

FED. ROAD DIV. NO.	DIST.	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	S 0002 (7)	1	

Rev. 9-29-50 E.L.P. - Tab. Length, Beg. Sta.

INDEX OF SHEETS

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	2	TYPICAL SECTIONS, SUMMARY OF APPROXIMATE QUANTITIES
	3	LIST OF STRUCTURES, BALLAST & SELECTED BORROW PLANS
	4	STANDARD MARKER POSTS
	5	STANDARD HEADWALLS & APRONS FOR C.M.P. CULVERTS
	6	STANDARD METHODS FOR SUPERELEVATION & WIDENING OF CURVES
	7	STANDARD SIDE APPROACH ROADS, FLARING, CUT SLOPE TREATMENT & WIDENING AT BRIDGES & AT CREST OF GRADES
	8	STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS
	9-15A	ALIGNMENT PLAN & PROFILE
	16-22	CROSS SECTIONS
	23	SUMMARY OF EARTHWORK

COLORADO STATE HIGHWAY DEPARTMENT PLAN AND PROFILE OF PROPOSED FEDERAL AID SECONDARY PROJECT NO. S 0002 (7) STATE HIGHWAY NO. 100 BACA COUNTY

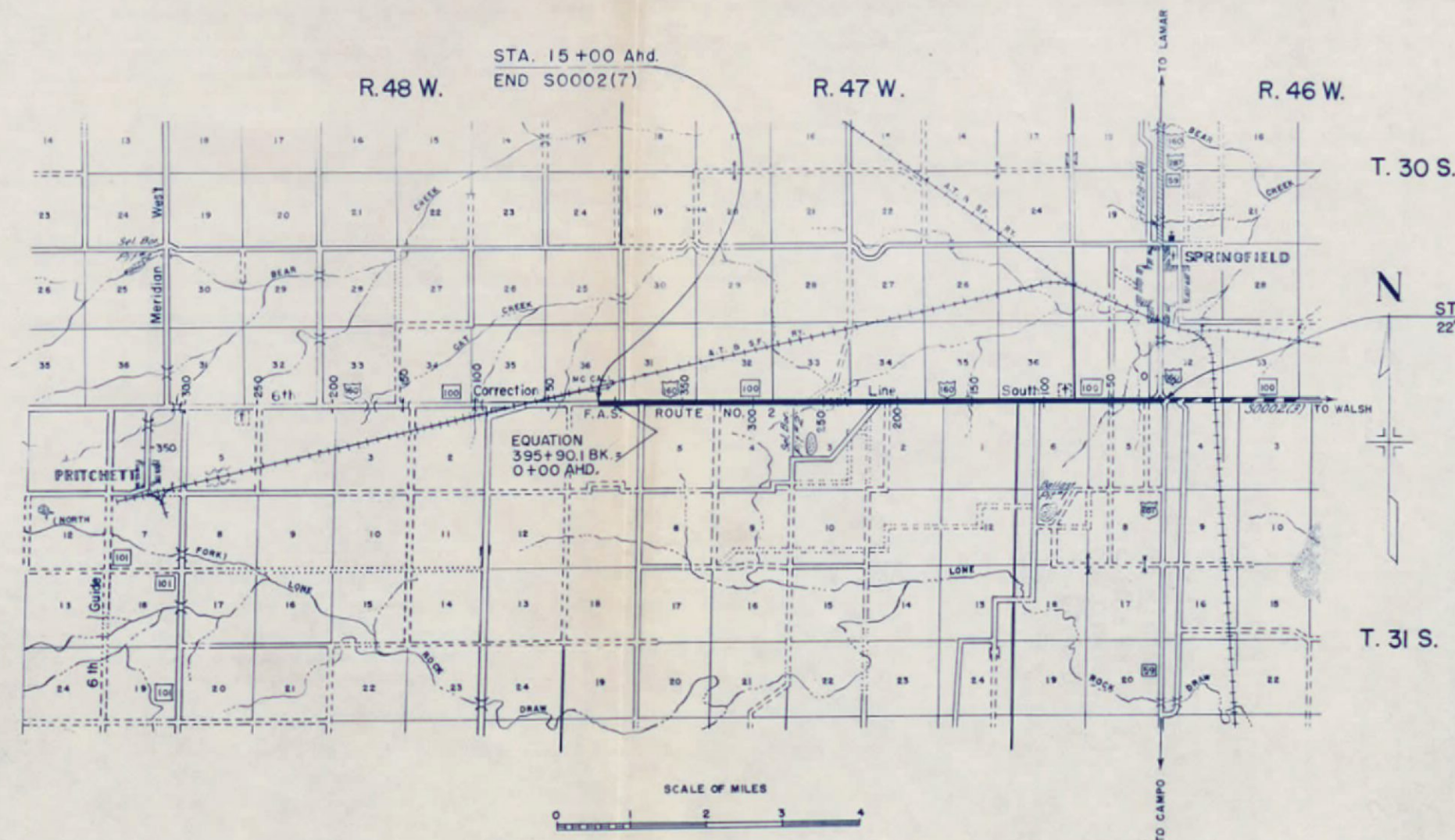
SCALES OF ORIGINAL TRACINGS
ON PLAN, 1 IN. = 100 FT.
ON PROFILE 1 IN. = 100 FT. HORIZONTAL
1 IN. = 10 FT. VERTICAL
GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD
GROSS LENGTH OF PROJECT } = 39,814.1 FT. = 7.541 MI.
NET LENGTH OF PROJECT }

CONVENTIONAL SIGNS

CENTER LINE	—+—
RIGHT-OF-WAY LINE	—+—+—
TOWNSHIP OR RANGE LINE	T. 6 S., R. 89 W.
SECTION LINE	T. 7 S., R. 89 W.
CITY LIMITS	PLAN SHEETS
RAILROAD	—+—+—+—
BARBED WIRE FENCE	—x—x—x—x—
COMB FENCE	—+—+—+—
POWER LINE	—•—•—•—•—
PRESENT ROAD (PLAN SHEETS)	—+—+—+—
TELEPH. & TELEG. LINE	—o—o—o—o—

TABULATION OF LENGTH AND DESIGN DATA

STATION	ROADWAY LIN. FT.	
12+76 = Begin S0002(7) 22' West of Sta 0+00 Begin S0002(3)	38,314.1	
395+90.1 Bk = Equation 0+00 Ahd.	1,500	
15+00 = End S0002(7)	39,814.1	
TOTAL	39,814.1	
SUMMARY	LIN. FT.	MILES
S0002(7) - Roadway	39,814.1	7.541
DESIGN DATA		
Maximum Grade	3.72%	
Maximum Degree of Curve	0°00'	
Minimum N.P.S.D. - Horizontal	>1300'	
Minimum N.P.S.D. - Vertical	455'	
Maximum Design Speed	50MPH	



NOTICE TO BIDDERS

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

J.A. Solmonson, Construction Engineer
Pueblo, Colo.
L.A. Rose, Resident Engineer
Lamar, Colo.

HIGHWAY DEPARTMENT STATE OF COLORADO	
RECOMMENDED FOR APPROVAL:	
<i>John Bell</i>	8-25-50
ASSISTANT ENGINEER	DATE
APPROVED:	
<i>Wendell L. Johnson</i>	8-25-50
STATE HIGHWAY ENGINEER	DATE

DEPARTMENT OF COMMERCE BUREAU OF PUBLIC ROADS	
RECOMMENDED FOR APPROVAL:	
<i>W. H. Hillman</i>	OCT 16 1950
DISTRICT ENGINEER	DATE
<i>B. W. Matteson</i>	
DIVISION ENGINEER	
<i>A. A. Abeland</i>	OCT 26 1950
DIVISION ENGINEER	DATE

Programming & Planning Engineer

COLORADO STATE HIGHWAY DEPARTMENT

PLAN AND PROFILE OF PROPOSED FEDERAL AID SECONDARY PROJECT NO. S 0002 (7) STATE HIGHWAY NO. 100 BACA COUNTY

INDEX OF SHEETS

SHEET NO. 1	SKETCH MAP & TITLE PAGE, TABULATION OF LENGTH & DESIGN DATA
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3	LIST OF STRUCTURES, BALLAST & SELECTED BORROW PLANS
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5	STANDARD HEADWALLS & APRONS FOR C.M.P. CULVERTS M-102-G
6	STANDARD METHODS FOR SUPERELEVATION & WIDENING OF CURVES M-1-B
7	STANDARD SIDE APPROACH ROADS, FLARING, CUT SLOPE TREATMENT & WIDENING AT BRIDGES & AT CREST OF GRADES M-2-DM
8	STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS M-2-DS
9-15A	ALIGNMENT PLAN & PROFILE
16-22	CROSS SECTIONS
23	SUMMARY OF EARTHWORK

