

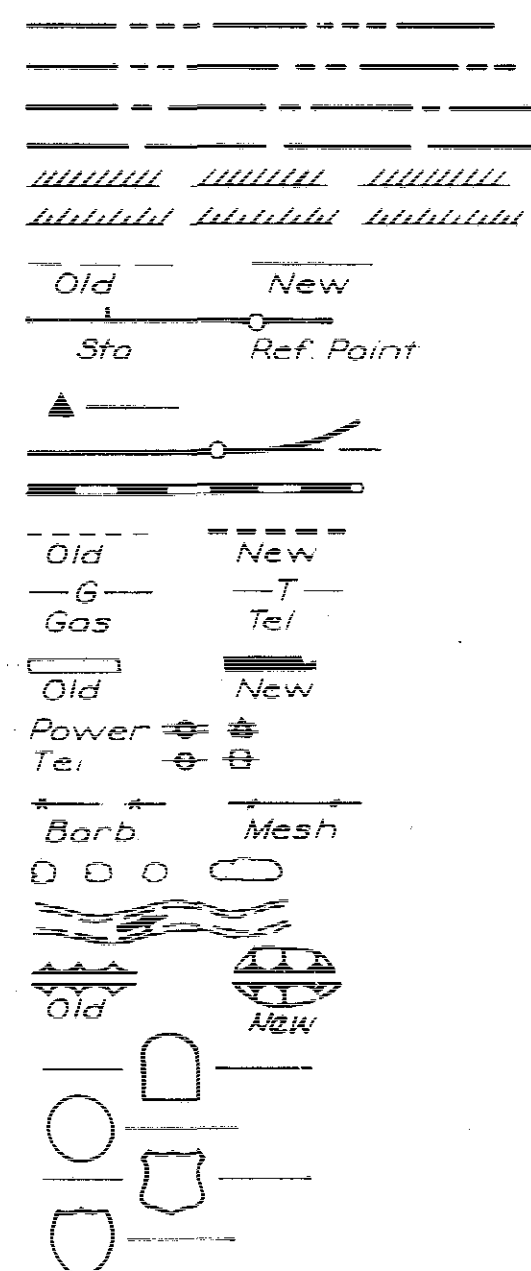
LETTING DATE
SEP. 17, 1974

CONVENTIONAL SIGNS

State Line
Co. Line
Twp. Line
Sec. Line
Corp. Line
Urban Bdry.
R.O.W. Lines
Survey Line

Sec. Corner
Profile Grade
Railroad
Field Tile
Underground Lines
Culverts
Utility Poles
Fences
Trees Or Brush
Stream
Dike

County Road No.
Primary Road No.
U. S. Road No.
Interstate Road No.



STATE OF IOWA
STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE

PRIMARY ROAD SYSTEM
JACKSON COUNTY
GRADING, P.C.C. PAVING
AND A.C. RESURFACING

ON IOWA NO. 62 FROM NEAR CENTER OF SECTION 23-86-4
NORTHEAST TO WATER STREET IN BELLEVUE
SCALES: AS NOTED

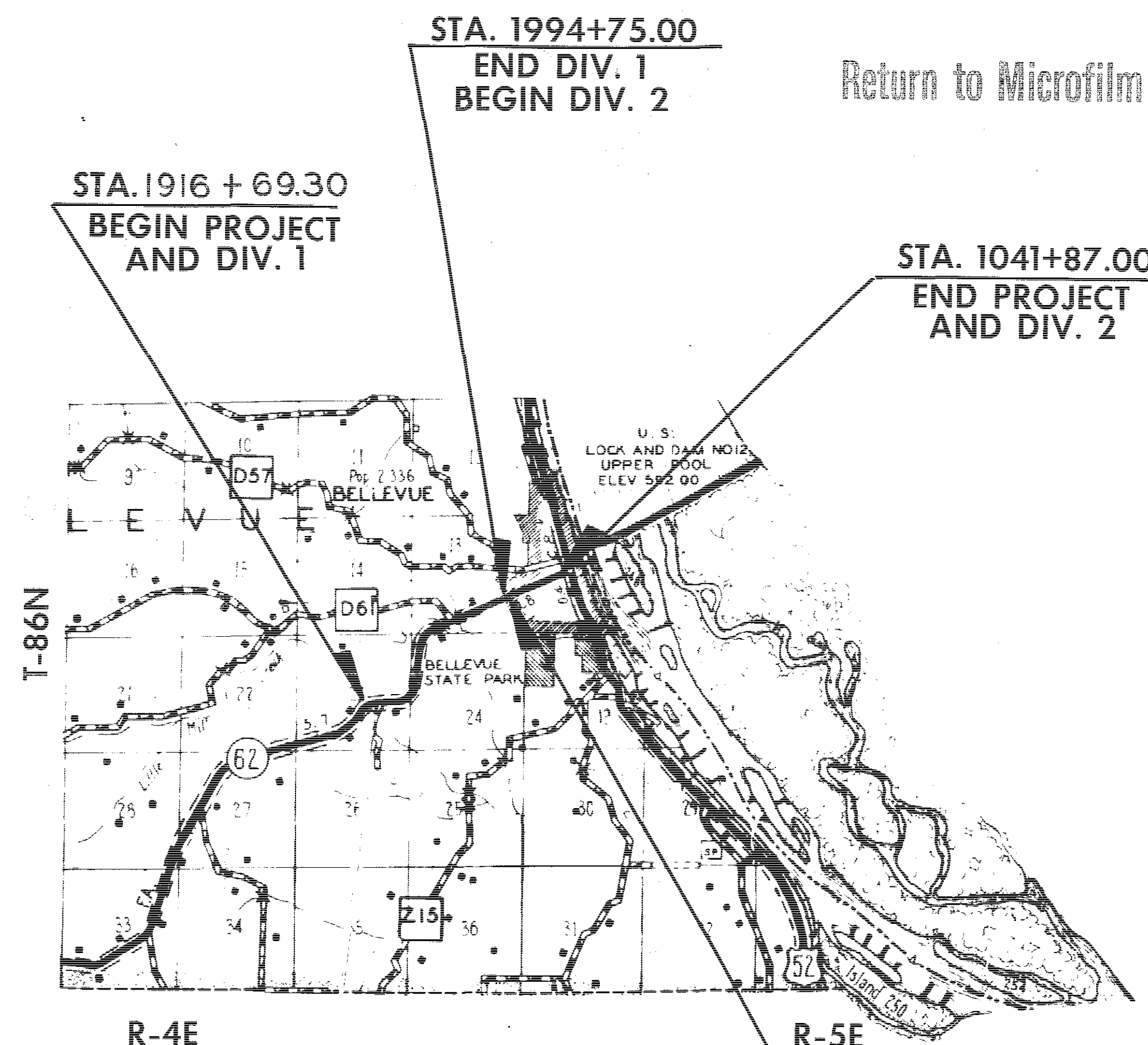
THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS
FOR CONSTRUCTION WORK, SERIES OF 1972 SHALL
APPLY TO WORK ON THIS PROJECT

86 Sheets

IND.	
NO.	DESCRIP.
1	TITLE SHEET
1A	TABULATION OF REVISIONS
2A-2B	TYPICAL CROSS SECTIONS
3A-3I	QUANTITIES AND GENERAL INFORMATION
4-9	MAINLINE PLAN AND PROFILE SHEETS
10	SIDE ROAD PLAN AND PROFILE SHEETS
11	RELOCATED FARM ENTRANCE PLAN AND PROFILE SHEET
12-13	BENCH MARKS AND REFERENCE INFORMATION
14-25	SOIL SHEETS
26-29	TABULATION OF EARTHWORK QUANTITIES
30-75	STANDARD ROAD PLANS
76-210	CROSS SECTIONS

THIS PLAN INCLUDES:

GRADING — R.B. BURCH
P.C.C. PAVING — R.B. BURCH
A.C. RESURFACING — R.B. BURCH



MILEAGE SUMMARY				105-1	STATE CONTROL SECTION NO.
DIV.	LOCATION	LIN. FT.	MILES		
1	RURAL				
	STA. 1916+69.30 TO STA. 1994+75.00	7,805.70			
	BRIDGE AT STA. 1974+00.00	147.15			
	BRIDGE AT STA. 1966+15.00	150.15			
	NET LENGTH OF ROADWAY - DIV. 1	7,527.29	1.424		
	NET LENGTH OF BRIDGES - DIV. 1	297.30	0.054		
	TOTAL LENGTH OF DIV. 1	7,805.70	1.478		19-10.00
2	URBAN, CITY OF BELLEVUE				
	STA. 1994+75.00 TO STA. 1996+18.20	143.20			
	EQUATION: STA. 1996+18.20 = STA. 996+18.20				
	STA. 996+18.20 TO STA. 1041+87.00	1,568.80			
	OMIT FOR RAILROAD	0.00			
	TOTAL LENGTH OF DIV. 2	1,712.00	0.891		4-10.00
	NET LENGTH OF ROADWAY IN PROJECT	12,220.79	2.315		
	NET LENGTH OF BRIDGES IN PROJECT	287.45	0.054		
	TOTAL LENGTH OF PROJECT	12,508.24	2.369		

INDEX OF STANDARD ROAD PLANS									105-4
									1-8-71
SH. NO.	ST'D. RD. PLAN Ident.	Date	SH. NO.	ST'D. RD. PLAN Ident.	Date	SH. NO.	ST'D. RD. PLAN Ident.	Date	
30	RA-3	3-30-73	45	RE-27B	8-2-74	60	RE-32	6-8-72	
31	RA-5	3-30-73	46	RE-29C	8-2-74	61	RE-35	3-29-74	
32	RA-13	12-21-73	47	RE-32B	12-21-73	62	RG-1	8-3-73	
33	RA-16A	4-19-74	48	RE-33	6-21-74	63	RG-2	1-18-74	
34	RA-25	6-12-64	49	RE-41	12-21-73	64	RH-2	12-7-73	
35	RA-27	9-9-69	50	RE-1	2-15-74	65	RH-22	4-14-72	
36	RB-1	9-7-73	51	RE-2	12-7-73	66	RH-37	10-20-72	
37	RB-2	9-7-73	52	RE-3	11-16-60	67	RK-11	10-19-73	
38	RB-3	3-9-73	53	RE-5	2-4-72	68	RL-1	6-8-72	
39	RB-6	8-2-74	54	RE-7	10-15-68	69	RL-2A	4-6-73	
40	RD-26	6-8-73	55	RE-20	3-1-74	70	RL-2B	3-23-73	
41	RE-2	8-2-74	56	RE-21	4-26-67	71	RL-4	8-3-73	
42	RE-7	11-19-71	57	RE-30A	4-6-72	72	RL-7	5-25-70	
43	RE-12	6-21-74	58	RE-30B	3-10-72	73	RL-9	12-21-73	
44	RE-29A	8-2-74	59	RE-31	12-3-71	74	RL-10	12-21-73	
						75	RP-1	10-20-71	

REV
-4/-

MICROFILMED
DATE 8/4/77

CONSTRUCTION PLANS
SHOWING PROJECT
AS BUILT

PLAN PREPARATION SUPERVISED BY: *William J. Crawford*
DATE: *August 1972*
REVIEWED & FORWARDED TO AMES BY: *Leonard C. Balcom*
DATE: *August 1972*
NO. OF COPIES (FULL, 50% L) TO BE MADE & RETURNED
TO: VAN R. SNYDER, DISTRICT ENGINEER.
AFTER MICROFILMING, RETURN ORIGINAL TO DISTRICT NO. 6

REVISED:
SEE FOLLOWING SHEET 1A

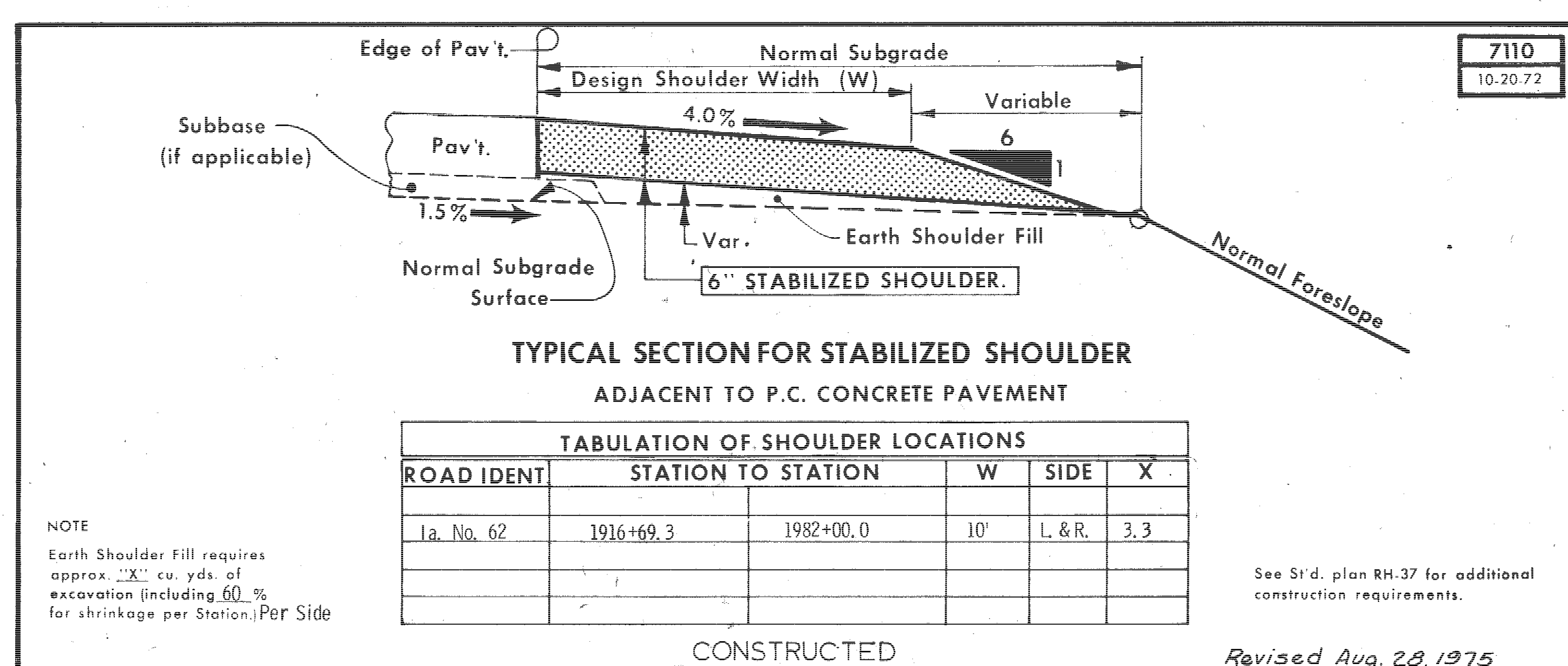
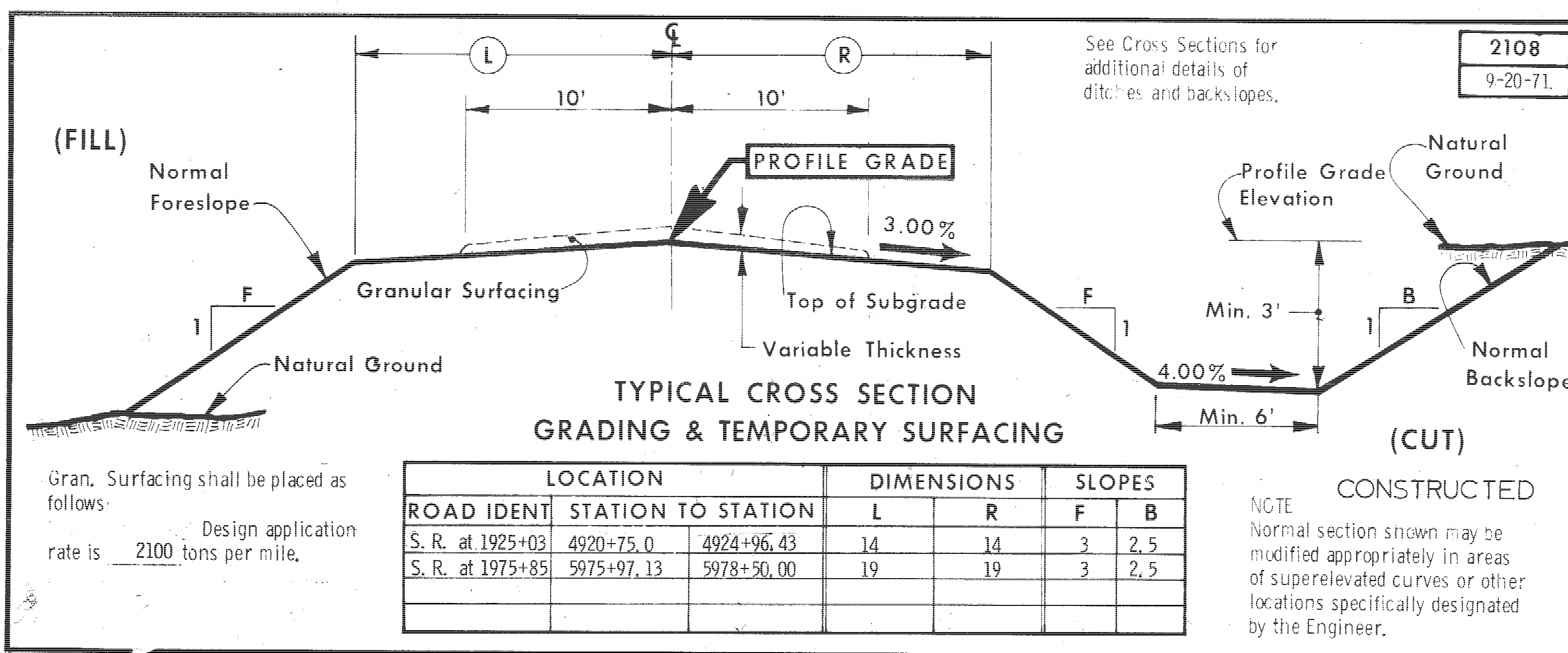
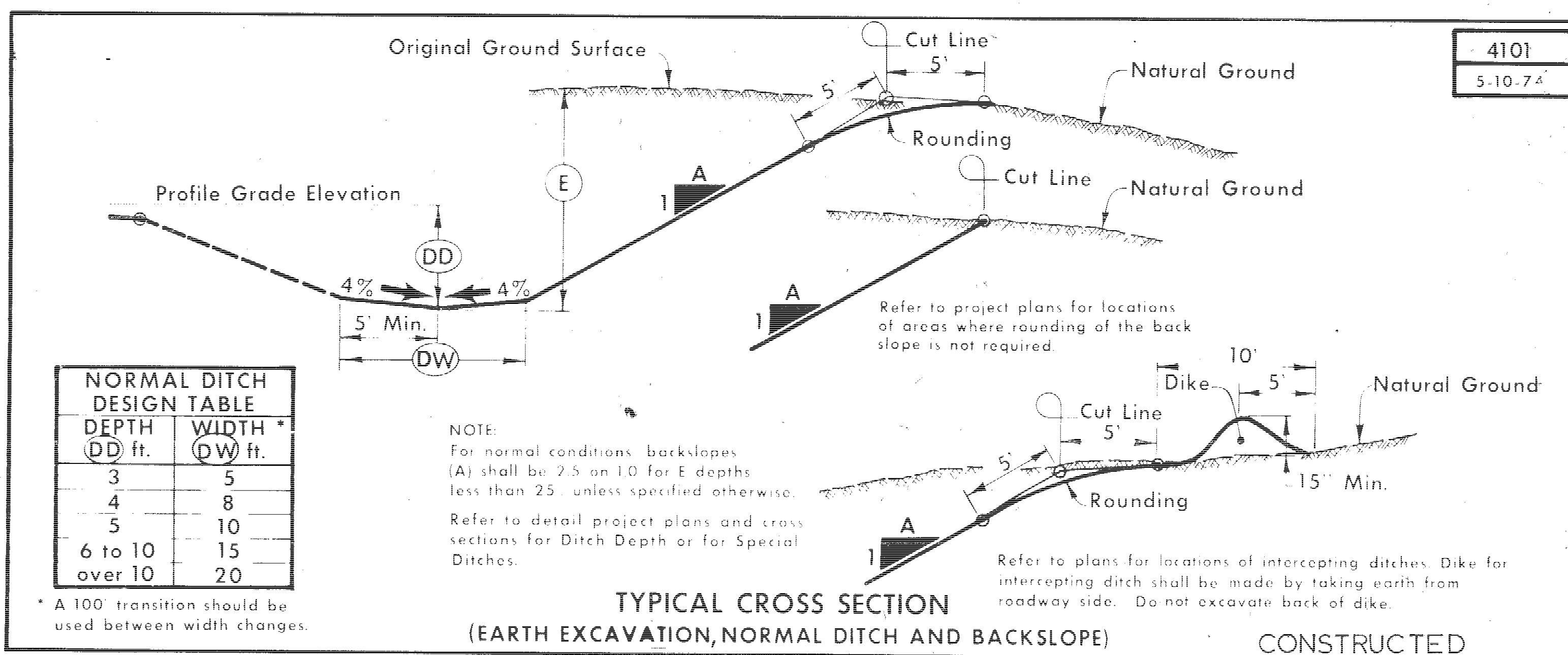
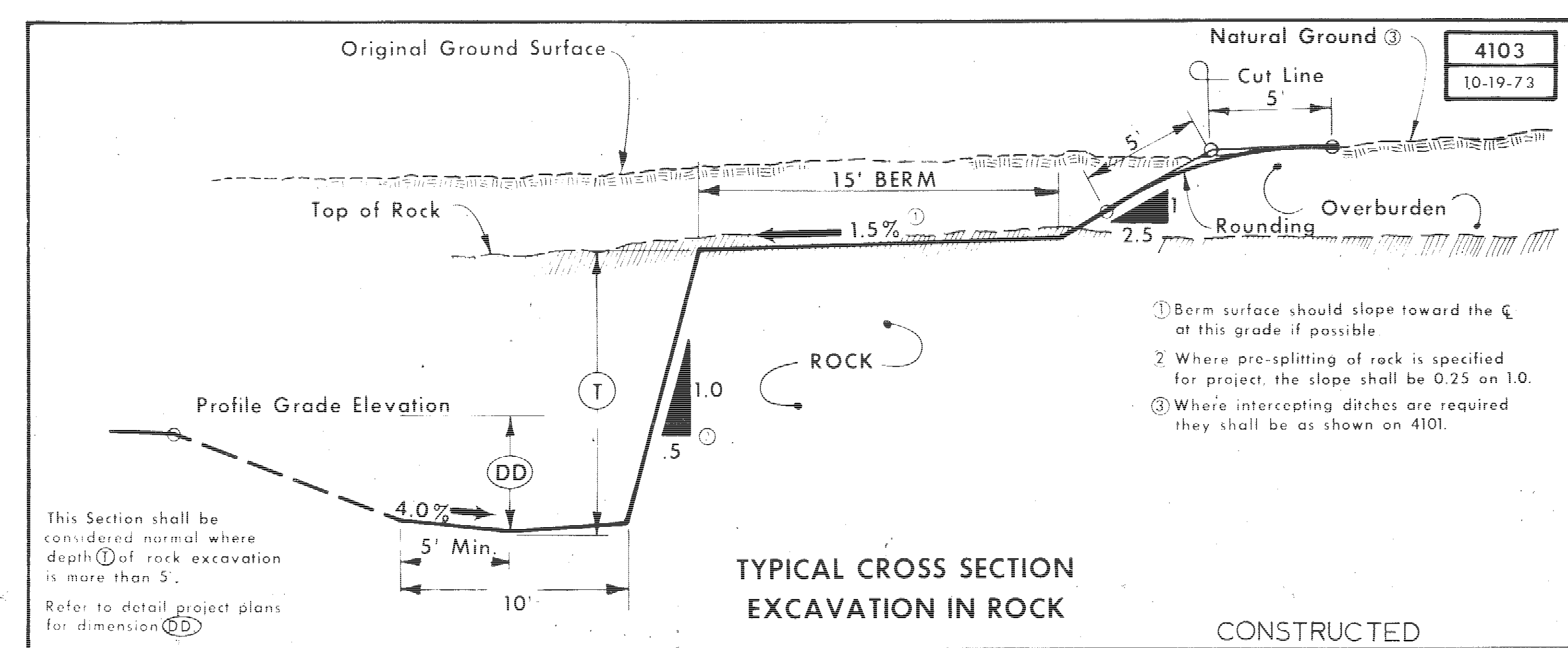
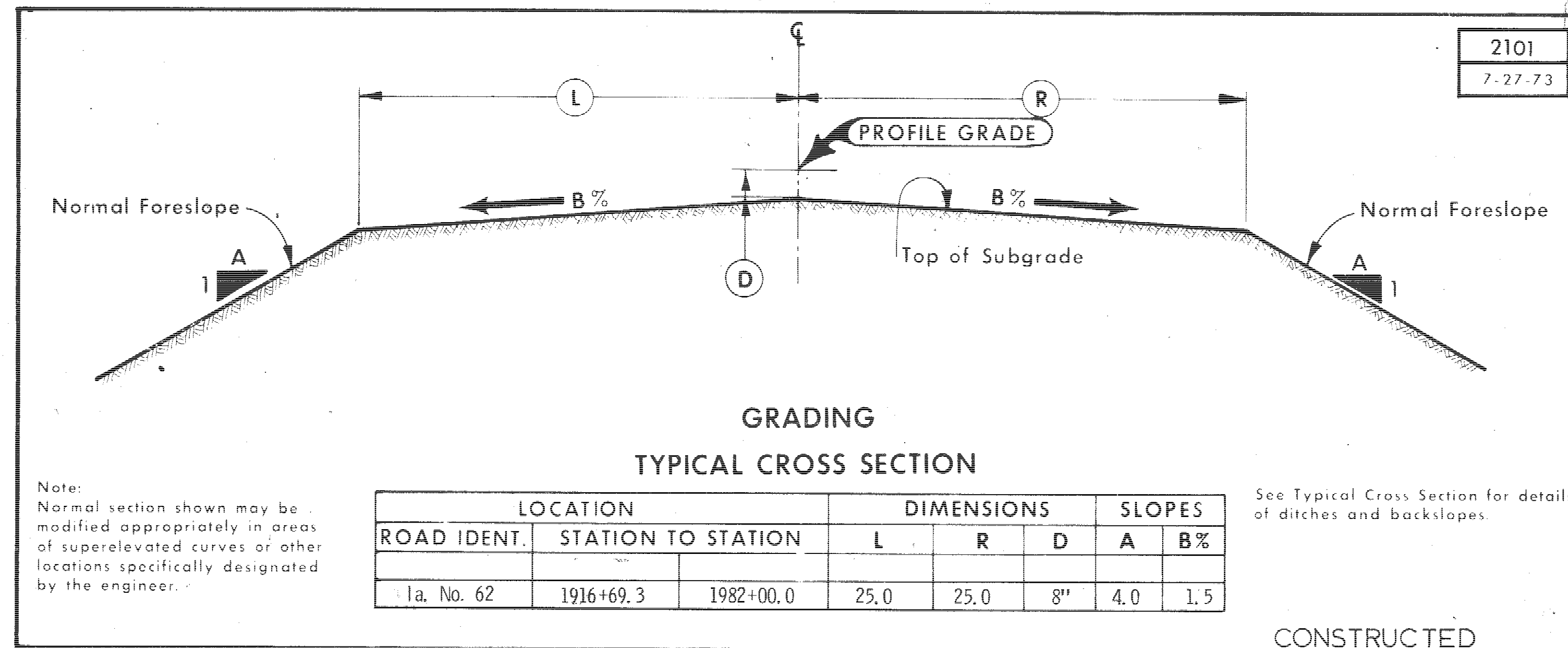
APPROVED
P. J. O'Brien 8/19/74
DEPUTY CHIEF ENGINEER
IOWA HIGHWAY COMMISSION
DATE

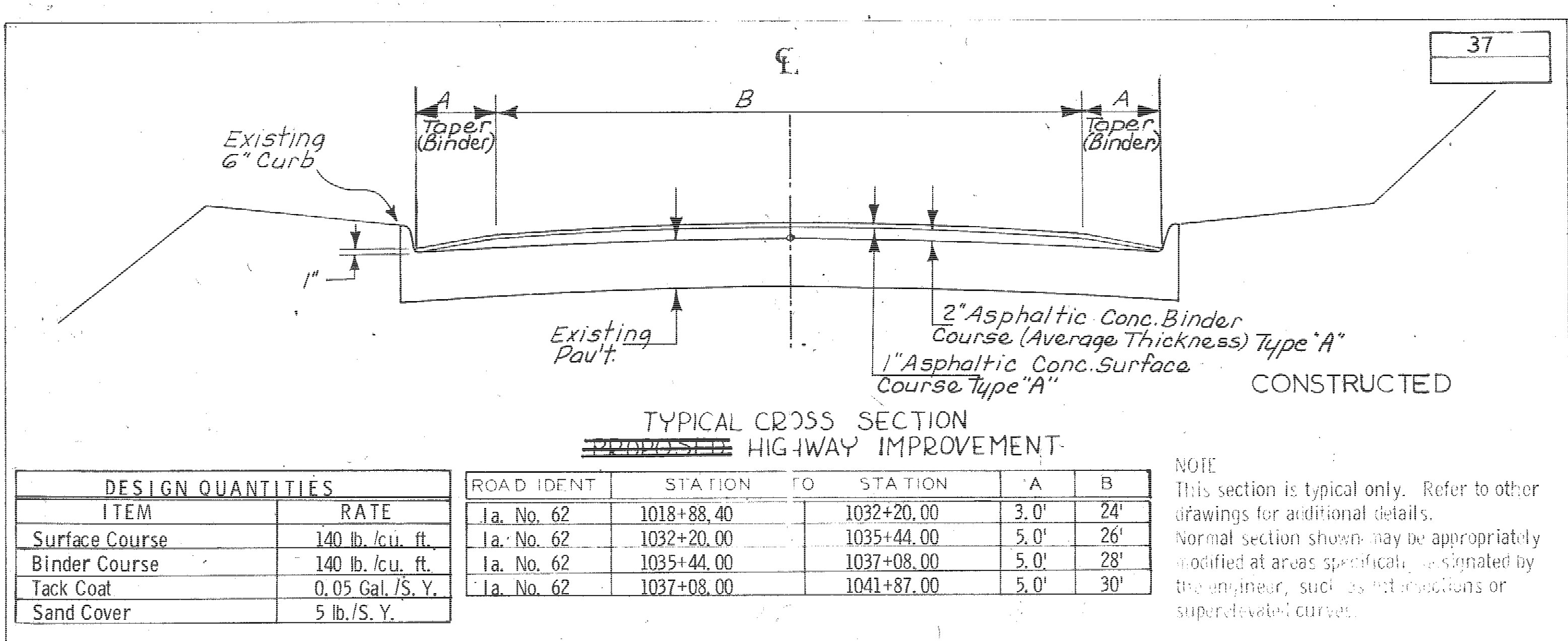
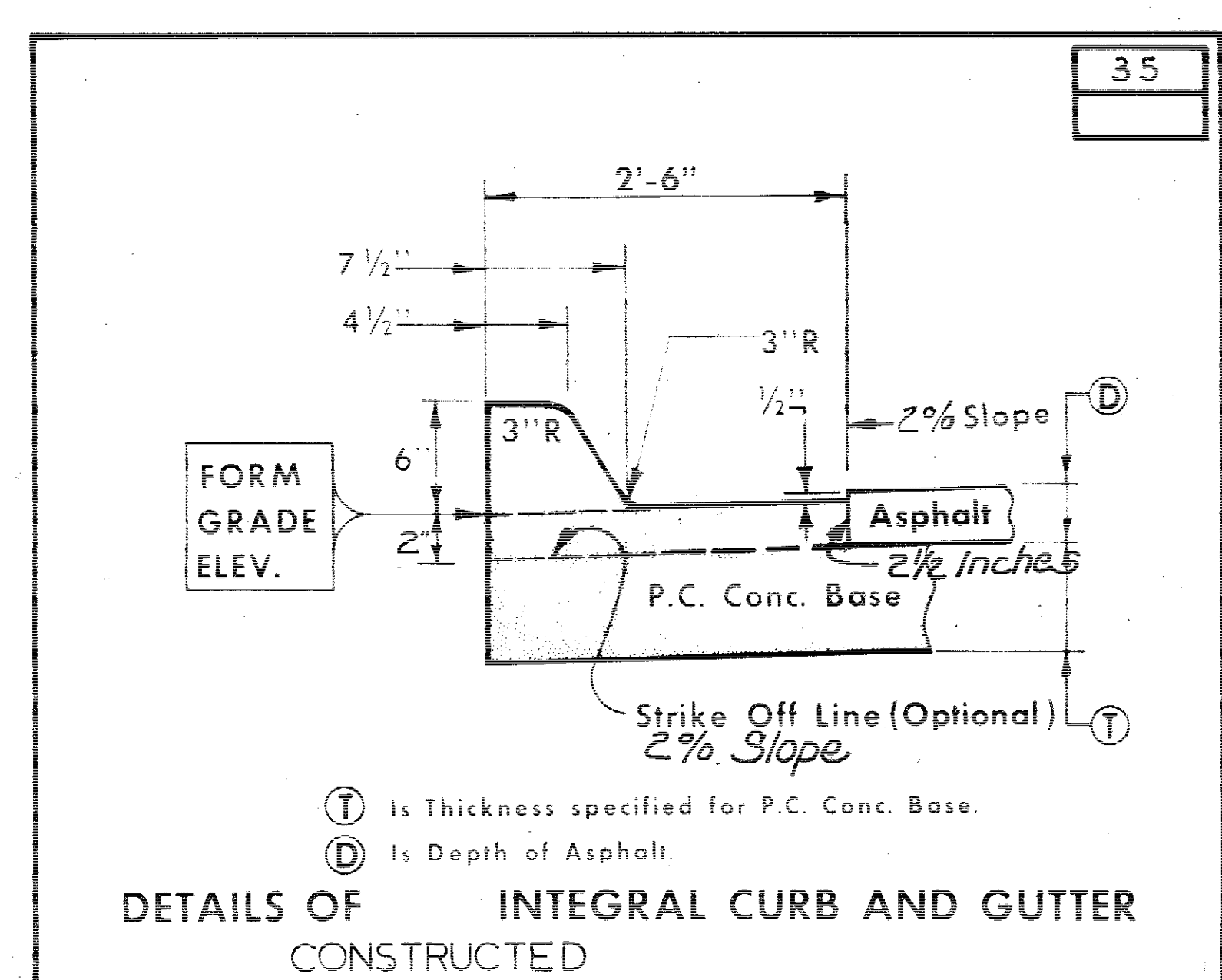
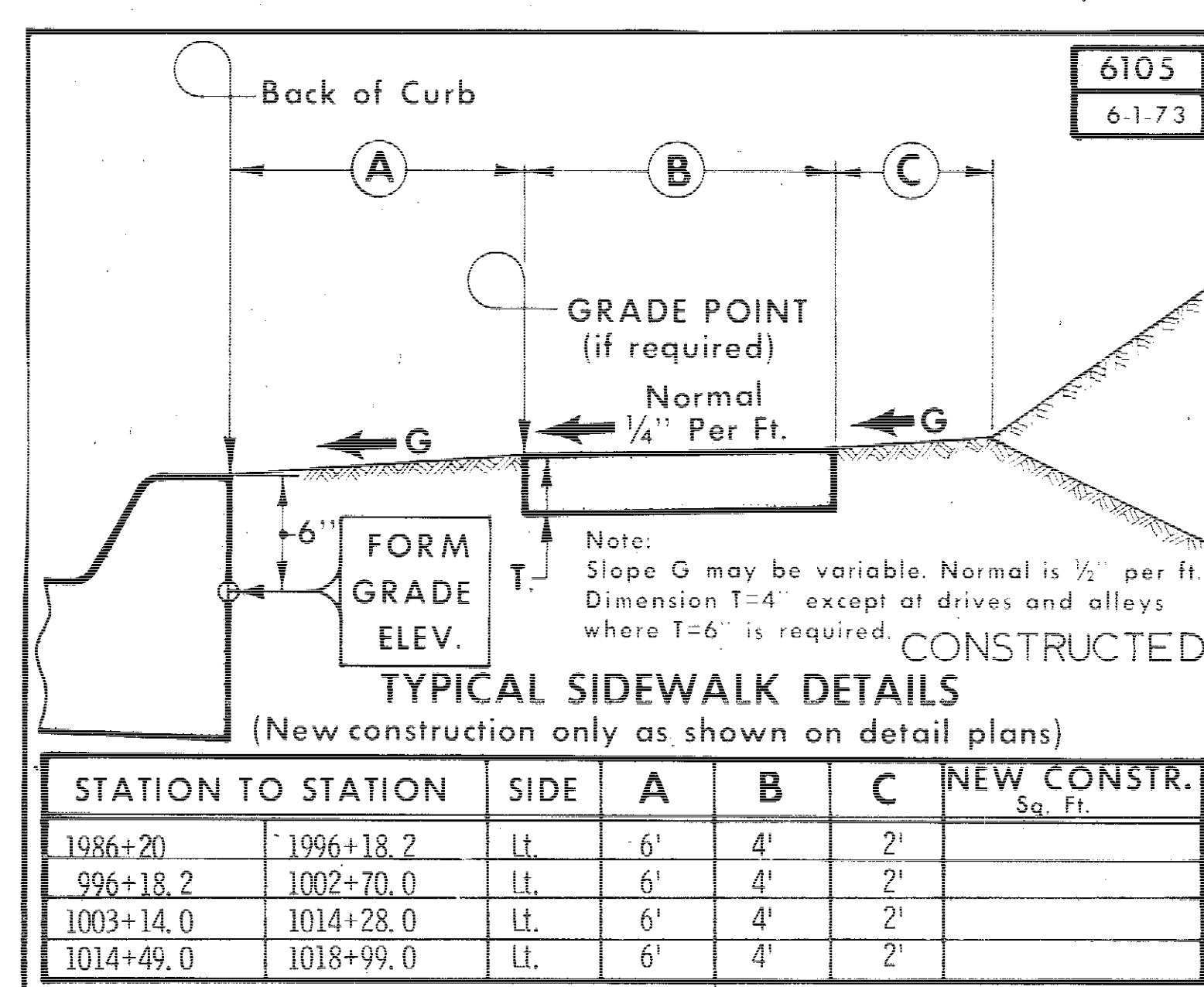
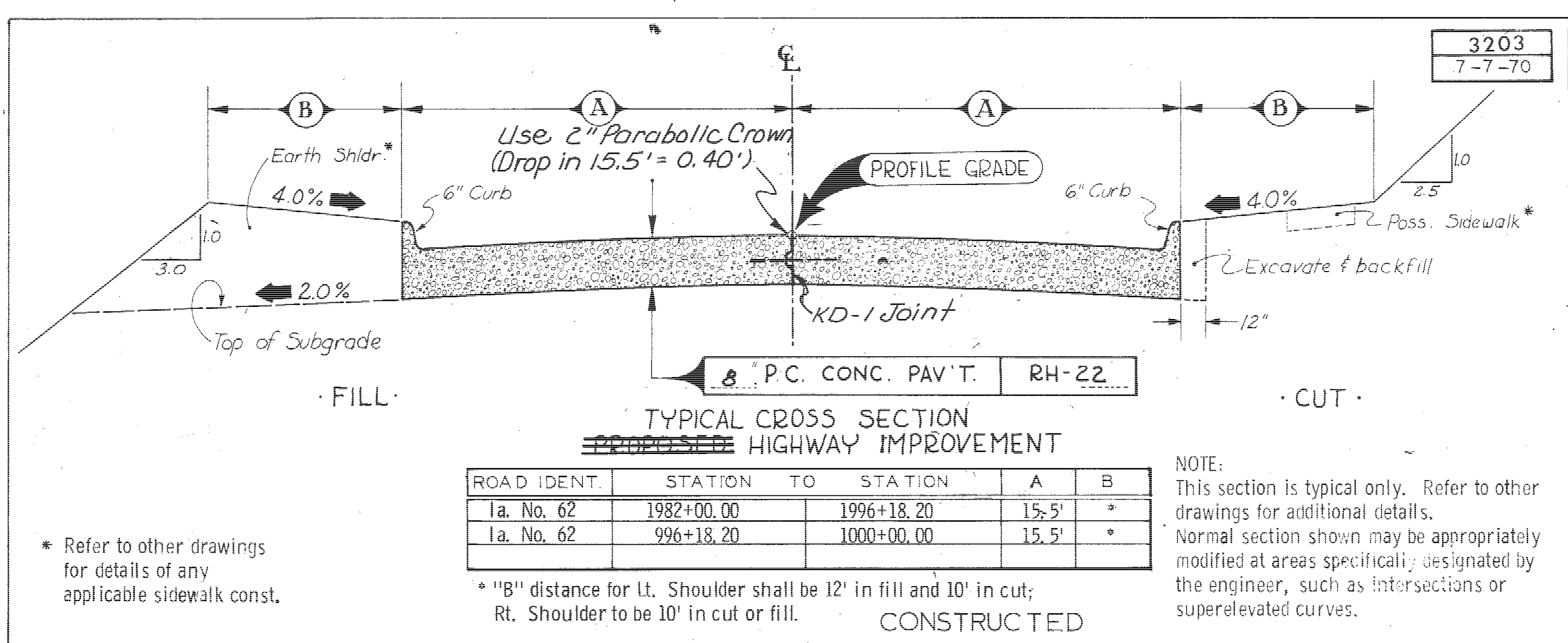
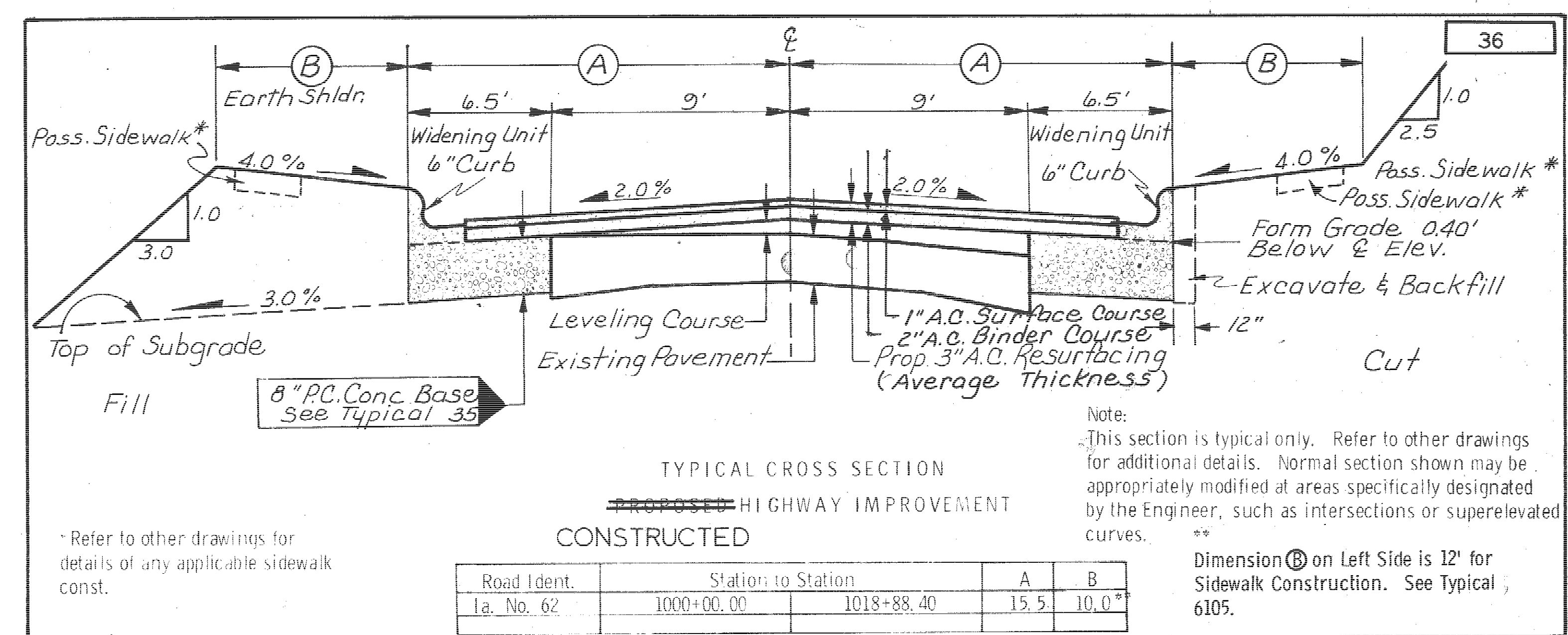
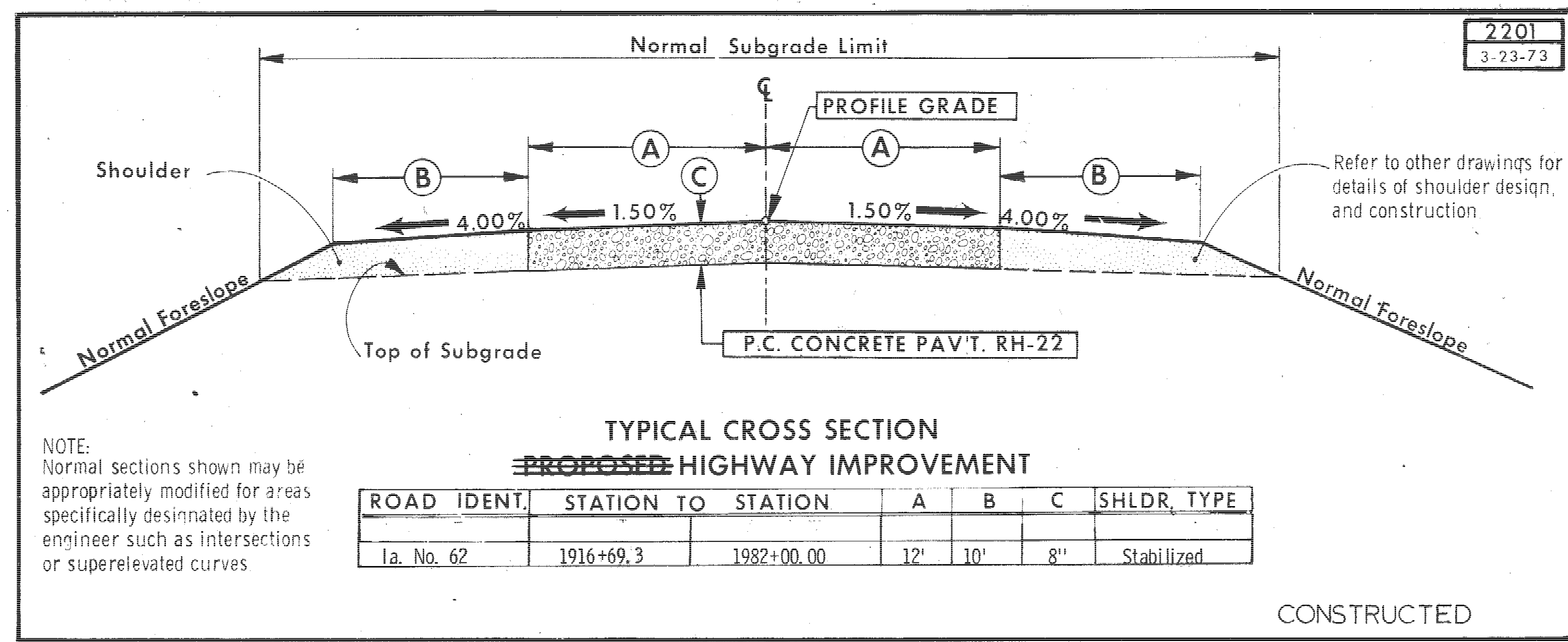
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED
UNDER MY SUPERVISION AND THAT ENGINEERING
DECISIONS WITH REGARD TO THE DESIGN WERE
MADE BY ME OR BY OTHER DULY REGISTERED
PROFESSIONAL ENGINEERS UNDER THE LAWS OF
THE STATE OF IOWA.
William J. Crawford
5972 August 16, 1974
IOWA REGISTRATION NUMBER DATE

U.S. DEPT. TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ENGINEER
DATE

LISTING OF PROJECT REVISIONS

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS	DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS
Oct. 10, '74	1A	Added Revision Sheet.	Aug. 28, '75	10	Continued
	3A	Added bid item Surface Treatment of P. C. Conc. Pavement to Estimated Project Quantities.		12	Corrected pluses shown on references to agree with those shown on Plan and Profile sheets 4 and 5.
	3C	Changed lin. ft. of 2000D for installation at Sta. 909+74 from 16 lin. ft. of 64 lin. ft. to reflect the 48 lin. ft. shown in remarks to be jacked.		14 - 25	Changed Sta. for beginning of soil survey. Plotted new grade and soils information on sheet No. 14 and 20.
		REASON: To add Surface Treatment of P. C. Concrete Pavement to Estimated Project Quantities and to clarify total lin. ft. of pipe required for installation.		26	Corrected Template Quantities and Adjustments in Stage 1A.
		MASTERS PRINTED		29	Corrected Template Quantities and Adjustments for Side Road at Sta. 1925+03.06.
				76 - 84	Revised Cross Sections and Quantities.
				192 - 194	Revised Cross Sections and Quantities.
Oct. 16, '74	3A	Item No. 80, in Estimated Reference Information, rate of application for Fescue, Ky. 31 corrected from 3 lbs. per acre to 30 lbs. per acre.			REASON: Field Elevations were found to be different than those used in development of plan. Required grade change and re-templating on first 1500 ft. of project.
	5	Added "B" to Borrow Stage 1B to clarify where material is to be obtained.			MASTERS PRINTED
		REASON: Rate of application for Fescue, Ky. 31 corrected to show proper rate. Borrow material for Stage 1B is to be obtained from Borrow "B".			
		MASTERS PRINTED			
Oct. 23, '74	3C	Added information, for structure Sta. 1948+93 - 160' Rt., to tabulation for Drainage Structures by Road Contractor.	Jan. 27, '76	3A	Revised Estimated Project Quantities: Item No. 5 Overhaul changed from 7,631,710 to 8,127,665 Sta. Yds. in Div. 1 and from 7,718,565 to 8,214,520 Sta. Yds. in Total. Revised Estimate Reference Information: Item No. 5 changed Sta. Yds. computed by mass diagram from 2,533,672 to 3,029,627 Sta. Yds.
		REASON: Culvert Sta. 1948+93 - 160' Rt. missing from tabulation for Drainage Structures By Road Contractor in final plan.			REASON: 495,955 Sta. Yds. of overhaul was missed in original summation.
		MASTERS PRINTED			MASTERS PRINTED
Jan. 3, '75	3A	Revised Estimated Project Quantities: Item No. 1, Class 10 Excavation (Roadway & Borrow) Div. 1 changed from 618,463 cu. yds. to 690,654 cu. yds. and total changed from 627,890 cu. yds. to 700,081 cu. yds. Item No. 2, Class 12 Excavation (Roadway and Borrow) Div. 1 changed from 119,977 cu. yds. to 112,852 cu. yds. and Total changed from 119,977 cu. yds. to 112,852 cu. yds. Item No. 5, Overhaul Div. 1 changed from 6,260,708 sta. yds. to 7,615,792 sta. yds. and Total changed from 6,347,563 sta. yds. to 7,702,647 sta. yds.			
		Revised Estimate Reference Information: Item No. 5 quantity computed by mass diagram changed from 2,586,306 sta. yds. to 2,517,754 sta. yds. and quantity computed by assuming center of mass changed from 3,761,257 sta. yds. to 5,184,893 sta. yds.			
	5	Changed balances from Sta. 1928+93 to Sta. 1961+00 Stage 1A, due to changed in quantities shown on Sheet No. 26.			
	23	Added existing 3" Gas Line and reshaped Borrow "A".			
	26	Changed Tabulation of Template Quantities and adjustments. Sta. 1930+20 to Sta. 1931+50 changed Template Cut from 3774 cu. yds. to 5649 cu. yds., Minus Rock Cut from 3418 cu. yds. to 5293 cu. yds. and Rock Cut from 3418 cu. yds. to 5293 cu. yds. Rock Sta. 1930+20 to Sta. 1936+10 decreased 9,000 cu. yds. for rock in stockpile. Sta. 1930+20 to Sta. 1936+10 corrected adjusted Rock plus Swell by a minus 7125 cu. yds. Sta. 1951+00 to Sta. 1954+00 corrected Minus Rockfill by a minus 7125 cu. yds. Adjusted Earth Fill by a plus 7125 cu. yds. and adjusted Earth Fill plus Shrink by a plus 8905 cu. yds.			
	83 - 84	Corrected end area for cross section Sta. 1930+89 and volumes effected.			
	204 - 207	Changed Cross Sections and volumes to avoid 3" Gas Line.			
		REASON: Rock quantity increased by 1875 cu. yds. because of end area of Cross Section Sta. 1930+89 being in error. Rock quantity decreased by 9000 cu. yds. for rock stockpile to be removed. Balance Sta. 1950+09.32 to Sta. 1961+00 was short 63,280 cu. yds. of earth required for fill. Total change required an additional 72,191 cu. yds. to come from Borrow "A". Increasing Overhaul by 1,355,084 sta. yds. Reshaped Borrow "A" to avoid 3" Gas Line Crossing through South East Corner of Borrow.			
		MASTERS PRINTED			
Aug. 28, '75	1	Eliminated Equation: Sta. 919+45.70 (Back) - Sta. 1919+65.00 (Ahead) and corrected Mileage Summary.			
	2A-2B	Corrected stations effected by the elimination of equation on project.			
	3A	Item No. 1 Class 10 Excavation (Roadway and Borrow) cu. yds. changed from 690,654 to 691,627 in Div. 1 and from 700,081 to 701,054 in total. Item No. 2 Class 12 Excavation (Roadway and Borrow) cu. yds. changed from 112,852 to 111,592 in Div. 1 and from 112,852 to 111,592 in total. Item No. 5 Overhaul - sta. yds. changed from 7,615,792 to 7,631,710 Div. 1 and from 7,702,647 to 7,718,565 total.			
	3D	Stationing for Embankment with Moisture and Density Control revised because of elimination of equation on project.			
	4	Eliminated equation on project by shifting it back to S.T. Sta. 911+55.40. Changed grade from Beginning of Project to Sta. 1927+77.6 and corrected balances.			
	5	Corrected balances. (Continued)			





ITEM	RATE
Surface Course	140 lb./cu. ft.
Binder Course	140 lb./cu. ft.
Tack Coat	0.05 Gal./S. Y.
Sand Cover	5 lb./S. Y.

ROAD IDENT.	STATION TO	STATION	A	B
Ia. No. 62	1018+88.40	1032+20.00	3.0'	24'
Ia. No. 62	1032+20.00	1035+44.00	5.0'	26'
Ia. No. 62	1035+44.00	1037+08.00	5.0'	28'
Ia. No. 62	1037+08.00	1041+87.00	5.0'	30'

Jackson

COUNTY

PROJECT NUMBER
FN- 62-1(4) -- 21-49

Revised Aug. 28, 1975

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		28	210

ESTIMATE REFERENCE INFORMATION		100-4
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.		
ITEM NO.	DESCRIPTION	
1.	Includes 100 cu. yds. for repairing existing backslope from Sta. 916+00 to Sta. 918+00; And 1125 cu. yds. unsuitable cut to be wasted off the project.	
3.	Includes 52 cu. yds. for retaining wall construction.	
5.	Includes 3,029,627 sta. yds. computed by mass diagram and 5,184,893 sta. yds. computed by assuming the center of mass.	
10.	Includes removal of existing flumes in reconstruction area. Flume removal in area of pavement widening (Urban) will be paid for separately. See Item No. 15.	
11.	Includes 285 sq. yds. of P. C. Concrete and 421 sq. yds of Asphaltic Concrete.	
12.	See Detail Sheet No. 3G	
15, 16.	Located in area of pavement widening only. See Typical Section No. 36.	
37.	Requires 2-90° Elbows.	
38.	Requires 9-20° Elbows and 1-7°30' Elbow.	
39.	Requires 6-20° Elbows and 1-7°30' Elbow	
56.	Includes 3600 lineal feet of 6" integral curb.	
56, 57.	Class 1 or Class 2 aggregate durability will be accepted.	
57.	Includes 3,777 lineal feet of integral curb. Curb and gutter portion requires surface finishing same as for pavement. See Typical Section No. 35. Bid Price also to include construction of contraction and expansion joints to match existing joints in old pavement. See Std. Plan RG-1 for expansion joints in area of curb removal.	
60.	Asphalt Cement Factors: Type "A" Asphaltic Concrete Leveling Course - 5.25% Type "A" Asphaltic Concrete Binder Course - 5.25% Type "A" Asphaltic Concrete Surface Course - 6.25%	
61, 62.	Use 3/4" Mixture Size	
63.	Use 3/8" Mixture Size.	
66.	Width varies from 30' to 40'.	
71.	Requires 8-RE-29A and 2-RE-29B.	
72.	Includes 8-RE-41 Guard Rail Bridge Connections.	
73.	Requires 104 - 8" x 8" Posts and 24 - 10"x 10" Posts.	
75.	Requires approximately 438 cu. yds. of excavation (Including 60% Shrinkage) for earth fill to be considered incidental.	
76.	Shoulder material is included in template quantities (Class 10 Excavation)	
77.	Includes 875 tons for temporary surfacing from Sta. 1979+00 to Sta. 1000+00; 596 tons for side roads and farm entrances and 75 tons for surfacing urban drives. All surfacing to be placed in accordance with section 2315, 1974 Standard Specifications.	
78.	See Article 2601.05.	
79.	For area from Sta. 1982+00 Lt., Sta. 1994+75 Rt. to Sta. 1018+88.4 Urban area. Article 2601.04J shall apply. Seed Mixture for seeding special areas: Fescue, Ky. 31 - 60% Bluegrass, Ky - 35% Clover, White - 5% Rate: 5 lbs. per 1000 sq. ft. Use 650 lbs. of 13-13-13 or equivalent chemically combined commercial fertilizer per acre.	
80.	For all areas from B. O. P. to Sta. 1982+00 Lt. and Sta. 1994+75 Rt. Seed Mixture: Fescue, Ky, 31 30 lbs. per acre Switchgrass (Blackwell) 5 lbs. per acre Crownvetch (Emerald) 5 lbs. per acre. Birdsfoot Trefoil (Empire) 4 lbs. per acre. Use 650 lbs. of 13-13-13 or equivalent chemically combined commercial fertilizer per acre.	
81.	For slope areas as designated by the Engineer.	
86.	Includes rotating 5 eccentric manhole cones to best fit construction (Minor Elev. change) & raising one manhole top 3.5 ft.	

FINAL ESTIMATE PROJECT QUANTITIES						100-1
NO.	ITEM	UNIT	DIVISION		TOTAL	
			1	2		
1	Class 10 Excavation (Roadway & Borrow)	Cu. Yds.	795,642	9,427	805,069	
2	Class 12 Excavation (Roadway & Borrow)	Cu. Yds.	116,224	0	116,224	
3	Class 20 Excavation	Cu. Yds.	281	74	355	
4	Class 22 Excavation	Cu. Yds.	64	0	64	
5	Overhaul (Div. 1) 324,759	Sta. Yds.	8,247,759	86,855	8,334,614	
6	Special Backfill	Tons	7660.95	133935	9000.30	
7	Compacting Embankment with Moisture & Density Control	Cu. Yds.	10,848	0	10,848	
8	Compacting Backfill Adjacent to Culverts & Stockpiles	Cu. Yds.	381	53	434	
9	Removal of Existing Structures	Lump Sum	\$5250.00	\$2500.00	\$5500.00	
10	Removal of old pavement	Sq. Yds.	8998.0	10754	10,0734	
11	Removal of Drives	Sq. Yds.	392.83	33071	723.54	
12	Removal of Concrete Wall	Cu. Yds.	0	21	21	
13	Removal of Concrete Steps	Cu. Yds.	0	24	24	
14	Removal of Sidewalk	Sq. Yds.	0	2134	2134	
15	Removal of Flumes	No.	0	2	2	
16	Removal of Curb	Sta.	0	9930	9,930	
17	Combined Conc. Steps & Retaining Wall	Cu. Yds.	0	6,900	6,900	
18	4" P. C. Concrete Sidewalk	Sq. Ft.	31980	91062	12,304.2	
19	6" P. C. Concrete Sidewalk	Sq. Ft.	96.0	484.0	580.0	
20	6" P. C. Concrete Drives	Sq. Yds.	0	2477	2477	
21	15" Concrete Roadway Pipe Culvert (1500D)	Lin. Ft.	0	40	40	
22	24" Concrete Roadway Pipe Culvert (2000D)	Lin. Ft.	16	0	16	
23	30" Concrete Roadway Pipe Culvert (2000D)	Lin. Ft.	62.0	0	62	
24	36" Concrete Roadway Pipe Culvert (2000D)	Lin. Ft.	84	0	84	
25	24" Jacked Concrete Roadway Pipe Culvert	Lin. Ft.	48	0	48	
26	15" on 15" Concrete Pipe Tee-Section	No.	0	1	1	
27	15" Concrete Aprons	No.	2	3	5	
28	24" Concrete Aprons	No.	1	0	1	
29	30" Concrete Aprons	No.	2	0	2	
30	36" Concrete Aprons	No.	2	0	2	
31	15" Corr. Metal Roadway Pipe Culvert	Lin. Ft.	0	32	32	
32	24" Corr. Metal Roadway Pipe Culvert	Lin. Ft.	494	0	494	
33	48" Corr. Metal Roadway Pipe Culvert	Lin. Ft.	306	0	306	
34	15" Metal Aprons	No.	0	1	1	
35	24" Metal Aprons	No.	11	0	11	
36	48" Metal Aprons	No.	8	0	8	
37	15" Bituminous Coated Corr. Metal Pipe Elbows	No.	0	2	2	
38	24" Corr. Metal Pipe Elbows	No.	11	0	11	
39	48" Corr. Metal Pipe Elbows	No.	7	0	7	
40	24" Corr. Metal Type "A" Diaphragm	No.	5	0	5	
41	48" Corr. Metal Type "A" Diaphragm	No.	4	0	4	
42	24" Unclassified Rdwy. Pipe Culvert	Lin. Ft.	52	0	52	
43	24" Unclassified Aprons	No.	2	0	2	
44	18" Unclassified Ent. Pipe Culvert	Lin. Ft.	272	0	272	
45	24" Unclassified Ent. Pipe Culvert	Lin. Ft.	268	0	268	
46	6" Corr. Metal Pipe Subdrain	Lin. Ft.	0	24	24	
47	12" Clay Storm Sewer	Lin. Ft.	0	25	25	
48	12" Storm Sewer (1500D)	Lin. Ft.	0	229	229	
49	15" Storm Sewer (1500D)	Lin. Ft.	46	308	354	
50	15" Storm Sewer (2000D)	Lin. Ft.	64	102	166	
51	15" Bituminous Coated Corr. Metal Storm Sewer	Lin. Ft.	0	28	28	
52	RA-3 Intake	No.	4	8	12	
53	RA-5 Intake	No.	0	2	2	
54	RA-16A Intake	No.	0	4	4	
55	Adjustment of Fixtures	No.	0	31	31	

FINAL ESTIMATE PROJECT QUANTITIES						100-1
NO.	ITEM	UNIT	DIVISION		TOTAL	
			1	2		
56	8" Standard or Slip Form P. C. Concrete Pavement (Class "A")	Sq. Yds.	20876.08	1826.59	22702.67	
57	8" Standard P. C. Concrete Base	Sq. Yds.	0	2,979.80	2,979.80	
58	Reinforced Bridge Approach Section	Sq. Yds.	213	0	213	
59	Bridge End Drains (RF-35)	No.	6	0	6	
60	Asphalt Cement	Tons	5.0	122.58	127.58	
61	Asphaltic Conc. Wedge Leveling or Strengthening Course (Type "A")	Tons	0	285	285	
62	Asphaltic Concrete Binder Course (Type "A")	Tons	100	1235	1335	
63	Asphaltic Concrete Surface Course (Type "A")	Tons	0	810	810	
64	Primer or Tack Coat Bitumen	Gals.	0	1445	1445	
65	Sand Cover	Tons	0	20.92	20.92	
66	Cleaning & Preparation of Old Base	Miles	0	.790	.790	
67	Full Depth Patches	Sq. Yds.	0	32.9	32.9	
68	Asphaltic Concrete Surface Patches	Tons	0	3.0	3.0	
69	Guard Rail Cable	Lin. Ft.	3728	0	3728	
70	Cable Guard Rail Posts	No.	245	0	245	
71	Cable Guard Rail End Anchorage	No.	10	0	10	
72	Formed Steel Beam Railing	Lin. Ft.	5875	0	5875	
73	Beam Guard Rail Posts	No.	126	0	126	
74	Beam Guard Rail End Anchorage	No.	8	0	8	
75	Stabilized Shoulder Material	Tons	5411.65	0	5411.65	
76	Earth Shoulder Finishing	Sta.	24.71	47.50	72.21	
77	Granular Surfacing on Road (Class "A" Crushed Stone)	Tons	3834.90	508.55	4343.45	
78	Stabilizing Crop Seeding & Fertilizing	Acres	6779	0	6779	
79	Seeding Special Areas	Acres	3.69	3.56	7.25	
80	Seeding and Fertilizing	Acres	42.07	0	42.07	
81	Mulching	Acres	1761	0	1761	
82	P. C. Concrete Retaining Wall	Cu. Yds.	0	0.80	0.80	
83	Concrete Block Retaining Wall	Sq. Ft.	0	99463	99463	
84	Locating Tile Lines	Stas.	2.3	0	2.3	
85	Barricades	No.	5	0	5	
86	Rebuild Sanitary Sewer Manhole	No.	0	6	6	
8001	Surface Treatment of P. C. Conc. Pav't (EWO)	Sq. Yd.	21089.41	2873.79	23963.2	
87	FIELD LABORATORY	ONLY	0.624	0.376	1	
88	CLEARING & GRUBBING	L.S.	\$1581813	\$65275	\$1647088	

PRESPLITTING TECHNIQUE - DEFINED AS THE ESTABLISHMENT OF A FREE SURFACE IN ROCK BY THE CONTROLLED USE OF EXPLOSIVES PRIOR TO PRIMARY BLASTING OF THE MAIN EXCAVATION. SHALL BE USED TO FORM THE ROCK CUT FACE AT THE DESIGN SLOPE FROM STA. 1924+75 TO STA. 1928+75 AND STA. 1935+50 TO STA. 1944+50. THE PRESPLIT HOLES SHALL FOLLOW THE DESIGN SLOPE LINES AND SHALL BE SPACED AT INTERVALS OF NOT MORE THAN 48 INCHES. EXCEPT FOR THE ABOVE LIMITATION, THE PROCEDURES FOLLOWED SHALL BE AS RECOMMENDED BY A RELIABLE POWDER COMPANY. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO CLASS 12 EXCAVATION.

Stage Construction

Stage 1A & 1B:

Local traffic including school traffic is to be maintained on County Road D61 and existing #62 east of Sta. 1975+50± to end of project.

Grade all portions west of Sta. 1975+50 and embankment from Sta. 1976+20 to Sta. 1980+00±. Includes removing NE wingwall from existing bridge over Mill Creek and left half of existing pavement from Mill Creek bridge to Sta. 1980+00; to expedite new bridge construction. One-lane traffic only need be maintained from existing Mill Creek bridge to Sta. 1980±.

Grade portion of embankment located right of existing pavement from Sta. 1979± to Sta. 1000+00± and place temporary surfacing on same.

Stage - 2:

With traffic on right side, grade and pave left side from Sta. 1980± to end of project, and pave from beginning of project to Sta. 1980± (Leave paving gap at Sta. 1975+85 and Sta. 1986+00 as necessary).

Stage - 3:

With traffic on left side, grade and pave remaining right side from Sta. 1980± to end of project. Since only one lane traffic is available between Sta. 1980± to Sta. 1000± the contractor will be required to furnish flagmen or other traffic control devices until right side pavement is completed and two-way traffic can be re-established.

Road Contractor is to remove existing bridge over Mill Creek and complete channel clearing under same, as directed by the engineer.

Revised January 27, 1976

Revised August 28, 1975

Revised January 27, 1976

Revised January 3, 1975

Revised October 16, 1974

Revised October 10, 1974

Jackson COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-62-1(4)--21-49	IOWA	5		3A	210

06

EXTRA WORK ORDERS		QUANTITIES	
NO.	ITEM	UNIT	TOTAL
8002	SUBDRAIN, CMP PERFE BIT.CTD. 6"	LIN.FT.	233
8003	SUBDRAIN, OUTLET RF-22	ONLY	6
8004	BACKFILL, POROUS	TONS	54616
8005	SUBDRAIN C.M.P.BIT.CTD. PERFE 6"	LIN.FT.	60
8006	PAYMENT FOR DELETED CR. ROCK	CU.YD.	9000
8007	PAYMENT FOR ADD. DRILLING COSTS	CU.YD.	11,944
8008	ASPHALT NON-COMPLIANCE DEDUC	L.S.	\$647.53
8009	EXCAV. CLASS 10 RDWY. & BORR.	CU.YD.	101
8010	ELBOW-CONC. PIPE 15"	ONLY	1
8011	REMOVE & RELAY CONC. APRON 15"	L.S.	\$3000
8012	REMOVE APRON METAL 15"	ONLY	1
8013	ELBOW 15" CONC. PIPE 12"	ONLY	1
8014	REMOVE & RELAY 24"X70' CM PLTDN.	L.S.	\$81500
8015	REMOVE & RELAY 24"X76' CM PLTDN.	L.S.	\$880.00
8016	SAWCUTS	LIN.FT.	54
8017	M3 MAINT. MIX CROSSEOVERS	SQ.YD.	30
8018	M3 MAINT. MIX DRIVES	SQ.YD.	42
8019	SUBDRAIN CORR. METAL PERFE 6"	LIN.FT.	1050
8020	SUBDRAIN CORR. METAL PIPE 6"	LIN.FT.	89
8021	ADD BAND 2 CONCRETE PAY QUAN.	SQ.YD.	266.667
8022	PRICE INCREASE ON CONC. SAND	TONS	3372.7
8023	PRICE INCREASE ON CONC. STONE	TONS	4193.8
8024	PRICE INCREASE ON STAB. SHOULD.	TONS	5411.65
8025	SOD FLUMES	SQ.	10
8026	SUBDRAIN STANDARD TILE 6"	LIN.FT.	616
8027	SUBDRAIN CORR. METAL PIPE 8"	LIN.FT.	10
8028	CEMENT FREIGHT RATE ADJUST.	TONS	1094.63
8029	CULVERT CONC. RDWY. PIPE 18"	LIN.FT.	256
8030	CONC. PIPE 36"-WITH 18" TEE	L.S.	\$300.00
8031	REMOVE & RELAY 36 CONC. APRON	ONLY	1
8032	PLACE "C" CONNECTIONS	ONLY	2
8033	EXCAV. CLASS 10 RDWY & BORR.	CU.YD.	600
8034	EXCAV. CLASS 20	CU.YD.	28
8035	REMOVE & RELAY 15" CONC. APRON	ONLY	1
8036	REMOVE & RELAY BLOCK RET. WALL	SQ.FT.	129.57

109-1B
THROUGH TRAFFIC WILL BE DETOURED OFF THE PROJECT.

109-2
THICKNESS OF SURFACING COURSES INDICATED ON TYPICAL CROSS SECTIONS IS NOMINAL. PAYMENT WILL BE BASED ON THE ACTUAL TONNAGE OF MATERIAL PLACED ON THE ROADWAY AS SPECIFIED.

109-3
BLADING AND SHAPING AS WELL AS ANY OTHER INCIDENTAL WORK IN PREPARATION FOR AND MAINTENANCE OF TEMPORARY CROSSINGS OR DETOURS SHALL BE CONSIDERED INCIDENTAL TO OTHER WORK ON THE PROJECT. ADDITIONAL SURFACING NEEDED FOR TEMPORARY CROSSINGS OR DETOURS DURING CONSTRUCTION SHALL BE FURNISHED AND SPREAD AT CONTRACT PRICE. ARTICLE 1109.03 OF THE CURRENT STANDARD SPECIFICATIONS SHALL NOT APPLY TO THE APPROPRIATE ITEM OF SURFACING.

109-4
UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

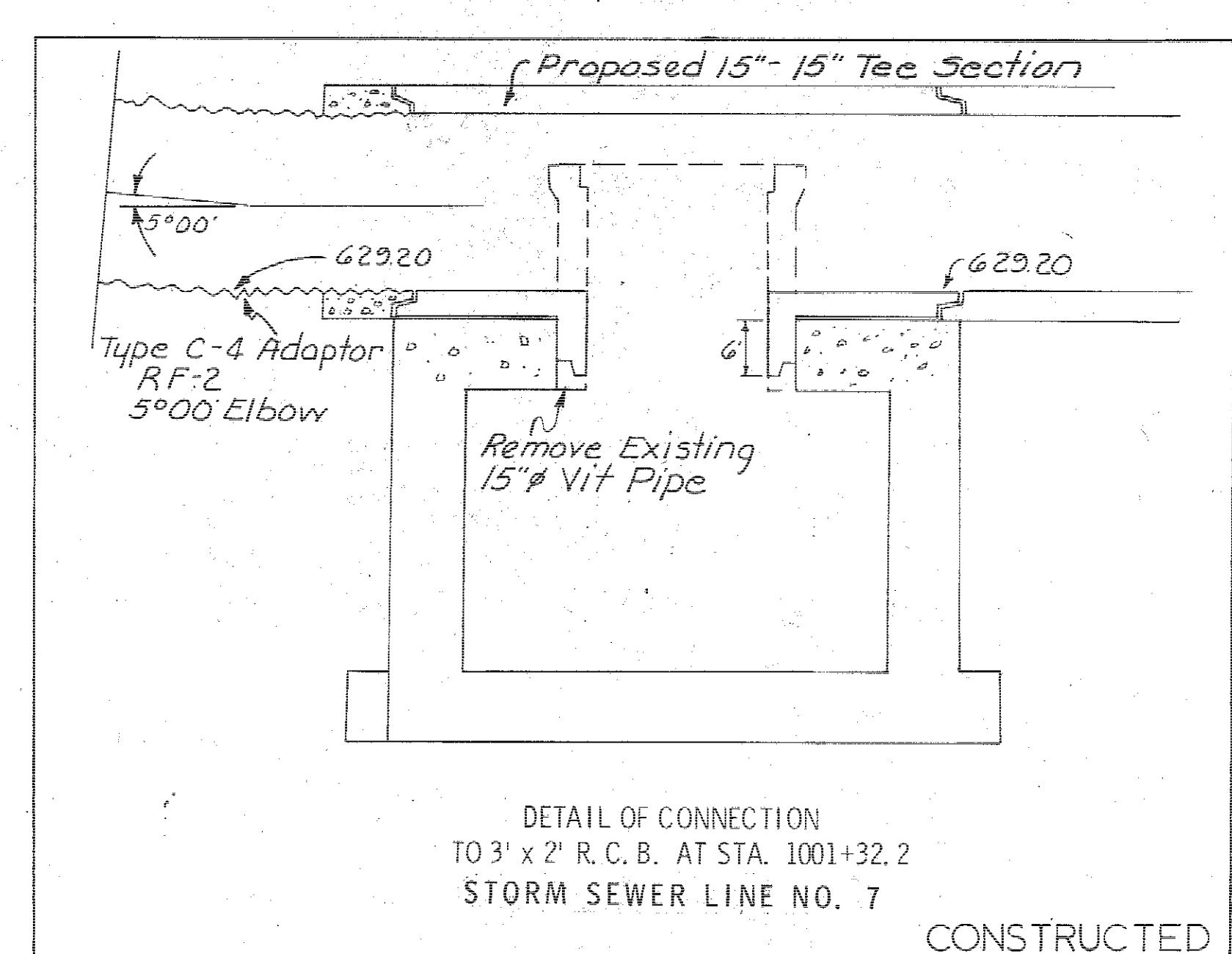
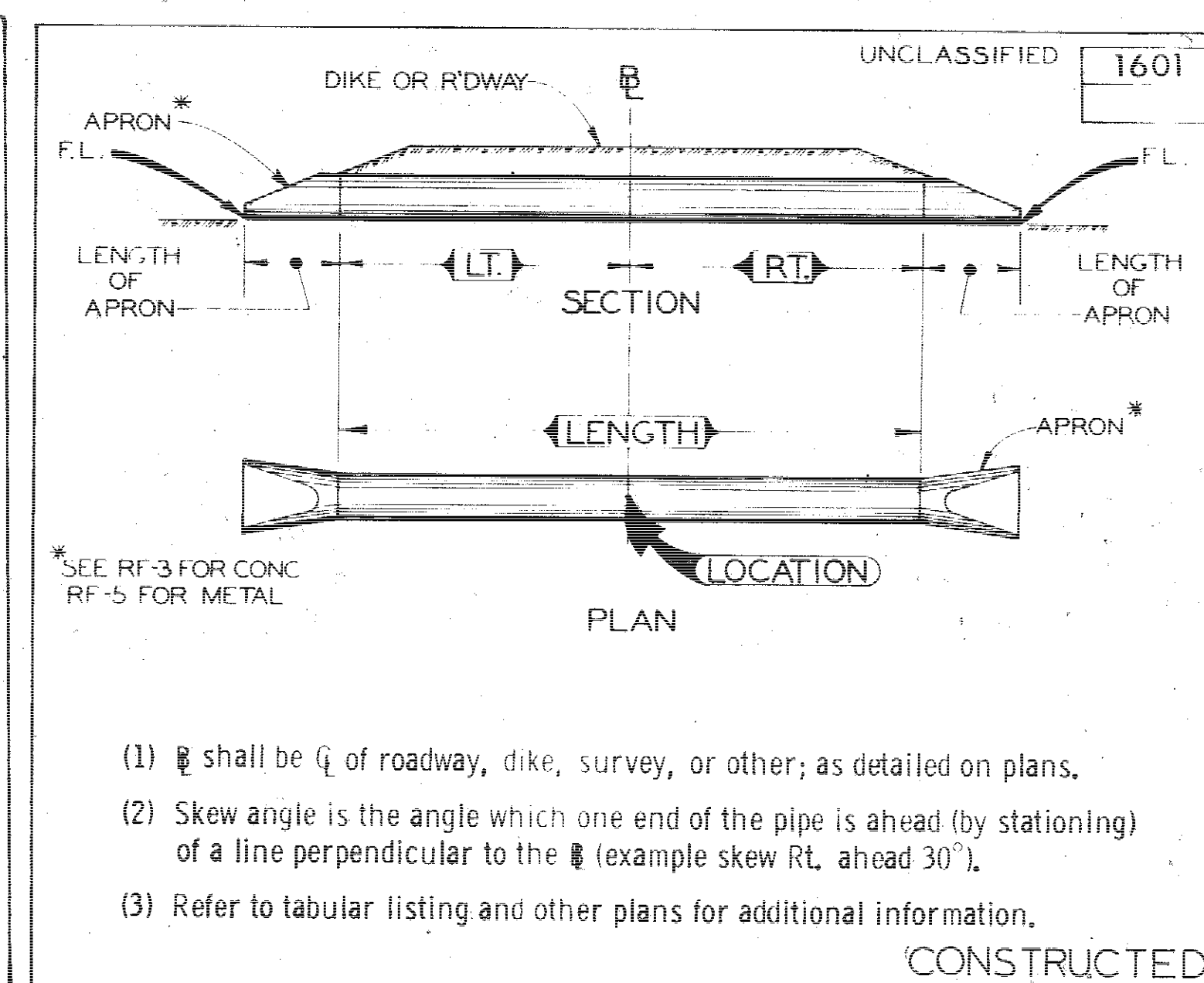
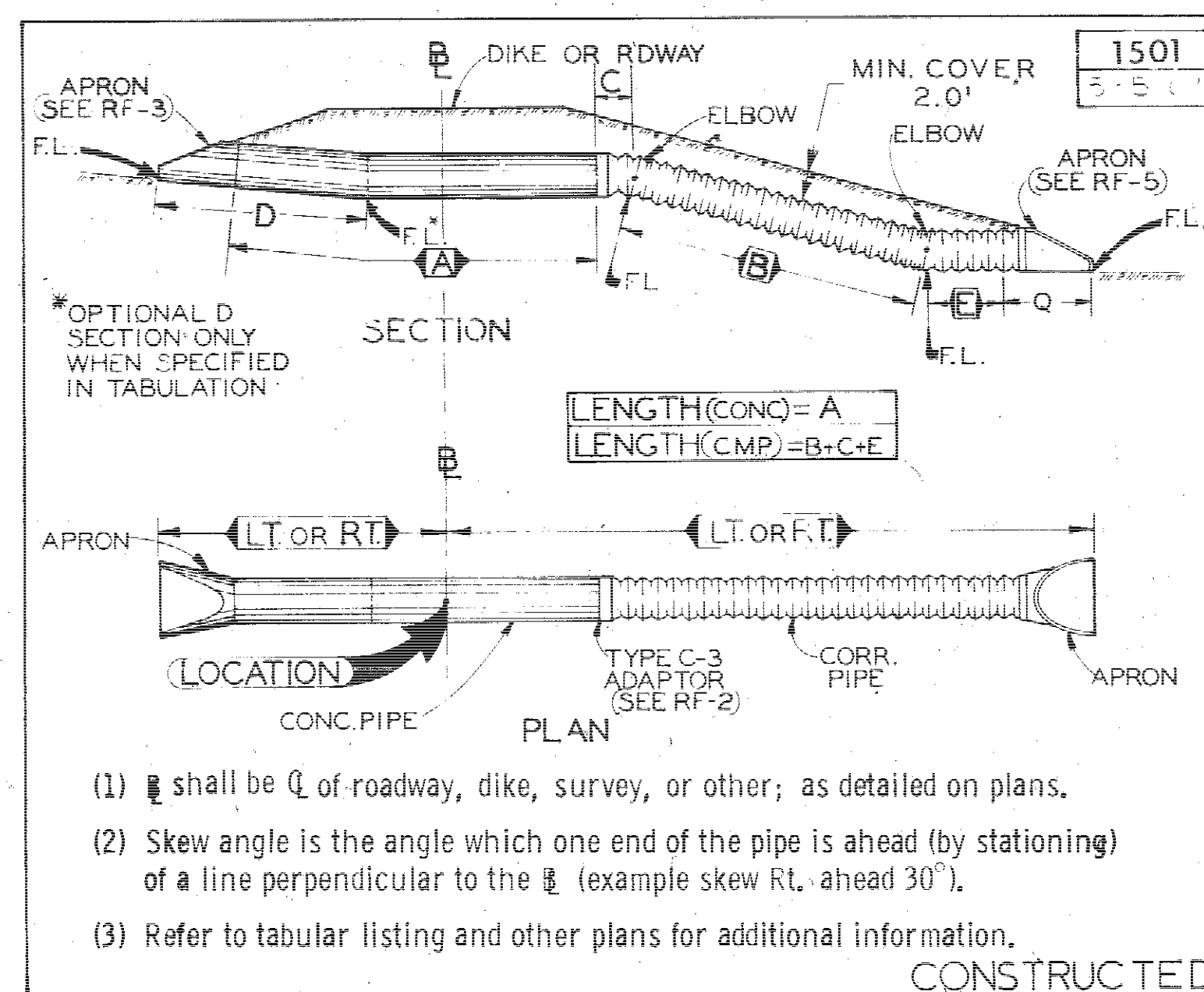
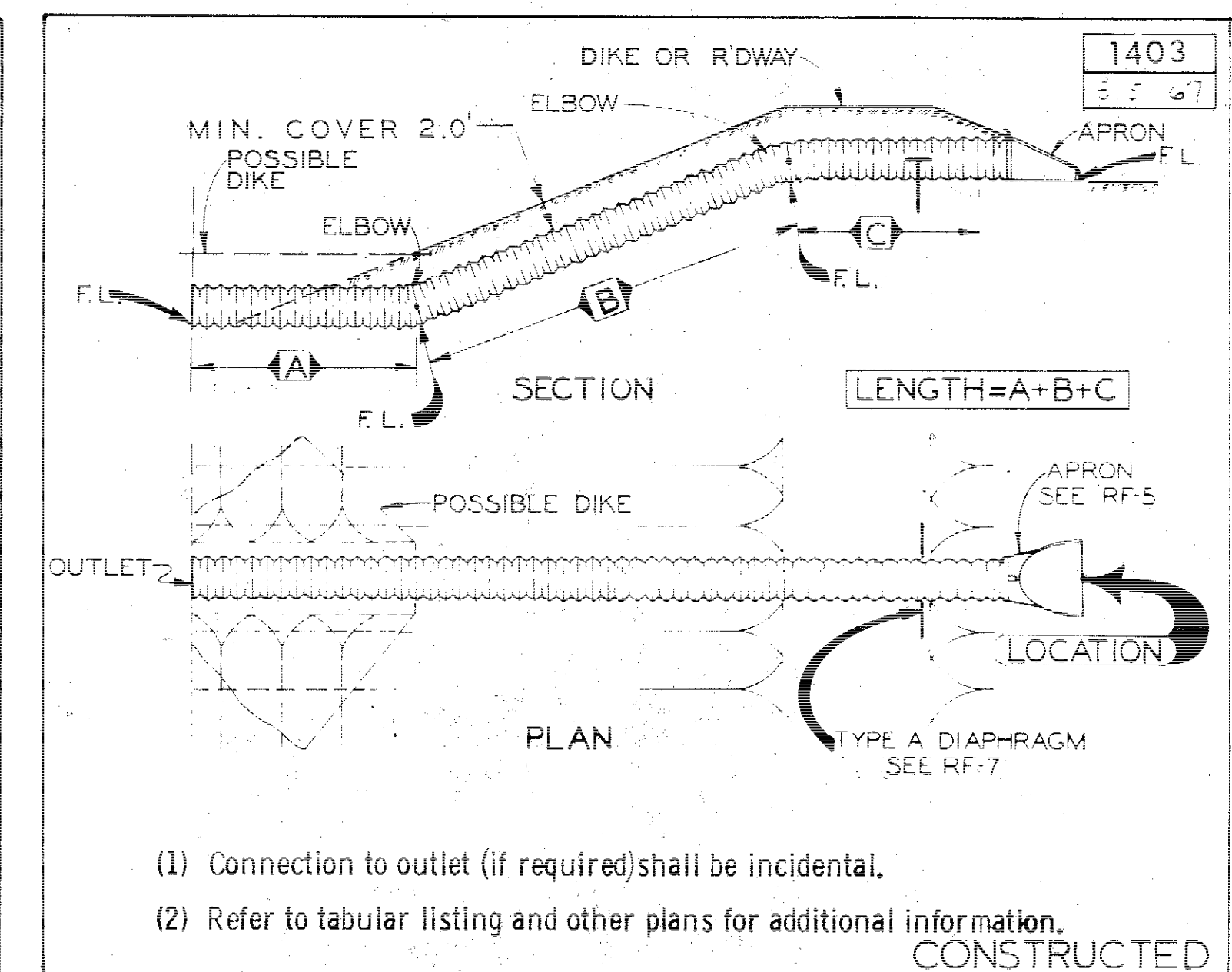
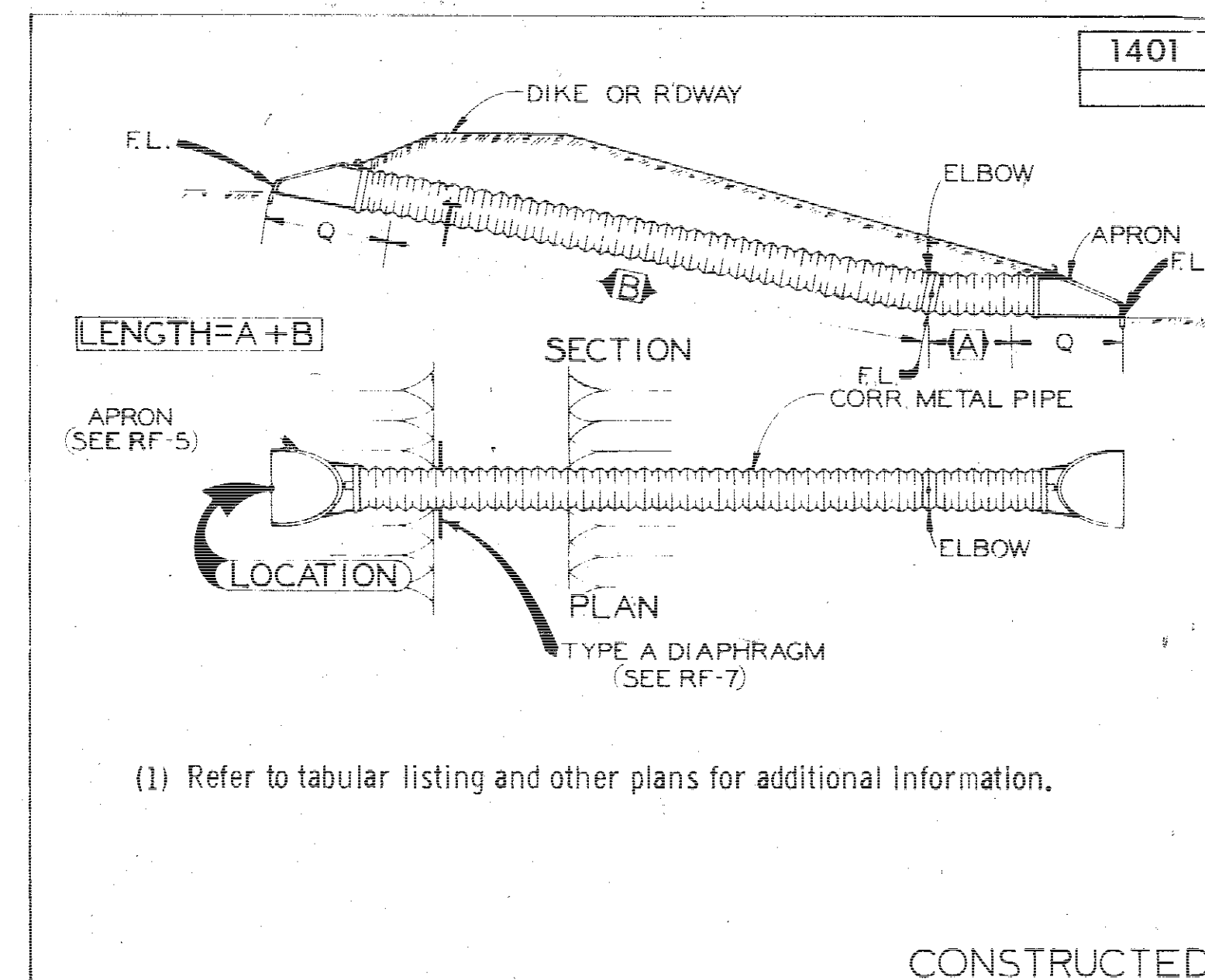
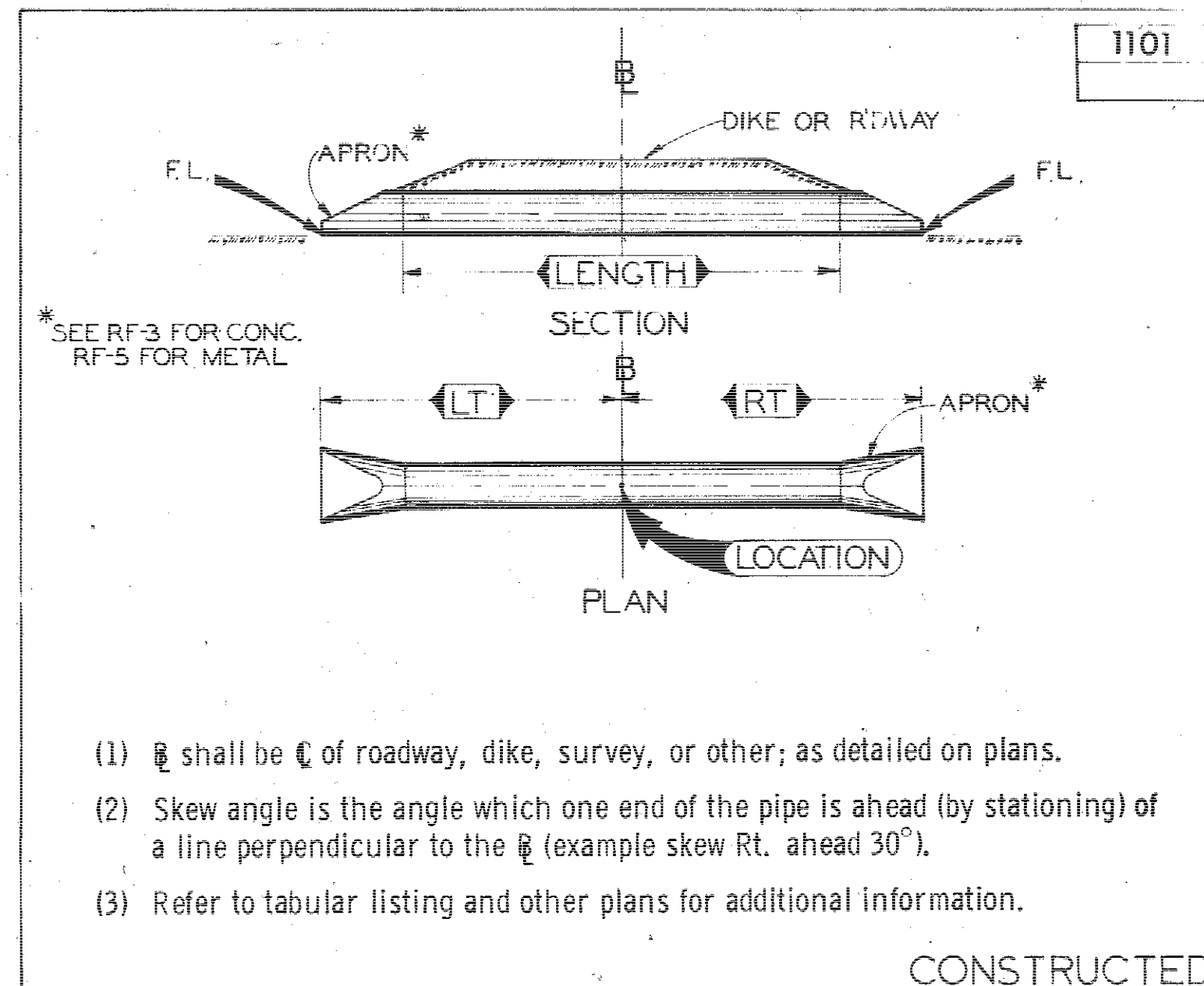
109-8
IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PROVIDE WASTE AREAS OR DISPOSAL SITES FOR EXCESS MATERIAL WHICH IS NOT DESIRABLE TO BE INCORPORATED IN THE WORK INVOLVED ON THIS PROJECT (EXCAVATION OR BROKEN CONCRETE) NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

109-9
SOUNDING AND TEST BORING DATA SHOWN ON PLANS WERE ACCUMULATED FOR DESIGNING AND ESTIMATING PURPOSES. THEIR APPEARANCE ON THE PLAN DOES NOT CONSTITUTE A GUARANTEE THAT CONDITIONS OTHER THAN THOSE INDICATED WILL NOT BE ENCOUNTERED.

109-10
MATERIAL LISTED WITHIN THESE PLANS AS "UNSUITABLE" IS INCLUDED IN THE TEMPLATE QUANTITIES FOR CLASS 10 EXCAVATION AND IS SHOWN TO INDICATE THE LOCATION AND DISTRIBUTION.

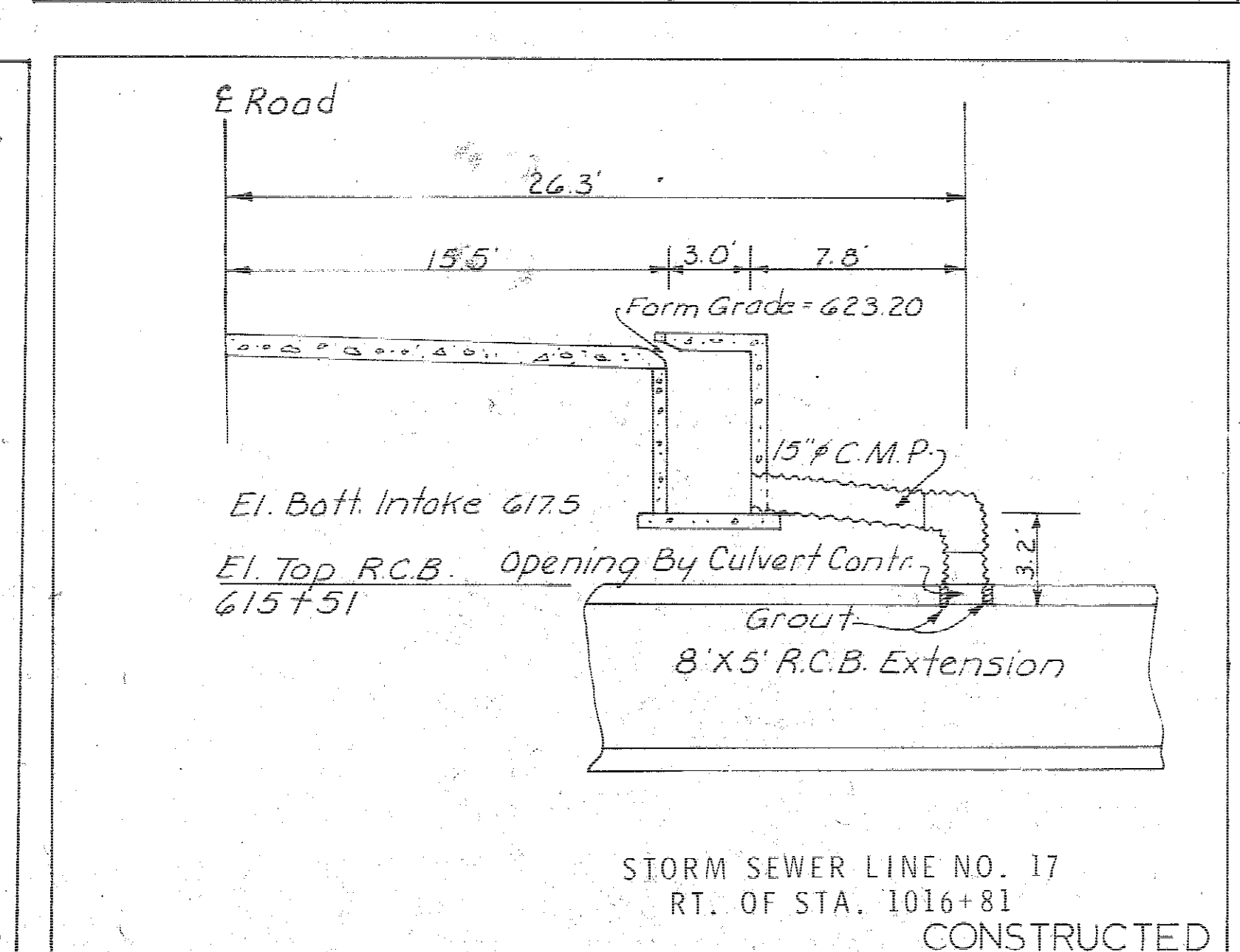
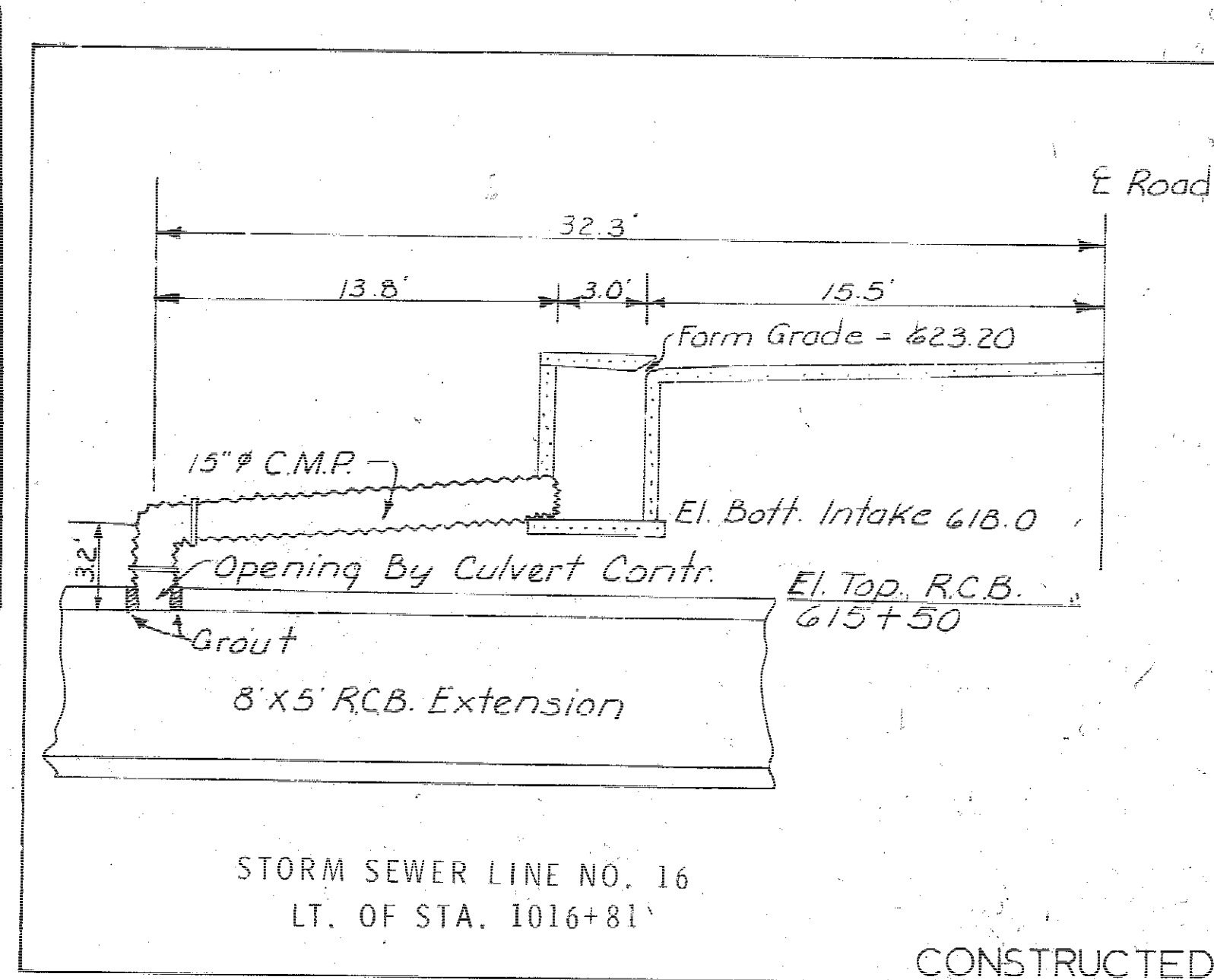
109-11
ROAD CONTRACTOR IS TO USE DUE CAUTION IN WORKING OVER AND AROUND ALL TILE LINES. BREAKS IN THE TILE LINE DUE TO THE CONTRACTORS CARELESSNESS ARE TO BE REPLACED AT HIS EXPENSE WITHOUT COST TO THE STATE OF IOWA. ANY TILE LINES BROKEN OR DISTURBED BY OUR CUT LINES WILL BE REPLACED AS DIRECTED BY THE ENGINEER IN CHARGE OF CONSTRUCTION AND AT THE STATE OF IOWA'S EXPENSE.

109-21
EROSION CONTROL QUANTITIES INDICATED HEREON INCLUDE ALL NECESSARY ITEMS FOR SEEDING BORROW AREAS.



109-26B
ALL BORROW AREAS ON THIS PROJECT WILL REQUIRE SUBSOIL TILLAGE TO AN AVERAGE DEPTH OF 16 TO 20 INCHES PRIOR TO PLACEMENT OF TOPSOIL AND/OR STABILIZING CROP SEEDING. SUCH TILLAGE SHALL BE ACCOMPLISHED ON MINIMUM THREE FOOT CENTERS AND AT RIGHT ANGLES TO THE FINISHED SLOPE OF THE BORROW. EQUIPMENT USED TO ACCOMPLISH THE TILLAGE SHALL BE EQUIPPED WITH AN ARROWHEAD-TYPE SHOE SO AS TO PROVIDE LATERAL DISPLACEMENT OF THE SOIL AND SHALL BE APPROVED BY THE ENGINEER FOR THE USE INTENDED. THIS WORK WILL BE CONSIDERED INCIDENTAL TO OTHER WORK ON THE PROJECT AND NO PAYMENT WILL BE ALLOWED.

109-35
THE CONTRACTOR SHALL EXERCISE ALL DUE CAUTION WHEN WORKING IN THE VICINITY OF PIPELINES CARRYING COMBUSTIBLE OR TOXIC MATERIALS WHICH ARE PRESENT ON THIS PROJECT. PIPELINE LOCATION SHOWN ON THE PLANS REPRESENT THE BEST INFORMATION AVAILABLE AT THE TIME OF PLAN PREPARATION.



LIST OF INTAKES, MANHOLES,						104-5A	LIST OF STORM SEWER PIPE								104-5B	
															3-2-73	
NO.	LOCATION	TYPE	FORM GRADE	BOTTOM WELL	NOTE	LINE NO.	LOCATION		CLASS "D"	PIPE DIA. (Inches)	LENGTH OF LINE (Feet)	SLOPE %	FLOW LINES			NOTE
							FROM	TO					IN	OUT	OTHER	
1	1982+20-15.5' Rt.	RA-3	636.94	632.94		1	1	2	2000	15	32	.78	633.44	633.19		
2	1982+20-15.5' Lt.	RA-3	636.94	632.94		2	2	Ditch	1500	15	22	5.4	633.19	631.57		A
3	1990+90-15.5' Rt.	RA-3	636.16	632.16		3	3	4	2000	15	32	.78	632.66	632.41		
4	1990+90-15.5' Lt.	RA-3	636.16	632.16		4	4	Ditch	1500	15	24	7.5	632.41	630.00		A
5	1001+32-15.5' Rt.	RA-3	633.24	625.44		5	5	Ditch	1500	15	28	12.3	625.69	621.49		A
6	1001+32-15.5' Lt.	RA-3	633.24	629.24		6	Ditch	6	1500	15	8	9.7	631.36	630.00		A
						7	6	RCB	1500	15	6	1.90	629.49	629.20		
7	1005+25-15.5' Rt.	RA-3	625.88	621.88		8	7	8	2000	15	32	0.87	622.33	622.05		
8	1005+25-15.5' Lt.	RA-3	625.88	621.60		9	8	Field	1500	15	98	2.3	622.00	619.60		A
9A	1010+00-35' Lt.	RA-16A	614.70	610.70		10										
9	1010+00-15.5' Lt.	RA-5	615.78	611.78			9A	9	1500	12	16	1.25	612.70	612.50		
10	1010+00-15.5' Rt.	RA-5	615.78	611.75		11	9	10	2000	15	32	.78	612.25	612.00		
						12	10	RCB	1500	15	72	2.78	612.00	610.00		
11	1015+69-26' Rt.	RA-3	623.20	619.20		13	11	12	2000	15	38	.66	619.70	619.45		
12	1016+05-34' Rt.	RA-3	623.25	619.25		14	12	RCB	1500	15	70	10.0	619.45	612.50		
13	1016+81-15.5' Lt.	RA-3	623.20	618.00		15	13	RCB	CMP	15	17	10	618.00			B
14	1016+81-15.5' Rt.	RA-3	623.20	617.50		16	14	RCB	CMP	15	11	10	617.50			B
15	1017+80-35' Lt.	RA-16A	624.00	620.00		17	15	RCB	1500	12	97	7.9	620.74	613.00		

* Incl. Apron

A-Includes 1-RF-3 Apron

B-Bituminous Coated. Includes 1-90° Elbow

104-5C

3-26-71

LISTING OF SUBDRAIN WORK

LOCATION			SUBDRAIN							TRENCH DRAIN	GRANULAR MATERIAL		POROUS BACKFILL	NOTE
LINE NO.	STATION	TYPE	SIZE DIA.	CORRUGATED		METAL	CONCRETE		TILE	LIN. FT.	BLANKET CU. YDS.	SUBDRAIN CU. YDS.	CU. YDS.	
				PIPE LIN. FT.	BIT. COAT. PIPE LIN. FT.	APRON (RF-5) NO.	RF-22 OUTLET NO.	RF-1 LIN. FT.	APRON RF-3 NO.	(CLAY) LIN. FT.				
1	1005+25 Lt.	7	6	24	OUTLETS INTO	RA3								

TABULATION OF BRIDGE END DRAINS 104-8 2-17-71					
Bridge Sta.	LOCATION		END DRAIN		Remarks
	End	Side	Kind	Case	
1974+00	West	Rt.	PCC	"C"	
1974+00	East	Rt.	PCC	"B"	
1978+15	West	Lt.	PCC	"B"	
1978+15	East	Lt.	PCC	"C"	
1978+15	West	Rt.	PCC	"B"	
1978+15	East	Rt.	PCC	"C"	

DRAINAGE STRUCTURES BY ROAD CONTRACTOR																				104-3 11-2-71	
INSTALLATION		DIA.	LENGTH L.F.	KIND OF PIPE	BED. CLASS	DESIGN COVER (H)	SKEW AHEAD		APR. NO.	DIMENSIONS		FLOW LINE ELEV.				CL. 20 CU. YDS.	DIKE			REMARKS	
LOCATION	TYPE						LT.	RT.		LT.	RT.	LT.	RT.	OTHER	OTHER		TYPE	LOCATION	TOP EL.		
909+74	1501	24"	64'	2000D	C	6'			1		46'		876.0				G	911+50-Rt.	878.5	A=64', B=86', C=9', E=5', Q=6.5'. Includes 1-20" C-3 Adaptor CMP Elbow=20" Jack 48" thru Fill	
1929+20	1101	24"	100'	CMP	C				1	124.3		841.2		873.5	841.6	56"					
Inlet		30"	62'	2000D	C	3'			2	36	38'	831.5	832.1			64"	M	1929+60	835.5	*Class 22 Excavation	
1943+21-103' Rt.	1401	48"	64'	CMP	C	6'		80°	2			S	N								
Inlet												748.0	732.0	733.7		36"	F	1943+45-Rt.	754.0	Requires 1 type 'A' Diaph. & 1-7' 30" Elbow A=9', B=55', Q=10'	
1944+76-131' Rt.	1403	48"	76'	CMP	C	4'		80°	2			S	N								
Inlet												731.0	710.9	730.0	711.4	27"	F	1945+00-Rt.	737.0	A=5', B=50', C=21', Q=10', Requires 1-type 'A' Diaph. & 2-20" Elbows. Fill Inlet to 731.0	
1945+85-47' Lt.	1401	24"	76'	CMP	C	10'		80°	2			S	N								
Inlet												748.0	739.0	739.4		13"	F	1946+15-Lt.	752.0	A=22', B=54', Q=6.5' Requires 1-type 'A' Diaph. 1-7' 30" CMP Elbow	
1947+69-77' Lt.	1403	24"	70'	CMP	C	4'		80°	2			S	N								
Inlet												737.0	718.7	736.2	719.1		F	1947+86-Lt.	741.0	A=5', B=46', C=19', Q=6.5' Requires 1-type 'A' Diaph. & 2-20" CMP Elbows, A=21' 48" Fill Inlet to 737.0	
1949+58-107' Lt.	1403	24"	62'	CMP	C	4'		80°	2			S	N								
Inlet												716.0	700.7	715.2	701.1	10"	F	1949+72-Lt.	720.0	A=5', B=38', C=19', Q=6.5' Requires 1-type 'A' Diaph. & 2-20" CMP Elbows, A=21' 48" Fill Inlet to 716.0	
1950+85-260' Rt.	1403	48"	88'	CMP	C	5'		60°	2			S	N								
Inlet												680.3	656.5	679.3	657.0	31"	F	1951+12-Rt.	687.0	A=5', B=60', C=23', Q=10' Requires 1-type 'A' Diaph. & 2-20" CMP Elbows, Fill Inlet to 680.3	
1951+02-132' Lt.	1403	24"	88'	CMP	C	4'		60°	2			S	N								
Inlet												699.1	674.5	698.3	674.9	42"	F	1951+15-Lt.	703.0	A=5', B=64', C=19', Q=6.5' Requires 1-type 'A' Diaph. & 2-20" CMP Elbows, Fill Inlet to 699.1	
1952+77-241' Lt.	1403	24"	98'	CMP	C	4'		60°	2			S	N								
Inlet												672.5	643.8	671.7	644.2	29"	F	1953+02-Lt.	676.5	A=5', B=74', C=19', Q=6.5' Requires 1-type 'A' Diaph. & 2-20" Elbows, Fill Inlet to 672.5	
6952+00	1601	24"	52'	UNCL	C	9'			2	36'	28'	655.5	660.0			19"					
1990+86.8	1101	36"	84'	2000D	C	8'			2	45'	55'	630.0	626.0							Removed 2 x 2 R.C.B.	
Inlet												W	E								
1000+93-41' Lt.	Spec.	15"	28'	CMP	C	2'			1			631.7	629.2			22"				Includes 1-5" C-4 Adaptor. Requires 1-15" on 15' Conc. Pipe Tee Section. Removed 0.5' x 2.0' Hdwl.	
1011+17-25' Rt.	Spec.	12"	25'	Vit.	C	3'						UAC	609.0								
1948+93-160' Rt.	1403	48"	78'	C.M.P.	C	4'		30°	2			705.5	683.3	704.7	683.9	18"	F	1949+14 Rt.	711.0	A=6', B=56', C=16', Q=10'. Requires 1-Type 'A' Diaph. & 2-20" C.M.P. Elbows, Fill Inlet to 705.5	

DRAINAGE STRUCTURES BY CULVERT CONTRACTOR																	104-4
DESIGN NO.	LOCATION	SIZE	LENGTH L.F.	KIND	SKEW AHEAD		APR. NO.	DIMENSION		FLOW LINE			BY ROAD CONTRACTOR COMP. OF B.F.	DIKE		REMARKS	
					LT.	RT.		LT.	RT.	OTHER	TYPE	LOCATION		TOP ELEV.			
373	1954+20	5' x 5'	515'	RCB	15°			274'	241'	642.0	655.0	637.0	381			8' x 5' Taper Inlet, 5x5 Flume W. Basin.	
473	1001+33	36"Ø	40'	RF-1 Ext.		20°	1	UAC	74.8	UAC	618.0					Remove Hdwl. & 8' Barrel to square outlet use 2-RF-13 Elbows 17' 30' Ext. Rt. 46.8'	
673	1009+05.2	6x4	23'	RCB Ext.	Inlet 30°			39.2'	35.4	609.5	608.4		13			Ext. 7' Left 16' Rt.	
					Outlet 0°												
573	1016+80.3	8x5	52'	RCB Ext.	Inlet 30°			56.1'	49	609.6	609.0		38			Ext. 27' Lt. & 25' Rt. Requires:	
					Outlet 10°												

Revised October 23, 1974

Revised October 10, 1974

Jackson COUNTY

PROJECT NUMBER
FN-62-1(4)--21-49

SHEET NO. 30 TOTAL SHEETS 210

PROPOSED SUBGRADE TREATMENT											103-3
(For Additional Details See Soils Survey Sheets No. 14 To 25.)											7-28-72
NO.	LOCATION		DESCRIPTION		TYPE	VOLUME		AVAILABLE FROM		REMARKS	
	STATION TO STATION	SIDE	DEPTH	WIDTH	MATERIAL + SHRINK %	CU. YDS.	TONS	VOLUME	STATION TO STATION		
1	1921+50 - 1944+00		1.0	26'	Special		474			See Art. 4132	
2	1967+00 - 1973+00		1.0	26'	Special		1262.20	✓			
3	1993+00 - 1994+00		1.0	33'	Special		1339.35	✓			
	1993+00 - 1994+75		1.0	33'	SPECIAL		436.95	✓			
	1921+50 - 1951+00		1.0	26'	SPECIAL		5961.80	✓			
	1994+75 - 1000+00		1.0	33'	SPECIAL		1339.35	✓			

POINTS OF PRIVATE ACCESS (Rural)										102-1 11-12-71
STATION	SIDE	TOP WIDTH	TYPE	PIPE CULVERT			SURFACE MATERIAL	TOMS		
				(H) FT.	18"	24"				
1925+14	Lt.	24'	C				By Others			
1929+50	Rt.	24'	C				20			
1934+25	Lt.	30'	B				10			
1934+25	Rt.	30'	B	4'		100'	18			
1956+00	Rt.	24'	C				176			
1971+60	Rt.	24'	C	2'	62'		46			
5977+75	Rt.	30'	B	1.5'	58'		6			
1980+25	Lt.	24'	C	6'		100'	43			
1987+25	Lt.	30'	B	2'	50'		16			
1989+10	Lt.	24'	C	5'	52'		11			
1982+53	Lt.	30'	B	3.0'		68'				
4921+00	Rt.		C		50'					
*Urban Section in Division I										
999+88	Rt.	24'	C							
**Urban Section in Division II										

TABULATION OF POINTS OF ACCESS (Urban)					102-3
LOCATION STATION	SIDE	TYPE	LENGTH OF OPENING		
			1 1/2"	3"	
			DROPPED CURB LINEAL FEET	DROPPED CURB LINEAL FEET	
1982+53	Lt.	B	45		
1986+10	Lt.	B	45		
1987+25	Lt.	B	45		
1989+10	Lt.	C	18		
997+10	Rt.	C	18		
997+56	Lt.	C	18		
999+07.3	Rt.	Platt St.	45		
999+88	Rt.	C	18		
999+90	Lt.	C	18		
1001+06	Lt.	C	18		
1002+24	Lt.	C	18		
1002+86.0	Rt.	Platt St.	45		
1003+45	Lt.	C	18		
1004+94	Rt.	C	18		
1005+80	Rt.	C	18		
1006+10	Lt.	Platt St.	45		
1006+10	Rt.	Platt St.	45		
1007+58	Rt.	C	18		
1009+43	Lt.	Platt St.	45		
1009+43	Rt.	Platt St.	45		
1010+86	Lt.	C	18		
1012+65	Lt.	Platt St.	45		
1012+65	Rt.	Platt St.	45		
1013+85	Rt.	B	35		
1014+38	Lt.	C	24		
1015+06	Lt.	C	18		
1015+24	Rt.	B	35		
1017+60	Lt.	C	24		
1018.39	Lt.	C	18		
1982+53	Rt.	B	45		
1987+25	Rt.	B	45		

EMBANKMENT WITH MOISTURE AND DENSITY CONTROL				103-1 4-21-72
Moisture content shall be within the limits of minus 3 and plus 1 percentage points of optimum for maximum density within the area described and listed below.				
LOCATION	DEPTH FT.	COMPACT CU. YDS.	REMARKS	
STATION TO STATION				
1916+69.3 - 1922+00	2.0	2299		
1943+50 - 1967+50	3.0	16,062		
1974+70 - 1977+40	3.0	1,882		
1978+93 - 1983+00	3.0	2,622		
1983+00 - 1993+50	2.0	4,045	See Cross Sections	

TABULATION OF STEP CONSTRUCTION										108-15 9-11-73
LOCATION		STEPS			LANDINGS		HANDRAIL		REMARKS	
STATION	SIDE	"W"	"H"	NO. REQ.	NO.	LIN. FT.	LENGTH (Lin. Ft.)	POST NO.		
1013+34	Lt.	4'	6 1/2'	15			34	4	①	
1014+63	Rt.	4'	6 1/2'	7			16	6	②	
① Combined Concrete Steps and Retaining Wall. Includes 4.8 Cu. Yd. of Concrete construction for Steps and 2 Reinforced Conc. Retaining Walls. ② Combined Concrete Steps and Retaining Wall. Includes 2.1 Cu. Yd. of Concrete Construction for Steps and 2 Reinforced Conc. Retaining Walls. Handrail and Appurtenances to be installed on both sides of each Step Construction.										

TABULATION OF BARRICADES		108-13
NO.	STATION	
1	1953+75	
1	1955+00	
1	1972+75	
1	1975+25	
1	1977+00	
1	1979+50	
	1934+00	

TABULATION OF BEAM GUARD RAIL INSTALLATIONS												108-8 7-30-71
LOCATION			STANDARD ROAD PLAN	FORMED STEEL BEAM RAIL Lin. Ft.	BEAM GUARD RAIL POSTS			SPECIAL CONNECTIONS		END ANCHORAGE		REMARKS
No.	Station	CASE			8 x 8 SINGLE SPACER	10 x 10 DOUBLE SPACER	10 x 10 SINGLE SPACER	TYPE	No.	TYPE	No.	
1	1974+00	A	RE-32B	2875	50		12'	RE-41.	4	RE-33	4	
2	1978+15	A	RE-32B	300	52'		12'	RE-41	4	RE-33	4	

REMOVAL OF OLD PAVEMENT			110-1 7-30-71
STATION TO STATION	AREA Sq. Yds.	REMARKS	
1010+00	110	INTAKE CROSSING	
1005+25	8.4	INTAKE CROSSING	
1978+61 - 1994+75	3228.0		
1994+75 - 1000+00	1056.0	EQUATION	
916+50 - 1928+69	32000	EQUATION	
1964+30 - 1973+58	1856.0		
1974+08 - 1977+65	714.0		

REMOVAL OF EXISTING STRUCTURES			110-2 10-13-72
LOCATION	DESCRIPTION	DISPOSAL	
953+45.8 - 104' Rt.			
(Survey)	4' x 4' x 37' R.C.B.	109-8	
954+15 (Survey)	8' x 6' x 137' R.C.B.	Break in Top Slab, Fill & Abandon	
1961+20+ Lt.	32' x 32' Stone Foundation	109-8	
1974+45+ Lt.	14' x 24' Pole Shed	109-8	
1975+10+ Lt.	22' x 30' Pole Shed	109-8	
978+26.5 (Survey)	70' x 20' Pony Truss Bridge	Becomes Property of Road Contractor	
1011+17 - Rt.	0.5' x 2.0' HeadWall	109-8	
1012+94 - Lt.	13' x 17' Garage	109-8	
1990+86.6	2X2X49 RCB (EWO 11)		

TABULATION OF SIDEWALK REMOVAL			110-5 10-13-72
STATION TO STATION	AREA SQ. YDS.	REMARKS	
1002+11.2 - 1002+65	18		
1002+15.9	2.0	Lt.	
1003+09	69.0		
1009+81	1010+93	3111	
1014+52	1016+108	73.78	
1014+63		0.92	Rt.
1018+45	1018+99	24.00	
1014+63		4.47	
1013+35		3.86	
1018+71		4.00	

TABULATION OF CURB REMOVAL				110-4 10-13-72
STATION TO STATION	SIDE	STATIONS	REMARKS	
1002+36		1006+90	4.78	
1002+36		1007+03	4.88	
1007+13		1007+30	0.17	
1007+27		1007+37	0.10	

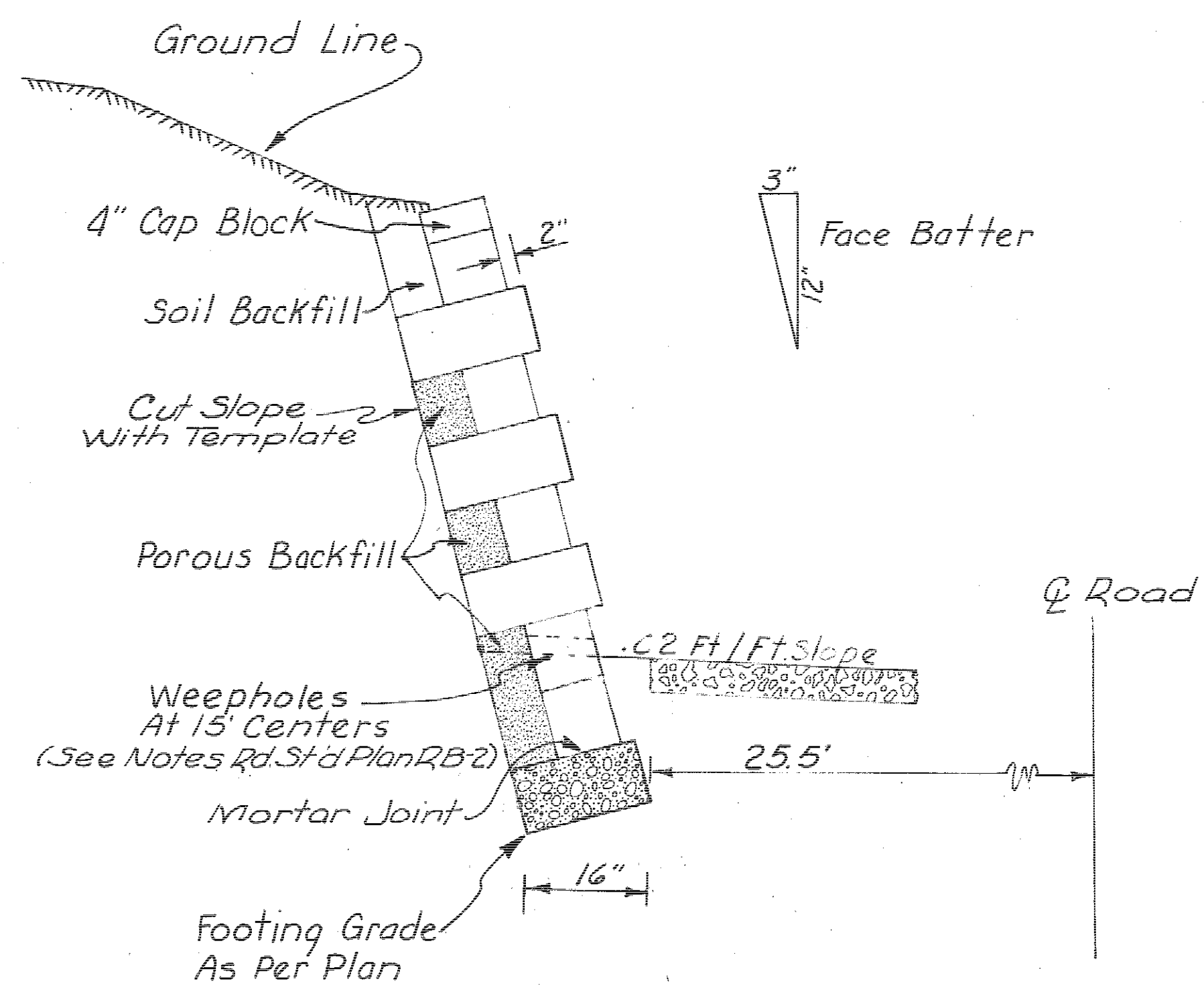
TABULATION OF CABLE GUARD RAIL INSTALLATIONS					108-9 8-25-69
LOCATION		NORMAL INSTALLATION		END ANCHORAGE	REMARKS
No.	Station	GUARD RAIL CABLE Lin. Feet	CABLE GUARD RAIL POSTS No.	TYPE No.	
1	1942+08 to 1946+32 Rt.	724'	49'	RE-29A 2'	
2	1948+48 to 1955+78 Rt.	730'	46'	RE-29A 1'	
				RE-29B 1'	
3	1956+22 to 1959+04 Rt.	282'	19'	RE-29B 1'	
				RE-29A 1'	
4	1946+00 to 1955+96 Lt.	996'	66'	RE-29A 2'	
5	1955+12 to 1965+08 Lt.	996'	65'	RE-29A 2'	

TABULATION OF LEVELING COURSES				106-2 5-14-71
LOCATION STATION TO STATION		AVERAGE THICKNESS FOR ESTIMATING	ASPHALTIC CONC. TONS	
1007+00	1012+50		45.0	
1000+15	1018+50		240.0	

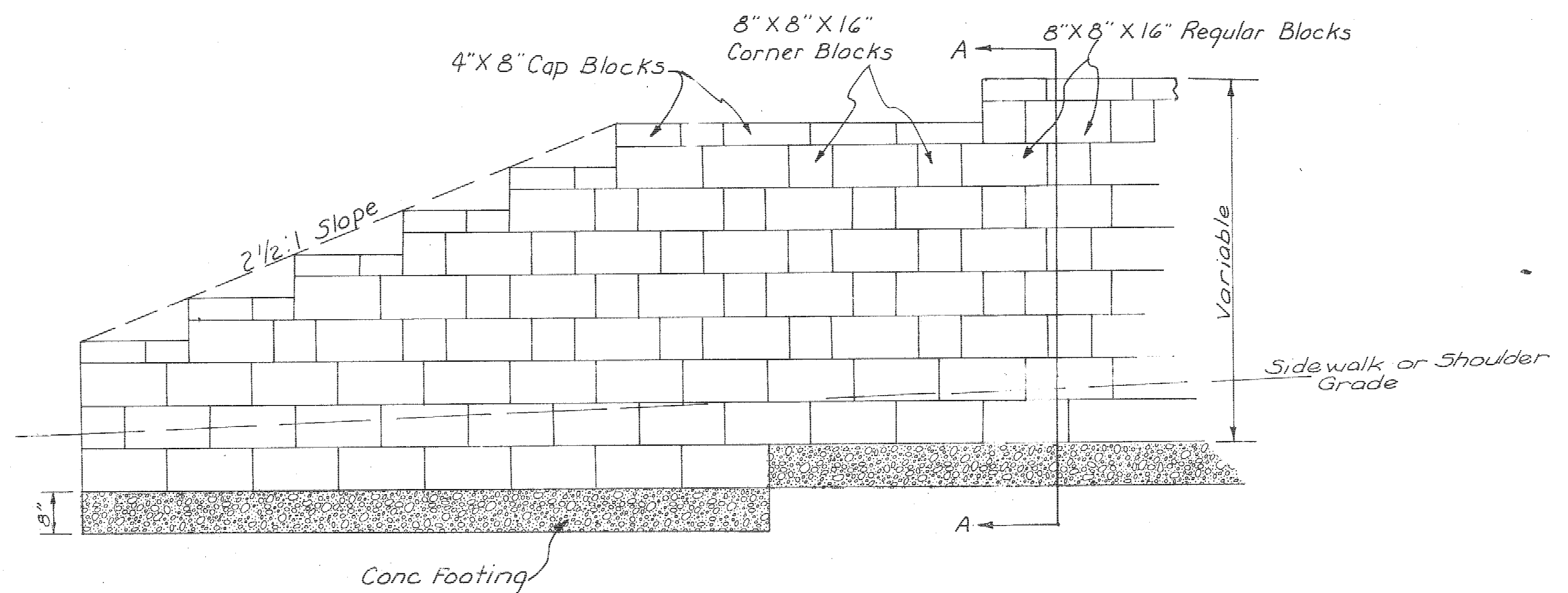
TABULATION OF RESURFACING RUNOUTS				106-3 5-14-71
LOCATION STATION	TYPE	LENGTH	REMARKS	
1002+89.30 - 43' Lt.		7'	Tie in Exist. Street.	
1038+02.7	Full	75'	R.R. crossing	
1039+61.7	Full	75'	R.R. crossing	
1041+12.1	Full	75'	End at Crosswalk.	

TABULATION OF SUPERELEVATION CURVE DATA								101-1 3-12-68
Curve No.	P. I. Location Sta.	Curve D	St'd. Road Plan Type No.	Design Speed M. P. H.	e	S	Note	
1	1937+58.53	3° 00'		70	.078	345'		
2	1966+89.9	3° 00'		70	.078	345'		
3	1006+44.20	1° 00'		25	N.C.			

TABULATION OF FLUME REMOVAL						110-3
LOCATION		REMOVE SLOPE DRAIN				
STATION	NO.	LT.	RT.	LT.	RT.	
1007+08.2	1	8'				
1007+23.1	2		9'			



SECTION A-A



Bid price shall include furnishing and placing 8" x 8" x 16" Conc. footing 8" x 8" x 16" concrete blocks, (corner blocks where ends are exposed) and 4" x 8" x 16" concrete cap blocks, porous backfill as indicated.

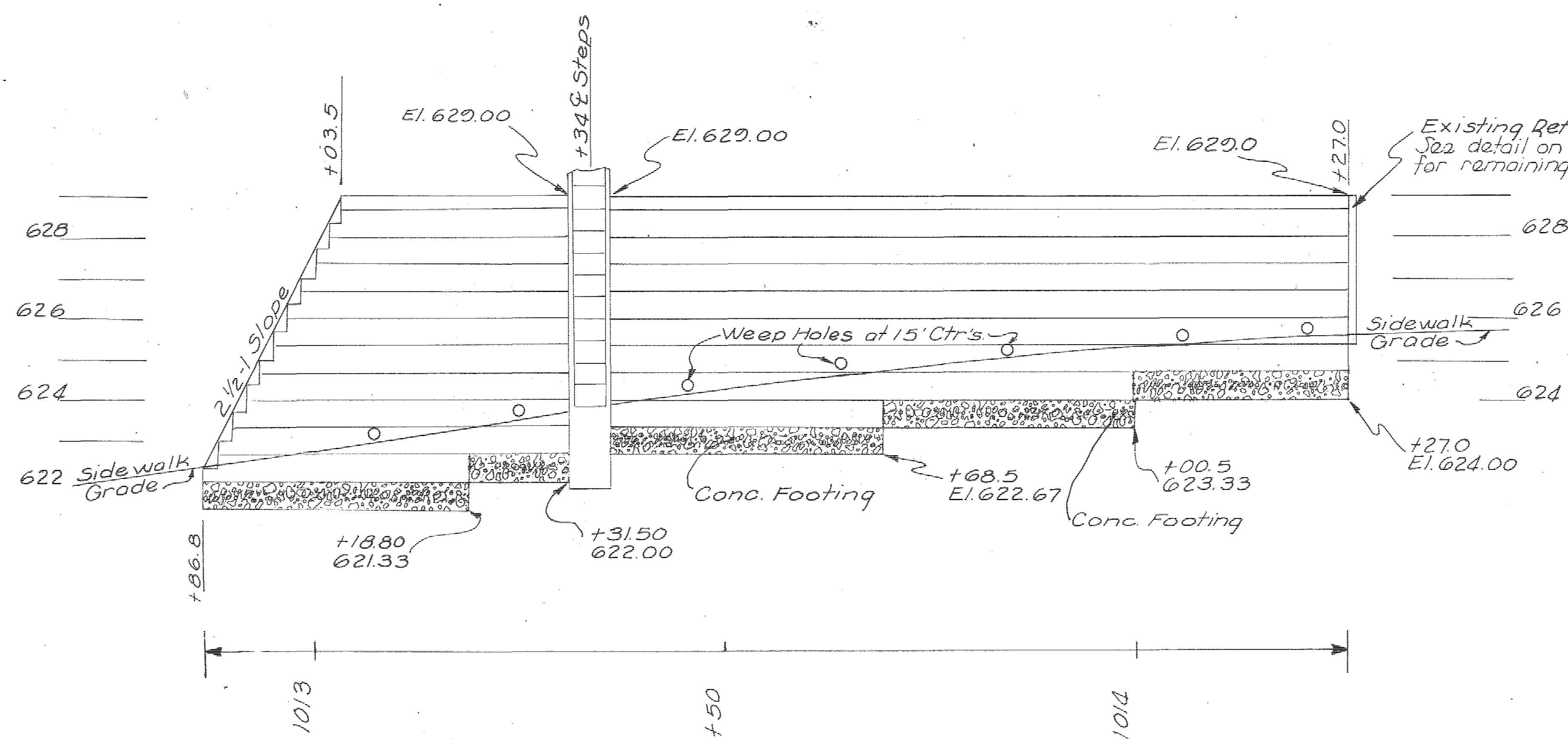
Care shall be taken to obtain a straight alignment and proper batter on wall. Concrete for footing to be of material and proportions shown in Article 2403.04.

Suitable wood or metal forms shall be used to enclose all footing concrete and to the grade as shown on plans.

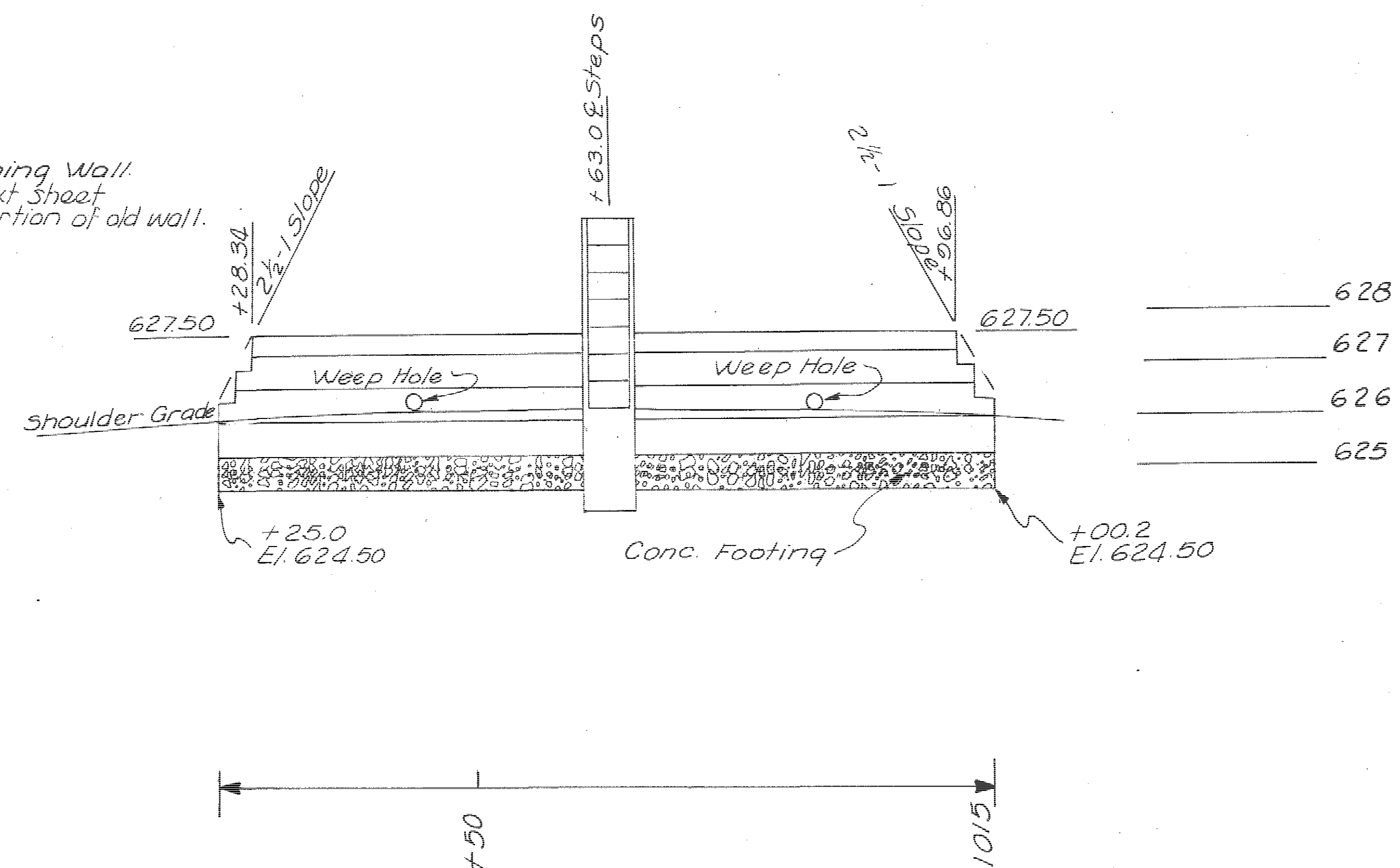
Excavation shall be paid for as Class No. 20. Filling operations for backfill of footing shall proceed simultaneously on both sides of the footing, in layers not more than 6 inches in depth, so that the two fills are kept at approximately the same elevations at all times. Hand tamping required.

Porous backfill, back of wall shall be hand tamped to bed transverse corner blocks. See Article 2402.08 for disposal of excavated material.

TYPICAL CONCRETE BLOCK DRY WALL
AS CONSTRUCTED

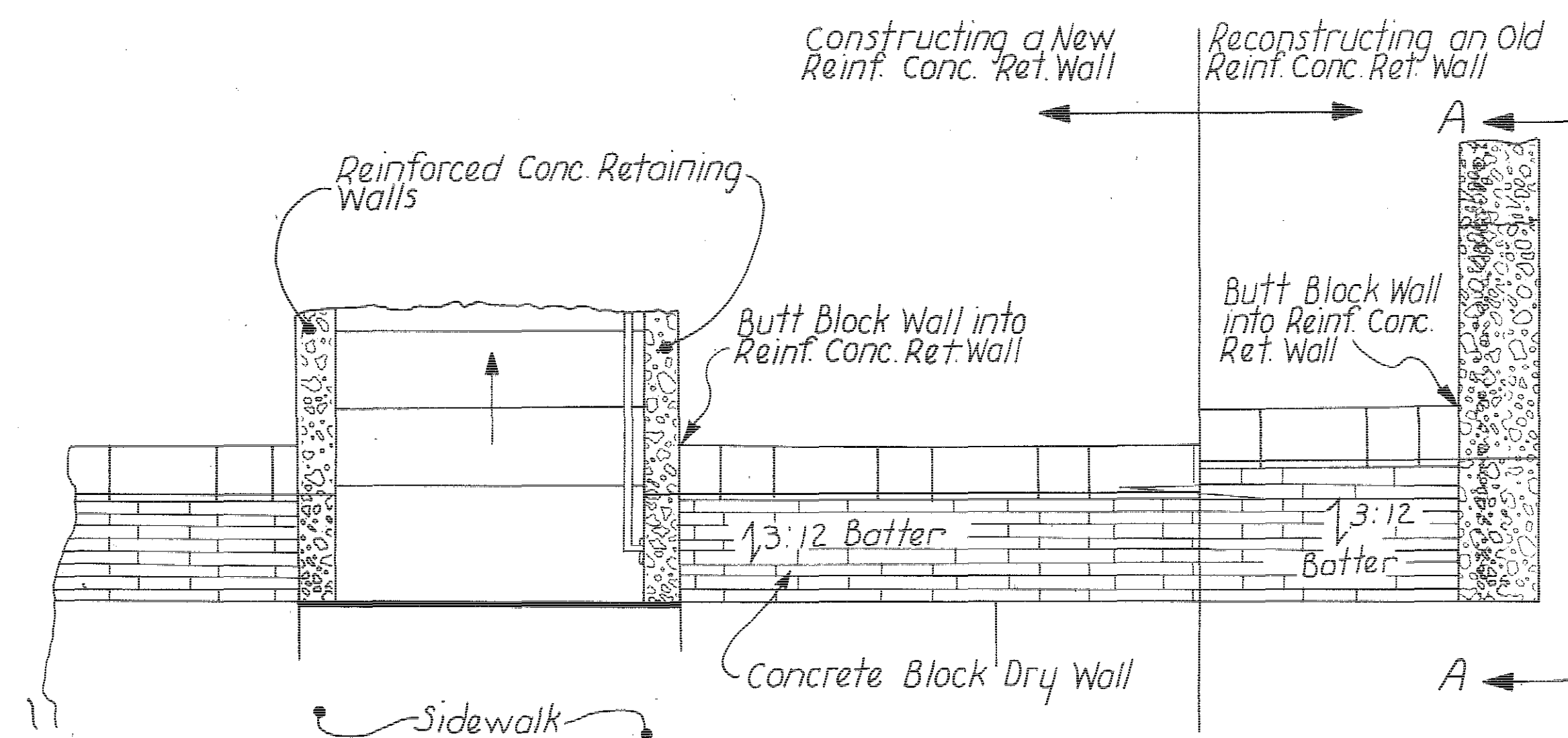


CONCRETE BLOCK DRY WALL
STA. 1012+86.8 TO STA. 1014+27.0 LT.

