FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	1	

SECONDARY

COLORADO
STATE HIGHWAY DEPARTMENT

PLAN AND PROFILE OF PROPOSED
FEDERAL AID PROJECT NO. S 0002(6)
STATE HIGHWAY NO. 100
LAS ANIMAS COUNTY

2.06

INDEX OF SHEETS

CONVENTIONAL SIGNS

CENTER LINE (Title Sheet)
RIGHT OF WAY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER SECTION LINE
WOVEN WIRE COMBINATION FENCE
BARBED WIRE FENCE
TELEPH. & TELEG. LINE
POWER LINE
PRESENT ROAD
LEGEND OF GRADES — -1.00% CONSTRUCTED BY COUNTY +1.00% — -1.00% TO BE CONSTRUCTED +1.00%

Scales of Original Tracings

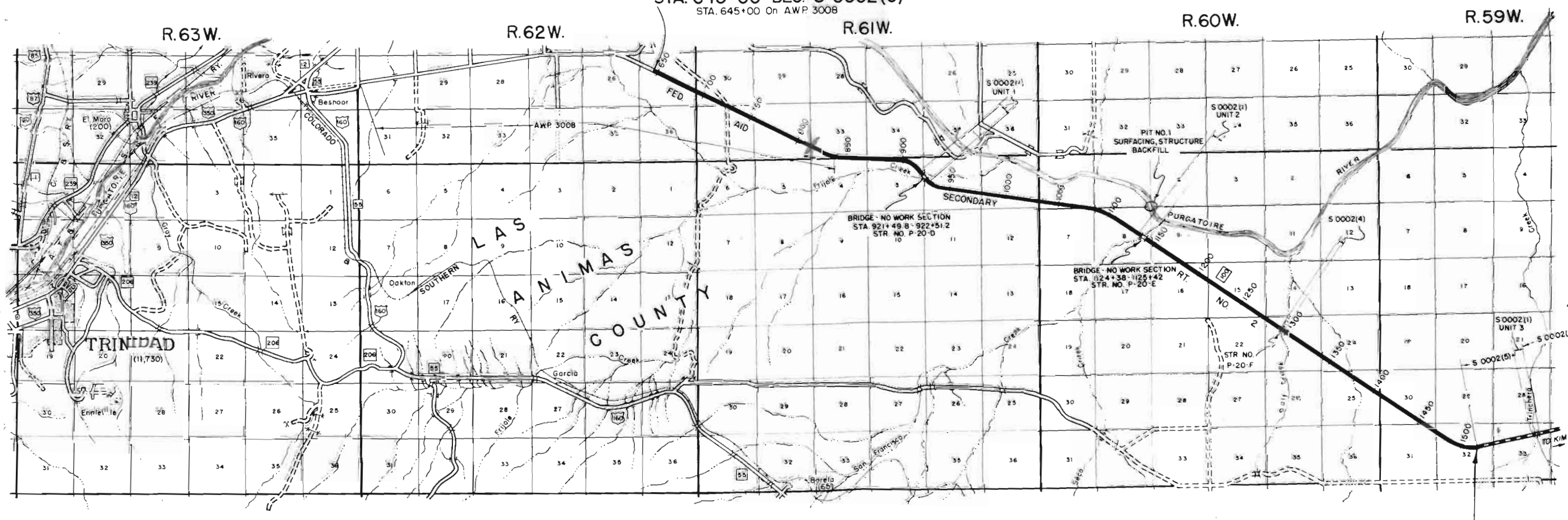
ON PLAN, 1 IN. - 100 FT.
ON PROFILE 1 IN. - 100 FT. HORIZONTAL
1 IN. - 10 FT. VERTICAL

GROSS LENGTH OF PROJECT 87,100.0 FT. = 16.496 MI.
NET LENGTH OF PROJECT 86,894.6 FT. = 16.457 MI.

— GRADES —

GRADE LINES THRU SECTIONS TO BE GRADED UNDER THIS PROJECT AS SHOWN ON PROFILE ARE 0.17 FT. BELOW THE GRADE OF THE FINISHED ROAD
PRESENT GRADE LINES SHOWN ON PROFILE AS CONSTRUCTED BY COUNTY IS 0.50 FT. BELOW THE GRADE OF THE FINISHED ROAD

STA. 645+00 - BEG. S 0002(6) =
STA. 645+00 On A.W.P. 3008



STA. 1516+00 - END S 0002(6) =
BEG. S 0002(5)

NOTICE TO BIDDERS

It is recommended that bidders on this Project go over the plan details with one of the following field representatives of this Department.

J.A. Solmonson, Constr. Engr, Pueblo, Colorado
S.W. Baker, Resident Engineer, Trinidad, Colorado

HIGHWAY DEPARTMENT
STATE OF COLORADO

RECOMMENDED FOR APPROVAL:
Jas. A. Bell — 4-28-
ASSISTANT ENGINEER — DATE

APPROVED:
Mark C. Nutter — 5-1-5
STATE HIGHWAY ENGINEER — DATE

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

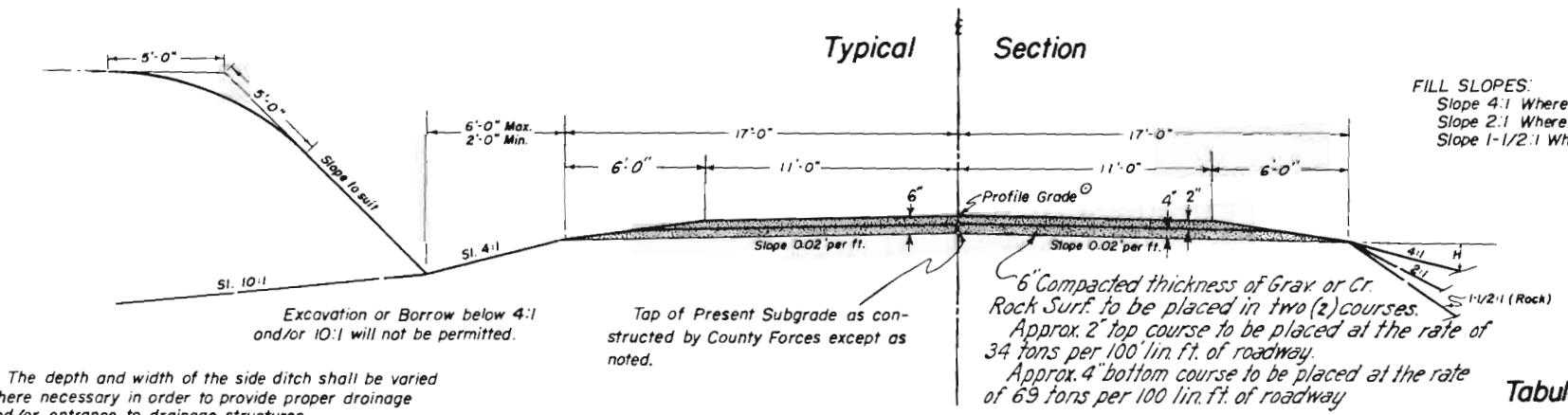
RECOMMENDED FOR APPROVAL:
DISTRICT ENGINEER — DATE

APPROVED:
DIVISION ENGINEER — DATE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	2	

TYPICAL CROSS SECTION OF IMPROVEMENT AND SUMMARY OF QUANTITIES

NOTE:
See Standard M-2-DM for details of Cut Slope Treatment, Flaring, and Widening for Guard Fence and/or Marker Posts.



FILL SLOPES:
Slope 4:1 Where "H" is 3' or less.
Slope 2:1 Where "H" is over 3'.
Slope 1-1/2:1 Where "H" is over 3' (In rock)

The depth and width of the 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 State Highway Department adopted January 1, 1948.

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

All roadway excavation required to construct this Project is to be obtained and used as indicated on the plans. Quantities involved beyond the limits of the ditches shown on the Typical Cross Section, either noted as "Borrow" on the Plans or as "Embankments" in the List of Structures, are to be classified and paid for as "Unclassified Excavation". These quantities are to be staked as part of the original excavation at locations indicated on the Plans. Any slope stakes beyond the limits of the Typical Section as shown, are subject to change by the Engineer to fit conditions actually met in construction.

Payment for overhaul will be based on measurement along the centerline of the project.

Right of Way fences, including line posts, shall be constructed approximately six (6) inches inside the boundary of the Highway Right of Way as shown on the plans.

Approximate location and quantities involved in construction of intercepting ditches are tabulated on summary of earthwork quantities sheet.

All curves are to be superelevated and widened as provided by the Standard Superelevation sheet included with the plans.

If excavation operations develop material which will stand on slopes steeper than slope stake lines, the Department reserves the right to change cut slopes during the progress of such excavations.

The Detour for this project lies along the present traveled road. At all places on the project where the new work lies along the present traveled road, the Contractor shall, at his own expense, prosecute construction in such manner that traffic may readily pass over the road. Also, the Contractor shall maintain in safe condition and at his own expense, all temporary approaches to and crossings of intersecting roads.

Cattle Guards encroaching on construction shall be moved by the County at no expense to the Project. It is estimated that Cattle Guards to be removed are at the following locations; Stations 932+, 1032+, 1118+, 1215+, 1247+, 1295+, 1363+, & 1407+.

It is estimated that grading for Road Approaches on this Project will not be required, however, for the convenience of the Contractor the approximate locations of those Approaches to be surfaced is carried in the List of Structures and on Plan-Profile Sheets. Approximate quantities for Payment are carried in the Surfacing Plan.

⊙ The Profile Grade for this Project, except between the following stations where grading is to be constructed under this project, shall be six (6) inches above the present grade line shown on Plan-Profile Sheets—
Sta. 1270+ to 1285+
1365+ to 1379+
1489+ to 1510+

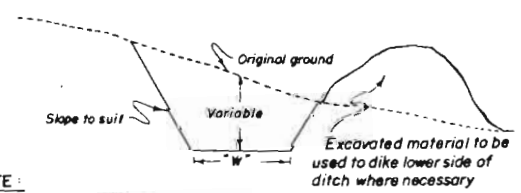
At Bridge Approaches excavation of the present roadway from the bridge ends will be required. It is estimated that this excavation will be six (6) inches in depth at the bridge ends and shall gradually feather out to zero over a distance of 300 feet.

After excavating the roadway shall then be built up to grades with the bridge deck with surfacing material. It is estimated that this excavation will be used to widen roadway shoulders within Free Haul Limits.

Culverts projecting from embankments shall be covered with approximately 6 inches of embankment material in such a manner that a minimum of pipe shall be exposed in the completed work. This shall be accomplished by warping embankment slopes around and adjacent to the culvert.

"Shaping Roadbed" will be required throughout this Project except in the locations where new grading is to be constructed and at bridge approaches where excavation is required for placement of surfacing material.

Typical Section for Ditches



NOTE:
"W" = 1' unless otherwise noted on plans.

Tabulation of Length & Design Data

STATION	ROADWAY LIN. FT.	BRIDGES NO-WORK SECTION LIN. FT	
645+00 BEG. S 0002(6) = 645+00 On A.W.P. 3008			
843+00 - End A.W.P. 3008	19,800.0		
921+00 - Beg. S 0002(1) Unit 1	7,800.0		
921+49.8 Bridge End Frijole Creek	49.8		
922+51.2 Bridge End		101.4	
923+00 - End S 0002(1) Unit 1	48.8		
1122+00 - Beg. S 0002(1) Unit 2	19,900.0		
1124+38 Bridge End San Francisca Creek	238.0		
1125+42 Bridge End		104.0	
1128+00 - End S 0002(1) Unit 2	258.0		
1280+04.8 - Beg. S 0002(4)	15,204.8		
Salt Creek (Concrete Arch Culvert)	45.4		
1280+50.2 - End S 0002(4)			
1516+00 - END S 0002(6) = Beg. S 0002(5)	23,549.8		
TOTALS	86,894.6	205.4	

SUMMARY

	LIN. FT.	MILES
Total S 0002(6) - Roadway	86,894.6	16.457
Total S 0002(6) - No-Work Section	205.4	0.039
TOTALS - S 0002(6)	87,100.0	16.496

DESIGN DATA

Maximum Degree of Curve	4°00'
Maximum Grade	5.79%
Minimum N.P.S.D. - horizontal	750'
Minimum N.P.S.D. - vertical	505'
Maximum Design Speed	55 M.P.H.

Summary of Approximate Quantities

ITEM NO.	ITEM		UNIT	ROADWAY	
11a.	Removal of 2 Structures		Lump Sum	•	
12a.	Removing Fence		Lin. Ft.	1,100	
13c.	Unclassified Excavation		Cu. Yd.	19,000	
13d.	Unclassified Ditch Excavation		Cu. Yd.	170	
14a.	Dry Rock Excavation	(Structural)	Cu. Yd.	10	
14b.	Dry Common Excavation	(Structural)	Cu. Yd.	60	
14c	Wet Rock Excavation	(Structural)	Cu. Yd.	5	
14d.	Wet Common Excavation	(Structural)	Cu. Yd.	10	
16a.	Structure Backfill (Class I)		Cu. Yd.	340	
16d.	Mechanical Tamping		Hr.	40	
17ax.	Rolling with Tamping Roller (2 Unit)		Hr.	50	
17ay.	Rolling with Tamping Roller (4 Unit)		Hr.	30	
17b.	Rolling with Flat Wheeled Roller		Hr.	140	
17dx.	Furnishing Tamping Roller (2 Unit)		Each	1	
17dy.	Furnishing Tamping Roller (4 Unit)		Each	1	
17e.	Furnishing Flat Wheeled Roller		Each	1	
17g.	Wetting		M Gal.	1,420	
18a.	Station Yard Overhaul		Sta. Yd.	66,000	
18b.	Yard Mile Overhaul		Yd. Mi.	4600	
51b	Relaying 48" Pipe		Lin. Ft.	50	
53c	30" Corrugated Metal Culvert Pipe		Lin. Ft.	46	
53f	84" Corrugated Metal Culvert Pipe		Lin. Ft.	288	
67a	Riprap		Cu. Yd.	30	
76b	Barbed Wire Fence with Untreated Wooden Posts		Lin. Ft.	123,300	
76g	Barbed Wire Gates		Each	30	
94	Marker Posts		Each	148	
119	Shaping Roadbed		Mile	15.3	
	WORK BY COUNTY FORCES				
17b	Rolling with Flat Wheeled Roller		Hour	255	
17ex	Furnishing Flat Wheeled Roller		Each	1	
17g	Wetting		M Gal.	1,360	
18c	Ton Mile Overhaul		Ton Mi.	384,745	
26b	Grav. or Crushed Rock Surf. (Grading B)		Ton	90,400	
	WORK BY STATE FORCES				
81a.	Project Markers		Each	1	
	FORCE ACCOUNT				
	Placing 6" of Earth in bottom of C.M.P. Stock Passes, Sta. 1200, 1370+, 1429+ & 1495+		Lump Sum	•	

Surfacing Plan

It is estimated that material for Gravel Surfacing for the Project is available in the vicinity of the pit indicated in the following tabulation. Estimated quantities involved are shown below.

Alteration of this plan as shown below will be allowed only on written permission from the Dept.

MATERIAL TO BE PLACED	SOURCE	QUANTITY AVAILABLE	QUANTITY TONS USED TOP COURSE GRADING B	QUANTITY TONS USED BOT. COURSE GRADING B	OVERHAUL TON MILES
Approach to Project	PIT NO. 1		34	69	937
645+00 to 921+49.8	S.E. 1/4 SEC. 5, S.W. 1/4 SEC. 4, N.E. 1/4 SEC. 8, N.W. 1/4 SEC. 9		3,539	13,079	182,901
922+51.2 to 1117+18	T. 33S., R. 60W.		6,716	13,432	39,157
1117+18 to 1124+38	63 MI. FROM STA. 1117+18 SOIL CLASS - A-1-a(0)		250	497	126
1125+42 to 1516+00		Ample	13,475	26,951	159,874
Approach to Project			34	69	793
Est. for Road Apprs. from Structure List				224	957
TOTALS					

FED. ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002 (6)	3	

List of Structures

STATION	DESCRIPTION	REMOVE STRUCTURES	EXCAVATION CU. YDS.			STRUCTURAL EXCAVATION CU. YDS.				STRUCTURE BACKFILL CU. YDS.			MECH. TAMP.	GRAVEL OR CRUSHED ROCK SURFACING	CORRUGATED METAL CULVERT PIPE LIN. FT.				RIPRAP		MISCELLANEOUS
		NO. KIND	UNCLASS.	EMBANK.	UNCLASS. DITCH	•				CL. "1"			HR.	◇ TONS	30"		84"		CU. YDS		
645+00 645+00 669+90	Project Marker Rt. Approach to Project Road Approaches Rt. & Lt.													52 24							1 - Project Marker (State Forces)
725+60 794+40	Road Approaches Rt. & Lt. Road Approach Rt.													24 12							
794+60 936+60	Road Approach Lt. Road Approaches Rt. & Lt.													12 24							
979+75 1153+00	Riprap at Ends of C.M.P. in place Dikes & Diversion Ditches Rt. & Lt.			50	50	32													25		
1200+00	Remove 48"x 60' C.M.P. & Relay 50 ft. as 1 - C.M.P. Cross Culvert Sta. 1504+15 Cross Culvert & Ditches (W=12') (Stock Pass)	1 - C.M.P.	25							70			7				68				
1312+00 1362+50	Cross Culvert Road Approach Rt.					5				18			2	12	46						
1362+80 1370+30	Road Approach Lt. Cross Culvert & Ditches (W=12') (Stock Pass)		25							72			7	12			76				
1426+90 1427+10	Road Approach Lt. Road Approach Rt.													12 12							
1429+00 1470+20 1470+50	Cross Culvert & Ditches (W=12') (Stock Pass) Road Approach Lt. Road Approach Rt.		75							72			7	12 12			72				
1495+50 1503+15	Remove Timber Bridge Cross Culvert & Ditches (W=12') (Stock Pass) Fill Low Spot Rt. & Lt.	1 - Bridge	75	10						72			7				72				
1504+15	Relay 50 lin. ft. of 48"x 60' C.M.P. from Sta. 1200+00 as Cross Culvert, Ditches (W=3')				10	33				31			3								Relay 50 lin. ft. of 48" Pipe
1506+00 1516+00	Fill Low Spot Rt. & Lt. Approach to Project			10										52							
TOTALS		1	200	70	60	70				335			33	272	46		288		25		

• It is estimated that Structural Excavation for this Project is 90% Common & 10% Rock of which 90% is Dry & 10% Wet.
◇ Included for Payment in Surfacing Plan

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	4	

FENCING REQUIREMENTS *and* DETAILS FOR PLACING RIPRAP AT END OF CULVERT STA. 979+

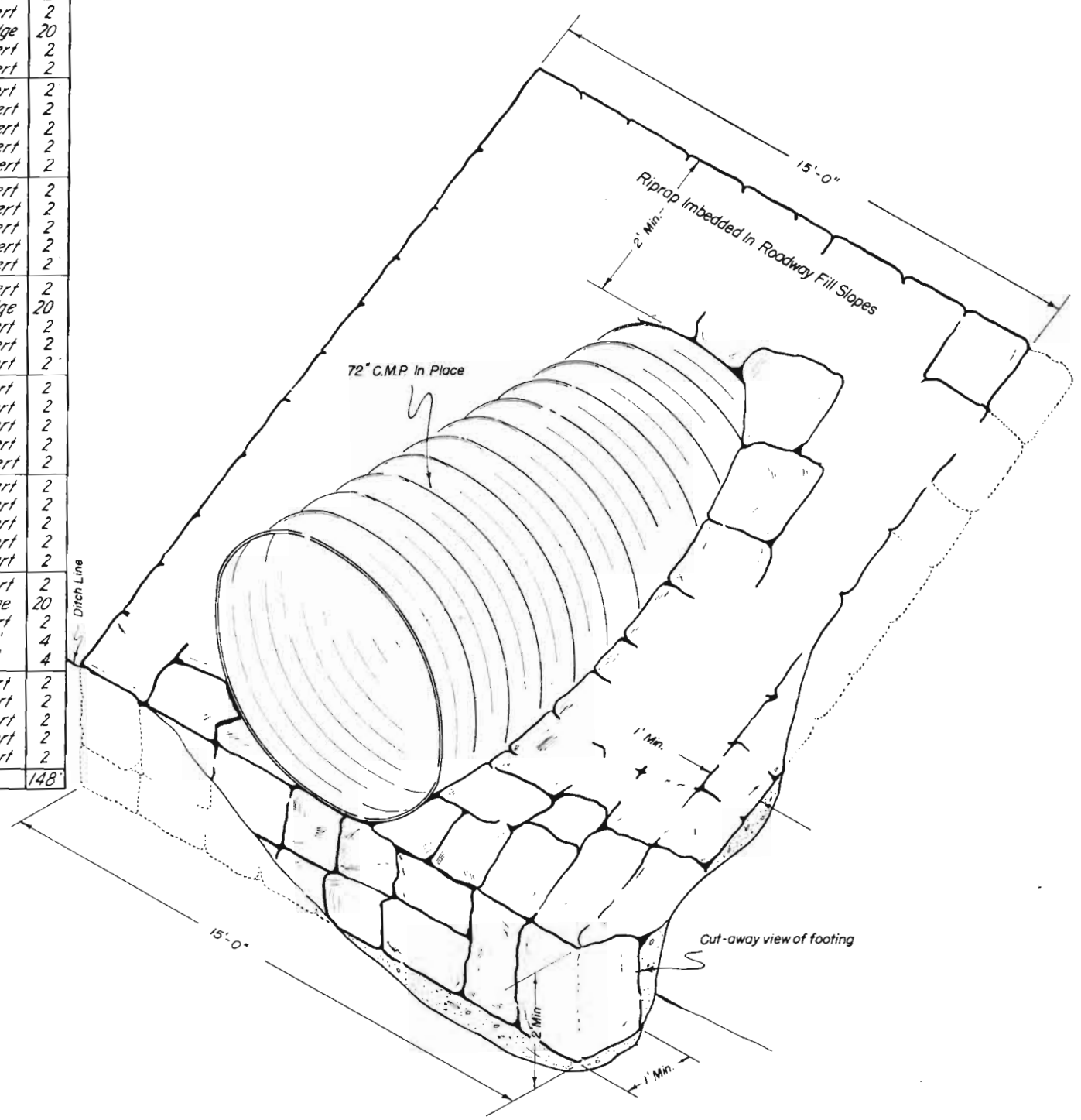
FENCING REQUIREMENTS

STATION	SIDE	REMOVE FENCE	BUILD FENCE			GATES	
			BARBED WIRE			BARBED WIRE	
		LIN. FT.	LIN. FT.			EACH	
932+40	X	250					
1032+80	X	105					
1118+00	X	105					
1215+30	X	105					
1247+88	X	105					
1295+48	X	105					
1363+20	X	140					
1407+15	X	105					
914+50 to 921+50	Lt.		710				
922+51 to 1124+38	Lt.		20,143				
936+50	Lt.					1	
1005+00	Lt.					1	
1032+90	Lt.					1	
1068+00	Lt.					1	
1116+50	Lt.					1	
1125+42 to 1280+06	Lt.		15,435				
1159+00	Lt.					1	
1197+00	Lt.					1	
1247+80	Lt.					1	
1264+00	Lt.					1	
1280+48 to 1516+00	Lt.		23,506				
1295+10	Lt.					1	
1331+50	Lt.					1	
1363+45	Lt.					1	
1406+90	Lt.					1	
1426+60	Lt.					1	
1472+05	Lt.					1	
878+50 to 921+50	Rt.		4,234				
922+51 to 1124+38	Rt.		20,206				
936+50	Rt.					1	
1005+00	Rt.					1	
1033+05	Rt.					1	
1068+00	Rt.					1	
1116+50	Rt.					1	
1125+42 to 1280+06	Rt.		15,440				
1159+00	Rt.					1	
1197+00	Rt.					1	
1248+10	Rt.					1	
1264+00	Rt.					1	
1280+48 to 1516+00	Rt.		23,570				
1295+50	Rt.					1	
1331+50	Rt.					1	
1362+10	Rt.					1	
1407+20	Rt.					1	
1427+30	Rt.					1	
1472+50	Rt.					1	
TOTALS		1,020	123,244			30	