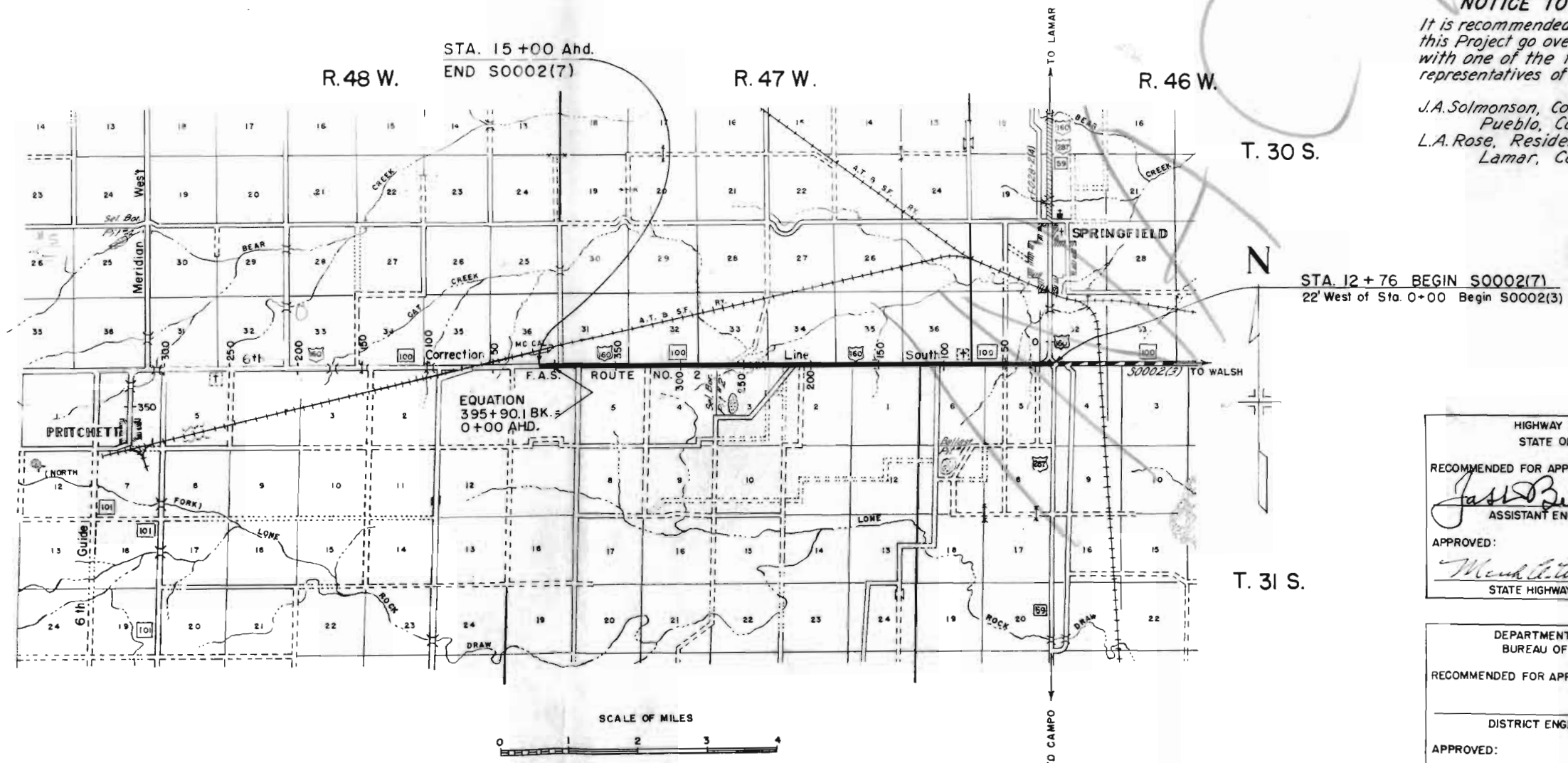
SCALES OF ORIGINAL TRACINGS
ON PLAN, 1 IN. = 100 FT.
ON PROFILE 1 IN. = 100 FT. HORIZONTAL
1 IN. = 10 FT. VERTICAL
GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD
GROSS LENGTH OF PROJECT } = 39,814.1 FT. = 7.541 MI.
NET LENGTH OF PROJECT }

CONVENTIONAL SIGNS

CENTER LINE	—+—
RIGHT-OF-WAY LINE	—+—+—
TOWNSHIP OR RANGE LINE	T. 6 S., R. 89 W.
SECTION LINE	T. 7 S., R. 89 W.
CITY LIMITS	PLAN SHEETS
RAILROAD	—+—+—
BARBED WIRE FENCE	—+—+—
COMB FENCE	—+—+—
POWER LINE	—+—+—
PRESENT ROAD (PLAN SHEETS)	—+—+—
TELEPH. & TELEG. LINE	—+—+—

TABULATION OF LENGTH AND DESIGN DATA

STATION	ROADWAY LIN. FT.	
12+76 = Begin S0002(7) 22' West of Sta. 0+00 Begin S0002(3)	38,314.1	
395+90.1 BK = Equation 0+00 Ahd.	1,500.0	
15+00 = End S0002(7)	39,814.1	
TOTAL		
SUMMARY	LIN. FT.	MILES
S0002(7) - Roadway	39814.1	7.541
DESIGN DATA		
Maximum Grade	37.2%	
Maximum Degree of Curve	0° 00'	
Minimum N.P.S.D. - Horizontal	> 1300'	
Minimum N.P.S.D. - Vertical	455'	
Maximum Design Speed	50 MPH	



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

J.A. Solmonson, Construction Engineer
Pueblo, Colo.
L.A. Rose, Resident Engineer
Lamar, Colo.

HIGHWAY DEPARTMENT STATE OF COLORADO	
RECOMMENDED FOR APPROVAL:	
<i>James D. Bull</i>	8-25-50
ASSISTANT ENGINEER	DATE
APPROVED:	
<i>Wendell C. Dietrich</i>	8-25-50
STATE HIGHWAY ENGINEER	DATE

DEPARTMENT OF COMMERCE BUREAU OF PUBLIC ROADS	
RECOMMENDED FOR APPROVAL:	
DISTRICT ENGINEER	DATE
APPROVED:	
DIVISION ENGINEER	DATE

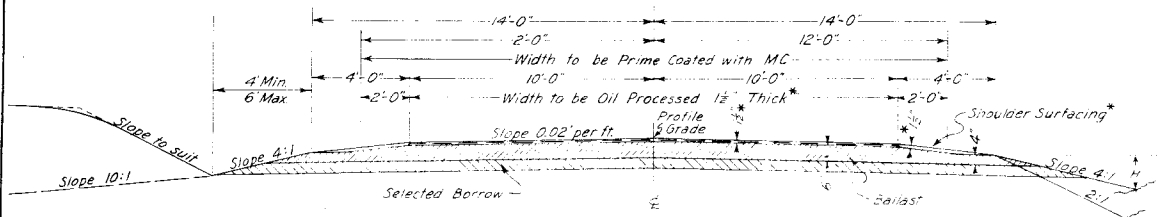
TYPICAL CROSS SECTION OF IMPROVEMENT AND SUMMARY OF QUANTITIES

NOTE:

See Standard M-2-DM for details of Cut Slope Treatment, Flaring & 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'



Excavation or Borrow Below 4:1 and/or 10:1 will not be permitted.

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.

The upper portion of subgrade is to be constructed of Ballast and Selected Borrow Material at locations designated in Ballast and Selected Borrow Material tabulations.

Estimated quantities involved in this operation and thicknesses of materials required are tabulated on Sheet No. 3.

*FUTURE CONSTRUCTION

*1 1/2" compacted thickness of Gravel or Crushed Rock Surfacing is to be placed in one course. Approximate 1 1/2" Top Course Surfacing is to be placed at the rate of 17 tons per 100 lin ft. of roadway (Future Construction).

Approximate 1 1/2" Bottom Course Surfacing for Shoulder Areas is to be placed at the rate of 5 tons per 100 lin ft. of roadway after placement of Bituminous Pavement (Future Construction).

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.

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.

Except as otherwise noted on the plans, payment for overhaul will be based on measurement along the centerline of the project.

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

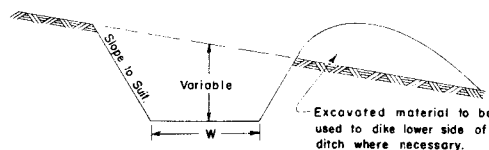
Asphaltic Road Material MC is to be used for Prime Coat over the width shown on the Typical Section previous to placing Oil Processed Material. Grade of Oil to be determined by the Engineer.

All C.M.P. Cross Culverts shall be laid with Metal Aprons unless otherwise noted on plans.

SHAPING ROADBED

STATION	MILES
12+76 to 31+00	0.345
54+00 to 143+00	1.686
153+00 to 202+00	0.928
219+00 to 235+00	0.303
250+00 to 329+00	1.496
329+00 to 15+00 A.H.	1.551
Total	6.309

TYPICAL SECTION OF DITCHES



W = 1', except as otherwise noted on plans.

SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO.	ITEM	UNIT	PROJECT TOTALS
11a	Removal of 1 Structure	L.S.	•
13c	Unclassified Excavation	Cu. Yd.	7000
13d	Unclassified Ditch Excavation	Cu. Yd.	100
13x	Selected Borrow	Cu. Yd.	59,700
14a	Dry Rock Excavation (Str)	Cu. Yd.	10
14c	Dry Common Excavation (Str)	Cu. Yd.	100
14c	Wet Rock Excavation (Str)	Cu. Yd.	10
14d	Wet Common Excavation (Str)	Cu. Yd.	20
16a	Structure Backfill (Class 1)	Cu. Yd.	70
16d	Mechanical Tamping	Hr.	10
17ax	Rolling with Tamping Roller (2 Unit)	Hr.	80
17ay	Rolling with Tamping Roller (4 Unit)	Hr.	40
17b	Rolling with Flat Wheeled Roller	Hr.	470
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.	3,000
18a	Station Yard Overhaul	Sta. Yd.	653,000
18b	Yard Mile Overhaul	Yd. Mi.	25,200
18c	Ton Mile Overhaul	Ton. Mi.	109,800
23a	Ballast (Class 1)	Ton	37,300
30x	Asphaltic Road Material MC	Gal.	45,100
53b	18" Corr. Metal Culv. Pipe	Lin. Ft.	20
53c	24" Corr. Metal Culv. Pipe	Lin. Ft.	186
95c	Metal Apron for 24" Corr. Metal Pipe Culv.	Each	4
119	Shaping Roadbed	Mile	6.4
STATE FORCES			
81a	Project Markers	Each	2

FED. ROAD DIV. NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	S 0002 (7)	3	

Rev. 9-29-50 E.L.P. - List of Structures, Ballast Plan & Selected Borrow Pits

BALLAST PLAN

It is estimated that Ballast for the Project is available in the vicinity of the pit indicated in the following tabulation. Estimated quantities involved in this operation are shown below.

No alteration of the Ballast Plan as here outlined will be allowed without written permission from the Department.

MATERIAL TO BE PLACED	SOURCE	QUANTITY AND THICKNESS		OVERHAUL	
		AVAILABLE	CLASS I	TONS	TON MILES
		TONS	THICKNESS		
12+76 to 25+00	Pit No. 1	Ample	6"	1112	2329
25+00 to 80+00	(U.S. Gov't)		6"	4950	7227
80+00 to 103+00	N. & Sec. 7		6"	2070	1490
103+00 to 135+00	T. 31 S. R. 46 W.		6"	2880	2304
135+00 to 158+00	1.5 Mi. from Sta. 103+00		6"	2070	2732
158+00 to 198+00			6"	3600	6912
198+00 to 240+00			6"	3780	10206
240+00 to 290+00			6"	4500	16020
290+00 to 329+00			6"	3510	15479
329+00 to 395+00	1.5 Mi. from Sta. 103+00		6"	6021	32597
0+00 to 15+00	Approaches		6"	1350	8355
				1385	4082
TOTALS				37,228	109,733

SELECTED BORROW PLAN

It is estimated that Selected Borrow for the Project is available in the vicinity of pits indicated in the following tabulation. Estimated quantities involved in this operation are shown below.

No alteration of the Selected Borrow Plan as here outlined will be allowed without written permission from the Department.

MATERIAL TO BE PLACED	SOURCE	QUANTITY AND THICKNESS		OVERHAUL	
		AVAILABLE	USED	STA. YDS.	YD. MI.
		CU. YDS.	* THICKNESS		
12+76 to 25+00	Pit No. 2	40,000	13"	22,011	8,553
25+00 to 80+00	(W.H. Means)		10"	73,205	24,200
80+00 to 135+00	N. & Sec. 3		13"	98,010	23,119
135+00 to 158+00	T. 31 S. R. 47 W.		10"	30,613	5,165
158+00 to 198+00	850' from Sta. 252+00		13"	6480	71,280
198+00 to 240+00			10"	5082	55,902
240+00 to 252+00			5"	696	6,025
252+00 to 290+00			5"	2204	22,613
290+00 to 329+00	Pit No. 4	34,000	13"	6318	63,498
329+00 to 344+00	(W.H. Deeds)		13"	2430	26,730
344+00 to 395+00	N. & Sec. 25		10"	6280	63,080
0+00 to 15+00	T. 30 S. R. 49 W.		10"	1815	19,965
	770' Mi. from Sta. 15+00				
Estimated for Road Appr's				2849	31,159
Estimated for correcting irregularities in subgrade				5165	56,493
TOTALS				59,668	632,584

*Based on Curve "C" of State Highway Dept. Design No. 12. Changes in the various thicknesses of Selected Material shall take place over a 300-ft. distance.

LIST OF STRUCTURES

LOCATION OF STRUCTURE	DESCRIPTION	REMOVE STRUCT. NO.	EXCAVATION		STRUCTURAL EXCAV.		STRUCTURE BACKFILL	MECH. TAMPING HOURS	BALLAST TONS	CORR. METAL CULV. PIPE LIN. FT.		METAL APRONS FOR CMP CULV.		PROJECT MARKER NO.
			CU. YDS.	UNCL. EMBKT. UNCL. DITCH	•	CU. YDS.	CL. I			CU. YDS.	18" 24"	18" 24"	NO.	
12+76	Approach to Project		20						20					1
13+75	Project Marker													
18+00	Road Approach, Rt.	1	2489		2		5		1315	20				
18+90	Road Approaches, Rt.		20						10		30			
51+13	Side Drain & Road Appr, Rt.		20		23									
77+33	Road Approach, Rt.		20											
79+70	Road Approach, Rt.		20											
81+70	Road Approach, Rt.		20											
103+90	Road Approach, Lt.		20											
156+90	Side Drain, Lt. and Road Approaches Rt. & Lt.		40		15		7				20			
183+00	Cross Culvert & Ditches			5	42		20				66		2	
191+23	Road Approach, Rt.		20											
192+42	Road Approach, Rt.		20											
221+00	Cross Culvert & Ditches			5	36		23				70		2	
222+87	Road Approach, Lt.		20						10					
236+10	Road Approach, Rt.		20											
272+00	Road Approach, Lt.		20											
275+76	Dip Road Approach, Rt.		20											
328+33	Dip Road Approach, Lt.		15						10					
381+38	Dip Road Approach, Lt.		15											
391+54	Dip Road Approach, Rt.		15											
394+37	Dip Road Approach, Rt.		15											
15+00th	Project Marker													1
15+00th	Approach to Project Mechanical Tamping Entire Project							7	20					2
PROJECT TOTALS		1	2849	10	118		65	7	1385	20	186		4	2

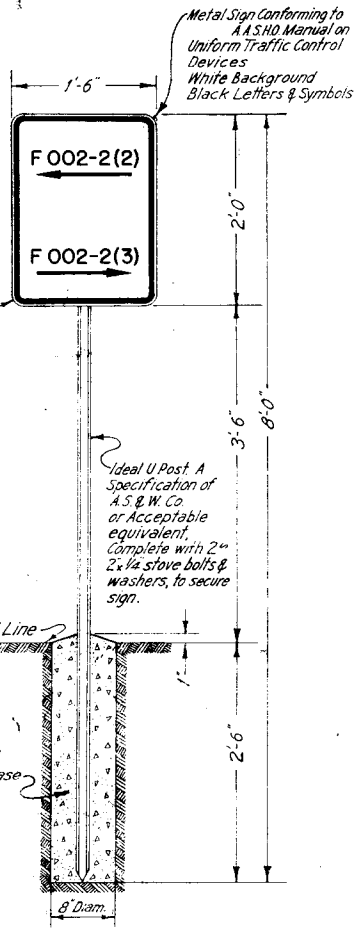
• Structural Excavation is estimated to be 90% Common and 10% Rock, each of which is 90% Dry and 10% Wet.

▽ To be furnished and installed by State Forces.

