

CONVENTIONAL SIGNS



TABULATION OF LENGTH AND DESIGN

DESCRIPTION	ROADWAY		NO WORK SECTION BRIDGES
	LINE, FT.	LINE, FT. - FLOODING	
STA. 2545+00.0 BEGIN S 0002 (23)= STA. 2545+00.0 END S 0002 (23)= STA. 2545+00.0 ON W.P.S.S. 377	12,168.6		
2666+88.6 BRIDGE STR. NO. P-22-B 2666+89.7	3,504.0		H-15
2701+93.7 BRIDGE STR. NO. P-22-A 2702+54.5	60.8		H-15
STA. 2793+79.0 Bk. END S 0002 (23)= STA. 1738+73.6 Ah=END S 0002 (21)= STA. 2793+79.0+END W.P.S.S. 377	9,124.5		
TOTALS	24,797.1	81.9	
SUMMARY			
ROADWAY	LINE, FT.	MILES	
TOTAL - NET LENGTH	24,797.1	4.696	
NO WORK SECTION	81.9	0.015	
TOTAL - GROSS LENGTH	24,879.0	4.712	
DESIGN DATA			
MAXIMUM DEGREE OF CURVE	200'		
MAXIMUM GRADE	8% ±		
MINIMUM N. P. S. P. - Horizontal	> 900'		
MINIMUM N. P. S. P. - Vertical	250'		
MAXIMUM DESIGN SPEED	30 MPH		

COLORADO
DEPARTMENT OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED
FEDERAL AID PROJECT NO. S 0002 (23)
STATE HIGHWAY NO. 100
LAS ANIMAS COUNTY

INDEX OF SHEETS

SHEET NO.

1. TITLE PAGE & TABULATION OF LENGTH AND DESIGN.
2. TYPICAL SECTION & GENERAL NOTES.
3. SUMMARY OF APPROXIMATE QUANTITIES & SUMMARY OF EARTHWORK QUANTITIES.
4. LIST OF STRUCTURES.
5. SUBBASE, SURFACING PLAN & TIMBER GUARD POSTS.
- 6-7. PIT LOCATION.
8. STANDARD METHODS FOR SUPERELEVATION & WIDENING OF CURVES.
9. STANDARD SIDE APPROACH ROADS, FLARING, CUT SLOPE TREATMENT & WIDENING AT BRIDGES AND AT CREST OF GRADES.
10. STANDARD TIMBER GUARD POSTS.
- 11-12. STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS.
13. STANDARD IDENTIFICATION SIGNS.
14. STANDARD METHODS OF BACKFILL AROUND STRUCTURES.
15. STANDARD TYPES OF DITCHES AND CONSTRUCTION METHODS.
- 16-24. ALIGNMENT PLAN AND PROFILE.
25. CROSS SECTION FOR STRUCTURES.

M-1-D
M-2-EN
M-19-E
M-29-C
M-31-A
M-60-B
M-107-D

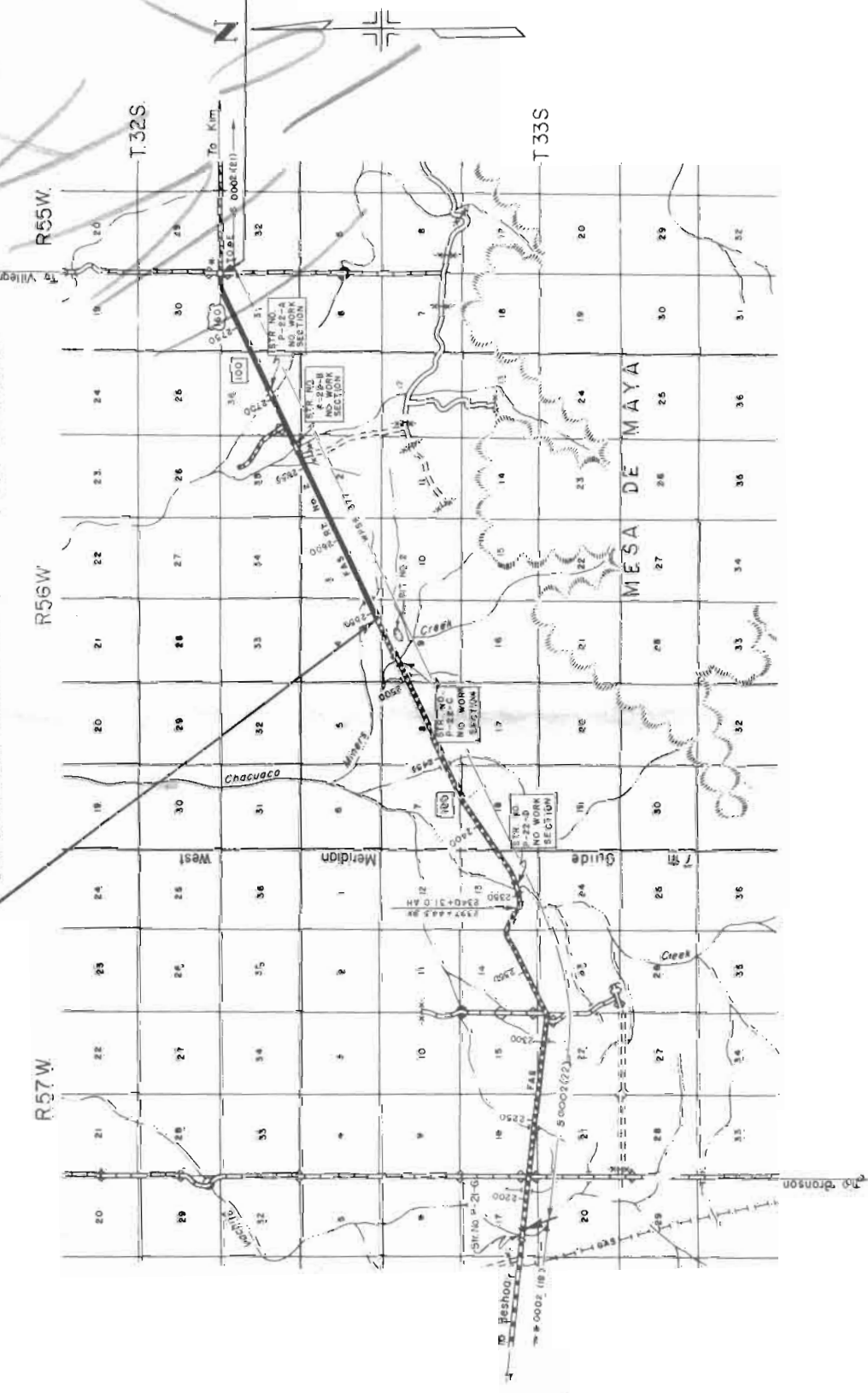
SCALES OF ORIGINAL DRAWINGS

ON PLAN 1 IN = 100 FT.
ON PROFILE 1 IN = 100 FT. HORIZONTAL
1 IN = 10 FT. VERTICAL

GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD.
GROSS LENGTH OF PROJECT 24,879.0 FT. = 4.712 MILES
NET LENGTH OF PROJECT 24,797.1 FT. = 4.696 MILES

STA. 2545+00.0 BEG. S 0002 (23)=

STA. 2545+00.0 =END S 0002 (22)= STA. 2545+00.0+ ON W.P.S.S. 377



NOTE: For Haul Route to Pit No. 1, see Sheet No. 6.

STA. 2793+79.0 Bk.=END S 0002 (23)=

STA. 1738+73.6 Ah=END S 0002 (21)=

STA. 2793+79.0 END W.P.S.S. 377

SEE SPECIAL PROVISIONS FOR NOTICE TO BIDDERS.

COLORADO
DEPARTMENT OF HIGHWAYS

APPROVED
[Signature]
CHIEF ENGINEER

DATE
7-3-61

APPROVED
[Signature]
DIVISION ENGINEER

DATE

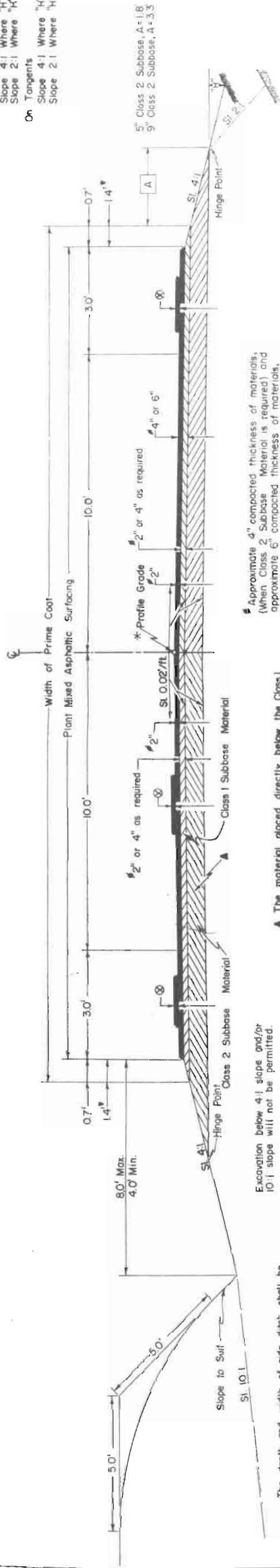
SCALE OF MILES

FEDERAL ROAD DISTRICT NO.	SECTION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	S 0002 (23)	2	

NOTE:
See Standard for Details
of Cut Slope Treatment, Flaring
& Widening.

TYPICAL SECTION OF IMPROVEMENT

FILL SLOPES
On Curves
Slope 4:1 Where "H" is 5' or less
Slope 2:1 Where "H" is over 5'
On Tangents
Slope 4:1 Where "H" is 3' or less
Slope 2:1 Where "H" is over 3'



Approximate 4" compacted thickness of materials, (When Class 2 Subbase Material is required) and approximate 6" compacted thickness of materials, (When Class 2 Subbase Material is not required) shall be placed in separate courses at the following rates per 100 in ft of roadway

Plant Mixed Asphaltic Surfacing	3.1 Tons
Class 1 Subbase Material (2")	30 Tons
Class 1 Subbase Material (4")	6.1 Tons

* The Profile Grade shall be the combined thickness of Subbase and Surfacing Materials above the present roadbed except as noted or required on List of Structures.
Width when 4" Class 1 Subbase is applied

The material placed directly below the Class 1 Subbase Material is to be constructed of Class 2 Subbase material at locations designated in the Subbase Material Plan.
Estimated quantities involved in this operation and thickness of material required are tabulated in the Subbase Material Plan.

1/2" Asphaltic Surfacing (Future Construction)

Excavation below 4:1 slope and/or 10:1 slope will not be permitted.

The depth and width of side ditch shall be varied where necessary in order to provide proper drainage and/or entrance to drainage structures.

