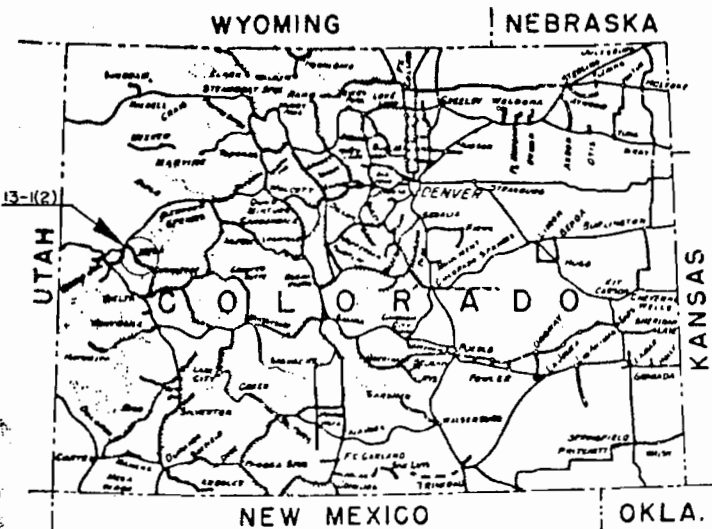




U.S. DEPARTMENT OF COMMERCE BUREAU OF PUBLIC ROADS

Drafting Room

REGION 9 STATE COLORADO
PROJECT 13-1(2), Cedaredge - Mesa
SHEET 1 OF 1 SHEETS

PLANS FOR PROPOSED COLORADO FOREST HIGHWAY PROJECT 13-1(2)

CEDAREGE - MESA LENGTH 16.361 MILES CLASS 2

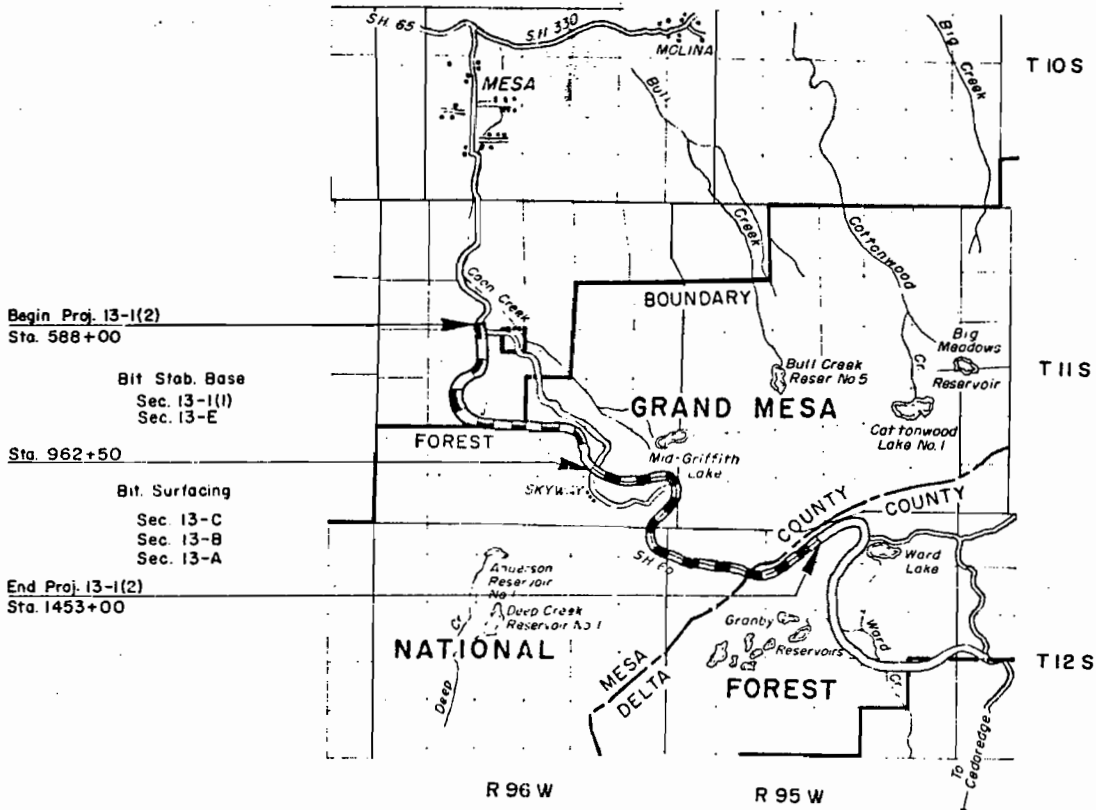
GRAND MESA NATIONAL FOREST DELTA AND MESA COUNTIES

INDEX TO SHEETS			
SHEET NO.	DESCRIPTION	STATION TO STATION	
1	Title Sheet		
2	Typical Sections (4 Sheets)		
3	Summary (3 Sheets)		
4	Plan & Profile	827+71.8	850+00
5	Plan & Profile	900+00	919+00
6	Plan & Profile	920+00	935+00
Std. 107	Emb. Drains, B. Curbs, & Pundowns		
Std. 108	Fill-Gage Tables		
Std. 108A	Met. End Sections		
Std. 116	Concret. Drop Inlets & Pipe-Elbow Inlets		
Std. 119	Underdrain		
Std. 121	Rock Structures		
Std. 131	Maintenance Posts & Delineators		
Std. 143	Project Identification Signs		
R9-SP 154	Details of Parking Area	749+50	752+82
	Mesa Lakes Area	962+00	980+50

Plans prepared by BPR
Date July, 1966

Description of Project
Improvements: Bit. Stab. Base & Bit. Surf.
Roadbed Widths:
Base: 28'-30'
Surfacing: 22'
Type Codes:
Base: 2013
Surfacing: 4253

Traffic Volume
ADT (1966): 220
ADT (1986): 600
D.V.: 90
D: 65%
T: 5%
V: 25



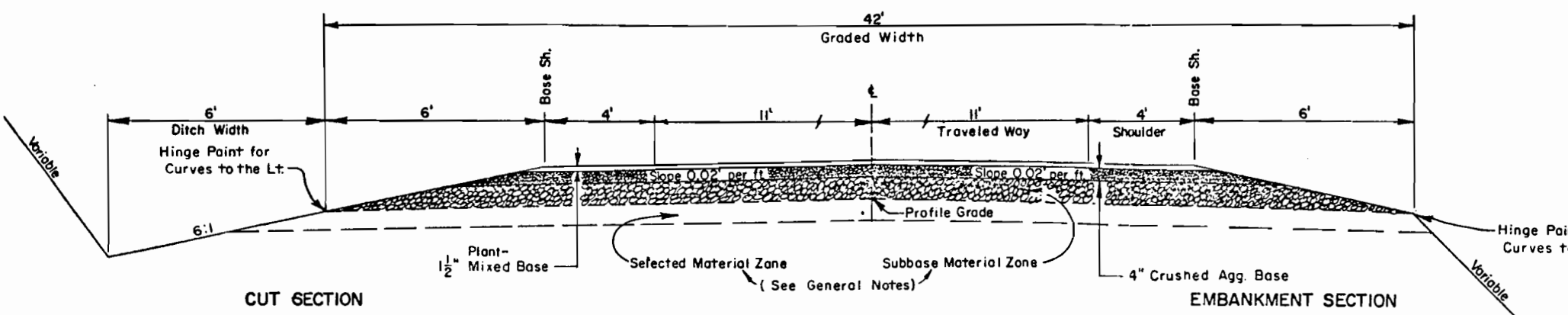
U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

APPROVED: _____
REGIONAL ENGINEER DATE _____ 19__

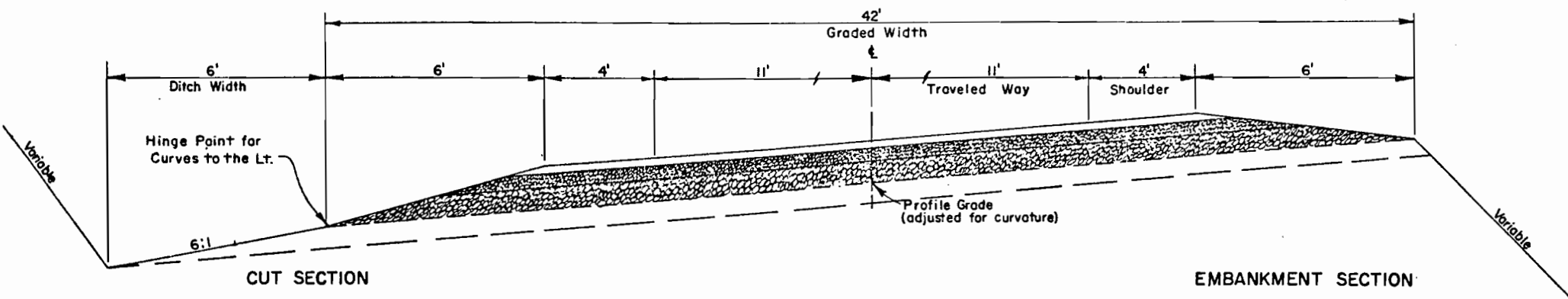
LEGEND

EXISTING ROAD	UNIMPROVED	GRADED	REINFORCED SUBGRADE	BASE COURSE	SURFACE TREATMENT	ROAD PLANT	CONCRETE
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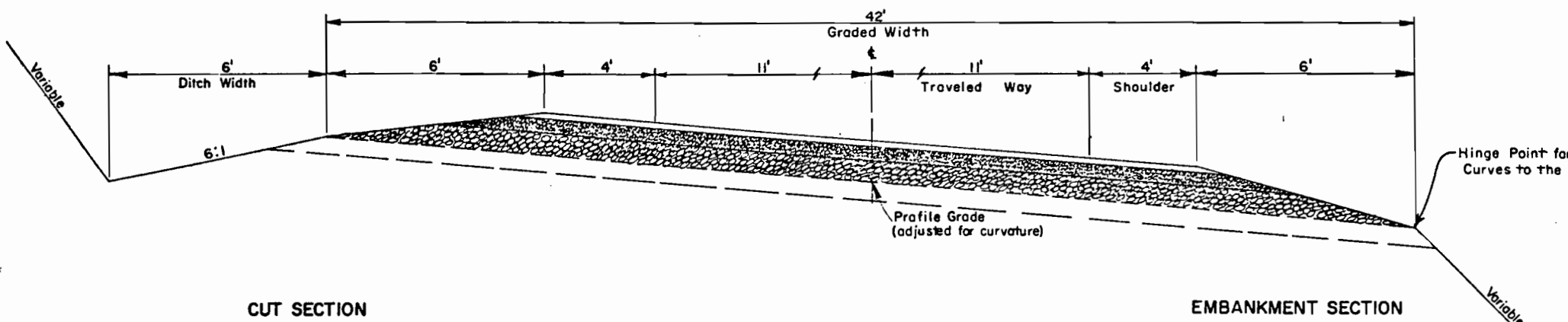
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03	401	1	1	20



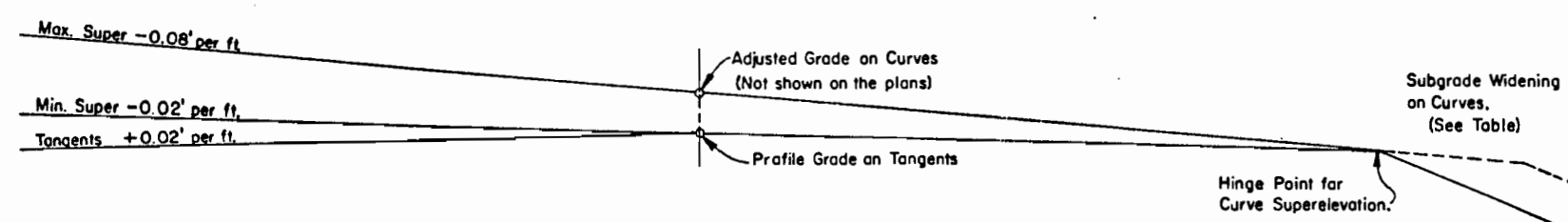
TYPICAL SECTION ON TANGENTS



TYPICAL SECTION FOR CURVES LT.
(MAXIMUM SUPERELEVATION)



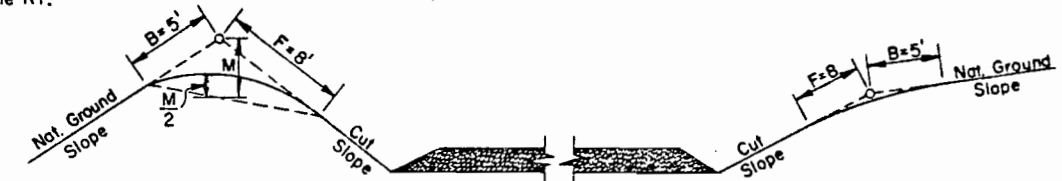
TYPICAL SECTION FOR CURVES RT.
(MAXIMUM SUPERELEVATION)



METHOD OF SUPERELEVATING ON CURVES

HEIGHT	EMBANKMENT SLOPE	HEIGHT	CUT SLOPE
0' to 3'	6:1	0' to 5'	3:1
3' to 6'	4:1	5' to 10'	2:1
6' to 12'	2:1	10' and up	1 1/2:1
12' and up	2:1		

The above tables are to be used as a guide in the design and construction of the project. The designer or field engineer may vary from these to fit existing conditions.



CUT SLOPE ROUNDING

When the cut slope is less than 8', reduce B & F distance to the actual slope distance.

Slope Rounding shall be considered as a subsidiary part of the work required in dressing the cut slopes and no allowance will be made for materials moved.

Rounding, Warping, and Finishing slopes shall be as provided in Standard Specifications and/or Special Provisions.

STABILIZING MATERIALS

STATION TO STATION	Subbase Material Zone		Selected Material Zone	
	Item	Depth	Item	Depth
See Summary Sheet No. 2 for locations and depths of stabilizing materials.				

GENERAL NOTES

The Typical Section and the table above show a "Selected Material Zone" and a "Subbase Material Zone." These terms are for defining locations and depths of materials only, and are not to be considered as pay items having similar names. The "Selected Material Zone" lies below the profile grade (adjusted for curvature where appropriate). The "Subbase Material Zone" lies above the profile grade and just below the base course zone.

Where the plans show special material to be placed in the "Selected Material Zone," the roadway excavations and embankments shall be constructed to the grade that will allow for the required thickness. The thicknesses of materials shown in the above table are based on laboratory analysis of samples taken at random along the proposed construction. During construction, the engineer will adjust the thicknesses as necessary to insure adequate structural stability, including the placing of Section 104 materials in the "Selected Material Zone," and the placing of Section 102 materials in the "Subbase Material Zone." Section 102 materials will not be placed on top of Section 104 materials.

On grades of 3% or less, where wet or unstable conditions exist, the engineer may increase the ditch width 3 feet or more.

Any subsurface data represented on these plans is limited to the specific locations shown and those locations alone.

CURVE WIDENING*

Degree of Curve	20'	22'	24'
5°-10°	2'	—	—
11°-21°	3'	2'	—
22° & Up	4'	3'	2'

FILE #	LOC + CASE	DOC COUNT	WIDEN SUBGRADE, BASE AND SURFACING	ADD'L PAGE
02	111	1	1	1

U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

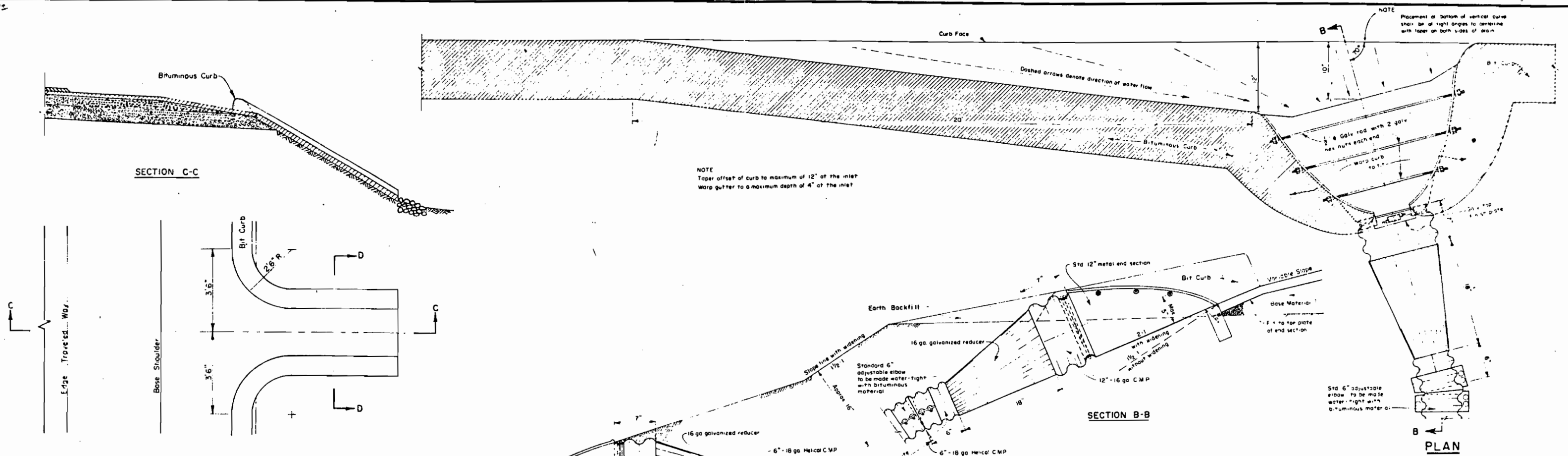
TYPICAL CROSS SECTIONS

SECTION 13-1(1), STA. 588+00 TO 790+00
NATIONAL FOREST HIGHWAYS

ROUTE: Cedaredge-Mesa
PROJECT: 13-1(2) (Bit Sub Base Portion)
NATIONAL FOREST: Grand Mesa
COUNTIES: Mesa & Delta
STATE: Colorado

ROADBED WIDTHS
GRADED: — SH to SH
BASE: 30' SH to SH
SURFACE: — SH to SH

Revision: 7/1963, 5/1964



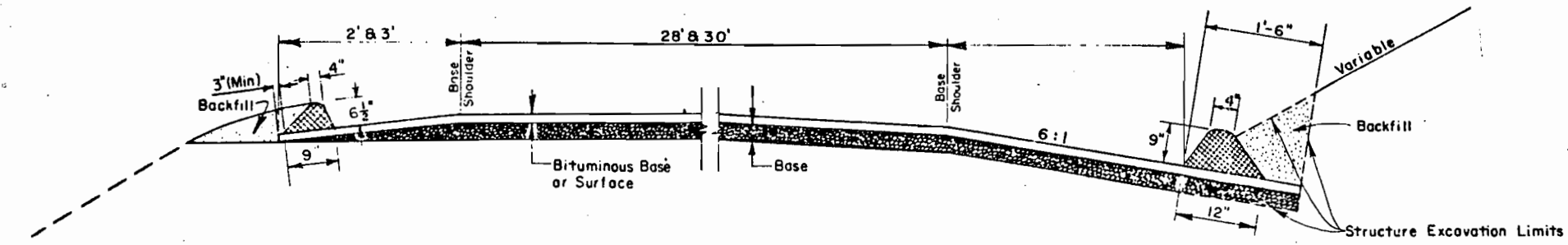
METAL EMBANKMENT DRAIN USE

GENERAL NOTES

1. A Metal Embankment Drain consists of 6 inch galvanized helically corrugated metal pipe with an inlet assembly and an outlet assembly.
2. An inlet assembly consists of a 12 inch metal end section, modified by the addition of trash bars; a transition section from 12 inch to 6 inch pipe, an adjustable 6 inch elbow; and special transitional treatment or adjacent curbing as shown on the diagram.
3. An outlet assembly consists of a 12 inch metal end section; transition section, adjustable elbow and a rock stilling basin as shown on the diagram.
4. Payment for Metal Embankment Drains will be made as follows:

6 inch corrugated metal drain pipe	Linear Foot
Metal drain inlets	Each
Metal drain outlets	Each
5. Adjustable elbow shall be made water-tight by surrounding it with a mixture of bituminous material and sand, gravel or crushed aggregate, similar to the provisions of Section 317, Bituminous Plant-Mix Surfacing. The cost of this work shall be included in the prices paid for metal drain inlets and outlets.