* Selected Borrow

φ Includes quantities required to construct approaches along Rt. side of this approach. (For locations see Sheet 9)

PROJECT MARKER POST ITEM N° 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

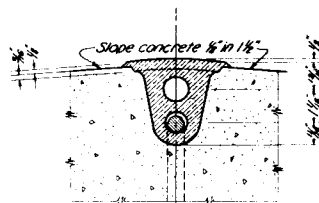
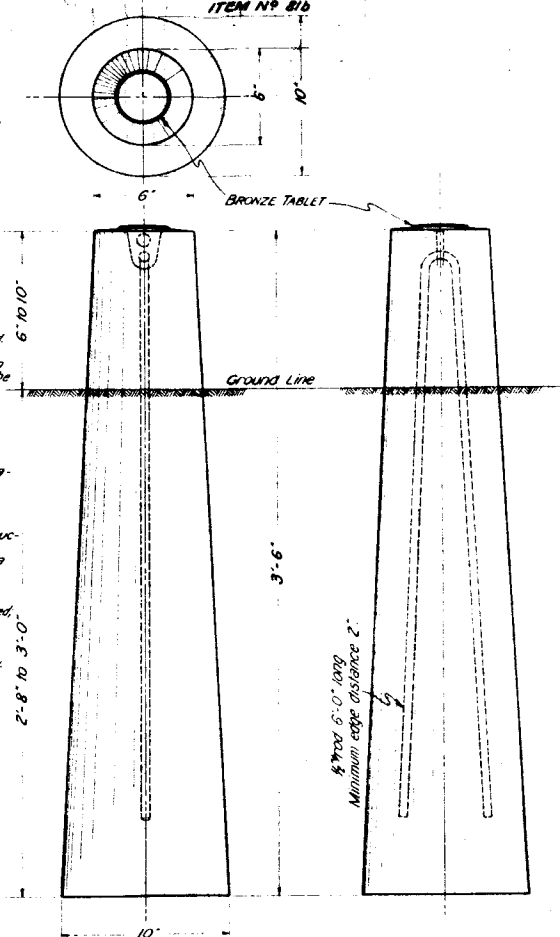
All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department, adopted January 1st 1948.

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.

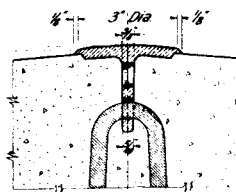
All letters are to be depressed a minimum of 1/8 inch. Information on the bronze tablet indicated by pin lines is to be stamped in the field by the engineering party after post is placed. 1/8 inch letters and figures to be used. Project designations on tablets shall be properly shown I.E., F.I. for Fed. Aid Interstate, F. for Fed. Aid Primary, S. for Fed. Aid Secondary, etc. & S.P.A.S. for State Projects. See detail below.



RIGHT OF WAY MARKER POST ITEM N° 819



SECTION B-B



SECTION A-A

DETAIL OF BRONZE TABLET
FOR RIGHT OF WAY MARKER POST

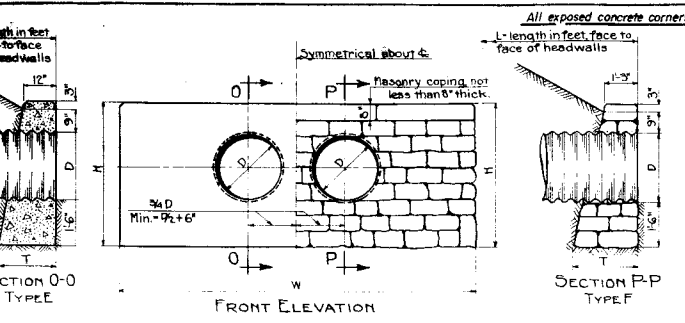
REVISIONS

Rev. 6-28-40, A.Z. 1940 Spec.
Rev. 1-2-46, C.S.D. Item 818
STANDARD M-7-8
Rev. 8 Jan. 48 P.S.B. 1/2" x 1/2" x 1/2"
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 Right for Metal Project Marker
Rev. July 5-1950, J.C.R. - Rev. Note Re Metal Sign for Project Marker, & ROW Marker Markings

FED. ROAD DIST. NO.	STATE	SHEET NO.	TOTAL SHEETS
3	COLO.	21-0327	4

COLORADO
STATE HIGHWAY DEPARTMENT
STANDARD
MARKER POSTS

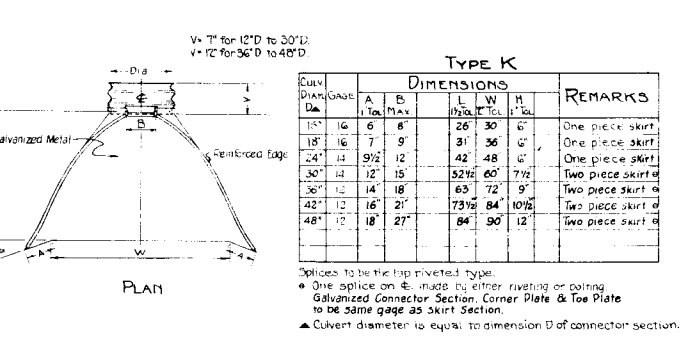
Designed by REL
Made by FFS
Checked by REL
Approved by [Signature]
Date: January 1st 1948



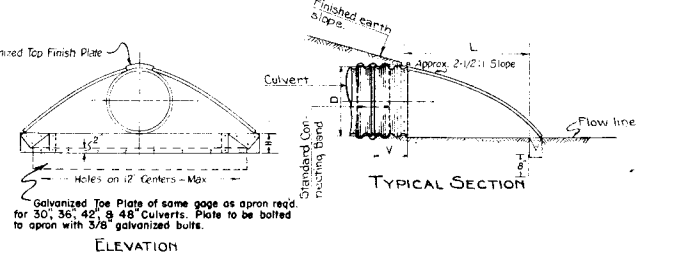
STANDARD HEADWALLS FOR DOUBLE CORRUG. METAL PIPE CULVERTS

TABLE OF DIMENSIONS AND QUANTITIES

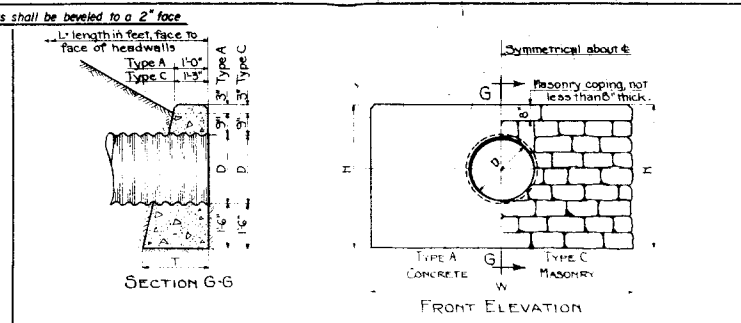
TYPE E			BOTH TYPES			TYPE F		
D	T	CLASS B CONCRETE IN TWO HEADWALLS	W	H	CORRUGATED METAL PIPE	CEMENT RUBBLE MASONRY IN TWO HEADWALLS	T	D
15'	1'-6"	24 Cu. Yds.	7'-6"	3'-9"	16 GAGE	3.1 Cu. Yds.	2'-0"	15'
18'	1'-6"	30 Do	8'-6"	4'-0"	16 GAGE	3.6 Do	2'-1"	18'
24'	1'-10"	44 Do	10'-6"	4'-6"	14 Do	5.5 Do	2'-4"	24'
30'	2'-0"	61 Do	12'-9"	5'-0"	14 Do	7.5 Do	2'-6"	30'
36'	2'-2"	81 Do	15'-0"	5'-6"	12 Do	10.0 Do	2'-8"	36'
42'	2'-5"	103 Do	17'-3"	6'-0"	12 Do	12.8 Do	2'-10"	42'
48'	2'-7"	136 Do	19'-6"	6'-6"	12 Do	16.3 Do	3'-0"	48'



STANDARD METAL APRONS FOR CORRUGATED METAL PIPE CULVERTS TYPE K



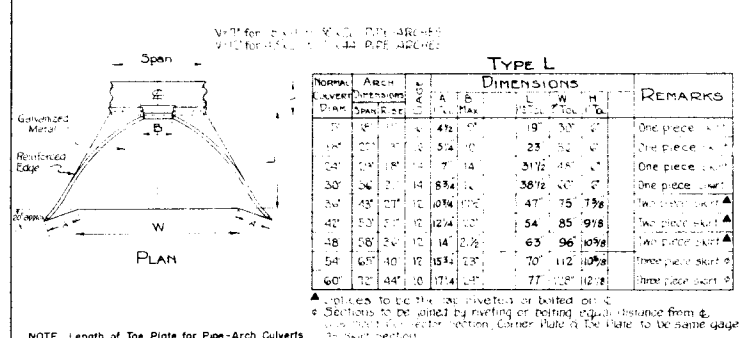
STANDARD METAL APRONS FOR CORRUGATED METAL PIPE ARCH CULVERTS TYPE L



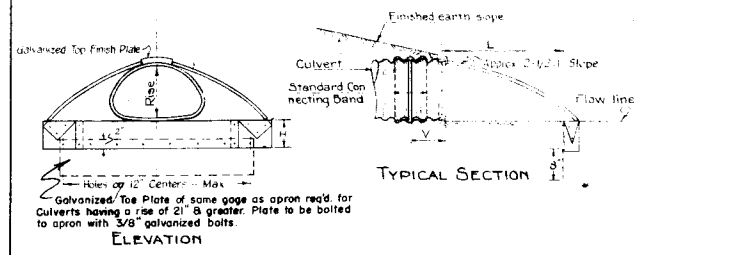
STANDARD HEADWALLS FOR SINGLE CORRUG. METAL PIPE CULVERTS

