

COLORADO
DEPARTMENT OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED
FEDERAL AID PROJECT NO. F 027-1(1)
STATE HIGHWAY NO. 12 350
OTERO COUNTY

FEDERAL ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	F 027-1(1)	1	1

CONVENTIONAL SIGNS

CENTER LINE	PLAN SHEET	TITLE & SHEET
RIGHT OF WAY LINE	ROW MARKER	
COUNTY LINE		
TOWNSHIP OR RANGE LINE		
LAND LINES	SECTION LINE	1/4 SECTION LINE
RAILROAD	TITLE SHEET	PLAN SHEET
BARBED WIRE FENCE		
COMBINATION WIRE FENCE		
SNOW FENCE		
TELEPHONE & TELEGRAPH LINES		
POWER LINE		
DETOUR		
PRESERVE ROAD (Plan Sheets)		

- INDEX OF SHEETS
- SHEET NO. 1 SKETCH MAP, TITLE PAGE AND TABULATION OF LENGTH & DESIGN DATA
- 2 TYPICAL SECTION AND GENERAL NOTES
- 3 SUMMARY OF APPROXIMATE QUANTITIES AND GUARD POSTS
- 4 LIST OF STRUCTURES
- 5 SURFACING AND SUB-BASE PLANS
- 6 PIT LOCATION
- 7 STANDARD METHODS FOR SUPERELEVATION & WIDENING OF CURVES (CROWNED HIGHWAYS)
- 8 STANDARD SIDE APPROACH ROADS, FLARING, CUT SLOPE TREATMENT & WIDENING AT BRIDGES AND AT CREST OF GRADES
- 9 STANDARD MARKER POSTS AND BENCH MARKS
- 10 STANDARD TIMBER GUARD POSTS
- 11-12 STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS
- 13 STANDARD METHODS OF BACKFILL AROUND STRUCTURES
- 14 DELETED
- 15-28 ALIGNMENT PLAN AND PROFILE

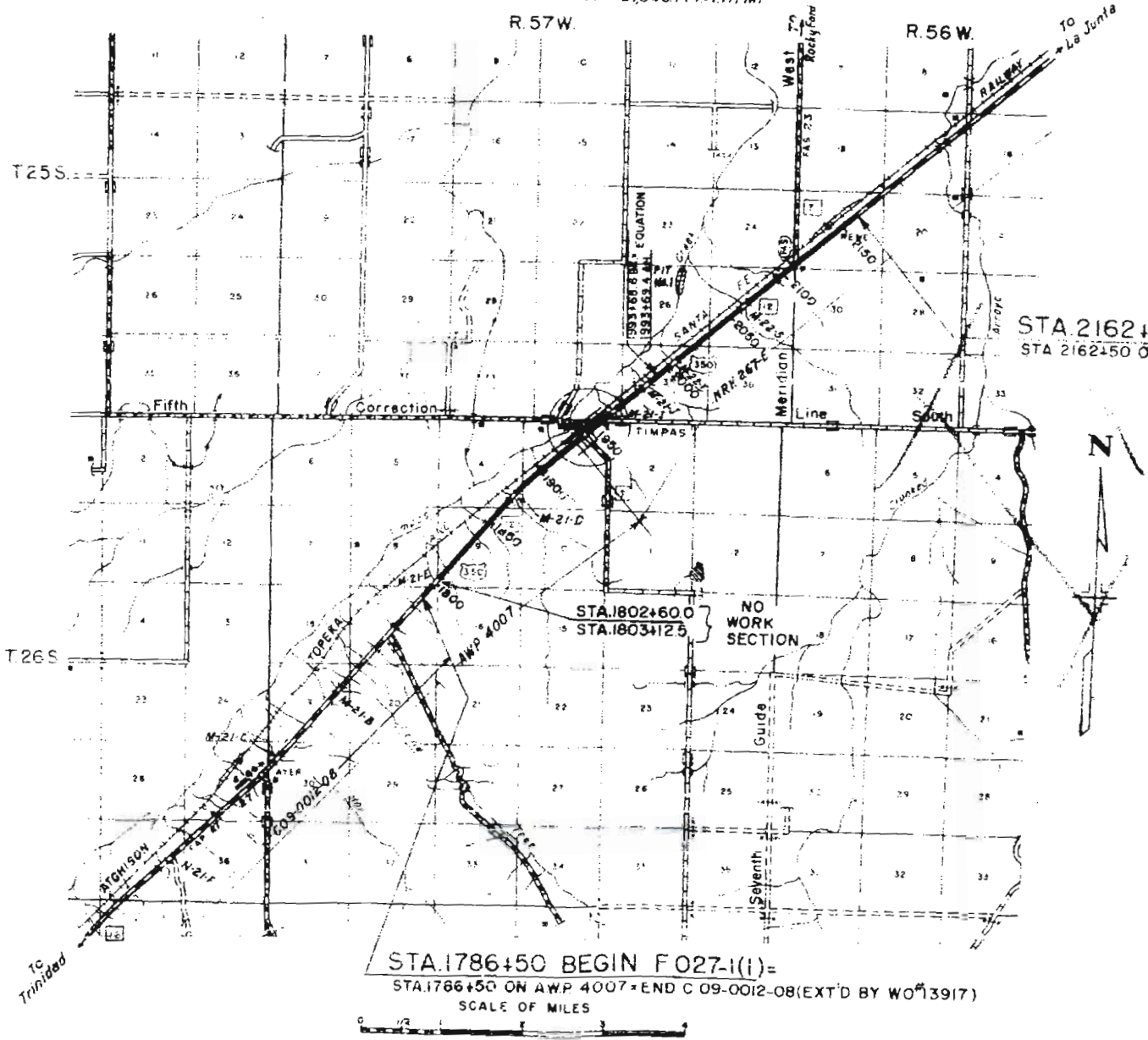
TABULATION OF LENGTH AND DESIGN DATA

STATION	ROADWAY LIN. FT.	MAJOR STRUCT'S LIN. FT.		LOADING
		ASPHALTIC PAVING	NO WORK SECTION	
1786+50-BEGIN F027-1(1)= 1786+50 ON AWP 4007- END C09-0012-08 (Extended by W013917)	16100			
1802+60.0 } Bridge STR M-21-E 1803+12.5 }	7173.5		52.5	H-15
1874+92.0 } Bridge STR M-21-D 1876+08.5 }	6291.5	116.5		H-15
1939+00 { END AWP 4007 BEG. N.R.H. 267 E	13600			
1952+60.0 } Bridge STR M-21-T 1953+29.2 }	3270.8	69.2		H-15
1986+00.0 } Bridge STR M-21-J 1986+47.5 }	721.1	47.5		H-15
1993+68.6 Bk. } EQUA 1993+69.4 Ah }	1068.6			
2004+38.0 } Bridge STR M-22-Y 2004+62.5 }	5700.5	24.5		H-15
2061+63.0 } Bridge STR M-22-S 2061+87.5 }	10062.5	24.5		H-15
2162+50-END F027-1(1)= 2162+50 ON N.R.H. 267 E				
TOTALS	37264.5	282.2	52.5	
SUMMARY		LIN. FT.	MILES	
F 027-1(1) Net Length		37546.7	7.111	
NO WORK SECTION		52.5	0.010	
F 027-1(1) Gross Length		37599.2	7.121	
DESIGN DATA				
Maximum Degree of Curve		1°00'		
Maximum Grade		3.50%		
Minimum N.P.S.D.-Horizontal		>1300'		
Minimum N.P.S.D.-Vertical		585'		
Maximum Design Speed		65 M.P.H.		

SCALES OF ORIGINAL DRAWINGS

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

GROSS LENGTH OF PROJECT: 37599.2 FT. 7.121 MI.
NET LENGTH OF PROJECT: 37546.7 FT. 7.111 MI.



SEE SPECIAL PROVISIONS FOR NOTICE TO BIDDERS

APPROVED

4-7-60

DATE

TERMINAL REVIEWED

DATE

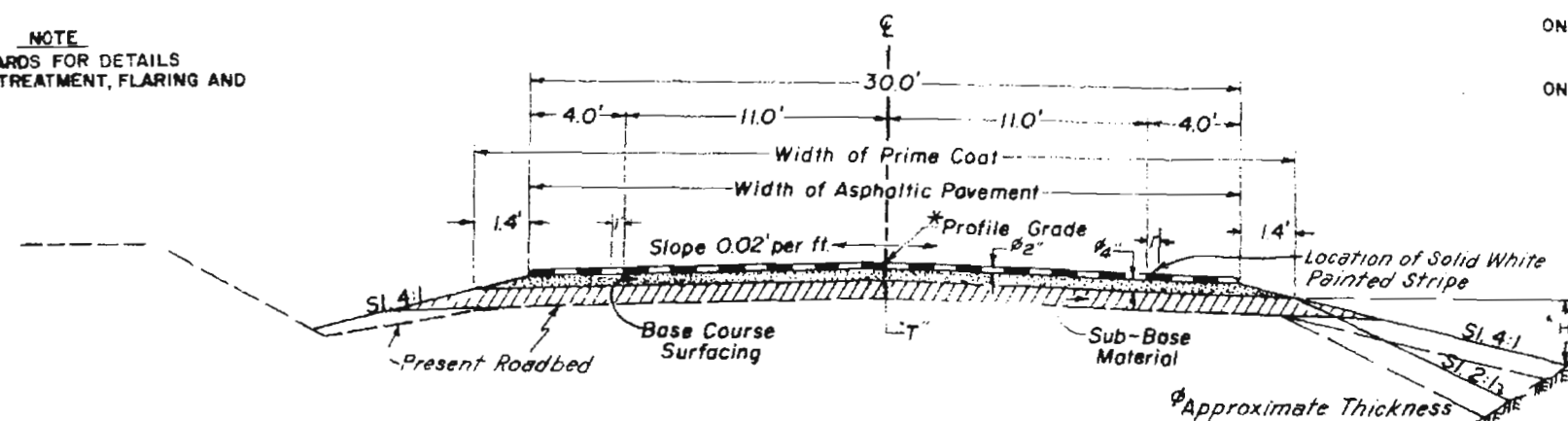
DIVISION

R.S.M.

FEDERAL ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	F 027-1(1)	2	

TYPICAL CROSS SECTION OF IMPROVEMENT

NOTE
SEE STANDARDS FOR DETAILS
OF CUT SLOPE TREATMENT, FLARING AND
WIDENING.



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'

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.

"T" = DESIGN THICKNESS OF SUB-BASE MATERIAL
ABOVE THE PRESENT ROADBED IS TO BE CONSTRUCTED
OF SUB-BASE MATERIAL AT LOCATIONS DESIGNATED IN SUB-BASE
MATERIAL TABULATION. ESTIMATED QUANTITIES INVOLVED IN
THIS OPERATION AND THICKNESS OF MATERIAL REQUIRED ARE
TABULATED IN THE SUB-BASE MATERIAL PLAN.

*The Profile Grade is to be the combined thickness
of Sub-base and Surfacing above the Present Road, except
at Bridge Approaches and at Approaches to Project New
Plant Mixed Asphaltic Wearing Surface to be carried
across all Bridges except at Sta. 1802+ after removal of
Present Oil Mat.

SURFACING MATERIALS SHALL BE PLACED IN SEPARATE
COURSES AT THE FOLLOWING RATES PER 100 LIN. FT. OF
ROADWAY:

ASPHALTIC PAVEMENT	12 TONS
BASE COURSE	65 TONS

GENERAL NOTES

THIS PROJECT IS TO BE CONSTRUCTED IN CONFORMITY WITH THE
STANDARD SPECIFICATIONS OF THE COLORADO DEPARTMENT OF HIGHWAYS,
ADOPTED JANUARY 1, 1958.

ALL QUANTITIES ON PRELIMINARY PLANS ARE TO BE CONSIDERED
APPROXIMATE ONLY.

FOR PRELIMINARY PLAN QUANTITIES OF ASPHALTIC ROAD MATERIALS
THE FOLLOWING RATES OF APPLICATION WERE USED:

PRIME COAT MC	(Roadway)	@ 0.40 GALS. PER SQ. YD.
" "	(Bridges)	0.10 " " "
PAVING ASPHALT (85-100 PENETRATION)	@ 5.8 % BY WEIGHT OF MIX	

RATE OF APPLICATION AND GRADE OF ASPHALTIC MATERIAL SHALL BE AS
DETERMINED BY THE ENGINEER AT TIME OF APPLICATION.

ALL CURVES ARE TO BE SUPERELEVATED AND WIDENED AS PROVIDED
BY THE STANDARD SUPERELEVATION SHEET INCLUDED WITH THE PLANS.

PRESENT GUARD POSTS AND PROJECT MARKERS ARE TO BE
REMOVED BY STATE FORCES

SIDE APPROACH ROADS, WHERE INDICATED IN THE LIST OF STRUCTURES,
SHALL BE PRIMED AND PAVED WITH 2" ASPHALTIC SURFACING 50 FEET OUT
FROM EDGE OF ASPHALTIC SURFACING OR TO THE RIGHT OF WAY LINE, WHICHEVER
IS LESS.

AT APPROACHES TO BRIDGES AND AT APPROACHES TO PROJECT, PRESENT
ROADBED TO BE EXCAVATED TO RECEIVE STABILIZING MATERIALS. EXCAVATED
MATERIAL TO BE USED TO WIDEN SHOULDERS WITHIN FREE HAUL LIMITS.

AT BRIDGE APPROACHES, THE ASPHALTIC SURFACING SHALL BE WIDENED TO
MEET THE CURBED WIDTH OF THE BRIDGE AND SHALL TAKE PLACE GRADUALLY OVER
A DISTANCE OF 300 FT. EACH WAY FROM THE BRIDGE ENDS

COMPACTION REQUIRED ON THIS PROJECT WILL BE "MODIFIED"

IT IS ESTIMATED THAT SHAPING AND COMPACTING ROADBED WILL BE REQUIRED
THROUGHOUT THE PROJECT. ESTIMATED LENGTH IS 7.1 MILES

FEDERAL ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	F027-1(1)	3	

TIMBER GUARD POSTS

STATION	SIDE	SPACING	NO	
1797+10	Lt. & Rt	Culvert	2	
1801+80 - 1803+93	" "	Bridge	20	
1811+00	" "	Culvert	2	
1817+00	" "	"	2	
1837+00	" "	"	2	
1850+00	" "	"	2	
1874+28 - 1876+74	" "	Bridge	20	
1877+83.7 - 1893+53.4	Lt	1° Curve	15	
1883+00	Rt	Culvert	1	
1895+57 - 1898+57	Lt. & Rt.	100'	8	
1911+00	" "	Culvert	2	
1920+82	" "	"	2	
1925+20	" "	"	2	
1930+40	" "	"	2	
1933+62	" "	"	2	
1940+42	" "	"	2	
1951+90 - 1953+99	" "	Bridge	20	
1954+74	" "	Culvert	2	
1978+00	" "	"	2	
1985+36 - 1987+11.5	" "	Bridge	20	
2003+74 - 2005+26.5	" "	"	20	
2060+99 - 2062+51.5	" "	"	20	
2091+75	" "	Culvert	2	
2134+00	" "	"	2	
2141+00	" "	"	2	
TOTAL			176	

SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO.	ITEM	UNIT		PROJECT TOTALS
11	Reset Mail Boxes	Lump Sum		•
11	Remove Asphaltic Surfacing	Sq. Yd.		840
13	Unclassified Excavation	Cu. Yd.		6,000
13	Stripping	Cu. Yd.		500
17	Wetting	M. Gal.		2800
18	Ton Mile Overhaul	Ton Mi.		372,500
23	Sub-Base Material (Class 2)	Ton		78,400
26	Gravel or Crushed Rock Surfacing (Grading C)	Ton		26,500
29	Asphalt (85-100 Penetration) Additive	Ton		910
30	Asphaltic Road Material MC	Gal.		55,500
32	Plant Mixed Asphaltic Surfacing	Ton		14,170
53	18" Corrugated Metal Culvert Pipe	Lin. Ft.		52
4	Timber Guard Posts	Each		176
119	Shaping and Compacting Roadbed	Mile		7.1
STATE FORCES				
81	Project Markers	Each		2
STATE FORCES (Non-Fed. Aid)				
	Signing and Striping Entire Project	Lump Sum		•

COLORADO STATE HIGHWAY DEPARTMENT
S H D Form 125
JANUARY 1982

FED. ROAD DIVISION NO.	DISTRICT	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9.	COLO.	F 027-1(1)	4	

* Quantities included in Sub-Base and/or Surfacing Plan.