BITUMINOUS RUNDOWN USE



ON FILL USE

Note:
To be constructed at locations as shown on the plans, or as directed by the engineer

SECTION SHOWING PAVEMENT WIDENING AND BITUMINOUS CURBS

FILE #	LOC + CASE	DOC. COUNT	PAGE	ADD'L PAGE
03	401	1	12	

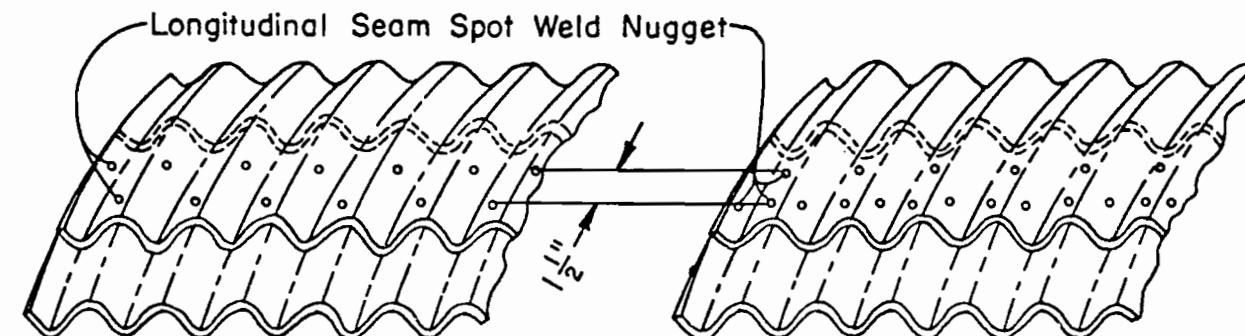
Revisions: 6/1/53, 7/1/54

U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

STANDARD EMBANKMENT DRAINS, BITUMINOUS CURBS AND RUNDOWNS

**HEIGHT OF FILL AND GAGE FOR
GALVANIZED CORRUGATED METAL PIPE
(RIVETED, OR HELICAL FABRICATION) 3"x1" CORRUGATIONS**

Pipe Diam.	Min. Cover Top of Pipe To Top of Subgrade	16 GAGE		14 GAGE		12 GAGE		10 GAGE		8 GAGE	
		Circular	5% Elongated	Circular	5% Elongated	Circular	5% Elongated	Circular	5% Elongated	Circular	5% Elongated
		MAXIMUM FILL HEIGHTS ABOVE TOP OF PIPE (FEET)									
36"	12"	30	—	38	44	48	69	56	72	63	75
42"	12"	26	—	30	38	37	60	42	63	48	65
48"	12"	23	—	27	34	30	52	34	54	38	57
54"	12"	20	—	24	29	26	47	29	48	32	50
60"	12"	19	—	22	26	24	42	26	43	28	45
66"	12"	17	—	20	24	22	38	23	39	25	41
72"	12"	15	—	20	22	21	35	22	36	23	38
78"	12"	14	—	19	21	20	32	21	33	22	35
84"	12"	—	—	19	—	19	30	20	31	21	32
90"	12"	—	—	18	—	19	28	19	29	20	30
96"	12"	—	—	—	—	18	26	19	27	20	28
102"	24"	—	—	—	—	18	25	19	25	19	26
108"	24"	—	—	—	—	18	23	19	24	19	25
114"	24"	—	—	—	—	—	—	18	22	19	24
120"	24"	—	—	—	—	—	—	18	21	19	22



TYPE 2 SEAM
Two welds per corrugation
in staggered line

TYPE 3 SEAM
Three welds per corrugation

**DETAILS OF SPOT WELDED LONGITUDINAL SEAM
3" x 1" Corrugations**

NOTE:

Height of cover shall be taken from top of pipe to top of subgrade.

Gages of metal culvert pipe shall be not lighter than those shown in the above tables for the various conditions.

Pipe sizes below solid black lines should be used only after investigation of abrasive & corrosive conditions or when anticipated velocities are less than 5 feet per second.

**HEIGHT OF FILL AND GAGE FOR
GALVANIZED CORRUGATED METAL PIPE &
GALVANIZED HELICALLY CORRUGATED METAL PIPE
(RIVETED, WELDED, OR HELICAL FABRICATION) 2 2/3" x 1/2"**

Pipe Diam.	Min.Cover Top of pipe To Top of Subgrade	16 GAGE		14 GAGE		12 GAGE		10 GAGE		8 GAGE	
		Circular	5% Elongated	Circular	5% Elongated	Circular	5% Elongated	Circular	5% Elongated	Circular	5% Elongated
MAXIMUM FILL HEIGHTS ABOVE TOP OF PIPE (FEET)											
18"	12"	47	—	55	—	70	—	82	—	86	—
24"	12"	30	—	33	—	40	—	48	—	54	—
30"	12"	24	34	25	36	29	47	33	49	37	52
36"	12"	21	28	22	30	24	39	26	41	28	43
42"	12"	19	31	20	38	21	43	23	46	24	48
48"	12"	18	27	19	37	20	40	21	42	22	44
54"	12"	—	—	18	33	19	38	20	39	21	41
60"	12"	—	—	—	—	18	34	19	38	20	40
66"	12"	—	—	—	—	18	25	18	35	19	38
72"	12"	—	—	—	—	—	—	18	25	18	31
78"	12"	—	—	—	—	—	—	—	—	18	25
84"	12"	—	—	—	—	—	—	—	—	18	20

**HEIGHT OF FILL AND GAGE FOR
ALUMINUM ALLOY
CORRUGATED METAL PIPE
(RIVETED, WELDED, OR HELICAL FABRICATION) 2 2/3" x 1/2"**

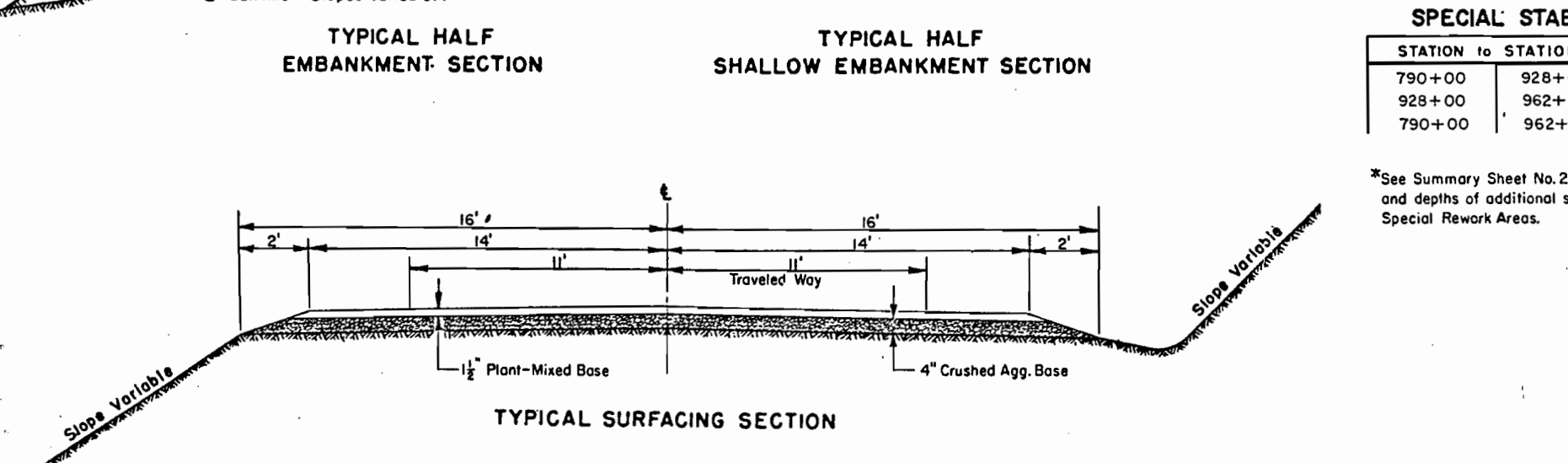
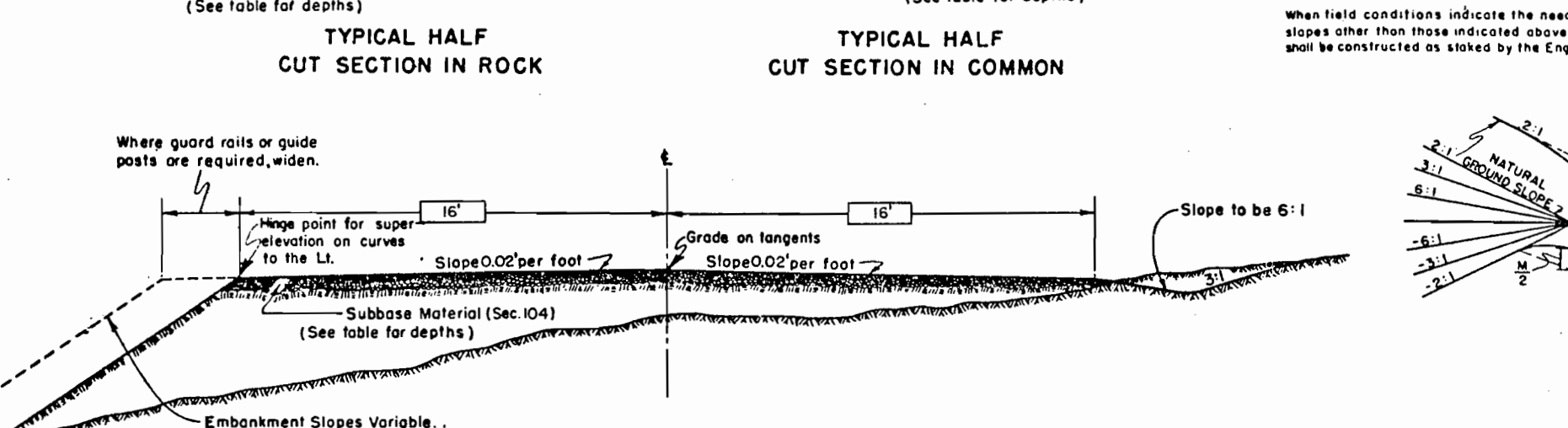
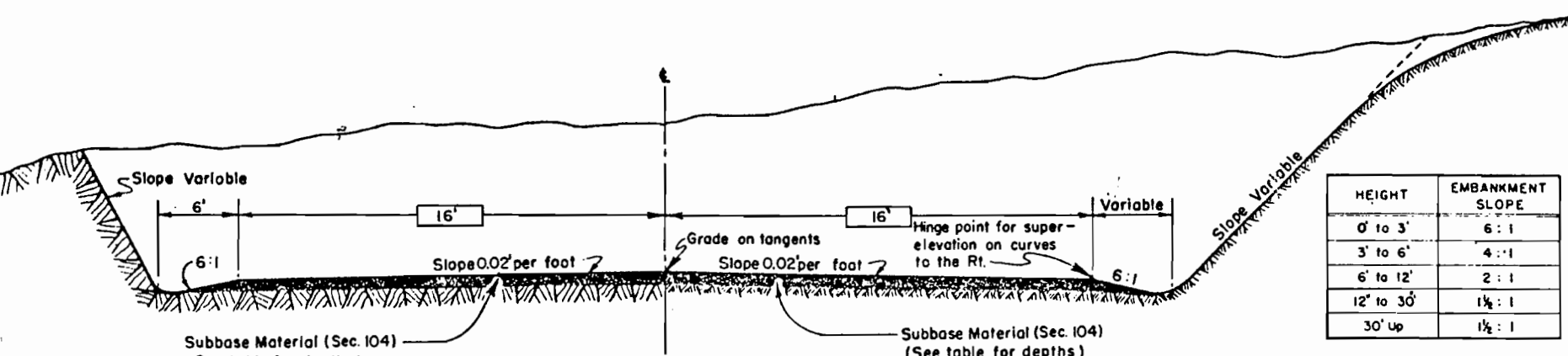
Pipe Diam.	Min.Cover Top of Pipe To Top of Subgrade	16 GAGE		14 GAGE		12 GAGE		10 GAGE		8 GAGE	
		Circular	5% Elongated	Circular	5% Elongated	Circular	5% Elongated	Circular	5% Elongated	Circular	5% Elongated
		MAXIMUM FILL HEIGHTS ABOVE TOP OF PIPE (FEET)									
18"	12"	28	—	31	—	36	—	42	—	49	—
24"	12"	22	—	23	—	25	—	28	—	31	—
30"	12"	19	—	20	—	21	31	22	33	24	34
36"	12"	16	—	16	—	19	25	20	27	21	28
42"	12"	—	—	18	25	19	35	19	38	20	40
48"	12"	—	—	—	—	18	24	18	31	19	38
54"	12"	—	—	—	—	17	—	18	21	18	27
60"	12"	—	—	—	—	—	—	16	—	18	20
66"	12"	—	—	—	—	—	—	12	—	15	—
72"	12"	—	—	—	—	—	—	—	—	12	—

FILE #	LOC + CASE	DOC. COUNT	PAGE	ADD'L PAGE
03	401	1	13	

REVISIONS: 2/1964, 5/1964, 6/1964, 10/1964
3/1965, 8/1966

U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

**STANDARD
FILL-GAGE TABLES
FOR METAL PIPE CULVERTS**



HEIGHT	EMBANKMENT SLOPE
0' to 3'	6:1
3' to 6'	4:1
6' to 12'	2:1
12' to 30'	1 1/2:1
30' up	1 1/2:1

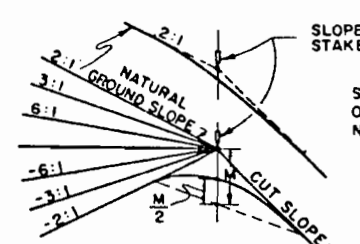
When field conditions indicate the need for slopes other than those indicated above, they shall be constructed as staked by the Engineer.

SLOPE ROUNDING FACTORS			ALTERNATE ROUNDING DIMENSIONS	
NATURAL GROUND SLOPE	CUT SLOPE		SEMI-TANGENTS +	
	HEIGHT	RATIO	Back of Slope Stake "B"	Front of Slope Stake "F"
VARIABLE	0'-5'	3:1	5'	5'
	5'-10'	2:1		
RELATIVELY FLAT (6:1 AND FLATTER)	10'-15'	1 1/2:1	5'	8'
	15'-30'	1 1/4:1		
	OVER 30'	1:1		
MODERATELY STEEP (6:1 TO 3:1)	10'-15'	1 1/2:1	5'	8' **
	15'-30'	1 1/4:1		
	OVER 30'	1:1		
STEEP (STEEPER THAN 3:1)	10'-15'	1 1/2:1	3'	5' *
	15'-30'	1 1/4:1		
	OVER 30'	1:1		

† Measured on slope surface.
 ** Desirable
 * Minimum (Winged)
 These ratios are desirable in steep terrain.

NOTE: In areas where existing conditions permit, use more liberal rounding with unequal semi-tangents. (Approximating a parabolic curve.)

ROUNDING, WARPING, AND FINISHING SLOPES, AS PROVIDED IN ART. 102-3.8, F.P.-61 SPECIFICATIONS.



SLOPE ROUNDING TO BE CONSIDERED AS A SUBSIDIARY PART OF THE WORK REQUIRED IN DRESSING THE CUT SLOPES AND NO ALLOWANCE WILL BE MADE FOR MATERIALS MOVED.

CUT SLOPE ROUNDING

GENERAL NOTES

Where Borrow is specified in the contract and satisfactory material is found in the roadway excavation, the right is reserved to increase the amount of Unclassified Excavation and reduce the Borrow Excavation. When additional material is needed for completing embankments, stabilizing the subgrade, or for selected cushion or topping, it may be secured by uniformly widening thru or sidehill cuts or flattening cut slopes where satisfactory material is available. The slopes at the ends of all cuts shall be flattened and flared to improve appearance.

Furrow ditches shall be constructed on approximate one percent grades following the ground contour and when possible shall be so constructed that the direction of flow will be away from the roadway.

Topsail shall be conserved and either placed in stockpiles or spread over cut and embankment slopes as directed and in accordance with the specifications.

Roadway ditches at the ends of cuts shall be constructed so as to carry the flow away from the adjacent embankment slopes.

Embankment slopes shall be uniformly warped between one side of slope and another. The transition shall cover a distance of not less than fifty feet.

The grade line shown on the plan and profile sheets is centerline grade, not corrected for curvature.

Curves are super-elevated and widened in accordance with AASHTO standards.

SOILS DATA

Any materials soils data shown on these plans are based on tests of samples obtained from the locations and depths shown, and are only for informational purposes. They do not reflect classification of the excavation. No responsibility is assumed by the Government as to the extent of materials represented by these tests. Any assumption by the contractor as to the extent of the materials represented by these samples is strictly his responsibility. The contractor must satisfy himself as to the nature of materials to be encountered by personal inspection of the project on the ground. If materials not conforming to the data show on these plans are encountered during construction, the grading plan will be modified where necessary to insure proper design.

SPECIAL STABILIZING MATERIAL

STATION to STATION	SUBBASE (Item 104(2))	
790+00 to 928+00	12"	(In Place)
928+00 to 962+50	18"	(In Place)
790+00 to 962+50	3"	(This Contr.)

*See Summary Sheet No. 2 for locations and depths of additional subbase thru Special Rework Areas.