TABLE OF DIMENSIONS AND QUANTITIES

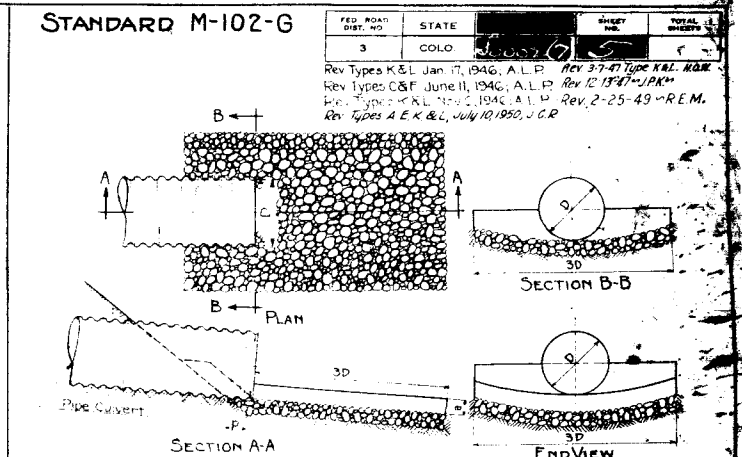
TYPE A			BOTH TYPES			TYPE C		
D	T	CLASS B CONCRETE IN TWO HEADWALLS	W	H	CORRUGATED METAL PIPE	CEMENT RUBBLE MASONRY IN TWO HEADWALLS	T	D
15'	1'-6"	18 Cu. Yds.	5'-3"	3'-9"	16 GAGE	2.2 Cu. Yds.	2'-0"	15'
18'	1'-6"	22 Do	6'-0"	4'-0"	16 Do	2.8 Do	2'-1"	18'
24'	1'-10"	33 Do	7'-6"	4'-6"	14 Do	4.1 Do	2'-4"	24'
30'	2'-0"	45 Do	9'-0"	5'-0"	14 Do	5.6 Do	2'-6"	30'
36'	2'-2"	60 Do	10'-6"	5'-6"	12 Do	7.4 Do	2'-8"	36'
42'	2'-5"	80 Do	12'-0"	6'-0"	12 Do	9.2 Do	2'-10"	42'
48'	2'-7"	100 Do	13'-6"	6'-6"	12 Do	11.5 Do	3'-0"	48'



STANDARD METAL APRONS FOR CORRUGATED METAL PIPE ARCH CULVERTS TYPE L



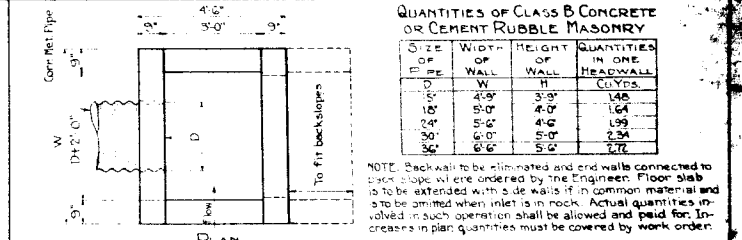
STANDARD METAL APRONS FOR CORRUGATED METAL PIPE ARCH CULVERTS TYPE L



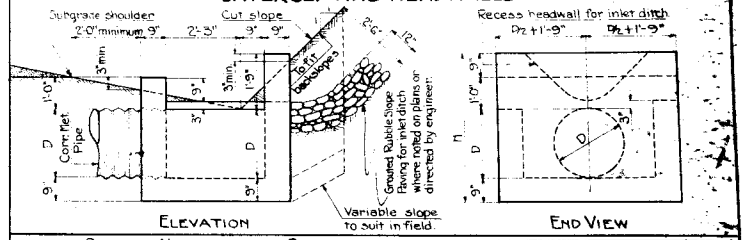
STANDARD GROUDED RUBBLE APRON FOR PIPE CULVERTS

SQUARE YARDS GROUDED RUBBLE SLOPE AND DITCH PAVING 1 FOOT THICK

SLOPE	D	15'	18'	24'	30'	36'	42'	48'	54'	60'	66'	72'	78'	84'
1:1	2'-0"	2	4	6	9	12	15	18	21	24	27	30	33	36
1:1	2'-0"	3	6	9	12	15	18	21	24	27	30	33	36	39
1:1	2'-0"	4	8	12	16	20	24	28	32	36	40	44	48	52
1:1	2'-0"	5	10	15	20	25	30	35	40	45	50	55	60	65
1:1	2'-0"	6	12	18	24	30	36	42	48	54	60	66	72	78
1:1	2'-0"	7	14	21	28	35	42	49	56	63	70	77	84	91
1:1	2'-0"	8	16	24	32	40	48	56	64	72	80	88	96	104
1:1	2'-0"	9	18	27	36	45	54	63	72	81	90	99	108	117
1:1	2'-0"	10	20	30	40	50	60	70	80	90	100	110	120	130
1:1	2'-0"	11	22	33	44	55	66	77	88	99	110	121	132	143
1:1	2'-0"	12	24	36	48	60	72	84	96	108	120	132	144	156
1:1	2'-0"	13	26	39	52	65	78	91	104	117	130	143	156	169
1:1	2'-0"	14	28	42	56	70	84	98	112	126	140	154	168	182
1:1	2'-0"	15	30	45	60	75	90	105	120	135	150	165	180	195
1:1	2'-0"	16	32	48	64	80	96	112	128	144	160	176	192	208
1:1	2'-0"	17	34	51	68	85	102	119	136	153	170	187	204	221
1:1	2'-0"	18	36	54	72	90	108	126	144	162	180	198	216	234
1:1	2'-0"	19	38	57	76	95	114	133	152	171	190	209	228	247
1:1	2'-0"	20	40	60	80	100	120	140	160	180	200	220	240	260
1:1	2'-0"	21	42	63	84	105	126	147	168	189	210	231	252	273
1:1	2'-0"	22	44	66	88	110	132	154	176	198	220	242	264	286
1:1	2'-0"	23	46	69	92	115	138	161	184	207	230	253	276	299
1:1	2'-0"	24	48	72	96	120	144	168	192	216	240	264	288	312
1:1	2'-0"	25	50	75	100	125	150	175	200	225	250	275	300	325
1:1	2'-0"	26	52	78	104	130	156	182	208	234	260	286	312	338
1:1	2'-0"	27	54	81	108	135	162	189	216	243	270	297	324	351
1:1	2'-0"	28	56	84	112	140	168	196	224	252	280	308	336	364
1:1	2'-0"	29	58	87	116	145	174	203	232	261	290	319	348	377
1:1	2'-0"	30	60	90	120	150	180	210	240	270	300	330	360	390
1:1	2'-0"	31	62	93	124	155	186	216	246	276	306	336	366	396
1:1	2'-0"	32	64	96	128	160	192	222	252	282	312	342	372	402
1:1	2'-0"	33	66	99	132	165	198	228	258	288	318	348	378	408
1:1	2'-0"	34	68	102	136	170	204	234	264	294	324	354	384	414
1:1	2'-0"	35	70	105	140	175	210	240	270	300	330	360	390	420
1:1	2'-0"	36	72	108	144	180	216	246	276	306	336	366	396	426
1:1	2'-0"	37	74	111	148	185	222	252	282	312	342	372	402	432
1:1	2'-0"	38	76	114	152	190	228	258	288	318	348	378	408	438
1:1	2'-0"	39	78	117	156	195	234	264	294	324	354	384	414	444
1:1	2'-0"	40	80	120	160	200	240	270	300	330	360	390	420	450
1:1	2'-0"	41	82	123	164	205	246	276	306	336	366	396	426	456
1:1	2'-0"	42	84	126	168	210	252	282	312	342	372	402	432	462
1:1	2'-0"	43	86	129	172	215	258	288	318	348	378	408	438	468
1:1	2'-0"	44	88	132	176	220	264	294	324	354	384	414	444	474
1:1	2'-0"	45	90	135	180	225	270	300	330	360	390	420	450	480
1:1	2'-0"	46	92	138	184	230	276	306	336	366	396	426	456	486
1:1	2'-0"	47	94	141	188	235	282	312	342	372	402	432	462	492
1:1	2'-0"	48	96	144	192	240	288	318	348	378	408	438	468	498
1:1	2'-0"	49	98	147	196	245	294	324	354	384	414	444	474	504
1:1	2'-0"	50	100	150	200	250	300	330	360	390	420	450	480	510
1:1	2'-0"	51	102	153	204	255	306	336	366	396	426	456	486	516
1:1	2'-0"	52	104	156	208	260	312	342	372	402	432	462	492	522
1:1	2'-0"	53	106	159	212	265	318	348	378	408	438	468	498	528
1:1	2'-0"	54	108	162	216	270	324	354	384	414	444	474	504	534
1:1	2'-0"	55	110	165	220	275	330	360	390	420	450	480	510	540
1:1	2'-0"	56	112	168	224	280	336	366	396	426	456	486	516	546
1:1	2'-0"	57	114	171	228	285	342	372	402	432	462	492	522	552
1:1	2'-0"	58	116	174	232	290	348	378	408	438	468	498	528	558
1:1	2'-0"	59	118	177	236	295	354	384	414	444	474	504	534	564
1:1	2'-0"	60	120	180	240	300	360	390	420	450	480	510	540	570