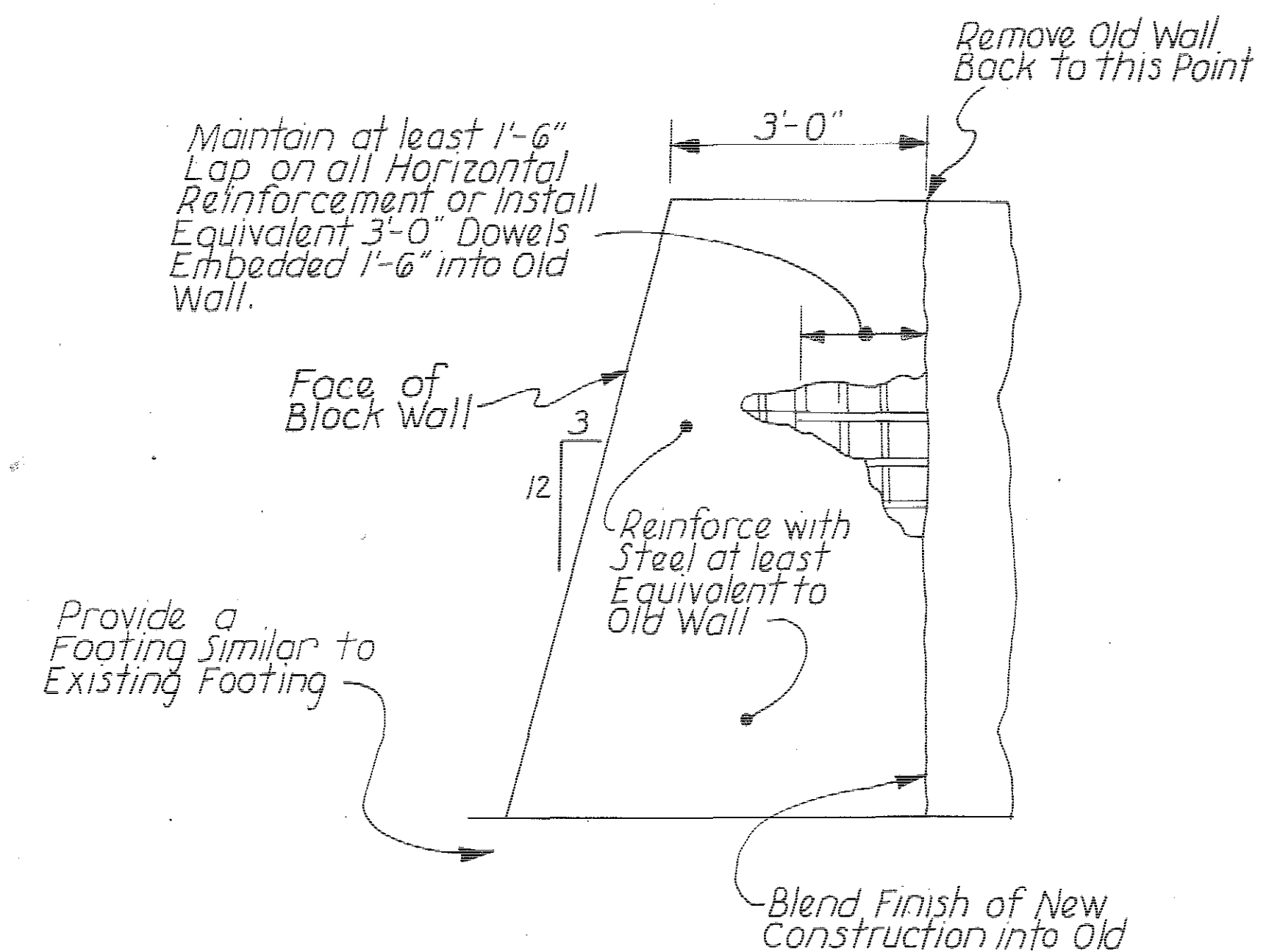


CONCRETE BLOCK DRY WALL
STA. 1014+25 TO STA. 1015+00.2 - 25.5' RT.

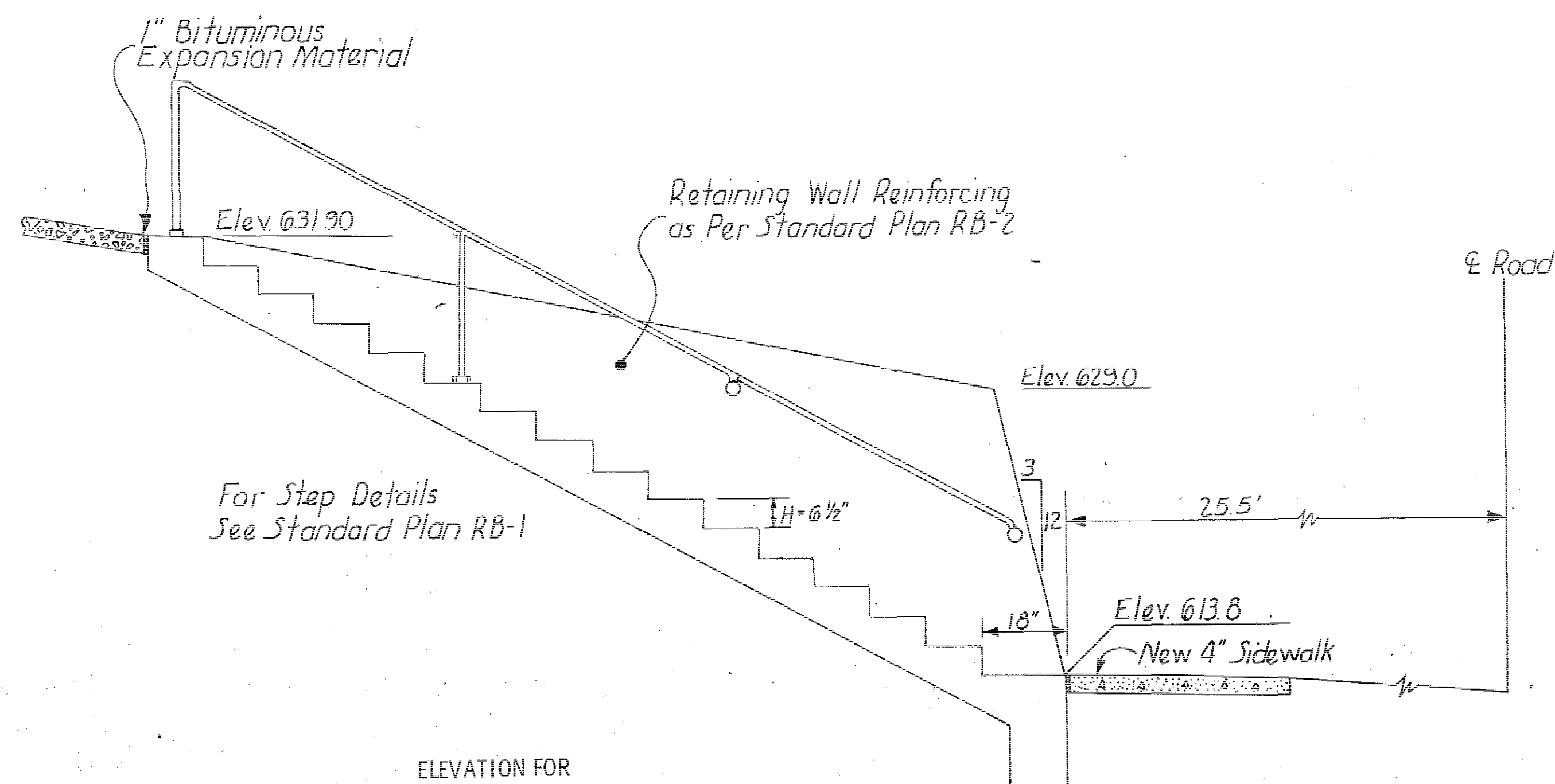
DETAILS OF CONCRETE BLOCK DRY WALL



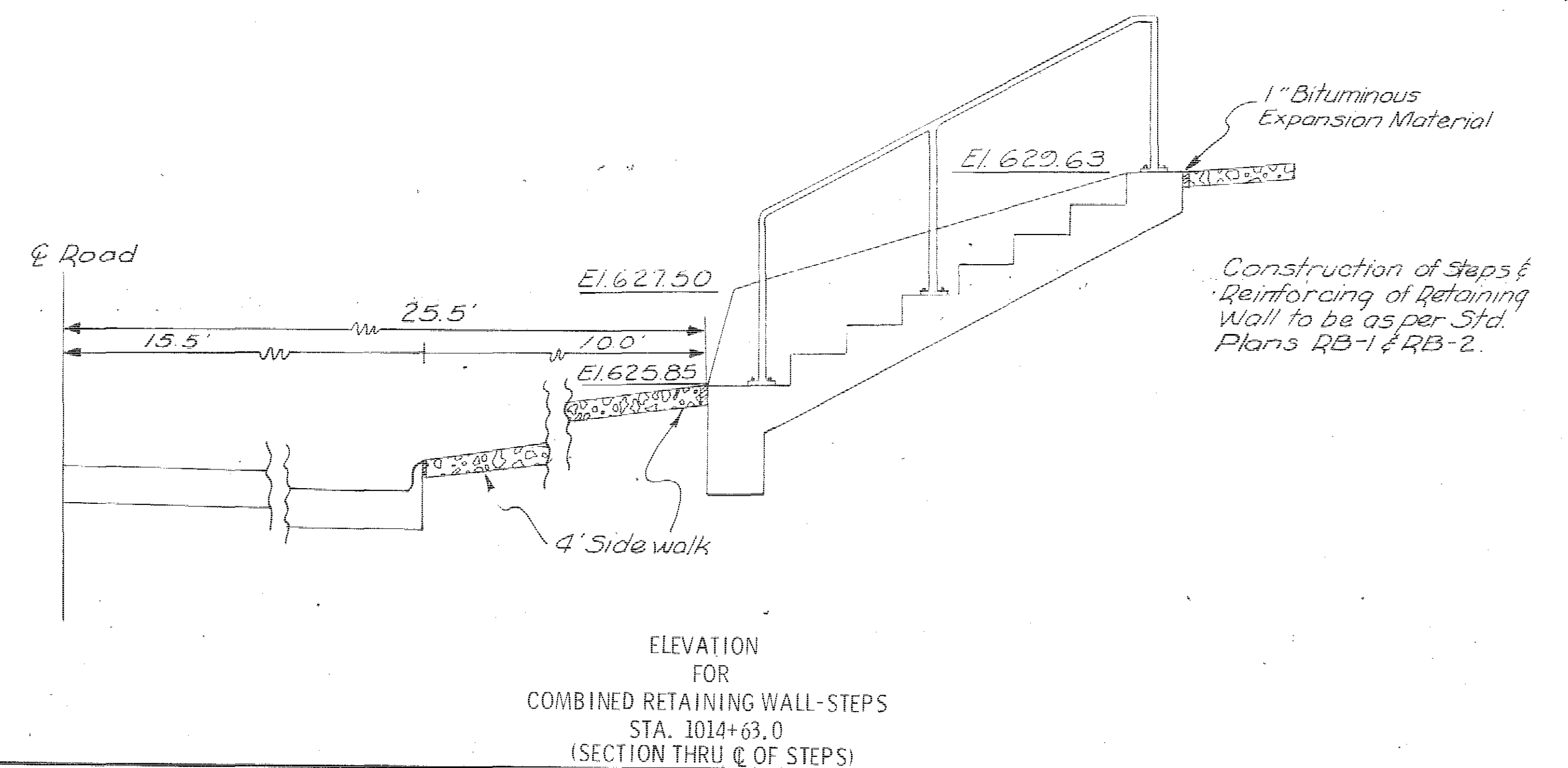
DETAILS OF REINFORCED CONCRETE WALLS
AND CONCRETE BLOCK DRY WALL
(TOP VIEW)



DETAIL OF TIE-IN TO OLD WALL
SECTION A-A
(PROFILE VIEW)

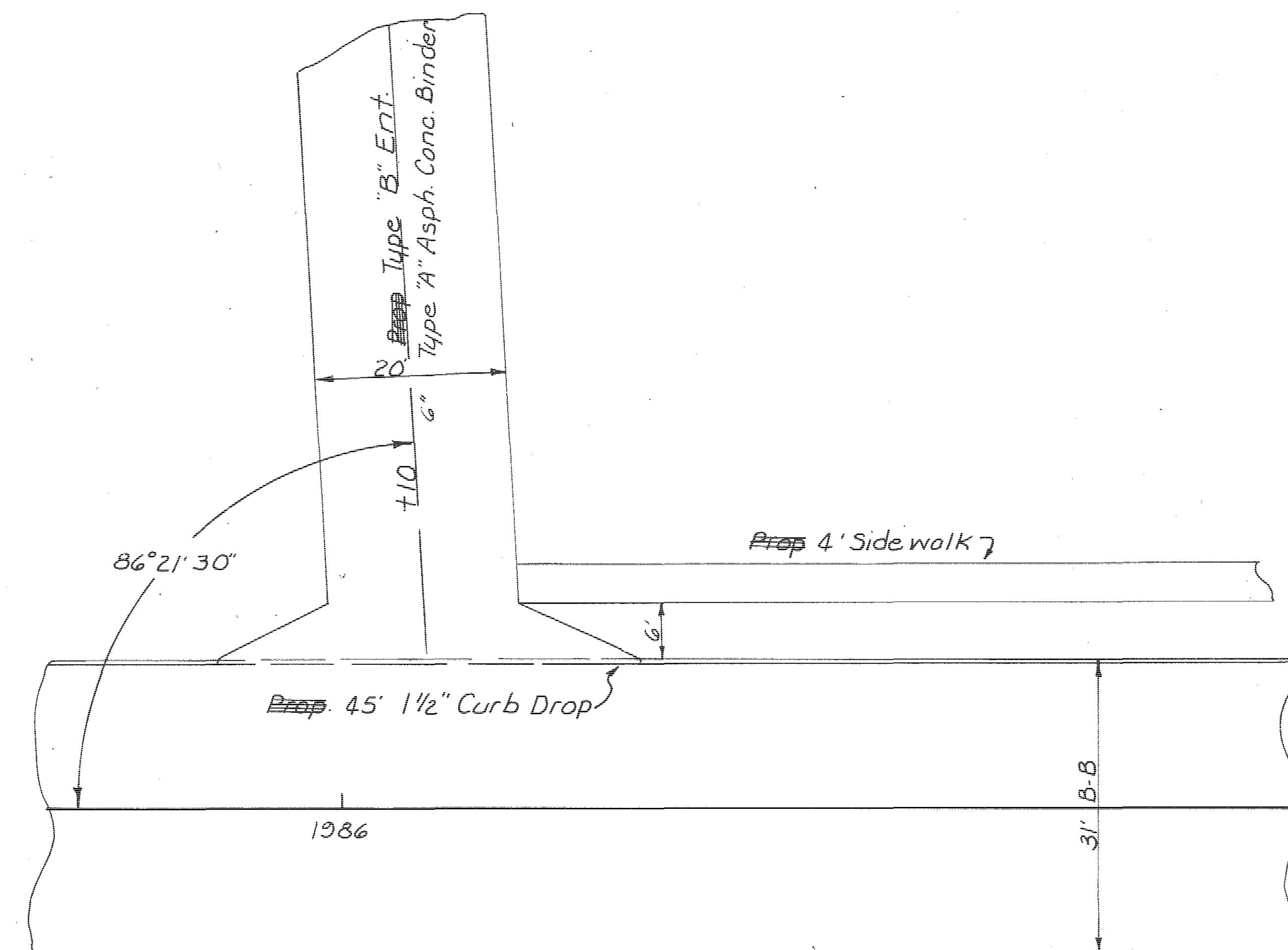
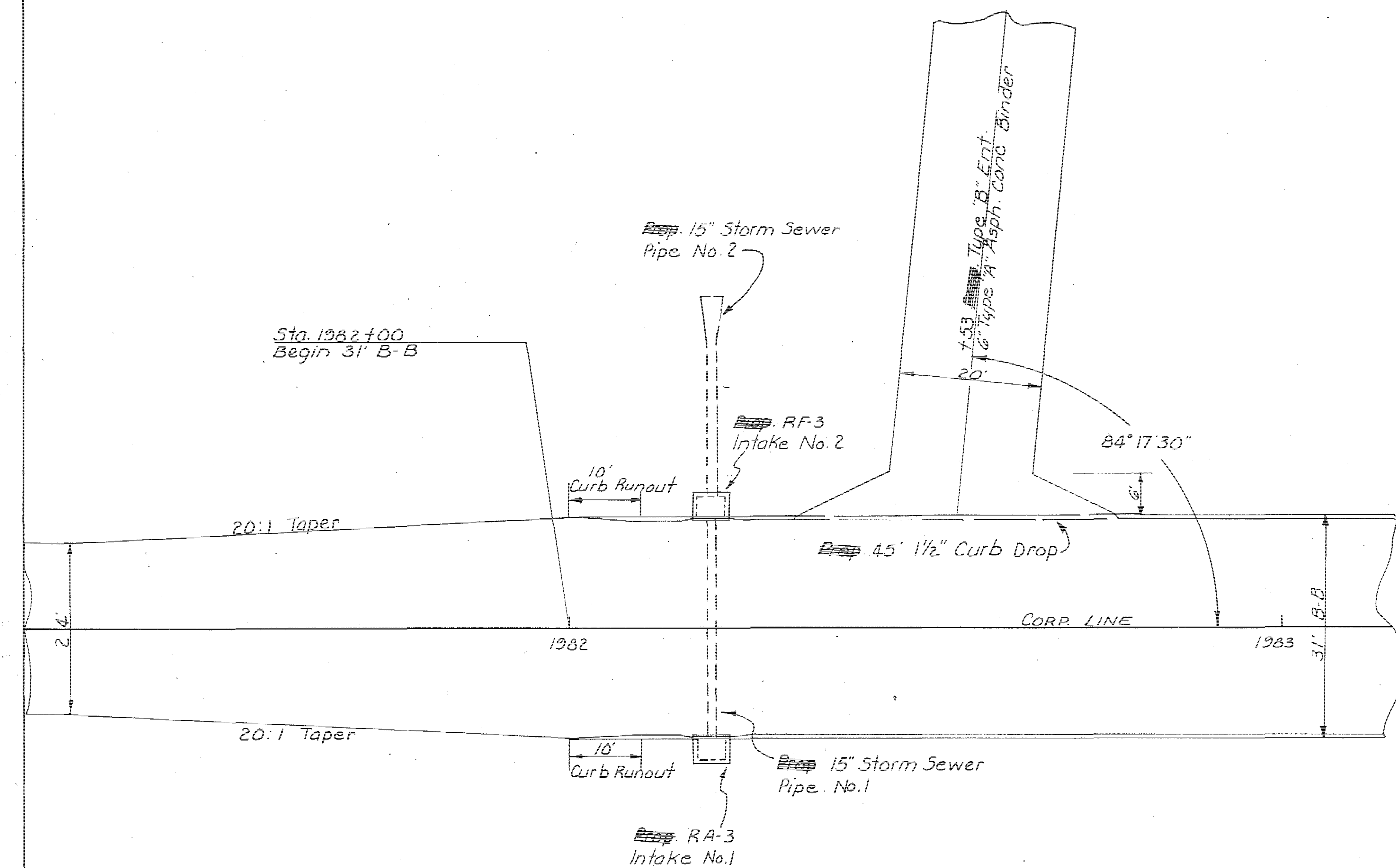


ELEVATION FOR
COMBINED RETAINING WALL - STEPS
LT. OF STA. 1013+34.0
(SECTION THRU C OF STEPS)



ELEVATION FOR
COMBINED RETAINING WALL- STEPS
STA. 1014+63.0
(SECTION THRU C OF STEPS)

DETAILS OF RETAINING WALL AND STEPS



DETAILS OF ENTRANCES
STA. 1982+53 AND 1986+10 LT.
SCALE: 1" = 10'

Jackson COUNTY

PROJECT NUMBER
FN-62-1(4)--21-49

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		34	240

PROPERTY OWNERS

(A) CARL WILLIAM WITTER &
CARMELITA M. WITTER
ROW acquired from:
Contract dates: 3-25-74 4-3-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' 2.54 AC. \$ 711.00
Total Settlement
Conveyance Recorded: JACKSON V 145
County Book Page

(B) RICHARD G. BAUSCH &
ALICE BAUSCH
ROW acquired from:
Contract dates: 4-19-74 5-30-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' 2.1 AC. \$ 192.00
Total Settlement
Conveyance Recorded: JACKSON V 181
County Book Page

(C) B. L. ANDERSON
ROW acquired from:
Contract dates: 5-31-74 6-26-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' 5.87 AC. \$ 55,103.00
Total Settlement
Conveyance Recorded: JACKSON V 404
County Book Page

(C) B. L. ANDERSON
ROW acquired from:
Contract dates: _____
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' _____ \$ _____
Total Settlement
Conveyance Recorded: JACKSON
County Book Page

(D) VERA HAMMOND
ROW acquired from:
Contract dates: 4-18-74 5-15-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' 1.8 AC. \$ 4150.00
Total Settlement
Conveyance Recorded: JACKSON V 132
County Book Page

(E) CORNELIUS V. DAUGHERTY
ROW acquired from:
Contract dates: 4-30-74 5-15-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' 4.1 AC. \$ 41,894.00
Total Settlement
Conveyance Recorded: JACKSON V 142
County Book Page

(F) FRANCIS J. MOOTZ &
MARITA M. MOOTZ
ROW acquired from:
Contract dates: 4-29-74 5-15-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' 1.5 AC. \$ 6,000.00
Total Settlement
Conveyance Recorded: JACKSON V 177
County Book Page

(G) ROSEMARY MICHELS &
MARVIN MICHELS
ROW acquired from:
Contract dates: 4-30-74 5-1-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' 2.16 AC. \$ 20,945.00
Total Settlement
Conveyance Recorded: JACKSON V 48
County Book Page

(H) BELLEVUE COMMUNITY
SCHOOL DISTRICT
ROW acquired from:
Contract dates: 5-1-74 5-1-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' 3.166 \$ 1,425.00
Total Settlement
Conveyance Recorded: JACKSON V 17
County Book Page

(I) VERA J. HERRIG,
ELMER J. & MARIAN H. WEIS
ROW acquired from:
Contract dates: 4-11-74 5-1-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' 2.875 \$ 1,715.00
Total Settlement
Conveyance Recorded: JACKSON U 506
County Book Page

(J) ALVIN C. JENSEN &
DOROTHY E. JENSEN
ROW acquired from:
Contract dates: 4-27-74 5-1-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' .90 \$ 595.00
Total Settlement
Conveyance Recorded: JACKSON U 512
County Book Page

(K) JOHN V. BLITGEN &
MILDRED B. BLITGEN
ROW acquired from:
Contract dates: 4-9-74 5-1-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' 5.3 AC. \$ 850.00
Total Settlement
Conveyance Recorded: JACKSON V 54
County Book Page

(M) LUCILLE G. VALANT &
KENNETH E. VALANT
ROW acquired from:
Contract dates: 3-23-74 4-17-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' 2.140 \$ 1,065.00
Total Settlement
Conveyance Recorded: JACKSON V 60
County Book Page

(N) WILLIS H. DOLAND &
MARILYN C. DOLAND
ROW acquired from:
Contract dates: _____
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' _____ \$ _____
Total Settlement
Conveyance Recorded: JACKSON
County Book Page

(O) BURLIN W. UOST &
MARY UOST
ROW acquired from:
Contract dates: 4-5-74 5-1-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' 1.470 \$ 985.00
Total Settlement
Conveyance Recorded: JACKSON V 315
County Book Page

(P) VERON H. ERNST &
AUGUSTIA A. ERNST
ROW acquired from:
Contract dates: 4-9-74 5-1-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' .98 \$ 530.00
Total Settlement
Conveyance Recorded: JACKSON U 497
County Book Page

(Q) GARY L. GRIEBEL &
JEANNE SUE GRIEBEL
ROW acquired from:
Contract dates: 4-27-74 5-1-74
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' 2.438 \$ 445.00
Total Settlement
Conveyance Recorded: JACKSON U 500
County Book Page

()
ROW acquired from:
Contract dates: _____
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' _____ \$ _____
Total Settlement
Conveyance Recorded: _____
County Book Page

ROW acquired from: _____
Contract dates: _____
Signed Approved Recorded Book Page
Condemnation: _____ Warrant _____
Date _____ To Sheriff _____ Accepted _____ Appealed _____
Acres by Fee _____ by Perm. Easmt' _____ \$ _____
Total Settlement
Conveyance Recorded: _____
County Book Page

Sta. 1+62.20
Stop Section 1

0+0

821

20.13

820

1+57.2

20.09

135

1-1

821

20.78

820

20.19

1+51.2

SCALE
VERTICAL 1" = 4'
HORIZONTAL 1" = 5'

17-9
For 622

1+42.7

ENGINEER
JAMES W. DUNN
1000 E. 10TH ST.
DES MOINES, IOWA 50319

JAMES W. DUNN

DESIGNED BY
JAMES W. DUNN
1000 E. 10TH ST.
DES MOINES, IOWA 50319

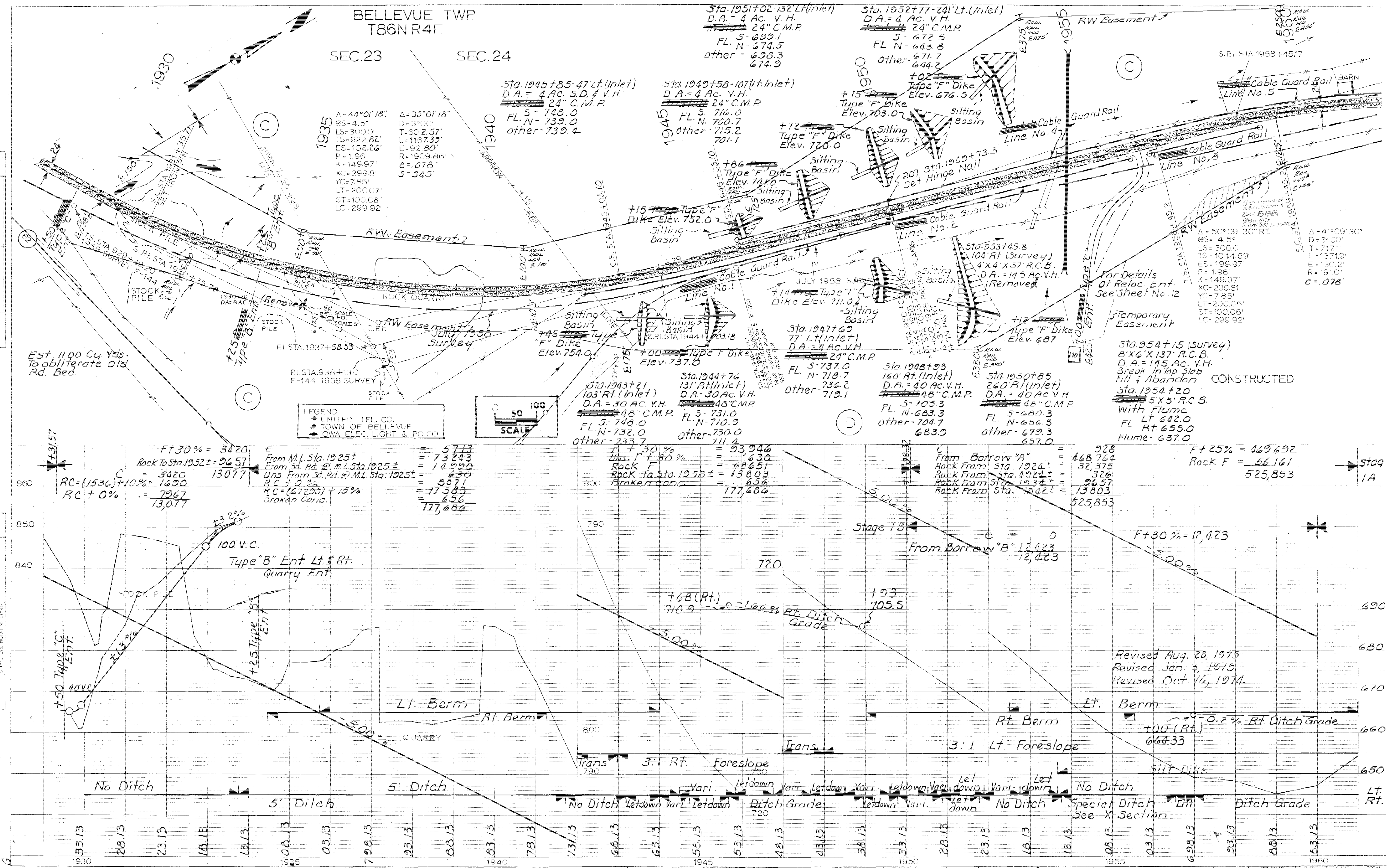
JONES COUNTY

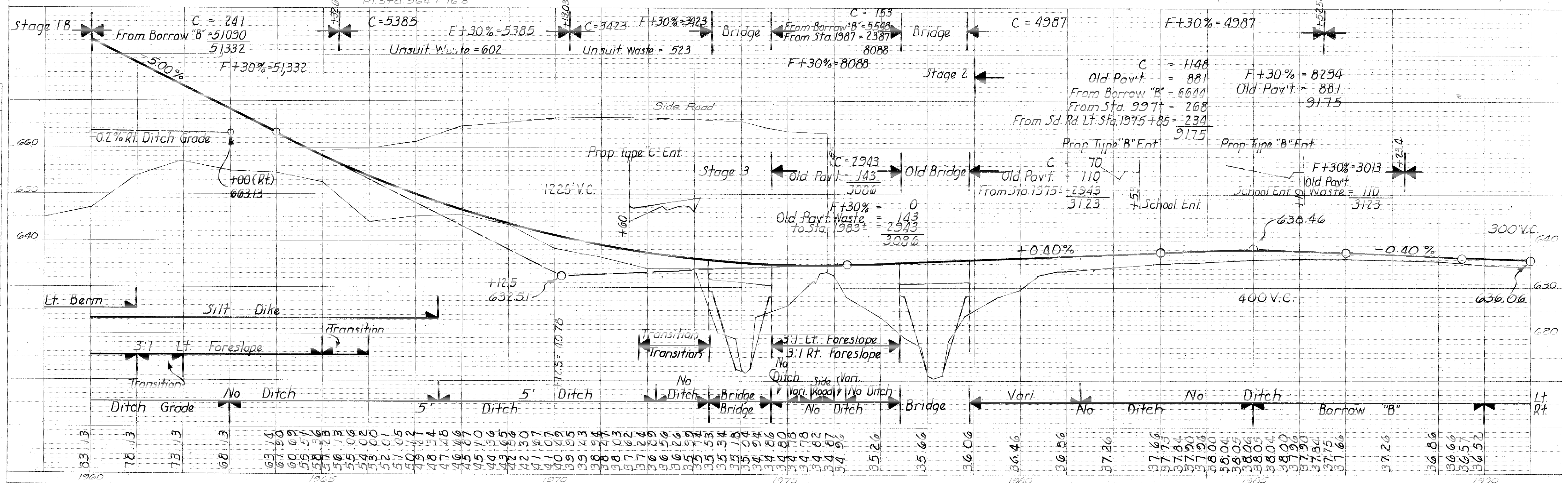
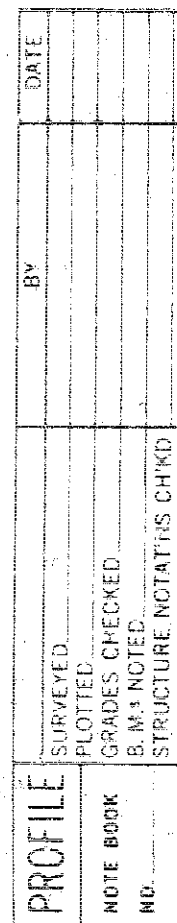
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DSS-711-0(4)-75-53

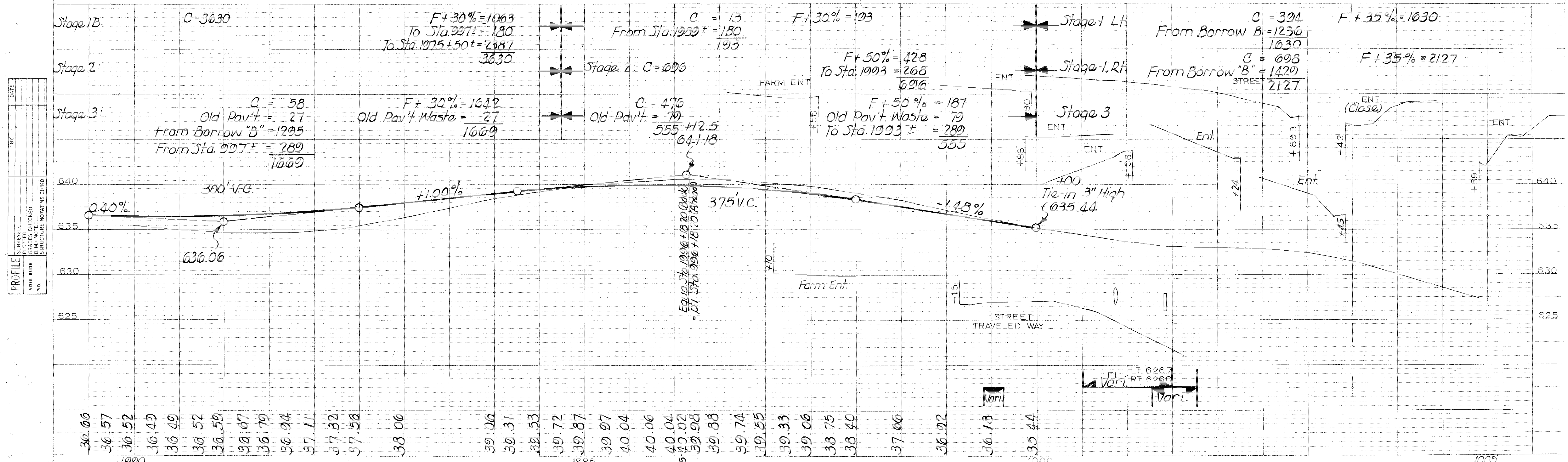
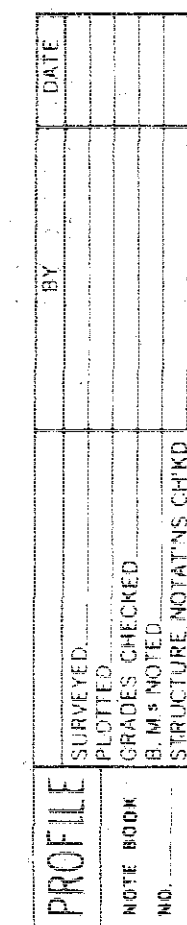
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IOWA	5	100	27	60

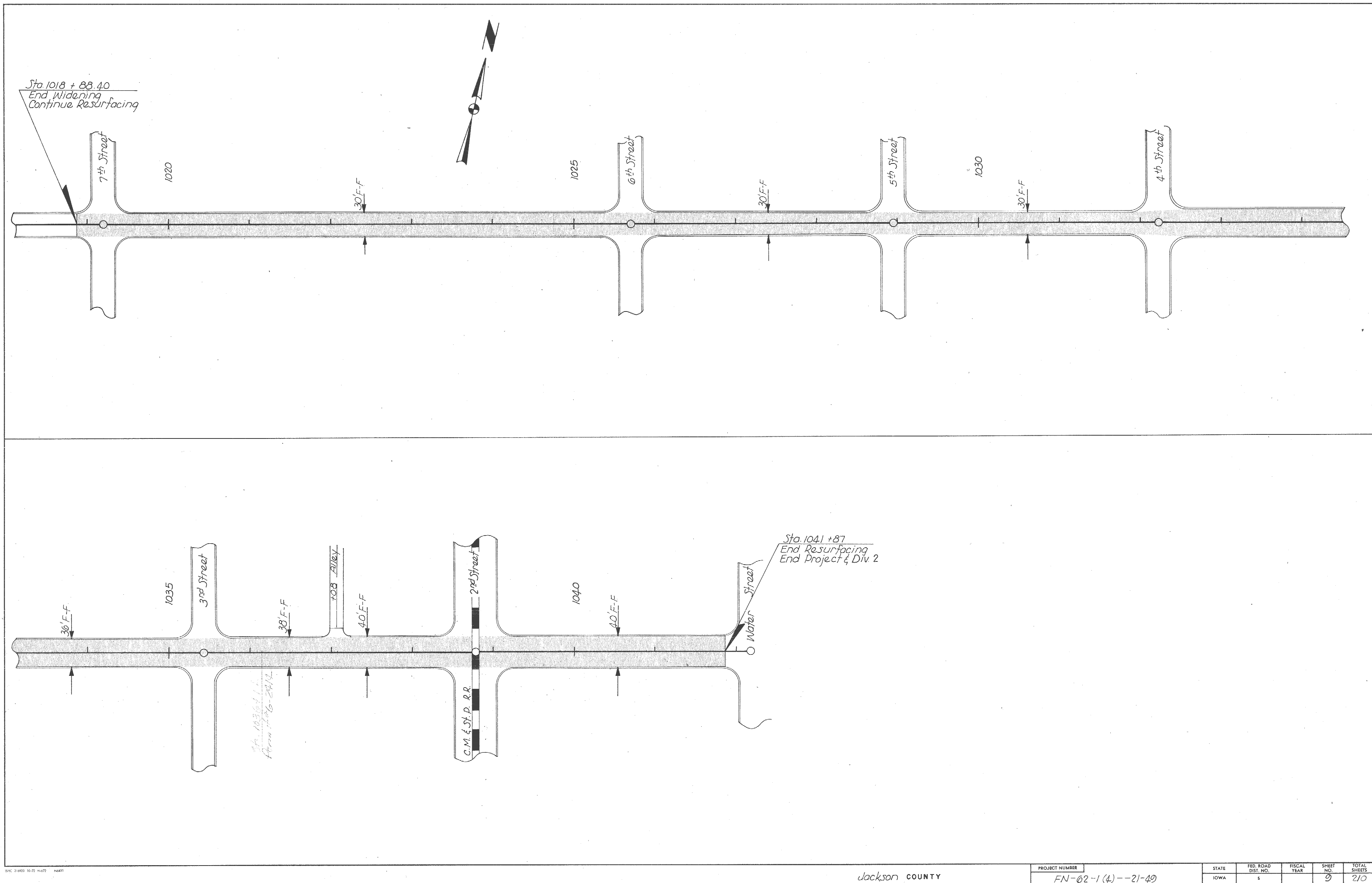
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 BY: _____
 CHECKED: _____
 PROJECT: _____
 SHEET: _____

DATE: _____
 BY: _____
 CHECKED: _____
 PROJECT: _____
 SHEET: _____





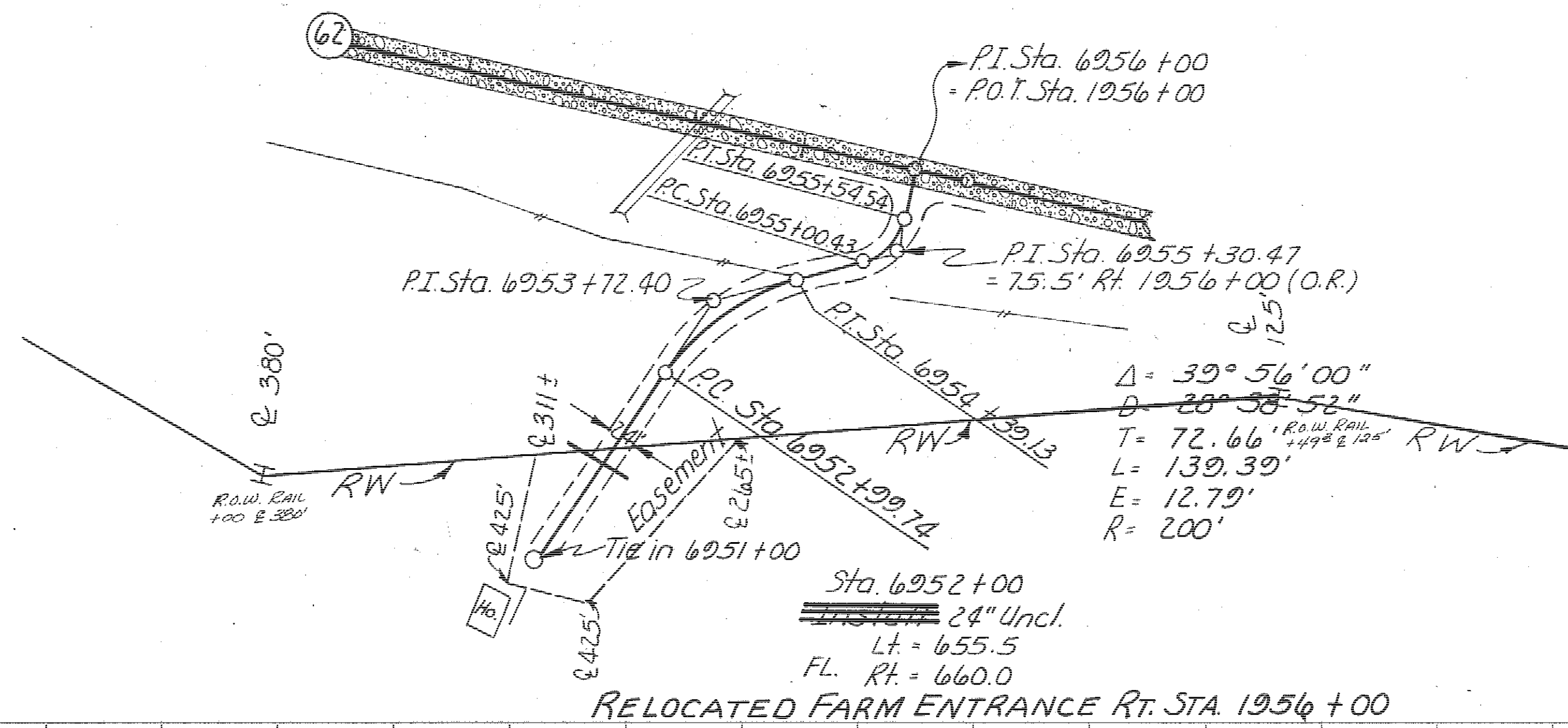




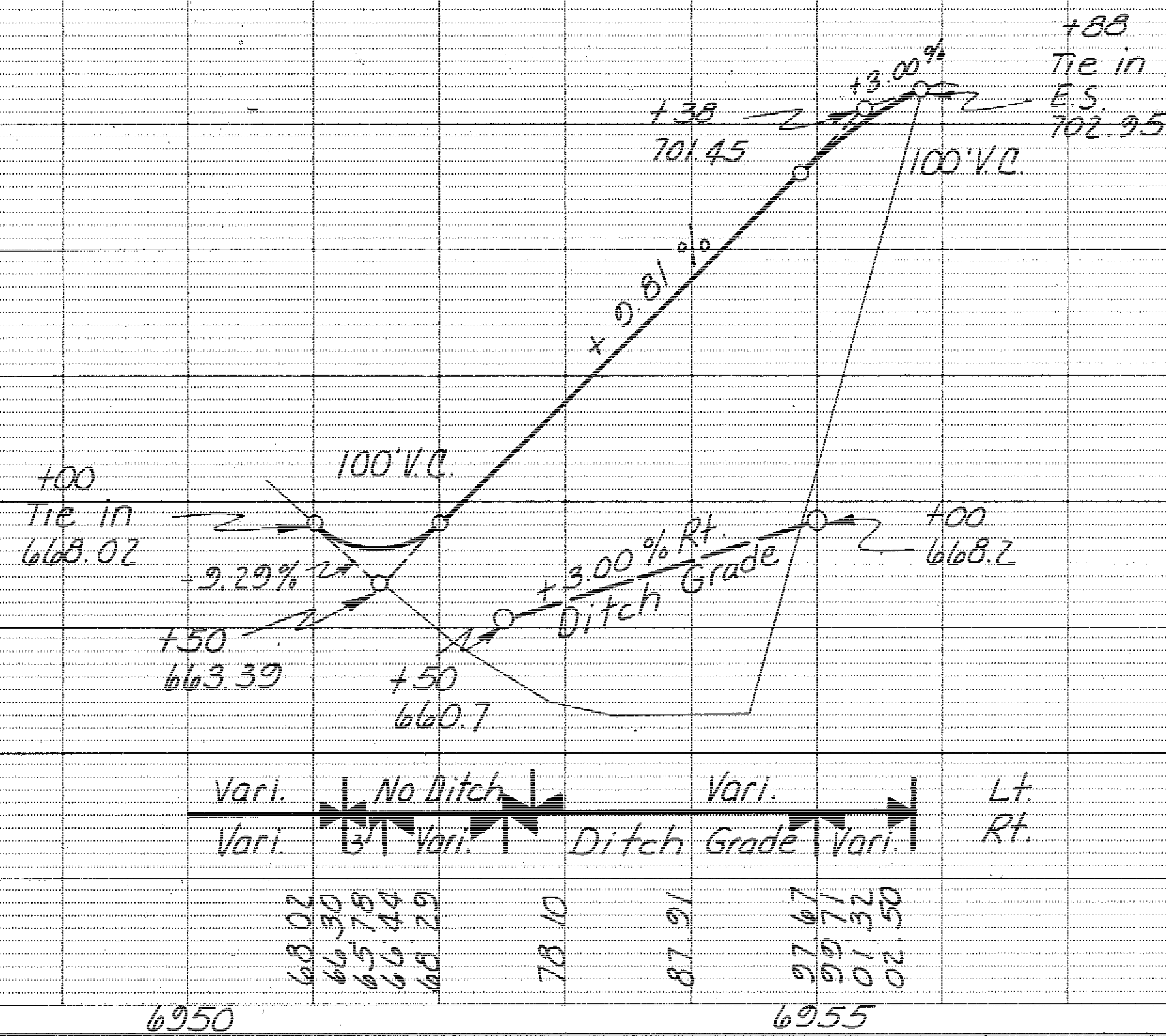
PLAN	DATE
DESIGNED	
BY	
CHECKED	
DATE	
NOTE BOOK	
NO.	

PROFILE	DATE
DESIGNED	
BY	
CHECKED	
DATE	
NOTE BOOK	
NO.	

$\Delta = 62^{\circ}00'$
 $D = 114^{\circ}35'30''$
 $T = 30.04'$
 $L = 54.11'$
 $E = 8.33'$
 $R = 50'$



$C = 496 \text{ Ft. } 25\% = 21,612$
 From Borrow A = 21,116
 21,612



Jackson Co.

PROJECT NUMBER

STATE: IOWA
 FED. ROAD DIST. NO.: 5
 FISCAL YEAR:
 SHEET NO.:
 TOTAL SHEETS:

PROJECT NUMBER: FN-62-1(4) -- 21-49

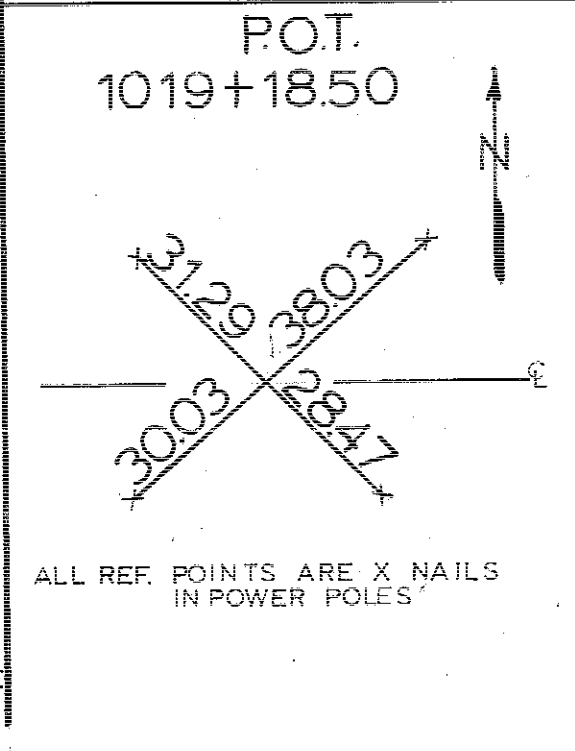
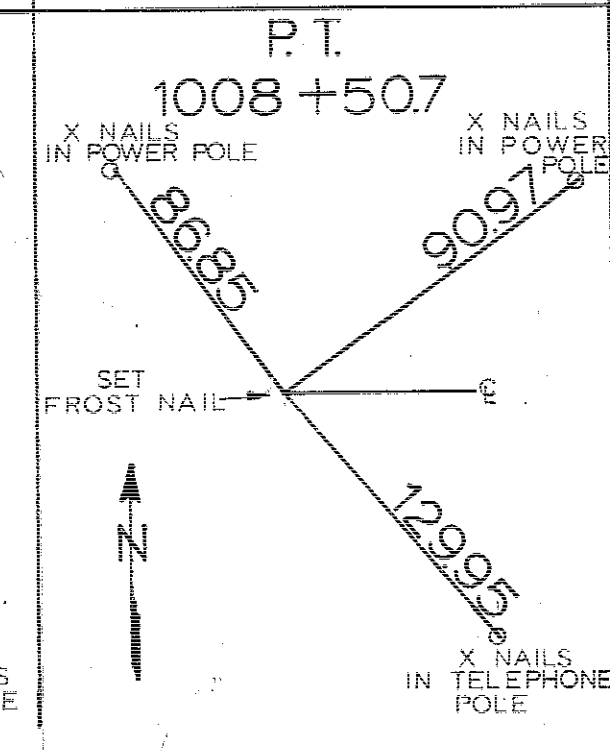
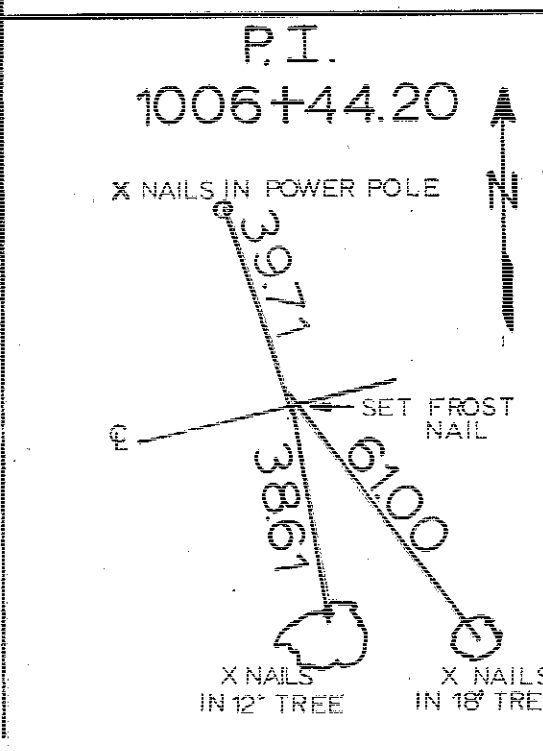
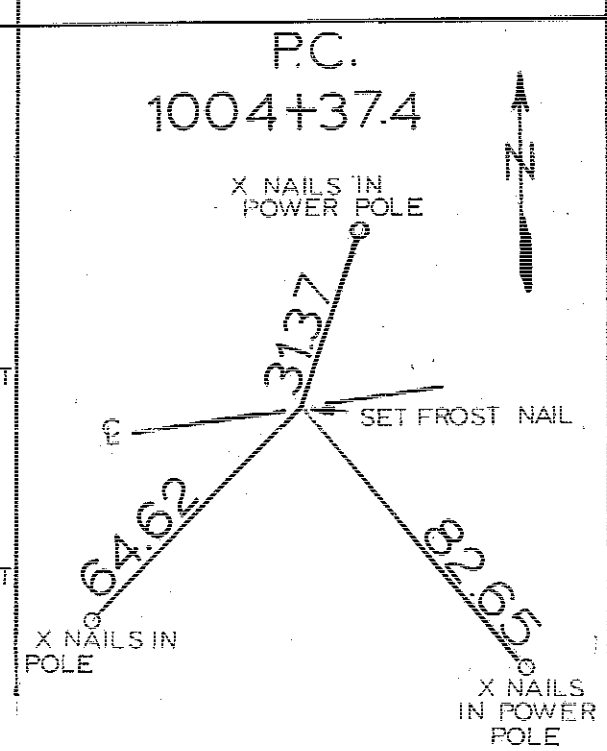
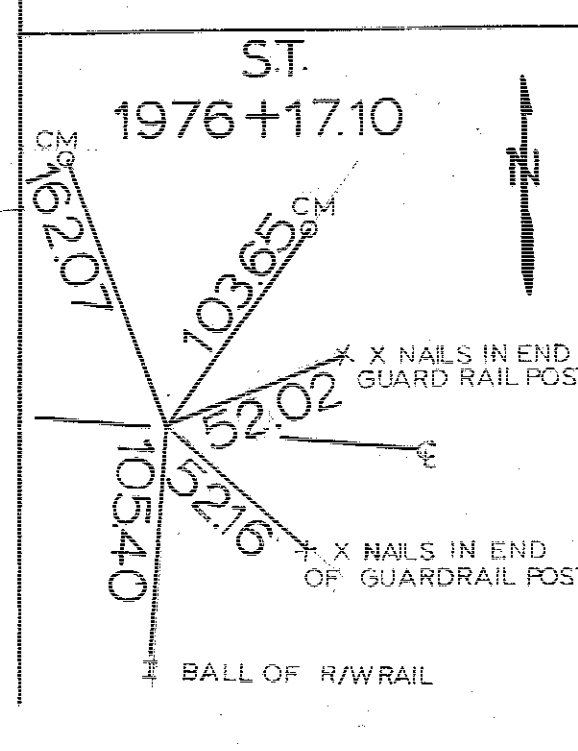
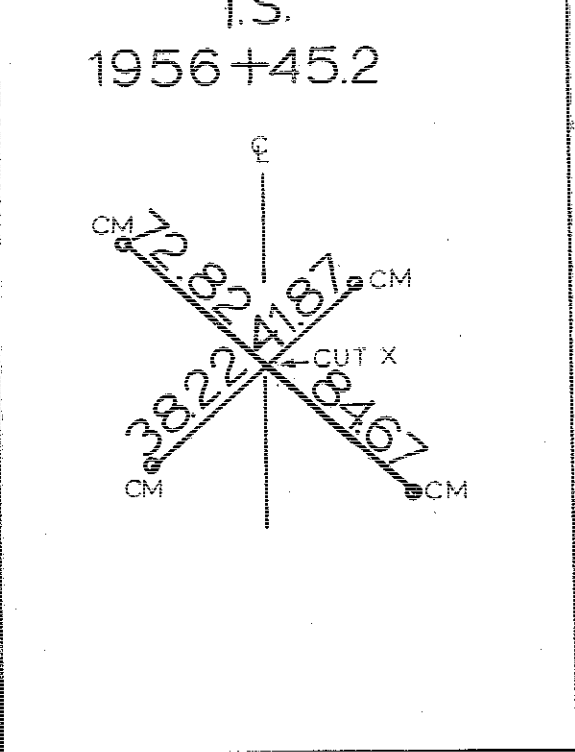
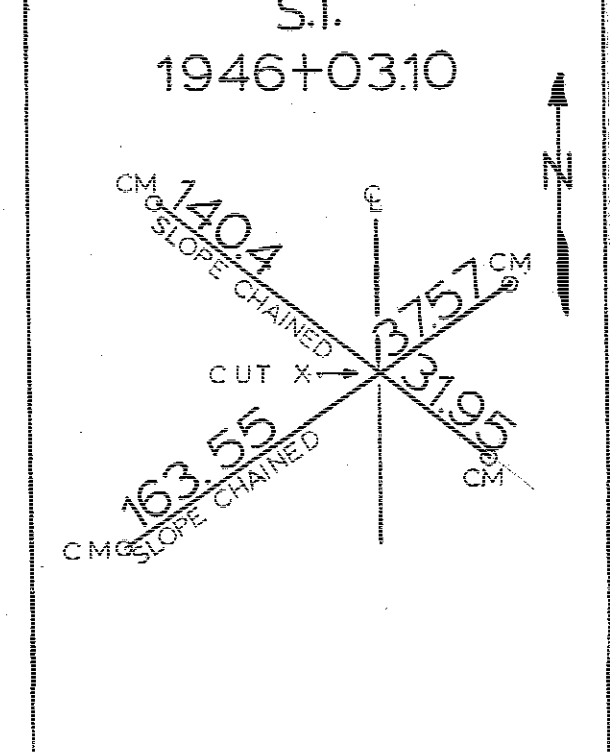
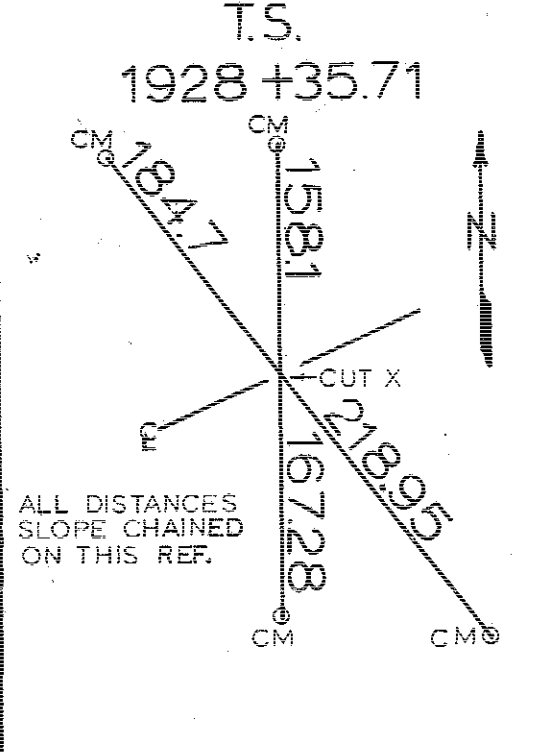
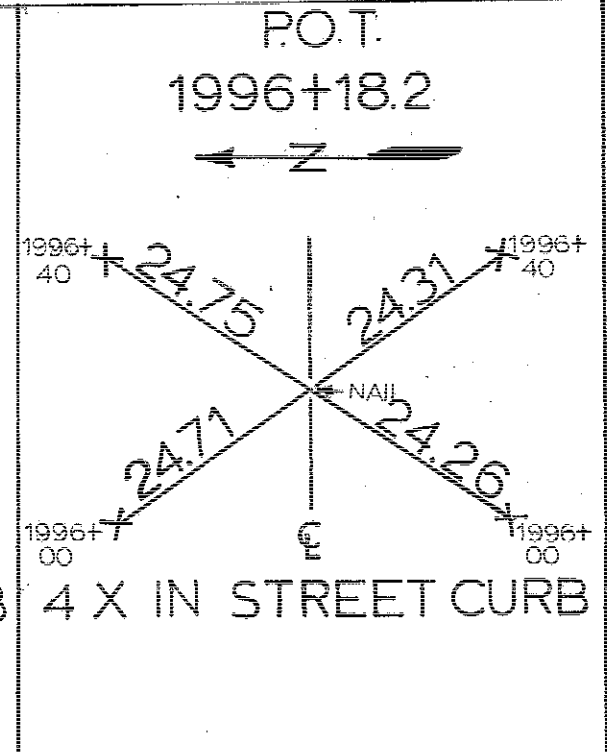
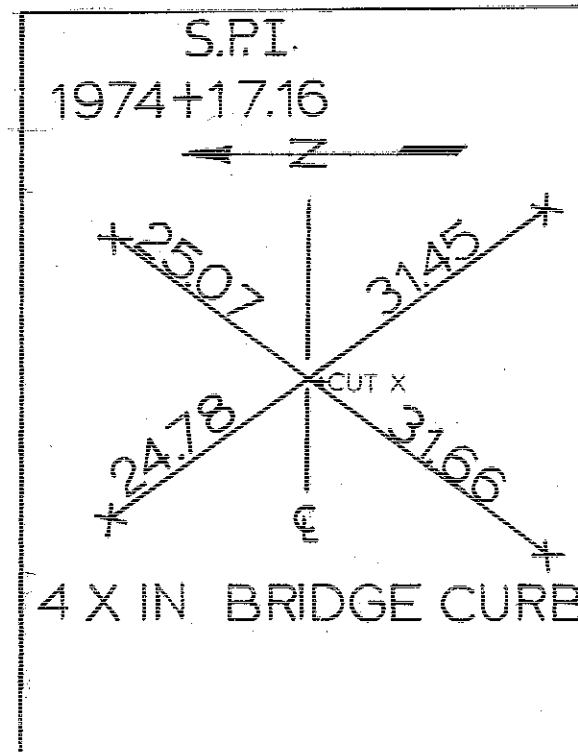
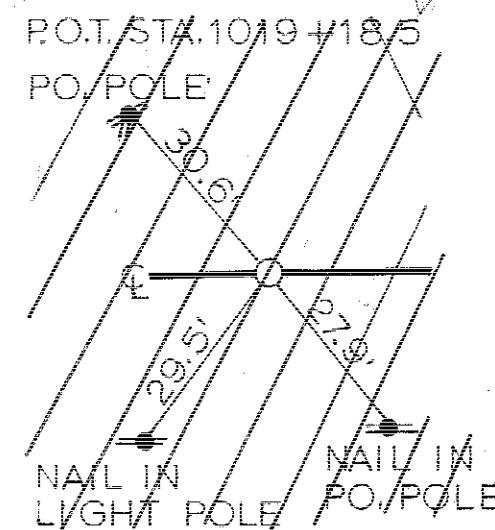
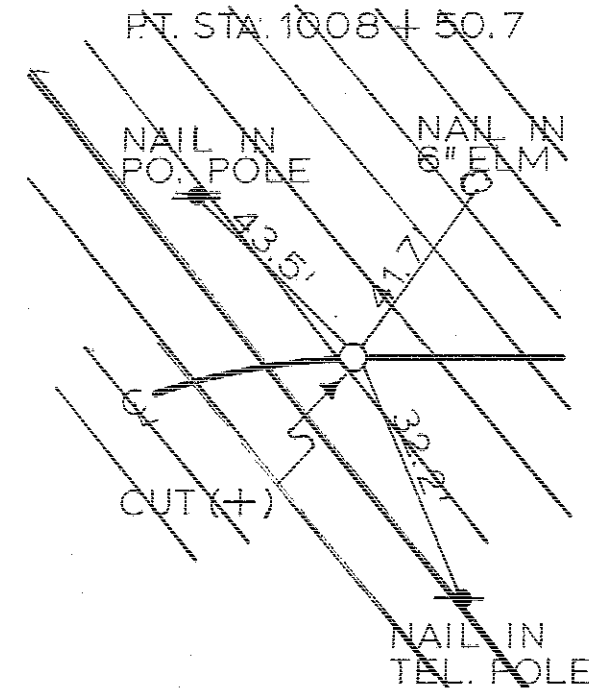
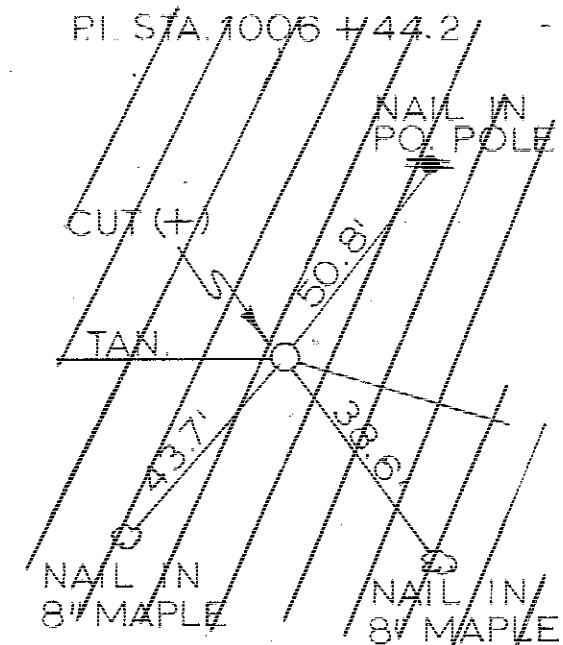
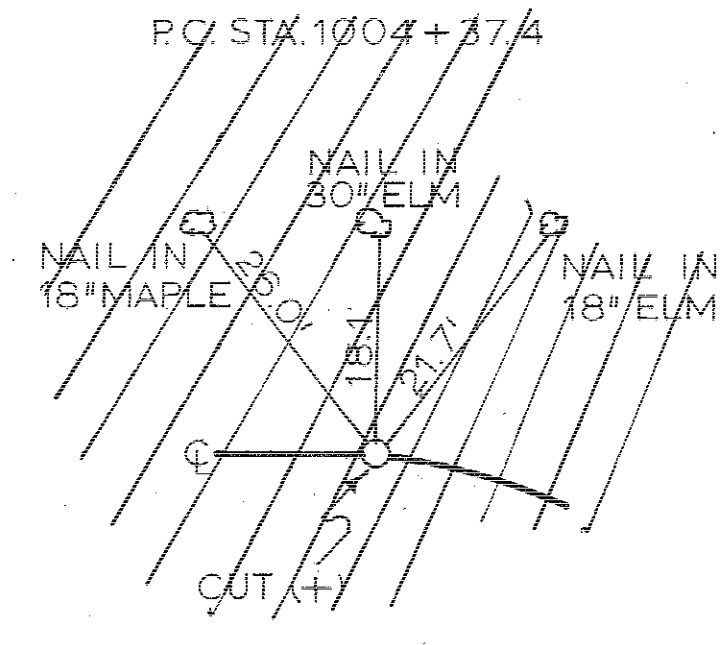
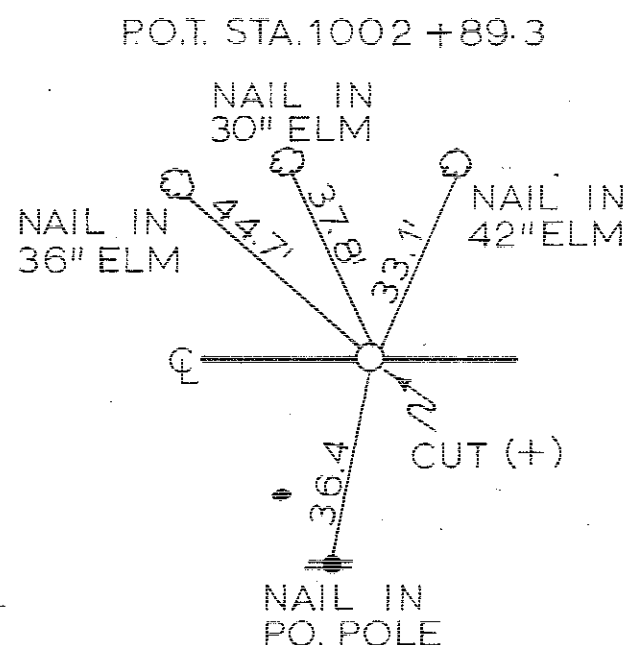
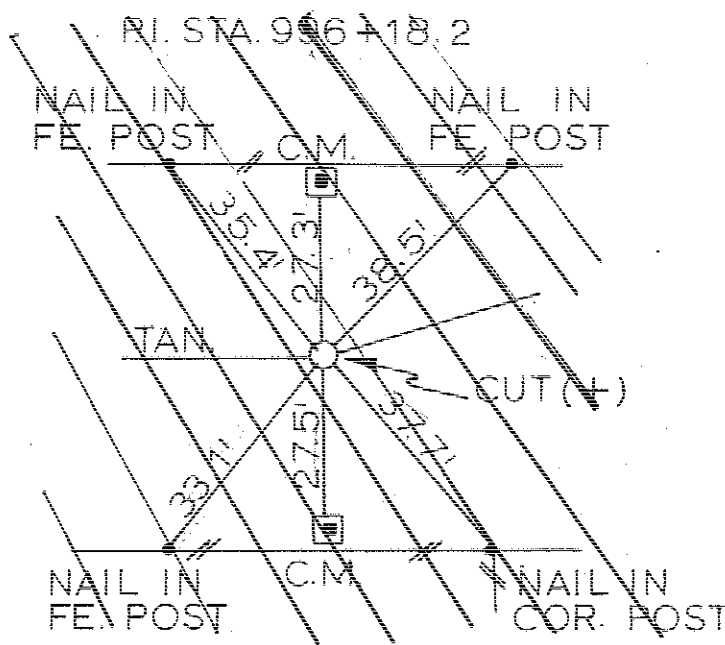
STATE: IOWA
 FED. ROAD DIST. NO.: 5
 FISCAL YEAR:
 SHEET NO.: 11
 TOTAL SHEETS: 210



BENCH MARKS

B.M. NO.119C STA.1009± LT. HDWL OF R.C.B., IDOT. B.M. IN INLET — ELEV. 615.67
B.M. NO.118C STA.1016+80 INLET HDWL RCB LT., IDOT. B.M. — ELEV. 616.62
B.M. NO.117C STA.1011± NAILS IN TREE 120' LT. — ELEV. 620.26
B.M. NO.116A STA.1978+15 IDOT B.M. ON N.E WING OF BRIDGE — ELEV. 636.76
B.M. NO.115A STA.1974+00 IDOT B.M. ON N.E WING OF BRIDGE — ELEV. 636.84
B.M. NO.114A STA.1972+50 RR SPIKE IN 36' ELM 140' RT. — ELEV. 638.20
B.M. NO.113A STA.1963± RT. RR SPIKE IN 10 CHERRY TREE — ELEV. 672.06
B.M. NO.112A STA.1954+20 RT. IDOT B.M. IN INLET HDWL RCB. — ELEV. 661.81
B.M. NO. 9B STA.1941± 175' LT. RR SPIKE IN OAK TREE ELEV. 816.38
B.M. NO. 9A STA.1935± X ON OUTLET HDWL 2X2 RCB (OLD SLAB) ELEV. 843.14
B.M. NO. 9 STA.1930± ON THERT. RR SPIKE IN POWER POLE ELEV. 858.68
B.M. NO. 8 STA.1920+50 LT. RR SPIKE IN POWER POLE ELEV. 885.42

ALL REFERENCES PLUMB DISTANCES

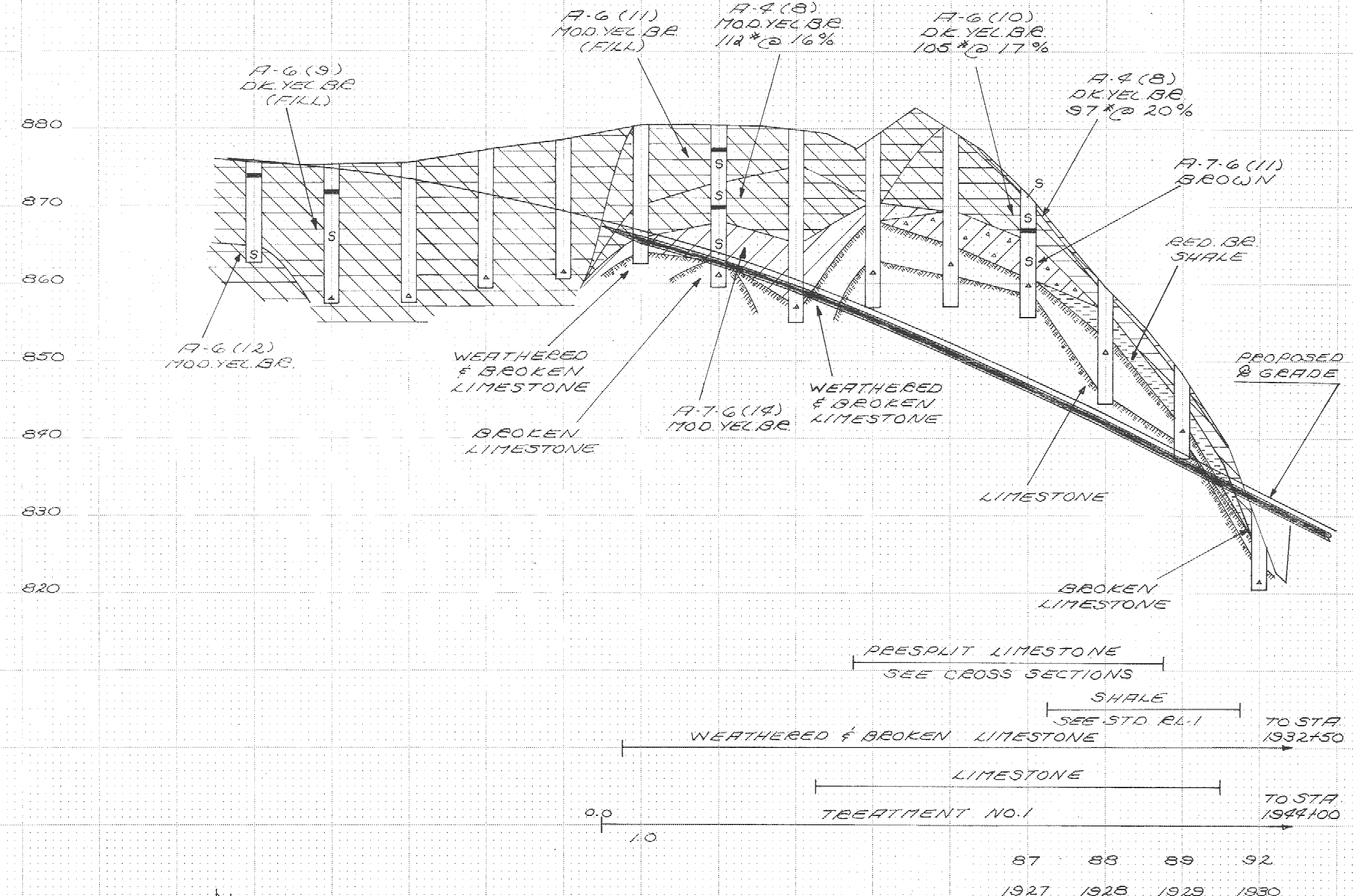
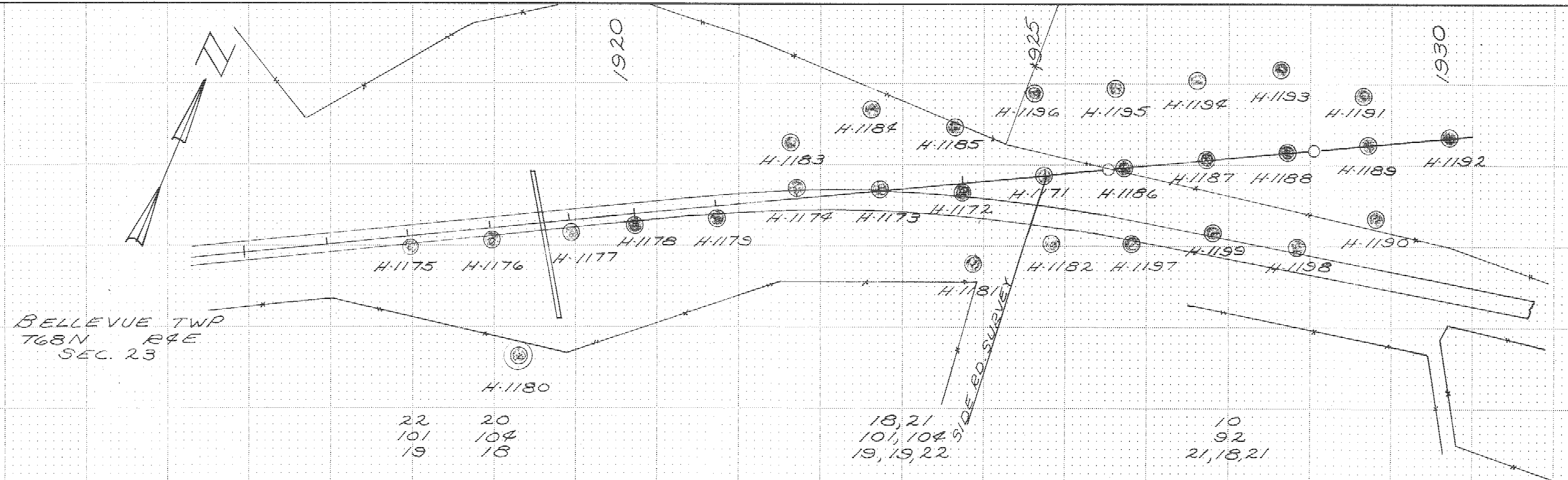
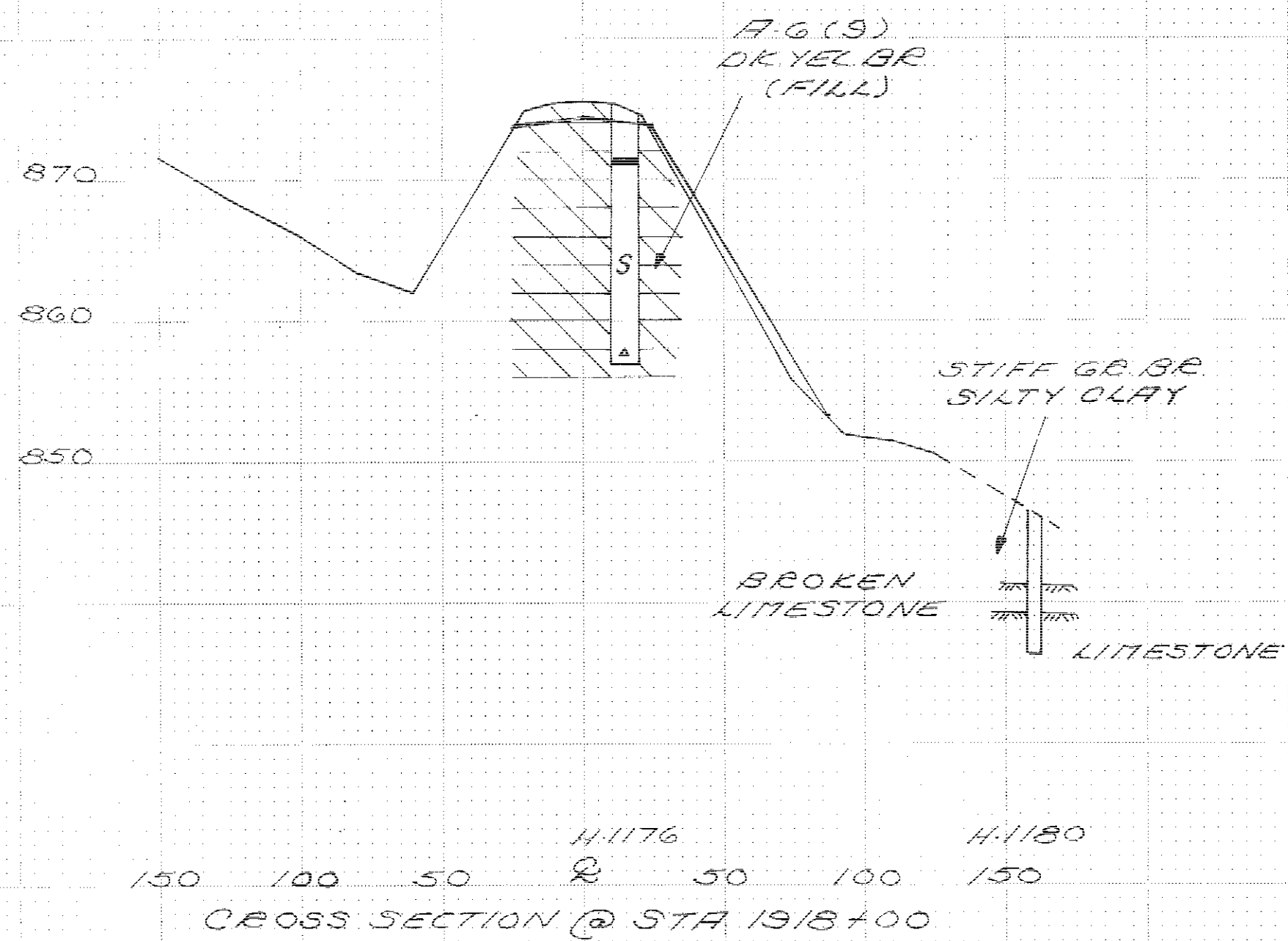
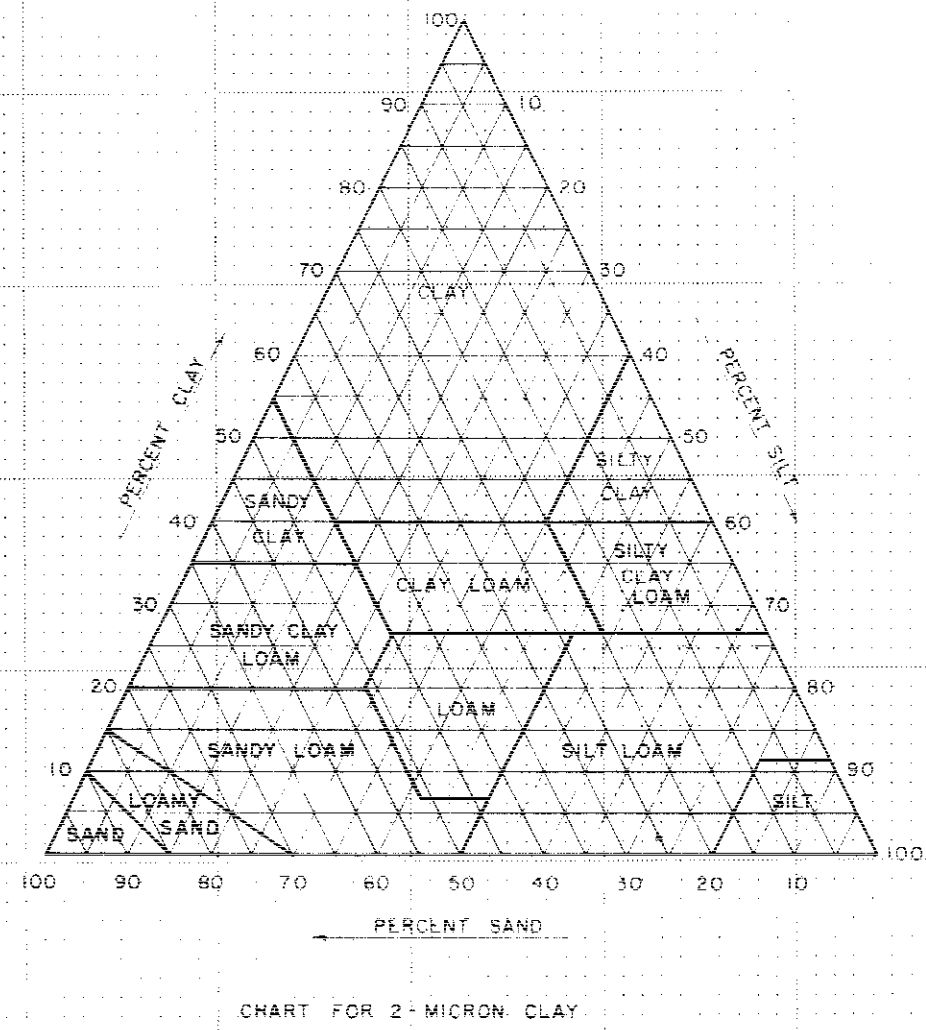


REFERENCE INFORMATION DETAILS

JACKSON COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	FN-62-1(1)-21-42	IOWA	5		13	210

DATE	
BY	
FINAL SURVEY	
SUPPLEMENTED	
FLATTENED	
NOTED BOOK	
NO.	
AREAS CHECKED	

DATE	Aug 1975
BY	M. Elmer
ORIGINAL SURVEY	
SUPPLEMENTED	
FLATTENED	
NOTED BOOK	
NO.	13
AREAS CHECKED	

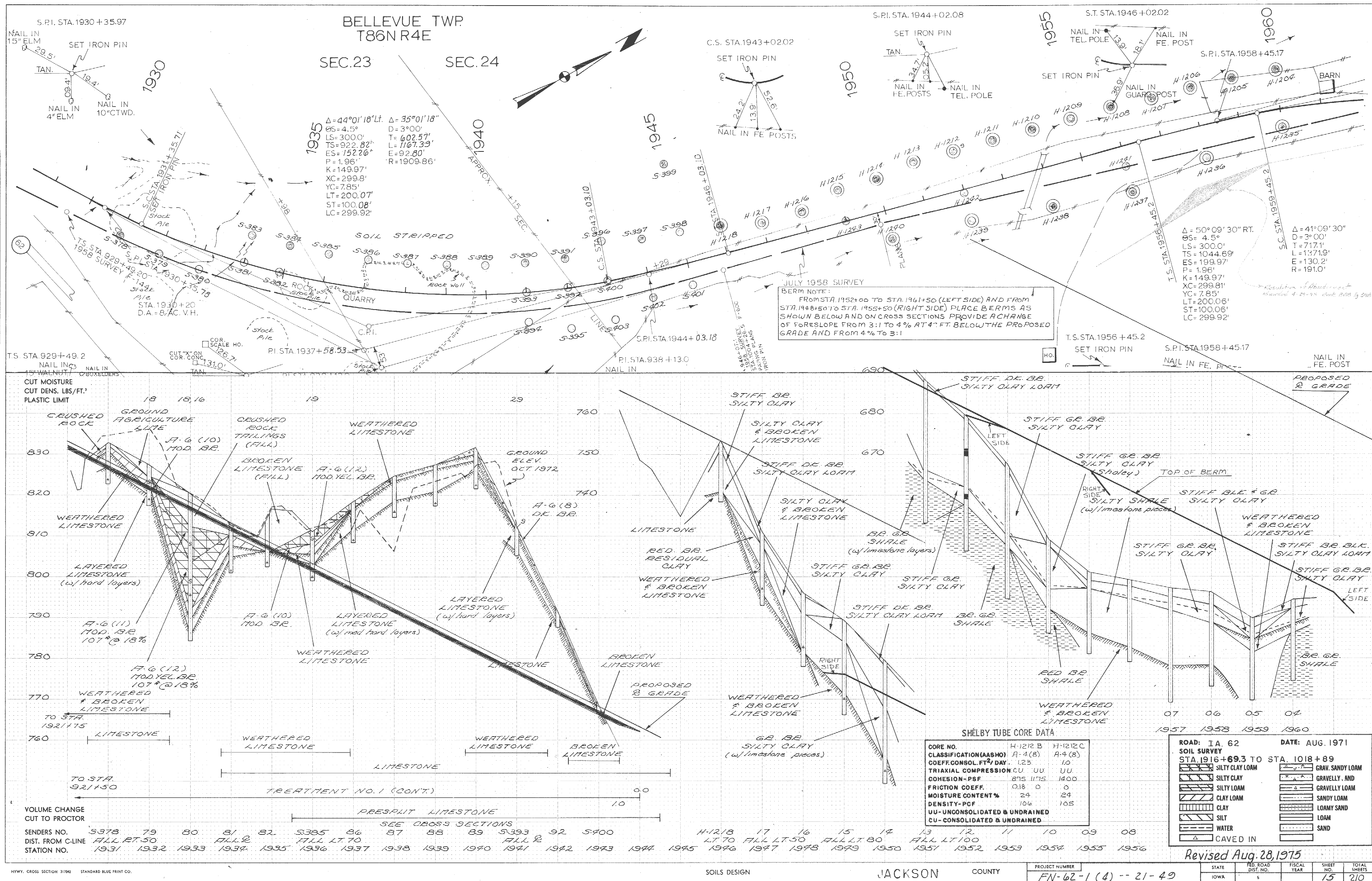


BEGIN PROJECT
STA 1916+69.3

H-1175	76	77	78	79	74	73	72	71	86
ALL RT 14					LT 10		RT 10	ALL	
1917	1918	1919	1920	1921	1922	1923	1924	1925	1926

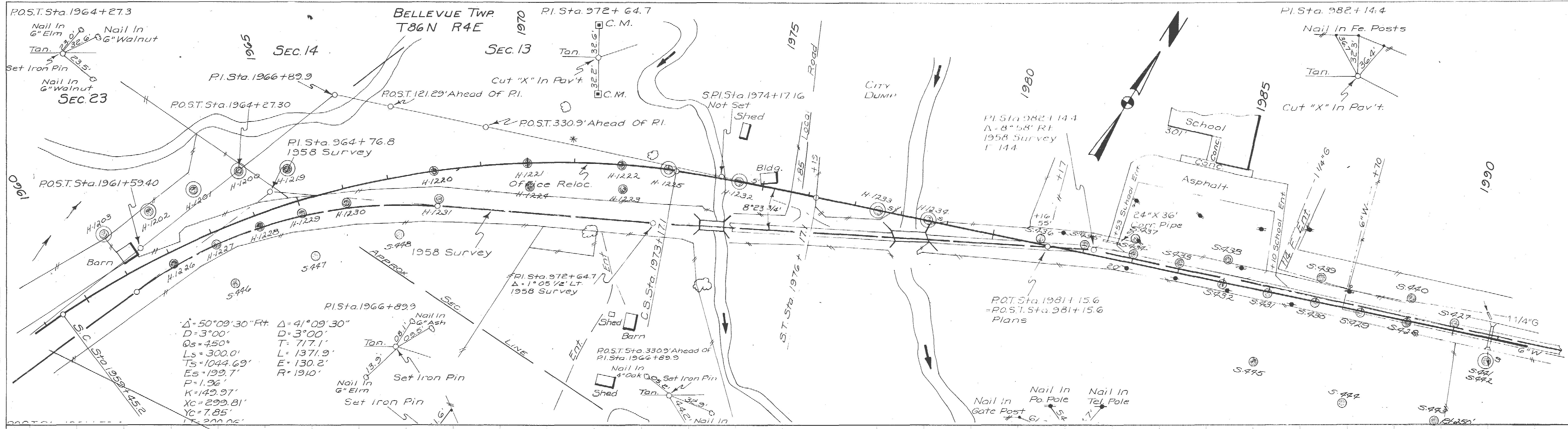
Revised Aug. 28, 1975

ROAD: IA. 62	DATE: AUG. 1971
SOIL SURVEY	
STA. 1916+69.3 TO STA. 1018+89	
SILTY CLAY LOAM	GRAVELLY SAND
SILTY CLAY	GRAVELLY LOAM
SILTY LOAM	SANDY LOAM
CLAY LOAM	LOAMY SAND
CLAY	LOAM
SILT	SAND
WATER	

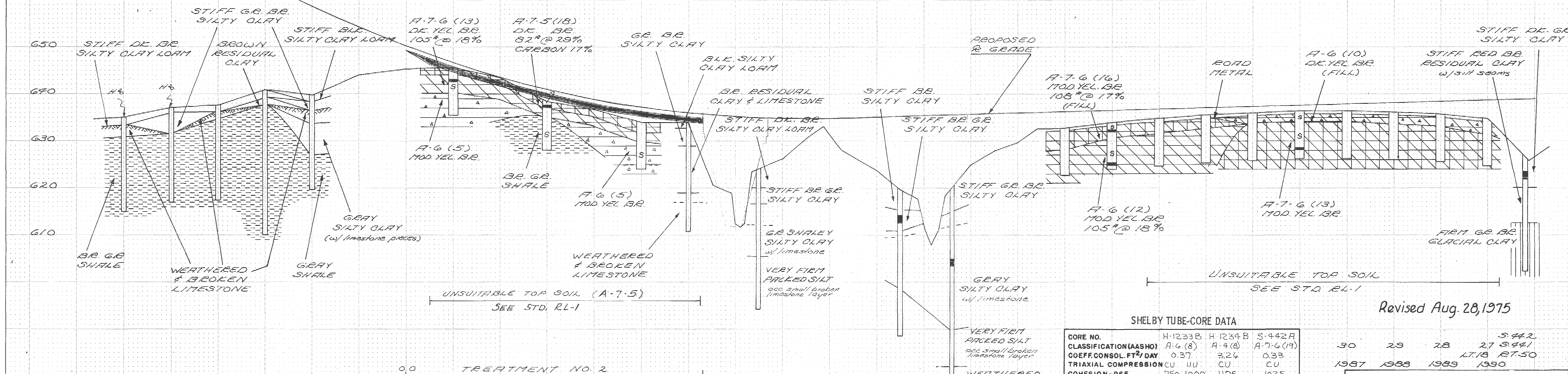


DATE
BY
SURVEY
PLANNED
NOTES
BOOK
NO.
CHECKED
NO.

DATE
BY
SURVEY
PLANNED
NOTES
BOOK
NO.
CHECKED
NO.



CUT MOISTURE	24	39		18.34	25
CUT DENS. LBS/FT.	96	77		100.89	72
PLASTIC LIMIT	20	36.20	16	20.19	21.20



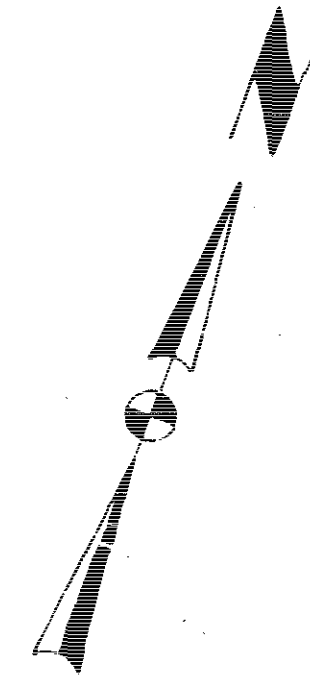
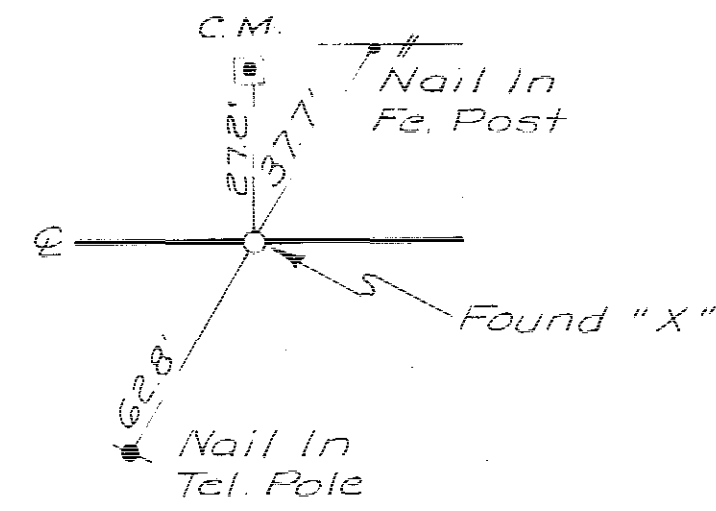
SHELBY TUBE-CORE DATA			
CORE NO.	H-1233B	H-1234B	S-442A
CLASSIFICATION(AASHO)	A-6(8)	A-6(8)	A-7-6(19)
COEFF. CONSOL. FT ² /DAY	0.37	3.24	0.33
TRIAxIAL COMPRESSION	CU UU	CU	CU
COHESION-PSF	750.1000	1175	1025
FRICTION COEFF.	0.19	0	0
MOISTURE CONTENT%	24	23	24
DENSITY-PCF	103	103	87
UU-UNCONSOLIDATED & UNDRAINED CU-CONSOLIDATED & UNDRAINED			

ROAD: IA. 62		DATE: AUG. 1971	
SOIL SURVEY		STA. 1916+69.3 TO STA. 1018+89	
	SILTY CLAY LOAM		GRAVELLY SAND
	SILTY CLAY		GRAVELLY LOAM
	CLAY LOAM		SANDY LOAM
	CLAY		LOAMY SAND
	SILT		LOAM
	WATER		SAND
	CAVED IN		

VOLUME CHANGE CUT TO PROCTOR																										 CLAY		 LOAMY SAND	
																										SILT		LOAM	
																										 WATER		 SAND	
																										 CAVED IN			
SENDERS NO.	H/1203	02	01	H/1200	19		H/1220	21		22	H/1225	H/1232		H/1233	34		S-436	35	34	33	32	31							
DIST. FROM C-LINE	ALL LT. 100																LT. 10	LT. 15	LT. 18	LT. 20	ALL RT. 2								
STATION NO.	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986			

BELLEVUE TWP
T86N R4E
SEC. 13

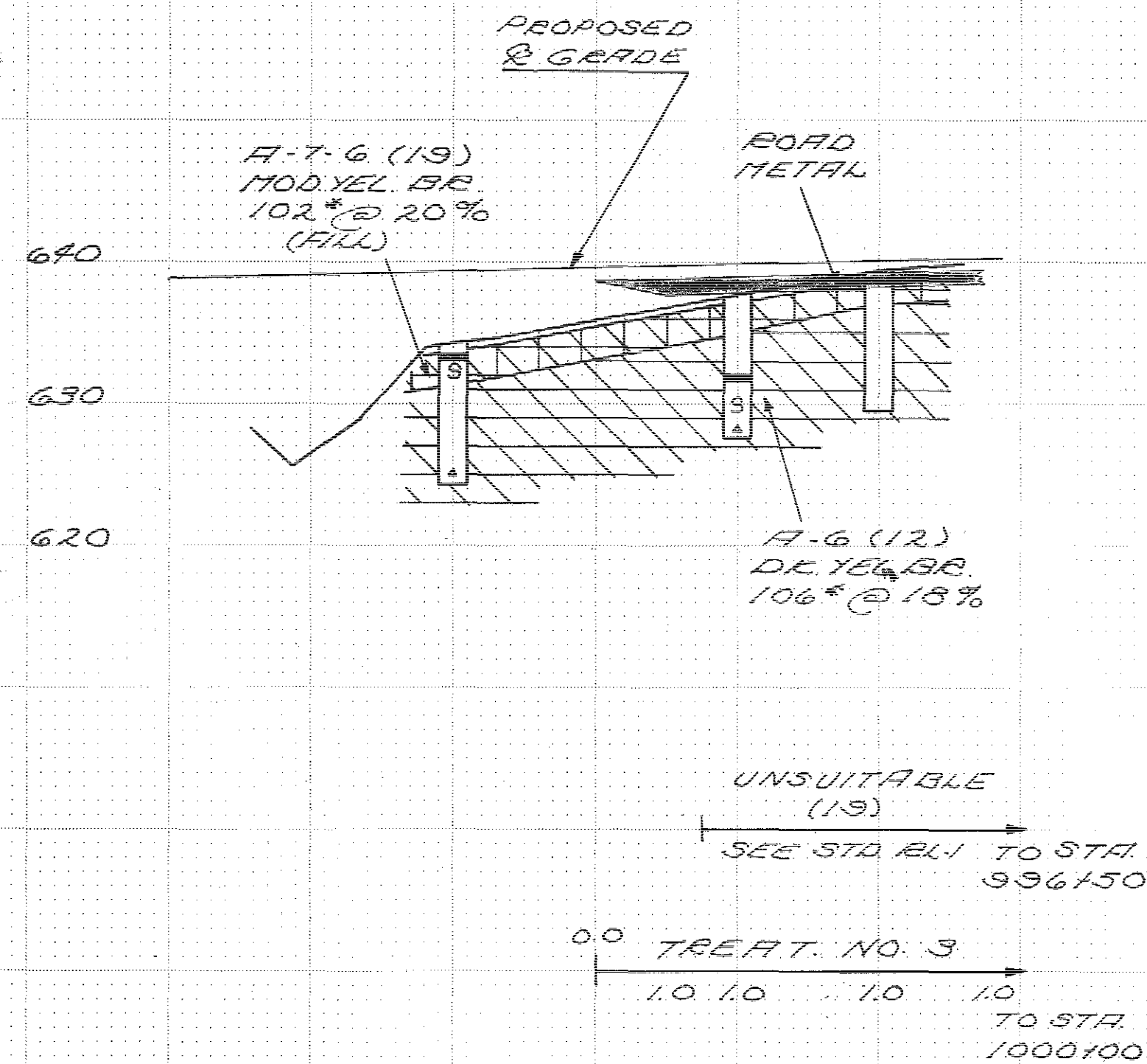
P.C.T. Sta. 1996+18.2



Equation
P.O.T. Sta. 1996+18.2 O.R. Photogrammetry
= P.I. Sta. 996+18.2 July 1958 Survey
 $\Delta = 0.35' \text{ Lt.}$

TOWN OF BELLEVUE

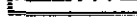
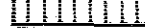
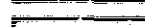
CUT MOISTURE	20	28
CUT DENS. LBS/FT. ³	99	88
PLASTIC LIMIT	29	18



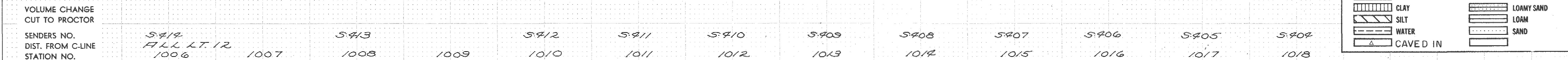
Revised Aug. 28, 1975

VOLUME CHANGE
CUT TO PROCTOR

SENDERS NO.	5426	25	24
DIST. FROM C-LINE	RT. 50	LT. 15	ALL LT. 12
STATION NO.	1991	1992	1993 1994 1995

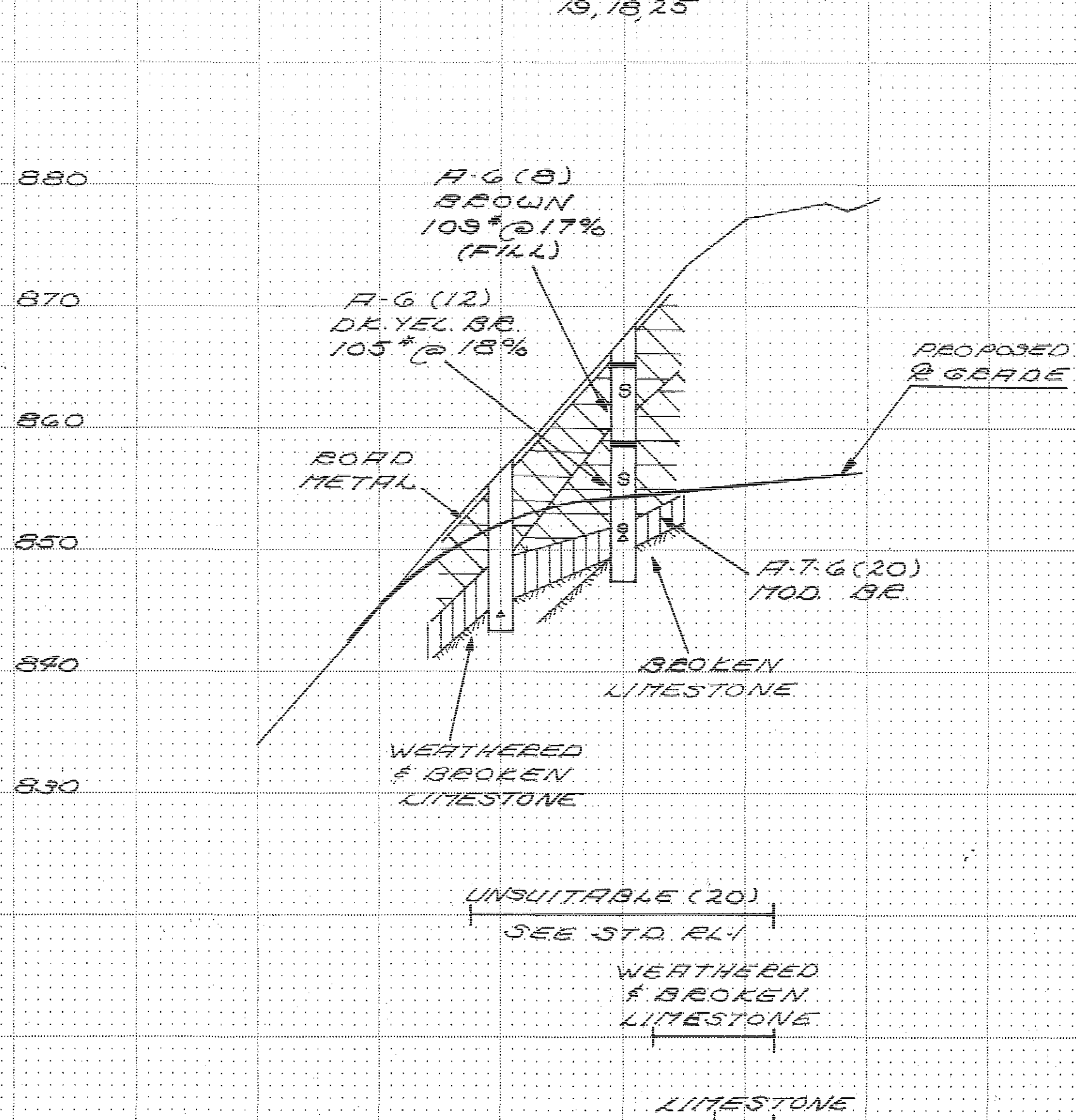
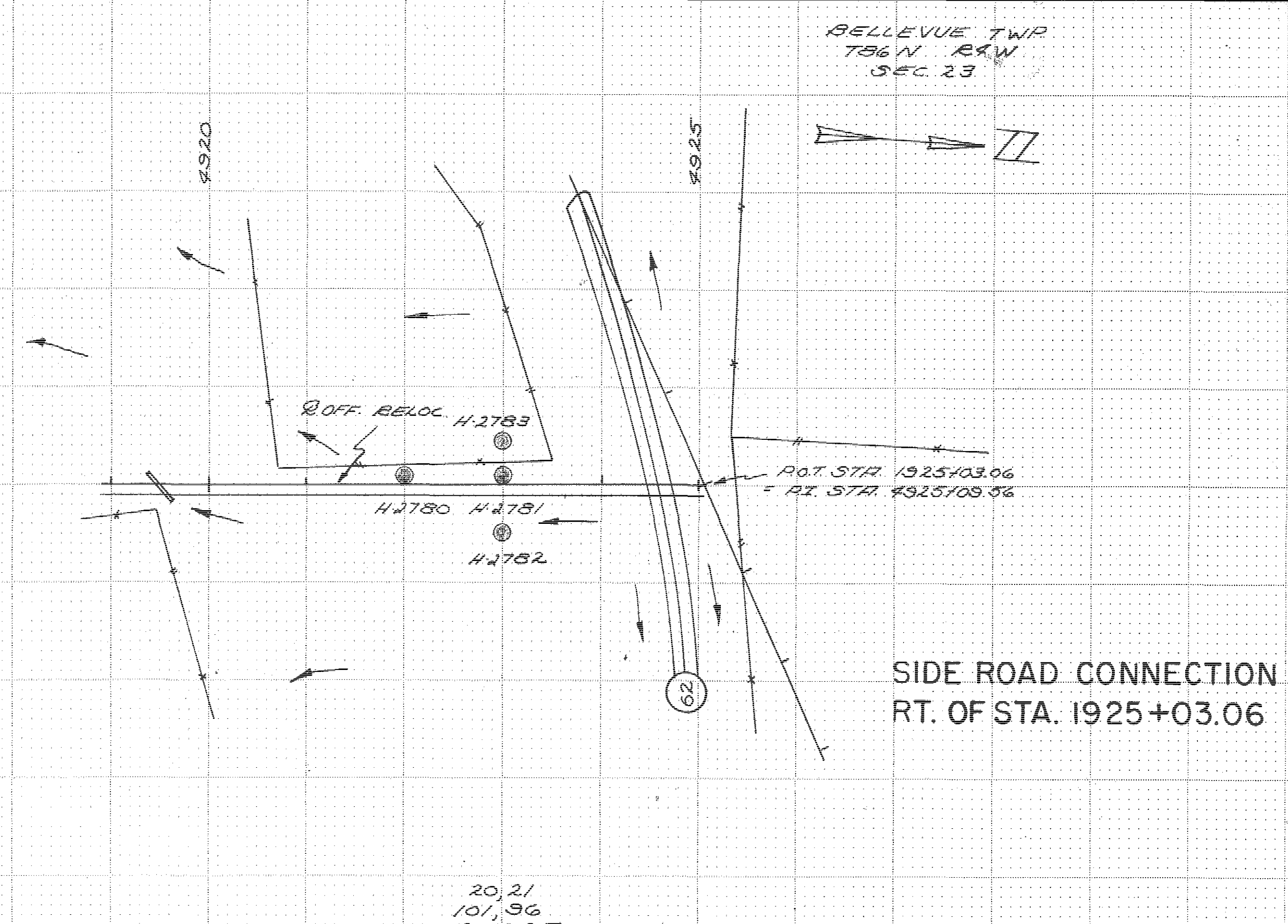
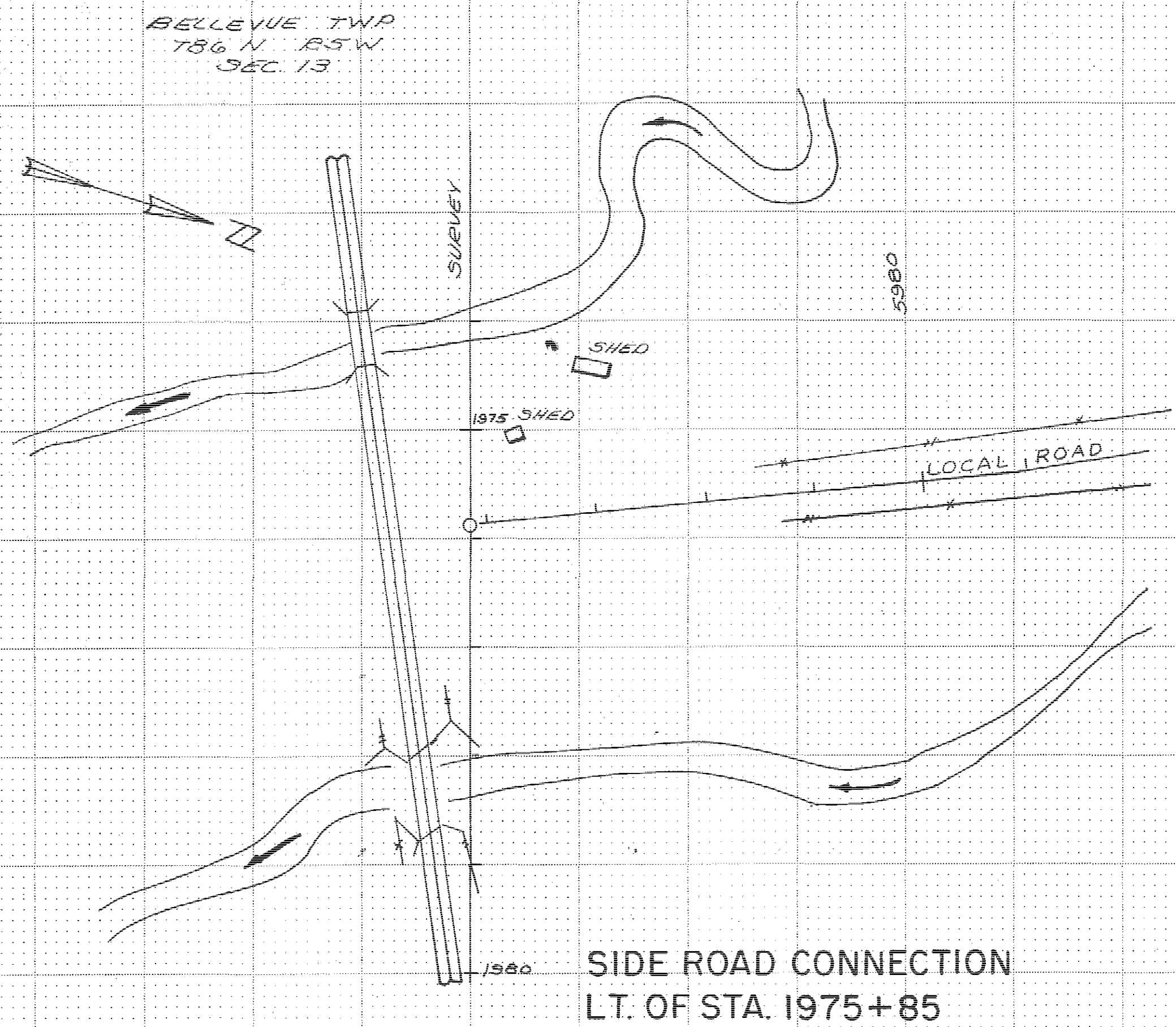
ROAD: I.A. 62		DATE: AUG. 1971	
SOIL SURVEY			
STA. 1916+69.3 TO STA. 1018+89			
	SILTY CLAY LOAM		GRAV. SANDY LOAM
	SILTY CLAY		GRAVELLY SAND
	SILTY LOAM		GRAVELLY LOAM
	CLAY LOAM		SANDY LOAM
	CLAY		LOAMY SAND
	SILT		LOAM
	WATER		SAND
	CAVED IN		

ORIGINAL	SURVEYED	BY	DATE
SURVEY	PLOTTED	R London	Aug 1971
NOTE BOOK	TEMPLE	B. Gray	Nov 1971
NO. A'	AREAS		
	AREAS CHECKED		



DATE	BY	SURVEYED	NOTED	NO.
FINAL				
SURVEY				
NOTE BOOK				
NO.				

DATE	BY	SURVEYED	NOTED	NO.
ORIGINAL				
SURVEY				
NOTE BOOK				
NO.				



ALL 200' 81
4920 4921 4922 4923 4924 4925

Revised Aug 28, 1975

ROAD: IA. 62		DATE: OCT. 1972	
SOIL SURVEY		STA. 1916+69.3 TO STA. 1018+89	
	SILTY CLAY LOAM		GRAY. SANDY LOAM
	SILTY CLAY		GRAVELLY SAND
	SILTY LOAM		GRAVELLY LOAM
	CLAY LOAM		SANDY LOAM
	CLAY		LOAMY SAND
	SILT		LOAM
	WATER		SAND

SOILS DESIGN

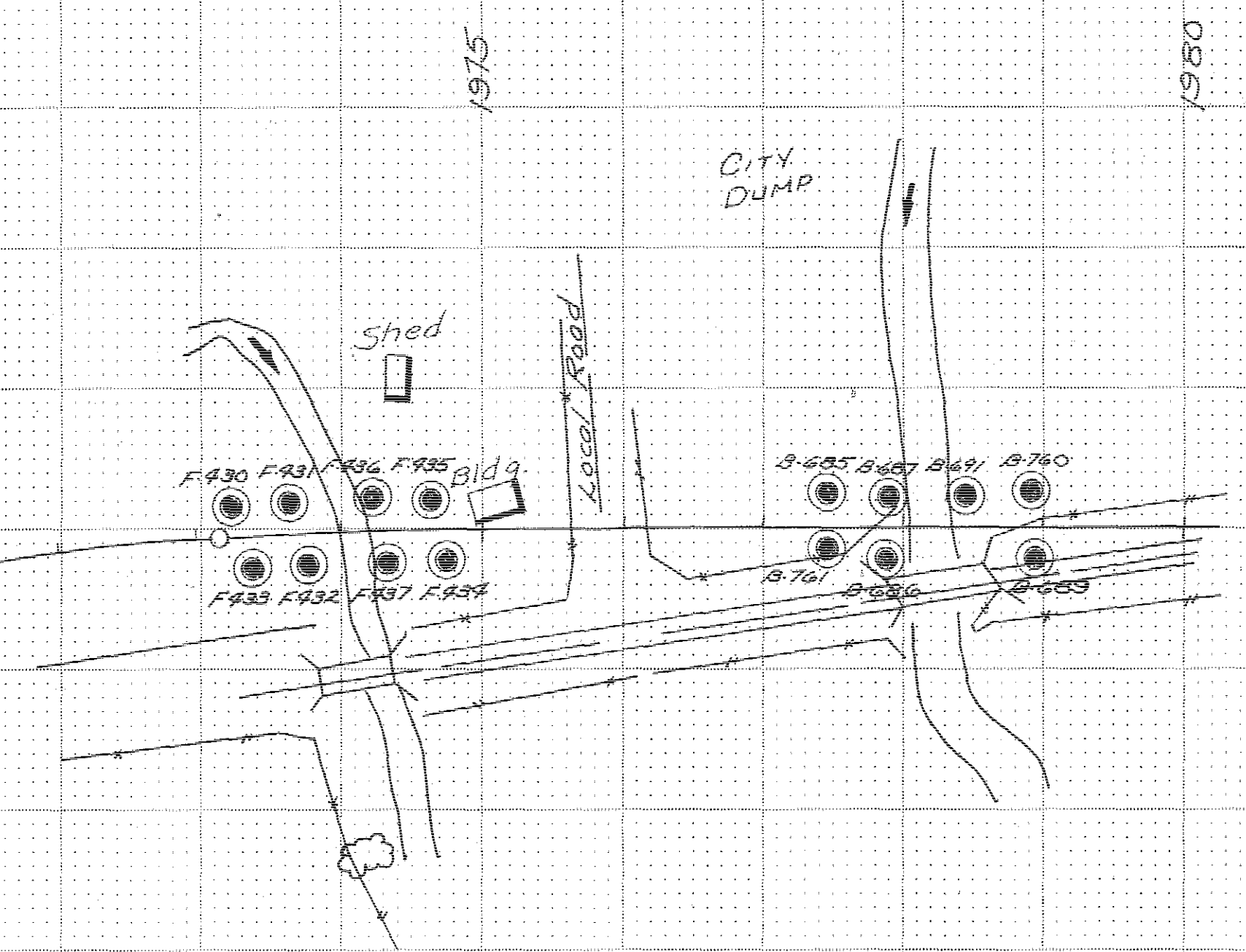
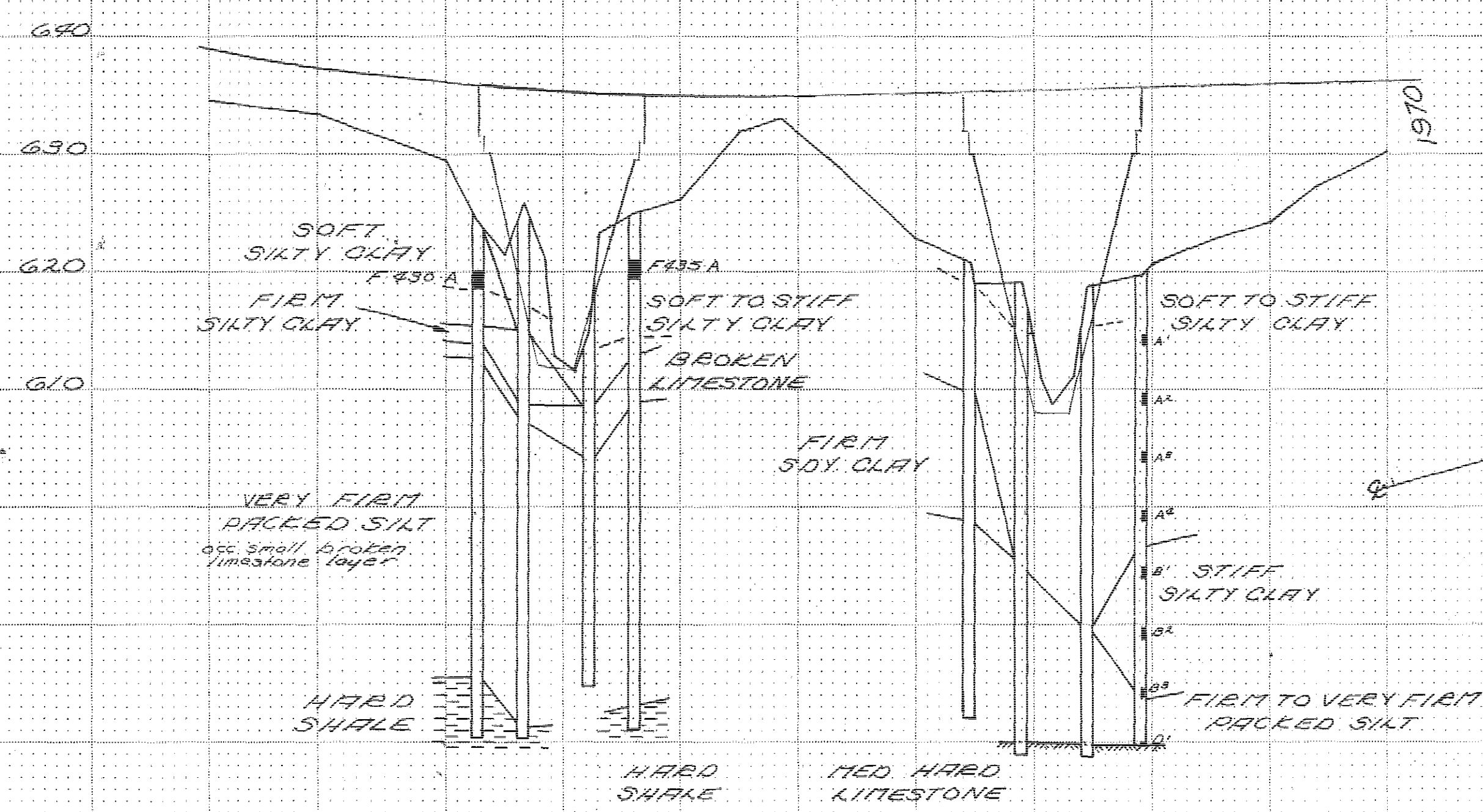
JACKSON COUNTY

PROJECT NUMBER
FN-62-1(4)-21-40

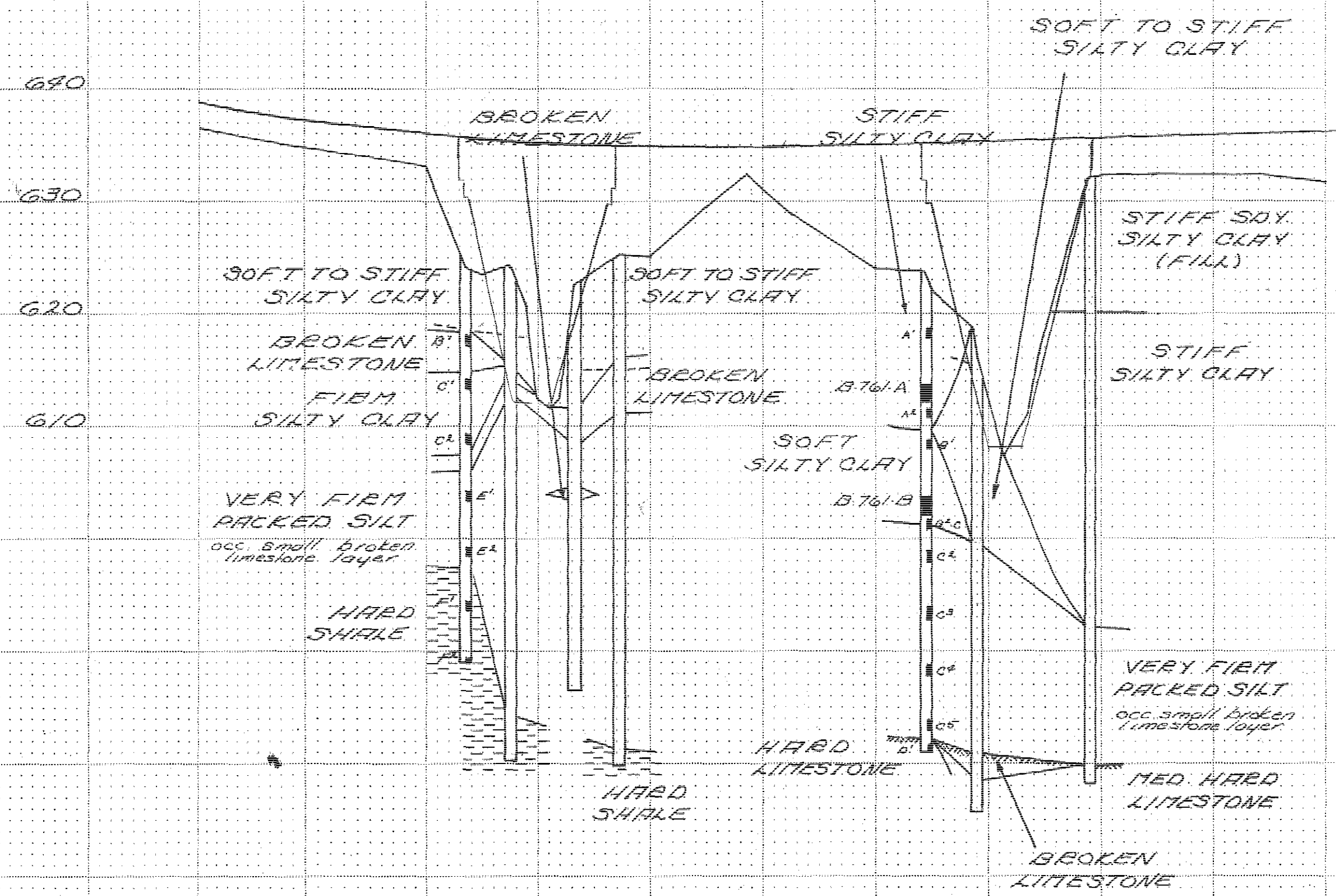
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		20	210

FINAL SURVEY BY DATE
SURVEYED BY DATE
PLANNED BY DATE
NOTE BOOK NO.
AREAS CHECKED

ORIGINAL SURVEY BY DATE
SURVEYED BY DATE
PLANNED BY DATE
NOTE BOOK NO.
AREAS CHECKED



F430 F431 F432 F433 B-685 B-687 B-689 B-760
ALL LT. 22 LT. 25 ALL LT. 22
1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981



F433 F432 F431 F434 B-761 B-686 B-689
ALL RT. 22 RT. 15 RT. 22 RT. 21 ALL RT. 22
1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981

WASH BORE DATA						
TYPE	STATION	DIST. &	SENDER NO.	DEPTH	BLOWS/FT.	% REC.
ST	1973+37	RT. 22	F433-B'	60'-7.0	29	
ST	1973+37	RT. 22	F433-C'	100'-11.0	13	
ST	1973+37	RT. 22	F433-D'	150'-16.0	14	
ST	1973+37	RT. 22	F433-E'	200'-21.0	21	
ST	1973+37	RT. 22	F433-F'	250'-26.0	43	
ST	1973+37	RT. 22	F433-G'	300'-30.5	100	Steady Pen.
ST	1973+37	RT. 22	F433-H'	350'-35.6	100	Steady Pen.
ST	1977+44	RT. 15	B-761-A'	50'-6.0	9	
ST	1977+44	RT. 15	B-761-A''	100'-13.0	6	
ST	1977+44	RT. 15	B-761-B'	150'-16.0	3	
ST	1977+44	RT. 15	B-761-B''	200'-23.0	13	
ST	1977+44	RT. 15	B-761-C'	250'-26.0	13	
ST	1977+44	RT. 15	B-761-C''	300'-31.0	16	
ST	1977+44	RT. 15	B-761-C'''	350'-36.0	16	
ST	1977+44	RT. 15	B-761-C''''	400'-41.0	13	
ST	1977+44	RT. 15	B-761-D'	450'-48.9	100	
ST	1978+91	LT. 25	B-760-A'	50'-6.0	4	
ST	1978+91	LT. 25	B-760-A''	100'-11.0	9	
ST	1978+91	LT. 25	B-760-A'''	150'-16.0	5	
ST	1978+91	LT. 25	B-760-A''''	200'-21.0	4	
ST	1978+91	LT. 25	B-760-B'	250'-26.0	7	
ST	1978+91	LT. 25	B-760-B''	300'-31.0	6	
ST	1978+91	LT. 25	B-760-B'''	350'-36.0	7	
ST	1978+91	LT. 25	B-760-B''''	400'-40.0	100	No Pen.

SHELBY TUBE CORE DATA			
CORE NO.	F430A	F435A	B-761B
CLASSIFICATION (AASHO)	A-4(8)	A-4(9)	A-4(11)
COEFF. CONSOL. FT ² /DAY	0.7	0.26	3.84
TRIAxIAL COMPRESSION	CU UU	CU UU	CU UU
COHESION - PSF	750 1000	850 1100	320 650
FRICITION COEFF.	0.19	0.2	0.31
MOISTURE CONTENT %	34	28	27
DENSITY - PCF	88	96	105
UU - UNCONSOLIDATED & UNDRAINED			
CU - CONSOLIDATED & UNDRAINED			

Revised Aug. 28, 1975

ROAD: I.A. 62
DATE: JAN. 1973
STA. 1916+69.3 TO STA. 1018+89

SILTY CLAY LOAM

SILTY CLAY

SILTY LOAM

CLAY LOAM

CLAY

SILT

WATER

GRAVELLY SAND

GRAVELLY LOAM

SANDY LOAM

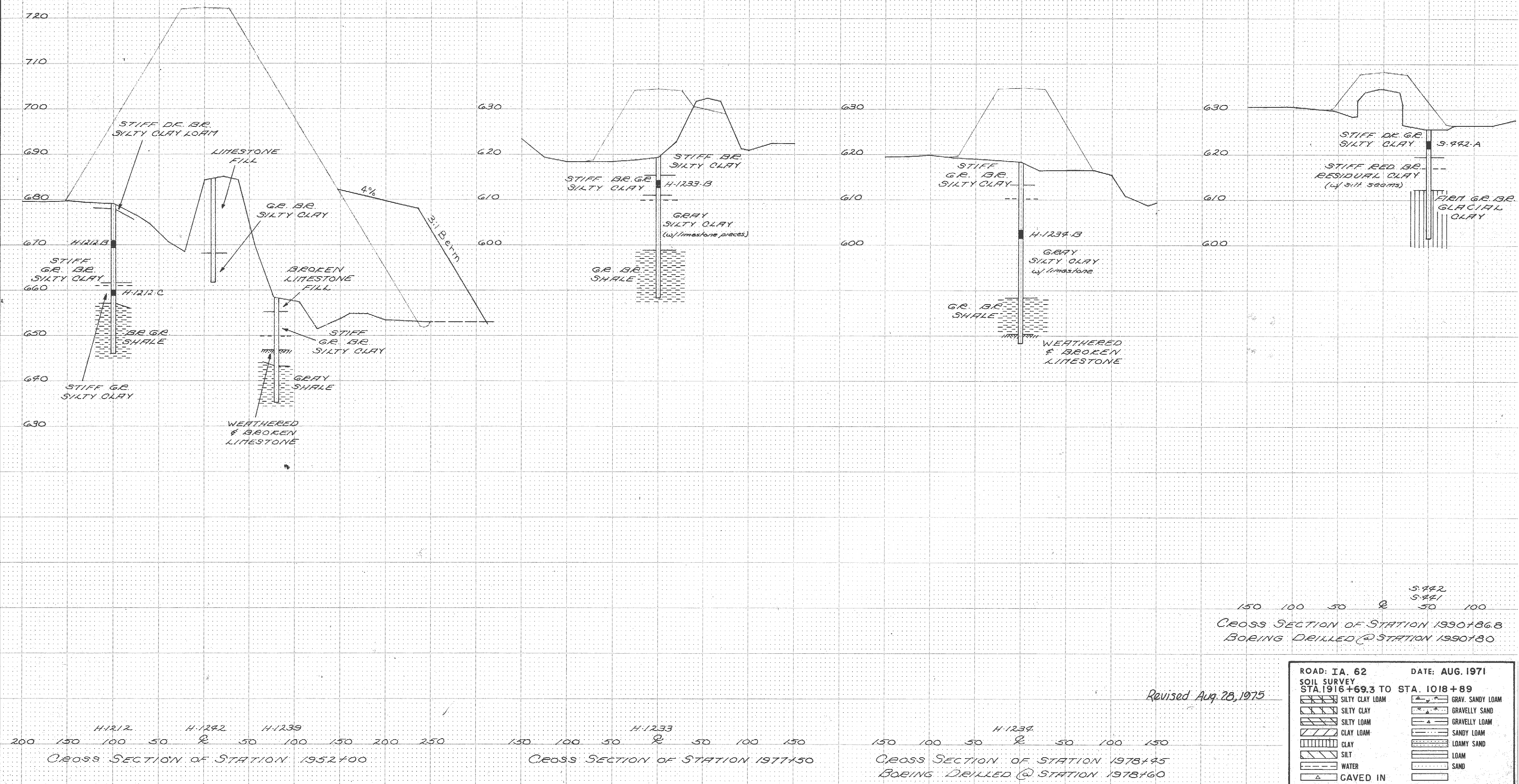
LOAMY SAND

LOAM

SAND

FINAL	SURVEYED	DATE
SURVEY	PLOTTED	BY
NOTEBOOK	TEMPLATE	
NO.	AREAS CHECKED	

ORIGINAL	SURVEYED	DATE
SURVEY	PLOTTED	BY
NOTEBOOK	TEMPLATE	
NO.	AREAS CHECKED	



150 100 50 0 50 100
 S-942
 S-941
 Cross Section of Station 1990+86.8
 Boring Drilled @ Station 1990+80

Revised Aug 28, 1975

ROAD: IA. 62		DATE: AUG. 1971	
SOIL SURVEY			
STA. 1916+69.3 TO STA. 1018+89			
	SILTY CLAY LOAM		GRAY. SANDY LOAM
	SILTY CLAY		GRAVELLY SAND
	SILTY LOAM		GRAVELLY LOAM
	CLAY LOAM		SANDY LOAM
	CLAY		LOAMY SAND
	SILT		LOAM
	WATER		SAND
	CAVED IN		

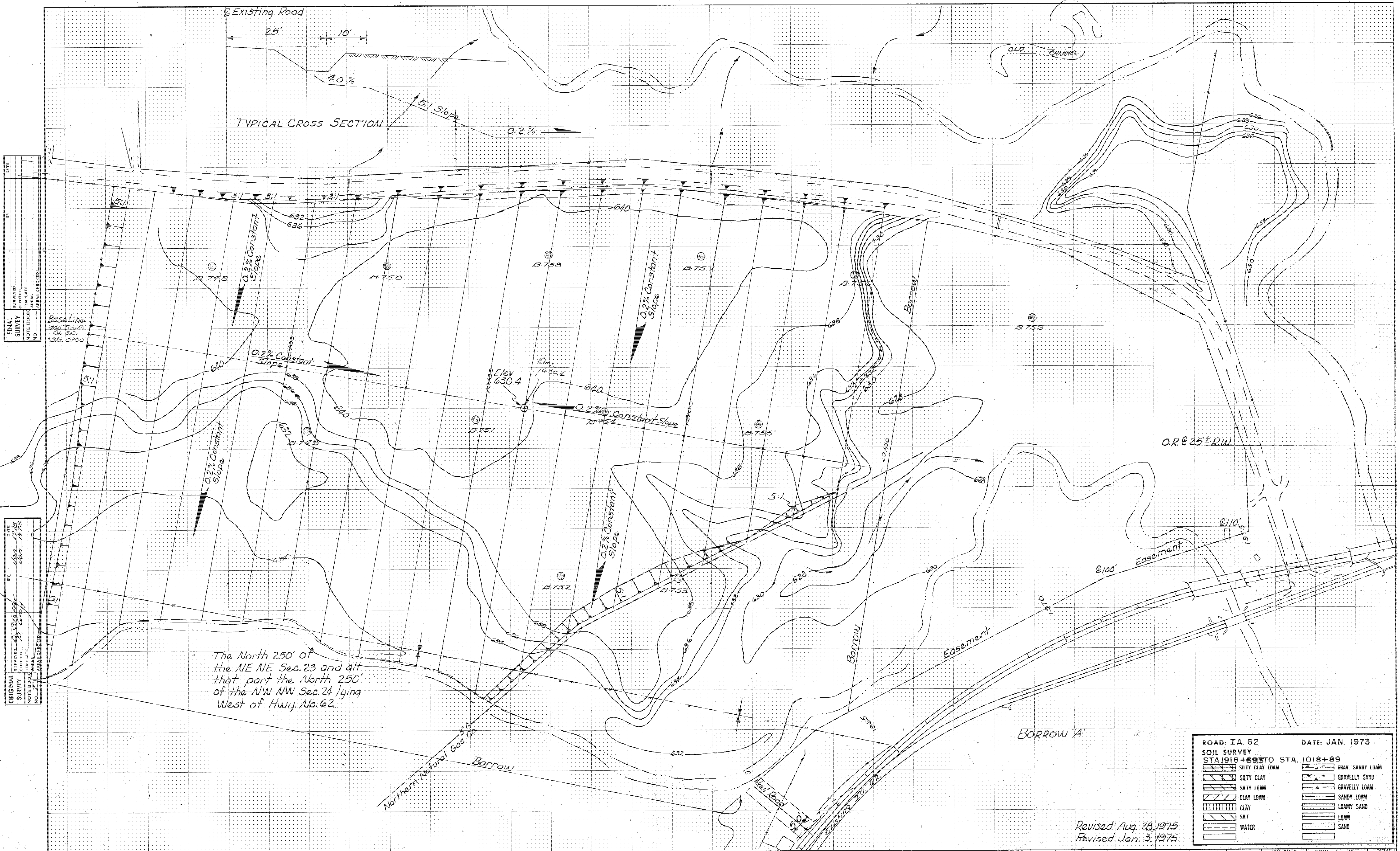
200 150 100 50 0 50 100 150 200 250
 H-1212 H-1242 H-1239
 Cross Section of Station 1952+00

150 100 50 0 50 100 150
 H-1233
 Cross Section of Station 1977+50

150 100 50 0 50 100 150
 H-1234
 Cross Section of Station 1978+45
 Boring Drilled @ Station 1978+60

DATE	BY	DATE	BY
FINAL SURVEY	SURVEYED	FLATTED	FLATTED
NO.	NO.	NO.	NO.

DATE	BY	DATE	BY
ORIGINAL SURVEY	SURVEYED	FLATTED	FLATTED
NO.	NO.	NO.	NO.



The North 250' of the NE NE Sec. 23 and all that part the North 250' of the NW NW Sec. 24 lying West of Hwy. No. 62.