U.S. DEPARTMENT OF COMMERCE
 BUREAU OF PUBLIC ROADS
 REGION NO. 9 DENVER, COLO.

TYPICAL CROSS SECTIONS

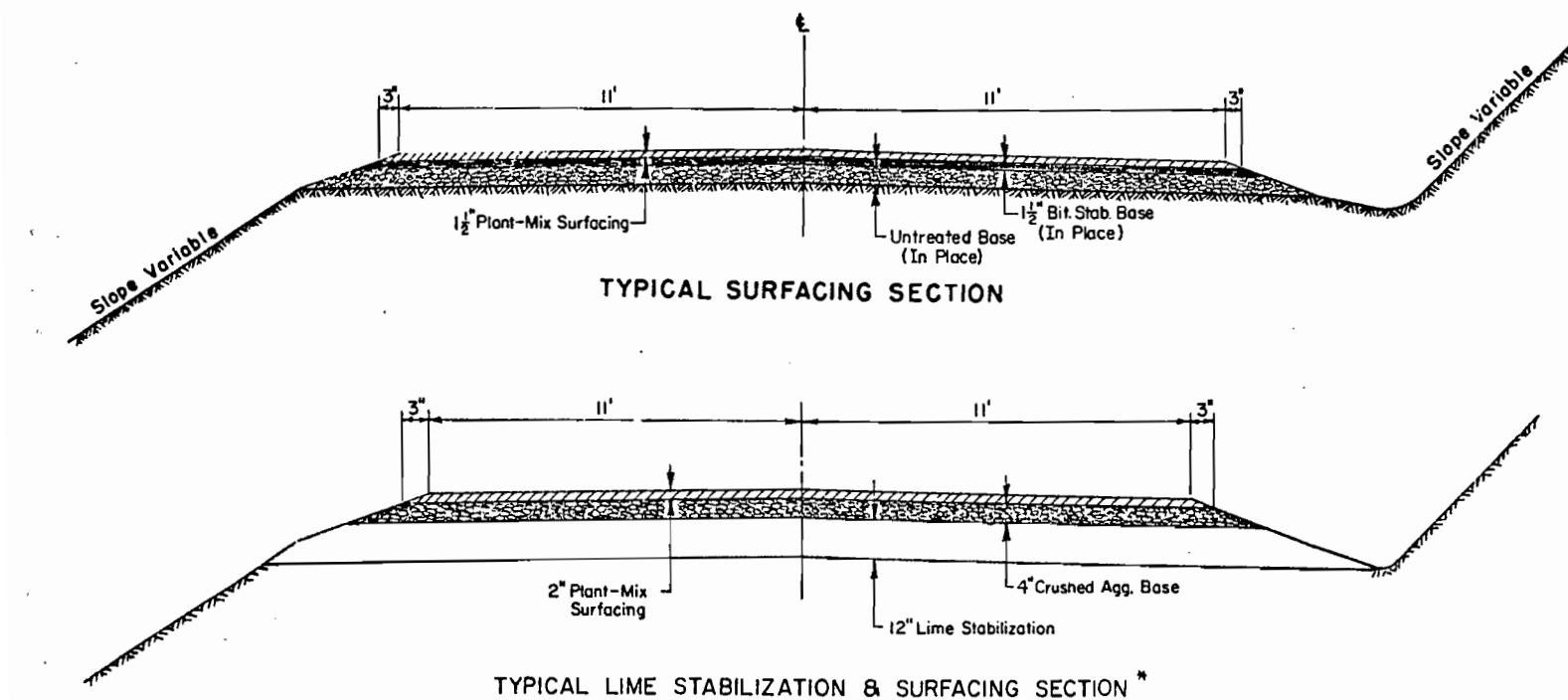
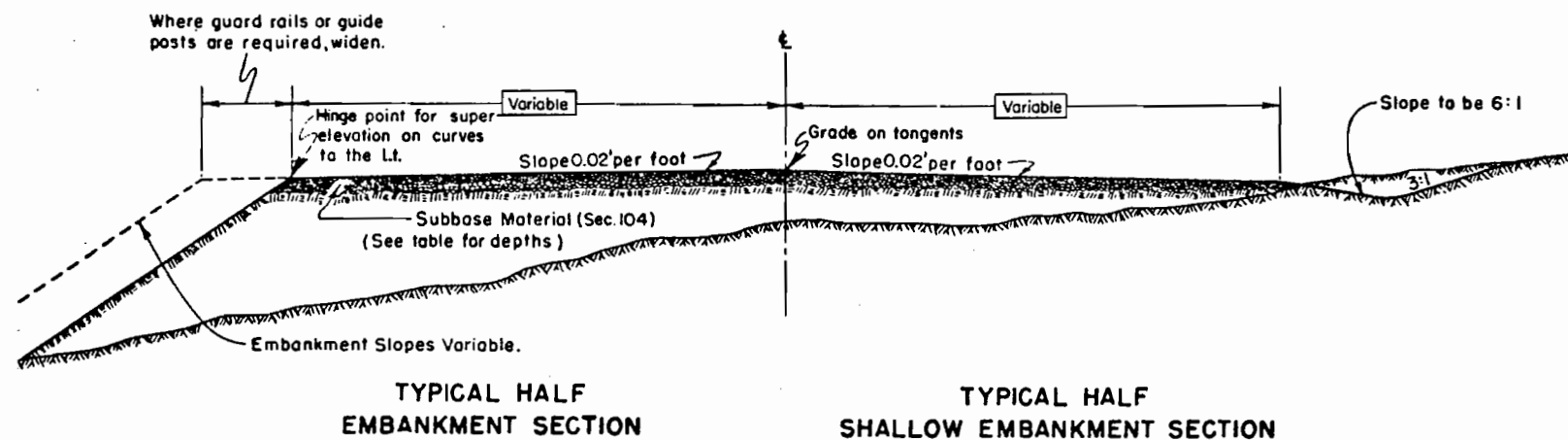
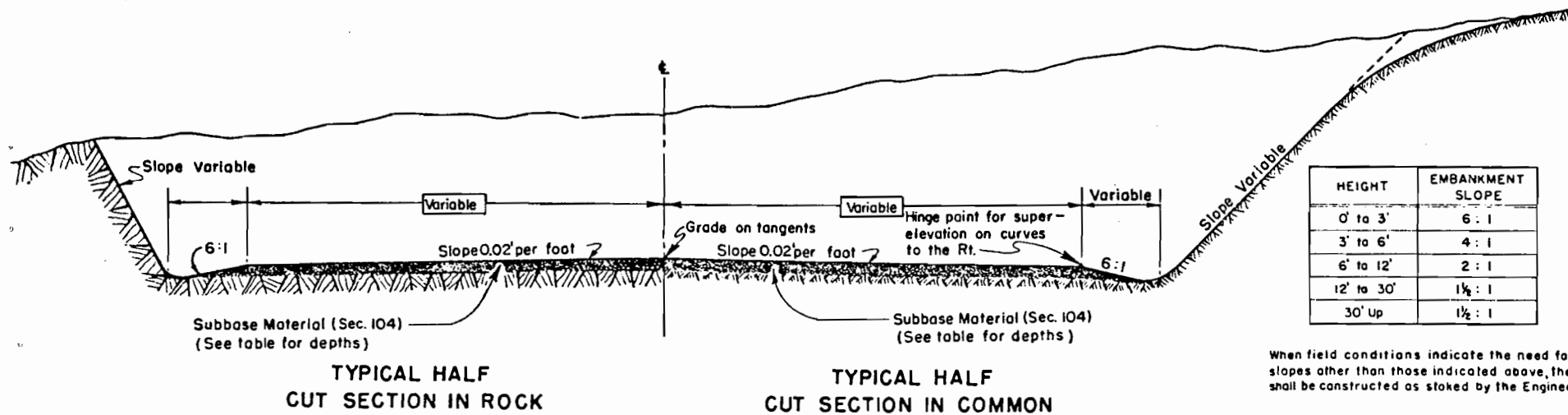
NATIONAL FOREST & PARK HIGHWAYS

SECTION 13-E, STA. 790+00 TO 962+50

FILE #	LOC. + BASE	DOC. COUNT	PAGE	ADD'L PAGE
03	401	1	3	

APPROVED: *[Signature]* Date: 2/26/58
 Federal Highway Projects Engineer

REGION No. 9 STANDARD ROADBED: *[Blank]*
 PROJECT: 13-1(2) (Bit. Sub. Base Portion)
 NATIONAL FOREST: Grand Mesa
 COUNTIES: Mesa & Delta
 STATE: Colorado

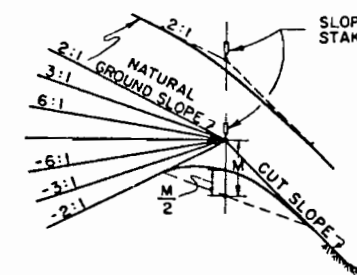


SLOPE ROUNDING FACTORS			ALTERNATE ROUNDING DIMENSIONS	
NATURAL GROUND SLOPE	CUT SLOPE		SEMI-TANGENTS †	
	HEIGHT	RATIO	Back of Slope Stake "B"	Front of Slope Stake "F"
VARIABLE	0'-5'	3:1	5'	5'
	5'-10'	2:1		
RELATIVELY FLAT (6:1 AND FLATTER)	10'-15'	1½:1	5'	8'
	15'-30'	1¼:1		
MODERATELY STEEP (6:1 TO 3:1)	10'-15'	1½:1	5'	8' **
	15'-30'	1¼:1		
STEEP (STEEPER THAN 3:1)	10'-15'	1½:1	3'	5' *
	15'-30'	1¼:1		
	OVER 30'	1:1		

† Measured on slope surface.
 ** Desirable
 * Minimum (Wooded)
 * These ratios are desirable in steep terrain.

NOTE: In areas where existing conditions permit, use more liberal rounding with unequal semi-tangents. (Approximating a parabolic curve.)

ROUNDING, WARPING, AND FINISHING SLOPES, AS PROVIDED IN ART. 102-3.8, F.P-61 SPECIFICATIONS.



SLOPE ROUNDING TO BE CONSIDERED AS A SUBSIDIARY PART OF THE WORK REQUIRED IN DRESSING THE CUT SLOPES AND NO ALLOWANCE WILL BE MADE FOR MATERIALS MOVED.

CUT SLOPE ROUNDING

GENERAL NOTES

Where Borrow is specified in the contract and satisfactory material is found in the roadway excavation, the right is reserved to increase the amount of Unclassified Excavation and reduce the Borrow Excavation. When additional material is needed for completing embankments, stabilizing the subgrade, or for selected cushion or topping, it may be secured by uniformly widening thru or sidehill cuts or flattening cut slopes where satisfactory material is available. The slopes at the ends of all cuts shall be flattened and flared to improve appearance.

Furrow ditches shall be constructed on approximate one percent grades following the ground contour and when possible shall be so constructed that the direction of flow will be away from the roadway.

Topsoil shall be conserved and either placed in stockpiles or spread over cut and embankment slopes as directed and in accordance with the specifications.

Roadway ditches at the ends of cuts shall be constructed so as to carry the flow away from the adjacent embankment slopes.

Embankment slopes shall be uniformly warped between one rate of slope and another. The transition shall cover a distance of not less than fifty feet.

The grade line shown on the plan and profile sheets is centerline grade, not corrected for curvature.

Curves are super-elevated and widened in accordance with AASHTO standards.

SOILS DATA

Any materials soils data shown on these plans are based on tests of samples obtained from the locations and depths shown, and are only for informational purposes. They do not reflect classification of the excavation. No responsibility is assumed by the Government as to the extent of materials represented by these tests. Any assumption by the contractor as to the extent of the materials represented by these samples is strictly his responsibility. The contractor must satisfy himself as to the nature of materials to be encountered by personal inspection of the project on the ground. If materials not conforming to the data show on these plans are encountered during construction, the grading plan will be modified where necessary to insure proper design.

U.S. DEPARTMENT OF COMMERCE
 BUREAU OF PUBLIC ROADS
 REGION NO. 9 DENVER, COLO.

TYPICAL CROSS SECTIONS NATIONAL FOREST & PARK HIGHWAYS SECTIONS 13-A, B, & C, STA. 962+50 TO 1453+00

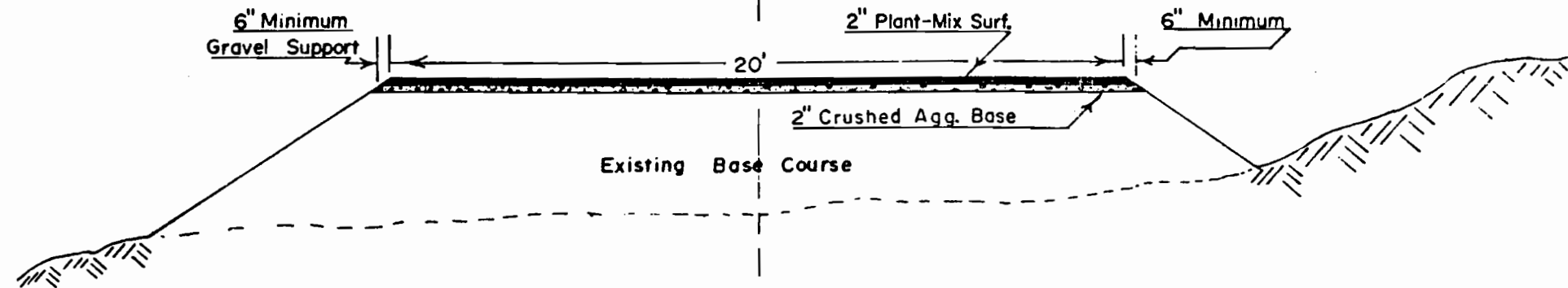
REGION No. 9 STANDARD ROADBED: GRADED Variable (In Place)
 PROJECT: 13-11(2) (Bit. Surf. Portion) BASE Variable (In Place)
 NATIONAL FOREST: Grand Mesa BITUMINOUS WEARING SURFACE: 22"
 COUNTIES: Mesa & Delta
 STATE: Colorado

* The existing bituminous stabilized base, base, and subbase are to be stabilized with lime for a depth of 12" before placing the base and bituminous surfacing.

See Summary sheet 2 for locations.

FILE #	LOC + CASE	DOC. COUNT	PAGE	ADD'L PAGE
03	401	1	4	

APPROVED *[Signature]* Date: 2/26/58
 Federal Highway Projects Engineer

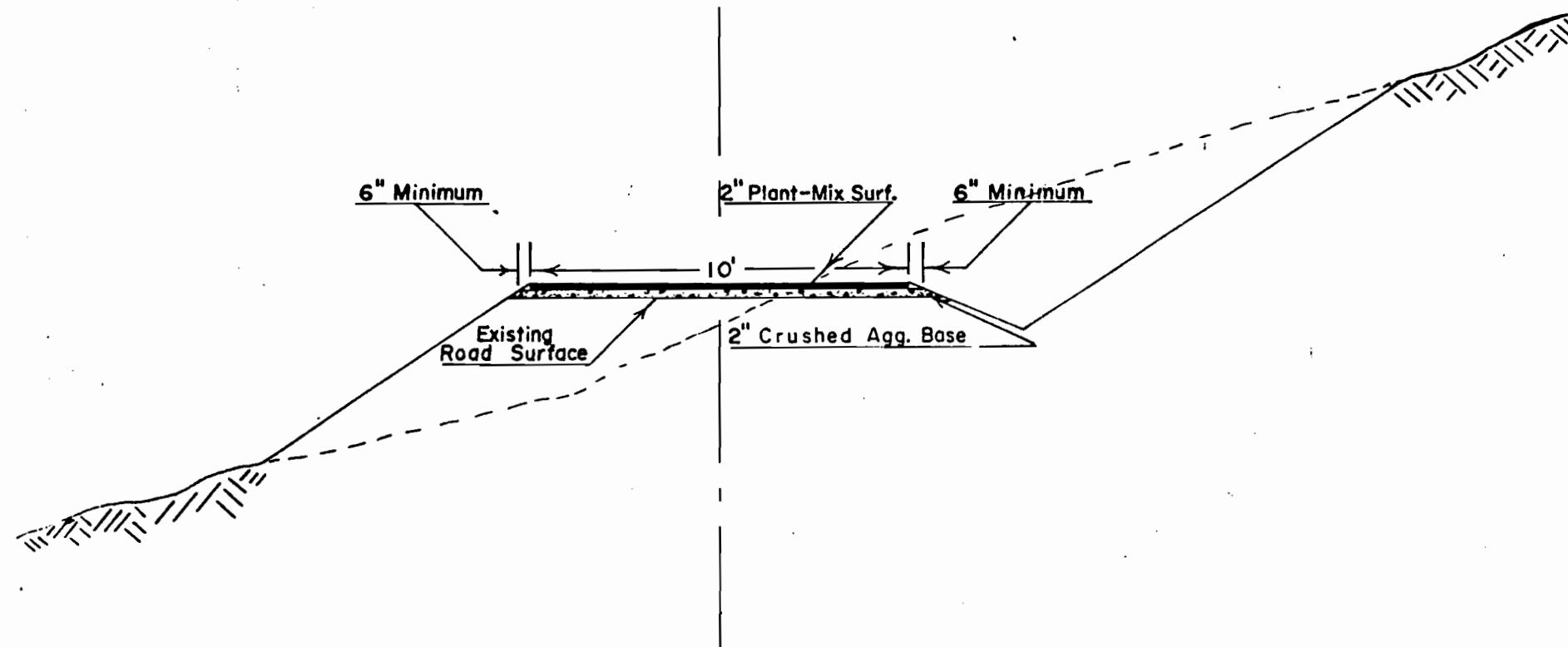


TYPICAL CROSS SECTIONS

NOTE:

All roads, spurs, and parking areas are to be treated with a Bituminous Prime Coat of 0.3 gal./sq. yd. or as directed by the engineer. A 10' mat shall be placed on all single lane roads as shown on the plans. Double lane roads shall be paved to a maximum width of 20' or less, governed by the width of the original roadbed, or as directed by the engineer.

Scarifying shall be only to the depth of the existing gravel.



U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO 9 DENVER COLORADO
TYPICAL CROSS SECTIONS
MESA LAKES AREA

ROUTE Cedaredge - Mesa

PROJECT 13-1(2)-(Bit. Surf. Portion)

NATIONAL FOREST Grand Mesa

COUNTY Mesa & Delta

STATE Colorado

FILE #	LOC + CASE	DOC. COUNT	PAGE	ADD'L PAGE
03	401	1	5	

SUMMARY OF ESTIMATED QUANTITIES

The following quantities are approximate. Payment will be made only for the quantities of work performed or materials furnished in accordance with the contract.