MARKER POSTS

STATION	SIDE	SPACING	NO.
659+72	Rt.&Lt.	Culvert	2
669+20	Rt.&Lt.	Culvert	2
679+10	Rt.&Lt.	Culvert	2
692+60	Rt.&Lt.	Culvert	2
707+88	Rt.&Lt.	Culvert	2
724+75	Rt.&Lt.	Culvert	2
754+00	Rt.&Lt.	Culvert	2
764+60 to 766+10	Rt.&Lt.	Bridge	20
777+10	Rt.&Lt.	Culvert	2
787+70	Rt.&Lt.	Culvert	2
799+30	Rt.&Lt.	Culvert	2
825+00	Rt.&Lt.	Culvert	2
831+00	Rt.&Lt.	Culvert	2
837+90	Rt.&Lt.	Culvert	2
850+00	Rt.&Lt.	Culvert	2
856+75	Rt.&Lt.	Culvert	2
877+90	Rt.&Lt.	Culvert	2
887+00	Rt.&Lt.	Culvert	2
891+50	Rt.&Lt.	Culvert	2
902+50	Rt.&Lt.	Culvert	2
905+00	Rt.&Lt.	Culvert	2
920+86 to 923+15	Rt.&Lt.	Bridge	20
953+50	Rt.&Lt.	Culvert	2
979+75	Rt.&Lt.	Culvert	2
1013+00	Rt.&Lt.	Culvert	2
1021+00	Rt.&Lt.	Culvert	2
1029+25	Rt.&Lt.	Culvert	2
1046+05	Rt.&Lt.	Culvert	2
1051+00	Rt.&Lt.	Culvert	2
1056+80	Rt.&Lt.	Culvert	2
1060+20	Rt.&Lt.	Culvert	2
1064+25	Rt.&Lt.	Culvert	2
1070+00	Rt.&Lt.	Culvert	2
1075+00	Rt.&Lt.	Culvert	2
1082+50	Rt.&Lt.	Culvert	2
1106+00	Rt.&Lt.	Culvert	2
1123+74 to 1126+06	Rt.&Lt.	Bridge	20
1200+00	Rt.&Lt.	Culvert	2
1279+50 to 1281+00	Lt.	50'	4
1279+80 to 1281+80	Rt.	50'	4
1312+00	Rt.&Lt.	Culvert	2
1370+40	Rt.&Lt.	Culvert	2
1429+00	Rt.&Lt.	Culvert	2
1495+50	Rt.&Lt.	Culvert	2
1504+15	Rt.&Lt.	Culvert	2
TOTALS			148

Details for Placing Riprap at Ends of 72" C.M.P. Sta. 979+



REVISIONS

Rev. 6-28-40, A.Z. 1940 Specs.
Rev. 1-2-46, C.S.D. Item 81a

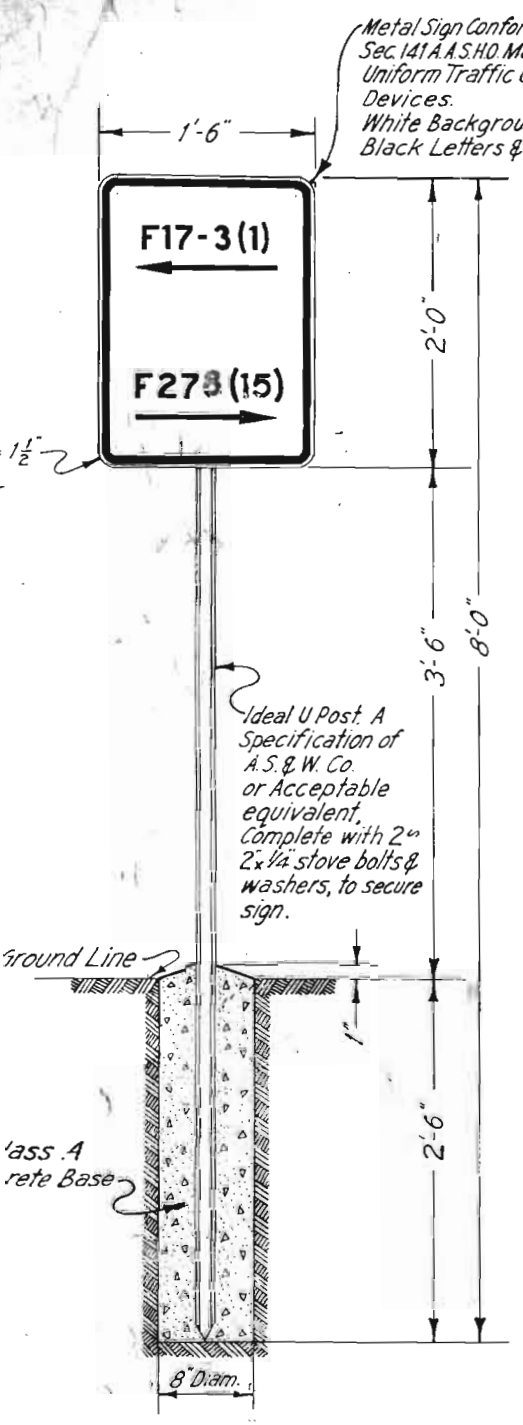
STANDARD M-7-B

Rev. 8 Jan. 46 P.S.B. 1/2" ø to 1/2" ø
Rev. June 10 '46, W.E.M. Bronze Tablet
Rev. Mar. 21-1947, W.H.M. ~ Project Marker Post.
Rev. Nov. 20-1947, J.P.K. ~ Metal Project Marker
Rev. Dec. 13-1947, J.P.K. ~ Concrete Base for Metal Project Marker

FED. ROAD DIST. NO.	STATE	SHEET NO.	TOTAL SHEETS
3	COLO.	80002(B)	3

PROJECT MARKER POST

ITEM Nº 818



NOTES FOR PROJECT MARKER POSTS

All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department, adopted January 1st 1948

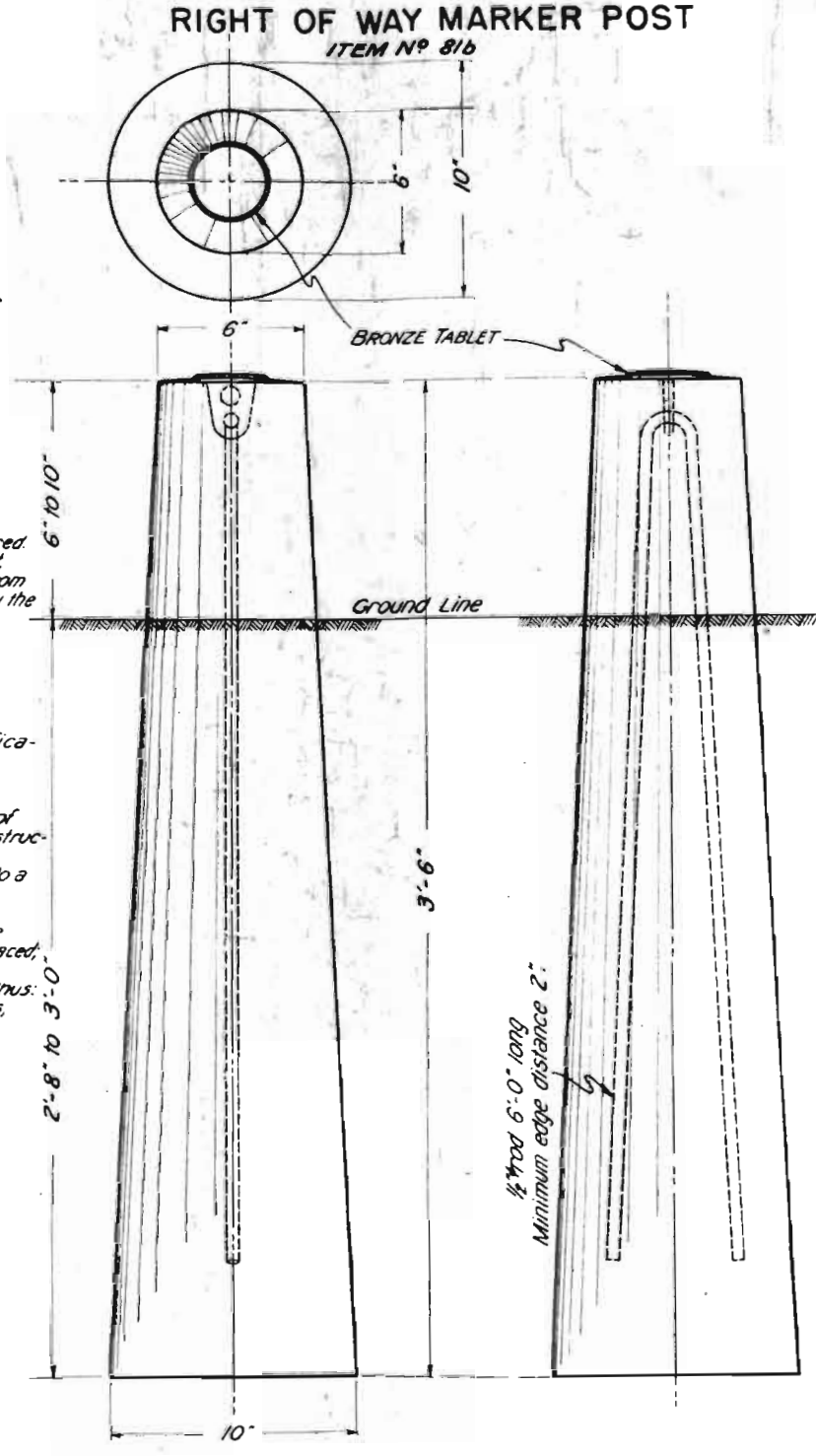
Numbers and arrows shall show the proper numbers and directions of the projects each way from where the post is placed. Post to be set with sign facing the road at the end of the project, two feet inside the R.O.W. line or at a point amply protected from traffic in such a position that the sign will indicate properly the projects to which it refers.

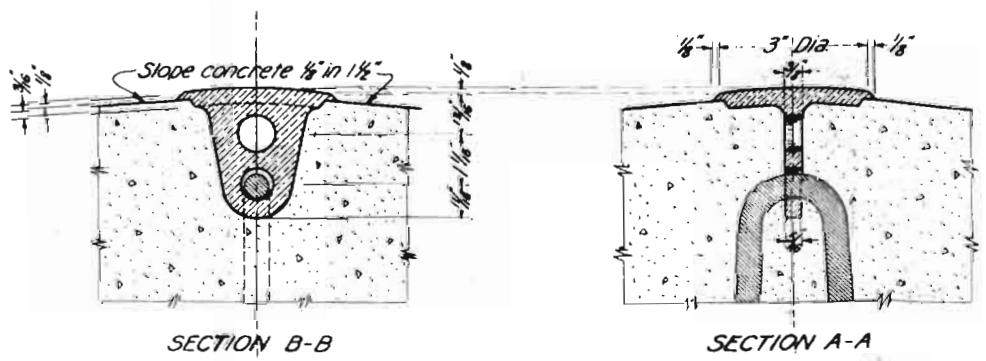
NOTES FOR R.O.W. MARKER POSTS

All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department, adopted January 1st 1945
Posts shall be made of Class "A" Concrete.
The upper 12 inches of marker posts shall be rubbed free of form marks, and the top surface of the post must be constructed to drain thoroughly.
All exposed surfaces of the bronze tablet are to be ground to a smooth surface.
All letters are to be depressed a minimum of 1/16 inch.
Information on the bronze tablet indicated by pin lines is to be stamped in the field by the engineering party after post is placed. 3/16 inch letters and figures to be used.
Project designations on tablets shall be properly shown. Thus: "F.A.P.Nº" for Federal Aid Projects, "S.P.Nº" for State Projects, P.W.A. Nº for P.W.A. Projects, etc.

RIGHT OF WAY MARKER POST

ITEM Nº 816





DETAIL OF BRONZE TABLET
FOR RIGHT OF WAY MARKER POST

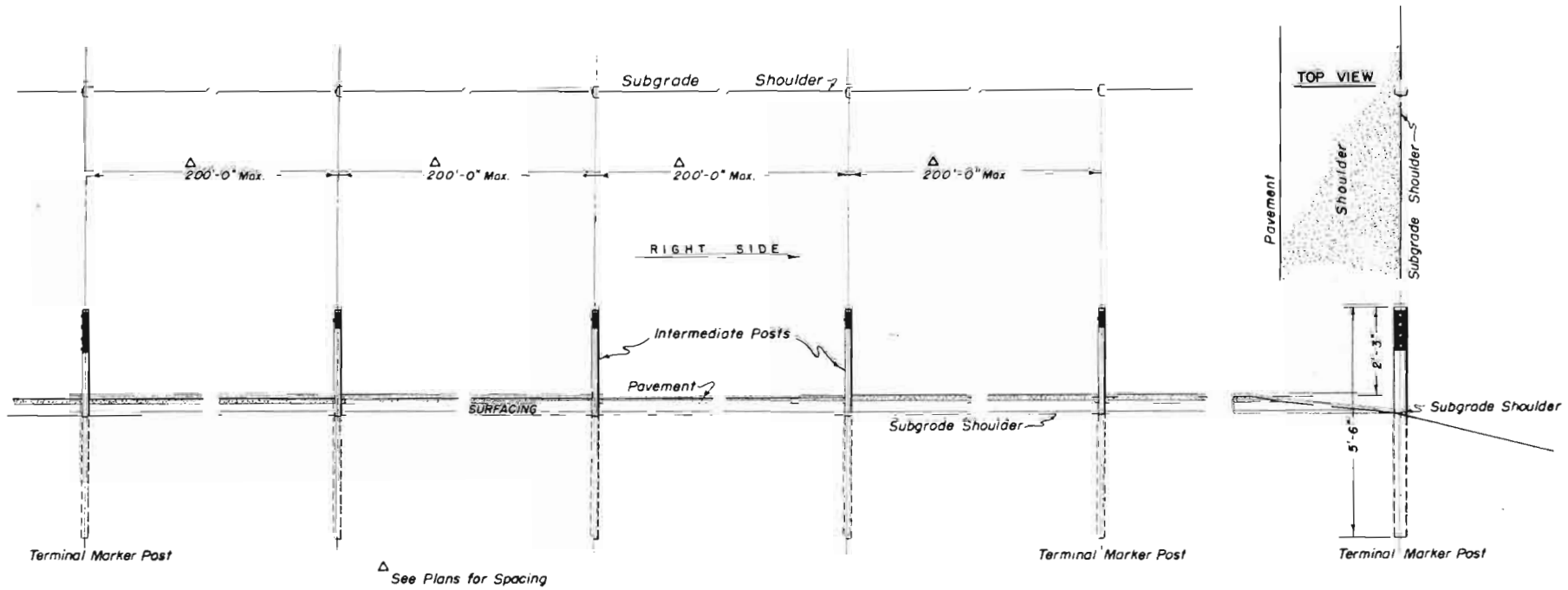
COLORADO
STATE HIGHWAY DEPARTMENT
STANDARD MARKER POSTS

Designed by R.E.L.
Made by F.F.S.
Checked by R.E.L.
Approved by [signature]
Date: January 1st 1948

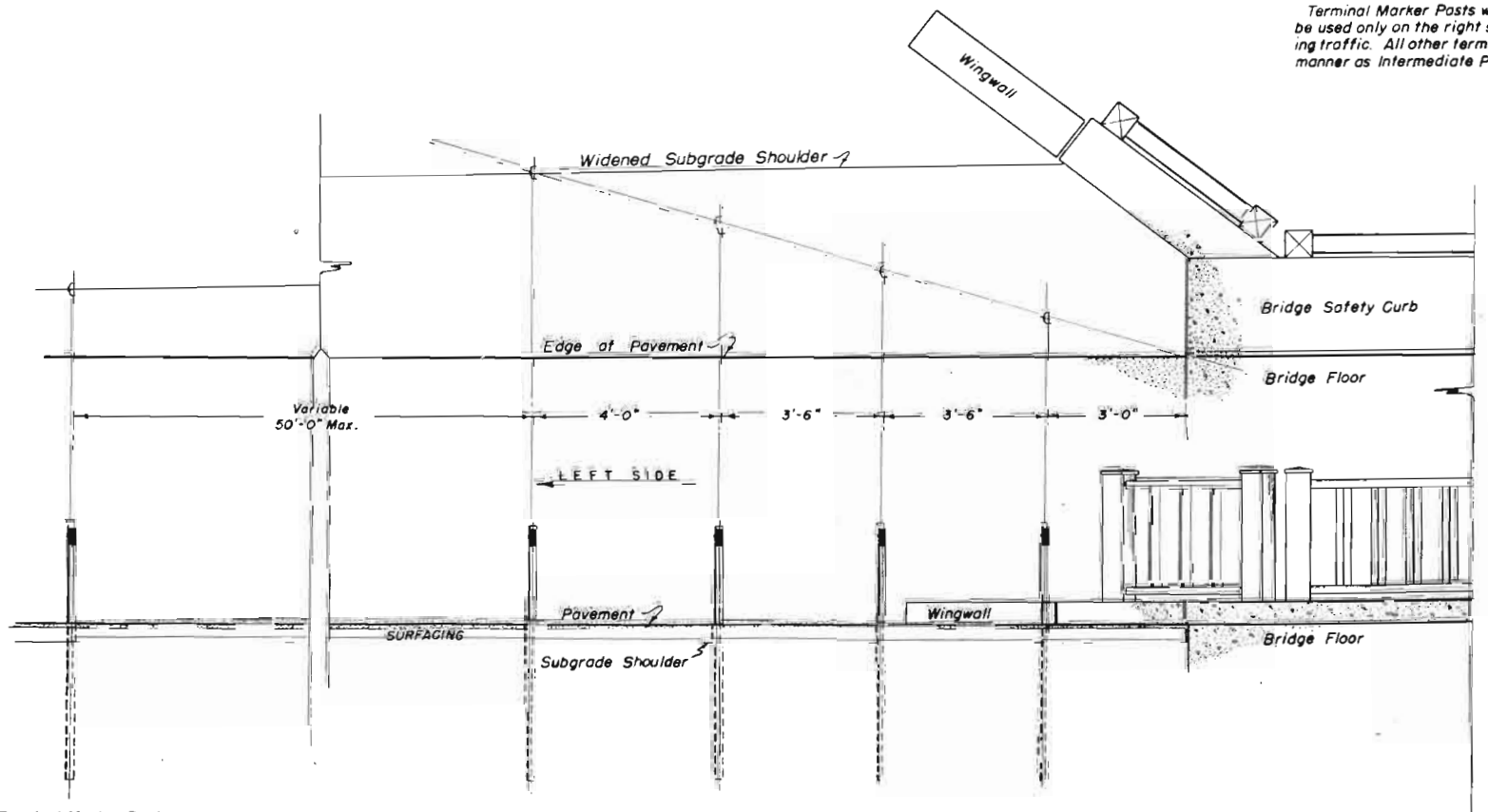
REVISIONS

MARKER POST

Layout Showing Placement on Normal Roadway Fills



Layout Showing Placement at Bridge Approaches



NOTE

Terminal Marker Posts with four (4) Reflector Units will be used only on the right side of the roadway facing approaching traffic. All other terminal posts to be marked in the some manner as Intermediate Posts.

General Notes

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

All posts shall be securely set or driven at locations shown on plans and as staked by the Engineer.

All posts shall be placed in such position that reflector units will function at a distance of 500 feet. On tangents posts shall be placed at an angle of approximately 5 degrees to a line parallel to the center-line of the roadway.

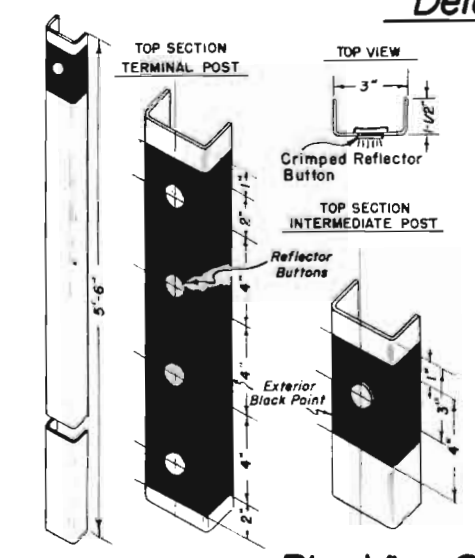
In all instances a test shall be made to assure the maximum effect from reflector units.

STANDARD M-23-A

FED. ROAD DIVISION NO.	DISTRICT		SHEET NO.	TOTAL SHEETS
9.	COLO.	[redacted]	6	

Rev. 9-15-49 "J.P.K." Details for Marker Posts
Rev. 1-30-50 E.A.R. - Details for Marker Posts

Details for Marker Post



POSTS- *Channel Type Metal Post weighing not less than 2.3 lbs per linear foot. 7/8" diameter holes for reflector buttons shall be made as indicated on post detail*

REFLECTOR BUTTONS- *"No.1 Stimsonite" Reflector Buttons or an acceptable equivalent to be attached to post by crimping the button in hole as indicated on post detail*

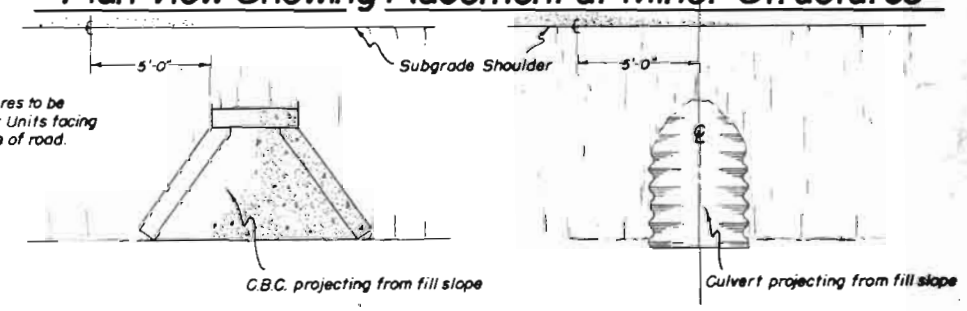
MARKINGS- *Posts to receive Zinc Chromate Shop Coat and painted with two (2) coats of Aluminum Paint above the ground line. One (1) coat of Exterior Black Paint to be applied at reflector button area as shown in detail.*

DIMENSION TOLERANCES: *Cross-Section dimensions shall have not more than 1/16" tolerance.*

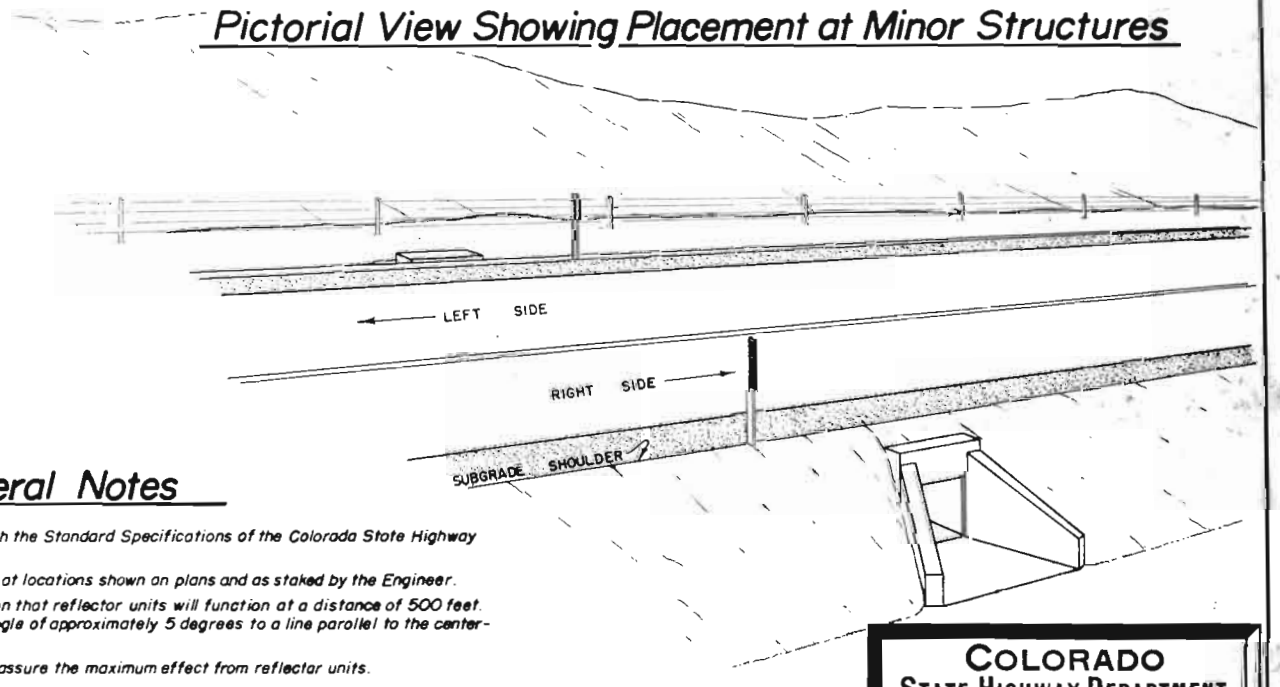
Plan View Showing Placement at Minor Structures

NOTE

Marker Posts at minor structures to be provided with four (4) Reflector Units facing approaching traffic on right side of road.