GENERAL NOTES

This project is to be constructed in conformity with the Standard Specifications of the Colorado Department of Highways, adopted Jan. 1, 1958.

All quantities on preliminary plans are to be considered approximate only.

All Corrugated Metal Pipe Cross Culverts shall be laid without Metal Aprons unless otherwise noted on the plans.

During construction of this project, traffic will be required to use the present traveled roadway, except where detours are shown on plans.

All curves are to be super-elevated and widened as provided by the Standard Super-elevation sheet included with the plans.

Thickness of Subbase Materials and Asphaltic Pavement Materials as shown on plans is approximate only. These materials are to be placed on the basis of tonnages shown on plans.

Excavation materials obtained from roadbed, where required to permit placement of Subbase and Surfacing Materials, shall be used to widen subgrade within 500 ft. from its source.

Liquid Asphaltic road material application methods which result in discoloration of concrete structures will not be permitted.

For preliminary plan quantities of Asphaltic Road Materials, the following rates of application were used

PRIME COAT at 0.40 Gals. per Sq. Yd.
PAVING ASPHALT at 6.3 % by weight

Rate of application and grade of Asphaltic Material shall be as determined by the Engineer at time of application.

The following side approach roads shall be prime coated and receive 2" Plant Mixed Asphaltic Surfacing to the Right of Way line:

2679+80, Lt

All other approaches shall be paved and primed 4' out from the edge of roadway pavement.

In lieu of placing Base Course Surfacing on road approaches, as required by Department Standard M-2-EN, Subbase Material, as designated on List of Structures will be permitted.

Timber Guard Posts interfering with construction shall be removed by State Maintenance Forces.

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	S 0002 (23)	3	

SUMMARY OF EARTHWORK QUANTITIES

UNCLASSIFIED EXCAVATION

LIST OF STRUCTURES AS EXCAVATION

800 CU YDS
TOTAL 800 CU YDS

UNCLASSIFIED DITCH EXCAVATION

LIST OF STRUCTURES AS DITCH EXCAVATION

20 CU YDS
TOTAL 20 CU YDS

SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO.	ITEM	UNIT			PROJECT TOTALS
11	Reset Mail Boxes	Lump Sum			●
13	Unclassified Excavation	Cu. Yd.			1,000
13	Unclassified Ditch Excavation	Cu. Yd.			20
13	Stripping	Cu. Yd.			500
14	Unclassified Structural Excavation - Miscellaneous	Cu. Yd.			20
16	Structure Backfill (Class I)	Cu. Yd.			10
17	Wetting	M. Gal.			1,470
18	Ton Mile Overhaul	Ton Mi.			286,400
23	Subbase Material (Class I)	Ton			8,600
23	Subbase Material (Class 2)	Ton			38,500
29	Asphalt (120-150 Penetration)	Ton			540
30	Asphaltic Road Material MC (Prime)	Gal.			30,600
32	Plant Mixed Asphaltic Surfacing	Ton			7,750
53	24" Corrugated Metal Culvert Pipe	Lin. Ft.			33
53	48" Corrugated Metal Culvert Pipe	Lin. Ft.			16
92	Timber Guard Posts	Each			93
	STATE FORCES				●
	▲ Signing and Striping Entire Project	Lump Sum			

▲ Non - Federal Aid

It is estimated that material for Subbase and Surfacing for the project is available in the vicinity of the pits indicated in the following tabulations. Estimated quantities involved in these operations are shown below.

Alteration of the Subbase Plan or Surfacing Plan as here outlined will be allowed only on written permission from the Department.

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	S 0002 (23)	5	

SUBBASE PLAN

MATERIAL TO BE PLACED	SOURCE	QUANTITY AND THICKNESS					TON MILE OVERHAUL	
		AVAILABLE	CLASS 1		CLASS 2		CLASS 1	CLASS 2
			THICKNESS INCHES -"	TONS	THICKNESS INCHES -"	TONS		
2545+00 TO 2580+00	PIT NO 2	100,000 CU YDS	2"	1,050	5"	2,870	746	7,038
2580+00 TO 2666+68.6	HAUL DISTANCE 2000' TO STA 2545+00		2"	2,601	9"	13,350	4,846	24,871
2666+68.7 TO 2691+00			2"	723	9"	3,712	2,108	11,824
2691+00 TO 2701+93.7	PR=82-CR-1		4"	667	0"		2,166	
2702+04.5 TO 2716+00	BRIDGE		4"	821	0"		2,865	
2716+00 TO 2793+79.0	R=70-CR-2		2"	2,334	9"	11,980	10,162	52,161
EST. FOR 1986G IN SUBGRADE FST FOR APPR TO PROJ. STA. 2793+ FROM LIST OF STRUCTURES				298		5,382	1,006	17,379
				30			133	
				72			190	207
TOTALS				8,596		38,469	24,244	175,421

Approximate
Based on Curve "B"

TIMBER GUARD POSTS

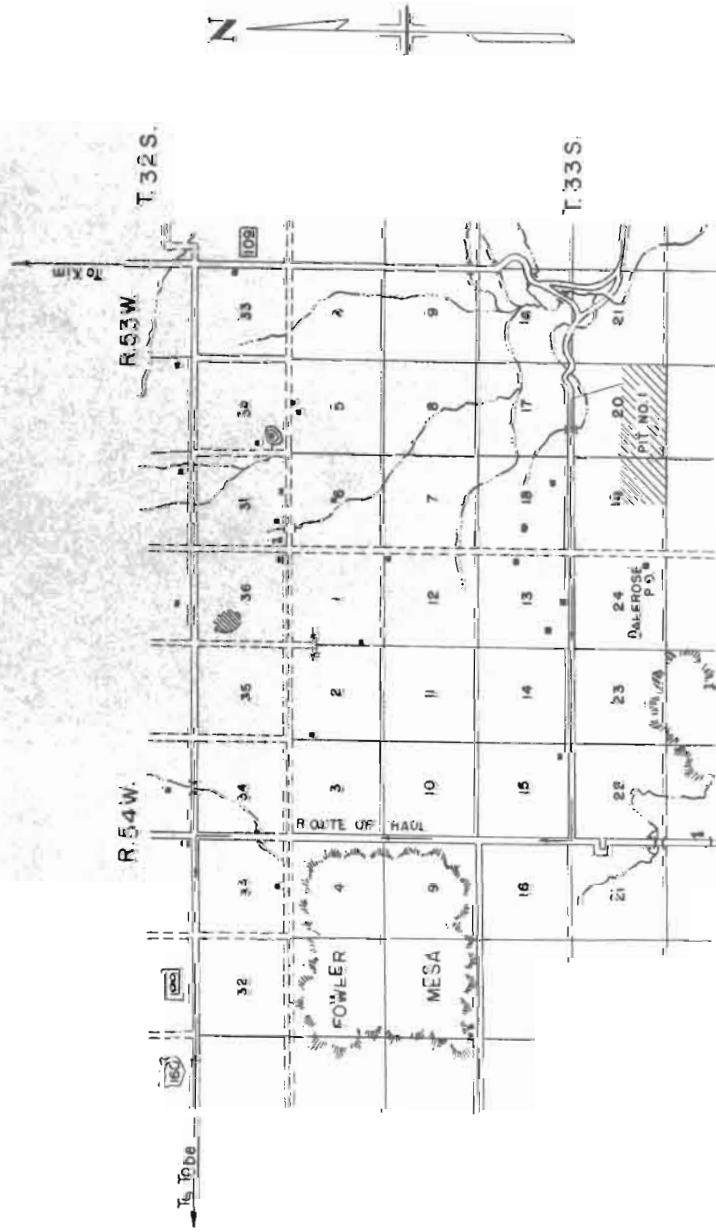
STATION	SIDE	SPACING	NUMBER
2558+71	LT & RT	CSC	2
2598+10	LT & RT	CULVERT	2
2629+00	LT & RT	CULVERT	2
2642+00	LT & RT	CULVERT	2
2661+00	LT & RT	CULVERT	2
2662+00	LT & RT	BRIDGE	20
2692+00	LT & RT	CULVERT	2
2702+00	LT & RT	CULVERT	2
2702+00 TO 2792+79.0	LT & RT	2" CURVE	25
TOTAL			52

SURFACING PLAN

MATERIAL TO BE PLACED	SOURCE	AVAILABLE	QUANTITY		TON MILE OVERHAUL	
			GRADING C. TONS			
			PLANT	MIX	PLANT	MIX
2544+00 TO 2666+75.6 BRIDGE	PIT NO. 1	100,000 CU YDS	3,772		79,825	
2666+75.7 TO 2701+93.7 BRIDGE	HAUL DISTANCE 17.5 MILES TO STA.		1,086		24,704	
2702+04.5 TO 2792+79			2,679		51,622	
EST. FOR BRIDGE TO ROAD STA. 2792+ FROM LIST OF STRUCTURES	2792+79		51 26		52 202	
TOTALS			7,537		153,216	

LOCATION OF MATERIAL PITS

HAUL ROUTE FROM PIT NO. 1

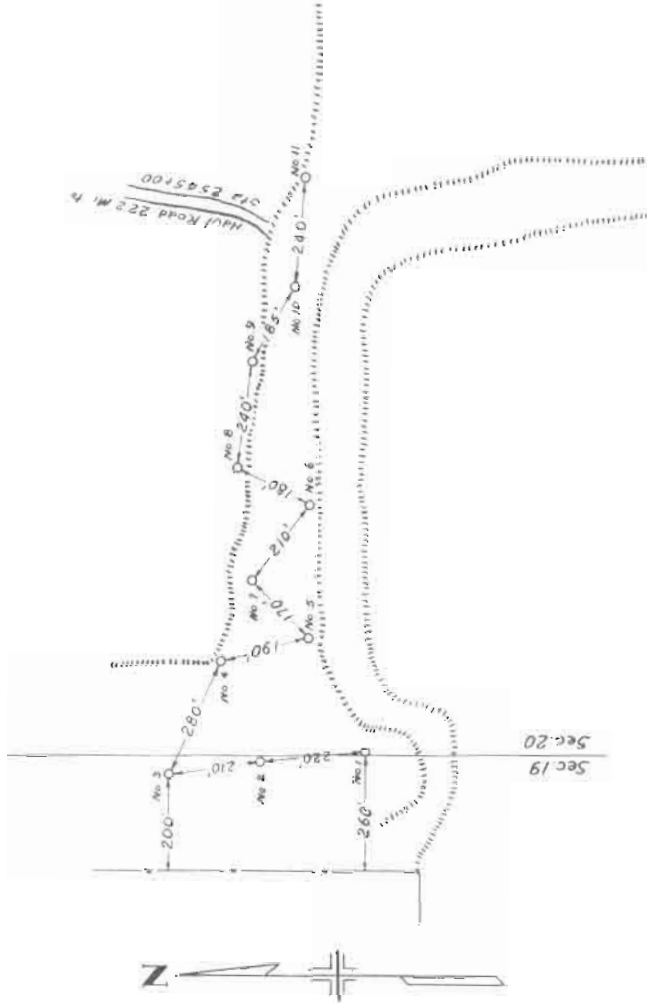


PIT NO. 1

LOCATION: SE 1/4, SEC. 19, S 1/2 SEC. 20, T. 33 S., R. 53 W.
OWNER: W. R. Howe, Kim, Colorado.
QUANTITY AVAILABLE: 150,000 Cu. Yds
PROPOSED USE: AGGREGATE FOR PLANT MIXED ASPHALTIC SURFACING.