INTERSECTING HEADWALLS



GENERAL NOTES FOR ALL STRUCTURES

COLORADO STATE HIGHWAY DEPARTMENT

STANDARD HEADWALLS

INTERSECTING HEADWALLS

GALVANIZED METAL APRONS

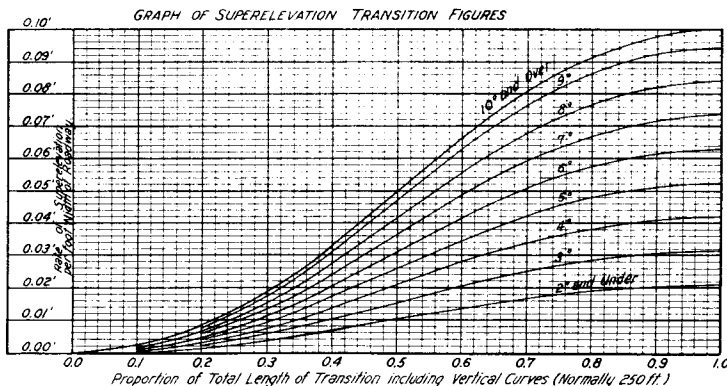
GROUDED RUBBLE APRONS

FOR CORR. MET. PIPE CULVERTS

Designed by **ALP** Approved by **ALP**
 Made by **ALP** Bridge Engineer
 Checked by **H.W.P.** Date December 15, 1945



DISTANCE FROM B.Y. (PROPORTION)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	MAX 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	0.02086	0.02100
3°	0.00066	0.00263	0.00519	0.01050	0.01575	0.02100	0.02559	0.02888	0.03094	0.03150
4°	0.00089	0.00350	0.00788	0.01400	0.02100	0.02800	0.03413	0.03850	0.0413	0.04200
5°	0.00109	0.00438	0.01050	0.01750	0.02625	0.03500	0.04286	0.04813	0.0514	0.05250
6°	0.00131	0.00525	0.01181	0.02100	0.03150	0.04200	0.05119	0.05775	0.06163	0.06300
7°	0.00153	0.00613	0.01378	0.02450	0.03675	0.04900	0.05972	0.06738	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	0.00209	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



The transition in this case, from crowned section to super-elevated 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 super-elevation at a point 100 ft. inside the curve.



Super-elevation transition at the outside ends of compound curves shall be constructed in accordance with rules given under CASE 1.

Super-elevation transition between the arcs of different radii shall be made as in CASE 1, except that the entire transition shall lie within the limits of the curve of the longer radius.

In case of two curves in the same direction having a tangent distance of less than six times the lower of the radii, the intervening tangent shall be super-elevated on 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.



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

[illegible]

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.

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 is to remain at the standard elevation of 0.125 ft below the profile grade, and the outside edge of the sidewalk is to be sloped at the rate per foot width of roadway given in the table.

The Section is to be related about the normal inside edge of the Pavement, with a $1\frac{1}{2}''$ 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.

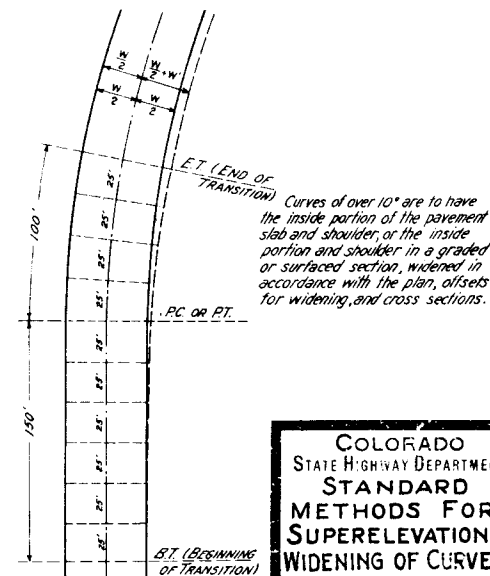
The outside ditch on superelevated Sections is to be modified, where necessary, to provide drainage. Otherwise, this ditch shall conform to normal ditch section shown for Project.

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

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
WIDENING

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

Designed by R.E.L.
Made by P.B.B.
Checked by W.S.A. W. Marshall
JANUARY 1st 1945

Case I

STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

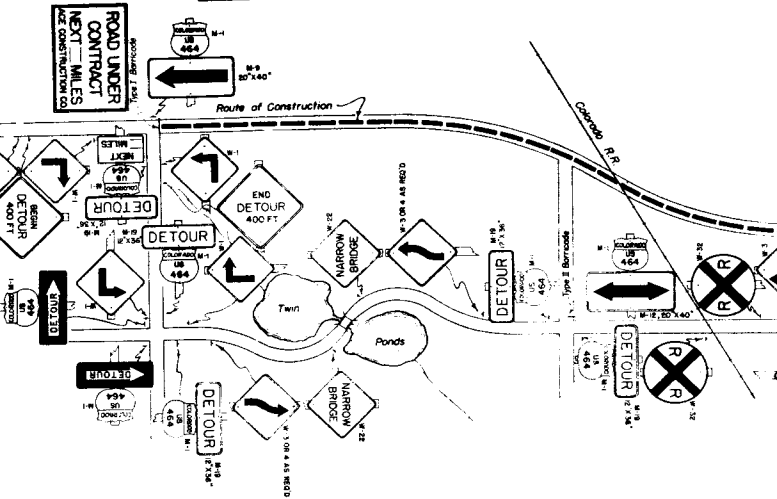
STANDARD M-2-DS

DISTRICT	SHEET	TOTAL SHEETS
9	8	

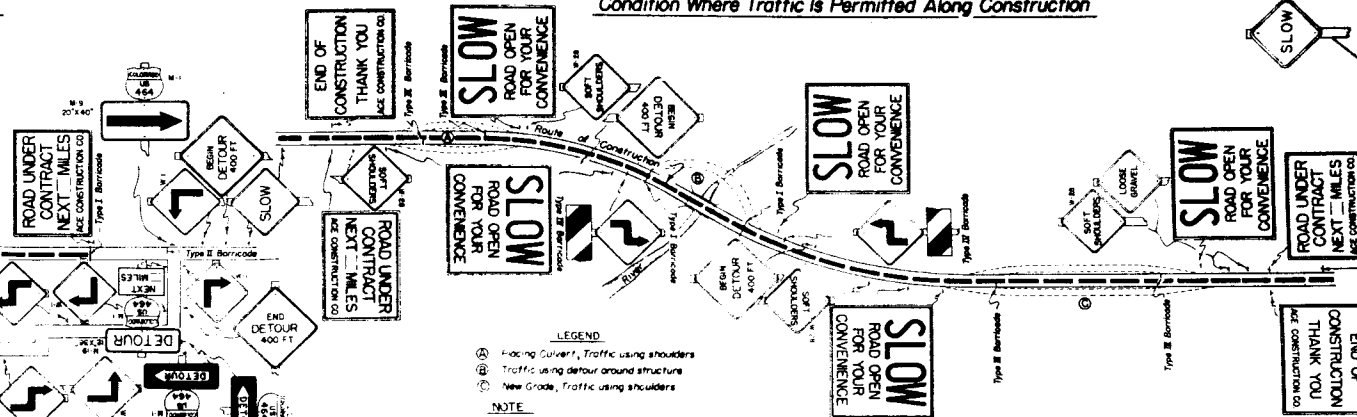
REV - 8/16/49 - E.E.O.
REV - 2/3/50 - E.A.R.

Typical Methods Of Marking Highways & Detours

Detour Condition Where Traffic Is Prohibited Along Construction



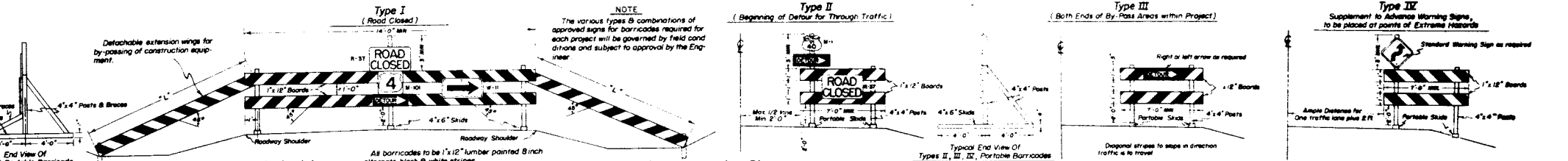
Condition Where Traffic Is Permitted Along Construction



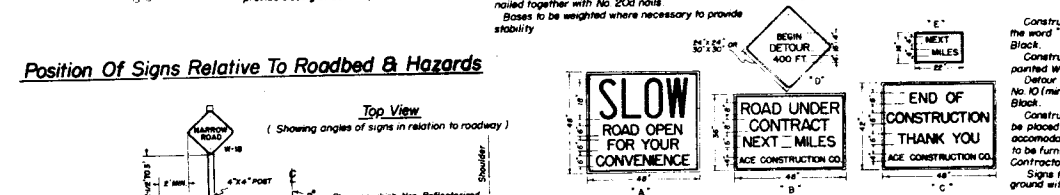
LEGEND
 (A) Facing Curve, Traffic using shoulders
 (B) Traffic using detour around structure
 (C) New Grade, Traffic using shoulders

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 & Engineer's equipment must be parked so that signs & barricades are visible to traffic at all times.