Pictorial View Showing Placement at Minor Structures



COLORADO
STATE HIGHWAY DEPARTMENT

Marker Post

Designed by C.G.M. Made by C.G.M.	Approved by [redacted] Engineer, Surveys & Plans

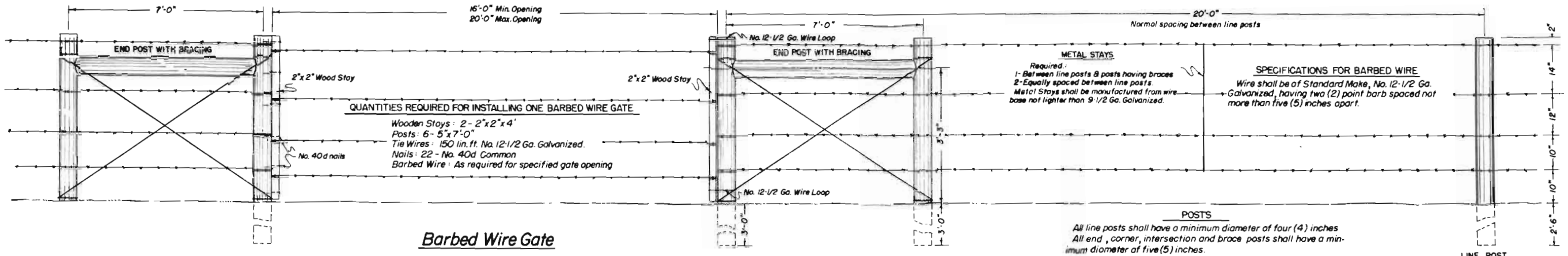
REVISIONS

Standard Wire Fence With Wooden Posts

STANDARD M-24-H

FED. ROAD DIVISION NO.	DISTRICT		SHEET NO.	TOTAL SHEETS
9	COLO.	2000-2(6)	7	

Rev. 3-1-50, C.G.M., Post spacing, Driveway gate, Added Gen. Note



Barbed Wire Gate

QUANTITIES REQUIRED FOR INSTALLING ONE BARBED WIRE GATE

Wooden Stays: 2 - 2"x2"x4'
Posts: 6 - 5"x7'-0"
Tie Wires: 150 lin. ft. No. 12-1/2 Ga. Galvanized.
Nails: 22 - No. 40d Common
Barbed Wire: As required for specified gate opening

METAL STAYS

Required:
1- Between line posts & posts having braces
2- Equally spaced between line posts.
Metal Stays shall be manufactured from wire base not lighter than 9-1/2 Ga. Galvanized.

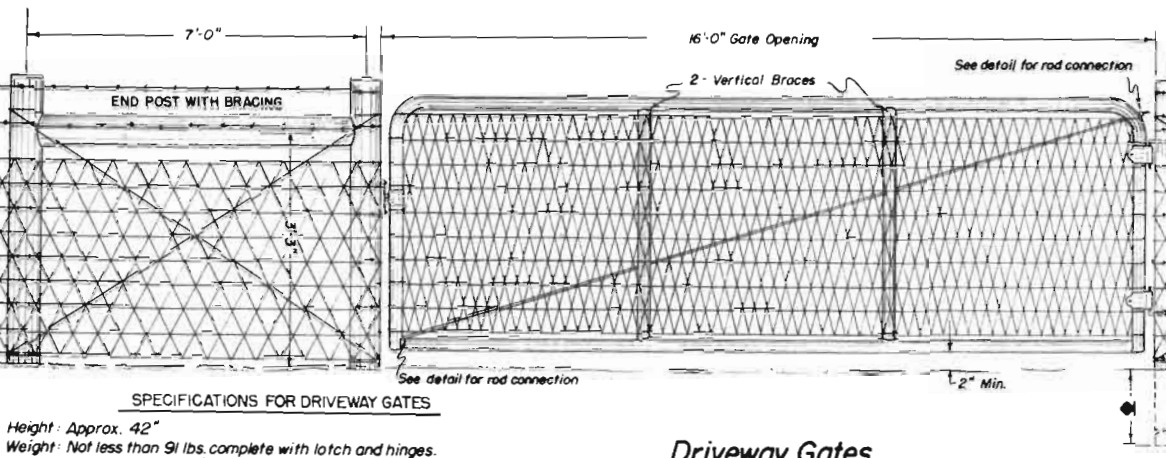
SPECIFICATIONS FOR BARBED WIRE

Wire shall be of Standard Make, No. 12-1/2 Ga. Galvanized, having two (2) point barb spaced not more than five (5) inches apart.

POSTS

All line posts shall have a minimum diameter of four (4) inches
All end, corner, intersection and brace posts shall have a minimum diameter of five (5) inches.
Cross brace shall be securely nailed with No. 40d Common Nails.

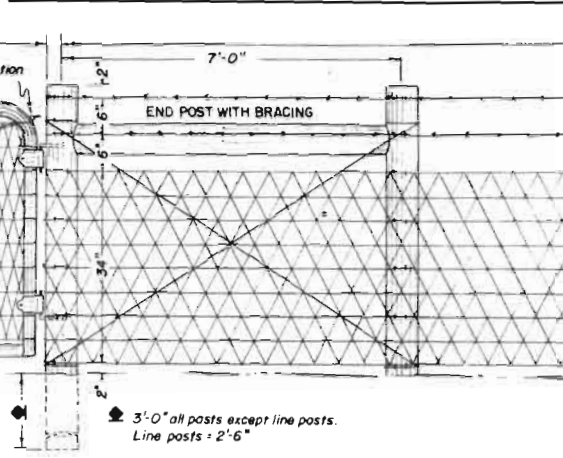
BARBED WIRE FENCE WITH WOODEN POSTS



SPECIFICATIONS FOR DRIVEWAY GATES

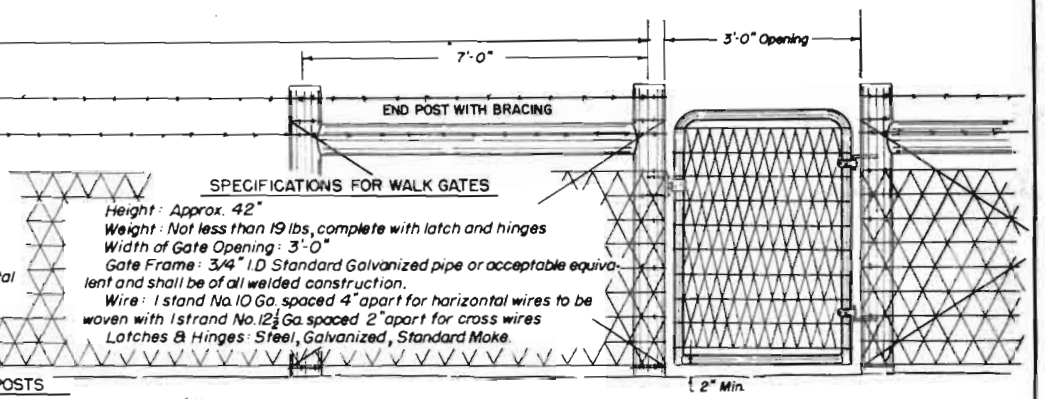
Height: Approx. 42"
Weight: Not less than 91 lbs. complete with latch and hinges.
Width of Gate Opening: 16'-0"
Gate Frame: 1" I.D. Standard Galvanized pipe or acceptable equivalent and shall be of all welded construction.
Wire: 1 strand No. 10 Ga. spaced 4" apart for horizontal wires to be woven with 1 strand No. 12½ Ga. spaced 2" apart for cross wires.
Rod Brace: 1/4" round, minimum
Latches & Hinges: Steel, Galvanized, Standard Make

Driveway Gates



SPECIFICATIONS FOR 4"x4" WIRE MESH FENCE

Width: 34"
Weight: 0.76 lbs. per linear foot minimum.
Horizontal Wires: 2 stands, No. 12-1/2 Ga. Wire
Cross Wires: 1 strand, No. 14 Ga. Wire
Construction: Cross wires to be woven with horizontal wires making a one piece fabric



SPECIFICATIONS FOR WALK GATES

Height: Approx. 42"
Weight: Not less than 19 lbs. complete with latch and hinges
Width of Gate Opening: 3'-0"
Gate Frame: 3/4" I.D. Standard Galvanized pipe or acceptable equivalent and shall be of all welded construction.
Wire: 1 stand No. 10 Ga. spaced 4" apart for horizontal wires to be woven with 1 strand No. 12½ Ga. spaced 2" apart for cross wires
Latches & Hinges: Steel, Galvanized, Standard Make.

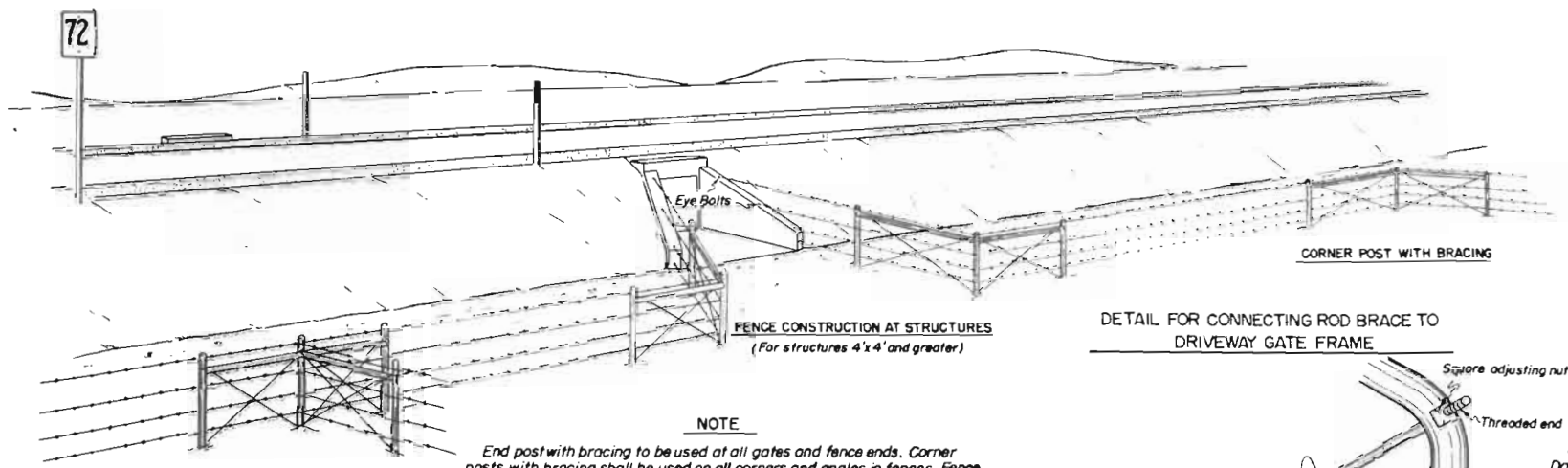
POSTS

All line posts shall have a minimum diameter of four (4) inches.
All end, corner, intersection and brace posts shall have a minimum diameter of five (5) inches.
Cross braces shall be securely nailed with No. 40d Common Nails.

Walk Gates

COMBINATION WIRE FENCE WITH WOODEN POSTS

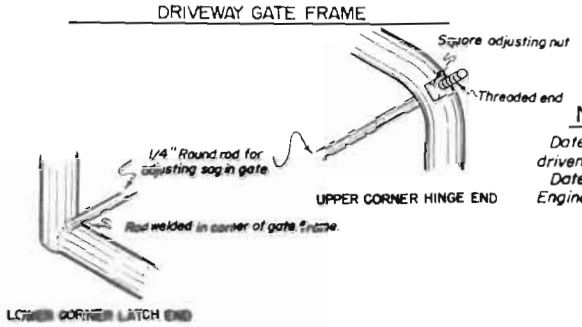
Illustrative Sketch Showing Typical Examples For Constructing Fences



NOTE

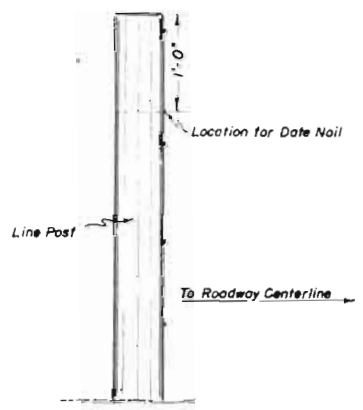
End post with bracing to be used at all gates and fence ends. Corner posts with bracing shall be used on all corners and angles in fences. Fence intersection with bracing to be used at all intersecting fences.
At all Structures of 4'x4' and over the fence shall be ended at eye-bolts in the wings of the structure. Where the type of construction prohibits the use of eye-bolts, an end post with bracing shall be used.
Eye-bolts are to be made from 1/2" round iron bars with a minimum of 6" of body length embedded in the concrete and a minimum of 1" inside eye diameter.

DETAIL FOR CONNECTING ROD BRACE TO DRIVEWAY GATE FRAME



DETAILS FOR PLACING DATE NAILS

(To be installed on Treated Wooden Posts only)



NOTE

Date Nails shall be placed on every tenth (10th) post and shall be driven flush.
Date Nails to be furnished and installed by State Forces as part of Engineering Costs.

General Notes

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

Wire mesh used in Combination Wire Fence as shown above shall be galvanized. Wire mesh used in walk and driveway gates shall be galvanized or painted with an approved waterproof asphalt or mineral paint.

Fence Staples shall be galvanized and at least 1-1/2" in length and shall be made from wire base not less than No. 9 Ga. Barbed wire fence shall have eight (8) staples per line post, Combination wire fence shall have fourteen (14) staples per line post.

Fence wire to be placed on either road or field side of posts depending on local conditions. i.e. On curves the wire should be placed on side of post which would prevent tension on staples. This will also apply where wind drift, tumble weeds or other conditions would exert unusual pressure against the wire.

POSTS:

Posts shall be treated or untreated as specified on plans and shall conform to the following:
Untreated posts shall be made of seasoned, straight native cedar. The tops of posts shall be sawed off square and peeling of the posts will not be required. Split posts will not be acceptable for use unless specifically permitted in the Special Provisions of plans.
Treated posts shall be made of seasoned, straight, sound Lodgepole Pine or Southern Pine, to be peeled and tops to be cut off square before pressure treatment. Posts shall be pressure treated in conformity with requirement of the Specifications

In lieu of Galvanized Finish on Gate Frames, Cadmium Plated Pipe or Aluminum Painting with zinc chromate Primer as per specifications will be considered to be equivalent.

COLORADO STATE HIGHWAY DEPARTMENT

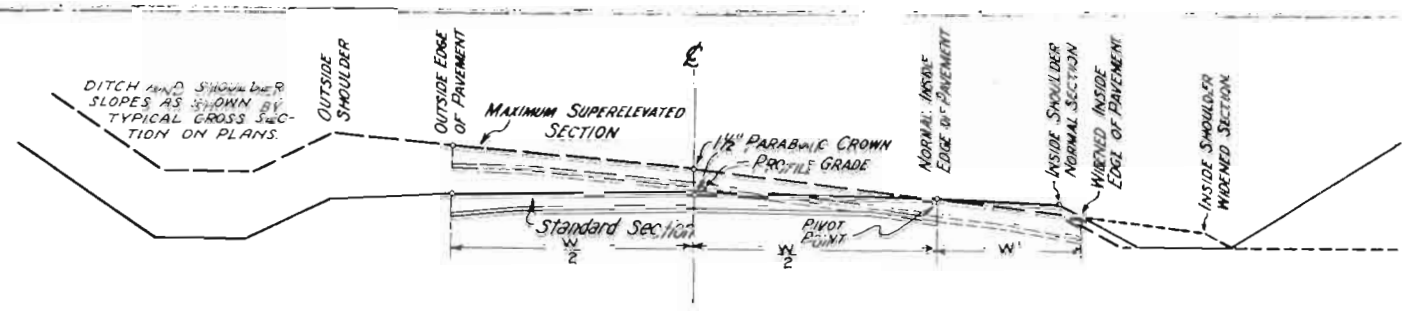
Standard Wire Fence With Wooden Posts

Designed by C.G.M.	Approved by [illegible]
Made by C.G.M.	Engineer, Surveys & Plans
Checked by C.B.	Date: March 1, 1950

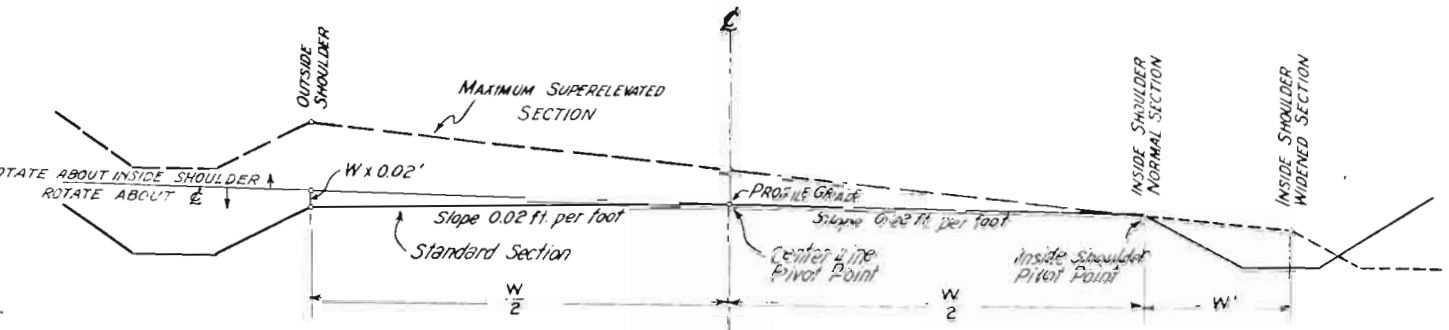
STANDARD M-I-B

FED. PROJ. DIST. NO.	STATE	
3	COLO.	S 3002(6) 8

Rev. 11-2-38 P.B.B. Widening Transition
Rev. 12-13-47 W.J.P.K.



PAVEMENT SECTION

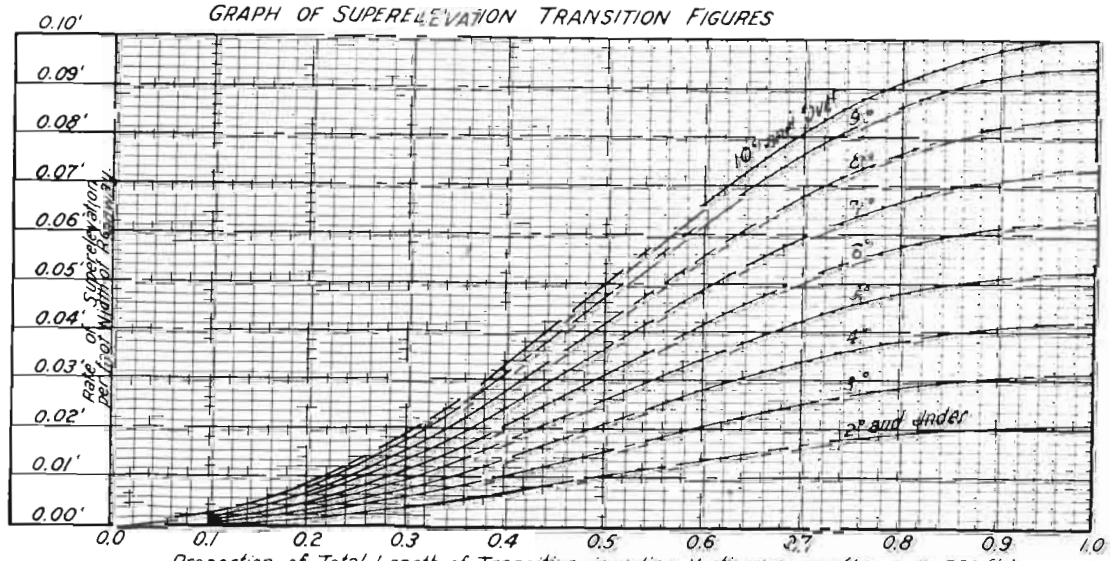


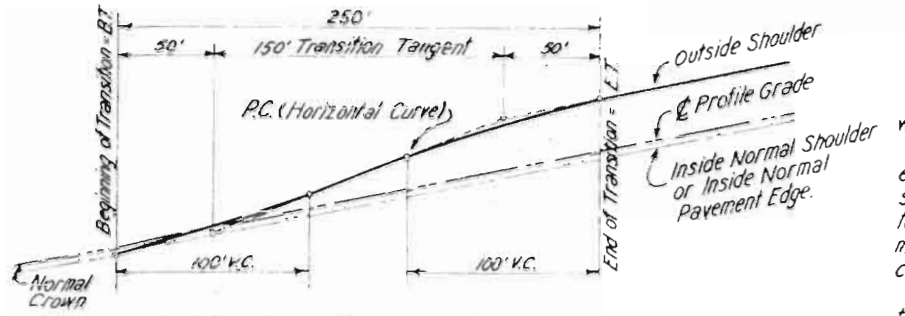
GRADED OR SURFACED SECTION

SUPERELEVATION AND WIDENING TABLES

DISTANCE FROM B.T. (PROPORTION)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	Mait. 1.0
Degree of Curvature	RATE OF SUPERELEVATION (IN FEET) PER FOOT WIDTH OF ROADWAY									
2° and Under	0.00044	0.00175	0.00394	0.00700	0.01050	0.01400	0.01706	0.01925	0.02056	0.02100
3°	0.00066	0.00263	0.00591	0.01050	0.01575	0.02100	0.02559	0.02888	0.03084	0.03150
4°	0.00088	0.00350	0.00788	0.01400	0.02100	0.02800	0.03413	0.03850	0.04113	0.04200
5°	0.00109	0.00438	0.00984	0.01750	0.02625	0.03500	0.04266	0.04813	0.05141	0.05250
6°	0.00131	0.00525	0.01181	0.02100	0.03150	0.04200	0.05119	0.05775	0.06169	0.06300
7°	0.00153	0.00613	0.01378	0.02450	0.03675	0.04900	0.05972	0.06736	0.07197	0.07350
8°	0.00175	0.00700	0.01575	0.02800	0.04200	0.05600	0.06825	0.07700	0.08225	0.08400
9°	0.00197	0.00788	0.01772	0.03150	0.04725	0.06300	0.07678	0.08663	0.09253	0.09450
10° and Over	0.00208	0.00833	0.01875	0.03333	0.05000	0.06667	0.08125	0.09166	0.09792	0.10000
	OFFSETS FOR WIDENING - W' - (IN FEET)									
Over 10° - Under 12°	0.03	0.12	0.27	0.48	0.75	1.08	1.47	1.92	2.43	3.00
12° - " 15°	0.04	0.16	0.36	0.64	1.00	1.44	1.96	2.56	3.24	4.00
15° - " 20°	0.05	0.20	0.45	0.80	1.25	1.80	2.45	3.20	4.05	5.00
20° and Over	0.06	0.24	0.54	0.96	1.50	2.16	2.94	3.84	4.86	6.00

GRAPH OF SUPERELEVATION TRANSITION FIGURES

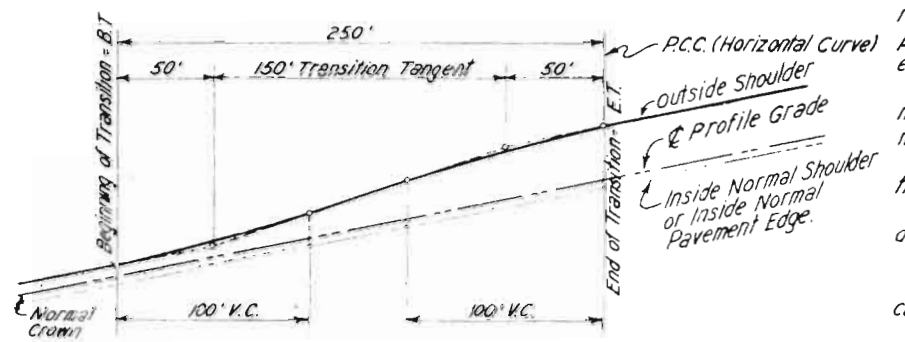




CASE I: SIMPLE CURVE WITH UNLIMITED TANGENT APPROACH

NOTE: CASE I

The transition in this case, from crowned section to superelevated section, shall proceed uniformly by raising the outside shoulder, over a distance of 250 ft. as shown, beginning at a point on the tangent 150 ft. from the end of the curve and acquiring full superelevation at a point 100 ft. inside the curve.