HAUL DISTANCE: 17.5 Miles to Sta. 2793+79
EST. FOR STRIPPING OVERBURDEN: 200 Cu Yds.

NOTE: The Contractor will be required to place temporary Cattle Guard on haul road as required by Option for Pit No. 1



FIELD SAMPLE NO. 2094 & 34608

TEST NO.	DEPTH	DESCRIPTION
1-A	0.0' - 1.5'	Overburden Gravel
2-A	1.5' - 3.0'	Overburden
3-A	3.0' - 4.5'	Sand and Gravel Sim. to 1A
4-A	4.5' - 6.0'	Overburden
5-A	6.0' - 7.5'	Fine Sand and Lime Concretions
6-A	7.5' - 9.0'	Overburden
7-A	9.0' - 10.5'	Fine Sand and Lime Concretions
8-A	10.5' - 12.0'	Overburden
9-A	12.0' - 13.5'	Sand and Gravel Sim. to 1A
10-A	13.5' - 15.0'	Overburden
11-A	15.0' - 16.5'	Sand and Gravel Sim. to 6A
12-A	16.5' - 18.0'	Overburden
13-A	18.0' - 19.5'	Sand and Gravel Sim. to 6A
14-A	19.5' - 21.0'	Overburden
15-A	21.0' - 22.5'	Sand and Gravel Sim. to 4-A
16-A	22.5' - 24.0'	Overburden
17-A	24.0' - 25.5'	Sand and Gravel
18-A	25.5' - 27.0'	Overburden
19-A	27.0' - 28.5'	Sand and Gravel
20-A	28.5' - 30.0'	Overburden
21-A	30.0' - 31.5'	Sand and Gravel
22-A	31.5' - 33.0'	Overburden
23-A	33.0' - 34.5'	Sand and Gravel
24-A	34.5' - 36.0'	Overburden
25-A	36.0' - 37.5'	Sand and Gravel
26-A	37.5' - 39.0'	Overburden
27-A	39.0' - 40.5'	Sand and Gravel
28-A	40.5' - 42.0'	Overburden
29-A	42.0' - 43.5'	Sand and Gravel
30-A	43.5' - 45.0'	Overburden
31-A	45.0' - 46.5'	Sand and Gravel
32-A	46.5' - 48.0'	Overburden
33-A	48.0' - 49.5'	Sand and Gravel
34-A	49.5' - 51.0'	Overburden
35-A	51.0' - 52.5'	Sand and Gravel
36-A	52.5' - 54.0'	Overburden

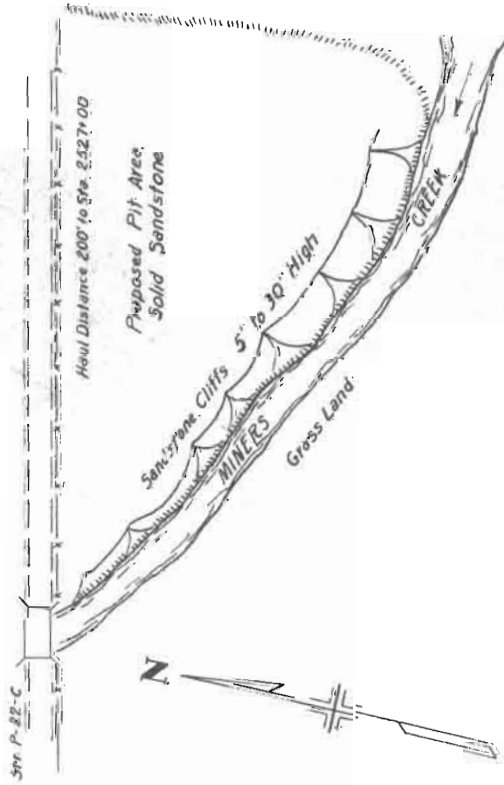
LOCATION OF MATERIAL PITS

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	S 0002 (23)	7	

PIT NO. 2

LOCATION: N 1/2 N 1/2 SEC. 8, T. 33 S., R. 56 W.
OWNER: Jim & Ruth Jordan, Eva, Oklahoma.
QUANTITY AVAILABLE: 100,000 Cu. Yds. +
PROPOSED USE: SUBBASE

HAUL DISTANCE: 2000 FT. TO STA. 2545+00
EST. FOR STRIPPING OVERBURDEN: 300 CU. YDS.



FIELD SAMPLE NO. 2158

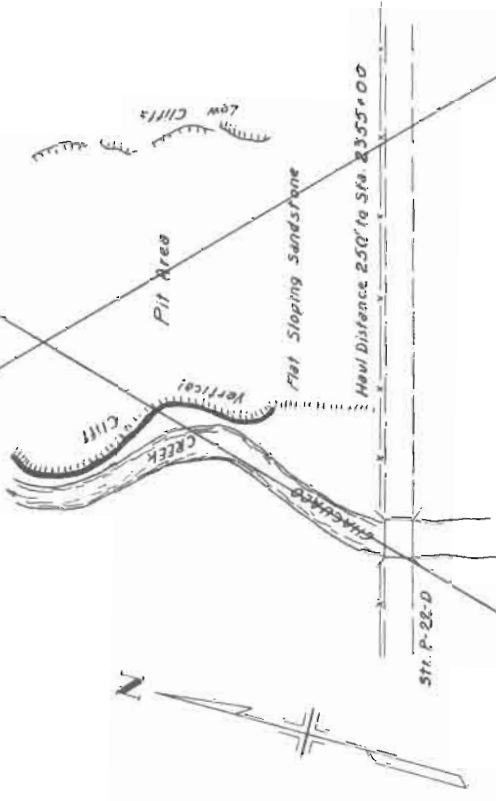
TEST NO.	DEPTH	DESCRIPTION
1		Sample of loose rock. Note: This pit, below loose rock, is solid sandstone.

~~PIT NO. 2~~

LOCATION: 8 Acres in the NW-SE SEC. 13, T. 33 S., R. 57 W.
OWNER: Howard & Theima Sumpter, Branson, Colo.
QUANTITY AVAILABLE: 100,000 Cu. Yds. +
PROPOSED USE: SUB-BASE &
STRUCTURE BACKFILL.

HAUL DISTANCE: 250 FT. to Sta. 2355+00
EST. FOR STRIPPING OVERBURDEN: 300 Cu. Yds.

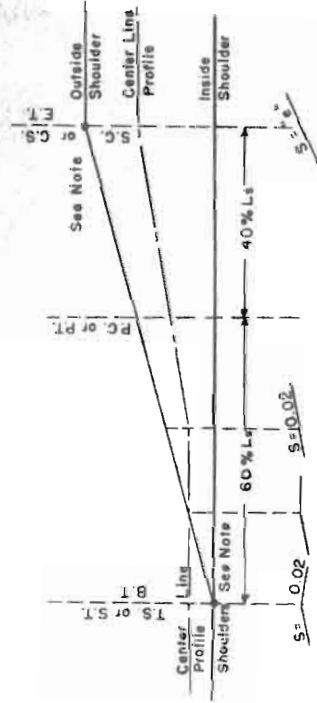
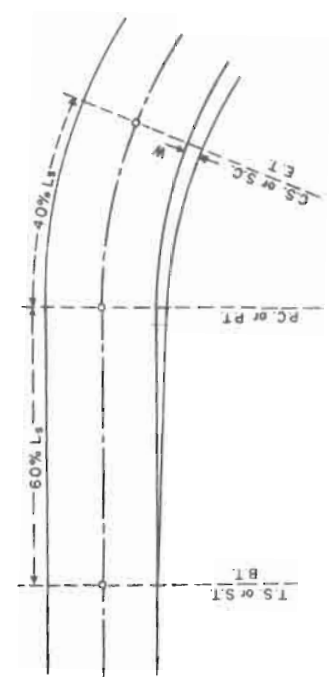
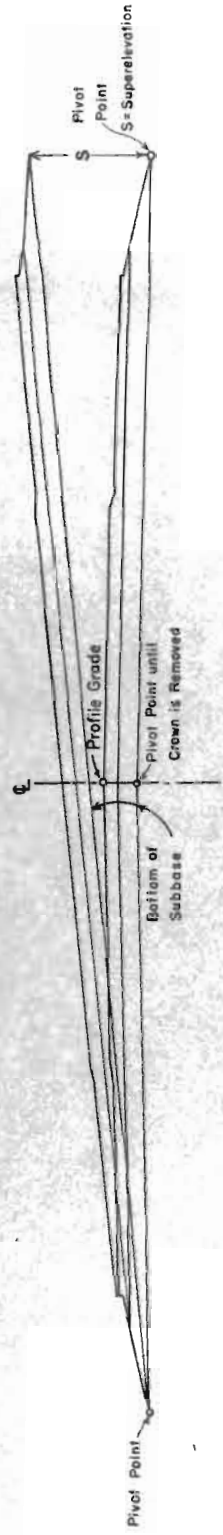
NOTE: The Contractor will be required to construct temporary Fence
around pit area, and refrain from disturbing stream bed, as
required by Option for Pit No. 2



FIELD SAMPLE NO. 2157

TEST NO.	DEPTH	DESCRIPTION
1		Sample of loose Surface Rock. Note: This pit, below loose surface rock, is solid sandstone.

STANDARD M-1-D



PAVEMENT WIDENING

Pavement Width	20 Ft.	22 Ft.	24 Ft.
Degree of Curve			
0° - 3°	0 Ft.	0 Ft.	0 Ft.
4° - 6°	2.0 Ft.	0 Ft.	0 Ft.
7° - 10°	2.5 Ft.	0 Ft.	0 Ft.
11° - 17°	3.0 Ft.	2.0 Ft.	0 Ft.
18° - 21°	3.5 Ft.	2.5 Ft.	0 Ft.
22° - Up	4.0 Ft.	3.0 Ft.	2.0 Ft.

Widening is to be on the inside edge of the pavement and the transition is to extend over the same transition length as the superelevation.