SUMMARY OF QUANTITIES

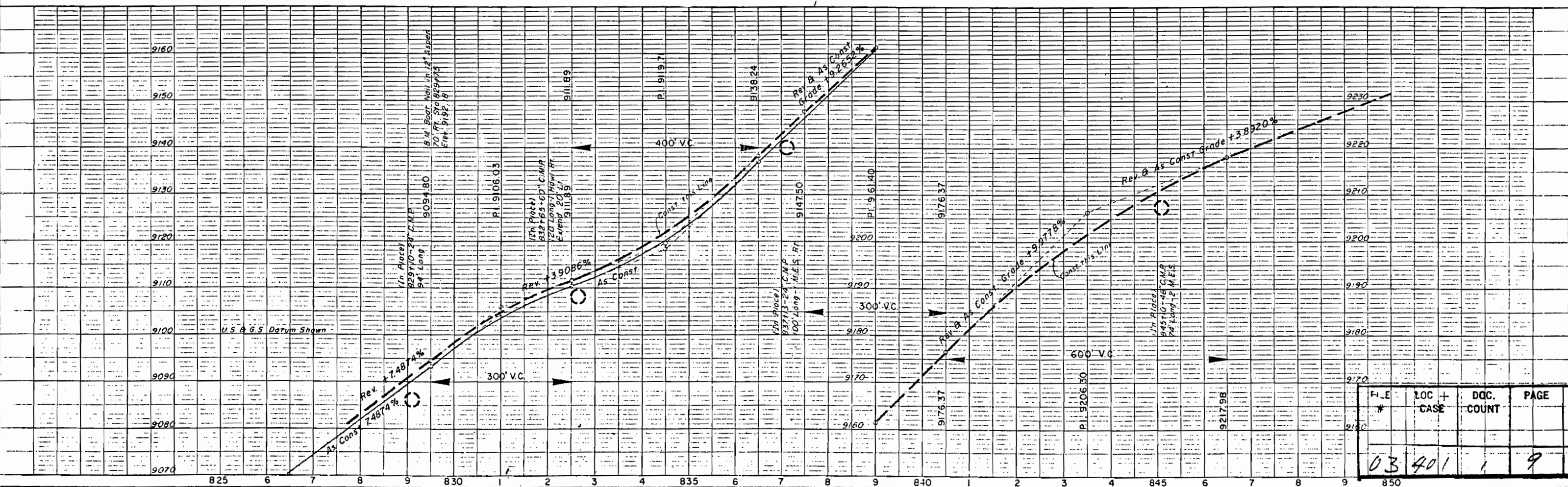
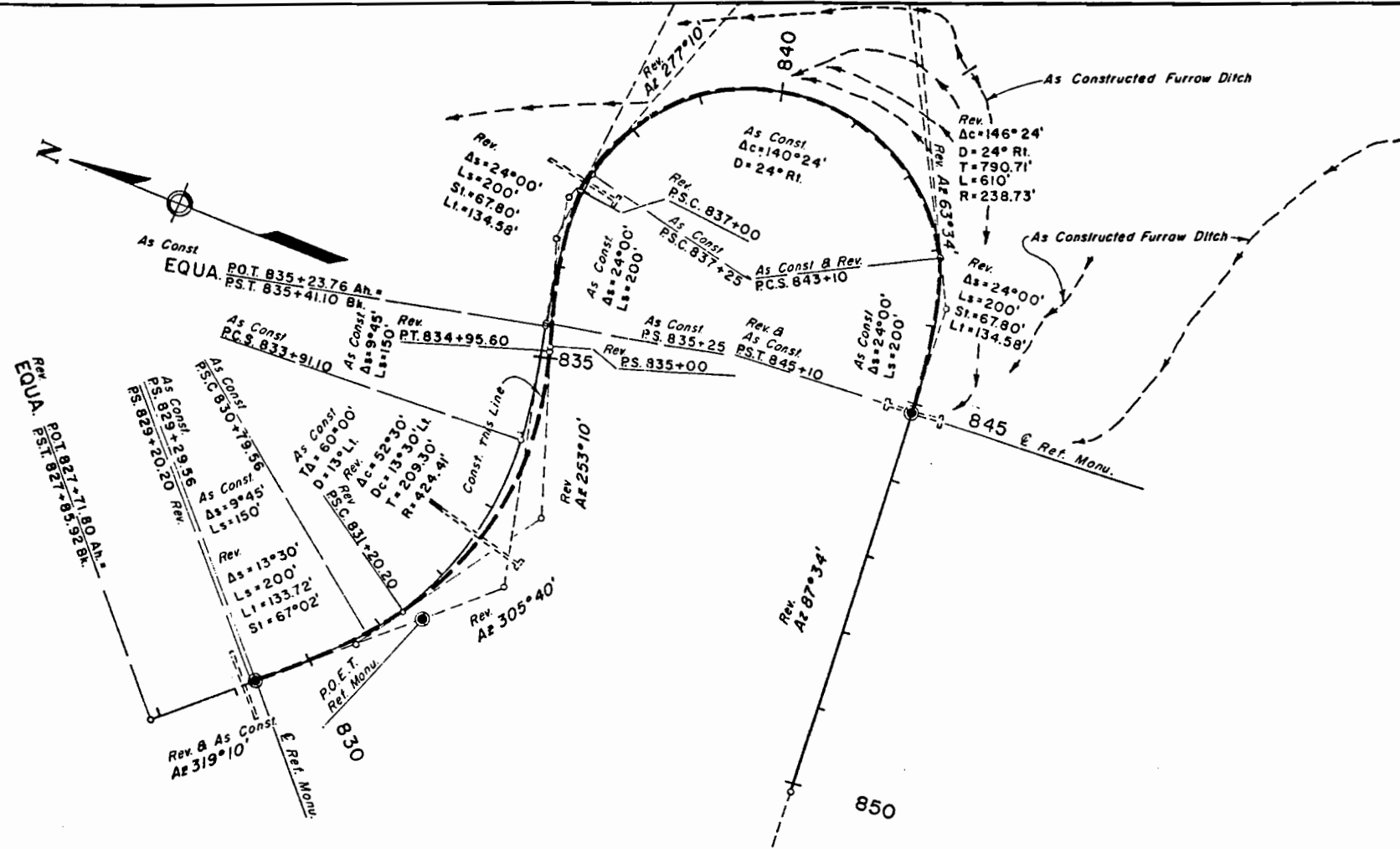
ITEM NO.	106	107(1)					108(2)	109(2)	107(1)	108(1)	109(1)	200(1)	201(1)	202(1)	203(1)	204(1)	205(1)	206(1)	207(1)	208(1)	209(1)	210(1)	211(1)	212(1)	213(1)	214(1)	215(1)	216(1)	217(1)	218(1)	219(1)	220(1)	221(1)	222(1)	223(1)	224(1)	225(1)	226(1)	227(1)	228(1)	229(1)	230(1)	231(1)	232(1)	233(1)	234(1)	235(1)	236(1)	237(1)	238(1)	239(1)	240(1)	241(1)	242(1)	243(1)	244(1)	245(1)	246(1)	247(1)	248(1)	249(1)	250(1)	251(1)	252(1)	253(1)	254(1)	255(1)	256(1)	257(1)	258(1)	259(1)	260(1)	261(1)	262(1)	263(1)	264(1)	265(1)	266(1)	267(1)	268(1)	269(1)	270(1)	271(1)	272(1)	273(1)	274(1)	275(1)	276(1)	277(1)	278(1)	279(1)	280(1)	281(1)	282(1)	283(1)	284(1)	285(1)	286(1)	287(1)	288(1)	289(1)	290(1)	291(1)	292(1)	293(1)	294(1)	295(1)	296(1)	297(1)	298(1)	299(1)	300(1)	301(1)	302(1)	303(1)	304(1)	305(1)	306(1)	307(1)	308(1)	309(1)	310(1)	311(1)	312(1)	313(1)	314(1)	315(1)	316(1)	317(1)	318(1)	319(1)	320(1)	321(1)	322(1)	323(1)	324(1)	325(1)	326(1)	327(1)	328(1)	329(1)	330(1)	331(1)	332(1)	333(1)	334(1)	335(1)	336(1)	337(1)	338(1)	339(1)	340(1)	341(1)	342(1)	343(1)	344(1)	345(1)	346(1)	347(1)	348(1)	349(1)	350(1)	351(1)	352(1)	353(1)	354(1)	355(1)	356(1)	357(1)	358(1)	359(1)	360(1)	361(1)	362(1)	363(1)	364(1)	365(1)	366(1)	367(1)	368(1)	369(1)	370(1)	371(1)	372(1)	373(1)	374(1)	375(1)	376(1)	377(1)	378(1)	379(1)	380(1)	381(1)	382(1)	383(1)	384(1)	385(1)	386(1)	387(1)	388(1)	389(1)	390(1)	391(1)	392(1)	393(1)	394(1)	395(1)	396(1)	397(1)	398(1)	399(1)	400(1)	401(1)	402(1)	403(1)	404(1)	405(1)	406(1)	407(1)	408(1)	409(1)	410(1)	411(1)	412(1)	413(1)	414(1)	415(1)	416(1)	417(1)	418(1)	419(1)	420(1)	421(1)	422(1)	423(1)	424(1)	425(1)	426(1)	427(1)	428(1)	429(1)	430(1)	431(1)	432(1)	433(1)	434(1)	435(1)	436(1)	437(1)	438(1)	439(1)	440(1)	441(1)	442(1)	443(1)	444(1)	445(1)	446(1)	447(1)	448(1)	449(1)	450(1)	451(1)	452(1)	453(1)	454(1)	455(1)	456(1)	457(1)	458(1)	459(1)	460(1)	461(1)	462(1)	463(1)	464(1)	465(1)	466(1)	467(1)	468(1)	469(1)	470(1)	471(1)	472(1)	473(1)	474(1)	475(1)	476(1)	477(1)	478(1)	479(1)	480(1)	481(1)	482(1)	483(1)	484(1)	485(1)	486(1)	487(1)	488(1)	489(1)	490(1)	491(1)	492(1)	493(1)	494(1)	495(1)	496(1)	497(1)	498(1)	499(1)	500(1)	501(1)	502(1)	503(1)	504(1)	505(1)	506(1)	507(1)	508(1)	509(1)	510(1)	511(1)	512(1)	513(1)	514(1)	515(1)	516(1)	517(1)	518(1)	519(1)	520(1)	521(1)	522(1)	523(1)	524(1)	525(1)	526(1)	527(1)	528(1)	529(1)	530(1)	531(1)	532(1)	533(1)	534(1)	535(1)	536(1)	537(1)	538(1)	539(1)	540(1)	541(1)	542(1)	543(1)	544(1)	545(1)	546(1)	547(1)	548(1)	549(1)	550(1)	551(1)	552(1)	553(1)	554(1)	555(1)	556(1)	557(1)	558(1)	559(1)	560(1)	561(1)	562(1)	563(1)	564(1)	565(1)	566(1)	567(1)	568(1)	569(1)	570(1)	571(1)	572(1)	573(1)	574(1)	575(1)	576(1)	577(1)	578(1)	579(1)	580(1)	581(1)	582(1)	583(1)	584(1)	585(1)	586(1)	587(1)	588(1)	589(1)	590(1)	591(1)	592(1)	593(1)	594(1)	595(1)	596(1)	597(1)	598(1)	599(1)	600(1)	601(1)	602(1)	603(1)	604(1)	605(1)	606(1)	607(1)	608(1)	609(1)	610(1)	611(1)	612(1)	613(1)	614(1)	615(1)	616(1)	617(1)	618(1)	619(1)	620(1)	621(1)	622(1)	623(1)	624(1)	625(1)	626(1)	627(1)	628(1)	629(1)	630(1)	631(1)	632(1)	633(1)	634(1)	635(1)	636(1)	637(1)	638(1)	639(1)	640(1)	641(1)	642(1)	643(1)	644(1)	645(1)	646(1)	647(1)	648(1)	649(1)	650(1)	651(1)	652(1)	653(1)	654(1)	655(1)	656(1)	657(1)	658(1)	659(1)	660(1)	661(1)	662(1)	663(1)	664(1)	665(1)	666(1)	667(1)	668(1)	669(1)	670(1)	671(1)	672(1)	673(1)	674(1)	675(1)	676(1)	677(1)	678(1)	679(1)	680(1)	681(1)	682(1)	683(1)	684(1)	685(1)	686(1)	687(1)	688(1)	689(1)	690(1)	691(1)	692(1)	693(1)	694(1)	695(1)	696(1)	697(1)	698(1)	699(1)	700(1)	701(1)	702(1)	703(1)	704(1)	705(1)	706(1)	707(1)	708(1)	709(1)	710(1)	711(1)	712(1)	713(1)	714(1)	715(1)	716(1)	717(1)	718(1)	719(1)	720(1)	721(1)	722(1)	723(1)	724(1)	725(1)	726(1)	727(1)	728(1)	729(1)	730(1)	731(1)	732(1)	733(1)	734(1)	735(1)	736(1)	737(1)	738(1)	739(1)	740(1)	741(1)	742(1)	743(1)	744(1)	745(1)	746(1)	747(1)	748(1)	749(1)	750(1)	751(1)	752(1)	753(1)	754(1)	755(1)	756(1)	757(1)	758(1)	759(1)	760(1)	761(1)	762(1)	763(1)	764(1)	765(1)	766(1)	767(1)	768(1)	769(1)	770(1)	771(1)	772(1)	773(1)	774(1)	775(1)	776(1)	777(1)	778(1)	779(1)	780(1)	781(1)	782(1)	783(1)	784(1)	785(1)	786(1)	787(1)	788(1)	789(1)	790(1)	791(1)	792(1)	793(1)	794(1)	795(1)	796(1)	797(1)	798(1)	799(1)	800(1)	801(1)	802(1)	803(1)	804(1)	805(1)	806(1)	807(1)	808(1)	809(1)	810(1)	811(1)	812(1)	813(1)	814(1)	815(1)	816(1)	817(1)	818(1)	819(1)	820(1)	821(1)	822(1)	823(1)	824(1)	825(1)	826(1)	827(1)	828(1)	829(1)	830(1)	831(1)	832(1)	833(1)	834(1)	835(1)	836(1)	837(1)	838(1)	839(1)	840(1)	841(1)	842(1)	843(1)	844(1)	845(1)	846(1)	847(1)	848(1)	849(1)	850(1)	851(1)	852(1)	853(1)	854(1)	855(1)	856(1)	857(1)	858(1)	859(1)	860(1)	861(1)	862(1)	863(1)	864(1)	865(1)	866(1)	867(1)	868(1)	869(1)	870(1)	871(1)	872(1)	873(1)	874(1)	875(1)	876(1)	877(1)	878(1)	879(1)	880(1)	881(1)	882(1)	883(1)	884(1)	885(1)	886(1)	887(1)	888(1)	889(1)	890(1)	891(1)	892(1)	893(1)	894(1)	895(1)	896(1)	897(1)	898(1)	899(1)	900(1)	901(1)	902(1)	903(1)	904(1)	905(1)	906(1)	907(1)	908(1)	909(1)	910(1)	911(1)	912(1)	913(1)	914(1)	915(1)	916(1)	917(1)	918(1)	919(1)	920(1)	921(1)	922(1)	923(1)	924(1)	925(1)	926(1)	927(1)	928(1)	929(1)	930(1)	931(1)	932(1)	933(1)	934(1)	935(1)	936(1)	937(1)	938(1)	939(1)	940(1)	941(1)	942(1)	943(1)	944(1)	945(1)	946(1)	947(1)	948(1)	949(1)	950(1)	951(1)	952(1)	953(1)	954(1)	955(1)	956(1)	957(1)	958(1)	959(1)	960(1)	961(1)	962(1)	963(1)	964(1)	965(1)	966(1)	967(1)	968(1)	969(1)	970(1)	971(1)	972(1)	973(1)	974(1)	975(1)	976(1)	977(1)	978(1)	979(1)	980(1)	981(1)	982(1)	983(1)	984(1)	985(1)	986(1)	987(1)	988(1)	989(1)	990(1)	991(1)	992(1)	993(1)	994(1)	995(1)	996(1)	997(1)	998(1)	999(1)	1000(1)	1001(1)	1002(1)	1003(1)	1004(1)	1005(1)	1006(1)	1007(1)	1008(1)	1009(1)	1010(1)	1011(1)	1012(1)	1013(1)	1014(1)	1015(1)	1016(1)	1017(1)	1018(1)	1019(1)	1020(1)	1021(1)	1022(1)	1023(1)	1024(1)	1025(1)	1026(1)	1027(1)	1028(1)	1029(1)	1030(1)	1031(1)	1032(1)	1033(1)	1034(1)	1035(1)	1036(1)	1037(1)	1038(1)	1039(1)	1040(1)	1041(1)	1042(1)	1043(1)	1044(1)	1045(1)	1046(1)	1047(1)	1048(1)	1049(1)	1050(1)	1051(1)	1052(1)	1053(1)	1054(1)	1055(1)	1056(1)	1057(1)	1058(1)	1059(1)	1060(1)	1061(1)	1062(1)	1063(1)	1064(1)	1065(1)	1066(1)	1067(1)	1068(1)	1069(1)	1070(1)	1071(1)	1072(1)	1073(1)	1074(1)	1075(1)	1076(1)	1077(1)	1078(1)	1079(1)	1080(1)	1081(1)	1082(1)	1083(1)	1084(1)	1085(1)	1086(1)	1087(1)	1088(1)	1089(1)	1090(1)	1091(1)	1092(1)	1093(1)	1094(1)	1095(1)	1096(1)	1097(1)	1098(1)	1099(1)	1100(1)	1101(1)	1102(1)	1103(1)	1104(1)	1105(1)	1106(1)	1107(1)	1108(1)	1109(1)	1110(1)	1111(1)	1112(1)	1113(1)	1114(1)	1115(1)	1116(1)	1117(1)	1118(1)	1119(1)	1120(1)	1121(1)	1122(1)	1123(1)	1124(1)	1125(1)	1126(1)	1127(1)	1128(1)	1129(1)	1130(1)	1131(1)	1132(1)	1133(1)	1134(1)	1135(1)	1136(1)	1137(1)	1138(1)	1139(1)	1140(1)	1141(1)	1142(1)	1143(1)	1144(1)	1145(1)	1146(1)	1147(1)	1148(1)	1149(1)	1150(1)	1151(1)	1152(1)	1153(1)	1154(1)	1155(1)	1156(1)	1157(1)	1158(1)	1159(1)	1160(1)	1161(1)	1162(1)	1163(1)	1164(1)	1165(1)	1166(1)	1167(1)	1168(1)	1169(1)	1170(1)	1171(1)	1172(1)	1173(1)	1174(1)	1175(1)	1176(1)	1177(1)	1178(1)	1179(1)	1180(1)	1181(1)	1182(1)	1183(1)	1184(1)	1185(1)	1186(1)	1187(1)	1188(1)	1189(1)	1190(1)	1191(1)	1192(1)	1193(1)	1194(1)	1195(1)	1196(1)	1197(1)	1198(1)	1199(1)	1200(1)	1201(1)	1202(1)	1203(1)	1204(1)	1205(1)	1206(1)	1207(1)	1208(1)	1209(1)	1210(1)	1211(1)	1212(1)	1213(1)	1214(1)	1215(1)	1216(1)	1217(1)	1218(1)	1219(1)	1220(1)	1221(1)	1222(1)	1223(1)	1224(1)	1225(1)	1226(1)	1227(1)	1228(1)	1229(1)	1230(1)	1231(1)	1232(1)	1233(1)	1234(1)	1235(1)	1236(1)	1237(1)	1238(1)	1239(1)	1240(1)	1241(1)	1242(1)	1243(1)	1244(1)	1245(1)	1246(1)	1247(1)	1248(1)	1249(1)	1250(1)	1251(1)	1252(1)	1253(1)	1254(1)	1255(1)	1256(1)	1257(1)	1258(1)	1259(1)	1260(1)	1261(1)	1262(1)	1263(1)	1264(1)	1265(1)	1266(1)	1267(1)	1268(1)	1269(1)	1270(1)	1271(1)	1272(1)	1273(1)	1274(1)	1275(1)	1276(1)	1277(1)	1278(1)	1279(1)	1280(1)	1281(1)	1282(1)	1283(1)	1284(1)	1285(1)	1286(1)	1287(1)	1288(1)	1289(1)	1290(1)	1291(1)	1292(1)	1293(1)	1294(1)	1295(1)	1296(1)	1297(1)	1298(1)	1299(1)	1300(1)	1301(1)	1302(1)	1303(1)	1304(1)	1305(1)	1306(1)	1307(1)	1308(1)	1309(1)	1310(1)	1311(1)	1312(1)	1313(1)	1314(1)	1315(1)	1316(1)	1317(1)	1318(1)	1319(1)	1320(1)	1321(1)	1322(1)	1323(1)	1324(1)	1325(1)	1326(1)	1327(1)	1328(1)	1329(1)	1330(1)	1331(1)	1332(1)	1333(1)	1334(1)	1335(1)	1336(1)	1337(1)	1338(1)	1339(1)	1340(1)	1341(1)	1342(1)	1343(1)	1344(1)	1345(1)	1346(1)	1347(1)	1348(1)	1349(1)	1350(1)	1351(1)	1352(1)	1353(1)	1354(1)	1355(1)	1356(1)	1357(1)	1358(1)	1359(1)	1360(1)	1361(1)	1362(1)	1363(1)	1364(1)	1365(1)	1366(1)	1367(1)	1368(1)	1369(1)	1370(1)	137
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SUMMARY OF ESTIMATED QUANTITIES

The following quantities are approximate. Payment will be made only for the quantities of work performed or materials furnished in accordance with the contract.