FEDERAL ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	F 027-1(1)	5	

It is estimated that material for Sub-Base and Surfacing for the Project is available in the vicinity of the Pit indicated in the following tabulations. Estimated quantities involved in these operations are shown below.

Alteration of the Sub-Base Plan and/or Surfacing Plan as here outlined will be allowed only on written permission from the Department.

SURFACING PLAN

MATERIAL TO BE PLACED (STATIONS)	SOURCE QUANTITY AVAILABLE 8 "R" VALUE	QUANTITY		OVERHAUL	
		TONS USED		TON MILE	
		PLANT MIX	BASE COURSE GRADED C	PLANT MIX	BASE COURSE
1786+50 to 1802+60	Pit No. 1	596	1,111	3,427	6,387
1803+12.5 to 1874+92	1.1 Mi. to Sta 2040+00	2657	4954	13,036	24,306
1874+92 to 1876+08.5	R=85	42	---	177	---
1876+08.5 to 1952+60	150,000 Cu Yds.	2837	5280	9852	18,373
1952+60 to 1953+292		22	---	61	---
1953+292 to 1986+00		1,611	2,257	2,946	5,490
1986+00 to 1986+47.5		15	---	32	---
1986+47.5 to 1993+68.6 bk		267	498	546	1,019
1993+68.6 bk to 2004+38		396	737	743	1,383
2004+38 to 2004+63.5		3	---	15	---
2004+63.5 to 2040+00		1,309	2,441	1,879	3,503
2040+00 to 2061+63		80	143	1,046	1,049
2061+63 to 2061+87.5		8	---	18	---
2061+87.5 to 2061+50		3,724	6,944	3,188	10,133
Estimated For:					
Approaches to Project		38	70	178	327
Road Approaches		143	496	415	1,545
Bridge Widening		30	54	155	216
Roadway Widening (Sta. 1931.5)		61	112	193	354
TOTALS		14,105	26,441	43,892	82,045

NOTE: On these Bridges the Plant Mix is to be used. The material is to be placed in the subgrade and the base course is to be placed on top of the subgrade. The material is to be placed in the subgrade and the base course is to be placed on top of the subgrade. The material is to be placed in the subgrade and the base course is to be placed on top of the subgrade.

SUB-BASE PLAN

MATERIAL TO BE PLACED (STATIONS)	SOURCE QUANTITY AVAILABLE 8 "R" VALUE	THICKNESS INCHES *	QUANTITY		OVERHAUL	
			TONS USED		TON MILE	
			CLASS-2		CLASS-2	
1786+50 to 1802+60	Pit No. 1	6	1,932		11,107	
1803+12.5 to 1812+50	1.1 Mi. to Sta 2040+00	6	1,125		6,185	
1812+50 to 1852+50		11	8880		44,665	
1852+50 to 1867+50	R=82	9	2,640		11,904	
1867+50 to 1874+92.0	150,000 Cu Yds.	12	1,826		7,846	
1876+08.5 to 1882+50		12	1,578		6,539	
1882+50 to 1947+50		10	12,935		44,850	
1947+50 to 1952+60		13	1,377		3,861	
1953+292 to 1957+50		13	1,137		3,073	
1957+50 to 1977+50		9	3,520		8,705	
1977+50 to 1986+00		12	2,091		4,607	
1986+47.5 to 1992+50		12	1,483		3,050	
1992+50 to 1993+68.6 bk		9	209		416	
1993+68.6 bk to 2004+38.0		9	1,881		7,529	
2004+62.5 to 2017+50		9	2,266		3,135	
2017+50 to 2040+00		6	2,700		3,546	
2040+00 to 2042+50		6	300		338	
2042+50 to 2057+50		9	2,640		3,404	
2057+50 to 2061+63		12	1,016		1,494	
2061+87.5 to 2067+50		12	1,384		4,170	
2067+50 to 2092+50		9	4,400		8,174	
2092+50 to 2147+50		6	6,600		17,260	
2147+50 to 2159+50		9	2,112		6,864	
2159+50 to 2162+50		12	738		2,503	
Estimated For:						
Roadway Widening (Sta. 1931.5)			281		884	
Bridge Widening			110		533	
Irregularities in Subgrade			10,074		31,687	
Road Approaches			1,111		3,537	
TOTALS			78,345		246,466	

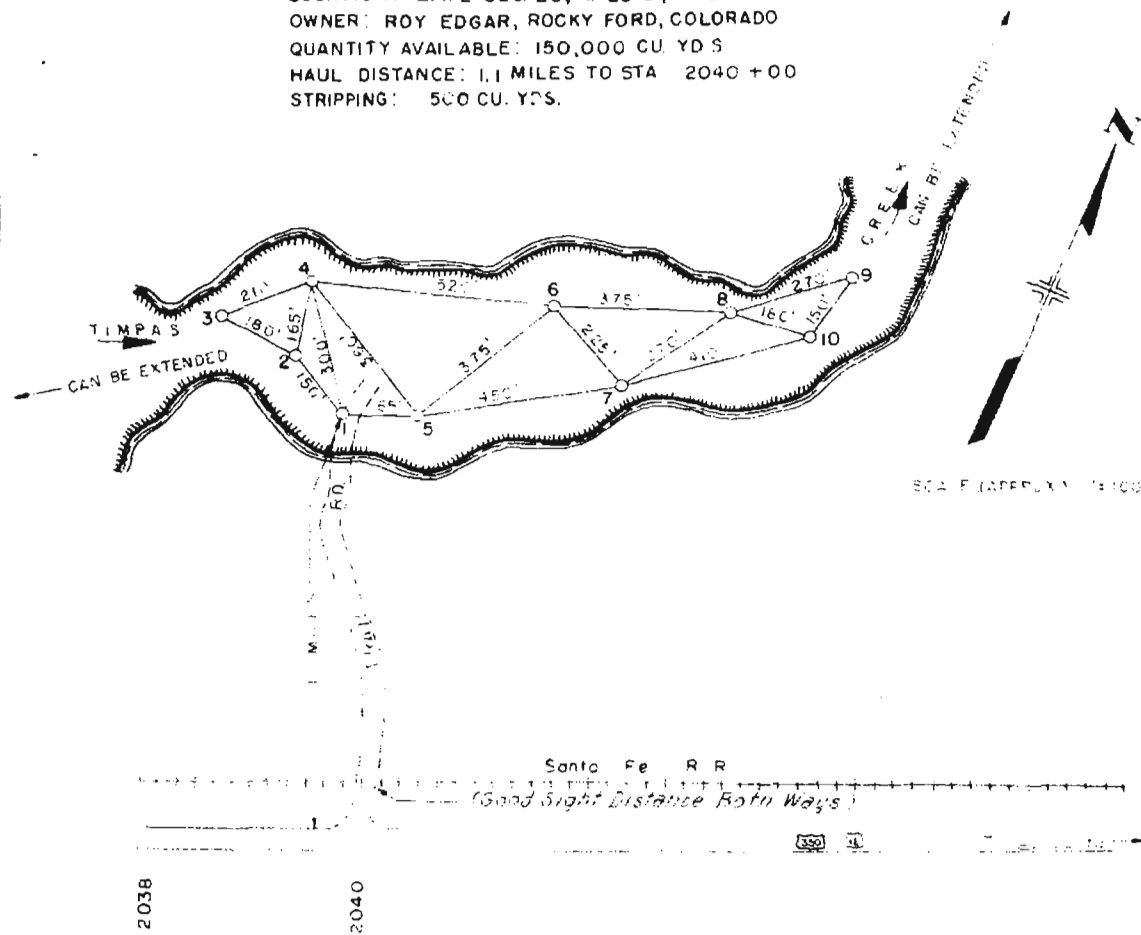
* Based on Curve "C" of Design No 12

PIT LOCATION

FEDERAL ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	F 027-1(1)	6	

PIT NO. 1

PROPOSED USE: Sub-Base, Surfacing and Structure Backfill
 LOCATION: E. 1/2 SEC. 26, T. 25 S., R. 57 W.
 OWNER: ROY EDGAR, ROCKY FORD, COLORADO
 QUANTITY AVAILABLE: 150,000 CU. YD S
 HAUL DISTANCE: 1.1 MILES TO STA 2040 + 00
 STRIPPING: 500 CU. YDS.



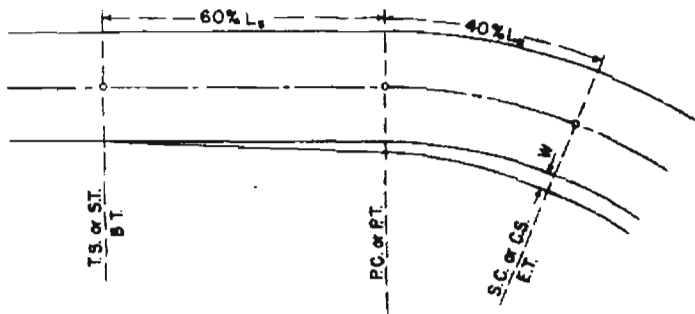
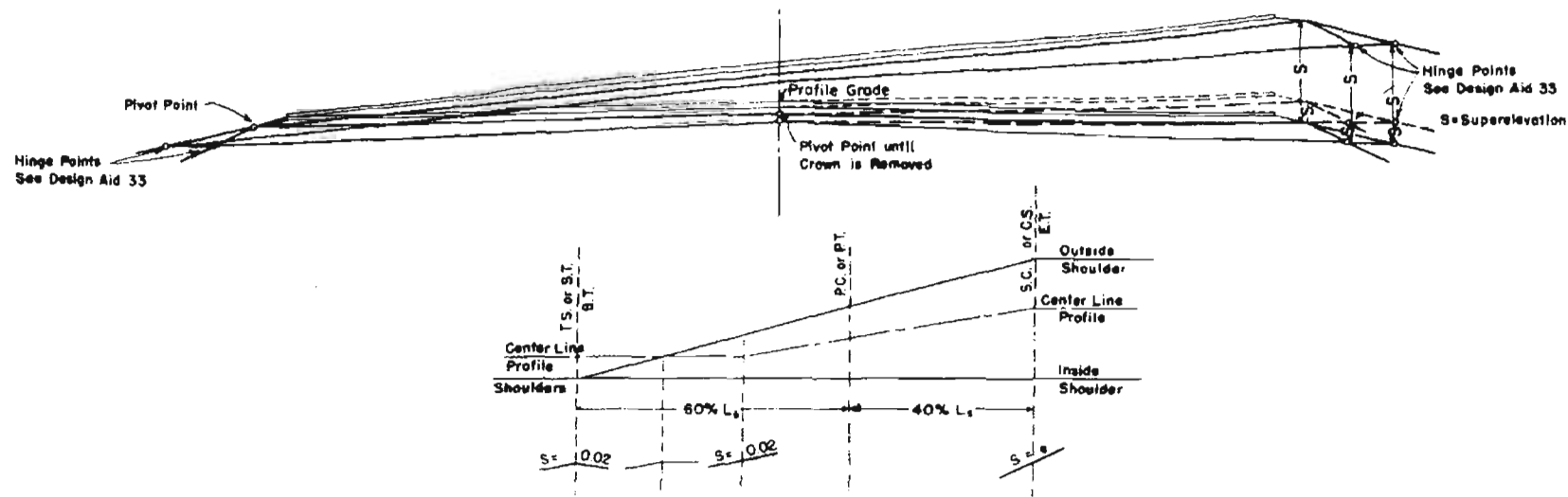
MAXIMUM SIZE OF MATERIAL — 10"
 MATERIAL OVER 3 INCHES — 2%
 MATERIAL OVER 5 INCHES — 2%
 MATERIAL OVER 7 INCHES — 2%

LOG OF PIT — — — SAMPLE NO. 1167

TEST NO.	DEPTH IN FEET	DESCRIPTION OF TEST HOLE MATERIAL
1	0.0'-12.0'	SAND & GRAVEL
2	0.0'-12.0'	"
3	0.0'-12.0'	"
4	0.0'-10.0'	"
5	0.0'-12.0'	"
6	0.0'-12.0'	"
7	0.0'-12.0'	"
8	0.0'-12.0'	"
9	0.0'-12.0'	"
10	0.0'-12.0'	"

STANDARD M-1-D

FEDERAL ROAD RES. NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	F-0274(1)	7	



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.

TABLE I
MAXIMUM SPEEDS & REQUIRED TRANSITION OR SPIRAL LENGTHS
FOR TWO LANE CROWNED HIGHWAYS

Degree of Curve	Maximum Superelevation = 0.08			Maximum Superelevation = 0.12		
	Super Rate Ft./Ft.	Maximum Design Speed M.P.H.	Minimum Transition or Spiral Length	Super Rate Ft./Ft.	Maximum Design Speed M.P.H.	Minimum Transition or Spiral Length
0° 15'	0.020	> 70	100'	0.020	> 70	100'
0° 30'	0.020	> 70	100'	0.020	> 70	100'
0° 45'	0.021	> 70	100'	0.021	> 70	100'
1° 00'	0.022	> 70	100'	0.022	> 70	100'
1° 30'	0.042	> 70	150'	0.043	> 70	150'
2° 00'	0.056	> 70	200'	0.057	> 70	200'
2° 30'	0.069	> 70	250'	0.071	> 70	250'
3° 00'	0.077	> 70	300'	0.086	> 70	300'
3° 30'	0.080	70	350'	0.100	> 70	350'
4° 00'	0.080	68	350'	0.114	70	400'
5° 00'	0.080	60	300'	0.120	66	400'
6° 00'	0.080	55	300'	0.120	60	350'
7° 00'	0.080	52	300'	0.120	56	350'
8° 00'	0.080	49	300'	0.120	53	350'
9° 00'	0.080	46	250'	0.120	50	300'
10° 00'	0.080	44	250'	0.120	48	300'
11° 00'	0.080	42	250'	0.120	46	300'
12° 00'	0.080	41	250'	0.120	44	300'
13° 00'	0.080	39	200'	0.120	42	300'
14° 00'	0.080	38	200'	0.120	41	250'
15° 00'	0.080	37	200'	0.120	39	250'
16° 00'	0.080	36	200'	0.120	38	250'
17° 00'	0.080	35	200'	0.120	37	250'
18° 00'	0.080	34	200'	0.120	36	250'
19° 00'	0.080	33	200'	0.120	35	250'
20° 00'	0.080	32	200'	0.120	34	250'
21° 00'	0.080	31	200'	0.120	34	250'
22° 00'	0.080	30	200'	0.120	33	250'
23° 00'	0.080	30	200'	0.120	32	250'
24° 00'	0.080	29	150'	0.120	32	200'
25° 00'	0.080	29	150'	0.120	31	200'
26° 00'	0.080	28	150'	0.120	30	200'
27° 00'	0.080	28	150'	0.120	30	200'

NOTE—Plains Areas use 0.12 Superelevation.
Mountainous Areas & areas where icing conditions frequently exist, use 0.08 Superelevation.