REVISIONS
4-20-60 0.10 B. GENERAL S.B.L.
5-1-61 GENERAL S.B.L.

NOTE -
For obtaining smooth profiles on pavement edges, vertical curves can be inserted between the angular breaks at the beginning and the end of the superelevation transition.

SUPERELEVATION RATES FOR TWO LANE CROWNED SECTION

Degree of Curve	Maximum Superelevation = 0.08			Maximum Superelevation = 0.10		
	Super. Rate Ft./Ft.	Minimum Transition or Spiral Length	Maximum Design Speed M.P.H.	Super. Rate Ft./Ft.	Minimum Transition or Spiral Length	Maximum Design Speed M.P.H.
0°15'	R C	200'	70	R C	200'	70
0°30'	R C	200'	70	R C	200'	70
0°45'	R C	200'	70	R C	200'	70
1°00'	R C	200'	70	R C	200'	70
1°30'	R C	200'	70	R C	200'	70
2°00'	R C	200'	70	R C	200'	70
2°30'	R C	200'	70	R C	200'	70
3°00'	R C	200'	70	R C	200'	70
3°30'	R C	200'	70	R C	200'	70
4°	R C	200'	70	R C	200'	70
5°	R C	200'	70	R C	200'	70
6°	R C	200'	70	R C	200'	70
7°	R C	200'	70	R C	200'	70
8°	R C	200'	70	R C	200'	70
9°	R C	200'	70	R C	200'	70
10°	R C	200'	70	R C	200'	70
11°	R C	200'	70	R C	200'	70
12°	R C	200'	70	R C	200'	70
13°	R C	200'	70	R C	200'	70
14°	R C	200'	70	R C	200'	70
15°	R C	200'	70	R C	200'	70
16°	R C	200'	70	R C	200'	70
17°	R C	200'	70	R C	200'	70
18°	R C	200'	70	R C	200'	70
19°	R C	200'	70	R C	200'	70
20°	R C	200'	70	R C	200'	70
21°	R C	200'	70	R C	200'	70
22°	R C	200'	70	R C	200'	70
23°	R C	200'	70	R C	200'	70
24°	R C	200'	70	R C	200'	70
25°	R C	200'	70	R C	200'	70

NOTES - Plains Areas use 0.10 Maximum Superelevation Rate. Mountainous Areas & areas where icing conditions frequently exist, use 0.08 Maximum Superelevation Rate.

SUPERELEVATION RATES FOR SPECIAL CASES

Degree of Curve	30 M.P.H.			35 M.P.H.			40 M.P.H.			45 M.P.H.			50 M.P.H.			55 M.P.H.			60 M.P.H.			Degree of Curve
	Super. Rate Ft./Ft.	Minimum Transition or Spiral Length	Required Superelevation Rate Ft./Ft.	Super. Rate Ft./Ft.	Minimum Transition or Spiral Length	Required Superelevation Rate Ft./Ft.	Super. Rate Ft./Ft.	Minimum Transition or Spiral Length	Required Superelevation Rate Ft./Ft.	Super. Rate Ft./Ft.	Minimum Transition or Spiral Length	Required Superelevation Rate Ft./Ft.	Super. Rate Ft./Ft.	Minimum Transition or Spiral Length	Required Superelevation Rate Ft./Ft.	Super. Rate Ft./Ft.	Minimum Transition or Spiral Length	Required Superelevation Rate Ft./Ft.	Super. Rate Ft./Ft.	Minimum Transition or Spiral Length	Required Superelevation Rate Ft./Ft.	
0°15'	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	0°15'
0°30'	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	0°30'
0°45'	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	0°45'
1°00'	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	1°00'
1°30'	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	1°30'
2°00'	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	2°00'
2°30'	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	2°30'
3°00'	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	3°00'
3°30'	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	3°30'
4°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	4°
5°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	5°
6°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	6°
7°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	7°
8°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	8°
9°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	9°
10°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	10°
11°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	11°
12°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	12°
13°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	13°
14°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	14°
15°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	15°
16°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	16°
17°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	17°
18°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	18°
19°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	19°
20°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	20°
21°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	21°
22°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	22°
23°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	23°
24°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	24°
25°	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	R C	200'	0.08	25°

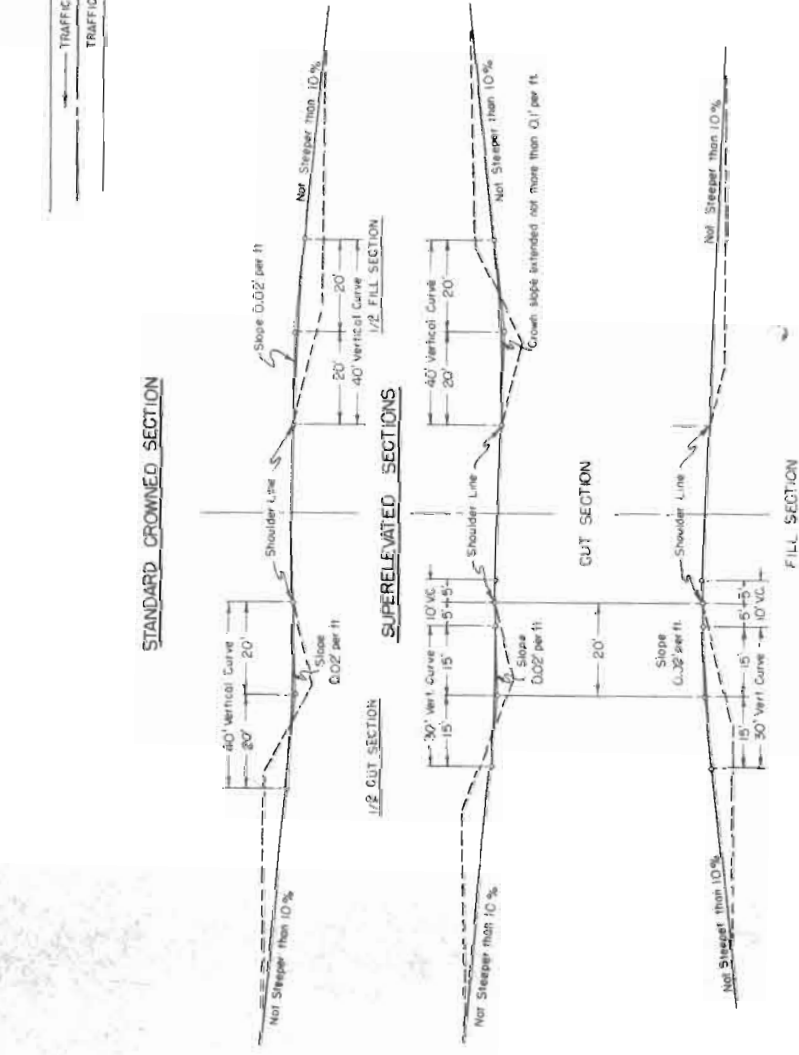
Table 2 data may be used for City Streets & Interchanges.
NC = Normal Crown section.
RC = Remove adverse crown, superelevate at normal crown slope

STANDARD M-2-EN

FED. ROAD SEA NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLO.	50002(23)	9

TYPICAL PLANS FOR SIDE APPROACH ROADS

60' Radii to be used on all intersecting roads except private approaches. Radii may be varied to suit field conditions.

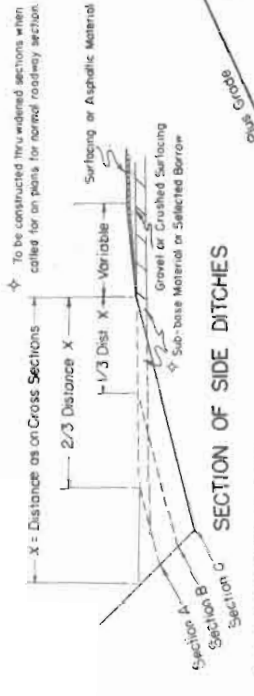


Formula for finding the Crest of Grade

$$d = \frac{\text{Pave Grade}}{\text{Algebraic Curve}} \times L$$

NOTE.

Where section is in embankment at crest of grades, the shoulder shall be widened an amount equivalent to that used on ditch sections, thus providing a symmetrical section at all crests.



Section A is a shallow ditch section.
Section C is a normal ditch section.
Section B shall be an uniform transition between Sections A and C.
The modification of the ditch indicated shall be used only at the crest of grades from which drainage breaks both ways.

PROFILE VIEW SHOWING DISTANCES AND RELATIVE POSITIONS OF DITCH-TREATMENT SECTIONS

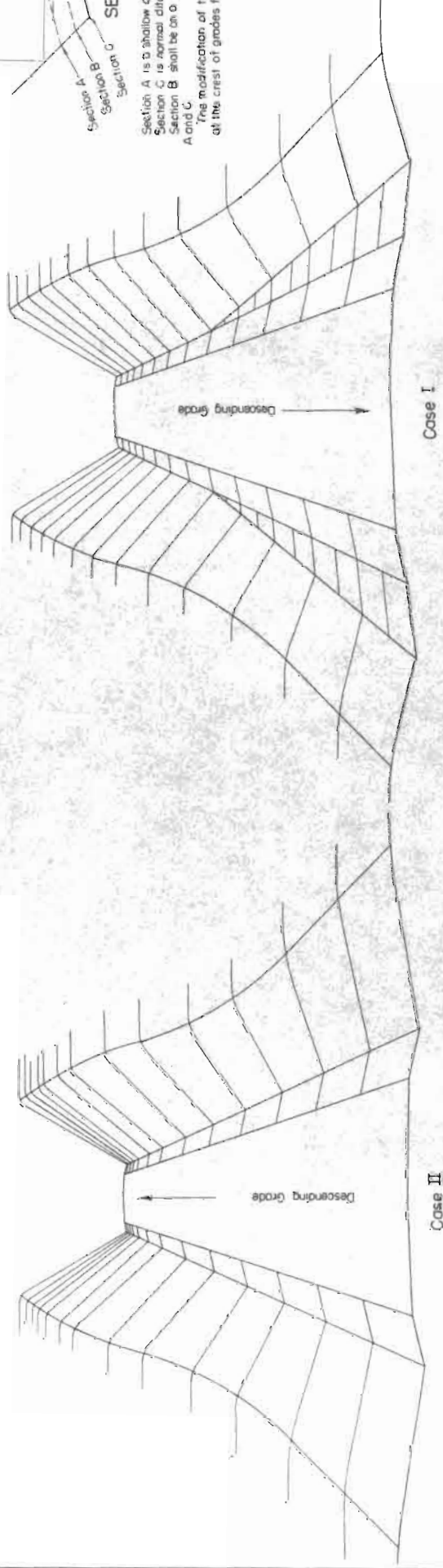
COLORADO
DEPARTMENT OF HIGHWAYS
STANDARD
SIDE APPROACH ROADS,
FLARING CUT SLOPE TREATMENT,
AND WIDENING AT BRIDGES AND
AT CREST OF GRADES

Designed by A. Z.	Approved by <i>A. Z. Jones</i>
Made by S.M. BASH	Date: November 1, 1953
Checked by C.R.S.	