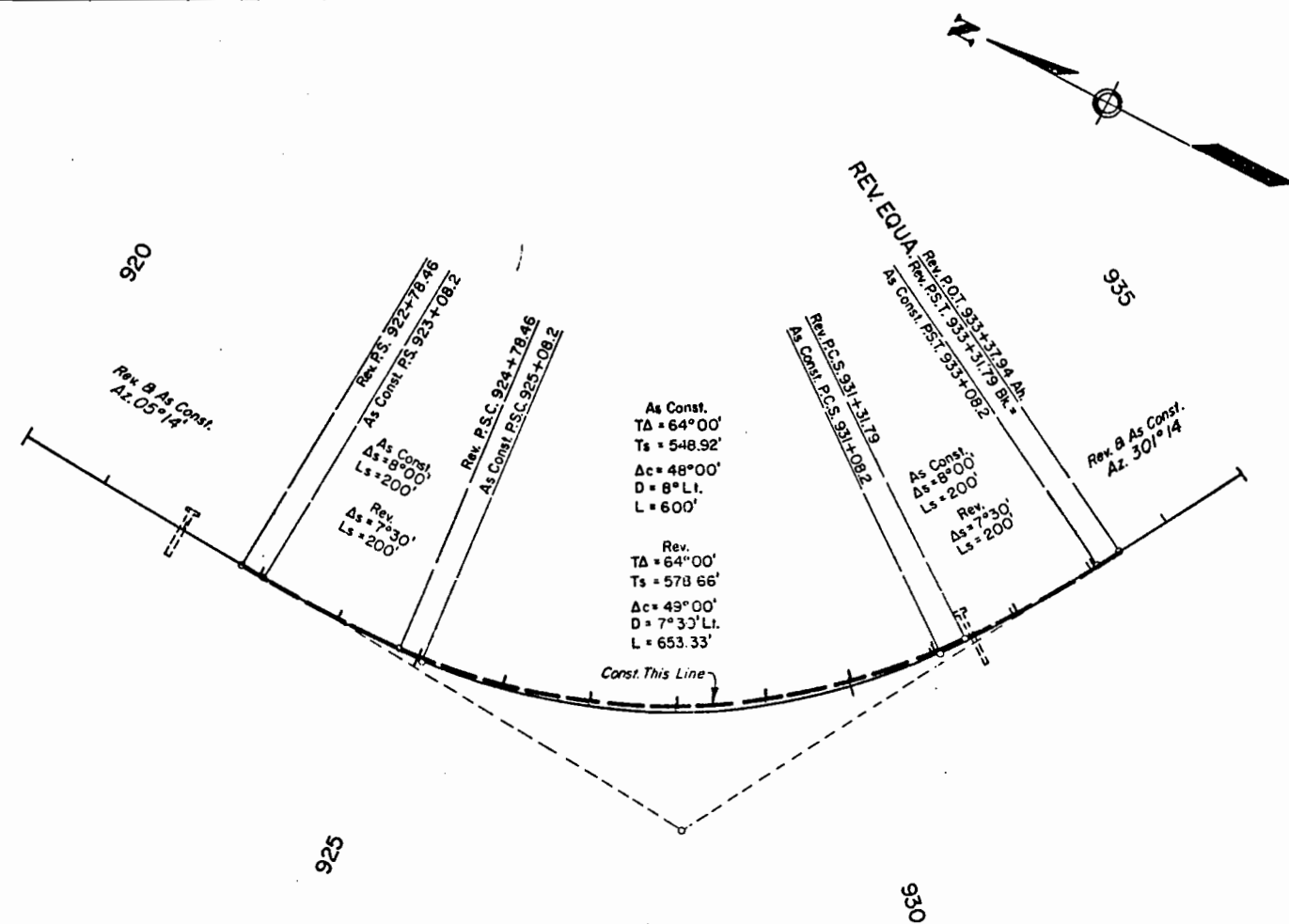
SUMMARY OF QUANTITIES

ITEM NO.																								
STATION TO STATION		Section	Length	SUBBASE		LIME STABILIZATION			RECONSTRUCTION OF ROADBED		BASE			PRIME COAT		PLANT MIXED BASE			TACK COAT		PLANT MIXTURE			
				Width	Depth	Cu. Ft.	Width	Depth	Cu. Ft.	Width	Sq. Yd.	Width	Depth	Cu. Ft.	Width	Sq. Yd.	Width	Depth	Cu. Ft.	Width	Sq. Yd.	Width	Depth	Cu. Ft.
Asphaltic Rubbl & Bit. Slab, Base																								
605+00 to 605+50	13-1(1)	1,700	36"	11"		56,304				31.5'	4"	17,812	36"	4,600	30'	1.5"	6,325							
605+00 to 625+00	13-1(1)	1,981	36"	7"		47,363				31.5'	4"	20,740	36"	7,924	30'	1.5"	7,429							
625+00 to 635+00	13-1(1)	1,000	36"	4"		11,880				31.5'	4"	10,480	36"	4,000	30'	1.5"	3,750							
635+00 to 652+00	13-1(1)	2,200								31.5'	4"	23,077	36"	8,600	30'	1.5"	8,250							
652+00 to 675+00	13-1(1)	1,800	36"	3"		16,200				31.5'	4"	18,841	36"	7,250	30'	1.5"	6,750							
675+00 to 685+00	13-1(1)	1,000								31.5'	4"	10,480	36"	4,000	30'	1.5"	3,750							
685+00 to 720+00	13-1(1)	3,528	36"	9"		95,256				31.5'	4"	37,307	36"	14,112	30'	1.5"	13,230							
720+00 to 731+00	13-1(1)	1,139								31.5'	4"	14,025	36"	5,356	30'	1.5"	5,021							
731+00 to 745+00	13-1(1)	1,211	36"	4"		14,387				31.5'	4"	12,707	36"	4,804	30'	1.5"	4,517							
745+00 to 755+00	13-1(1)	1,000	36"	8"		24,120				31.5'	4"	10,480	36"	4,000	30'	1.5"	3,750							
755+00 to 765+00	13-1(1)	1,000	36"	10"		29,580				31.5'	4"	14,480	36"	4,000	30'	1.5"	3,750							
765+00 to 775+00	13-1(1)	948	36"	5"		13,729				31.5'	4"	9,524	36"	3,642	30'	1.5"	3,405							
775+00 to 790+00	13-1(1)	1,500	36"	8"		36,180				31.5'	4"	15,234	36"	6,000	30'	1.5"	5,625							
790+00 to 790+00 (Shoulders)	13-1(1)	20,167	Variable	Variable		38,467				2.25'	4"	15,125			0.75'	1.5"	1,891							
790+00 to 962+50	13-E	17,132	12'	3"		137,656				24'	4"	159,809	32'	60,914	28'	1.5"	59,962							
962+50 to 962+50 (Shoulders)	13-E	17,132	1.5'	3"		6,424				1.5'	4"	4,566			0.5'	1.5"	1,001							
Curve Widening	13-E	4,630	2'	3"		2,315				2'	4"	3,048	21'	1,029	21'	1.5"	1,154							
Special Work Areas																								
61+50 to 70+50	13-1(1)	200	30'	8"		5,203																		
70+50 to 80+50	13-E	450	35'	9"		11,493																		
80+50 to 82+50	13-E	450	35'	9"		11,611																		
82+50 to 84+50	13-E	2,114	35'	9"		55,493																		
84+50 to 85+50	13-E	400	35'	9"		10,500																		
85+50 to 85+50	13-E	200	35'	9"		5,250																		
85+50 to 87+50	13-E	250	35'	9"		6,561																		
87+50 to 912+00	13-E	1,812	35'	9"		47,565																		
912+00 to 920+00	13-E	1,000	35'	9"		25,250																		
Shoulders	13-1(1) & E	6,876	4.5'	9"		23,206																		
Curve Widening	13-E	2,010	2'	9"		3,015																		
Lime Slab & Bit. Surfacing																								
662+50 to 765+50	13-C	2,250																	23'	5,750	22.5'	1.5"	6,328	
665+00 to 695+00	13-C	1,000					26'	12"	26,000	26'	2,889	24'	1"	8,000	24'	2,667			23'		22.5'	2"	3,750	
725+00 to 928+50	13-C	350																	23'	894	22.5'	1.5"	984	
928+50 to 1022+50	13-C	2,150					26'	12"	61,100	26'	6,789	24'	1"	18,800	24'	6,267			23'		22.5'	2"	8,813	
1022+50 to 1028+50	13-C	200																	23'	511	22.5'	1.5"	563	
1028+50 to 1027+50	13-C	350					26'	12"	9,100	26'	1,011	24'	1"	2,300	24'	933			23'		22.5'	2"	1,313	
1027+50 to 1033+00	13-C	550																	23'	1,406	22.5'	1.5"	1,547	
1033+00 to 1033+00	13-C	5,790					26'	12"	150,940	26'	16,726	24'	1"	46,320	24'	15,440			23'		22.5'	2"	21,713	
1033+00 to 1096+50	13-C	600																	23'	1,533	22.5'	1.5"	1,688	
1096+50 to 1096+50	13-C	550					26'	12"	14,300	26'	1,589	24'	1"	4,400	24'	1,467			23'		22.5'	2"	2,063	
1096+50 to 1102+50	13-C	1,100																	23'	2,811	22.5'	1.5"	3,094	
1102+50 to 1113+00	13-C	1,000					26'	12"	26,000	26'	2,889	24'	1"	8,000	24'	2,667			23'		22.5'	2"	3,750	
1113+00 to 1123+00	13-C & B	1,300																	23'	3,322	22.5'	1.5"	3,656	
1123+00 to 1136+00	13-B	900					26'	12"	23,400	26'	2,600	24'	1"	7,200	24'	2,400			23'		22.5'	2"	3,375	
1136+00 to 1145+00	13-B	5,000																	23'	12,728	22.5'	1.5"	14,063	
1145+00 to 1223+00	13-B	2,800					26'	12"	72,800	26'	8,069	24'	1"	22,400	24'	7,467			23'		22.5'	2"	10,500	
1223+00 to 1227+00	13-B	400																	23'	1,022	22.5'	1.5"	1,125	
1227+00 to 1310+00	13-B & A	8,300					26'	12"	215,800	26'	23,978	24'	1"	66,400	24'	22,133			23'		22.5'	2"	31,125	
1310+00 to 1323+00	13-A	1,300																	23'	3,322	22.5'	1.5"	3,656	
1323+00 to 1336+00	13-A	1,300					26'	12"	33,															

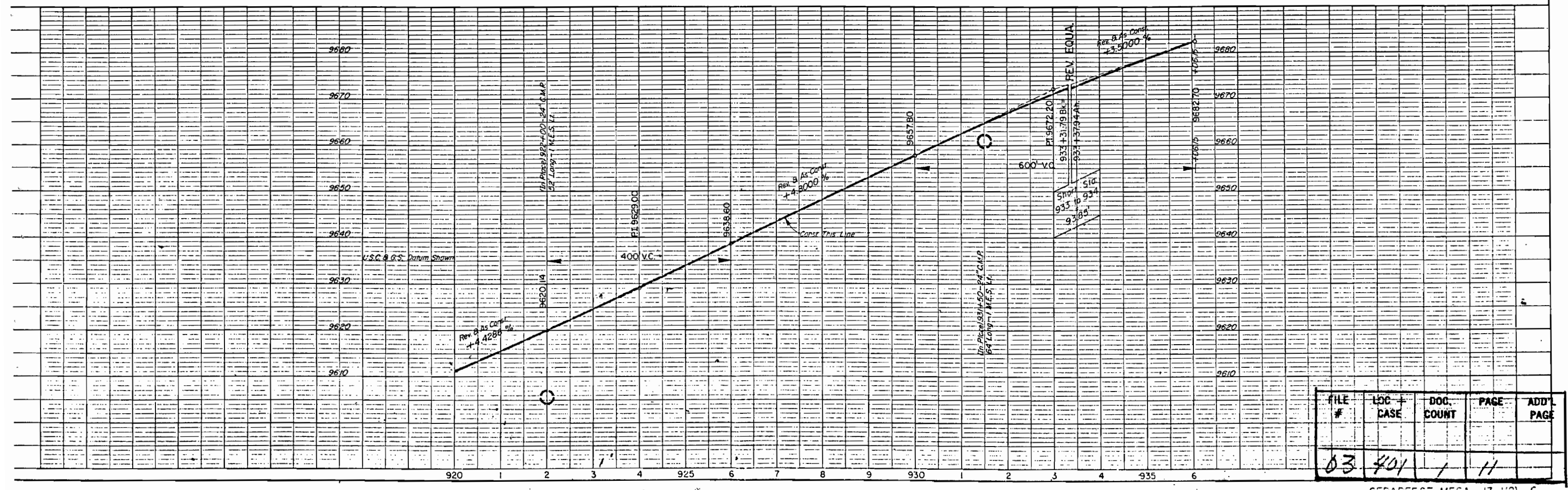


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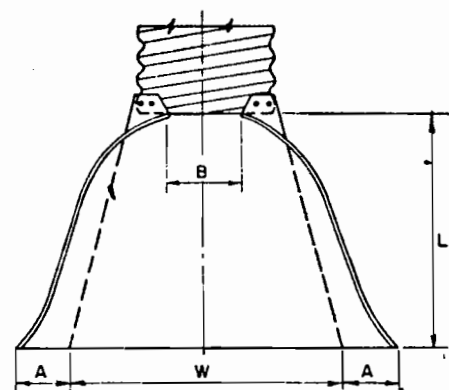
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03	401	1	10	



"The Alignment and Grade as hereon shown are subject to adjustment."

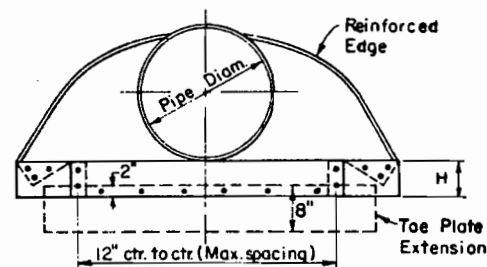


FILE #	LOC + CASE	DOC. COUNT	PAGE	ADD'L PAGE
03	401	1	11	

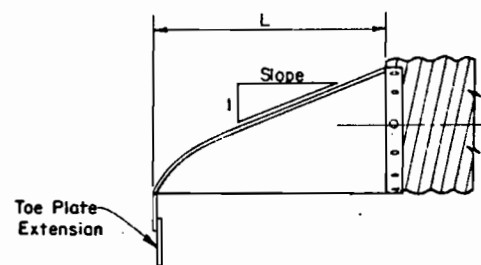


PLAN VIEW

Pipe Diam.	Gage	Dimensions					Approx Slope	Body
		A (1" ±)	B (Max)	H (1" ±)	L (1 1/2" ±)	W (2" ±)		
12"	16	6"	6"	6"	21"	24"	2 1/2	1 Pc.
15"	16	7"	8"	6"	26"	30"	2 1/2	1 Pc.
18"	16	8"	10"	6"	31"	36"	2 1/2	1 Pc.
21"	16	9"	12"	6"	36"	42"	2 1/2	1 Pc.
24"	16	10"	13"	6"	41"	48"	2 1/2	1 Pc.
30"	14	12"	16"	8"	51"	60"	2 1/2	1 Pc.
36"	14	14"	19"	9"	60"	72"	2 1/2	2 Pc.
42"	12	16"	22"	11"	69"	84"	2 1/2	2 Pc.
48"	12	18"	27"	12"	78"	90"	2 1/2	2 Pc.
54"	12	18"	30"	12"	84"	102"	2	2 Pc.
60"	12	18"	33"	12"	87"	114"	1 3/4	3 Pc.
66"	12	18"	36"	12"	87"	120"	1 1/2	3 Pc.
72"	12	18"	39"	12"	87"	126"	1 1/3	3 Pc.
78"	12	18"	42"	12"	87"	132"	1 1/4	3 Pc.
84"	12	18"	45"	12"	87"	138"	1 1/6	3 Pc.