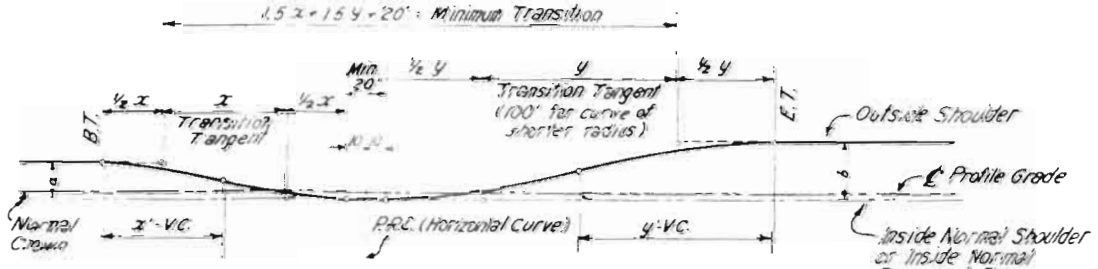
CASE II: COMPOUND CURVE

NOTE: CASE II

Superelevation transitions at the outside ends of compound curves shall be constructed in accordance with rules given under CASE I.

Superelevation transition between the arcs of different radii shall be made as in CASE I, except that the entire transition shall lie within the limits of the curve of the longer radius.

In cases where curves in the same direction have a tangent distance of less than 300 ft. between points of curve, the intervening tangent shall be superelevated an amount equal to that of the curve of greater radius and the transition shall be made as in the case of a true compound curve.



CASE III: REVERSE CURVES

NOTE: CASE III

Transitions between true reverse curves shall be accomplished as shown on the above diagram.

Transition tangents shall be directly proportional to the amount of superelevation of the respective curves.

EXAMPLE: Let a represent the amount of superelevation on 1st curve;
" b " " " " " " 2nd " ;
" x " " " " transition tangent on 1st " ;
" y " " " " " " 2nd " ;
then, a : b = x : y.

The transition tangent of the curve having the shorter radius shall be set at 100 ft.

A normal crowned section 20 ft. long, 10 ft. on each side of the P.R.C. shall be used.

In cases where curves in opposite directions are in such proximity that a standard transition can not be had, the practice outlined for true reversing curves shall be used.

The total distance between the P.T. of the first curve and the P.C. of the succeeding curve shall be prorated into the transition distance of the respective curves until a maximum of 150 ft. of transition tangent for each curve is achieved.

GENERAL NOTES

Curves on projects using the Sections shown are to be superelevated and widened as indicated in the accompanying drawings and tables.

The normal inside edge of the Pavement slab is to remain at the standard elevation of 0.125 ft below the profile grade, and the outside edge of the slab is to be superelevated at the rate per foot width of roadway given in the table. The Section is to be rotated about the normal inside edge of the Pavement, with a 1½" parabolic crown for curves of 10° and under, and a flat crown for widened Sections.

The normal inside edge of the Graded or Surfaced Section is to remain at the standard elevation of 0.02 ft. per foot width of roadway below the profile grade, or as shown on the Typical Section for the Project. Also, the centerline pivot point is to be used until the superelevation equals 0.02 ft. per foot width of roadway, but when this elevation is exceeded the normal inside shoulder pivot point is to be used.

When the degree of curvature exceeds 10°, the inside edge of the Pavement slab or the inside shoulder of the Graded or Surfaced Section is to be widened from the normal inside edge or shoulder, respectively, as shown by the table and plan or by cross-sections. Curves of 10° or less are not to be widened.

The slope of the shoulders and widened sections shall conform to the rate per foot width of roadway required, except that the inside shoulder of paved sections shall maintain the Typical Section slope until this slope is exceeded by the required superelevation slope.

The outside ditch on superelevated Sections is to be modified, where necessary to provide drainage. Otherwise, this ditch shall conform to normal ditch section shown for Project.

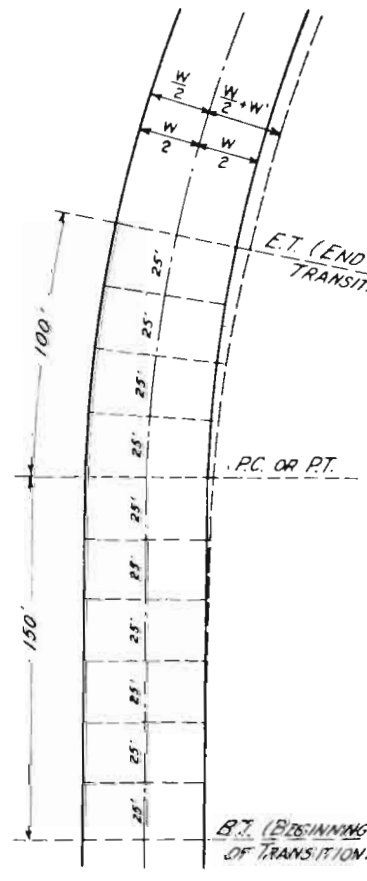
The rate of superelevation per foot width of roadway to be applied at the outside shoulder of the roadway is computed as follows:

The full superelevation per foot width of roadway rate for a given degree of curvature is

0.0105 ft. x Degree of Curvature.

The maximum superelevation of 0.10 ft per foot width, applying to curves of 10° and over, is not to be exceeded.

Special transition problems not covered by this standard sheet shall be covered by appropriate notes included with curve data on plans.



GENERAL PLAN OF

Curves of over 10° are to have the inside portion of the pavement slab and shoulder, or the inside portion and shoulder in a graded or surfaced section, widened in accordance with the plan, offsets for widening, and cross sections.

COLORADO
STATE HIGHWAY DEPARTMENT
STANDARD METHODS FOR SUPERELEVATION & WIDENING OF CURVES

Designed by R.E.L.
Made by P.B.B.
Checked by J. Marshall

REVISIONS

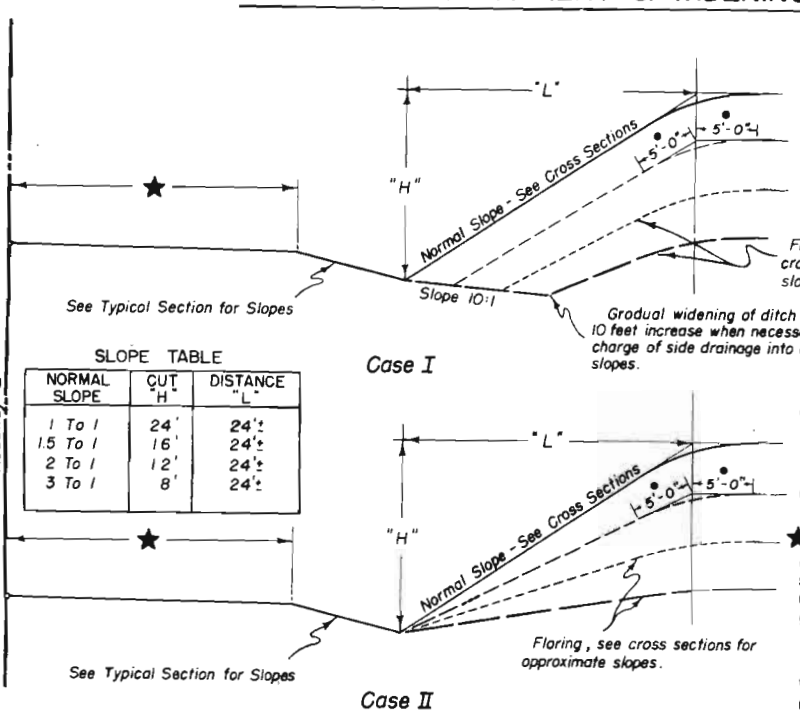
STANDARD SIDE APPROACH ROADS, FLARING, CUT SLOPE TREATMENT & WIDENING AT BRIDGES AND AT CREST OF GRADES

STANDARD M-2-DM

Rev. 7-12-49, C.G.M., Details for widening at Crest of Grades
Rev. 12-7-49, C.G.M., Rev. notes re Type I Rd. Apprs. & widen at Bridge Apprs., added note re accell & decell. lanes.

FED. ROAD DIVISION NO.	DISTRICT	SHEET NO.	TOTAL SHEETS
9.	COLO.	9	

GENERAL DETAILS FOR FLARING OF EARTH CUTS, CUT SLOPE TREATMENT & WIDENING AT BRIDGES



SLOPE TABLE

NORMAL SLOPE	CUT "H"	DISTANCE "L"
1 To 1	24'	24'±
1.5 To 1	16'	24'±
2 To 1	12'	24'±
3 To 1	8'	24'±

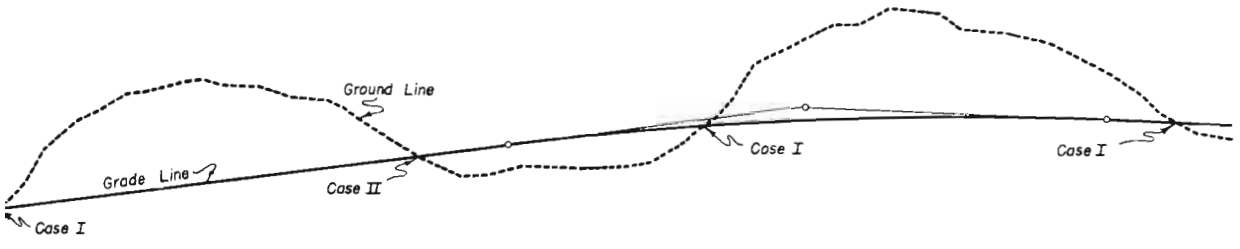
FLARING OF EARTH CUTS: *The backslopes at ends of all earth cuts shall be flattened & where necessary the ditch shall be widened gradually to discharge side ditch drainage away from the base of adjacent fill slopes in order to avoid erosion & to improve appearance. The transition of flattened backslopes & widened ditch shall be constructed in such a manner that a uniform appearance of slope & ditch results. Backslopes shall be flared to the approximate "L" distance shown on Slope Table included with this detail. Rock cuts shall not be flared.*

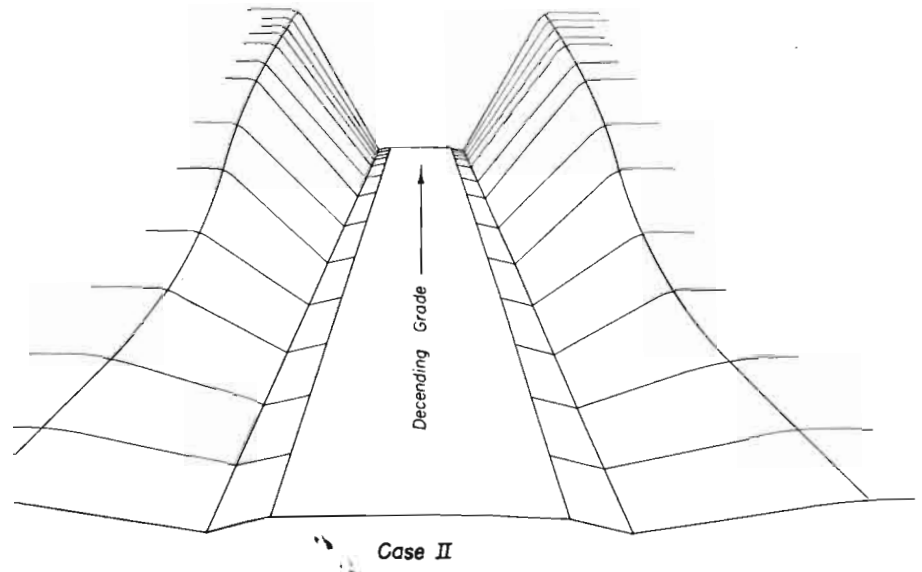
CUT SLOPE TREATMENT IN EARTH CUTS: *The intersection of cut slopes with the existing ground shall be rounded in earth cuts, beginning 5 ft. outside the slope stake and extending 5 ft. down the cut slope. Where the cut slope is less than 5 ft. reduce each of the above widths of slope treatment to the actual slope distance. Quantities shall be included in "Unclassified Excavation".*

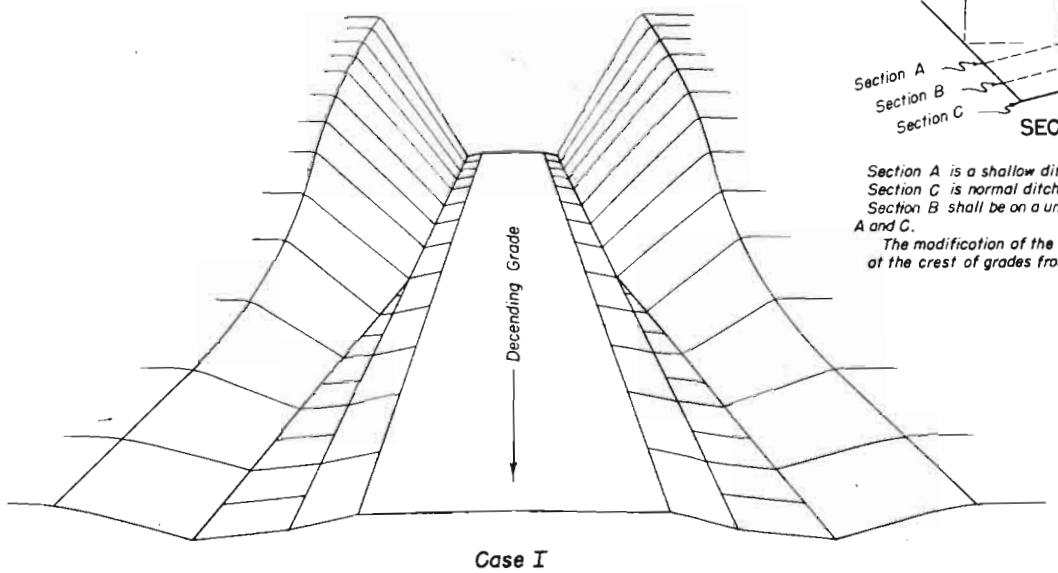
★ WIDENING AT BRIDGE APPROACHES: *Roadway embankment at bridge approaches shall be so constructed that the finish point of the subgrade shoulder is a Min. of 2 ft. beyond the outside edge of bridge deck. Where widening of the section is necessary to achieve this result it shall take place gradually over a distance of 300 ft. This is done to accomodate guard fence and/or guard or marker posts at bridge approaches. (See additional requirements for Guard Fences below)*

WIDENING TO ACCOMODATE GUARD FENCES: *At all locations on the project (except as provided above for bridge approaches) where guard fence is to be constructed the shoulders shall be widened 2 ft. to provide additional lateral support for guard fence posts.*

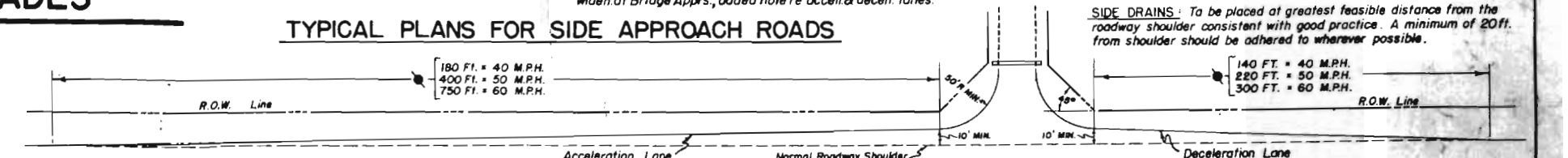
PLAN OF FLARING IN EARTH CUTS







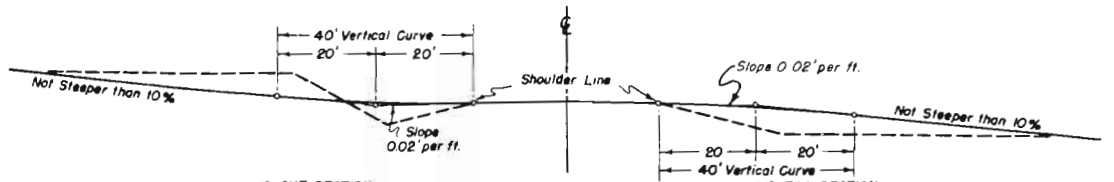
TYPICAL PLANS FOR SIDE APPROACH ROADS



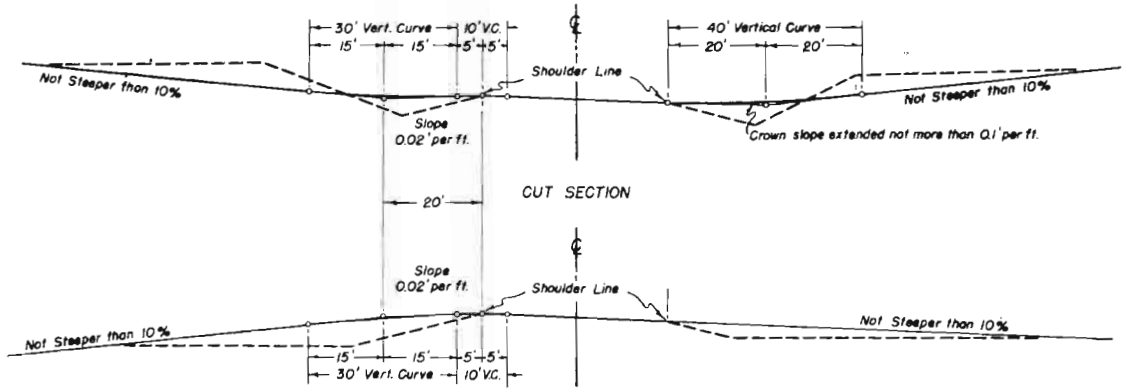
SIDE DRAINS: *To be placed at greatest feasible distance from the roadway shoulder consistent with good practice. A minimum of 20 ft. from shoulder should be adhered to wherever possible.*

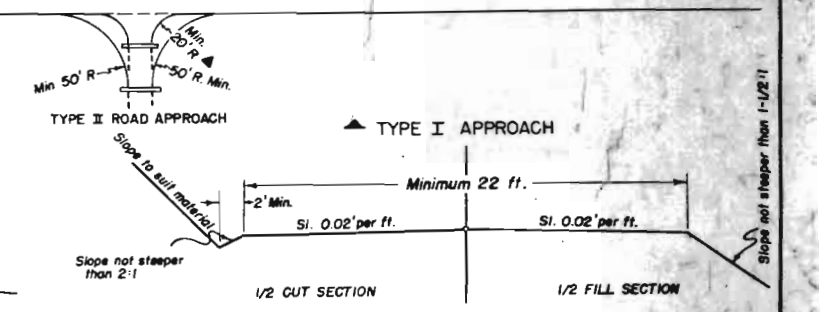
★ *Values shown are general, see plans for specific requirements of each Type I Road Approach.*

STANDARD CROWNED SECTION



SUPERELEVATED SECTIONS





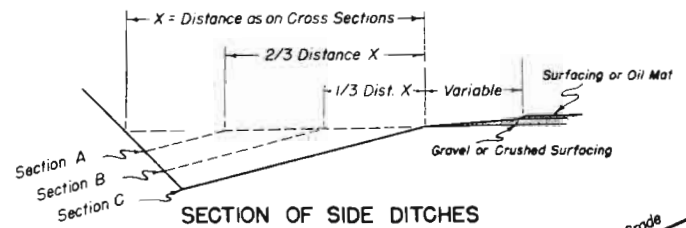
▲ TYPE I ROAD APPROACHES: *To be used only when called for on plans. The width of crowned section shall not be less than the existing crowned width of the approaching road but in no case shall less than twenty two (22) feet.*

♠ TYPE II ROAD APPROACHES: *To be used at all places which are not indicated as "Type I Road Approaches." The width of crowned section shall not be less than the existing crowned width of the approaching road but in no case shall be less than sixteen (16) feet.*

▲ 20 FT. RADII: *To be used only on private road approaches.*

DETAILS FOR DITCH & WIDENED SHOULDERS AT CREST OF GRADES

(TO BE USED ONLY WHERE SIGHT DISTANCE AT CREST OF GRADE IS 600 FT. OR LESS)

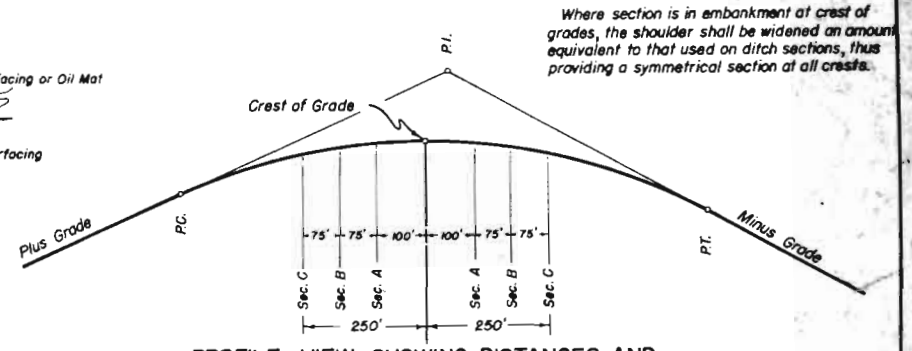


SECTION OF SIDE DITCHES

Section A is a shallow ditch section.
Section C is normal ditch section
Section B shall be on a 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.

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.



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

GENERAL NOTES

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

All side approach roads to the Project shall be Grovel Surfaced with a four (4) inch thickness of "Gravel or Crushed Rock Surfacing" extending approximately to the Right of Way Line. Estimated tonnage & 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.