TABLE II
MINIMUM SUPERELEVATION RATES & TRANSITION LENGTHS
TO BE USED WHEN MAXIMUM SPEED IS FIXED, AS IN URBAN ROADWAYS

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.	
	Minimum Super Rate Ft./Ft.	Minimum Transition or Spiral	Minimum Super Rate Ft./Ft.	Minimum Transition or Spiral	Minimum Super Rate Ft./Ft.	Minimum Transition or Spiral	Minimum Super Rate Ft./Ft.	Minimum Transition or Spiral	Minimum Super Rate Ft./Ft.	Minimum Transition or Spiral	Minimum Super Rate Ft./Ft.	Minimum Transition or Spiral	Minimum Super Rate Ft./Ft.	Minimum Transition or Spiral
0° 15'	Normal Crown		Normal Crown		Normal Crown		Normal Crown		Normal Crown		Normal Crown		N.C.	
0° 30'													0.020	100'
0° 45'									0.020	100'	0.020	100'	0.020	100'
1° 00'					0.020	100'	0.020	100'	0.020	100'	0.020	100'	0.020	100'
1° 30'			0.020	100'	0.020	100'	0.020	100'	0.020	100'	0.020	100'	0.020	100'
2° 00'	0.020	100'	0.020	100'	0.020	100'	0.020	100'	0.020	100'	0.022	100'	0.026	150'
2° 30'	0.020	100'	0.020	100'	0.020	100'	0.020	100'	0.022	100'	0.027	150'	0.033	150'
3° 00'	0.020	100'	0.020	100'	0.020	100'	0.021	100'	0.028	100'	0.032	150'	0.040	200'
3° 30'	0.020	100'	0.020	100'	0.020	100'	0.024	100'	0.031	150'	0.038	200'	0.046	200'
4° 00'	0.020	100'	0.020	100'	0.021	100'	0.028	100'	0.035	150'	0.043	200'	0.053	250'
5° 00'	0.020	100'	0.020	100'	0.027	100'	0.034	150'	0.044	200'	0.054	250'	0.079	300'
6° 00'	0.020	100'	0.024	100'	0.032	150'	0.041	150'	0.052	250'	0.076	300'	0.120	350'
7° 00'	0.020	100'	0.028	100'	0.037	150'	0.048	200'	0.064	250'	0.111	350'		
8° 00'	0.023	100'	0.032	100'	0.043	150'	0.055	200'	0.093	300'	0.120	350'		
9° 00'	0.028	100'	0.036	150'	0.048	200'	0.067	250'						
10° 00'	0.029	100'	0.040	150'	0.053	200'	0.091	250'						
11° 00'	0.031	100'	0.044	150'	0.059	200'	0.114	300'						
12° 00'	0.034	100'	0.048	150'	0.073	250'	0.120	300'						
13° 00'	0.037	100'	0.052	200'	0.092	250'								
14° 00'	0.040	150'	0.056	200'	0.111	250'								
15° 00'	0.043	150'	0.060	200'	0.120	250'								
16° 00'	0.046	150'	0.073	200'										
17° 00'	0.049	150'	0.087	200'										
18° 00'	0.051	150'	0.102	200'										
19° 00'	0.054	150'	0.116	250'										
20° 00'	0.057	150'	0.120	250'										
21° 00'	0.060	150'												
22° 00'	0.070	200'												
23° 00'	0.081	200'												
24° 00'	0.091	200'												
25° 00'	0.102	200'												
26° 00'	0.112	200'												
27° 00'	0.120	200'												

NOTE—Transition or Spiral Lengths are shown in the tables for 2 Lane Crowned Highways.
For 3 Lane Crowned Highways use 12 times the lengths shown, rounded to the nearest 50 feet.
For 4 Lane Crowned Highways use 15 times the lengths shown, rounded to the nearest 50 feet.

FORMULAE FOR TABLES
 $D = \frac{85,950(e+f)}{V^2}$
 $L_s = \frac{1.6 \times D \times V^3}{5730}$
D = Degree of Curve
e = Superelevation Rate—Ft. per Ft. of Width
f = Side Friction Factor (varies from 0.12 at 70 M.P.H. to 0.16 at 35 M.P.H.)
V = Velocity—M.P.H.
L_s = Spiral Length—Feet
Note for Table II—A straight line transition was used for e from 0.02 to 0.06

COLORADO
DEPARTMENT OF HIGHWAYS
METHODS FOR
SUPERELEVATION &
WIDENING OF CURVES
CROWNED HIGHWAYS

Designed by R.W.L.
Made by S.B.L.
Checked by L.E.O.
Approved by
Date June 1, 1958

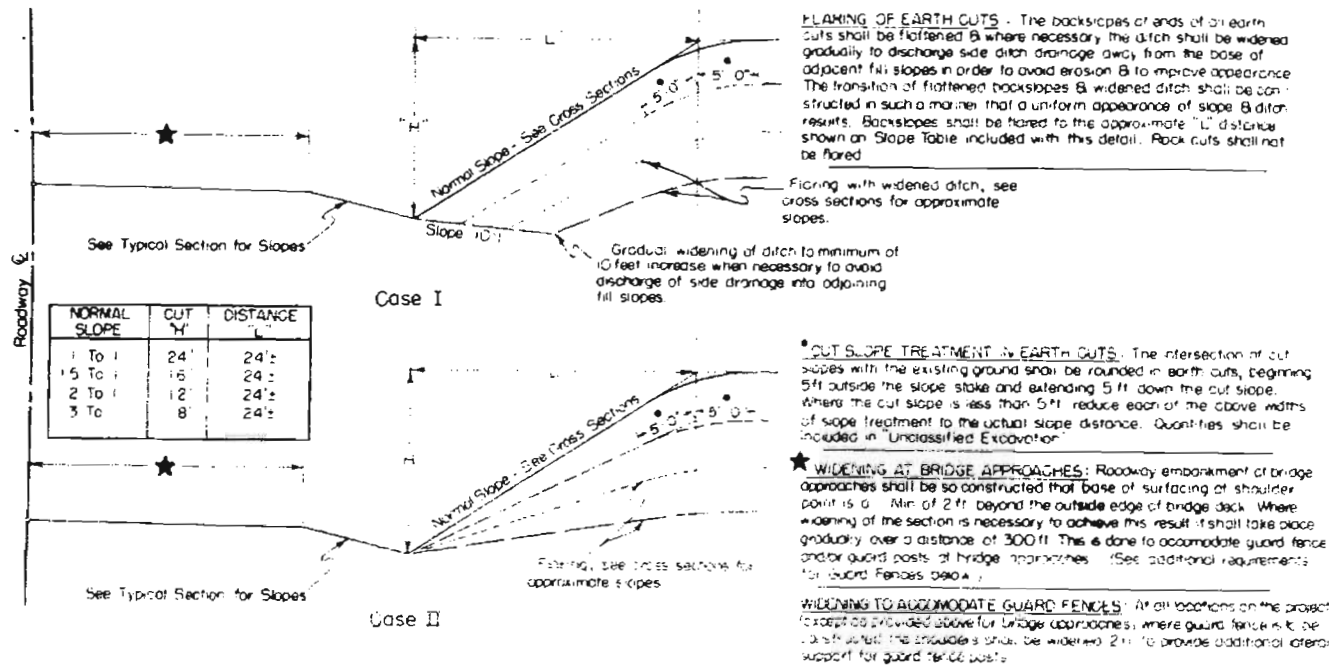
STANDARD SIDE APPROACH ROADS, FLARING, CUT SLOPE TREATMENT & WIDENING AT BRIDGES AND AT CREST OF GRADES

REVISIONS

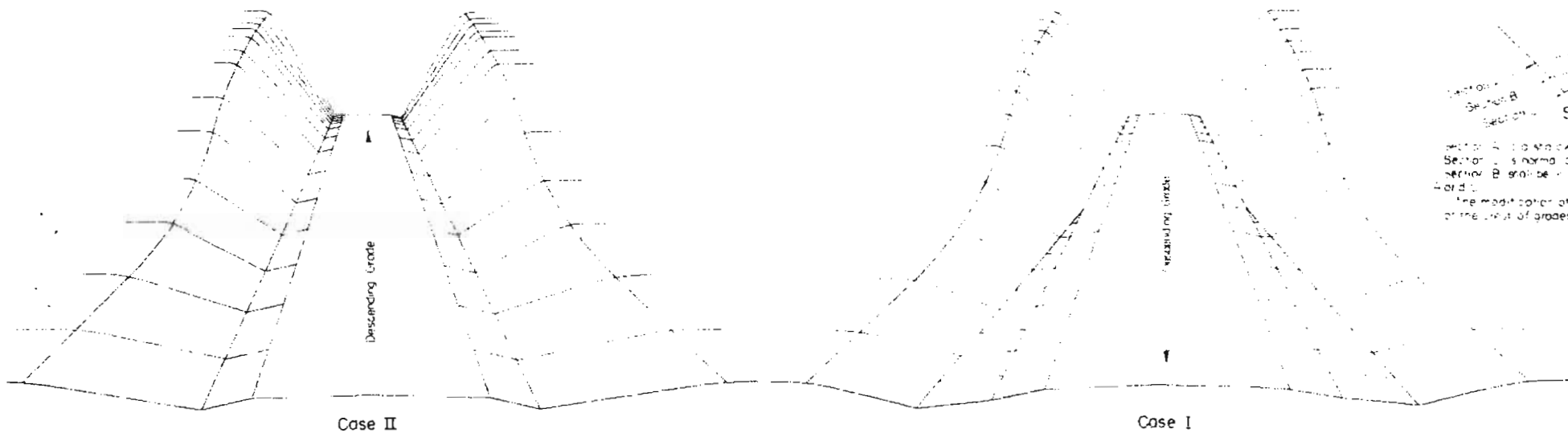
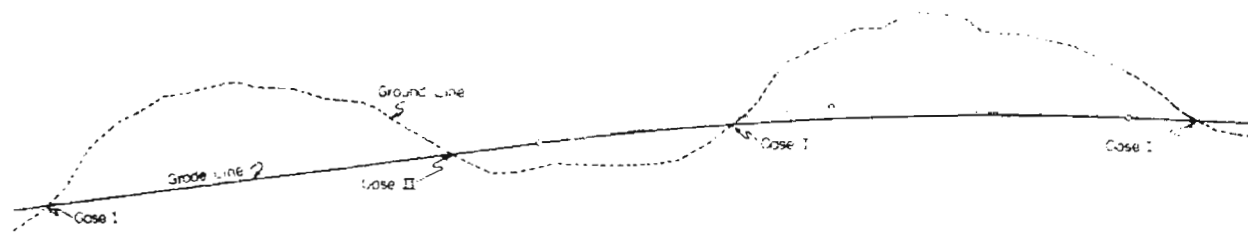
STANDARD M-2-EN

FED. ROAD REG. NO. 9 DIVISION COLO. 4021-N SHEET NO. 8 TOTAL SHEETS

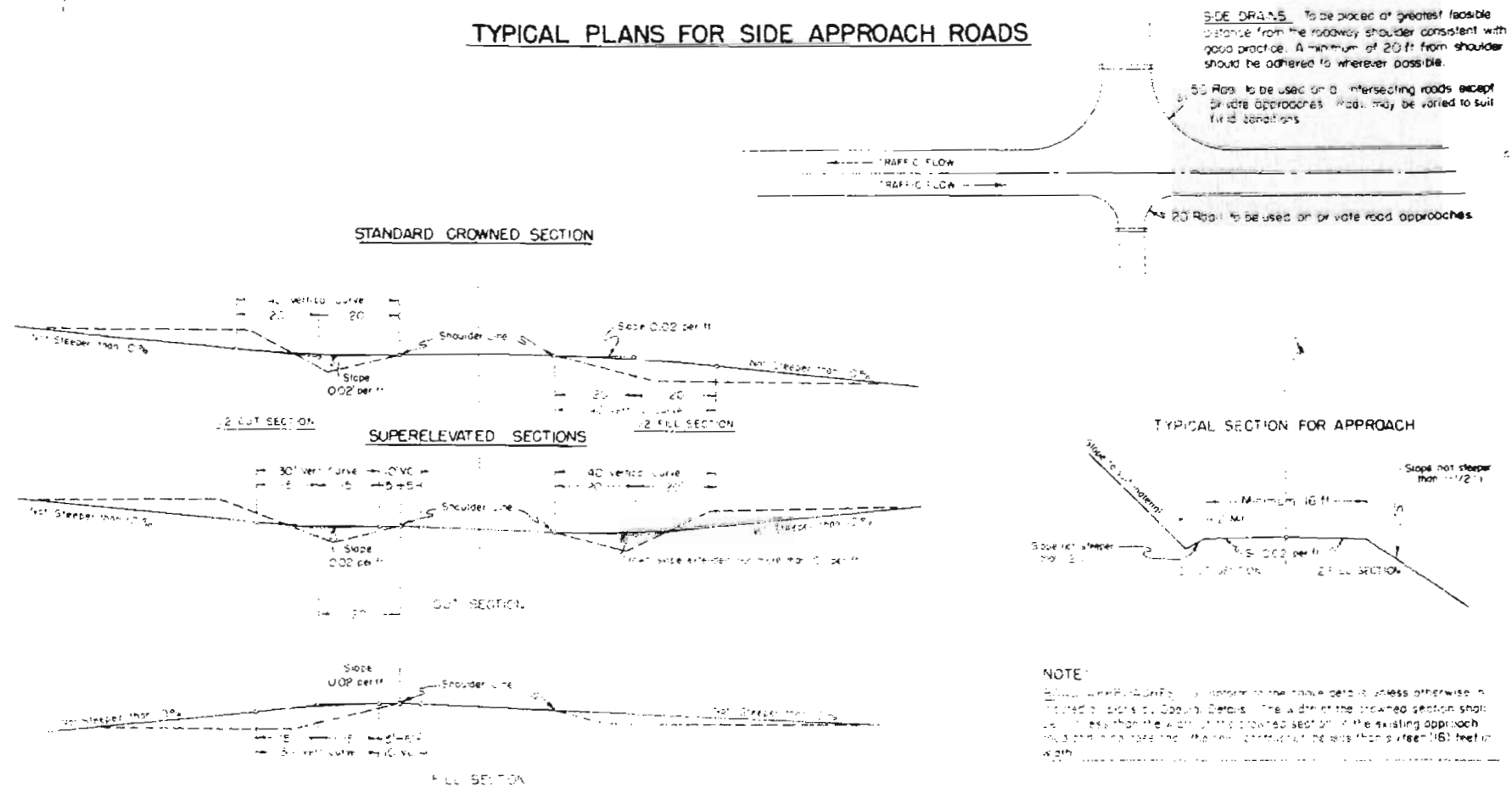
GENERAL DETAILS FOR FLARING OF EARTH CUTS, CUT SLOPE TREATMENT & WIDENING AT BRIDGES



PLAN OF FLARING IN EARTH CUTS

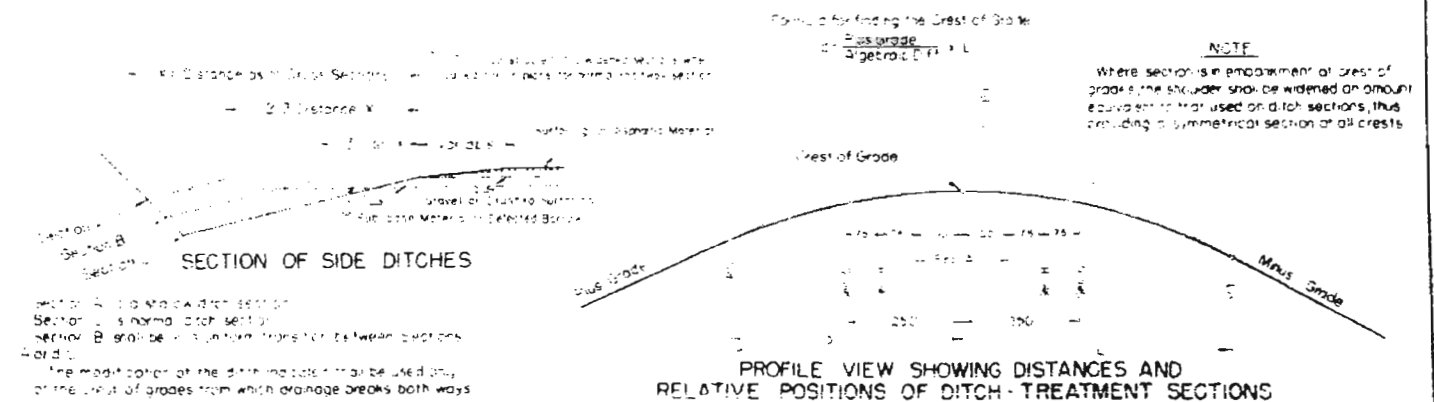


TYPICAL PLANS FOR SIDE APPROACH ROADS



DETAILS FOR DITCH & WIDENED SHOULDERS AT CREST OF GRADES

TO BE USED WHERE THE DISTANCE OF TRAIL OF GRADE IS 600 FT. OR LESS



GENERAL NOTES

1. 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
DEPARTMENT OF HIGHWAYS
STANDARD
SIDE APPROACH ROADS,
FLARING, CUT SLOPE TREATMENT,
AND WIDENING AT BRIDGES AND
AT CREST OF GRADES

Designed by A. Z. Made by S.M. BASH Checked by C.R.S. Approved by A. Julian Date: November 1, 1953

PROJECT MARKER POST

RIGHT OF WAY MARKER POST

STANDARD M-7-D

FEDERAL ROAD REG. NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	F002(1)	9	

Metal Sign Conforming to A.A.S.H.O. Manual on Uniform Traffic Control Devices. White Background, Black Letters & Symbols.