ROAD: IA. 62
SOIL SURVEY
STA. 1916+00 TO STA. 1018+89

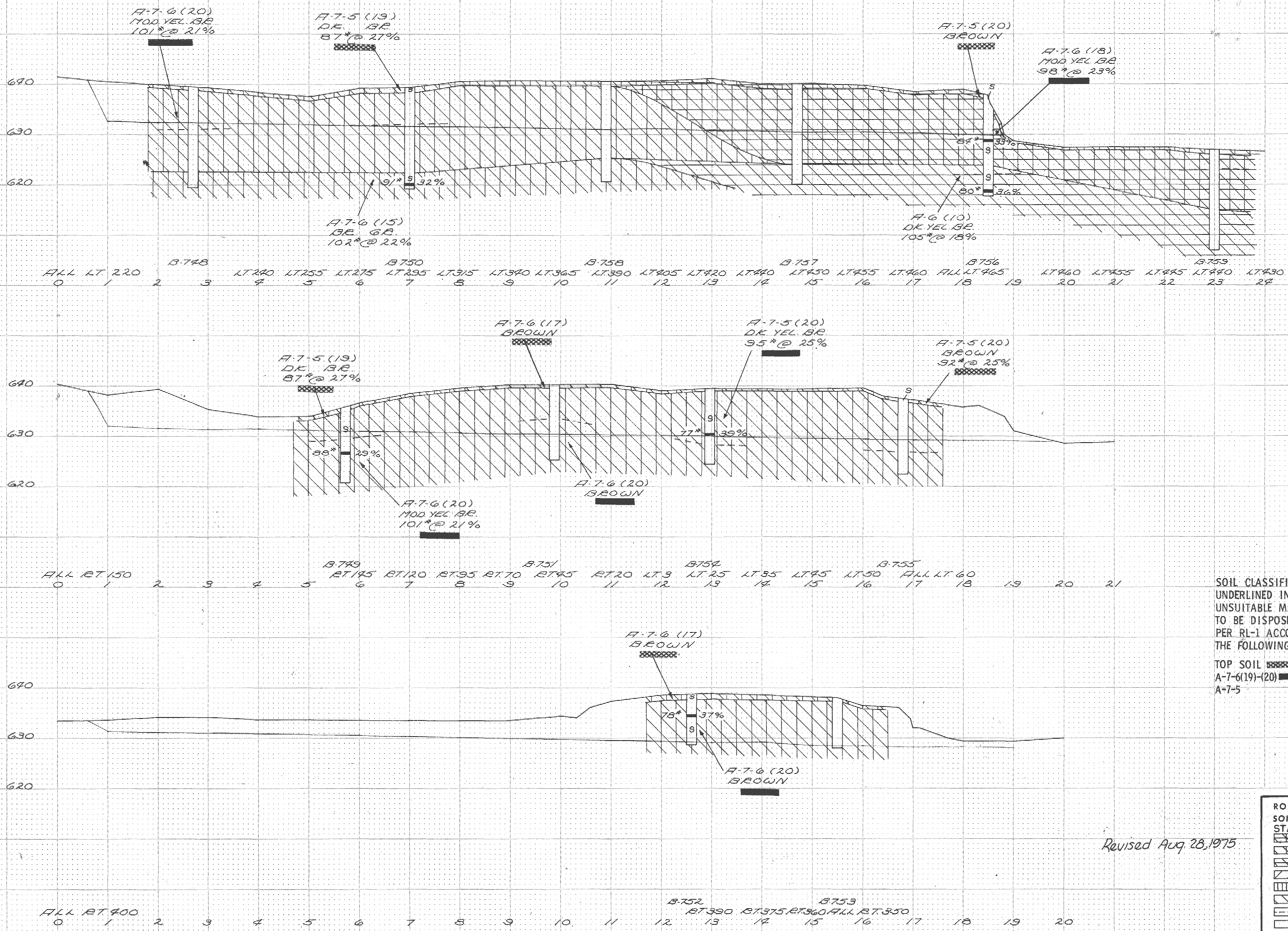
DATE: JAN. 1973

SILTY CLAY LOAM	GRAY SANDY LOAM
SILTY CLAY	GRAVELLY SAND
SILTY LOAM	GRAVELLY LOAM
CLAY LOAM	SANDY LOAM
CLAY	LOAMY SAND
SILT	LOAM
WATER	SAND

Revised Aug. 28, 1975
Revised Jan. 3, 1975

FINAL	SURVEYED	DATE
SURVEY	PLOTTED	10/27/73
NOTE BOOK	TEMPERATURE	122
NO.	AREAS CHECKED	

ORIGINAL	SURVEYED	DATE
SURVEY	PLOTTED	10/27/73
NOTE BOOK	TEMPERATURE	122
NO.	AREAS CHECKED	



SOIL CLASSIFICATIONS
 UNDERLINED INDICATE
 UNSUITABLE MATERIALS
 TO BE DISPOSED OF AS
 PER RL-1 ACCORDING TO
 THE FOLLOWING CODE:
 TOP SOIL A-7-6(19)-(20)
 A-7-5

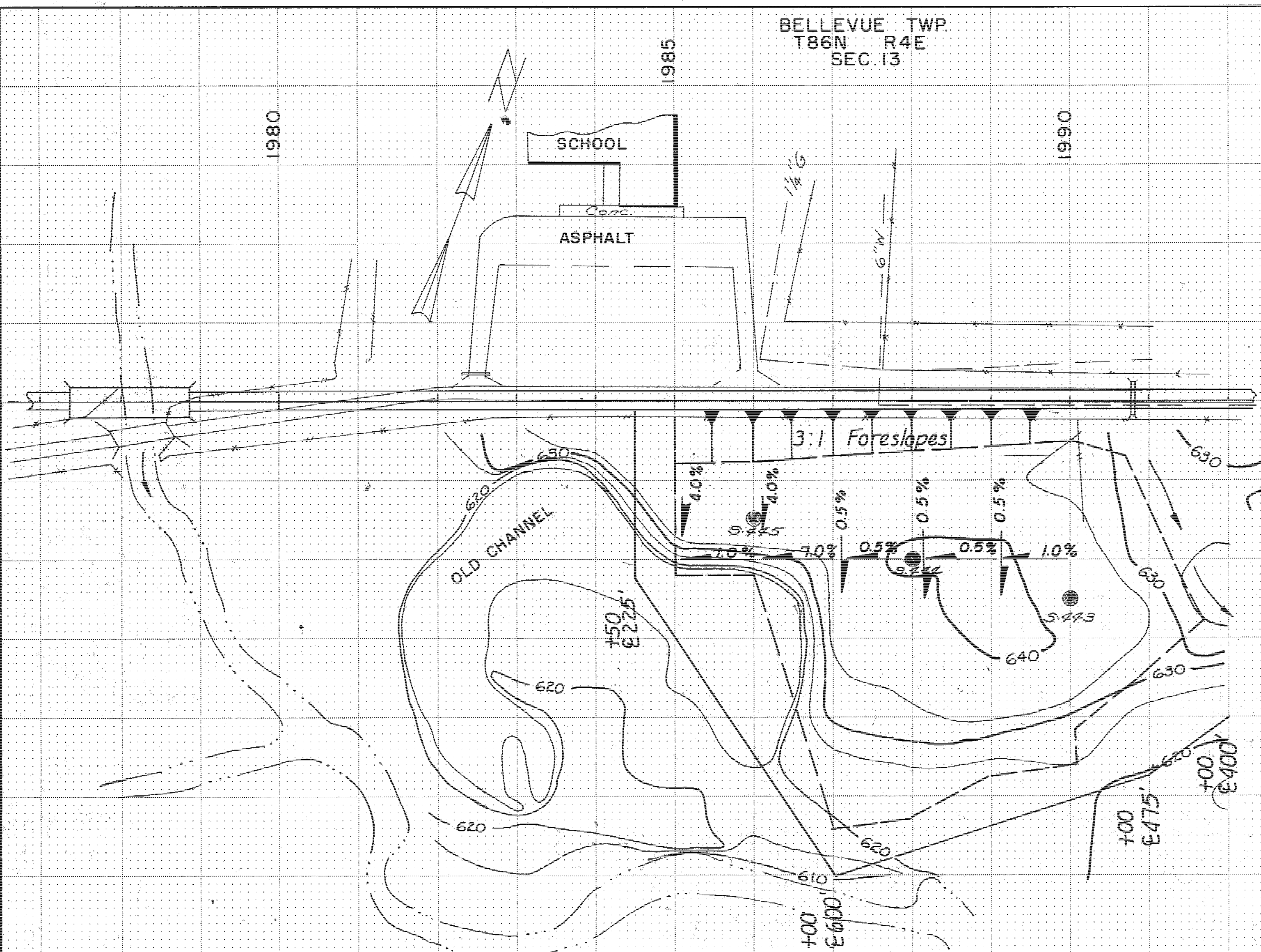
Revised Aug 28, 1975

ROAD: I.A. 62		DATE: JAN. 1973	
SOIL SURVEY		STA 1916+69.3 TO STA. 1018+89	
	SILTY CLAY LOAM		GRAY. SANDY LOAM
	SILTY CLAY		GRAVELLY SAND
	SILTY LOAM		GRAVELLY LOAM
	CLAY LOAM		SANDY LOAM
	CLAY		LOAMY SAND
	SILT		LOAM
	WATER		SAND

FINAL	SURVEYED	BY	DATE
SURVEY	PLOTTED		
NOTE BOOK	NO.		
AREAS CHECKED			

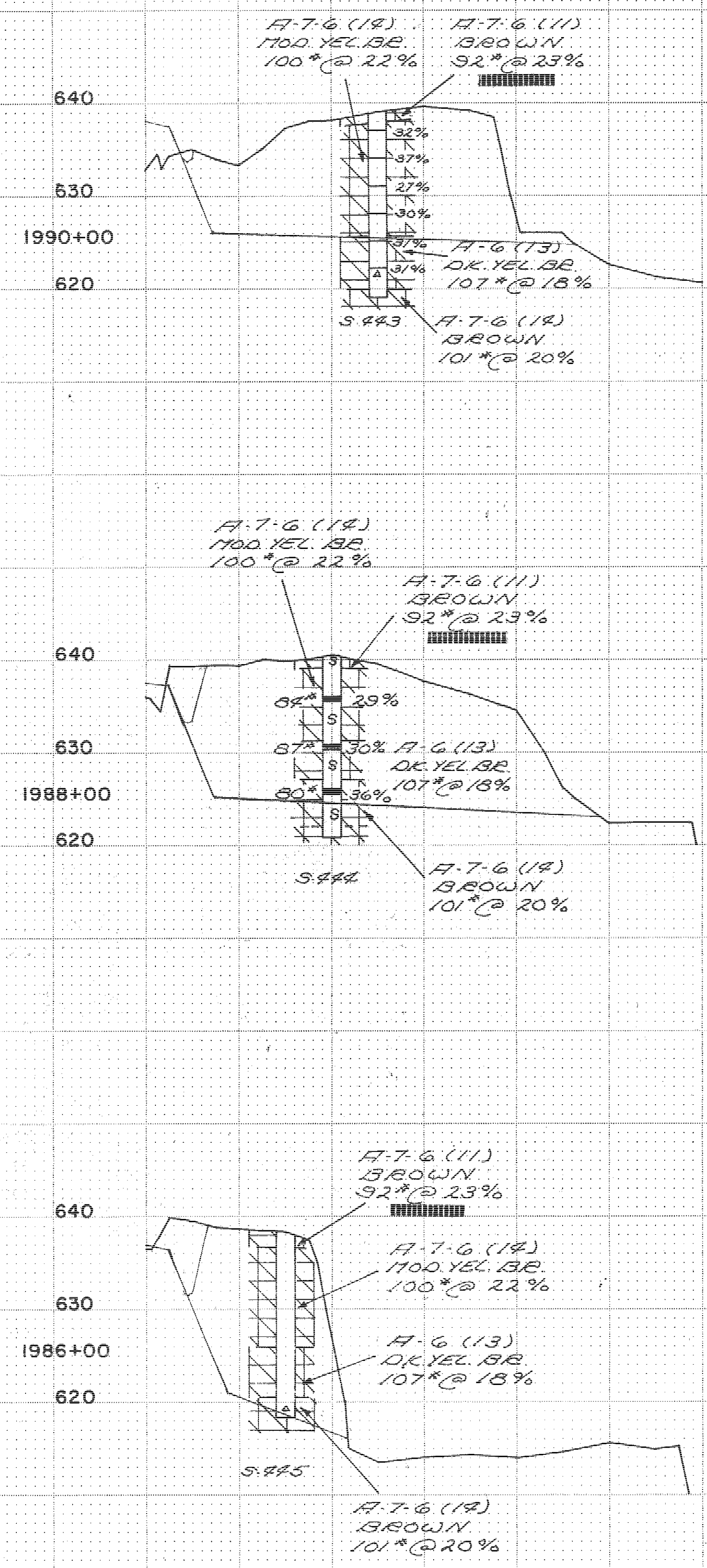
ORIGINAL	SURVEYED	BY	DATE
SURVEY	PLOTTED		
NOTE BOOK	NO.		
AREAS CHECKED			

BELLEVUE TWP.
T86N R4E
SEC. 13



SOIL CLASSIFICATIONS
UNDERLINED INDICATE
UNSUITABLE MATERIALS
TO BE DISPOSED OF AS
PER RL-1 ACCORDING TO
THE FOLLOWING CODE:

TOP SOIL
A-7-6(19)-(20)
A-7-5



Revised Aug 28, 1975

ROAD: IA. 62		DATE: AUG. 1971	
SOIL SURVEY			
STA. 1916+69.3 TO		STA. 1018+89	
	SILTY CLAY LOAM		GRAV. SANDY LOAM
	SILTY CLAY		GRAVELLY SAND
	SILTY LOAM		GRAVELLY LOAM
	CLAY LOAM		SANDY LOAM
	CLAY		LOAMY SAND
	SILT		LOAM
	WATER		SAND
	CAVED IN		

HYWY. CROSS SECTION TELETYPE POST

SOILS DESIGN

JACKSON COUNTY

PROJECT NUMBER
FN-62-1(4)--21-49

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		25	210

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-19

SEE STANDARD ROAD PLAN (RL-1)

STATION	TEMPLATE CUT	ADDITIONAL QUANTITY + C	SUBGRADE TREATMENT + C	MOISTURE AND DENSITY + C	SELECT SOIL - C	PAVEMENT REMOVAL - C	ROCK - C	SUBGRADE TREATMENT ROCK - C	ADJUSTED EARTH	UNSUITS	UNSUITS C-5	ROCK CUT	ADDITIONAL ROCK CUT + C	SWELL FACTOR %	ADJUSTED ROCK + SWELL	TEMPLATE FILL	ADDITIONAL QUANTITY + F	SUBTRACT QUANTITY - F	SUBGRADE TREATMENT - F	MOISTURE AND DENSITY + F	PAVEMENT REMOVAL	ROCK FILL			ADJUSTED FILL	UNSUITS FILL	SHRINKAGE FACTOR %	ADJUSTED FILL + SHRINK	UNSUITS FILL + SHRINK	MASS DIAGRAM ORDINATE SUITABLE	MASS DIAGRAM ORDINATE UNSUIT.	BALANCE
1916+69.3		STAGE 1A																														
1918+00	210			366					576							218				366					584		30%	759				
1919+00	444			309					753							87				309					396			515				
1920+00	1193			313					1506							0				313					313			407				
1921+00	2465			313					2778							0				313					313			407				
1922+00	5754			313			178		5889			178		10%	196	0			24	313					289			376				
1923+50	13268		144				555		12857			555			611	0			0					0				0				
1924+40	11687		86				1233	67	10473			1233	67		1430	0			0					0				0				
1925+54	19225		109				5573	109	13652			5573	109		6250	0			0					0				0				
1927+00	23047		140				8768	140	14279			8768	140		9799	0			0					0				0				
1928+00	13000		96				6333	96	6667			6333	96		7072	0			0					0				0				
1929+00	11070	APP. CUT	96				5574	96	5496			5574	96	STOCKPILE		6237	0	APP. F.	0					0				0				
1930+22	3890	2000	78				2179	66	1179 2548			2179	66	ROCK C.		780/1690	575	425	39					303 658				394/855				
1931+50	5605		102				5292	90	325			5292	90	2190	3192	1457			21					1436				1867				
1932+66	9115		111				9115	111	0			9115	111	5235	3991	0			0					0				0				
1934+00	1468		92				971	42	547			971	42	229	784	574	APP. F.		37					537				698				
1935+00	1429		96				806	17	702			806	17	347	476	9	262							271				352				
1936+10	5781		106				5488	106	293			5488	106	999	4595	0								0				0				
1937+18	5900		104				5752	104	148			5752	104		6734	0								0				0				
1938+46	6227		123				6227	123	0			6227	123		7303	0								0				0				
1939+64	10660		113				10660	113	0			10660	113		12389	0								0				0				
1941+00	26766		131				24984	131	1782			24984	131		28882	0								0				0				
1942+00	12652		96				11793	96	859			11793	96		13672	0								0				0				
1943+00	5898		94				5289	80	623			5289	80		6174	535	DIKE		2		48	218	48	315				410				
1944+00	2217		25				1532	16	694			1532	16		1780	4583	1271		47		6	1948	608	3257	485			3604	630			
1945+00	454						390		64			390			449	9798	1214							5533				7193				
1946+00	0								0							13696	429							7223				9390				
1947+00	274								274							16639	DIKE							8508				11060				
1948+00	274								274							22009	2782							12677				16480				
1949+00	0								0							28252	2273							15608				20290				
1950+00	0								0							32370	1684							17412				22636				
1951+00	0								0							38044	5232				2300/19338			21638		30/25		2531/24632				
1952+00	0								0							45244	DIKE							26289				32861				
1953+00	0								0							49800	2863							36249				45311				
1954+00	0								0							51754								50300				62875				
1955+00	0								0							51343								51343				64179				
1956+00	0								0							48595								48595				60744				
1957+00	214								214							42335								42335				52919				
1958+00	464								464							35341								35341				44176				
1959+00	250								250							29844								29844				37305				
1960+00	0								0							24854								24854				31068				
1961+00	0								0							10898								10898				13622				
1950+00		STAGE 1B																														
1951+00	0								0																							

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-19

SEE STANDARD ROAD PLAN (RL-1)

STATION	TEMPLATE CUT	ADDIT. QUANTITY + C	SUBGRADE TREATMENT + C	MOISTURE AND DENSITY + C	SELECT SOIL - C	PAVEMENT REMOVAL - C	ROCK - C		Unsuit. Topsoil (Waste) - C	ADJUSTED EARTH	UNSUIT.	UNSUIT C-5	ROCK CUT	ADDIT. ROCK CUT + C		SWELL FACTOR %	ADJUSTED ROCK + SWELL	TEMPLATE FILL	ADDIT. QUANTITY + F	SUBTRACT QUANTITY - F	SUBGRADE TREATMENT - F	MOISTURE AND DENSITY + F	PAVEMENT REMOVAL	ROCK FILL			ADJUSTED FILL	UNSUIT. FILL	SHRINK-AGE FACTOR %	ADJUSTED FILL + SHRINK	UNSUIT FILL + SHRINK	MASS DIAGRAM ORDINATE SUITABLE	MASS DIAGRAM ORDINATE UNSUIT.	BALANCE
BRIDGE																			C&W															
1974+67.33										95								1919	182									2101		30	2731			
1975+85	95																	3409	712									4121			5357			
1977+43.50	58									58																								
BRIDGE																																		
1978+90.67																			C&W															
1980+00	0									0								1601	499									2100			2731			
1981+00	0									0								446										446			580			
1982+00	0									0								804										804			1045			
1983+00	478									478								444										444			577			
1984+00	1461									1461								30										30			39			
1985+00	1446									1446								6										6			8			
1986+00	1011									1011								4										4			5			
1987+00	1124									1124								2										2			3			
1988+00	1133									1133								0										0			0			
1989+00	1043									1043								28										28			36			
1990+00	750									750								33										33			43			
1991+80	139									139								585					7					592			770			
1993+00	3			7						10								90					17					107			139			
1994+75	5			17						22								57										57			74			
End Div. I																																		
Begin Div. II																																		
1994+75																																		
1996+18.2	3									3								37										37			48			
-996+18.2	Equation																																	
997+00	4									4								20										20			26			
998+00	1									1								27										27			35			
999+00	4									4								28										28			36			
1000+00	1									1								37										37			48			
Stage - I(LE)																																		
1000+00	27									27								106										106		35	143			
1001+00	25	App. Cut								25								126	App. Fill									126			170			
1002+00	36	17								53								20	4									24			32			
1003+00	50	17								67								3										3			4			
1004+00	33	21								54								24										24			32			
1005+00	37	20								57								46										46			62			
1006+00	37									37								168										168			227			
1007+00	23									23								296										296			400			
1008+00	51									51								415										415			560			
1010+00	24									24								50										50			68			
1011+00	21									21								39										39			53			
1012+00	37									37								26										26			35			
1013+00	96									96								11										11			15			
1014+00	61									61								6										6			8			
1015+00	23									23								70										70			95			
1016+00	115									115								589										589			795			
1017+00	37									37								15										15			20			
1018+00	22									22								47										47			63			
1018+90.9	0									0								4										4			5			
1018+99																																		
End of Sidewalk																																		
Stage - I(Rt.)																																		
1000+00	27									27								159										159		35	215			
1001+00	167									167																								

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

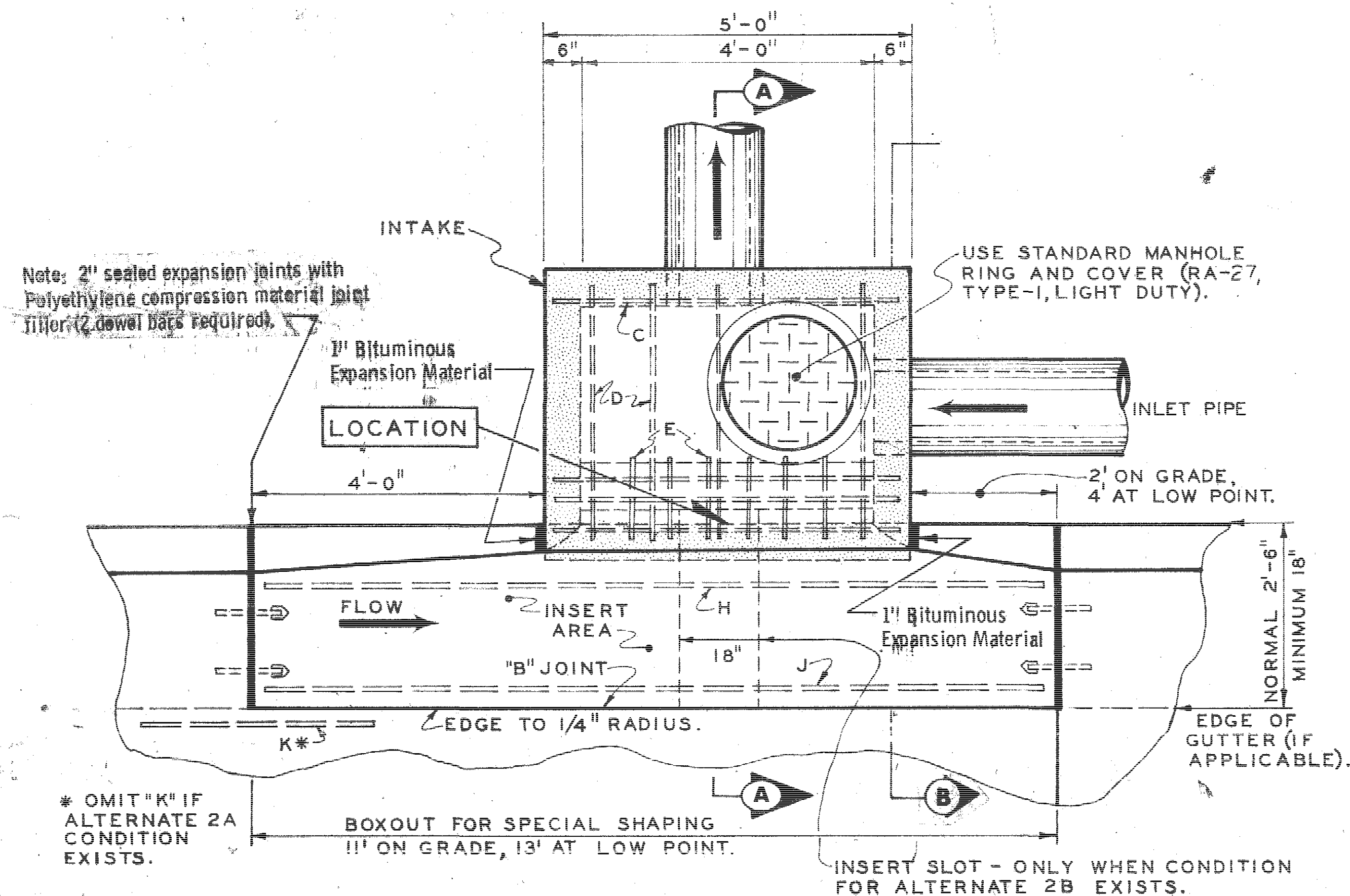
SEE STANDARD ROAD PLAN (RL-1)

107-19

STATION	TEMPLATE CUT	ADDIT. QUANTITY + C	SUBGRADE TREATMENT + C	MOISTURE AND DENSITY + C	SELECT SOIL - C	PAVEMENT REMOVAL - C	ROCK - C		ADJUSTED EARTH	UNSUIT	UNSUIT C-5	ROCK CUT	ADDIT. ROCK CUT + C		SWELL FACTOR %	ADJUSTED ROCK + SWELL	TEMPLATE FILL	ADDIT. QUANTITY + F	SUBTRACT QUANTITY - F	SUBGRADE TREATMENT - F	MOISTURE AND DENSITY + F	PAVEMENT REMOVAL + F	ROCK FILL	Broken Conc. - F		ADJUSTED FILL	UNSUIT. FILL	SHRINK-AGE FACTOR %	ADJUSTED FILL + SHRINK	UNSUIT FILL + SHRINK	MASS DIAGRAM ORDINATE SUITABLE	MASS DIAGRAM ORDINATE UNSUIT.	BALANCE
1011+00	19								19								502										502		35	678			
1012+00	14								14								554										554			748			
1013+00	25								25								127										127			171			
1014+00	44	App. Cut							44								9	App. Fill									9			12			
1015+00	23	10							33								11	4									15			20			
1016+00	115								115								450										450			608			
1017+00	19								19								490										490			662			
1018+00	17								17								34										34			46			
1018+90.9	0								0								0										0			0			
1018+99																																	
End of Sidewalk																																	
Stage 2																																	
1979+00	0								0								1094							350			744		25	930			
1980+00	91								91								1086										746			933			
1981+00	53			28					81								396					28	42				466			583			
1982+00	0			61					61								389					61	52				502			628			
1983+00	0			56					56								415					56	52				523			654			
1984+00	0			33					33								300					33	52				385			481			
1985+00	0			72					72								187					72	52				311			389			
1986+00	0			111					111								144					111	52				307			384			
1987+00	22			132					154								130					132	52				314			393			
1988+00	22			135					157								165					135	52				352			440			
1989+00	0			130					130								233					130	52				415			519			
1990+00	0			73					73								833					73	93		181		818			1023			
1991+80	0			11					11								359					11	57				427			534			
1993+00	17		87	25		11			118								289				49	25	57				322			403			
1994+75																																	
End Div. I																																	
Begin Div. I																																	
1994+75	93		110			44			159								122				2		10				130		50	195			
1996+18.2																																	
Equation:																																	
-996+18.2	89		64			30			123								37										37		50	56			
997+00	119		78			37			160								29										29			44			
998+00	101		78			37			142								37										37			56			
999+00	71		78			37			112								51										51			77			
1000+00																																	
Stage 3																																	
BRIDGE																																	
1974+67.33	1398					61			1337								0										0			0			
1975+85	1688					82			1606								0										0			0			
1977+43.5																																	
BRIDGE																																	
1978+90.67	80					10			70								158						48				206		30	268			
1980+00	0								0								269						42				311			404			
1981+00	0								0								232						10				242			315			
1982+00	0								0								302										302			393			
1983+00	0								0								298										298			387			
1984+00	0								0								235										235			306			
1985+00	0								0								239										239			311			
1986+00																																	

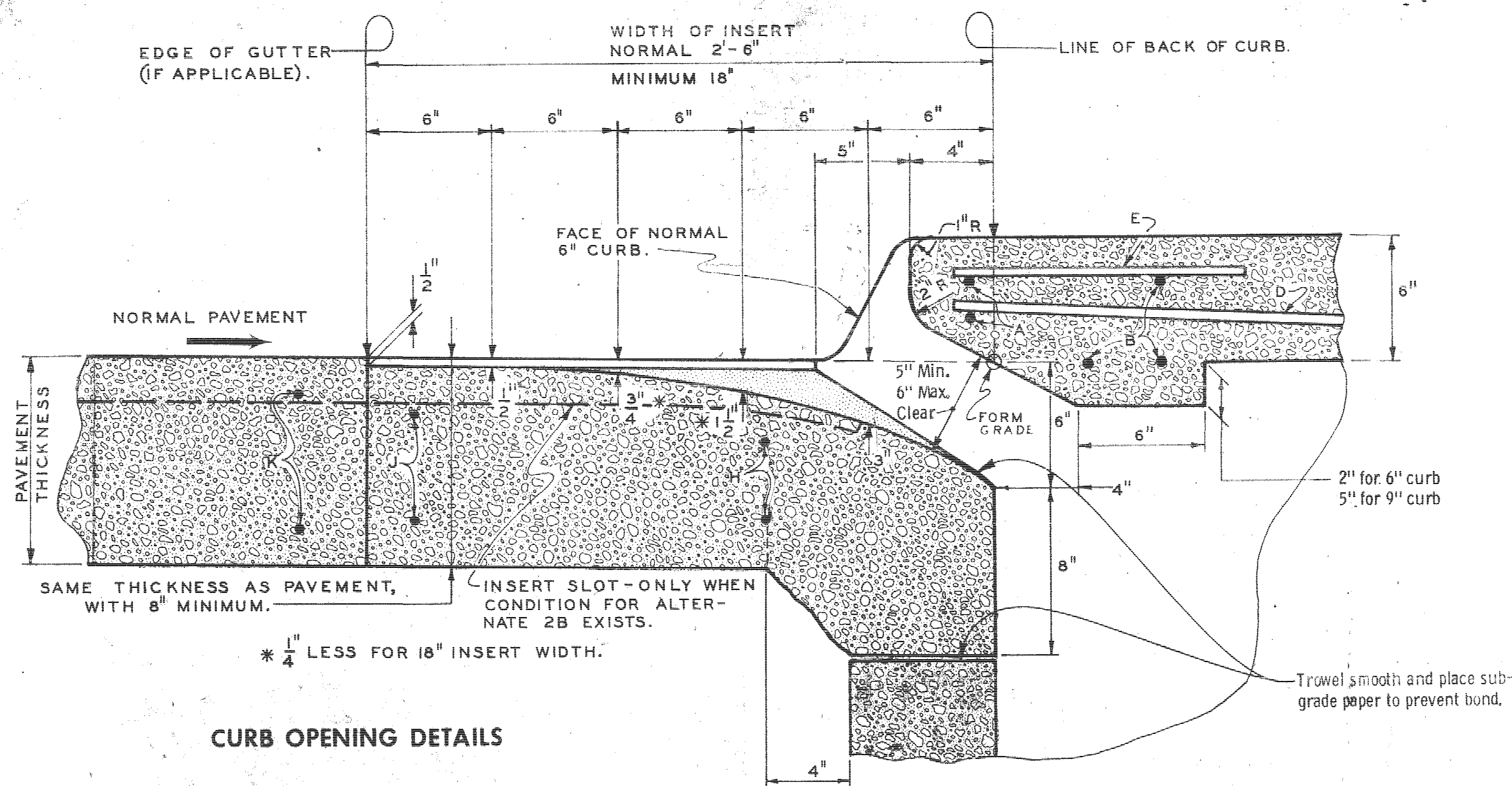
SEE STANDARD ROAD PLAN (RL)

Revised Aug. 28, 1975



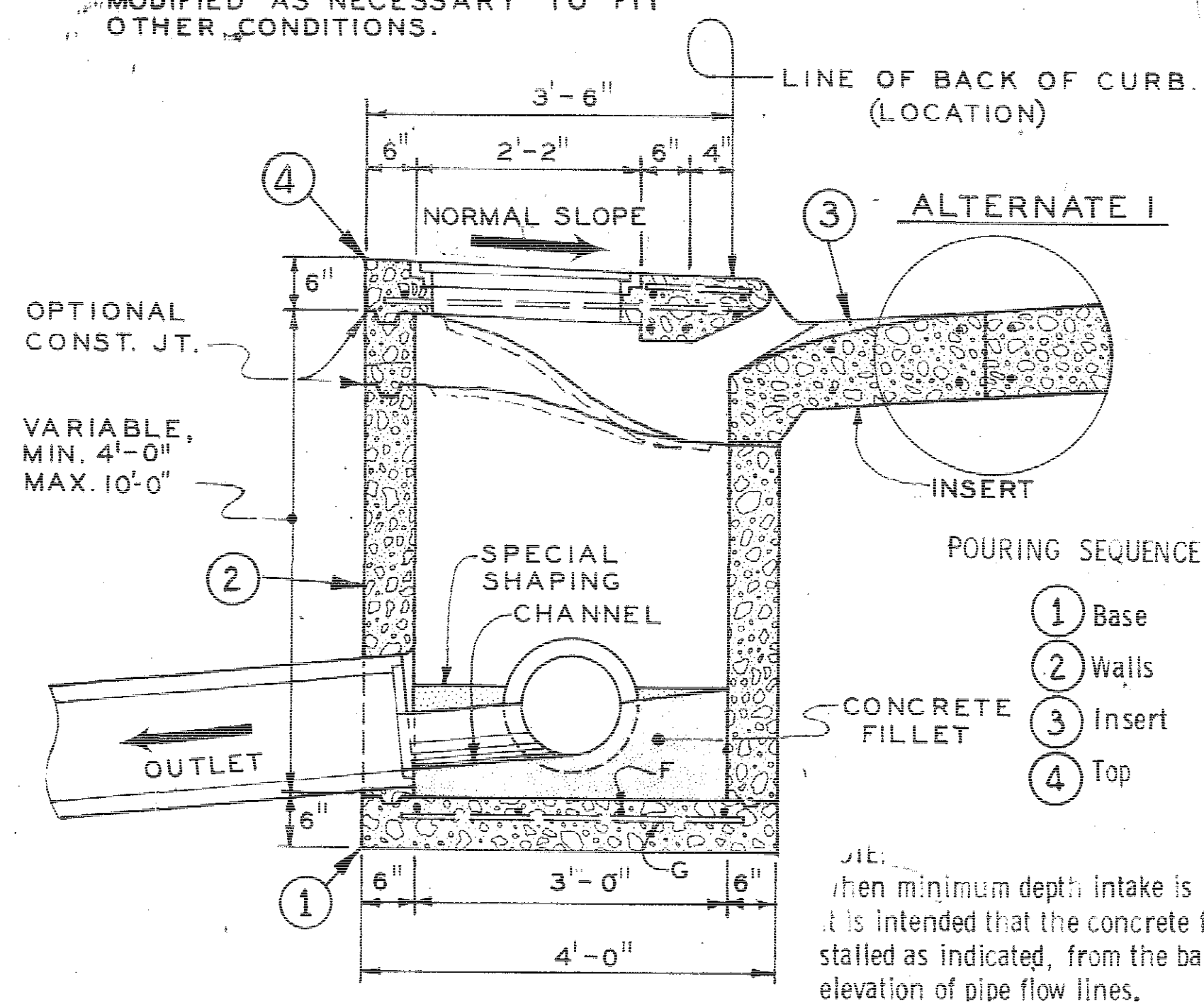
PLAN VIEW

NOTE: "LOCATION" POINT IS C OF INTAKE AT BACK OF CURB.

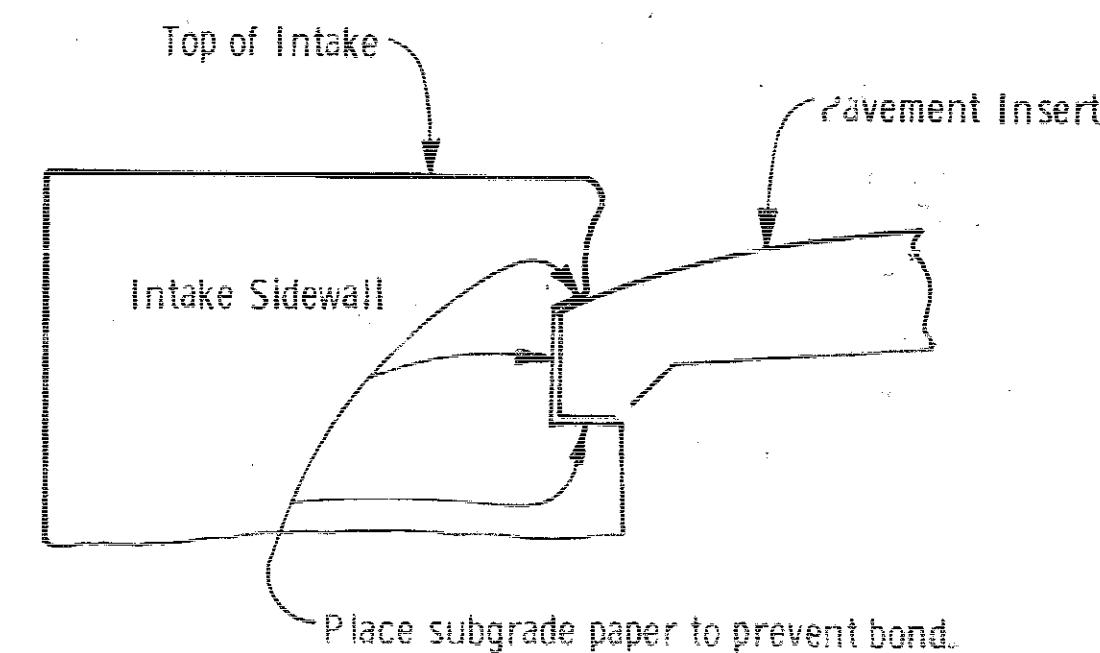


CURB OPENING DETAILS

NOTE: NORMAL SLOPE OF 4% MAY BE MODIFIED AS NECESSARY TO FIT OTHER CONDITIONS.



SECTION A-A



SECTION B-B

REINFORCING SCHEDULE			
MARK	LENGTH	NO. REQ.	SPACING
A	4'-9"	2	SEE DETAIL
B	4'-9"	3	SEE DETAIL
C	4'-9"	1	SEE DETAIL
D	3'-4"	4	SEE DETAIL
E	1'-2"	8	6"
F	4'-9"	4	13"±
G	3'-9"	5	13"±
H	10'-6"	2 *	SEE DETAIL
J	10'-6"	2 *	SEE DETAIL
K	3'-0"	2	SEE DETAIL

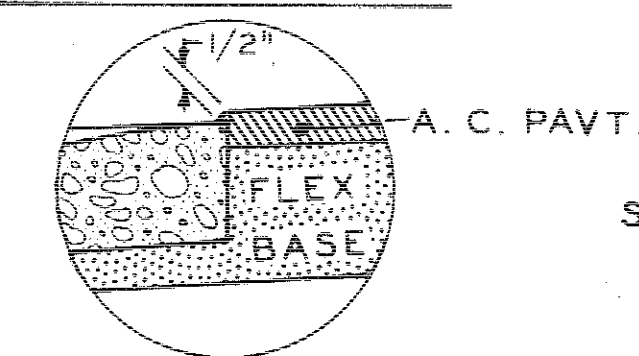
NOTE: ALL REINFORCING STEEL, NO. 4 BARS, PLACED APPROXIMATELY 1-1/2" CLEAR OF CONCRETE SURFACES.

* 2' LONGER WHEN USING 13' BOXOUT.

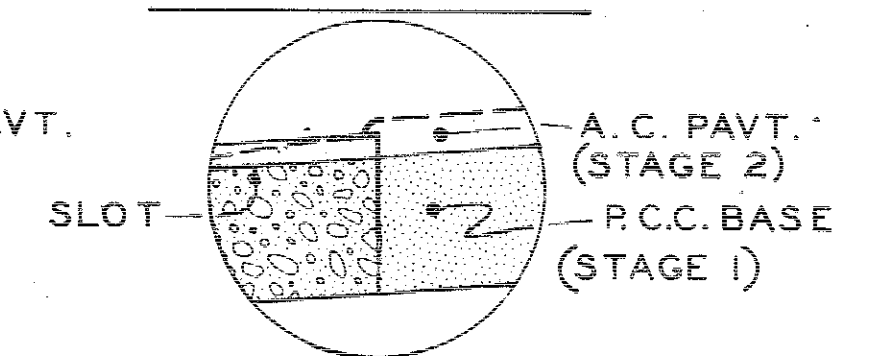
NOTE:

Details indicated hereon are for construction of intake conforming to construction of normal 6" curb (6101) as a part of pavement. Appropriate minor modification may be made to conform to other curb shape when necessary. Where 9" curb is specified for pavement construction, the intake design shall be adjusted as indicated, or as otherwise directed by the engineer.

ALTERNATE 2A



ALTERNATE 2B



CONSTRUCTION CONDITIONS

ALTERNATE 1 - For use when adjacent pavement is P. C. Concrete.

ALTERNATE 2A -- For use when adjacent pavement is Asphaltic Concrete surface with P. C. Concrete base and/or curb and gutter unit.

ALTERNATE 2B - Same as 2A except adjacent pavement is built in stages. A slot is constructed in the insert area to facilitate draining the surface of the base until the final Asphaltic Concrete is placed. When the surface course is constructed the slot, in the insert area, shall be carefully filled in as directed by the Engineer.

GENERAL NOTES:

Construction of Intake, as shown hereon, shall be in accordance with current Iowa State Highway Commission Standard Specifications for Storm Sewer(Intakes) and applicable portions of current specifications for Structural Concrete. Vibration of concrete is required.

Insert area shall be included with the quantities for either concrete pavement or curb and gutter. Special shaping of insert area shall be included with price bid for Intake. Concrete for insert area may be either concrete for "Intake" or "Pavement". Finish of "Insert" shall be same as pavement. Finish for the intake top or any portion exposed shall be as required for Structural Concrete.

Storm sewer pipe should be installed before intake sidewall construction is started. Sidewalls shall be constructed as indicated with openings for storm sewer smoothly shaped and no inlet pipes projecting unnecessarily into well. Outlet pipes shall not project beyond inside face of sidewall.

Construction joints, in sidewalls shall be formed with keyways or tie bars to ensure bond between concrete pours.

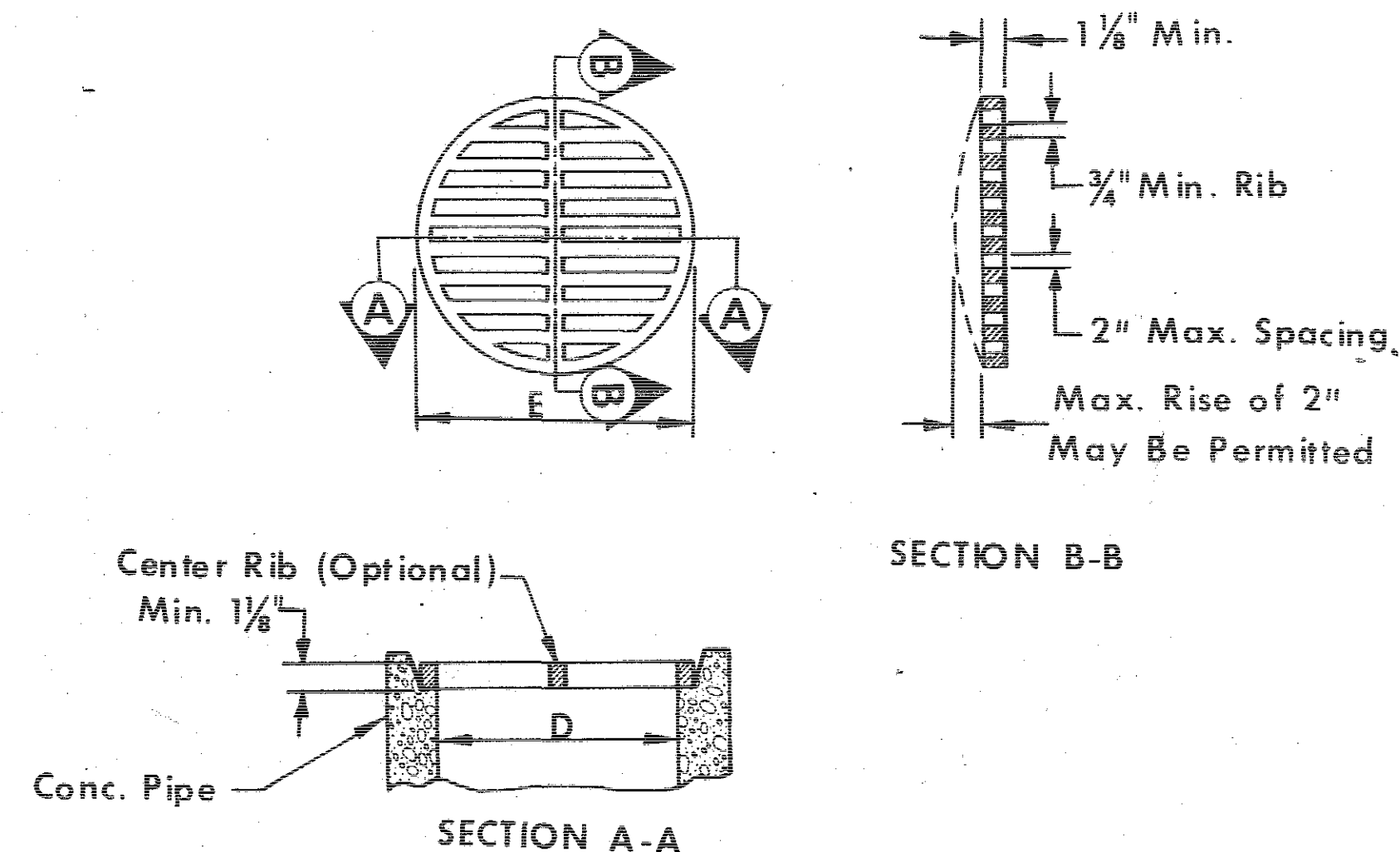
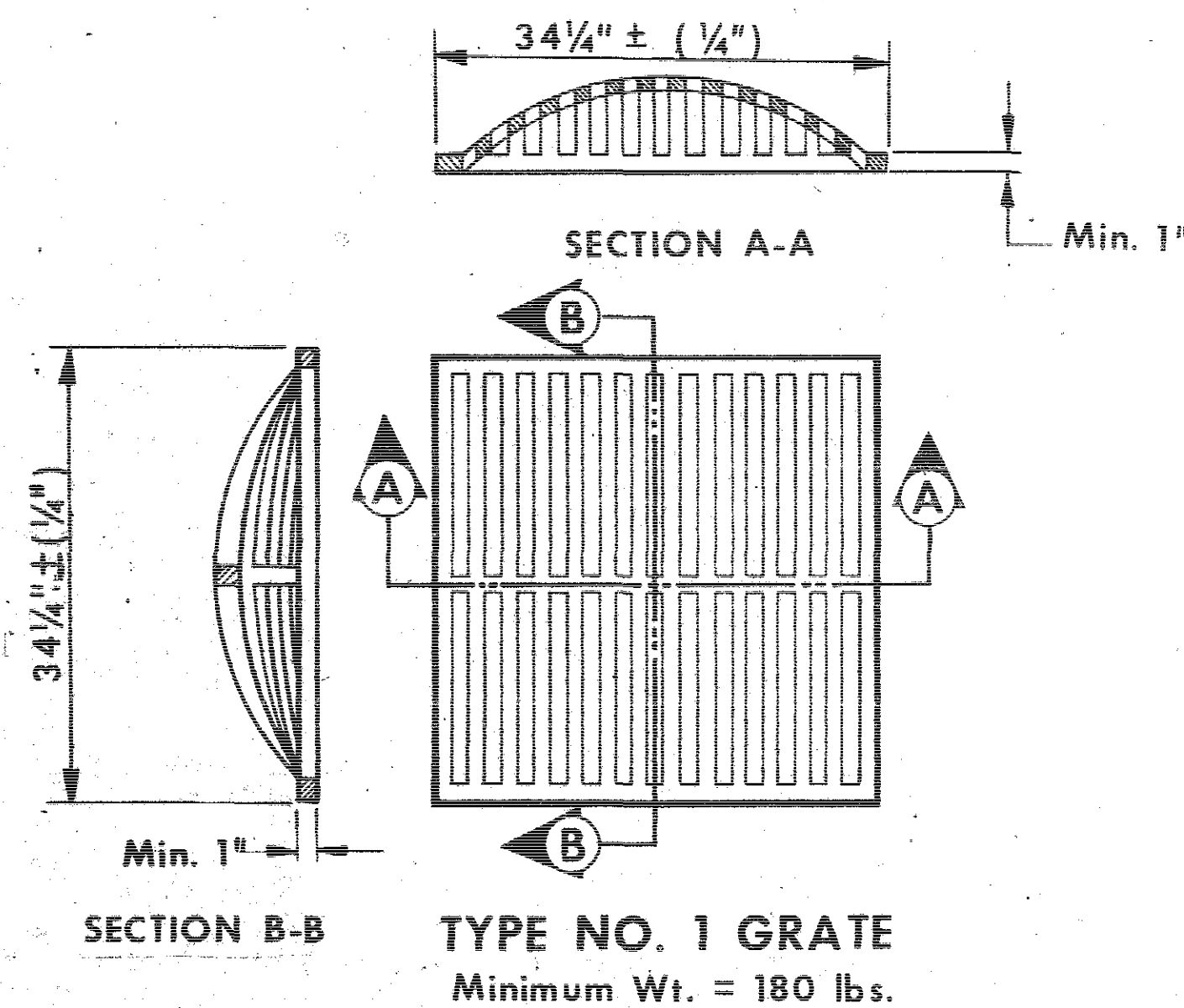
Joints in pavement, adjacent to intake, shall be as shown on Standard Road Plan RH-2. Any transverse pavement joints shall stop at edge of insert area. Joint locations shall be as indicated hereon, except where specifically modified by other plan drawings or by the Engineer. "C" joint at end of insert shall extend through to an opposite form line.

A concrete fillet shall be placed in the bottom of the intake approximately as indicated and as directed by the Engineer. Special shaping of this fillet is required to provide a smooth channel through the intake. Top surface of the fillet shall slope approximately 1 inch per foot toward the channel.

Storm sewer pipe locations shown hereon are typical. Refer to detail project plans for additional data.

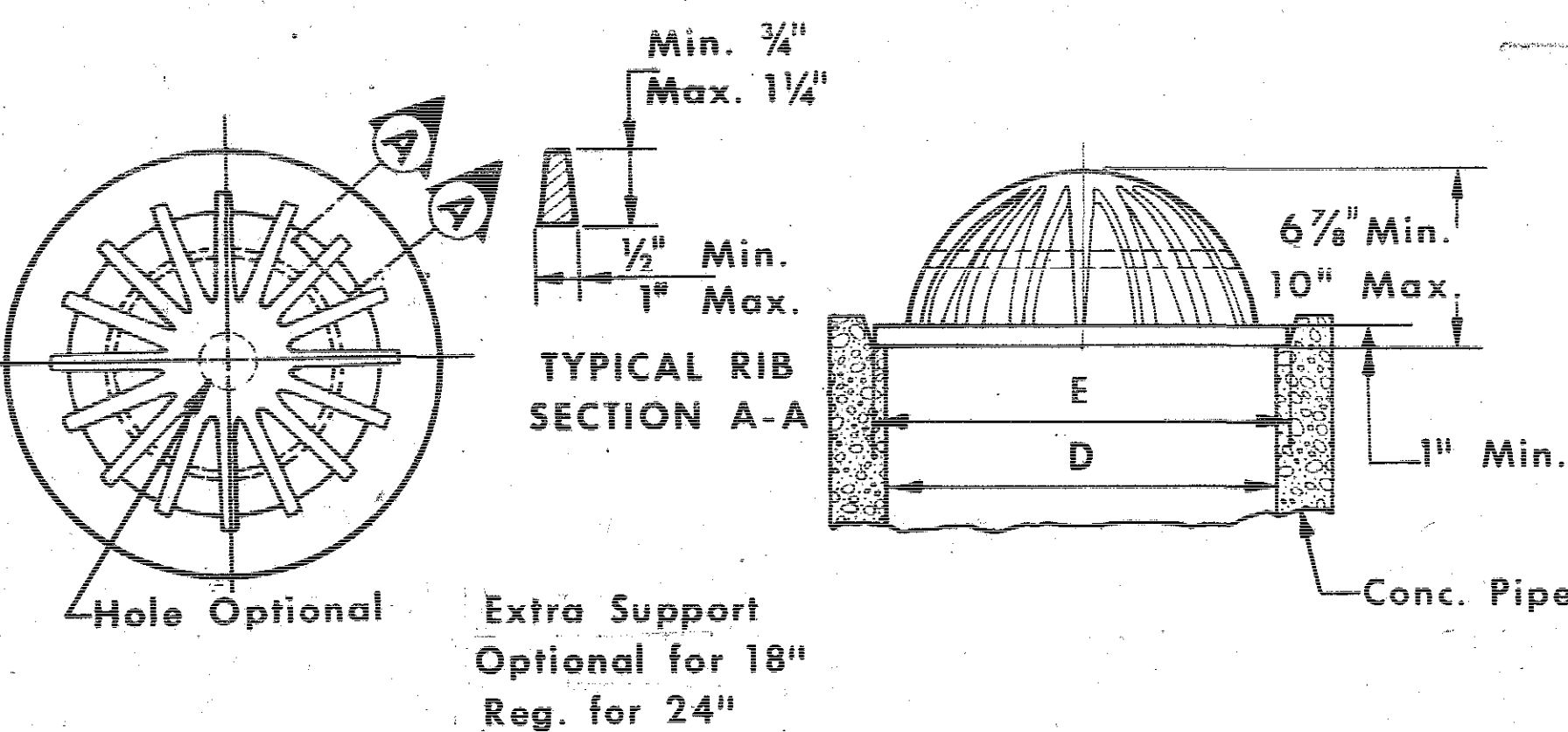
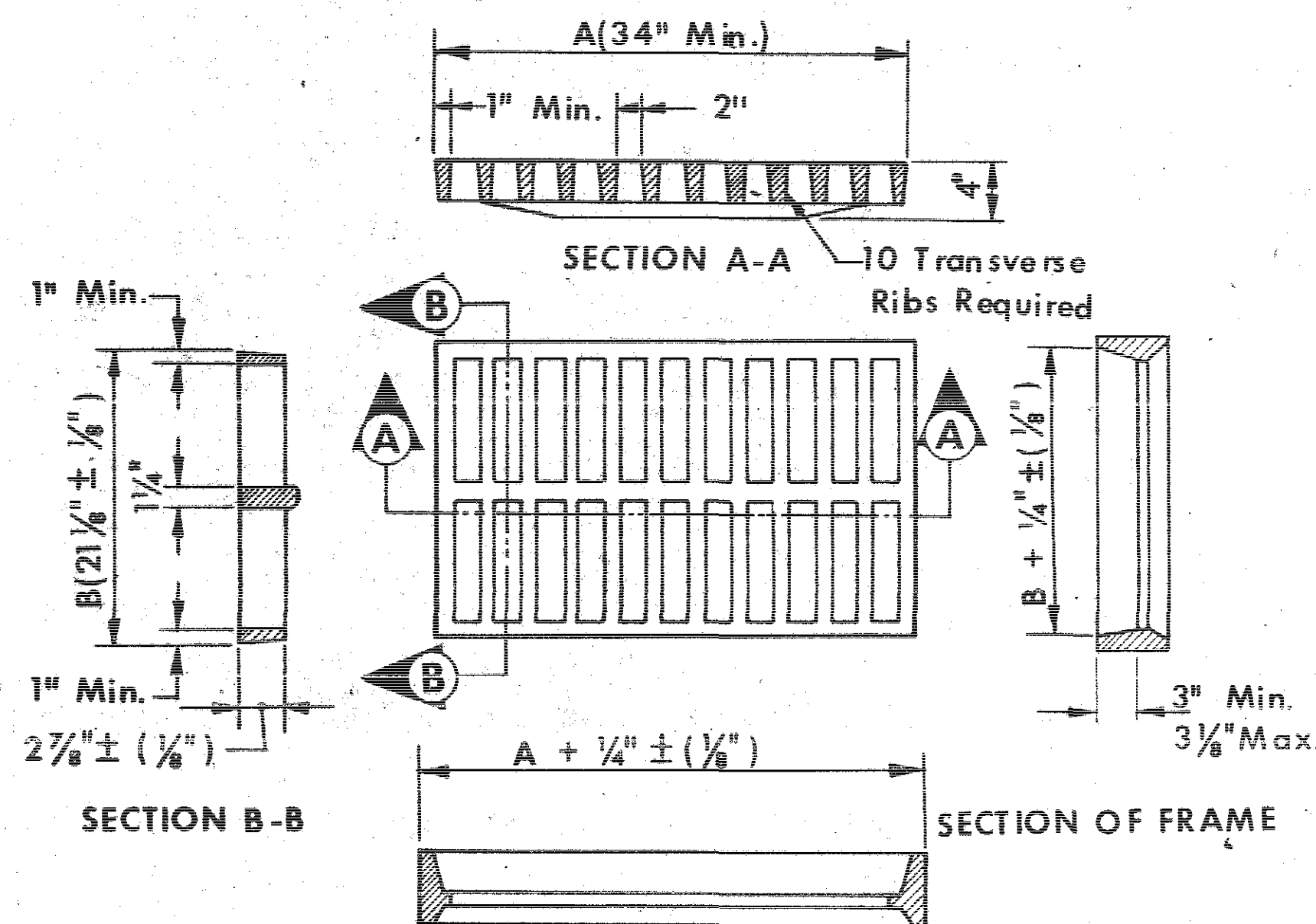
Price bid for Intake shall include all necessary excavation and backfill, as well as special shaping of insert area, bottom fillet, and other details essentially as shown hereon.

IOWA HIGHWAY COMMISSION	
STANDARD ROAD PLAN RA-3	
RECOMMENDED	Jack C. Dellbridge 3/10/67 ROAD ENGINEER DATE H. P. Thompson 3/13/67 DESIGN ENGINEER DATE
APPROVED	R. L. Owen 4/6/67 DEPUTY CHIEF ENGINEER DATE
CURB INTAKE SHALLOW WELL	
STATE	IOWA
FED. ROAD DIST. NO.	5
LOCAL YEAR	1967
SHEET NO.	30
TOTAL SHEETS	210

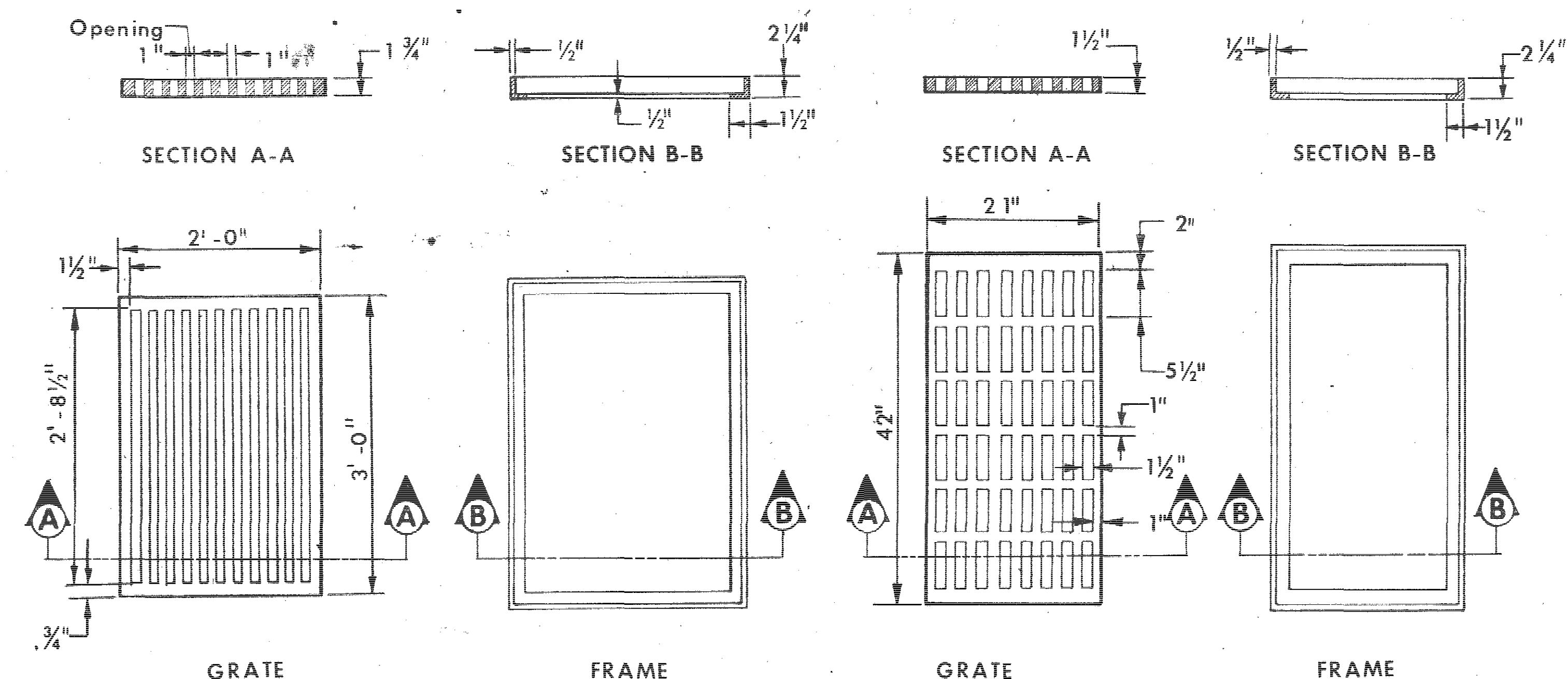
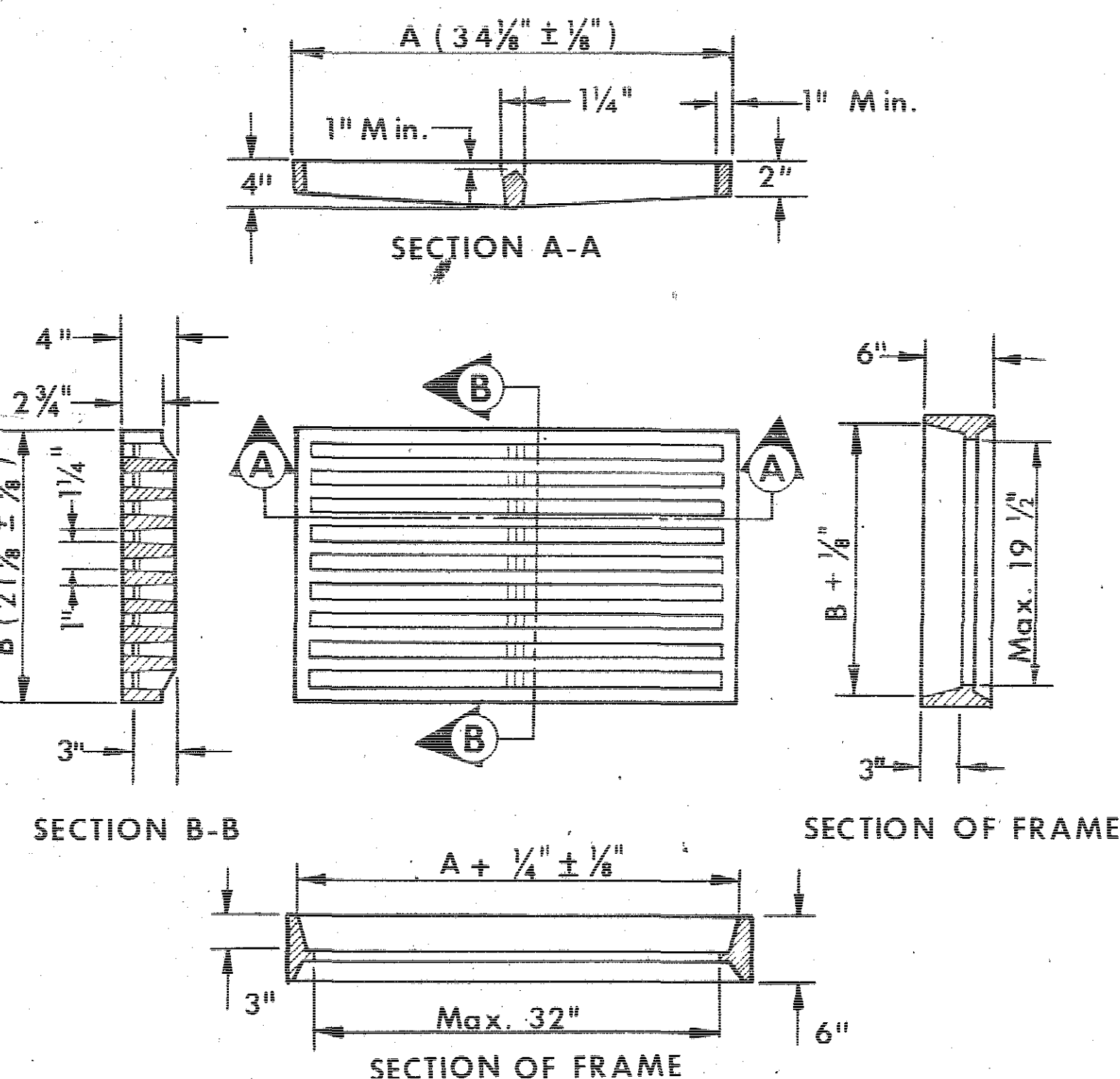


TYPE	D	E	F	G	H	MIN. WT.
4A	18	19 7/8" ± (1/8")	3/4" Min.	2" Max.	1 1/8" Max.	65 lbs.
4B	24	26 7/8" ± (1/8")	3/4" Min.	2" Max.	1 1/8" Max.	100 lbs.
4C	30	32 7/8" ± (1/8")	1" Min.	2" Max.	1 1/2" Max.	160 lbs.
4D	36	38 7/8" ± (1/8")	1" Min.	2" Max.	1 1/2" Max.	250 lbs.

TYPE NO. 4 FRAME: The frame is required only when specified in detail plans. Frame shall be of adequate and proper dimensions to satisfactorily accommodate the grate. Minimum Weight A=50 lbs., B=80 lbs., C=125 lbs. and D=200 lbs.



TYPE	D	E	Min. Wt.	Min. No. Ribs
3A	18	19 7/8" ± (1/8")	75 lbs.	16
3B	24	26 7/8" ± (1/8")	110 lbs.	20



GENERAL NOTES:

All castings shall be Class 30 gray iron castings complying with current Iowa State Highway Commission Standard Specifications and shall be essentially as detailed hereon. The castings illustrated hereon are only typical, however, and alternate designs for similar situations may be submitted to the Engineer for approval. Minimum dimensions and weight requirements must be met unless specific authorization is received for any such deviation. All castings subject to roadway traffic shall have machine ground bearing surfaces to prevent rattling, and be match marked before delivery. The use of grinding pads is allowed as long as all dimensional requirements are met.

Finish of castings shall be smooth and free of defects as per Standard Specifications. Painting of castings is not required, however if used, paint shall be evenly applied and neither sticky, nor brittle when dry.

All component parts of castings shall fit smoothly together without forcing and finished product shall have a completely satisfactory appearance.

An identifiable trade name or mark may be imprinted on castings by the casting foundry.

Unless specified otherwise as a part of detail project plans, cast iron grates and frames described hereon shall not be paid for separately but shall be included with and considered incidental to intake or manhole where required.

NOTE:

Unless otherwise specified, grate shall be cast without locking lugs so that it may be used in an inverted position when so desired.

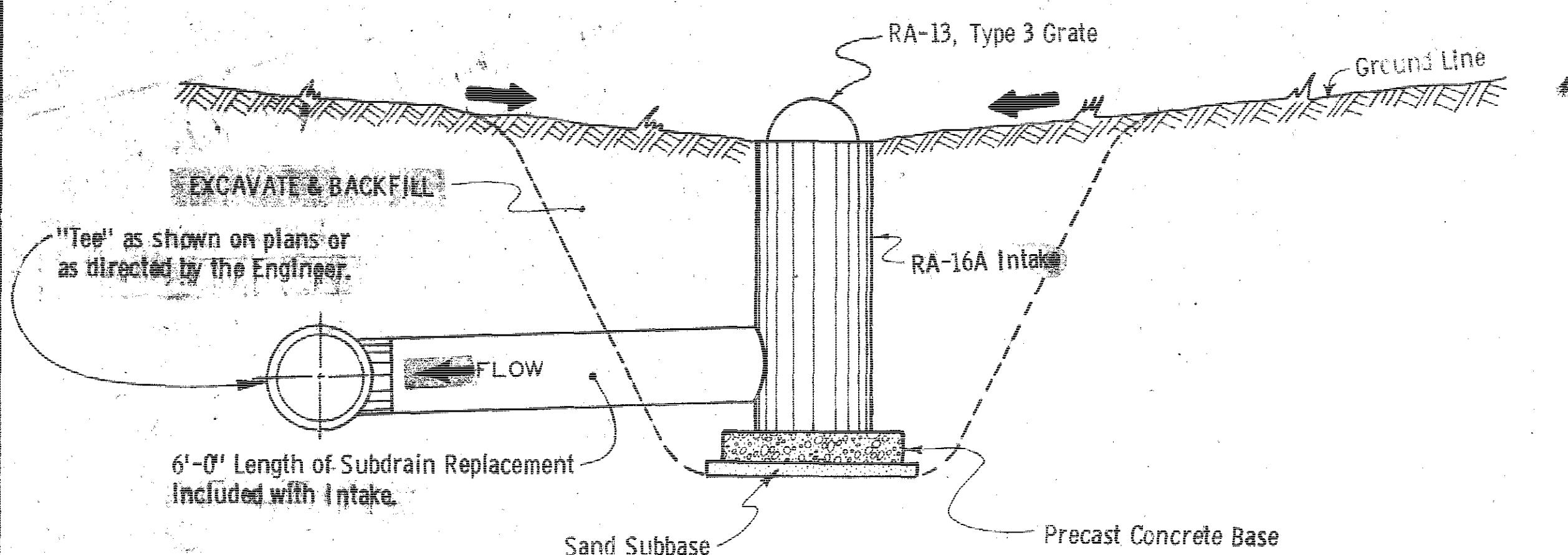
TYPE NO. 9 GRATE WITH FRAME

Min. Wt. Grate = 85 lbs.
Min. Wt. Frame = 75 lbs.

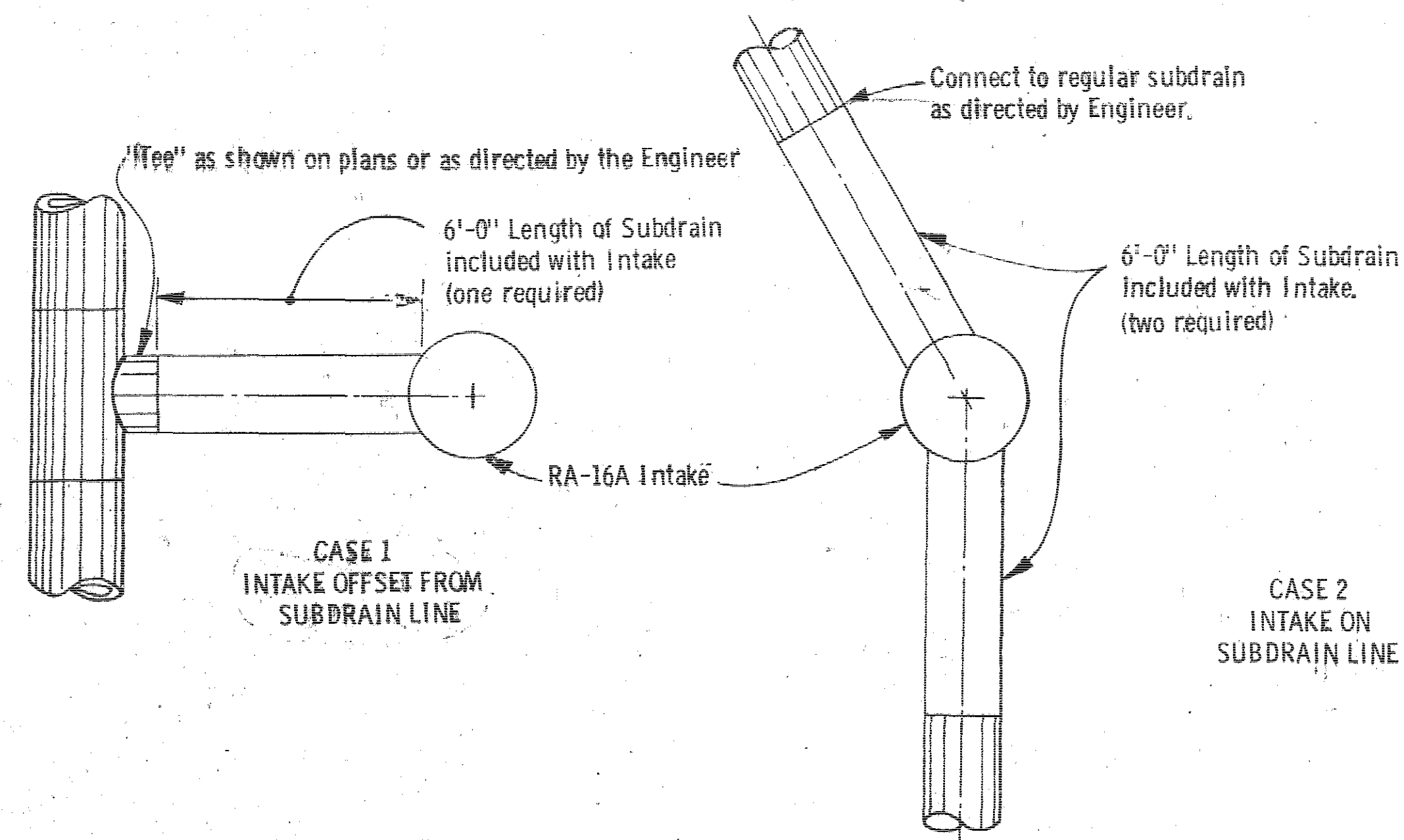
IOWA HIGHWAY COMMISSION	
STANDARD ROAD PLAN RA-13	
RECOMMENDED	ROAD ENGINEER DATE
DESIGN ENGINEER DATE	
APPROVED	DEPUTY CHIEF ENGINEER DATE
INTAKE GRATES	

When the RA-16A Intake is used in conjunction with installation of tile subdrain either one or two sections as required (See Case 1 or Case 2) of concrete culvert pipe or corrugated metal pipe of proper size shall be placed at the intake as shown. This is for the purpose of preventing seepage into the subdrain adjacent to the intake. This length shall be included with and considered incidental to price bid for intake.

When intake is used in a location where adjacent surface area is paved, use a RA-13 Type 3 Grate.



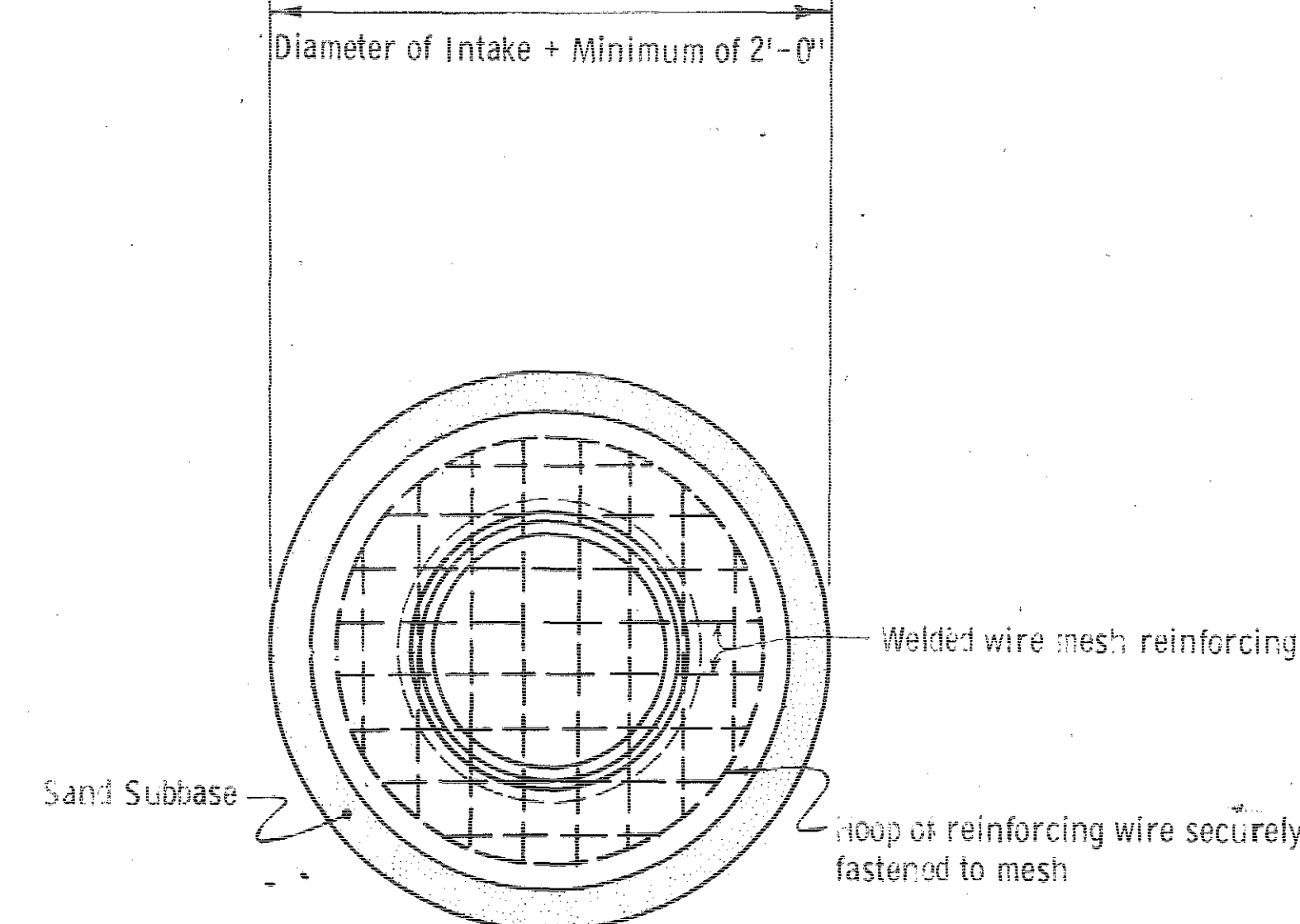
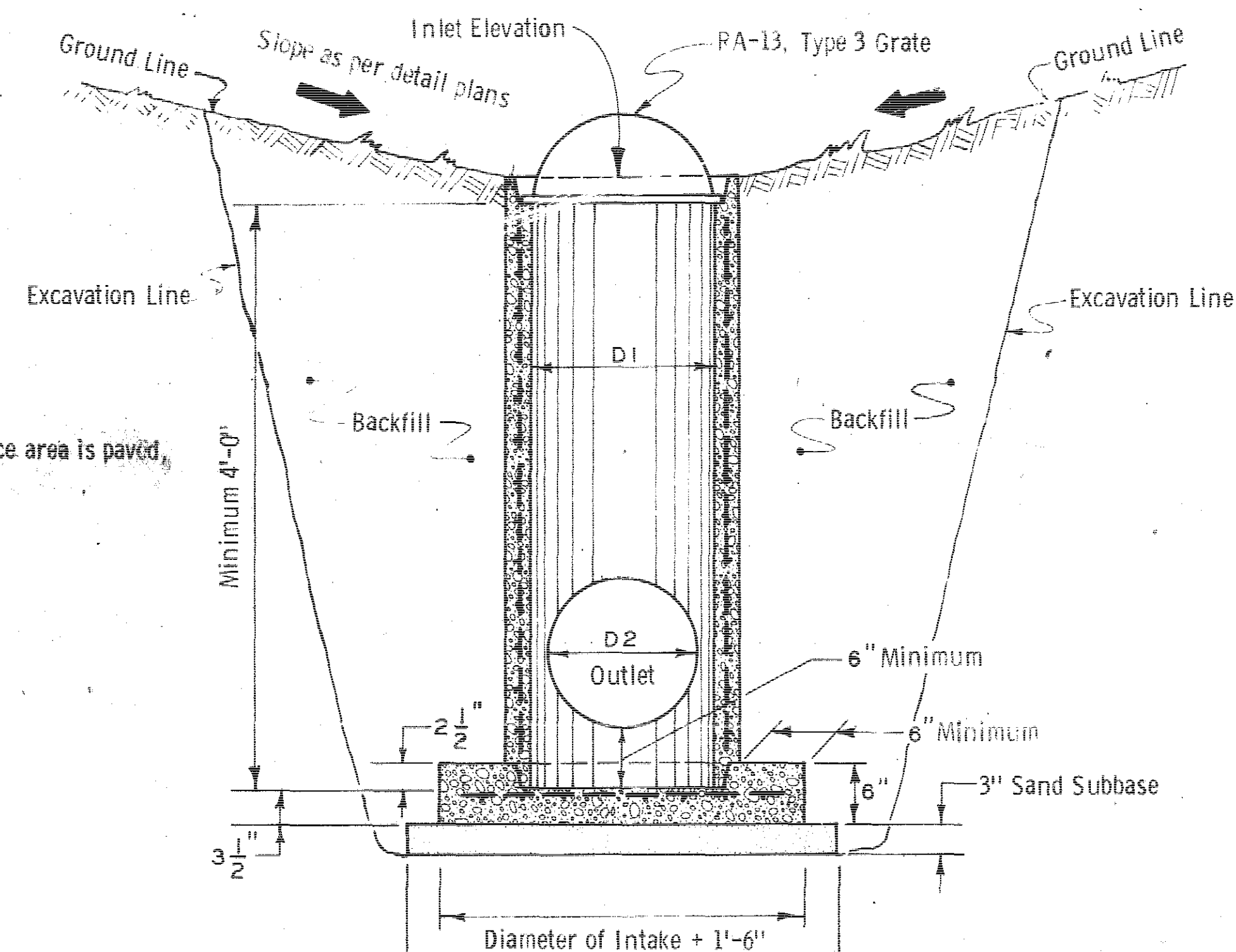
TYPICAL INSTALLATION
EXCAVATION AND BACKFILL



CASE 1
INTAKE OFFSET FROM
SUBDRAIN LINE

CASE 2
INTAKE ON
SUBDRAIN LINE

SECTION OF INTAKE



PLAN OF PRECAST CONCRETE BASE

GENERAL NOTES:

Price bid for RA-16A Intake shall be full compensation for furnishing all materials and constructing intake as detailed hereon.

Materials and methods of construction used shall be in accordance with current Iowa State Highway Commission specifications, as supplemented by this drawing as well as applicable special provisions.

Precast base shall be constructed using welded wire mesh reinforcing of No. 6 wire on 4" centers, or equivalent. Groove portion of base shall be carefully constructed to ensure correct installation of Intake well.

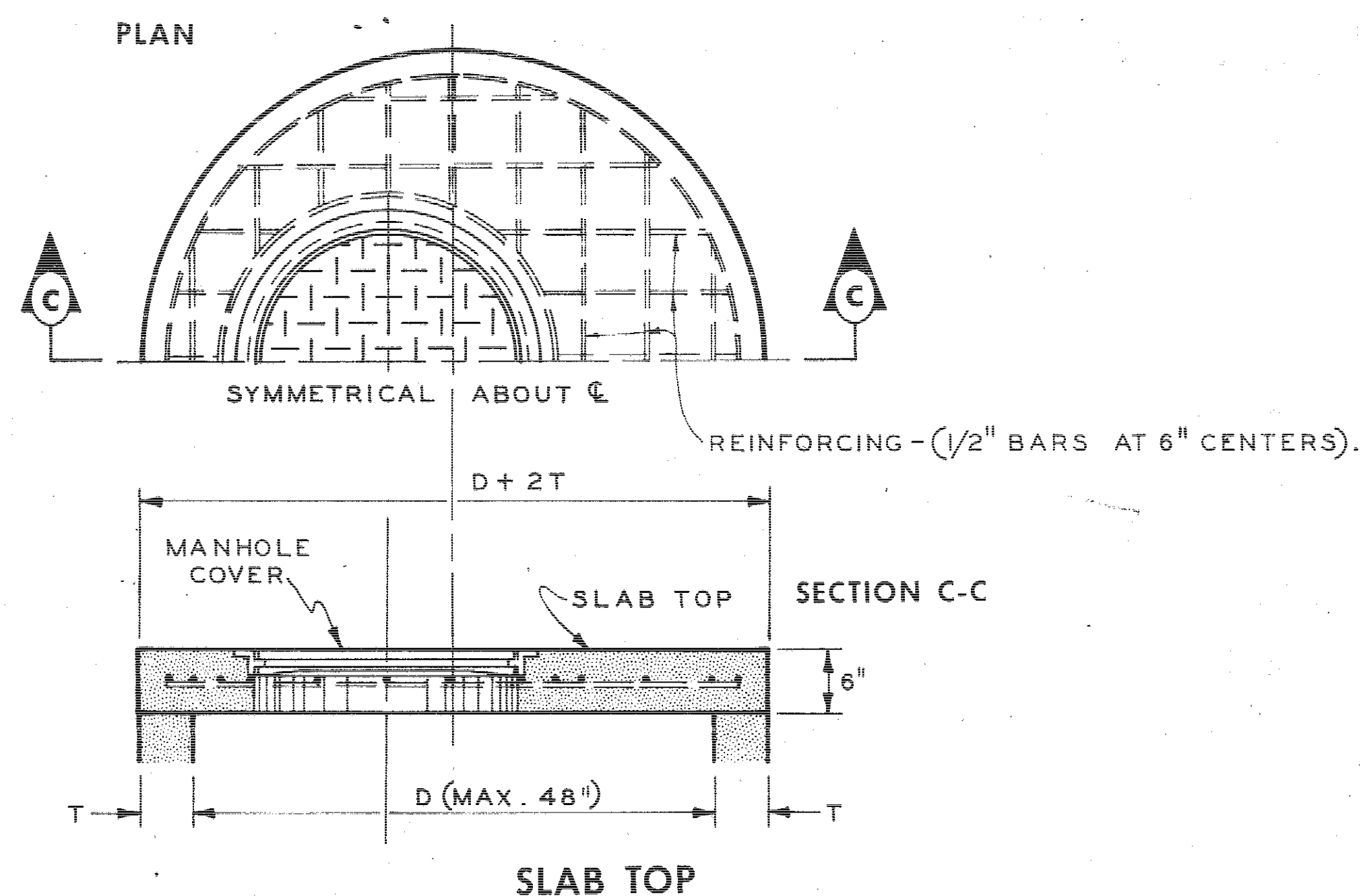
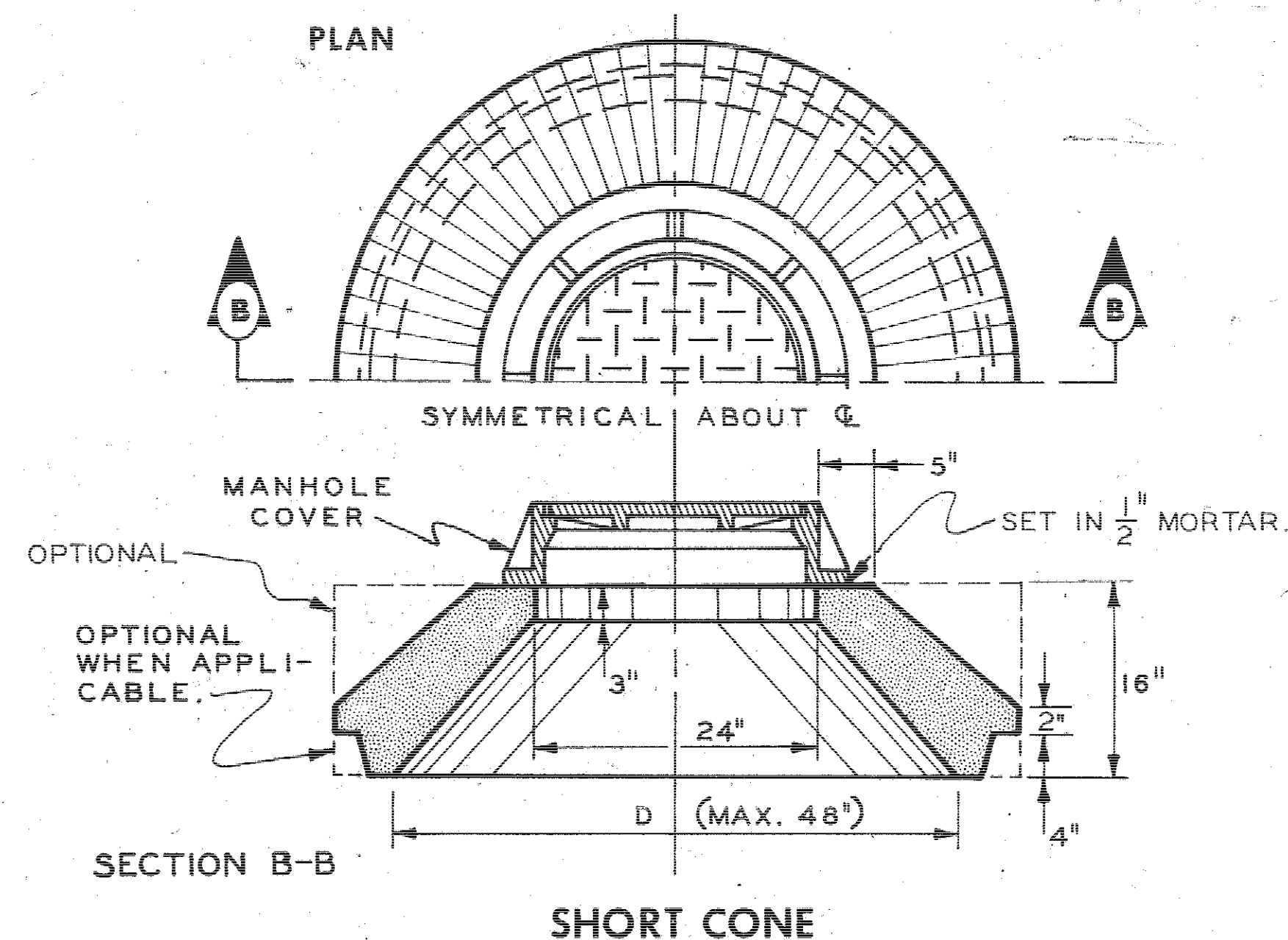
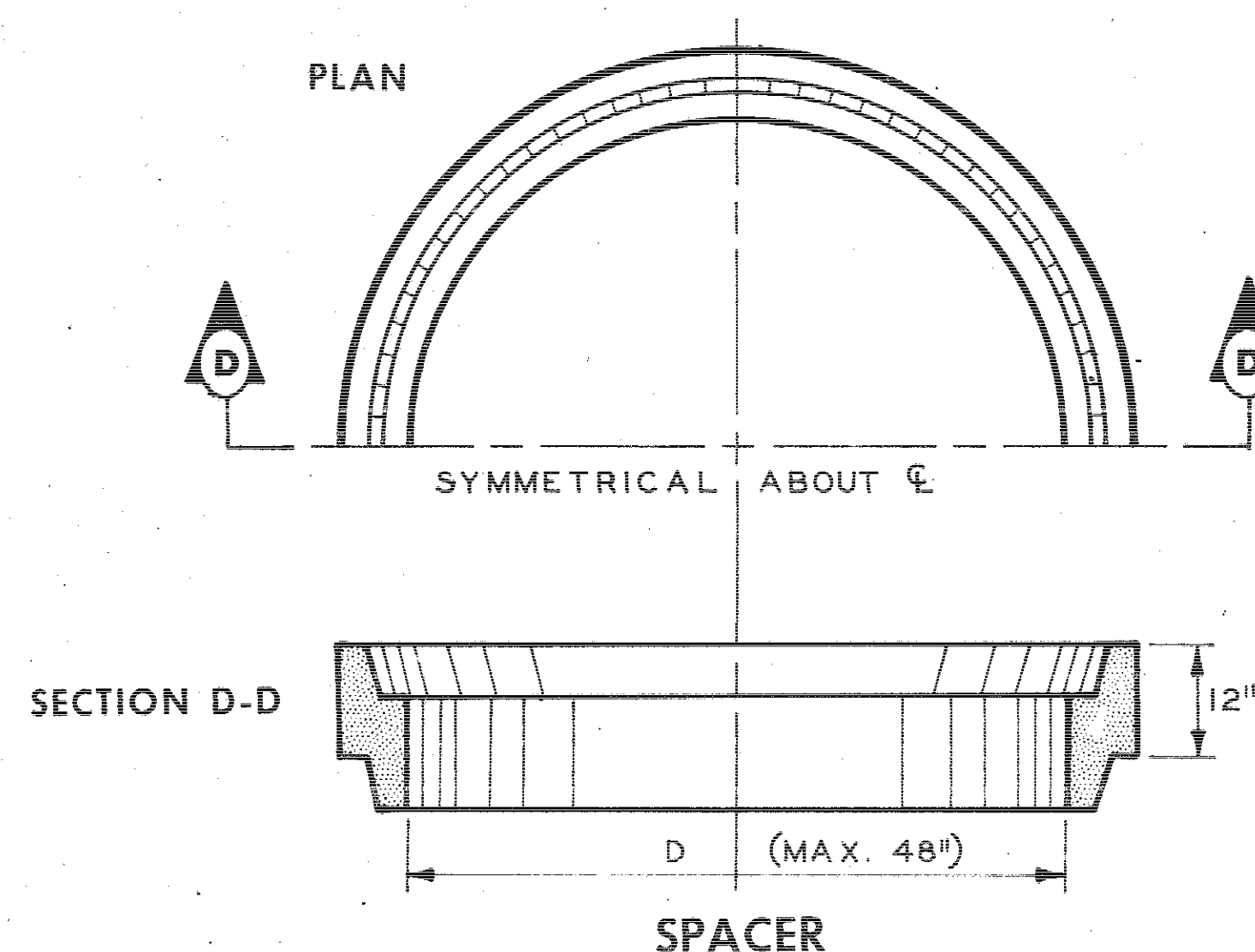
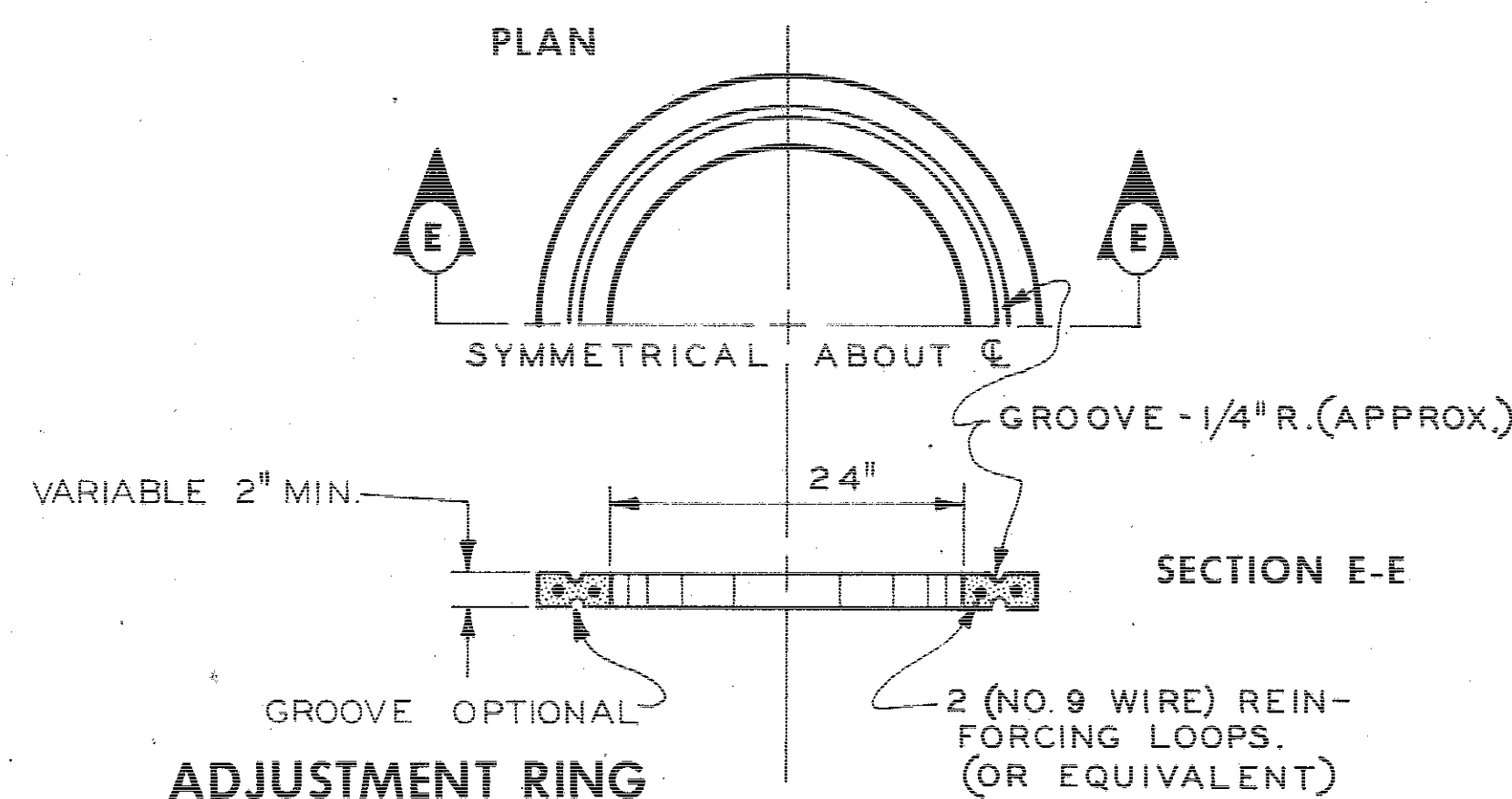
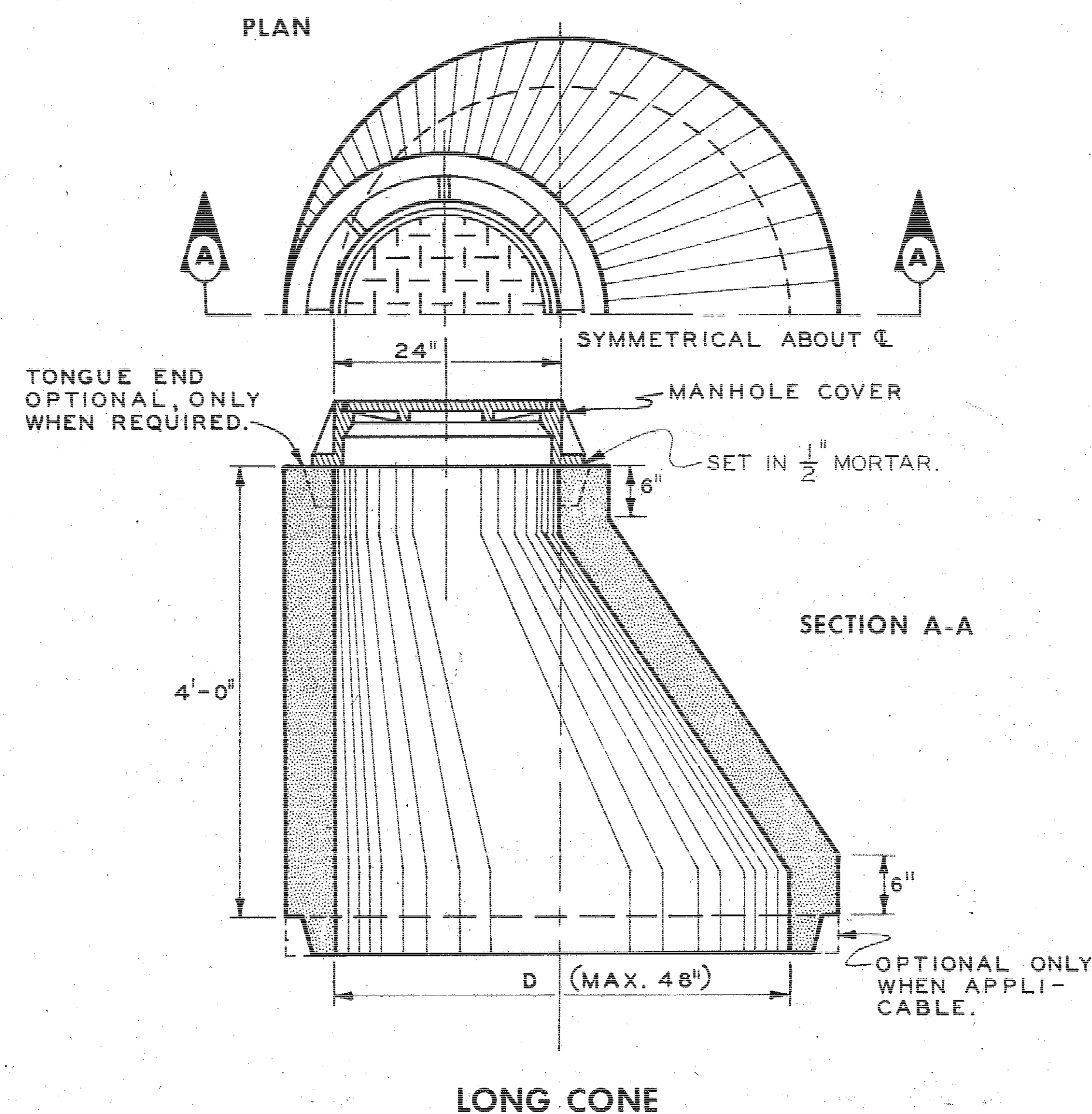
The well portion of the RA-16A Intake shall consist of 15000 concrete pipe (refer to Standard Plan RF-1) modified as indicated hereon. Unless otherwise specified within detail project plans the minimum depth of intake well shall be 4'-0". The intake may be constructed in lengths that will be convenient to transport and install. Opening may be formed when pipe is cast or may be cut out to desired elevation after pipe is complete. Opening shall be neatly shaped. Wire mesh may be left in place and cut to size when outlet pipe is installed. Subdrain pipe shall be smoothly grouted into opening.

All requirements of current Iowa State Highway Commission specifications for "EXCAVATION FOR STRUCTURES" applicable to the necessary excavation and backfill for intakes shall apply to this work. Excavation and backfill will not be classified, measured or paid for separately but shall be considered incidental to and included with the price bid for the intakes. Excess material excavated for intakes shall be disposed of as directed by the engineer.

SPECIAL NOTE:

The intake shall be constructed using 18" concrete pipe for well portion (D1). D2 will be of proper size to accommodate a 12" outlet pipe.

IOWA HIGHWAY COMMISSION	
STANDARD ROAD PLAN RA-16A	
RECOMMENDED	Jack Delbridge 8-26-66 ROAD ENGINEER DATE A. P. McLaughlin 8-26-66 DESIGN ENGINEER DATE
APPROVED	D. P. McLaughlin 10-18-66 DIRECTOR OF ENGINEERING DATE
OPEN DITCH INTAKE (BEEHIVE) FOR TILE DRAIN	
PROJECT NUMBER	Jackson COUNTY FN-62-1(4)-21-49
STATE	IOWA
FED. ROAD DIST. NO.	5
FISCAL YEAR	
SHEET NO.	33
TOTAL SHEETS	210



GENERAL NOTES:
Details indicated hereon are for accessory units manufactured in accordance with current Iowa State Highway Commission Standard Specifications for concrete culvert pipe (2000D Class) insofar as applicable. Also refer to Standard Road Plan RF-1. Dimensions shown shall apply unless modified by plan requirements of individual project installations. Units may be used as necessary to accomplish plan requirements for manhole elevations, dimensions, etc..

The "Slab Top" shall not be used where the installation would be subject to roadway traffic.

The "Long Cone" shall be of the eccentric design, shown hereon, unless otherwise specifically required on project plans. The "Short Cone" shall only be of the concentric design shown hereon.

The Long Cone and Short Cone may be used where necessary whether manhole would be subject to roadway traffic or not.

Alternate designs for the units shown may be submitted to the Engineer for approval.

Reinforcing in Long Cone and Short Cone shall be at least equivalent in cross sectional area to the reinforcing required for culvert pipe of diameter "D" (Refer to Standard Road Plan RF-1). Reinforcing in Spacer shall be the same as required for culvert pipe of same "D".

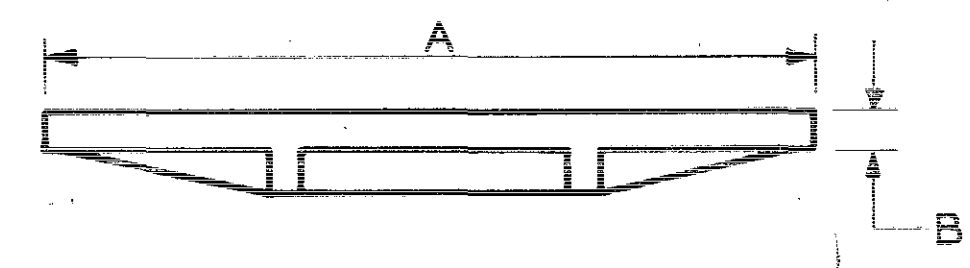
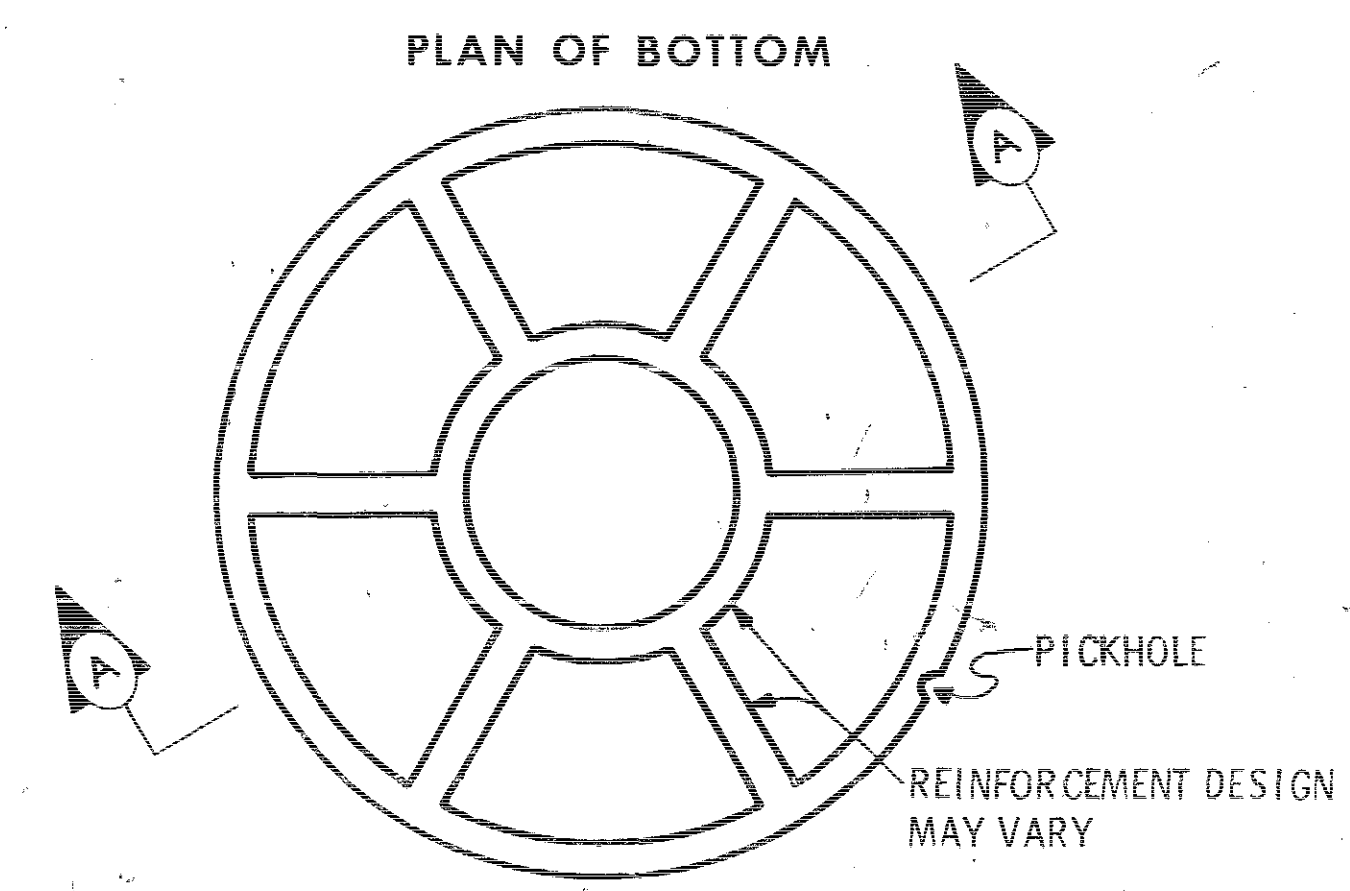
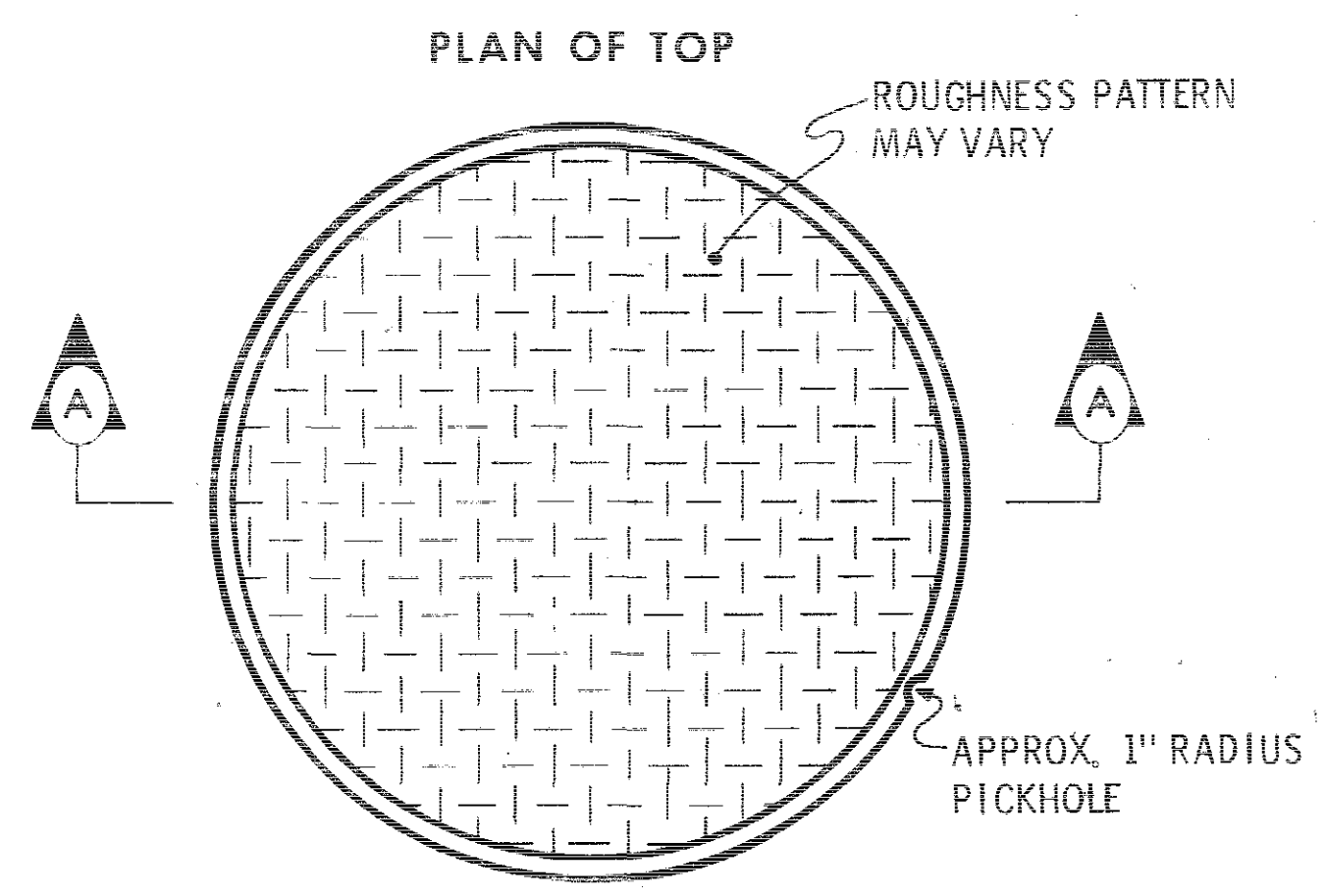
Normal usage will utilize the Type 1 manhole cover for the "Slab Top" and the Type 2 manhole cover for the "Long or Short Cone". Refer to Standard Road Plan RA-26 and RA-27 for details of covers. Refer to detail project plans for details of requirements for individual installations.

Where any manhole unit is installed in a location subject to roadway traffic the RA-26 (Standard Road Plan RA-26, Type 1 or Type 2 as necessary) manhole cover is required. In locations where manhole is not subject to roadway traffic, the RA-27 (Standard Road Plan RA-27, Type 1 or Type 2 as necessary) manhole cover may be used unless otherwise specified in detail project plans.

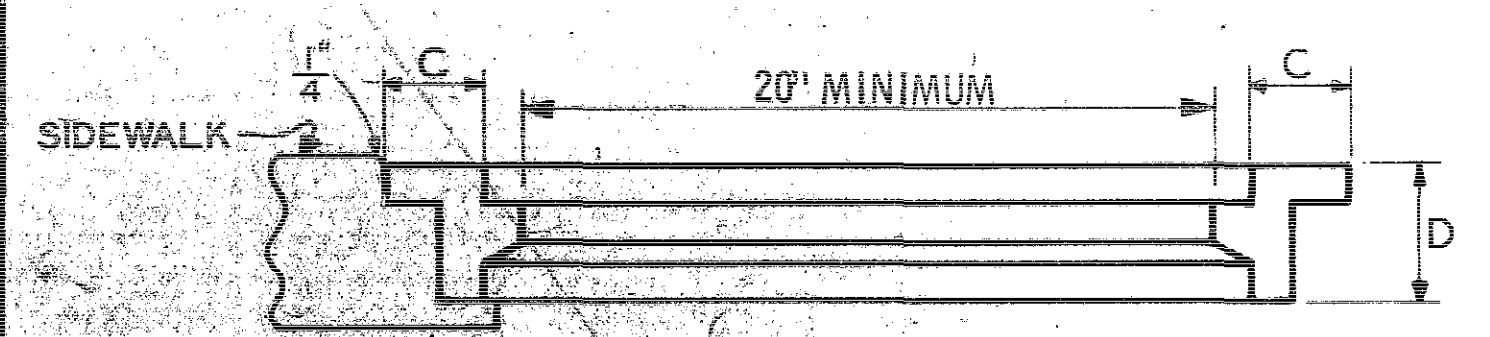
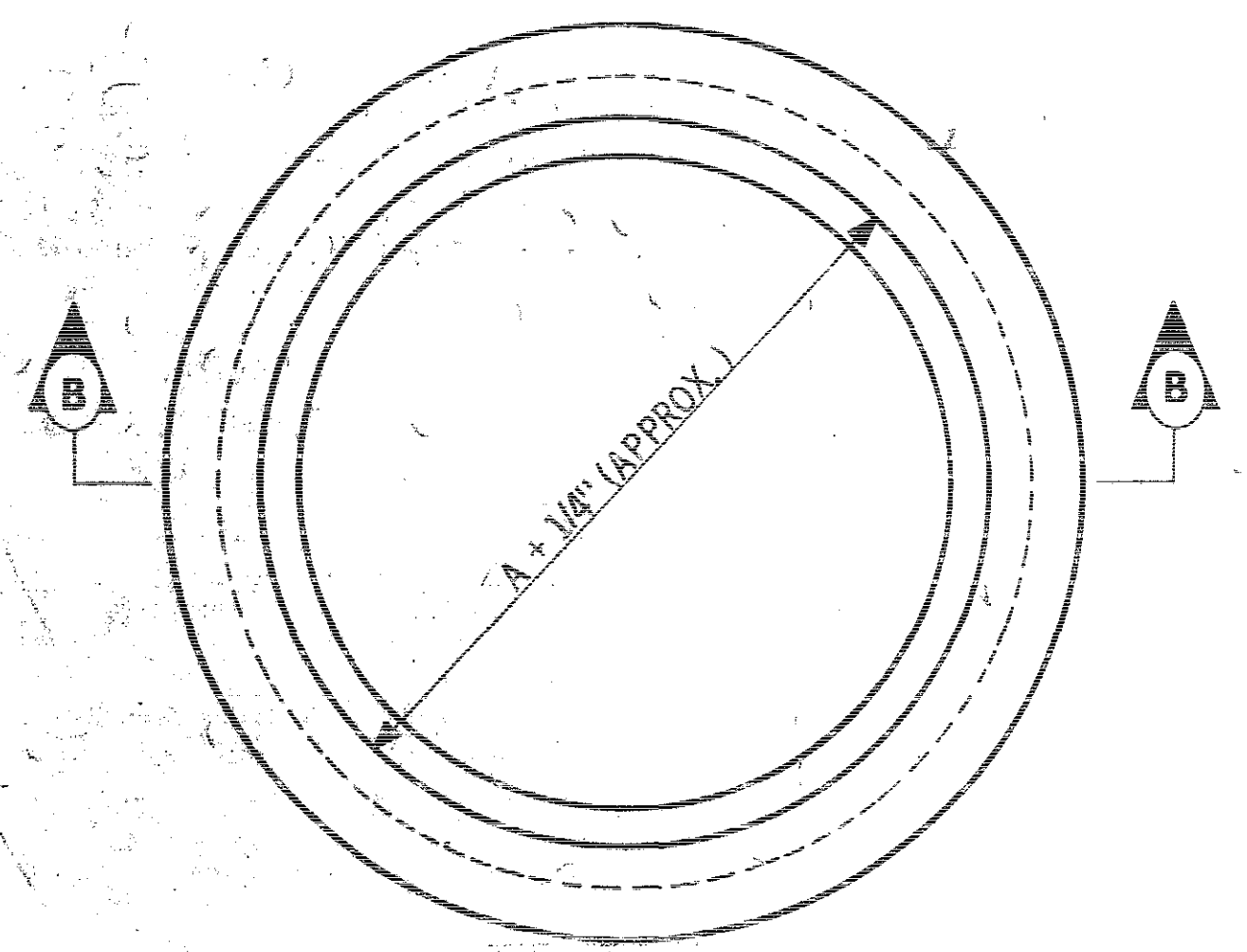
MODIFY GENERAL NOTES 6-12-69	DATE	IOWA HIGHWAY COMMISSION	
	DATE	STANDARD ROAD PLAN RA-25	
	RECOMMENDED	John D. Delbridge 4/5/67	DATE
	DESIGN ENGINEER	4/6/67	DATE
	APPROVED	4/11/67	DATE
DEPUTY CHIEF ENGINEER		DATE	
DETAILS CONCRETE PIPE			
ACCESSORY UNITS FOR MANHOLES			

IRON CASTING FOR MANHOLE COVERS

- 1) All castings shall be class 30 gray iron castings complying with current Iowa State Highway Commission Standard Specifications. Finish of casting shall be smooth and free of defects. Painting of castings is not required, however if used, paints shall be evenly applied and neither sticky nor brittle when dry.
- 2) An identifiable trade name or mark may be imprinted on the casting.
- 3) Lightweight manhole covers as described hereon shall be used with appropriate frames of either slab type or neck-bearing type wherever manholes are not subject to roadway traffic.
- 4) Unless specified otherwise, manhole covers shall not be paid for separately but shall be considered incidental to other work.
- 5) When specifically so required as a part of detail project plans the RA-27 frame and cover will be required to be furnished with an approved locking device.



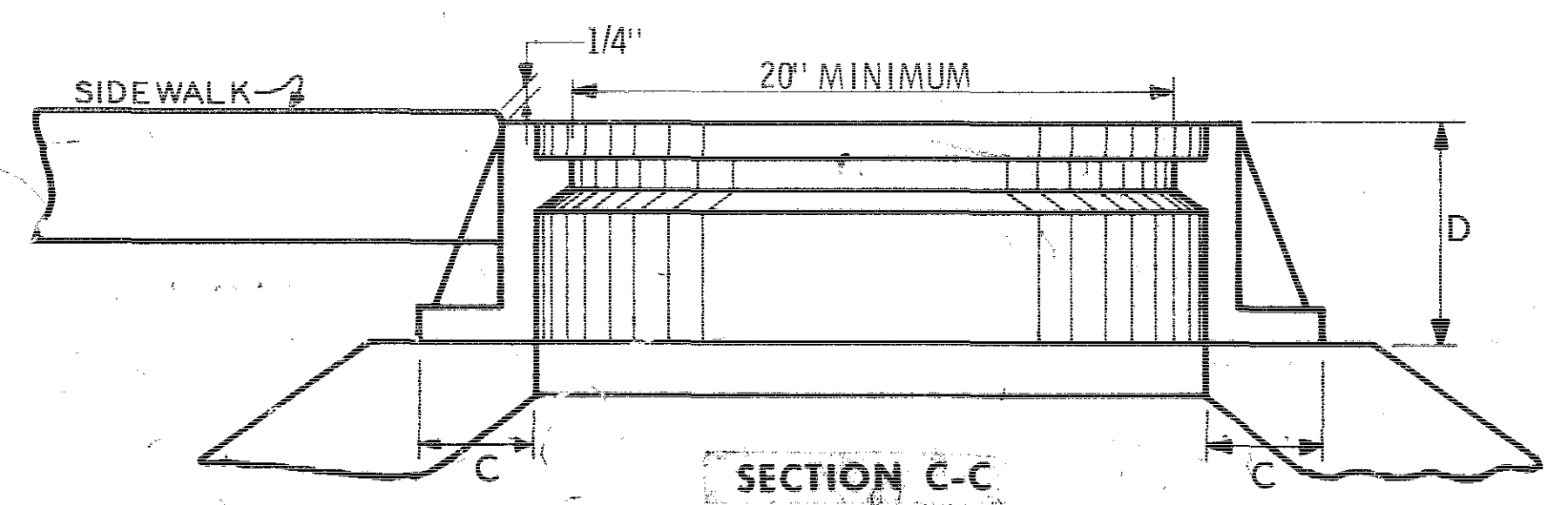
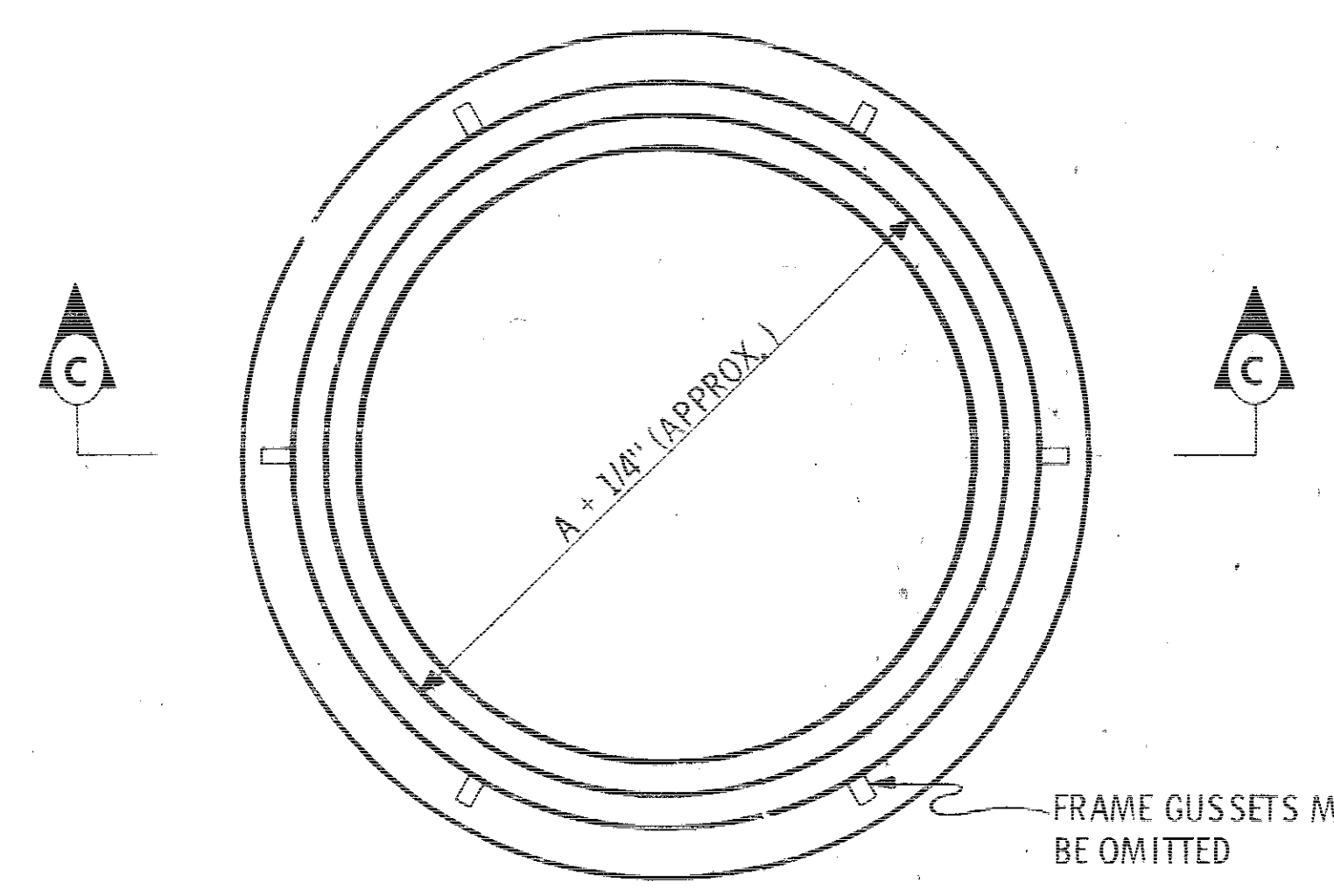
COVER DETAILS



TYPE-1 FRAME
Slab Type For Cast Manholes

TYPE 1 MANHOLE COVER MINIMUM DIMENSIONS				
A	B	C	D	
21"	1 1/2"	2"	2 1/2"	

MINIMUM WEIGHTS	
Frame	Cover
70 lbs.	60 lbs.

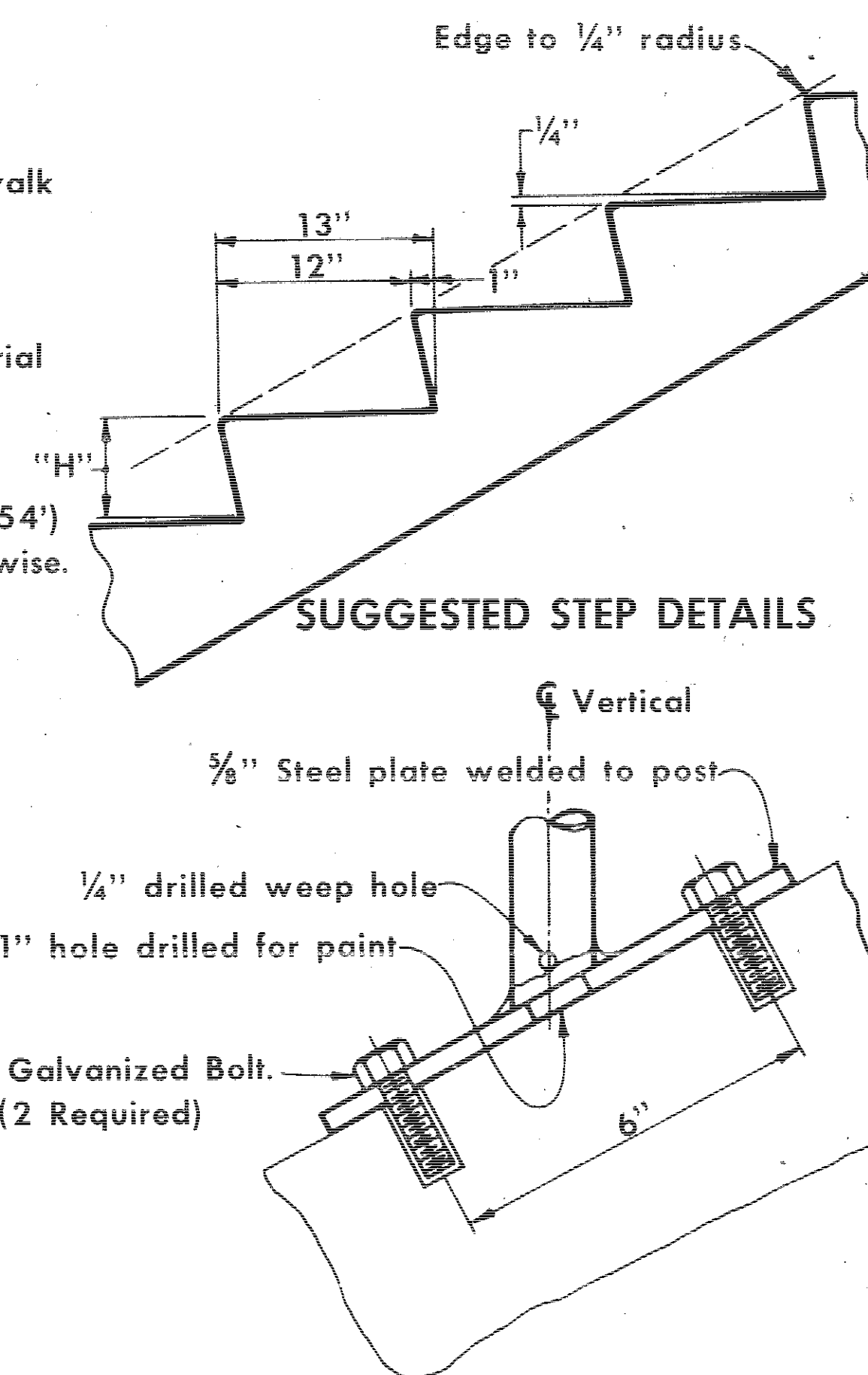
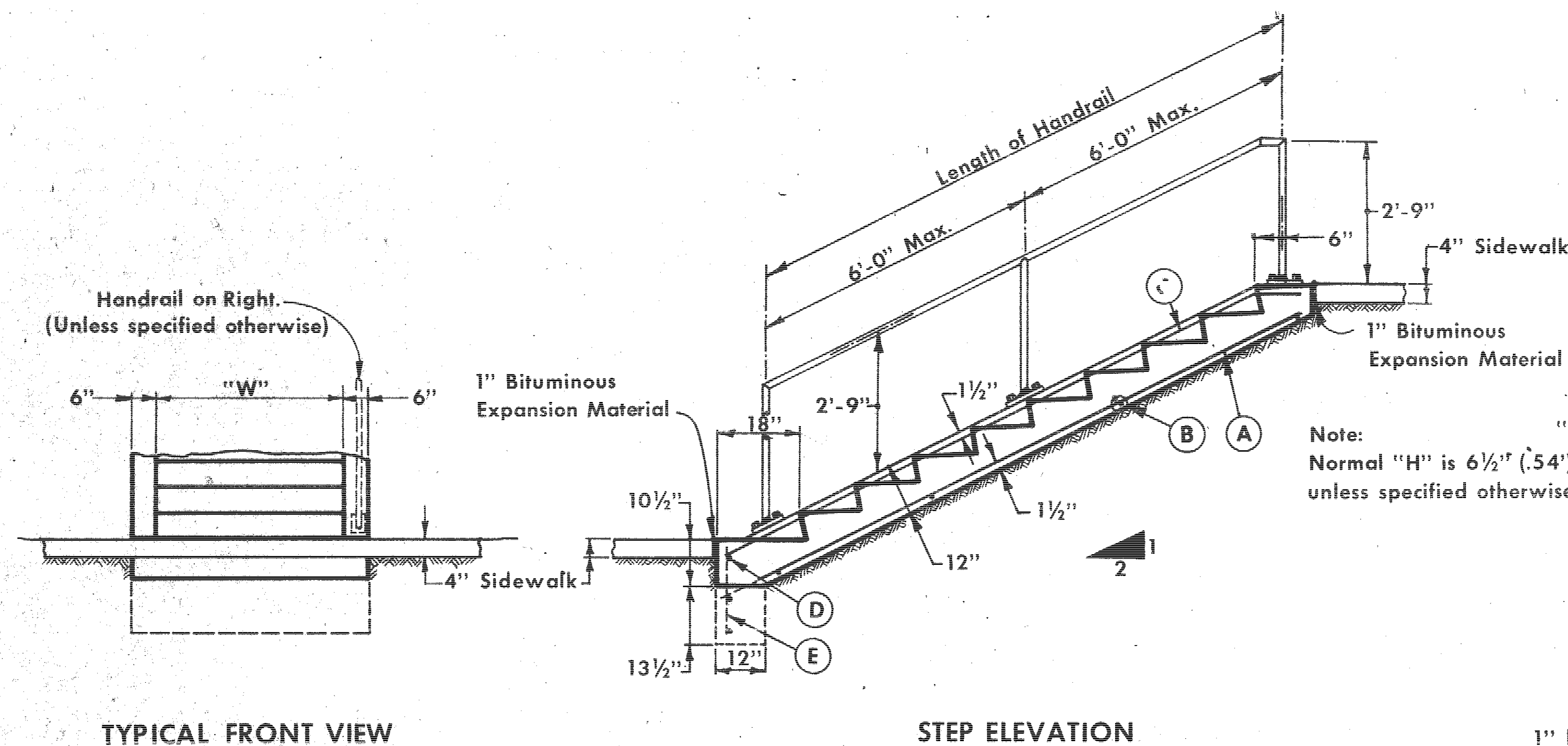


TYPE-2 FRAME
Neck Bearing Type For Built Up Manholes

TYPE 2 MANHOLE COVER MINIMUM DIMENSIONS			
A	B	C	D
21"	1 1/2"	2 1/2"	4"

MINIMUM WEIGHTS	
Frame	Cover
85 lbs.	60 lbs.

MODIFY GEN. NOTES	LAST REVISION NO.	DATE	IOWA HIGHWAY COMMISSION	
			STANDARD ROAD PLAN RA-27	
			RECOMMENDED	Jack C. Deelbridge 3/12/68 ROAD ENGINEER DATE
			APPROVED	A. P. McLaughlin 3/12/68 DESIGN ENGINEER DATE
				DEPUTY CHIEF ENGINEER DATE
CAST MANHOLE COVERS (LIGHT)				



GENERAL NOTES:

Details for construction of concrete steps and handrails shown hereon are typical only and are not intended to depict specific installations. Refer to project plans for requirements of individual locations. Alternate design details may be submitted for approval.

All concrete for steps shall be as used for sidewalks. All concrete shall be thoroughly tamped and spaded against forms to leave a smooth surface without honey comb. Finish of steps treads and top of side rails to be steel troweled and then brush finished with brush strokes on treads at right angles to width and on curbs parallel to handrailing

All reinforcing used in construction of steps shall be #4 bars placed as shown. Reinforcing is required only when four or more steps (risers) are constructed.

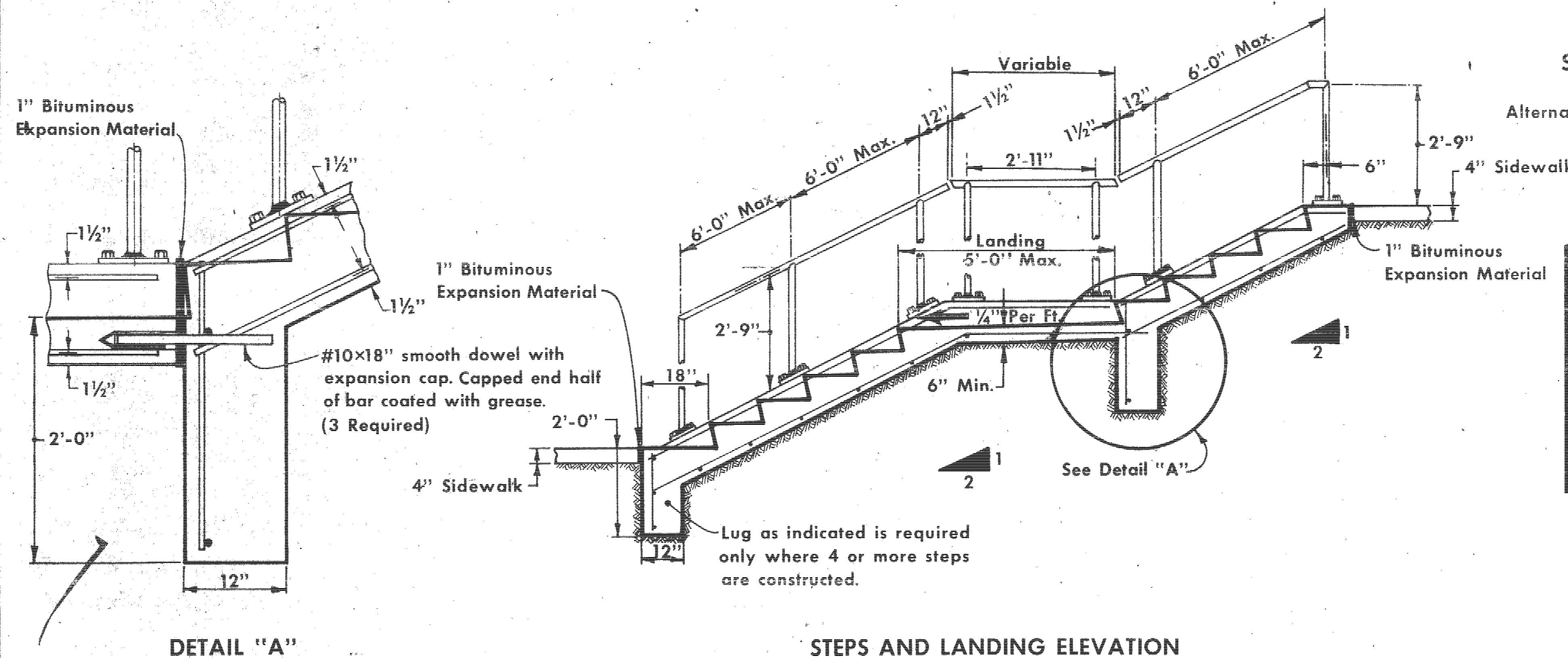
The price bid per cu. yd. for "P.C. Concrete Steps" shall be considered full compensation for construction of the steps and necessary appurtenances shown in project plans and as detailed hereon. All necessary excavation and backfill, including "finishing" of disturbed areas shall be considered incidental to other work.

Special Note: (Handrail)

Details shown are typical. Alternate designs may be submitted for approval. Rail shall be standard 1 1/4" black pipe with all welded connections ground smooth. Railings shall be painted with one shop coat and two field coats of aluminum paint or approved equivalent. Any exposed ends of railing shall be capped. Maximum length of rail segment between support posts is 6'-0". Supports shall be evenly spaced for the length of railing required. Bolts and hardware used in construction of railing required shall be galvanized. Hand-rail is required when three or more steps are constructed. For steps 6' or wider, railing is required on both sides.

Special Note: (Extra Concrete)

Landing shall be used where change in direction of steps is required or where desired for lengthy installations. In general a maximum of 15 steps may be provided without a landing. Where more than 15 steps are required and room is available, a landing may be provided at regular intervals. Landing shall be 5'-0" unless specified otherwise.



REINFORCING SCHEDULE				
MARK	SIZE	LENGTH	SPACING	NO. REQUIRED
(A)	#4	Varies	11"	4*
(B)	#4	W + 6"	24"	Varies
(C)	#4	Varies	Shown	2
(D)	#4	W + 6"	Shown	2
(E)	#4	20"	11"	4*

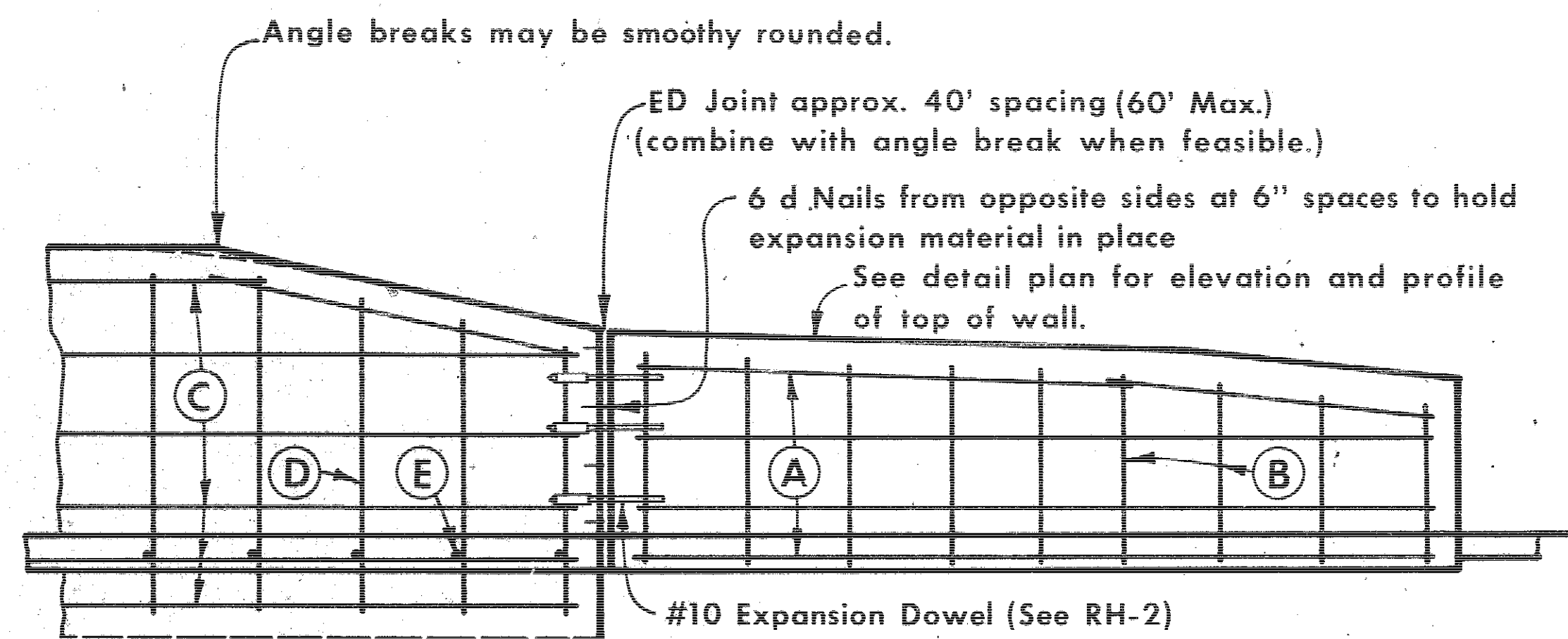
*One required for each foot of "W"

SCHEDULE FOR CONCRETE STEPS*										
NO. OF STEPS	1	2	3	4	5	6	7	8	9	10
CONCRETE (Cu. Yds.)	0.4	0.5	0.7	0.9	1.0	1.2	1.4	1.5	1.7	1.9

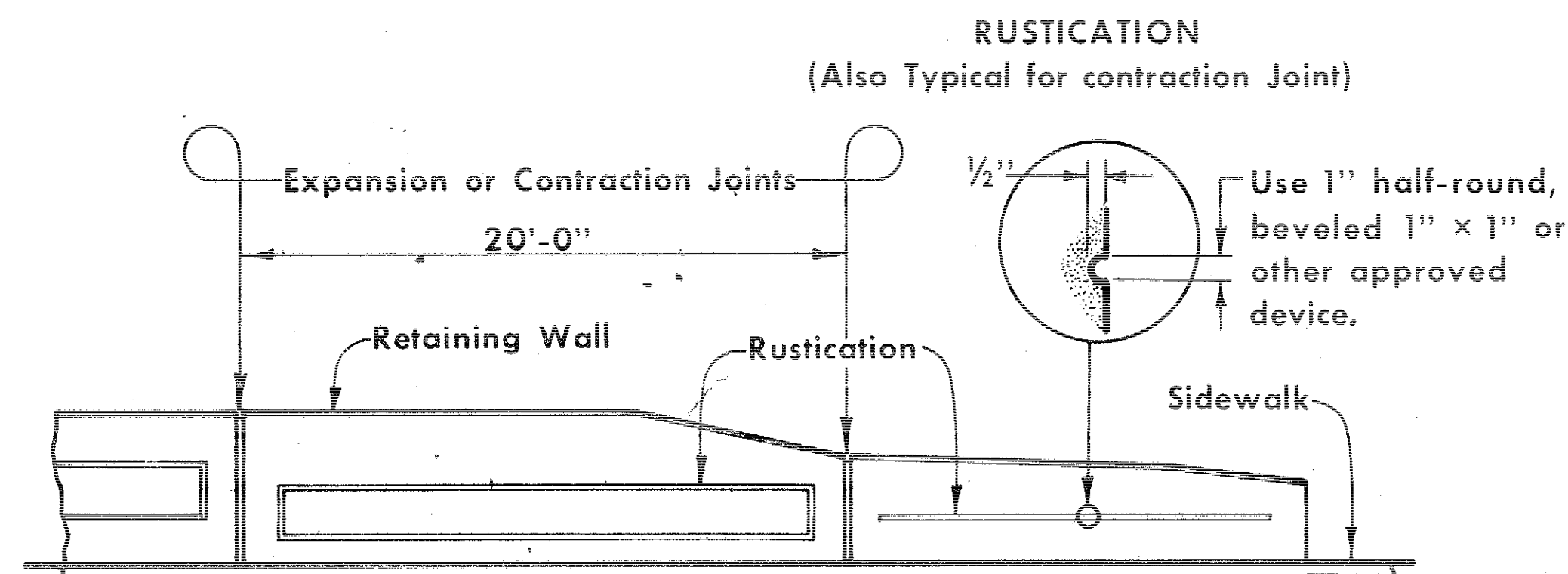
*Quantities shown are for "W" = 4'-0"

One 4' x 5' Landing requires 0.54 cu. yds. concrete
One 5'-0" Lug requires 0.14 cu. yds. concrete

Redrawn Sheet	9-7-73	Date	IOWA HIGHWAY COMMISSION	
	1	No.	STANDARD ROAD PLAN RB-1	
	Last Revision	Recommended	<i>J. C. Hocker</i>	9-4-73
		Approved	<i>R. M. Lauplin</i>	9-5-73
		Deputy Chief Engineer	Date	
CONCRETE STEP DETAILS				



TYPE "B" WALL TYPE "A" WALL
TYPICAL LONGITUDINAL SECTION OF RETAINING WALL
(CONTRACTION JOINTS REQUIRED AT 20'-0" SPACING)



Construct rustication at approx. 2'-0" interval on horizontal plane. Stop grooves and connect approx. 1'-0" from joints or end of wall. Other details may be approved by the engineer.
Rustication not required for walls less than 3'-0" high.
TYPICAL RUSTICATION AND CONTRACTION JOINTS

GENERAL NOTES:
Details indicated hereon for construction of combination Retaining Wall-Sidewalk and Steps are typical only and are not intended to depict specific installation. Refer to project plans for construction requirements of individual locations. Concrete shall be the same as required for walks.

The work of finishing and dressing up the disturbed areas adjacent to retaining walls is considered incidental to other work.

Unless specifically required on project plans, the Type "A" wall does not require the back of the wall to be formed, installation of weep holes, or the placing of porous backfill. Where forming the back of the wall is not done and sloughing occurs, the loose material will be removed and replaced with concrete at no additional expense to the State. The engineer may require the back of the wall to be formed if deemed necessary. Refer to detail project plans for method of determining excavation requirements for individual locations.

