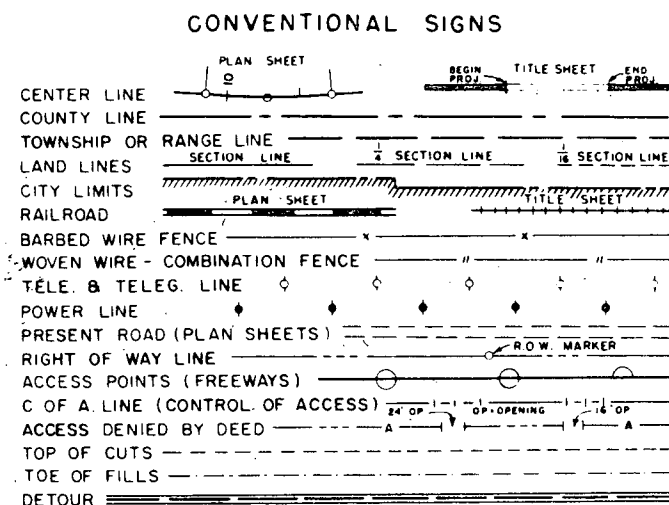


DEPARTMENT OF HIGHWAYS STATE OF COLORADO

PLAN AND PROFILE OF PROPOSED FEDERAL AID PROJECT NO. ER 42 (I), SECOND CONTRACT STATE HIGHWAY NO. 233 PUEBLO COUNTY



SCALES OF ORIGINAL DRAWINGS

ON PLAN, 1 IN. = 100 FT.
ON PROFILE, 1 IN. = 100 FT. HORIZONTAL
1 IN. = 10 FT. VERTICAL
GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD
GROSS LENGTH OF PROJECT: 3010.0 FT. = 0.570 MI.
NET LENGTH OF PROJECT: 2962.4 FT. = 0.561 MI.

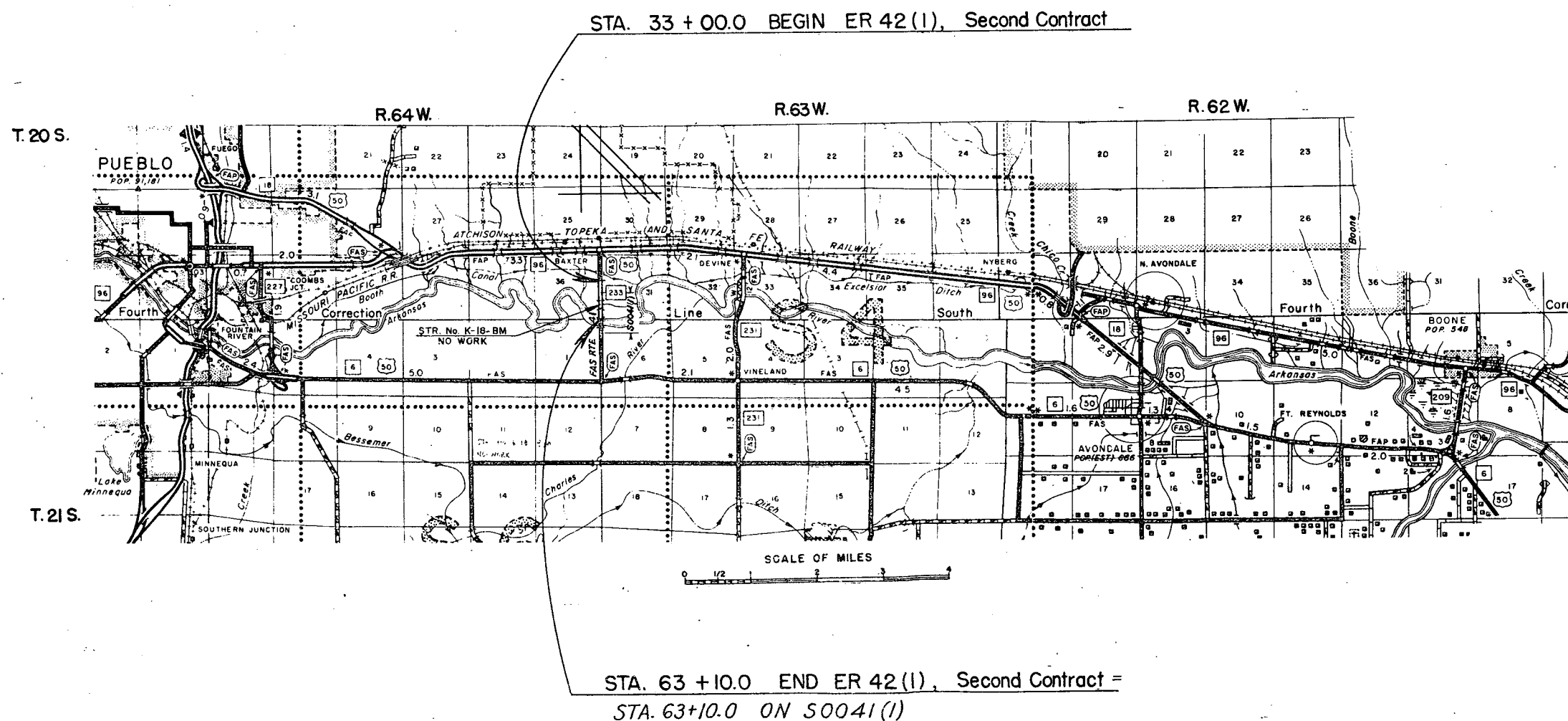
FEDERAL ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLORADO	ER 42(I), SECOND CONTRACT	1