NOTES FOR PROJECT MARKER POSTS

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

Numbers and arrows shall show the proper numbers and directions of the projects each way from where the post is placed. Post is 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.

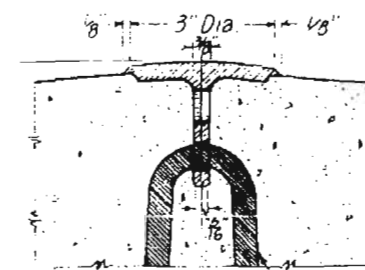
NOTES FOR R.O.W. MARKER POSTS

All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the project. 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. 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 field by the engineering party after marker is placed. 3/16 inch letters and figures to be used. Project designation on tablets shall be properly shown (i.e., 1 for Fed. Aid Interstate, F for Fed. Aid Primary, S for Fed. Aid Secondary, etc. & C for State Projects. See detail below).



SECTION B-B



SECTION A-A

DETAIL OF BRONZE TABLET FOR RIGHT OF WAY MARKER POST AND BENCH MARK

BENCH MARK

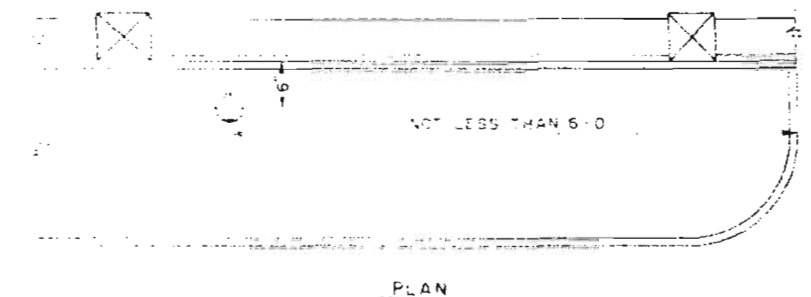
All work shall be done in accordance with Standard Specifications of the Colorado Department of Highways applicable to the project.

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 field by the engineering party after marker is placed. 3/16 inch letters and figures to be used. Project designation on tablets shall be properly shown (i.e., 1 for Fed. Aid Interstate, F for Fed. Aid Primary, S for Fed. Aid Secondary, etc. & C for State Projects. See details below).

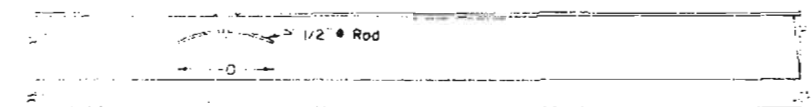
Bronze Bench Mark Tablets will be furnished by the Department at no expense to the Contractor.

Installation of Bronze Bench Mark Tablets will not be paid for directly, but shall be included in the price bid for Concrete.

Note: Where 2'-0" safety curbs are not used place marker in center of curb.



PLAN



ELEVATION



One marker to be placed on Bridges as shown. The station shown on marker shall be the center-line stationing directly opposite the marker.

COLORADO
DEPARTMENT OF HIGHWAYS
STANDARD
MARKER POSTS
AND
BENCH MARKS

Designed by R.E.L. Approved by J. L. Julian
Made by E.O. Date: Nov. 12, 1953
Checked by R.E.L.

STANDARD TIMBER GUARD POSTS

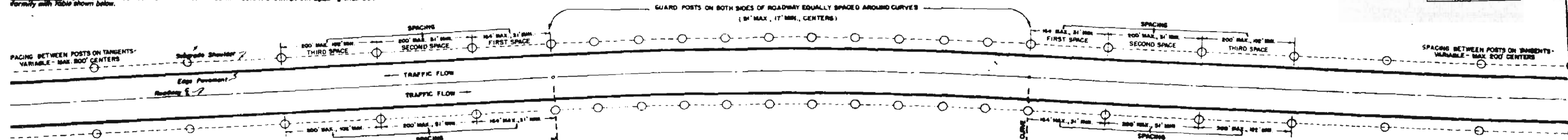
STANDARD M-19-E SPECIFICATIONS

FED. ROAD DISTRICT NO.	DIVISION	SHEET NO.	TOTAL SHEETS
5	COLO.	FOUR	10

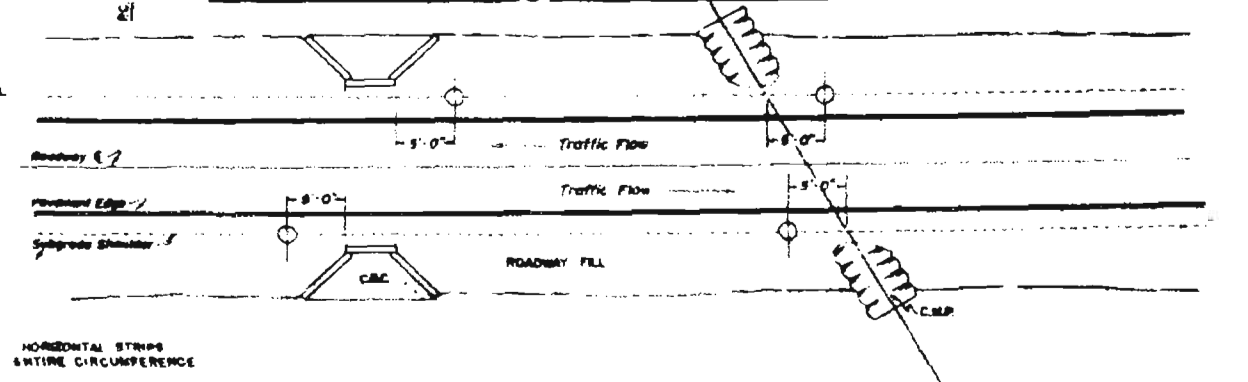
REVISIONS	
NO. Y-58	Added Spacing Table

Typical Installation on Curves & Tangents

INSTALLATION of guard posts on curves shall be in accordance with details shown below. Spacing shall be in conformity with Table shown below.



Plan View Showing Placement at Isolated Minor Structures



Pictorial View Showing Location at Isolated Minor Structures

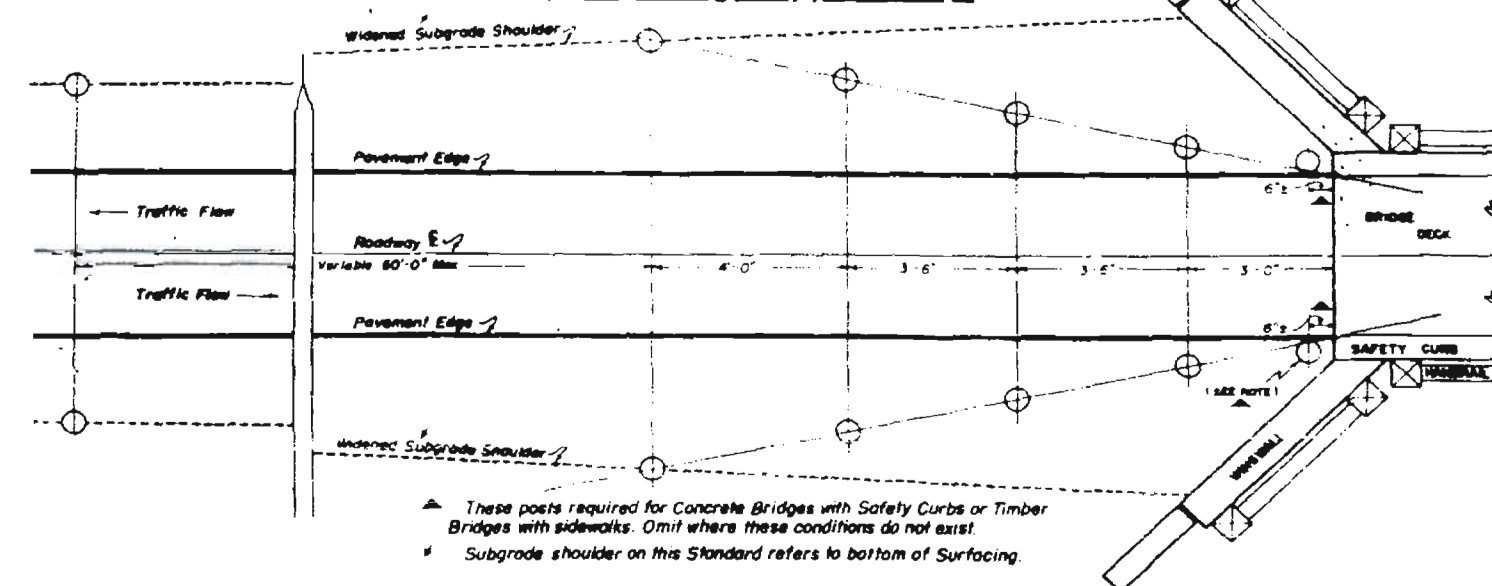


SPACING FOR DELINEATORS ON HORIZONTAL CURVES

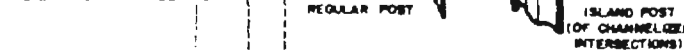
DEGREE OF CURVE	RADIUS	SPACING ON CURVE	SPACING IN ADVANCE OF AND BEYOND CURVE			DEGREE OF CURVE	RADIUS	SPACING ON CURVE	SPACING IN ADVANCE OF AND BEYOND CURVE		
			FIRST SPACE	SECOND SPACE	THIRD SPACE				FIRST SPACE	SECOND SPACE	THIRD SPACE
0°30'	11400.0'	129	200	200	200	8°00'	716.3'	33	59	99	198
1°00'	5730.0'	91	164	200	200	8°30'	674.1'	32	58	96	192
1°30'	3680.0'	74	133	200	200	9°00'	636.7'	31	56	93	186
2°00'	2865.0'	64	115	192	200	9°30'	603.2'	30	54	90	180
2°30'	2292.0'	56	104	174	200	10°00'	573.0'	29	52	87	174
3°00'	1910.0'	53	95	159	200	10°30'	545.7'	28	50	84	168
3°30'	1637.1'	49	88	147	200	11°00'	520.9'	28	50	84	168
4°00'	1432.5'	46	83	138	200	11°30'	498.5'	27	49	81	162
4°30'	1273.3'	43	77	129	200	12°00'	477.5'	27	49	81	162
5°00'	1146.0'	41	73	123	200	15°00'	362.0'	24	43	72	144
5°30'	1041.6'	39	70	117	200	18°00'	318.3'	22	40	66	132
6°00'	935.0'	37	67	111	200	21°00'	272.9'	20	36	60	120
6°30'	861.5'	36	65	108	200	25°00'	229.2'	19	34	57	114
7°00'	818.6'	35	63	105	200	30°00'	191.0'	17	31	51	102
7°30'	764.0'	34	61	102	200						

$S = 1.2 \sqrt{R + 16}$ 1-ST. SPACE = 1.85 2-ND. SPACE = 35 3-RD. SPACE = 65
NO SPACES TO EXCEED 200 FT.

Typical Installation At Bridge Approaches



TYPICAL POST INSTALLATION



INSTALLATION DETAILS OF REFLECTORIZED STRIPS

GENERAL NOTES

(Work By Contractor)
All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the project.
All posts shall be set and tamped in, plumb and firm, to the line and grades established by the Engineer.
INSTALLATION of Timber Guard Posts on Tangents, Curves and at Bridge Approaches shall be in conformity with details on this sheet. The number, location and spacing of Timber Guard Posts is shown on plans.

(Work By State Forces)
Reflective delineators shall be furnished and installed by State Forces after the Contractor has finished his operations.
Installation of reflective delineators shall be in accordance with the following: Wrap Around Reflective Sheeting Strips shall be installed horizontally one (1) sheet on all posts. Island posts shall have Wrap Around Reflective Sheeting Strips placed horizontally to cover entire circumference of Post.
On Divided Highways and Islands, Reflective Sheeting Strips shall be placed in a manner to obtain maximum visibility for the primary direction of travel. In all instances tests shall be made to insure the maximum effectiveness of reflective delineators.
All Traffic Islands shall be marked with Island Posts as indicated hereon.

COLORADO
DEPARTMENT OF HIGHWAYS

STANDARD
TIMBER GUARD POSTS

Designed by
Made by
Checked by
Approved by
Date: March 25, 1959

STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

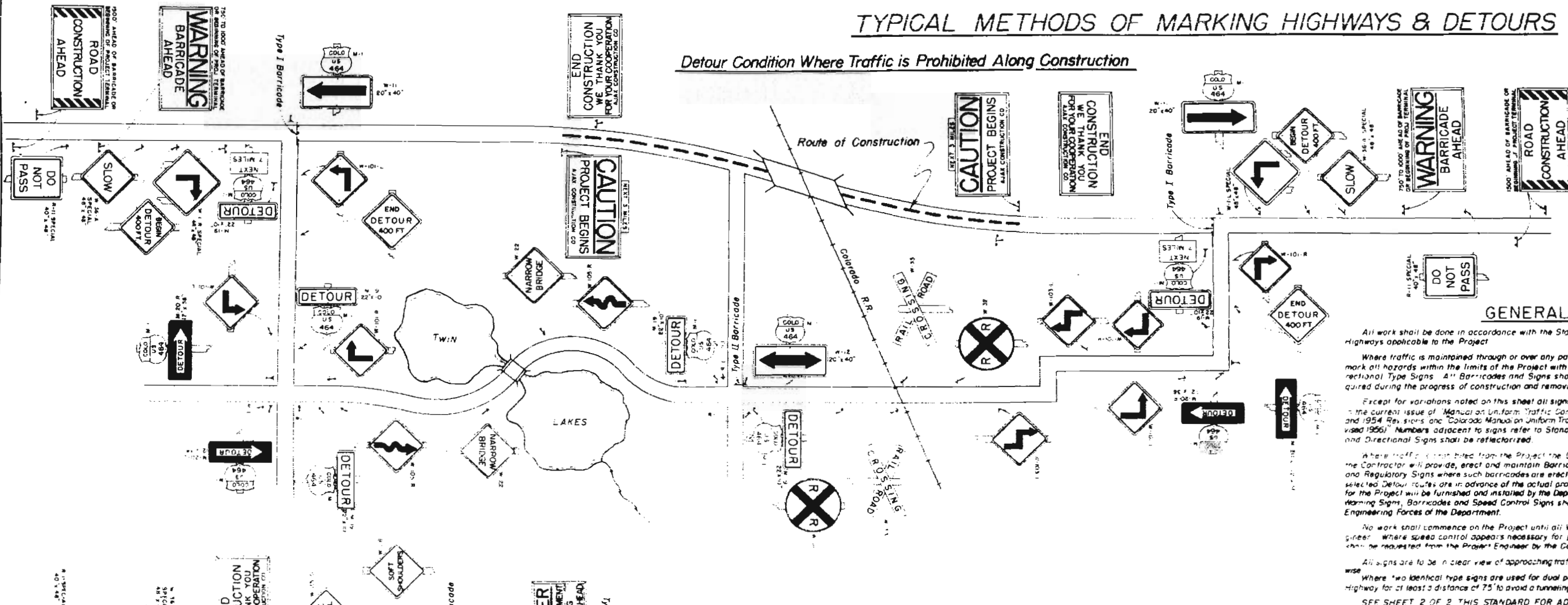
STANDARD M-29-C
(SHEET 1 OF 2 SHEETS)

FED. ROAD DIST. NO. DIVISION **FORM-10** SHEET NO. **11** TOTAL SHEETS

TYPICAL METHODS OF MARKING HIGHWAYS & DETOURS

REVISIONS		
10250	General	J.C.R.