For walls more than 3'-0" high weep holes approximately 3" in diameter at 8' intervals are required, (or as otherwise indicated on project plans.) Weep holes are to be formed with an approved rustproof device backed with copper screening or galvanized hardware cloth.

Unless otherwise specified on project plans, all necessary excavation, porous backfill and reinforcing steel as well as all other work and material necessary for the construction described hereon, shall be included in the price bid for "Combined Retaining Wall-Sidewalk." That portion of sidewalk constructed as a part of retaining wall is not measured or paid for as "Sidewalk" but is included with "Retaining Wall-Sidewalk."

REINFORCING SCHEDULE

WALL TYPE	MARK	SIZE	LENGTH	SPACING	NO. REQ.	REMARKS
TYPE "A"	(A)	#4	Variable	12" Min. 15" Max.	Vari ①	
	(B)	#4	Variable	14"	17 ②	
TYPE "B"	(C)	#4	Variable	12" Min. 15" Max.	Vari ②	
	(D)	#4	H+18"	14"	17	
	(E)	#4	3'-10"	14"	17 ②	

① Top bar 6" parallel to top of wall. Lap 6" min. as necessary. Tie securely.

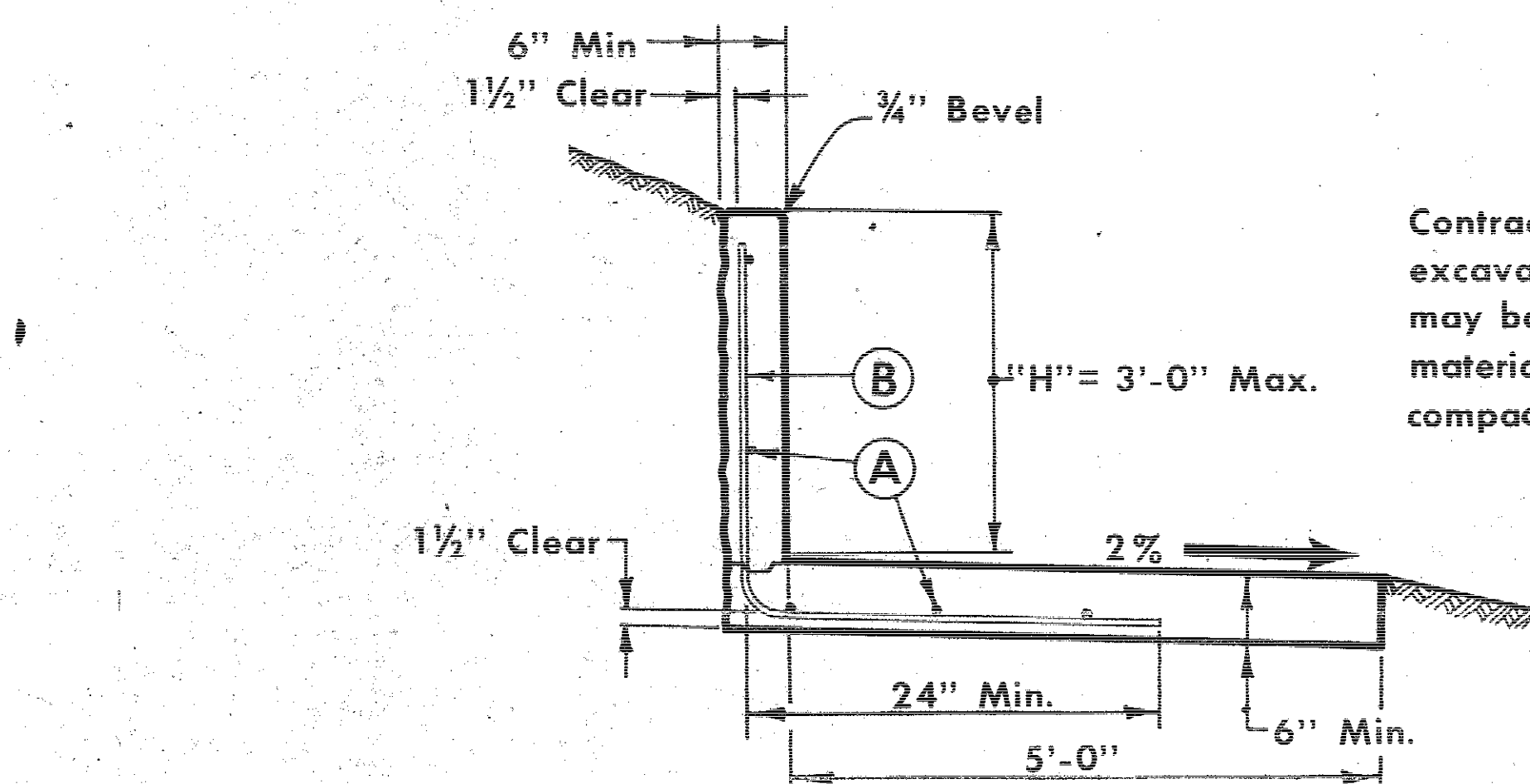
② For 20'-0" of wall.

DESIGN QUANTITY TABLE ③

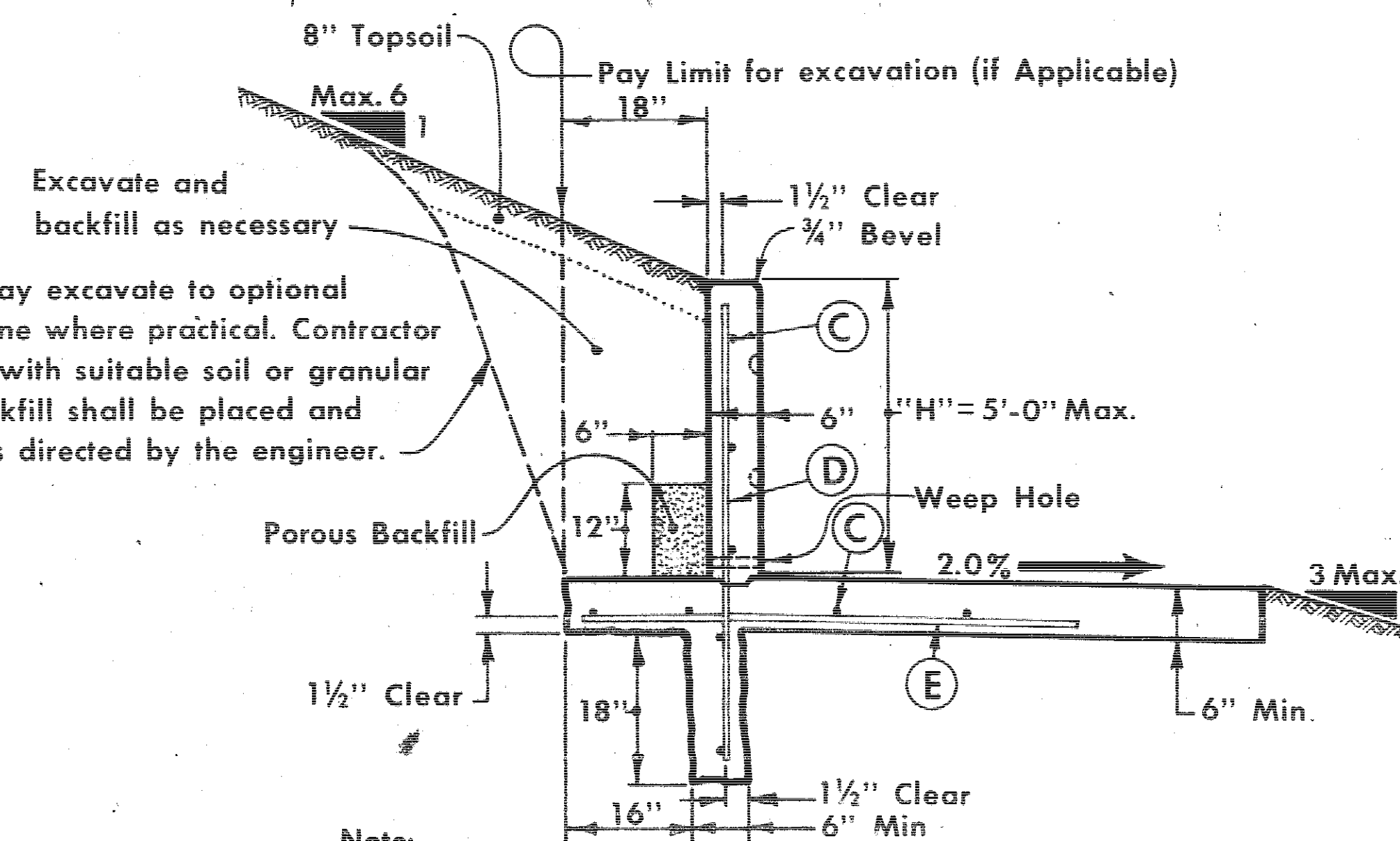
WALL TYPE	TYPE "A" WALL			TYPE "B" WALL ④				
HEIGHT	1'-0"	2'-0"	3'-0"	1'-0"	2'-0"	3'-0"	4'-0"	5'-0"
CONCRETE	2.407	2.777	3.148	3.518	3.888	4.259	4.629	5.000

③ Quantities are for 20'-0" of wall length

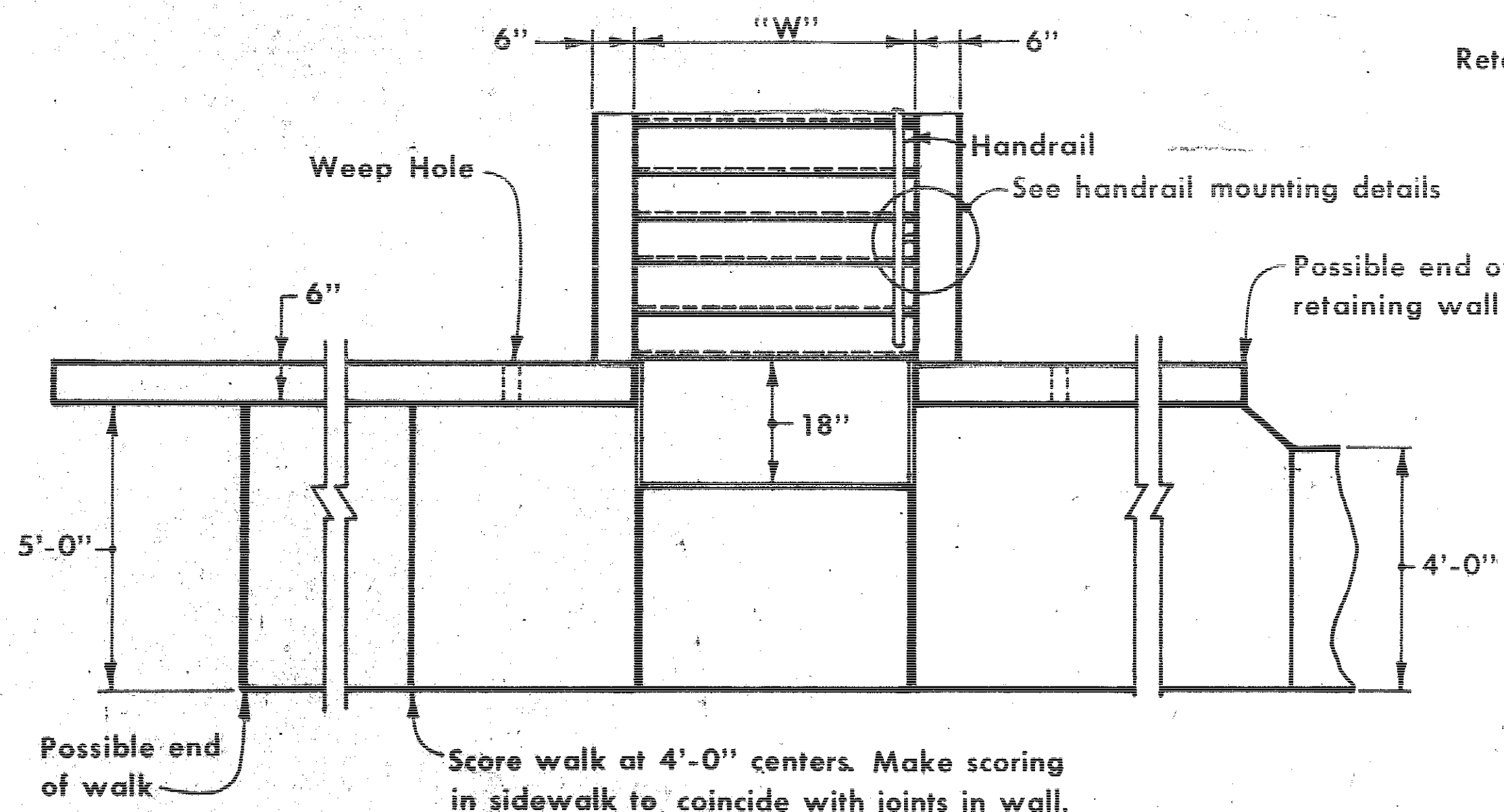
④ When specified 1.85 cu. yds of porous backfill are required per station.



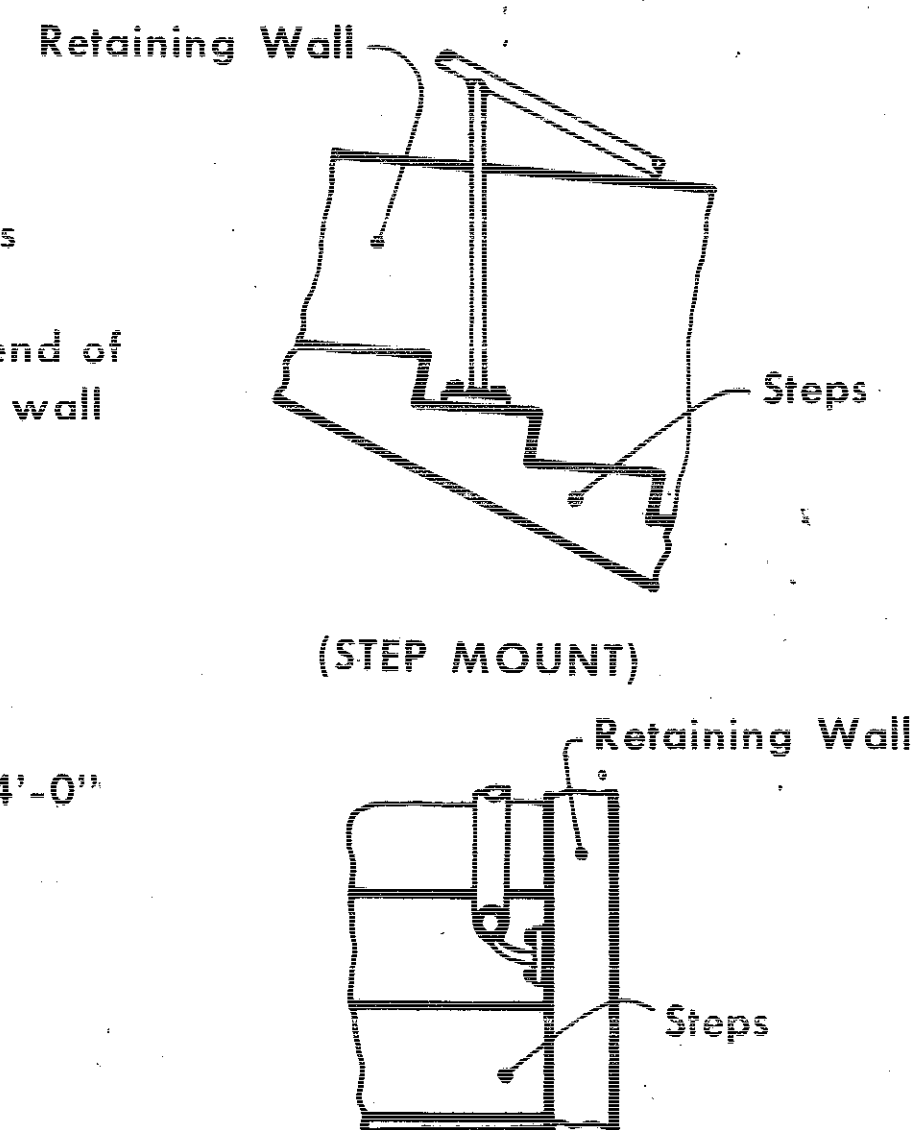
Note:
Back of wall not to be formed.
TYPE "A" WALL DETAILS



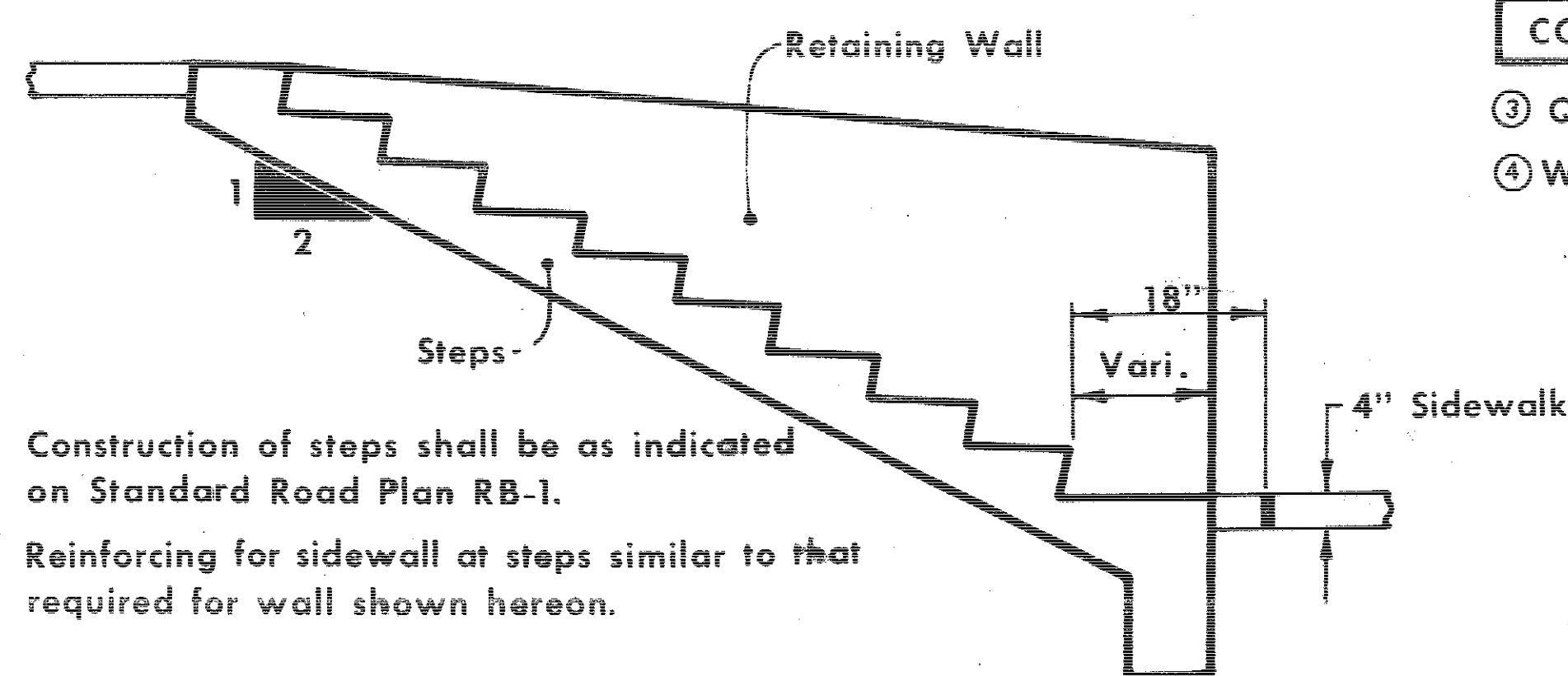
Note:
Bottom and Sides of footing and rear lug are not to be formed
TYPE "B" WALL DETAILS



TYPICAL PLAN FOR COMBINED RETAINING WALL-SIDEWALK AND COMBINED RETAINING WALL-STEPS

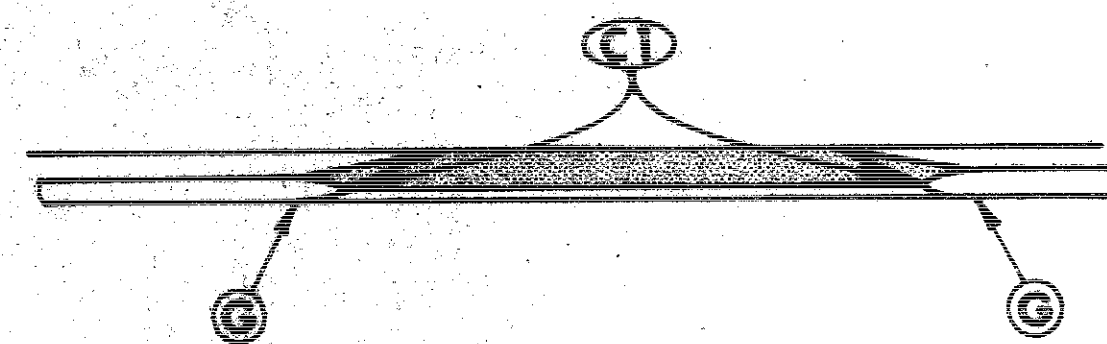


TYPICAL HANDRAIL MOUNTING DETAILS

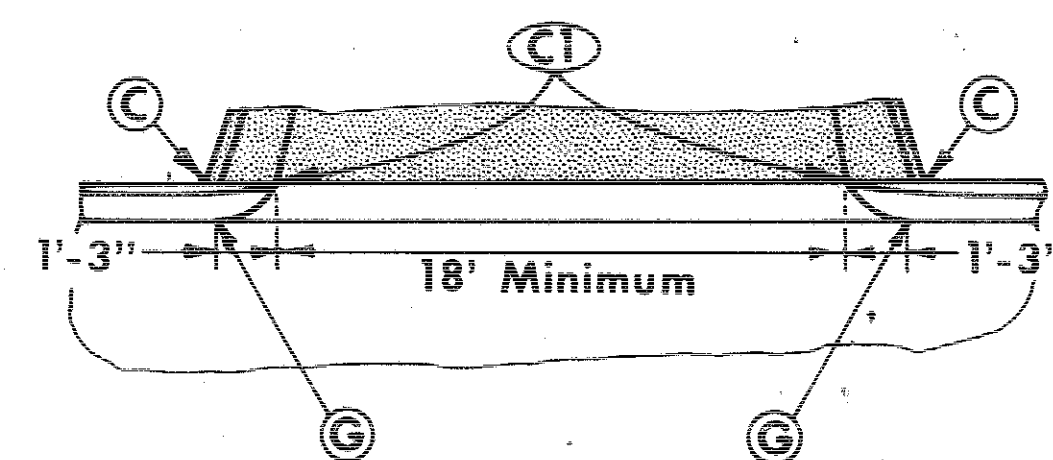


TYPICAL ELEVATION FOR COMBINED RETAINING WALL-STEPS

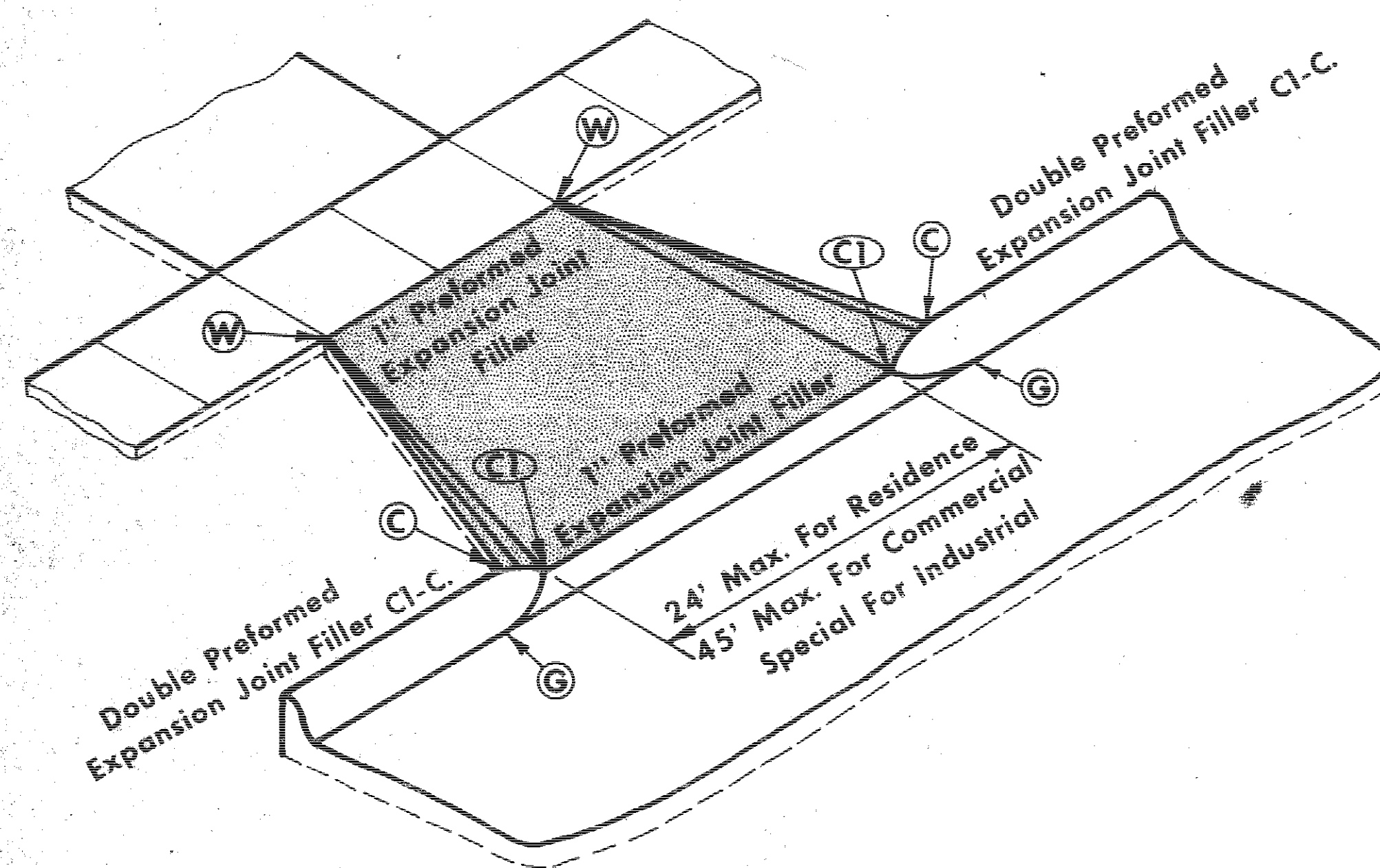
IOWA HIGHWAY COMMISSION		STANDARD ROAD PLAN		RB-2
		Date		
Last Revision	No.	1	Revised By	John C. Hocker
	Recommended	9-4-73	Ass't. Road Design Engineer	Date
	Approved	9-5-73	Road Design Engineer	Date
	Deputy Chief Engineer	9/4/73	Date	
COMBINED RETAINING WALL-SIDEWALK				



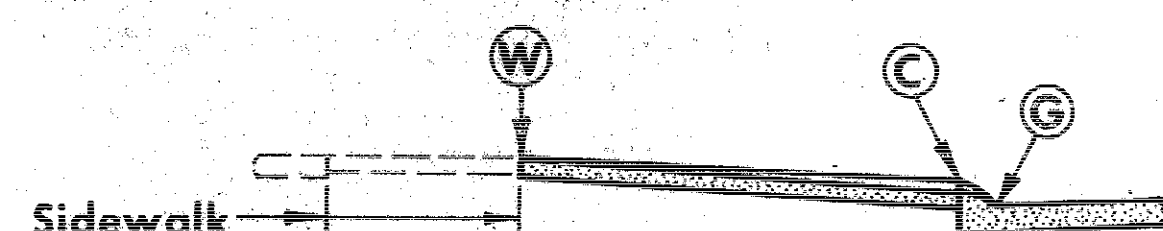
ELEVATION AT G-G



PLAN



TYPICAL PAVED DRIVEWAY



SECTION C-C DRIVE

PAVED DRIVEWAY

The policy in regard to work in private paved drives will be to remove and replace only such portions of existing driveway paving as are necessary to make a suitable piece of construction.

In general the length of the curb opening will determine the ease of driving in or out. For distance CI-CI and W-W see 10 scale plan.

The shape and surface of areas "CWWC", or any part of it, will vary to fit conditions. The lines "CW and CIW" may be curved or broken.

The edge "CI" should normally be 1 1/2 inches above gutter line "G". For special conditions use 3 inches. Care should be used to get true grade lines on "CI" and "G".

The curved ends of the drive drop (GCI and CCI) should be about 1'-3" for a curb 6 inches high.

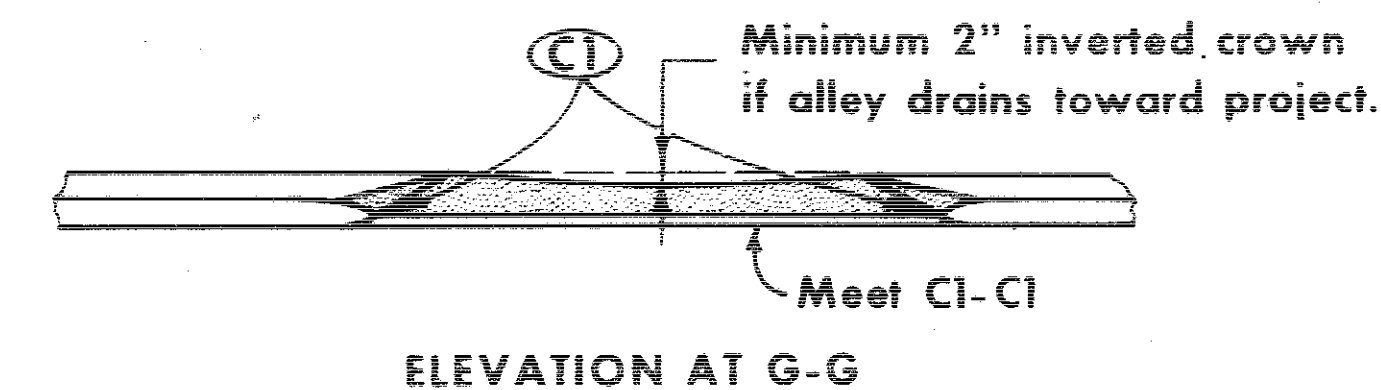
Concrete for drives to be pavement mix 6 inches thick with no reinforcing except when replacing reinforced drive concrete.

Place 1 inch expansion between drive and edge of pavement and curb. Place 1 inch expansion between driveway concrete and walk if replacement extends to walk. If driveway replacement extends to back of sidewalk or beyond, then 1 inch expansion should be placed at back of sidewalk in place of side as shown above, and sidewalk area shall be placed with drive. Preformed expansion joint filler shall conform to current Standard Specifications.

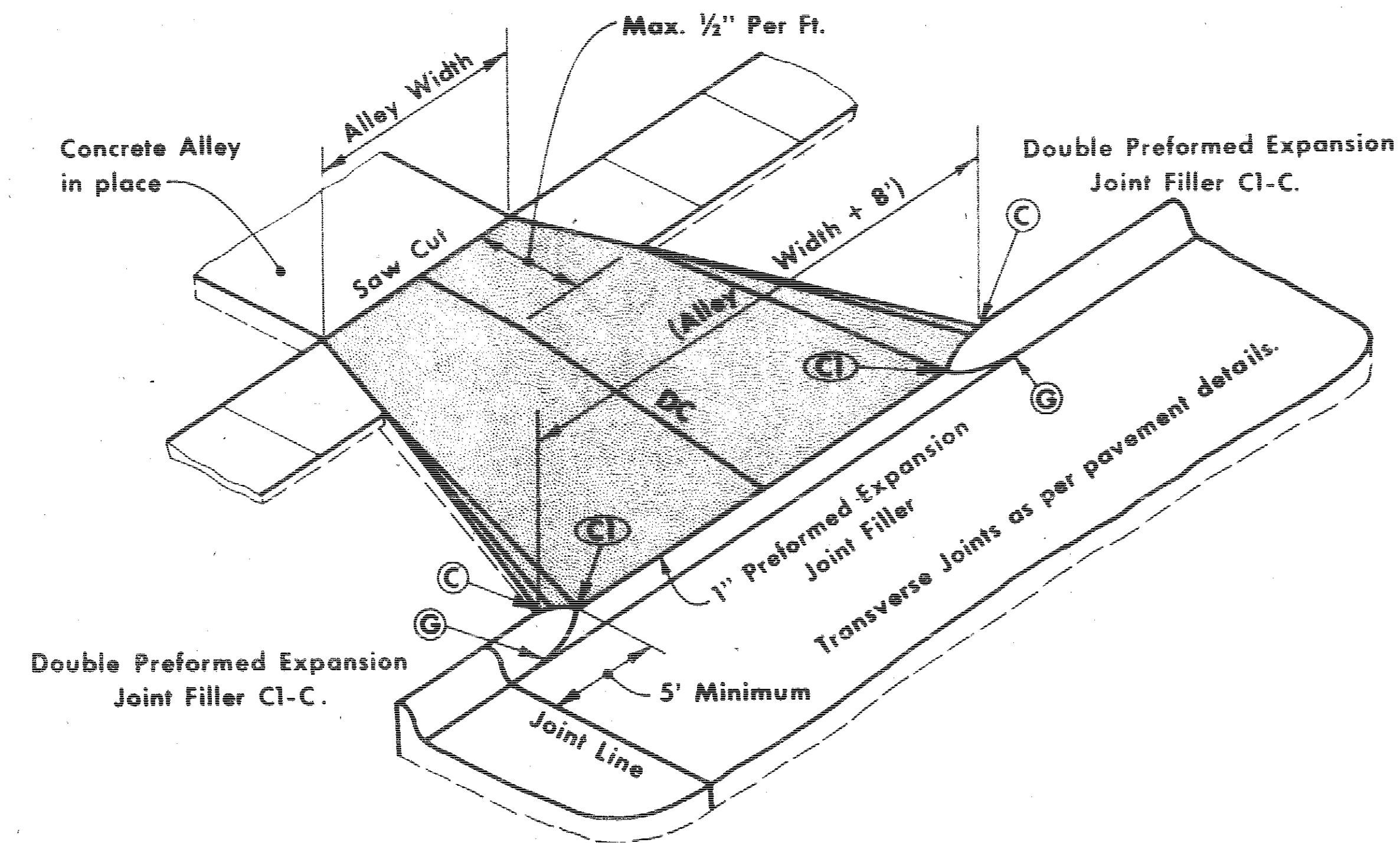
NOTE:

Contract items for paved driveways and alleys shall be "P.C. Concrete Drives". Price bid per sq. yd. for P.C. Concrete Drives shall be considered full compensation for construction of alleys and drives as detailed herein and as required by project plans.

NORMAL RESIDENTIAL DRIVEWAY WIDTHS		
WALK TO BACK OF CURB	W-W	CI-CI
2Ft.	15Ft.	18Ft.
3Ft.	14Ft.	18Ft.
4Ft.	13Ft.	18Ft.
5Ft.	12Ft.	18Ft.
6Ft.	11Ft.	18Ft.
7Ft.	10Ft.	18Ft.
8Ft.	9Ft.	18Ft.
9Ft. or Over	8Ft.	18Ft.



ELEVATION AT G-G



TYPICAL PAVED ALLEY

PAVED ALLEY

The construction of an alley to be similar to the construction of a driveway, except variations shown above.

Concrete for alleys shall be pavement mix, unreinforced, with minimum thickness of 6". If alley drains toward roadway, use inverted crown to CI-CI, otherwise use flat surface for alley pavement.

IOWA HIGHWAY COMMISSION			
STANDARD ROAD PLAN RB-3			
REVISION	No.	Date	
	1	3-7-73	
	Recommended		Date
	Approved		Date
Last Revision		Date	
CONCRETE DRIVES AND ALLEYS			

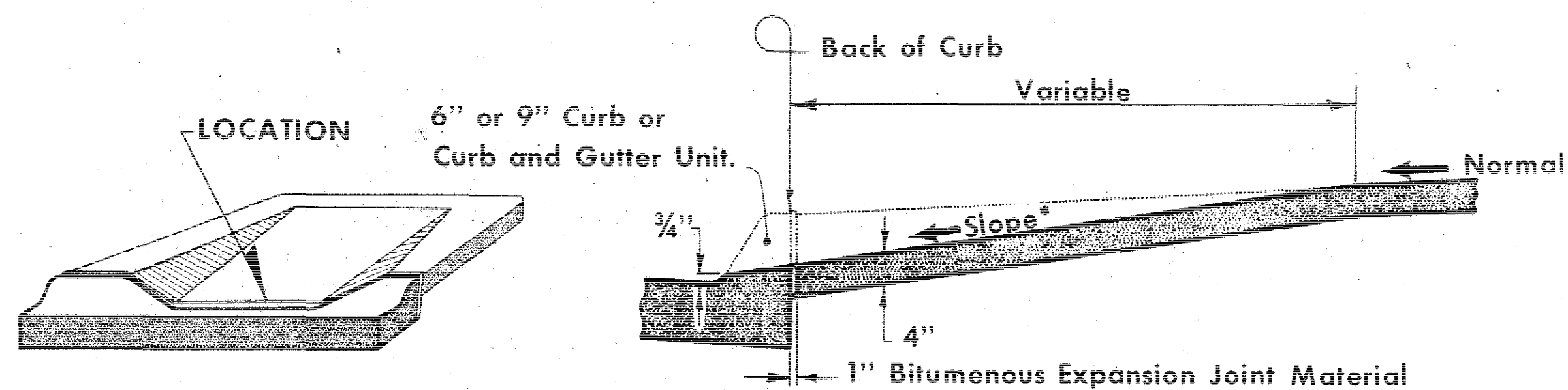
GENERAL NOTES:
Details shown hereon are typical only and are not intended to depict any specific installations. Refer to project plans for requirements of individual locations.

Alternate designs and details may be submitted to the engineer for approval.

All concrete for construction of "Pedestrian Curb Ramps" shall be as for sidewalks.

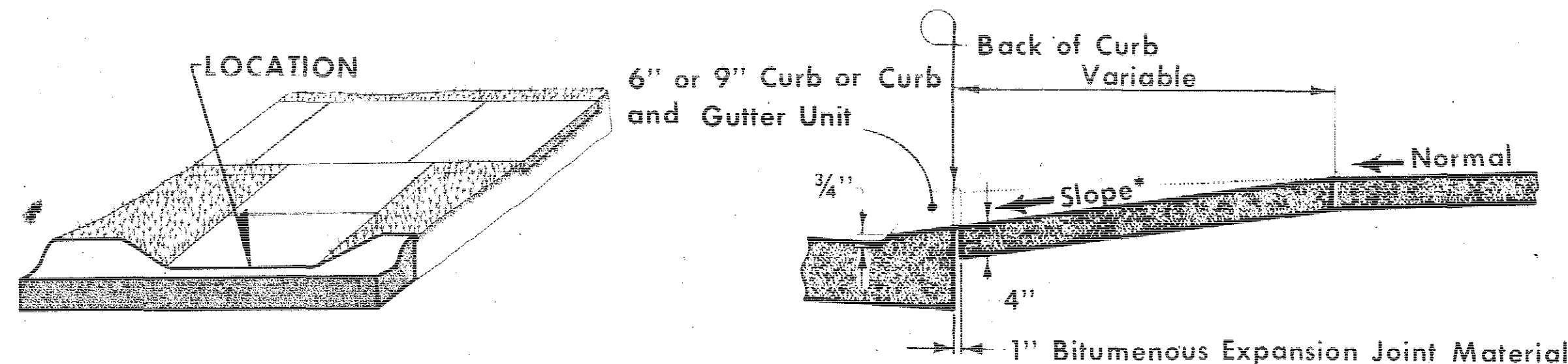
Finish shall be the same as for sidewalks and in accordance with ISHC Standard Specifications.

The work of constructing "Pedestrian Curb Ramps" shall not be paid for separately but considered incidental to other work on the project.



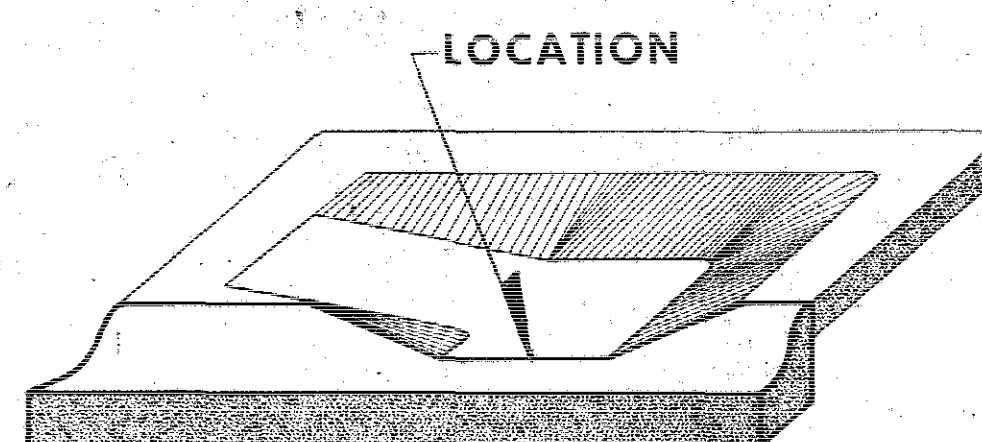
TYPE "A"
TYPICAL RAMP INSTALLATION

(TYPE "A")
TYPICAL SECTION

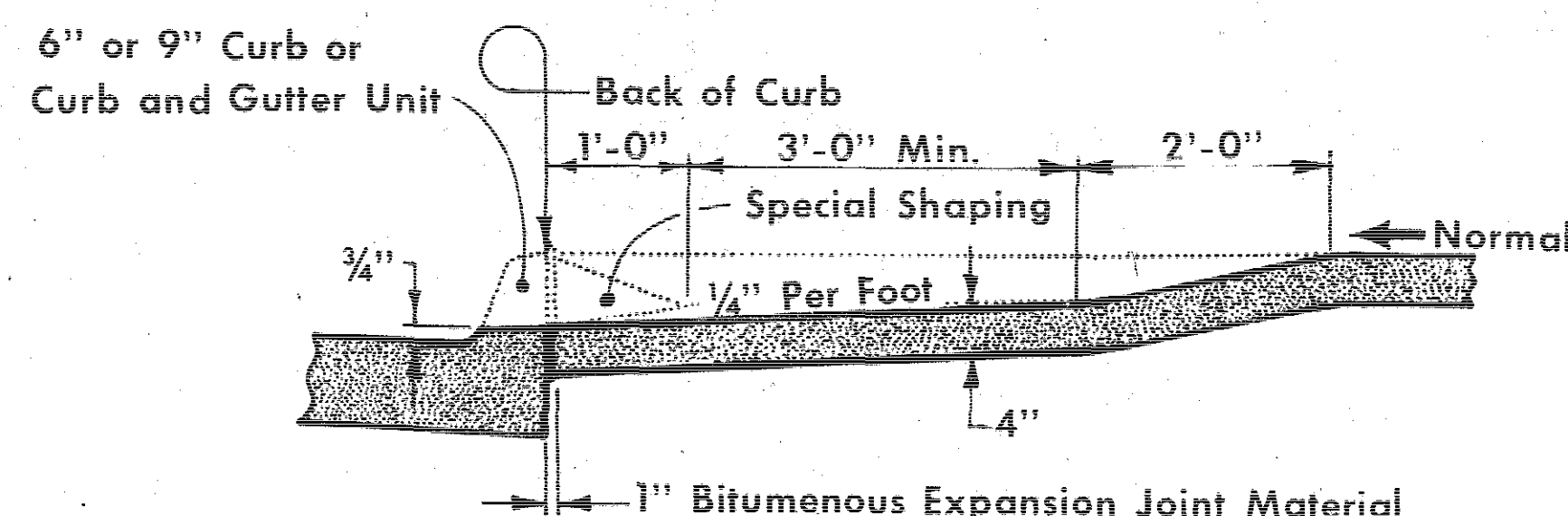


TYPE "B"
TYPICAL RAMP INSTALLATION

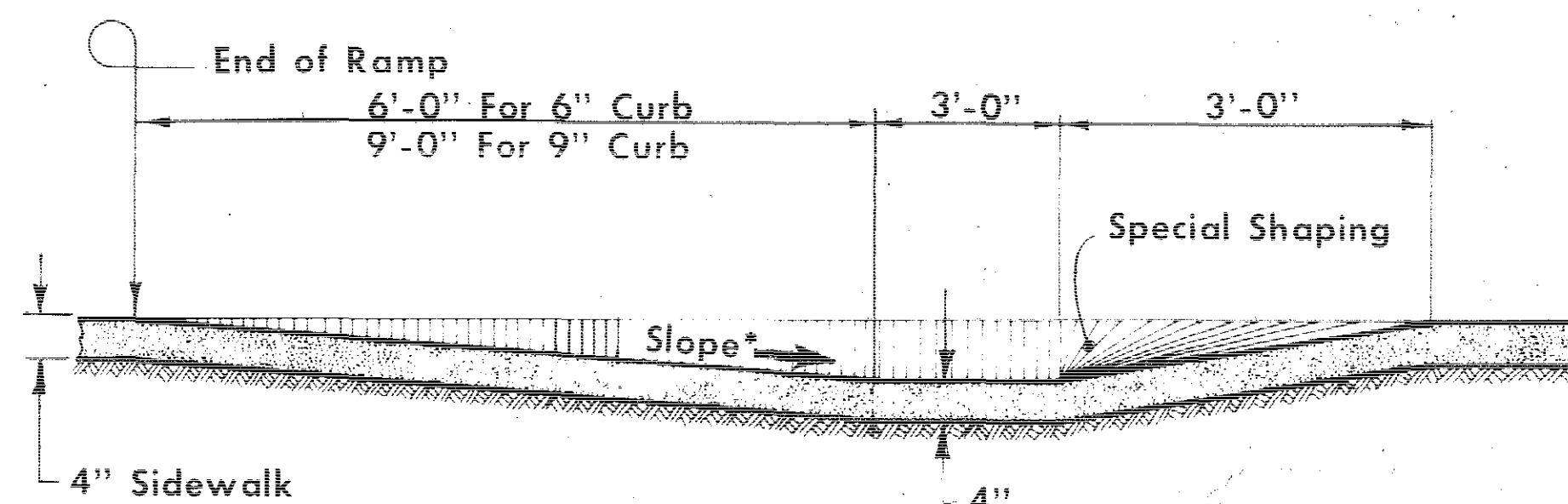
(TYPE "B")
TYPICAL SECTION



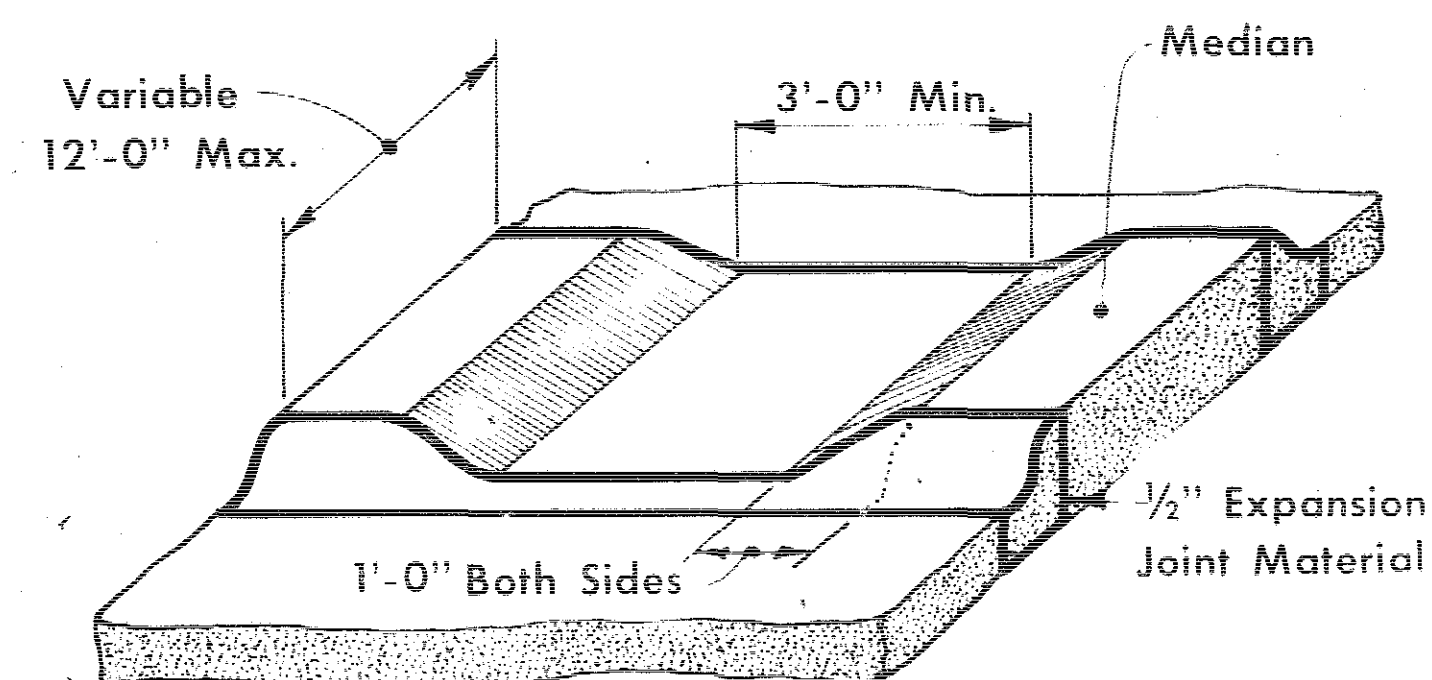
TYPE "C"
TYPICAL RAMP INSTALLATION



(TYPE "C")
TYPICAL SECTION

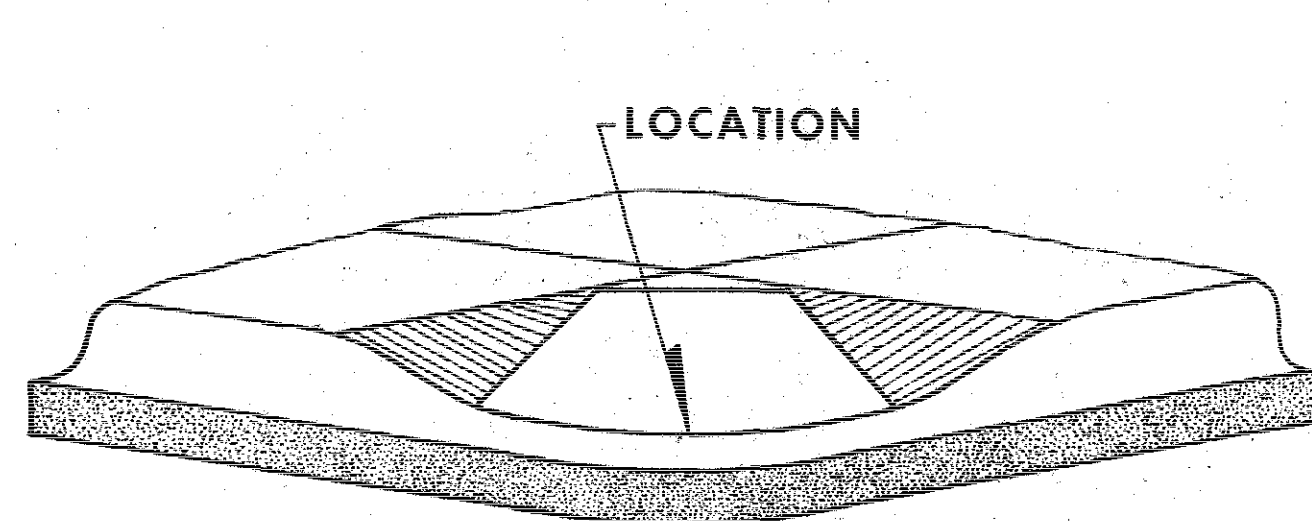


(TYPE "C")
TYPICAL SECTION

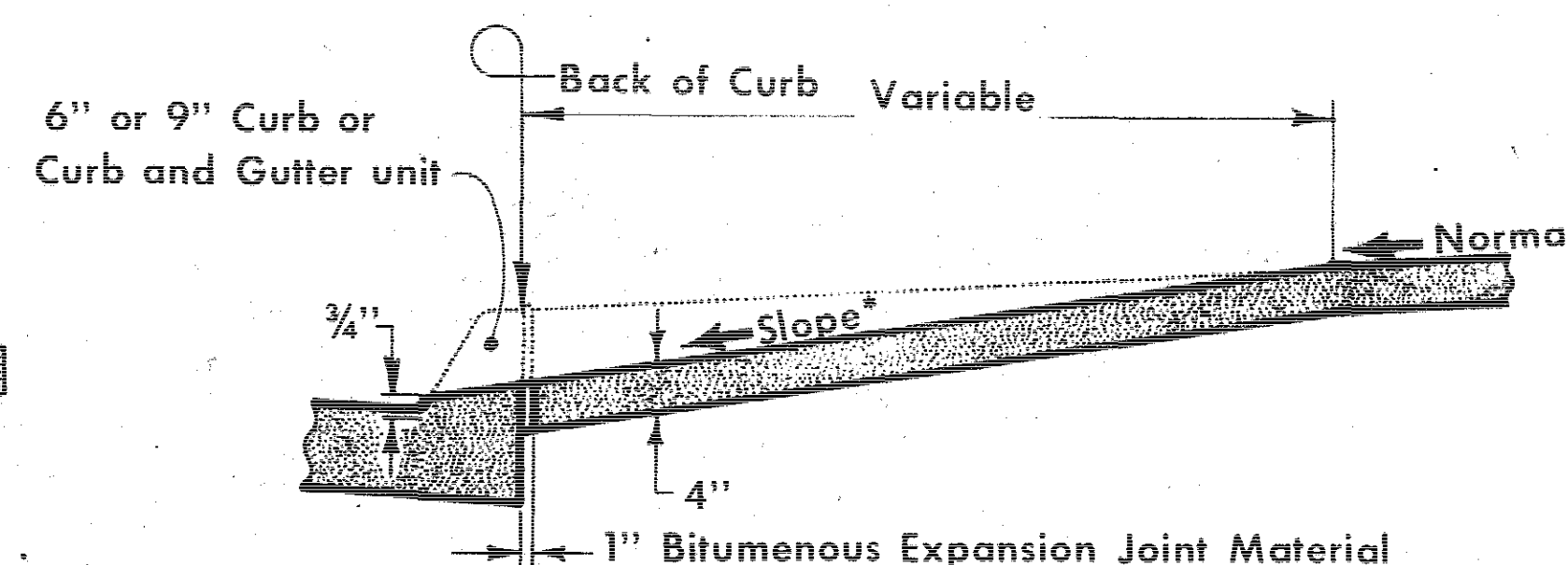


RAMPS AT CURBED MEDIANS
When Median is more than 12'-0" wide
use two 6'-0" ramps across Median.

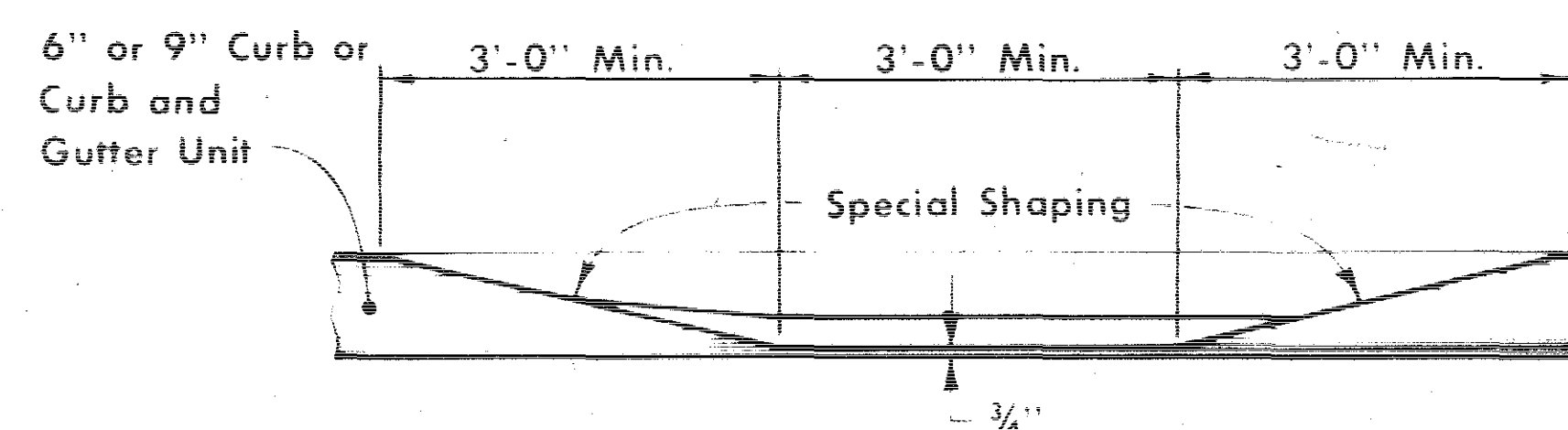
1" Per Foot is Normal Ramp Slope
1 1/2" Per Foot is the Max Ramp Slope



TYPE "D"
TYPICAL RAMP INSTALLATION

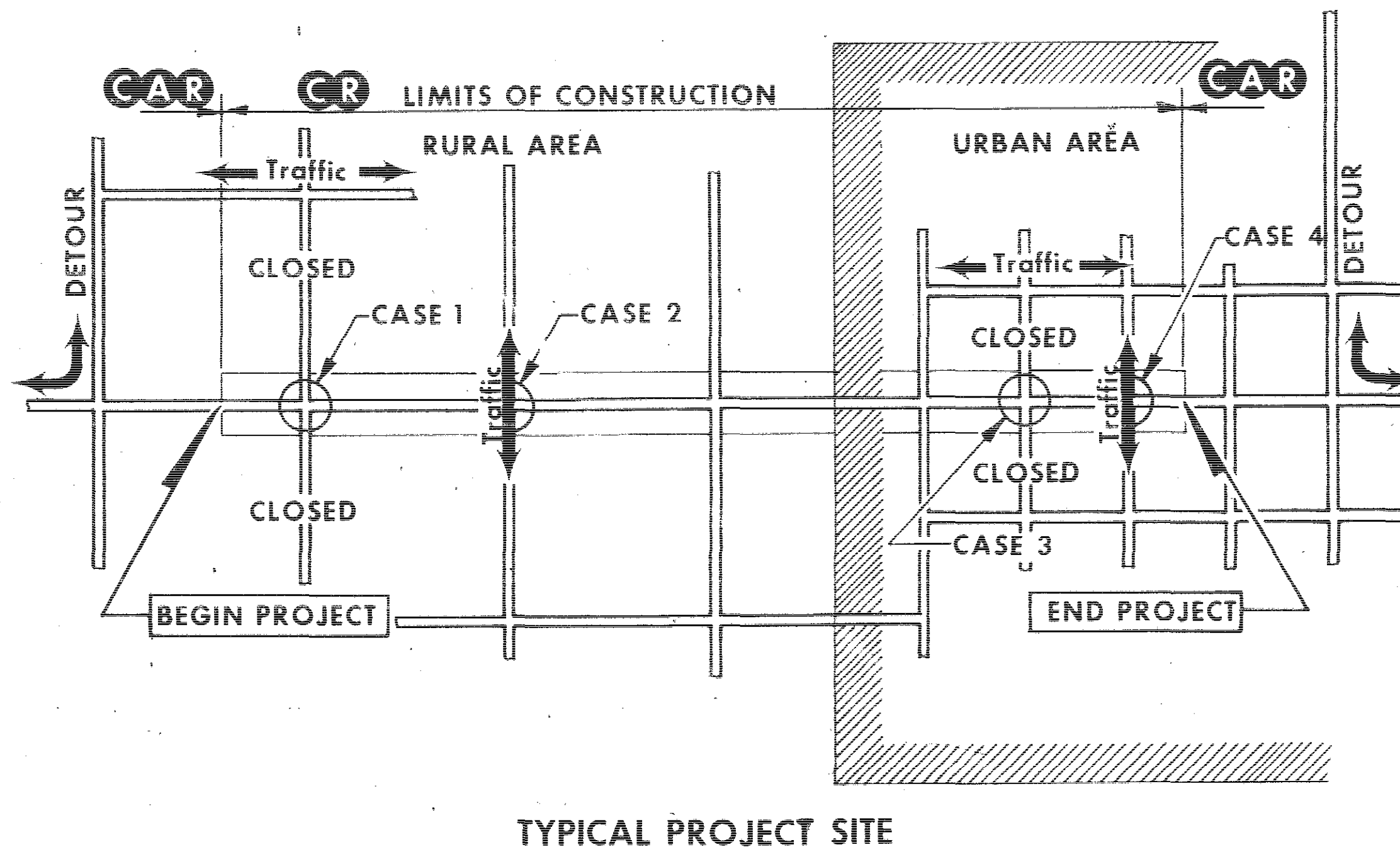
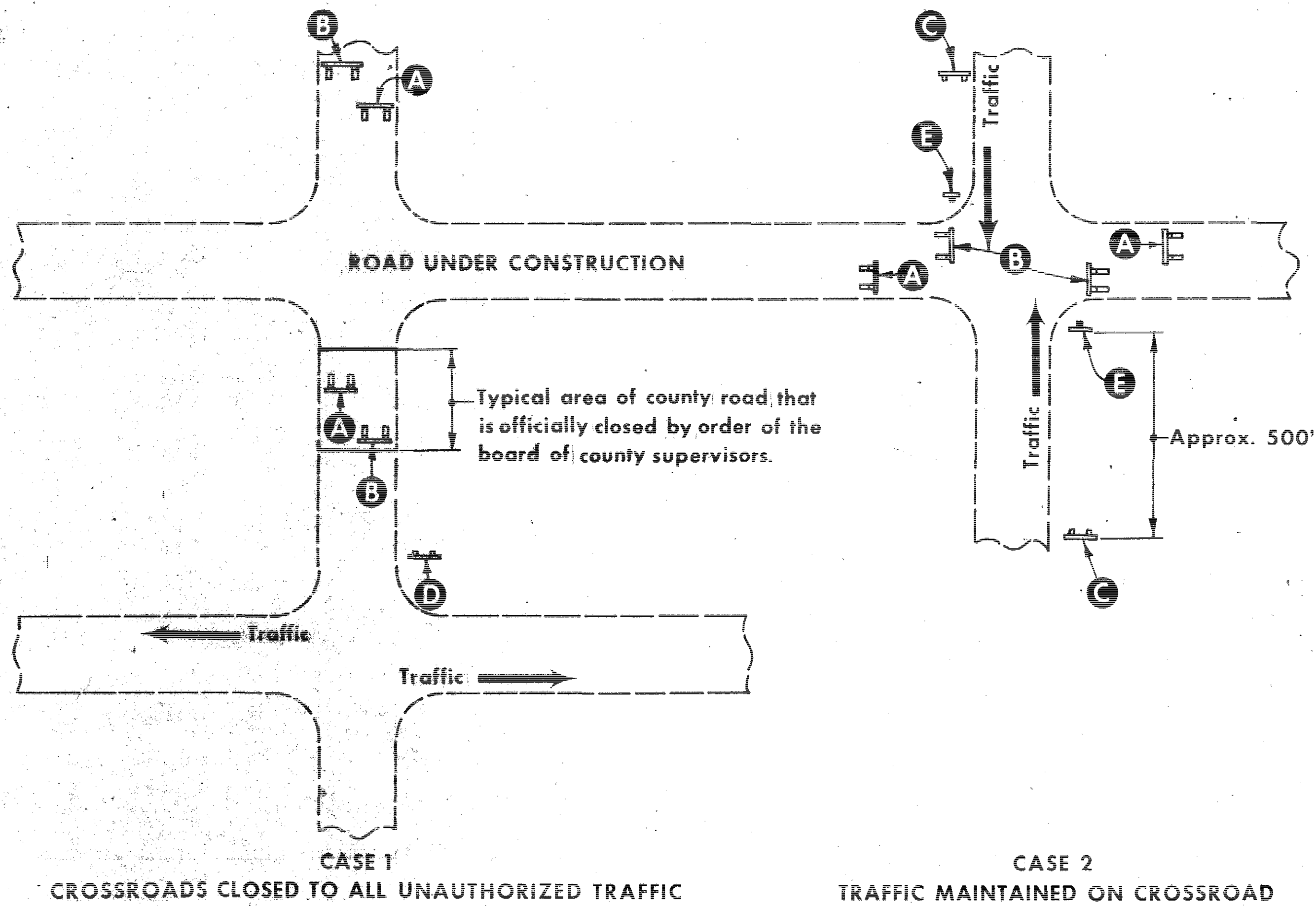


(TYPE "D")
TYPICAL SECTION



(TYPICAL FOR ALL FOUR TYPES)
NORMAL CURB DROP

IOWA HIGHWAY COMMISSION	
STANDARD ROAD PLAN	RB-6
Date	8-2-74
No.	7-31-74
Recommended	John C. Hooker 7-31-74 Ass't. Road Design Engineer Date
Approved	H. P. McLaughlin 7-31-74 Road Design Engineer Date
Deputy Chief Engineer	7/31/74 Date
PEDESTRIAN CURB RAMPS (FOR HANDICAPPED)	



- CR** Signing within and adjacent to limits of project site shall be the responsibility of the contractor.
- CAR** Signing beyond the limits of project site shall be the responsibility of the contracting authority. All signing deemed necessary beyond the project limits described hereon shall be furnished, erected, maintained and removed by the contracting authority.

GENERAL NOTES:
The signs and barricades indicated hereon are minimum requirements and shall be considered typical for the situations illustrated. Additional advance warning signs (either W20-1 or W20-3) may be necessary for restricted sight distance or where directed by the engineer. All work described hereon shall be done in conformance with the requirements of current I.S.H.C. Standard Specifications and applicable Supplemental Specifications.

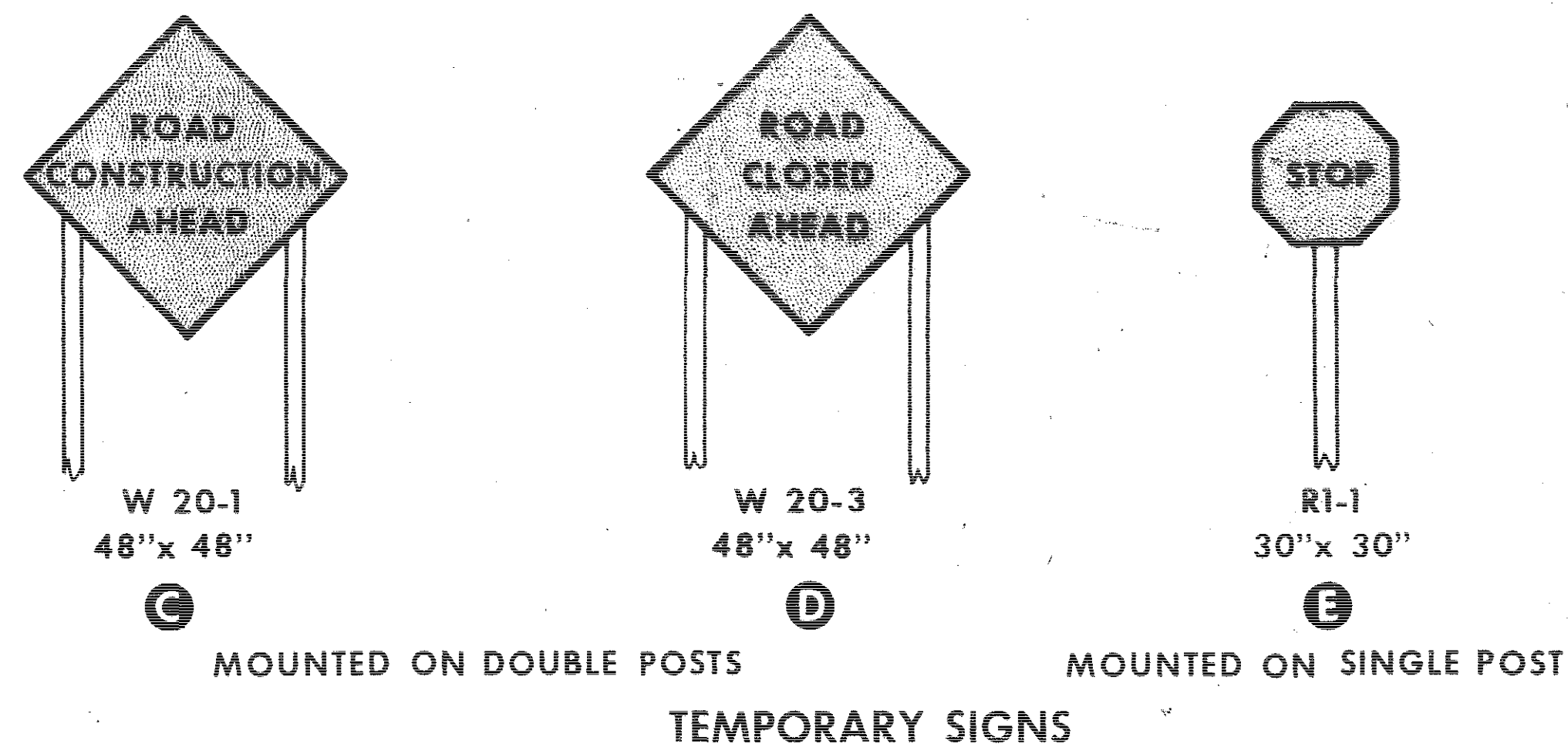
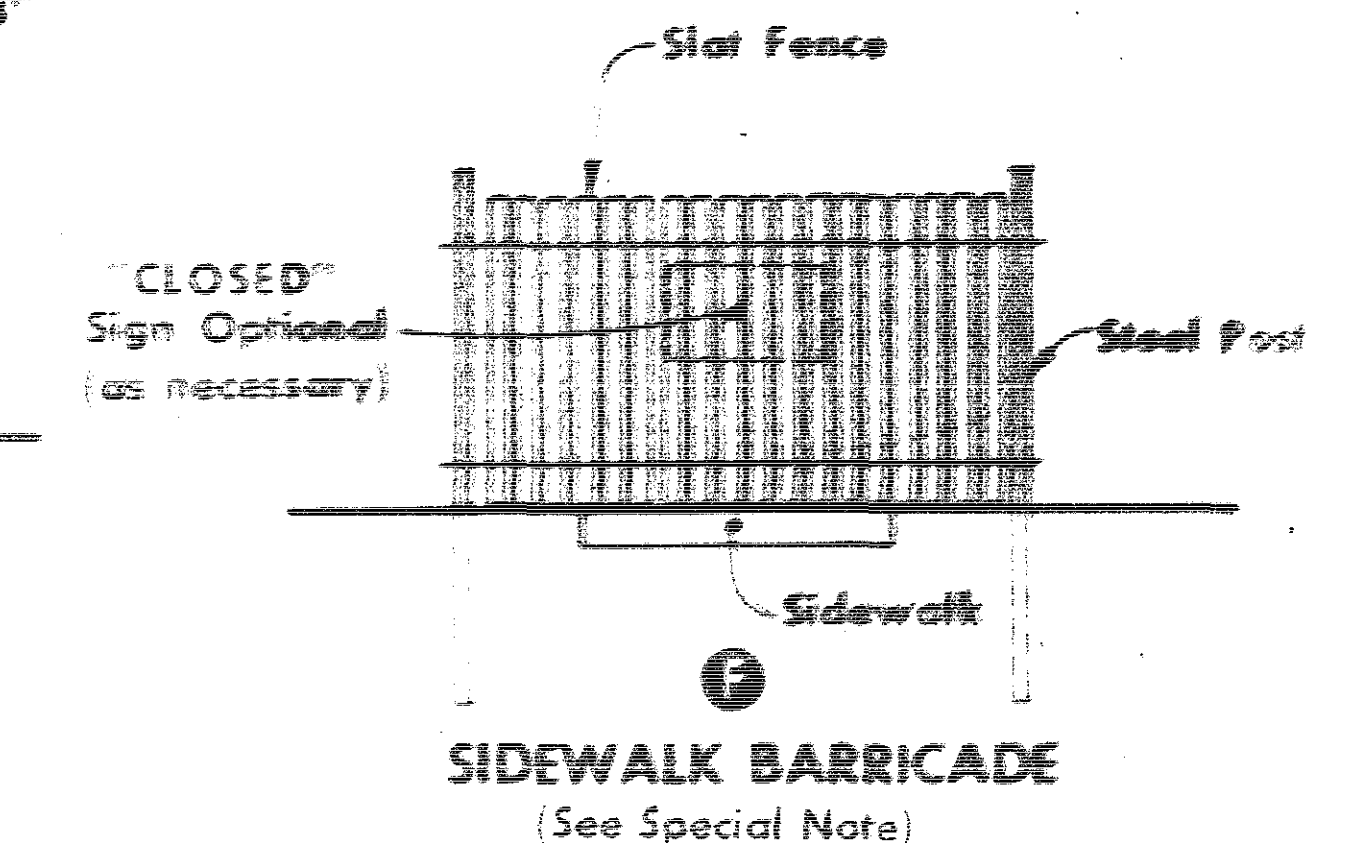
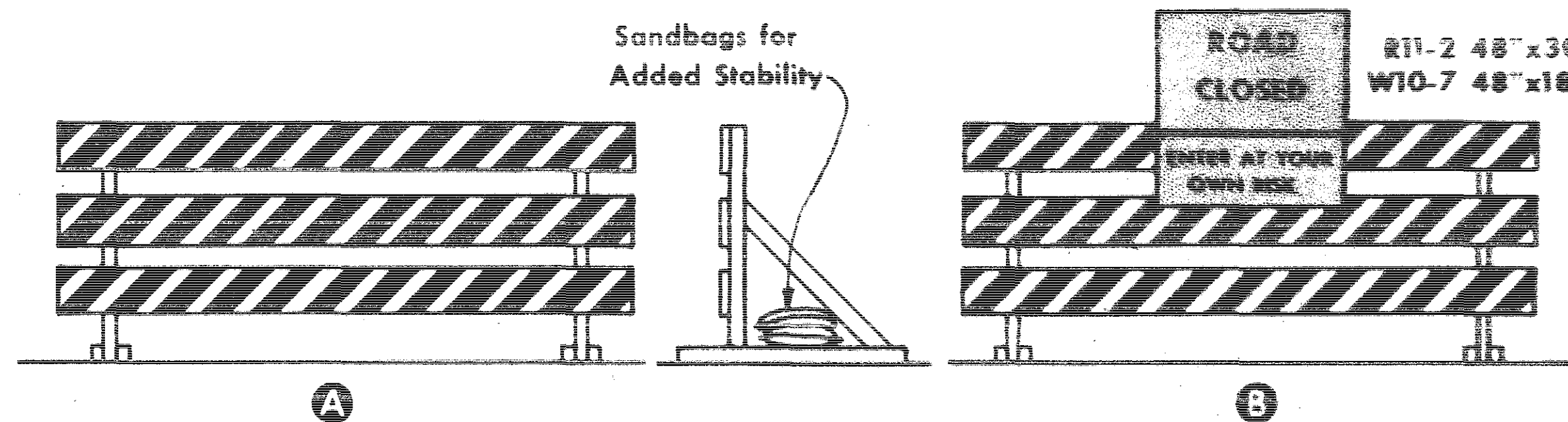
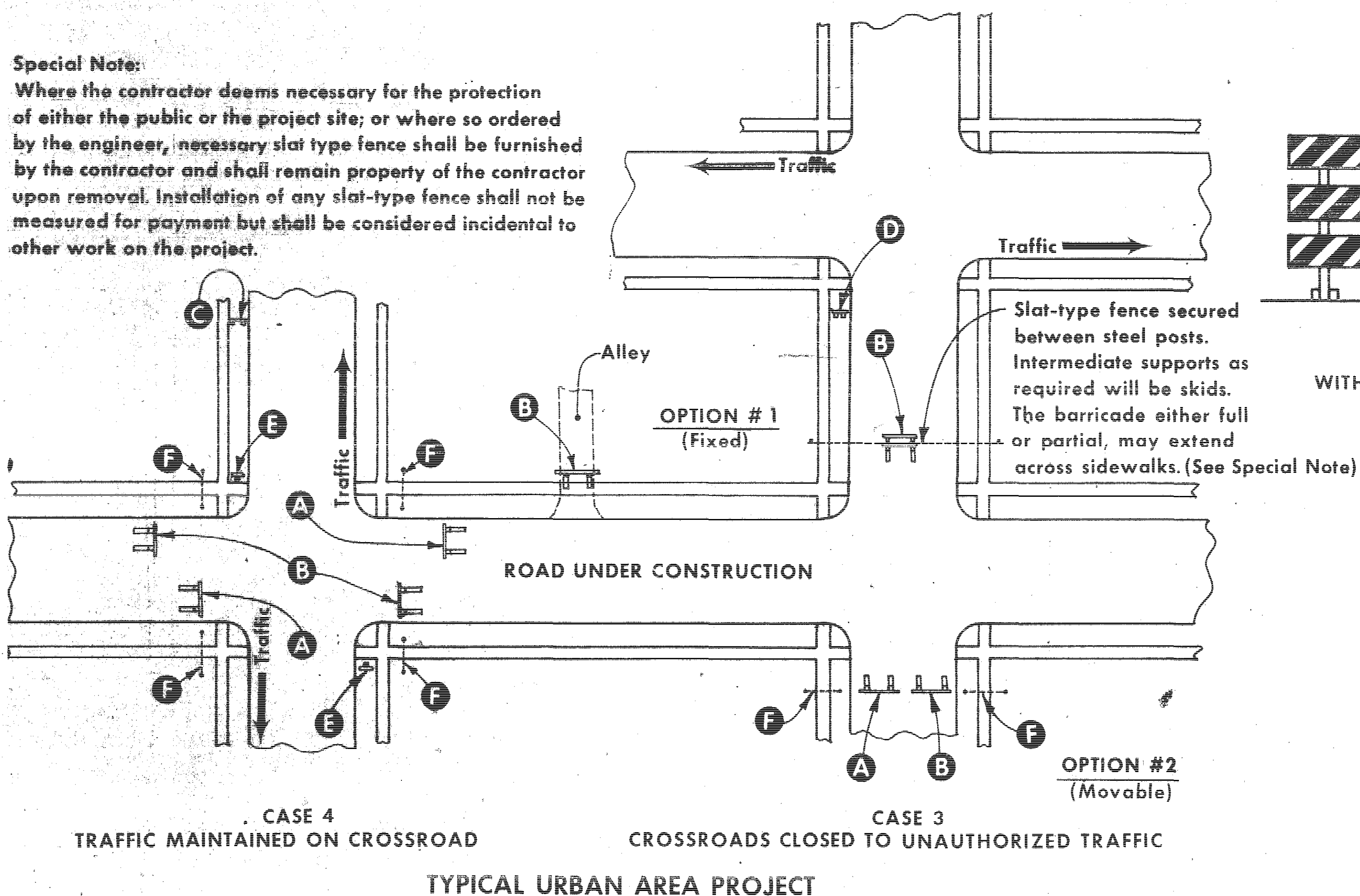
All required signs, barricades, mounting hardware and appurtenant fixtures shall be furnished by the State at a Maintenance Garage site near the project and identified in advance by the engineer.

The contractor shall be required to deliver all signs and barricades to the project site and to erect the necessary signs as indicated hereon or as otherwise directed by the engineer. The contractor shall be required to maintain all signs or barricades in acceptable condition. Any signs or barricades required to be replaced shall be furnished by the State and installed by the contractor.

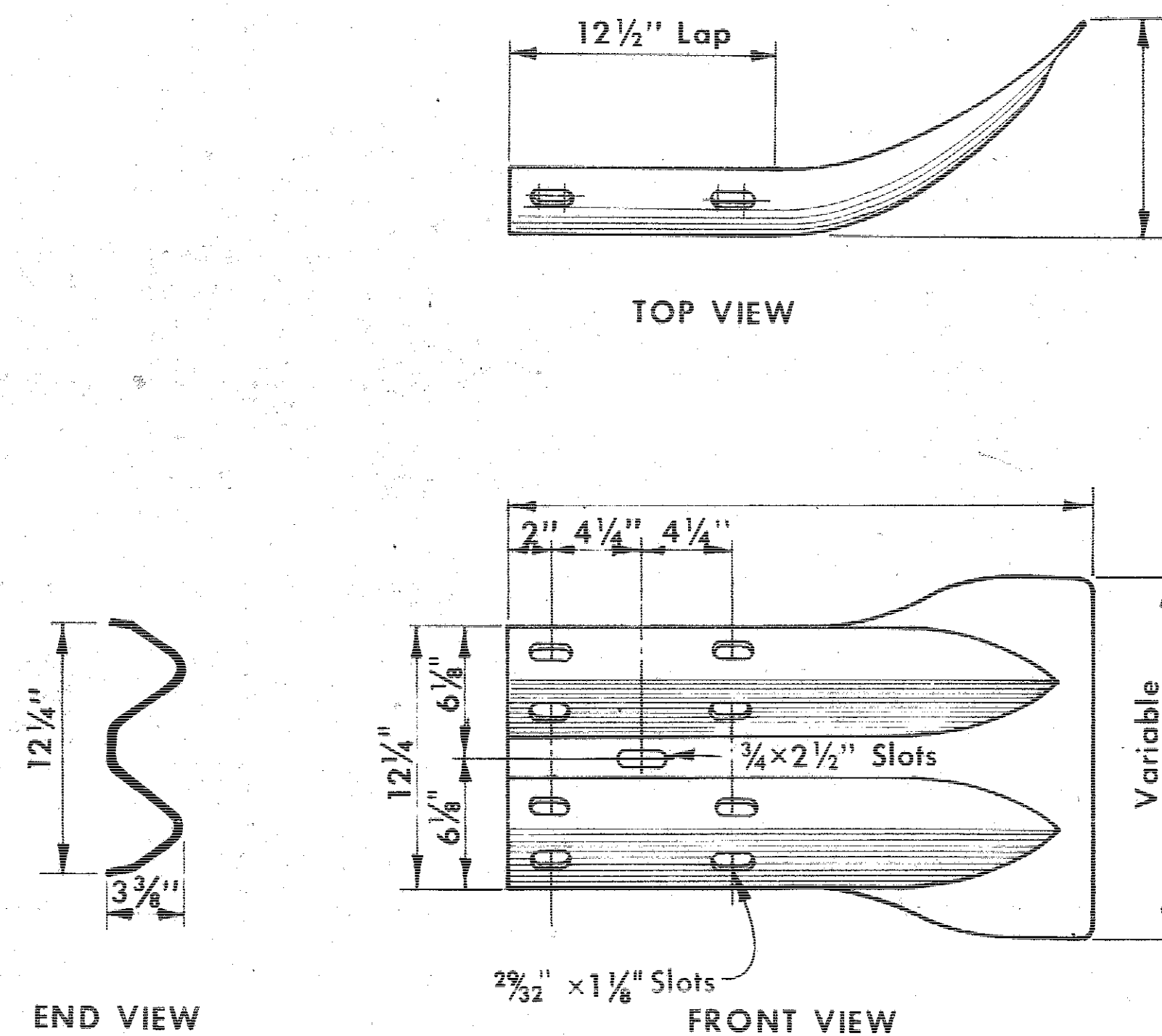
At such time as is directed by the engineer, all signs, barricades, mounting hardware and appurtenant fixtures shall be removed from the project site and returned to the Maintenance Garage from which they were obtained.

The work of installing, maintaining, and removing the temporary signing described hereon shall not be measured or paid for directly. Such cost shall be considered included with and incidental to other work on the project.

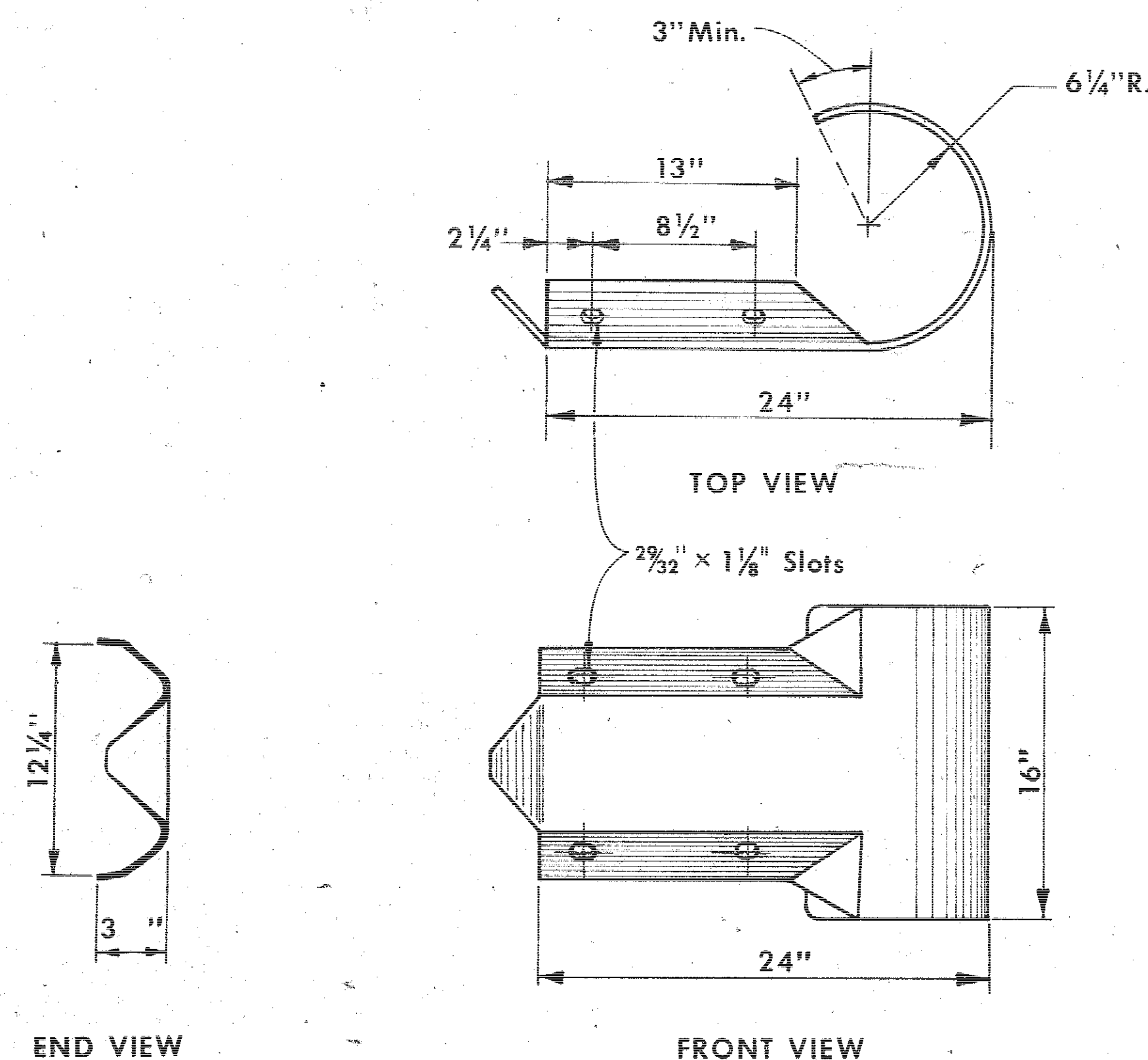
Special Note:
Where the contractor deems necessary for the protection of either the public or the project site; or where so ordered by the engineer, necessary slot type fence shall be furnished by the contractor and shall remain property of the contractor upon removal. Installation of any slot-type fence shall not be measured for payment but shall be considered incidental to other work on the project.



NEW ISSUE		Last Revision		Date		No.		IOWA HIGHWAY COMMISSION	
				6-8-73				STANDARD ROAD PLAN RD-26	
								Ass't. Road Design Engineer Date	
								Road Design Engineer Date	
								Deputy Chief Engineer Date	
								SIGNING FOR TEMPORARY ROAD CLOSURES (PROJECT ROUTE CLOSED TO TRAFFIC)	
								PROJECT NUMBER	
								STATE	
								FISCAL YEAR	
								SHEET NO.	
								TOTAL SHEETS	

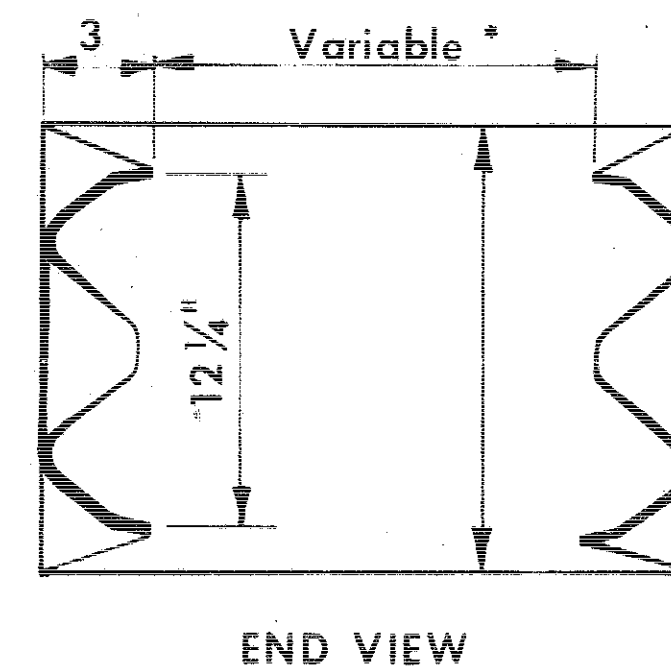


TYPE "A" TERMINAL SECTION
SINGLE TERMINAL



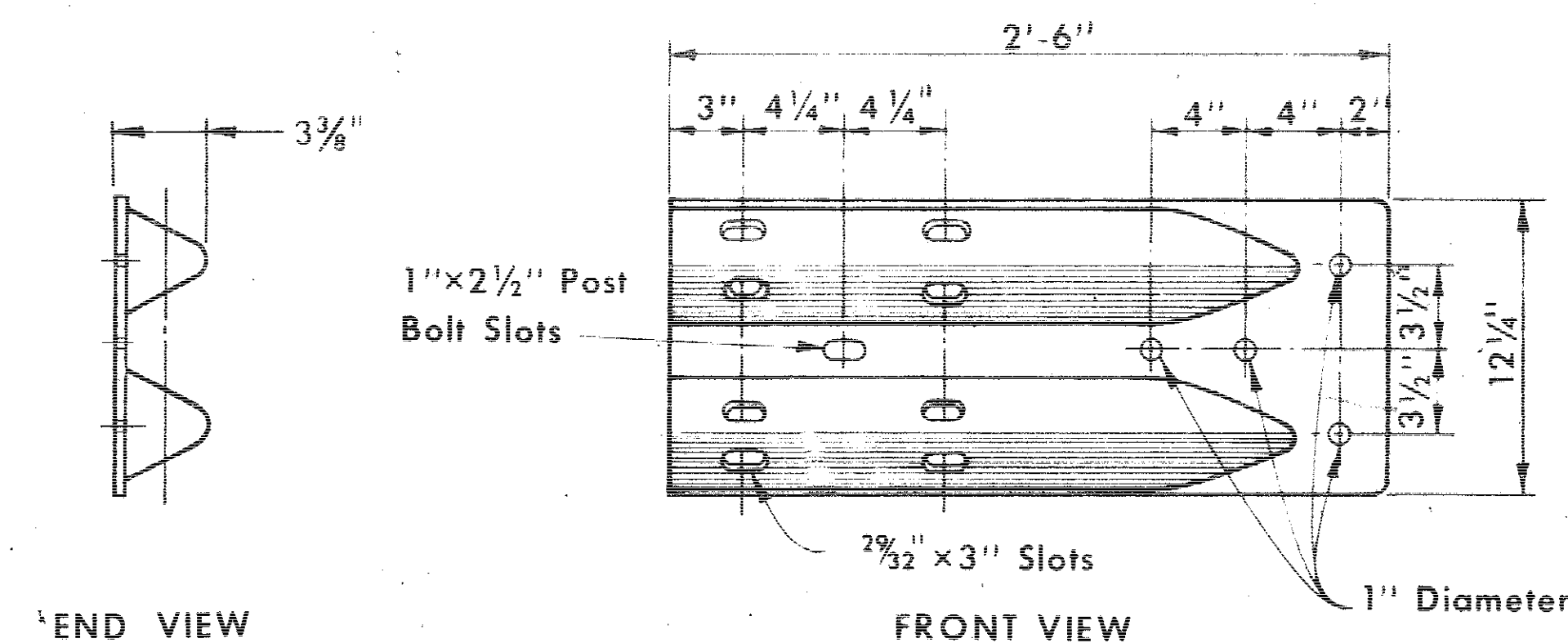
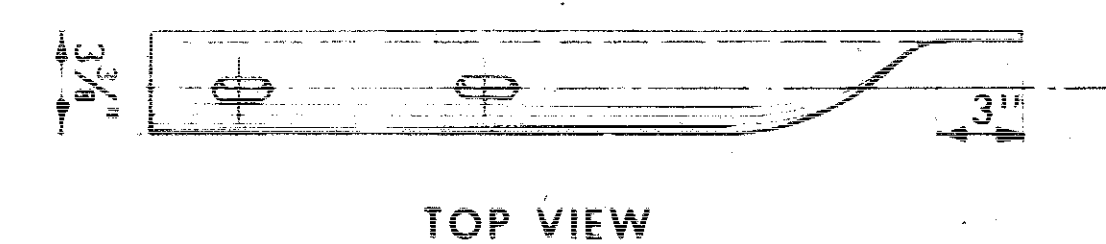
TYPE "B" TERMINAL SECTION
SINGLE TERMINAL

A	Radius
B	
6"	12 ³ / ₈ "
8"	14 ³ / ₈ "



TYPE "E" TERMINAL SECTION
DOUBLE TERMINAL

*Note:
Dimensions of Double Terminals for each type of installation shall be as necessary for the type of guard rail or median barrier installation specified for the project.



TYPE "F" TERMINAL SECTION
SINGLE TERMINAL

GENERAL NOTES:
Terminal section shall be required as part of the end treatment for all guard rail installations unless specifically indicated otherwise in project plans.

Either Type "A" or Type "B" may be used for single terminals unless one type is specifically required. Only one style shall be used on a project.

Fabrication and installation of terminal sections shall be in accordance with current I.S.H.C. Standard Specifications and appropriate other standard road plans.

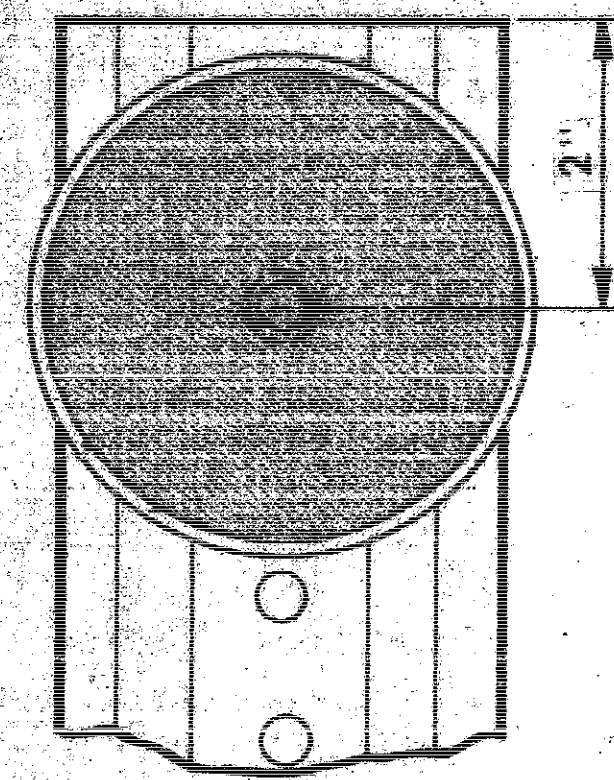
Refer to "Tabulation of Guardrail Installations" for additional details of installations.

Type "A" and "B" terminals shall not be less than U.S.S. 12 gage. Type "E" and "F" terminals shall be U.S.S. 10 gage.

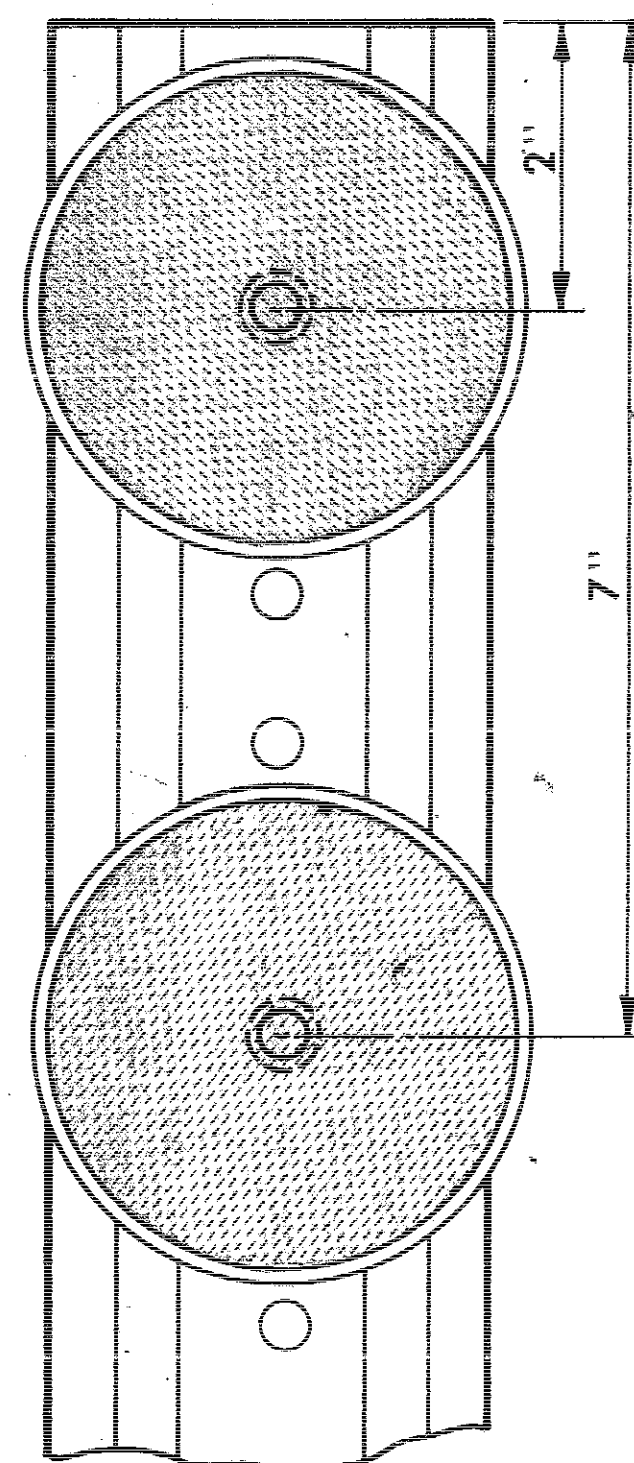
Furnishing and installing terminal sections will not be paid for directly but shall be considered incidental to the price bid for other guard rail work required.

MODIFY DIMENSIONS		8-2-74	Date	IOWA HIGHWAY COMMISSION	
		5	No.	STANDARD ROAD PLAN RE-2	
Last Revision	Recommended	J. P. McLaughlin		8-4-72	
	Approved	J. P. McLaughlin		8-4-72	
	Deputy Chief Engineer		Date		
FORMED STEEL BEAM RAILING TERMINAL SECTIONS					

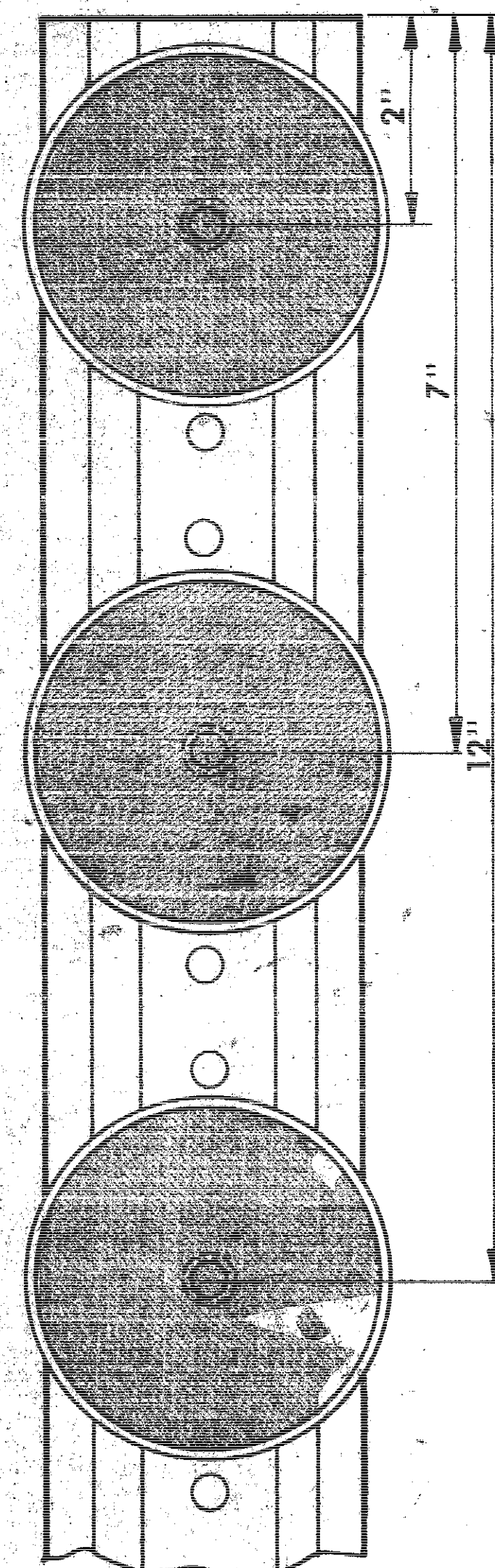
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-02-1(4)-21-49	IOWA	5		41	210



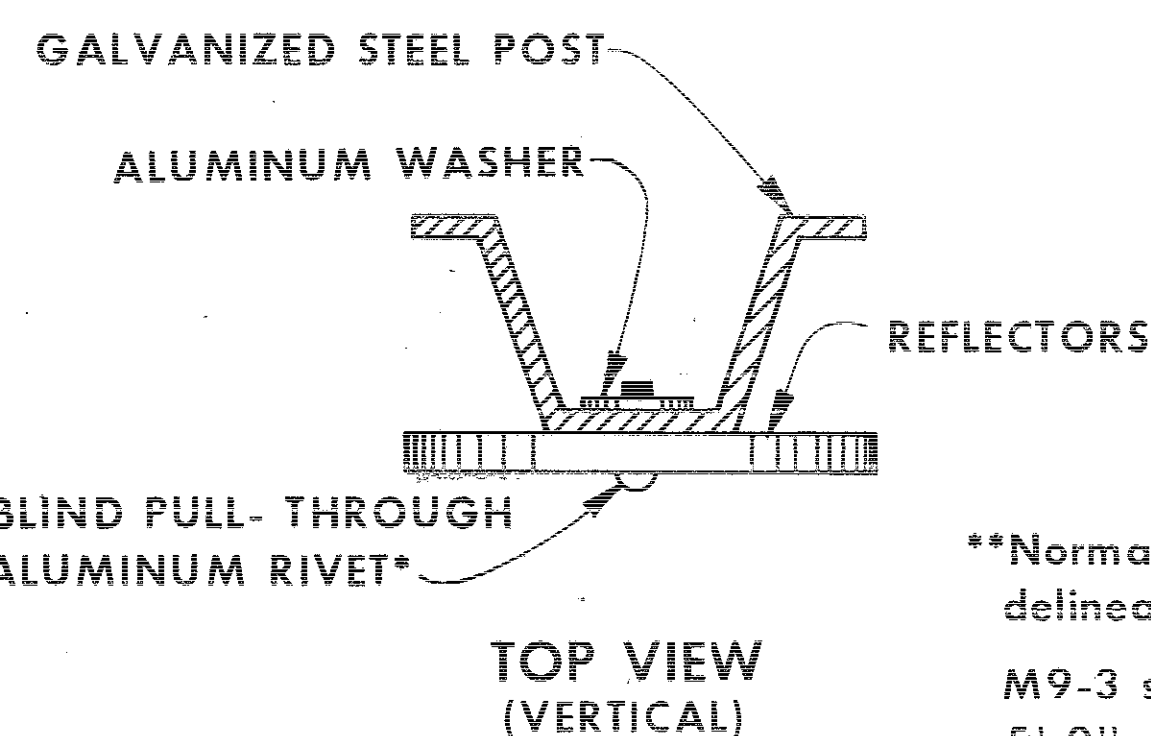
**SINGLE WHITE M9-1
(VERTICAL)**



**DOUBLE AMBER M9-2
(VERTICAL)**

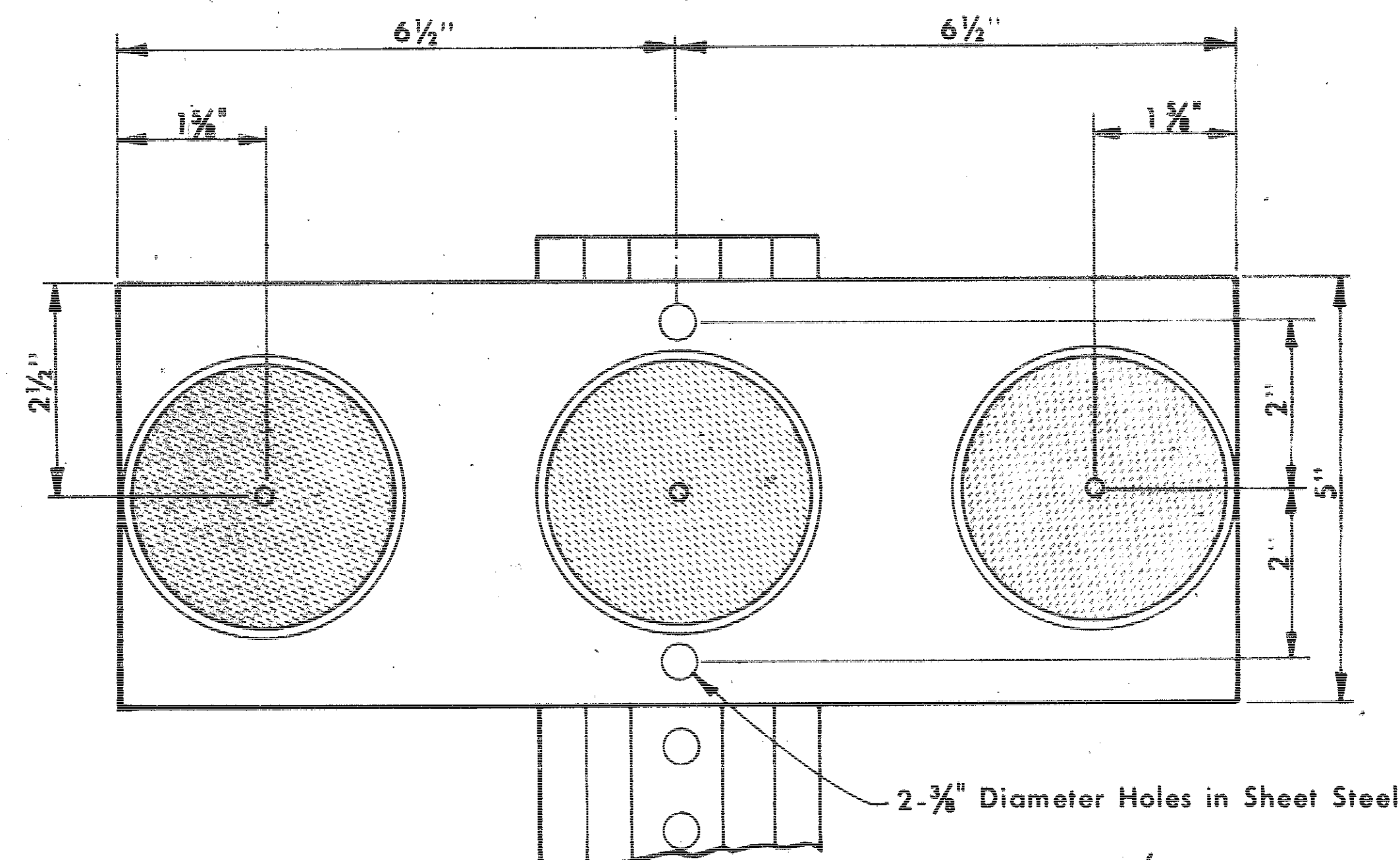


TRIPLE AMBER M9-3

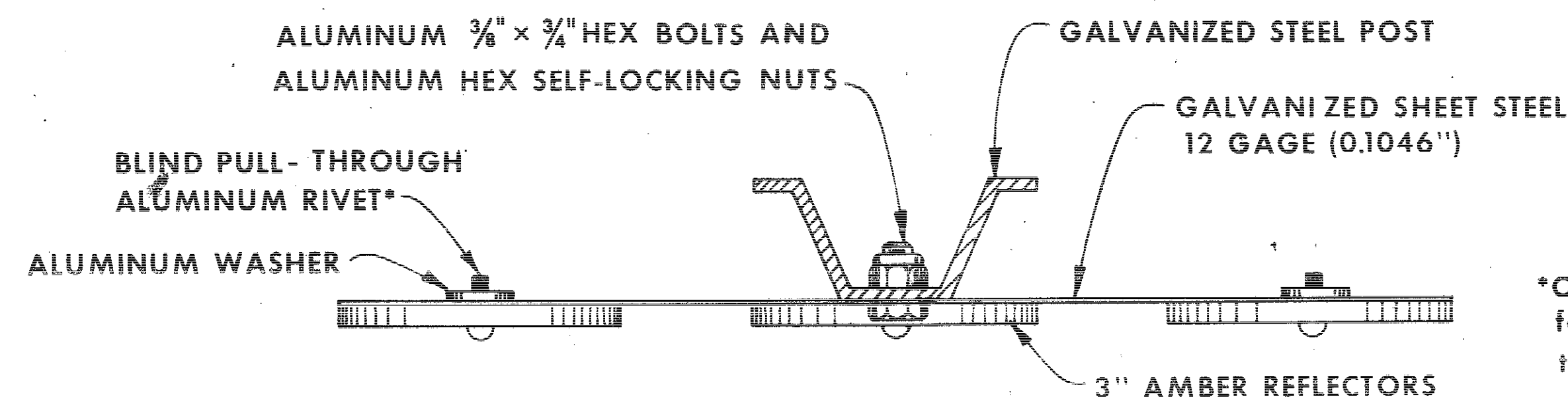


*Other tamper resistant type fasteners may be used upon the approval of the engineer.

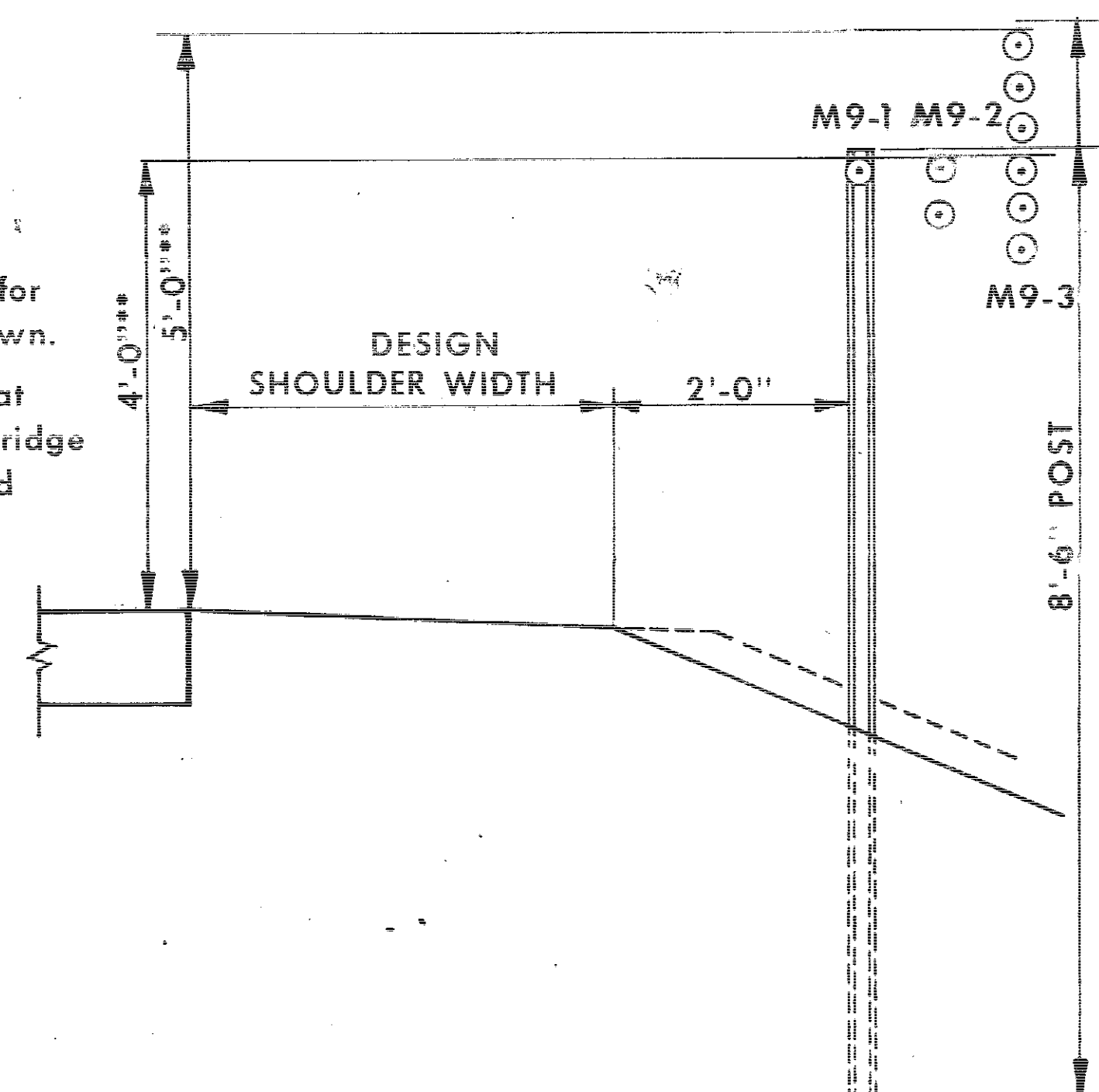
**Normal mounting height for delineators is 4'-0" as shown. M9-3 shall be mounting at 5'-0" when installed at bridge ends or when so specified on detail project plans.



FRONT VIEW OF 3" AMBER TRIPLE HORIZONTAL DELINEATOR



*Other tamper resistant type fasteners may be used upon the approval of the engineer.



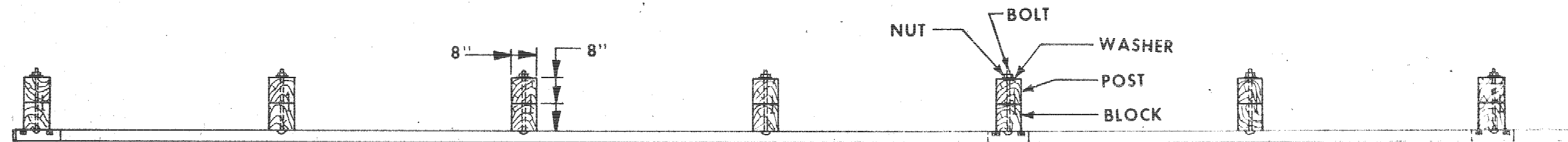
TYPICAL INSTALLATION VERTICAL DELINEATOR

GENERAL NOTES:

Materials, Fabrication and Installation of delineators and delineator posts shall be in conformance with current ISHC Standard Specifications and applicable Special Provisions, as supplemented by details hereon.

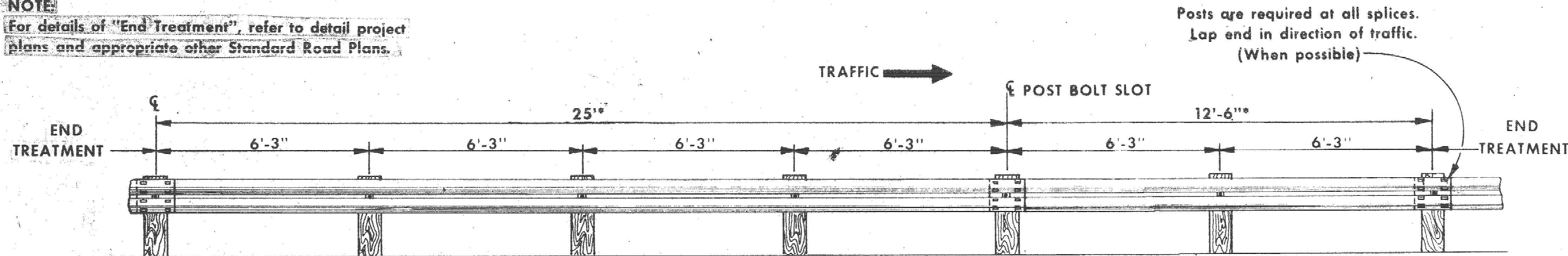
See detail plans for locations of various types of delineators.

REDRAW SHEET	Date	11-19-71	
	No.	1	
	Recommended	<i>John C. Hocker</i> 11-22-71 Ass't. Road Design Engineer Date	
	Approved	<i>J. P. McLaughlin</i> 11-23-71 Road Design Engineer Date	
Last Revision	<i>J. P. McLaughlin</i> 11-23-71 Deputy Chief Engineer Date		
DETAILS OF DELINEATOR INSTALLATION			



PLAN

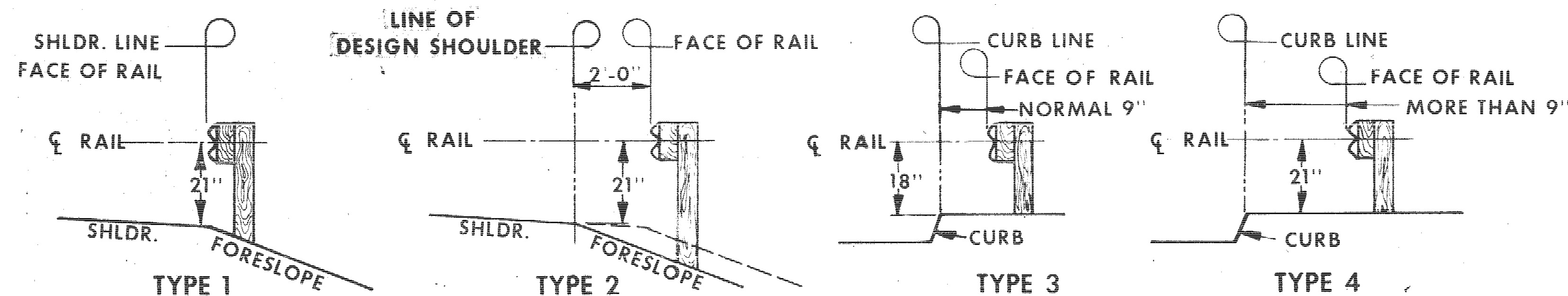
NOTE:
For details of "End Treatment", refer to detail project plans and appropriate other Standard Road Plans.



RAIL WASHER SHALL BE INSTALLED AT ALL POSTS

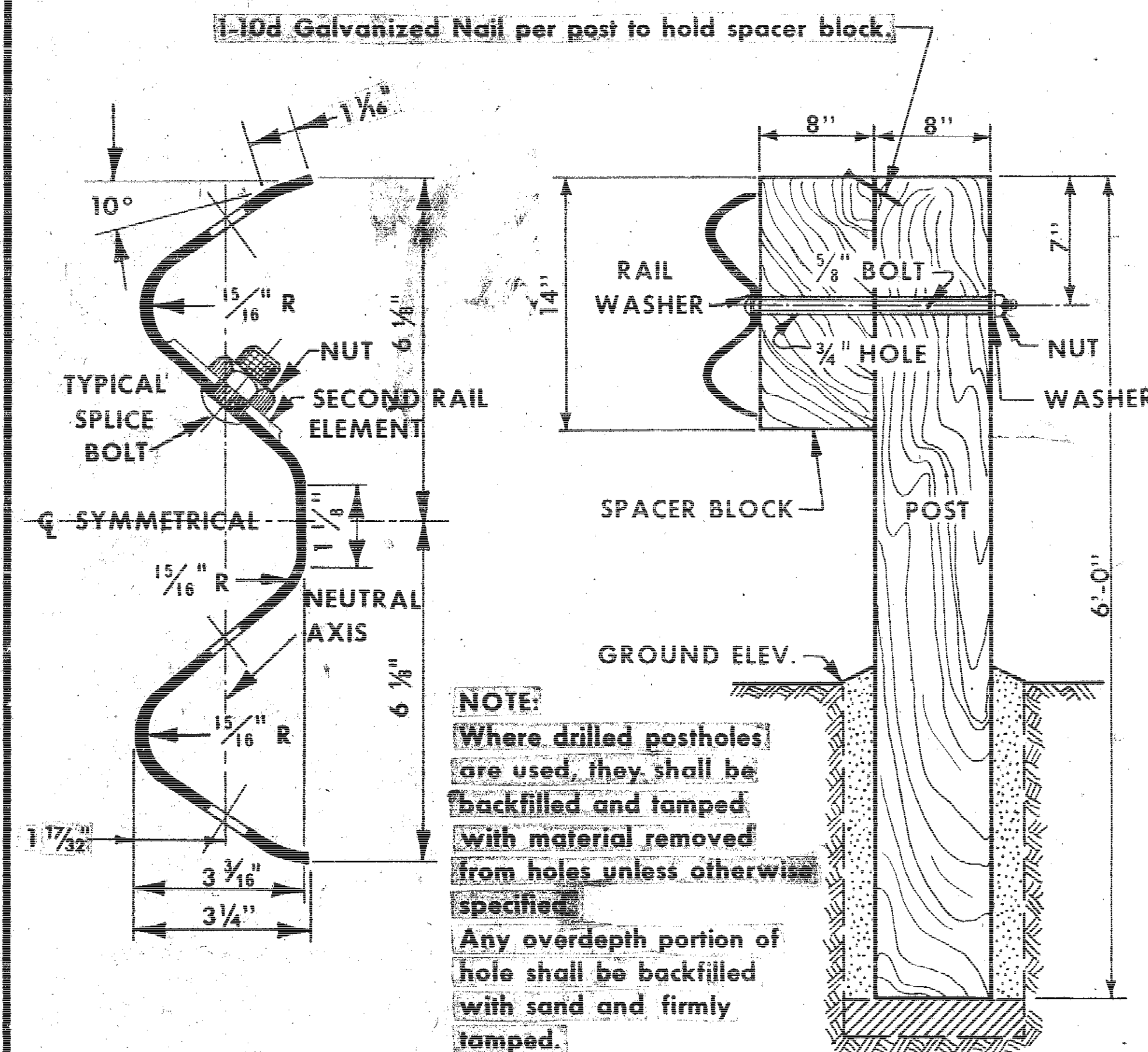
NOTE:
Care shall be taken at time of installation to ensure a smooth appearance with no abrupt breaks in alinement or profile of guard rail upon completion of the construction.

ELEVATION



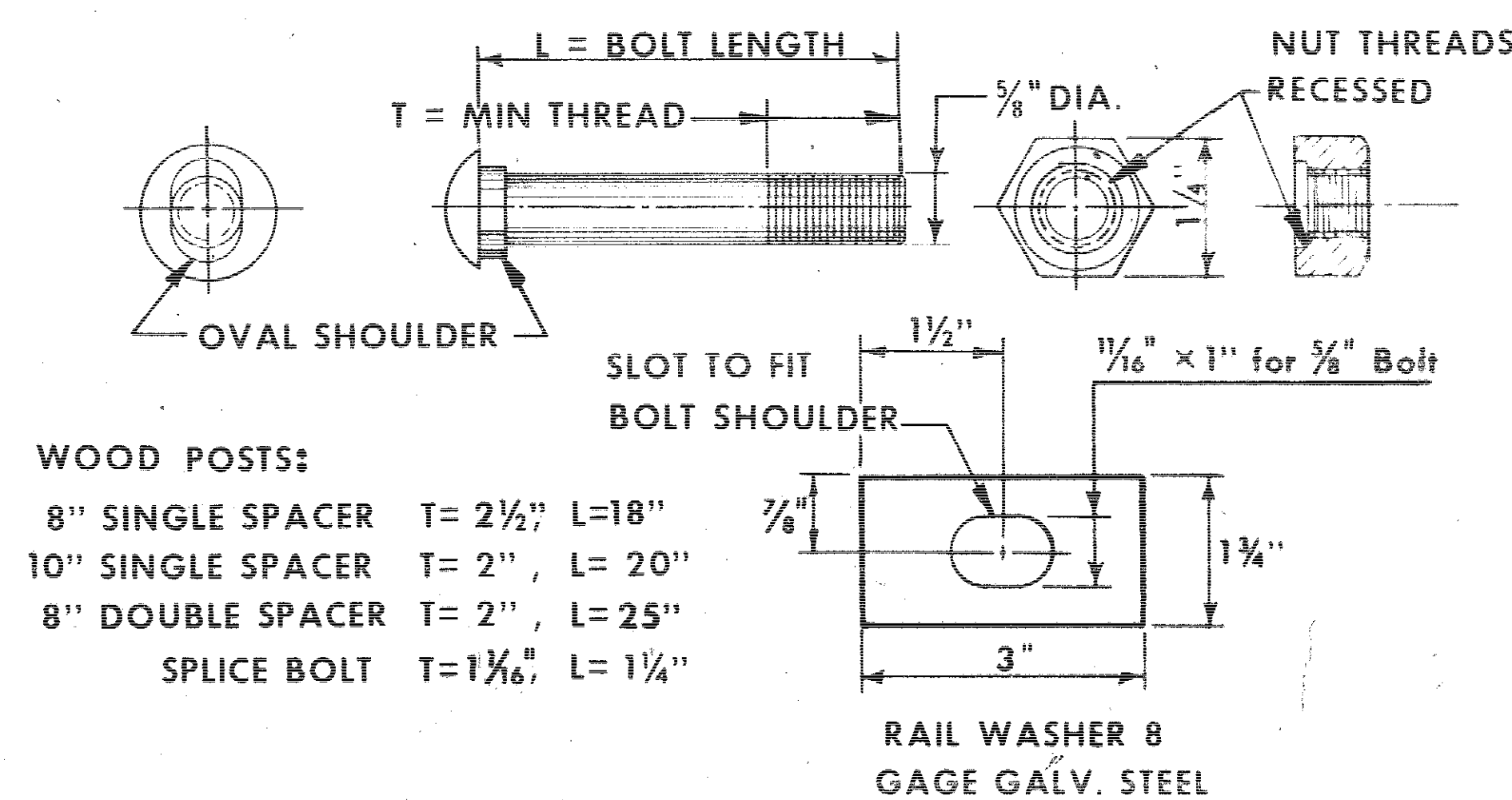
TYPICAL SECTIONS OF VARIOUS TYPES OF INSTALLATIONS

***NOTE:**
Except where specifically required otherwise, the rail element may be furnished in either 25' or 12'-6" "pieces".



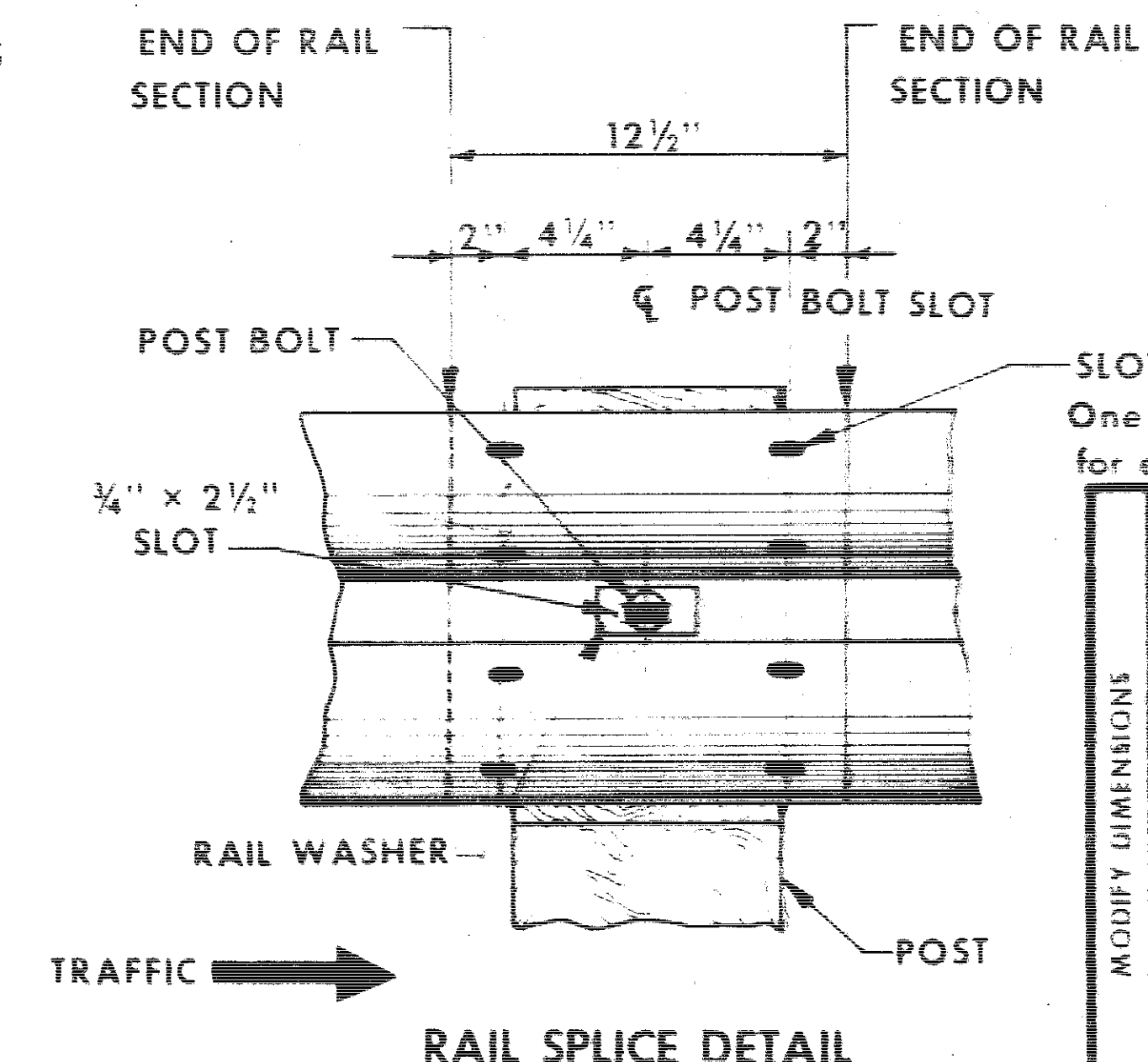
SECTION THRU RAIL

DETAILS OF SAWN POST AND SPACER BLOCK



NOTE:
For any case requiring bolts other than as indicated, the bolt lengths shall be of a proper length to accomplish the intended purpose.

DETAILS OF HARDWARE



RAIL SPLICE DETAIL

SPECIAL NOTE:
At splices, the rail ends shall be overlapped in the direction of the traffic for which the guard rail installation is made.

GENERAL NOTES:
Sections of beam rail and all hardware necessary for its installation shall be in accordance with current ISHC Standard Specifications and as detailed herein.

Beam rail installed on curvilinear alinement of a radius less than 150 ft. shall be shop curved to the proper radius by the fabricator.

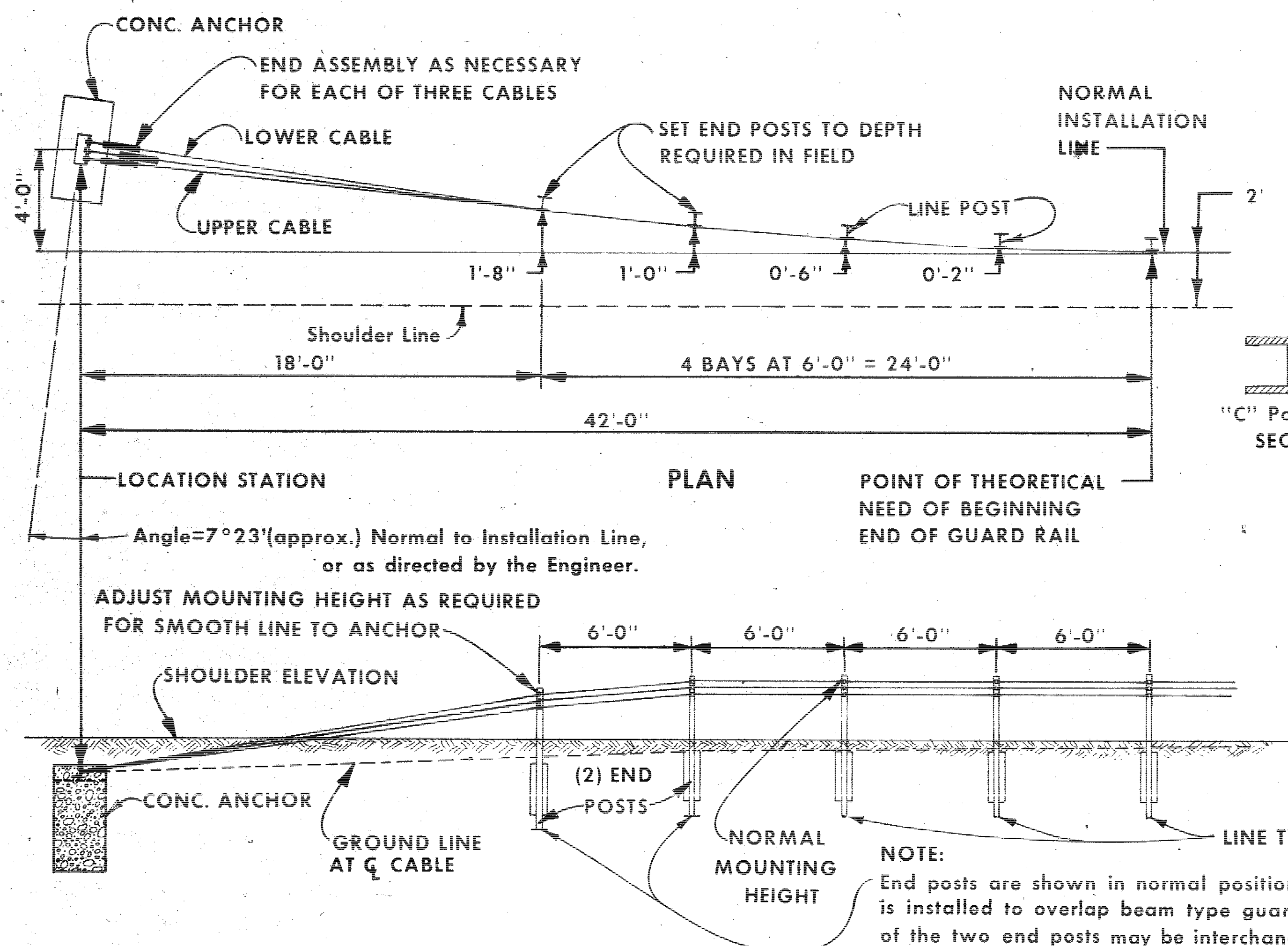
Post spacing shall be 6'-3" C-C unless otherwise specified as part of project plans. Where detail plans call for guard rail to be installed so that normal post spacing cannot be used, the rail may be cutoff or additional holes drilled as necessary. Affected portions of the rail shall be repaired as directed by the engineer. At locations approved by the engineer where the top of a culvert or concrete footing would prevent the installation of the guard rail post in the normal manner, the bottom of the post may be cut off up to 12" to facilitate installation of post and rail. Portion of post where cut off is made shall be coated with pentachloro phenol preservative before installation. Not more than three consecutive posts shall be so modified.

Posts shall be furnished with one or two spacer blocks as specified in detail plans along with appropriate hardware for the type of post installed. Where post size other than 8" x 8" are specified, the applicable details for such posts shall be similar to those indicated herein. 8" x 8" spacer blocks shall be used unless detail plans specify otherwise.

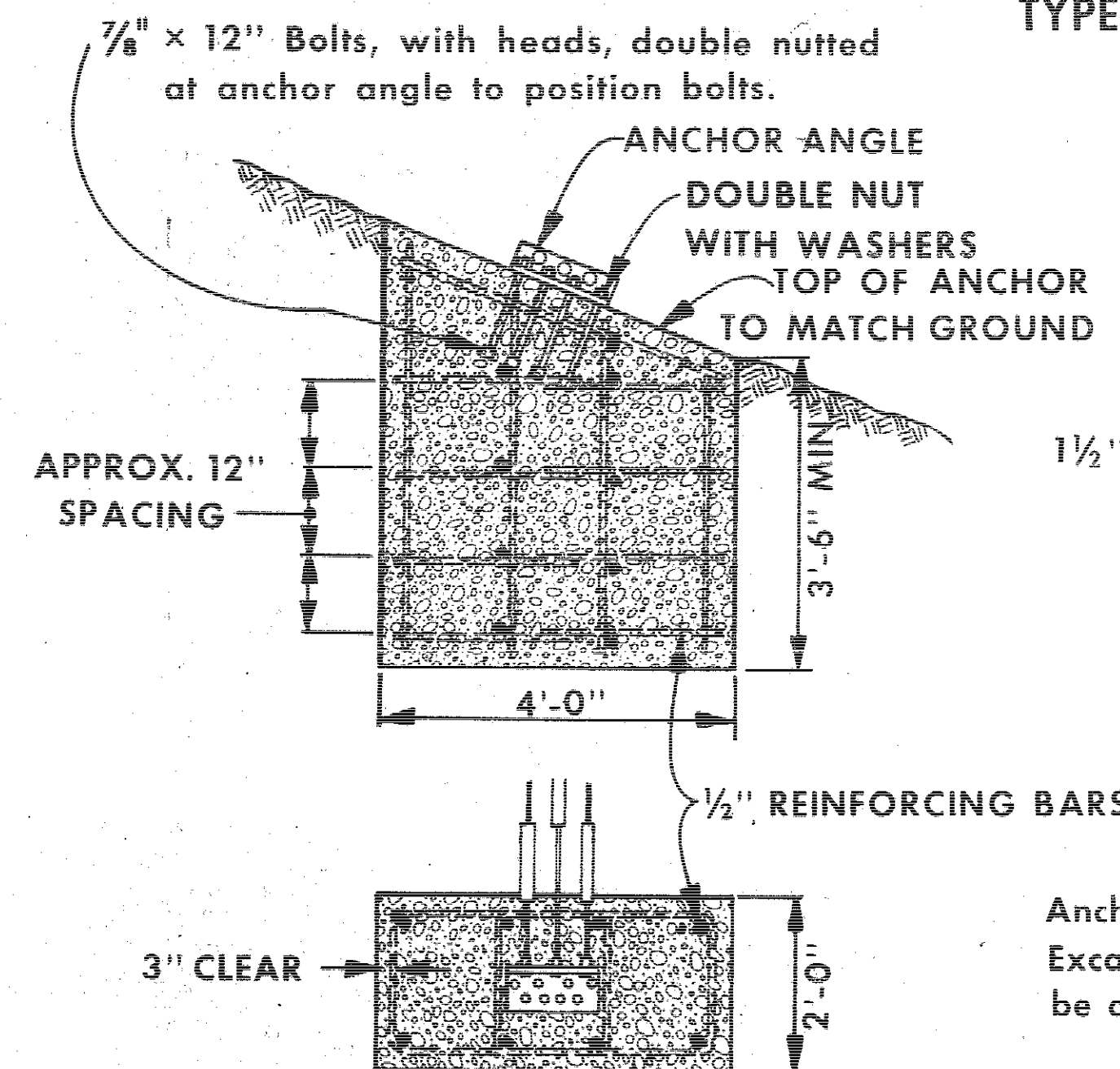
Refer to "Tabulation of Guard Rail Installations" and applicable Standard Road Plans for additional details regarding installation of guard rail and End Treatment.

Price bid for contract items shall be considered full compensation for furnishing and installing all necessary materials guard rail as indicated herein.