All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the Project.

All side approach roads to the Project shall be Gravel Surfaced with a four (4) inch thickness of Gravel or Crushed Rock Surfacing extending approximately to the Right of Way Line. Estimated Tonnage B type of material required for this operation are shown in the Surfacing Plan.

The maximum grades shown are to be the limiting grades for all road approaches. Modifications of grades will be permitted where adherence to the grades as shown would cause damage to property or create other unsatisfactory conditions. Grades less than the maximum shown are to be used wherever feasible.



STANDARD TIMBER GUARD POSTS

STANDARD M-19-E

(Work By Contractor)

FED. ROAD DISTRICT NO.	PROJECT NO.	SHEET NO.
COLO.	50002 (23) 10	
REVISION		
10-9-58 Added Spacing Table		
2-21-61 Spacing		

PAINTING - Posts shall be painted with aluminum paint and a black band placed around each post as per details on this sheet. Number of coats and type of paint applied shall be in accordance with specifications.

REFLECTIVE SHEETING - In accordance with the details hereon, State Forces will furnish and place the required 2"x6" smooth surfaced reflective delineators fabricated from 3x.114 aluminum alloy, minimum thickness 0.025", reflectorized with reflective sheeting strips or other approved reflective materials. Strips shall be suitable for placement around a curved surface.

(Work By State Forces)

INSTALLATION OF GUARD POSTS ON CURVES AND TANGENTS - Spacing shall be in accordance with Table 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 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1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 21

STANDARD M-29-C
(SHEET 1 OF 2 SHEETS)

[illegible]

Detour Condition Where Traffic is Prohibited Along Construction



All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the Project.

Where traffic is maintained through or over any part of the Project, the Contractor will be required to mark all hazards within the limits of the Project with well-maintained Barricades, Warning Signs and Directional Type Signs. All Barricades and Signs shall be moved, added to, changed or removed as required during the progress of construction and removed entirely when project is completed.

Except for variations noted on this sheet all signs will be in conformity with the specification outlined in the current issue of "Manual on Uniform Traffic Control Devices for Streets & Highways, PRA AASHTO 1988" and 1954 Revisions and "Colorado Manual on Uniform Traffic Control Devices for Streets & Highways CDMOT 1952 (as revised 1956)". Numbers adjacent to signs refer to Standards in the manual. Standard Warning, Regulatory and Directional Signs shall be reflectorized.

Where traffic is prohibited from the Project the Detour will be marked by the Department except that the Contractor will provide, erect and maintain Barricades complete with approved Directional Arrows and Regulatory Signs where such barricades are erected and maintained at the ends of the Project or where selected Detour routes are in advance of the actual project terminal. U.S. or State Route Markers required for the Project will be furnished and installed by the Department. The location and positioning of Advance Warning Signs, Barricades and Speed Control Signs shall be as recommended by the appropriate District Engineering Forces of the Department.

No work shall commence on the Project until all Warning Signs are in place and approved by the Engineer. Where speed control appears necessary for protection of the travelling public, such speed control shall be requested from the Project Engineer by the Contractor.

All signs are to be in clear view of approaching traffic and rare not to be obstructed by equipment, weeds or other wise. Where two identical type signs are used for dual posting they are to be staggered on the two sides of the Highway for at least a distance of 75' to avoid a tunneling effect.

SEE SHEET 2 OF 2 THIS STANDARD FOR ADDITIONAL NOTES AND DETAILS.



NOTE:
Typical examples for parking Projects are shown, herein constitute a minimum of signs required and is subject to alteration to fit actual conditions encountered in the field. Additional markings and any special signs required for the guidance and protection of traffic will be placed as required on the project by the Contractor's expense.

All signs and Barricades must be maintained in good condition and kept clean and free of dirt at all times to give the appearance of new signs. Contractor's and Engineers' equipment must be parked so their signs and barricades are visible to approaching traffic at all times.

LEGEND

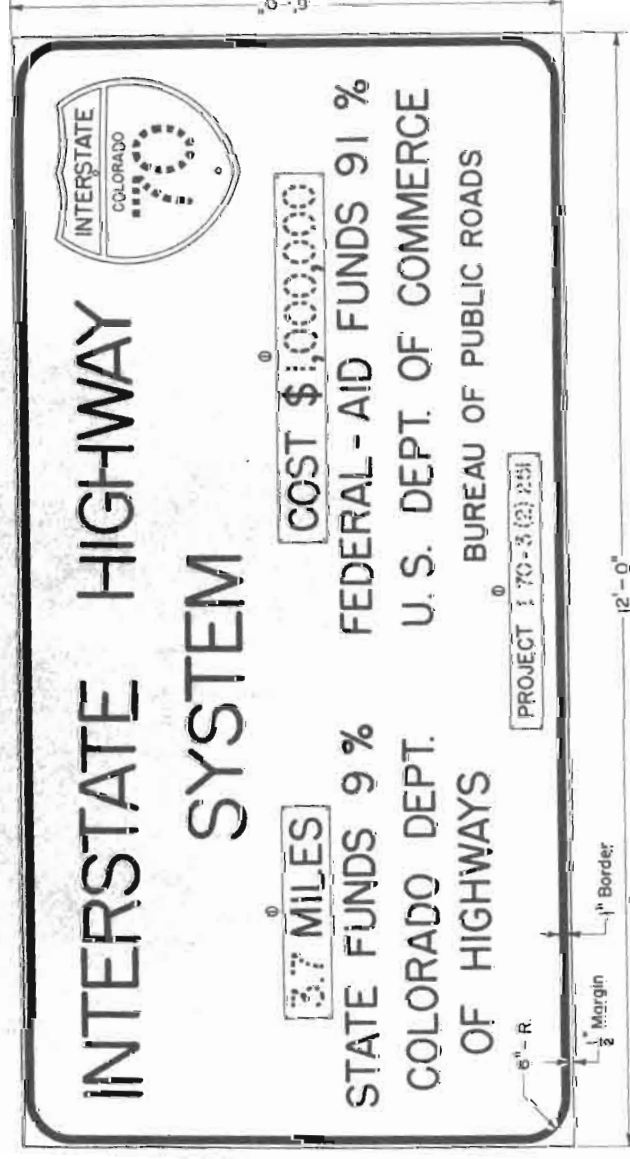
(1) NEW GRADE, TRAFFIC USING SHOULDERS
(2) TRAFFIC USING DETOUR AROUND STRUCTURE

COLORADO DEPARTMENT OF HIGHWAYS <i>Standard Roadway</i> <i>Construction Traffic Signs</i>	Designed by	JCR	Approved by	<i>A. T. Ralston</i>
	Made By	JCR	Engineer, Survey & Plans	
	Checked by		Date	<i>July 22, 1955</i>

Designed by J.C.R.	Approved by <i>C. Julian</i>
Made by J.C.R.	Engineer, Surveys & Plans
Checked by	Date: <i>July 22, 1955</i>

TYPICAL SIGNS

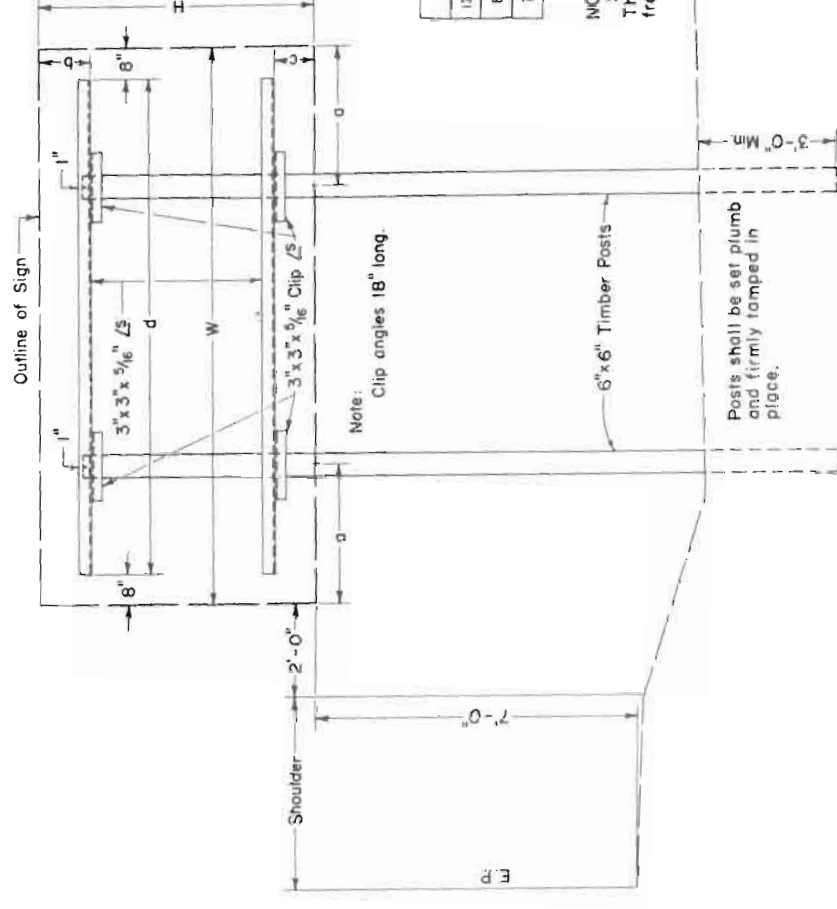
INTERSTATE SYSTEM



⊕ Plaque length variable, as determined by message.

24" Standard Interstate Shield, for dimensions see "Interstate Signing Manual." Background, letters and numerals plain (nonreflective - Red, White and Blue). (Removable Plaque)

INSTALLATION DETAIL



W	H	a	b	c	d
12'-0"	6'-0"	3'-0"	1'- $\frac{1}{2}$ "	0'-10'- $\frac{1}{2}$ "	10'-8"
8'-0"	5'-0"	2'-0"	1'- $\frac{1}{2}$ "	0'-10'- $\frac{1}{2}$ "	6'-8"
7'-0"	4'-0"	1'-5"	1'- $\frac{1}{2}$ "	0'-10'- $\frac{1}{2}$ "	5'-8"

NOTE:

NOTE:
Signs are to be placed facing traffic approaching the work. These signs should be located so as not to obscure or detract from the effectiveness of other official signs.

GENERAL NOTES

All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways, applicable to the Project.

Signs shall be made of $\frac{3}{4}$ " Plywood or other material approved by the Department.