COLORADO
STATE HIGHWAY DEPARTMENT

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

Designed by A.Z.
Made by C.G.M.
Approved by [signature]
Engineer Surveys & Plans

REVISIONS

STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

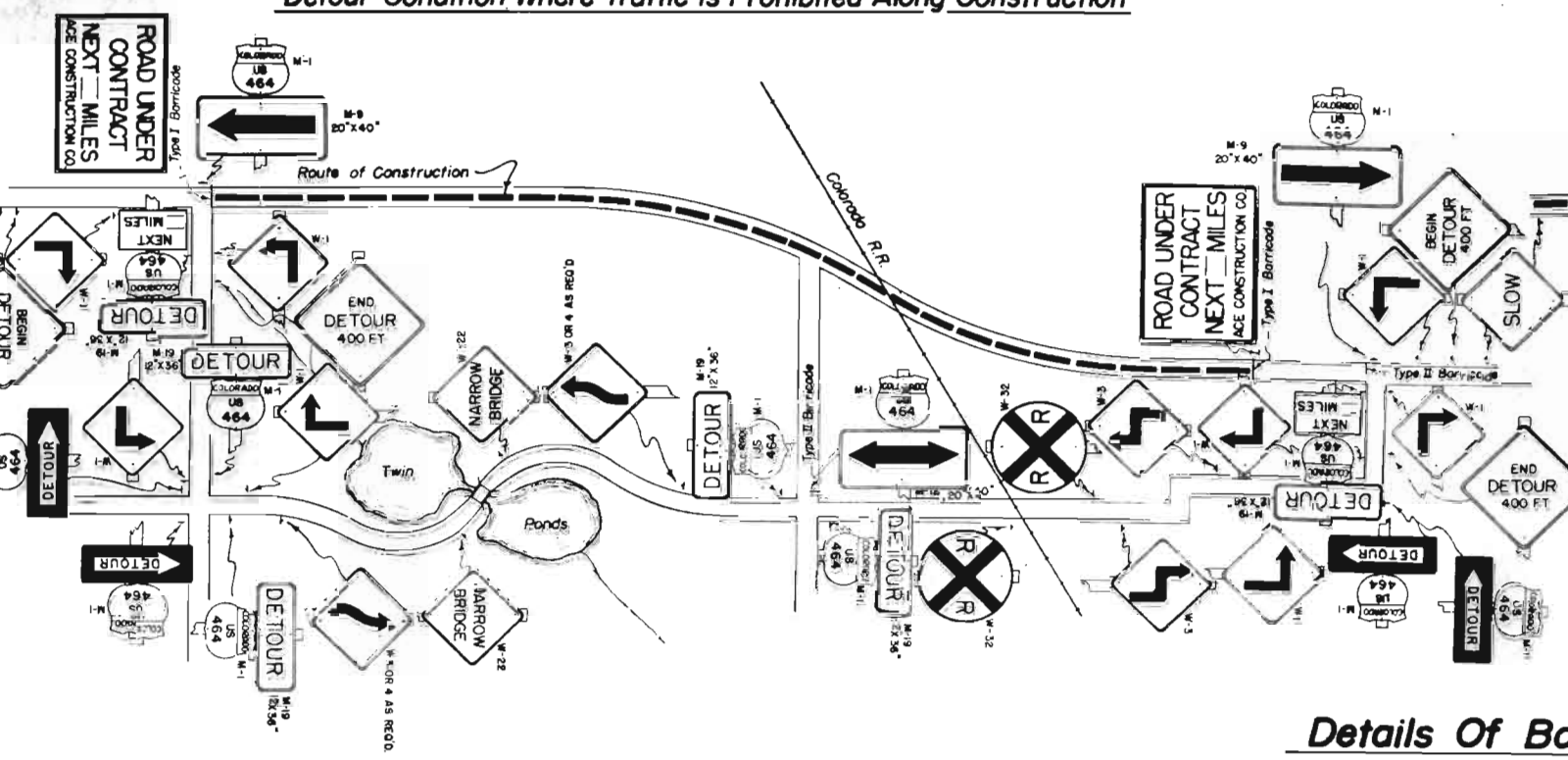
STANDARD M-2-DS

FED. ROAD DIVISION NO.	DISTRICT		SHEET NO.	TOTAL SHEETS
9	COLO.	0002(6)	10	

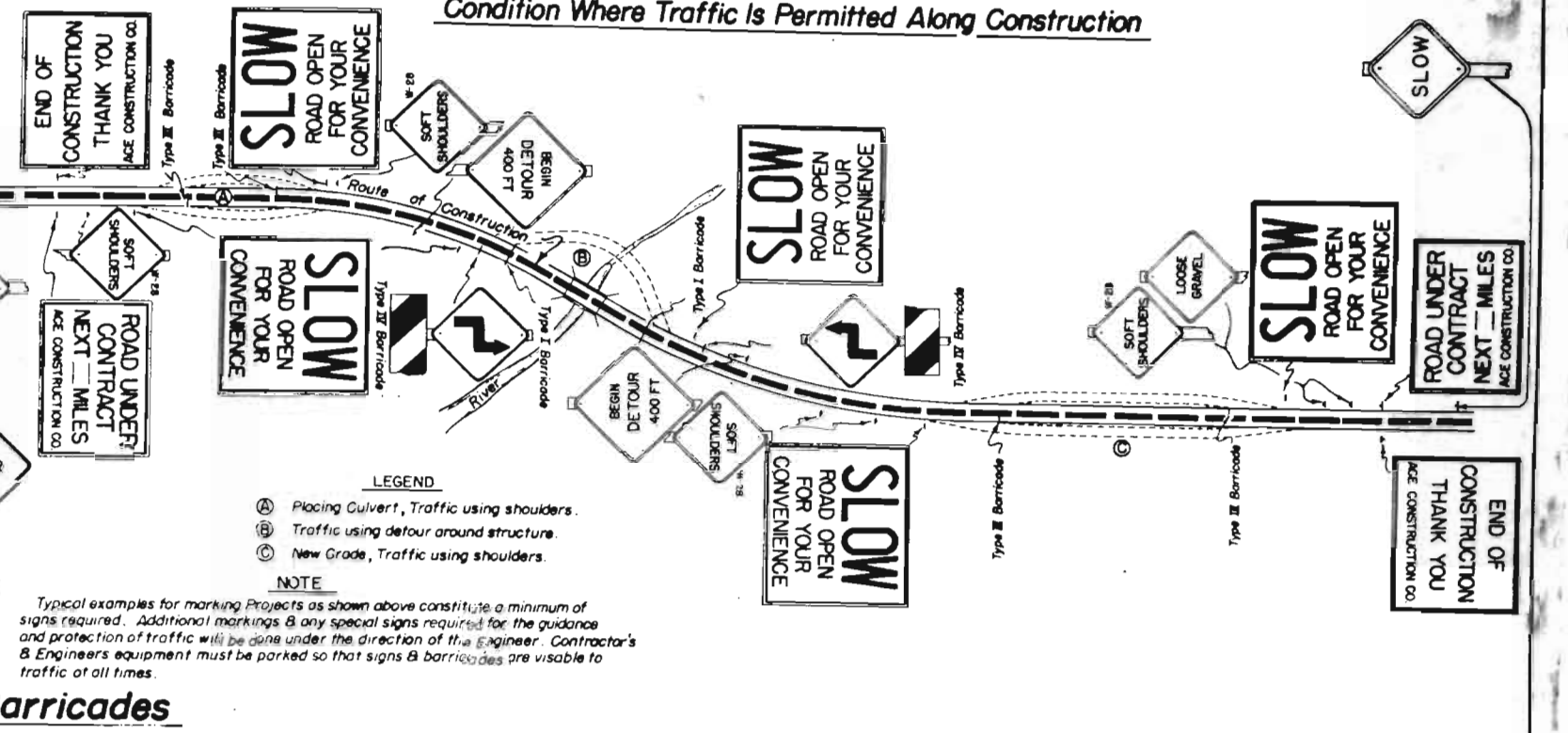
REV.- 8/16/49 - E.E.O.
REV.- 2/3/50 - E.A.R.

Typical Methods Of Marking Highways & Detours

Detour Condition Where Traffic Is Prohibited Along Construction



Condition Where Traffic Is Permitted Along Construction



LEGEND

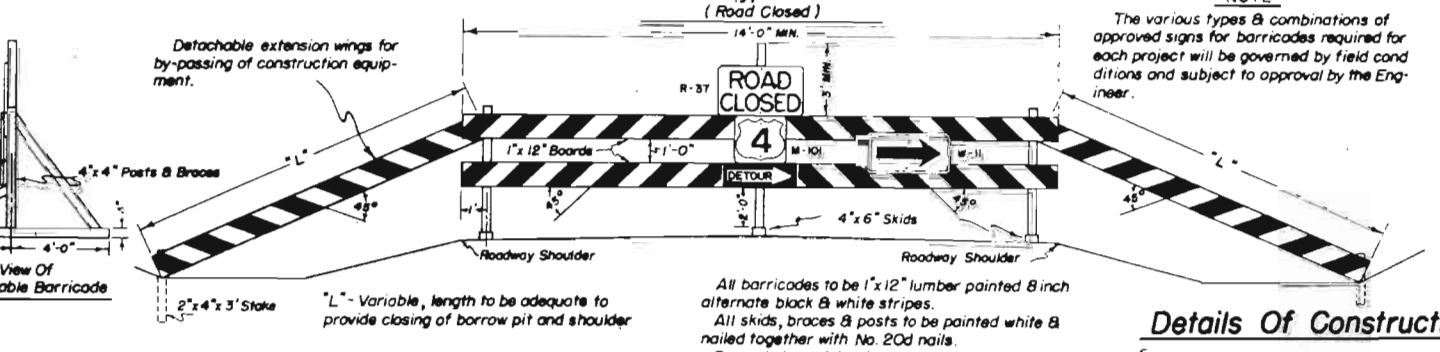
- (A) Placing Culvert, Traffic using shoulders.
- (B) Traffic using detour around structure.
- (C) New Grade, Traffic using shoulders.

NOTE

Typical examples for marking Projects as shown above constitute a minimum of signs required. Additional markings & any special signs required for the guidance and protection of traffic will be done under the direction of the Engineer. Contractor's & Engineers equipment must be parked so that signs & barricades are visable to traffic at all times.

Details Of Barricades

Type I
(Road Closed)



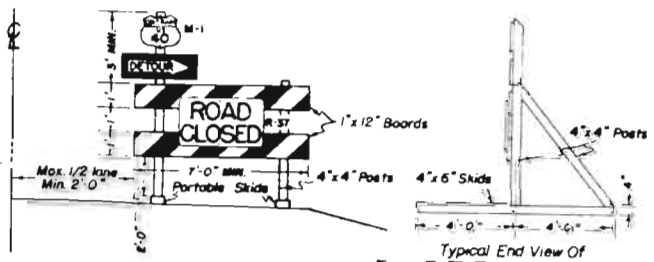
"L" - Variable, length to be adequate to provide closing of borrow pit and shoulder

All barricades to be 1"x12" lumber painted 8 inch alternate black & white stripes.
All skids, braces & posts to be painted white & nailed together with No. 20d nails.
Bases to be weighted where necessary to provide stability

NOTE

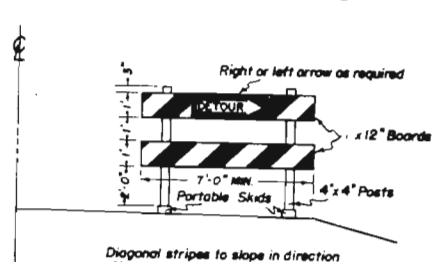
The various types & combinations of approved signs for barricades required for each project will be governed by field conditions and subject to approval by the Engineer.

Type II
(Beginning of Detour for Through Traffic)



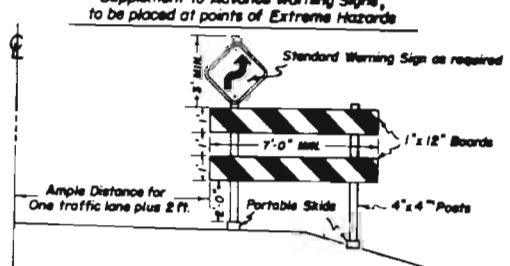
Typical End View Of Types II, III, IV, Portable Barricades

Type III
(Both Ends of By-Pass Areas within Project)

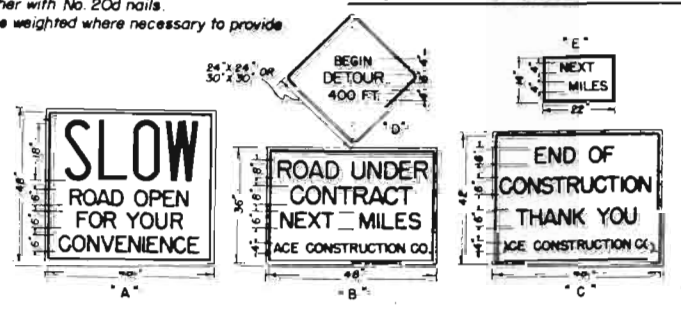


Diagonal stripes to slope in direction traffic is to travel.

Type IV
Supplement to Advance Warning Signs, to be placed at points of Extreme Hazards



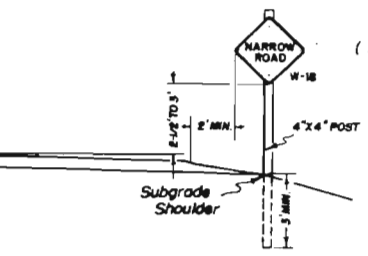
Details Of Construction Signs



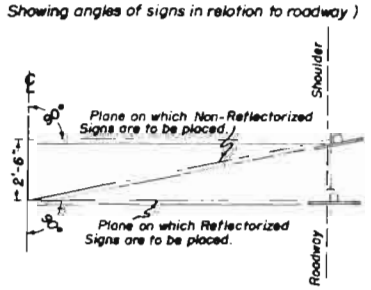
MARKINGS

Construction Sign "A" - to be of 1" material painted White, the word "SLOW" lettered in Red, balance of lettering to be Black.
Construction Signs "B", "C", "E" - to be of 1" material painted White, all lettering to be Black.
Detour Warning Sign "D" to be of 1/4" (min.) plywood or No. 10 (min.) gauge metal, painted Yellow, all lettering to be Black.
Construction Signs - "B", "E" - 3/4"x9" metal slides to be placed between words "Next & Miles" spaced so as to accomodate appropriate size numerals. Required numerals to be furnished by the Department and to be installed by the Contractor.
Signs to be fastened to 2-4"x4" posts set 4 ft. in the ground with a minimum of 3 cleats on the back.

Position Of Signs Relative To Roadbed & Hazards



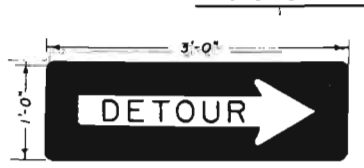
Top View
(Showing angles of signs in relation to roadway)



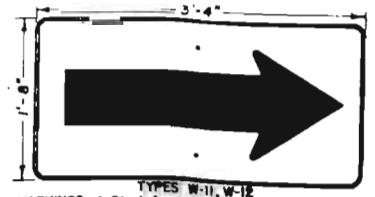
NOTE

Signs to be made of 1/4" (Min.) plywood or No. 10) metal.
to be governed by field conditions. Exact location t by the Engineer. In all cases warning signs are to ell in advance of hazard, the distance depending hy, and existing approach speeds.

Details Of Reflectorized Arrows



MARKINGS *A White Reflectorized Arrow of "Scotchlite" Reflective Sheeting or suitable equivalent to be placed on a Black background. Letters to be 4" in height.*



TYPES W-11, W-12

MARKINGS *A Black Arrow on a "Highway Yellow" background of "Scotchlite" Reflective Sheeting or suitable equivalent.*

GENERAL NOTES

All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department 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 painted, well maintained Barricades, Warning Signs and Directional Type Signs. All Barricades & Signs shall be moved added to, changed or removed as required during the progress of construction.

All Warning & Directional Type Signs will be "Reflectorized" with "Scotchlite" Reflective Sheeting or a suitable equivalent. Except for variations noted on this sheet all signs will be in conformity with the specifications outlined in "Manual on Uniform Traffic Control Devices for Streets & Highways" issue of August 1948 by the U.S. Public Roads Administration. U.S. or State Route Markers required for the Project will be furnished by the Department and installed by the Contractor. Numbers adjacent to signs refer to Standards in the Manual.

The Contractor shall furnish & install the following as required within the limits of the Project:

1.	*All Barricades*	*As Required*
2.	*"SLOW, ROAD OPEN FOR YOUR CONVENIENCE" Signs*	*Minimum-2*
3.	*Standard Warning & Directional Signs*	*As Required*
4.	*"ROAD UNDER CONTRACT, NEXT __ MILES, CONTRACTORS NAME" Signs*	*Minimum-2*
5.	*Approved Directional Arrows for Barricades*	*As Required*
6.	*"END OF CONSTRUCTION, THANK YOU, CONTRACTORS NAME" Signs*	*Minimum-2*
7.	*Torches and Flares as follows:*	
	Type I Barricades	*Minimum-3*
	Type III, IV Barricades	*Minimum-1*
	Standard Warning Signs	*Minimum-1*

Where traffic is prohibited from the Project, the Detour will be marked by the Department except for Barricades complete with approved Warning Signs & Arrows which will be provided, erected & maintained by the Contractor at ends of Project and intersecting roads.

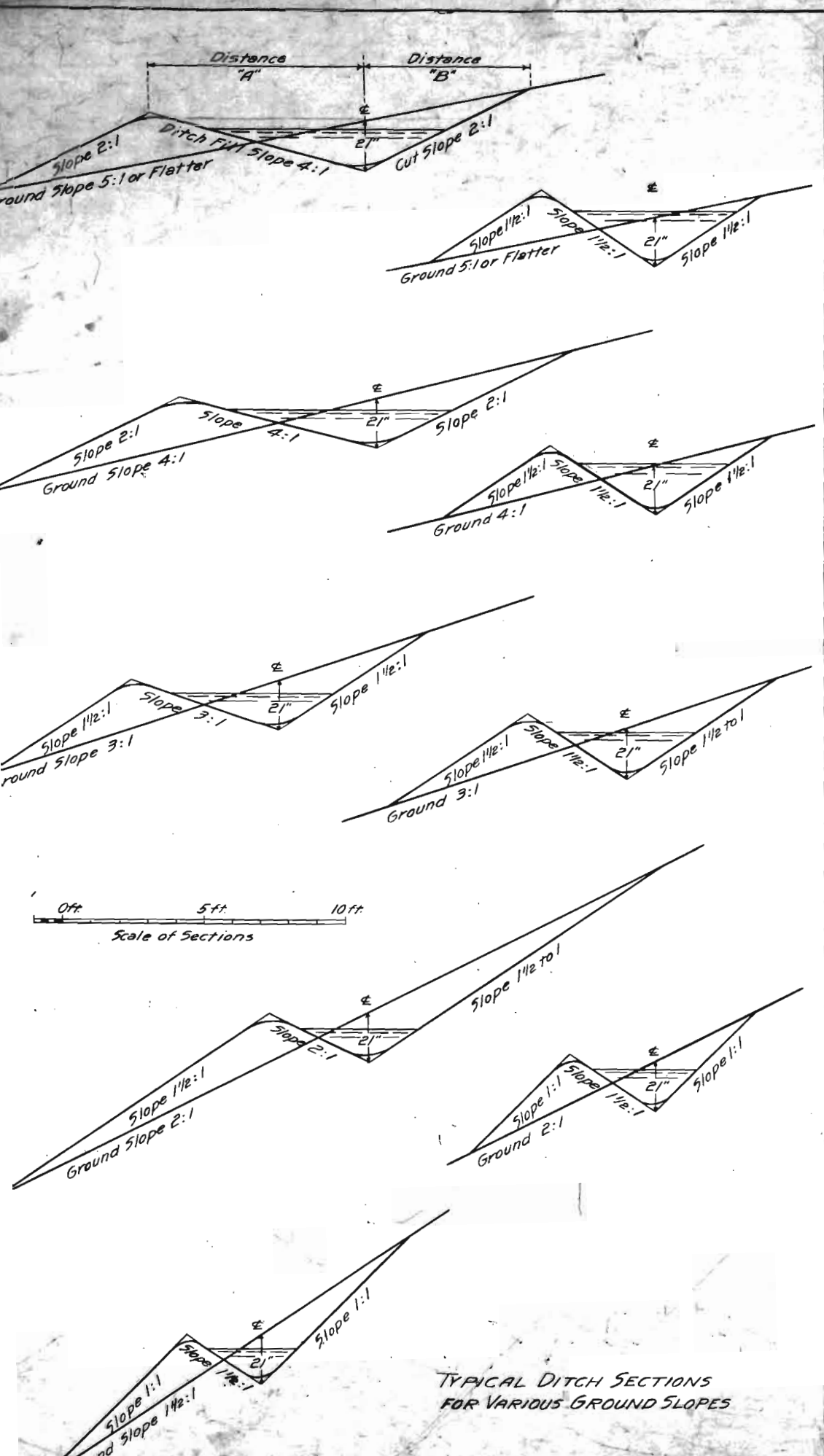
All lumber used shall be of sound durable material. Barricades, Signs, Symbols & Lettering conforming to styles noted hereon will be well painted & maintained. Uneven or smeared lettering will not be accepted.

Flares and Torches shall be of the Oil Burning Type approved by the Department and shall be placed 3 ft. to 5 ft. ahead of the object to be illuminated. Particular care shall be taken to protect all signs and barricades from smoke and powder arising from torches and flares.