IOWA HIGHWAY COMMISSION			
STANDARD ROAD PLAN RE-12			
MODIFY DIMENSIONS Last Revision	Date	6/7/74	
	No.	1	
	Recommended	Asst. Road Design Engineer Date	
	Approved	Road Design Engineer Date	
		Deputy Chief Engineer	Date
FORMED STEEL BEAM RAILING AND POSTS FOR BLOCKED-OUT GUARD RAIL			



TYPE "A" END ANCHORAGE

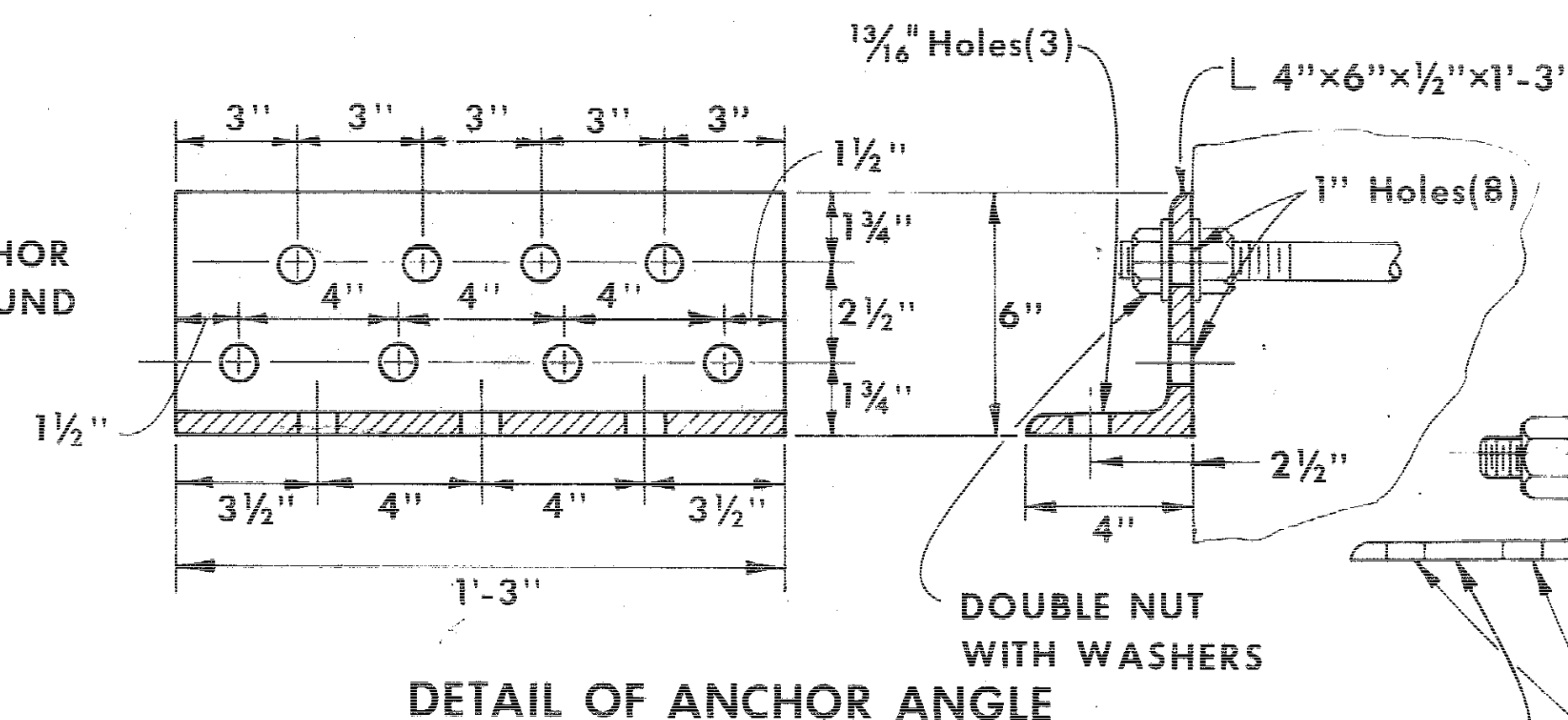


PLAN

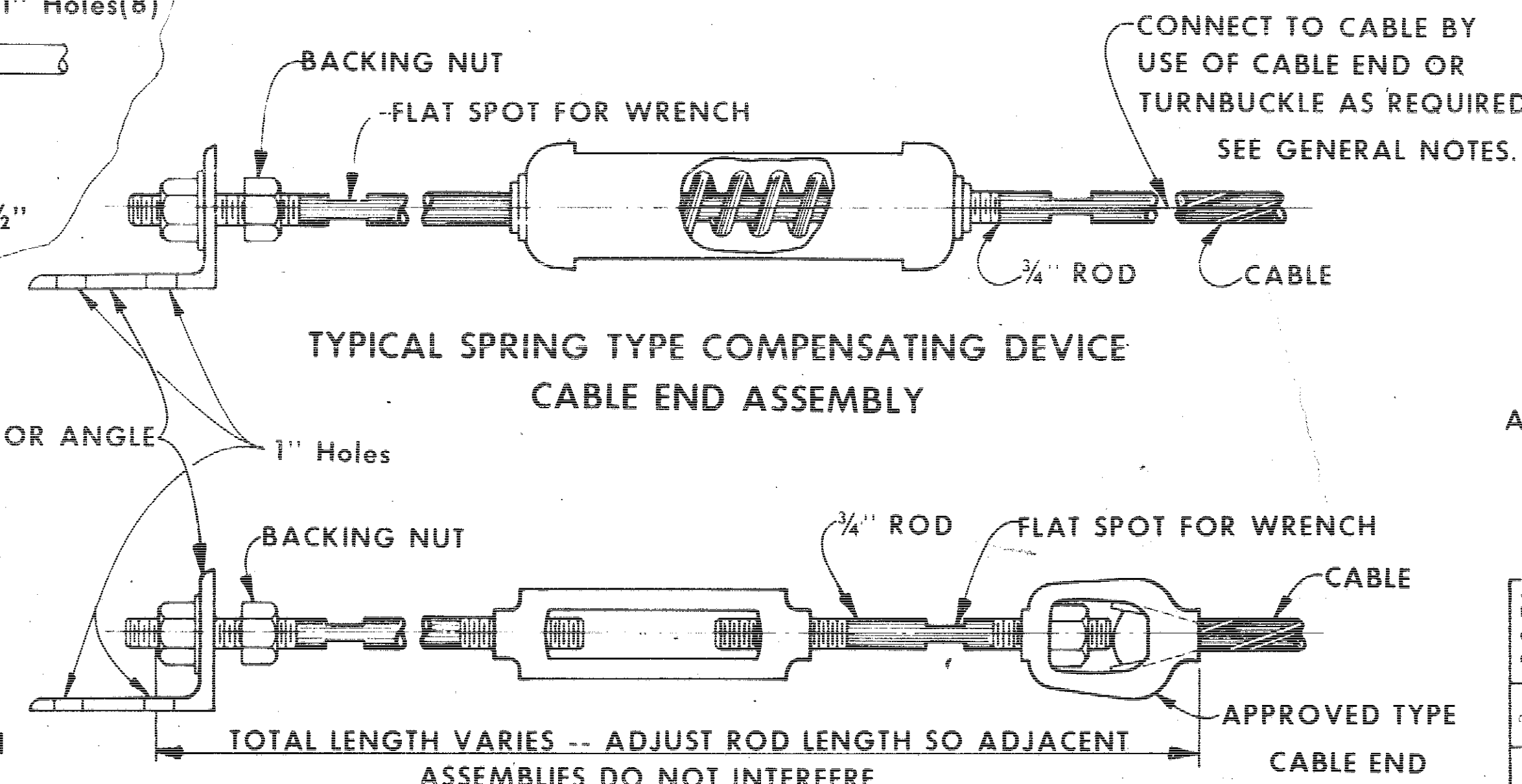
**DETAIL - CONCRETE ANCHOR
TYPE "A" END ANCHORAGE**

Anchor shall be cast in place with $\angle$ normal to line of guard rail. Excavation for anchor shall be to the neat lines indicated. Forms will be allowed only for the ends (the 2 foot dimension) of the anchor.

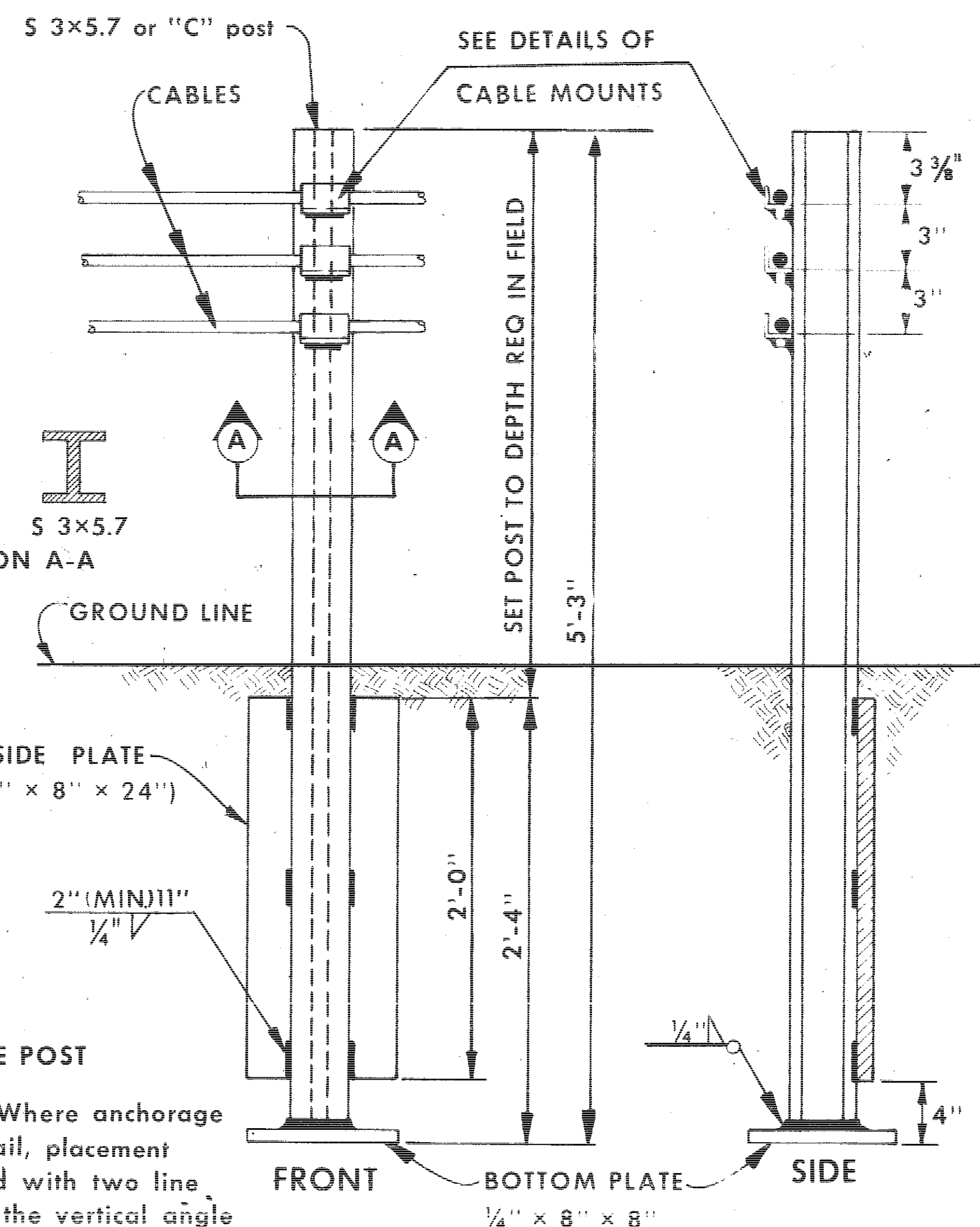
Concrete for anchor shall meet the requirements for Class "C" Structural Concrete excepting air content shall be 6% with a tolerance of +1% and -4%.



DETAIL OF ANCHOR ANGLE



TYPICAL TURNBUCKLE CABLE END ASSEMBLY



DETAIL OF END POST

GENERAL NOTES:
Spring type compensating devices shall be fabricated specifically for the purpose of holding guard rail cable in tension and shall consist of a spring apparatus capable of accommodating the pull necessary for proper installation of guard rail cable. These devices shall each provide for a minimum compensation in length of 5 inches.

Turnbuckles shall be of the open type and shall each provide for a minimum takeup of 12 inches.

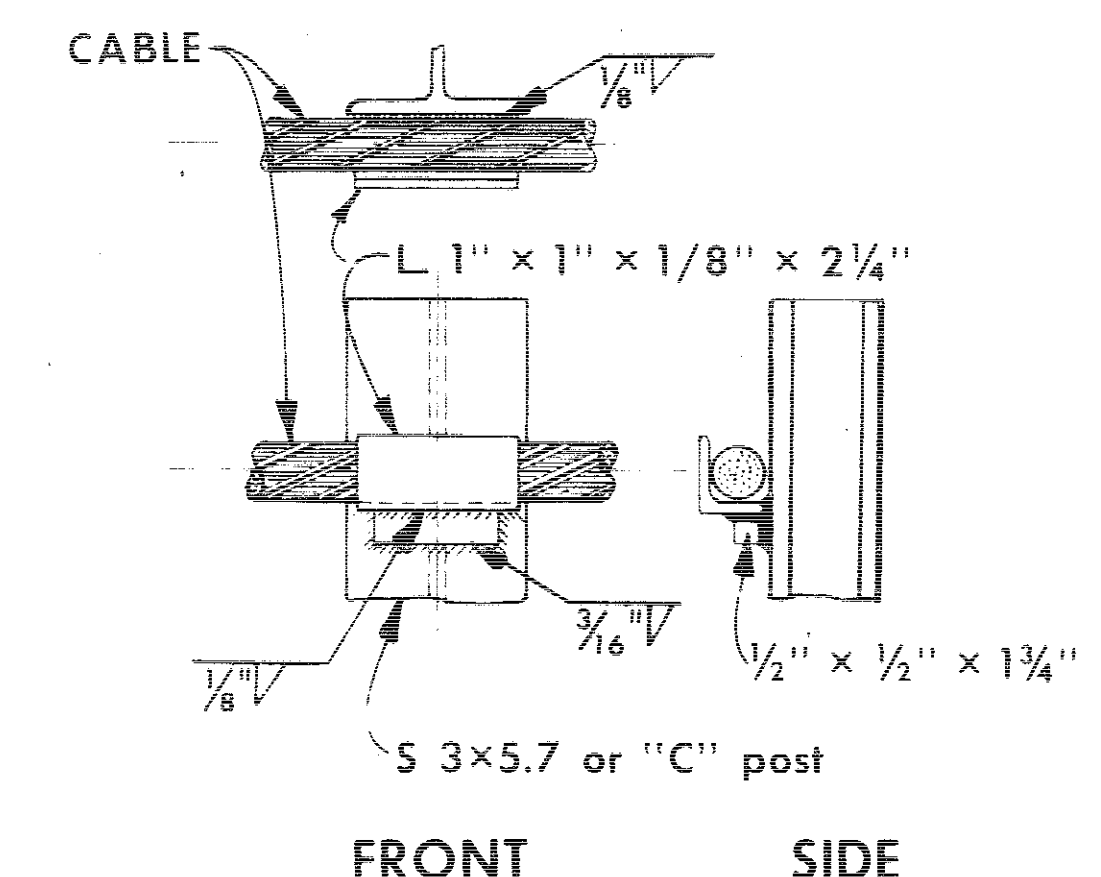
Turnbuckles and compensating devices shall each be equipped with adequate and proper bolts and fittings to provide for use separately or in combination to connect the guard rail cable to the end anchorage. Turnbuckles and compensating devices will not be paid for separately but shall be considered incidental to the item of "Guard Rail Cable."

Details hereon are typical. Alternate designs may be submitted to the engineer for consideration and approval. Type "A" End Anchorage shall be used in all cases except where detail projects plans specifically require otherwise. Refer to project plan details and tabulation of installations for requirements of individual installations.

The posts used in Type "A" End Anchorage shall be included with posts counted for normal guard rail installation

The price bid for "Cable Guard Rail End Anchorage" shall be considered full compensation for constructing the type "A" End Anchorage as detailed hereon.

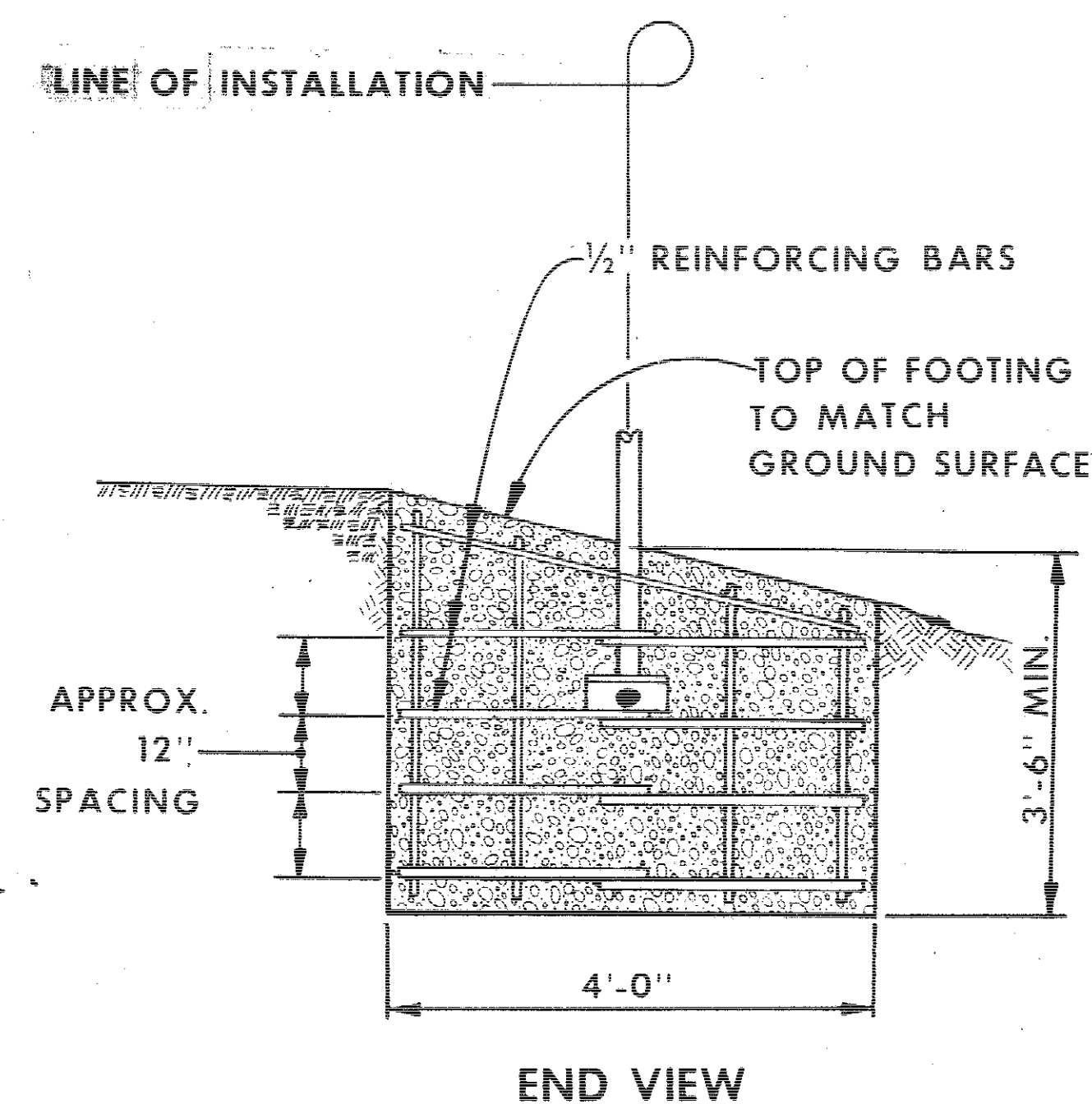
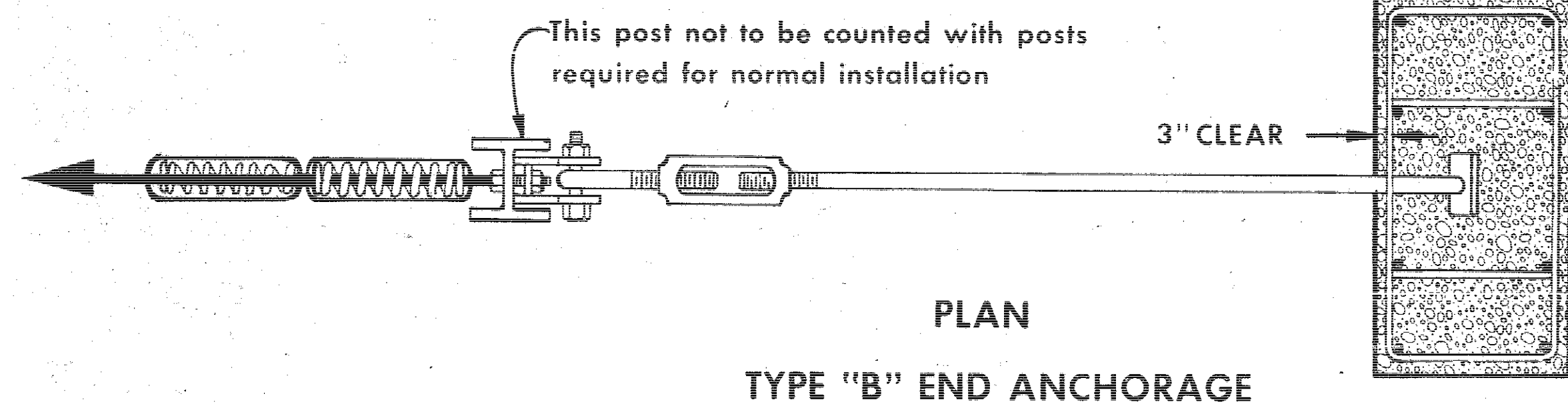
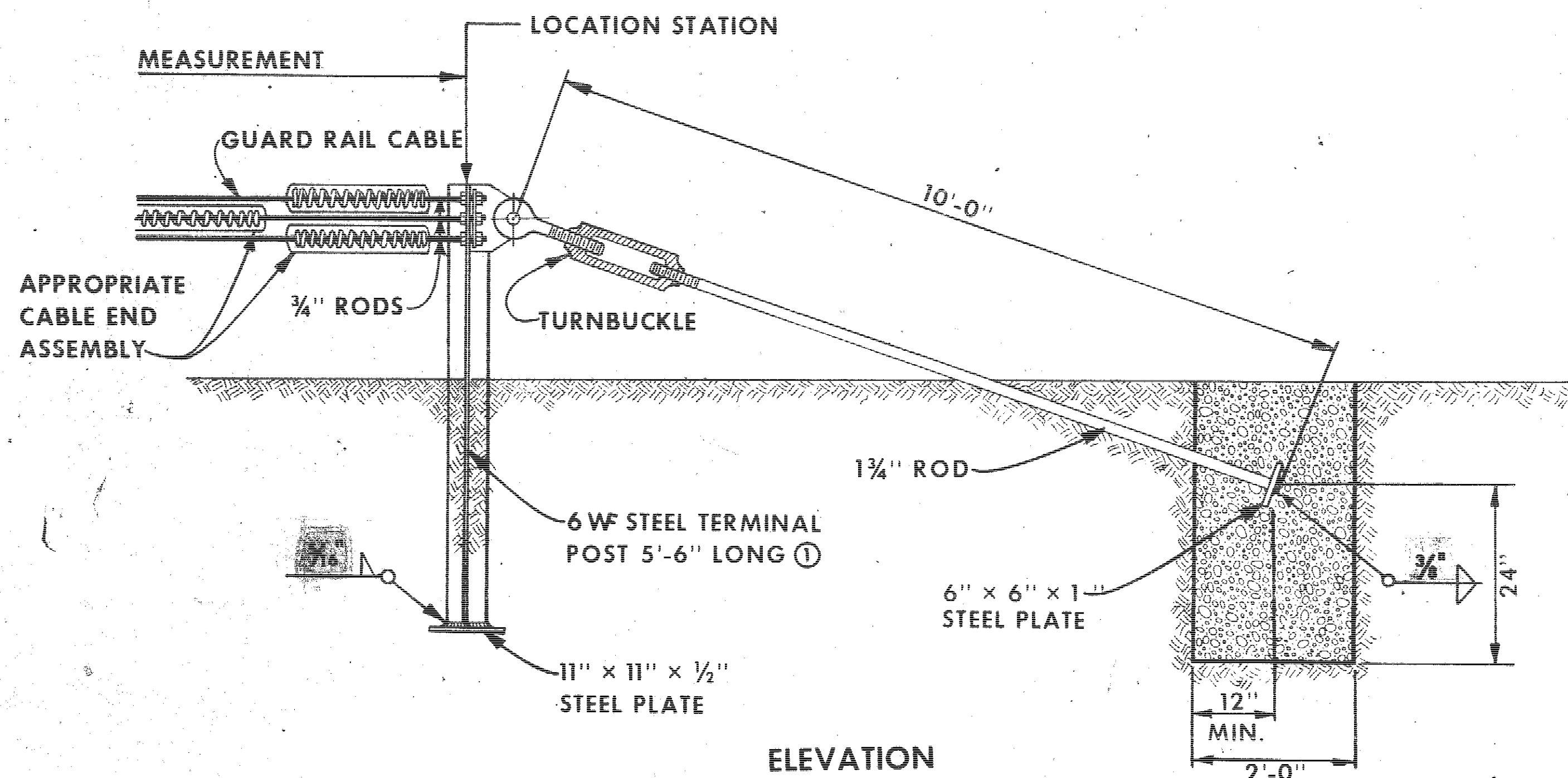
LIST OF MATERIALS FOR THE RE-29A TYPE "A" END ANCHORAGE
1 Anchor Angle and hardware.
1.19 cu. yd. of concrete.
59 lbs. of reinforcing steel (approx.).



All seams shall be sealed by welding before galvanizing.

DETAIL OF END POST CABLE MOUNT

ADD TYPE "C" POST LAST REVISION NO.	DATE	IOWA HIGHWAY COMMISSION	
		STANDARD ROAD PLAN RE-29A	
		RECOMMENDED	John C. Hocker 1-26-71 ROAD ENGINEER DATE
		DESIGN ENGINEER DATE	DATE
APPROVED	DATE	DEPUTY CHIEF ENGINEER DATE	DATE
DETAILS OF CONSTRUCTION FOR TYPE "A" END ANCHORAGE			



Anchor shall be cast in place with ϕ normal to line of guard rail. Excavation for anchor shall be to the neat lines indicated. Forms will be allowed only for the ends (the 2 foot dimension) of the anchor.

GENERAL NOTES:

Spring type compensating devices shall be fabricated specifically for the purpose of holding guard rail cable in tension and shall consist of a spring apparatus capable of accommodating the pull necessary for proper installation of guard rail cable. These devices shall each provide for a minimum compensation in length of 5 inches.

Turnbuckles shall be of the open type and shall each provide for a minimum takeup of 12 inches.

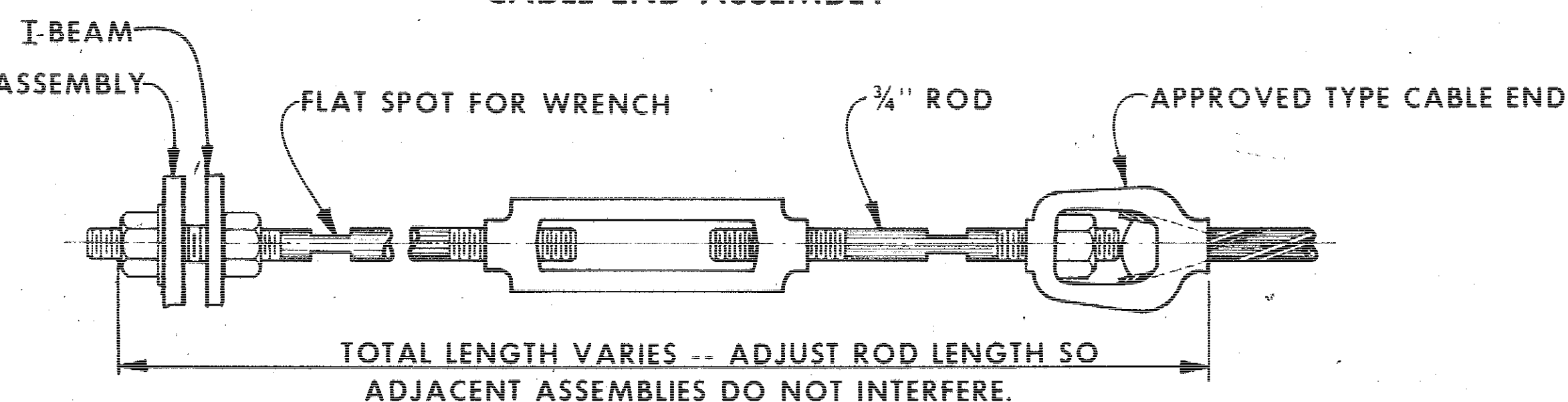
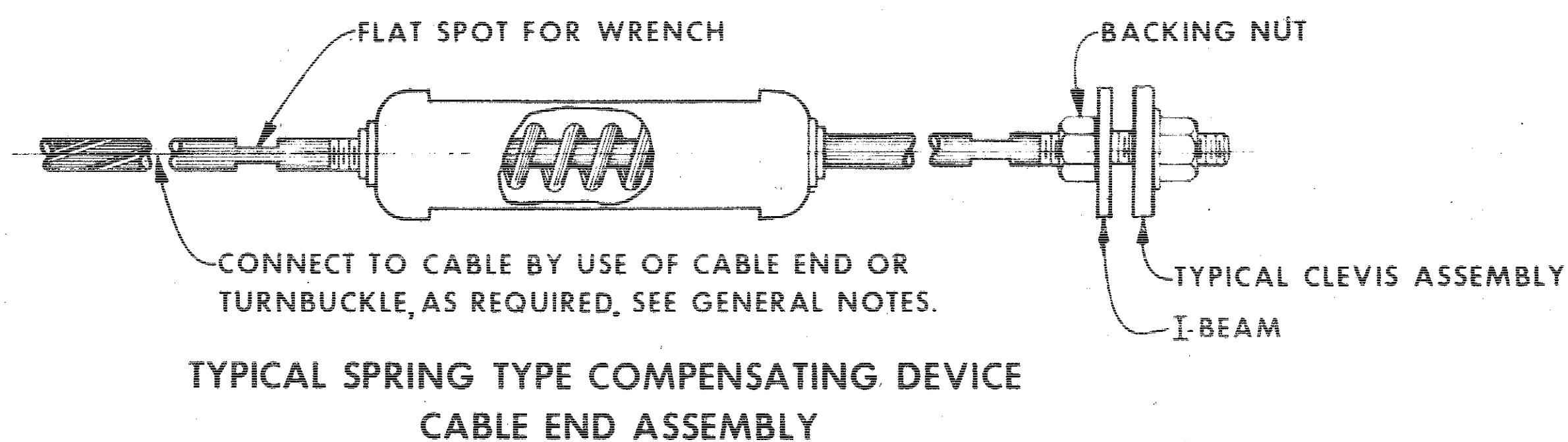
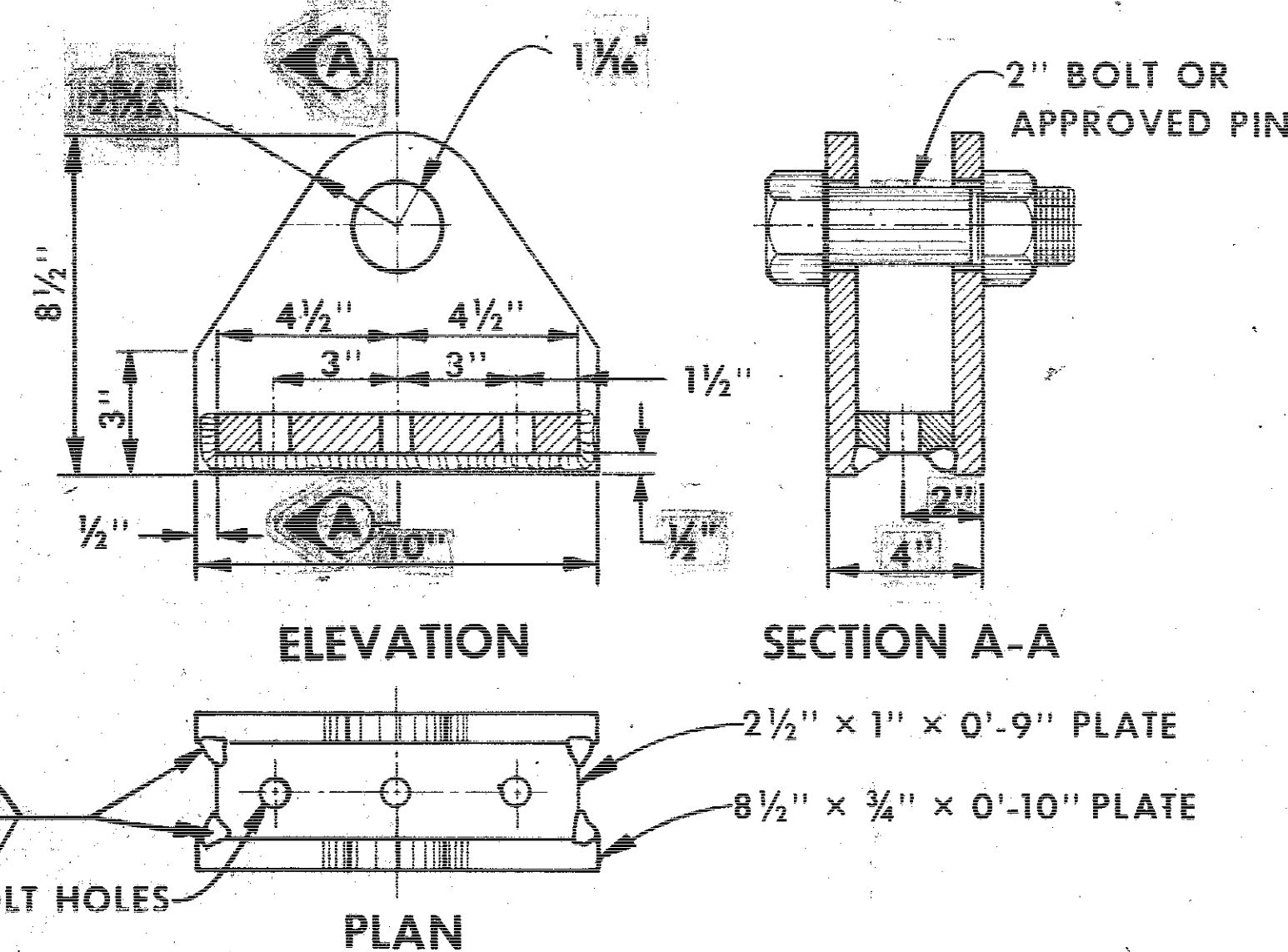
Turnbuckles and compensating devices shall each be equipped with adequate and proper bolts and fittings to provide for use separately or in combination to connect the guard rail cable to the end anchorage. Turnbuckles and compensating devices will not be paid for separately but shall be considered incidental to the item of "Guard Rail Cable."

Details hereon are typical. Alternate designs may be submitted to the engineer for consideration and approval. Type "B" anchorage is to be used only at locations where special conditions make the use of a Type "A" anchorage impractical. When Type "B" anchorage is used at access points, the terminal post shall be positioned so as to provide convenient ease of exit or entrance at the access point. Refer to project plan details and tabulation of installations for requirements of individual installations.

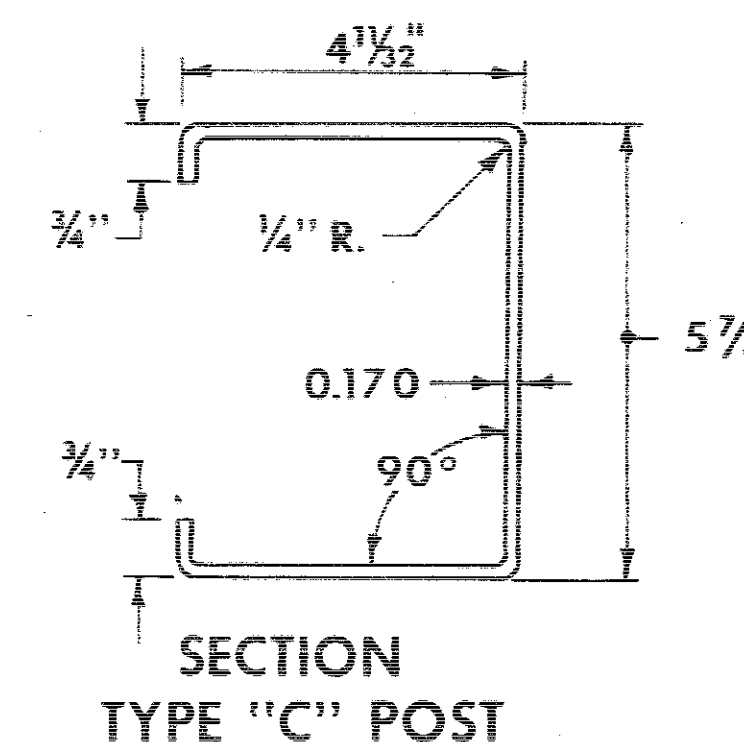
The price bid for "Cable Guard Rail End Anchorage" shall be considered full compensation for constructing the type B End Anchorage as detailed hereon.

LIST OF MATERIALS FOR THE RE-29B TYPE "B" END ANCHORAGE

- 1 End Post 6WF 5'-6" or "C" post
- 1 Anchor Rod 1 1/4" with turnbuckle and eye bolt.
- 1 Clevis and hardware for attaching to end post.
- 1.04 cu. yd. of concrete.
- 55 lbs. of reinforcing steel (approx.).

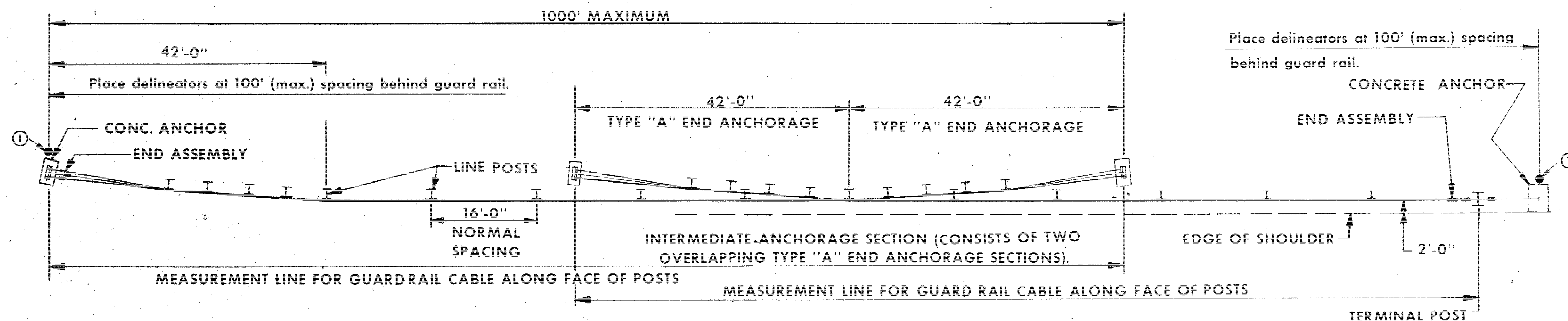


Refer to Standard Road Plan RE-29C for requirements for usage of Cable End Assemblies



① In lieu of an 6WF post an alternate "C" post meeting min. cross section dimensions as shown may be substituted.

IOWA HIGHWAY COMMISSION		STANDARD ROAD PLAN		RE-29B	
RECOMMENDED	John C. Hocker	1-26-71	DATE		
DESIGN ENGINEER	A. P. M. Laughlin	1-26-71	DATE		
APPROVED	R. H. Owen	1/26/71	DATE		
DEPUTY CHIEF ENGINEER					
DETAILS OF CONSTRUCTION FOR TYPE "B" END ANCHORAGE					
PROJECT NUMBER	FN-62-1(4)--21-49		STATE	IOWA	
FED. ROAD DIST. NO.	5		FISCAL YEAR		
SHEET NO.	45		TOTAL SHEETS	210	

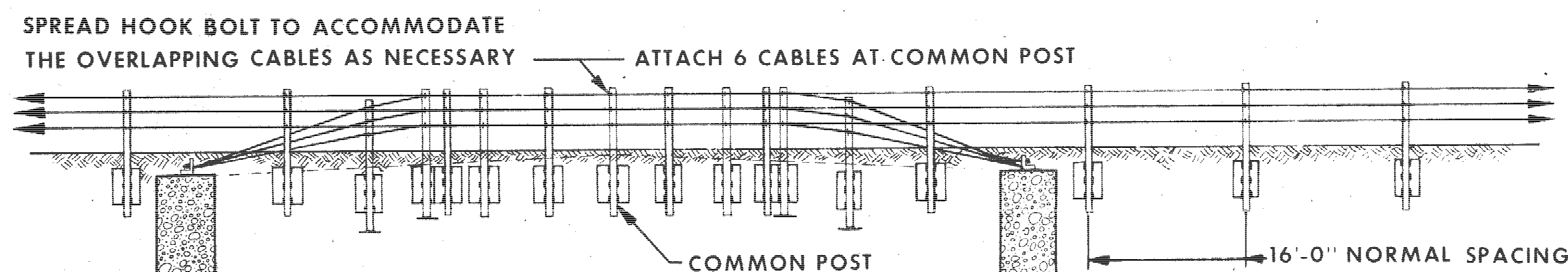


↑
TYPE "A" END ANCHORAGE

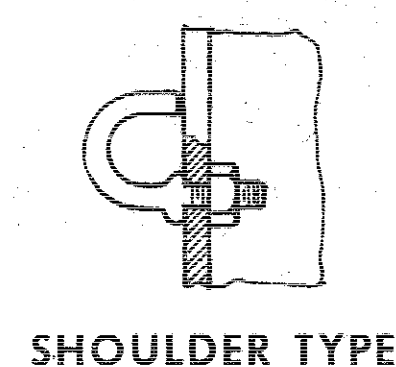
PLAN
TYPICAL LAYOUT CABLE GUARD RAIL INSTALLATION

↑
TYPE "B" END ANCHORAGE

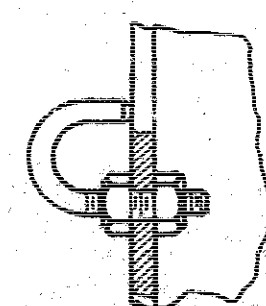
- ① Install Single White (M9-1) Delineators behind Cable Guard Rail at 100ft. (max.) spacing throughout length of guard rail. Where guard rail installation is not in multiples of 100ft., adjust spacing to maintain maximum 100ft. spacing. Place first delineator at point of anchorage. Refer to Standard Road Plan RE-7 for details of delineators.



ELEVATION
TYPICAL LAY OUT CABLE GUARD RAIL INSTALLATION



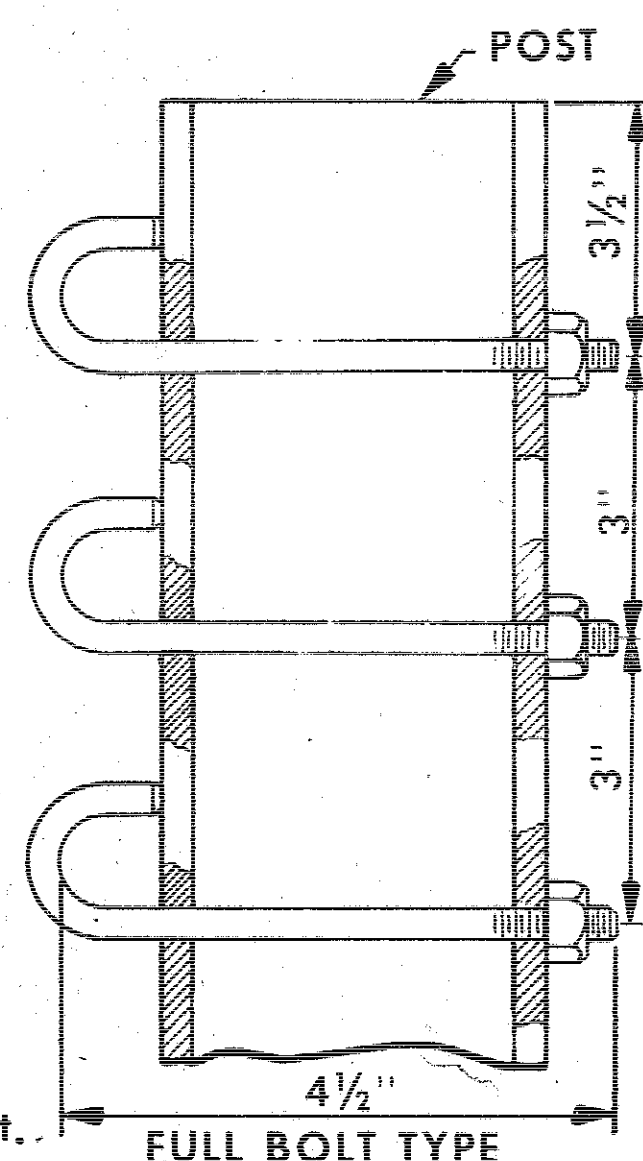
SHOULDER TYPE



BACKING NUT TYPE

ALTERNATE HOOK BOLTS

Note:
Use only ONE type of bolt per project.

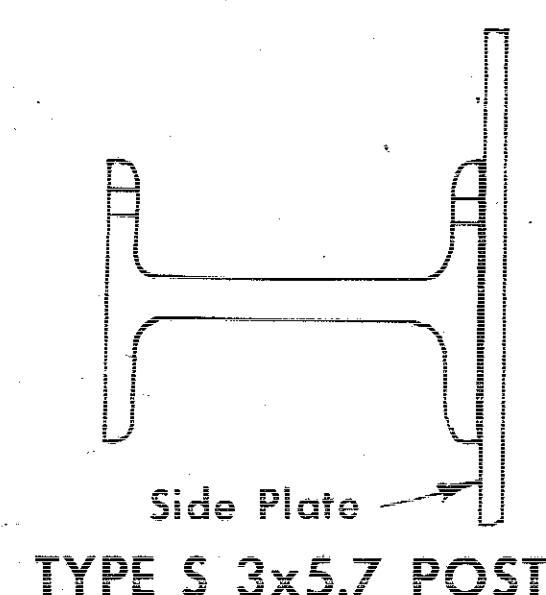


FULL BOLT TYPE

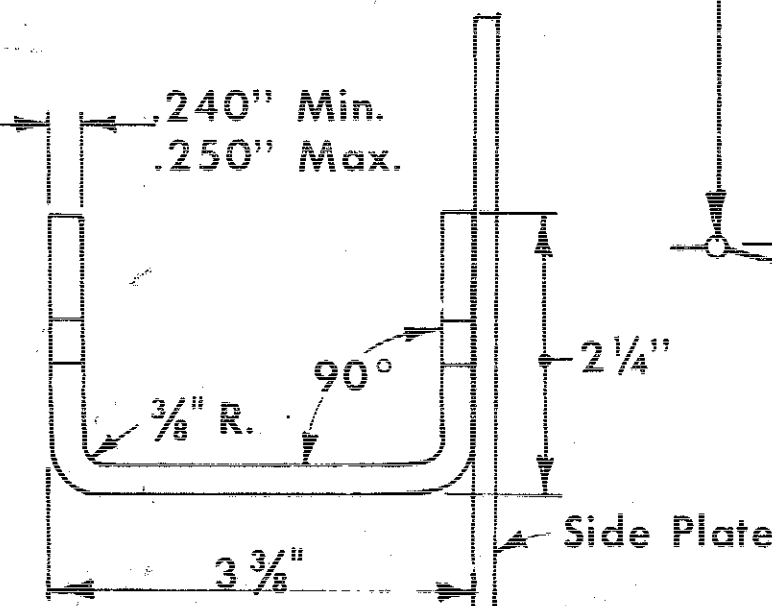
Hook bolts, as installed, shall develop an ultimate pull open strength of from 500 to 1,000 lbs. applied in a direction normal to the longitudinal axis of the post.

DETAILS OF HOOK BOLTS INSTALLATIONS

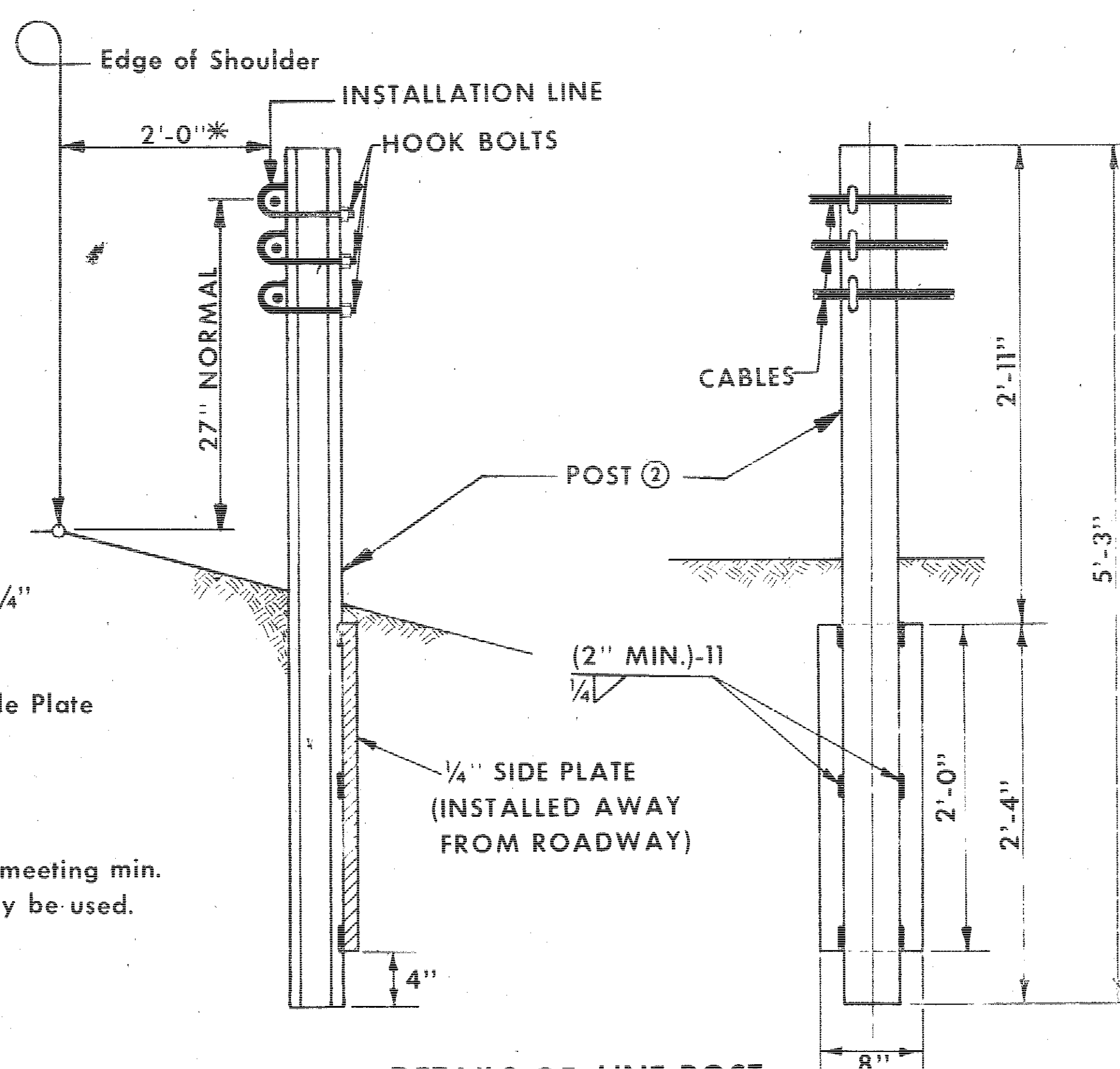
- ② Either type S 3x5.7 or type "C" post meeting min. cross section dimensions as shown may be used.



TYPE S 3x5.7 POST



TYPE "C" POST



DETAILS OF LINE POST

GENERAL NOTES:

The construction of Cable Guard Rail shall be done in conformance with current I.S.H.C. Specifications for guard rail.

Posts may be driven except any posts with bottom plates shall be set to proper location in pre-drilled holes and securely backfilled and compacted.

Cable End Assemblies, consisting of a spring type compensating device, or a turnbuckle, or a combination of the two, shall be installed at end anchorage according to the following criteria:

Length of Run -

Up to 500' - Use a spring type compensating device on one end and a turnbuckle on the opposite end of each individual cable.

From 500' to 1000' - Use a spring type compensating device plus a turnbuckle on each end of each individual cable.

For runs over 1000 feet overlapping end anchorage shall be located to provide approximately equal length sections of guard rail. Maximum length between anchorage shall be 1000 feet.

Refer to project plan details and tabulation of installations for requirements of individual installations and for location of end anchorages.

Details hereon are typical. Alternate designs may be submitted to the Engineer for consideration and approval.

On projects where delineators are required along the edge of shoulder throughout the length of the project, placement of delineators as detailed hereon is not required.

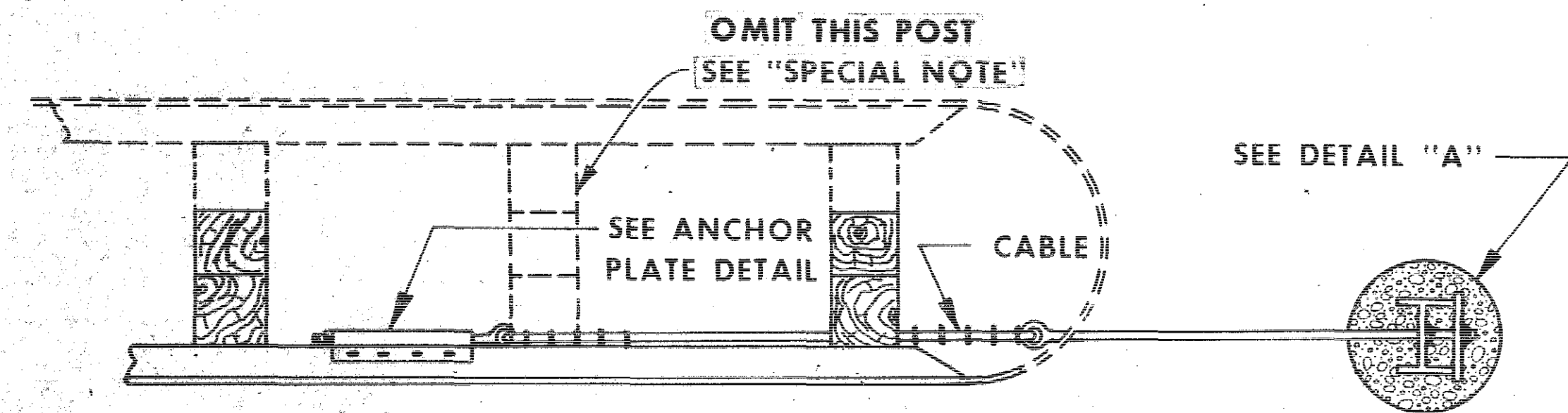
Price bid for contract items shall include all labor and materials necessary to construct guard rail as detailed hereon and as specified on project plans, including delineators where required.

Contract items for Cable Guard Rail construction are:

1. Guard Rail Cable
2. Cable Guard Rail End Anchorage
3. Cable Guard Rail Posts

* Unless specified otherwise as part of detail project plans, normal procedure shall be to install cable guard railing parallel to and offset 2 feet from the line of design shoulder. Post spacing shall be 16 feet for alignment flatter than 8 degree curvature. For curvilinear alignment between 8 degree and minimum radius of 220 feet, post spacing shall be 12 feet.

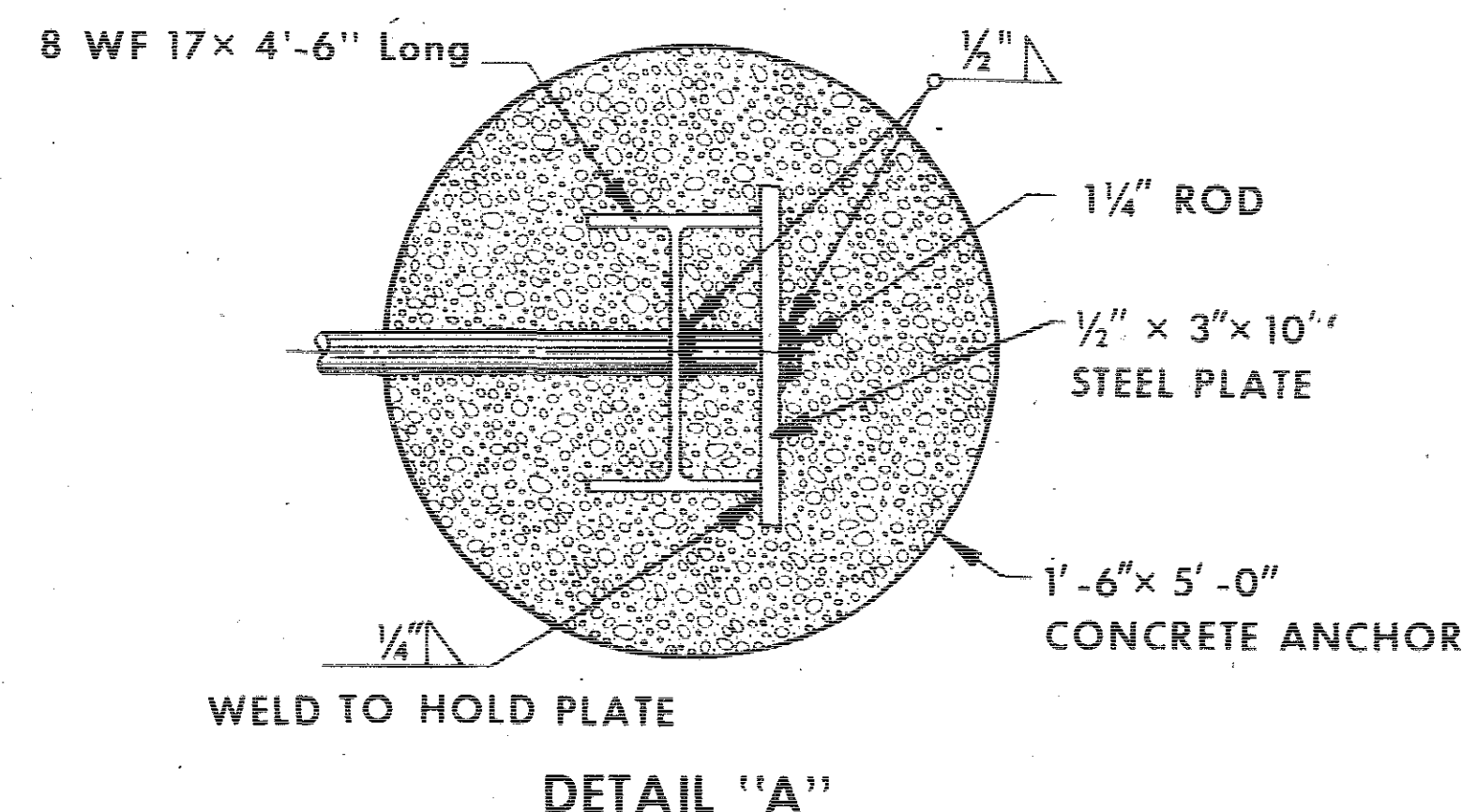
IOWA HIGHWAY COMMISSION			
STANDARD ROAD PLAN		RE-29C	
RECOMMENDED	DATE	DESIGN ENGINEER	DATE
APPROVED	DATE	DEPUTY CHIEF ENGINEER	DATE
DETAILS OF CONSTRUCTION FOR CABLE GUARD RAIL			



NOTE:
Cable shall be parallel to guard rail for straight runs of rail.
Cable may have an angle point at anchor plate if guard rail is curved.

PLAN

For median barrier type installation, place anchor plate on rail nearest to approach traffic.



DETAIL "A"

GENERAL NOTES:

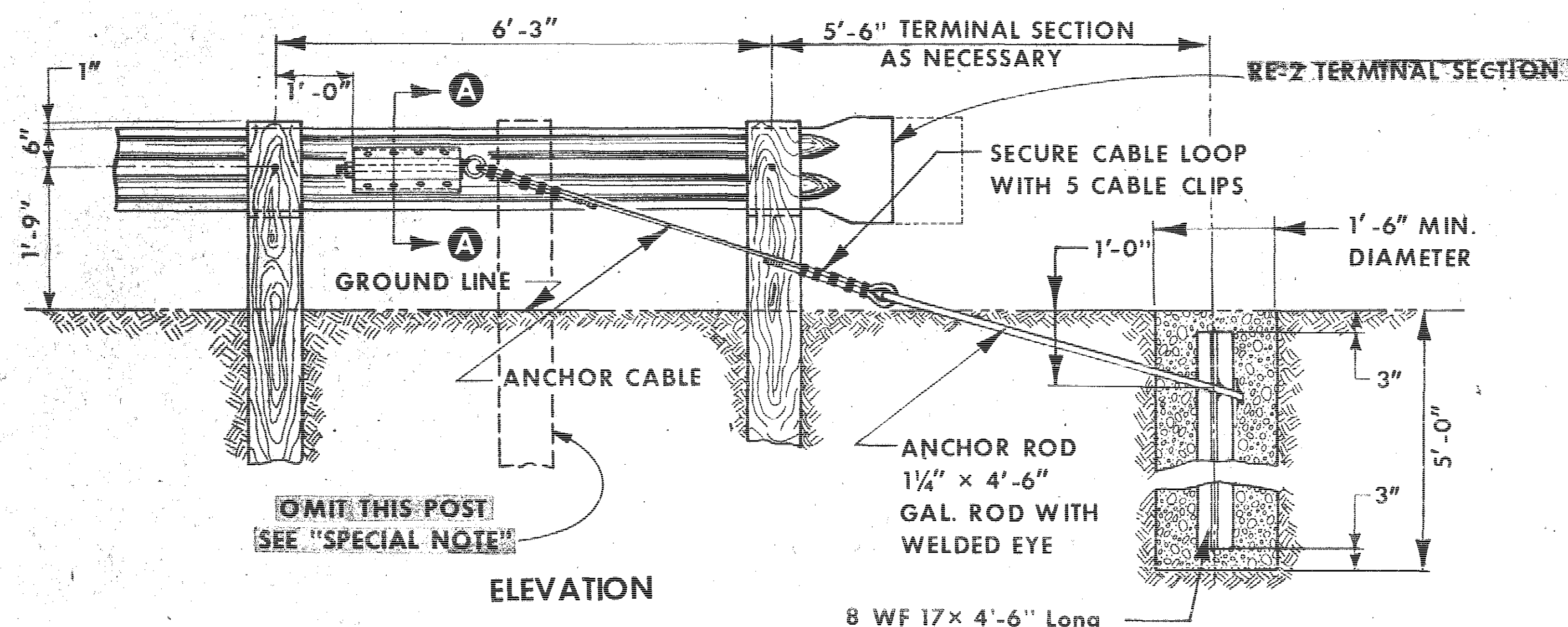
The details indicated hereon are for an end anchorage system for beam guard rail. This type of beam guard rail and anchorage may be used for either a normal guard rail installation or a median barrier installation. Beam railing and posts are not part of this end anchorage. Refer to appropriate other Standard Road Plans and current Iowa State Highway Commission Standard Specifications for additional information. Any items not specifically covered by specifications shall be subject to the approval of the Engineer.

Cable shall be of an approved galvanized type at least 3/4 inch diameter with a minimum breaking strength of 21.4 tons. Cable thimbles and clips are required as shown for connecting cable to anchor rod and eye bolt.

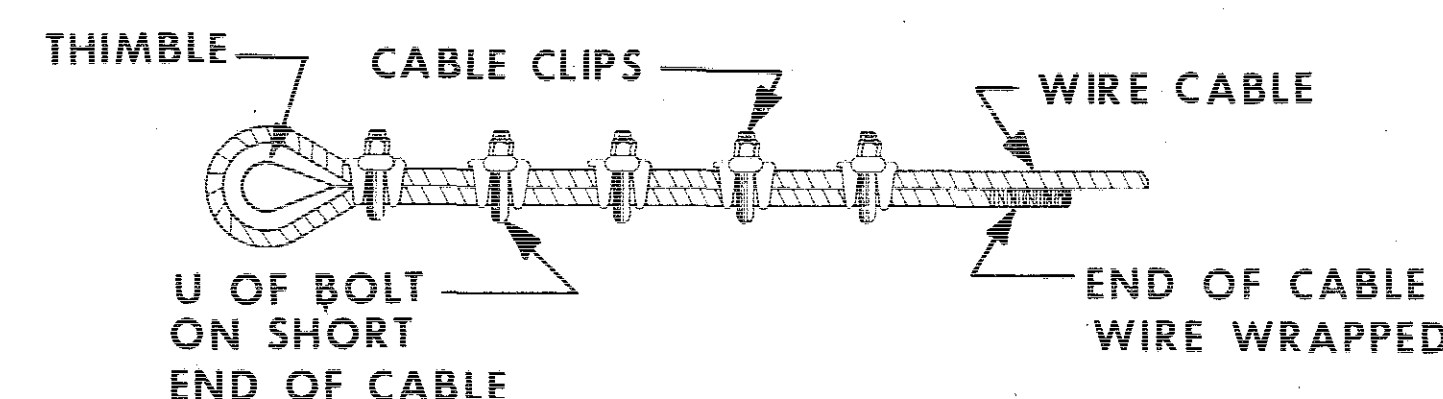
All fittings and hardware required shall be galvanized after fabrication.

Price bid for "Beam Guard Rail End Anchorage" shall be considered full compensation for furnishing all materials (exclusive of beam railing and posts) and work necessary to construct the end anchorage as detailed hereon.

Alternate details may be submitted to the engineer for approval.



ELEVATION



TYPICAL CABLE CLIP INSTALLATION

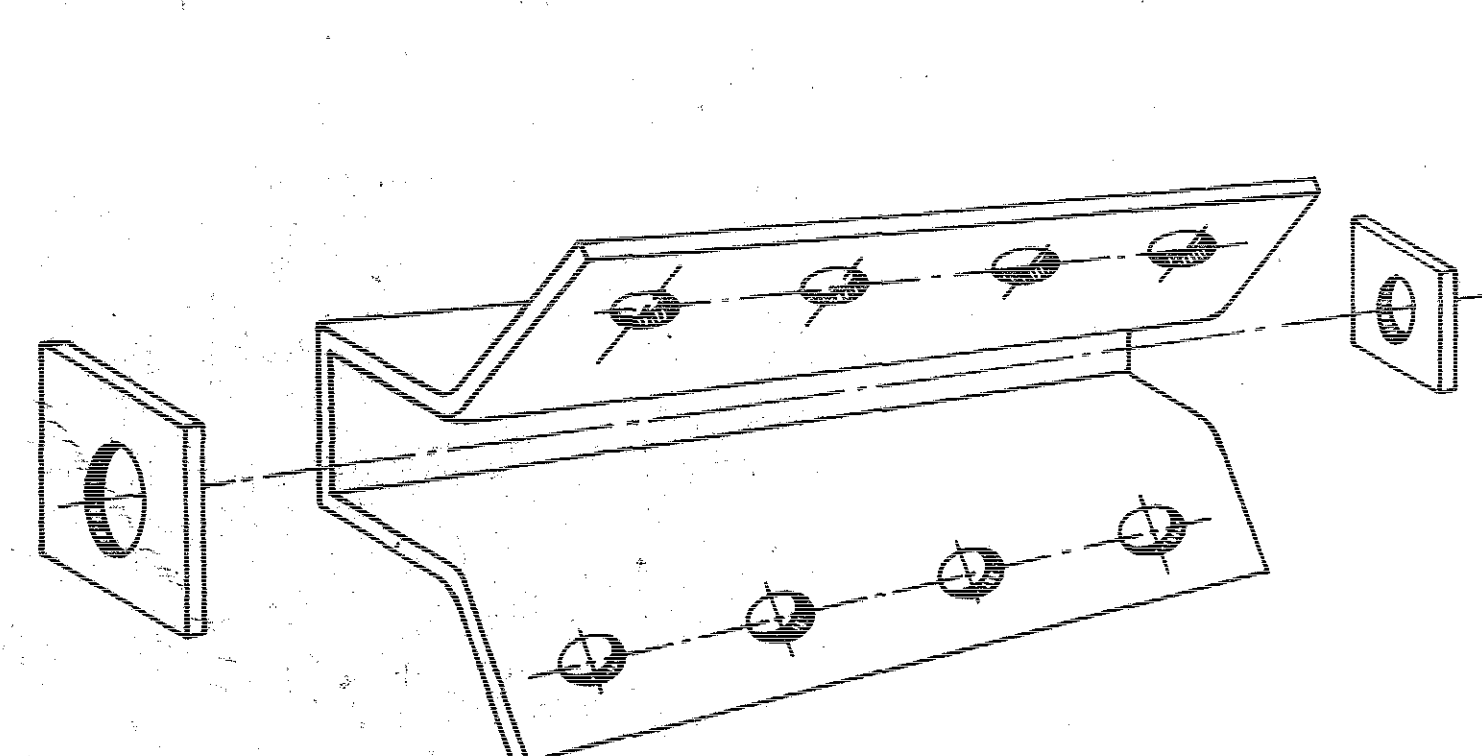
NOTE: All cable clips shall be torqued to a minimum of 130 ft. lbs. each.

REFER TO "TABULATION OF GUARD INSTALLATIONS" AND APPLICABLE STANDARD ROAD PLANS FOR ADDITIONAL DETAILS REGARDING INSTALLATION OF GUARD RAIL

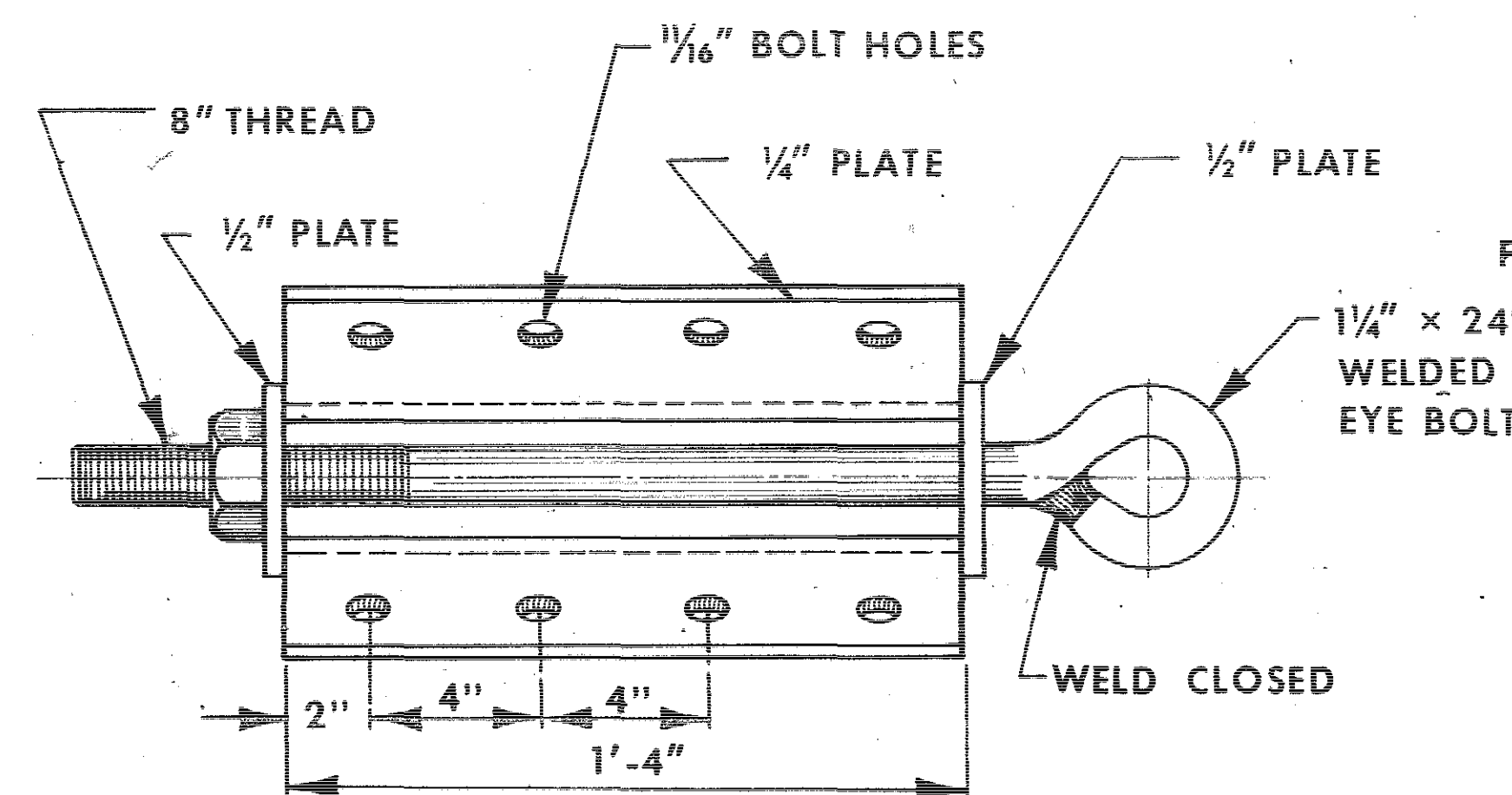
TYPICAL END ANCHORAGE INSTALLATION

SPECIAL NOTE:

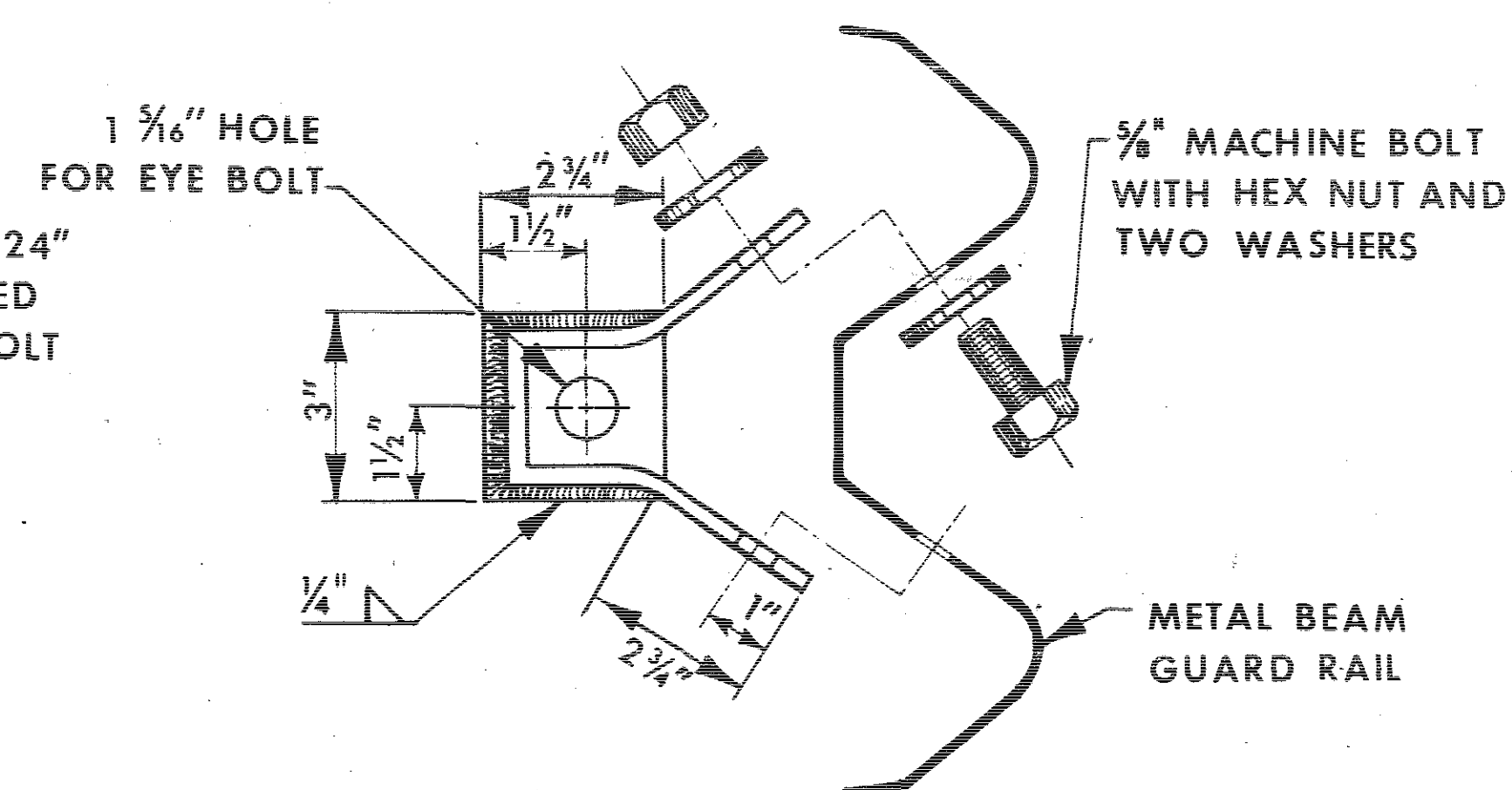
If RE-33 type end anchorage is used where post spacing of less than 6'-3" is specified for the installation, one post shall be omitted so that the RE-33 end anchorage can be constructed as shown.



PERSPECTIVE VIEW OF ANCHOR PLATE

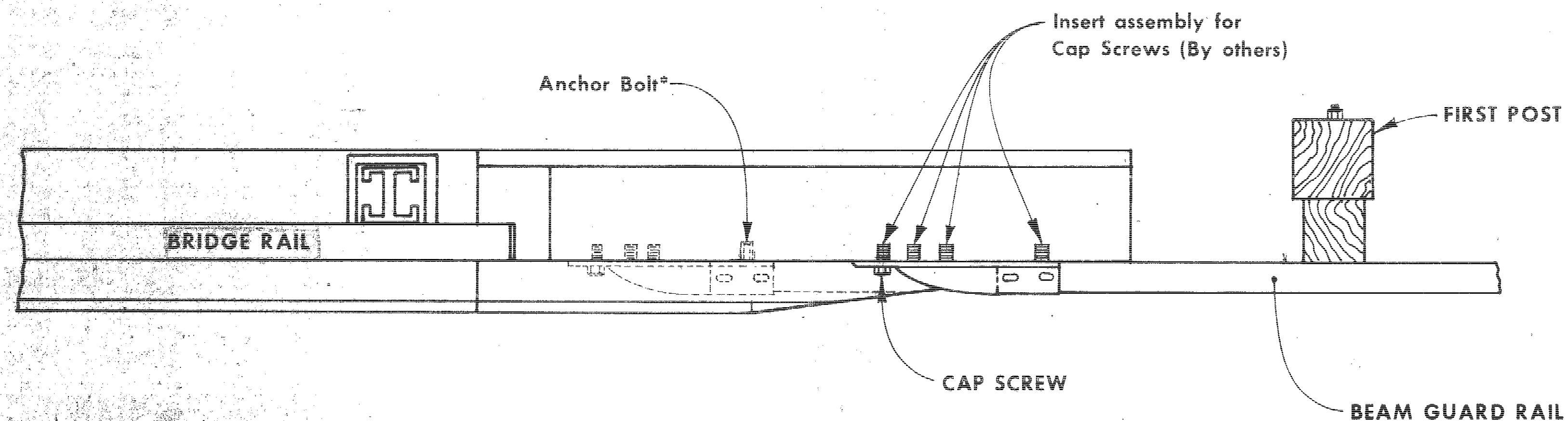


ANCHOR PLATE



SECTION A-A

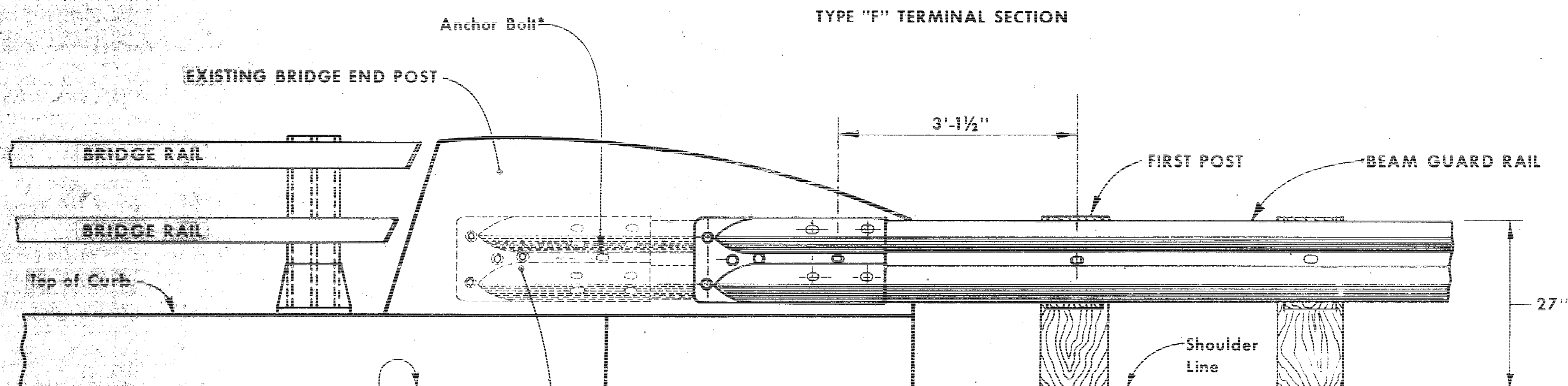
IOWA HIGHWAY COMMISSION	
STANDARD ROAD PLAN	
RE-33	
NOTE CABLE CLIPS	DATE
LAST REVISION	NO
5	3-6-72
RECOMMENDED	JOHN C. HOEKER 3-6-72
	DATE
	R. P. McLAUGHLIN 3-22-72
	DATE
APPROVED	P. K. OWEN 3/23/71
	DATE
DEPUTY CHIEF ENGINEER	
DATE	
BEAM GUARD RAIL	
END ANCHORAGE	



PLAN

NOTE:

Where end post have been constructed with the insert in the alternate location provisions have been made for only 4 cap screw inserts. The contractor will be required to install one approved anchor bolt at location indicated. Anchor bolt shall be drilled in place or installed in drilled hole in concrete as directed by the engineer.



ELEVATION

GENERAL NOTES:

Details shown hereon are for making a connection between approach guard rail and the bridge post. This type shall be used on either end of any bridge having end post construction with provision for attachment of type "F" Terminal Section. Refer to "Tabulation of Guard Rail Installations" and applicable Standard Road Plans for additional details regarding installation of guard rail.

Cap Screws shall conform to requirement of ASTM A-307 and shall be galvanized in compliance with ASTM A-153. Bolts may be installed in drilled holes or in approved inserts cast in the concrete.

Any materials not specifically detailed hereon shall be in accordance with appropriate other Standard Road Plans as well as current ISHC Standard Specifications.

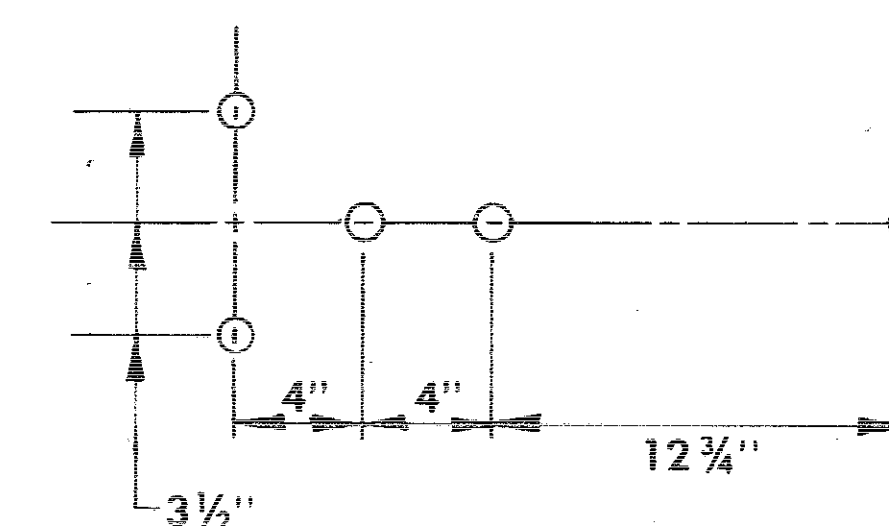
The RE-41 Guard Rail - Bridge Connection shall not be measured for payment. The construction indicated including the furnishing of the RE-2, Type "F" Terminal Section, shall be considered incidental to other guard rail work on the project.

LIST OF MATERIALS FOR THE RE-41 BRIDGE CONNECTION

- 5 Approved 7/8" Cap Screws with Washers.*
- 1 - RE-2 Type "F" Terminal Section.

SPECIAL NOTE:

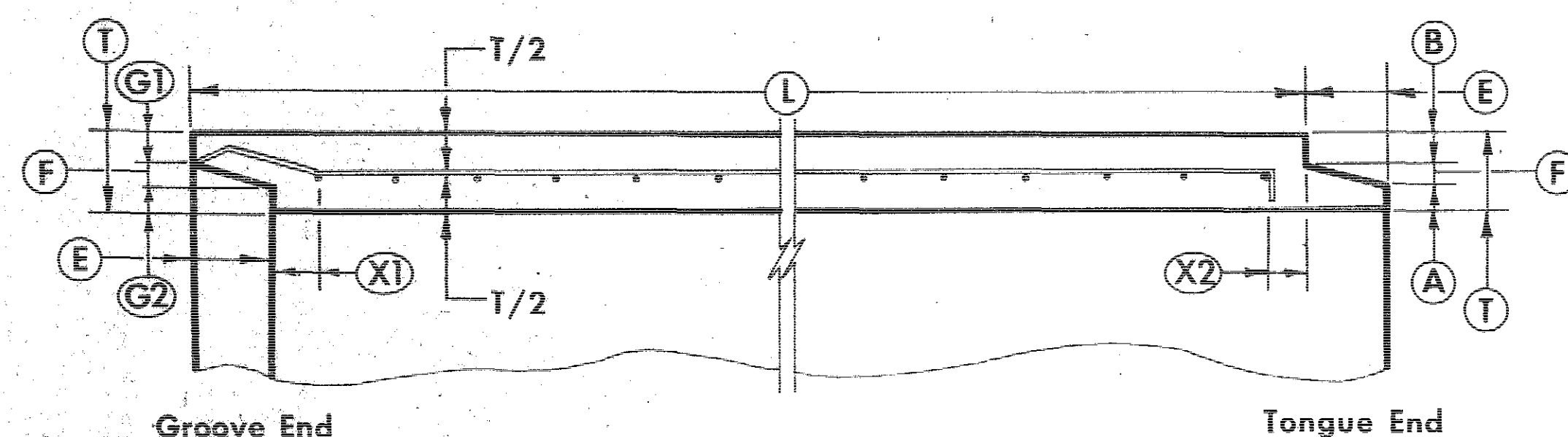
Horizontal and vertical alinement of the guard rail in the area immediately adjacent to the bridge shall be adjusted to a smoothly curved line with no abrupt changes. Exact details of the installation shall be as directed by the engineer.



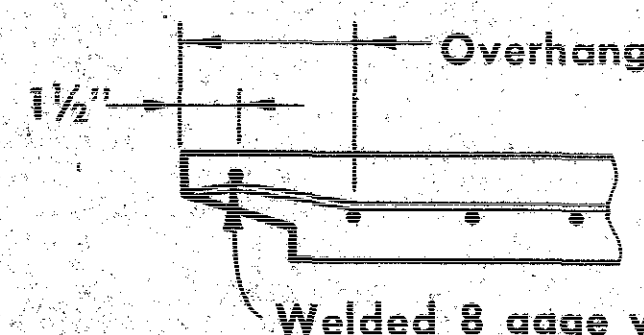
BOLT PATTERN

For RE-2 type "F" Terminal Section

Clarified Note on Insert Location Last Revision 3		Date 12-21-73		IOWA HIGHWAY COMMISSION		
		No.		STANDARD ROAD PLAN RE-41		
		Recommended <i>J. C. Hacker</i> 7-31-72 Ass't. Road Design Engineer Date		Approved <i>R. P. McLaughlin</i> 7-31-72 Road Design Engineer Date		
		Approved <i>R. Owens</i> 7/31/74 Deputy Chief Engineer Date		DETAILS OF GUARD RAIL BRIDGE CONNECTION		
PROJECT NUMBER FN-62-1(4)--21-49		STATE IOWA	FED. ROAD DIST. NO. 5	FISCAL YEAR	SHEET NO. 49	TOTAL SHEETS 210



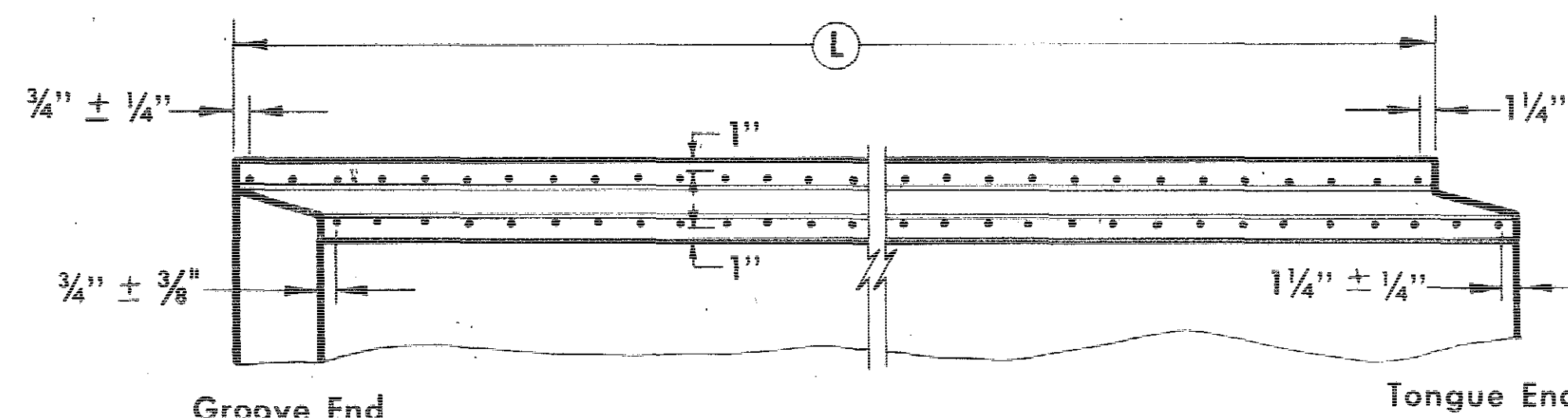
SINGLE LINE REINFORCED



REINFORCED GROOVE

LONGITUDINAL SECTIONS

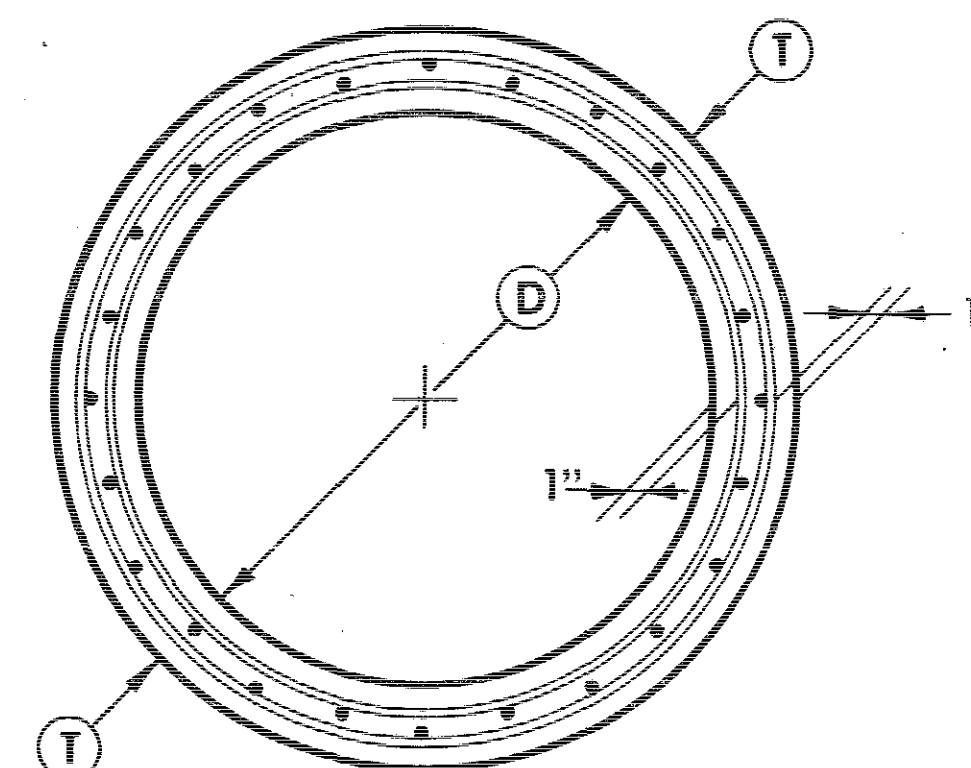
NOTE: "L"
Minimum length of pipe section shall be 4'-0".
The minimum number of 4'-0" sections shall be used to make up the necessary length of installation shown on project plans. Normal length shall be 6'-0".



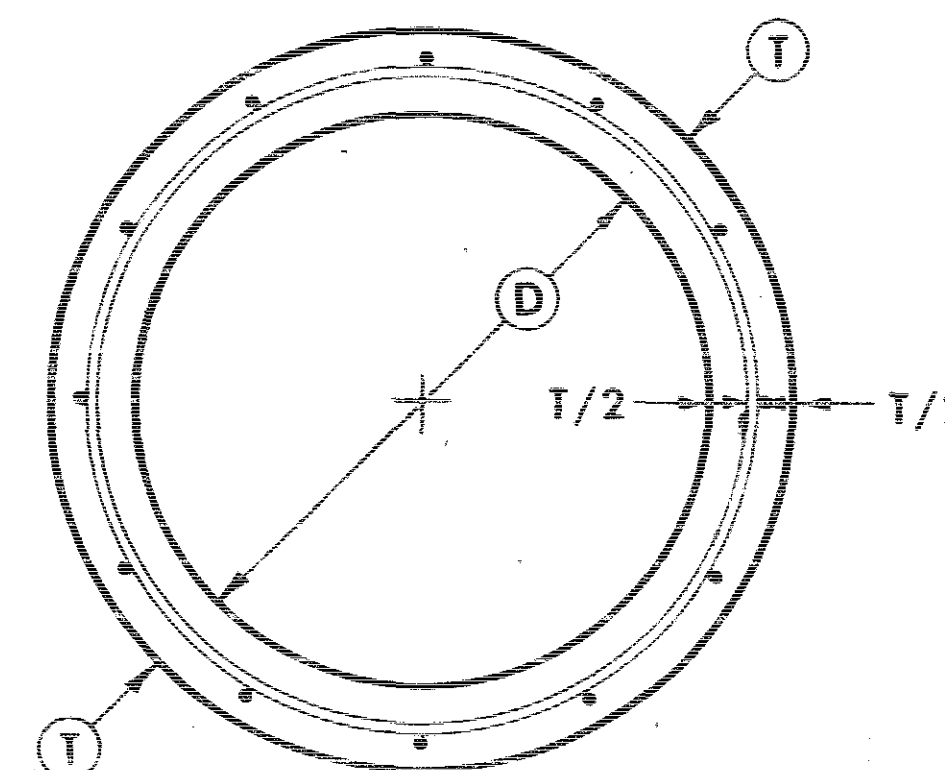
DOUBLE LINE REINFORCED

GENERAL DIMENSIONS																						
D	AREA OF OPENING	CLASS 2000D AND 3000D										CLASS 1500D										D
		APPR. WT. /FT.	Dimensions in Inches									APPR. WT. /FT.	Dimensions in Inches									
			T	A	B	G1	G2	C*	E	F	T		A	B	G1	G2	C*	E	F			
12	0.78	92	2	5/8	3/4	5/8	3/4	1/8	2	5/8											12	
15	1.23	127	2 1/4	3/4	1	7/8	7/8	1/8	2	1/2	111	2	3/4	7/8	3/4	7/8	1/8	2	3/8		15	
18	1.77	168	2 1/2	7/8	1 1/8	1	1	1/8	2 1/2	1/2	149	2 1/4	7/8	1	7/8	1	1/8	2	3/8		18	
21	2.41	210	2 3/4	1	1 3/8	1 1/4	1 1/8	1/8	2 1/2	3/8	192	2 1/2	1	1 1/8	1	1 1/8	1/8	2 1/2	3/8		21	
24	3.15	265	3	1 1/16	1 5/8	1 1/8	1 1/8	3/16	3	3/4	229	2 5/8	1	1 3/8	1	1 3/8	3/16	2 1/2	7/16		24	
27	3.98	327	3 1/4	1 1/16	1 7/16	1 1/4	1 1/4	3/16	3 1/4	3/4	280	2 3/4	1 1/16	1 1/4	1	1 1/4	3/16	2 3/4	1/2		27	
30	4.91	384	3 1/2	1 3/16	1 9/16	1 3/8	1 3/8	3/16	3 1/2	3/4	324	3	1 1/8	1 5/16	1 1/8	1 5/16	3/16	3	9/16		30	
33	5.94	452	3 3/4	1 1/4	1 11/16	1 1/2	1 1/2	1/4	3 3/4	3/4	385	3 1/4	1 1/8	1 3/8	1 1/8	1 3/8	1/4	3 1/4	5/8		33	
36	7.07	524	4	1 3/8	1 7/8	1 3/8	1 3/8	1/4	4	3/4	435	3 3/8	1 3/16	1 1/16	1 3/16	1 1/16	1/4	3 1/2	3/4		36	
42	9.62	685	4 1/2	1 5/8	2 1/8	1 7/8	1 7/8	1/4	4	3/4	562	3 3/4	1 3/8	1 3/8	1 3/8	1 3/8	1/4	3 1/2	3/4		42	
48	12.57	867	5	1 5/8	2 5/8	2 3/8	1 7/8	1/4	4	3/4	727	4 1/4	1 5/8	1 7/8	1 5/8	1 7/8	1/4	4	3/4		48	
54	15.90	1071	5 1/2	1 13/16	2 15/16	2 11/16	2 1/16	1/4	4 1/2	3/4	888	4 5/8	1 13/16	2 1/16	1 13/16	2 1/16	1/4	4 1/2	3/4		54	
60	19.64	1296	6	2	3 1/4	3	2 1/4	1/4	5	3/4	1064	5	2	2 1/4	2	2 1/4	1/4	5	3/4		60	
66	23.76	1542	6 1/2	2 1/4	3 1/2	3 1/4	2 1/2	1/4	5	3/4	1272	5 1/2	2 1/4	2 1/2	2 1/4	2 1/2	1/4	5	3/4		66	
72	28.27	1810	7	2 1/2	3 3/4	3 1/2	2 3/4	1/4	5	3/4	1532	6	2 1/2	2 3/4	2 1/2	2 3/4	1/4	5	3/4		72	
84	38.48	2409	8	2 7/8	4 3/8	4	3 1/4	3/8	5	3/4	2085	7	3	3 1/4	3	3 1/4	1/4	5 1/2	3/4		84	

* C is clearance between edges of adjacent tongue and groove (G2-A).



DOUBLE LINE REINFORCED



SINGLE LINE REINFORCED

CROSS SECTIONS

GENERAL NOTES:

The wall thickness and reinforcement shown are minimum requirements. If the wall thickness is increased only dimensions indicated by T, B, and G1 shall be changed. 1500D pipe, in 12", 15", 18" and 21" diameters, when made with wall thickness for 2000D pipe need not be reinforced if strength requirement can be met. All other 2000D pipe shall have the minimum reinforcement specified.

No circumferential reinforcement shall be required in tongues or grooves of 12", 15", 18" and 21" pipe of all classes or 24" pipe of 1500D class. All other pipe with single line reinforcement shall have the groove end reinforced by one welded hoop of not less than 8 gage wire. This hoop shall be secured to the cage by welding or by twisting the transverse wire around the hoop.

Pipe having two lines of reinforcement shall have circumferential wires extending into tongues and grooves as shown.

The difference between X1 and X2 shall not be more than 1/2".

The spacing of transverse wires shall not exceed 8" and the size shall be that specified by the U.S. Department of Commerce Simplified Practice Recommendation No. 234-48 effective August 1, 1948. The spacing of circumferential rings shall not exceed 4".

The suggested overhangs specified are approximate and may need to be changed due to the tightness of bends, wire diameter, cage width, and the exact location of cage within the tolerances permitted. The bend shown in REINFORCED GROOVE view requires approximately 1/8" extra overhang for all sizes except the 30" pipe which will require about 1/4". When the groove end hoop is welded to the transverse wires, approximately 1 1/8" less overhang will be required. Tongue end overhang is required only when it is used for placement of reinforcement.

All material and construction to conform to the Iowa State Highway Commission Specifications and welded wire fabric shall conform to A.S.T.M. A-185.

Pipe culvert sections shall be connected by use of approved connectors when so specified. Connector holes shall be provided in conformance with requirements shown on Standard Road Plan RF-14.

SPECIAL NOTE:

Installation requirements for concrete culvert pipe shall be in conformance with appropriate other Standard Road Plans, detail project plans and current Iowa State Highway Commission Standard Specifications. Refer to "Tabulation of Drainage Structures" for requirements of individual installations.

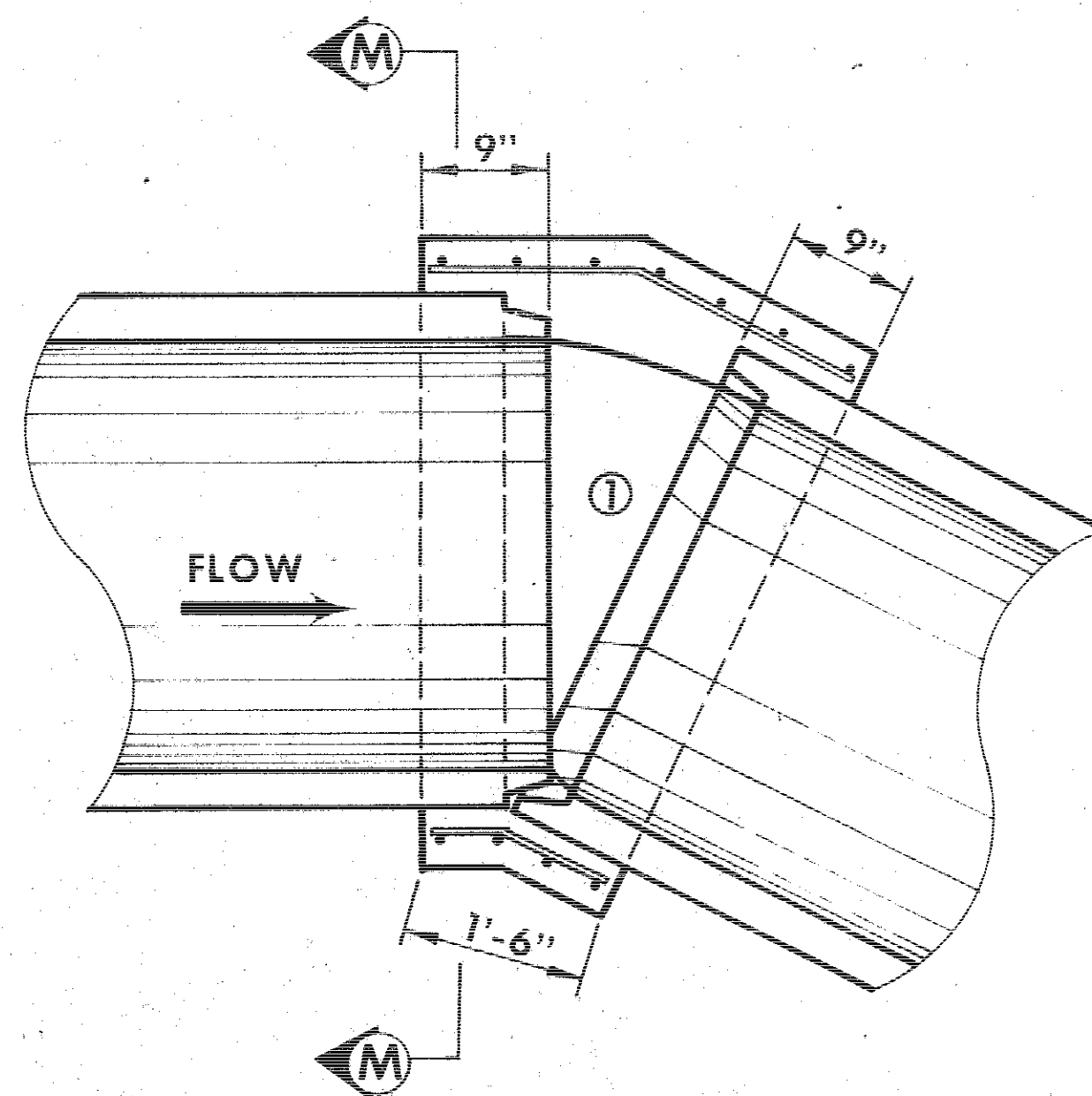
REINFORCEMENT - WELDED STEEL WIRE FABRIC														
D	MINIMUM CIRCUMFERENTIAL SQ. INCH PER FT. OF PIPE						MINIMUM CAGE WIDTH (W) + (L) INCHES SHOWN BELOW			SUGGESTED OVERHANG				
										GROOVE END		TONGUE END		
	1500D		2000D		3000D		1500D	2000D 3000D	1500D	2000D 3000D	1500D	1500D		
SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE	STD. WALL							THIN WALL	STD. WALL
12	.062	—	.062	—	.062	—	5	5	5	—	—	—	—	—
15	.062	—	.062	—	.087	—	5	5	5	3½	3½	1⅜	1⅜	1¼
18	.062	—	.098	—	.116	—	5	5	5	3¾	3½	1½	1½	1⅝
21	.074	—	.116	—	.148	—	5	5	5	3¾	3¾	1⅝	1⅝	1½
24	.087	—	.148	—	.187	—	6	6	6	3¾	4¼	1¾	1¾	1⅝
27	.098	—	.159	—	.216	—	—	6	6	5¾	4⅞	2	1⅞	1⅝
30	.116	—	.187	—	—	.174	6	6	3	5⅞	5⅞	2	2	1¾
33	.148	—	.239	—	—	.174	—	6	3	5⅞	5¾	1¾	2⅞	1⅞
36	.148	—	—	.174	—	.187	6	3	3	¾	5⅞	1⅜	2¼	2
42	—	.174	—	.187	—	.239	3	3	2	¾	¾	1½	1⅝	1⅝
48	—	.187	—	.239	—	.280	3	2	2	¾	¾	1½	1½	1½
54	—	.239	—	.280	—	.325	2	2	2	¾	¾	1½	1⅝	1⅝
60	—	.280	—	.325	—	.377	2	2	2	¾	¾	1½	1½	1½
66	—	.325	—	.377	—	.443	—	2	2	¾	¾	1½	1½	1½
72	—	.325	—	.443	—	.443	2	2	2	¾	¾	1⅝	1½	1½
84	—	.377	—	.516	—	.516	2	2	2	¾	¾	1⅝	1½	1½

Last Revision		No.	IOWA HIGHWAY COMMISSION	
			STANDARD ROAD PLAN RF-1	
Refraw	1	2-15-74	Date	2-15-74
	Recommended		Ass't. Road Design Engineer Date	
	Approved		Road Design Engineer Date	
		Deputy Chief Engineer		Date
CONCRETE CULVERT PIPE				

Jackson COUNTY

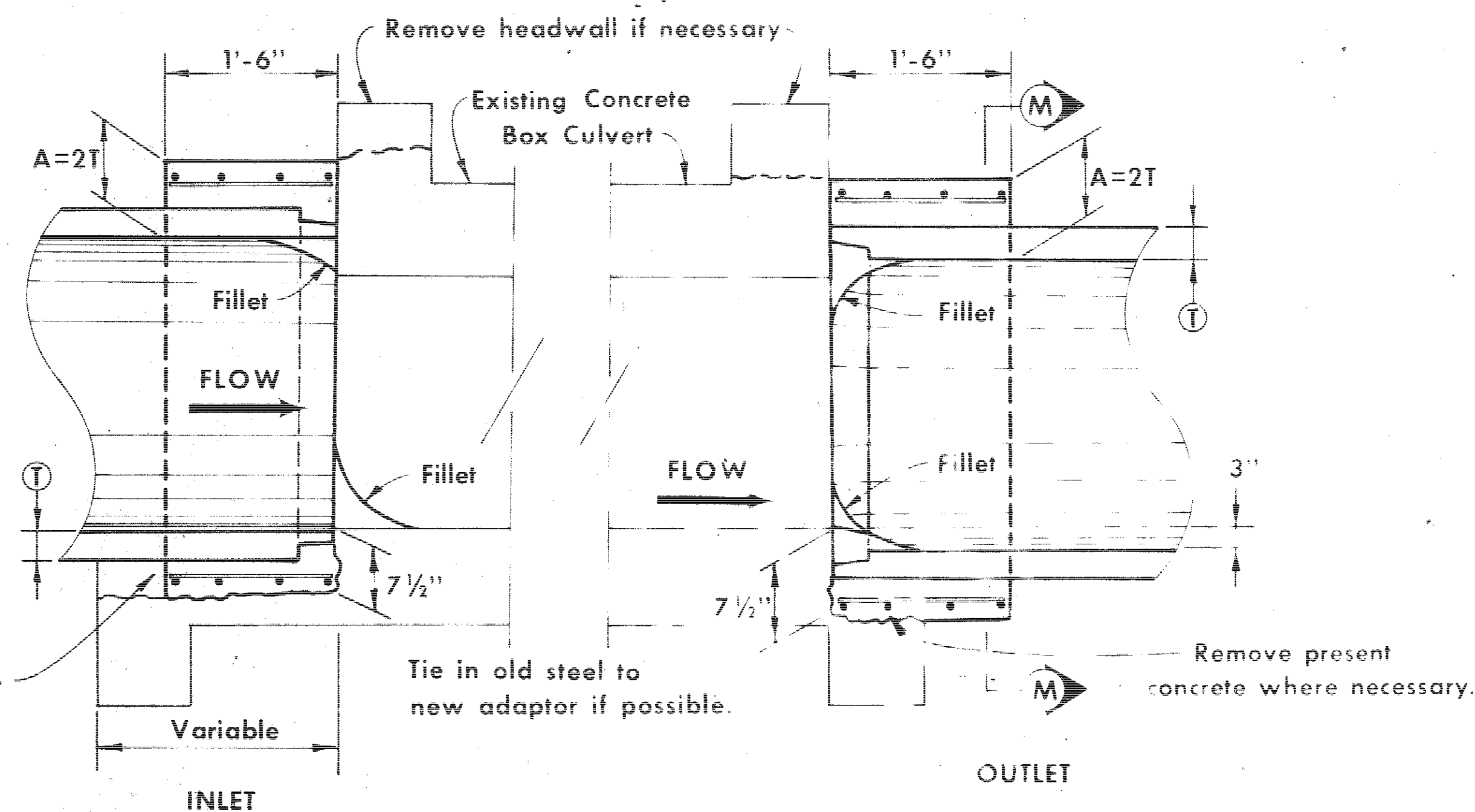
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-62-1(4) -- 21-49	IOWA	5		50	210

① Opening between pipes shall be carefully grouted.

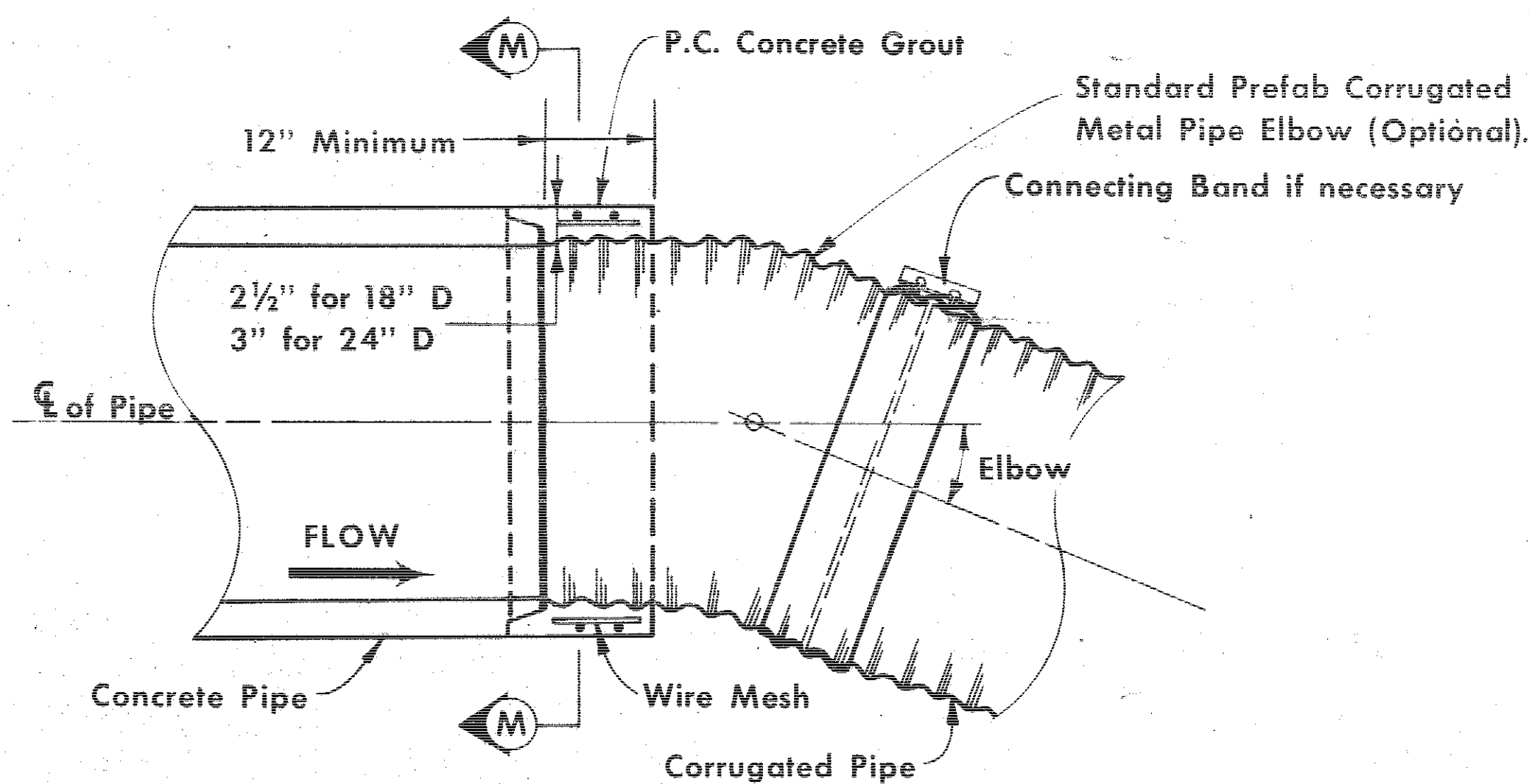
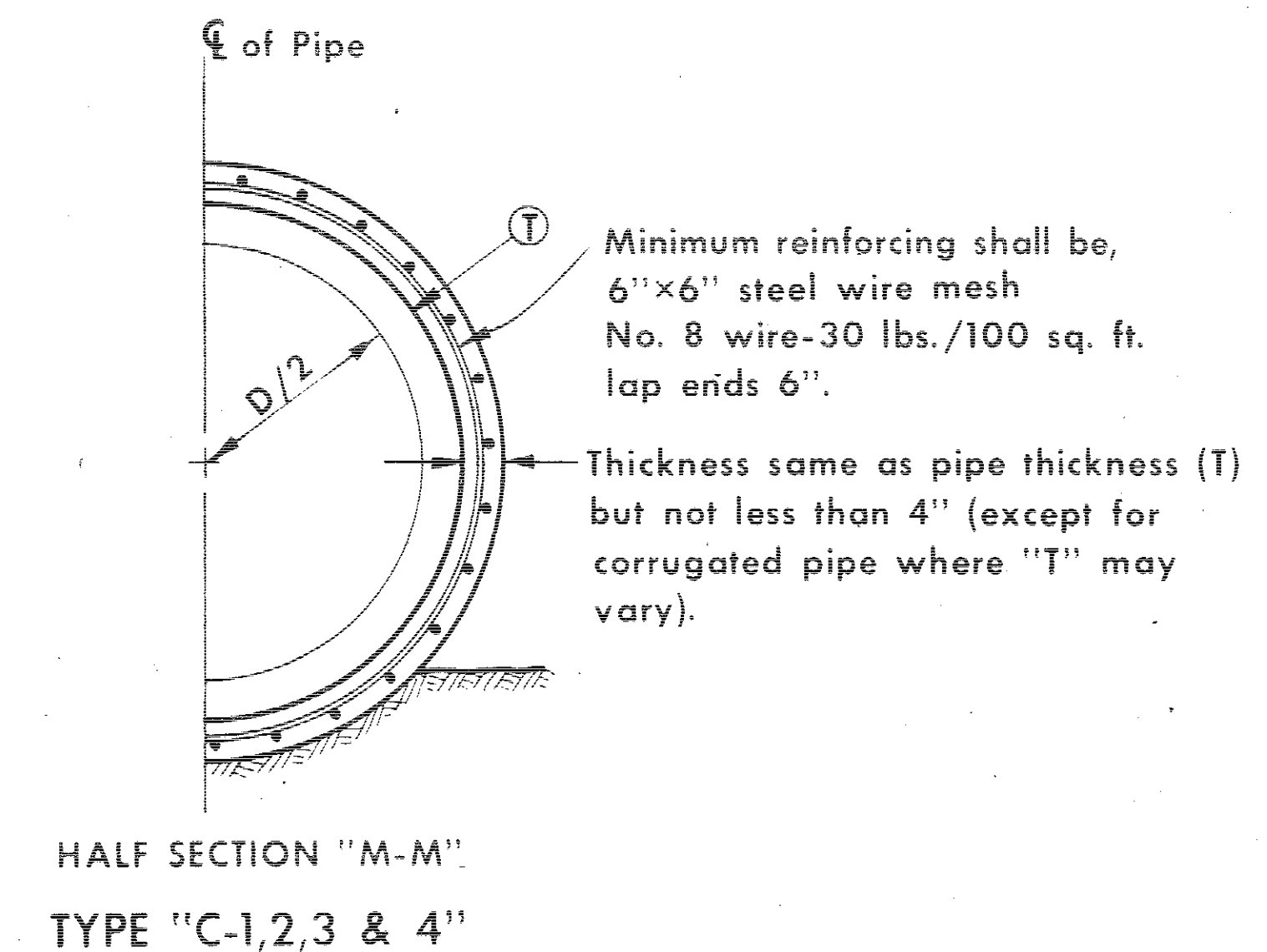


CONCRETE PIPE TO CONCRETE PIPE
TYPE "C-1"

NOTE:
Type "C-1" and "C-2" adaptors are to be formed and constructed on the job site by methods approved by the engineer.

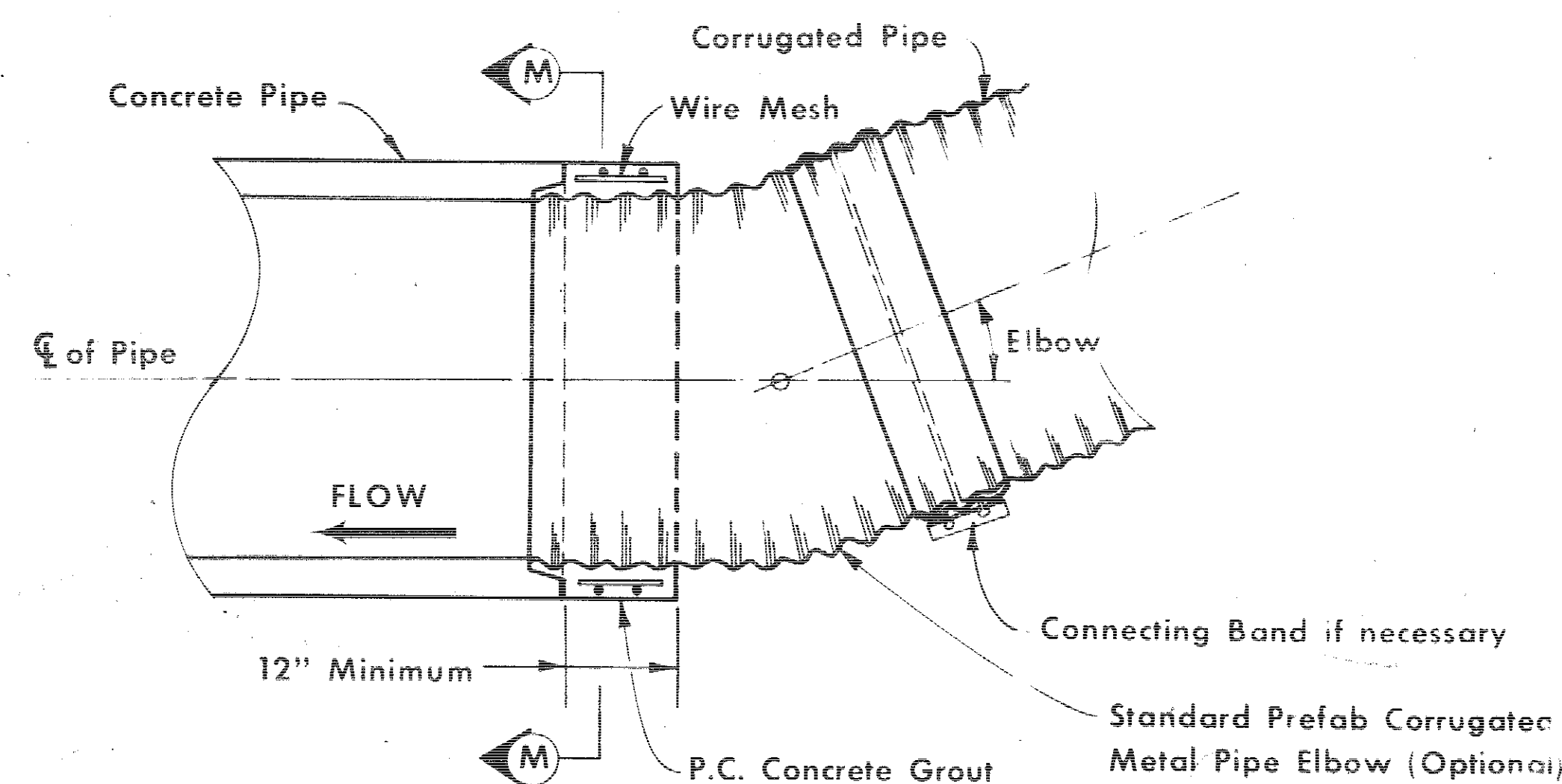


CONCRETE PIPE TO CONCRETE BOX CULVERT
TYPE "C-2"



CONCRETE PIPE TO CORRUGATED PIPE
TYPE "C-3"

NOTE:
Type "C-3" and "C-4" adaptors may be shop fabricated by a method approved by the engineer for attaching a concrete collar (either tongue or groove end) to a standard section of corrugated metal pipe.



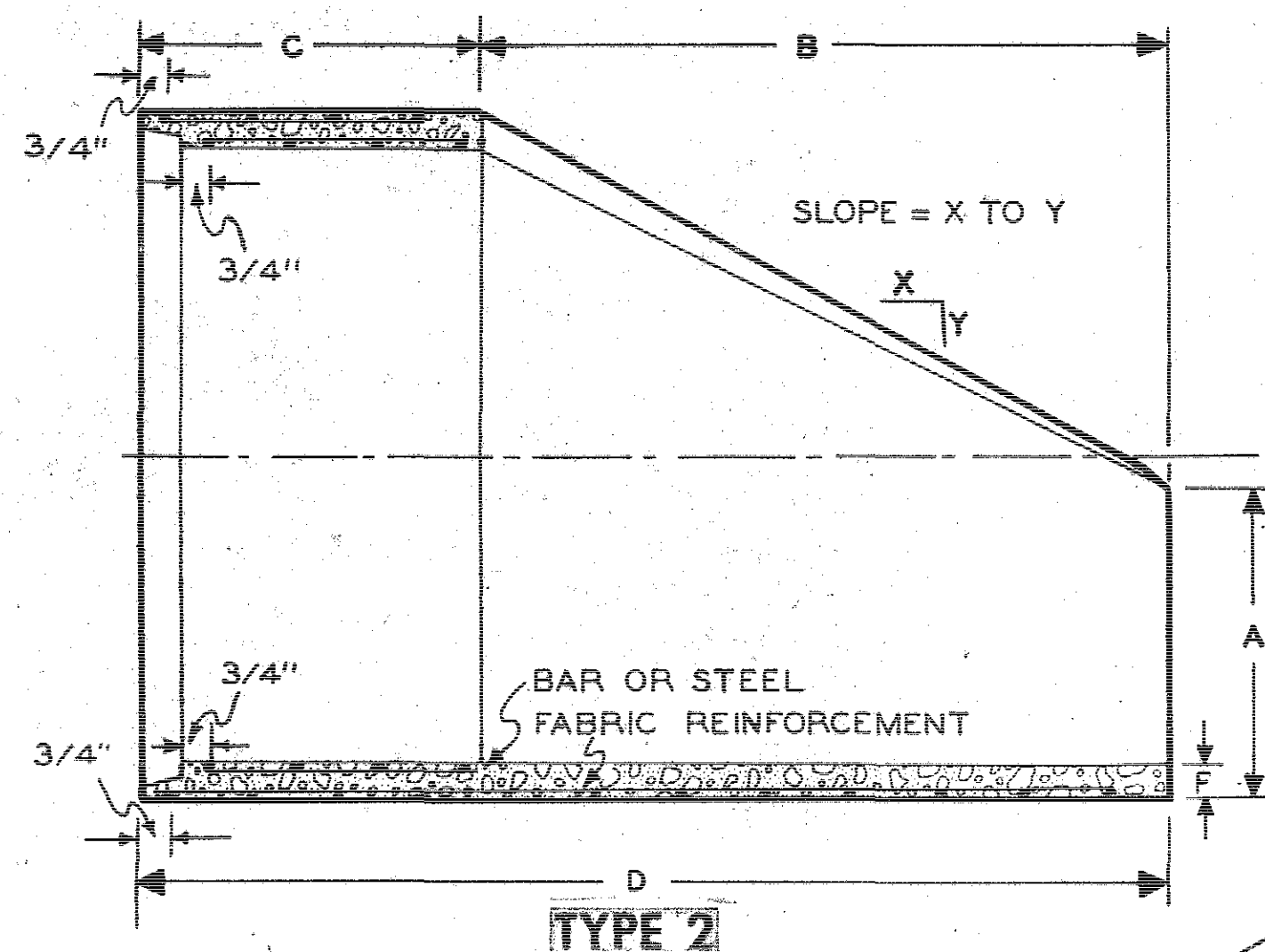
CORRUGATED PIPE TO CONCRETE PIPE
TYPE "C-4"

		DIAMETER "D"											
		15"	18"	21"	24"	30"	36"	42"	48"	54"	60"	72"	84"
CONCRETE (Cu. Yds.)		.076	.087	.099	.110	.132	.155	.200	.254	.318	.376	.525	.697
WIRE MESH (Lbs.)		2.00	2.27	2.55	2.82	3.36	3.93	4.50	5.10	5.70	6.20	7.47	8.64
CU. YDS. CONC. FOR FILLET ("C-2")		N.A.					.052	.068	.050	.069	.073	N.A.	

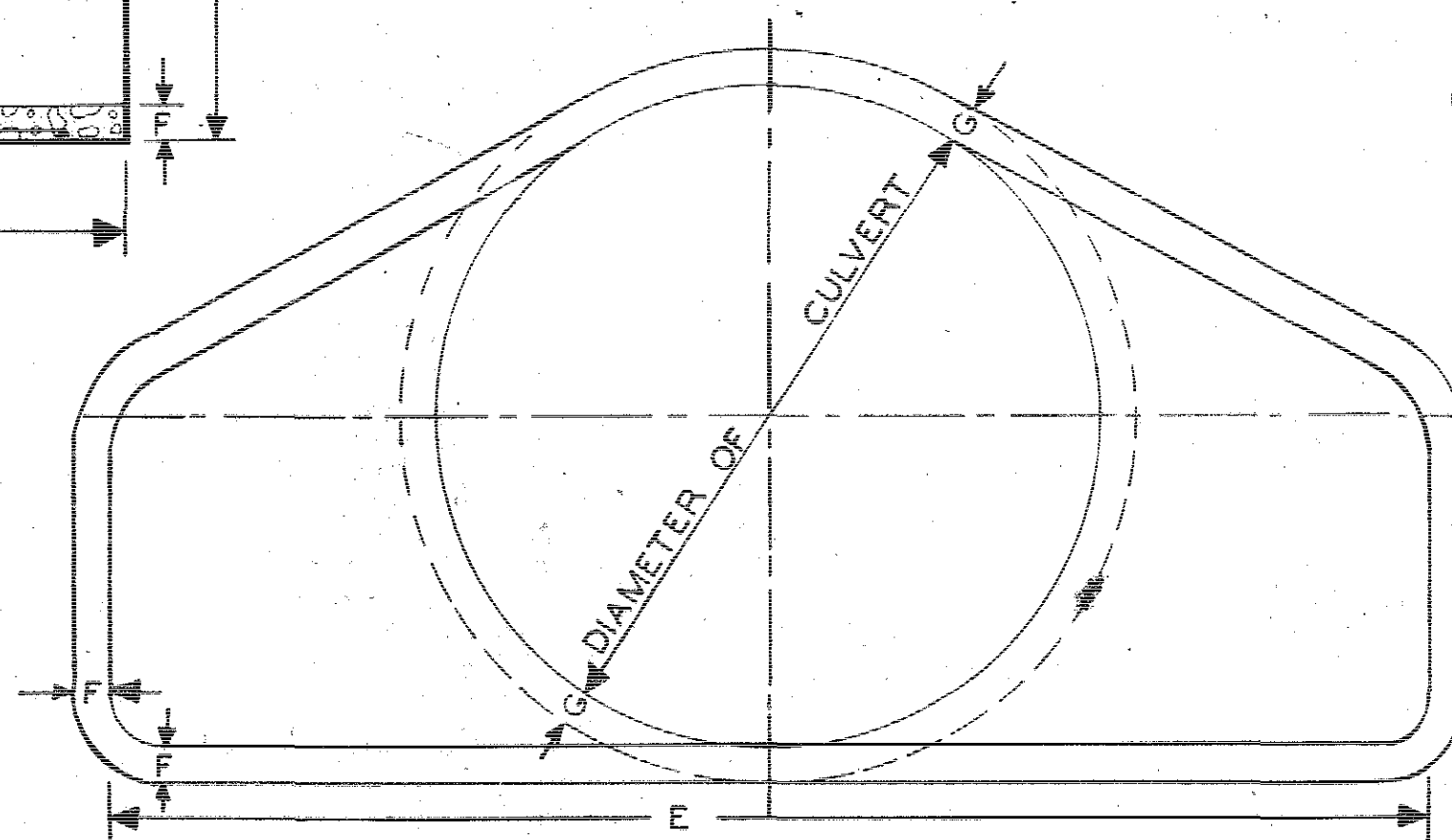
TYPE "C" ADAPTORS;

When the use of suitable Adaptors for making connections in various drainage structures are required, the details shall be similar to those indicated hereon for the respective types. No payment will be made for individual adaptors. The cost of furnishing all materials and constructing adaptors as indicated will be considered incidental to the pipe culvert. The cost of removing and disposing as directed, of any necessary headwall or other concrete shall be considered incidental to the pipe culvert.

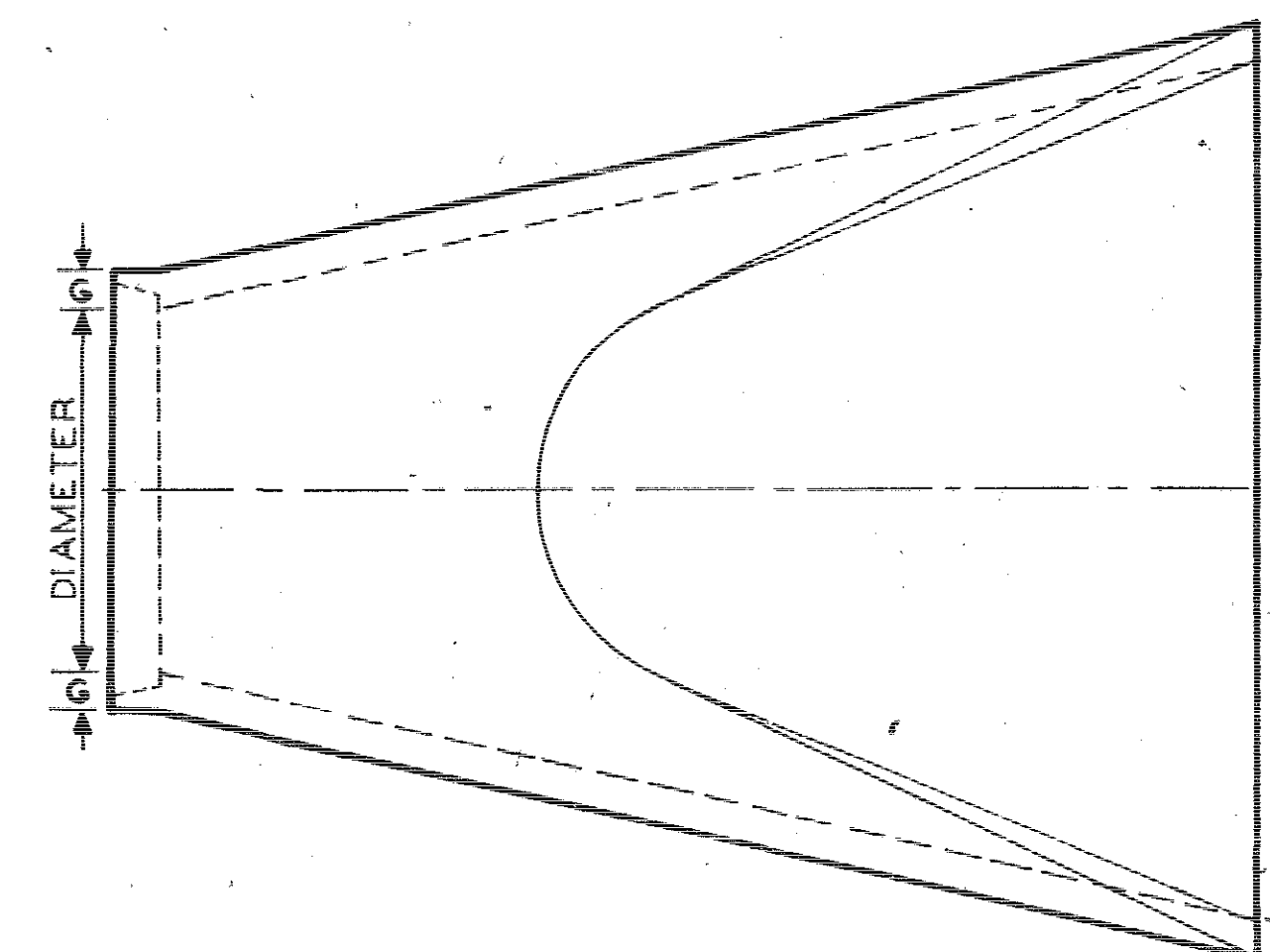
12 273		Date		IOWA HIGHWAY COMMISSION	
No		STANDARD ROAD PLAN		RF-2	
Recommended		Karl Derry Engineer		Date	
Approved		James C. Derry Engineer		Date	
TYPE "C" CONCRETE ADAPTORS FOR PIPE CULVERT CONNECTIONS					



Details are indicated hereon for groove and aprons. Tongue and aprons are also required. Details for tongue and groove shall be as indicated on Standard RF-1.