Detour Condition Where Traffic is Prohibited Along Construction

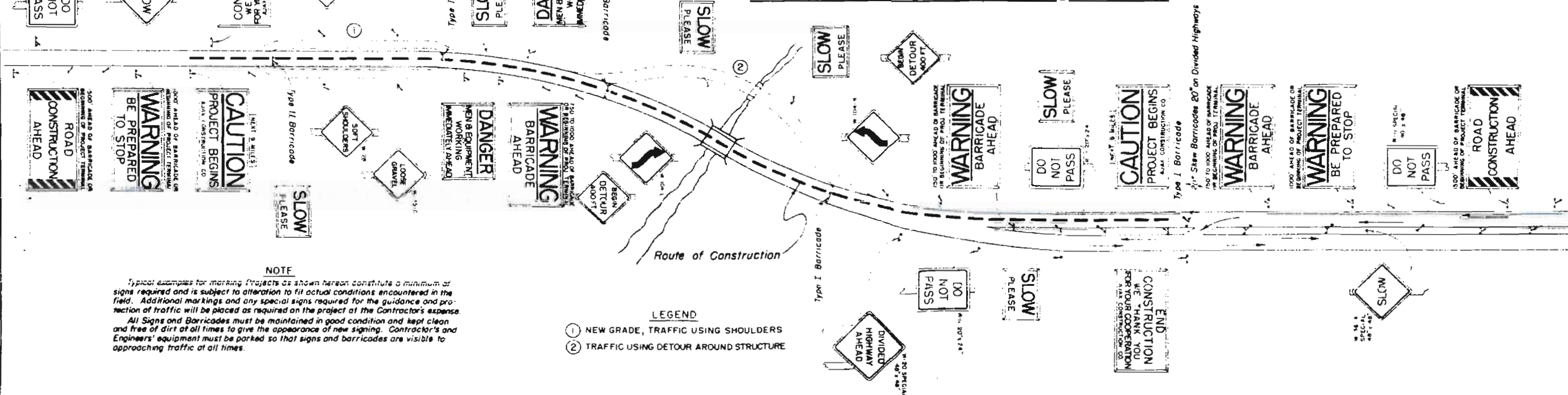


GENERAL NOTES

- 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 August 1946 and 1954 Revisions" and "Colorado Manual on Uniform Traffic Control Devices for Streets & Highways CDOH 1952 (Revised 1956)". Numbers adjacent to signs refer to Standards in the manual. Standard Warning, Regulatory and Directional Signs shall be reflectorized.
- Where traffic is diverted 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 traveling 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 are 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.

Condition Where Traffic is Permitted Along Construction



NOTE

Typical examples for marking Projects as shown hereon 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 at 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 signing. Contractor's and Engineers' equipment must be parked so that signs and barricades are visible to approaching traffic at all times.

LEGEND

- NEW GRADE, TRAFFIC USING SHOULDERS
- TRAFFIC USING DETOUR AROUND STRUCTURE

COLORADO
DEPARTMENT OF HIGHWAYS

Standard Roadway
Construction Traffic Signs

Designed by J.C.R. Approved by J.C.R.
Made by J.C.R. Engineer, Survey & Plans
Checked by Date: July 22, 1955

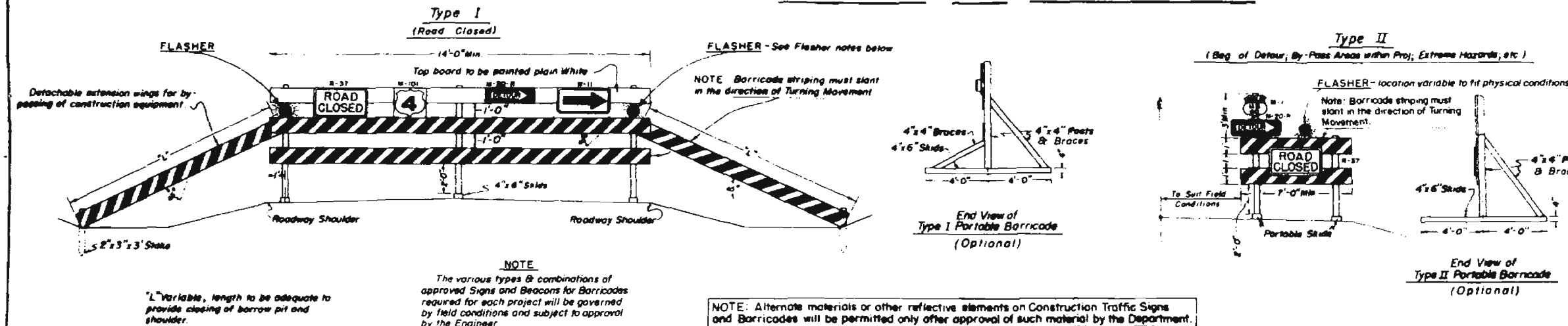
STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

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

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	FORTH	12	

Rev. 10-23-58 - J.C.R.

DETAILS OF BARRICADES



SPECIFICATIONS

PAINT - All paint and methods of painting shall be in conformity with the Standard Specifications of the Colorado Department of Highways for painting of Timber Structures.

STRIPING - Planking and Wings shall be painted with Maintenance Flat Black on both sides before adding any one of the following acceptable Reflective Strips:

- (a) Wide Angle White, 7" strip, spaced 7' apart
- (b) Flat Top Silver, 3" strip, spaced 7' apart
- (c) Direct Process of Glass Beads on Paint, 3" strip, spaced 7' apart

Stripes shall be applied on both front and back of barricades for opposite direction use. Division of traffic will be accomplished as follows:

- 1- Stripes for barricades diverting traffic to the left shall start on the right hand side of the lower plank and progress up to the left. Traffic diversion to the right will be just the opposite.
- 2- Stripes on barricades diverting traffic in both directions shall begin at the center of the lower plank and progress up in both directions.

TIMBER - All timber used shall conform to the Standard Specifications for Miscellaneous Untreated Timber.

Planking 1" x 12" or 2" x 12" S4S
Posts (Barricades) 6" x 6" S4S
Posts (Signs) 4" x 4" S4S

The Reflective Stripes on planking & wings on all barricades shall be reflectorized with White or Silver Reflective Material of a type acceptable to the Department.

Barricades may be either portable as shown or fixed with posts set into the ground.

All skids, braces and posts to be painted white and nailed together with No. 20d nails.

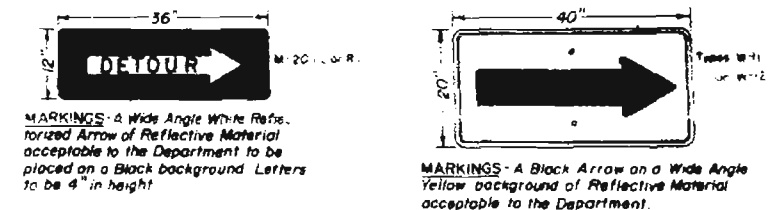
Bases to be weighted where necessary to provide stability.

When this method is used as described above or when white binder and beads are applied to planking and wings, alternate black stripes using Maintenance Flat Black paint shall be applied over the reflective material in the prescribed pattern. All measurements for striping are to be made along the horizontal axis of the board.

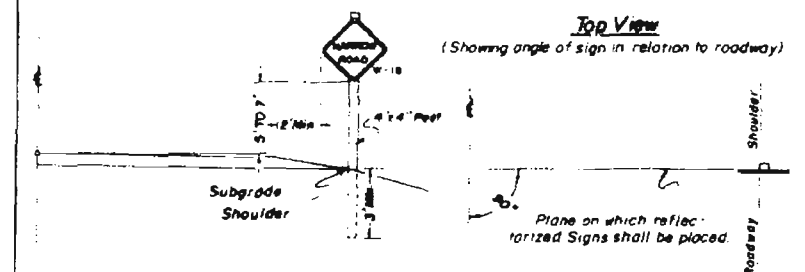
DETAILS OF CONSTRUCTION SIGNS



Details of Reflectorized Arrows



Position of Signs Relative to Roadbed & Hazards



DETAILS OF SIGN AND BEACON FABRICATION AND USAGE

Construction Signs "A" through and including "G" shall be made of 3/4" Plywood or other material after approval by the Department, and as per details above. Signs shall be reflectorized with reflective sheeting or other reflective materials of types approved by the Department.

CONSTRUCTION SIGN "A" - Wide Angle White background with painted Black lettering. Barricade stripes of 4" Wide Angle White placed over Black painted vertical stripes spaced as shown above. This sign is the first advance warning sign and shall be placed 1500 feet ahead of barricade or beginning of project terminal and on both sides of the travelled way in all cases.

CONSTRUCTION SIGN "B" - Apply top 23" strip of Flat Top Silver, reversed screened or sprayed with Transparent Red Paint allowing the words "WARNING" and 1-inch Underline to remain as Flat Top Silver. Balance of lettering painted Black on a 22" strip of Wide Angle White. This sign is the second advance warning sign and shall be placed 1000 feet ahead of barricade or beginning of project terminal and on both sides of the travelled way on divided highways and singly on two-lane highways.

CONSTRUCTION SIGN "C" - Apply top 23" strip of Flat Top Silver, reversed screened or sprayed with Transparent Red Paint allowing the words "WARNING" and 1-inch Underline to remain as Flat Top Silver. Balance of lettering painted Black on a 22" strip of Wide Angle White. This sign is the third advance warning sign in cases where two-lane roads are used and shall be placed 750 to 1000 feet ahead of barricade or beginning of project terminal and on both sides of the travelled way on divided highways and singly on two-lane highways.

REVERSE SIDES OF SIGNS "A", "B" and "C" - The word "SLOW" shall be painted Black and superimposed over a Yellow miniature W-36-A background panel. Balance of lettering shall be painted Black on a White background.

CONSTRUCTION SIGN "D" - Apply top 24 1/2" strip of Flat Top Silver, reversed screened or sprayed with Transparent Red Paint allowing the words "CAUTION" and 1 1/2-inch Underline to remain as Flat Top Silver. Balance of lettering painted Black on a 20 1/2" strip of Wide Angle White. This sign will be provided with a detachable 1" material board mounted on back of sign with 2" x 1/2" bolts. This board shall be painted White with Black lettering. (Indicate to the nearest Mile). This sign shall be placed to mark the Beginning of the Project. To be placed singly and may be placed opposite barricade if desirable.

CONSTRUCTION SIGN "E" - Apply top 17 1/2" strip of Flat Top Silver, reversed screened or sprayed with Transparent Red Paint allowing the words "DANGER" and 1-inch Underline to remain as Flat Top Silver. Balance of lettering painted Black on a 27 1/2" strip of Wide Angle White. The sign is of the hinged and fold type to facilitate the closing down of sign when the need is not prevalent. This sign shall be placed 500 feet ahead of the situation on hand.

CONSTRUCTION SIGN "F" - The words "END CONSTRUCTION" and "CONTRACTOR'S NAME" shall be painted Black on strips 22" and 6 1/2" respectively of Wide Angle White. For balance of lettering, apply 16 1/2" strip of Flat Top Silver, reversed screened or sprayed with Transparent Red Paint allowing "WE THANK YOU FOR YOUR COOPERATION" remaining in Flat Top Silver. This sign shall be placed to mark the Ending of the Project. To be placed singly and may be placed opposite barricade if desirable.

CONSTRUCTION SIGN "G" - The words "SLOW" and "PLEASE" shall be painted Black on a background of Wide Angle Yellow. This sign shall be used frequently within the limits of the Project. All of the preceding signs shall be fastened to 2" x 4" posts set 4 feet in the ground with a minimum of 3" x 1/4" nailing strips on the back. Bottom of sign to be not less than 36" above the ground.

FLAGMAN WARNING SIGN "H" - This sign shall be made of Plastic or other lightweight material, painted Red background with White lettering on the "STOP" side and painted Green background with White lettering on the "GO" side. Handle to be grooved on one side to indicate reading of sign to flagman. This sign will be used whenever flagmen are necessary. Sign to be reflectorized if used to stop traffic at night.

DETOUR WARNING SIGN "I" - To be of 3/8" (Min.) plywood or No. 16 (Min.) gauge metal with Black painted letters on a Wide Angle Yellow Background.

CONSTRUCTION SIGN "J" - 3/4" x 9" metal slides to be placed between "NEXT MILES" spaced so as to accommodate appropriate size numerals. Required numerals to be furnished by the Department and to be installed by the Contractor. Numerals calculated to the nearest Mile.

All material shall be sound and durable. Barricades, signs, symbols and lettering conforming to styles noted hereon will be of good workmanship and well maintained. Uneven lettering will not be accepted.

FLARES AND TORCHES shall be either of the oil burning or electrical type approved by the Department and shall be placed 3 feet to 5 feet ahead of the object to be illuminated. Particular care shall be taken to protect all signs and barricades from smoke and smudge arising from the use thereof.

FLASHERS used on Type I or II Barricade shall be of the Battery or Electrical Type and shall have no less than 12,566 sq. inches of light area (4" dia. lens). The illuminating element in a flashing amber beacon or signal shall be flashed continuously at a rate between 50 or 60 flashes per minute which will be clearly distinguishable to traffic. The duration in which Flashers will be left in operation will be governed by field conditions and subject to approval by the Engineer.

Alternate methods of processing signs or the substitution of symbols or other reflecting elements for painted symbols will be permitted only after approval of such methods or materials by the Department.

The Department shall furnish and install the following as required OUTSIDE THE LIMITS of the Project:

1. ROAD CONSTRUCTION AHEAD - Minimum 4
2. WARNING BE PREPARED TO STOP - Minimum 2
3. WARNING BARRICADE AHEAD - As Required
4. Standard Warning & Directional Signs - As Required

The Contractor shall furnish and install the following as required WITHIN THE LIMITS of the Project:

1. All Barricades - As Required
2. CAUTION PROJECT BEGINS - Minimum 2
3. DANGER MEN & EQUIPMENT WORKING IMMEDIATELY AHEAD - As Required
4. END CONSTRUCTION WE THANK YOU FOR YOUR COOPERATION - Minimum 2
5. SLOW PLEASE - As Required
6. Standard Warning & Directional Signs - As Required
7. Approved Directional Arrows & Regulatory Signs for Barricades - As Required
8. Flares and Torches as follows: Type I Barricade - Minimum 3; Type II Barricade - Minimum 1
9. Flashers - Type I Barricade - Minimum 2; Type II Barricade - As Required

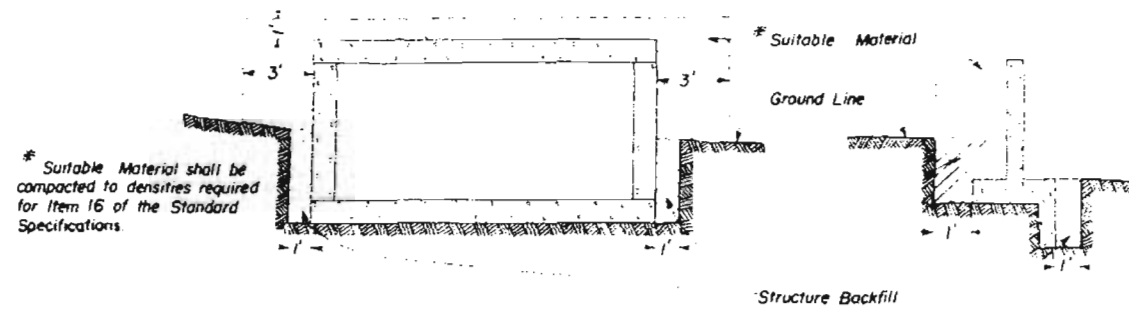
including Type I Barricade located immediately inside of Project terminal points.