ELEVATION

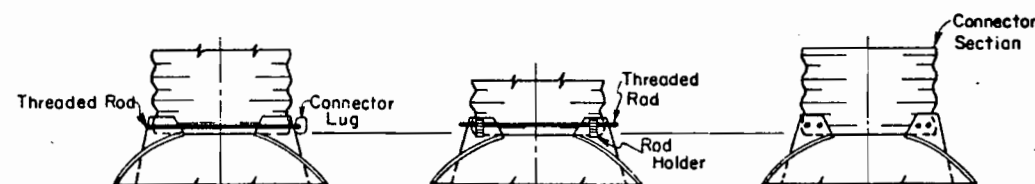


TYPICAL CROSS SECTION

GENERAL NOTES

- All 3 piece bodies to have 12 gage sides and 10 gage center panels. Width of center panels to be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams which are to be tightly joined by $\frac{3}{8}$ " ϕ galvanized rivets or bolts.
- For 60" thru 84" sizes, reinforced edges to be supplemented with galvanized stiffener angles. The angles will be $2 \times 2 \times \frac{1}{4}$ " for 60" thru 72" diameter and $2 \frac{1}{2} \times 2 \frac{1}{2} \times \frac{1}{4}$ " for 78" and 84" diameter. The angles to be attached by $\frac{3}{8}$ " ϕ galvanized nuts and bolts.
- Toe plates shall be installed on end sections when directed by the Engineer. Toe plates shall be the same gage as end section.

METAL END SECTION FOR PIPE CULVERTS



TYPE 1

For 12" thru 24" only

TYPE 2

For 30" & 36" only

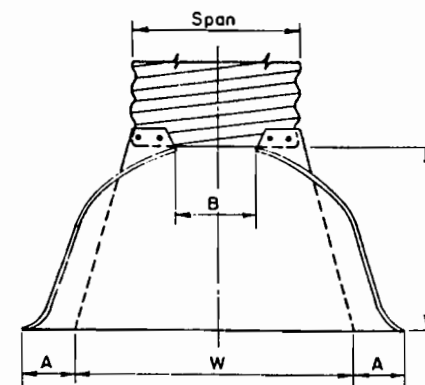
TYPE 3

For 42" thru 84" only

Note:

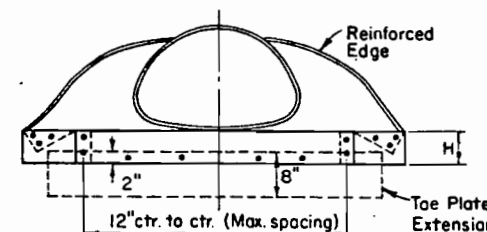
Type 3 connection includes one foot of pipe length for 42" thru 84" diameter as a connector section. The connector section will be attached to the end section by galvanized rivets or bolts and will be the same gage as the end section.

STANDARD CONNECTION FOR PIPE CULVERTS

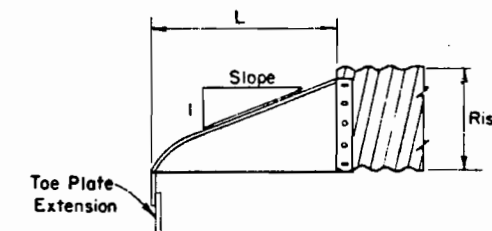


PLAN VIEW

Pipe-Arch Dimensions	Span	Rise	Gage	Dimension					Approx Slope	Body
				A (1" ±)	B (Max)	H (1" ±)	L (1 1/2" ±)	W (2" ±)		
18"	11"	16	7"	9"	6"	19"	30"	2 1/2	1 Pc.	
22"	13"	16	7"	10"	6"	23"	36"	2 1/2	1 Pc.	
25"	16"	16	8"	12"	6"	28"	42"	2 1/2	1 Pc.	
29"	18"	16	9"	14"	6"	32"	48"	2 1/2	1 Pc.	
36"	22"	14	10"	16"	6"	39"	60"	2 1/2	1 Pc.	
43"	27"	14	12"	18"	8"	46"	75"	2 1/2	1 Pc.	
50"	31"	12	13"	21"	9"	53"	85"	2 1/2	2 Pc.	
58"	36"	12	18"	26"	12"	63"	90"	2 1/2	2 Pc.	
65"	40"	12	18"	30"	12"	70"	102"	2 1/4	2 Pc.	
72"	44"	12	18"	33"	12"	77"	114"	2 1/4	3 Pc.	
79"	49"	12	18"	36"	12"	77"	126"	2	3 Pc.	
85"	54"	12	18"	39"	12"	77"	138"	2	3 Pc.	



ELEVATION

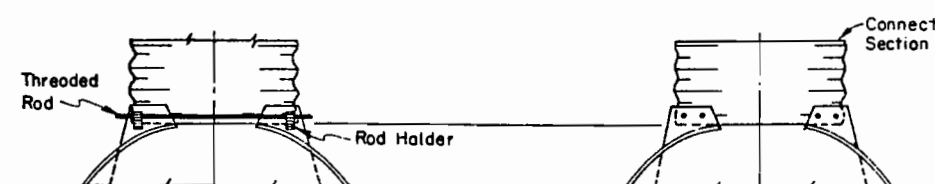


TYPICAL CROSS SECTION

GENERAL NOTES

- All 3 piece bodies to have 12 gage sides and 10 gage center panels. Width of center panels to be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams which are to be tightly joined by $\frac{3}{8}$ " ϕ galvanized rivets or bolts.
- For the 79"x 49" and 85"x 54" sizes, reinforced edge to be supplemented by $2 \times 2 \times \frac{1}{4}$ " galvanized angles. The angles to be attached by $\frac{3}{8}$ " ϕ galvanized nuts and bolts.
- Angle reinforcement will be placed under the center panel seams on the 79"x 49" and 85"x 54" sizes.
- Toe plates shall be installed on end sections when directed by the Engineer. Toe plates shall be the same gage as end section.

METAL END SECTION FOR PIPE-ARCH CULVERTS



TYPE 2

For 18" x 11" thru 58" x 36" only

TYPE 3

For 65" x 40" thru 85" x 54" only

Note:

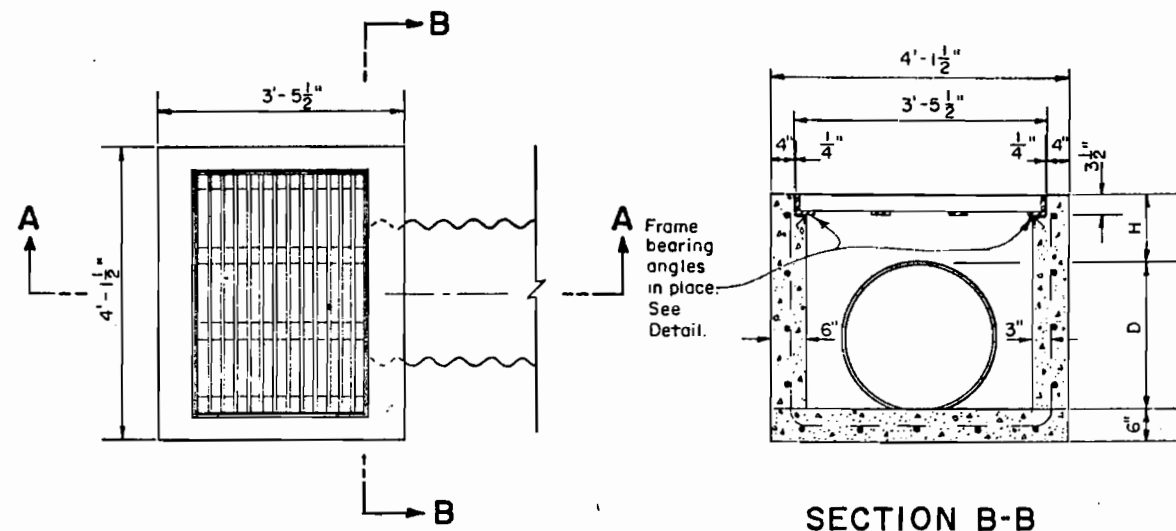
Type 3 connection includes one foot of the pipe length for 65" x 40" thru 85" x 54" sizes as a connector section. The connector section will be attached to the end section by galvanized rivets or bolts and will be the same gage as the end section.

STANDARD CONNECTION FOR PIPE-ARCH CULVERTS

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03	401	1	14	

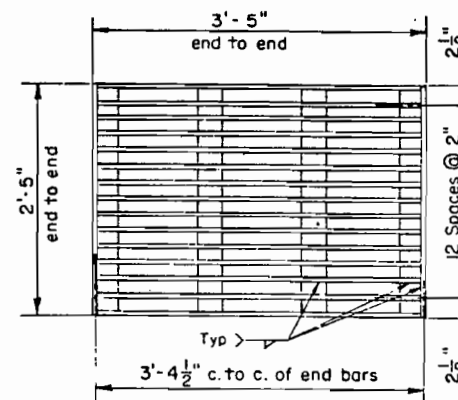
U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

STANDARD METAL END SECTIONS FOR METAL PIPE CULVERTS



PLAN

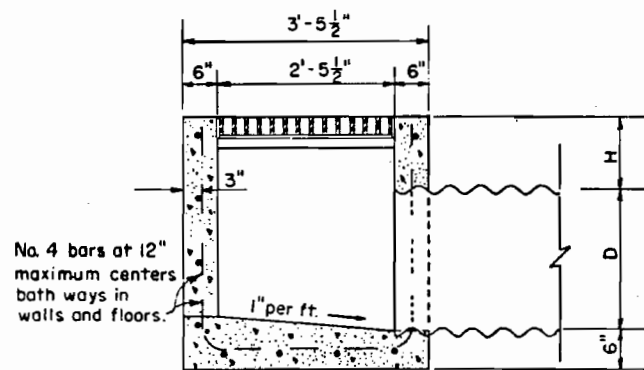
SECTION B-B



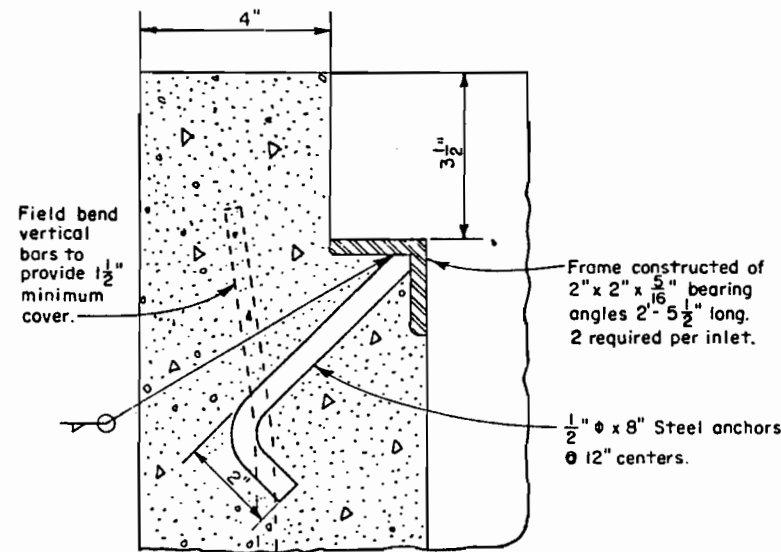
Note: All connections may be welded on one side of bar only.

STEEL GRATING

MATERIAL FOR STEEL GRATING & FRAME	
6 Bars	3" x 1/2" x 2'-5"
15 Bars	3" x 1/2" x 3'-4"
2 Angles	2" x 2" x 5/16" x 2'-5 1/2"
Approx. Weight = 342 lbs.	



SECTION A-A



Note: No point on surfaces of steel in contact with concrete.

DETAIL OF BEARING ANGLE FRAME

MATERIAL QUANTITIES FOR ONE DROP INLET													
Units	CONCRETE						STEEL GRATING & FRAME	REINFORCEMENT STEEL					
	6"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"		6"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"
H	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
18"	0.71	0.83	0.95	1.08	1.20	1.32	342	61	71	80	90	100	110
24"	0.81	0.93	1.05	1.17	1.30	1.42	342	71	80	90	100	110	120
30"	0.90	1.02	1.14	1.26	1.38	1.51	342	80	90	100	110	120	130
36"	0.98	1.10	1.22	1.34	1.47	1.59	342	90	100	110	120	130	140

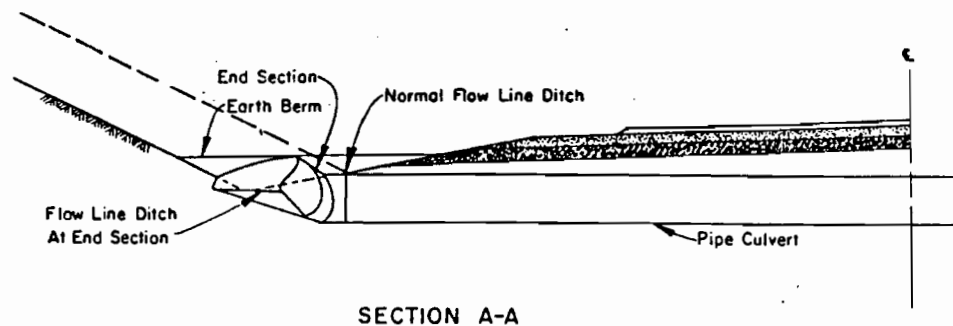
GENERAL NOTES

Concrete: All concrete shall be Class "A" with Type II (Low Alkali) Portland Cement and with an air-entraining admixture. Exposed edges and corners shall be chamfered 3/4".

Steel Grating: All steel shall conform to A.S.T.M. Designation A-36, and shall be painted in accordance with the provisions of Section 420 of the Specifications, F.P. 61.

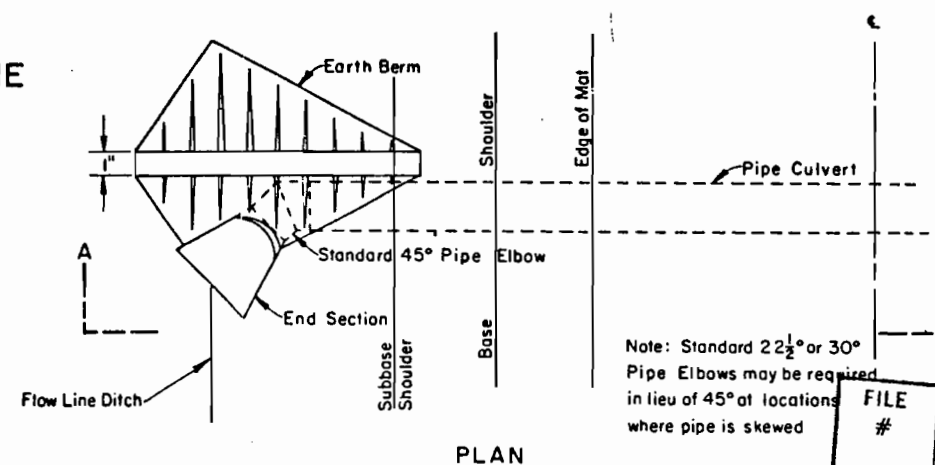
Foundation: Foundations shall be inspected and approved by the Engineer prior to pouring the floor.

Construction: The inlets shall be constructed with horizontal tops unless otherwise directed by the Engineer at locations where a sloping top and grating will fit adjacent ground slopes. The inlet shall also be constructed with openings in the back or sides to provide for small surface flows when directed by the Engineer.



SECTION A-A

TYPICAL END SECTION INSTALLATION IN CUT SECTION



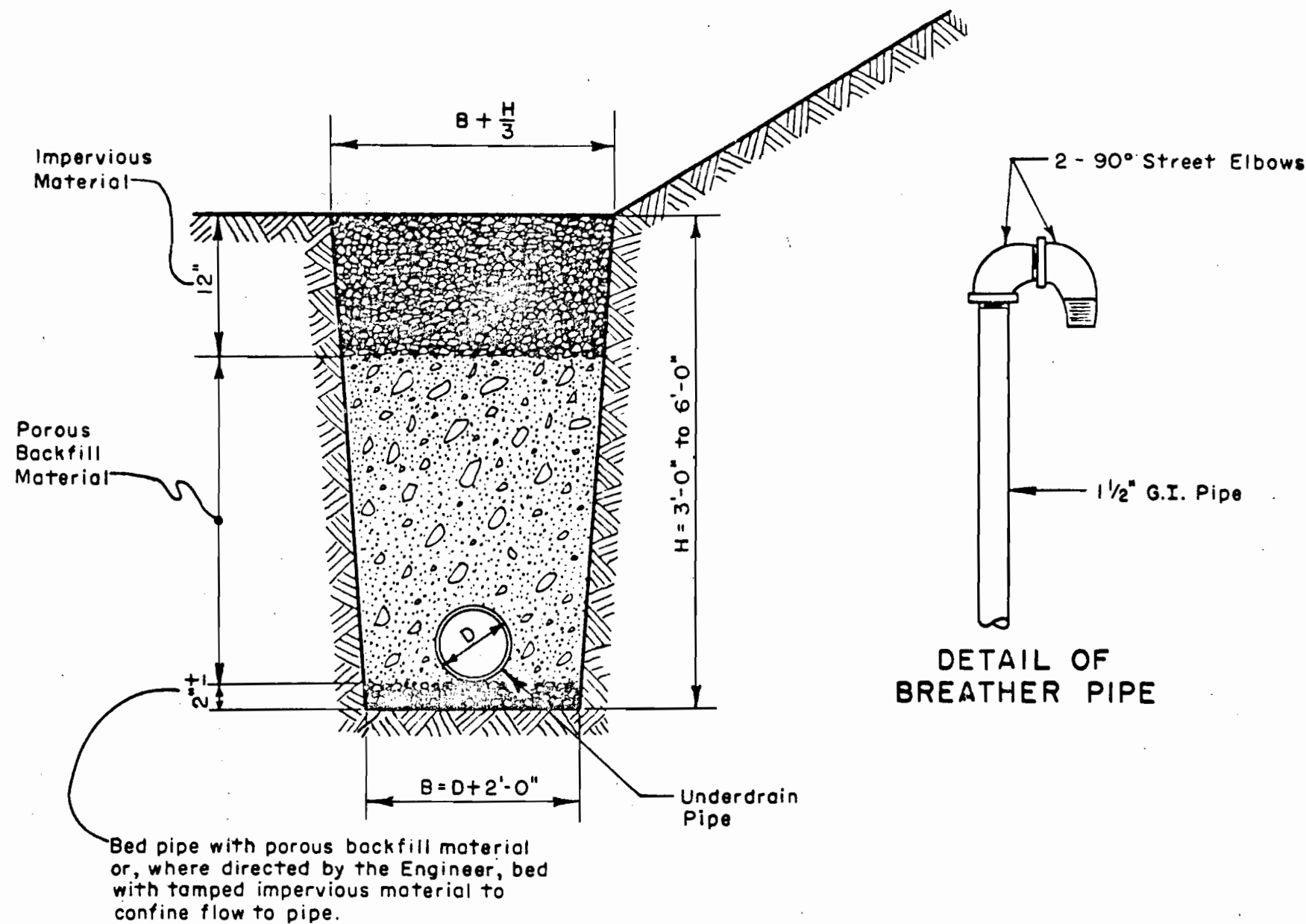
PLAN

Note: Standard 22 1/2° or 30° Pipe Elbows may be required in lieu of 45° at locations where pipe is skewed

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U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
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STANDARD CONCRETE DROP INLETS AND PIPE-ELBOW INLETS



PIPE UNDERDRAIN

GENERAL NOTES

SPECIFICATIONS: Current B.P.R. Standard Specifications

MATERIAL: Porous granular backfill shall be clean, coarse sand and shall conform to the following gradation requirements:

Passing 3" Sieve 100%

Passing #4 Sieve 50% Min.