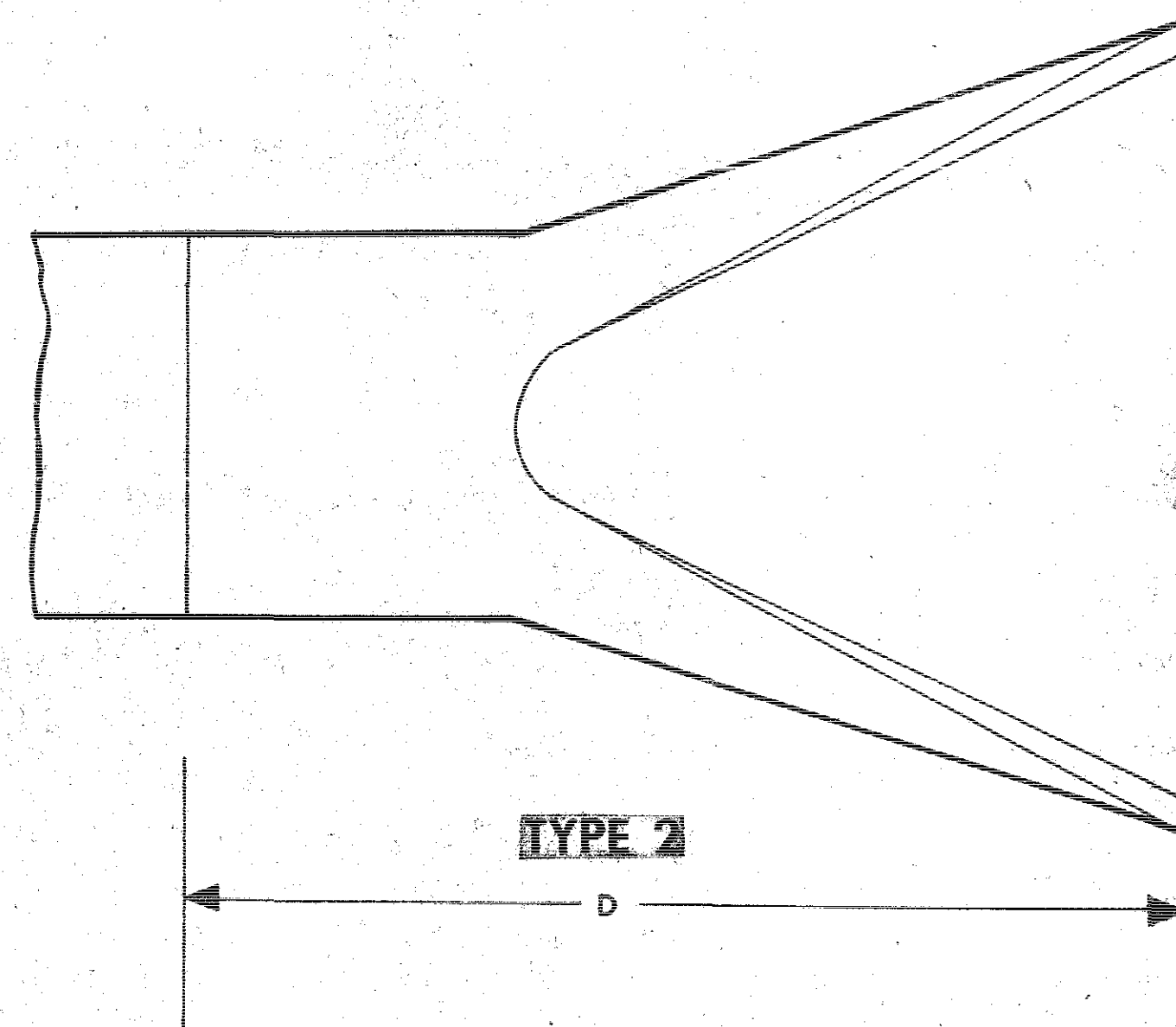


TYPE 2

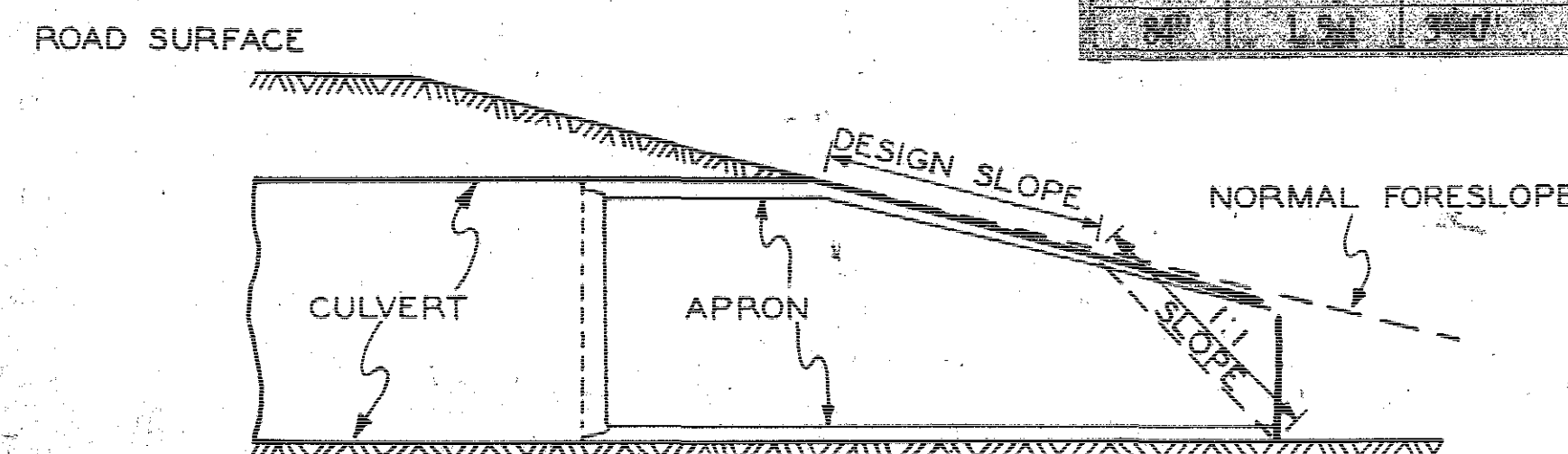


TYPE 1

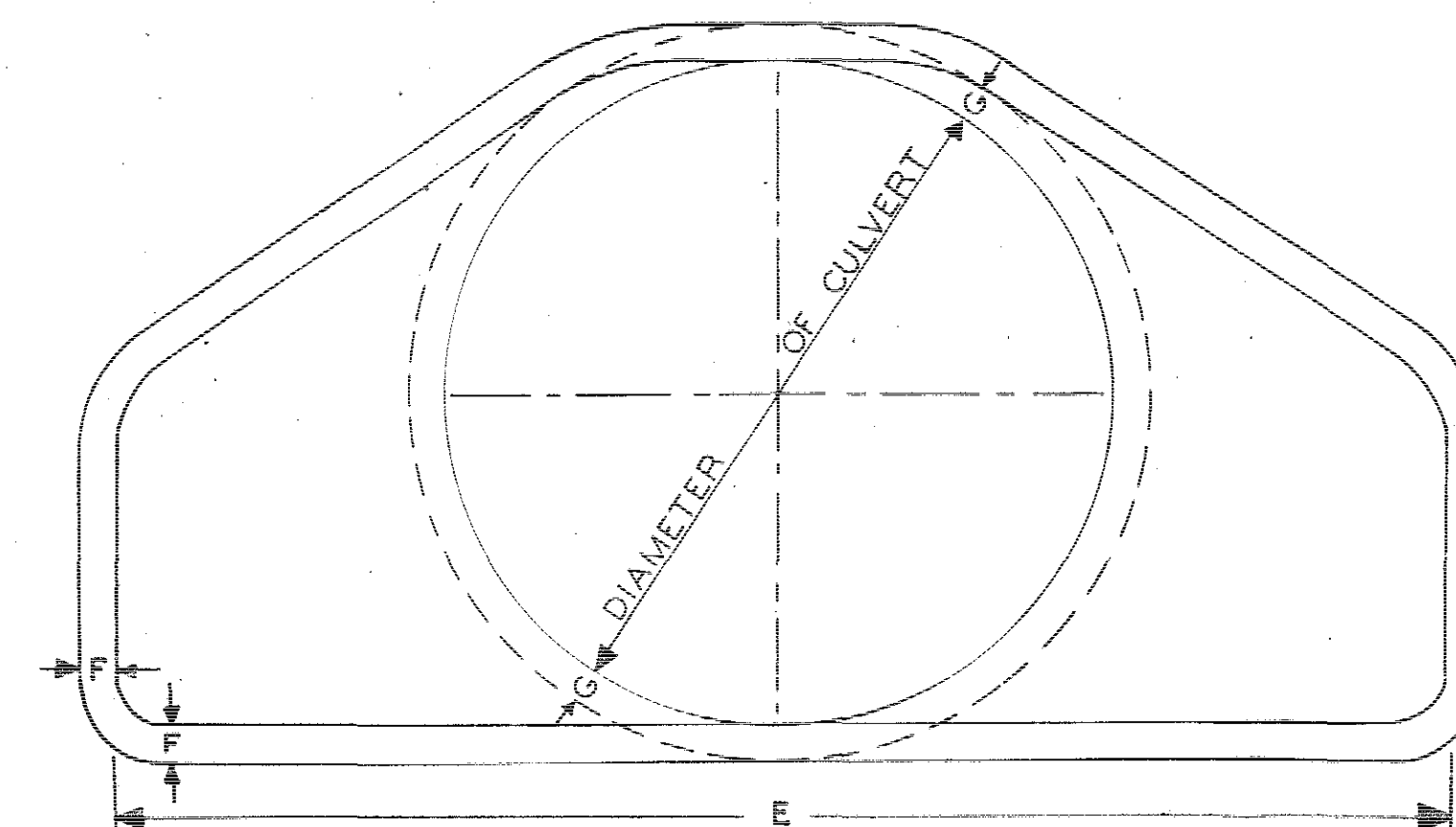
APRON DIMENSIONS								
DIAM.	SLOPE	A	B	C	D	E	F	G
12"	3:1	6"	2'-0"	4'-7 7/8"	6'-7 7/8"	2'-0"	2"	2"
15"	3:1	8 1/4"	2'-3"	3'-10"	6'-1"	2'-6"	2 1/4"	2 1/4"
18"	3:1	11 1/2"	2'-3"	3'-10"	6'-1"	3'-0"	2 1/2"	2 1/2"
24"	3:1	12 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	3"	3"
30"	3:1	1'-9 1/2"	4'-6"	1'-9 3/4"	6'-1 3/4"	5'-0"	3 1/2"	3 1/2"
36"	3:1	1'-7"	5'-3"	2'-9"	8'-0"	6'-0"	4"	4"
42"	3:1	2'-1 1/2"	5'-3"	2'-9"	8'-0"	6'-6"	4 1/2"	4 1/2"
48"	3:1	2'-5"	6'-0"	2'-0"	8'-0"	7'-0"	5"	5"
54"	2.4:1	2'-8 1/2"	5'-0"	3'-0"	8'-0"	7'-6"	5 1/2"	5 1/2"
60"	2:1	2'-11"	5'-0"	3'-0"	8'-0"	8'-0"	5 1/2"	6"
72"	2:1	3'-0"	6'-6"	1'-9"	8'-3"	9'-0"	6"	7"
84"	1.5:1	3'-0"	6'-6"	2'-6 1/2"	9'-3 1/2"	10'-0"	6 1/2"	8"



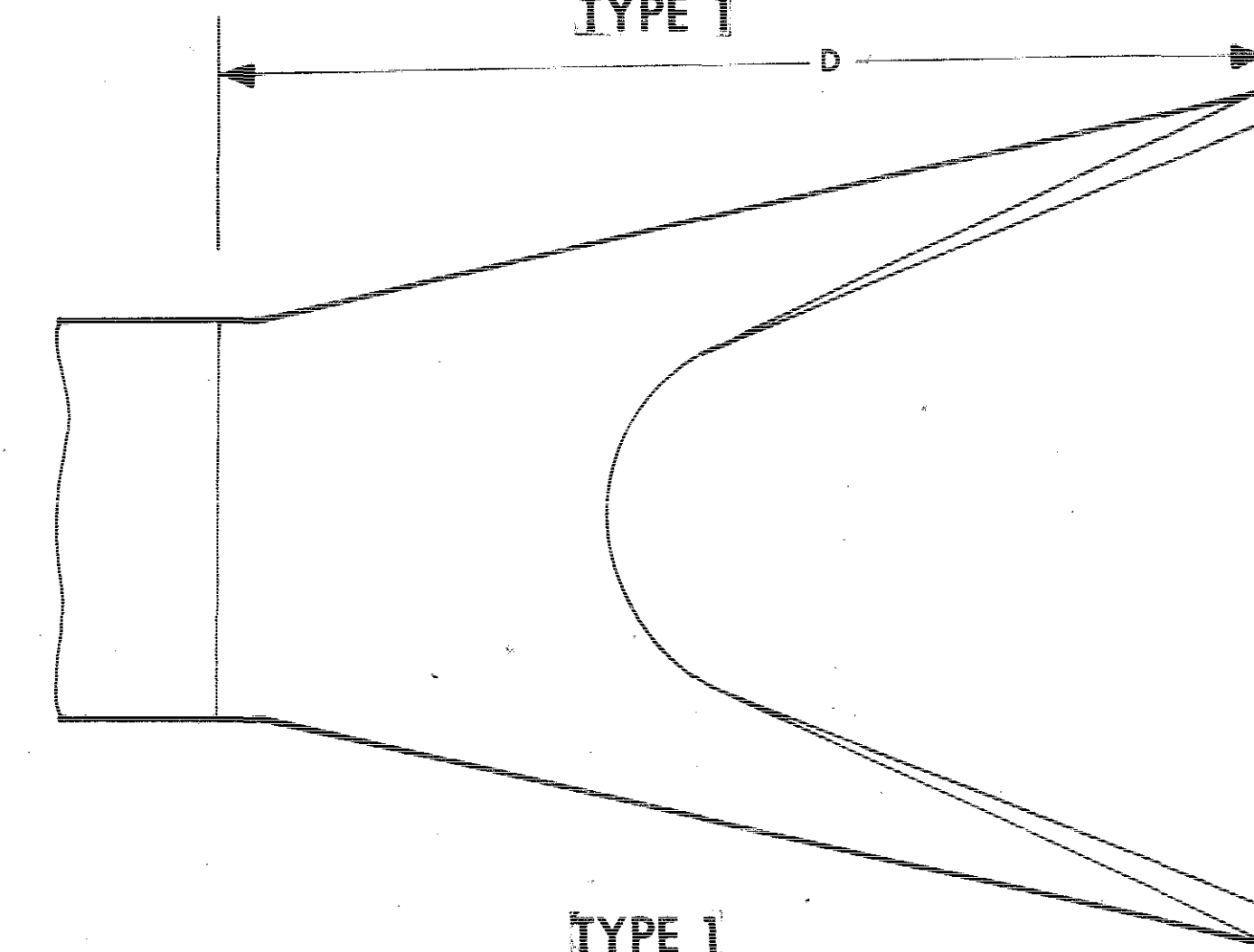
TYPE 2



TYPE 1 or 2

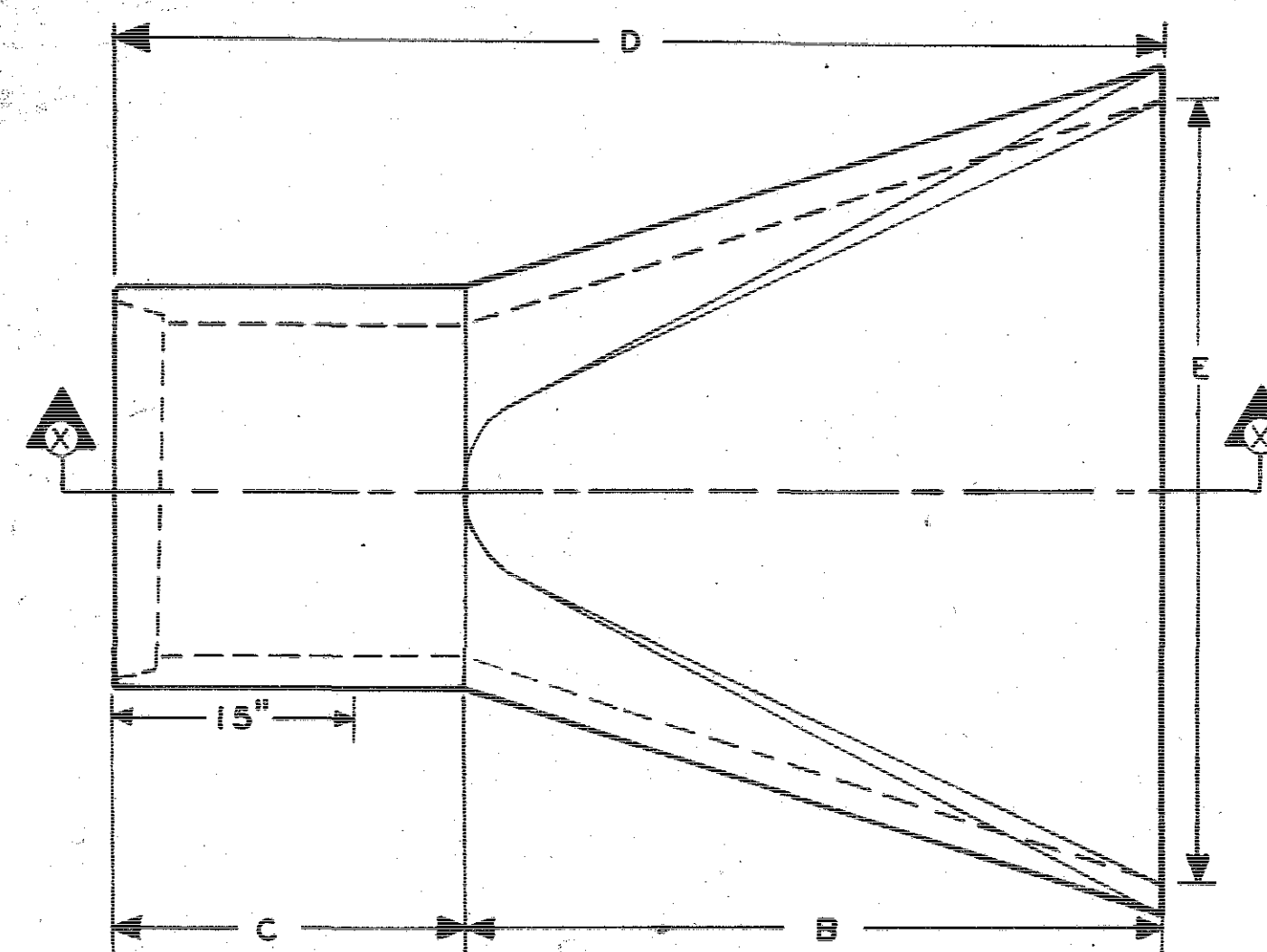


TYPE 1

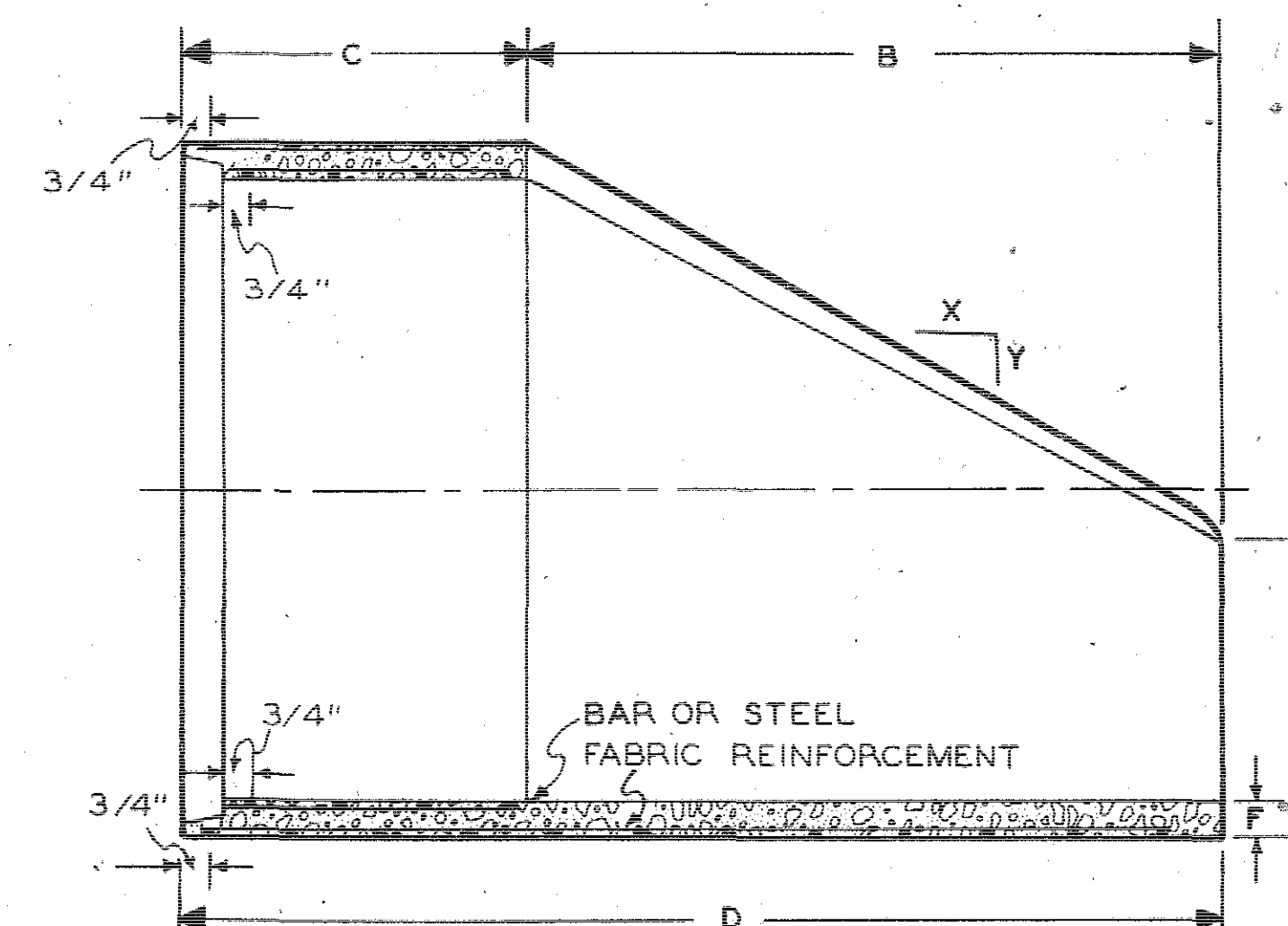


TYPE 1

APRON DIMENSIONS								
DIAM.	SLOPE	A	B	C	D	E	F	G
12"	3:1	6"	2'-0"	4'-7 7/8"	6'-7 7/8"	2'-0"	2"	2"
15"	3:1	8 1/4"	2'-3"	3'-10"	6'-1"	2'-6"	2 1/4"	2 1/4"
18"	3:1	11 1/2"	2'-3"	3'-10"	6'-1"	3'-0"	2 1/2"	2 1/2"
24"	3:1	12 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	3"	3"
30"	3:1	1'-9 1/2"	4'-6"	1'-9 3/4"	6'-1 3/4"	5'-0"	3 1/2"	3 1/2"
36"	3:1	1'-7"	5'-3"	2'-9"	8'-0"	6'-0"	4"	4"
42"	3:1	2'-1 1/2"	5'-3"	2'-9"	8'-0"	6'-6"	4 1/2"	4 1/2"
48"	3:1	2'-5"	6'-0"	2'-0"	8'-0"	7'-0"	5"	5"
54"	2.4:1	2'-8 1/2"	5'-0"	3'-0"	8'-0"	7'-6"	5 1/2"	5 1/2"
60"	2:1	2'-11"	5'-0"	3'-0"	8'-0"	8'-0"	5 1/2"	6"
72"	2:1	3'-0"	6'-6"	1'-9"	8'-3"	9'-0"	6"	7"
84"	1.5:1	3'-0"	6'-6"	2'-6 1/2"	9'-3 1/2"	10'-0"	6 1/2"	8"

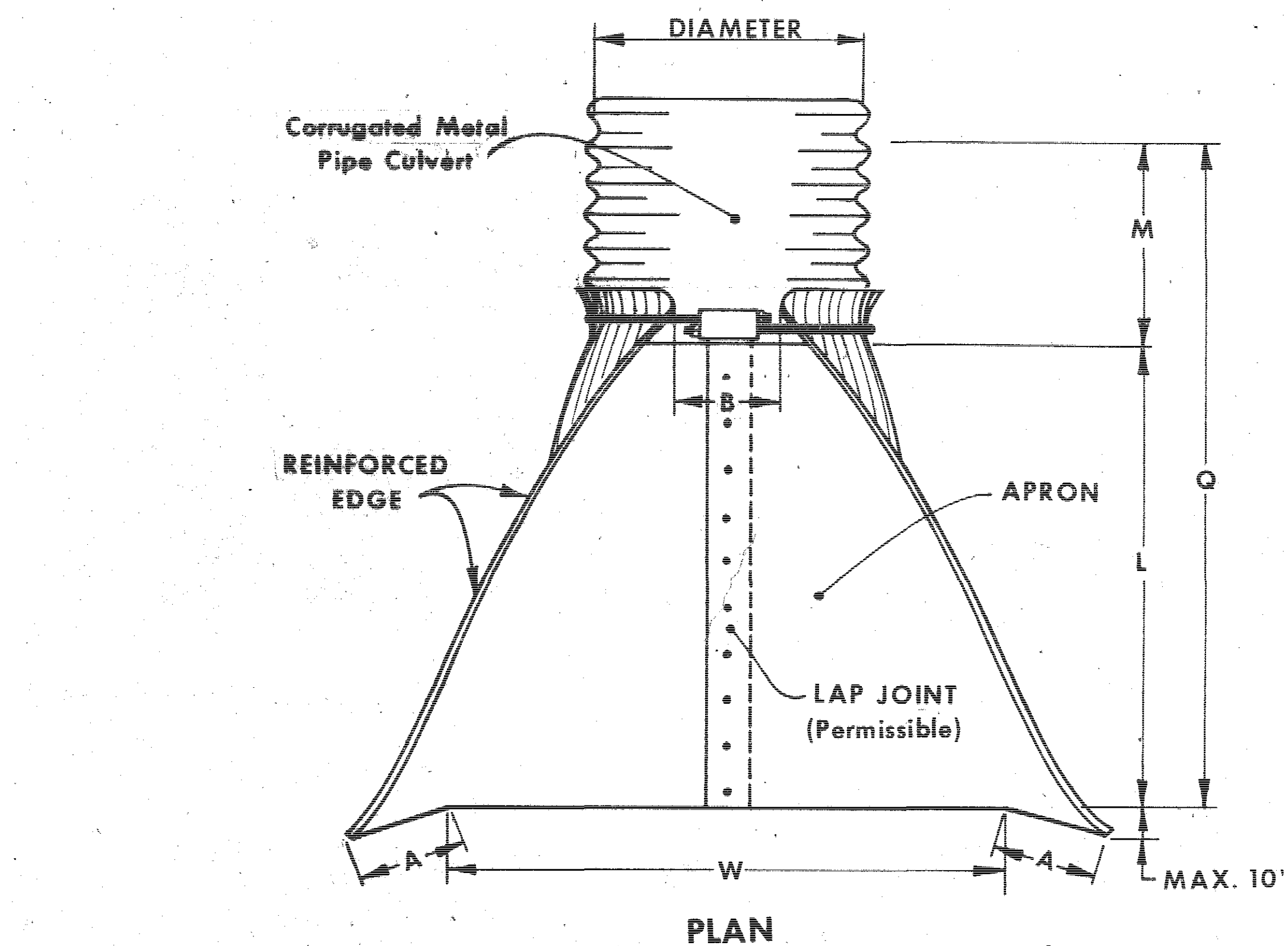


TYPE 2



NOTES: (ALL TYPES)
Design of barrel portion of concrete aprons shall conform to standard reinforced sectional concrete culvert pipe. See Design Standard RF-1.
If double line reinforcing is required in the barrel, only single line reinforcing is required in the flare of the apron.
Tie bolts and bolt holes if necessary, are required only when specified in the detail plans.
Alternate designs for concrete pipe aprons may be submitted for approval.
Any difference between length of concrete aprons installed, and the dimensions indicated hereon shall be appropriately adjusted for the length of concrete pipe furnished.

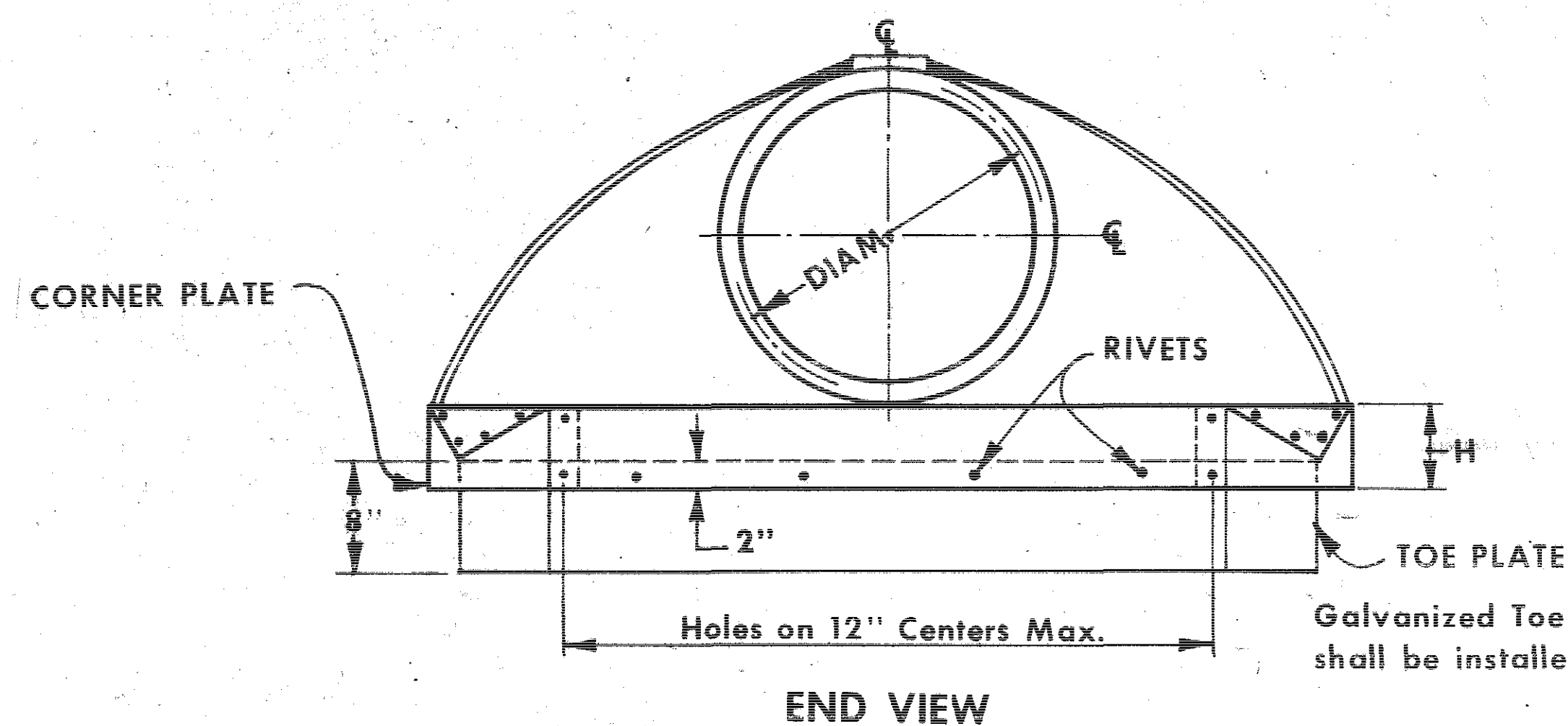
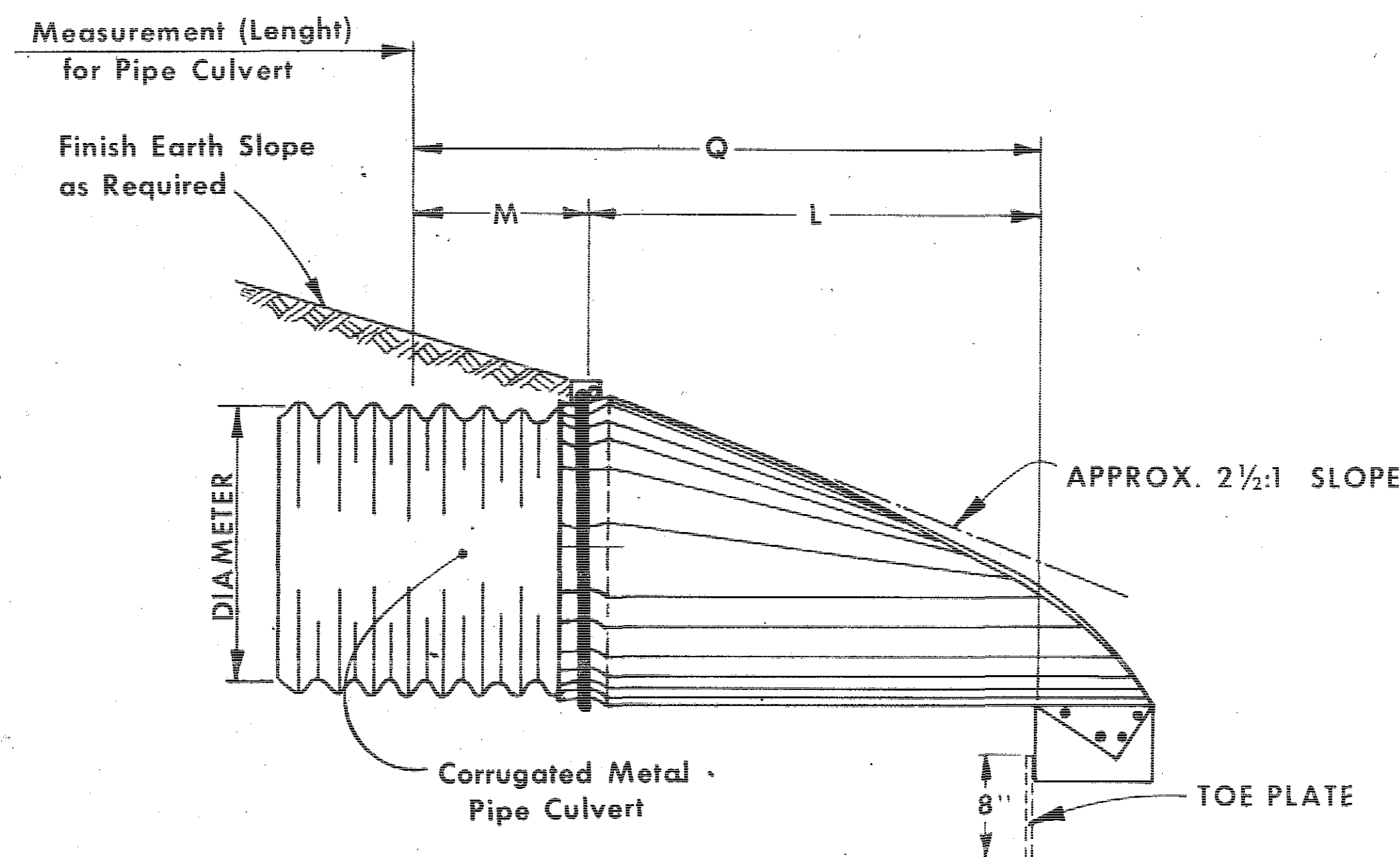
IOWA HIGHWAY COMMISSION	
DATE	11-16-60
STANDARD ROAD PLAN RF-3	
RECOMMENDED	DESIGN ENGINEER DATE
APPROVED	ROAD ENGINEER DATE
CONCRETE PIPE APRONS	



PIPE DIAM.	DIMENSIONS						
	A 1" ±	B MAX.	H 1" ±	L 1 1/2" ±	W 2" ±	M*	Q
12"	4 3/4"	6"	6"	21"	24"	48"	69"
15"	6"	8"	6"	26"	30"	48"	74"
18"	7"	9"	6"	31"	36"	48"	79"
21"	8 1/4"	11"	6"	36"	42"	48"	84"
24"	9 1/2"	12"	6"	42"	48"	36"	78"
30"	12"	15"	7 1/2"	52 1/2"	60"	24"	76 1/2"
36"	14"	18"	9"	63"	72"	48"	111"
42"	16"	21"	10 1/2"	73 1/2"	84"	48"	121 1/2"
48"	18"	27"	12"	84"	90"	36"	120"
54"	18"	30"	12"	84"	102"	36"	120"
60"	18"	33"	12"	87"	114"	36"	123"

Measurement (Length)
for Pipe Culvert

Finish Earth Slope
as Required



Galvanized Toe Plate (Same gage metal as apron)
shall be installed on all aprons 24" diameter and larger.

SIDE VIEW

GENERAL NOTES:

Metal pipe aprons and hardware shall be constructed of galvanized steel in conformance with the requirements of current ISHC specifications for Corrugated Metal Culverts and essentially as indicated hereon. Refer to appropriate other standard road plans as well as project plans for additional details of individual culvert installations. Alternate design details may be submitted to the engineer for approval.

Apron may be attached to culvert pipe as follows:

- If normal culvert is of circumferential corrugation type:
 - Use an approved bolt or clamp to fasten apron directly to culvert.
 - If apron is fabricated with "M" dimension of annular corrugated pipe as an integral part of apron, use a standard connecting band to fasten the two pieces together.
- If normal culvert is of helical corrugation type:
 - Use an approved sizing ring securely fastened to inside diameter of apron to connect to the culvert pipe using special dimple band connector.
 - If the apron is fabricated with "M" dimension of annular pipe as an integral part of apron, connect the two with a dimple band.
 - "Dimple" bands shall be approved by the engineer.

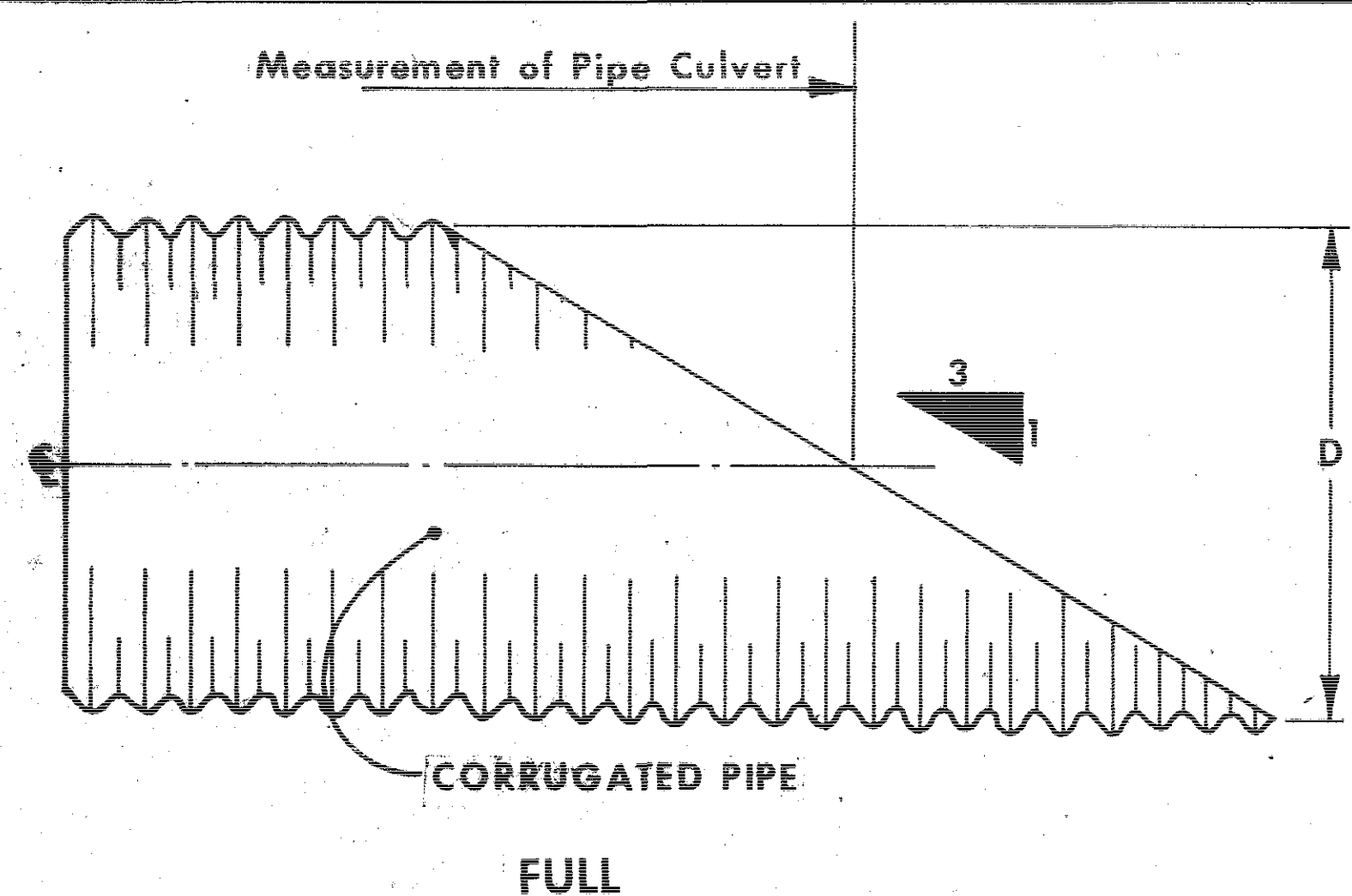
Any damage to Spelter Coat resulting from installation of culvert shall be repaired as directed by the engineer.

Price bid for "Metal Aprons" shall be considered full compensation for fabrication and installation of metal aprons as indicated hereon.

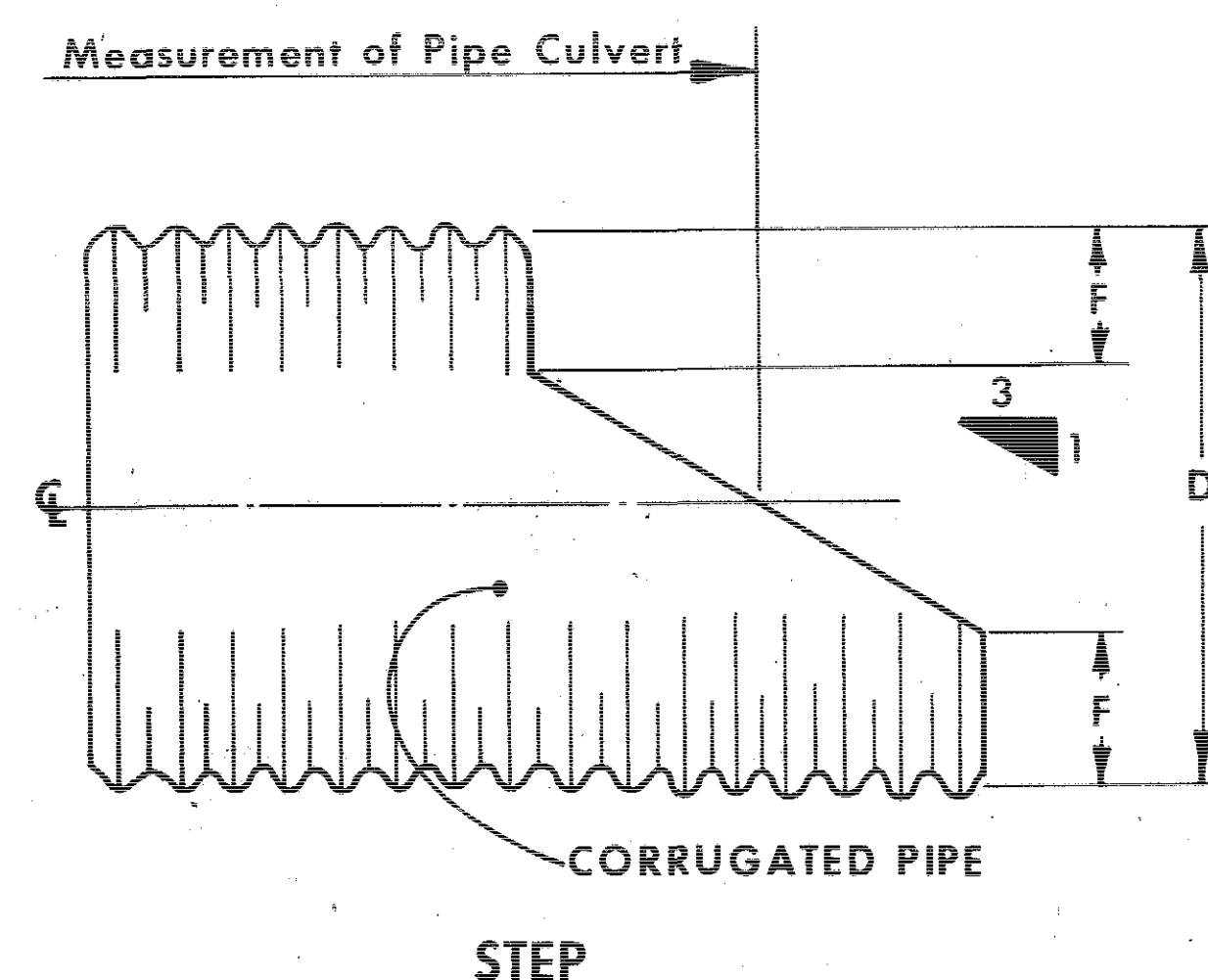
* SPECIAL NOTE:

Corrugated metal pipe of length "M" (See table of Dimensions) shall be furnished and installed in addition to specified length of corrugated metal pipe culvert. This length "M" shall be considered an integral part of the Apron and shall not be measured or paid for as culvert pipe but shall be considered incidental to the item of "Metal Aprons". Dimension "Q" shall be considered the "Length" of the apron.

Where the corrugated metal apron is to be used with bituminous coated corrugated metal pipe culverts, the pipe portion (Dimension "M") of this apron shall be bituminous coated, same as the culvert.



BEVELED ENDS FOR CORRUGATED METAL PIPE



BEVEL 3:1	
D	F
54"	3"
60"	6"
66"	9"
72"	12"
78"	15"
84"	18"

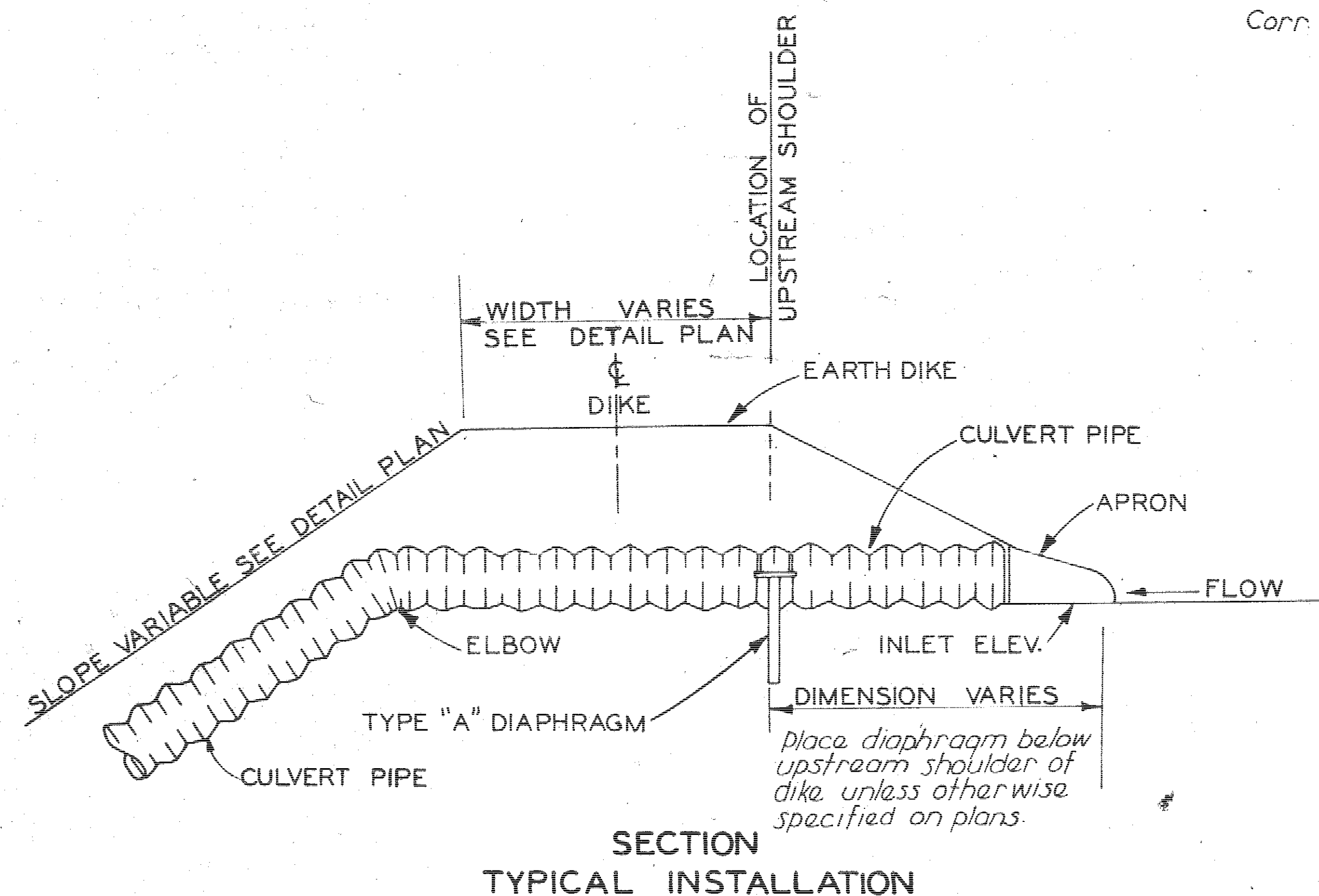
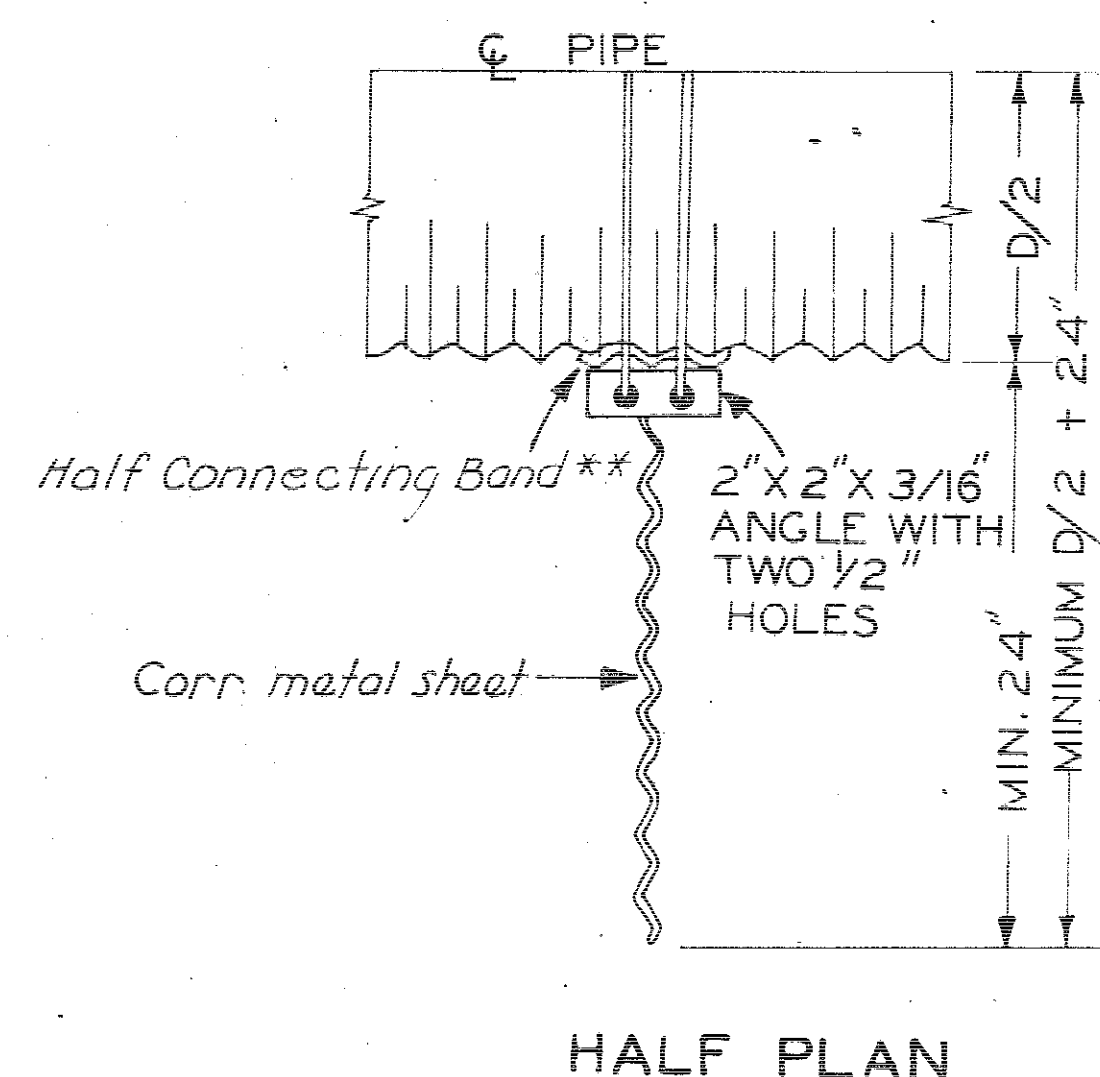
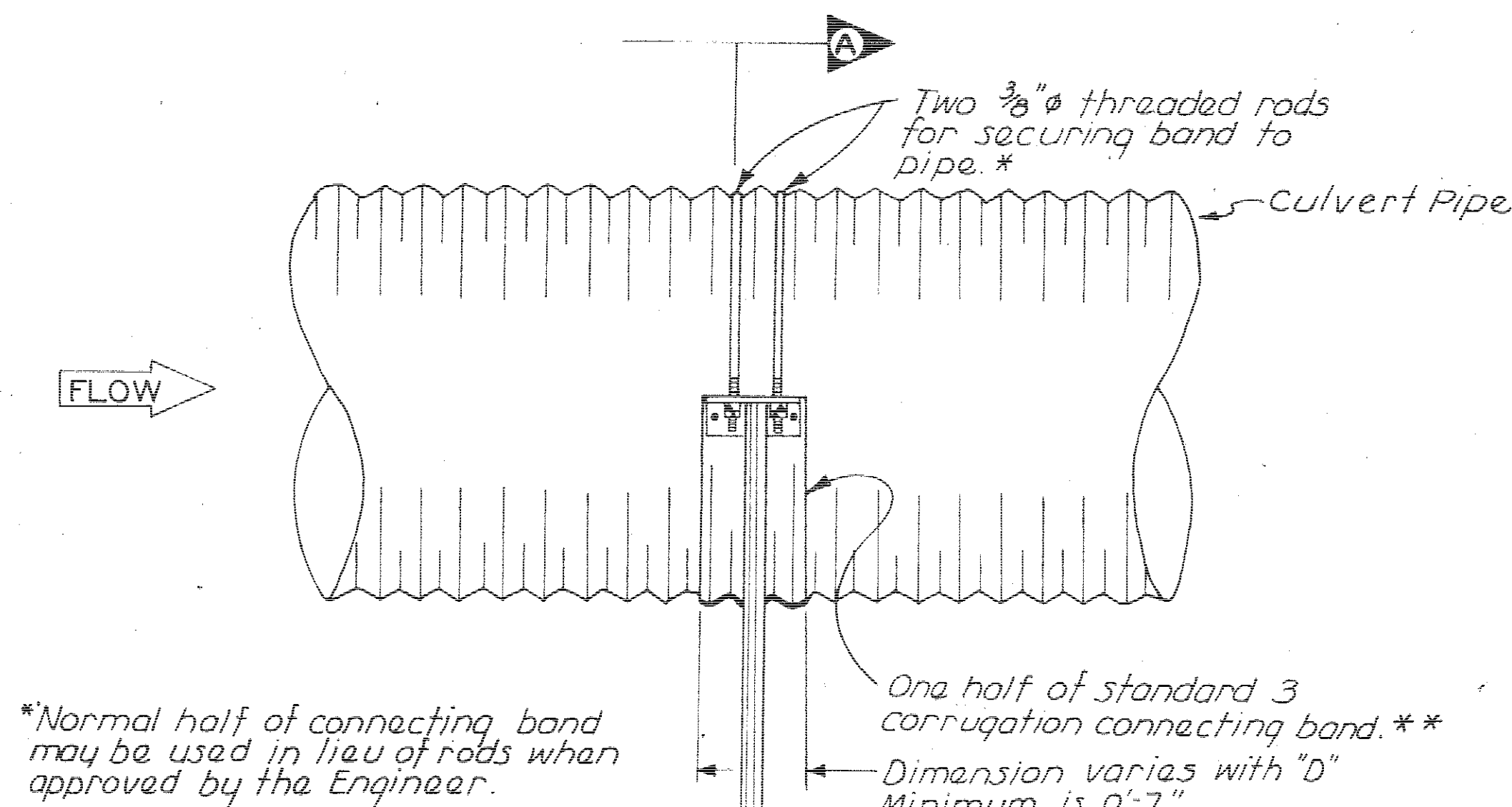
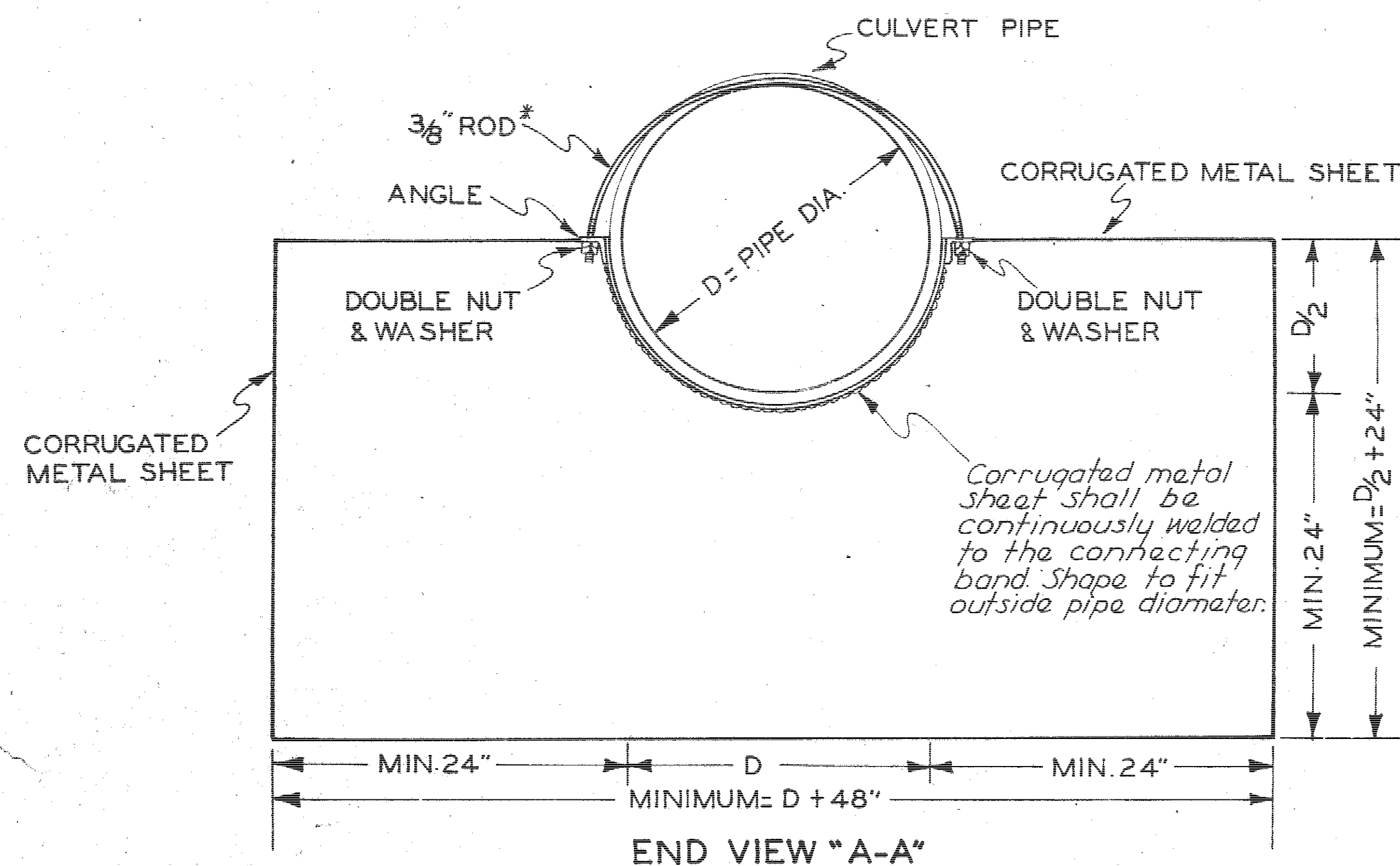
NOTE:

When specifically required as part of detail project plans, ends of pipe culverts may be provided with beveled ends as shown. Either Full Bevel or Step Bevel may be used unless one type is specified. Unless specified otherwise the slope of the bevel shall be 3:1.

Beveled ends will not be paid for separately but when required shall be considered incidental to the price bid for the culvert.

REDRAWN SHEET	2	24-72	Date	IOWA HIGHWAY COMMISSION	
	2	No.	STANDARD ROAD PLAN		RF-5
	Recommended		Ass't. Road Design Engineer Date		
	Approved		Road Design Engineer Date		
Last Revision		Deputy Chief Engineer Date		METAL PIPE APRONS AND BEVELED ENDS	
PROJECT NUMBER		STATE		FED. ROAD DIST. NO.	FISCAL YEAR
FN-62-1(4)-21-49		IOWA		5	53
TOTAL SHEETS		SHEET NO.		210	

Jackson COUNTY



NOTE:
Details are shown using corrugated metal culvert pipe. Appropriate modifications as indicated, subject to the approval of the engineer, shall be made as necessary where concrete culvert pipe is to be used.

GENERAL NOTES

Type "A" Diaphragm is an anti-seep device for use on let-down structures and shall be installed directly below the upstream shoulder of the dike.

Type "A" diaphragm shall consist of a sheet of corrugated metal of the dimensions indicated hereon and of the same weight gage as the pipe used for the culvert pipe.

This sheet may be fabricated from one or more sheets of corrugated metal. If two or more sheets are used, they shall be lapped a minimum of one corrugation and welded or riveted 3" (min.) centers along the seam. The sheet shall be welded on both sides to a standard half connecting band of the dimensions indicated hereon. This assembly shall then be securely attached to the pipe by means of two 3/8" rods of appropriate length placed in two adjacent valleys of the corrugated pipe and threaded with double nut and washer.

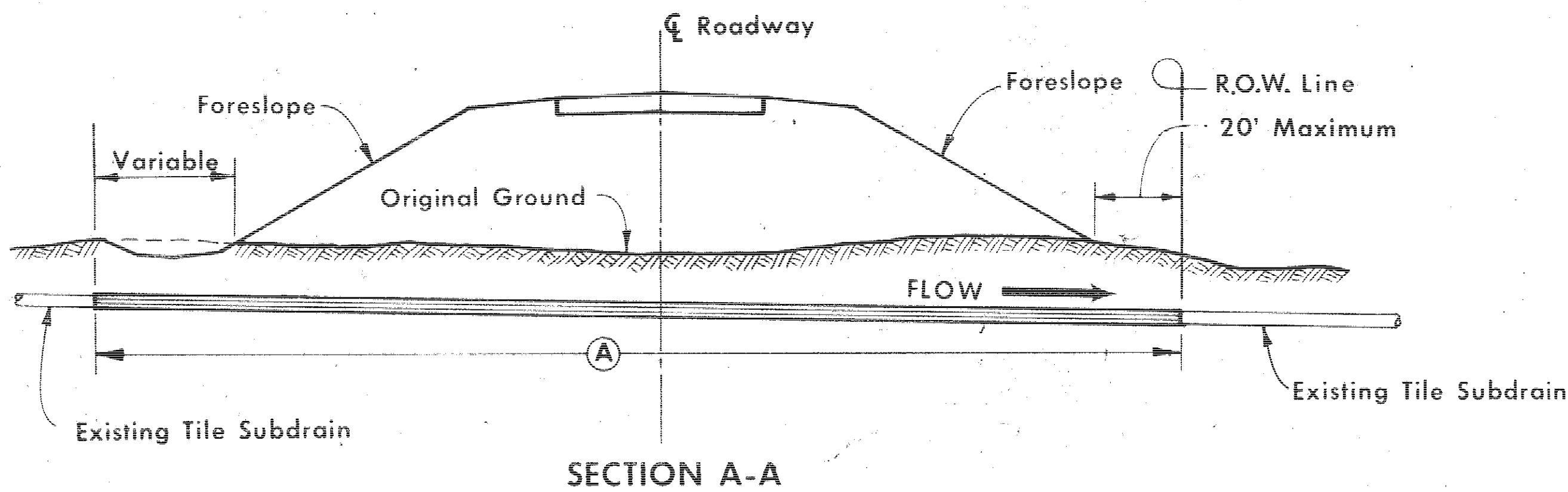
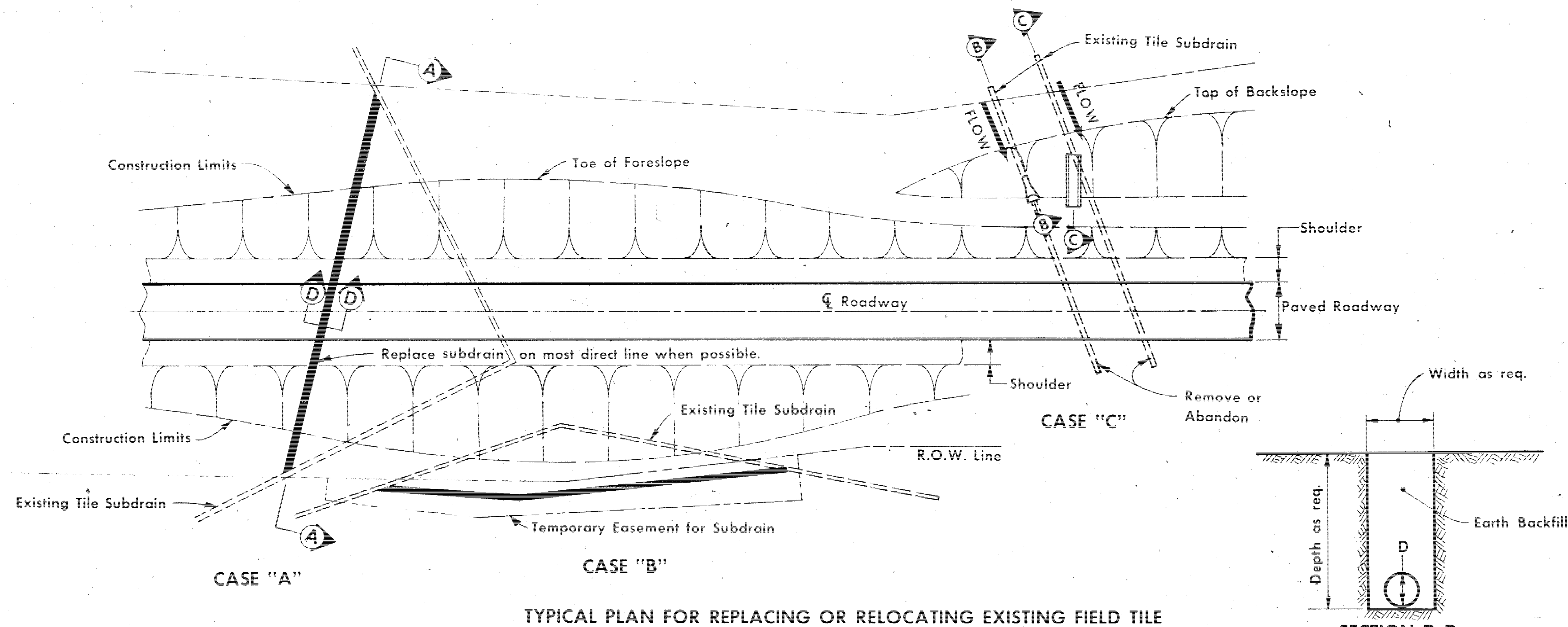
Bid price for "Type "A" Diaphragm" shall include furnishing all material and labor necessary as well as any excavation, backfilling, or other work required to complete the installation as indicated hereon.

Current I. S. H. C. Standard Specifications covering corrugated metal pipe culvert, shall apply to the construction of the Type "A" Diaphragm.

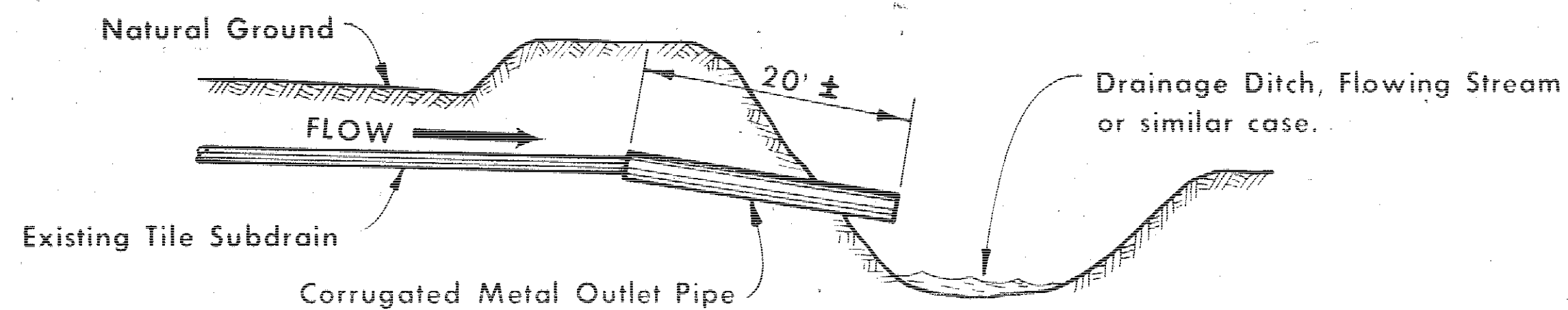
ADD CONC. PIPE NOTE	10-15-68	IOWA HIGHWAY COMMISSION	
	DATE	STANDARD ROAD PLAN RF-7	
	LAST REVISION	RECOMMENDED	ROAD ENGINEER <i>A. P. McLaughlin</i> DATE <i>10-18-68</i>
		DESIGN ENGINEER <i>A. P. McLaughlin</i> DATE <i>10-18-68</i>	
	APPROVED	DEPUTY CHIEF ENGINEER <i>R. H. Swen</i> DATE <i>10/18/68</i>	
CORRUGATED METAL TYPE "A" DIAPHRAGM			

Jackson COUNTY

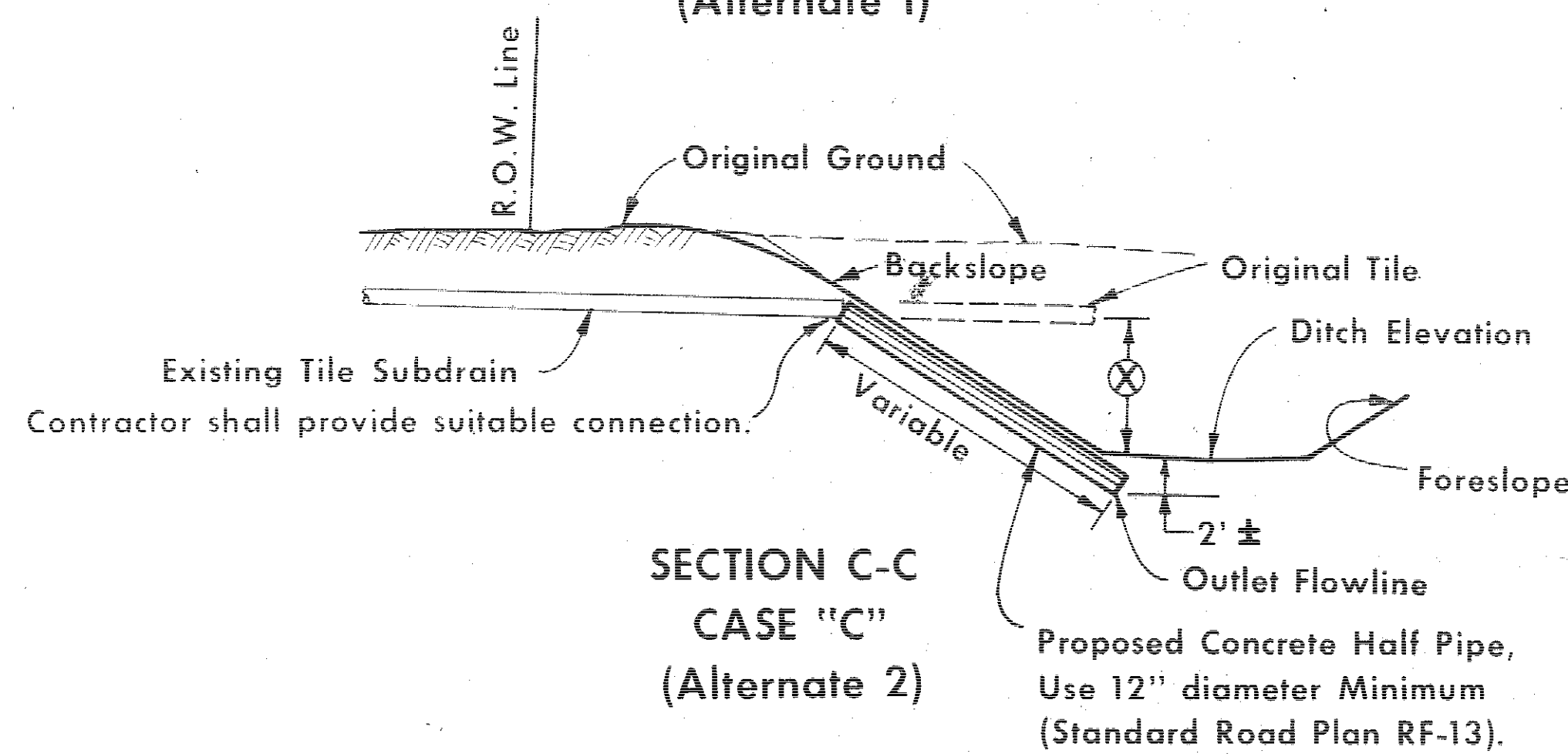
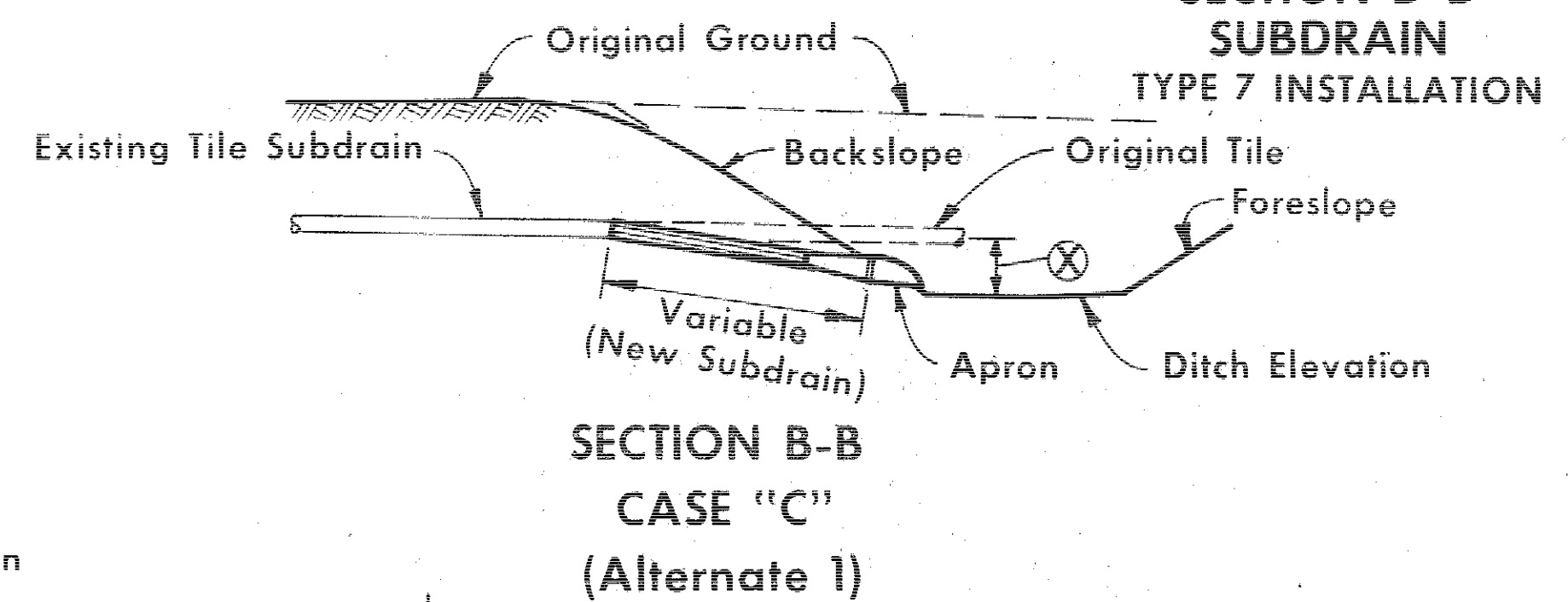
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.
FN-62-1(4) -- 21-49	IOWA	5		54



Dimension (A) indicates the construction limits in which replacement of tile subdrain in accordance with the replacement schedule is required.



In cases where new construction requires subdrain outlet into the channel of a flowing stream or into an established drainage ditch a special outlet similar to that indicated should be provided.



Where an existing tile line is intercepted by roadway excavation such that it is not possible to match Flow Lines if subdrain is extended across the roadway (Case 'C'), special outlets should be provided for existing tile to drain outlet into ditches. Alternate Outlet Type 1 should ordinarily be used when dimension "X" would be less than 4ft. Alternate Outlet Type 2 should ordinarily be used when dimension "X" would be more than 4 ft.

GENERAL NOTES:

Details shown and described hereon illustrate typical situation. Refer to project plans for specific data regarding individual subdrain installations.

Where the roadway crosses existing tile lines the tile line shall normally be replaced within the construction limits. If intersected so as to result in an undesirable alignment (Case A) the tile should normally be relocated as shown to result in a more nearly right angle crossing. Intercepted tile lines which generally run in the same direction as the roadway should be relocated outside the construction limits and desirable outside ROW where feasible (Case B).

Tile lines replaced within the construction limits shall be done so in accordance with the replacement schedule below. Generally replacement of the tile lines outside the construction limits should be done utilizing the same size and type of pipe as the existing tile line.

Blind ends of subdrains shall be capped with a metal cap or by covering with pieces of broken tile or other suitable methods.

All outlet ends of subdrains 12" or less in diameter which outlet into roadway ditches shall have such ends of the subdrain covered with 1/2" mesh galvanized hardware cloth screen. The screen shall be securely attached to the subdrain end by a means approved by the Engineer, so as to provide an effective means of preventing rodents from entering the end of the subdrain. This work shall not be paid for directly but shall be considered incidental to "Subdrain".

Relocated or replacement subdrain shall be installed so as to cause a minimum of disturbance to existing field tile. Connections to lines of existing tile drains shall be made in such a way as to leave the existing tile drains in a functional condition.

When concrete culvert pipe, of 2000 D classification or greater, is required, the price bid for subdrain shall include furnishing and installing an RF-14 type 1 connector. Concrete pipe classified as 1500 D does not require connectors.

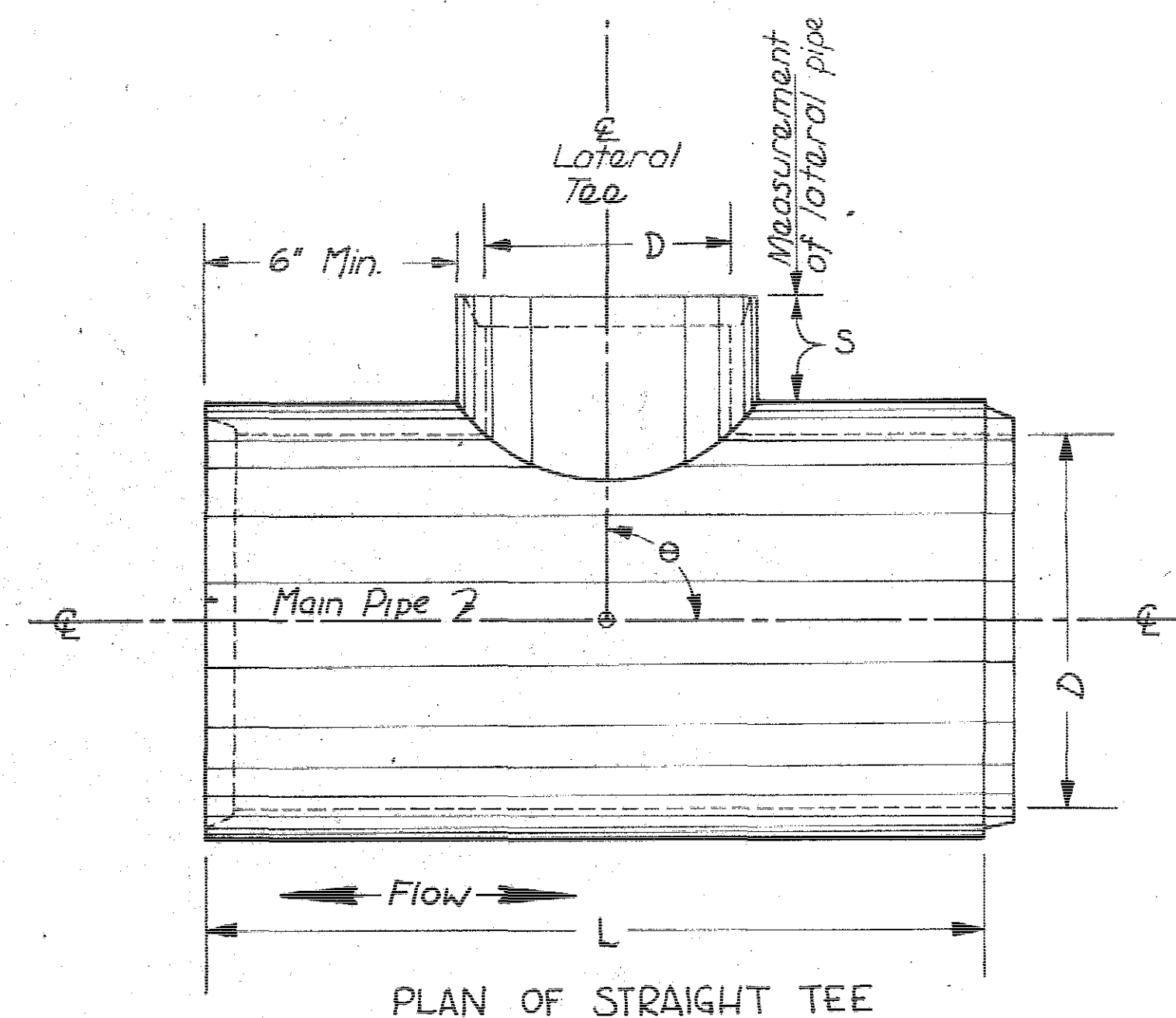
Price bid for "Subdrain" shall include all necessary elbows, tees, connections and any other items not specifically paid for; which are necessary to construct subdrain as described hereon and as shown in the detail project plans.

REPLACEMENT SCHEDULE										
EXISTING TILE D	4	6	8	10	12	15	18	21	24	> 24
PROPOSED SUBDRAIN SIZE										
CONCRETE PIPE	—	—	12	15	15	18	21	24	30	D+6"
Bit. Coated C.M.P.	10	12	15	18	21	24	30	36	36	*

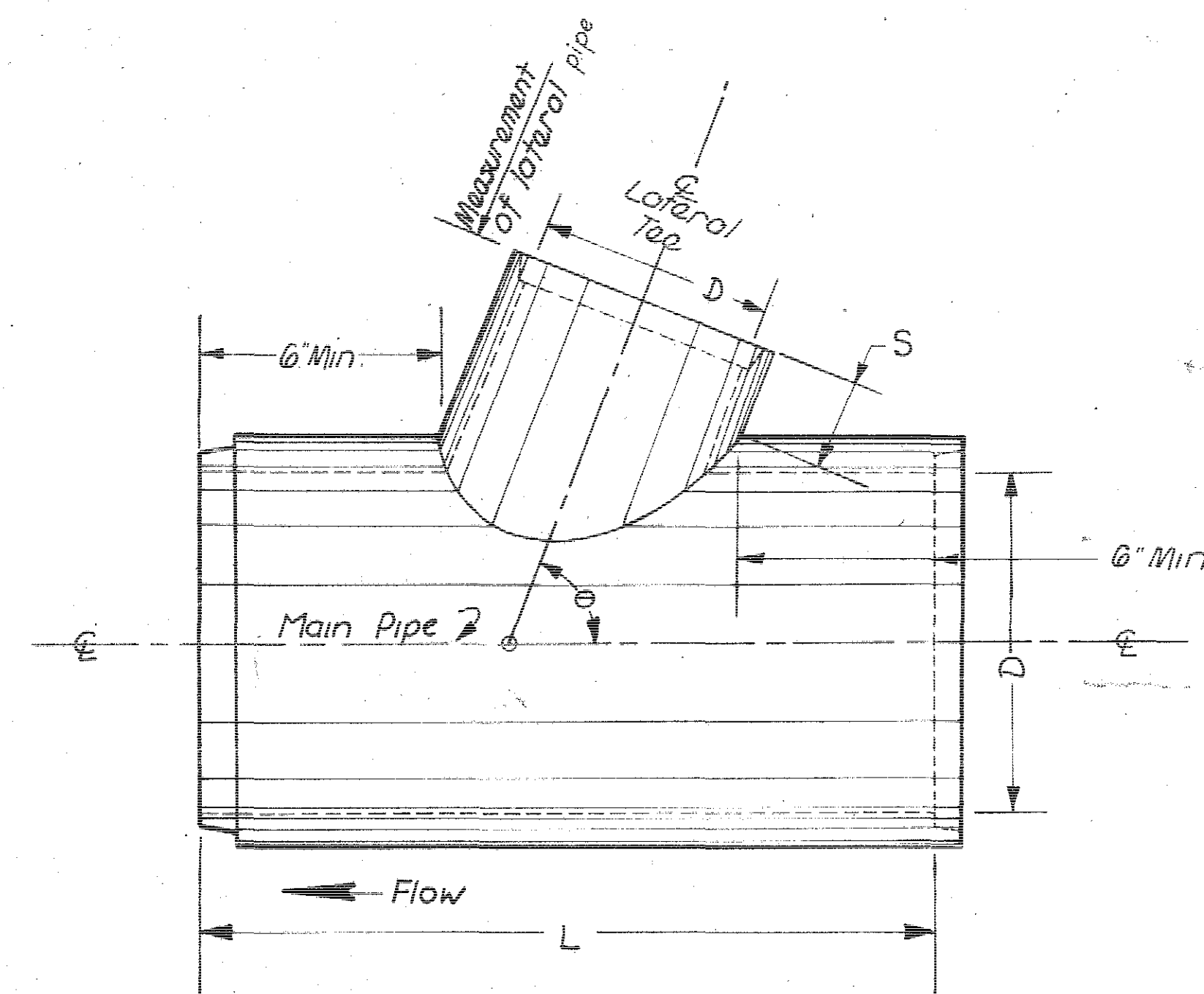
*Replacement sizes provide equivalent capacity based on a 6" settlement, assuming a 0.20% slope with n=0.13 for concrete pipe and n=0.25 for corrugated pipe. (Mannings Formula).

PROJECT NUMBER FN-62-1(4) -- 21-49		STATE IOWA		FED. ROAD DIST. NO. 5	FISCAL YEAR	SHEET NO. 55	TOTAL SHEETS 210
		JACKSON COUNTY					

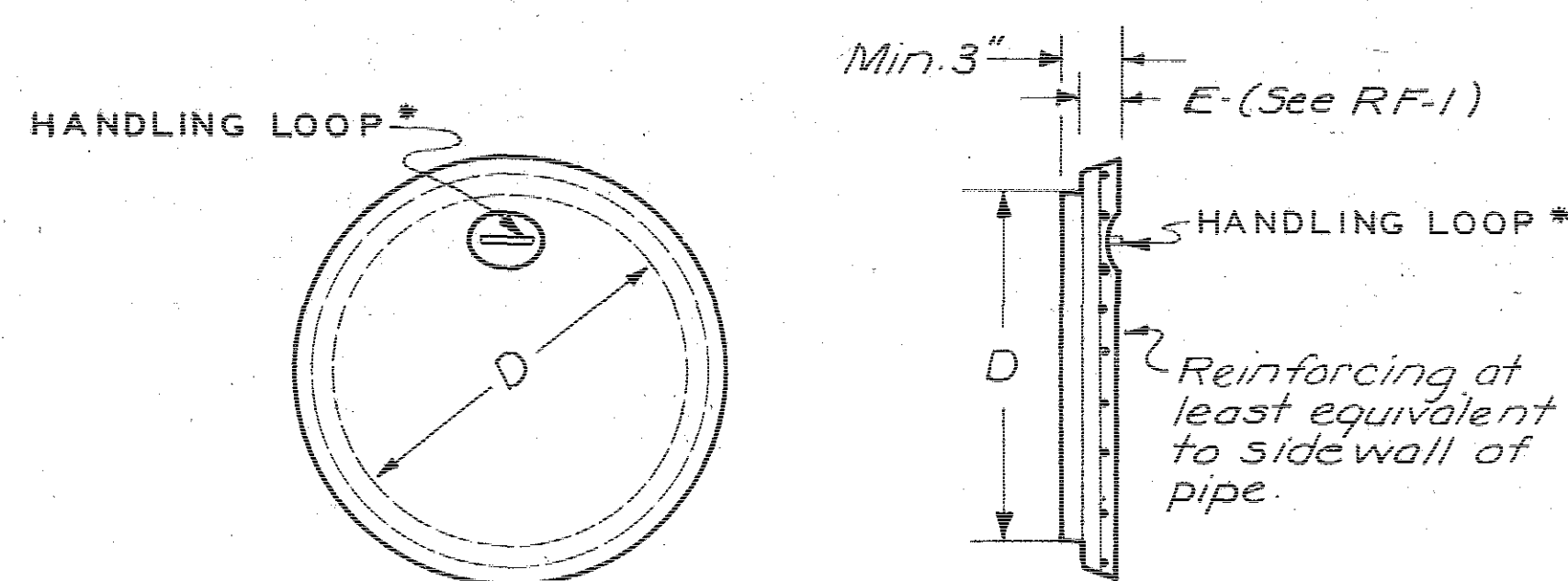
IOWA HIGHWAY COMMISSION	
STANDARD ROAD PLAN RF-20	
3-1-74	Date
6	No.
Clarly C. M. P. Replacement	
Recommended	Ass't. Road Design Engineer Date 10-19-71
Approved	Road Design Engineer Date 10-26-71
	Deputy Chief Engineer Date 10-27-71
DETAILS OF SUBDRAIN INSTALLATION	



PLAN OF STRAIGHT TEE



PLAN OF ANGLE TEE



DETAILS OF PIPE CAP

TEE SECTION GENERAL NOTES

Tees may be required in any size from 12" ϕ to 48" ϕ (in 6" increments) on main pipe culverts equal to or greater in diameter than that of the tee. Angle tees may be required in any θ angle (of 5° increment) between 45° and 90°. Unless a θ angle of other than 90° is so specified in the detail project plans, tee sections shall be considered to be 90° (straight tees).

Example: 18" - 36" Tee means an 18" ϕ 90° lateral tee attached to a 36" main pipe culvert.

Example: 24" - 48" 75° Tee means a 24" ϕ lateral tee attached to a 48" main pipe culvert at a θ angle of 75°.

The price bid for "tee" shall be considered full compensation for fabrication and installation of a section of pipe of specified diameter and minimum full length of 6" (as illustrated hereon) attached to another culvert pipe of specified diameter. The length of pipe culvert lateral within 6" of the outside wall of the main pipe culvert will not be measured for payment but shall be considered as the tee.

The fabrication of the tee shall be accomplished in such a manner as to be as free from obstruction on the inside of the pipe as is reasonable and otherwise to be constructed by methods approved by the engineer.

CONCRETE PIPE TEE

Materials and methods used in the fabrication of tee sections, both in the main pipe and in the lateral tee, shall conform to current Iowa State Highway Commission Standard Specifications for Concrete Pipe Culvert and to the details shown on Standard Road Plan RF-1.

Length of main pipe section (L) shall be a minimum of 4'-0" and a maximum of 6'-0". Length of main pipe section shall be included in measured length of structure.

CORRUGATED METAL PIPE TEE

Materials and methods used in the fabrication of tee sections shall conform to current ISHC S't'd. Spec's. for corrugated metal pipe culverts. All metal parts and hardware shall be galvanized as per current ISHC S't'd. Spec's. Any damage to protective coating resulting from installation of culvert shall be repaired as directed by the engineer.

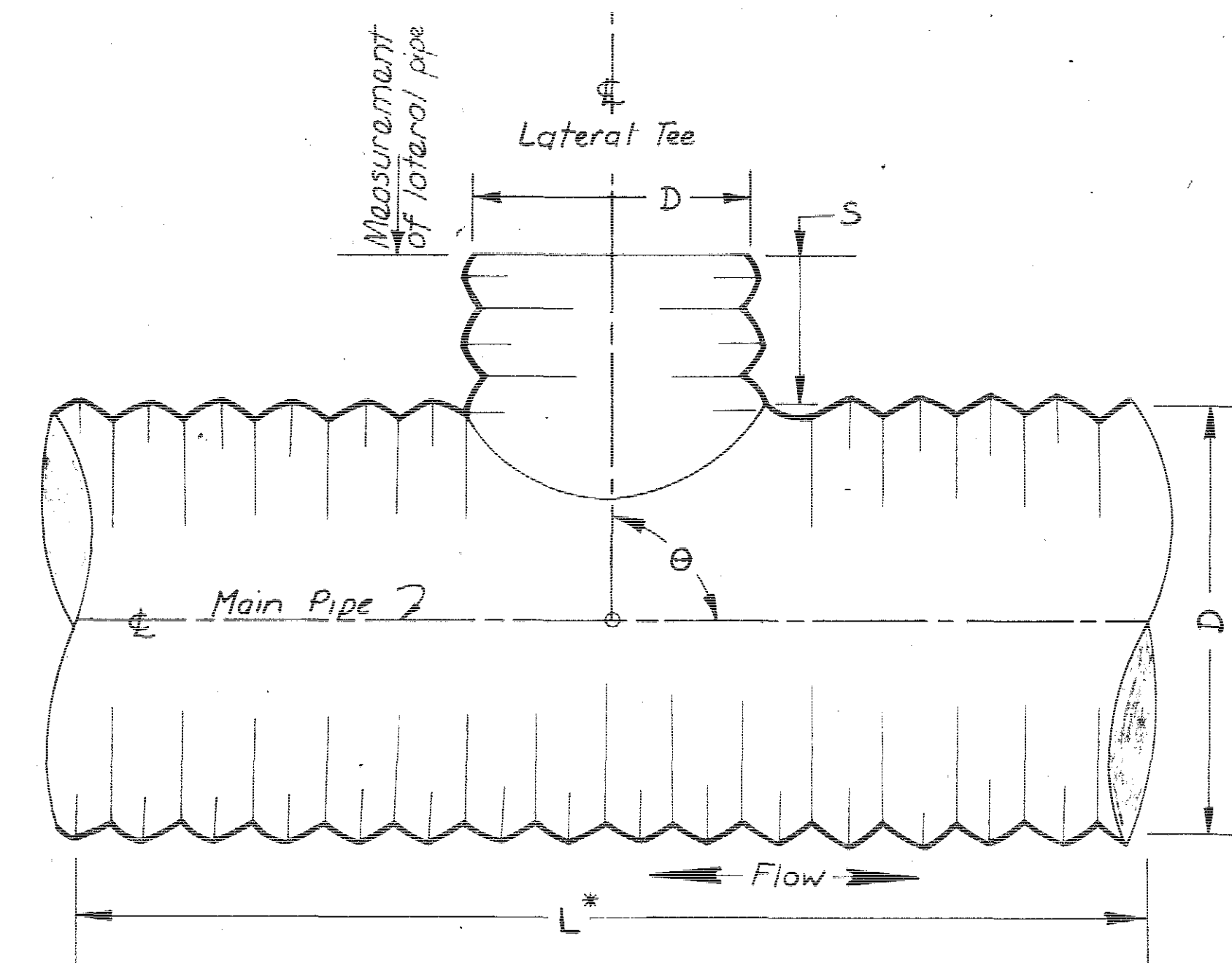
GENERAL NOTE - PIPE CAP

The use of an approved pipe cap is required when so indicated on the detail project plans. The pipe cap shall be constructed with methods and materials required by current ISHC Standard Specifications for concrete culvert pipe. The dimensions of the pipe cap shall be such as to neatly fit the groove end of the appropriate size of culvert pipe.

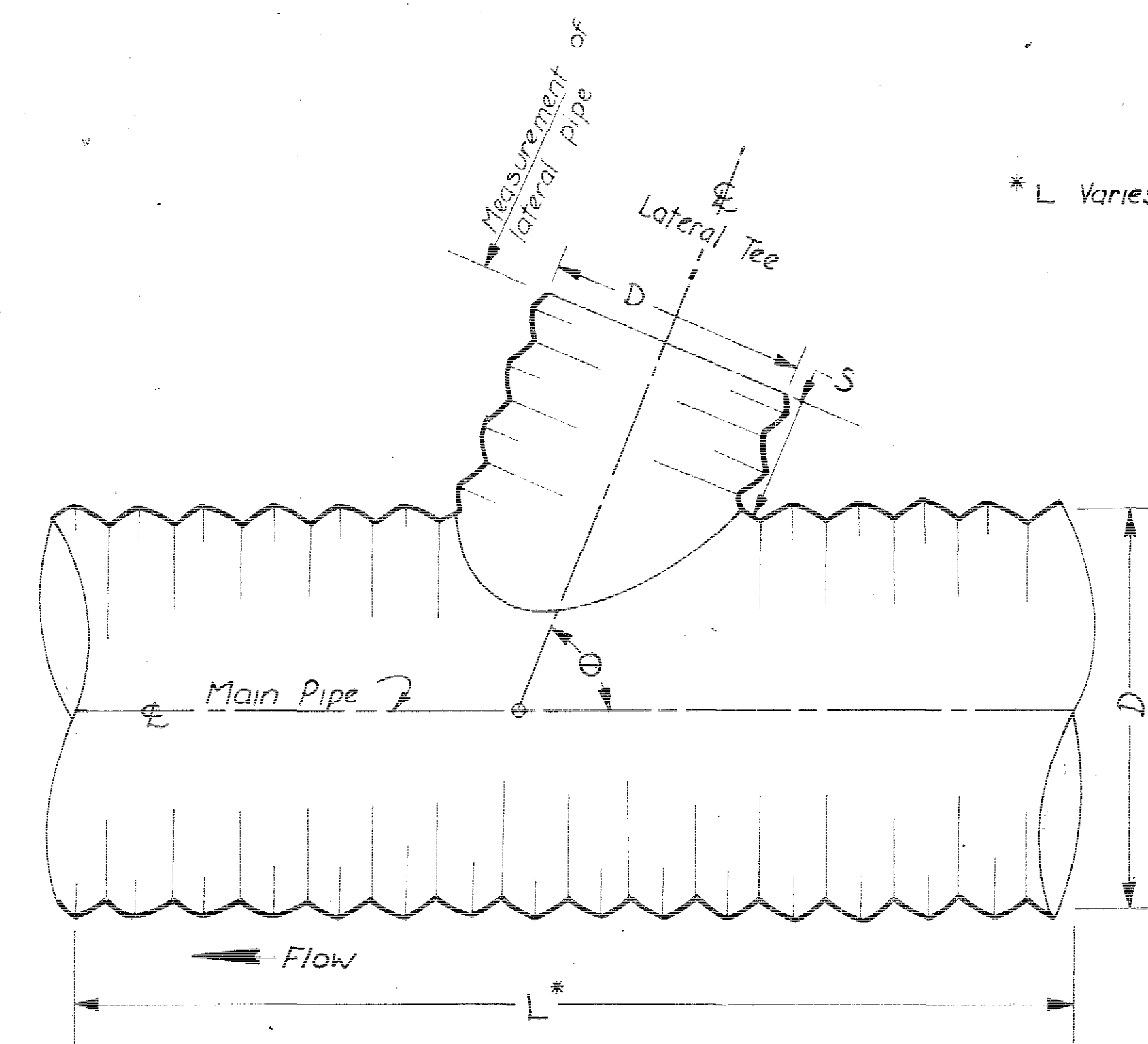
The cap may be precast or it may be cast directly into the pipe end with a tight mortar joint between the cap and the pipe. If the cap is positioned at the construction site, an approved bituminous joint material shall be placed between the cap and the pipe.

The Pipe Cap shall not be paid for directly but when specified shall be considered to be incidental to other pipe culvert work on the project.

* The handling loop may be omitted when the cap is placed in a buried installation.



PLAN OF STRAIGHT TEE



PLAN OF ANGLE TEE

* L Varies

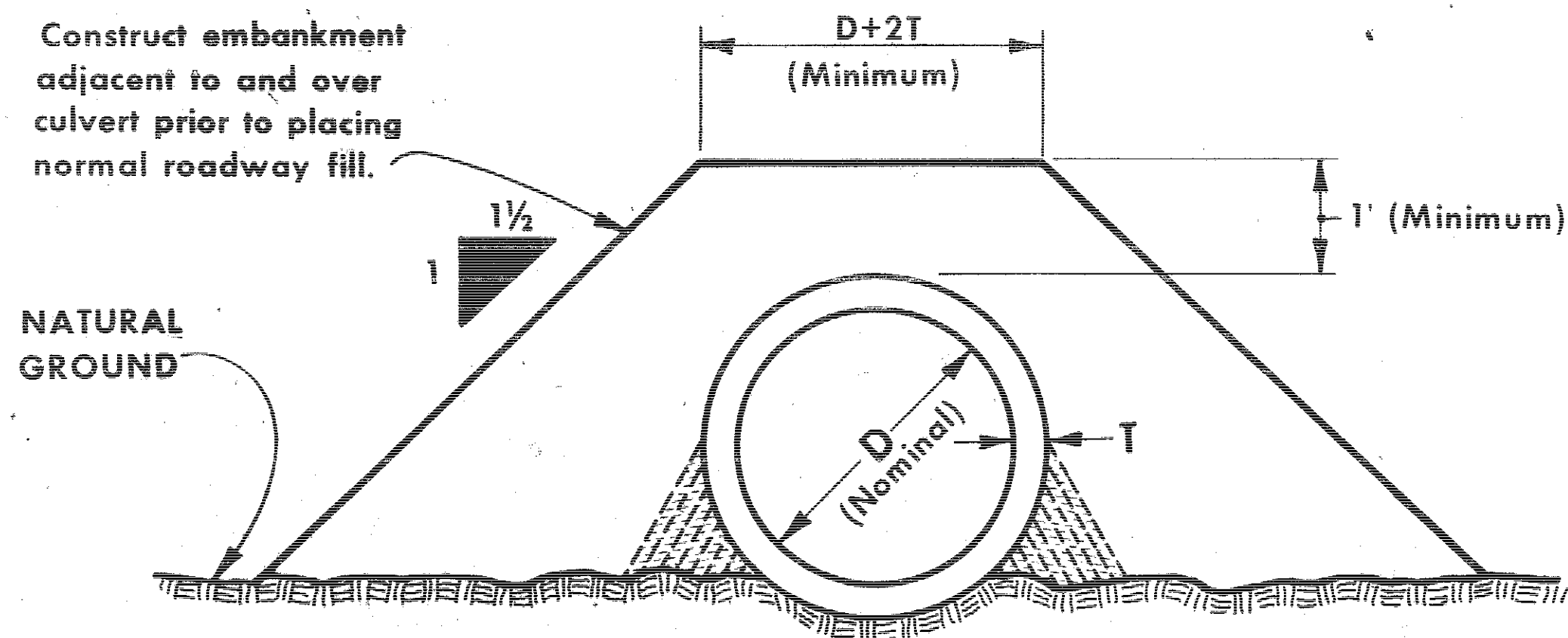
ADD HANDLING LOOP	DATE	IOWA HIGHWAY COMMISSION	
	DATE	STANDARD ROAD PLAN RF-21	
	RECOMMENDED	<i>R. P. McLaughlin</i>	6-4-65
	ROAD ENGINEER	DATE	
	DESIGN ENGINEER	DATE	
LAST REVISION	APPROVED	<i>[Signature]</i>	DUTY CHIEF ENGINEER
			DATE
CULVERT PIPE TEE SECTIONS			

Jackson

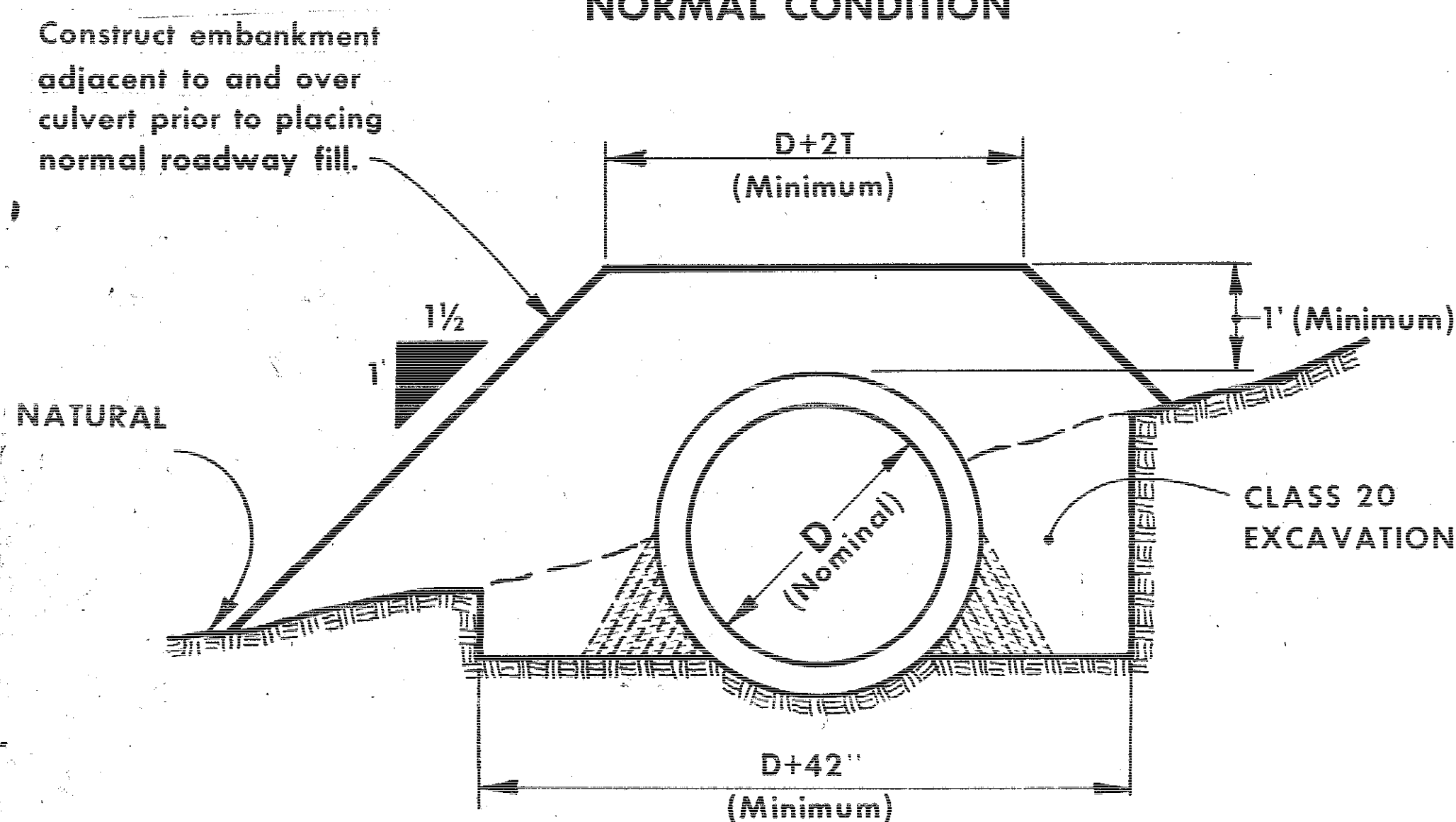
COUNTY

PROJECT NUMBER
FN-62-1(4) -- 21-49

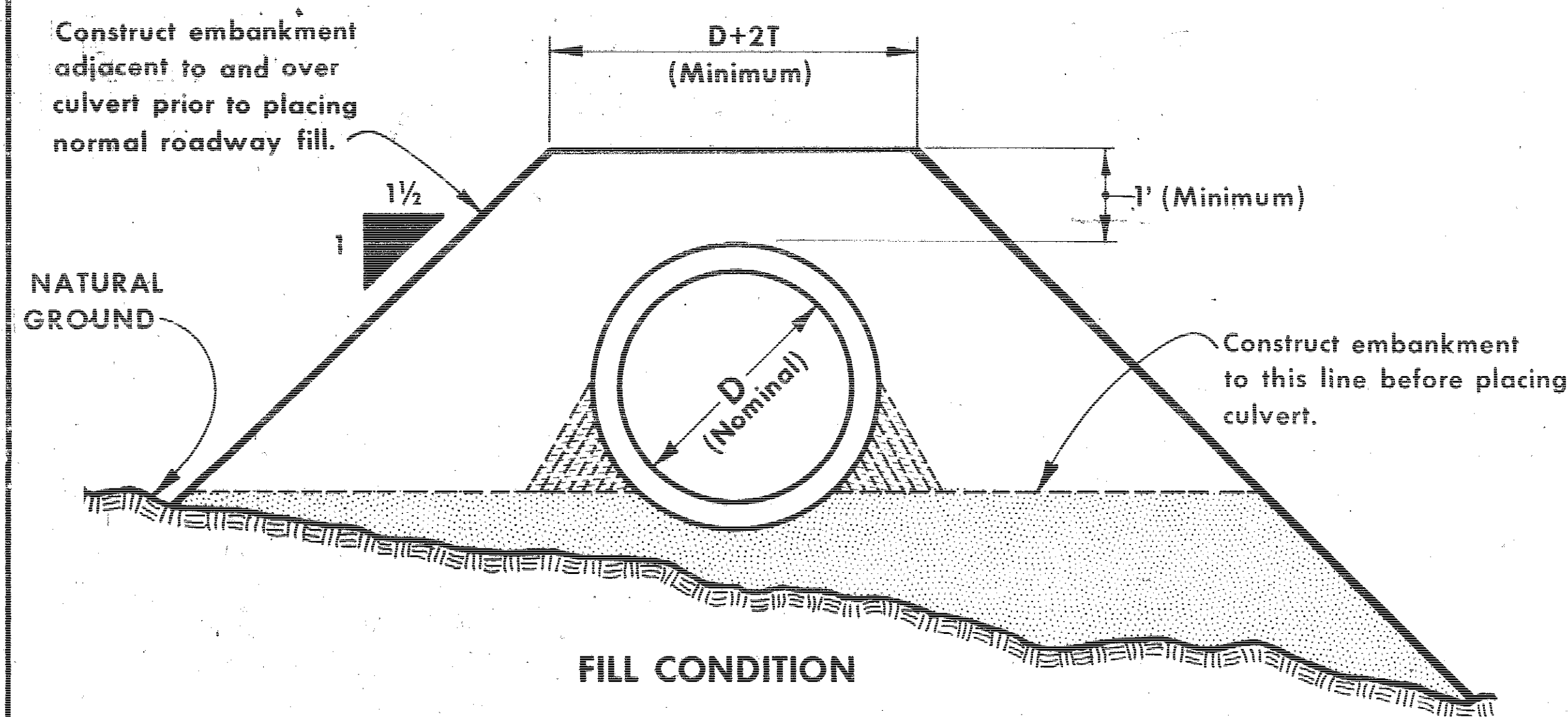
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		56	21



NORMAL CONDITION

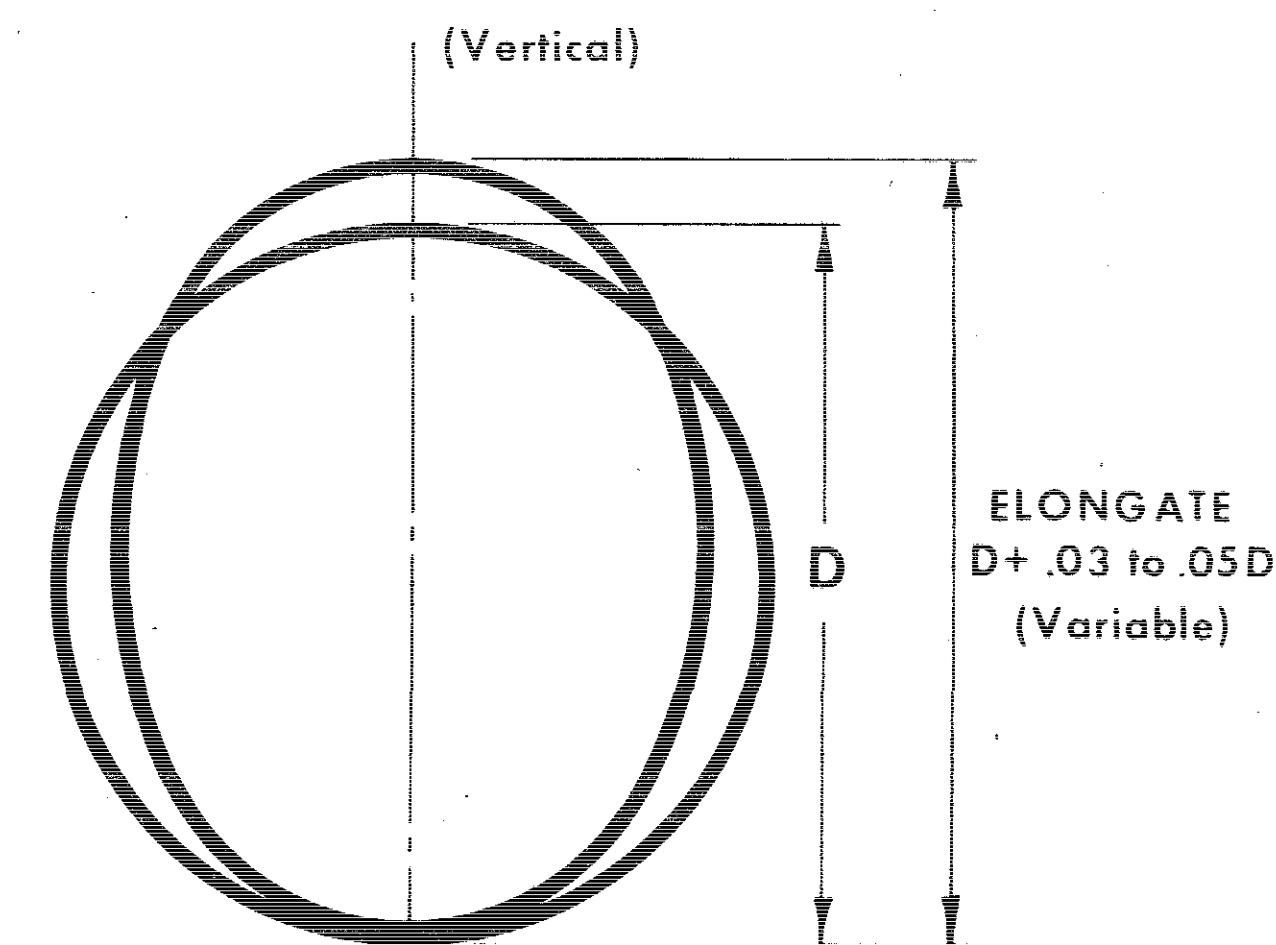


CUT CONDITION

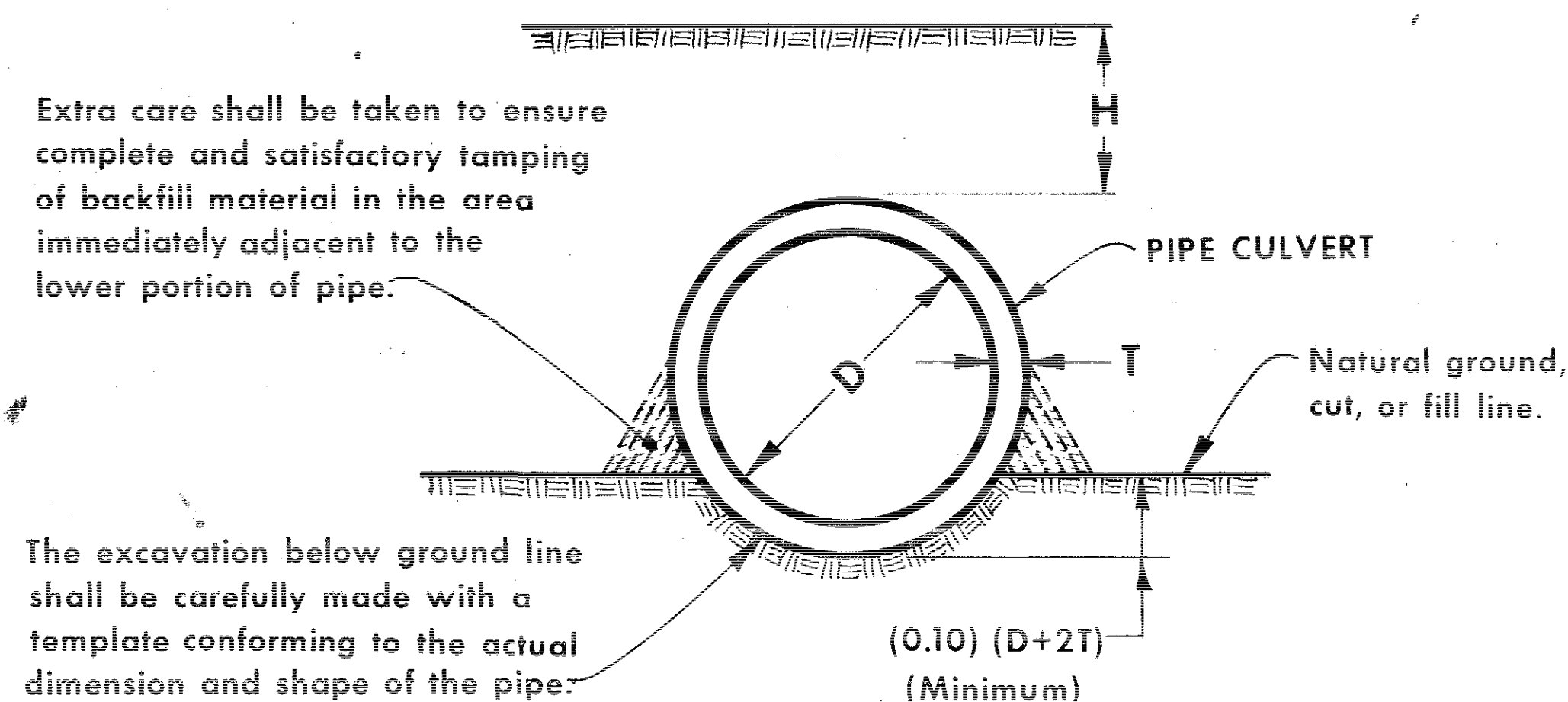


FILL CONDITION

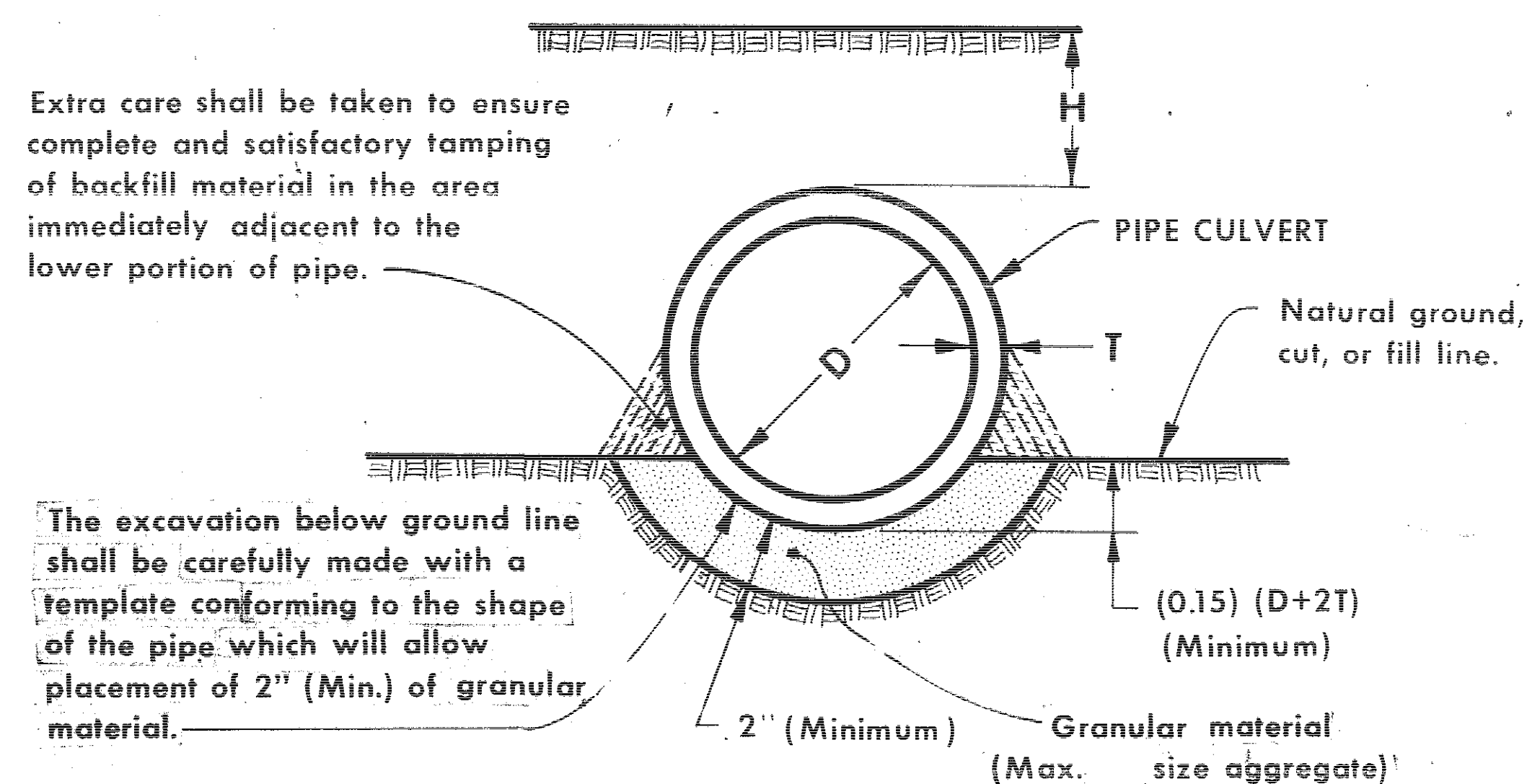
TYPICAL DETAILS FOR BACKFILLING OF ROADWAY PIPE CULVERTS



TYPICAL SECTION ELONGATED PIPE



DETAILS FOR CLASS 'C' BEDDING



DETAILS FOR CLASS 'B' BEDDING

GENERAL NOTES:

Pipe culverts shall be of the kind and classification specified on detail project plans. All materials and methods of construction shall conform to current Iowa State Highway Commission Standard Specifications. Any construction features not covered by specification shall be at the direction of the engineer.

Where a corrugated metal pipe culvert requiring elongation is to be installed, such elongation is to be accomplished by means approved by the engineer. Elongation may be developed either as part of shop fabrication or field installation unless directed otherwise by the engineer. Other details of installation for elongated pipe shall be the same as for round pipe unless otherwise directed by the engineer.

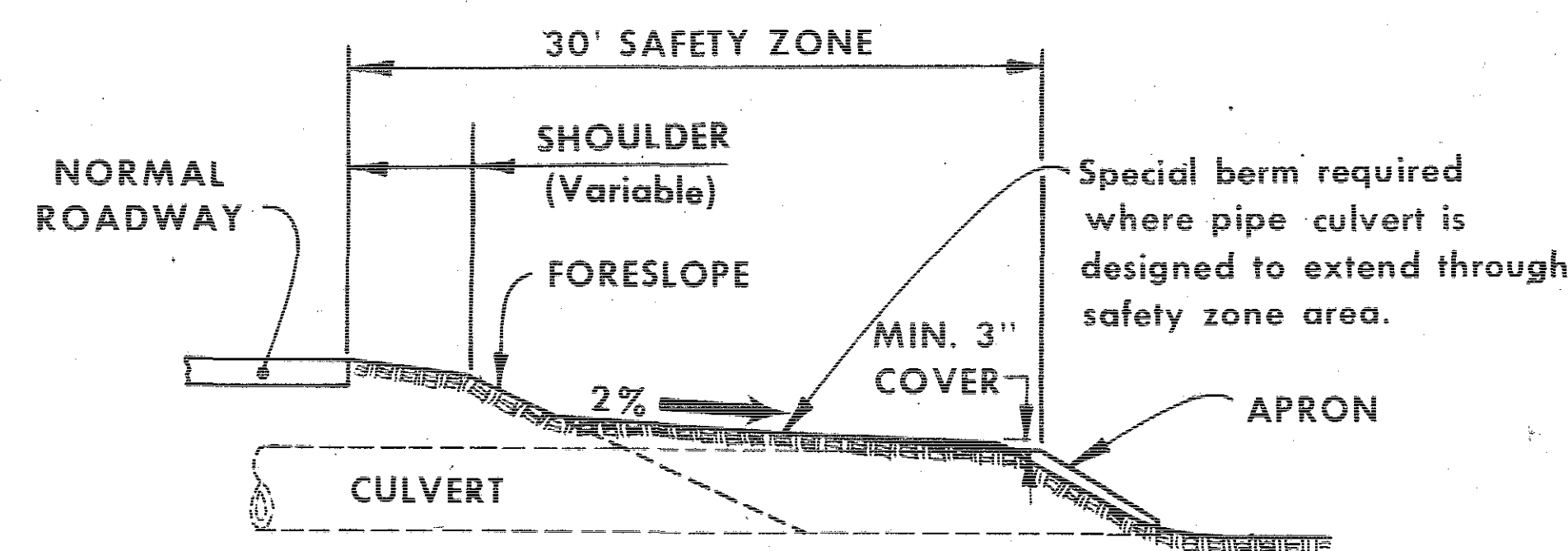
The minimum and maximum allowable cover for pipe culverts shall be as shown on the appropriate Standard Road Plans for the particular kind of culvert, as follows:

RF-31 Depth of Cover Tables for Concrete Pipe Culverts

RF-32 Depth of Cover Tables for Corrugated Metal Pipe Culverts (1,2,3)

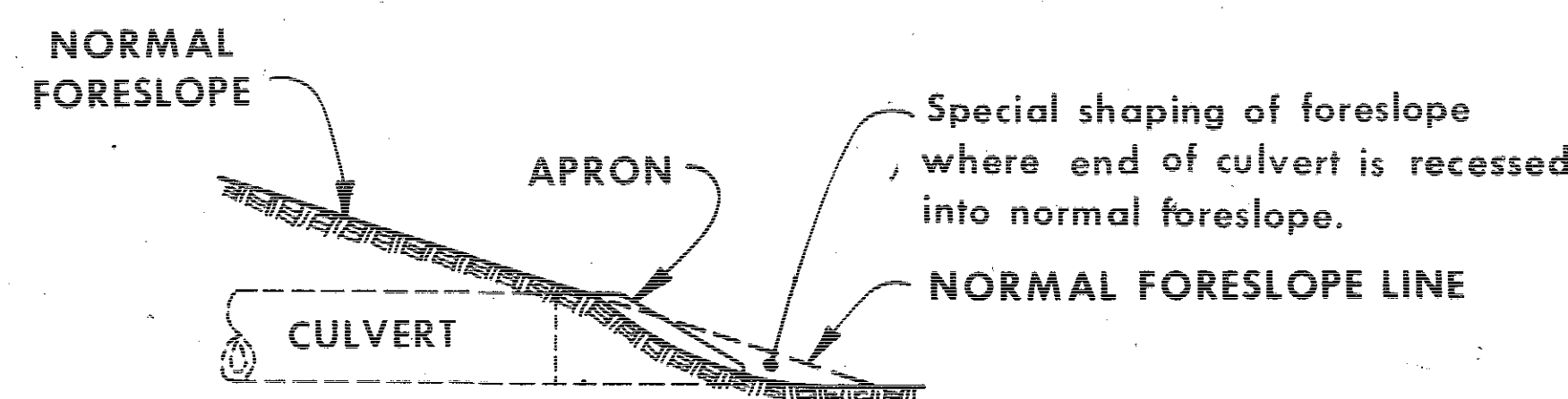
RF-33 Depth of Cover Tables for Corrugated Metal Pipe Culverts (4,5,6,7)

IOWA HIGHWAY COMMISSION			
STANDARD ROAD PLAN		RF-30A	
1	No.	Date	3-6-74
Ass't. Road Design Engineer		Date	3-8-72
Recommended		Date	3-8-72
Approved		Date	3-8-72
Deputy Chief Engineer		Date	
PIPE CULVERT INSTALLATION DETAILS (BEDDING AND BACKFILL)			

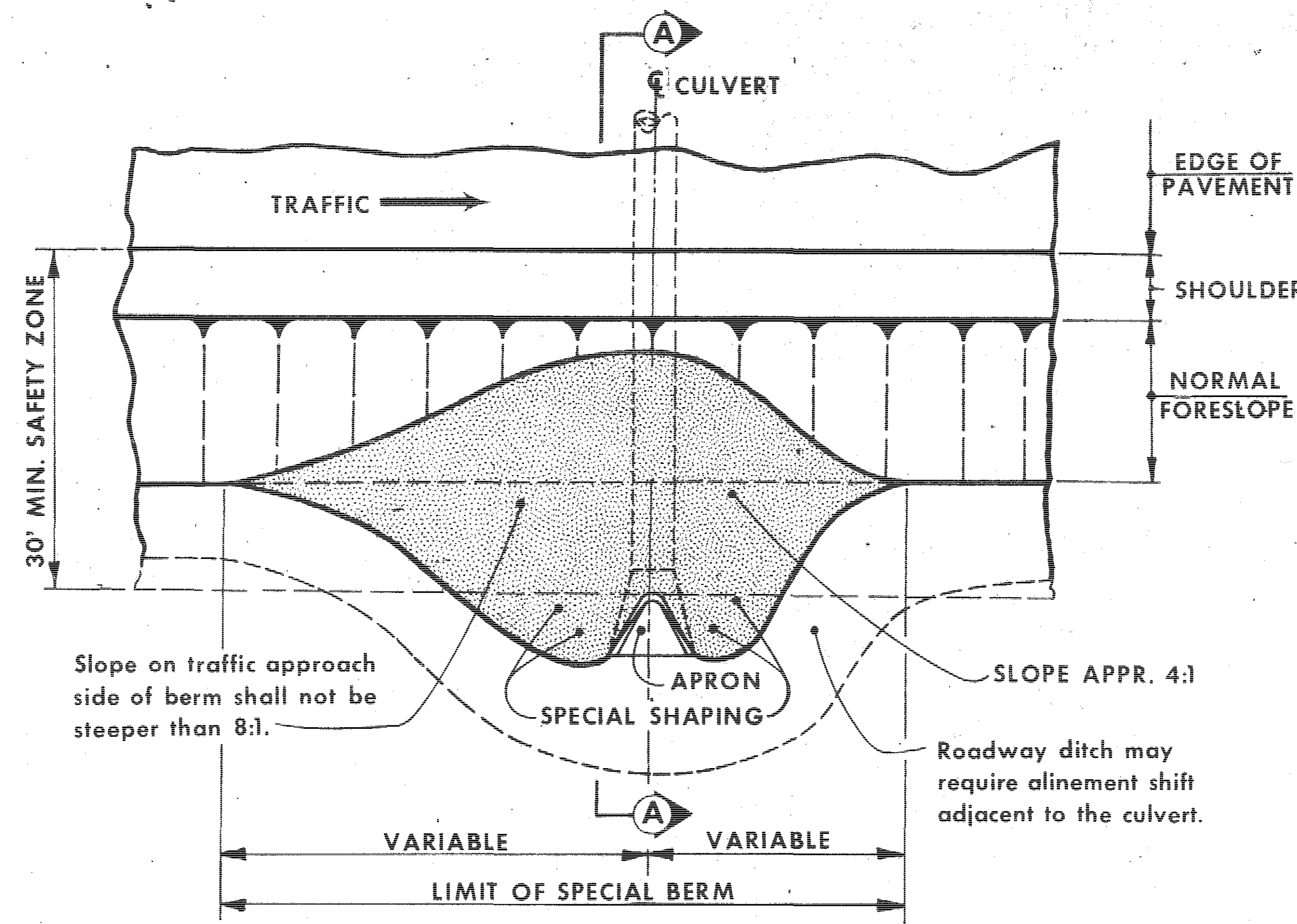


NOTE:
Normal procedure for culvert design shall provide for a minimum distance of 30' from edge of pavement to apron or headwall.

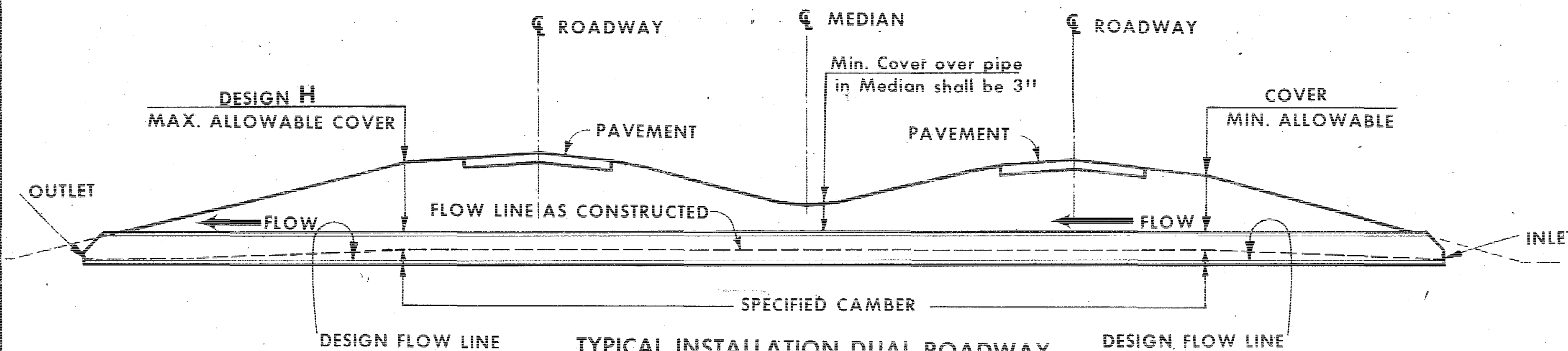
SECTION A-A



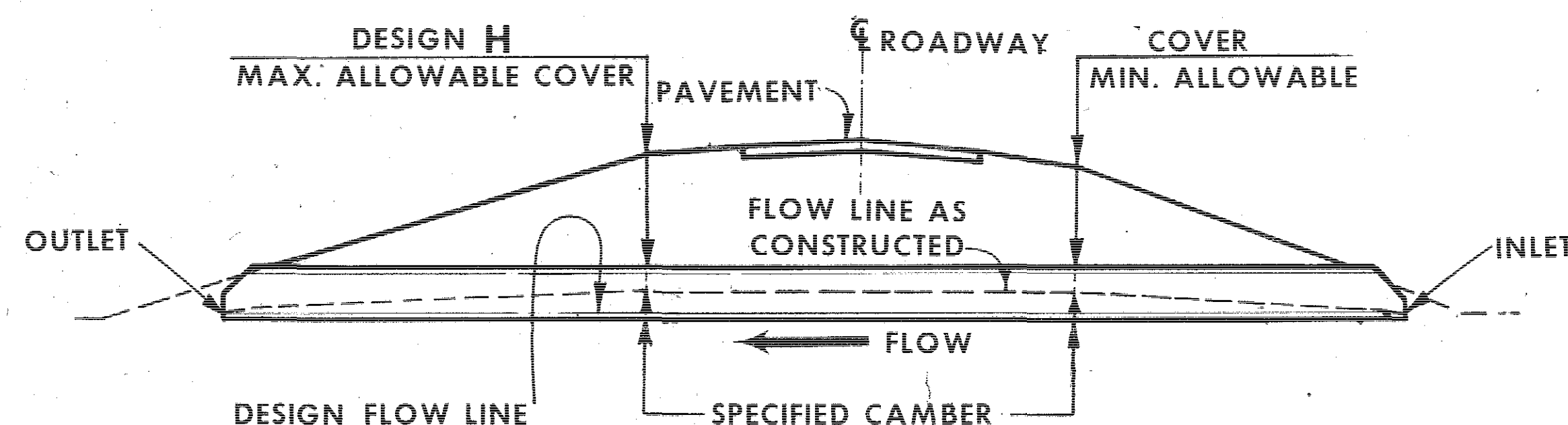
DETAIL OF SHAPING OF EARTH FORESLOPE
AT CULVERT END



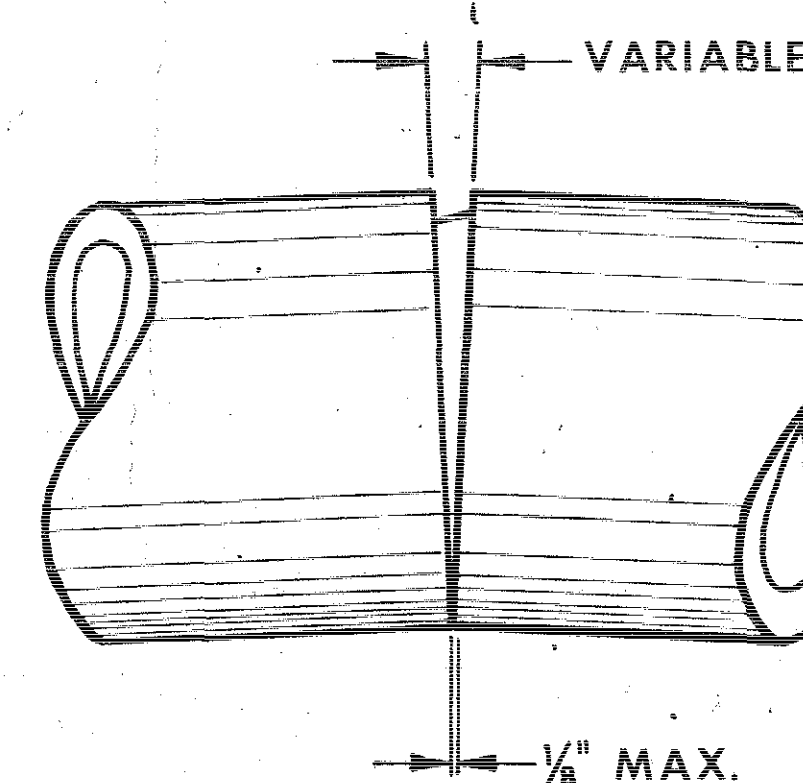
TYPICAL INSTALLATION PLAN
WHERE SPECIAL BERM IS REQUIRED



TYPICAL INSTALLATION DUAL ROADWAY



TYPICAL INSTALLATION SINGLE ROADWAY



Camber for concrete pipe is accomplished by placing pipe sections tight at the bottom of the joint with opening at top of joint variable as directed by the Engineer.

Camber for corrugated metal pipe shall be accomplished as directed by the engineer.

TYPICAL JOINT IN CAMBERED PIPE

GENERAL NOTES:

Pipe culverts shall be of the kind and classification specified on detail project plans. All materials and methods of construction shall conform to current Iowa State Highway Commission Standard Specifications. Any construction features not covered by specification shall be at the direction of the engineer.

The minimum and maximum allowable cover for pipe culverts shall be as shown on the appropriate Standard Road Plans for the particular kind of culvert, as follows:

- RF-31 Depth of Cover Tables for Concrete Pipe Culverts
- RF-32 Depth of Cover Tables for Corrugated Metal Pipe Culverts (1,2,3)
- RF-33 Depth of Cover Tables for Corrugated Metal Pipe Culverts (4,5,6,7)

Camber is the dimension above a straight line between inlet elevation and outlet elevation. Some Settlement of structure is usually anticipated so as to result in the design flow line between inlet and outlet. Camber is developed uniformly from inlet and outlet to a point beneath the outside shoulder lines of the roadway and is uniform between those points, as indicated hereon

Normal construction procedure shall be to install pipe culverts with "Normal" camber as indicated hereon. Where so specified on project plans, camber exceeding the normal may be used. Camber up to the maximum shown for the various pipe sizes may be used where yielding soil conditions require the provision of more than normal camber.

Details shown hereon illustrate certain construction requirements for installation of roadway pipe culverts. Refer to tabular listing of culverts and other installation details in project plans, and appropriate other Standard Road Plans for additional requirements.

ALLOWABLE CAMBER TABLES

DESIGN COVER H FEET	NORMAL CAMBER	PIPE SIZE D	MAX. CAMBER FEET
5	0.08'	24"	1.1
10	0.17'	30"	1.2
15	0.25'	36"	1.3
20	0.33'	42"	1.4
25	0.42'	48"	1.5
30	0.50'	60"	1.6
35	0.58'	84"	1.7

NEW ISSUE		3-10-72		Date		IOWA HIGHWAY COMMISSION	
		No.		Date		STANDARD ROAD PLAN RF-30B	
Last Revision	Recommended	John C. Hooker		3-6-72		Ass't. Road Design Engineer Date	
	Approved	R. P. McLaughlin		3-8-72		Road Design Engineer Date	
		P. N. Owen		3-8-72		Deputy Chief Engineer Date	
PIPE CULVERT INSTALLATION DETAILS (COVER AND CAMBER)							

CONCRETE CULVERT PIPE

① CLASS "B" BEDDING				
DIAMETER OF PIPE D INCHES	(H) MAXIMUM ALLOWABLE COVER-FEET			
	1500D	2000D	3000D	3750D
18	11	13	20	25
24	12	14	21	26
36	13	16	23	28
48	14	16	24	29
60	14	17	24	29
72	14	17	24	30
84	15	17	25	30
96	15	18	25	31
108	15	18	26	32

CONCRETE CULVERT PIPE

② CLASS "C" BEDDING				
DIAMETER OF PIPE D INCHES	(H) MAXIMUM ALLOWABLE COVER-FEET			
	1500D	2000D	3000D	3750D
18	9	12	18	22
24	10	13	19	23
36	11	14	20	24
48	11	15	21	25
60	12	15	21	26
72	12	16	22	26
84	13	16	22	27
96	13	16	23	27
108	13	17	23	28

GENERAL NOTES:

The maximum allowable cover values indicated hereon for the various kind of pipe culvert installations, are design values based on current ISHC construction specifications and other normal conditions.

When unclassified pipe is specified it is the contractor's responsibility to furnish and install a class of pipe meeting the requirements on the chart.

Minimum allowable cover for roadway culverts is 2'-0" and for entrance culverts is 1'-0".

Refer to tabulation of culvert installations and other detail project plans as well as appropriate other Standard Road Plans for additional information regarding individual culvert installations.

NOTE:

Where a pipe size not listed in the table is required, the H indicated for the next smaller size shown shall apply.

DESIGN CRITERIA

The height of cover tables have been prepared from data in the "Concrete Pipe Design Manual" published by the American Concrete Pipe Association using the values listed below.

FOR EMBANKMENT CONDITIONS

Fill Material Weight =w= 120 lb. per cu. ft.

Settlement Ratio = rsd= +0.5

* =ku= 0.13

Projection Ratio =P= 0.9 (Class C Bedding)

=P= 0.7 (Class B Bedding)

Factor of Safety =F.S.= 1.33 on Ultimate Strength

*Using a Ratio of lateral to vertical earth pressure (k) of 0.37 (saturated yellow clay) and a coefficient of internal friction u of 0.34.

NOTE:

The data shown hereon has been calculated for concrete pipe placed under embankment conditions. The values shown hereon for H do not apply to design & installation of sanitary sewer except where sanitary sewer would be placed under embankment condition.

SPECIAL NOTE

Special installations may be designed to exceed indicated maximum allowable cover by specific modification of one or more of the following conditions:

1. Bedding Class
2. Pipe Strength (including special design pipe)
3. Type of backfill or cover material
4. Compaction requirements for backfill or cover material
5. Controlled trench width

Where site conditions favor such modifications significant economy may result from special design installations and these should be considered. Special designs shall specify particular modification of construction requirements or design criteria as applicable. Necessary modifications of normal requirements will not ordinarily be paid for separately but will be included in the price bid for that culvert pipe.

12-3-71		Date	IOWA HIGHWAY COMMISSION	
No.		No.	STANDARD ROAD PLAN RF-31	
Recommended		Date	Ass't. Road Design Engineer Date	
Approved		Date	Road Design Engineer Date	
Last Revision		Date	Deputy Chief Engineer Date	
DEPTH OF COVER TABLES FOR CONCRETE PIPE				

ALUMINUM ROUND PIPE

① 2 2/3" x 1/2" CORRUGATIONS												
DIAM. OF PIPE D (INCHES)	MIN. COVER ABOVE PIPE (INCHES)	(H) MAXIMUM ALLOWABLE COVER-FEET										
		(0.060")		(0.075)		(0.105")		(0.135")		(0.164")		
		Round	Elong	Round	Elong	Round	Elong	Round	Elong	Round	Elong	
12	12	38	—	38	—	—	—	—	—	—	—	
15	12	29	—	30	—	—	—	—	—	—	—	
18	12	21	—	23	—	—	—	—	—	—	—	
24	12	14	—	16	—	—	—	—	—	—	—	
30	12	—	—	13	26	14	28	—	—	—	—	
36	12	—	—	12	23	12	24	—	—	—	—	
42	18	—	—	—	—	11	22	12	23	—	—	
48	18	—	—	—	—	11	22	11	22	—	—	
54	18	—	—	—	—	11	21	11	21	—	—	
60	18	—	—	—	—	—	—	11	21	11	21	
66	18	—	—	—	—	—	—	—	—	10	20	
72	18	—	—	—	—	—	—	—	—	10	20	

STEEL ROUND PIPE

② 3" x 1" CORRUGATIONS											
DIAM OF PIPE D (INCHES)	MIN. COVER ABOVE PIPE (INCHES)	(H) MAXIMUM ALLOWABLE COVER-FEET									
		16 GA. (0.064")		14 GA. (0.079")		12 GA. (0.109")		10 GA. (0.138")		8 GA. (0.168")	
		Round	Elong	Round	Elong	Round	Elong	Round	Elong	Round	Elong
36	12	27	40	31	50	40	74	—	—	—	—
42	12	21	34	23	42	29	58	—	—	—	—
48	12	17	30	19	37	23	46	—	—	—	—
54	12	15	27	16	32	19	38	—	—	—	—
60	12	13	24	15	29	16	33	—	—	—	—
66	12	13	22	13	27	15	30	—	—	—	—
72	12	12	20	12	25	14	27	—	—	—	—
78	12	12	18	12	23	13	26	—	—	—	—
84	12	—	—	12	21	12	24	13	26	—	—
90	12	—	—	—	—	12	24	12	35	13	26
96	12	—	—	—	—	11	23	12	24	12	25
102	24	—	—	—	—	—	—	12	23	12	24
108	24	—	—	—	—	—	—	—	—	12	23
114	24	—	—	—	—	—	—	—	—	11	23
120	24	—	—	—	—	—	—	—	—	11	20

STEEL ROUND PIPE

③ 2 2/3" x 1/2" CORRUGATIONS											
DIAM. OF PIPE D (INCHES)	MIN. COVER ABOVE PIPE (INCHES)	(H) MAXIMUM ALLOWABLE COVER-FEET									
		16 GA. (0.064")		14 GA. (0.079")		12 GA. (0.109")		10 GA. (0.138")		8 GA. (0.168")	
		Round	Elong	Round	Elong	Round	Elong	Round	Elong	Round	Elong
12	12	70	—	76	—	—	—	—	—	—	—
15	12	56	—	61	—	—	—	—	—	—	—
18	12	40	—	48	—	64	—	—	—	—	—
24	12	23	—	26	—	33	—	—	—	—	—
30	12	—	—	18	30	22	43	25	51	—	—
36	12	—	—	15	25	17	33	19	38	—	—
42	12	—	—	—	—	14	28	16	31	17	34
48	12	—	—	—	—	13	25	14	27	15	29
54	12	—	—	—	—	12	24	13	25	13	26
60	12	—	—	—	—	—	—	12	23	12	25
66	12	—	—	—	—	—	—	11	22	12	23
72	12	—	—	—	—	—	—	11	17	11	21
78	12	—	—	—	—	—	—	—	—	11	17
84	12	—	—	—	—	—	—	—	—	11	13

GENERAL NOTES:

The maximum allowable cover values indicated hereon for the various kind of pipe culvert installations, are design values based on current ISHC construction specifications (Class "C" Bedding) and other normal conditions.

The contractor may furnish the type of corrugated culvert he chooses so long as the selection conforms to the limits shown only on charts ② or ③. The use of Aluminum Pipe (Chart ①) will be allowed only when specified in contract documents.

Refer to tabulation of culvert installations and other detail project plans as well as appropriate other Standard Road Plans for additional information regarding individual culvert installations.

For culverts shown in Elongated Column, the installation shall be made in accordance with current I.S.H.C. Specifications. Min. Allowable Cover for Roadway Culverts H=2.0.

DESIGN CRITERIA:

These height of cover tables have been prepared from data in the "AASHTO Standard Specifications for Highway Bridges". Section 8 with exceptions only as stated

W=unit weight of Soil= 120 lbs. per cu. ft.

CIRCULAR CORRUGATED METAL PIPE

- (A) Seam Strength
- (B) Handling and Installation Strength
- (C) Failure of conduit wall (buckling)
- (D) Deflection or Flattening

K= Soil Stiffness Factor= 0.55

E= Modulus of passive earth pressure= 400 psi per inch.