COLORADO
STATE HIGHWAY DEPARTMENT

Standard Roadway Construction Traffic Signs

Designed by	Approved
Made by C.G.M.	Engineer, Safety & Plans
Checked by	Date



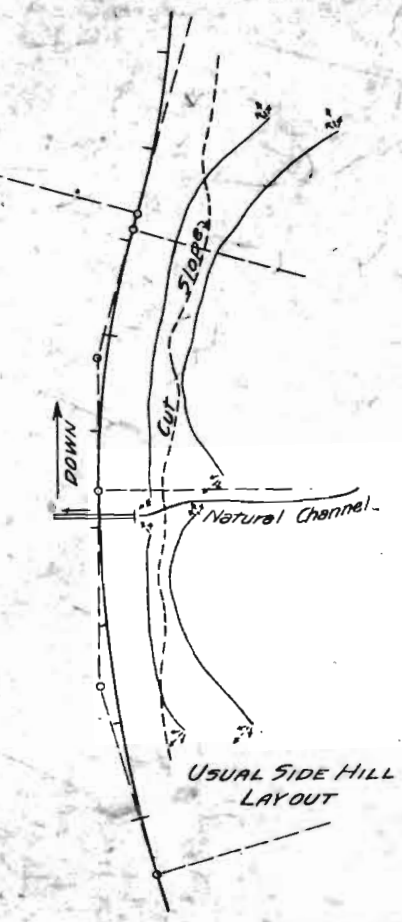
TYPICAL DITCH SECTIONS FOR VARIOUS GROUND SLOPES

DETAILS OF DITCH SECTIONS

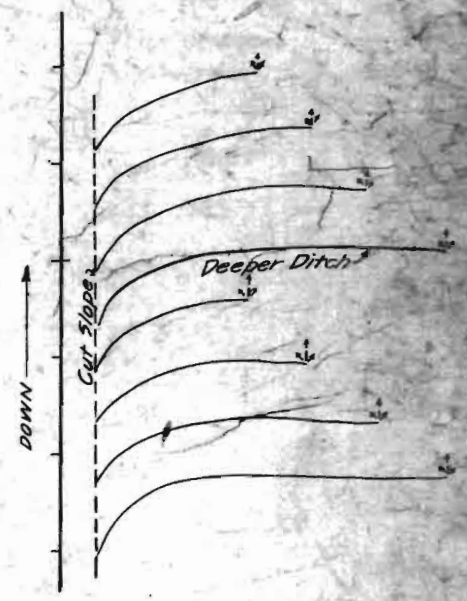
Ground Slope	Cut Slope	Ditch Fill Slope	℄ Cut	Cut Area Sq.Ft.	Cu.Yd. per Sta. of Cut	Ditch Area Sq.Ft.	Dist. "A" Ft.	Dist. "B" Ft.
5:1	2:1	4:1	15"	4.3	15.8	3.7	4.2	5.6
			18"	6.2	22.9	5.9	5.0	6.7
			• 21"	8.5	31.5	8.5	5.8	7.8
		3:1	15"	4.1	15.1	4.1	4.2	4.7
			18"	5.8	21.6	6.5	5.0	5.6
			21"	8.0	29.5	9.3	5.8	6.6
		2:1	15"	3.7	13.8	4.6	4.2	3.6
			18"	5.3	19.8	7.0	5.0	4.3
			21"	7.3	27.0	10.0	5.8	5.0
		1½:1	15"	3.5	13.0	4.8	4.2	2.9
			18"	5.0	18.6	7.3	5.0	3.5
			21"	6.9	25.4	10.3	5.8	4.0
5:1	1½:1	4:1	15"	3.3	12.4	3.4	2.7	5.6
			18"	4.8	17.9	5.4	3.2	6.7
			21"	6.7	24.7	7.8	3.7	7.8
		3:1	15"	3.1	11.6	3.8	2.7	4.7
			18"	4.5	16.7	5.8	3.2	3.6
			21"	6.2	22.8	8.3	3.7	4.6
		2:1	15"	2.8	10.3	4.0	2.7	3.6
			18"	4.0	14.8	6.1	3.2	4.3
			21"	5.5	20.2	8.8	3.7	5.0
		1½:1	15"	2.6	9.5	4.1	2.7	2.9
			18"	3.7	13.7	6.3	3.2	3.5
			• 21"	5.1	18.7	8.8	3.7	4.0
4:1	2:1	4:1	15"	4.7	17.4	2.8	5.0	5.0
			18"	6.7	24.8	4.5	6.0	5.0
			• 21"	9.2	34.0	6.6	7.0	7.0
		3:1	15"	4.5	16.5	3.3	5.0	4.3
			18"	6.4	23.6	5.2	6.0	5.1
			21"	8.8	32.4	7.5	7.0	6.0
		2:1	15"	4.2	15.4	3.9	5.0	3.3
			18"	6.0	22.1	6.0	6.0	4.0
			21"	8.2	30.2	8.5	7.0	4.7
		1½:1	15"	4.0	14.7	4.2	5.0	2.7
			18"	5.7	21.0	6.4	6.0	3.3
			21"	7.7	28.5	9.1	7.0	3.8
4:1	1½:1	4:1	15"	3.4	12.7	2.6	3.0	5.0
			18"	4.9	18.3	4.1	3.6	6.0
			21"	6.7	24.9	6.0	4.2	7.0
		3:1	15"	3.2	11.9	3.0	3.0	4.3
			18"	4.6	17.0	5.9	3.6	5.1
			21"	6.3	23.3	6.8	4.2	6.0
		2:1	15"	2.9	10.8	3.4	3.0	3.3
			18"	4.2	15.5	5.3	3.6	4.0
			21"	5.7	21.1	7.5	4.2	4.7
		1½:1	15"	2.7	10.1	3.6	3.0	2.7
			18"	3.9	14.3	5.5	3.6	3.3
			• 21"	5.3	19.5	7.8	4.2	3.8
3:1	2:1	3:1	15"	5.9	21.7	2.3	7.5	3.8
			18" ◦	8.4	31.1	3.8	9.0	4.5
			21" ◦	11.5	42.6	5.5	10.5	5.3
		2:1	15"	5.6	20.8	3.0	7.5	3.0
			18" ◦	8.1	29.9	4.7	9.0	3.6
			21" ◦	11.0	40.8	6.7	10.5	4.2
		1½:1	15"	5.5	20.3	3.4	7.5	2.5
			18" ◦	7.8	29.0	5.3	9.0	3.0
			21" ◦	10.7	39.8	7.5	10.5	3.5
3:1	1½:1	3:1	15"	3.5	13.1	2.1	3.8	3.8
			18"	5.0	18.7	3.4	4.5	4.5
			• 21"	6.9	25.6	4.9	5.3	5.3
		2:1	15"	3.3	12.1	2.6	3.8	3.0
			18"	4.7	17.4	4.1	4.5	3.6
			21"	6.4	23.8	5.9	5.3	4.2
		1½:1	15"	3.1	11.6	2.9	3.8	2.5
			18"	4.5	16.6	4.5	4.5	3.0
			• 21"	6.1	22.7	6.4	5.3	3.5
2:1	1½:1	2:1	15"	5.5	20.9	1.6	7.5	2.5
			18" ◦	7.8	29.0	2.6	9.0	3.0
			• 21" ◦	10.7	39.7	3.8	10.5	3.5
		1½:1	15"	5.4	19.8	2.0	7.5	2.1
			18" •	7.7	28.4	3.1	9.0	2.6
			21" •	10.5	38.9	4.5	10.5	3.0
2:1	1:1 ♦	2:1	15"	2.4	8.7	1.4	2.5	2.5
			18"	3.4	12.5	2.3	3.0	3.0
			21"	4.6	17.0	3.3	3.5	3.5
		1½:1	15"	2.2	8.3	1.7	2.5	2.1
			18"	3.2	11.9	2.6	3.0	2.6
			• 21"	4.4	16.2	3.8	3.5	3.0
1½:1	1:1 ♦	1½:1	15"	2.9	10.8	1.2	3.8	1.9
			18"	4.2	15.6	1.9	4.5	2.3
			• 21"	5.8	21.3	2.7	5.3	2.6

• Section shown at left.
♦ 1:1 Slopes are difficult to seed.
◦ Cut Slope exceeds a 10 ft. length.

STEEP SIDE HILL ABOVE CUT SLOPE

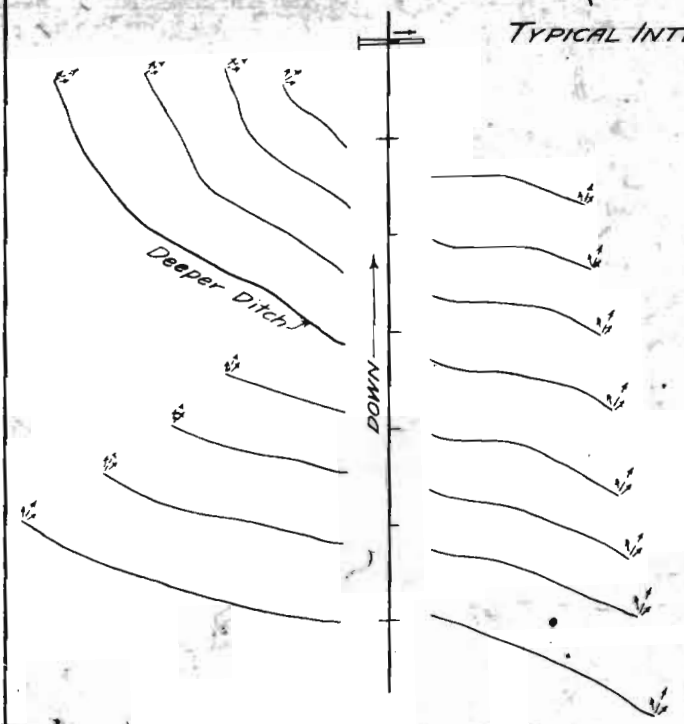


USUAL SIDE HILL LAYOUT

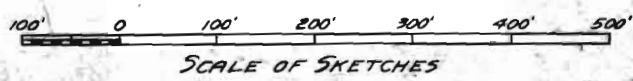


LONG SIDE HILL CUT

TYPICAL INTERCEPTING DITCH ARRANGEMENTS



DRAINAGE DITCHES ON HILL SIDE



GENERAL NOTES

Contour Intercepting and Drainage Ditches on this Project are to be constructed to the line and grade staked by the Engineer using the Ditch Section called for on the Plans or ordered by the Engineer.

Ends of Intercepting and Drainage Ditches are to be lined up so that concentration of flow from a higher contour ditch into one of lower contour is, as far as possible, avoided. Use a deeper ditch when any such flow might be picked up.

The following horizontal spacing of ditches is recommended:

Slope % or Slope Ratio	Horizontal Spacing of Ditches
4% to 6%	70 ft. centers
8% to 10%	60 ft. centers
20% to 4:1	55 ft. centers
30% to 1½:1	50 ft. centers

Ditches are to be laid out along the ground contour on a grade of not over -1%. (Type of soil and volume of flow shall govern the grade.)

Ditch checks may be required for drainage which cannot be diverted as shown. Ditch checks and ditches shall be set in such a manner that the grade of the ditch from the down-stream side of the check to the lip of the adjacent downstream check shall not exceed -0.5%. The checks shall conform to standard plans of the Department.

Grasses are to be planted to stabilize the slope and ditch banks whenever conditions permit.

STANDARD M-107-B

FED. ROAD DIST. NO.	STATE		SHEET NO.	TOTAL SHEETS
3	COLO.	50002(6)	11	

Rev. 12-13-47 vn J.P.K. vn

COLORADO STATE HIGHWAY DEPARTMENT
CONTOUR INTERCEPTING AND DRAINAGE DITCHES

Designed by S.B.L.
Made by S.B.L.
Checked by

Approved by
Chief Draftsman

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	12	

NE NE
SEC. 26 T 32 S R 62 W

NW NW
SEC. 25

SE NW

GRAZING LAND

24"x42" C.M.P. Mass Horiz. Ct.

24"x42" C.M.P. Mass Horiz. Ct.

TO BESHOAR

Gate

Gate

620 625 630 635 640 645 650

S 63° 26' E

S 63° 26' E

6'x6'x74' Outside Mouth
11 Wings @ 30°
Masonry Walls & Wings
No Floor. Conc. Horiz.
& Dect. Cut off Wall.
at Ft. end of Wings.

NOTE:

Alignment and Grades as shown are subject to modification during construction after approval by the Denver Office.

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

Fencing Requirements & Marker Posts are tabulated on Sheet No. 4.

SE NE

SW NW
SEC. 25 T 32 S R 62 W

GRAZING LAND

S 0002(6)

645+00 - BEG. S 0002(6) = STA. 645+00 On AWP 3008

645+00 - Reqd Project Marker Rl. (State Forces)

645+00 - Reqd Approach to Project

Test No. 1, A-6(11)

Top of present Subgrade as constructed by County Forces.

5737.0 P.I.

5734.97 P.I.

-0.05%

-0.45%

400' V.C. N.P.S.D. = ? 1300'

400' V.C. N.P.S.D. = ? 1300'

5730

5720

5710

-0.44%

FL. 11.5

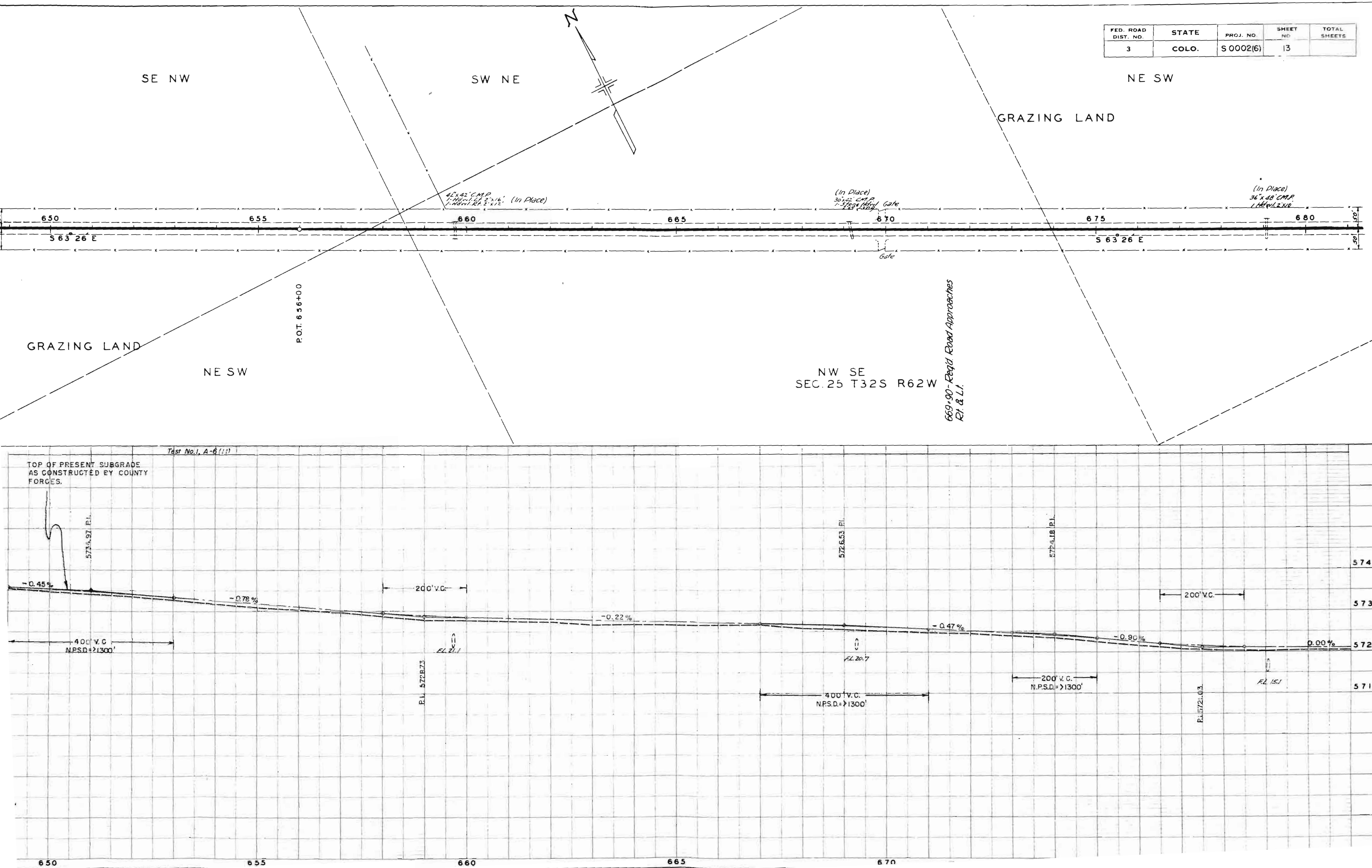
FL. 17.5

FL. 11.5

620 625 630 635 640 645 650

PLATE I-PLAN-PROFILE S. P. R. STANDARD

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	13	



SE NW
SW NE
NE SW
GRAZING LAND
42"x42" C.M.P. (In Place)
(In Place) 30"x42" C.M.P. Gate
(In Place) 36"x48" C.M.P.
650
655
660
665
670
675
680
S 63°26' E
Gate
P.O.T. 656+00
NE SW
NW SE
SEC. 25 T32S R62W
669+90 - Req'd Road Approaches Rt. & Lt.
Test No. 1, A-6 (11)
TOP OF PRESENT SUBGRADE AS CONSTRUCTED BY COUNTY FORCES.
5734.97 P.I.
-0.45%
-0.78%
400' V.C. N.P.S.D.=>1300'
200' V.C.
P.I. 5728.73
FL 21.1
-0.22%
5726.53 P.I.
FL 20.7
400' V.C. N.P.S.D.=>1300'
-0.47%
5724.18 P.I.
200' V.C. N.P.S.D.=>1300'
-0.90%
200' V.C.
P.I. 5721.03
0.00%
FL 15.1
5740
5730
5720
5710

FED. ROAD DIST. NO.	STATE	PROJ NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	14	

NE SE
SEC. 25 T32S R62W

NW SW

SE SW
SEC. 30 T32S R61W

GRAZING LAND

GRAZING LAND

SE SE

SW SW

S.0°.33'W. (calc.)

Stock Pond

Dam

(In Place)
36"x48" C.M.P.
1-Hdwl. 2'x10'

(In Place)
30"x46" C.M.P.
No. Hdwl.

(In Place)
48"x52" C.M.P.
1-Hdwl, Lt.
2'x21' Long.

Gate

Gate

680 685 690 695 700 705 710

S 63 26 E

S 63 26 E

50'

50'

P.O.T. 684+00

689+05

P.O.T. 698+00

R62W / R61W

Test No. 1, A-6(11)
L.L. = 39.6
P.I. = 18.0
%-200 = 90.7
C.B.R. = 1.5

Test No. 2, A-6(11)

Top of present Subgrade is constructed by County forces

5722.13 P.I.

5721.0 P.I.

5717.85 P.I.

5730

5720

5710

0.00%

+0.22%

-0.087%

-0.63%

-1.00%

+0.38%

200' V.C.

200' V.C.
N.P.S.D. = 1300'

400' V.C.
N.P.S.D. = 1300'