Background to be painted plain white with stencil black letters, numerals and border.

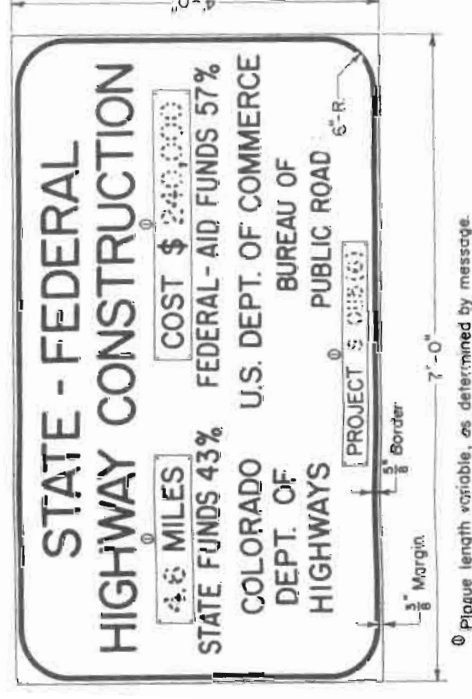
Posts shall be 6" X 6" S 4 S timber or other material approved by the Department and shall be painted white.

Layout of signs will be furnished the Contractor by the Traffic Operations Section indicating the details as to letter size, symbols, spacing, etc. which are required for these signs.

Figure for cost of project to be furnished contractor by Department.

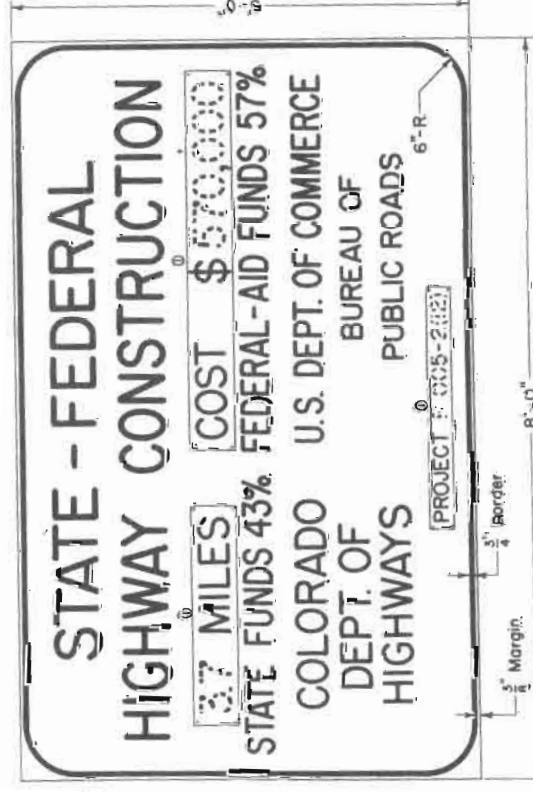
If signs are for a single structure or interchange, name will be used in lieu of mileage. Such as:
COLORADO RIVER BRIDGE or ARAPAHOE INTERCHANGE.

SECONDARY SYSTEM



^① plaque length variable, as determined by message.

PRIMARY SYSTEM



① *clockwise* length variable, as determined by message.

COLORADO
DEPARTMENT OF HIGHWAYS

STANDARD IDENTIFICATION SIGNS

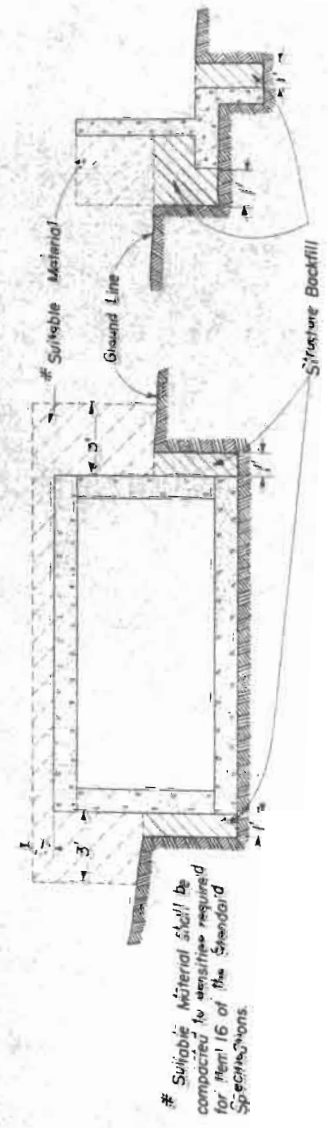
Designed by	V.H.	Approved by	Q.3
Made by	D.M.E.	Engr. Surveys & Plans	
Checked by	E.E.O.	Date:	May 15 1960

REV. ROAD SECTION NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLO.	50002(23)	14

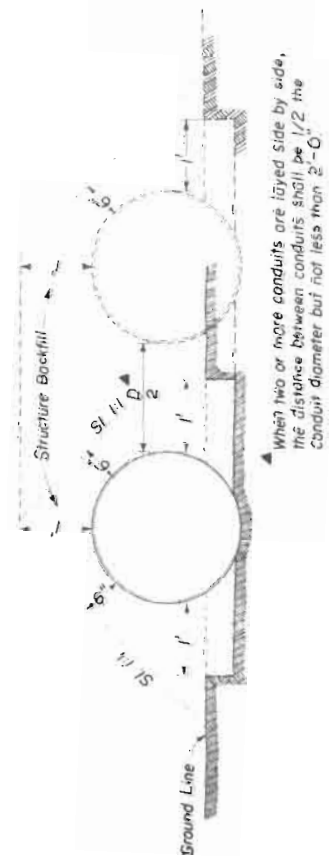
STANDARD M-60-B

REVISION
2-9-59 Dbl. Cond. & Cond. in Tr. H.E.P.

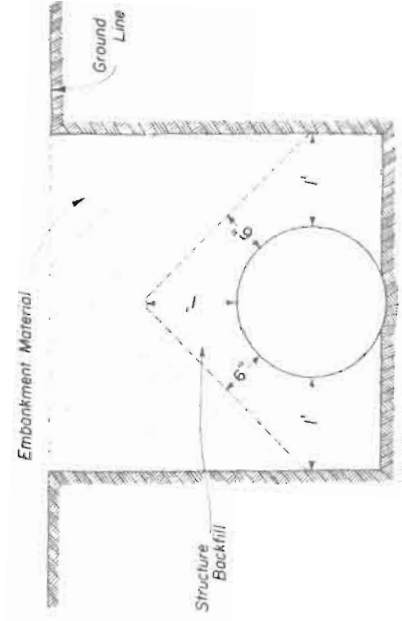
CONCRETE BOX CULVERTS & WINGWALLS



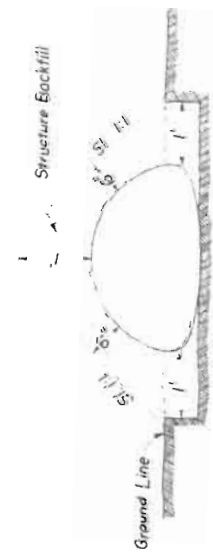
CIRCULAR CONDUIT



SIPHONS OR CONDUIT IN TRENCH

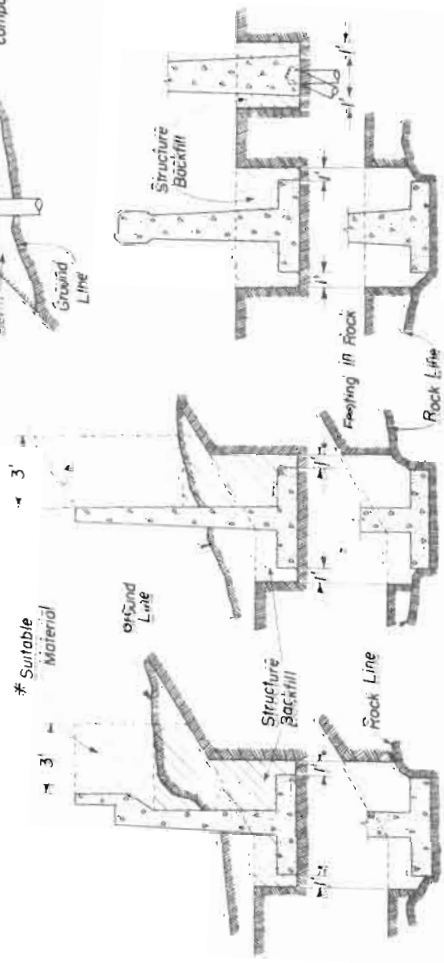
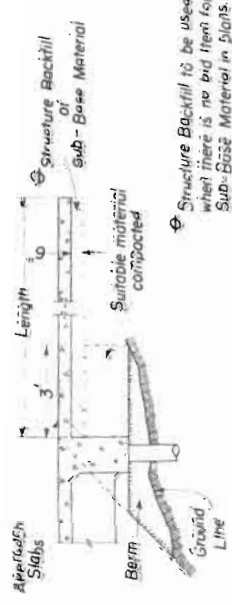


ELLIPTICAL OR ARCH CONDUIT

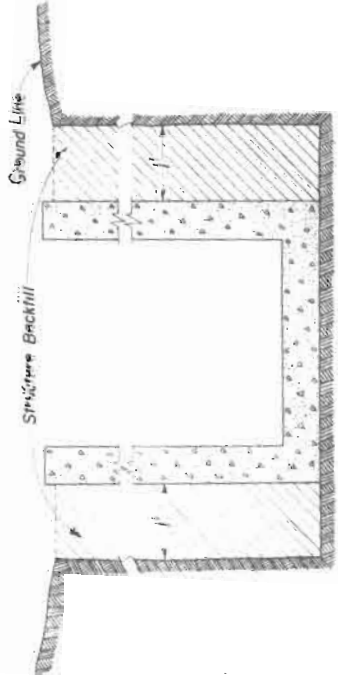


PIERS, ABUTMENTS, RETAINING WALLS ETC.

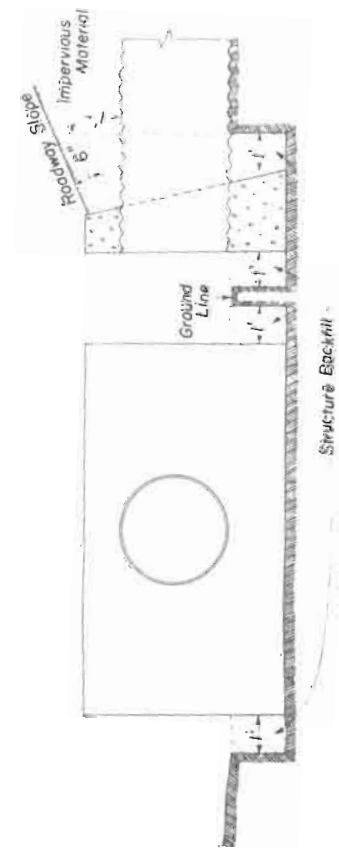
All material that is to be compacted shall be placed in horizontal layers not more than 6" inches in depth and compacted before the next layer is placed. For Arches, Road Fillings and Box Culverts the fill shall be brought up uniformly on both sides of the center of structure to avoid stresses in the structure caused by unsymmetrical loading.