SPECIAL NOTE

Special installations may be designed to exceed indicated maximum allowable cover by specific modification of on one or more of the following conditions:

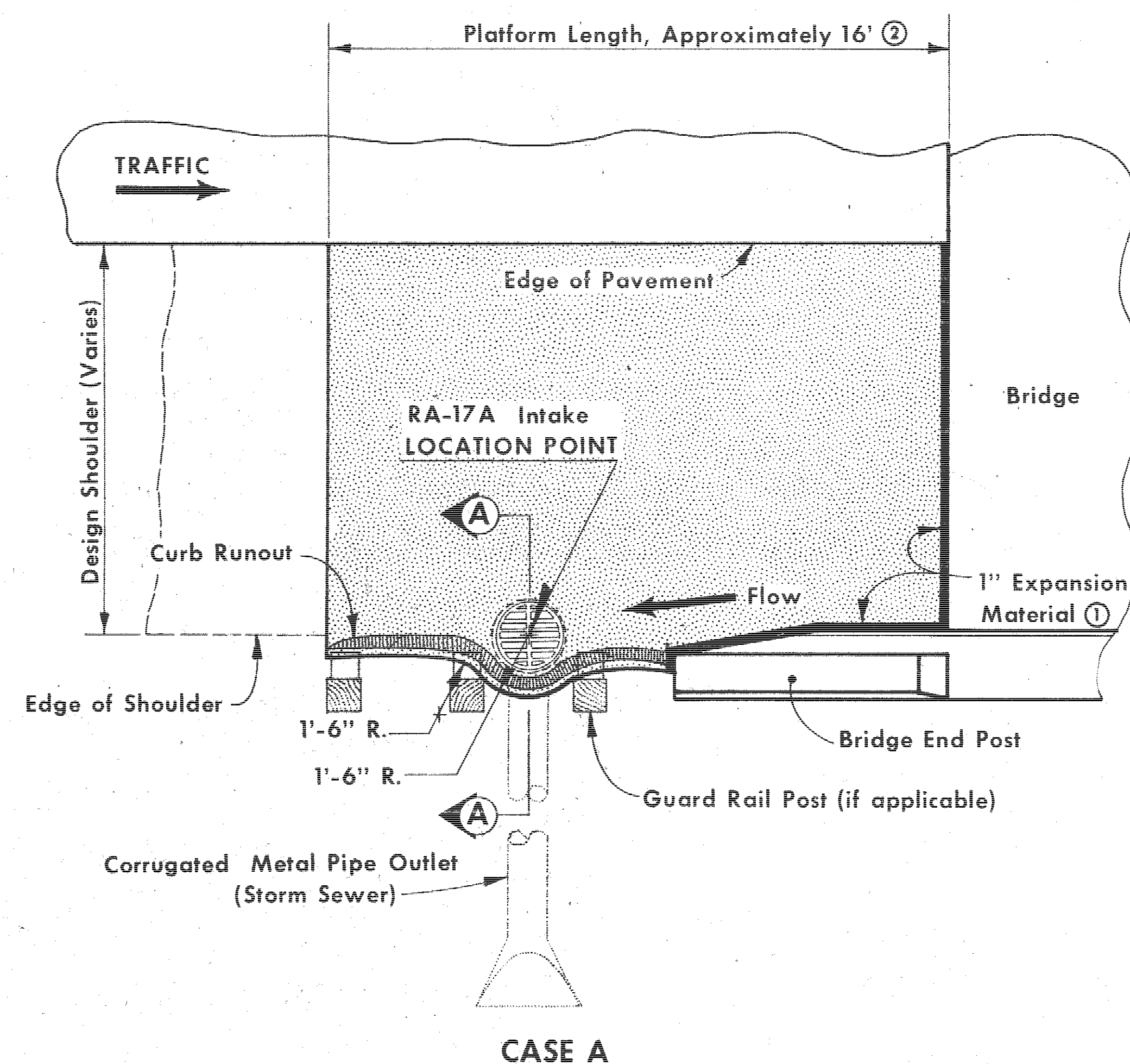
1. Bedding Class
2. Pipe Strength (including special design pipe)
3. Type of backfill or cover material
4. Compaction requirements for backfill or cover material
5. Controlled trench width

Where site conditions favor such modifications significant economy may result from special design installations and these should be considered.

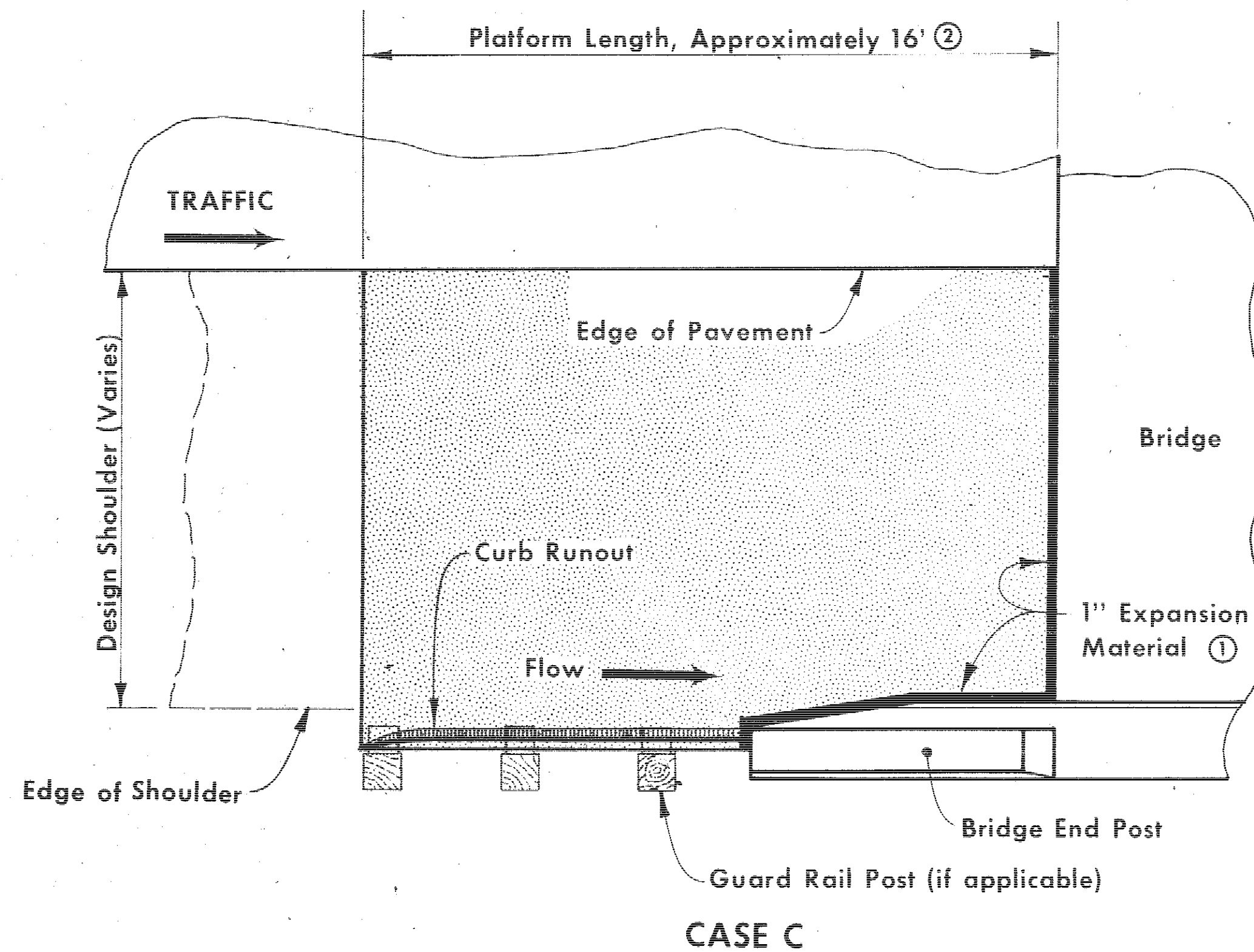
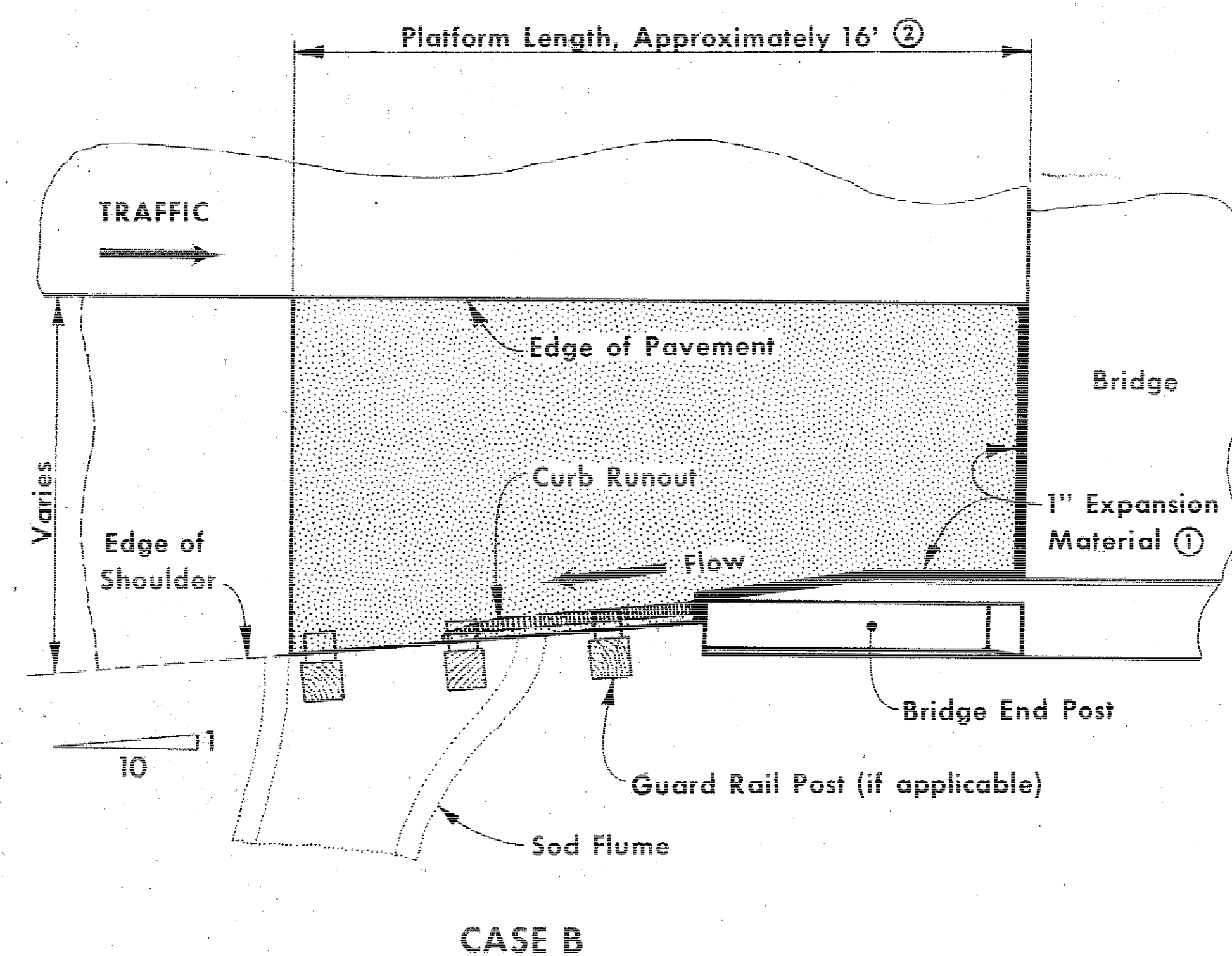
Special designs shall specify particular modifications of construction requirements or design criteria as applicable. Necessary modifications of normal requirements will not ordinarily be paid for separately but will be included in the price bid for that culvert pipe.

Change General Notes		16-8-73		Date		IOWA HIGHWAY COMMISSION	
		1		No.		STANDARD ROAD PLAN RF-32	
		Recommended		John C. Hooker 12-1-71		Ass't. Road Design Engineer Date	
		Approved		R. P. McLaughlin 12-1-71		Road Design Engineer Date	
Last Revision		Approved		R. P. Owen 12/2/71		Deputy Chief Engineer Date	
DEPTH OF COVER TABLES FOR CORRUGATED METAL PIPE							
PROJECT NUMBER				STATE			
FN- 62-1(4) -- 21-49				IOWA			
FISCAL YEAR				SHEET NO.			
1960				60			
TOTAL SHEETS				210			

Jackson COUNTY



- ① Place 1" bituminous expansion material where concrete platform is placed adjacent to concrete bridge end post.
- ② Length indicated is for normal bridge and may be greater where bridge end post is longer than normal



GENERAL NOTES:

Details indicated on this sheet are intended to cover the various drainage conditions at ends of bridges. Bridge End Drains as shown are for use at locations where non-paved shoulders are provided on the normal roadway.

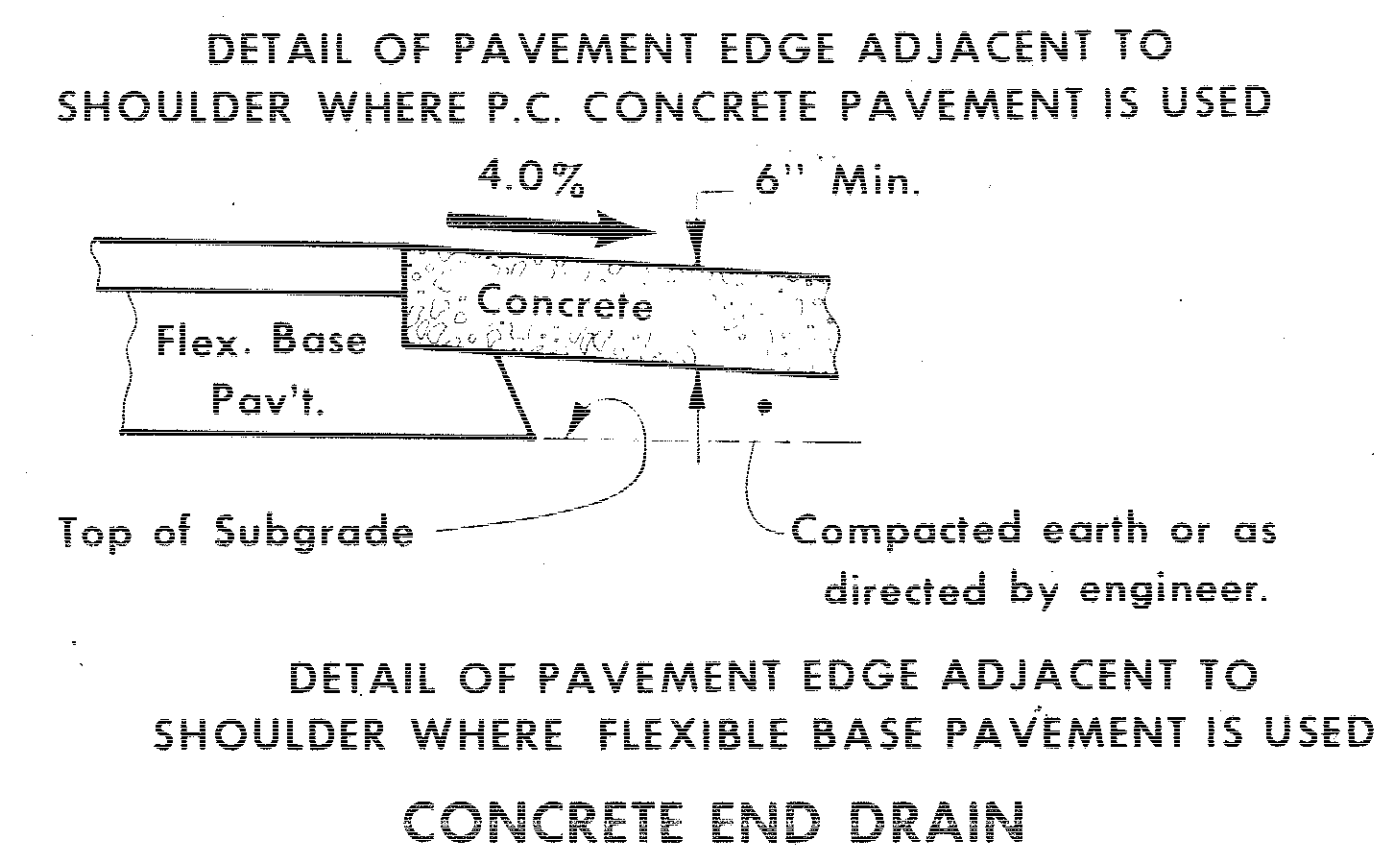
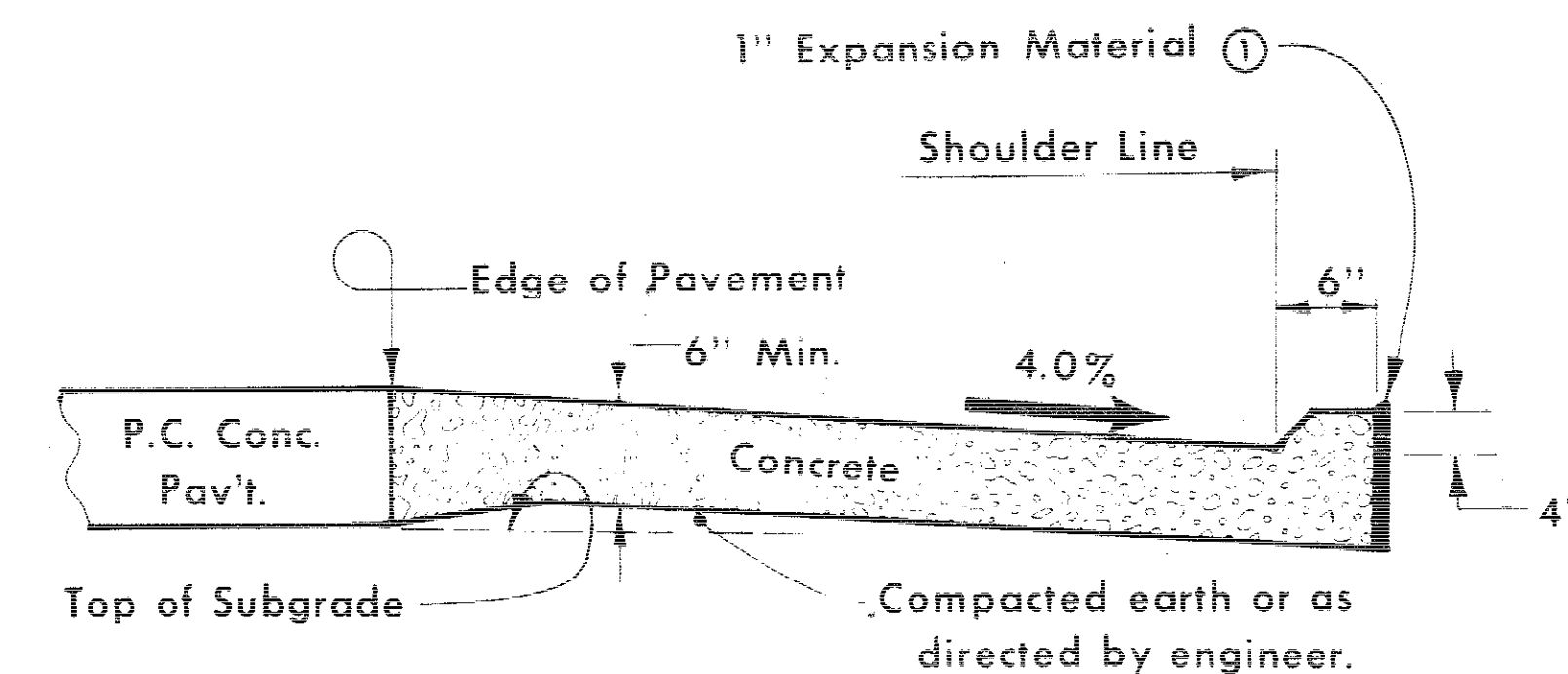
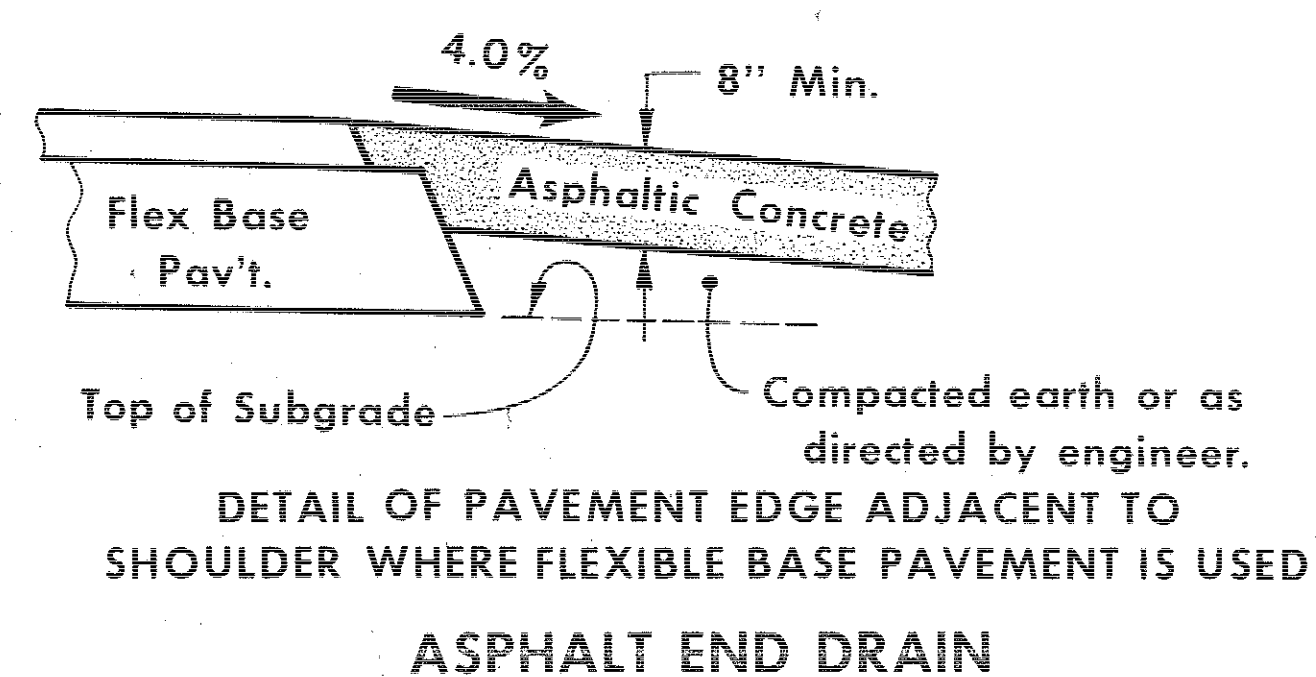
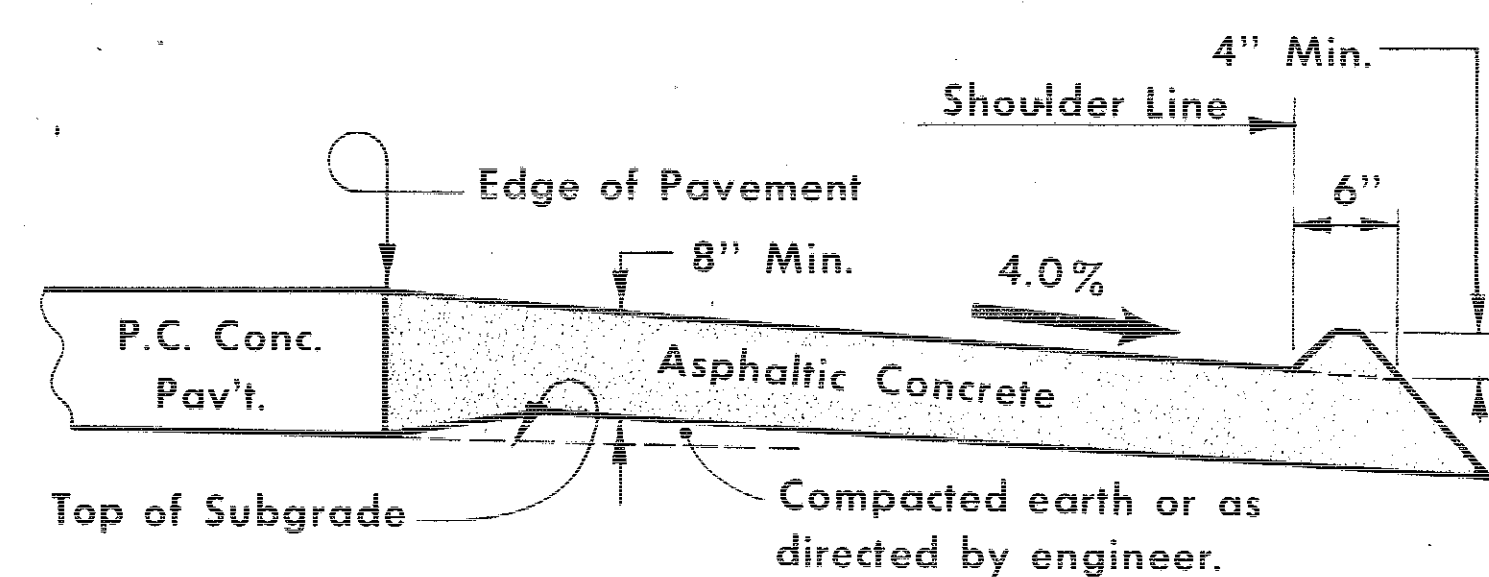
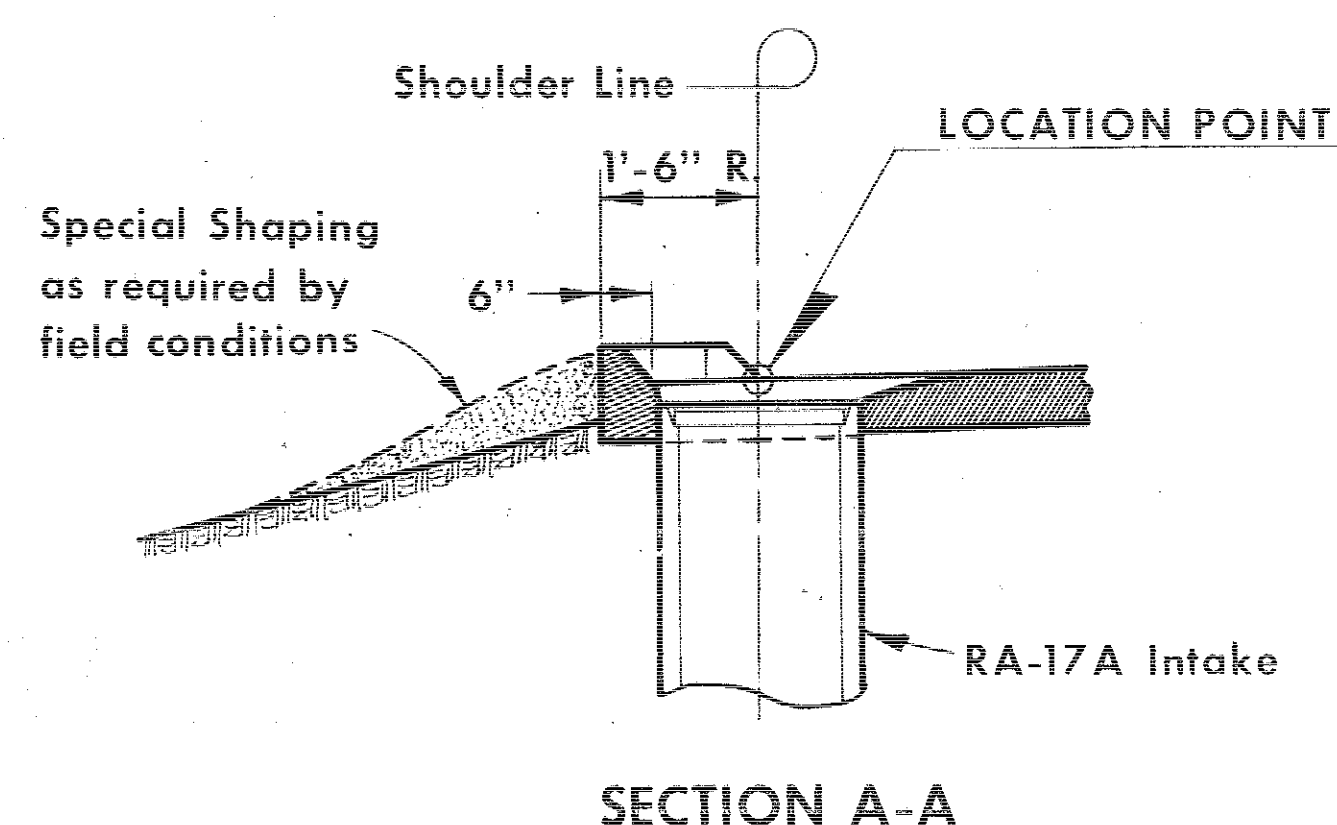
For any one of three cases illustrated, the work shall consist of providing the curbed platform of dimensions approximately as indicated. Each case shall be appropriately modified as necessary to adapt to conditions of shoulder dimensions at the site. The end drain may be constructed of either concrete or asphalt at the option of the contractor. Concrete if used shall conform to current I.S.H.C. Specifications for Concrete Paving, and shall be placed as directed by the engineer. Asphalt if used shall conform to current I.S.H.C. Specifications for Asphalt Treated Base and shall be placed as directed by the engineer. Necessary curb as indicated shall be carefully shaped and constructed to ensure proper flow of surface drainage.

CASE "A" is intended to be used with type RA-17A intake and storm sewer outlet pipe which would be paid for separately.

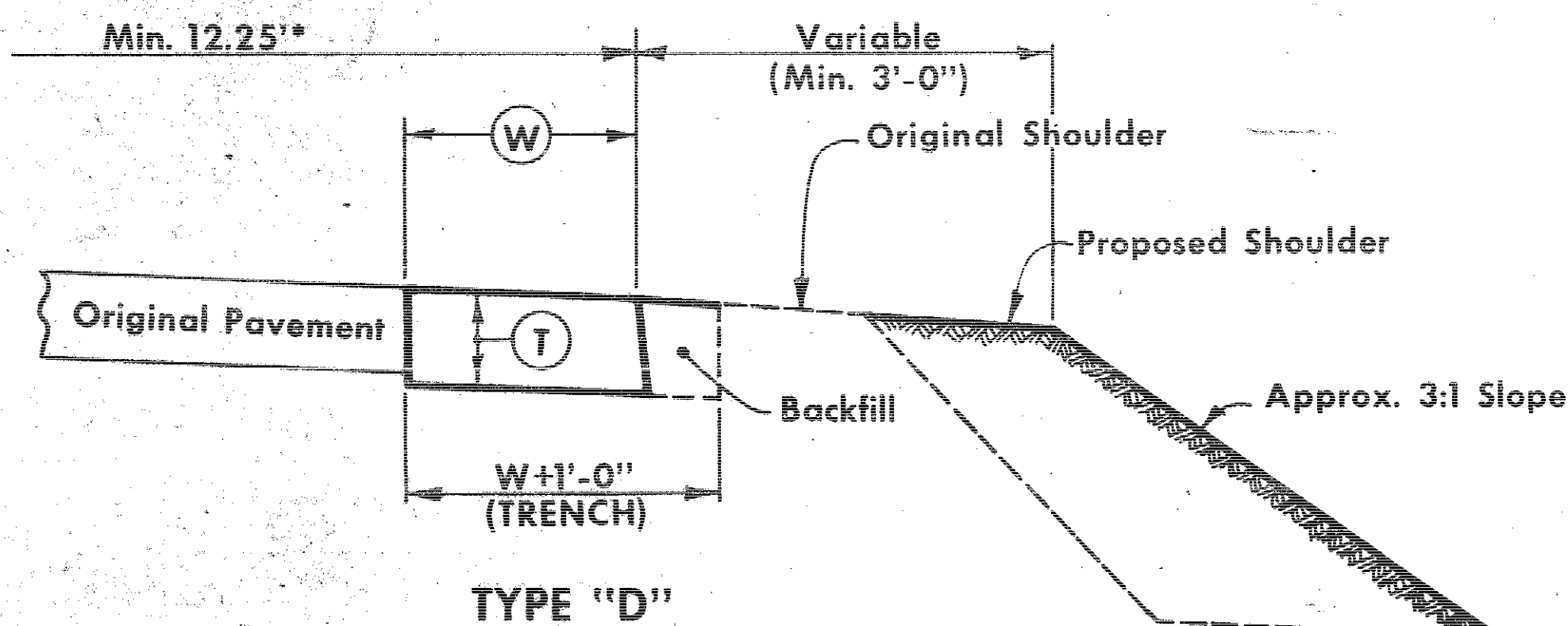
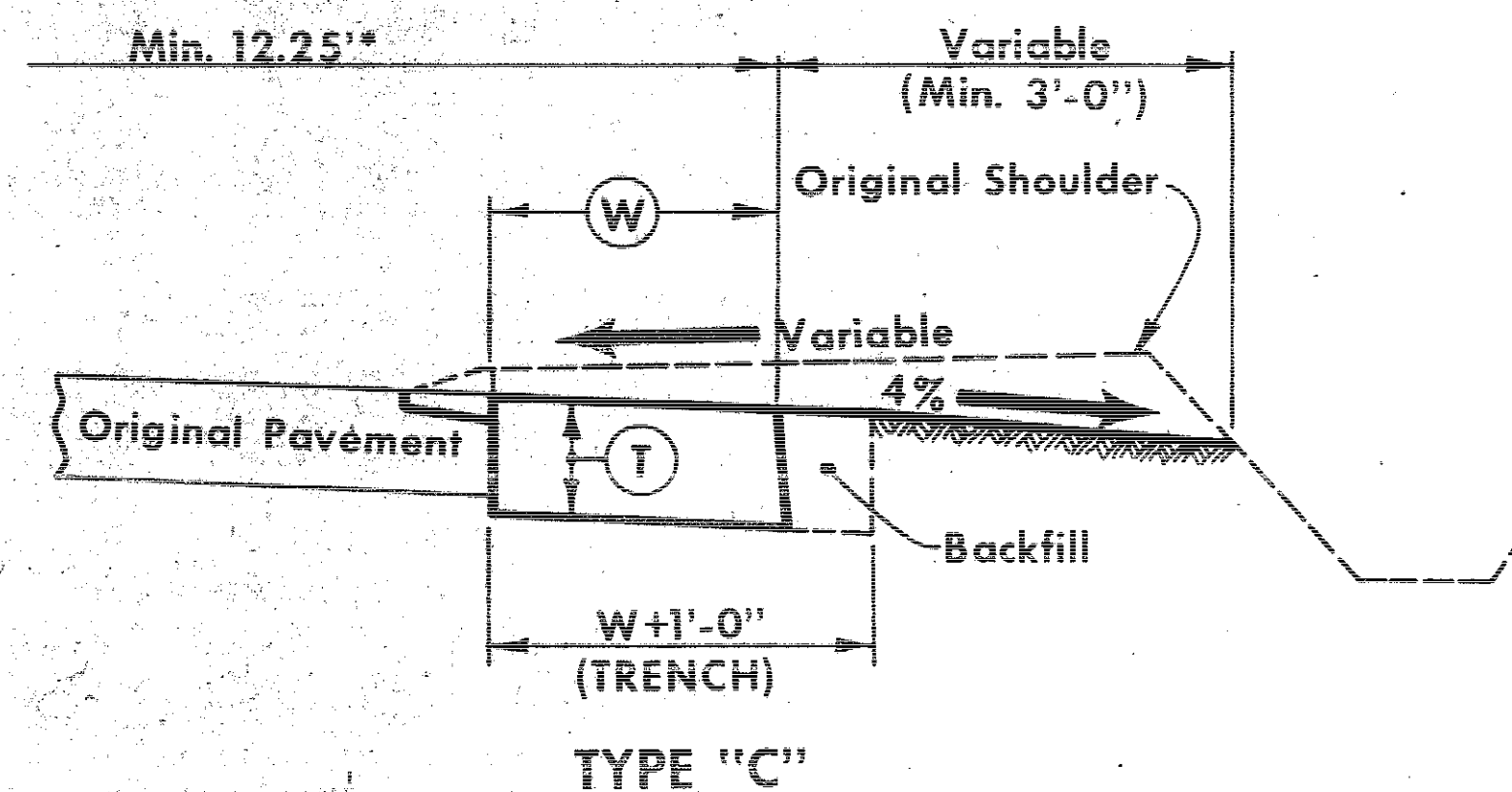
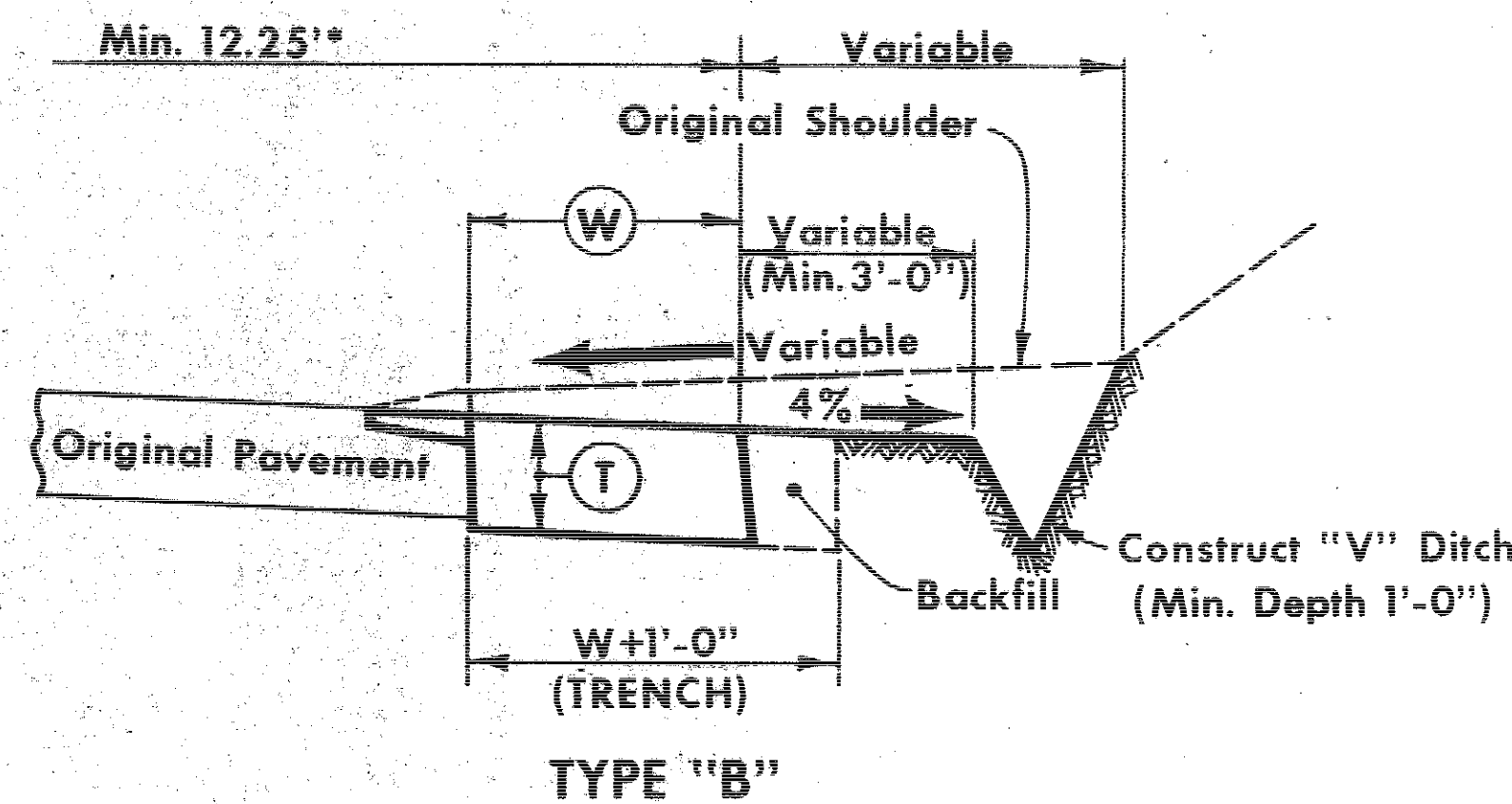
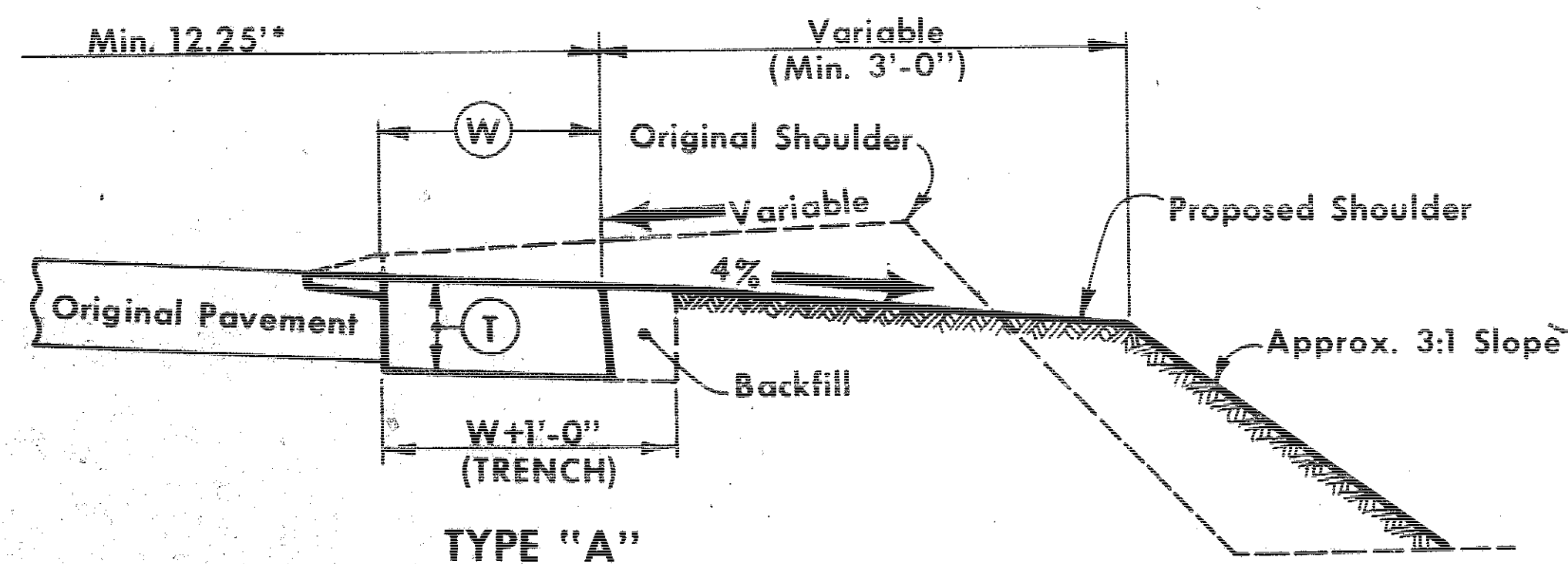
CASE "B" is intended to be used with a sod flume which would be paid for separately.

CASE "C" is intended for use only where it is desired to direct shoulder surface drainage onto the bridge.

Price bid for "RF-35 Bridge End Drain" shall be considered full compensation for construction of curbed asphalt or concrete platform including surface treatment of bridge end drains constructed of concrete, as detailed hereon for either Case "A", Case "B" or Case "C", and as required for particular installations identified on detail project plans.



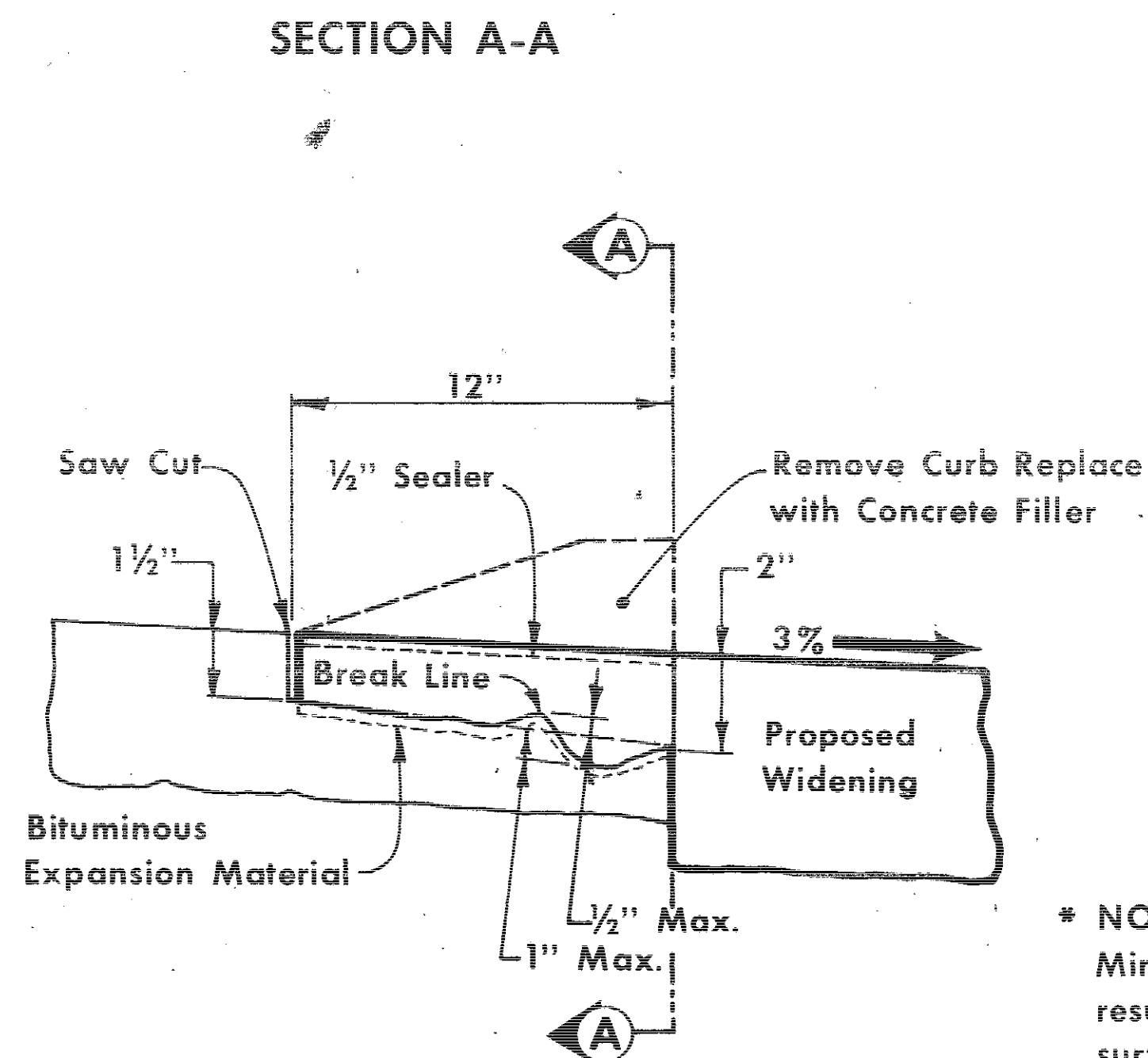
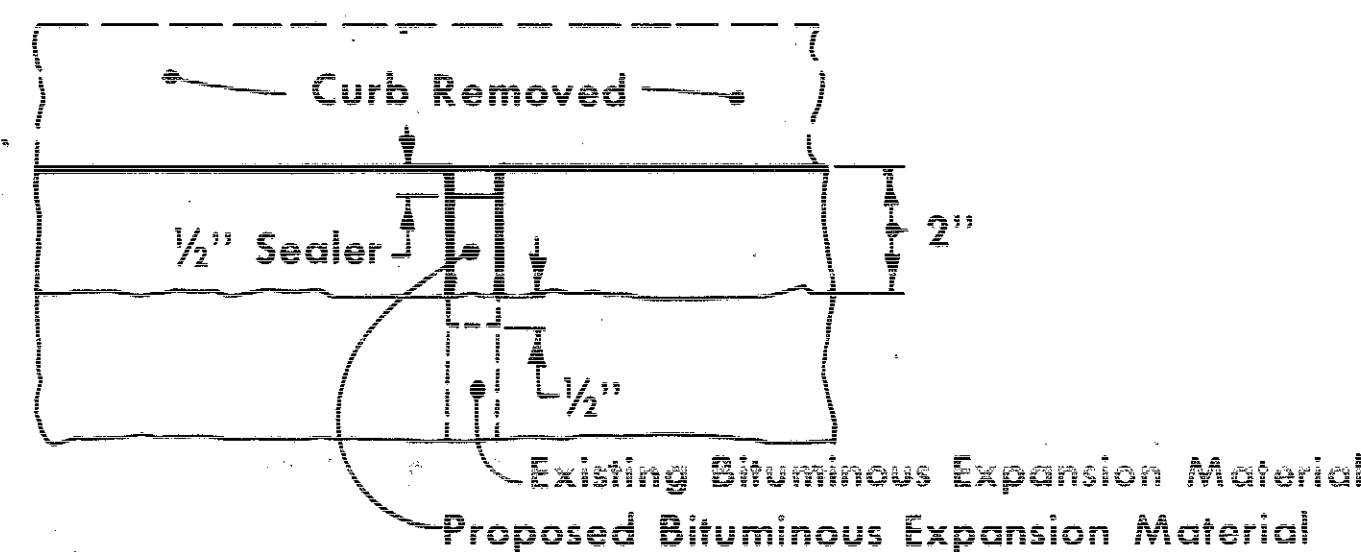
ADDED SURFACE TREATMENT NOTE	6	3-29-74	Date	IOWA HIGHWAY COMMISSION													
				STANDARD ROAD PLAN		RF-35											
	Last Revision	No.	Recommended	John C. Harker 3-27-74		Ass't. Road Design Engineer Date											
				J. P. McLaughlin 3-27-74		Road Design Engineer Date											
R. H. Burton 3/27/74				Deputy Chief Engineer Date													
Approved			BRIDGE END DRAINS (Non-Paved Shoulders)														
07-1(4) -- 21-49 <table border="1"> <thead> <tr> <th>STATE</th> <th>FED. ROAD DIST. NO.</th> <th>FISCAL YEAR</th> <th>SHEET NO.</th> <th>TOTAL SHEETS</th> </tr> </thead> <tbody> <tr> <td>IOWA</td> <td>5</td> <td></td> <td>66</td> <td>210</td> </tr> </tbody> </table>								STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS	IOWA	5		66	210
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS													
IOWA	5		66	210													



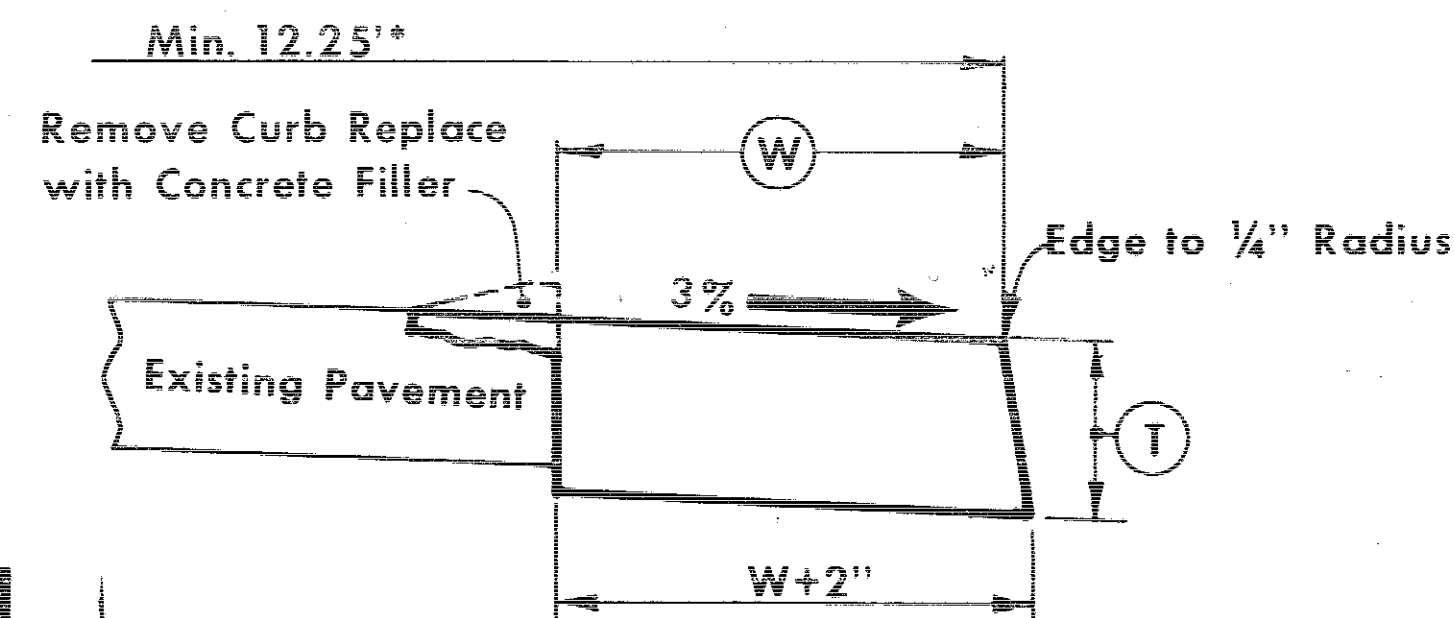
NOTE:
When directed by the engineer, surplus excavation shall be disposed of on foreslopes of superelevated curves which will require extra width of roadbed to accommodate earth shoulder fill necessitated by future wedge courses for resurfacing.
See Tabulation of Locations requiring extra width widening (106-5).
Excavation in excess of that indicated for "Trench" shall be considered incidental to "Shoulders".

DESIGN QUANTITIES FOR PAVEMENT WIDENING (TWO SIDES)							
T	SURFACE AREA② Sq. Yd. / Sta.		VOLUME② Cu. Yd. / Sta.		FILLER ① Cu. Yd. / Sta.	TRENCH EXCAVATION (Class 13) Cu. Yd. / Sta. ②	
	W=2.25'	W=3.25'	W=2.25'	W=3.25'		W=2.25'	W=3.25'
7"	50.00	72.22	10.073	14.391	0.56	14.034	18.353
8"	50.00	72.22	11.525	16.466	0.56	16.057	20.997
9"	50.00	72.22	12.960	18.515	0.56	18.055	23.611
10"	50.00	72.22	14.391	20.561	0.56	20.050	26.223

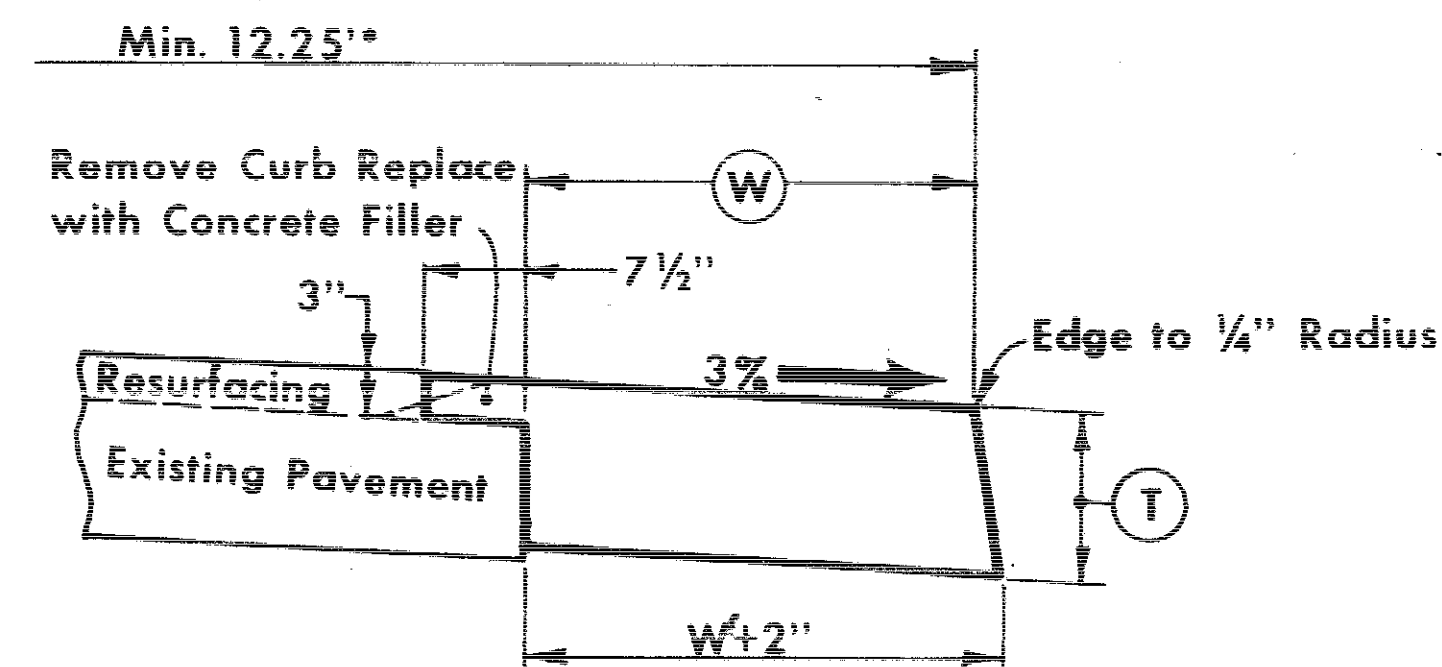
① Per Station per side only when existing curb is removed.
② Quantities will vary if W is increased.



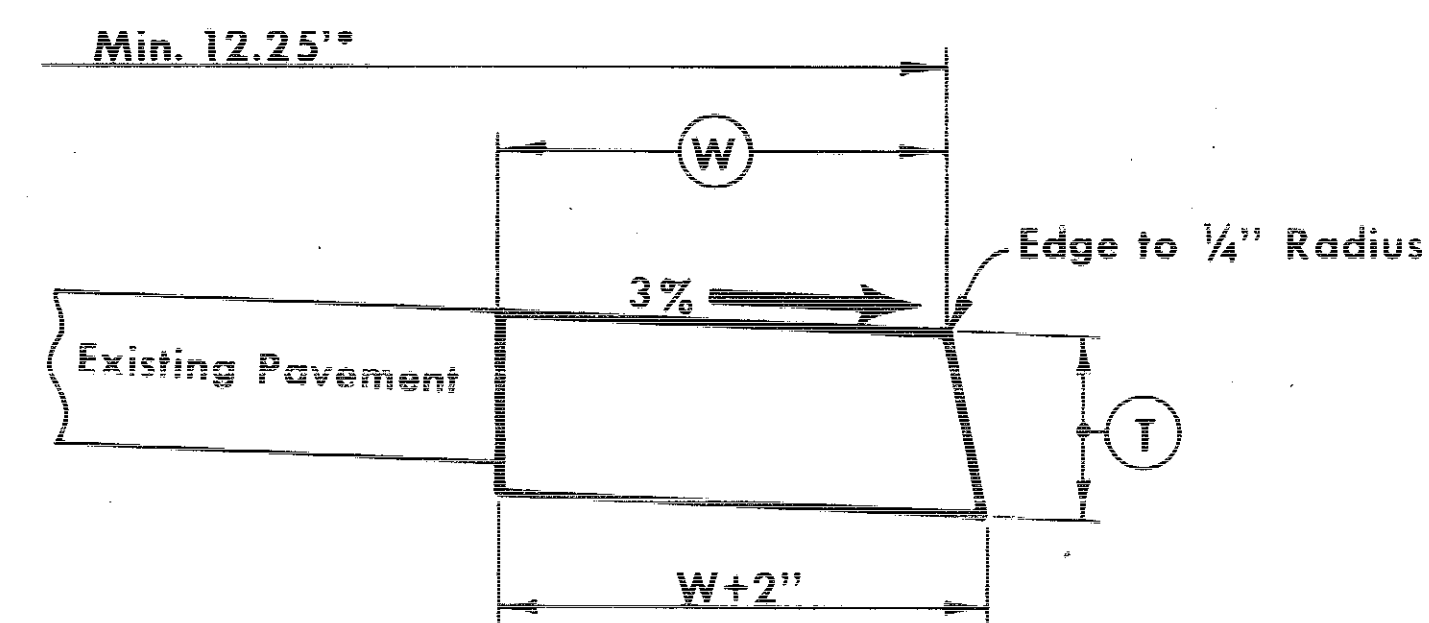
TYPICAL DETAIL OF CURB REMOVAL AND EXPANSION JOINT



P.C. CONCRETE WIDENING ON PRESENT PAVEMENT WITH CURB



P.C. CONCRETE WIDENING ON PRESENT RESURFACED PAVEMENT WITH CURB



P.C. CONCRETE WIDENING ON PRESENT PAVEMENT WITHOUT CURB

*** NOTE:**
Minimum surface dimension is based on accommodating 3 inches of resurfacing. Where thickness other than 3 inches are provided the surface width should be modified appropriately.
Dimension may vary for superelevated curves or at locations specifically designated by the engineer.
"W" and "T" shall be as specified as part of the individual project plans.

TYPICAL DETAILS FOR PAVEMENT WIDENING

GENERAL NOTES
Materials and methods of construction shall be in accordance with the current ISHC Standard Specifications regarding Portland Cement Concrete Pavement Widening, as well as applicable special provisions, and as supplemented by this standard plan.

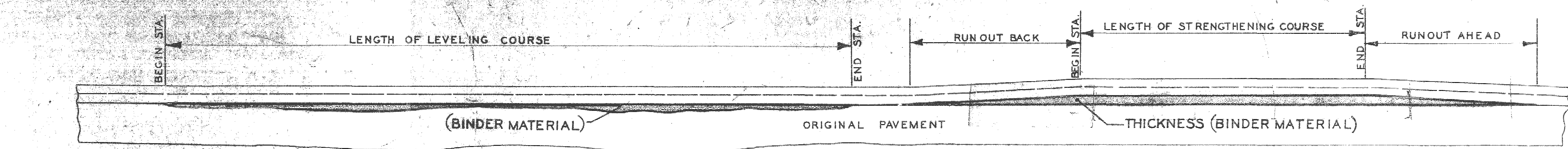
Joints in widening unit shall be as described in Specifications and Standard Plan RH-2. Contraction joints shall be constructed in widening unit adjacent to all joints in existing pavement or at the interval specified in plans. Contraction joints shall be saw cuts at least 1 1/2" in depth. No sealer is required. Expansion joints shall be replaced as indicated hereon, in the "filler" portion only in areas where curb is removed from existing pavement.

Shoulders shall be constructed as detailed hereon. Excavation from Type A & D shoulders shall be disposed of in the immediate area. Excavation from Type B & C shoulders shall be hauled to and disposed of in Type A or D shoulder areas or in areas specifically designated by the engineer.

Special shaping of widening units through bridge approach sections shall be done at the direction of the engineer. A 3" joint of full depth bituminous expansion material shall be installed at each end of bridge in each widening unit.

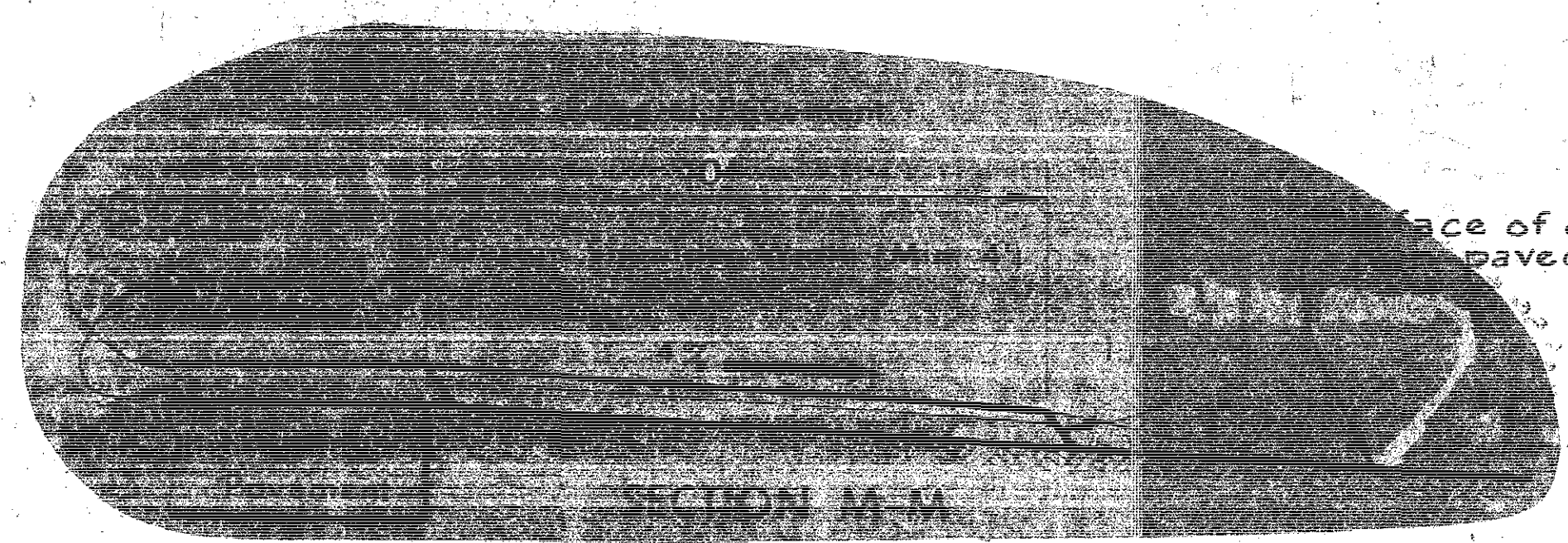
8-3-73		Date	IOWA HIGHWAY COMMISSION	
5		No.	STANDARD ROAD PLAN RG-1	
Redrawn Sheet		Recommended	John C. Harker 7-31-73 Asst. Road Design Engineer Date	
Last Revision		Approved	R. P. McLaughlin 7-31-73 Road Design Engineer Date	
			Deputy Chief Engineer Date	
P.C. CONCRETE PAVEMENT WIDENING				
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		62	210

TYPICAL DETAILS OF SHOULDERS FOR PAVEMENT WIDENING



TYPICAL LEVELING COURSE
(SEE TABULATION FOR LOCATION)

TYPICAL STRENGTHENING COURSE
(SEE TABULATION FOR LOCATION)

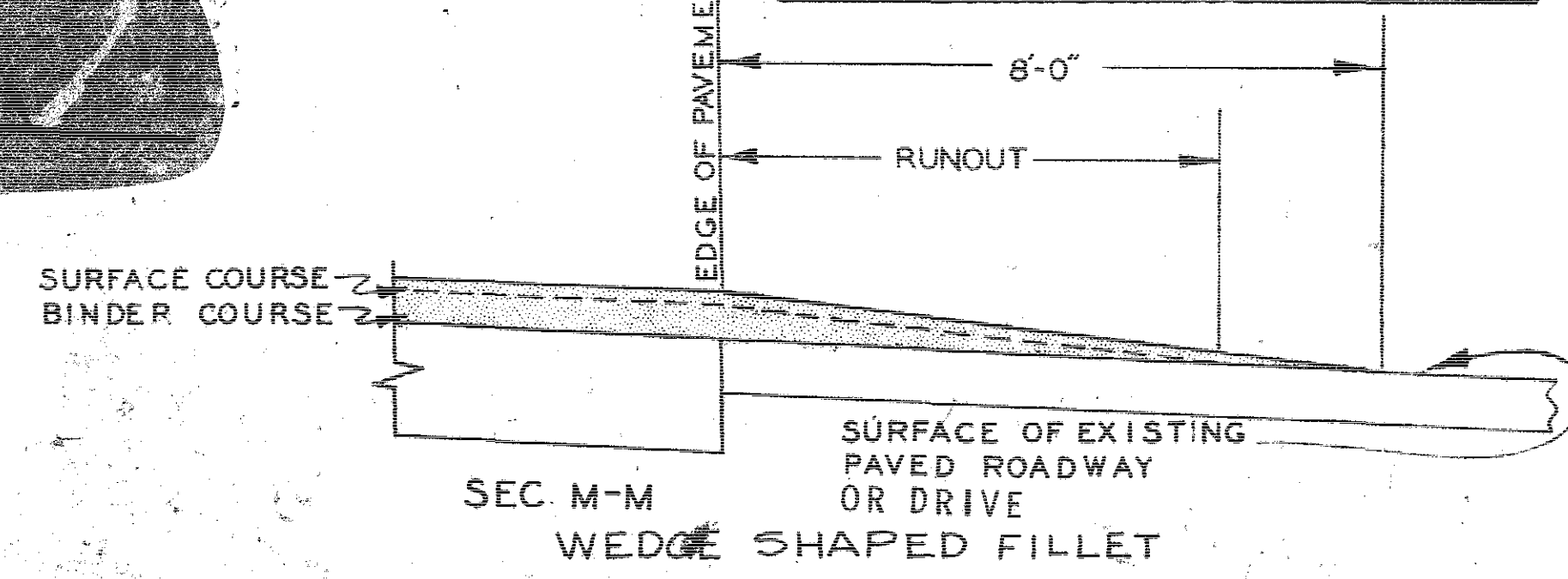


FULL THICKNESS FILLET

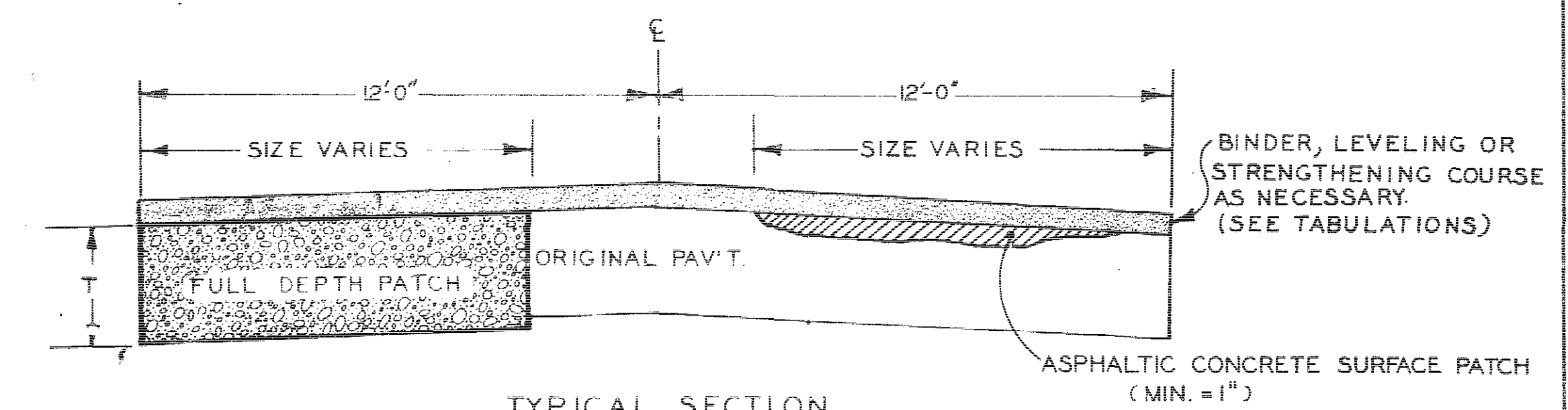
STATION PROGRESS

PAVEMENT ELEVATION

RUNOUT LENGTH FOR BINDER		
Surface Course Thickness	Binder Course Thickness	Binder Runout Length
1 1/2"	1 1/2"	4'
1"	1"	4'
1"	2"	5'

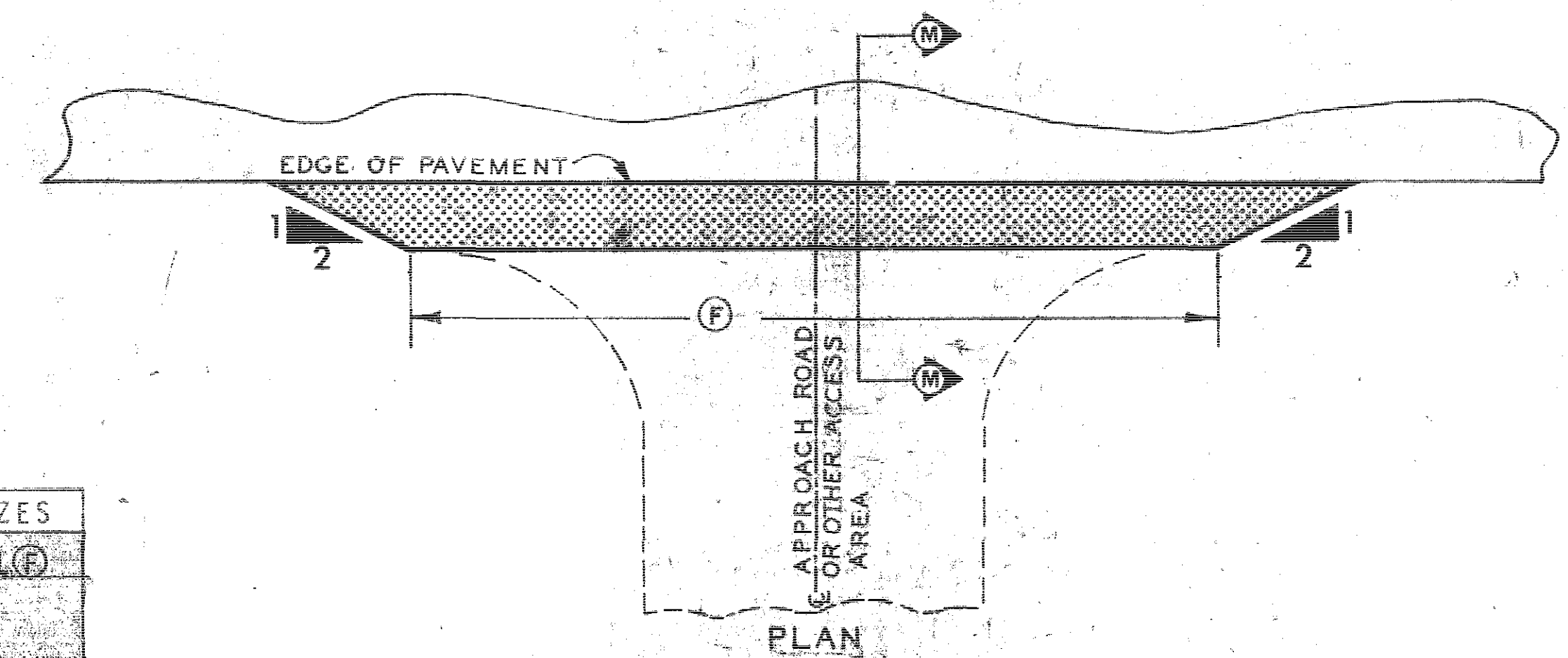


SEC. M-M
WEDGE SHAPED FILLET



TYPICAL SECTION
FULL DEPTH AND SURFACE PATCHES

NOTE:
For "T" and other details of requirements for surface patching and full depth patching, refer to current ISHC Specifications.



DETAILS OF TYPICAL FILLET
AT PAVED ENTRANCES AND INTERSECTING ROADS

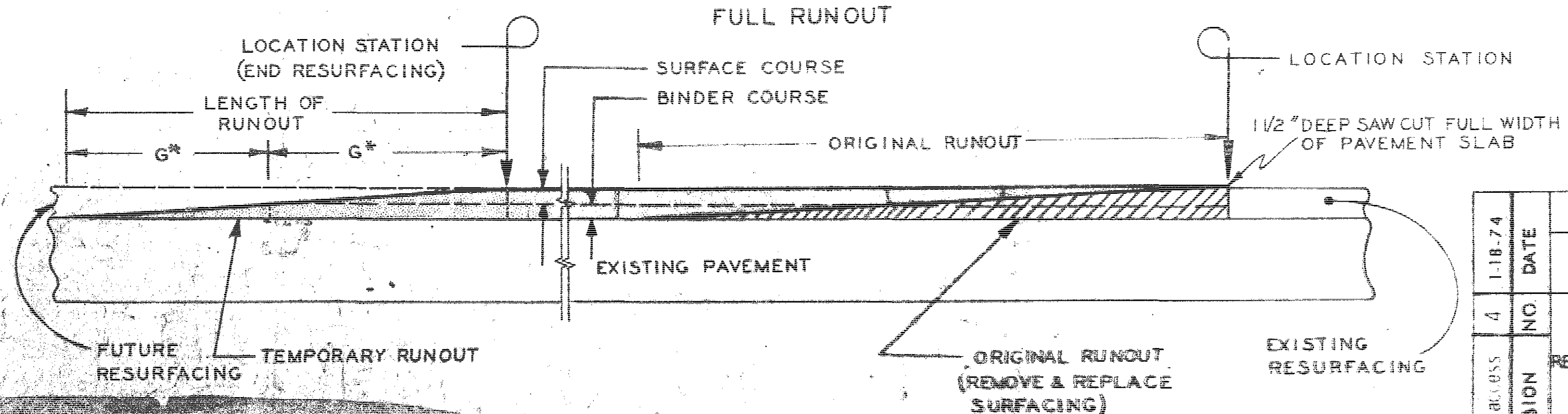
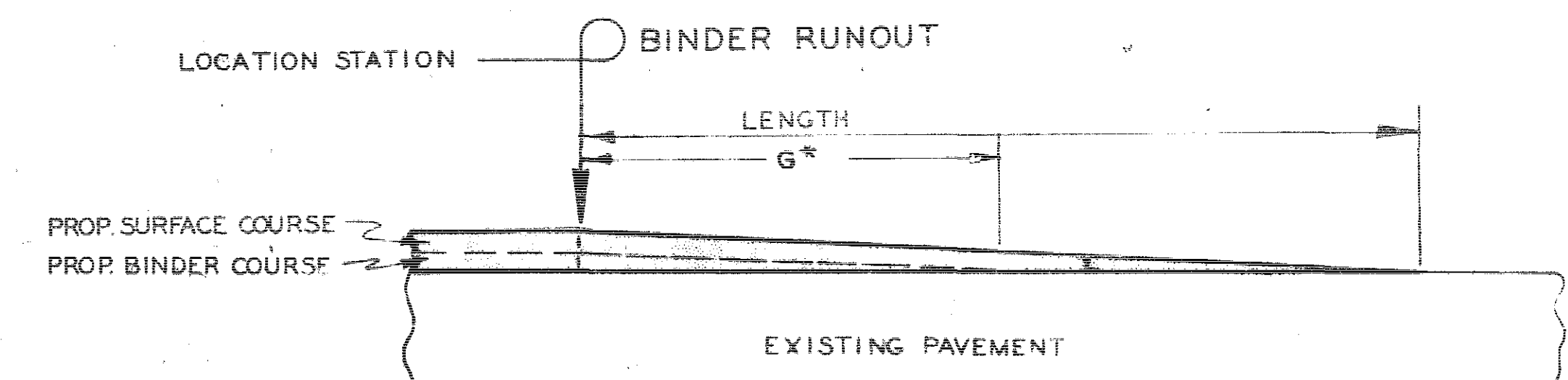
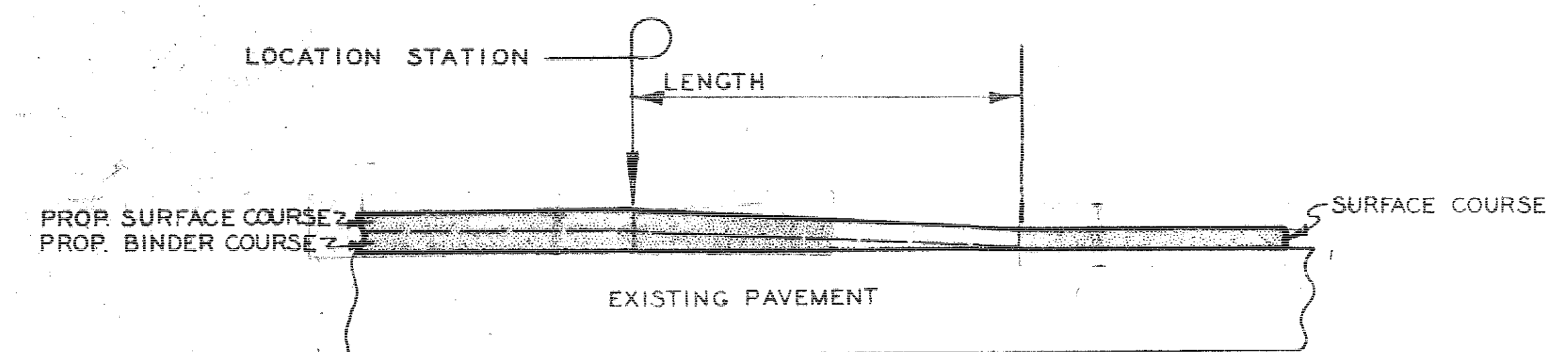
NORMAL FILLET SIZES

TYPE OF ACCESS	MIN. (F)
Res. Ent.	40
Farm Ent.	60
Comm. Ent.	80
Non-Paved Rd.	100
Paved Road	VAR. *

* See layout drawing for details of construction in special areas.

DESIGN RATE FOR WEDGE SHAPE FILLETS Per Lineal Foot of Fillet					DESIGN RATES FOR FULL THICKNESS FILLETS Per Lineal Foot of Fillet				
THICKNESS		SURFACE COURSE① Tons	BINDER COURSE① Tons	PRIME & TACK ② Gallons	SAND COVER ③ Tons	SURFACE COURSE① Tons	BINDER COURSE① Tons	PRIME & TACK ② Gallons	SAND COVER ③ Tons
SURFACE COURSE	BINDER COURSE								
1 1/2"	1 1/2"	.0525	.0175	.0665	.0033	.0875	.0975	.1111	.0028
1"	1"	.0348	.0116	.0665	.0033	.0581	.0581	.1111	.0028
1"	2"	.0378	.0292	.0722	.0036	.0581	.1167	.1111	.0028

- NOTE: ① Design Weight = 140 lbs. per cu. ft.
② The tack coat for entrance fillets may be eliminated when so directed by the engineer. Estimated for (2) applications at a rate of 0.05 gal. per sq. yd.
③ Rate of application 5 lbs. per sq. yd.



TYPICAL RUNOUTS FOR RESURFACING

GENERAL NOTES:

Refer to typical cross sections of the project for detail data as to exact course dimensions and other construction requirements.

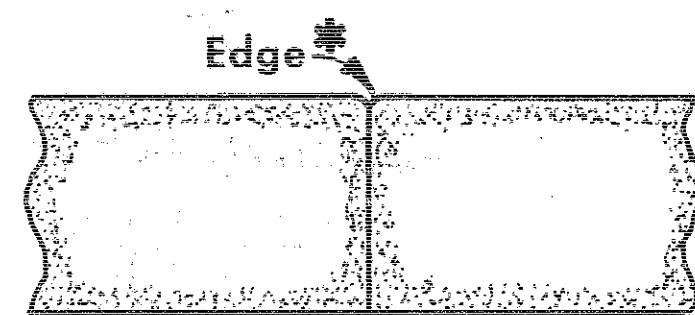
Refer to tabular listing for location and other details of runouts. Unless otherwise specifically noted, runouts for asphaltic concrete resurfacing shall be at the rate of 25' of length for each 1' of resurfacing thickness to be runout. Place subgrade paper, bur-lap, or similar material over adjacent surfaces in areas of run-out wedges to facilitate removal of wedges where subsequent future resurfacing is anticipated.

Wedge shaped fillets of asphaltic concrete shall be constructed at all paved entrances and paved intersecting roads.

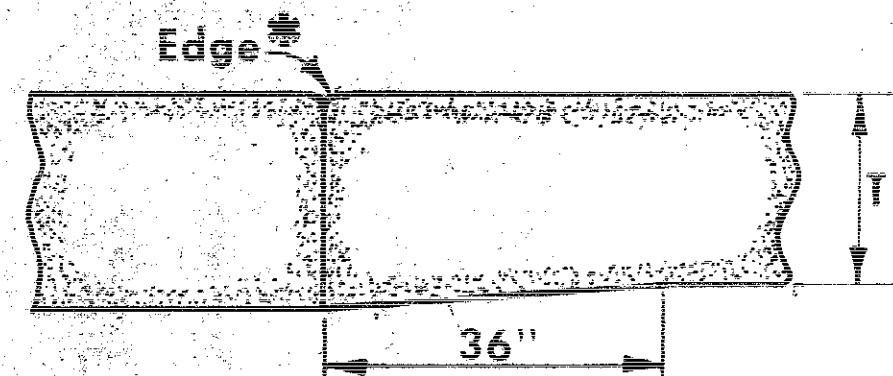
Full thickness fillet shall be constructed at all non paved public roads.

Fillet sizes as listed in the table are recommended and shall be used for design and estimating purposes. The Engineer shall establish the size of each individual fillet to accommodate conditions at the site.

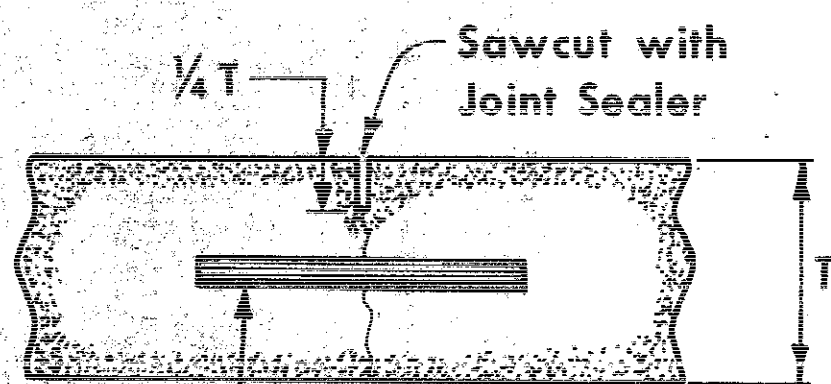
IOWA HIGHWAY COMMISSION	
STANDARD ROAD PLAN RG-2	
RECOMMENDED	ROAD ENGINEER: <i>C. H. Harker</i> 6-22-71 DATE:
	DESIGN ENGINEER: <i>R. P. McBratney</i> 6-30-71 DATE:
APPROVED	DEPUTY CHIEF ENGINEER: <i>R. P. McBratney</i> 7-1-71 DATE:
	DETAILS FOR DOUBLE COURSE ASPHALTIC CONCRETE RESURFACING



'B'
Plain Joint for
Abutting Pavement Slabs

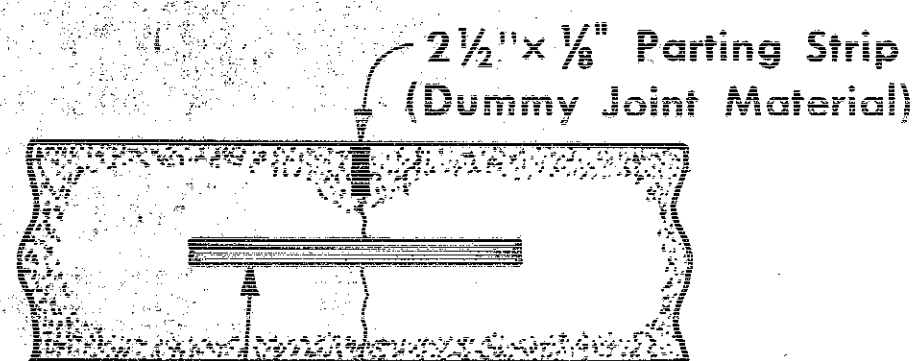


'TE'
Thickened Edge Joint
for Abutting Pavement Slabs



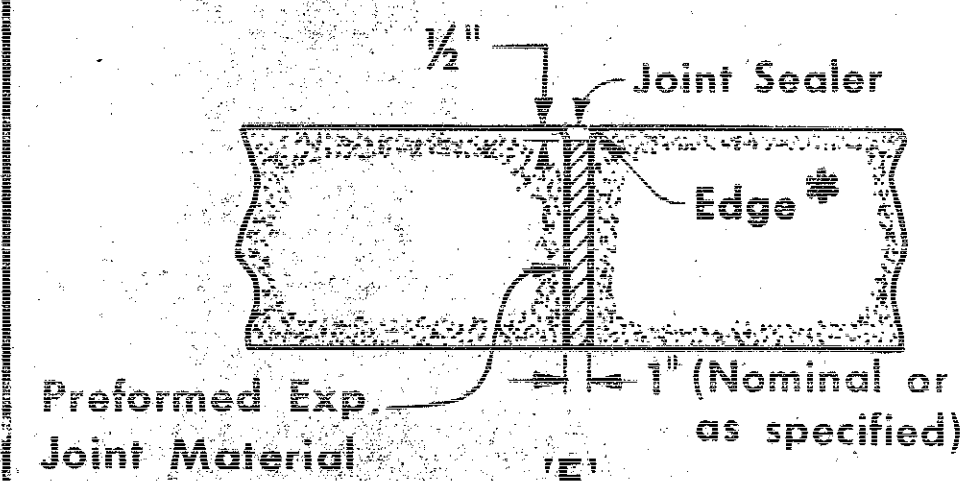
See Notes 1, 2, 3, 4.

'CD'
Doweled Contraction Joint

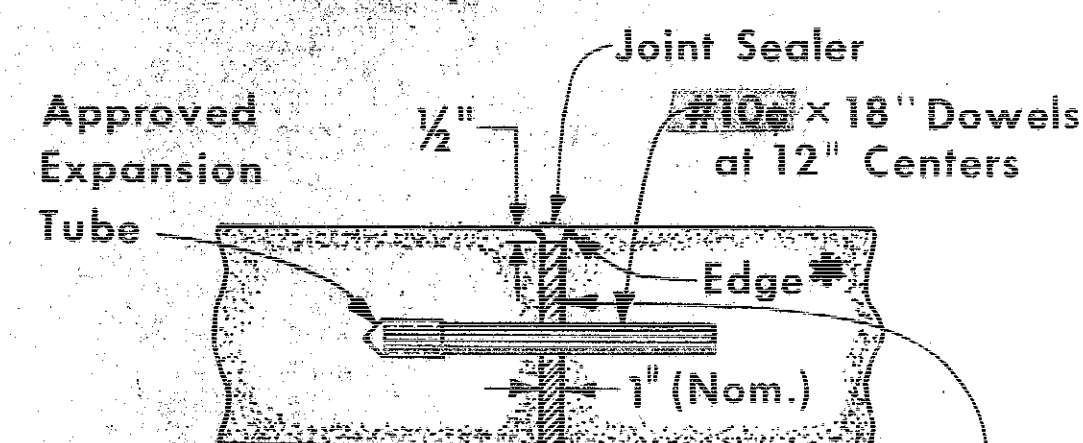


See Notes 1, 2, 3, 4.

'CD-1'
Doweled Contraction Joint



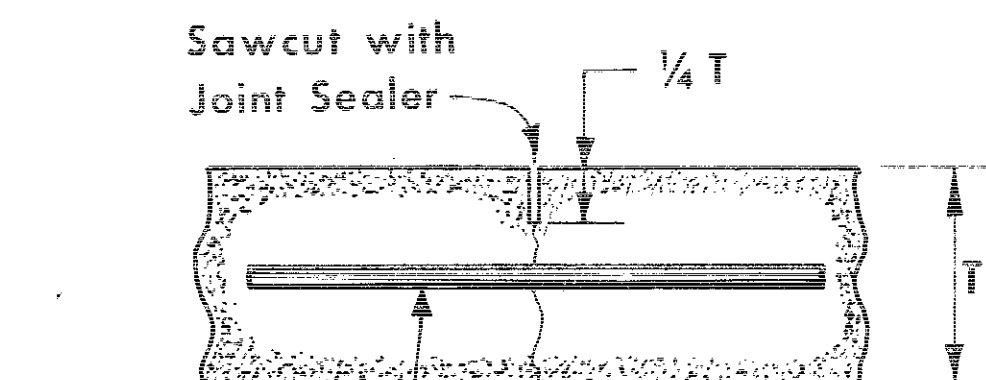
'E'
Plain Expansion Joint



Preformed expansion joint material with holes same size as dowels.

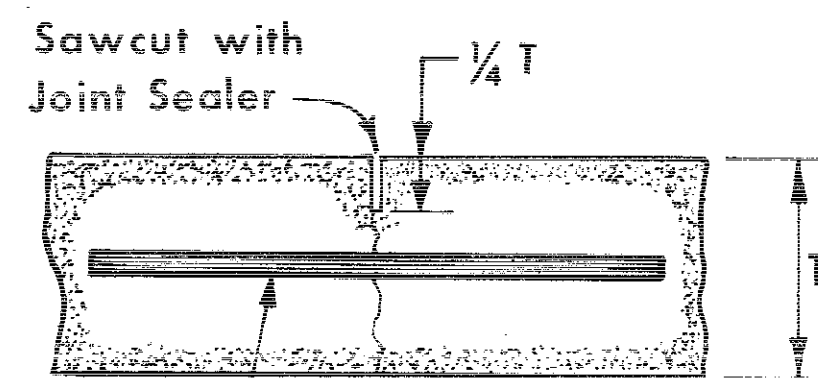
See Notes 2, 3.

'ED'
Doweled Expansion Joint



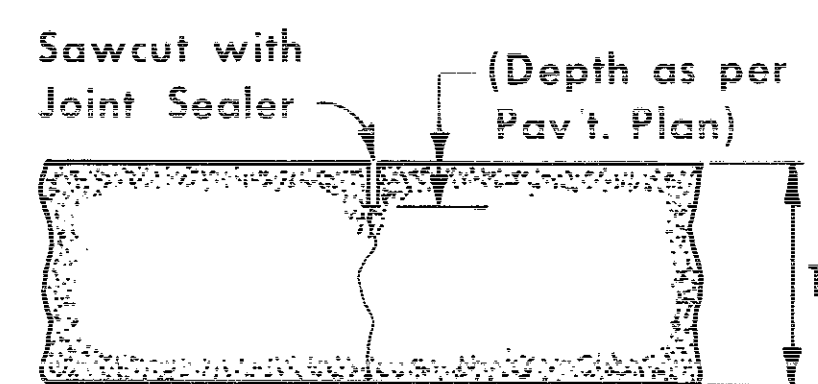
See Note 6.

'L-1'
Longitudinal Joint



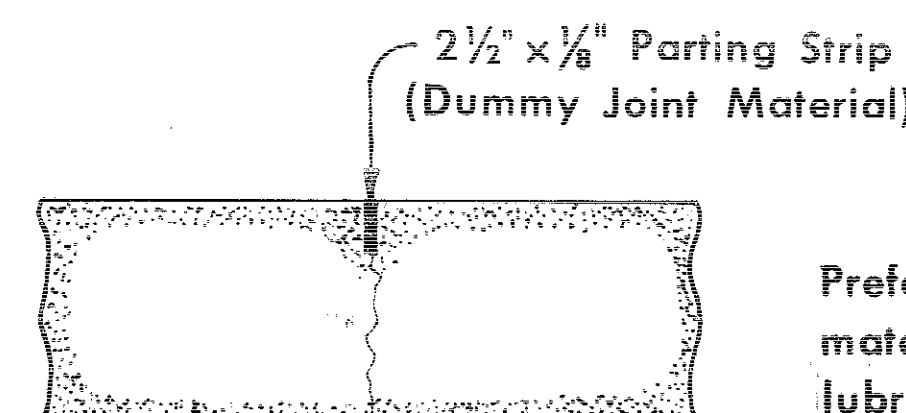
See Note 6.

'L-2'
Longitudinal Joint



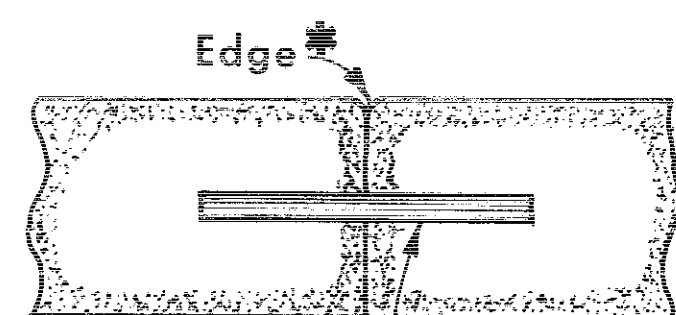
'C'

'C'
Transverse Contraction Joint



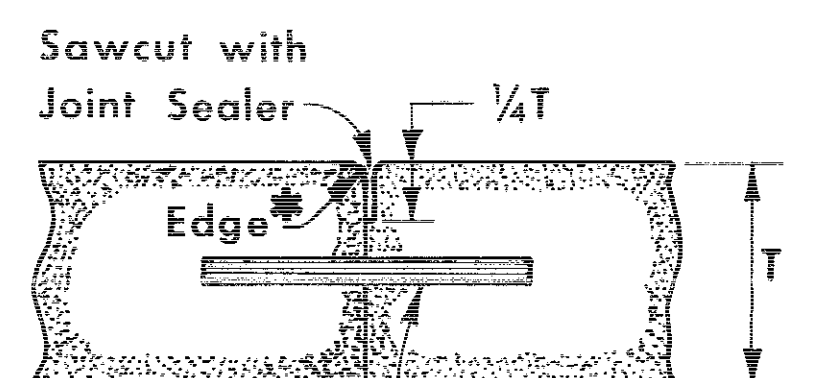
'DC'

'DC'
Dummy Contraction Joint



See Notes 3, 4.

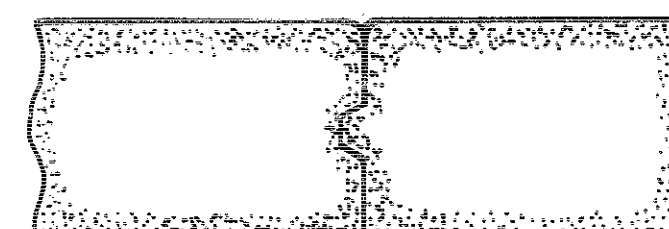
'D-3'
End of Run Joint



See Notes 3, 4.

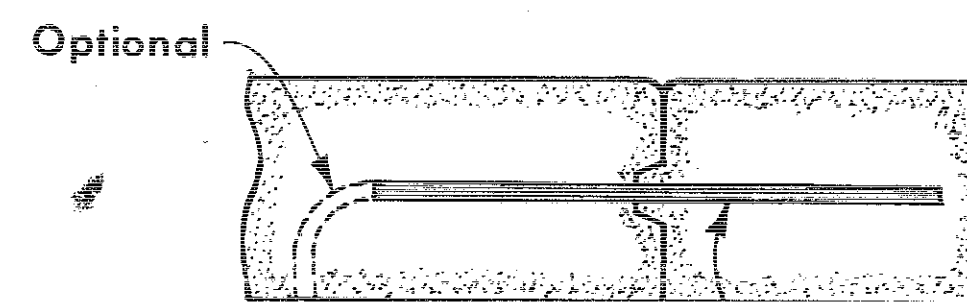
'D-4'

'D-4'
End of Run (Multiple Lane)



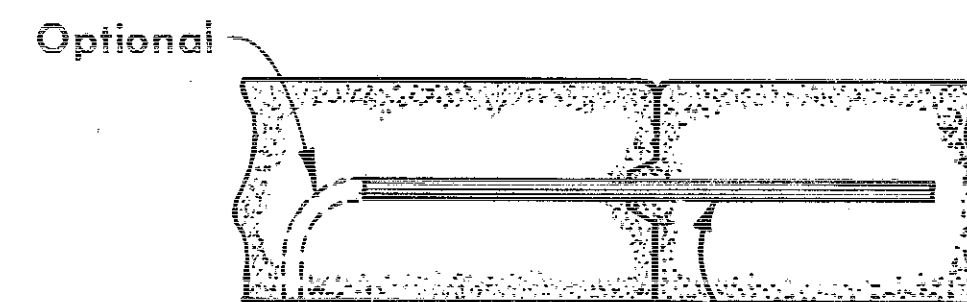
'K'

'K'
Keyed Joint for Adjacent Slabs



See Notes 5, 6.

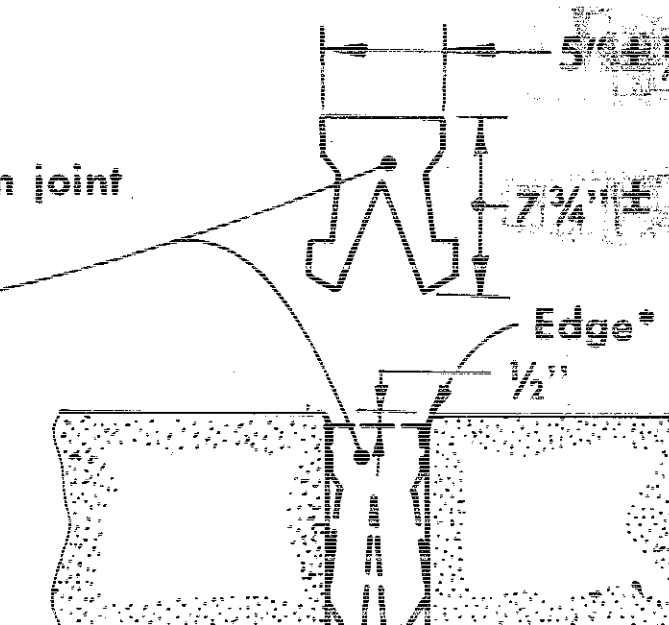
'KD'
Keyed and Doweled Joint
for Adjacent Slabs



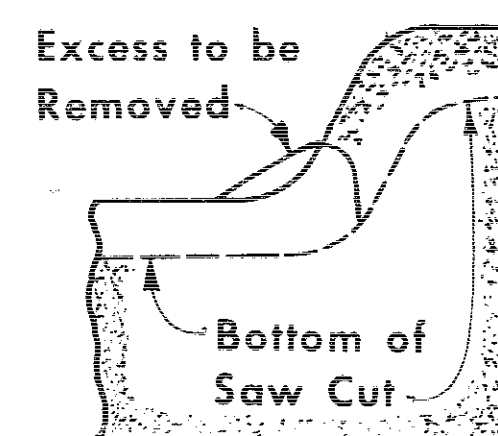
See Notes 5, 6.

'KD-1'
Keyed and Doweled Joint
for Adjacent Slabs

Preformed urethane foam joint material installed with lubricant adhesive.

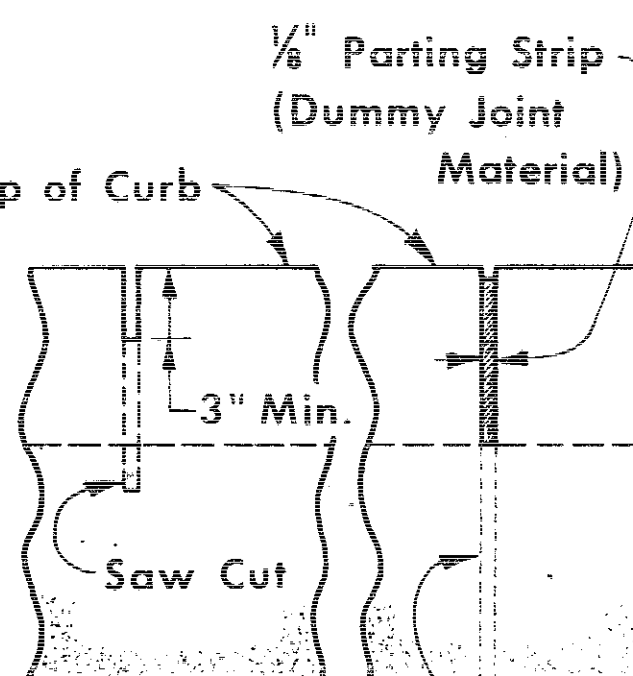


'CF' Joint



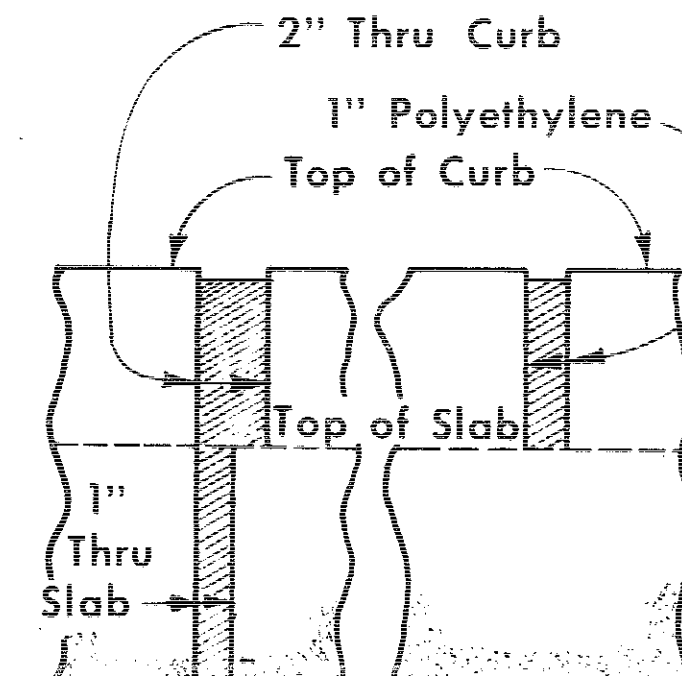
(Match 'C' Joint in Pavement)

'C'

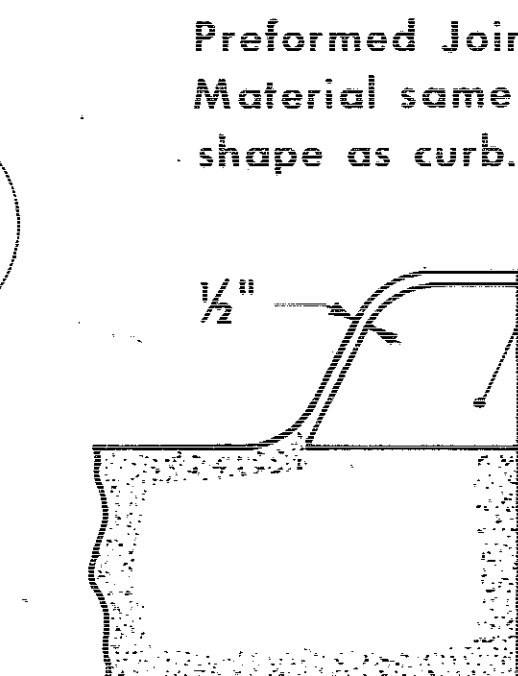


'S'

'S'
Joints in Curb



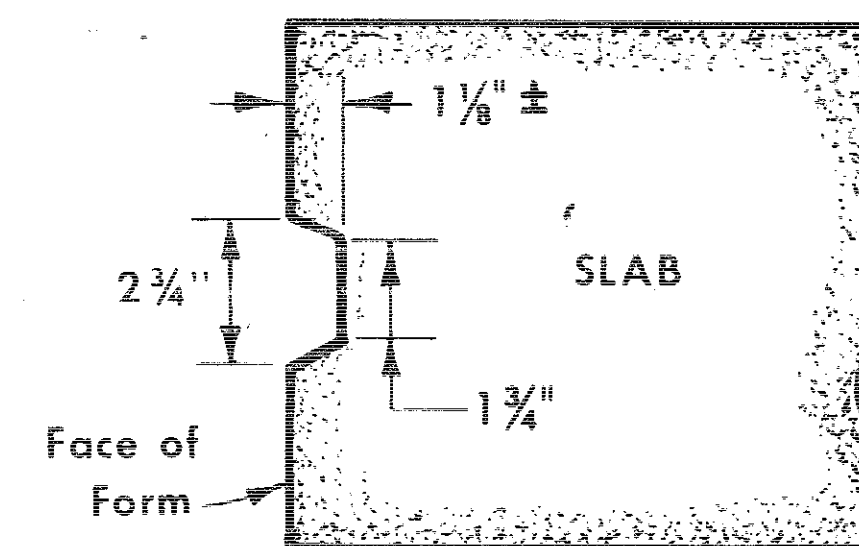
'E'



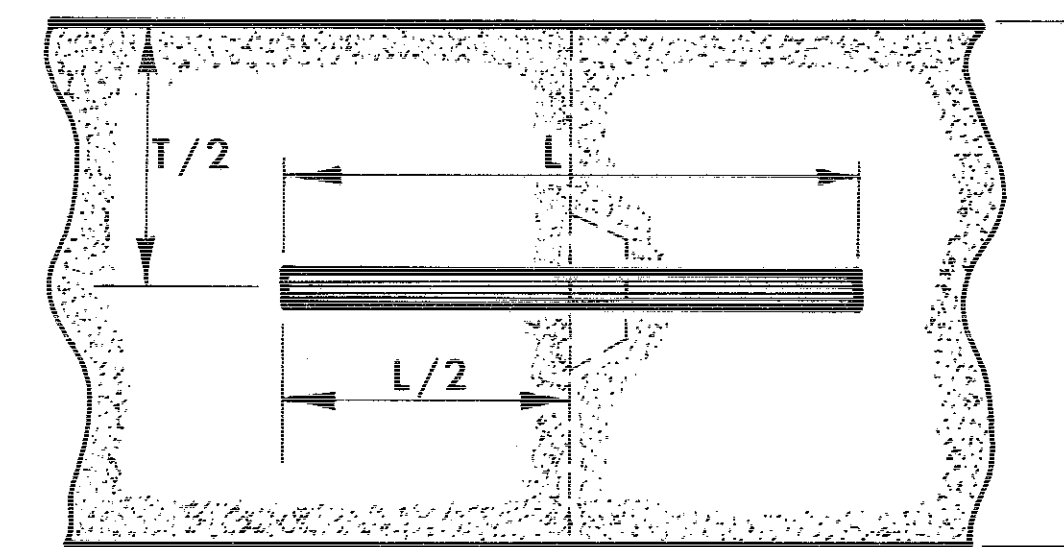
'ES'

(Match 'E', 'DC', or 'B' Joint in Pavement)

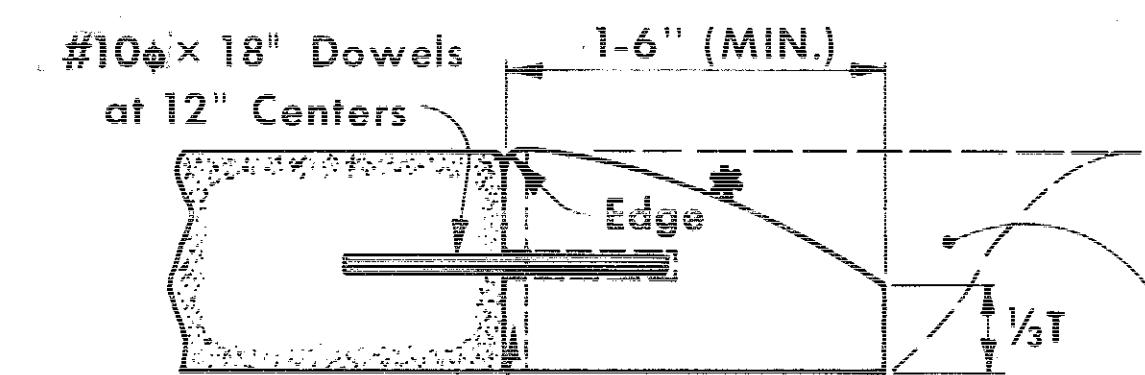
'E-ES' & 'S'



Typical Keyway



Typical Bar Placement



Possible header board (may be left in place if used.)

Area to be filled and tamped with excavated material (Possible Future Paving)

HD-1 Joint shall have the reinforcing bar in the second slab portion, plastic or tarpaper wrapped as directed by the engineer to facilitate removal of second slab.
HD-2 Joint shall omit use of second slab.

GENERAL NOTES:

All materials and construction features used in the construction of pavement joint shall conform to the requirements of current Iowa State Highway Commission Standard Specifications. Refer to appropriate other Standard Road Plans and project plans for additional information. Alternate methods for construction of joints may be submitted to the engineer for consideration. All methods of construction shall be such that a joint substantially as indicated hereon results.

Dowels for "CD" and "ED" joints shall be properly positioned by the use of an approved support assembly. Tie bars shall be held in place by approved devices or methods.

Bars placed after concrete slab is poured shall be installed prior to vibration of pavement slab. Width of saw cut in pavement shall be a minimum of 1/8 inch.

All preformed joint material shall be installed perpendicular to pavement surface and care shall be exercised throughout the construction of the pavement to ensure that such joint material remains in proper position upon completion of paving operation.

An "End of Run" joint shall be as detailed hereon for a "D-3" joint except use as a D-4 joint when adjacent to an existing joint in multiple lane pavement.

*Edge with 1/4" radius tool for length of joint indicated.

SPECIAL NOTES:

1. Alternate ends of dowels shall be free moving in the support assembly.

2. The free end half of dowel bar shall be coated as directed by the engineer to prevent bond with that portion of pavement.

3. The contractor may, at his option, install high density poly ethylene coated dowel bars of 1/8" less dia. Details of such installation shall be direct by the engineer.

4. Where "T" is 7" or less, dowel bar dia. may be reduced to not less than 3/4 inch.

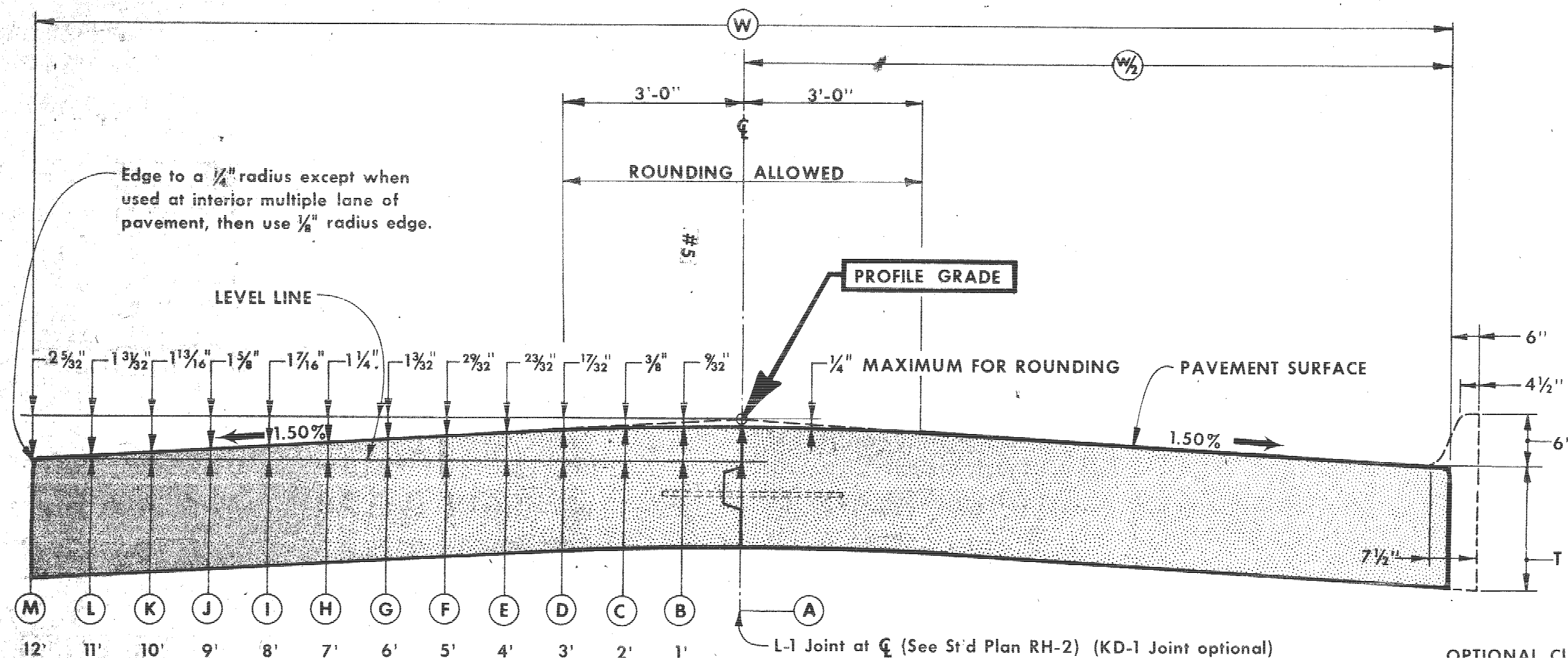
5. In lieu of using an approved bar support, a bar of appropriate length may be bent as indicated with the tip supporting bar in proper position.

6. Bar dimensions shown are for deformed steel. Smooth steel bars of 60 inches in length may be substituted. Bar diameter and spacing shall remain the same unless otherwise directed by the engineer.

IOWA HIGHWAY COMMISSION			
STANDARD ROAD PLAN RH-2			
Modified C. F. Joint Last Revision	Date	9-14-72	
	No.	9-14-72	
	Recommended	Date	
	Approved	Date	
P.C. CONCRETE PAVEMENT JOINTS			

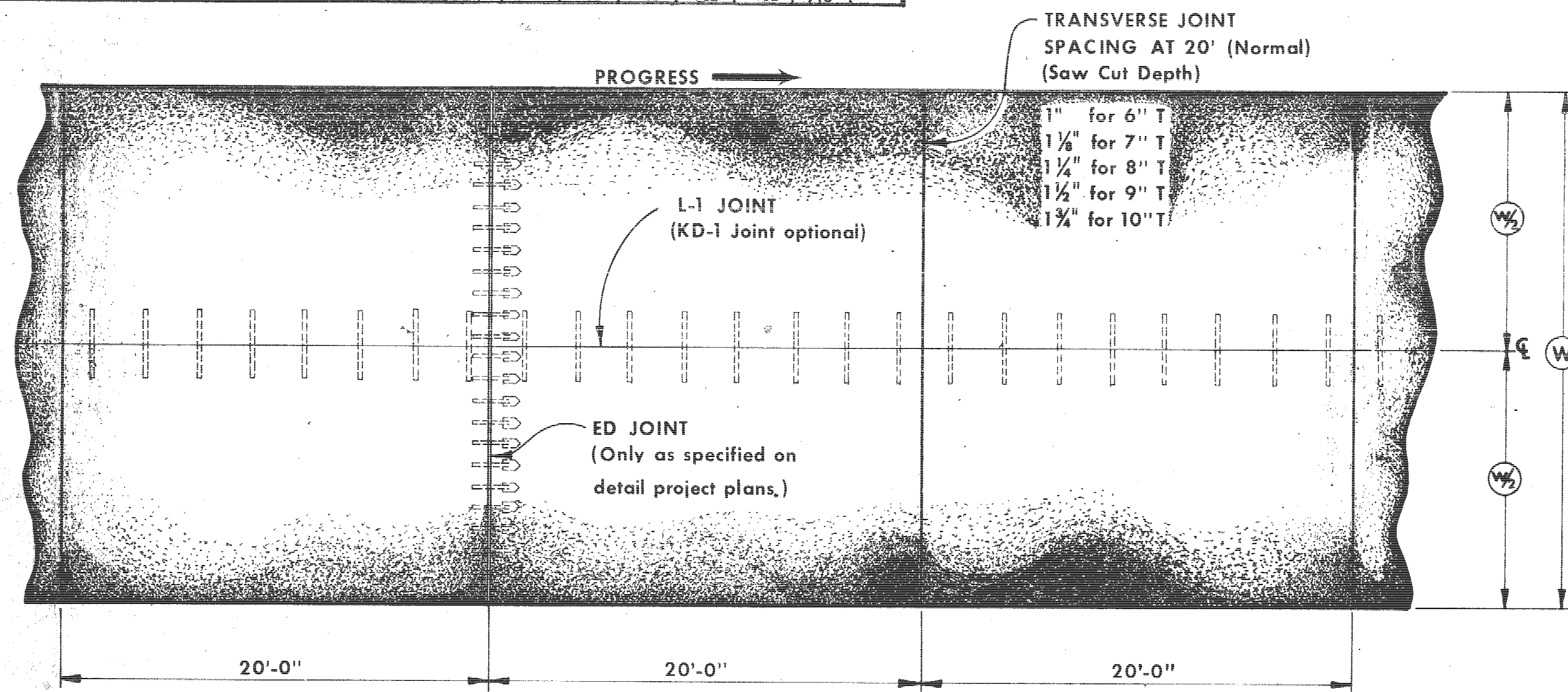
Jackson COUNTY

PROJECT NUMBER FN-62-1(4) -- 21-49
STATE IOWA
FISCAL YEAR 5
SHEET NO. 64
TOTAL SHEETS 210



TYPICAL CROSS SECTION PAVEMENT

CROWN DIMENSIONS												
POINT LOCATION	A	B	C	D	E	F	G	H	I	J	K	L
PAV'T WIDTH 22'	12 1/2"	11 1/2"	10 1/2"	9 1/2"	8 1/2"	7 1/2"	6 1/2"	5 1/2"	4 1/2"	3 1/2"	2 1/2"	1 1/2"
PAV'T WIDTH 24'	12 1/2"	11 1/2"	10 1/2"	9 1/2"	8 1/2"	7 1/2"	6 1/2"	5 1/2"	4 1/2"	3 1/2"	2 1/2"	1 1/2"



TYPICAL PLAN OF PAVEMENT

GENERAL NOTES :

Details indicated on this plan are intended to illustrate the general requirements for two-lane p.c. concrete pavements of either 22' or 24' in width. Unless specifically authorized otherwise, the methods and materials used in the construction of this pavement shall be in conformance with current specifications for Concrete Pavement. Refer to individual project plans for specific dimensional requirements and other details of pavement construction.

Refer to Standard Road Plan RH-2 for details of construction of joints in pavement. Joint layout shall be as indicated hereon except at intersections, bridges, or other locations specifically designated by the Engineer. Transverse joints will be "C" except when "CD" joints are specifically required as a part of detail project plans.

Normal crown shall be a straight line sloped each way from ϵ profile grade at the rate of 0.015 ft. per ft. Rounding to a maximum depth of 1/4" below profile grade will be allowed as indicated. This crown may be varied through superelevated curves and Intersection areas where special shaping is required, or other areas specifically authorized by the engineer.

PER STATION DESIGN VALUES FOR PAVEMENT AS DETAILED HEREON

W= 22ft.						
ITEM	UNIT	T= 6"	T= 7"	T= 8"	T= 9"	T= 10"
SECTION AREA	Sq. Ft.	11.000	12.8333	14.6667	16.5000	18.333
CONC. VOLUME	Cu. Yds.	40.7407	47.5309	54.3211	61.1113	67.9015
SURFACE AREA	Sq. Yds.	244.44	244.44	244.44	244.44	244.44

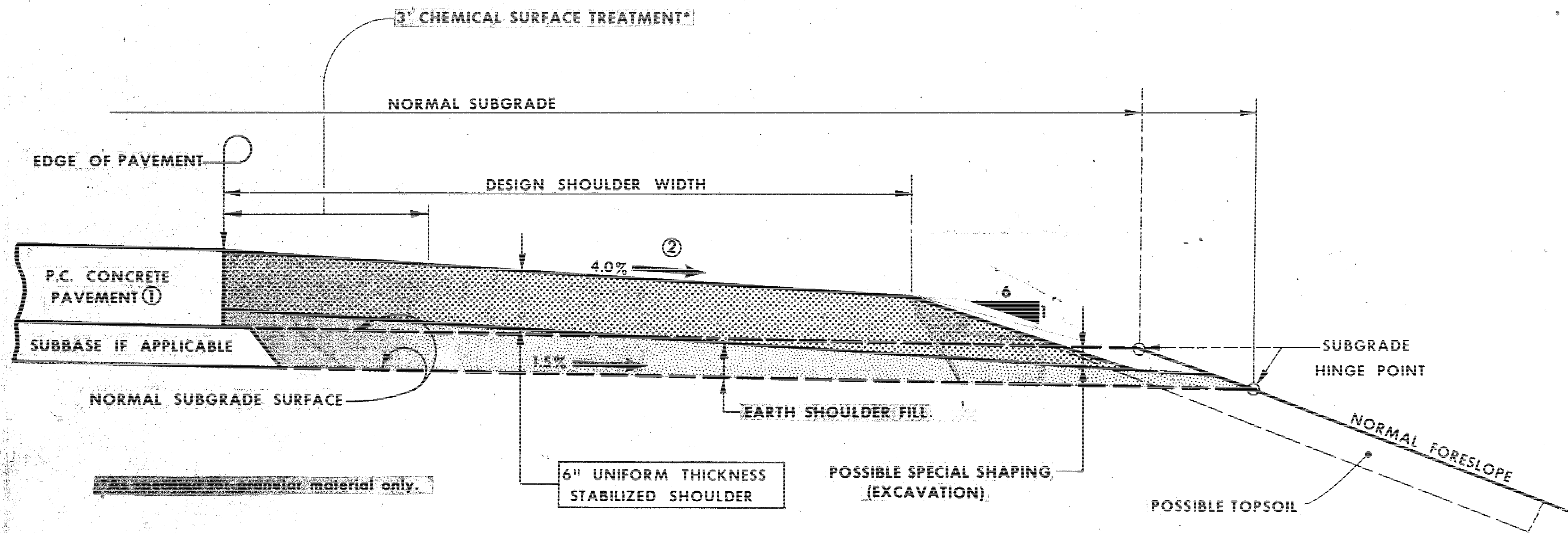
W= 24ft.						
ITEM	UNIT	T= 6"	T= 7"	T= 8"	T= 9"	T= 10"
SECTION AREA	Sq. Ft.	12.000	14.000	16.000	18.000	20.000
CONC. VOLUME	Cu. Yds.	44.444	51.8519	59.2593	66.6667	74.0741
SURFACE AREA	Sq. Yds.	266.667	266.667	266.667	266.667	266.667

PER STATION DESIGN VALUES FOR OPTIONAL 6" CURB						
ITEM	UNIT	T= 6"	T= 7"	T= 8"	T= 9"	T= 10"
SECTION AREA	Sq. Ft.	0.5000	0.5416	0.5833	0.6250	0.6650
CONC. VOLUME	Cu. Yds.	1.852	2.006	2.160	2.315	2.468
SURFACE AREA	Sq. Yds.	5.555	5.555	5.555	5.555	5.555

CHANGE CROWN DIMENSION 1"	4-14-72	Date	IOWA HIGHWAY COMMISSION	
	3	No.	STANDARD ROAD PLAN RH-22	
	Last Revision	Recommended	<i>John C. Hocken</i>	9-30-71
		Ass't. Road Design Engineer	Date	
		Approved	<i>R. H. Owen</i>	10-12-71
	Approved	Road Design Engineer	Date	
	Approved	Deputy Chief Engineer	Date	
NON-REINFORCED TWO-LANE P.C. CONCRETE PAVEMENT				

Jackson COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-62-1(4) -- 21-49	IOWA	5		65	210



- ① Refer to Typical Cross Section and detail project plans for exact shape and dimensions of adjacent pavement.
- ② Refer to Typical Cross Sections and detail project plans for details of slope variation through superelevated curves.

TYPICAL SHOULDER SECTION

TABLE OF DESIGN QUANTITIES			
	4' SHLDR.	6' SHLDR.	10' SHLDR.
STABILIZED SHLDR. (TONS/STA.)	19.94	27.19	41.69

Rates indicated are for design purposes and may be adjusted at time of construction if so directed by the Engineer.

Quantities have been determined on the basis of a design weight of 145 lbs. per cubic foot.

Quantities listed are for one shoulder per station.

GENERAL NOTES:

Construction of the Stabilized Shoulder shall conform to the requirements of current Iowa State Highway Commission Specifications for the items involved.

Any Special Shaping of subgrade necessary prior to construction of Stabilized Shoulder shall be accomplished as directed by the Engineer. Any material removed due to this special shaping shall be disposed of at the direction of the Engineer.

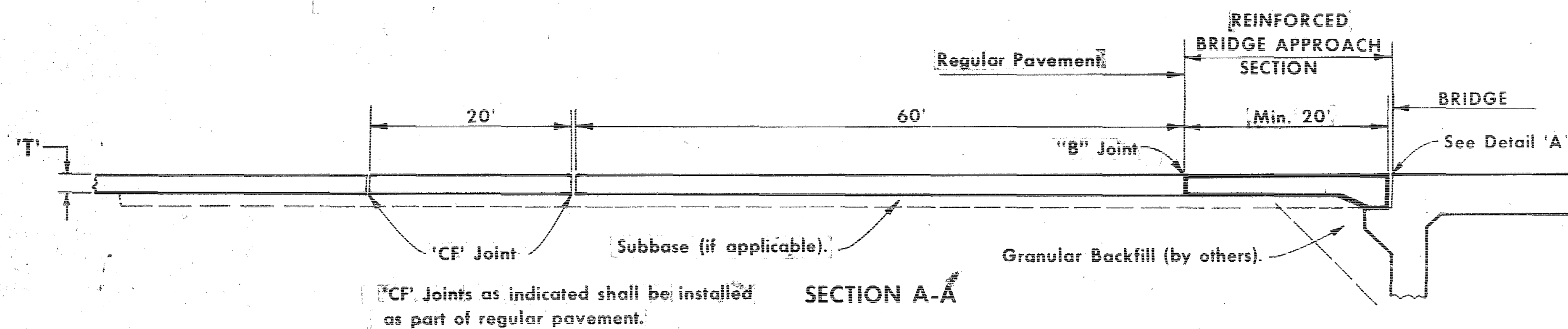
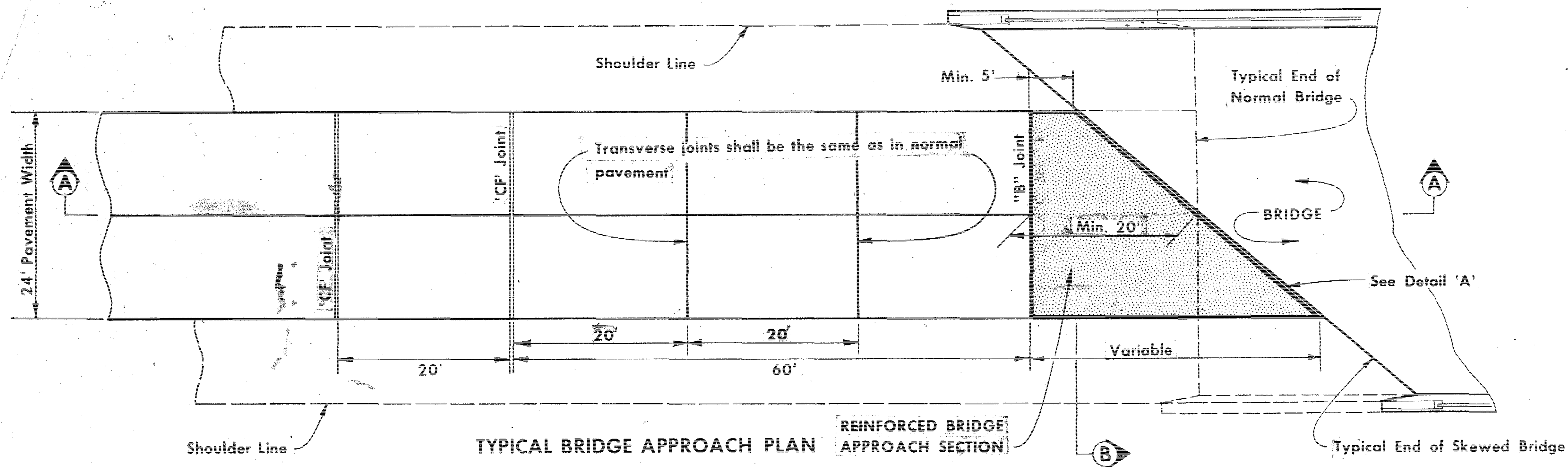
Natural subgrade prior to placement of stabilized shoulder material shall be adequately compacted and smoothed for proper construction of shoulder.

Earth Shoulder Fill shall be done in accordance with the requirements of current specifications. Refer to detail project plans for estimated quantity of material required for Earth Shoulder Fill. Material required for Earth Shoulder Fill shall be obtained from adjacent areas at the direction of the Engineer. This work shall not be paid for separately but shall be included with and considered incidental to other work.

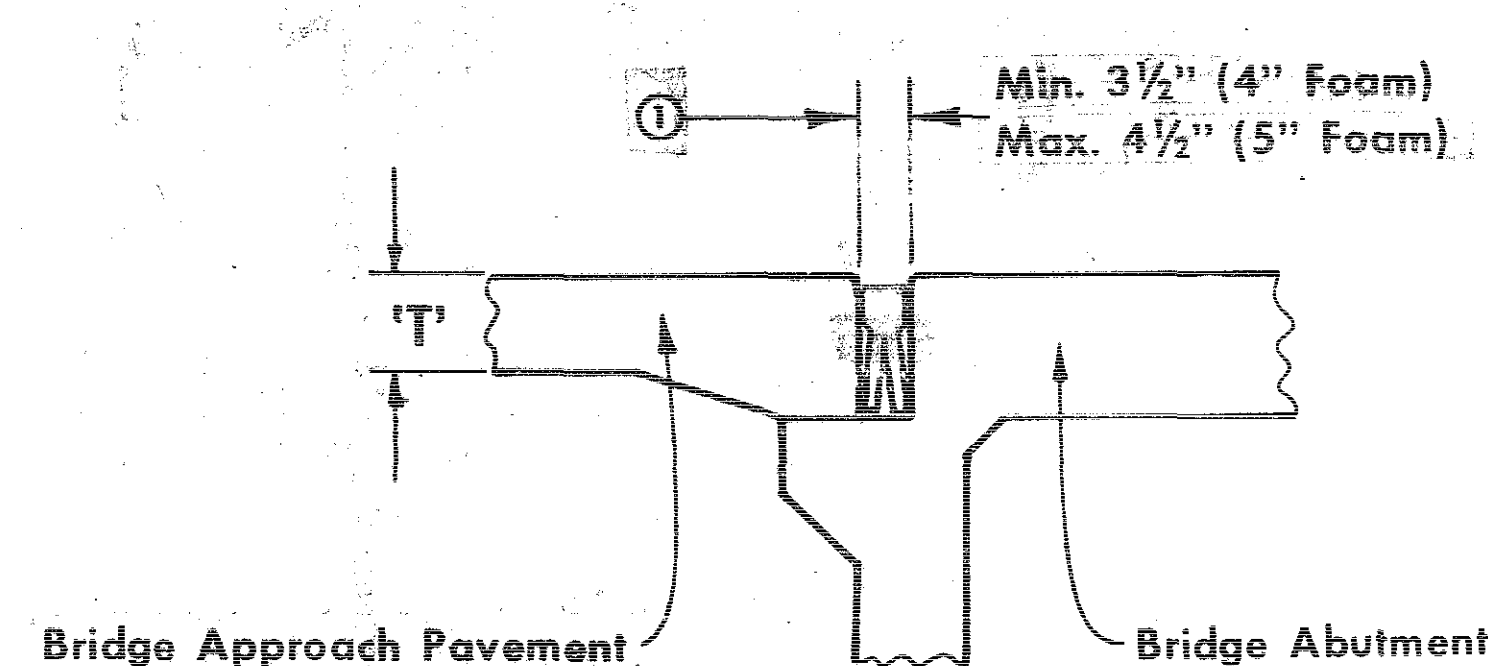
The price bid for Stabilized Shoulder Material shall be considered full compensation for complete construction of the shoulder as detailed hereon.

6:1 Foreslope for Stabilized Shoulder Material		10-20-72		Date		IOWA HIGHWAY COMMISSION	
		6		No.		STANDARD ROAD PLAN RH-37	
		Recommended		John C. Hockley		7-14-71	
		Ass't. Road Design Engineer		Date			
Approved		A.P. McLaughlin		7-15-71		Date	
Last Revision		Road Design Engineer		Date			
		Approved		J. H. Cowan		7/16/71	
		Deputy Chief Engineer		Date			
STABILIZED SHOULDER (ADJACENT TO P.C. CONCRETE PAVEMENT)							
PROJECT NUMBER		FV-62-1(4) -- 21-40		STATE		IOWA	
FED. ROAD DIST. NO.		5		FISCAL YEAR			
SHEET NO.		66		TOTAL SHEETS		210	

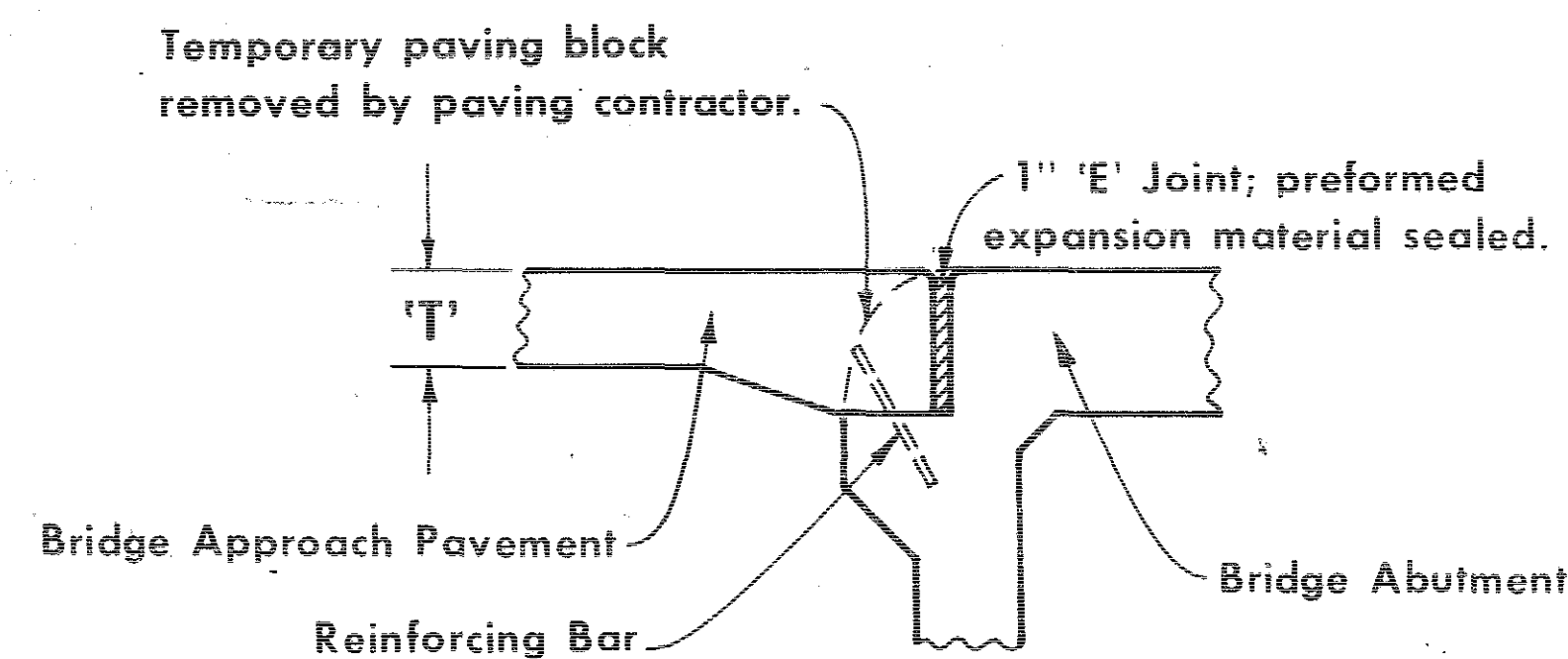
Jackson COUNTY



① To be constructed same as CF-Joint.
Refer to standard plan RH-2 for
additional details of pavement joints.



MOVABLE ABUTMENT BRIDGE

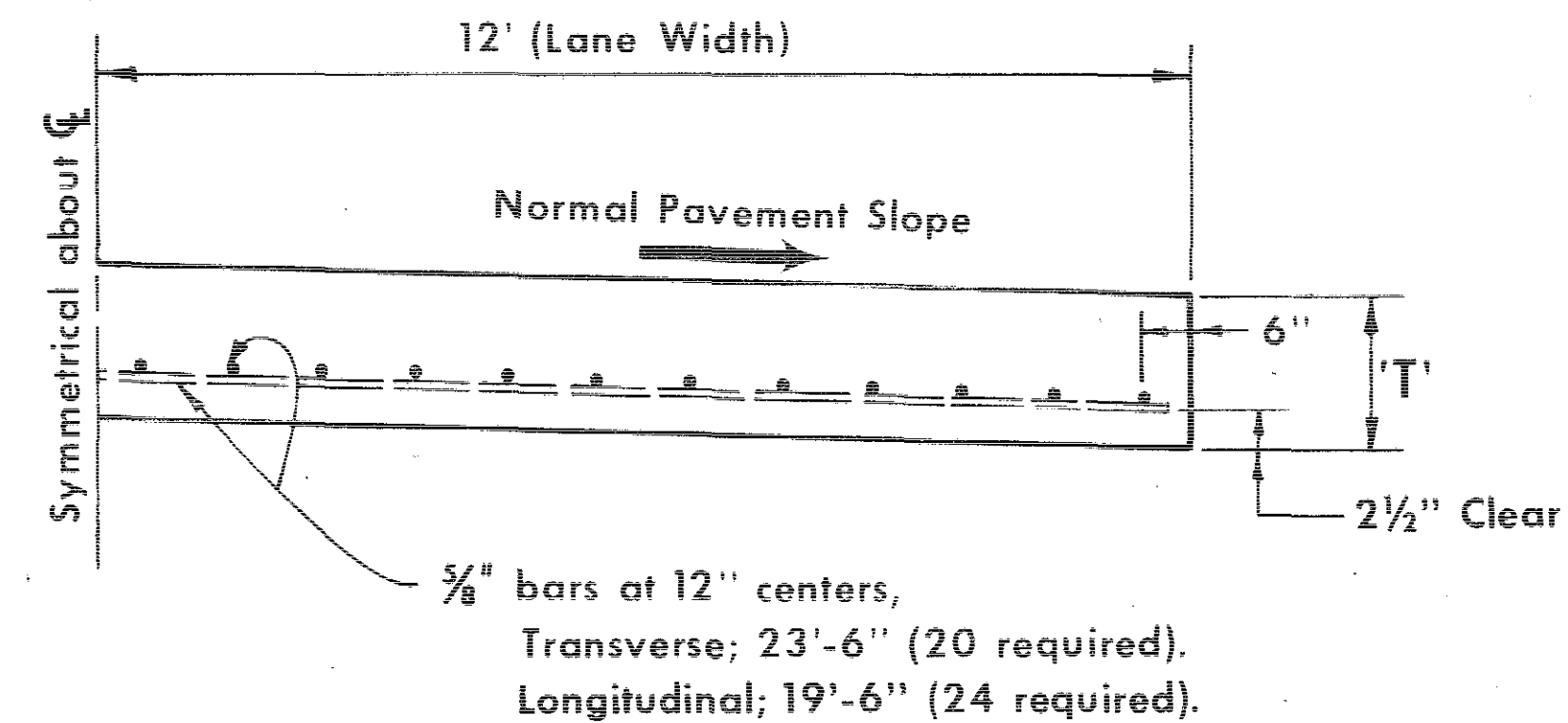


FIXED ABUTMENT BRIDGE

DETAIL 'A'

NOTE: Joint treatment at bridge end shall be as directed by the Engineer.

NOTE: "T" is same thickness as is required for remainder of project pavement.



TYPICAL HALF SECTION B

GENERAL NOTES :

Details indicated hereon are typical and shall be used for all situations where directly applicable.