COLORADO
DEPARTMENT OF HIGHWAYS

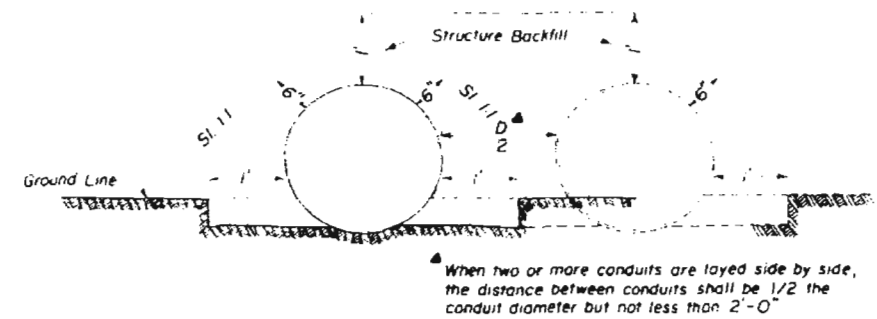
Standard Roadway
Construction Traffic Signs

Designed by J.C.R. Approved by J.C.R.
Made by J.C.R. Engineer, Surveyor & Planner
Checked by J.C.R. Date: July 22, 1955

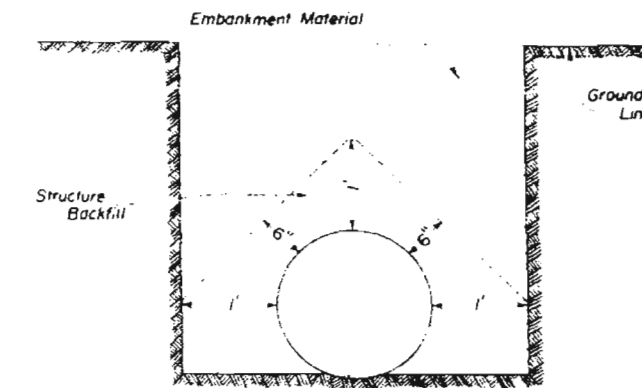
CONCRETE BOX CULVERTS & WINGWALLS



CIRCULAR CONDUIT

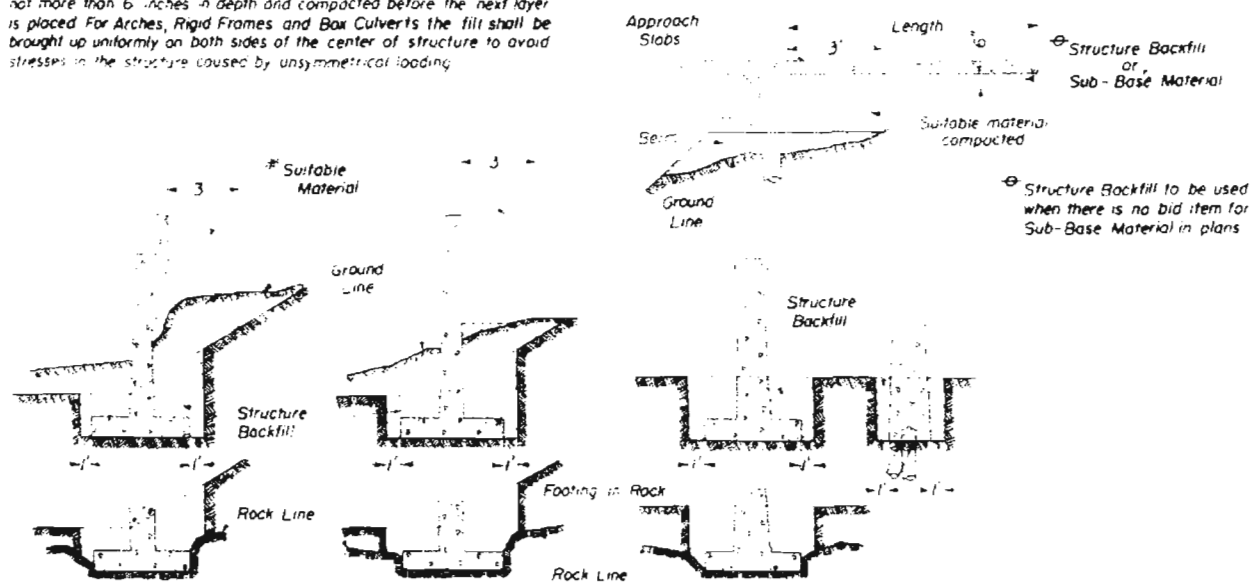


SIPHONS OR CONDUIT IN TRENCH

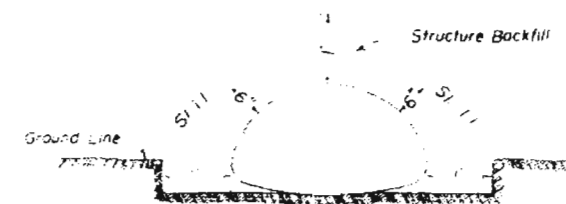


PIERS, ABUTMENTS, RETAINING WALLS ETC.

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, Rigid Frames 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.



ELLIPTICAL OR ARCH CONDUIT



GENERAL NOTES

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

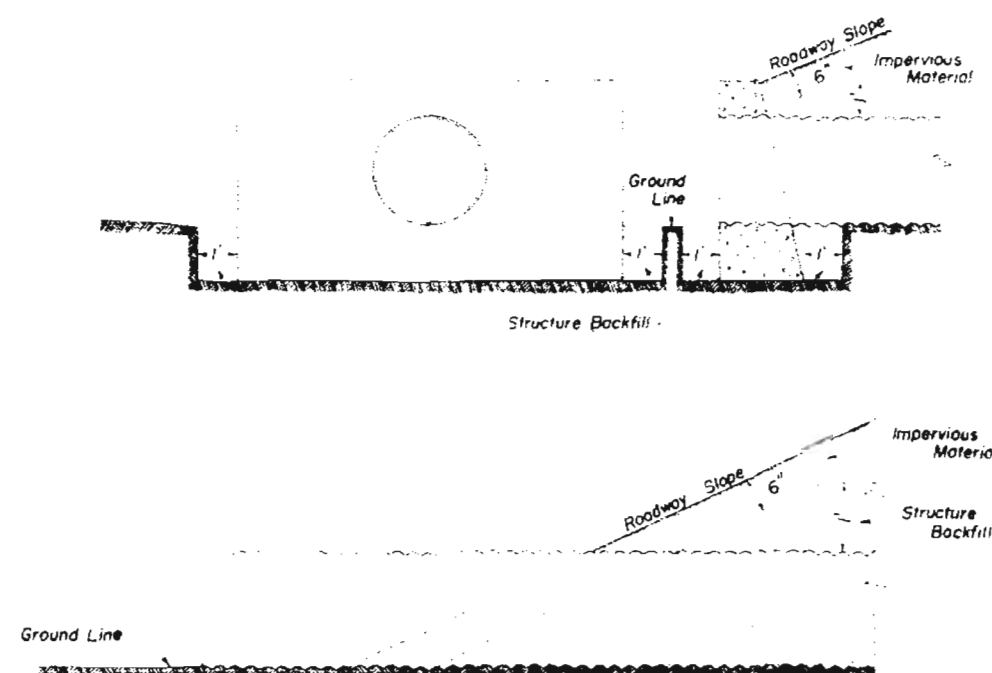
When the opinion of the Engineer, the material beneath the Structure is of such character as to cause unequal settlement along the length of the Structure, the material shall be removed to such a depth, ordered, and backfilled with gravel or other suitable material and compacted in accordance with Item 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 ground culverts, bays etc.

DROP INLETS, DIVISION BOXES, INTERCEPTING
HEADWALLS ETC



HEADWALLS AND END OF CULVERTS

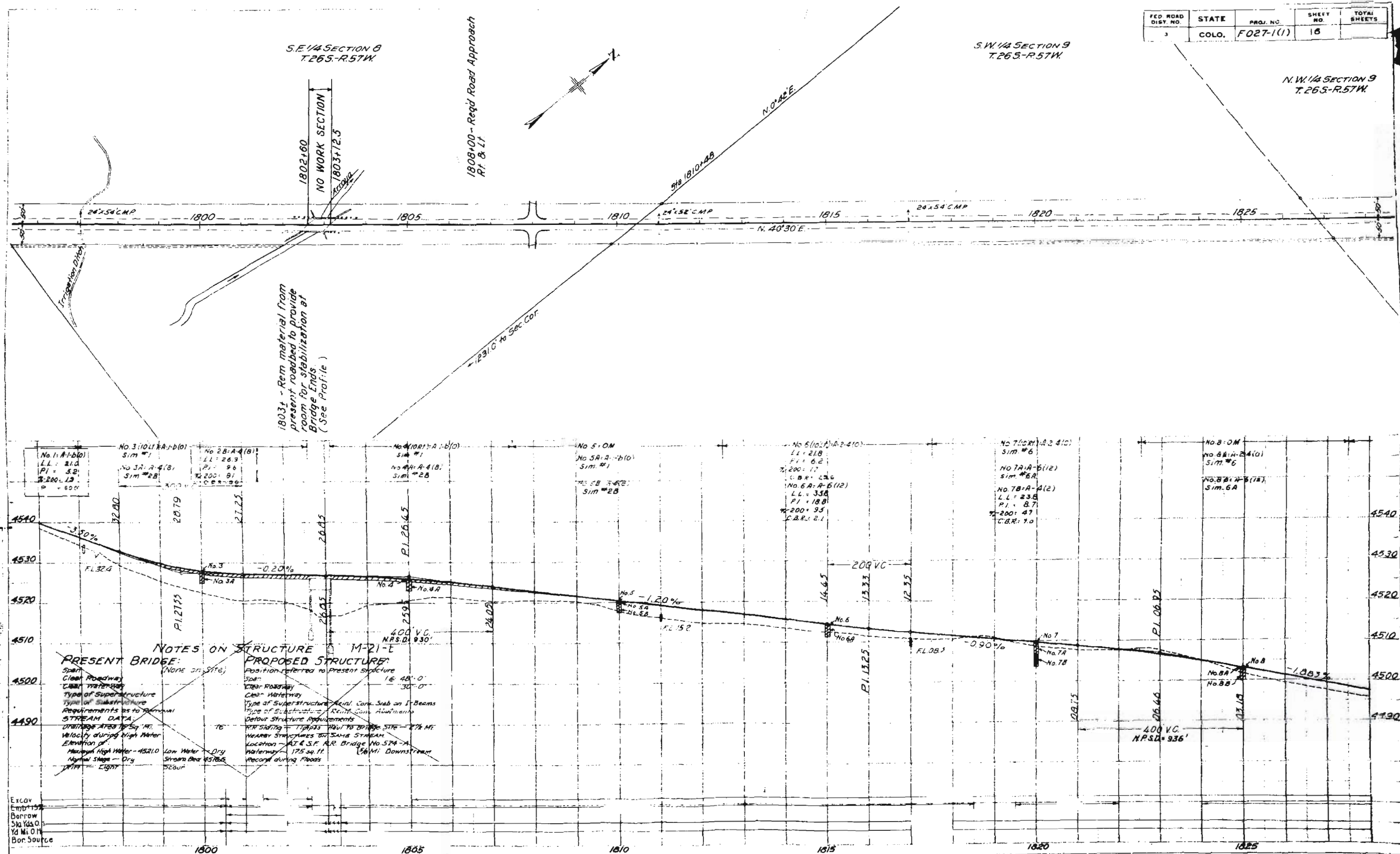


COLORADO
DEPARTMENT OF HIGHWAYS
STANDARD METHODS
OF BACKFILL
AROUND STRUCTURES

Designed by H.E.P.	Approved by <i>W. L. Kewbold</i>
Made by D.M.E.	Bridge Engineer
Checked by L.E.O.	Date: <i>May 2, 1958</i>

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	F027-1(1)	18	

N.W. 1/4 SECTION 9
T.26S-R.57W.



FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	F027-1(1)	17	

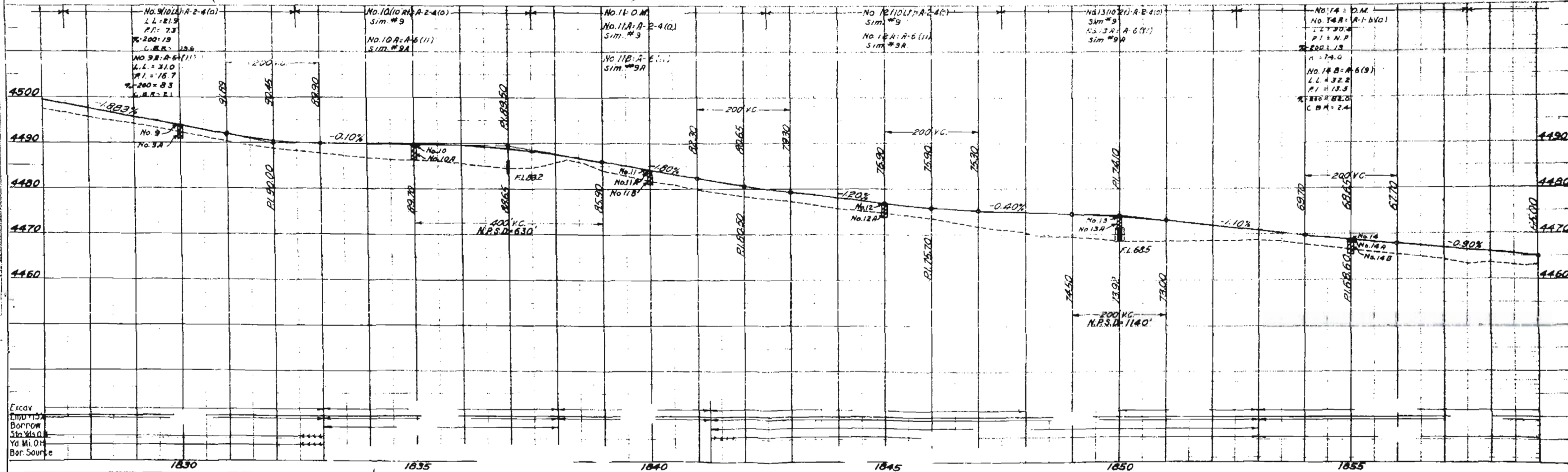
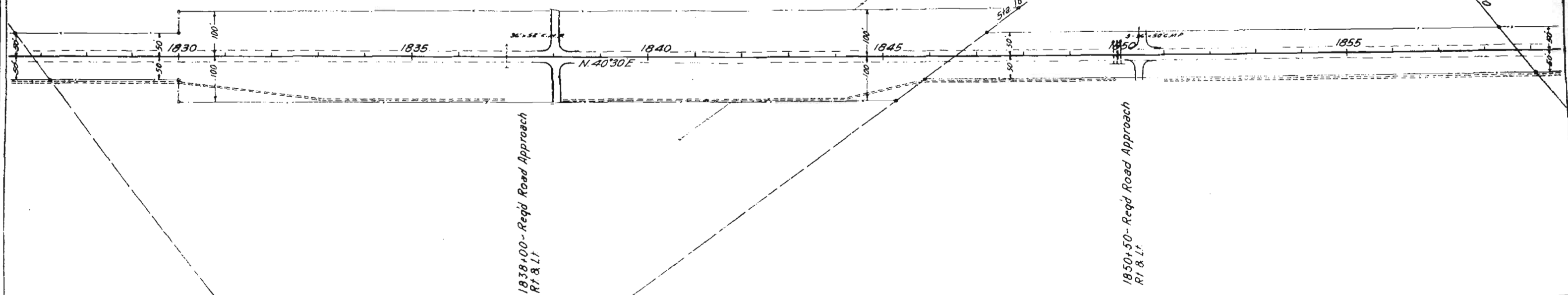
N.W. 1/4 SECTION 9
T.26S-R.57W