DROP INLETS, DIVISION BOXES, INTERCEPTING HEADWALLS ETC.



HEADWALLS AND END OF CULVERTS



GENERAL NOTES

All work shall be done according to the Standard Specifications of the Colorado Department of Highways applicable to the Project.
If, in the opinion of the Engineer, the material beneath the structure is of such character as to cause unequal settlement along the length of the structure, the material shall be removed to such a depth, ordered, and backfilled with gravel or other suitable material and compacted in accordance with Item 16 of the Standard Specifications.
Suitable Material shall be any "Unclassified Excavation" material developed on the project except large rock, boulders or other materials considered by the Engineer to be undesirable for backfill around culverts, boxes etc.

STANDARD M-107-D

STANDARD M-107-D

TYPICAL SECTIONS for DRAINAGE, IRRIGATION DITCHES and CHANNEL CHANGES

PURPOSE & USE OF THE TABLE

The diagram illustrates a cross-section of a ditch. The ditch is defined by two sloped sides and a flat bottom. The top width of the ditch is labeled as W . The bottom width is labeled as X . The vertical depth of the ditch is labeled as Y . The slope of the ditch is indicated by a dashed line with a slope ratio of $1:1$. The ditch is shown in a plan view, with a dashed line representing the 'Normal ground line' and a solid line representing the 'Ditch section'. The ditch is labeled 'Ditch section to be excavated after soil embankment has been placed and compacted to proper density.'

For Embankment Sections

The diagram illustrates a cross-section of a ditch. Key features and labels include:

- Normal ground line:** A dashed line on the left side of the ditch.
- Slope to cut:** The left side of the ditch, sloping downwards from the ground line.
- Slope to fill:** The right side of the ditch, sloping upwards towards the ground line.
- Top width:** The width of the ditch at the top, labeled as W .
- Bottom width:** The width of the ditch at the bottom, labeled as w .
- Depth:** The vertical distance from the top edge to the bottom of the ditch, labeled as D .
- Excavated material:** A label pointing to the area on the right side of the ditch, indicating material to be used on the lower side of the ditch where necessary.

GENERAL NOTES

All ditches are to be constructed to lines and grades as stated by the Engineer using the ditch section shown on plans or as ordered by the Engineer.

The following horizontal spacing of ditches is recommended:

4% to 6%	70' Centers
8% to 10%	Approximately 65' Centers
20% to 4:1 Slope	Approximately 55' Centers
30% to 1-1/2:1 Slope	Approximately 50' Centers

COLORADO
DEPARTMENT OF HIGHWAYS
*Standard Types of Ditches
and
Construction Methods*

Designed by GSM	Approved by <i>Wm. L. B.</i> Engineer, Highways & Plans Date: Aug. 16, 1950
Made by G.M.	
Checked by	

SW-SE, Sec 4,
T.33S, R.56 W.

NOTE:

Alignment and Grades as shown are subject to modification during construction after approval by the Denver Office.
Soil data shown on plans is obtained from best available testing laboratory information. This information is shown for the convenience of the Contractor and the Department does not guarantee the accuracy of these tests. If materials not conforming to the data on the plans are encountered during construction the grading plan shown on plans will be modified where necessary to secure dense, stable embankments.

2545+00.0 ~ Reg'd Identification Sign, Rt.

STA 2545+00.0 BEG. S 0002 (23)=
STA 2545+00.0 END S0002(22)=
STA 2545+00.0 on WPSS. 377

NW-NE, Sec 9

SE-SE, Sec 4

SW-SW, Sec 3

B.M.
H10 50' PI 2548.15
Elev. 5675.82

B.M.
H111 in PP 2551.25
Elev. 5684.27

B.M.
H111 in PP 25528.15
Elev. 5685.05

Test No 20 A-6(10)
LL 33.9
PI 14.3
% 200 75
C.B.R. 6.5

Test No 21 A-6(10)
Surr. No 20

Test No 22 A-6(10)
Surr. No 20

No. 21

No. 22

E 772

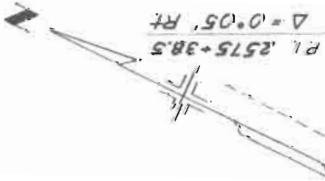
FILE NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLD	S 0002 (23)	16	

EXCAVATION
EMBANKMENT
STA 10:00 Haul
YD. M. O'Haul
BORROW
BORROW SOURCE

NW 1/4, SW 1/4, Sec. 3
T. 33S, R. 56W.

NE 1/4, SW 1/4, Sec. 3

FILE NO.	PROJ. NO.	DIVISION	FILE NO.
3	S 0002 (23)	COLD	17



SW 1/4, SW 1/4, Sec. 3

B.M.
Nail in P.P. 5141-2564+50
Elev. 5688.96

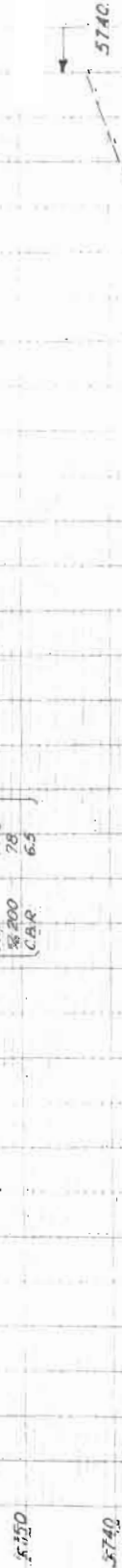
Test No. 29	4-6(10)
LL	3.3
PI	14.3
%	200
C.B.R.	6.5

B.M.
Nail in P.P. 5141-2573+00
Elev. 5731.12

Test No. 28	4-6(10)
LL	20.1
PI	82
%	200
C.B.R.	4.6

B.M.
Nail in P.P. 5141-2579+40
Elev. 5744.75

Test No. 25	4-6(10)
LL	38.4
PI	20.1
%	200
C.B.R.	4.6



N.F.S.D. = 820

N.P.S.D. = 390

EMBANKMENT
STA. 50+00 TO
50+100
BORROW SOURCE

SW 1/4, NE 1/4, Sec. 3
7.33 S., R. 56 W.

SE 1/4, NE 1/4, Sec. 3

FILE NO.	SECTION	PLAT NO.	DATE
3	000	5 0002 (28)	18



P1 2615+29.3
Δ=0°04' 17"

B.M.
Nail in PT 27 No. 2465+30
Elev. 5765.17

B.M.
Nail in PT 28 No. 2465+30
Elev. 5765.17

SW 1/4, NW 1/4, Sec. 2

Test No. 27 A-6 (12)
Start to No. 25

Test No. 28 A-6 (12)
Start to No. 25

B.M.
Nail in PT 29 No. 2465+30
Elev. 5765.17

B.M.
Nail in PT 30 No. 2465+30
Elev. 5765.17

NW 1/4, SE 1/4, Sec. 3

Test No. 26 A-6 (12)
Start to No. 25

Test No. 27 A-6 (12)
Start to No. 25

Test No. 28 A-6 (12)
Start to No. 25

Test No. 29 A-6 (12)
Start to No. 25

Test No. 30 A-6 (12)
Start to No. 25

5790
5780
5770
5760
5750

5790
5780
5770
5760
5750

EXCAVATION
EMBANK. 1.20
STA. TO GRADE
YD. M. O'HAUL
BORROW
SOURCE

FILE NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	C.O.D.	S 0002 (23)	19	

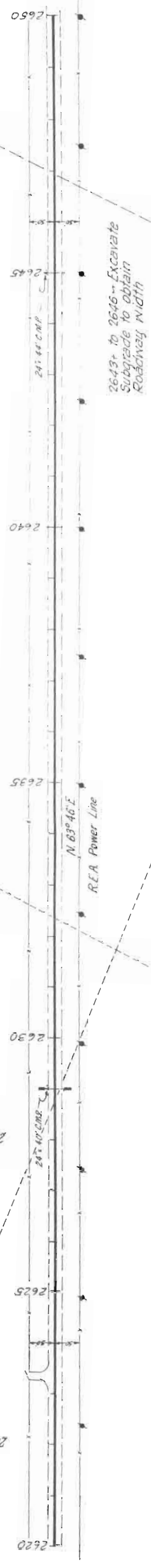
NE-NW Sec. 2
T. 33 S. - R. 56 W.



NW-NW Sec. 2

2629+00 - Remove Damaged End Rt. Ditch.
& Extend 24' x 40' Cross
Culvert 12' Lt. & 12' Rt.

2623+35 - Road Approach, Lt.