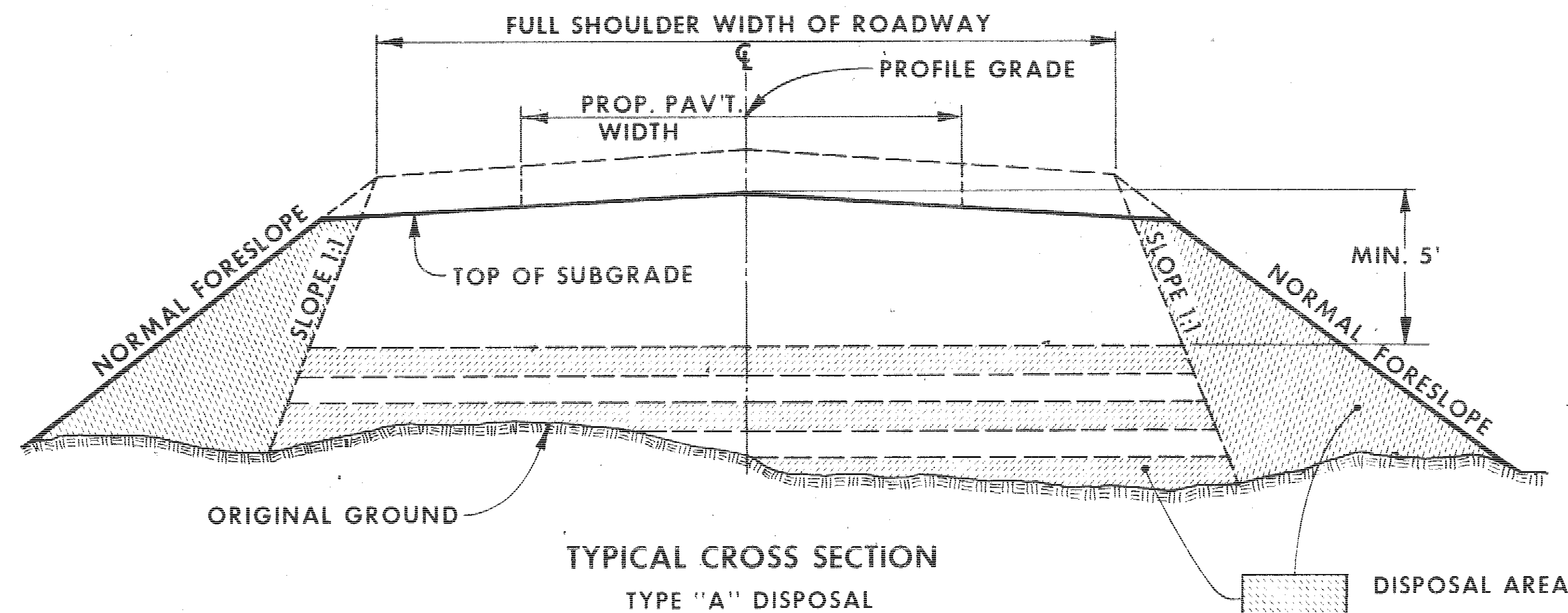
The concrete used for construction of bridge approach section as indicated shall be the same as for remainder of pavement and shall be placed as required for pavement, unless otherwise directed by the Engineer.

For individual locations requiring dimensions other than those indicated, construction procedure shall be similar, with appropriate modifications as directed by the Engineer. Quantities shall be as indicated on plans.

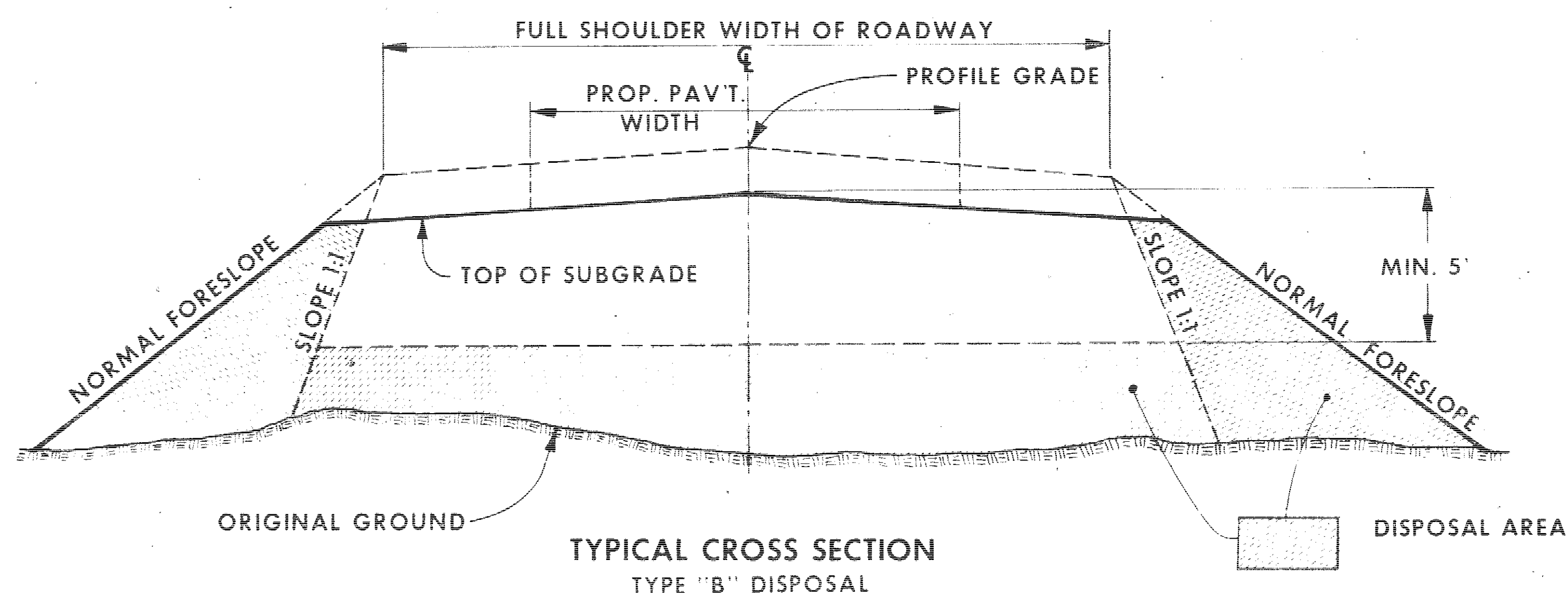
Price bid for "Reinforced Bridge Approach Section" shall be considered full compensation for construction as detailed hereon, and as shown on detail plans.

Quantity for 20' long approach section for 24' pavement is 53.33 sq. yds. of "Reinforced Bridge Approach Section".

Date 10-19-73 No. 7		IOWA HIGHWAY COMMISSION STANDARD ROAD PLAN RK-11	
		Recommended <i>John C. Harker</i> 7-9-71 Ass't. Road Design Engineer Date	
Last Revision Specify "B" Joint	Approved <i>R. A. Owen</i> 8/22/71 Deputy Chief Engineer Date	BRIDGE APPROACH DETAILS TWO-LANE STANDARD CONCRETE PAVEMENT	
	PROJECT NUMBER JACKSON COUNTY FN-62-1(4) --21-49		
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.
IOWA	5		67
TOTAL SHEETS		210	



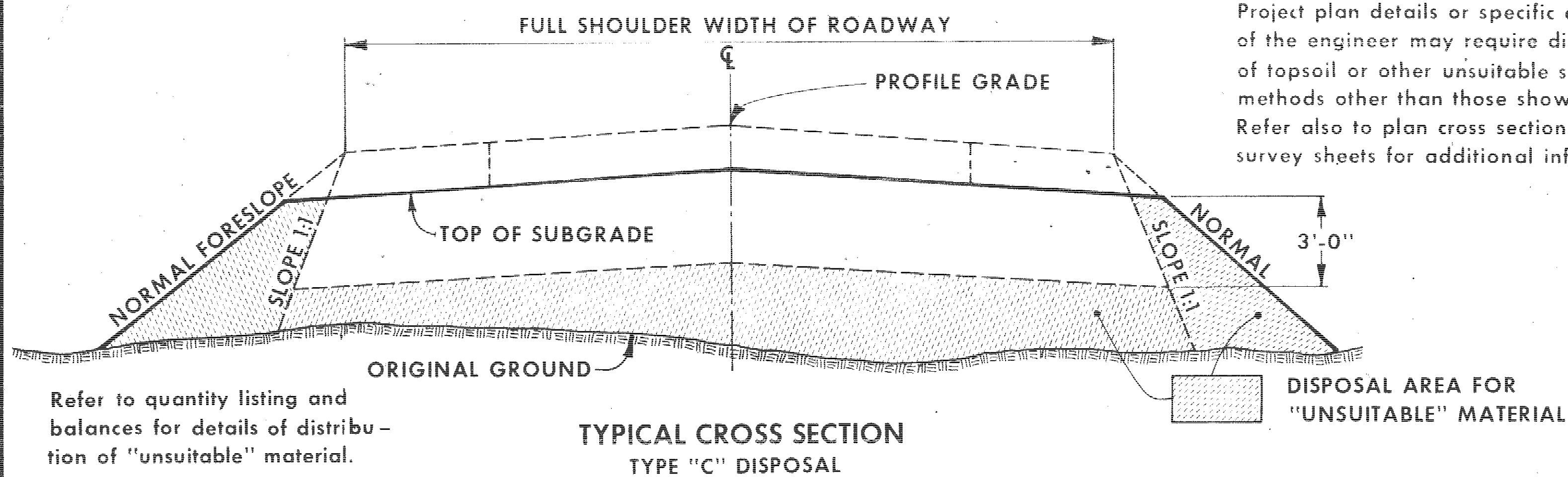
Disposal of shale or material designated A-7-5 or A-5 in the A.A.S.H.O. soils classification.



Disposal of designated material such as clay pan gumbo residual shaley clay or material classified as A7-6 (19-20) in the A.A.S.H.O. soils classification.

Refer to column C-5 on earth work tabulation.

Material listed as "unsuitable" in the project plans shall ordinarily be disposed of as detailed hereon for the particular type of soils described. Project plan details or specific directions of the engineer may require disposition of topsoil or other unsuitable soil by methods other than those shown. Refer also to plan cross sections and soils survey sheets for additional information.

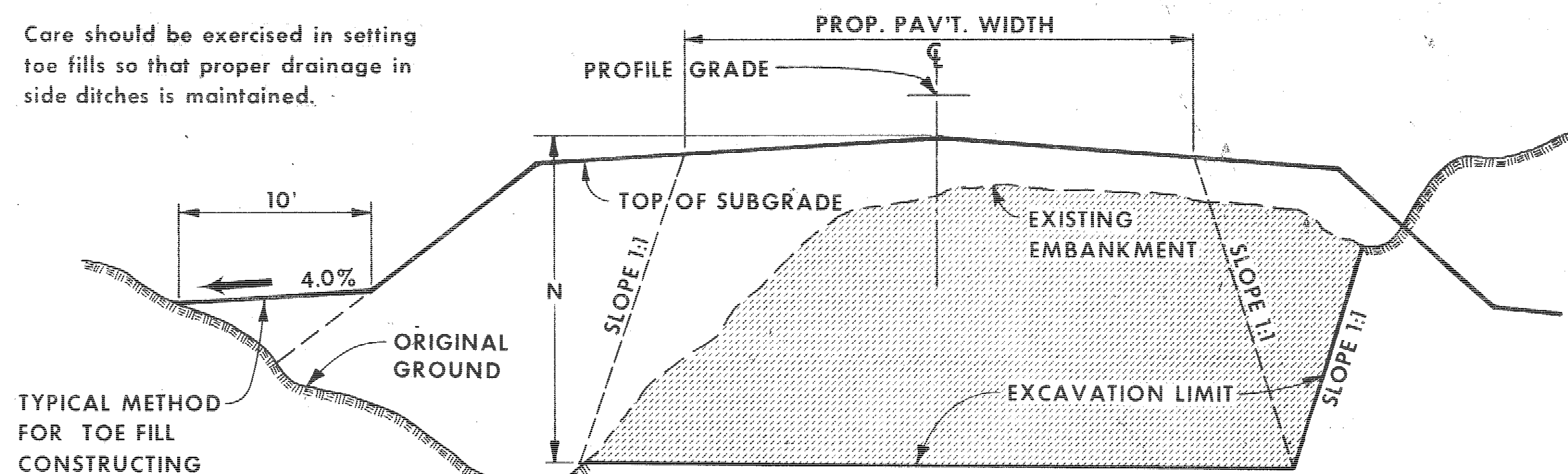


Refer to quantity listing and balances for details of distribution of "unsuitable" material.

Disposal of soils designated as unsuitable topsoil or classified by color as black or brownish black in the A.A.S.H.O. soils classification A-4, A-6 or A7-6 unsuitable for use in construction of the upper 3 feet of any embankment.

Refer to column C-3 on earth work tabulation.

Care should be exercised in setting toe fills so that proper drainage in side ditches is maintained.



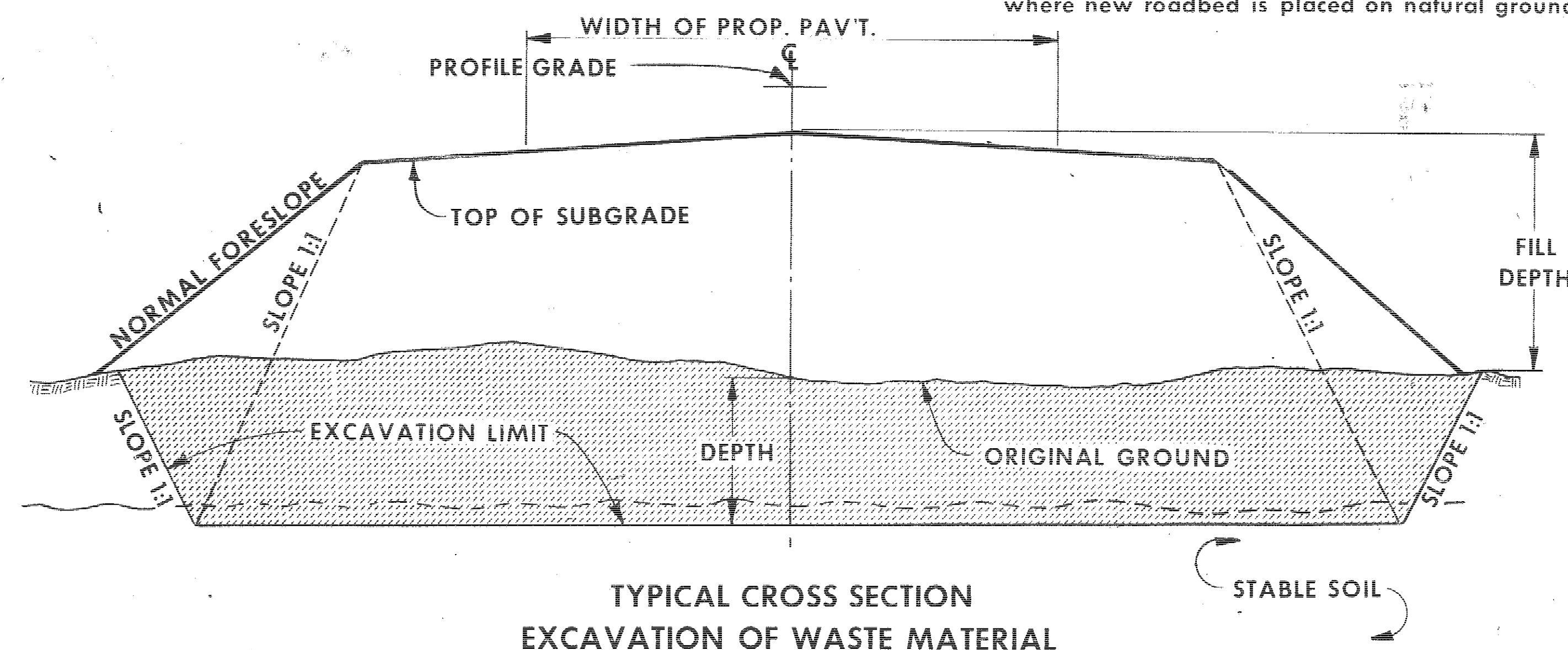
**TYPICAL CROSS SECTION
REBUILDING EMBANKMENTS
(PLOWING & SHAPING)**

NOTE:

Material excavated in rebuilding embankments may be redeposited in the same area or any adjacent embankment approved by the Engineer. No payment for overhaul will be allowed on material excavated in "Rebuilding Embankments".

N MAXIMUM = 5'-0"

Excavate from grade down on 1:1 slope to natural ground or to five feet below grade whichever is less. This will insure that new pavement will rest completely on uniformly stable bearing soil. Rebuild embankments only when new road bed overlaps an existing roadbed. Do not use this type section on relocations or where new roadbed is placed on natural ground.



Peat and muck or other material which must be wasted and in no case used in construction of embankment.

Refer to detail cross sections for depths and limits of excavation and quantity listings and balances for distribution of material.

Material used for replacement shall be placed in conformance with other requirements shown hereon for the type of material to be used.

6-8-73		Date		IOWA HIGHWAY COMMISSION	
2		No.		STANDARD ROAD PLAN RL-1	
Last Revision		Recommended		Ass't. Road Design Engineer Date 11-22-71	
Add Material Note		Approved		Road Design Engineer Date 11-23-71	
				Deputy Chief Engineer Date 11-24-71	
DETAILS OF EMBANKMENTS (DISPOSAL OF UNSUITABLE MATERIAL)					

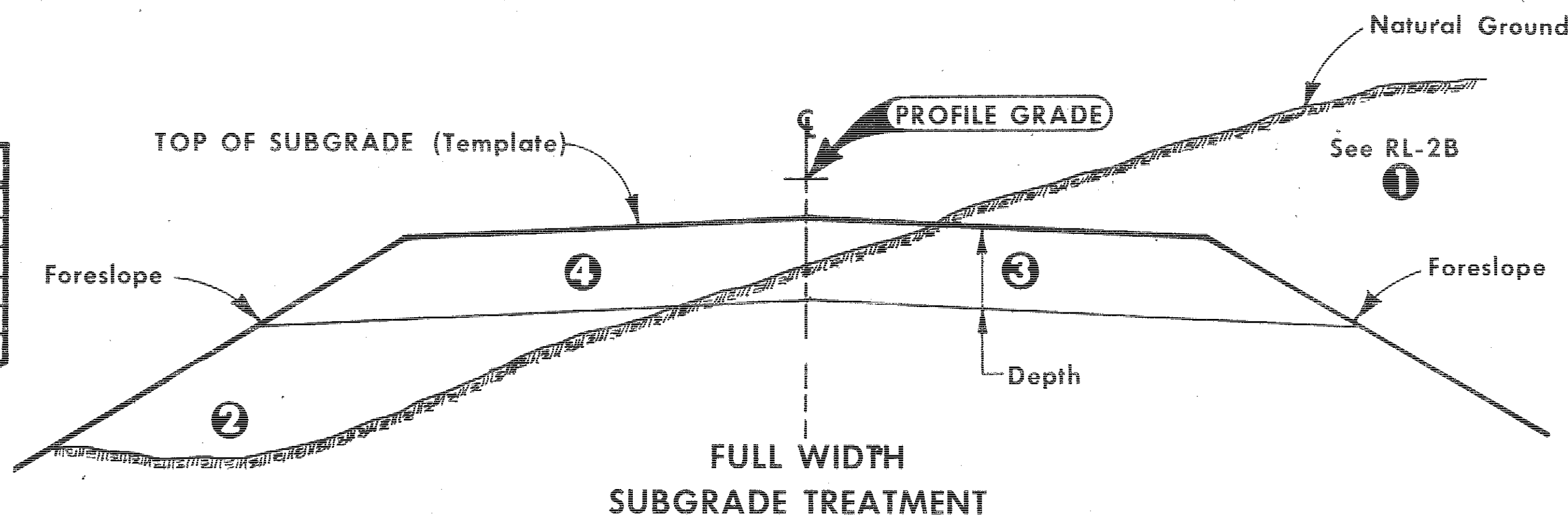
Jackson

COUNTY

PROJECT NUMBER
FU 621(4)-21-47

66 1210

TYPE OF WORK	AREA NO.
Excavation	1
Embankment	2
Subgrade Treatment	3,4



AREA NO.	TYPE OF ADJUSTMENTS TO TEMPLATE QUANTITY
1	NONE
2	NONE
3	+ CUT
4	- FILL

GENERAL NOTES:

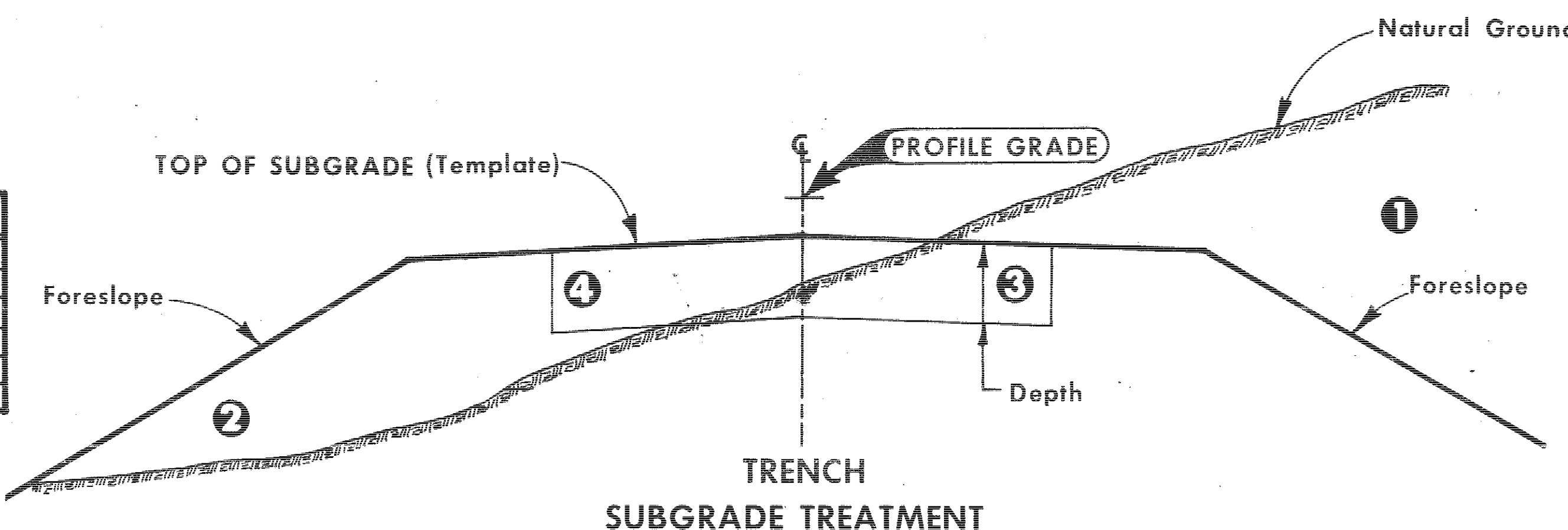
This plan illustrates the normal construction procedure for Construction of Embankment with Moisture and Density Control, for Subgrade Treatment and for Special Compaction of Subgrade and Compacting Trench Bottom. All work described hereon shall be done in conformance with current ISHC Standard Specifications.

The pay quantity for Subgrade Treatment shall be in either tons or cubic yards of specified material as necessary. The volume shall be based on specified depth, the treatment type as indicated, and shall include the quantity allowed for shrinkage.

The pay quantity for Special Compaction of Subgrade and Compacting Trench Bottom shall be in stations of centerline length for the work as detailed hereon.

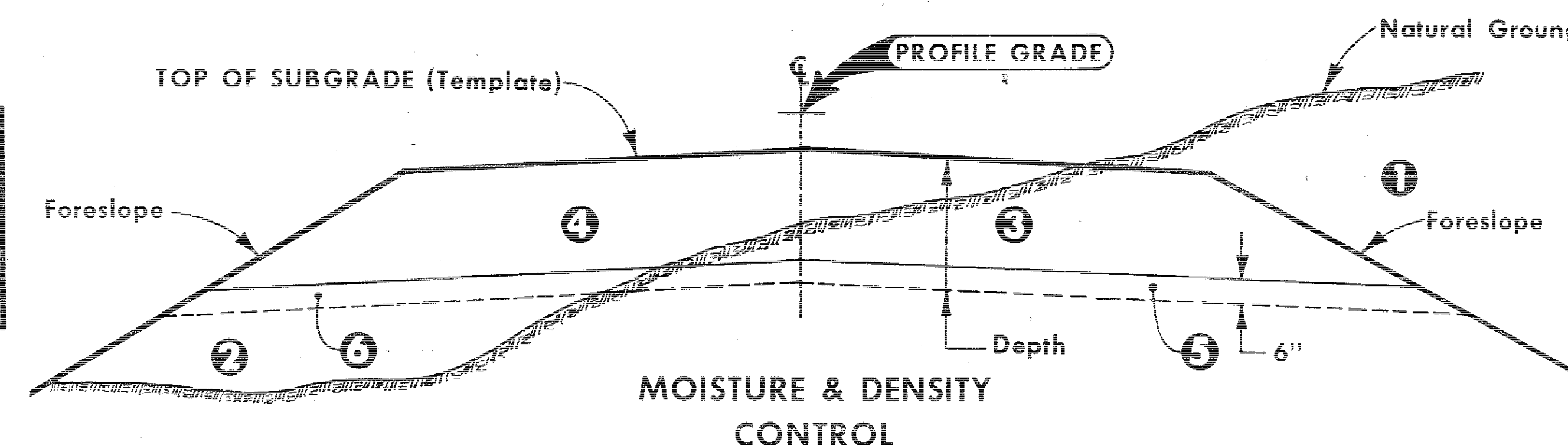
The pay quantity for "Construction of Embankment with Moisture and Density Control" shall be the absolute volume for the specified depth and subgrade width as indicated.

TYPE OF WORK	AREA NO.
Excavation	1
Embankment	2
Subgrade Treatment	3,4



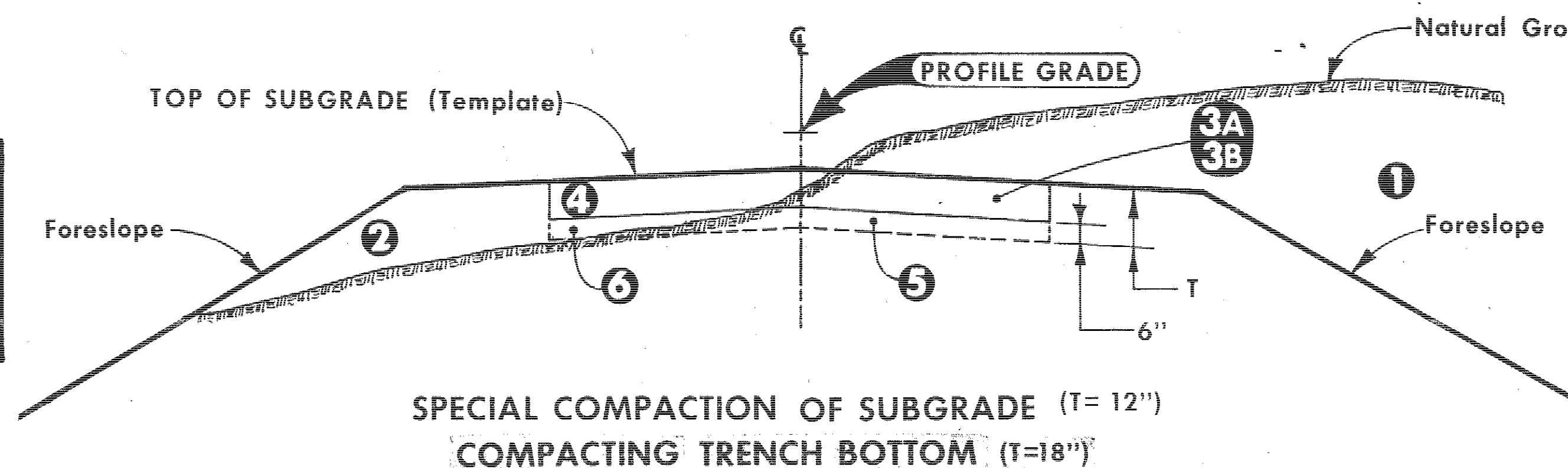
AREA NO.	TYPE OF ADJUSTMENT TO TEMPLATE QUANTITY
1	NONE
2	NONE
3	+ CUT
4	- FILL

TYPE OF WORK	AREA NO.
Excavation	1,3
Embankment	2,4,6
M & D Embankment (95%)	3,4
M & D Embankment (90%)	6
Scarify with M & D Embank.	5



AREA NO.	TYPE OF ADJUSTMENTS TO TEMPLATE QUANTITY
1	NONE
2	NONE
3	+ CUT + FILL
4	NONE
5	+ FILL (Shrinkage only)
6	NONE

TYPE OF WORK	AREA NO.
Excavation	1,3
Embankment	2,3,4,6
Scarify	5



AREA NO.	TYPE OF ADJUSTMENTS TO TEMPLATE QUANTITY
1	NONE
2	NONE
3A	+ FILL (Shrinkage only)
3B	+CUT + FILL
4	NONE
5	+ FILL (Shrinkage only)
6	NONE

3A Special Compaction of subgrade
3B Compacting Trench Bottom

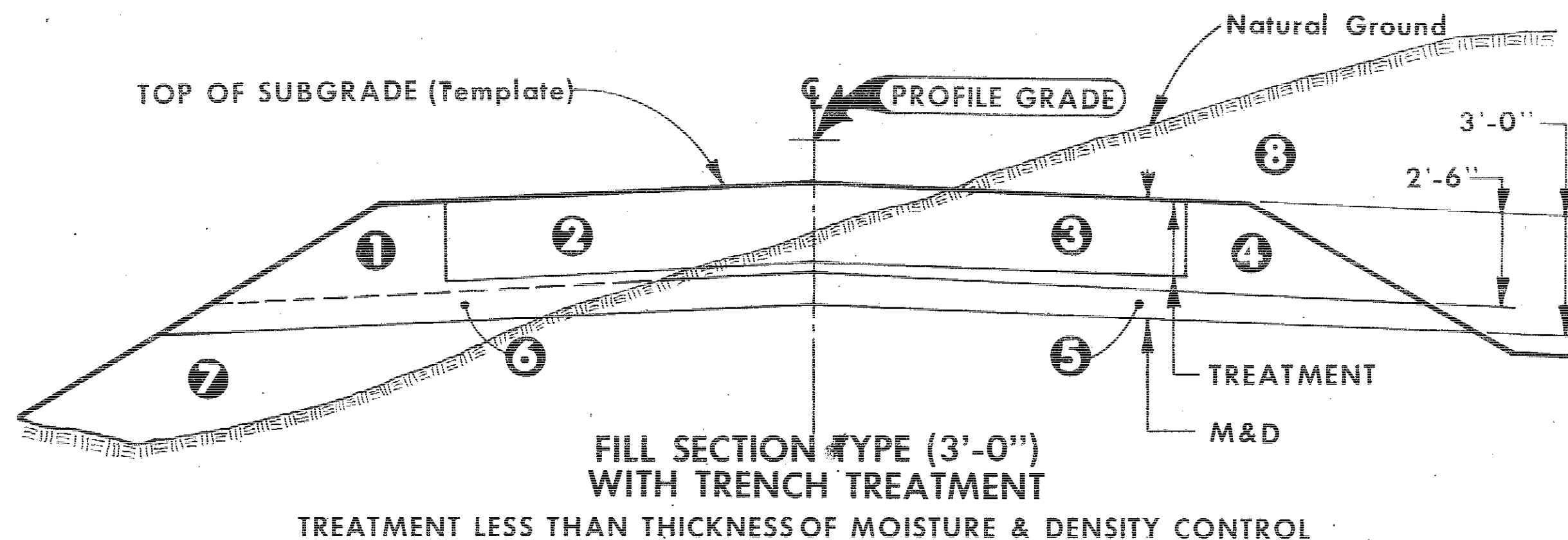
CORRECT ERROR		Last Revision	4-6-73		Date		IOWA HIGHWAY COMMISSION	
			1	No.	STANDARD ROAD PLAN RL-2A			
		Recommended	John C. Hecker		2-5-73		Ass't. Road Design Engineer Date	
		Approved	R.P. McQuinn		2-5-73		Road Design Engineer Date	
			R.H. Cavin		2/5/73		Deputy Chief Engineer Date	
DETAILS OF EMBANKMENT (SUBGRADE TREATMENT, MOISTURE DENSITY CONTROL & SPECIAL COMPACTION)								

Jackson COUNTY

PROJECT NUMBER
FAI-62-1(4) -- 21-49

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		69	210

TYPE OF WORK	AREA NO.
Excavation	3,4,8
Embankment	7
M & D Embankment (90%)	6
Scarify with M & D Emb.(90%)	5
M & D Embankment (95%)	1,2,3,4
Subgrade Treatment	2,3
Pay Area M & D Embankment	1, 2, 3, 4, 5, 6,



AREA NO.	TYPE OF ADJUSTMENT TO TEMPLATE QUANTITY
1	NONE
2	-FILL
3	+CUT
4	+CUT, +FILL
5	+F (Shrinkage only)
6	NONE
7	NONE
8	NONE

GENERAL NOTES:

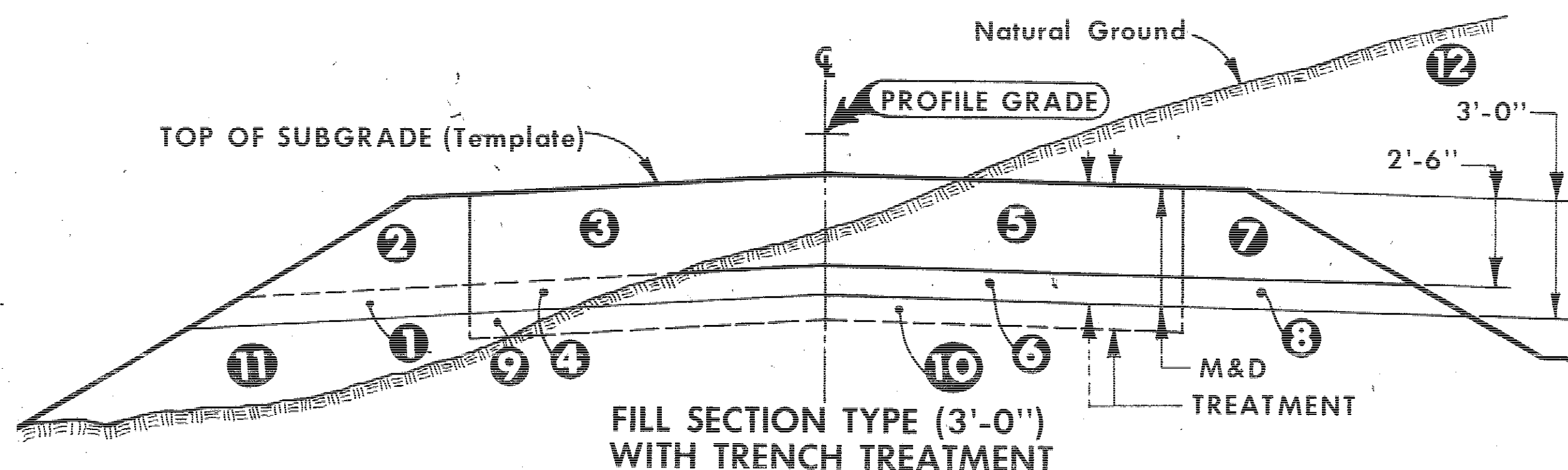
This plan illustrates the necessary procedure where Construction of Embankment with Moisture and Density Control is specified in the same area where Subgrade Treatment is required.

All work described hereon shall be done in conformance with current ISHC Standard Specifications.

The amount and kind of work to be done and the necessary adjustments to subgrade template quantities shall be done in conformance with details indicated hereon. The pay quantity for Subgrade Treatment shall be in either tons or cubic yards of specified material as necessary. The volume shall be based on specified depth, the treatment type as indicated, and shall include the quantity allowed for shrinkage.

The pay quantity for "Construction of Embankment with Moisture and Density Control" shall be the absolute volume for the specified depth and subgrade width as indicated.

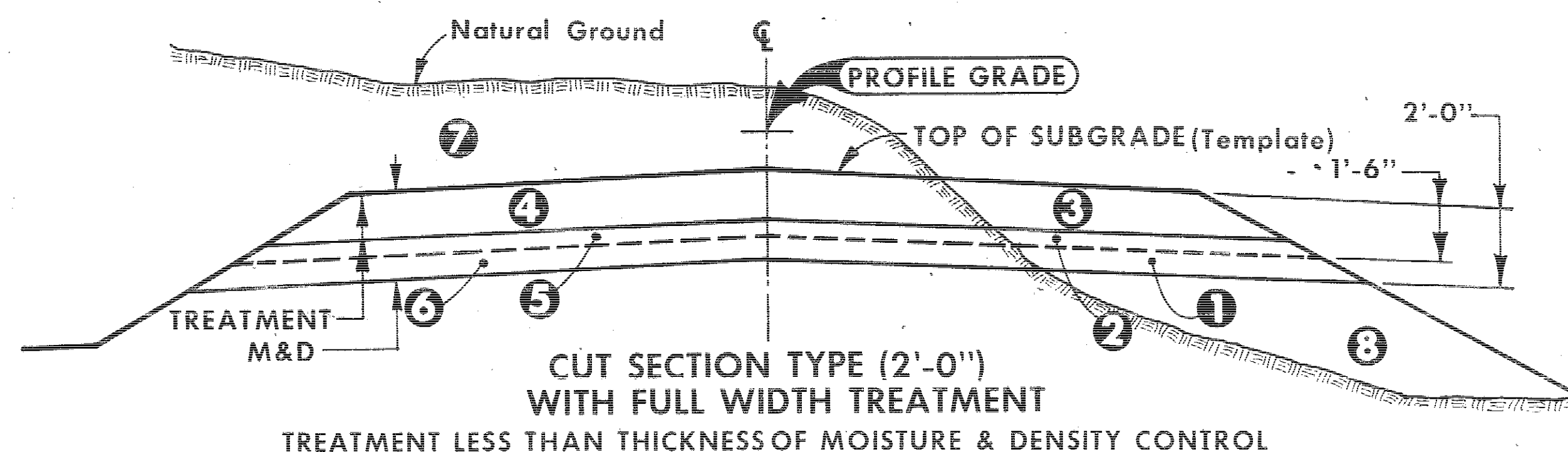
TYPE OF WORK	AREA NO.
Excavation	5,6,7,10,12
Embankment	11
M & D Embankment (90%)	1,4,6
Scarify with M & D Emb.(90%)	8
M & D Embankment (95%)	2,3,5,7
Subgrade Treatment	3,4,5,6
Pay Area M & D Embankment	1,2,3,4,5,6,7,8



AREA NO.	TYPE OF ADJUSTMENT TO TEMPLATE QUANTITY
1	NONE
2	NONE
3	-FILL
4	-FILL
5	+CUT
6	+CUT
7	+CUT, +FILL
8	+F (Shrinkage only)
9	NONE OR -F
10	NONE OR +C
11	NONE
12	NONE

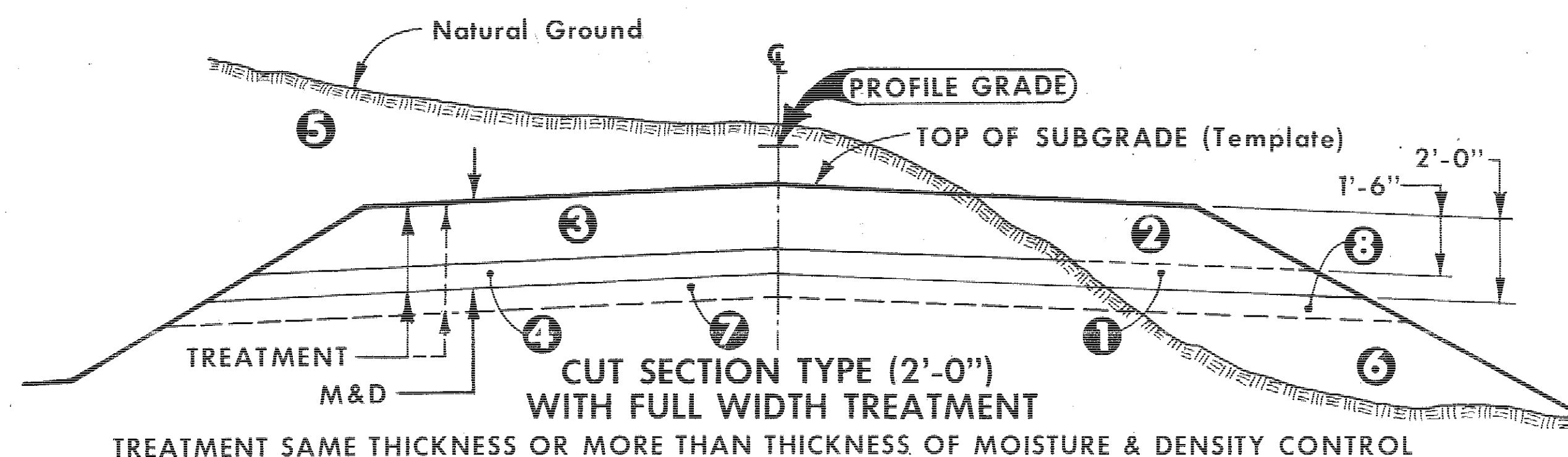
NOTE: When subgrade treatment (9 & 10) does extend below limits of moisture & density control, 9 is -FILL & 10 is +CUT to template quantity and are not included in moisture & density.

TYPE OF WORK	AREA NO.
Excavation	4,5,7
Embankment	8
M & D Embankment (90%)	1
Scarify with M & D Emb.(90%)	6
M & D Embankment (95%)	2,3,4,5
Subgrade Treatment	3,4
Pay Area M & D Embankment	1,2,3,4,5,6



AREA NO.	TYPE OF ADJUSTMENT TO TEMPLATE QUANTITY
1	NONE
2	NONE
3	-FILL
4	+CUT
5	+CUT, +FILL & SHRINK
6	+F (Shrinkage only)
7	NONE
8	NONE

TYPE OF WORK	AREA NO.
Excavation	3,4,5
Embankment	6
M & D Embankment (90%)	1,4
M & D Embankment (95%)	2,3
Subgrade Treatment	1,2,3,4
Pay Area M & D Embankment	1,2,3,4



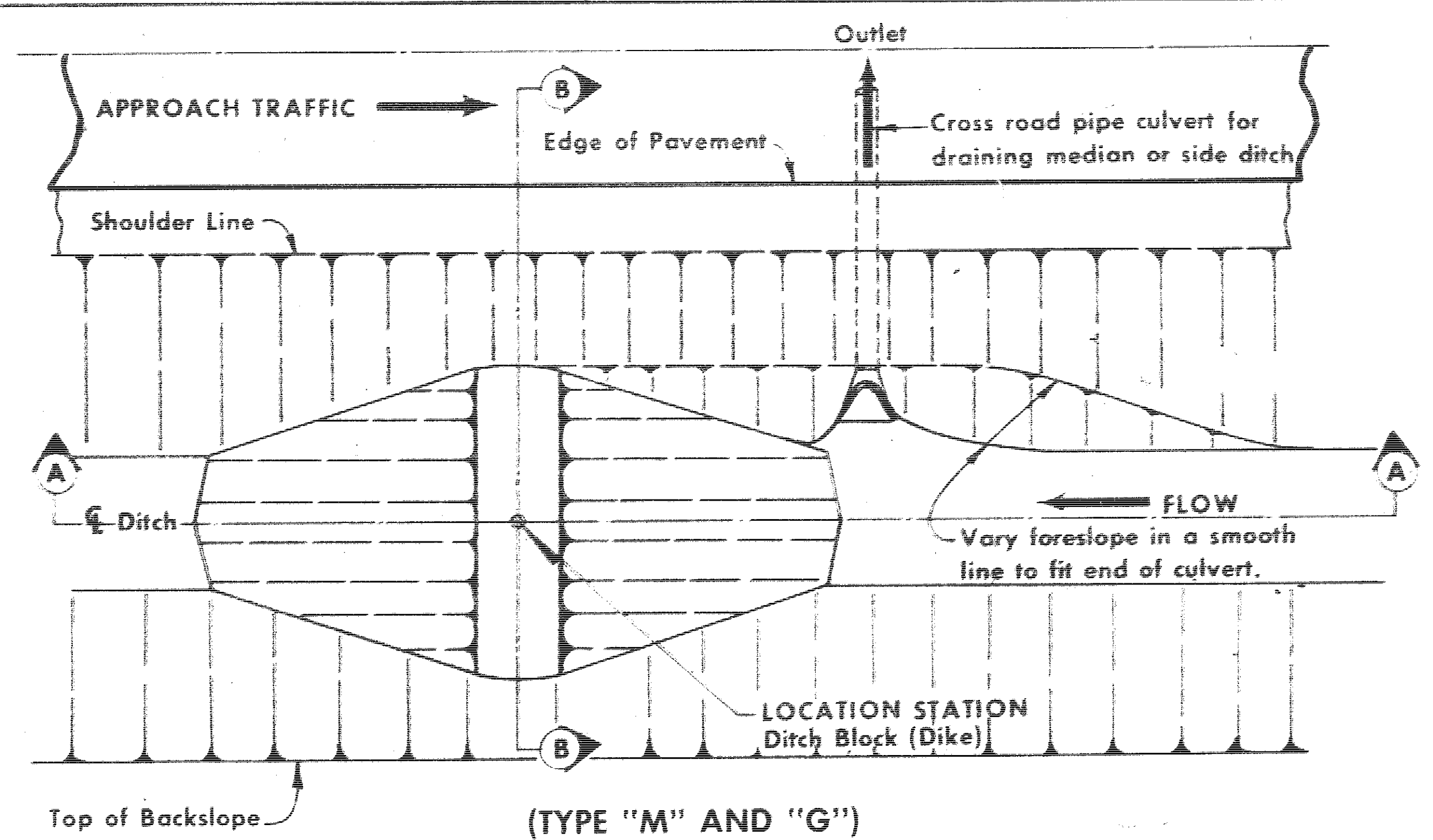
AREA NO.	TYPE OF ADJUSTMENT TO TEMPLATE QUANTITY
1	-FILL
2	-FILL
3	+CUT
4	+CUT
5	NONE
6	NONE
7	NONE OR +C
8	NONE OR -F

NOTE: When subgrade treatment (7 & 8) does extend below limits of moisture & density control, 7 is +CUT & 8 is -FILL to template quantity and are not included in moisture & density.

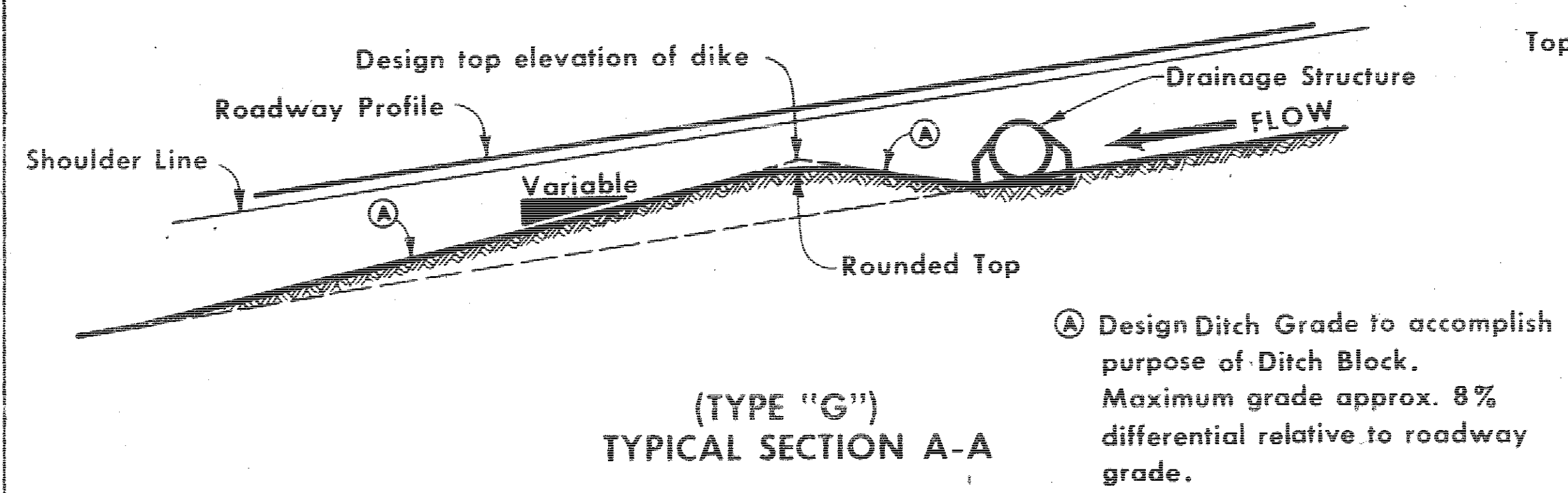
CORRECT ERROR	3-23-73	Date	IOWA HIGHWAY COMMISSION	
	1	No.	STANDARD ROAD PLAN RL-2B	
	Last Revision	Recommended	John C. Hocker 2-5-73 Ass't. Road Design Engineer Date	
		Approved	R. P. McHugh 2-5-73 Road Design Engineer Date	
			2-5-73 Deputy Chief Engineer Date	
DETAILS OF EMBANKMENT (WITH MOISTURE & DENSITY CONTROL IN SUBGRADE TREATMENTS)				

Jackson County, Iowa
FA-62-1(4)--21-49

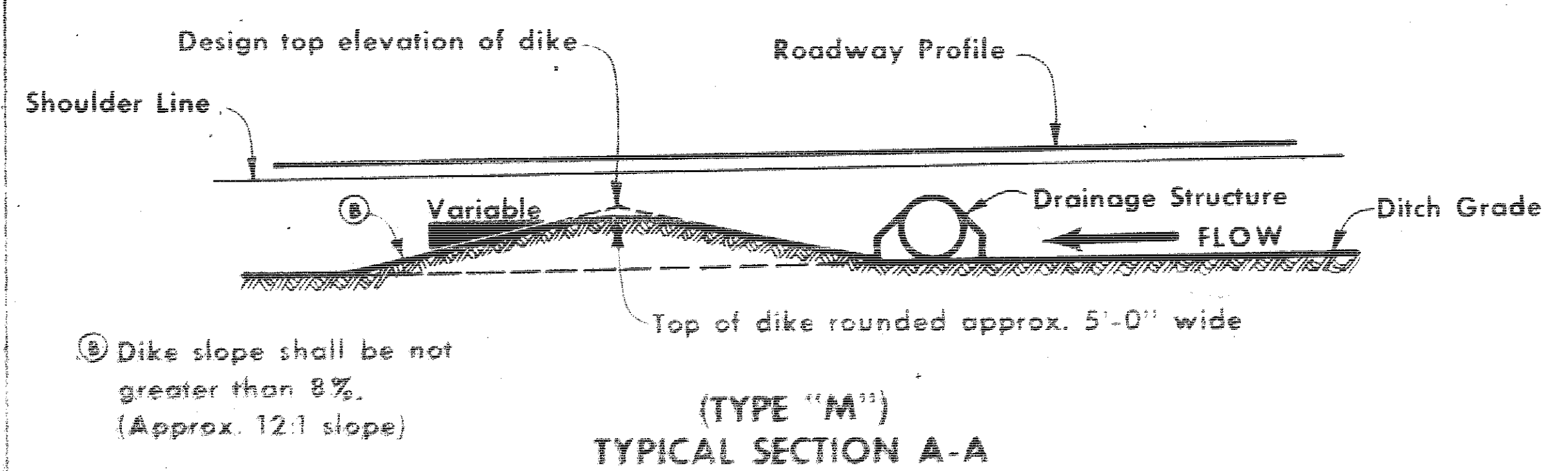
DATE	SHEET NO.	TOTAL SHEETS
2-5-73	70	210



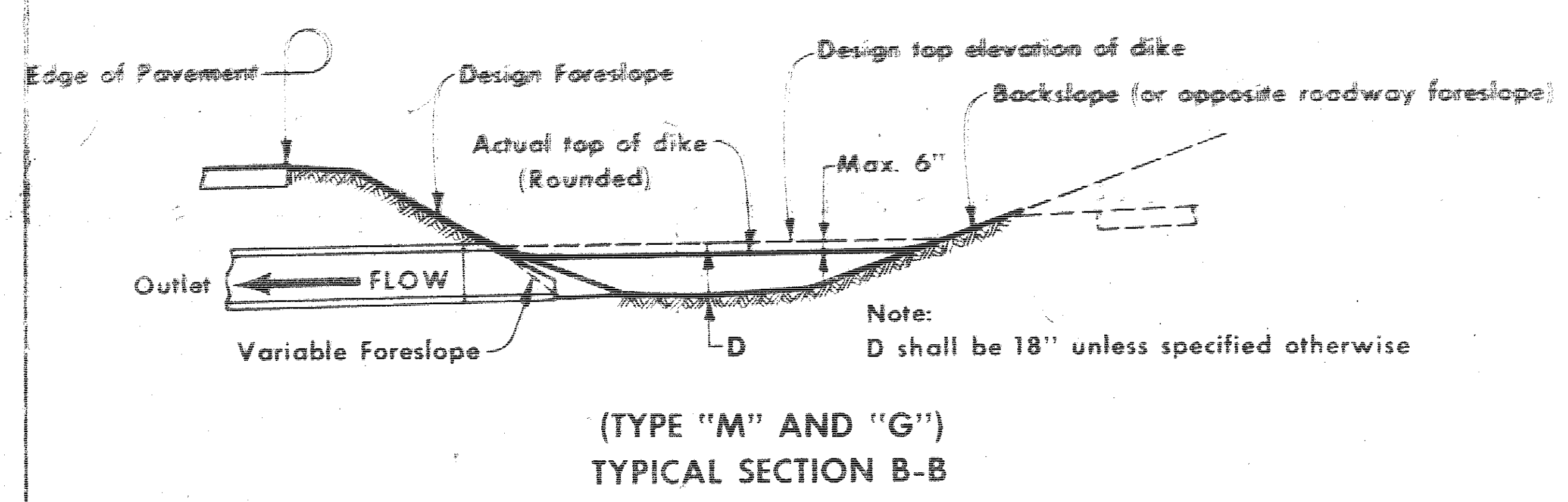
(TYPE "M" AND "G")
TYPICAL PLAN FOR DITCH BLOCK (DIKE)



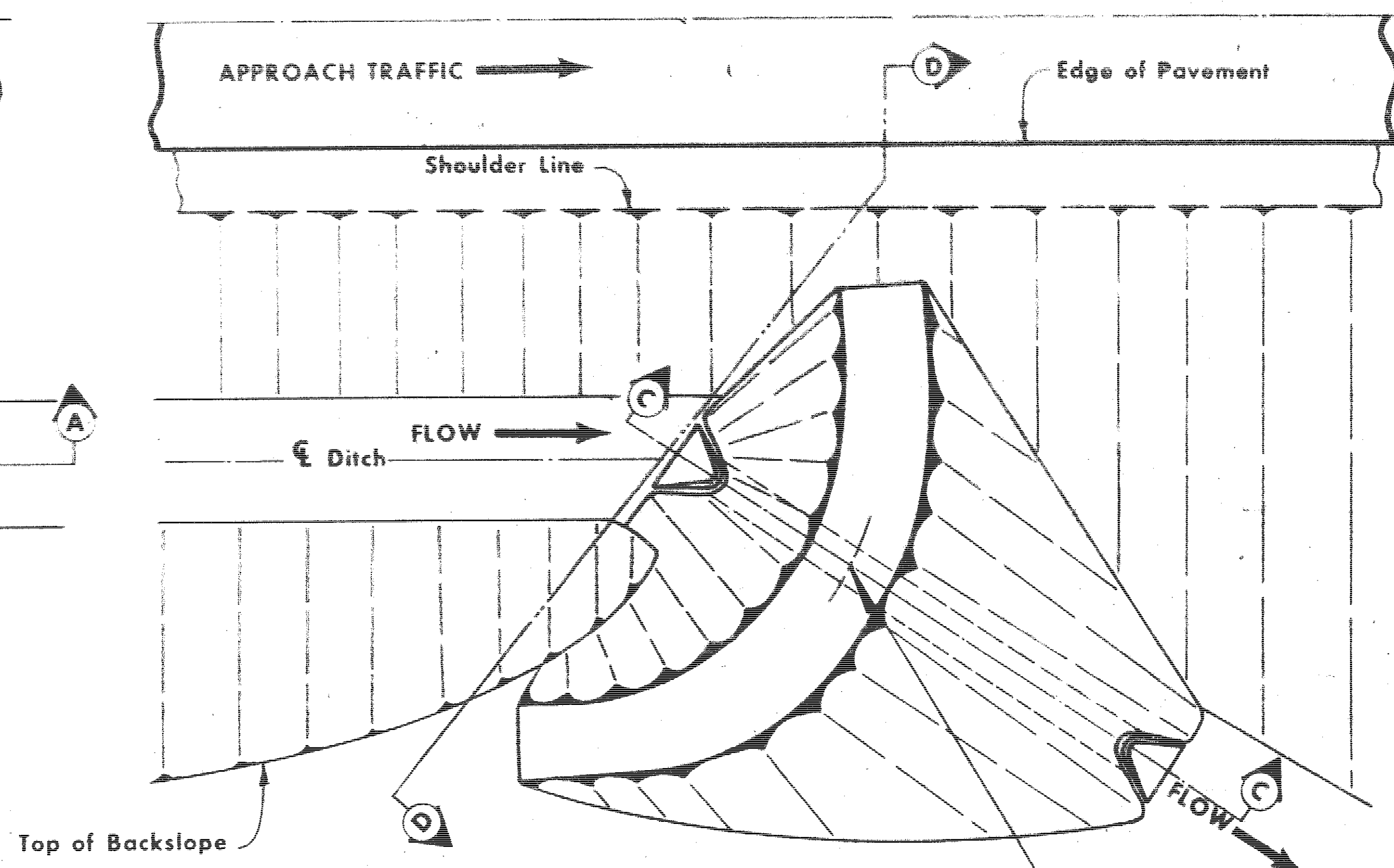
(TYPE "G")
TYPICAL SECTION A-A



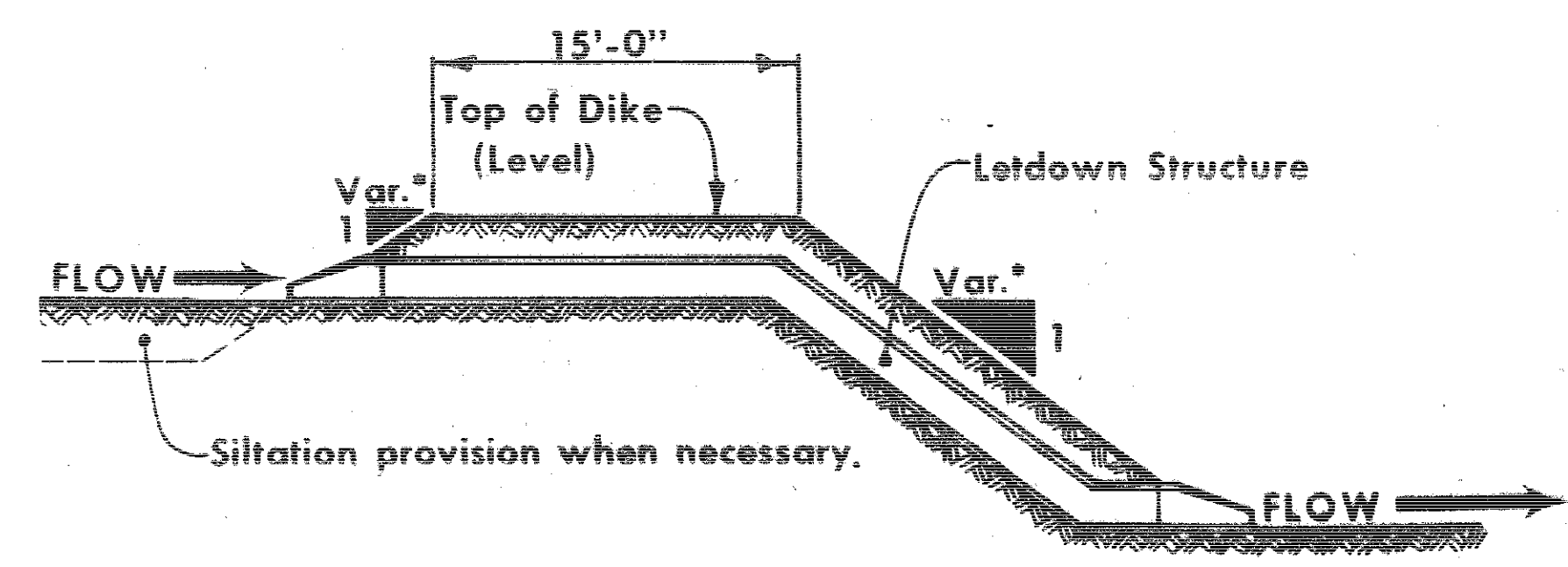
(TYPE "M")
TYPICAL SECTION A-A



(TYPE "M" AND "G")
TYPICAL SECTION B-B

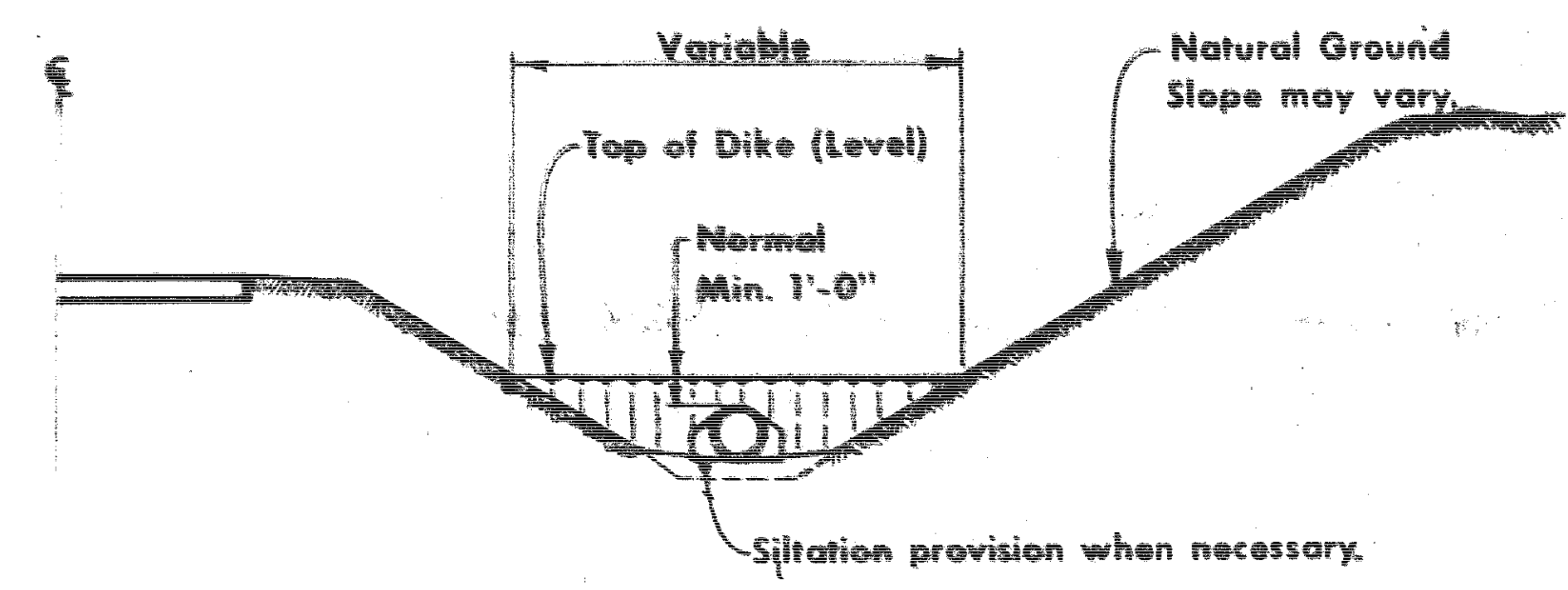


(TYPE "F")
TYPICAL PLAN FOR DIKE AT LETDOWN STRUCTURES



* Any portion of dike constructed within 50' of edge of roadway with approach traffic shall be 8:1 slope relative to approach roadway. Any portion of dike beyond 50' from edge of roadway may vary from 8:1 to a max. of 2 1/2:1 at 100' from roadway.

(TYPE "F")
TYPICAL SECTION C-C



(TYPE "F")
TYPICAL SECTION D-D

GENERAL NOTES:
Dikes of the types indicated hereon shall be constructed essentially as shown. Some variation will be allowed to adapt to local conditions when necessary.

Type "F" dike for letdown structures may vary in length and plan in different locations. Ends of dikes shall ordinarily tie into natural ground at the elevation of top of dike.

Refer to detail road plans and tabulation of drainage structures for exact information on location, top elevation, shape, or any variation from this plan for dikes.

Construction of dikes shall be coordinated with project provisions for erosion control as directed by the engineer.

Necessary material for construction of dikes is included in "Estimate of Quantities" for excavation.

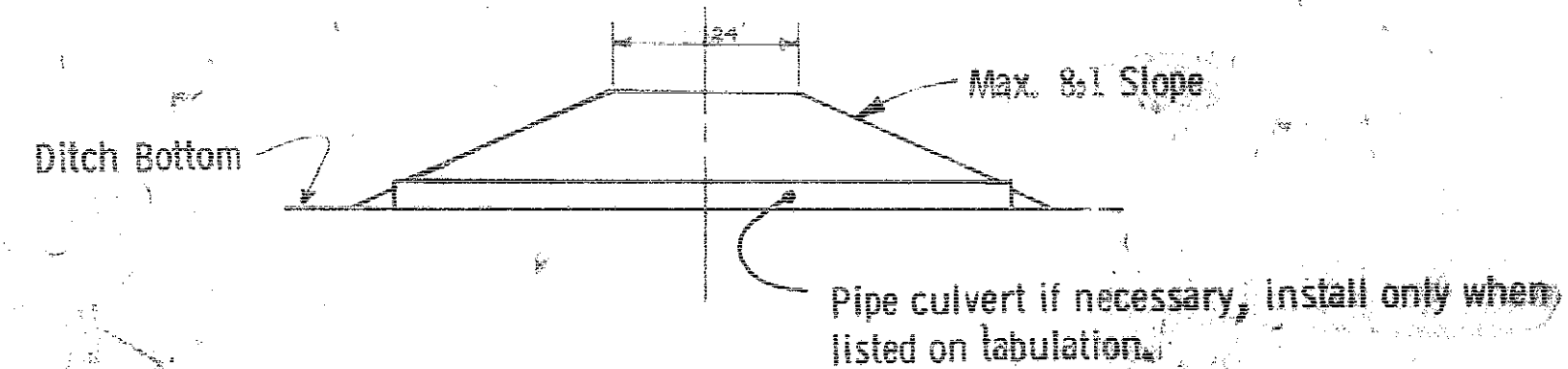
Price bid for excavation shall be full compensation for construction of dikes as indicated hereon and in accordance with current Standard Specifications for roadway embankment.

DESCRIPTION OF DIKES

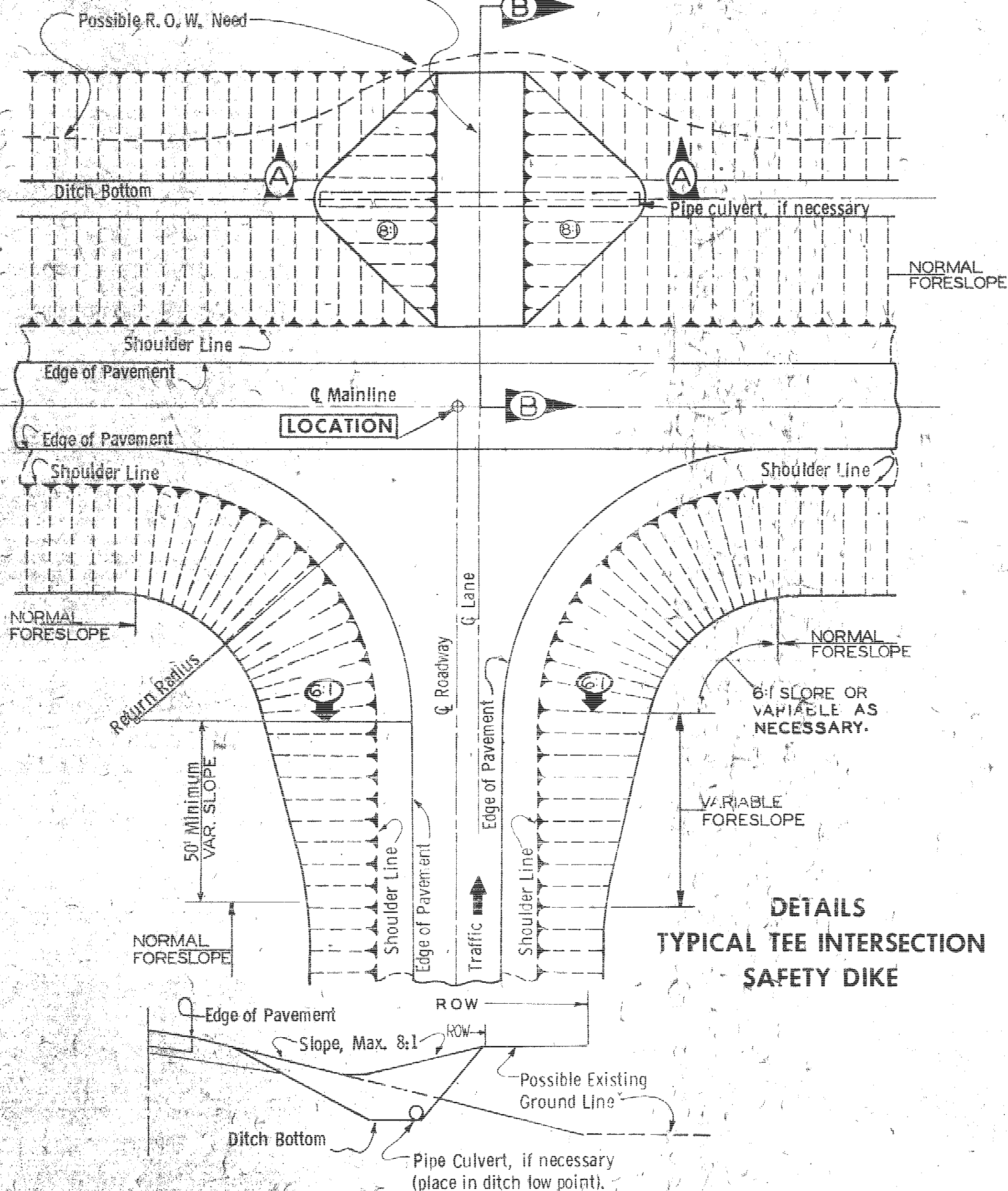
- TYPE "M"** Normal ditch block for medians or roadway side ditches.
- TYPE "G"** Ditch block using established ditch grades. For median or side ditches.
- TYPE "F"** Dike for letdowns or other structures away from roadway area. Refer to project plans for details.

Redrawn Sheet Last Revision 3 8-3-73		IOWA HIGHWAY COMMISSION STANDARD ROAD PLAN		RL-4
		Date 7-31-73 Ass't. Road Design Engineer		Date 7-31-73
Recommended Date 8/1/73		Road Design Engineer Date 8/1/73		Approved Deputy Chief Engineer Date 8/1/73
DITCH BLOCKS AND DIKES				

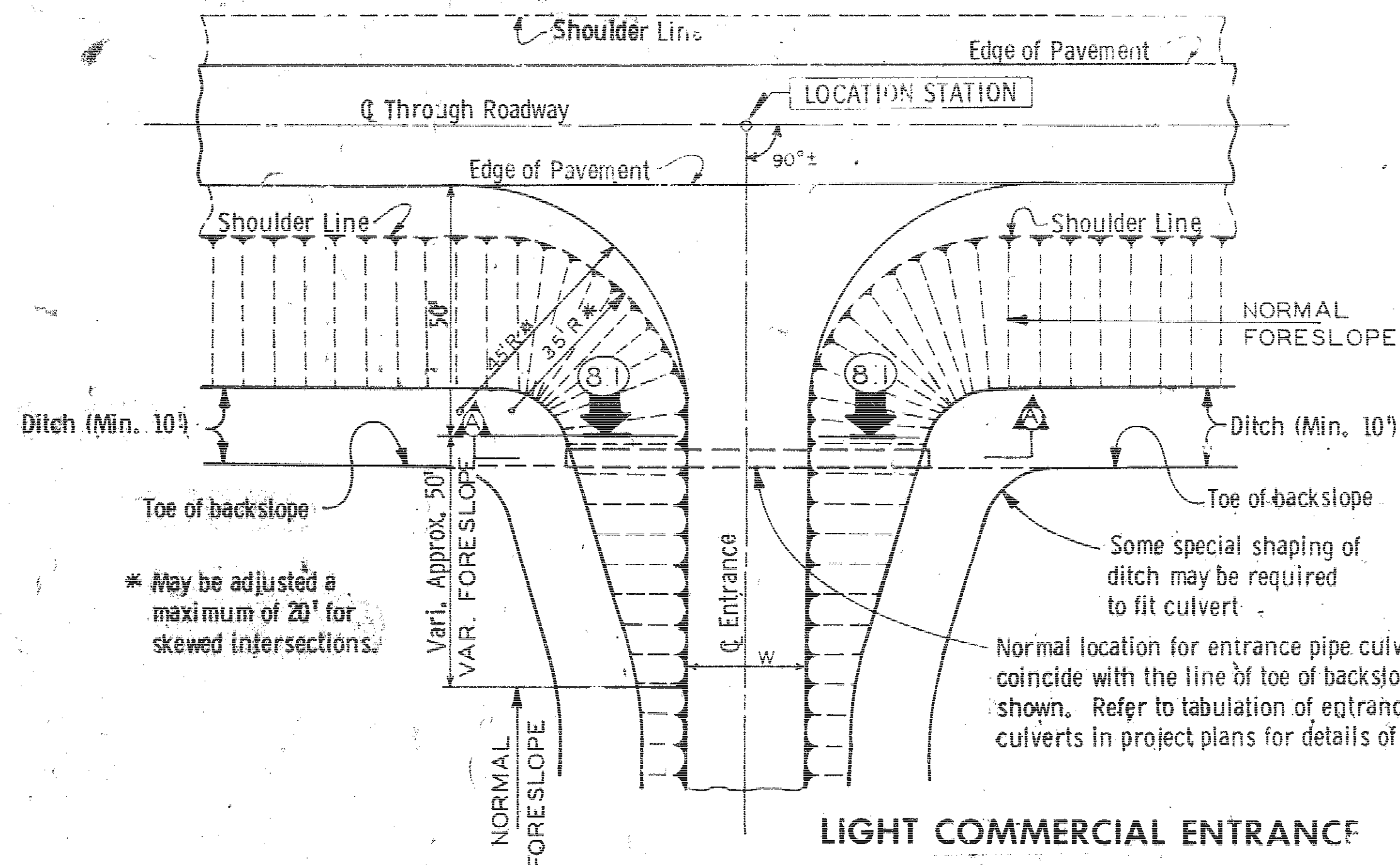
SAFETY DIKE SECTION A-A



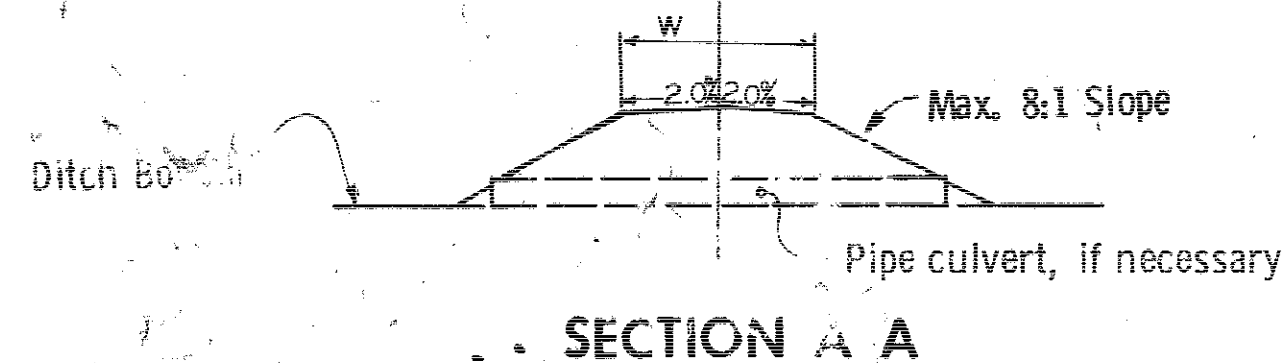
SAFETY DIKE



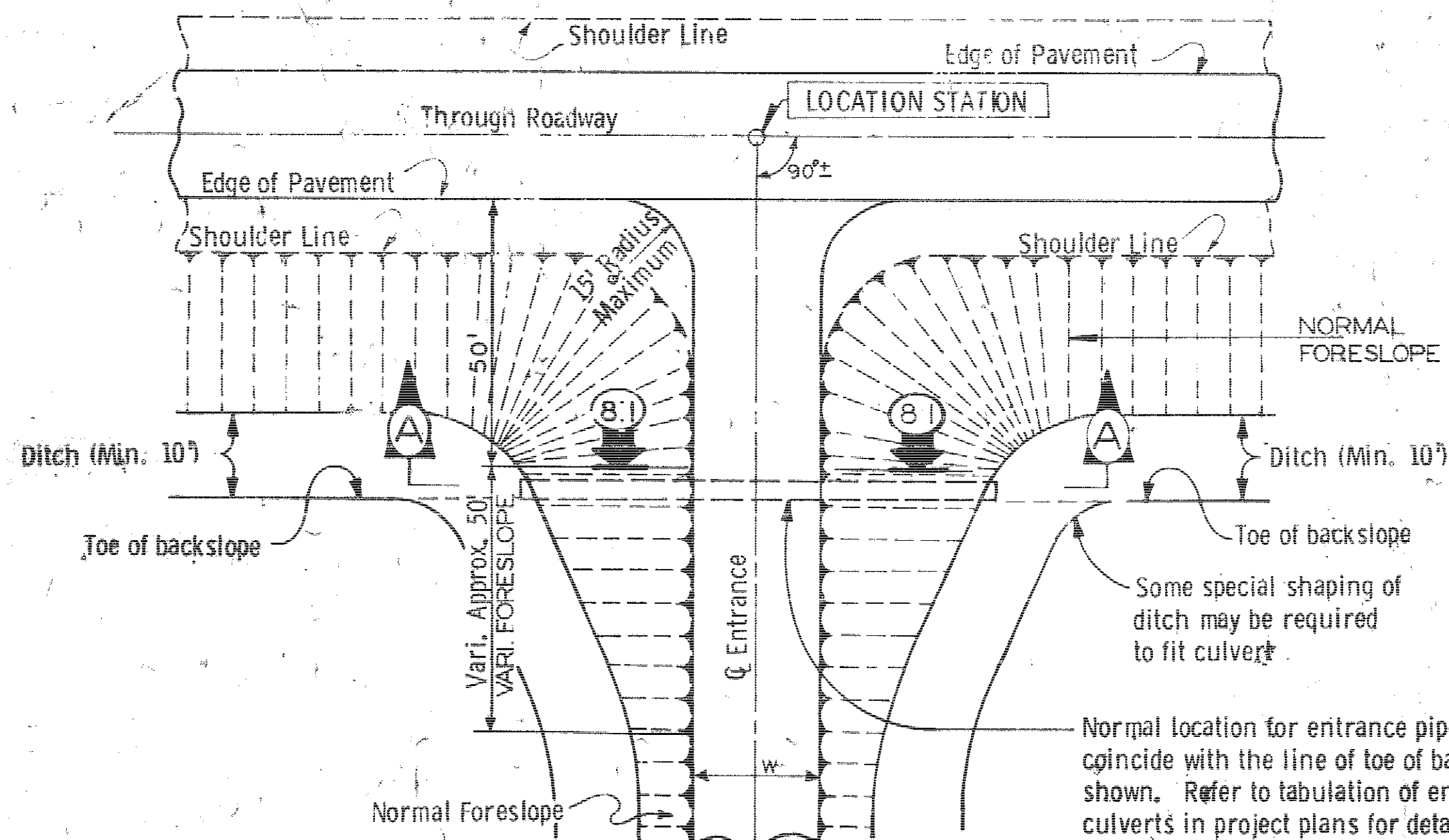
SECTION B-B



LIGHT COMMERCIAL ENTRANCE TYPE B



SECTION A A



FIELD, FARM, OR RESIDENTIAL ENTRANCE TYPE C

SPECIAL NOTE:
Details are shown hereon for entrances on Primary roads.
At locations where entrance construction is required on Secondary roads, the details will be similar except that in lieu of the 8:1 entrance foreslopes shown, the entrance foreslopes shall be the same as used on the remainder of the secondary road. Pipe culvert placement for such entrance shall be as shown on project plans or as otherwise directed by the engineer.

GENERAL NOTES:
Construction of entrance facilities and safety dikes as indicated in project plans and as detailed hereon shall be considered incidental to construction of roadway and the cost shall be included with the price bid for appropriate earthwork for the project.

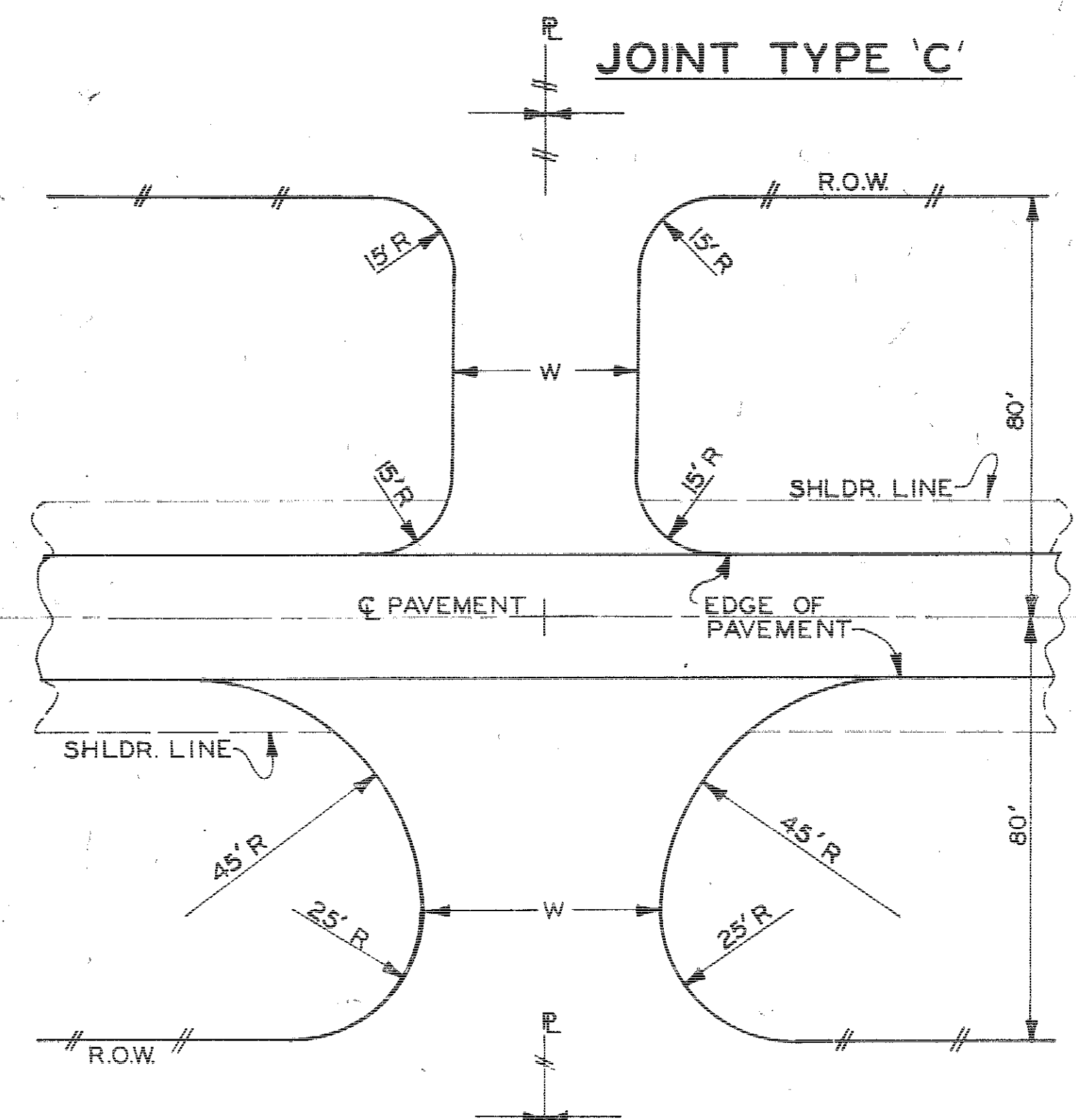
Safety Dike: The intent of the safety dike shall be to provide an area where an out-of-control vehicle passing through the "tee" intersection could be directed to normal terrain without undue damage to the vehicle. Surface and side slopes shall be smoothly shaped to contours which would facilitate the intent of the dikes.

Entrances: Side slopes of entrances shall be constructed with slopes of 8:1 as well as variable slopes for distances from the through roadway as indicated. Surface and slopes of entrances shall be smoothly shaped and rounded where practical to provide minimal hazard to an out-of-control vehicle from the through roadway.

Refer to tabular listings and detail project plans for exact locations, dimensions, and other data for individual entrances and safety dikes.

Details shown hereon are typical and shall be modified appropriately at the direction of the Engineer to fit site conditions of skewed angle intersections and other variations.

JOINT TYPE 'C'



TYPICAL COMBINATION ENTRANCE JOINT TYPE 'B'

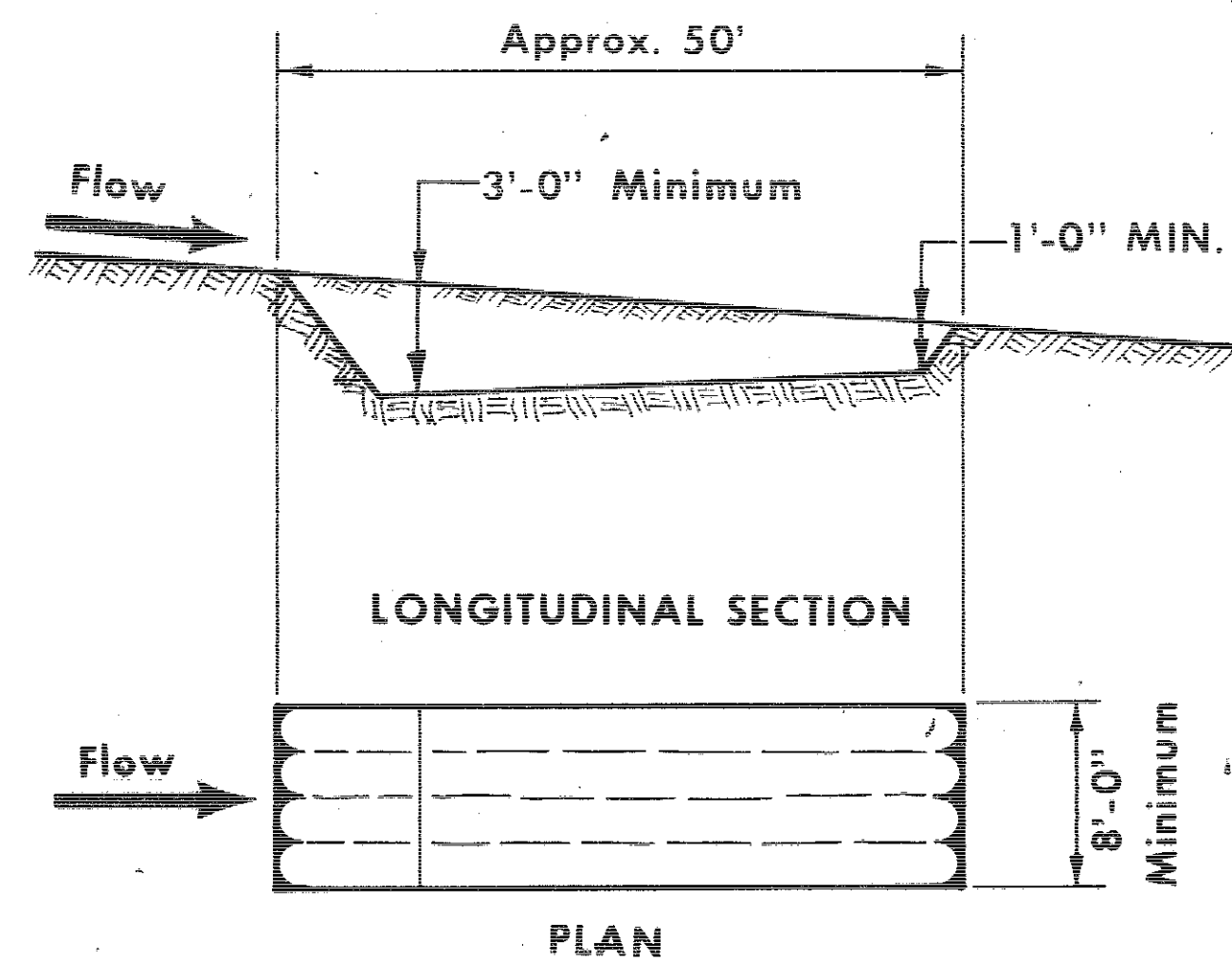
IOWA HIGHWAY COMMISSION	
STANDARD ROAD PLAN	
RL-7	
RECOMMENDED	JACKSON COUNTY 6-6-68
DESIGN ENGINEER	DATE
APPROVED	6-6-68
DEPUTY CHIEF ENGINEER	DATE

DETAILS OF TYPICAL ENTRANCES AND SAFETY DIKE

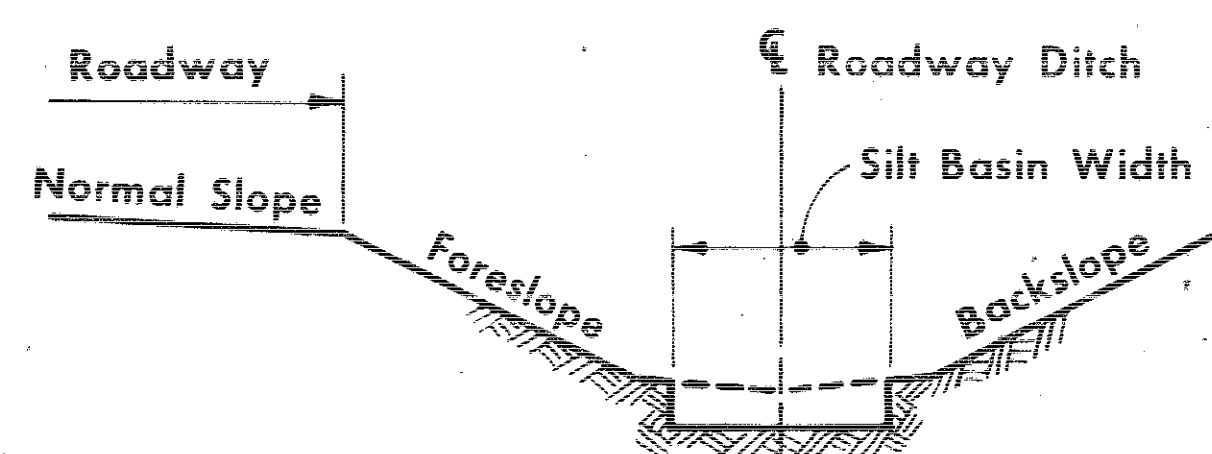
JACKSON COUNTY

PROJECT NO. 62-1 (4) - 21-49

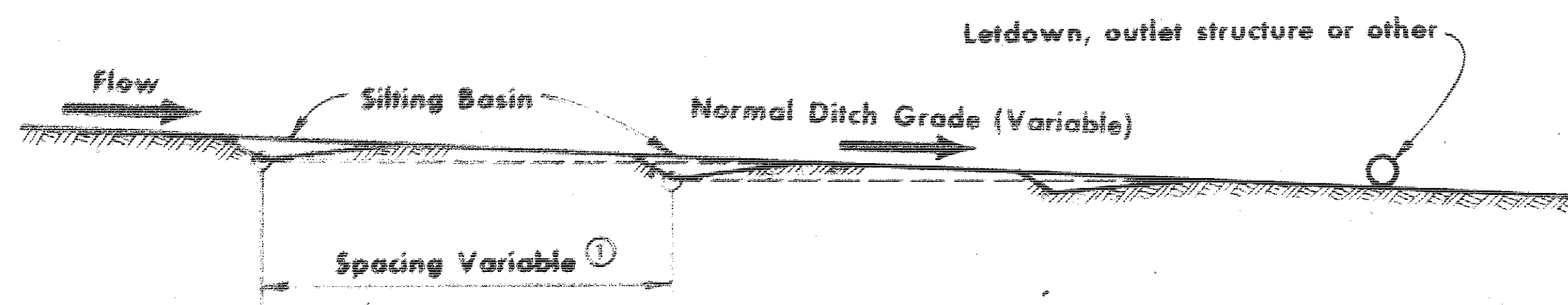
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		72	210



TYPICAL DETAIL
DITCH SILTING BASIN

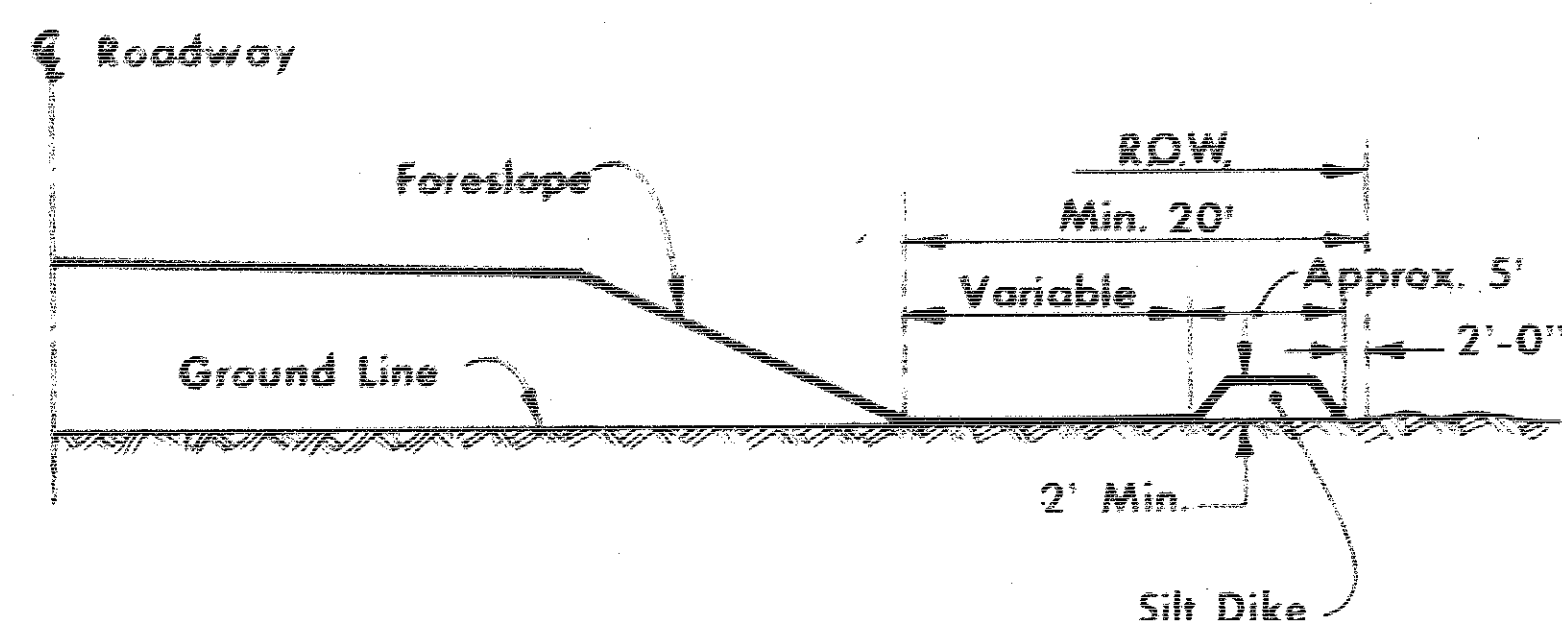


TYPICAL CROSS SECTION
SILTING BASIN

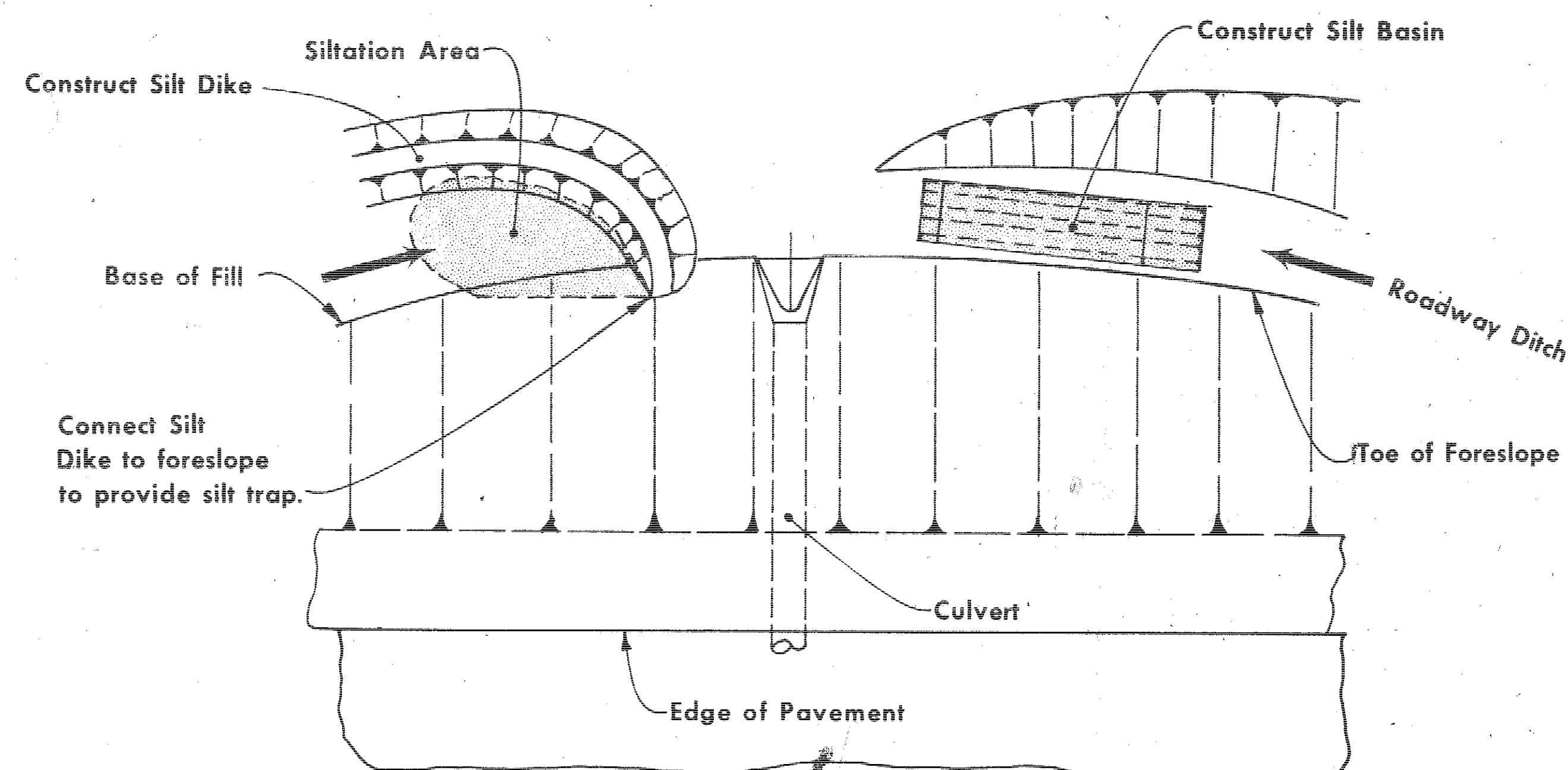


TYPICAL LONGITUDINAL SECTION OF DITCH

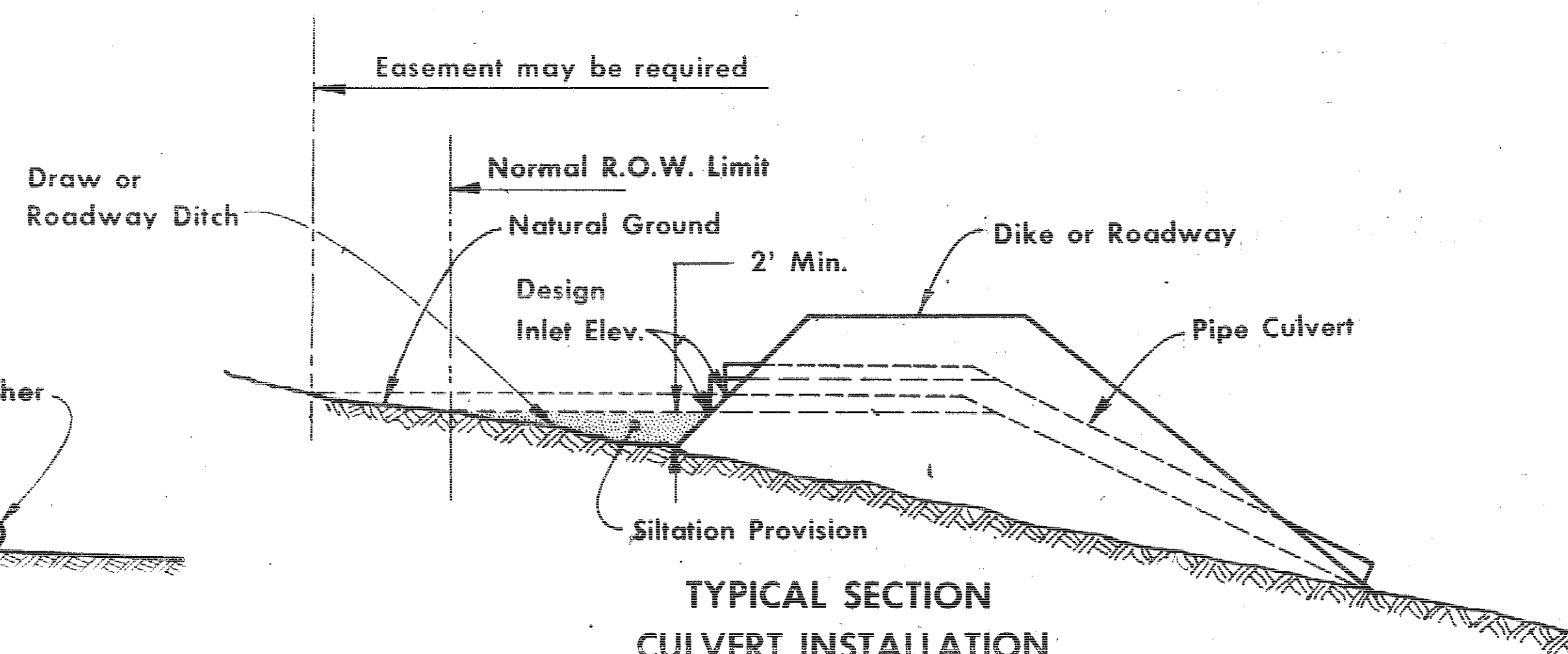
① Locations to be approved by the engineer.



TYPICAL SECTION
SILT DIKE

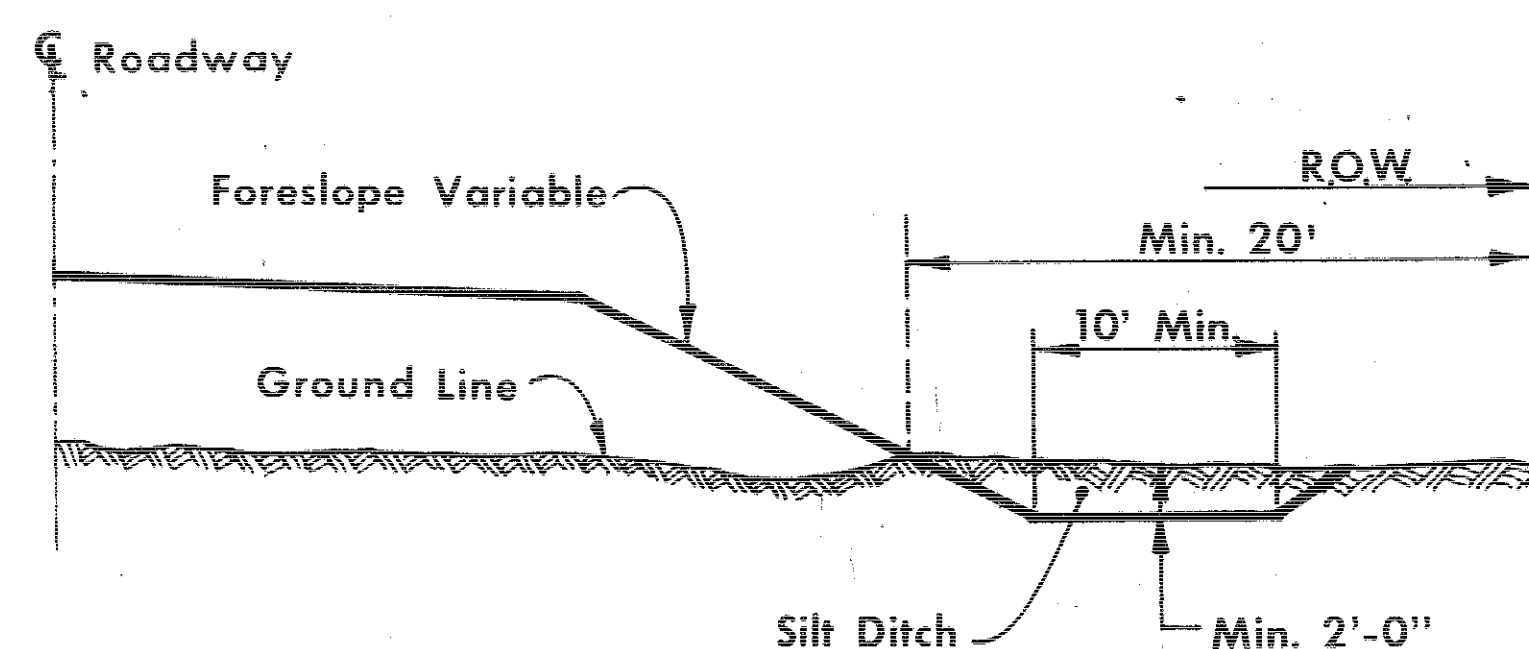


TYPICAL PLAN CULVERT INSTALLATION
(Showing siltation provision at ends of culvert.)



TYPICAL SECTION
CULVERT INSTALLATION

For letdown structures or where draws are filled, a minimum 2' of provision for siltation should be provided.



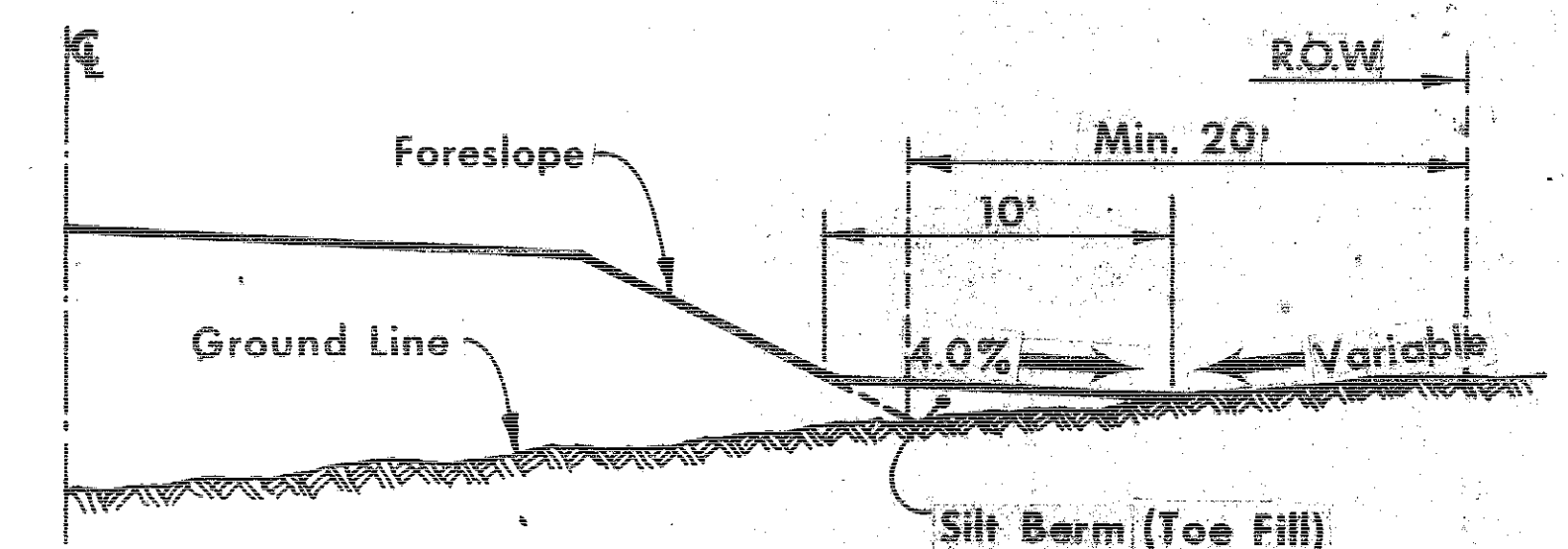
TYPICAL SECTION
SILT DITCH

GENERAL NOTES:
The contractor shall be responsible for accomplishing the required construction work on this project in such a manner as to effectively minimize and control the water pollution which might be caused by soil erosion from the project. The work described hereon shall be done in conformance with current Iowa State Highway Commission Standard Specifications for "Temporary Water Pollution Control (Soil Erosion)".

The details shown hereon describe various methods of construction which may be used for the control of siltation on the project. It is intended that these features be maintained in appropriate functional condition from initial construction to final completion of project.

Actual field conditions may require adjustment in size, number or location of these features. Silt Basins shall be constructed by removing earth from locations so that a basin similar to that described hereon will result. Silt Ditches shall be constructed by making uniform excavation in natural terrain. Silt Dikes shall be constructed by depositing and compacting earth to a uniform shape.

In addition to the details shown, other provisions for controlling erosion may be incorporated into the project work.



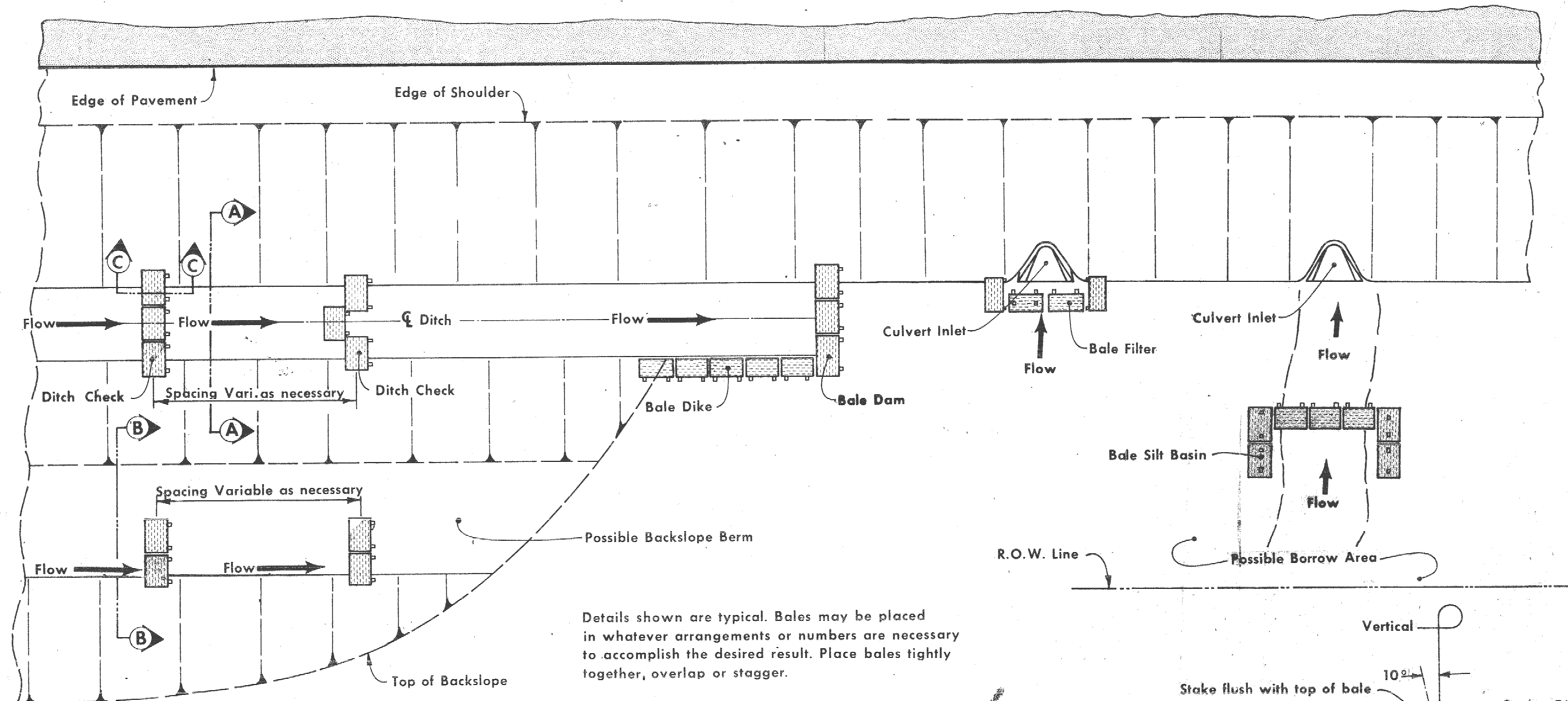
TYPICAL SECTION
TOE FILLET

SPECIAL NOTE:
For areas where either regular roadway ditch, silt ditch, or silt dikes are not provided, the contractor will be required to construct an earth fillet at the toe of the roadway foreslope.

Modify General Notes	IOWA HIGHWAY COMMISSION			
	STANDARD ROAD PLAN			
	RL-9			
	No.	Date		
	1	John C. Hooker 6-6-73 Asst. Road Design Engineer Date		
Last Revision	Recommended	J.P. McLaughlin 6-6-73 Road Design Engineer Date		
	Approved	R.H. Owen 6/6/73 Deputy Chief Engineer Date		
	TEMPORARY EROSION CONTROL MEASURES			

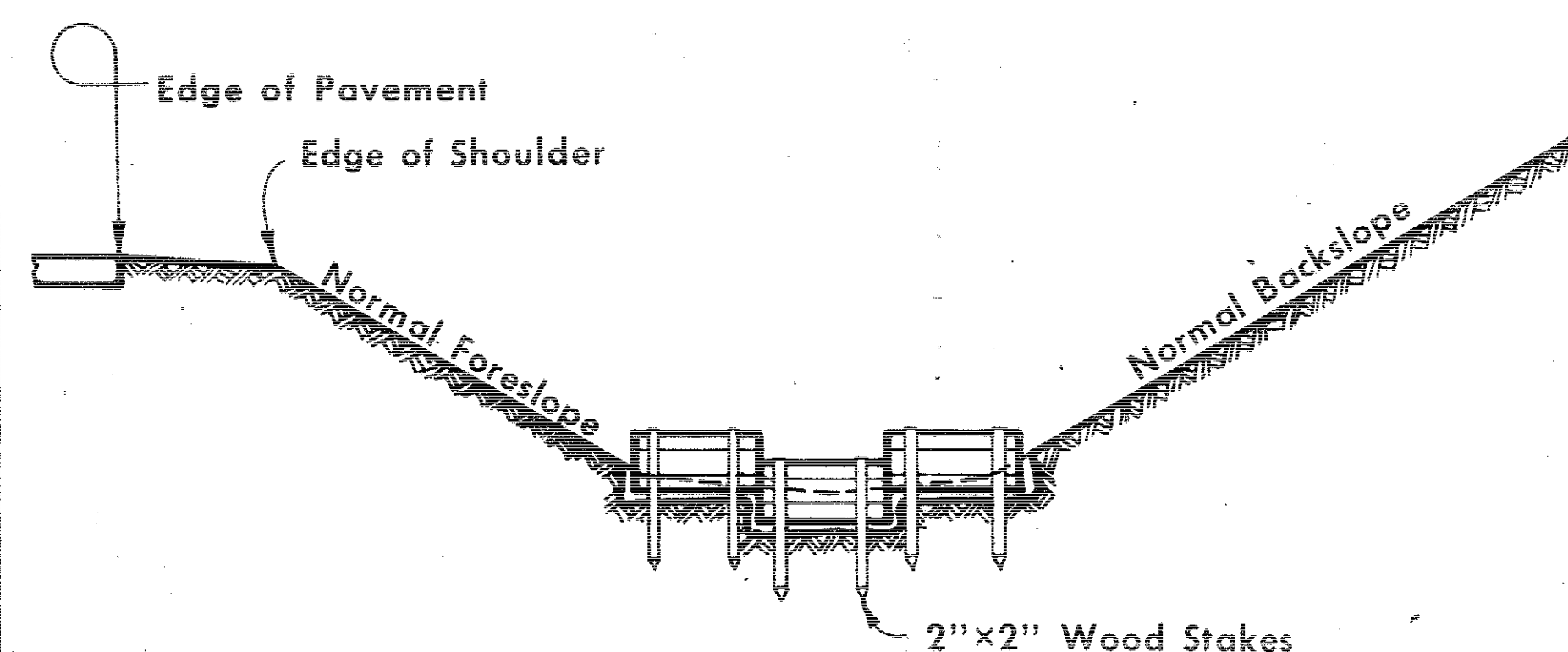
Jackson COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FA-62-1(4)-21-49	IOWA	5	73	210	

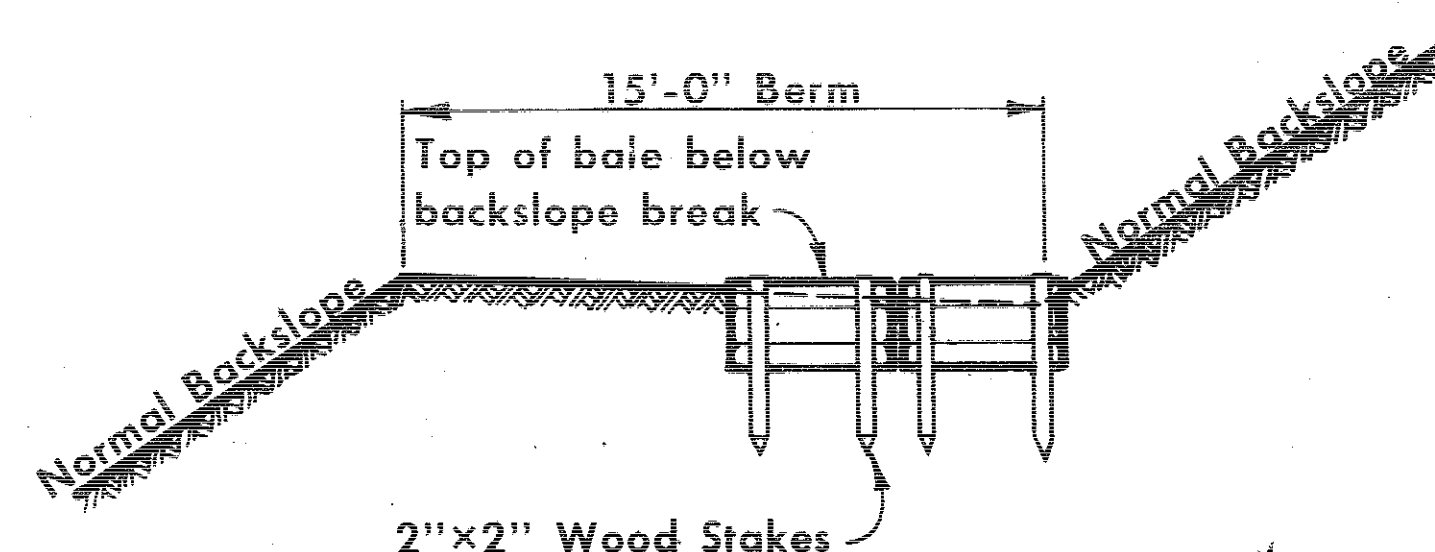


Details shown are typical. Bales may be placed in whatever arrangements or numbers are necessary to accomplish the desired result. Place bales tightly together, overlap or stagger.

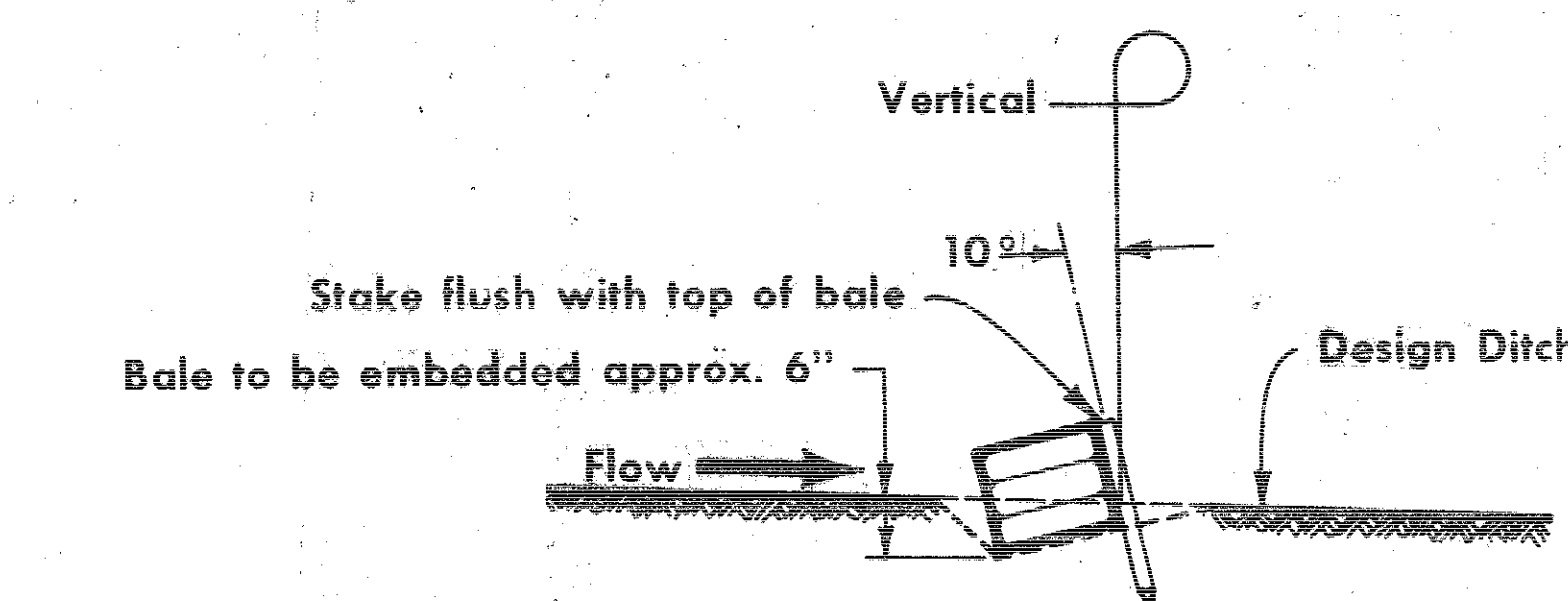
TYPICAL INSTALLATION SITUATION PLAN



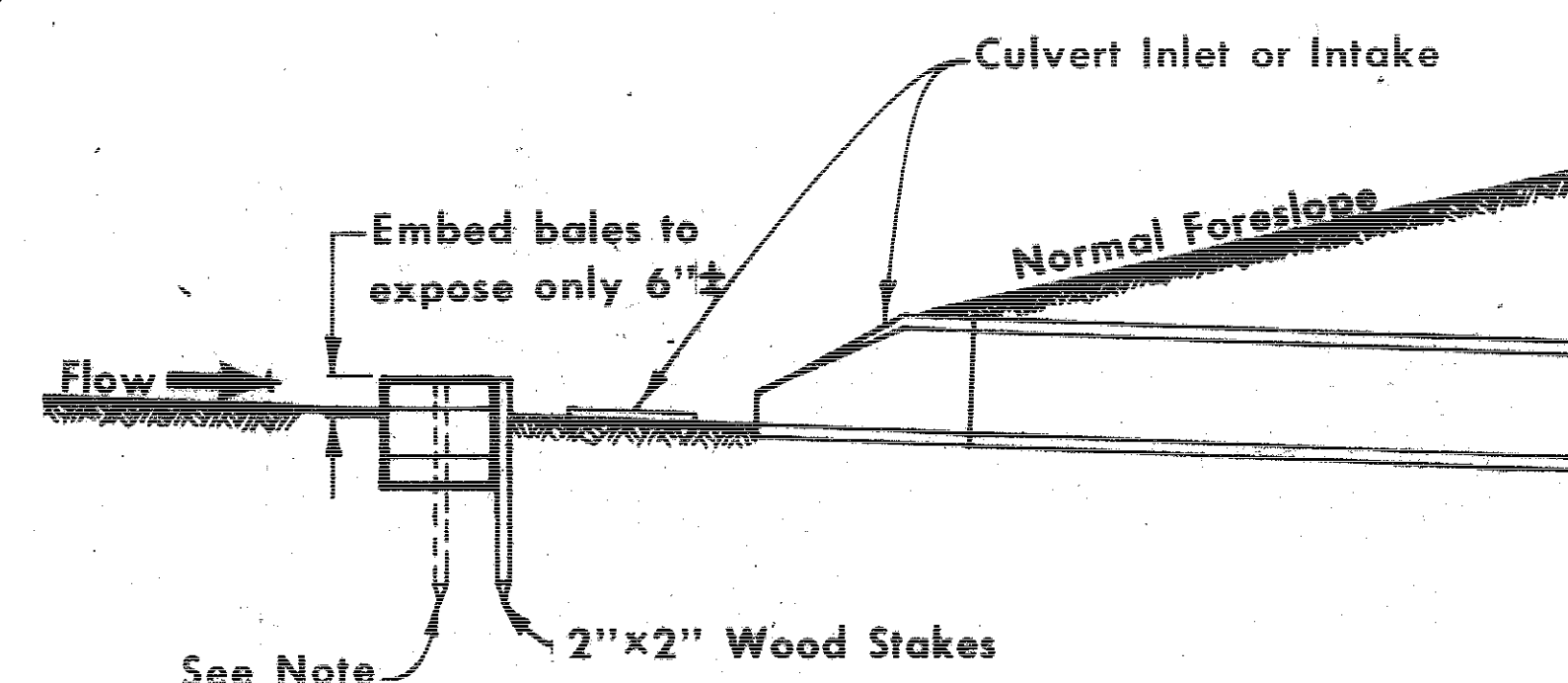
TYPICAL SECTION A-A
(THREE BALE DITCH CHECK)



TYPICAL SECTION B-B



TYPICAL SECTION C-C



TYPICAL SECTION AT CULVERT ENTRANCE AND INTAKES

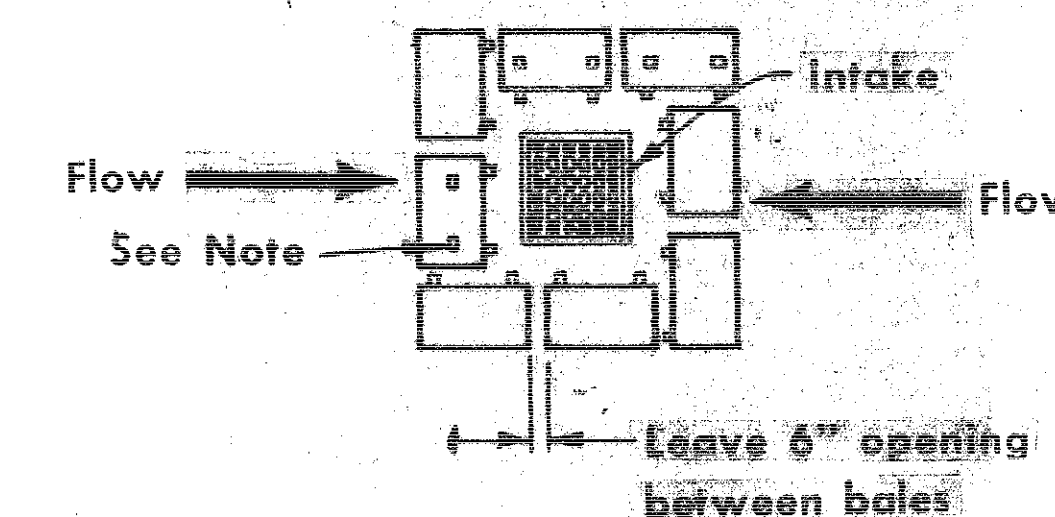
Note:
In some areas bales may be placed vertically with stake through the bale to hold it in place.

GENERAL NOTES:
The contractor shall be responsible for accomplishing the required construction work on this project in such a manner as to effectively minimize and control the water pollution which might be caused by soil erosion from the project. The work described hereon shall be done in conformance with current Iowa State Highway Commission Standard Specifications for "Temporary Water Pollution Control (Soil Erosion)".

The details shown hereon describe various methods of construction which may be used for the control of siltation on the project. It is intended that these features be maintained in appropriate functional condition from initial construction stages to final completion of project.

Actual field conditions may require adjustment in size, number or location of these features. Bales used for ditch checks, dikes, or dams may be hay or straw securely tied with wire or twine. Staking shown is typical but shall be sufficient to secure bales in desired locations.

In addition to the details shown, other provisions for controlling erosion may be incorporated into the project work.

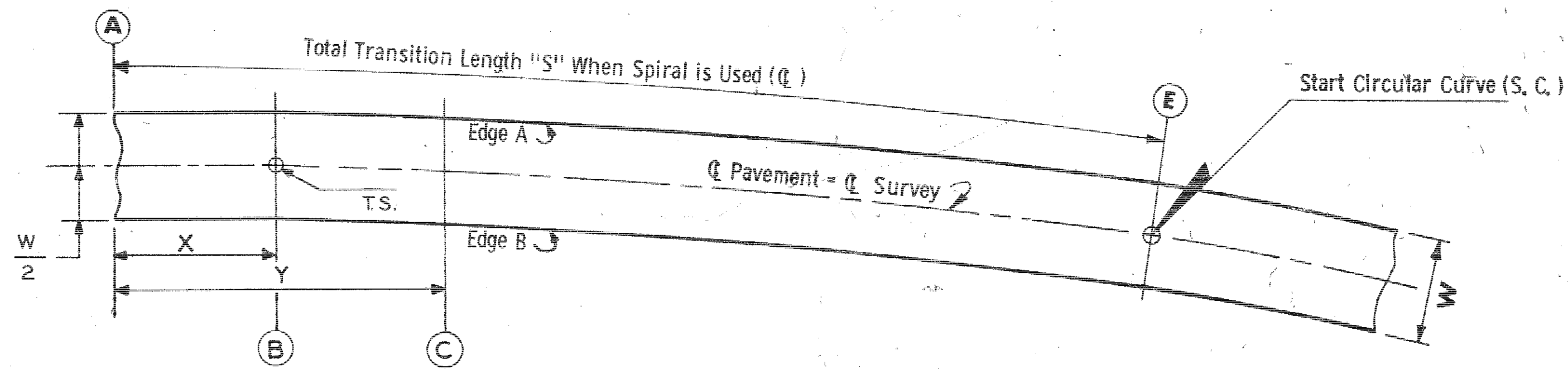


TYPICAL PLAN FOR INTAKE FILTER

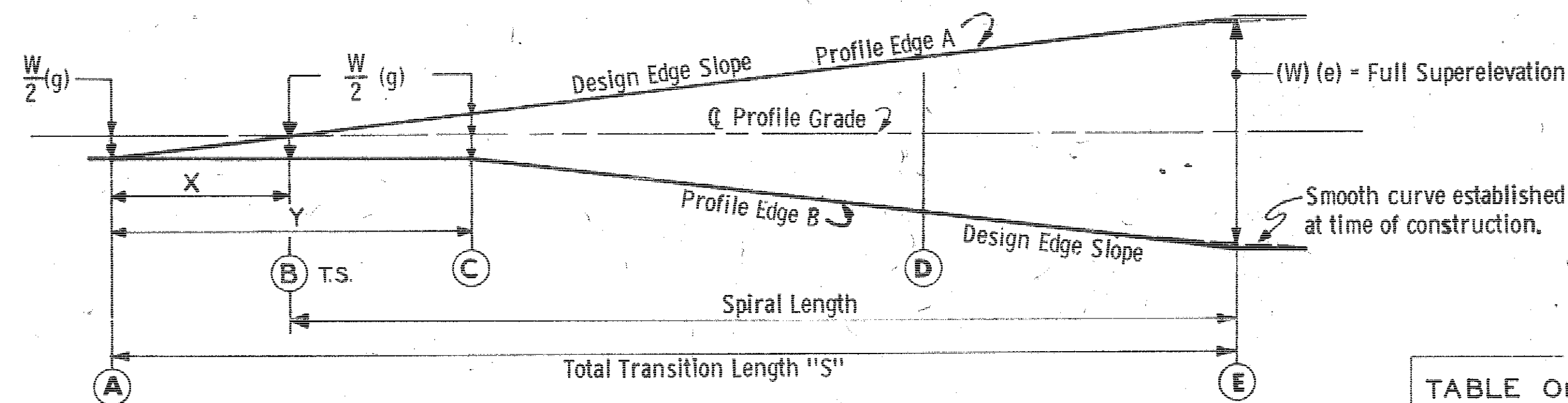
PROJECT NUMBER		STATE		FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FNU-62-1 (4) -- 21-40		IOWA		5		74	210

IOWA HIGHWAY COMMISSION			
STANDARD ROAD PLAN RL-10			
Modify General Notes Last Revision	No.	Date	
	1	12-21-73	
	Recommended	John C. Hoeker	6-6-73
	Ass't. Road Design Engineer	Date	
Approved	R. P. McLaughlin	6-6-73	
	Deputy Chief Engineer	Date	

TEMPORARY EROSION CONTROL MEASURES	
------------------------------------	--



g = Normal Cross Slope Rate

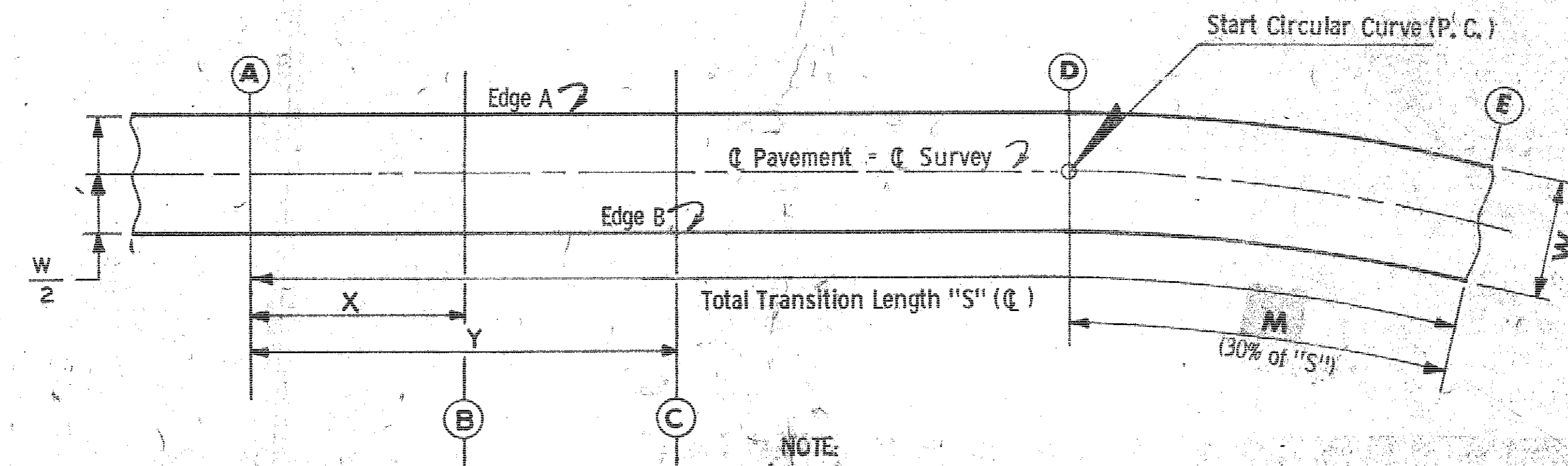


TRANSITION DETAILS WHEN SPIRAL IS USED
PAVEMENT CROWN SHALL BE REMOVED WITHIN DISTANCE "Y"

TABLE OF DESIGN DATA

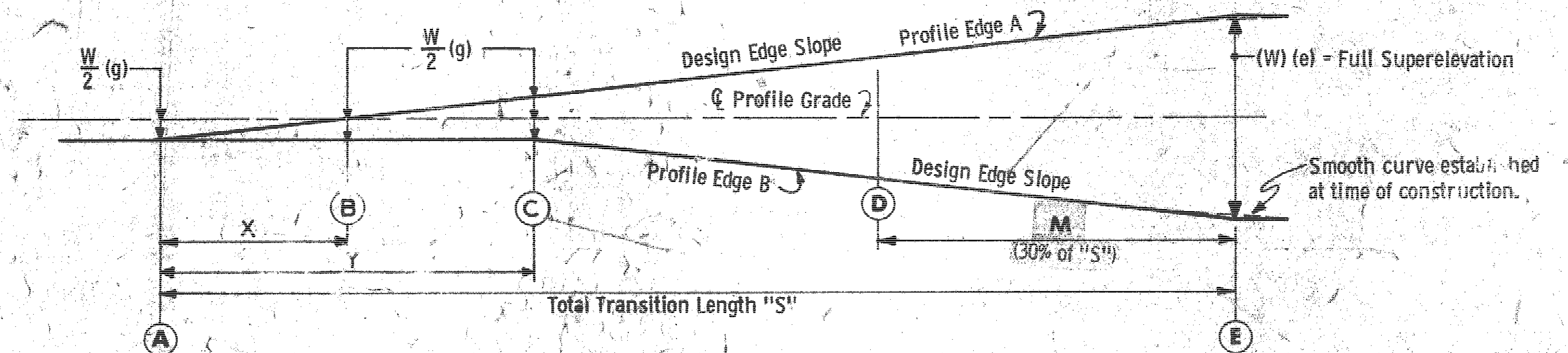
DESIGN SPEED	DES. EDGE SLOPE	DIMEN. X *
40	1:175	31.5
50	1:200	36.0
60	1:225	40.5
70	1:250	45.0

* FOR CURVES WHERE Y=2X.



NOTE:
For all curves except where spiral transitions are used, normal practice shall be to place 70% of the transition on the tangent and 30% of the transition within the curve. Unless otherwise specified on detail project plans M = 30% of "S".

g = Normal Cross Slope Rate



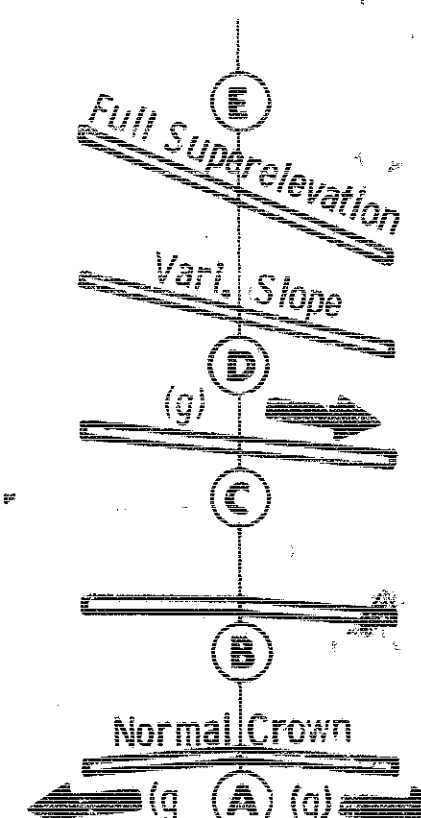
TRANSITION DETAILS WHEN SPIRAL IS NOT USED
PAVEMENT CROWN SHALL BE REMOVED WITHIN DISTANCE "Y"

TABLE OF VALUES FOR TRANSITIONS

D	DESIGN SPEED																	
	40 M. P. H.			50 M. P. H.			60 M. P. H.			70 M. P. H.								
	e	S	Y	e	S	Y	e	S	v	e	S	Y						
0° 15'	NC	0	0	NC	0	0	NC	0	0	NC	0	0						
0° 30'	NC	0	0	NC	0	0	.015	180	⑤180	.015	210	210⑤						
0° 45'	NC	0	0	.015	150	⑤150	.022	180	⑤146	.029	210	143⑤						
1° 00'	.015	120	120⑤	.021	150	⑤125	.029	180	⑤123	.038	210④	119⑤						
1° 30'	.021	120	100⑤	.030	150②	⑤100	.040	180③	⑤98	.053	220	90						
2° 00'	.027	120	86⑤	.038	150②	⑤94	.051	180	81	.065	240	90						
2° 30'	.033	120①	75⑤	.046	150	72	.060	200	81	.073	260	90						
3° 00'	.038	120①	68⑤	.053	160	72	.067	220	81	.078	230	90						
3° 30'	.043	120	63	.058	170	72	.073	240	81	.080	280	90						
4° 00'	.047	130	63	.063	190	72	.077	250	81	④ Use a spiral length of 200'								
5° 00'	.055	150	63	.071	210	72	.080	260	81									
6° 00'	.061	160	63	.077	220	72	③ Use a spiral length of 150'											
7° 00'	.067	170	63	.079	230	72												
8° 00'	.071	180	63	.080	230	72	⑤ Do not use "X" shown in Table of Design Data; use $\frac{Y}{2}$											
9° 00'	.075	190	63															
10° 00'	.077	190	63															
11° 00'	.079	200	63															
12° 00'	.080	200	63															

① Use a spiral length of 150'

NOTE: Interpolate directly for any curves not listed.



AXIS OF ROTATION AT CENTER LINE

MAXIMUM SUPERELEVATION RATE (e) = 0.03 / ft. (4.0%)

GENERAL NOTES:

Unless specifically required otherwise as part of the detail project plans, normal practice shall be to utilize spiral transitions for all curves listed below the heavy line in the table.

For details of shoulder treatment in area of superelevated curves, refer to appropriate Typical Cross Sections.

Design edge slope is the ratio of the longitudinal slope of one edge of a traffic lane compared to the longitudinal slope of the opposite edge of that lane.

"S" distances in the table are obtained by using the design edge slope and the indicated "e" cross slope in the following formula:

$$S = X + \left(\frac{W}{2}\right) (e) (\text{Design Slope})$$

For convenience, "S" values are rounded up to nearest 10 ft. increment. Minimum "S" values have been established for each design speed.

"X" dimension, shown in table, has been determined using a normal cross slope-crown rate (g) of 1.50%. If other rates are used, the "X" distance may be adjusted accordingly.

Where spiral transitions are used, the length of spiral plus the indicated "X" shall be at least equivalent to the indicated "S". Example: for a 2°30' curve, design speed 70 - a 250 ft. spiral should be used with a 45 ft. "X" distance for a total of 295 ft. compared to the 260 ft. "S" indicated.

IOWA HIGHWAY COMMISSIO.	
STANDARD ROAD PLAN RP-1	
RECOMMENDED	ROAD ENGINEER <i>John C. Dalbridge</i> 9/10/48 DESIGN ENGINEER <i>R.P. McLaughlin</i> 3/11/49 DEPUTY CHIEF ENGINEER <i>R.P. McLaughlin</i> 3/11/49
APPROVED	DEPUTY CHIEF ENGINEER <i>R.P. McLaughlin</i> 3/11/49 DATE
SUPERELEVATION DETAILS TWO LANE ROADWAYS	

Jackson Co.

FA-62-1(4) -- 21-49

75 70