N.E. 1/4 SECTION 9
T.26S-R.57W

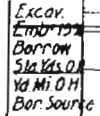
S.E. 1/4 SECTION 4
T.26S-R.57W

N 66° 53' W
3088.4 to Sec. 604

S 81° 05' 30" W
1058.70



1875+... Rem material from present roadbed to provide room for stabilization at Bridge ends (See Profile)

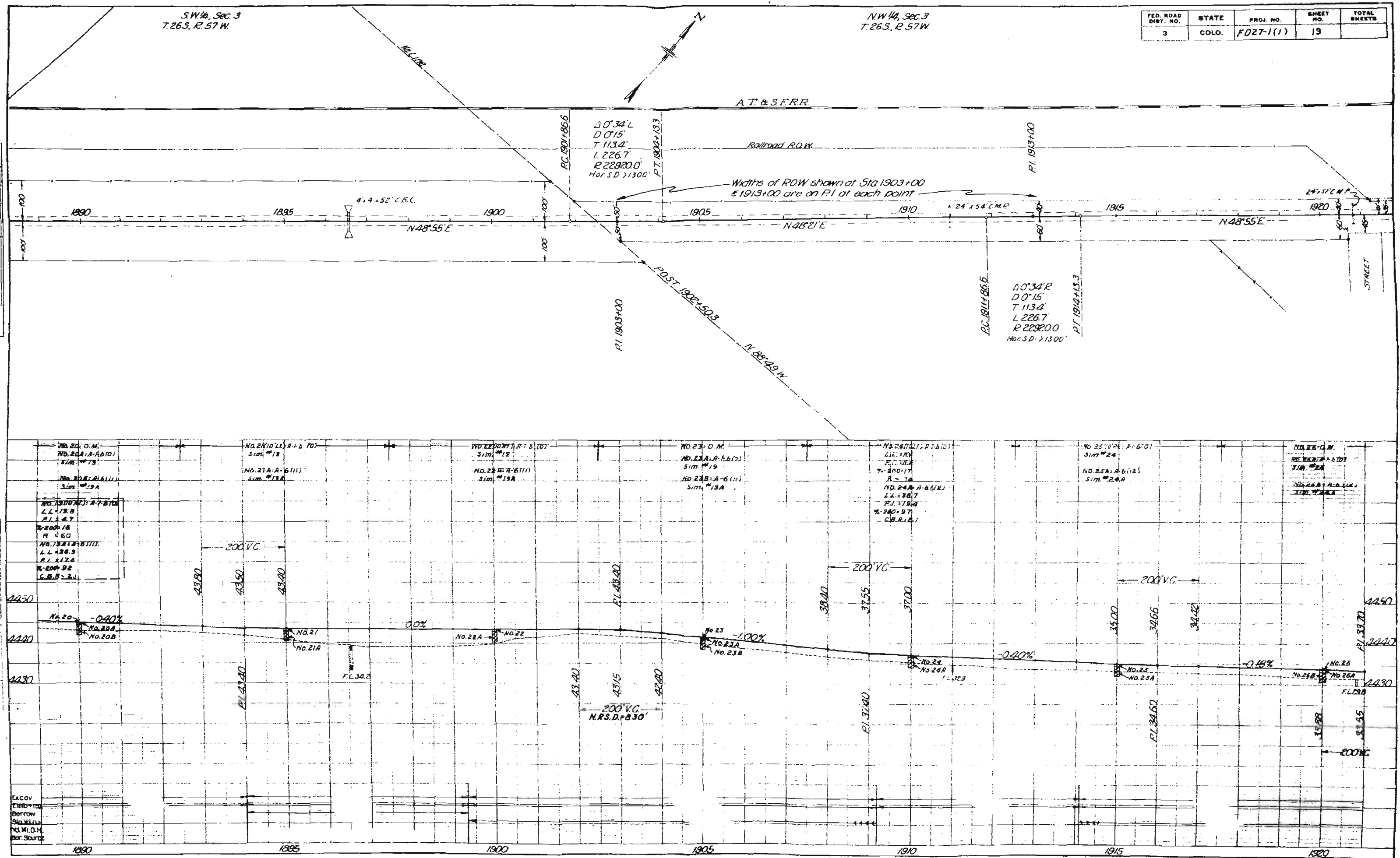


U. S. AIR FORCE - 1954

S.W. 1/4, Sec. 3
T. 26 S., R. 57 W.

N.W. 1/4, Sec. 3
T. 26 S., R. 57 W.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	FD27-1(1)	19	



FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	F027-1(1)	20	

TWP 25 SOUTH, RANGE 57 WEST
TWP 26 SOUTH, RANGE 57 WEST

NW 1/4 Sec. 3
T.26 S. R.57 W.

NE 1/4 Sec. 3
T.26 S. R.57 W.

1925+ to 1940+ - Adjust
Borrow Ditch, Lt. to Drain
Ah.

1930+70 - Reg'd
Road Appr. Lt.

AT&SFRR

N 7° 53' E

PI 1937+00

Baseline Storage Tanks
Pipe Line
Corr. Iron Bldg

ROW Covered by Easement
ROW Covered by Deed

N 48° 55' E

N 49° 22' E

TIMPAS

1932+ to 1952+ - Adjust
Borrow Ditch, Rt. to
Drain, Ah.

1930+40 to 1932+60 -
Reg'd - Widen Roadway
12' Rt with 200 taper
each end

PC 1936+10
PT 1937+00
Δ 0° 27' R
D 0° 15'
T 90°
L 180°
R 22920'
Hor. S.D. 11300'

END AWP 4007
BEG N.R.H. 267E

1923+58 - Reg'd 18x26'
Side Drain & Road Approach,
Rt

1924+90 - Reg'd Road
Approach, Rt (with Asphaltic
Dip)

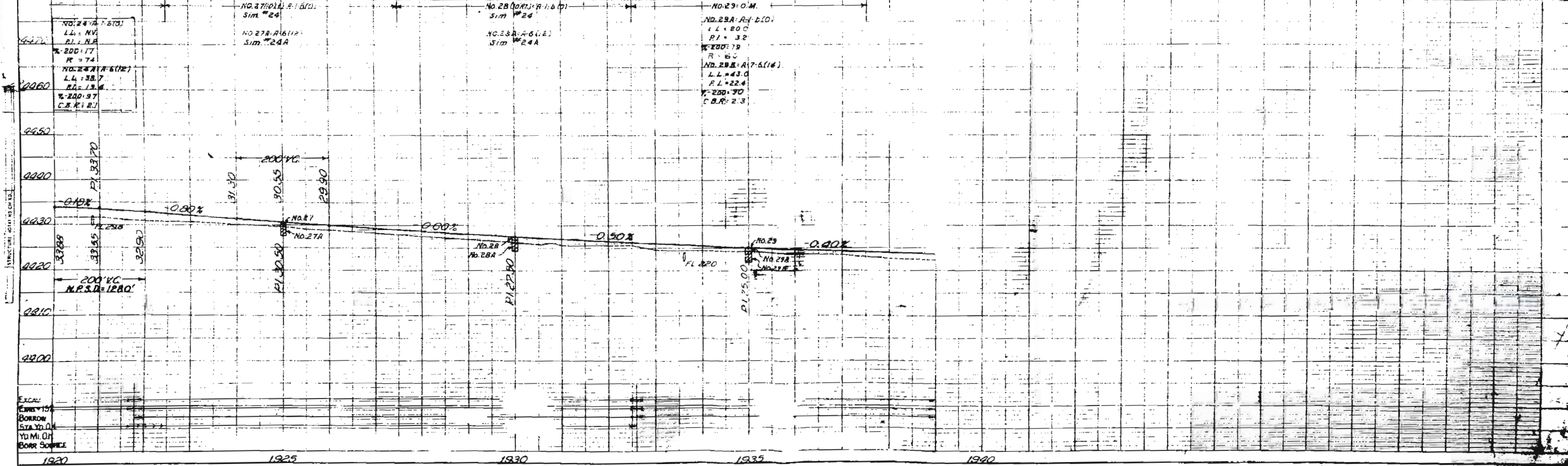
1928+60 - Reg'd Road
Approach, Rt (with Asphaltic
Dip)

1930+ - Reg'd Road Appr. Rt.

1932+45 - Reg'd Road Appr. Rt.
(With Asphaltic Dip)

1936+30 - Reg'd Road Appr. Rt.
(With Asphaltic Dip)

1937+50 - Reg'd 18x26' Side Drain
& Road Appr. Rt.



EXCAL
CUTS
BORROW
STA. Y.O. 0.4
Y.O. MI. 0.4
BORR. SOURCE

S.E. 1/4 SECTION 34
T.25S-R.57W.

S.W. 1/4 SECTION 35
T.25S-R.57W.

N.W. 1/4 SECTION 35
T.25S-R.57W.

FEED	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
1	MO.	F027-1(1)	22	

Sta 1962+71.2

ATCHISON, TOPEKA & SANTA FE RAILROAD

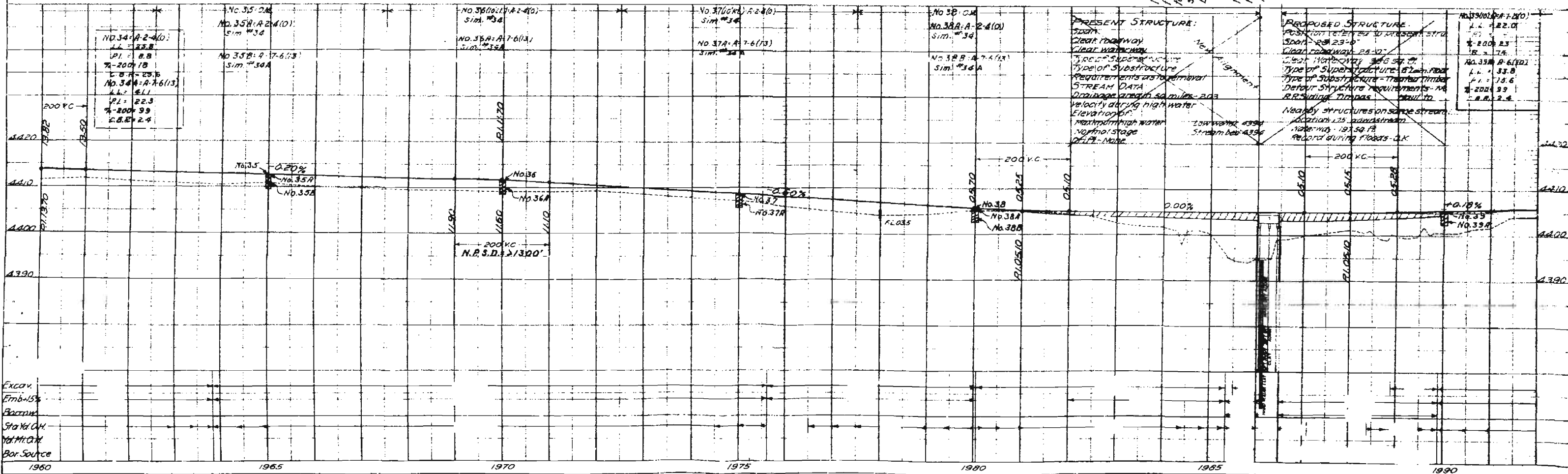
P.O.W. Line

74.150' M.P.

52' Bridge (1-Beams on Piles)

1986+00 - Rem Material
from present Roadbed
to provide room for
stabilization at Bridge
Ends (See Profile)

1986+00 to 1986+473-
Rem Asphaltic Surface
ing from Bridge

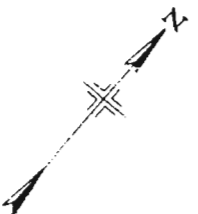


Excav.
Embank.
Bottom
Station
M.O.M.
Box Source

N.W. 1/4 SECTION 35
T.25S-R.57W.

N.E. 1/4 SECTION 35
T.25S-R.57W.

R.199746.1



ATCHISON, TOPEKA & SANTA FE RAILROAD

1995

2000

2005

2010

2015

2020

$\Delta = 1^{\circ}44' R$
 $D = 0^{\circ}15'$
 $T = 346.7$
 $L = 693.3$
 $R = 22920.0$