EL. 5719

Test No. 1

EL. 5706.5

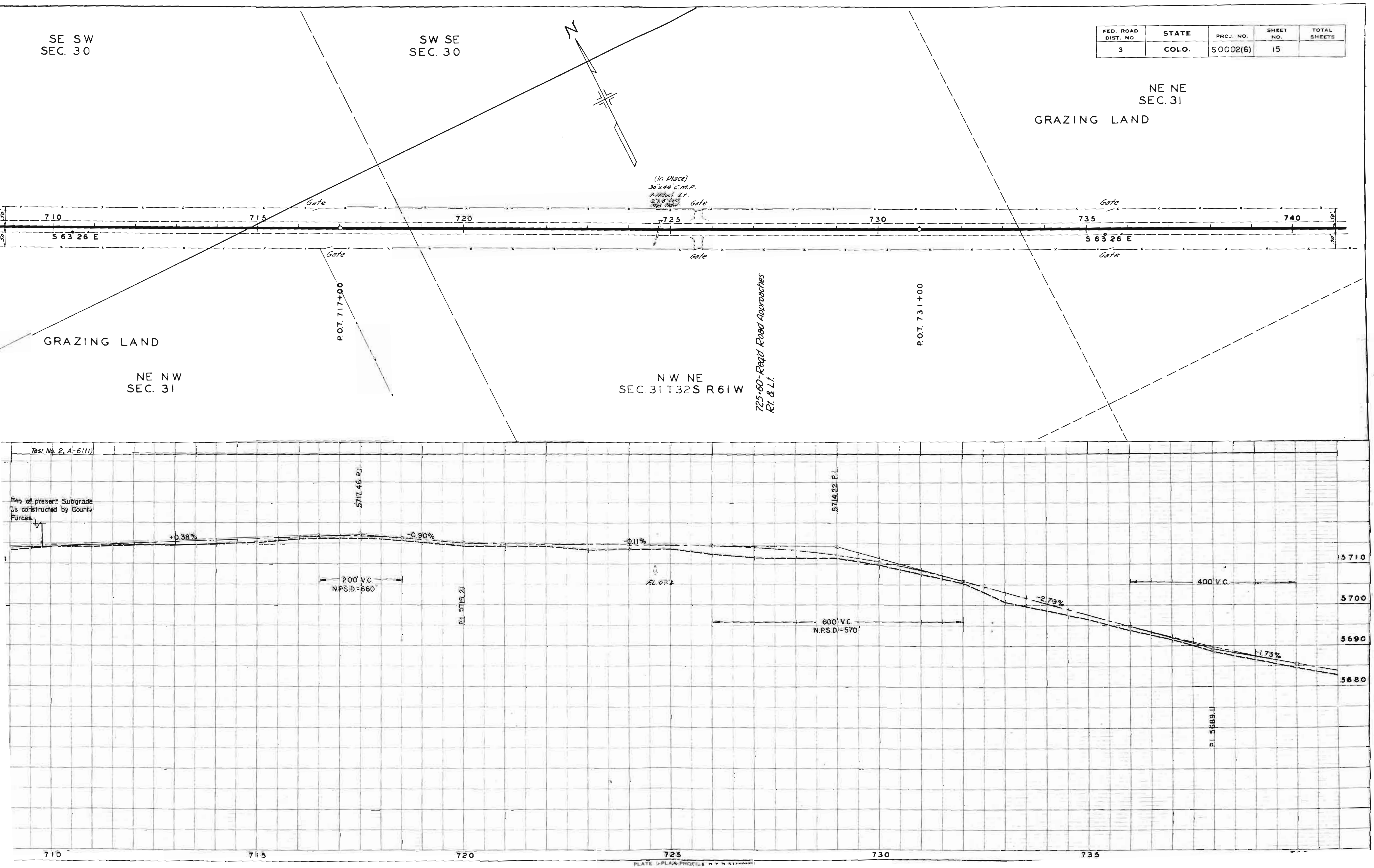
P.I. 5721.03

P.I. 5713.85

680 685 690 695 700

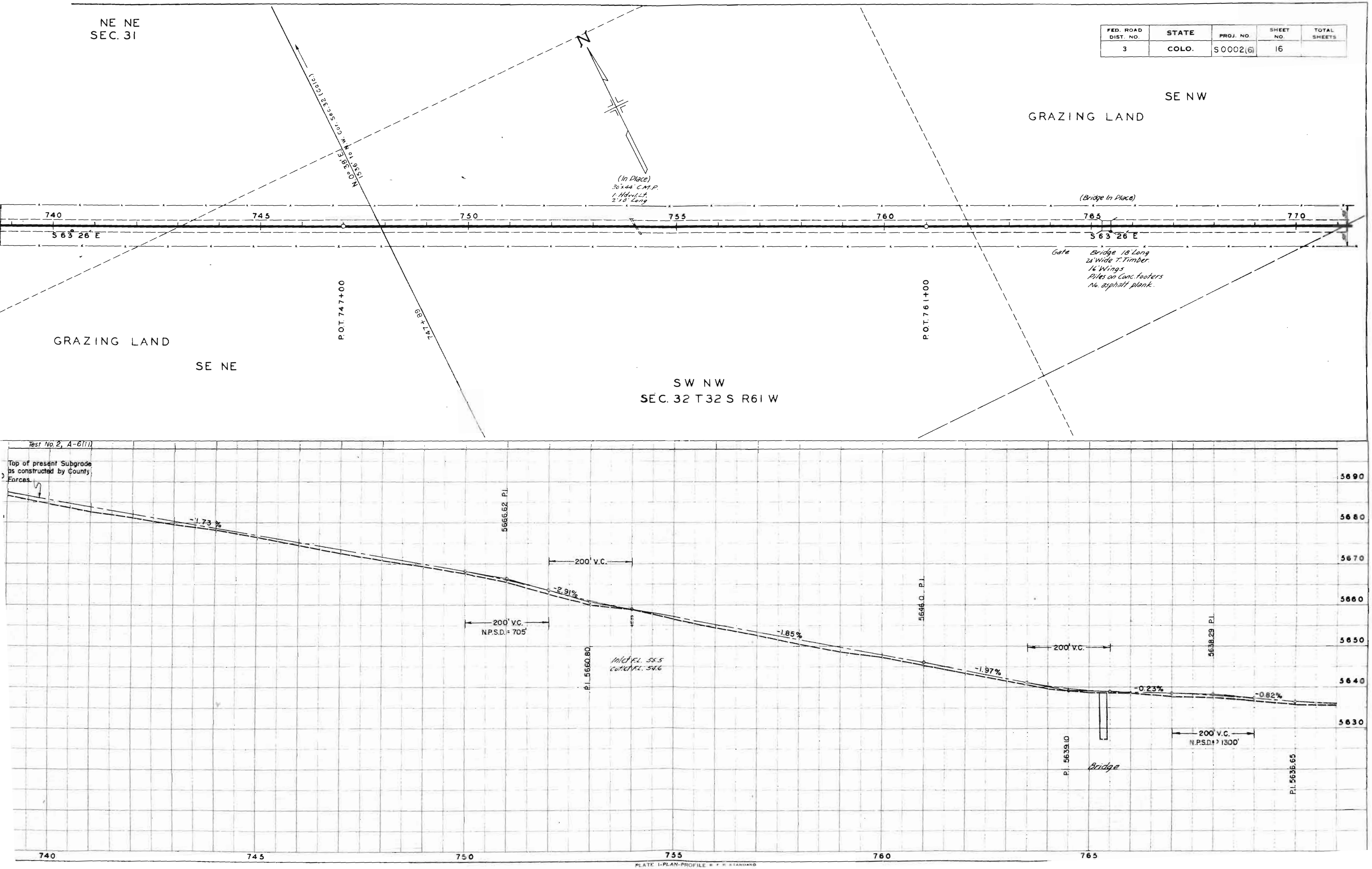
PLATE 1-PLAN-PROFILE B. P. R. STANDARD

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	15	



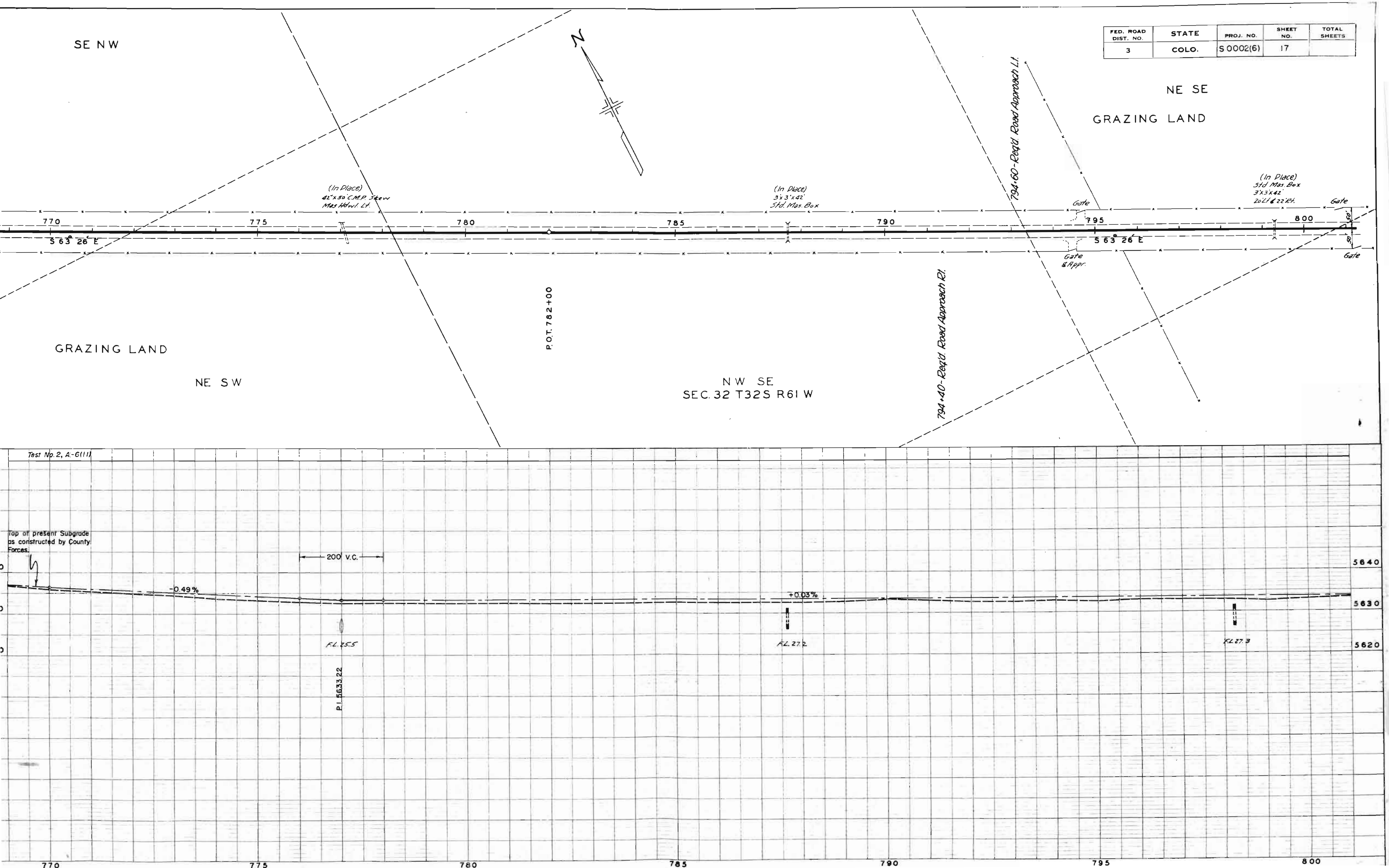
SE SW SEC. 30
SW SE SEC. 30
NE NE SEC. 31
GRAZING LAND
(In Place) 30"x44" C.M.P.
Gate
710
715
720
725
730
735
740
S 63°26' E
GRAZING LAND
NE NW SEC. 31
P.O.T. 717+00
NW NE SEC. 31 T32S R61W
725+60-Req'd. Road Approaches Rt. & Lt.
P.O.T. 731+00
Test No. 2, A-6(11)
of present Subgrade as constructed by County Forces.
5717.46 P.I.
5714.22 P.I.
+0.38%
-0.90%
-0.11%
200' V.C. N.P.S.D.=660'
P.I. 5715.21
FL 07.2
600' V.C. N.P.S.D.=570'
400' V.C.
-2.79%
-1.73%
P.I. 5689.11
5710
5700
5690
5680
PLATE 1-PLAN-PROFILE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	16	



NE NE
SEC. 31
N
(In Place)
30"x44" C.M.P.
1-Hdwl.Lt.
2'x8' Long
1536' to N.W. Cor. Sec. 32 (Calc.)
N 0° 38' E
SE NW
GRAZING LAND
(Bridge In Place)
740
745
750
755
760
765
770
S 63° 26' E
Gate
Bridge 18' Long
24' Wide T. Timber
16' Wings
Piles on Conc. footers
No asphalt plank.
P.O.T. 747+00
747+89
P.O.T. 761+00
GRAZING LAND
SE NE
SW NW
SEC. 32 T32 S R61 W
Test No. 2, A-6(11)
Top of present Subgrade as constructed by County Forces.
-1.73%
5666.62 P.I.
200' V.C.
-2.91%
200' V.C.
N.P.S.D. = 705'
P.I. 5660.80
Inlet F.L. 55.5
Outlet F.L. 54.6
-1.85%
5646.0 P.I.
-1.97%
200' V.C.
-0.23%
5638.29 P.I.
-0.82%
200' V.C.
N.P.S.D. = 1300'
P.I. 5639.10
Bridge
P.I. 5636.65
5690
5680
5670
5660
5650
5640
5630
PLATE 1-PLAN-PROFILE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	17	


SE NW
NE SE
GRAZING LAND
GRAZING LAND
NE SW
NW SE
SEC. 32 T32S R61 W
N
(In Place)
42"x50" C.M.P. Skew
Mas Hdwl. Lt.
(In Place)
3'x3'x42'
Std. Mas. Box
(In Place)
Std. Mas. Box
3'x3'x42'
20' Lt. & 22' Rt.
794+60-Req'd. Road Approach Lt.
794+40-Req'd. Road Approach Rt.
Gate
Gate
Gate & Appr.
Gate
770
775
780
785
790
795
800
S 63° 26' E
S 63° 26' E
P.O.T. 782+00
Test No. 2, A-6(11)
Top of present Subgrade as constructed by County Forces.
200' V.C.
-0.49%
+0.03%
F.L. 25.5
P.I. 5633.22
F.L. 27.2
F.L. 27.3
5640
5630
5620
770
775
780
785
790
795
800

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	18	

NE SE
SEC. 32

N

GRAZING LAND

SE SW

Δ 20° 04' LT.
D 1°
T 1013.8
L 2006.8
R 5730
HOR. S.D. => 1300'

P.C. 811+80.3

Gate

800

S 63° 26' E

805

Gate

810

S 63° 26' E BK. S 62° 42' E AH.

815

820

825

S 82° 46' E

830

(In Place) Std. Mas. Box 6'x3'x40'

(In Place) Std. Mas. Box 6'x4'x40'

P.O.T. 803+00

GRAZING LAND

SE SE

EQUATION

BEARING EQUATION
S 63° 26' E BK. = S 62° 42' E AH.

SW SW
SEC. 33 T 32 S R 61 W

P.T. 821+94.3

Test No. 2, A-6(11)

5634.0 P.I.

Top of present Subgrade as constructed by County Forces.

+0.03%

500' V.C.
N.P.S.D. = 595'

-2.11%

400' V.C.

-1.14%

400' V.C.

P.I. 5596.02

F.L. 539

P.I. 5585.76

F.L. 77.0

5630
5620
5610
5600
5590
5580

800 805 810 815 820 825 830

PLATE 1-PLAN-PROFILE B. P. R. STANDARD

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	19	

SE SW

SW SE
SEC. 33 T.32S. R61W

SE SE

GRAZING LAND

P.T. 831+67.2

(In Place)
Std. Mas. Box
4'x4'x40'

(In Place)
5'x5'x40 C.B.C.

STA. 843+00 END AWP 3008

830 835 840 845 850 855 860

S 82° 46' E

S 82° 46' E

48"x44' C.M.P.
(In Place)

84"x44' C.M.P.
(In Place)

T. 32 S.
T. 33 S.

GRAZING LAND

P.O.T. 843+62.8

P.O.T. 854+00

NW NE
SEC. 4 T.33S. R61W

NE NE

Test No. 2, A-6(11)

Top of present Subgrade as construct'd by County Forces.

5595.04 P.I.

400' V.C.

400' V.C.

+1.12%

+0.18%

-0.87%

200' V.C.

-0.08 1%

5590

5580

5570

F.L. 80.7

F.L. 77.6

F.L. 76.8

P.I. 5585.76

P.I. 5567.20

P.I. 5563.73

500' V.C.
N.P.S.D. = 615'

830 835 840 845 850

PLATE 1-PLAN-PROFILE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	20	

SE SE
SEC. 33

SW SW
SEC. 34

N

T. 32 S.
T. 33 S.

33 | 34
4 | 3

GRAZING LAND

878+50 End Fence Rt.

860 865 870 875 880 885 890

S 82° 46' E

S 82° 46' E

30"x48" C.M.P. (In Place)

Present R.O.W.

84"x48" C.M.P. (In Place)

30"x48" C.M.P. (In Place)

GRAZING LAND

N. 0° 22' W. 864+40.4 (Colo.)

P.O.T. 869+00

NE NE
SEC. 4

NW NW
SEC. 3 T33S R61W

NE NW

Test No. 2, A-6(11)

Top of present Subgrade as constructed by County Forces.

5583.0 P.I.

-0.08 %

-2.00 %

400' V.C.

1200' V.C.

300' V.C.
N.P.S.D.=685'

El. 58.8

P.I. 5566.10

-1.54 %

+0.455 %

El. 35.0

P.I. 5550.00

5570
5560
5550
5540

860 865 870 875 880 885

PLATE I-PLAN-PROFILE B.P.R. STANDARD

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	21	

Stock Pond
Dam
P.T. 907+06
ditch
NE NE
GRAZING LAND
(In Place) 24"x42" C.M.P.
905
910
Present R.O.W.
30"x42" C.M.P. (In Place)
900
914+50 ℄ Fence Ends Lt.
915
ditch
Δ 48° 00' RT.
D 4°
T 637.8
L 1200.0
R 1432.5
HOR. S.D. = 750'
P.C. 900+82.2
P.T. 912+82.2
S 34° 46' E
920
(In Place) 30"x42" C.M.P.
895
890
S 82° 46' E
50'
50'
GRAZING LAND
NW NE
SEC. 3 T.33S. R61W
SE NE
(NO-WORK SECTION)
Bridge (Concrete I-Beam)
Sta. 921+49.76 to 922+51.15
Structure No. P-20-D
FRIJOLE CREEK
50' R/W
N

Test No.2, A-6(11)
L.L. = 36.5
P.I. = 17.5
%-200 = 94.2
Test No. 3, A-6 (9)
STA. 921+00-BEG. S 0002(1) Unit 1
1200' V.C.
+0.455%
Top of present Subgrade as constructed by County Forces.
5555.0 P.I.
5544.10 P.I.
F.L. 48.0
F.L. 48.3
-1.816%
P.I. 555.00
800' V.C.
N.P.S.D. = 710'
F.L. 50.5
200' V.C.
N.P.S.D. => 1300'
-2.10%
600' V.C.
Test No. 2
+0.60%
P.I. 551.90
5550
5540
5530
5520
5510
5500
890
895
900
905
910
915
920

PLATE 1-PLAN-PROFILE S. P. R. STANDARD

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	22	

SW NW
SEC. 2

SE NW
SEC. 2

GRAZING LAND

CREEK

FRIJOLE

P.C. 928+10.8

Δ 45° 20' LT.
D 4°
T 598.3
L 1133.3
R 1432.5
HOR. S.D. = 750'

P.T. 935+04.1

Gate

Present R.O.W.

(In Place)
Cattle Guard

Road

S 80° 06' E

P.O.T. 947+00

STA. 921+00-BEG. S 0002(1) Unit 1

STA. 923+00-END S 0002(1) Unit 1

GRAZING LAND

SE NE
SEC. 3

P.I. 929+69.1

NW SW

936.60-Regd Road Approaches
Rt. & Lt.

NE SW
SEC. 2 T33S R61W

Test No. 3, A-6 (9)

5542.90 P.I.

5539.10 P.I.

Top of present Subgrade as constructed by County Forces

400' V.C.

300' V.C.

Sta. 921+49.76
Elev. 5521.00

Sta. 921+51.15
Elev. 21.61

+0.60%

±2.40%

P.I. 5523.70

800' V.C.
N.P.S.D. = 635'

-0.475%

-1.748%

800' V.C.
N.P.S.D. = 960'

5540
5530
5520
5510
5500

920 925 930 935 940 945

PLATE I-PLAN-PROFILE U. S. P. R. STANDARD
EUGENE DIETZGEN CO. Chicago New York

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	23	

N

GRAZING LAND

Present R.O.W

950 955 960 965 970 975 980

S 80° 06' E

S 80° 06' E

72"x48' C.M.P. (In Place)

72"x40' C.M.P.

GRAZING LAND

NE SW

NW SE
SEC. 2 T.33S. R61W

NE SE

P.O.T. 967+00

P.O.T. 973+00

979+25 - Reqd. Riprap at End of 72" C.M.P. in place. (Details on Sheet 4)

989+31 (Calc.)

Test No. 3, A-6(9)

5544.0 P.I.

5539.0 P.I.

Top of present Subgrade as constructed by County Forces.

600' V.C.

+2.50%

-0.556%

800' V.C.

-1.78%

-3.44%

600' V.C.
N.P.S.D.=530'

800' V.C.
N.P.S.D.=635'

P.I. 5519.0

5540
5530
5520
5510

950 955 960 965 970

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	24	

NW SW
SEC. 1 T.33S. R61W

NE SW

GRAZING LAND

Present R.O.W.

80 985 990 995 1000 1005 1010

S 80° 06 E

S 80° 06 E

72"x40' C.M.P.

989+31 (Colo)

P.O.T. 994+00

P.O.T. 1005+00

GRAZING LAND

SW SW

SE SW

Test No. 3, A-6(9)

5568.97 P.I.

5560

5550

5540

5530

5520

1800' V.C.

-2.40%

Top of present Subgrade as constructed by County Forces.

800' V.C.

+4.877%

1600' V.C.
N.P.S.D.=565'

-3.444%

P.I. 5508.0

980 985 990 995 1000 1005 1010

PLATE I - PLAN-PROFILE FOR STANDARD

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	25	

NW SE

N

N 1°16' E 4572.7' to N.W. Cor. Sec. 6

R 60 W

GRAZING LAND

(In Place) 48"x 58' C.M.P.

Present R.O.W.

1010 1015 1020 1025 1030 1035 1040

S 80° 06 E

Cattle Guard (In Place)

S 80° 06 E

30"x 38' C.M.P. (In Place)

84"x 60' C.M.P. (In Place)

R 61 W

1032+91.3 (calc)

P.O.T. 1028+00

P.O.T. 1040+00

GRAZING LAND

SW SE

SE SE
SEC. 1 T 33 S R 61 W

SW SW
SEC. 6 T 33 S R 60 W

Test No. 3, A-6(9)

Top of present Subgrade as constructed by Co. Hy. Forces.

1800' V.C.

-2.48%

+0.90%

F.L. 27.0

800' V.C.

+2.086%

-4.00%

5561.0 P.I.

1260' V.C.
N.P.S.D. = 535'

P.I. 5523.37

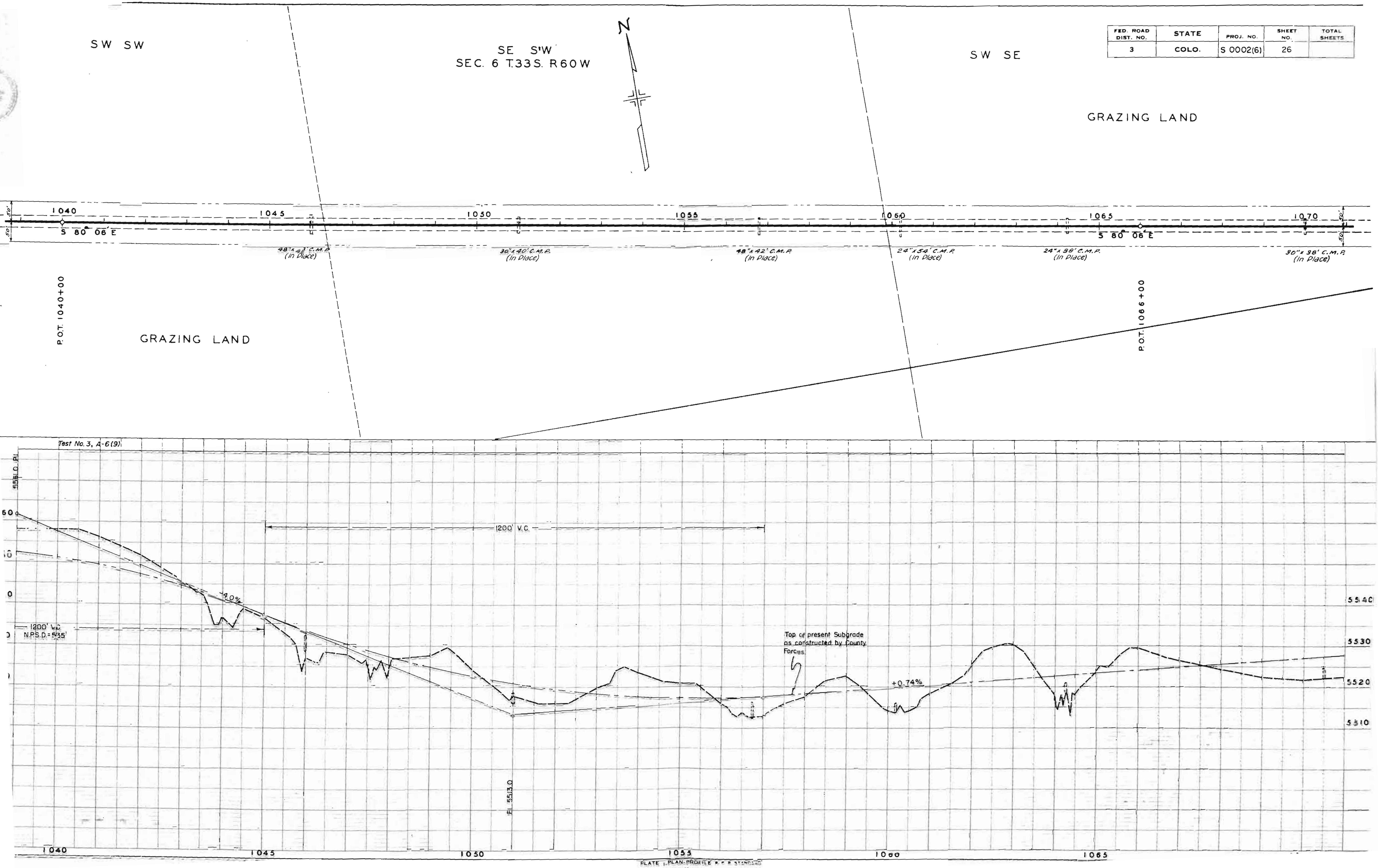
P.I. 5535.97

5560
5550
5540
5530
5520

1010 1015 1020 1025

PLATE 1-PLAN PROFILE S. P. H. STANDARD

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	26	



SW SW
SE S'W
SEC. 6 T.33S. R60W
SW SE
GRAZING LAND
N
1040
1045
1050
1055
1060
1065
1070
S 80° 06' E
48"x42' C.M.P. (In Place)
30"x40' C.M.P. (In Place)
48"x42' C.M.P. (In Place)
24"x54' C.M.P. (In Place)
24"x38' C.M.P. (In Place)
30"x38' C.M.P. (In Place)
P.O.T. 1040+00
P.O.T. 1066+00
GRAZING LAND
Test No. 3, A-6(9)
1200' V.C.
-4.0%
1200' V.C.
N.P.S.D.=535'
Top of present Subgrade as constructed by County Forces
+0.74%
El. 5513.0
5540
5530
5520
5510
PLATE PLAN-PROFILE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	27	

SW SE

SE SE
SEC. 6 T33S R60W

GRAZING LAND

GRAZING LAND

NE NE
SEC. 7

NW NW
SEC. 8

Present R.O.W.

40'

1070 1075 1080 1085 1090 1095 1100

S 80° 06 E

30" x 38' C.M.P. (In Place)

24"x38' C.M.P. (In Place)

84"x46' C.M.P. (In Place)

N 0° 30' E

1087+16.3

P.C. 1090+49.9

P.I. 1093+74.1

P.T. 1096+87.4

S 54° 36 E

Δ 25° 30' RT.
D 4°
T 324.2
L 637.5
R 1432.5
HOR. S.D. = 780'

Test No. 3, A-6(5)

5579.49 P.I.

600' V.C.

+3.263%

-5.79%

Top of Present Subgrade as constructed by County Forces.

+0.737%

2000' V.C.
M.P.S.D. = 565'

P.I. 1032.7

5580 5570 5560 5550 5540 5530 5520 5510

1070 1075 1080 1085 1090 1095 1100

PLATE C-PLAN-PROFILE S. P. R. STANDARD

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	28	

NE NW
SEC. 8 T33S. R60W

SW NE

PIT NO.1
Surfacing, Structure Backfill
S.E. 1/4 Sec 5, S.W. 1/4 Sec. 4
N.E. 1/4 Sec 8, N.W. 1/4 Sec. 9
T. 33S., R.60W.
1.1 Mile from Sta. 1117+18
SOIL CLASS A-1-a(0)

GRAZING LAND

CREEK

(No-Work Section)
Bridge - Steel Truss
Sta. 1124+38.0 to 1125+42.0
No. P-20-E

Present R.O.W.

Cattle Guard (In Place)

1100 1105 1110 1115 1120 1125 1130

S 54° 36' E

72" x 48" C.M.P. (In Place)

Diversion Channel (In Place)

P.O.T. 1107+00

GRAZING LAND

SAN FRANCISCO

SE NW

Test No. 3, A-6(9)

-8.79%

500' V.C.

2000' V.C.
N.P.S.D.=565'

Top of present Subgrade as constructed by County Forces.

-2.90%

600' V.C.

-0.68%

800' V.C.