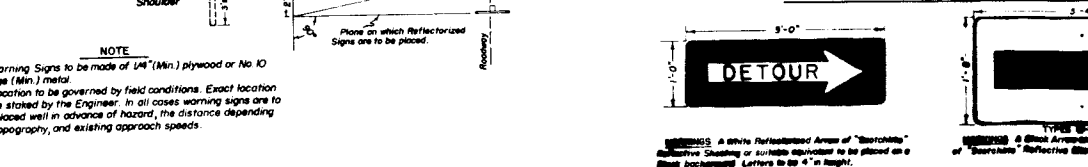
Details Of Barricades



Details Of Construction Signs



Details Of ReflectORIZED Arrows



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 white 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 "Scotchite" 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:
 - All Barricades
 - "SLOW, ROAD OPEN FOR YOUR CONVENIENCE" Signs
 - Standard Warning & Directional Signs
 - "ROAD UNDER CONTRACT, NEXT MILES, CONTRACTORS NAME" Signs
 - Approved Directional Arrows for Barricades
 - "END OF CONSTRUCTION, THANK YOU, CONTRACTORS NAME" Signs
 - Placards and Plates as follows:
 - Type I Barricades: As Required
 - Type II, III, IV Barricades: Minimum 2
 - Standard Warning Signs: Minimum 2
 - As Required
 - As Required
 - Minimum 2
 - Minimum 3
 - Minimum 1
- Where traffic is prohibited from the Project, the Detour will be marked by the Department except for Barricades adjacent with approved Warning Signs & Arrows which will be provided, erected & maintained by the Contractor at ends of Project and intersecting roads.
- All number used shall be of sound durable material. Barricades, Signs, Symbols & Lettering conforming to styles noted herein will be used. Unapproved lettering will not be accepted.
- Placards and Plates shall be of the following type approved by the Department and shall be placed 3 ft to 5 ft ahead of the sign to be illuminated. Placards shall be placed to protect all signs and barricades from vehicle encroachment during both forward and reverse.

COLORADO
 STATE HIGHWAY DEPARTMENT

Standard Roadway
 Construction Traffic Signs

Designed by: GCM
 Made by: GCM
 Checked by: GCM

Approved by: [Signature]
 Date: 7-25-1949

SEC 5, T 31 S, R 46 W

FED ROAD DIV NO	DIST.	PROJ. NO	SHEET NO	TOTAL SHEETS
9	COLO.	S0002(7)	9	

Rev 9-29-50 ELP - New Sheet

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.

All signs encroaching on construction shall be moved or adjusted by owners.

The following Stations apply to Rd Appr.
Right of Station 18+00.

- 3+20 - Reg'd Road Approach, Rt.
- 4+70 - Reg'd 18+20 Side Drain & Road Approach, Rt. Remove 4' x 3' 1/2" W.B.C. Rt.
- 7+00 - Reg'd Road Approach, Rt.
- 9+50 - Reg'd Road Approach, Rt.
- 10+60 - Reg'd Road Approach, Rt.

STA. 12+76 BEGIN S0002(7)

22' West of Sta. 0+00 Begin S0002(3)

12+76 - Reg'd Approach to Project

13+75 - Reg'd Project Marker, Lt.
(To be furnished & installed by State Forces)

S0002(7)

21+73 Tel. Ser. Line Crosses Highway

MOUNTAIN STATES T. & T. CO.
(Entire Project)

POT. 28+225

SOUTHEAST POWER ASSN.
8 R.E.A. CO-OP.
(Entire Project)

18+00 - Reg'd Road Approach, Rt.

18+90 - Reg'd Road Approach, Rt.

Section Line
STA 24+063

SEC 32, T 30 S, R 46 W

SEC 31, T 30 S, R 46 W

NO. 34-A-1 (7/11)
LL = 44.4
PI = 19.2
S = 200+00.0
C.B.R. = 3.2

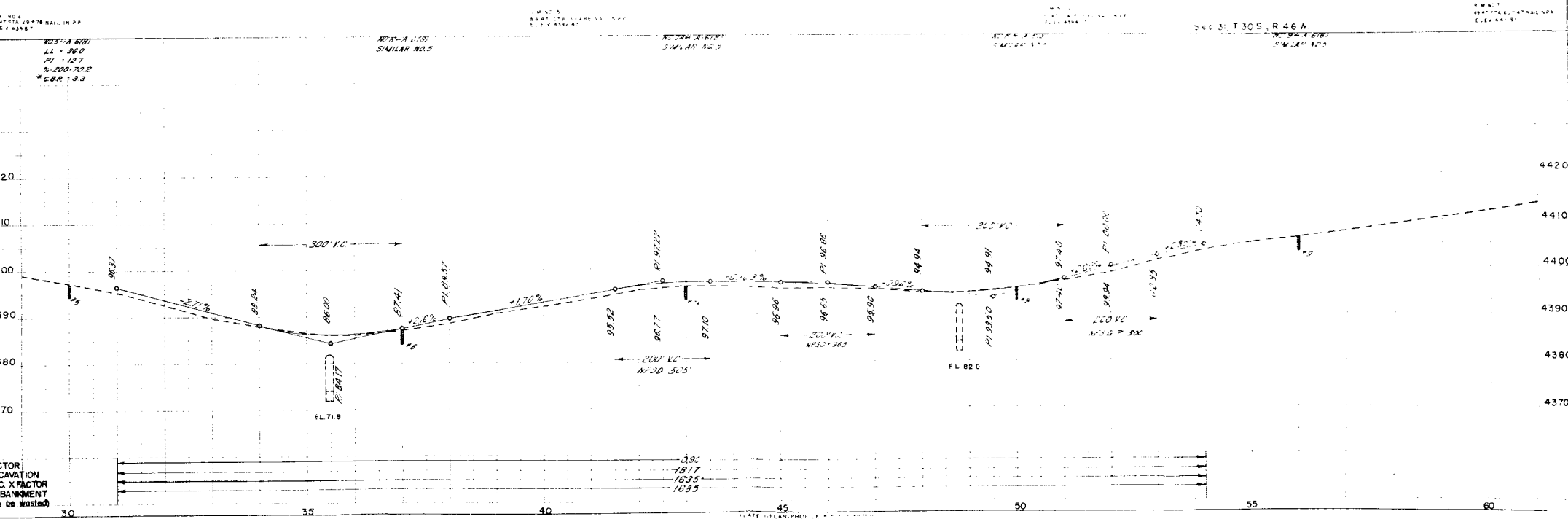
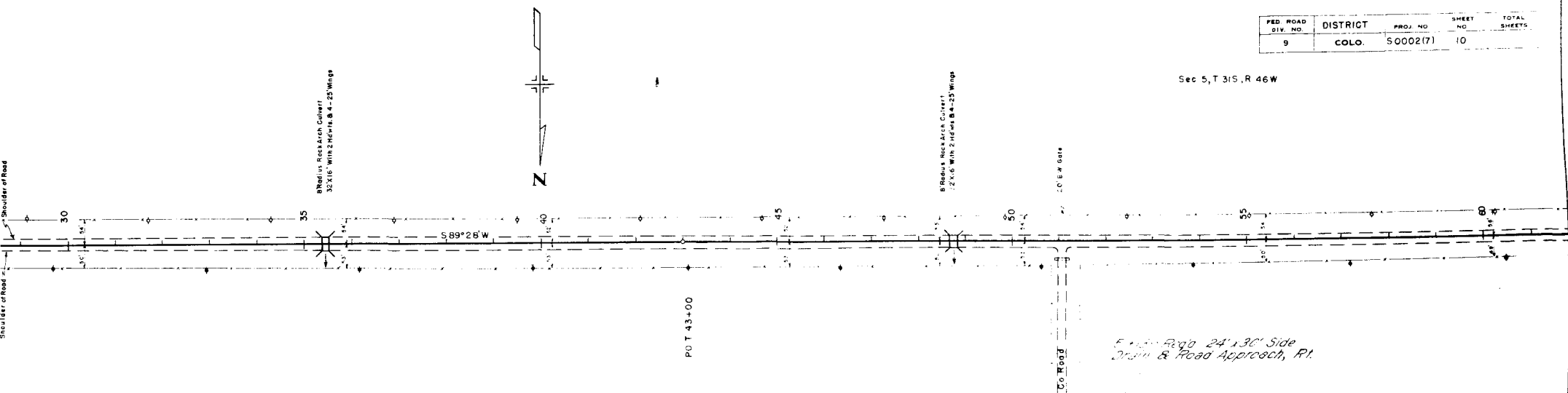
Note:

- * Indicates Referenced C.B.R.'s
- * Indicates Interpolated C.B.R.'s

NO. 34-A-1 (7/11)
LL = 44.4
PI = 19.2
S = 200+00.0
C.B.R. = 3.2

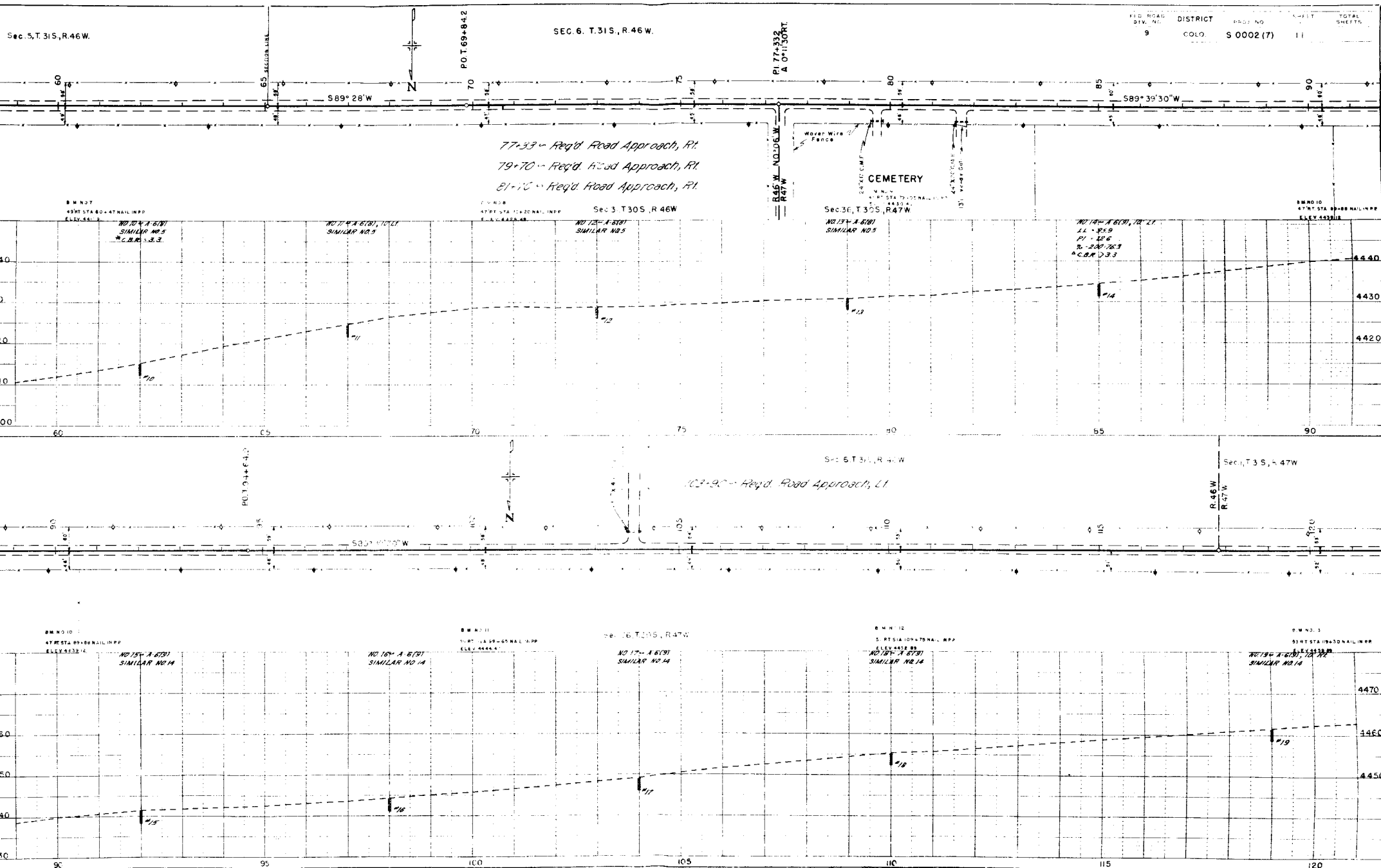
FED. ROAD DIV. NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	50002(7)	10	

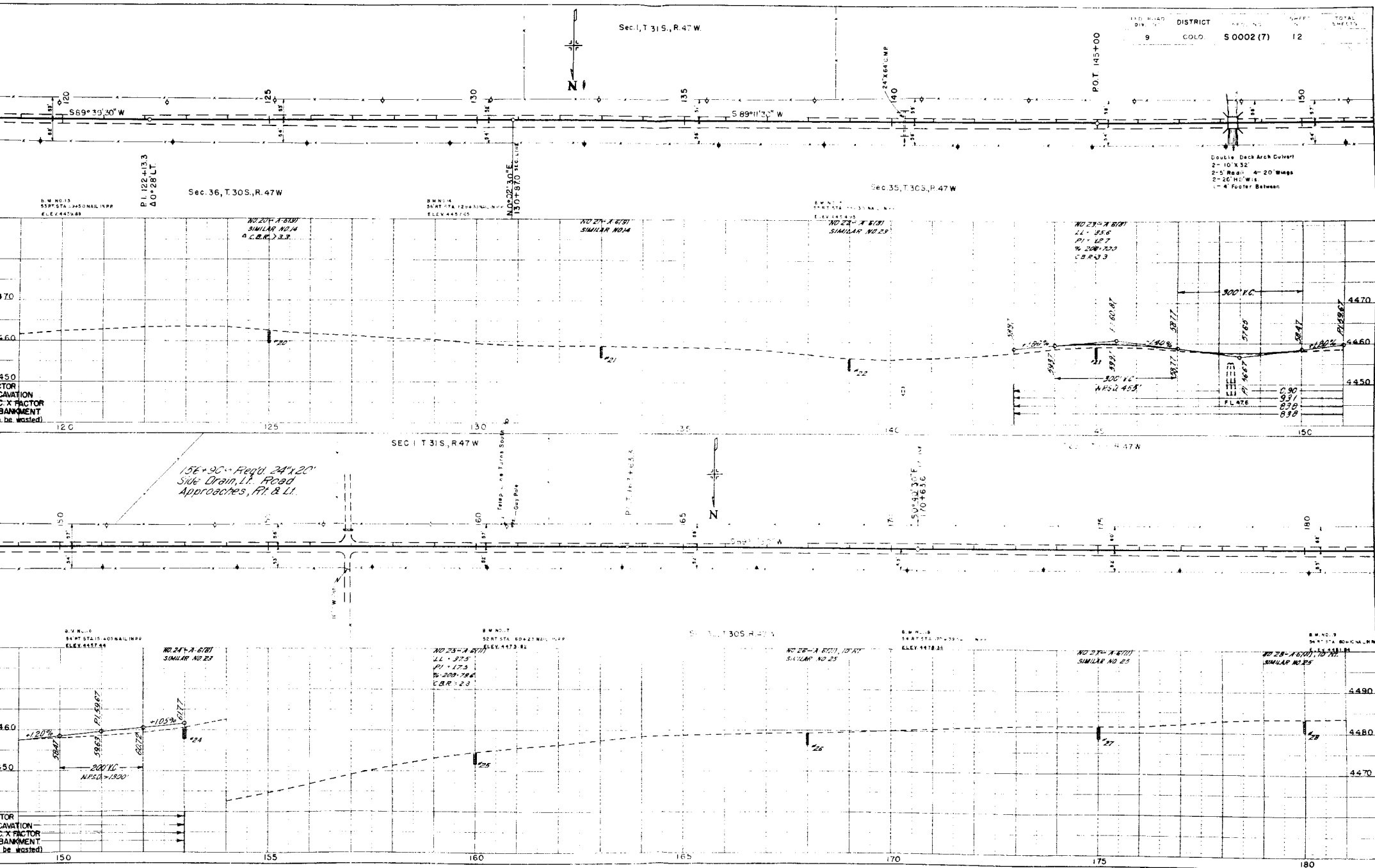
Sec 5, T 31S, R 46W



STOR.
CAVATION
S. X FACTOR
BANKMENT
(be wasted)

DATE: 11/11/11
BY: [signature]
CHECKED: [signature]





FED. ROAD DISTRICT	PRD. NO.	SHEET	TOTAL SHEETS
9 COLO.	S0002 (7)	13	