All porous material passing the #4 sieve shall conform to the following:

Passing #50 Sieve 10 - 30%

Passing #100 Sieve 0 - 10%

Passing #200 Sieve 0 - 2%

Impervious material shall contain sufficient granular material to be stable when wet and compacted in place

CONSTRUCTION: When trench is under the roadbed, paved ditch, or other structure, the porous material shall completely fill the trench and the porous material shall be tamped into place. The material shall be dampened prior to placing if necessary to prevent segregation. If soft, mucky trench bottoms are encountered they shall be stabilized prior to placing bedding material by working granular material into the trench bottom.

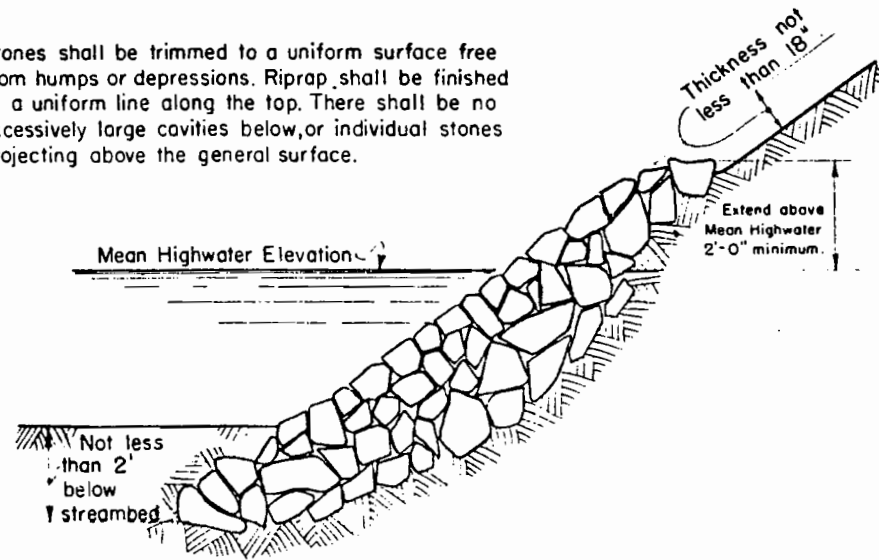
The outfall end of underdrain pipe shall be covered with galvanized, No. 17 gage hardware cloth screen having approximately 1/2" x 1/2" mesh openings. The screen shall be held securely in place with standard coupling bands.

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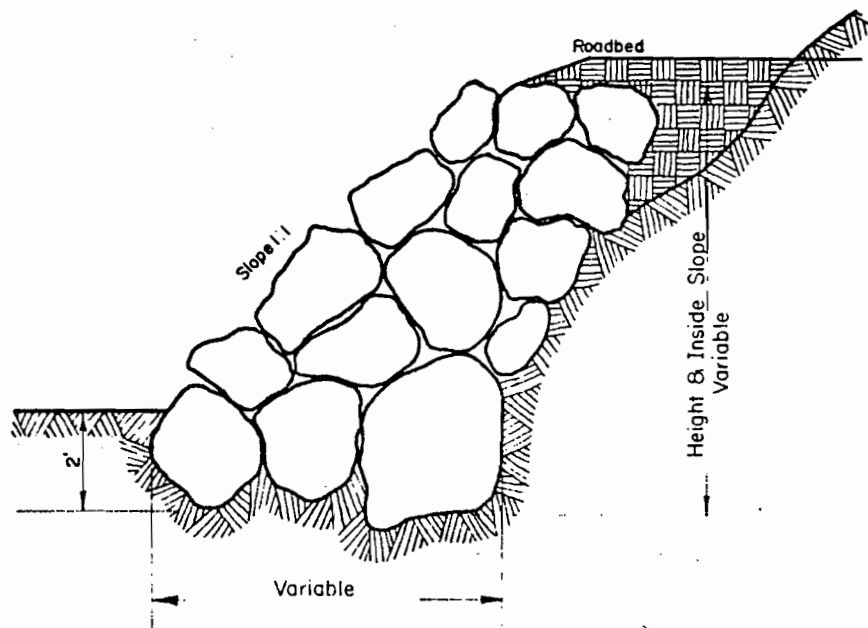
STANDARD UNDERDRAIN

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Stones shall be trimmed to a uniform surface free from humps or depressions. Riprap shall be finished to a uniform line along the top. There shall be no excessively large cavities below, or individual stones projecting above the general surface.

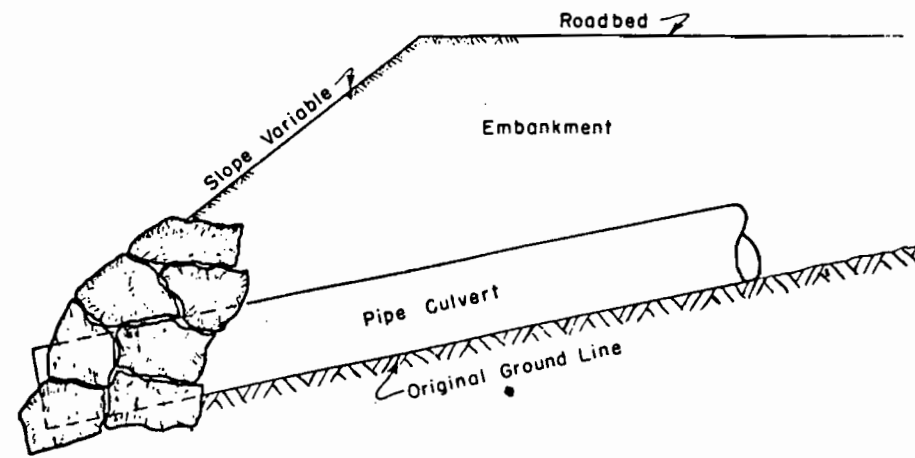


LOOSE RIPRAP

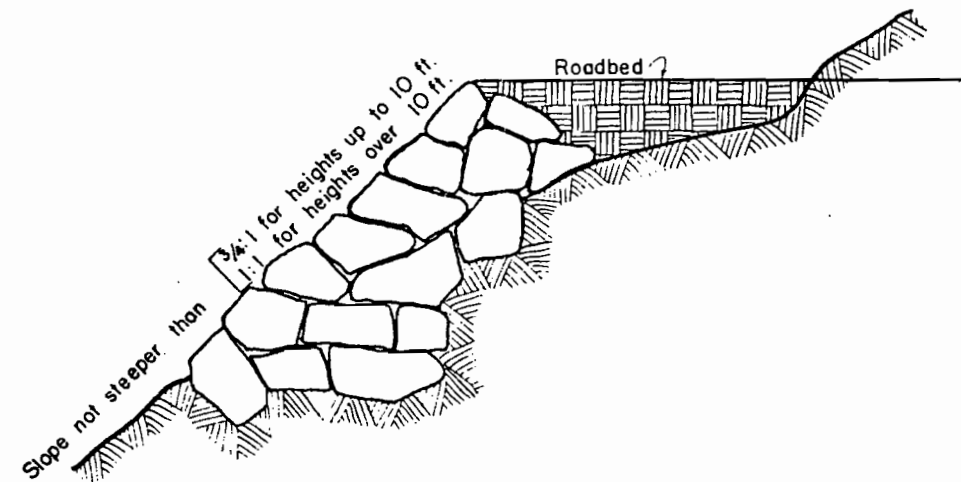


Embankment will be constructed on a foundation bed satisfactory to the Engineer. The stones shall be not less than one Cu. Ft. in volume with 50% of the stones at least 1/2 Cu. Yd. in volume and placed to the lines and dimensions required. The stones shall be bonded and securely bedded.

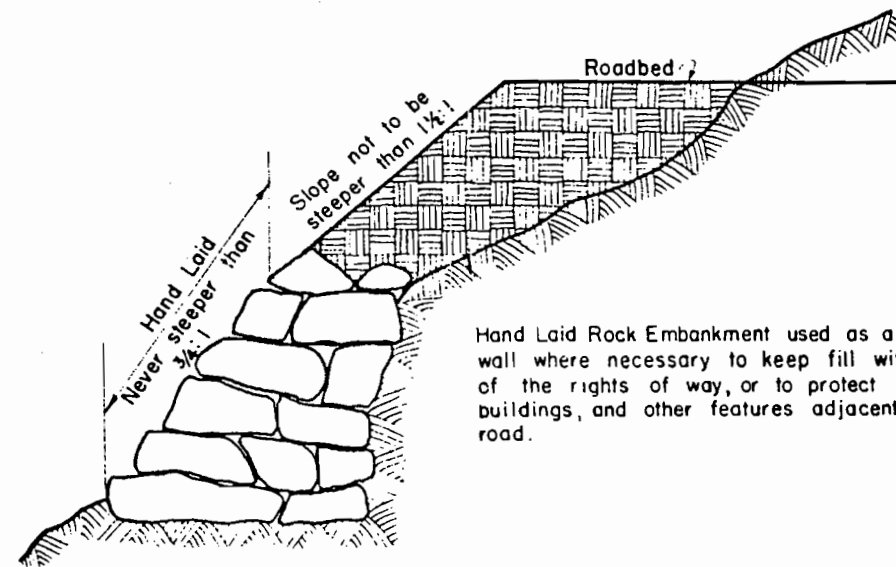
DERRICK-PLACED ROCK
FULL HEIGHT
USE



TYPICAL SECTION AT END OF PIPE CULVERTS



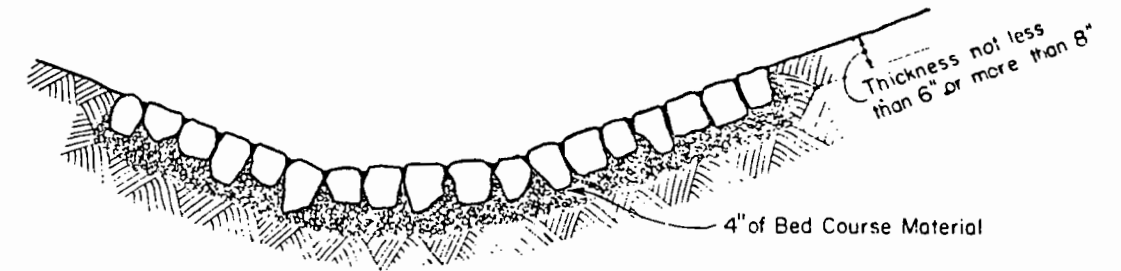
TYPICAL SECTION OF FULL HEIGHT CONSTRUCTION



TYPICAL SECTION OF TOE WALL CONSTRUCTION

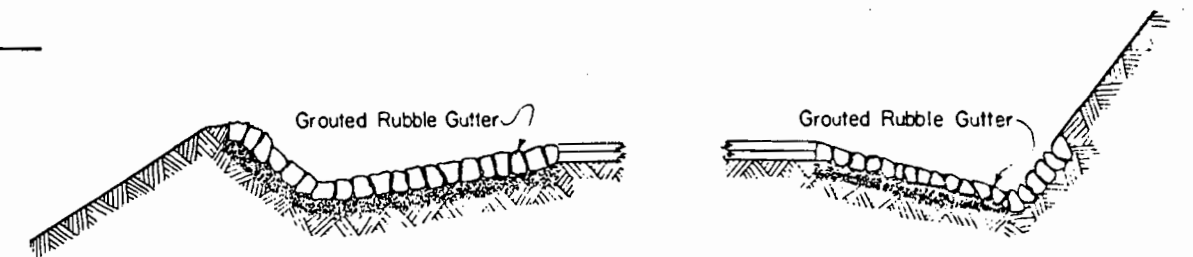
HAND LAID ROCK EMBANKMENT

Hand Laid Rock Embankment used as a toe-wall where necessary to keep fill within limits of the rights of way, or to protect trees, buildings, and other features adjacent to the road.



All stones shall be rectangular in shape and shall extend entirely through the paving. Each stone shall be carried by the underlying material and not by the adjacent stones. The surface of the rocks shall not vary more than one inch from the required finished section.

TYPICAL SECTION THROUGH GROUTED RUBBLE GUTTER



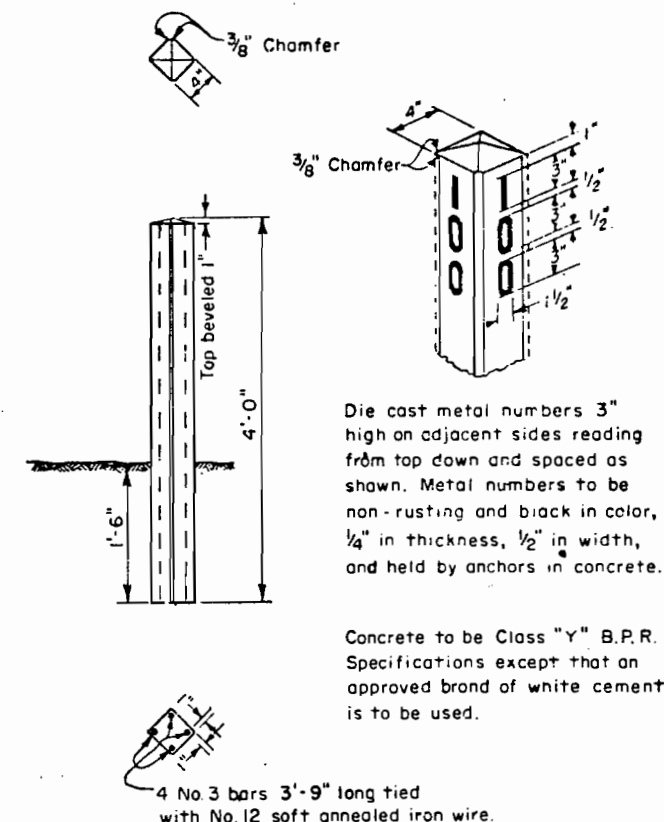
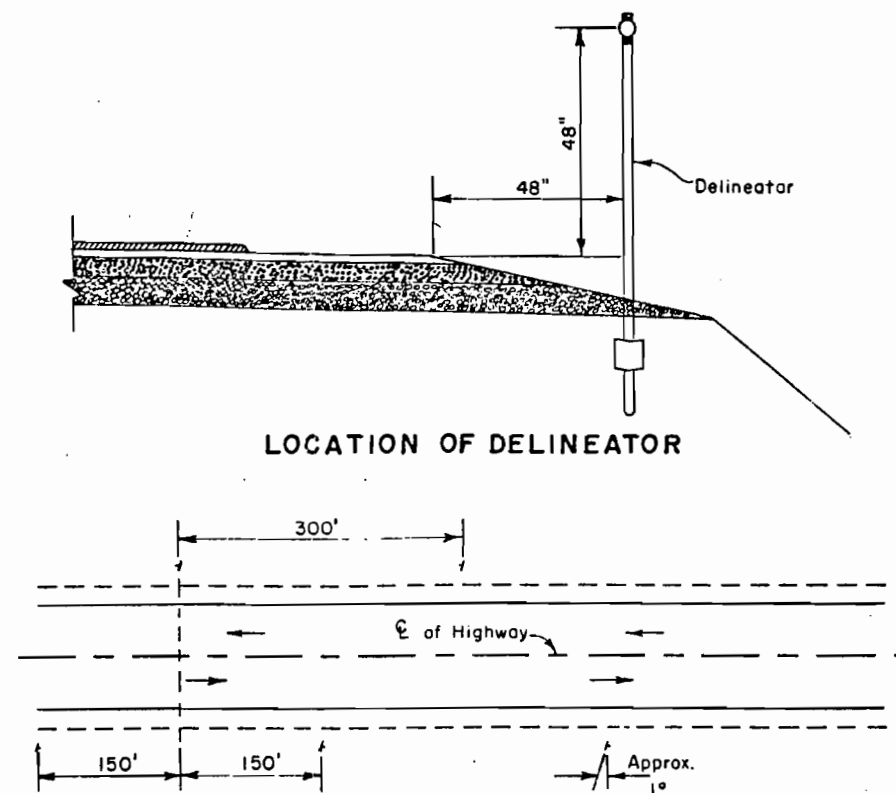
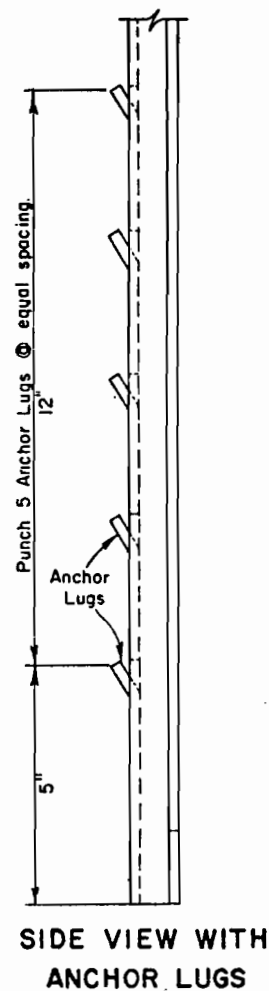
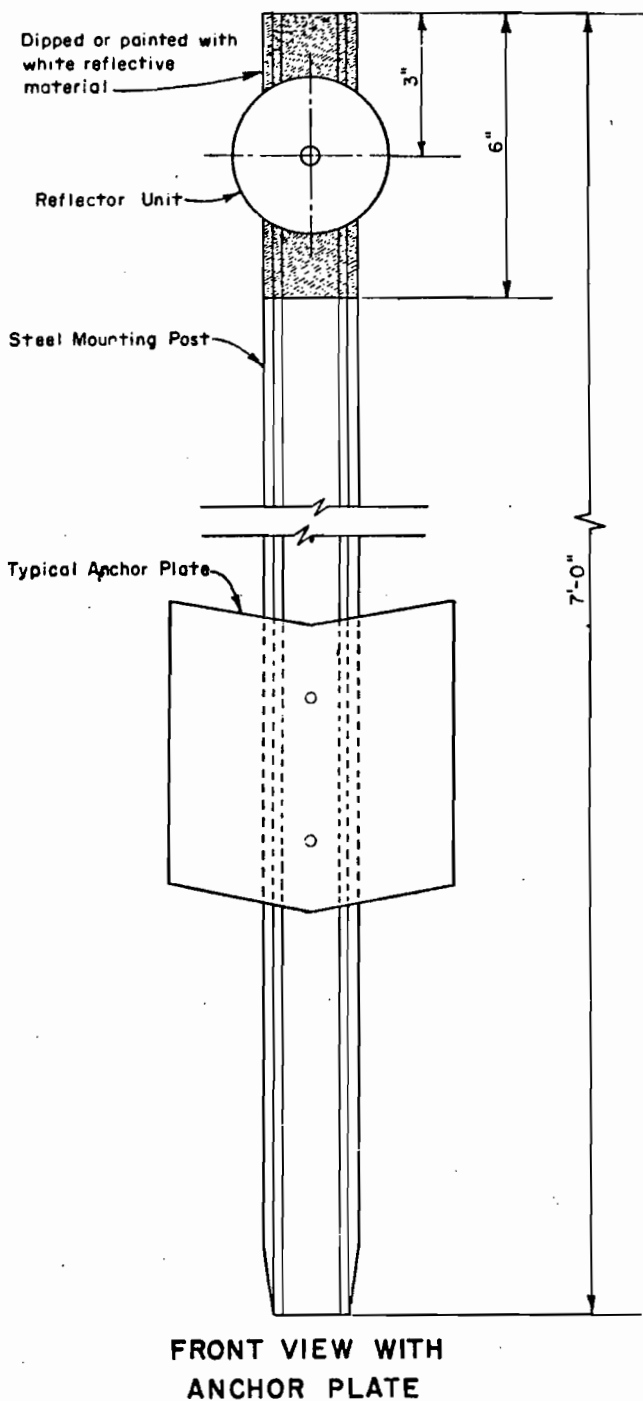
TYPICAL SECTIONS IN EMBANKMENTS AND CUTS

GROUTED RUBBLE GUTTER

U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

STANDARD ROCK STRUCTURES

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33	421	1	17	



GENERAL NOTES

MATERIALS: The steel mounting posts shall weigh at least one pound per. foot. The mounting posts shall be furnished with either type of anchor shown and shall have a black baked enamel finish which is resistant to the shock of driving operations.