STA. 1122+00 BEG. S 0002(1) Unit 2

STA. 1128+00 END S 0002(1) Unit 2

P.I. 5492.65

P.I. 5457.85

Sta. 1124+38 Elev. 5453.85

Sta. 1125+42 Elev. 5453.14

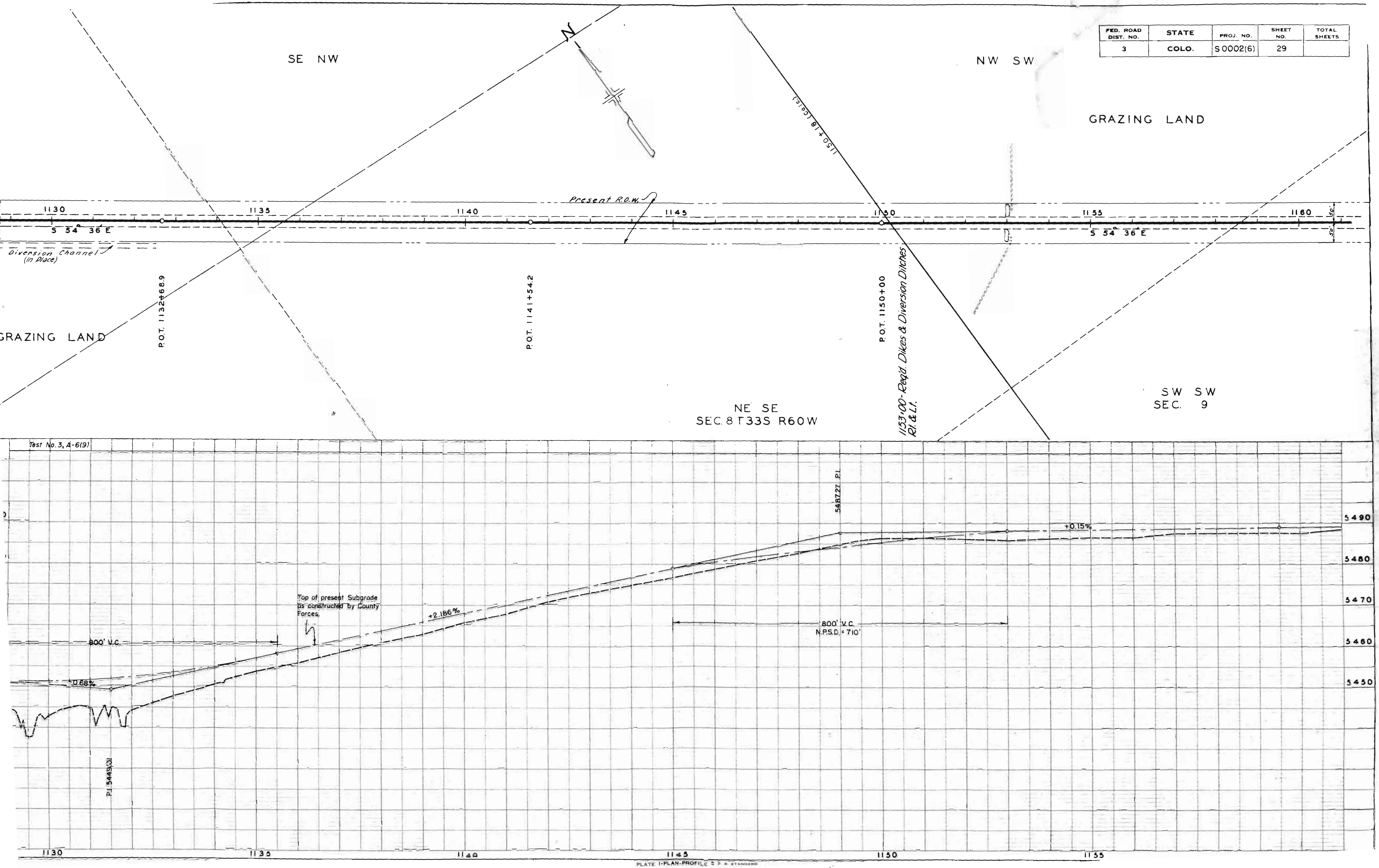
5470
5460
5450
5440

1100 1105 1110 1115 1120 1125 1130

PLATE I-PLAN-PROFILE S. P. R. STANDARD

EUGENE DIETZGEN CO. Chicago-New York

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	29	


SE NW
NW SW
GRAZING LAND
N
Present R.O.W.
1150+18 (Colo.)
1130
1135
1140
1145
1150
1155
1160
S 54° 36' E
S 54° 36' E
50'
50'
Diversion Channel (in Place)
P.O.T. 1132+68.9
P.O.T. 1141+54.2
P.O.T. 1150+00
1153+00 - Req'd. Dikes & Diversion Ditches Rt. & Lt.
GRAZING LAND
NE SE
SEC. 8 T33S R60W
SW SW
SEC. 9
Test No. 3, A-6(9)
5487.27 P.I.
+0.15%
5490
5480
5470
5460
5450
Top of present Subgrade as constructed by County Forces.
+2.186%
800' V.C.
N.P.S.D. = 710'
800' V.C.
+0.68%
P.I. 5449.01
1130
1135
1140
1145
1150
1155
PLATE 1-PLAN-PROFILE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	30	

NW SW

SE SW
SEC. 9 T33S R60W

SW SE

GRAZING LAND

N 89° 41' E

Present R.O.W.

50'

1160 1165 1170 1175 1180 1185 1190

S 54° 36' E

S 54° 36' E

50'

P.O.T. 1172+00

1181+64.8
2575.4' to S.W. Cor. Sec. 9

P.O.T. 1191+00

GRAZING LAND

SW SW

NE NW
SEC. 16

NW NE

Test No. 3, A-6 (9)

5530
5520
5510
5500
5490
5480

P.I. 5517.80

+0.847%

400' V.C.
N.P.S.D. = > 1300'

Top of present Subgrade as constructed by County Forces.

+1.422%

400' V.C.

+1.239%

+0.15%

P.I. 5502.16

P.I. 5489.15

1160 1165 1170 1175 1180 1185 1190

PLATE I-PLAN-PROFILE 6 x 4 STANDARD
EUGENE DIETZGEN CO. Chicago New York

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	31	

NW NE

NE NE
SEC. 16 T33S. R60W

SW NW
SEC. 15

GRAZING LAND

N 0°31'E

Present R.O.W.

50'

1190 1195 1200 1205 1210 1215 1220

S 54° 36' E

(In Place) Cattle Guard

S 54° 36' E

48"x60' C.M.P. in Place

P.O.T. 1191+00

GRAZING LAND

1200.00-Remove 48"x60' Cross Culvert, and Relay 50 lf. as Cross Culvert Sta 1504+15 Rep'd. 64"x68' Cross Culvert & Ditches (W.12') (Stock Pass)

SE NE

1515+30.7

P.O.T. 1218+00

Test No. 3, A-6(9)

5570.23 P.I.

+0.545%

5526.27 P.I.

600' V.C.

+2.48%

400' V.C.
N.P.S.D. 585'

Top of present Subgrade as constructed by County Forces

+0.847%

+0.20%

400' V.C.
N.P.S.D. = 1300'

F.I. 18.3

P.I. 5528.07

70 60 50 40 30 20

5570 5560 5550 5540 5530 5520

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	32	

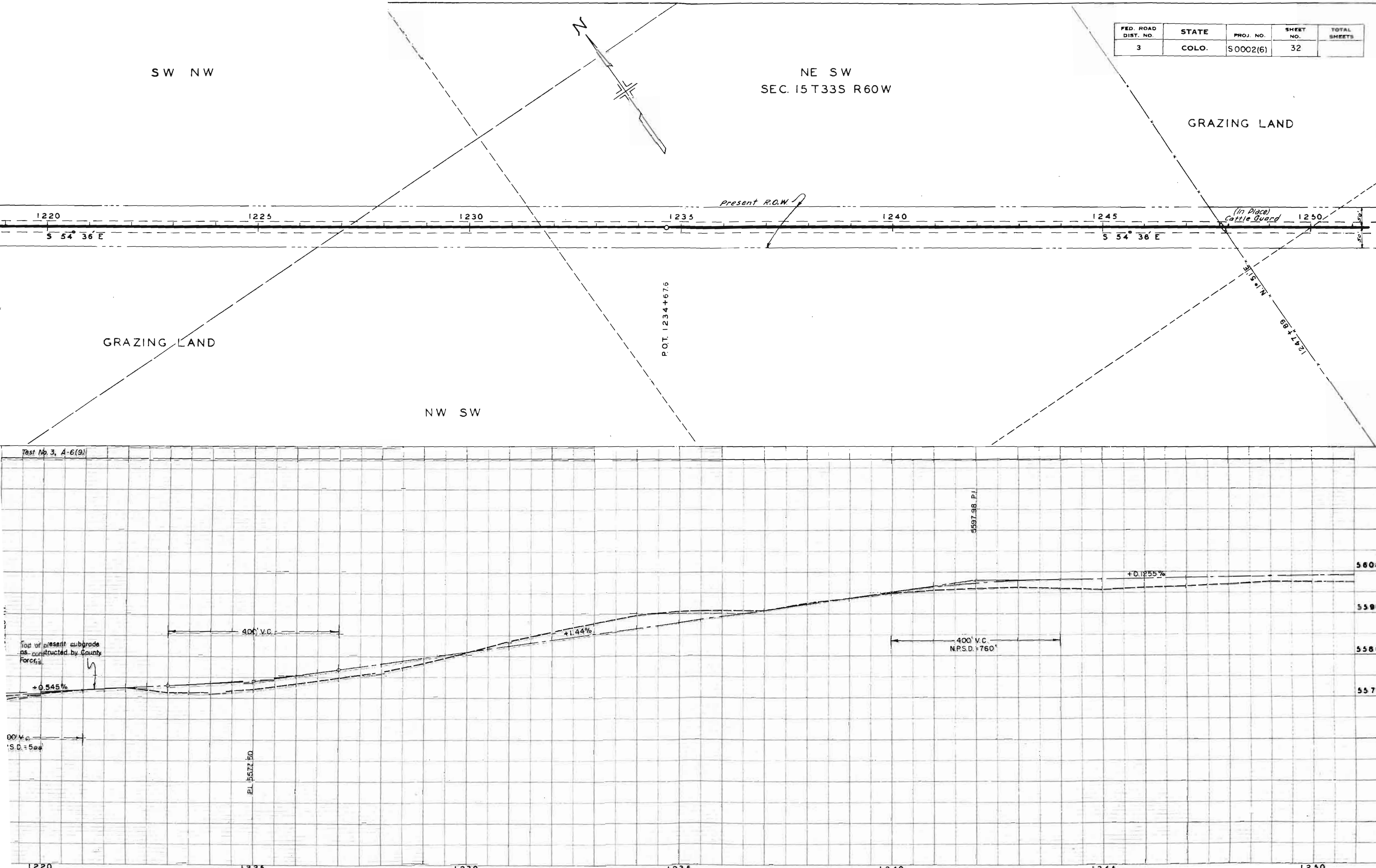


PLATE 1-PLAN-PROFILE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	33	

SW SE

SE SE
SEC. 15 T33S R60W

GRAZING LAND

GRAZING LAND

15 | 14
22 | 23

N 1° 28' E 1327'

CREEK

SALT

Present R.O.W.

Contour Ditches

1250 1255 1260 1265 1270 1275 1280

S 54° 36' E

S 54° 36' E

P.O.T. 1254+00

P.O.T. 1265+00

N. 89° 50' W.

1272+61.7

PRESENT GRADED SECTION

END OF

NE NE

STA. 1280+04.8 - BEG. S 0002(4)

STA. 1280+50.2 - END S 0002(4)

1278+18.9

Test No. 3, A-6(9)

Top of present Subgrade as constructed by County Forces

+0.1255%

5600.74 P.I.

600' V.C.
N.P.S.D.=540'

-2.91%

5568.58 P.I.

600' V.C.

-3.87%

+3.52%

300' V.C.
N.P.S.D.= 1190'

72.95 68.33 63.23 61.44 66.05

P.I. 5550.73

5600 5590 5580 5570 5560 5550 5540 5530

	EXCAV.	EMBANK.	EMBANK. FACTOR	EMBANK. X FACTOR	STA. YD. O'HAUL	YD. MI. O'HAUL	BORROW	BORROW SOURCE
	110	122	0.90	110		FREE HAUL		
℄	2280	13	0.90	12	515			

* Excess excavation to be used to widen shoulders per ℄ H within F.H. Limits.

* Excess excavation to be used in fill between STA. 1265+90 to 1267+77

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	34	

NW NW

NE NW

GRAZING LAND

SALT CREEK

Arch Culvert
Sta. 1280+04.8 to 1280+50.2
Str. No. P-20-F

Contour Ditch

Present R.O.W.

1280 1285 1290 1295 1300 1305 1310

50' 50'

S. 54°36'E.

Cattle Guard (In Place)

S 54° 36' E

P.O.T. 1282+25.0

GRAZING LAND

P.O.T. 1286+25.0

P.O.T. 1303+00

BEGIN PRESENT GRADING SECTION

STA. 1280+04.8 - BEG. S 0002(4)

STA. 1280+50.2 - END S 0002(4)

SW NW
SEC. 23 T33S R60W

SE NW

Test No. 3, A-6(9)

5575.37 (4)

5572.04 (F)

Top of present Subgrade as constructed by County Forces.

+0.14%

600' V.C.

65.02

61.29

64.81

72.83

75.79

600' V.C.
N.P.S.D. = 505'

600' V.C. N.P.S.D. = 505

-3.57%

+3.92%

P.I. 5550.23

3580
3570
3560
3550
3540

EXCAV.	1626		
EMBANK.	1676	4	
EMBANK. FACTOR	1690	490	
EMBANK. X FACTOR	1676	0	
STA. YD. O'HAUL			
YD. MI. O'HAUL			
BORROW			

* excess excavation is placed in fills between Sta. 1284+97 & 1287+37

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	35	

SW NE

NE SE

GRAZING LAND

Present R.O.W.

1310 1315 1320 1325 1330 1335 1340

S 54° 36' E

S 54° 36' E

50'

GRAZING LAND

NW SE
SEC. 23 T33S R60W

P.O.T. 1328+00

P.O.T. 1339+00

Test No. 3, A-6(9)
L.L. = 34.8
P.I. = 13.7
%-200 = 83.5
C.B.R. = 2.8

Test No. 4, A-6(10)

5612.10 P.I.

+0.44%

400' V.C.
N.P.S.D. = 860'

5610
5600
5590
5580
5570

400' V.C.

+1.50%

Top of present Subgrade as constructed by County Forces

+0.14%

Test No.3

EL. 75.0

P.I. 1579.10

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	36	

SW SW
SEC. 24 T33S R60W

SE SW

GRAZING LAND

GRAZING LAND

NE NW
SEC. 25

S 1°02' W

1343+53.6
1117.2 to S.E. Cor. Sec. 23

P.O.T. 1339+00

Present R.O.W.

1362.80-Rqd. Road Approach Lt.

1362.50-Rqd. Road Approach Rt.

S 89 32' W
1574.0' to S.W. Cor. Sec. 24 (Calc.)
1362+59.8

1370.40-Rqd. 84"x 76' Cross Culvert & Ditches (W-12') (Stock Pass)

1340 1345 1350 1355 1360 1365 1370

S 54° 36' E

S 54° 36' E

50'
50'

Cattle Guard (In Place)

OLD ROAD

END PRESENT GRADED SECTION

Test No. 4, A-6(10)

Top of present Subgrade as constructed by County Forces.

5615.00 P.I.

+0.41%

400' V.C.

-1.50%

400' V.C.
N.P.S.D. = 585'

P.I. 5607.50

+0.24%

11.25 12.06 13.53

400' V.C.

+0.28%

+0.90%

5620
5610
5600

FL 05.3

P.I. 5611.73

EXCAV.	6.94
EMBANK.	0.90
EMBANK. FACTOR	5%
EMBANK. X FACTOR	6.3%
STA. YD. O'HAUL	0.15
YD. MI. O'HAUL	
BORROW	
BORROW SOURCE	

1638
090
1471
16181
1914

EXCESS EXCAV BETWEEN STA 1276+68 TO 1277+20

EXCESS EXCAV. from Sta 1282+10 to 1283+00

1340 1345 1350 1355 1360 1365 1370

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	37	

NW NE

SE NE

GRAZING LAND

Present R.O.W.

1370 1375 1380 1385 1390 1395 1400

S 54° 36' E

S 54° 36' E

50'

50'

P.O.T. 1376+00

P.O.T. 1397+00

GRAZING LAND

NE NW
SEC. 25 T 33 S R60 W

BEGIN PRESENT GRADED SECTION

SW NE

Test No. 4, A-6(10)

5624.33 P.I.

400' V.C.

400' V.C.

+1.091%

Top of present Subgrade as constructed by County Forces

+0.70%

+0.70%

+0.90%

5640

5630

P.I. 5643.00

5620

P.I. 5631.00

F.L. 0.3

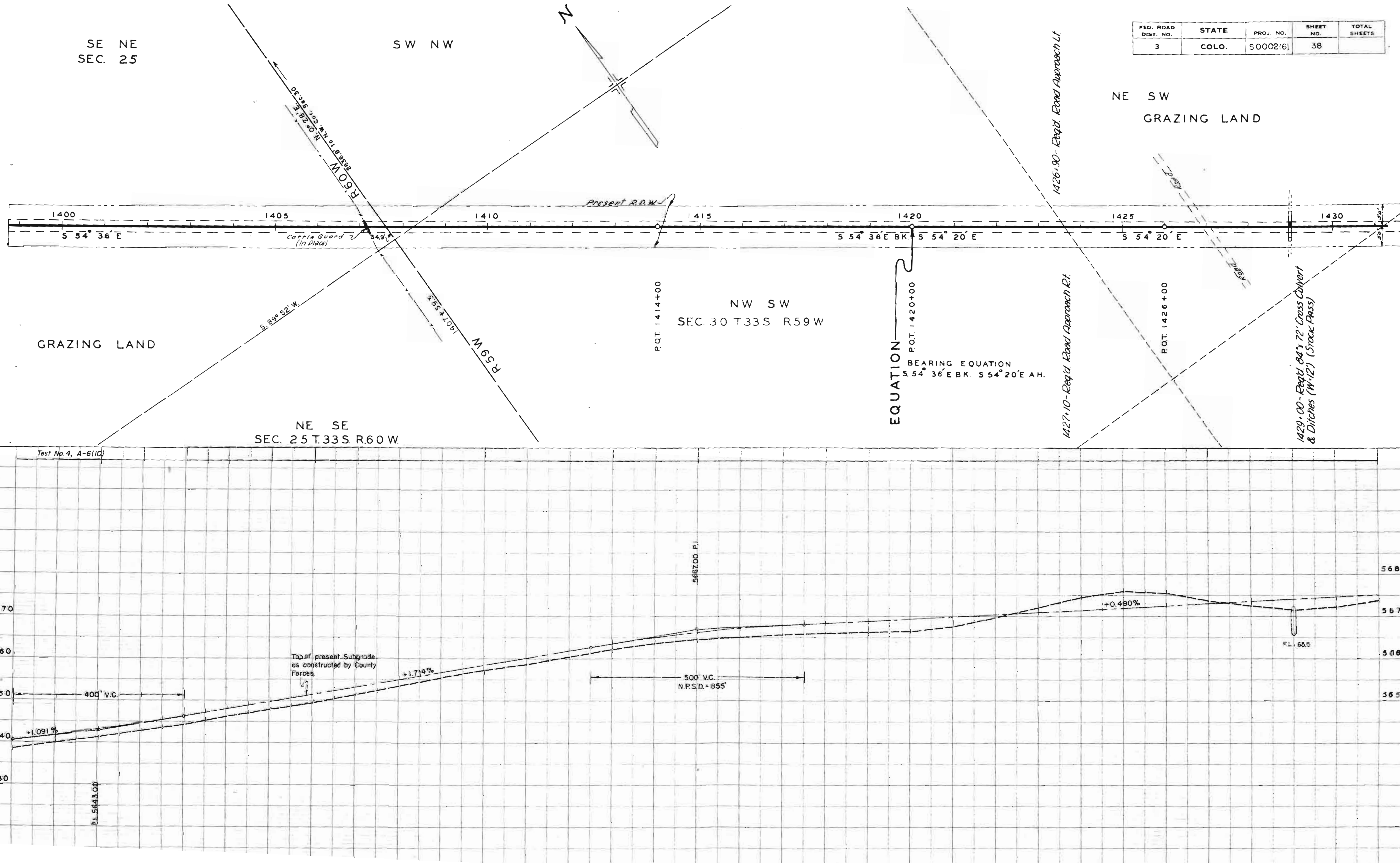
400' N.P.S.D. 1300'

22.53

24.23

EXCAV.
EMBANK.
EMBANK. FACTOR

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	38	



SE NE
SEC. 25
SW NW
N
NE SW
GRAZING LAND
1426+90 - Req'd. Road Approach Lt.
2656.8' to N.W. Cor. Sec. 30
N. 0°28' E.
R60W
Present R.O.W.
1400
1405
1410
1415
1420
1425
1430
S 54° 36' E
Cattle Guard (In Place)
34.9'
S 54° 36' E BK.
S 54° 20' E
Road
S.89°52' W.
1407+59.3
R59W
P.O.T. 1414+00
NW SW
SEC. 30 T33S R59W
EQUATION
P.O.T. 1420+00
BEARING EQUATION
S.54° 36' E BK. S 54° 20' E AH.
1427+10 - Req'd. Road Approach Rt.
P.O.T. 1426+00
1429+00 - Req'd. 84" x 72' Cross Culvert & Ditches (W-12') (Stock Pass)
GRAZING LAND
NE SE
SEC. 25 T.33S. R.60 W.
Test No. 4, A-6(10)
5667.00 P.I.
5680
5670
5660
5650
+0.490%
F.L. 65.5
Top of present Subgrade as constructed by County Forces.
+1.714%
500' V.C.
N.P.S.D. = 855'
400' V.C.
+1.091%
P.I. 5643.00

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	39	

NE SW

GRAZING LAND

Present R.O.W.

1430 1435 1440 1445 1450 1455 1460

S 54° 20' E

S 54° 20' E

50'

50'

P.O.T. 1444+00

S 89° 52' W 1454+15.0

GRAZING LAND

SE SW
SEC. 30 T.33S. R.59 W.

S W SE

N W NE
SEC. 31

Test No. 4, A-6110

5681.20 P.I.

Top of present Subgrade as constructed by County Forces.

+0.490%

+0.269%

400' V.C.
N.P.S. D = 1300'

80 70 60

5680 5670 5660

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 0002(6)	40	

NE NE
SEC. 31

NW NW
SEC. 32

GRAZING LAND

GRAZING LAND

SW NW
SEC. 32

1470+20 - Regd Road Approach Lt.

1470+50 - Regd Road Approach Rt.

Present R.O.W.

1460 1465 1470 1475 1480 1485 1490

S 54° 20' E

S 54° 20' E

50'

50'

P.O.T. 1465+00

P.O.T. 1481+00

P.C. 1490+94.9

1472+04.7 S.W. Cor. Sec. 32

S 04° 09' W
426.37'

END PRESENT GRADING SECTION

Test No. 4, A-6(10)

Top of present Subgrade as constructed by County Forces.

5688.20 P.I.

5681.53 P.I.

-0.269%

-0.45%

-1.695%

400' V.C.
N.P.S.D. = 1240'

400' V.C.
N.P.S.D. = 805'

5690

5680

5670

EXCAV.	
EMBANK	
EMBANK. FACTOR	
EMBANK X FACTOR	
STA. YD. O'HAUL	
YD. MI. O'HAUL	
BORROW	
BORROW SOURCE	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S0002(6)	41	

P.C. 1490+94.9

1490

S 4° 20' E

SE 1/4, NW 1/4

1495

1495-50- Remove Timber Bridge
Reg'd 84'x 12' Cross Culvert and
Ditches (W-12') (Stock Pass)

GRAZING LAND

Δ 40° 00' LT.
D 2°
T 1042.8'
L 2000.0'
R 2885.0'
HOR. S.D. => 1300'

1500

1503+15 - Fill low spot Rt. & Lt.

1504+15 - Relay 30' of 48" C.M.P. from Sta. 1200+00 as Cross Culvert & Ditches (W-3')

1505

1506+00 - Fill Low Spot Rt. & Lt.

S. 89° 54' W.

Present R.O.W.

1510

1516+00 - Reqt'd. Approach to Project.

N

SW 1/4, NE 1/4

P.I. 1510+94.9

To Kim

1515

N 85° 40' E

GRAZING LAND

SE 1/4, NE 1/4

P.C. 1518+80.0

1520

50'

50'

76' CATTLE GUARD & BW. GATE

30' X 42' C.M.P WITH HDWL.

S 0002(5)

S 0002(6)

PROJ. MARKER (in Place)

NW 1/4, SE 1/4
SEC. 32 T 33 S R 59W

NE 1/4, SE 1/4

P.I. 1501+37.7

Test No. 4, A-6(10)
L.L. = 38.0
P.I. = 14.2
%-200 = 90.6

Test No. 4

-1.695%

403' V.C.

67.17

65.62

65.96

FL. 66.0

FL. 5664.38

+0.7875%

FL. 63.0

BEGIN PRESENT GRADING SECTION

STA. 1516+00 = END S 0002(6)
BEG. S 0002(5)

5676.36 P.I.

5676.65 P.I.

Top of present Subgrade as constructed by County Forces.

-2.30%

76.22

73.88

68.60

700' V.C.
N.P.S.D. = 575'

5680

5670

5660

EKCAV.
EMBANK.
EMBANK. FACTOR
EMBANK. x FACTOR

7

1833
1.15
2108
15237

9391
1.15
3899
359

14

2201
1.15
2533
15978
15
2378