1995+00-Req'd Road
Appr Rt

2004+38 to 2004+62.5 -
Rem Asphaltic Surfacing
from Bridge

2004+38 to 2004+62.5 -
Rem Asphaltic Surfacing
from Bridge

EQUATION

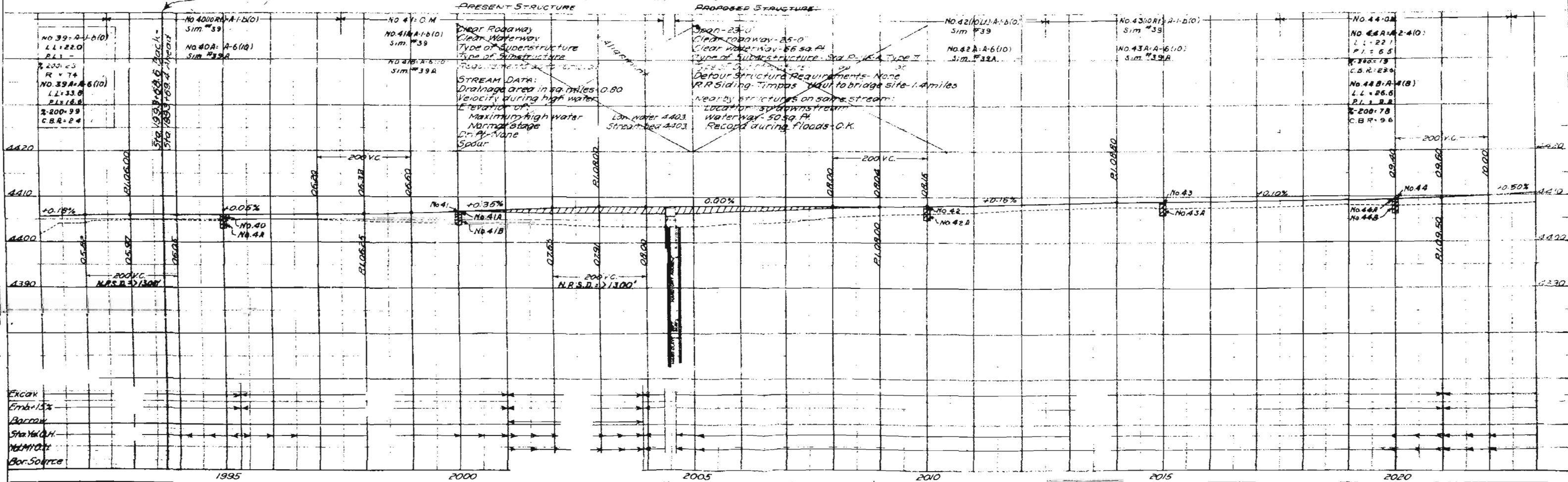
STRUCTURE NOTES

PRESENT STRUCTURE

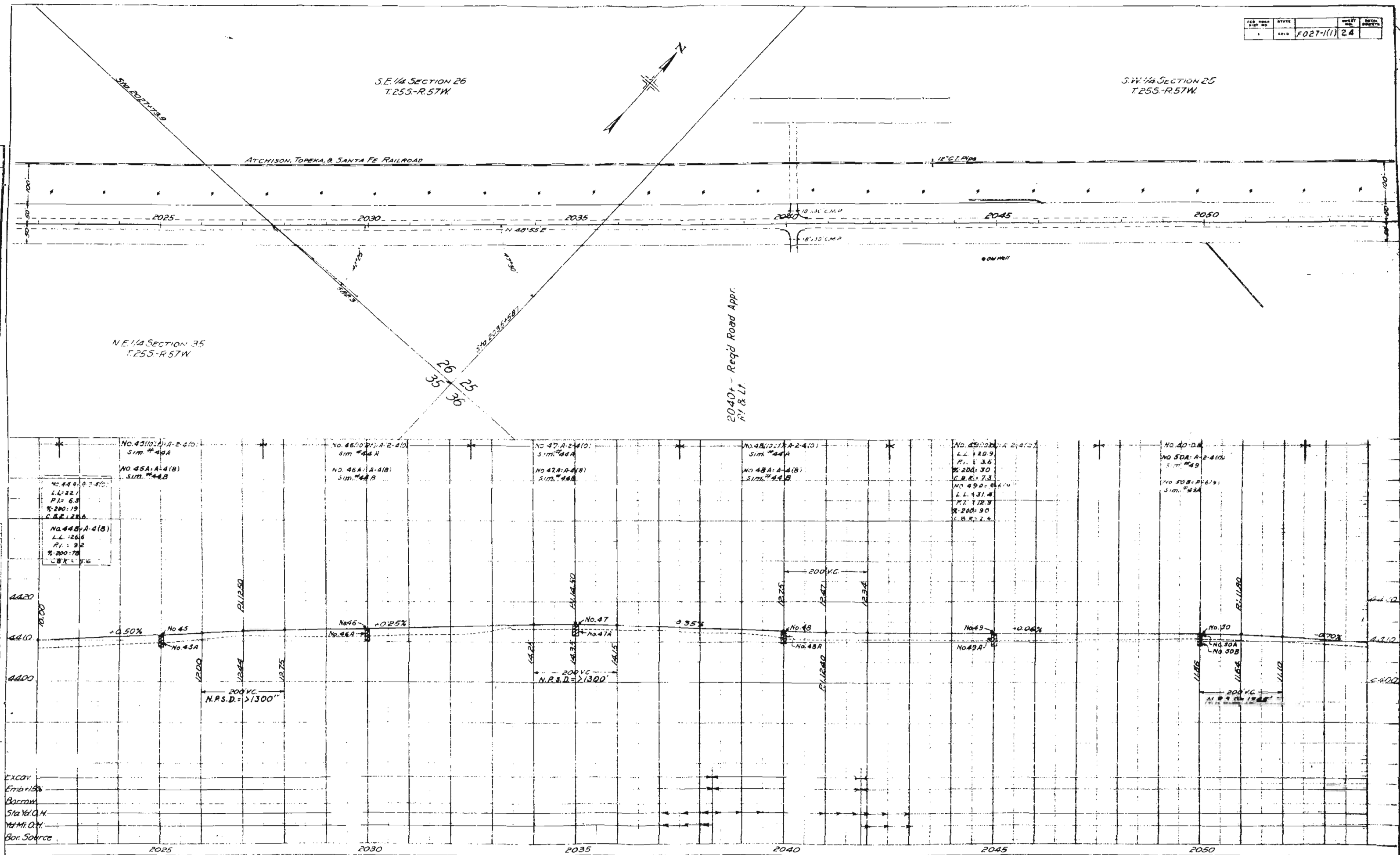
PROPOSED STRUCTURE

Direct Roadway
Clear Waterway
Type of Substructure
Type of Substructure
Required Retention
Stream Data:
Drainage area in sq. miles 0.80
Velocity during high water
Elevation of
Maximum high water
Normal stage
Ch. A None
Spout

2000-23-0
Clear Roadway 25-0
Clear Waterway 55-50 ft
Type of Substructure
Type of Substructure
Defour Structure Requirements-None
R.R Siding-Timpas 1/4 mi to bridge site 1.4 miles
Nearby structures on same stream:
Location 50' downstream
Waterway 50-50 ft
Record during floods O.K.



Excav
Embl 15%
Barrow
Sh. Y. 0.1
M. 0.1
Bar Source

[illegible]

S.W. 1/4 SECTION 25
T.25S-R.57W

N.W. 1/4 SECTION 25
T.25S-R.57W

N.E. 1/4 SECTION 25
T.25S-R.57W

42' Ballast Deck Pile Trestle

ATCHISON, TOPEKA AND SANTA FE RAILROAD

2061 ± - Rem Material
to provide room for
stabilization at Bridge
Ends (See Profile)

2061 ± 63 to 2061 ± 87.5 -
Rem Asphaltic Surfacing
from Bridge.

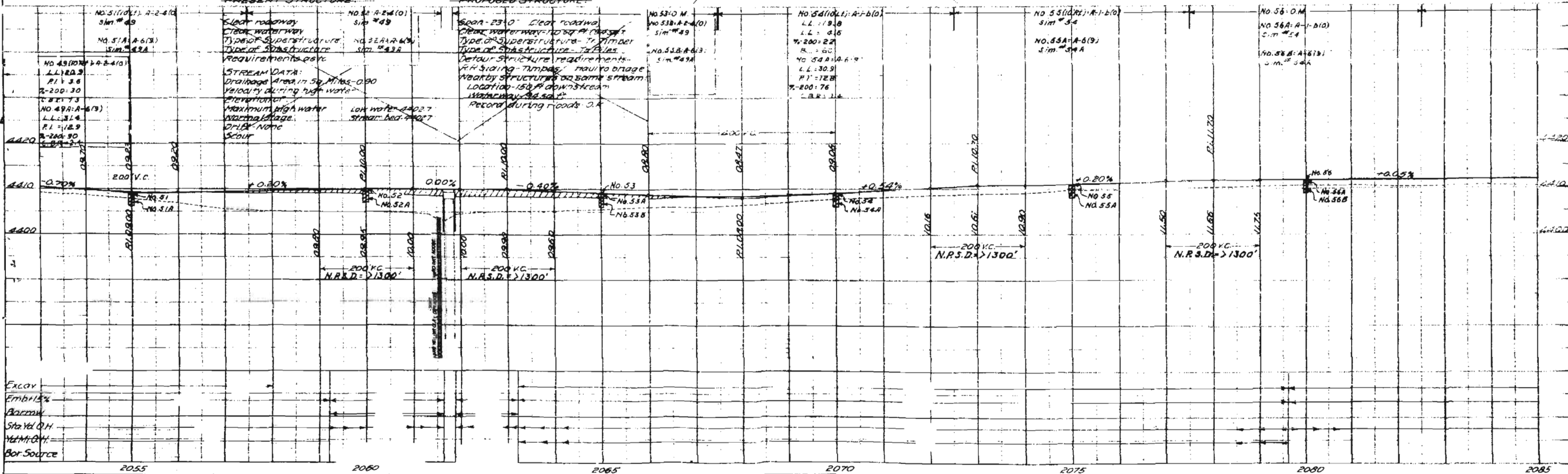
STRUCTURE NO. 25 - STRUCT. M-22-5

PRESENT STRUCTURE:

PROPOSED STRUCTURE:

500' - 23' 0" Clear roadway
Clear waterway: 105' 4" (100' 0" + 5' 4")
Type of Superstructure - Timber
Type of Substructure - Piles
Detail Structure requirements -
R.R. Siding - Timber; main bridge
Nearby structure on same stream -
Location - 150' downstream
Waterway: 360' 0"
Record during floods: 2' 0"

500' - 23' 0" Clear roadway
Clear waterway: 105' 4" (100' 0" + 5' 4")
Type of Superstructure - Timber
Type of Substructure - Piles
Detail Structure requirements -
R.R. Siding - Timber; main bridge
Nearby structure on same stream -
Location - 150' downstream
Waterway: 360' 0"
Record during floods: 2' 0"

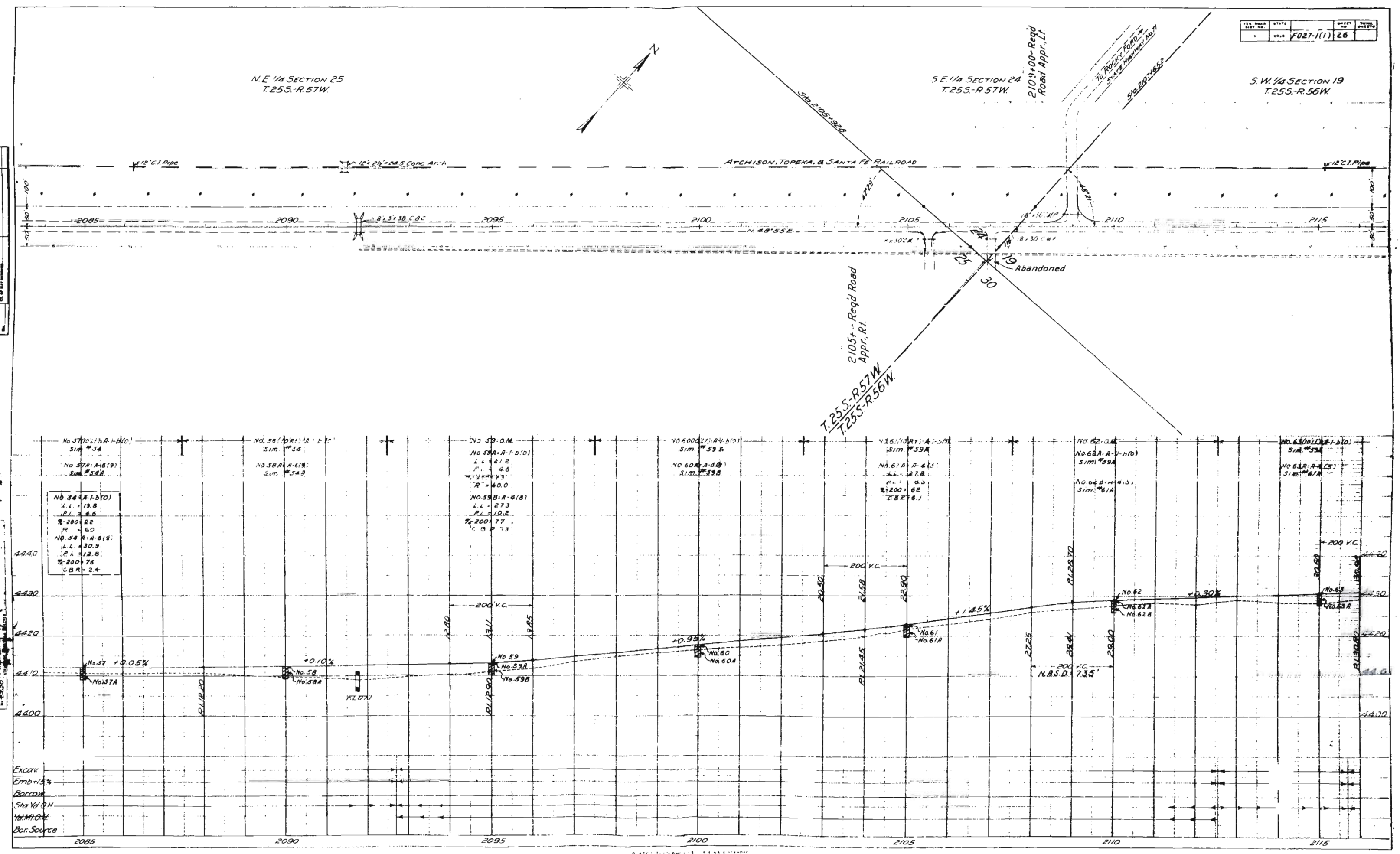


Excav
Embl 15%
Barren
St. Vel. 0.1
H.M. 0.1
Bot. Source

N.E. 1/4 SECTION 25
T.25S-R.57W.

S.E. 1/4 SECTION 24
T.25S-R.57W.

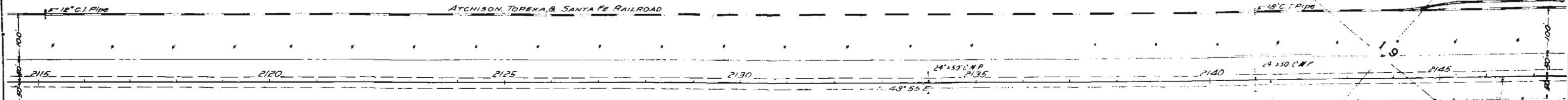
S.W. 1/4 SECTION 19
T.25S-R.56W.



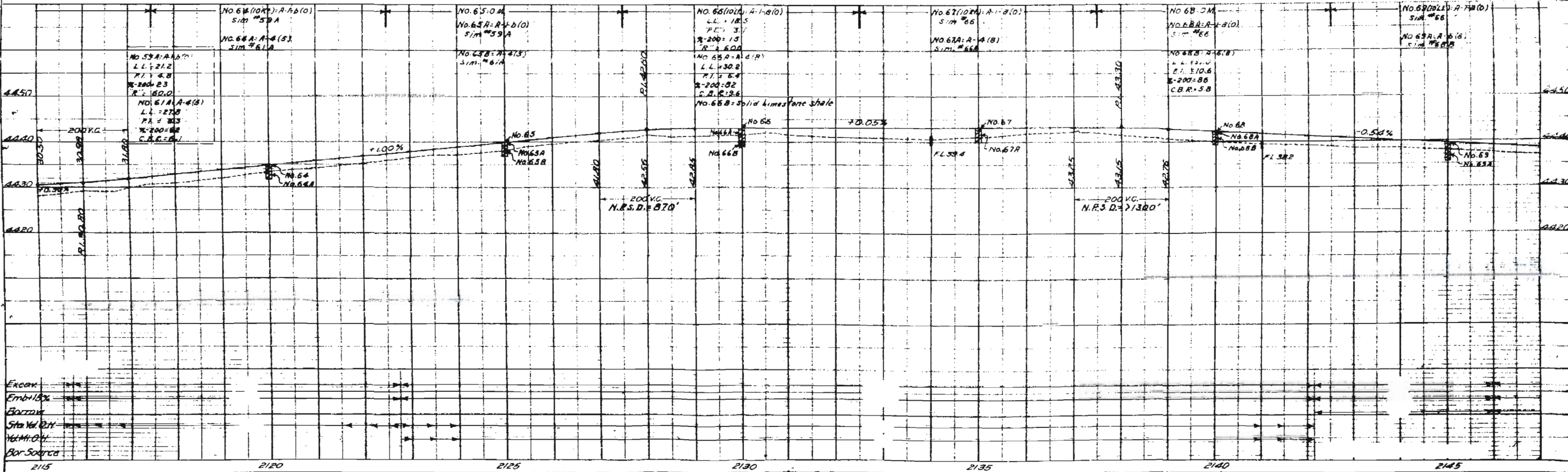
SW 1/4 SECTION 19
T.25S-R.56W.

NW 1/4 SECTION 19
T.25S-R.56W.

ATCHISON, TOPEKA & SANTA FE RAILROAD



SE 1/4 SECTION 19
T.25S-R.56W.



Excav
Embank
Bottom
Station
Highway
Bor Source

N.E. 1/4 SECTION 19
T.25S-R.56W

RENE

ATCHISON, TOPEKA & SANTA FE RAILROAD