B.M.
Nail in P.P. 50' RI 2646+25
Elev. 5792.92

B.M.
Nail in Fence Post 45' RI 2629+75
Elev. 5790.35

B.M.
Nail in P.P. 50' RI 2646+25
Elev. 5792.92

B.M.
Nail in P.P. 50' RI 2646+25
Elev. 5792.92

Test No. 29 A-6(12)	Sum. to No. 29
LL	38.4
PI	20.1
% 200	82
C.B.R.	46

Test No. 30 A-6(11)	Sum. to No. 30
LL	38.1
PI	18.3
% 200	76
C.B.R.	37

Test No. 31 A-6(11)	Sum. to No. 31
LL	38.1
PI	18.3
% 200	76
C.B.R.	37

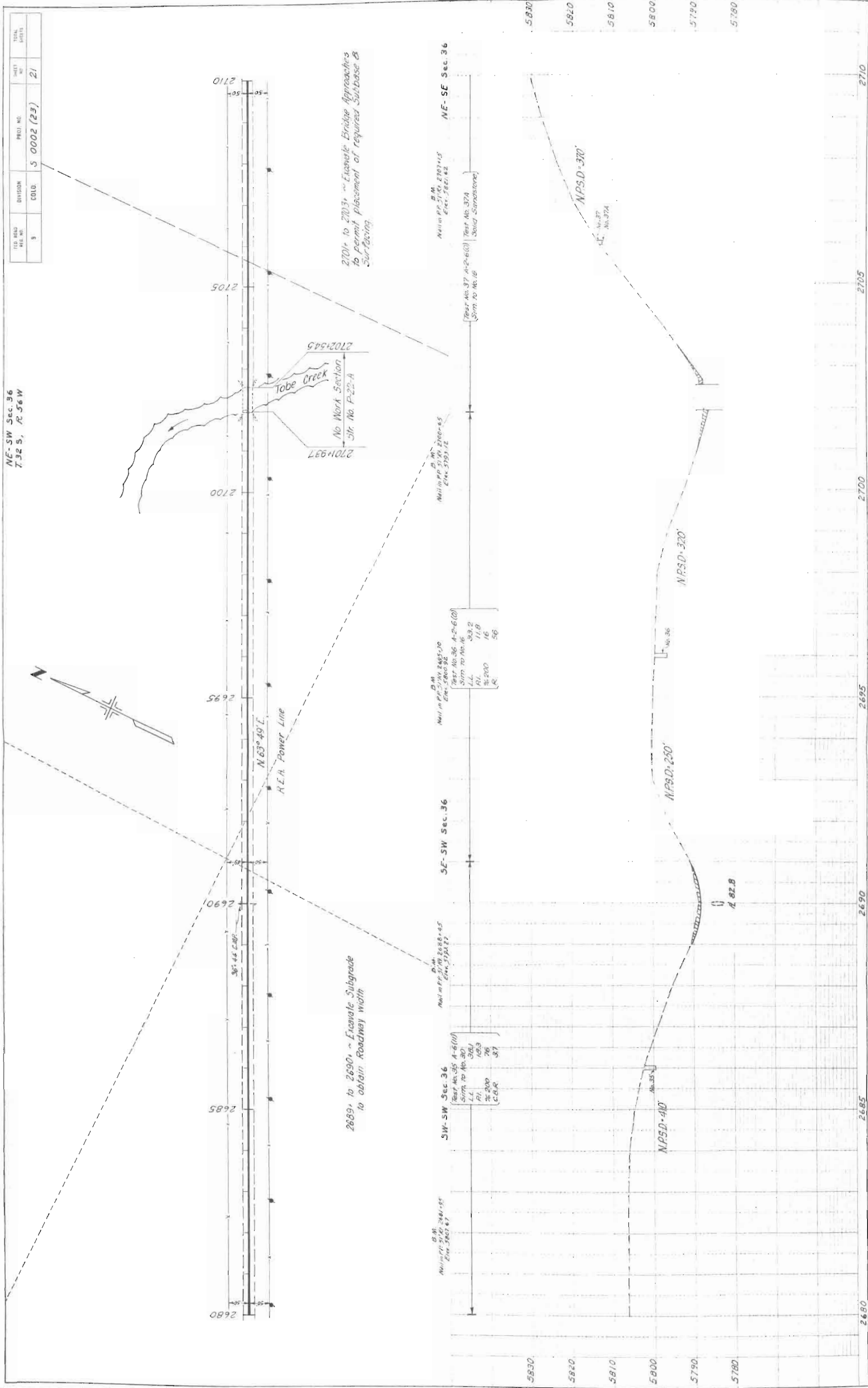
5810
5800
5790
5780

5810
5800
5790
5780

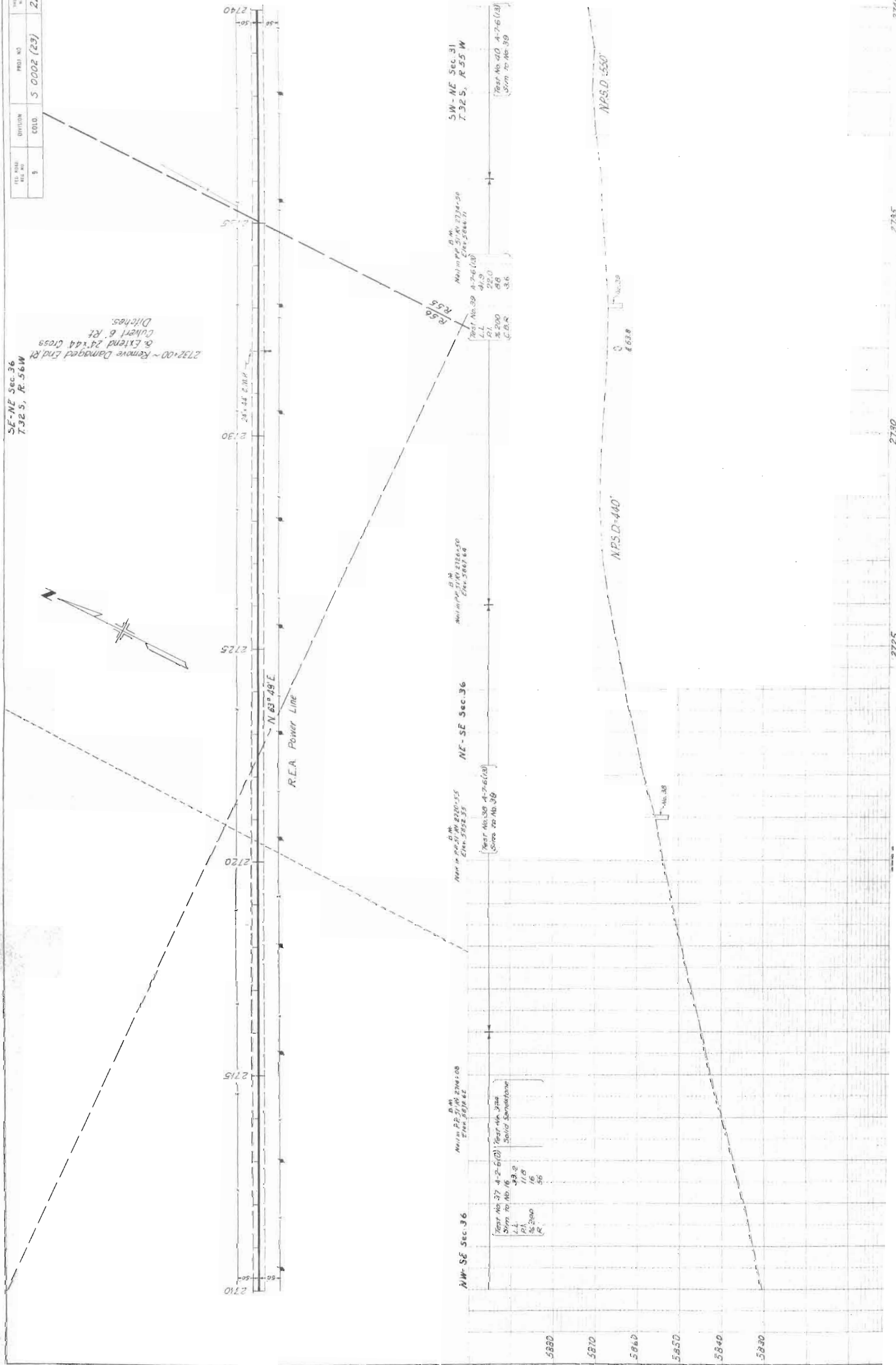


EXCAVATION
EMBANK x 1.87
578.40 0.74 Haul
Y22M. 0.4 Haul

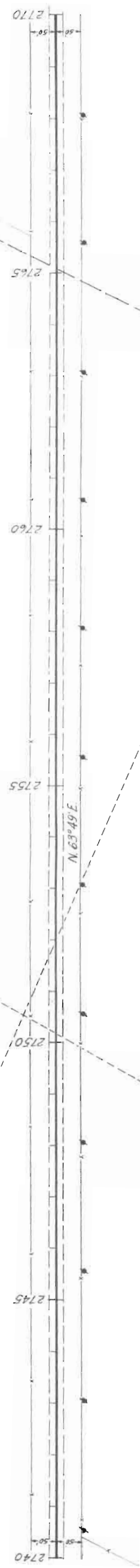
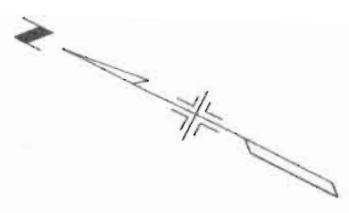
FIELD ROAD WBS NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	C010	5 0002 (23)	21	



FEED ROAD REF. NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	COLD.	5 0002 (23)	22	



NE-NW Sec. 31
T.32S R.55W



5885
5870
5860
5850

5880
5870
5860
5850

N.P.S.D. = 640'

N.P.S.D. = 790'

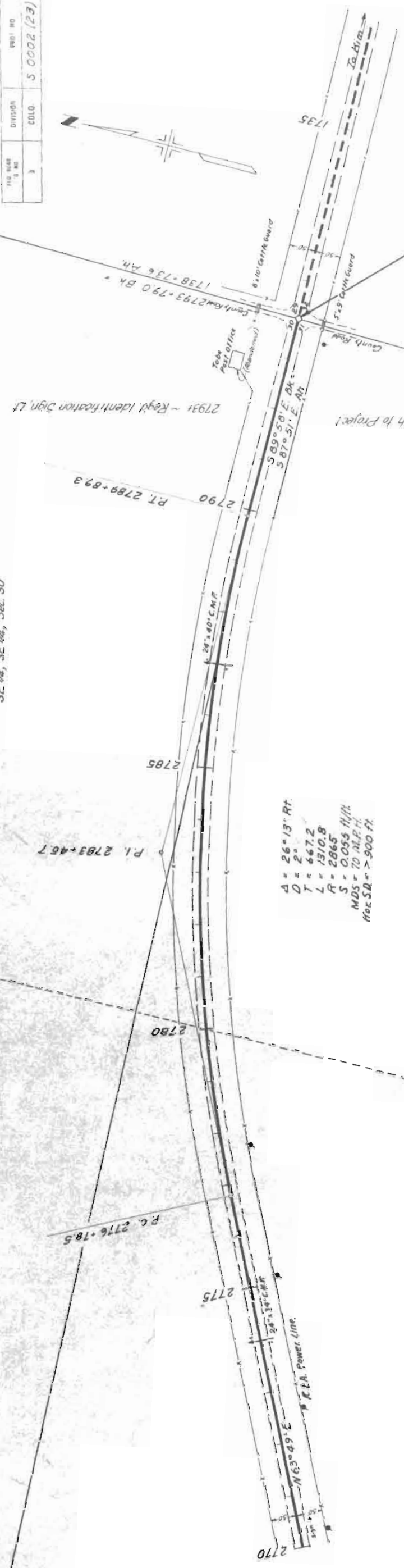
N.P.S.D. = 1300'

PLAN

PROFILE

FILE NO.	DIVISION	PROJECT NO.	DATE
3	COLO	5 0002 (23)	24

SE 1/4, SE 1/4, Sec. 30



STA. 2793+79.0 Bk. END S 000 (23) =
 STA. 1738+73.6 Ah. = END S 000 (21) =
 STA. 2793+79.0 = END W.P.S.S. 377



5860
5850
5840

460

48.1

48.1

48.1