The top portion of the mounting post shall be either surfaced with white paint containing white reflective glass beads or painted with white paint and covered with white reflective glass beads while the paint is wet.

The delineator reflector unit shall be a sealed acrylic plastic prismatic reflex lens having a minimum of six and one-half square inches of smooth reflective area. The lens shall be housed in an aluminum frame and provided with a single grommetted mounting hole.

Mounting posts shall be driven to the depth shown and shall be vertical and in accurate alignment. They shall be driven by the use of a regular post driver or protected by a driving cap if any means other than a post driver is used.

The reflector unit shall be securely fastened to the steel mounting post with an approved type aluminum rivet.

DELINEATOR INTERVAL ON HORIZONTAL CURVES

DEGREE OF CURVE	SPACING ON CURVE	SPACING ON EACH END OF CURVE		
		FIRST SPACE	SECOND SPACE	THIRD SPACE
	FEET	FEET	FEET	FEET
1	152	200	200	200
2	106	191	200	200
3	86	155	200	200
4	74	133	200	200
5	66	119	198	200
7	55	99	165	200
9	48	86	144	200
12	41	74	123	200
15	36	65	108	200
18	33	59	99	198
21	30	54	90	180
25	28	50	84	168
30	24	43	72	144

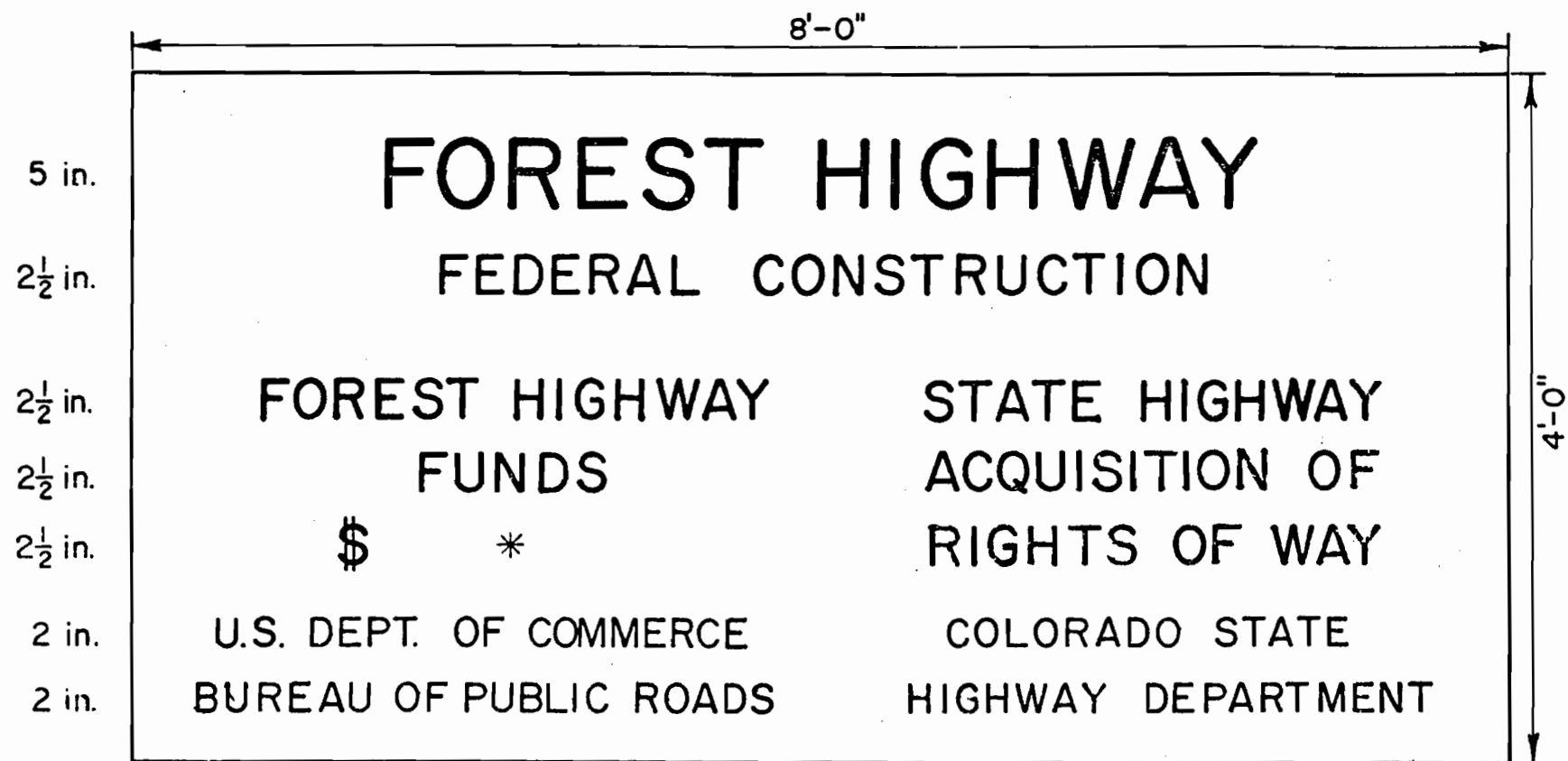
DELINEATOR
USE

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U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

STANDARD MAINTENANCE POSTS AND DELINEATORS

STD. 131



GENERAL NOTES

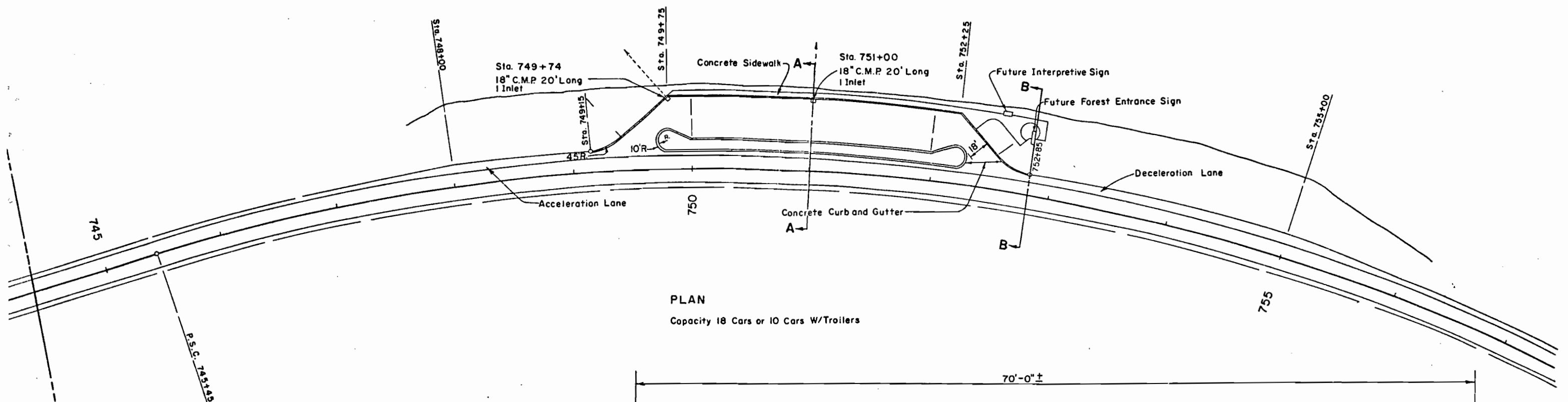
1. Two signs, of the type shown hereon; shall be furnished and installed by the contractor. One sign shall be placed at each end of the project, at locations determined by the engineer, consistent with the location of other construction signs.
2. The signs shall be erected immediately upon beginning construction operations, and shall remain in place until final acceptance of the project.
3. The sign material may be either wood or metal, at the option of the contractor, but shall have sufficient stability to last throughout the estimated period of use.
4. The signs shall be painted with black letters on a white background. Lettering shall be Series "C", as specified in the B.P.R. publication "Standard Alphabets for Highway Signs," in connection with the A.A.S.H.O. "Manual on Uniform Traffic Control Devices".
- * 5. The amount for insertion in the "Funds" space will be determined by the engineer.

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Revised 6-1964

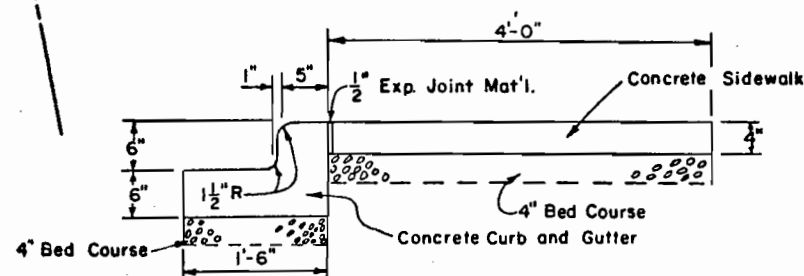
U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
REGION NO. 9 DENVER, COLORADO

PROJECT IDENTIFICATION SIGNS

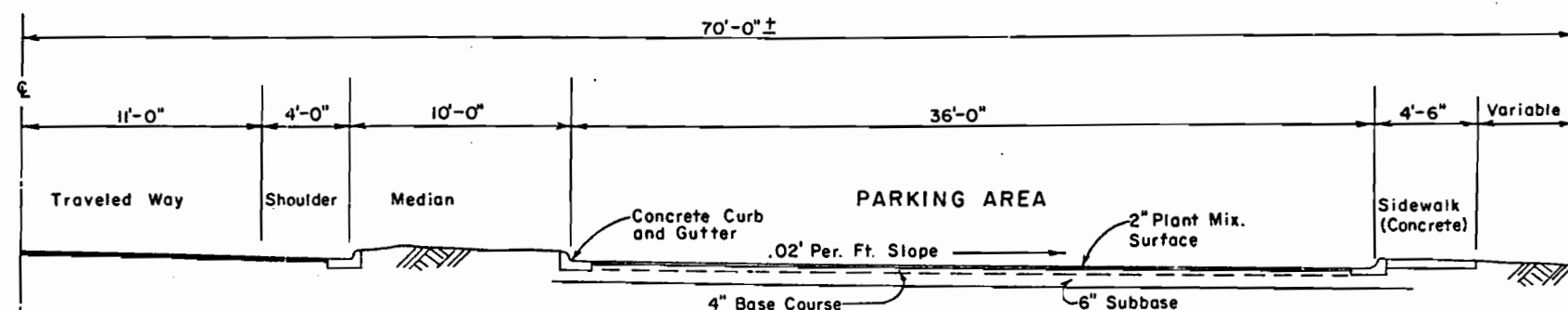


PLAN
Capacity 18 Cars or 10 Cars W/Trailers

Transverse expansion joints shall be placed in both sidewalk and curb and gutter at 30' intervals. Where sidewalk and curb are adjacent, the expansion joints shall coincide. Weakened plane cuts shall be placed in sidewalk at 10' intervals.

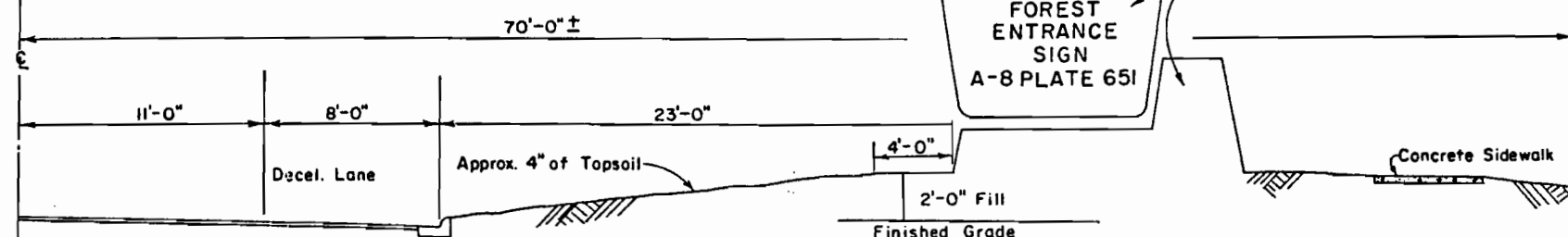


TYPICAL SECTION AT SIDEWALK



SECTION A-A (STA. 751+00)

Concrete curb and gutter and sidewalk shall be colored slate gray, using Pure Oxide Color as manufactured by the Davis Color Co., or approved equivalent. (Rate: 25 lbs. ± Black Oxide # B42 per cu. yd. of concrete).



SECTION B-B (STA. 752+85)

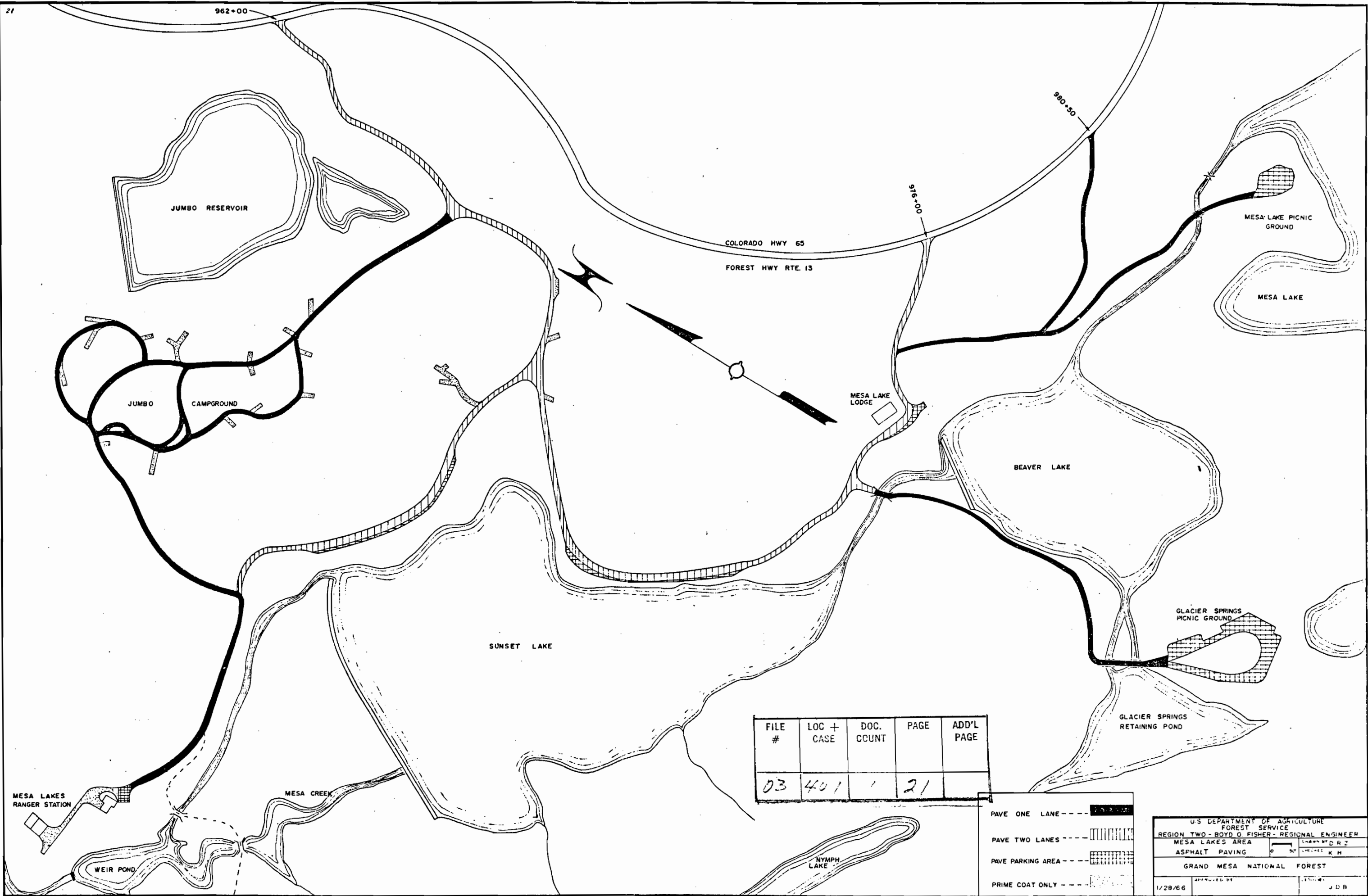
FOREST ENTRANCE SIGN
A-8 PLATE 651

Not in Contract

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REGION NO. 9 DENVER, COLORADO

**DETAILS OF
PARKING AREA**
Sta. 749+50 to Sta. 752+85

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PAVE ONE LANE	---
PAVE TWO LANES	----
PAVE PARKING AREA	-----
PRIME COAT ONLY	-----

U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE	
REGION TWO - BOYD O. FISHER - REGIONAL ENGINEER	
MESA LAKES AREA	DRAWN BY D.R.Z.
ASPHALT PAVING	BY MICHAEL K.H.
GRAND MESA NATIONAL FOREST	
1/28/66	J.D.B.