INDEX OF SHEETS

SHEET NO.

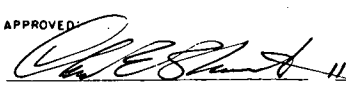
1. Title Page and Sketch Map.
2. Typical Section, General Notes, Tabulation of Length, Surfacing Plan, Structure Quantities, Fencing Requirements, and Delineators.
3. Summary of Approximate Quantities.
4. Alignment Plan and Profile.

M-6-BA. Traffic Signing for Highway Construction - 3 Sheets (2-1-65)
M-6-B. Construction Traffic Signs - 2 Sheets (1-31-64) & (8-24-64)
M-6-CA. Identification Signs (6-28-64)
M-76-A. Wire fences and Gates - 2 Sheets (4-8-65)
M-142-AA. Timber Barricades (2-1-65)
M-192-AA. Delineators - 2 Sheets (10-19-65)



SEE SPECIAL PROVISIONS FOR
NOTICE TO BIDDERS

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

APPROVED:  11-8-65
CHIEF ENGINEER DATE

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

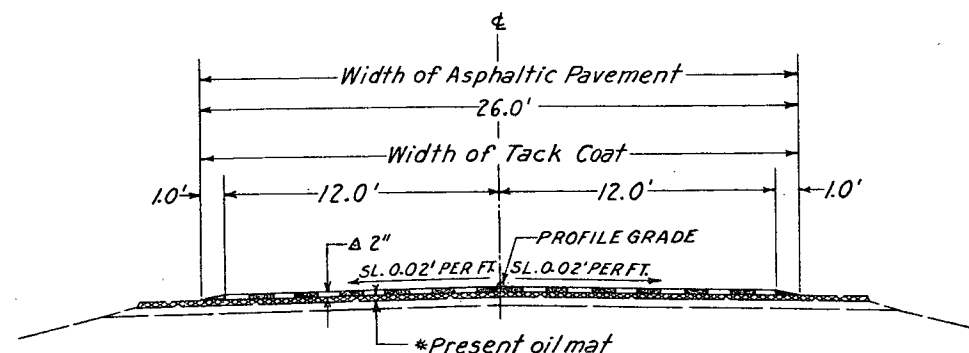
APPROVED: _____ DATE _____
DIVISION ENGINEER

W.E.M.

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	ER 42(1) SECOND CONTRACT	2	

TYPICAL SECTION

STA 33+00 TO STA 55+89.4
STA 56+37 TO STA 63+10



* A leveling course will be required over present oil mat.

Δ Approximate 2" thickness of Plant Mixed Asphaltic Surfacing shall be placed at the rate of 31 tons per 100 Lin. Ft. of Roadway.

Profile Grade shall be the thickness of the asphalt mat above the present road.

TABULATION OF LENGTH

STATION	ROADWAY LIN. FT.	NO WORK LIN. FT.
33+00 BEGIN ER 42(1) SECOND CONTRACT	1,700.0	
50+00 ER 42(1) = 50+00 BEGIN 50041(1)	589.4	
55+89.4 END WORK		47.6
56+37 BEGIN WORK	673.0	
63+10 END ER 42(1) SECOND CONTRACT = 63+10 50041(1)		
TOTALS	2,962.4	47.6
SUMMARY		
ROADWAY (NET LENGTH)	2,962.4	0.561
NO WORK	47.6	0.009
GROSS LENGTH	3,010.0	0.570

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.

Traffic will use the present travelled roadway during construction.

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

For preliminary plan quantities of Asphaltic road material the following rate of application was used:

TACK COAT.....0.1 GALS PER SQ. YD.

Rate of application and grade of Asphaltic road material shall be determined by the Engineer at time of application.

Application methods for liquid Asphaltic road materials, which result in the discoloration of concrete structures will not be permitted.

It is estimated that Roadway and channel repairs will require 32 hours of blading.

Existing Guard Posts encroaching on construction will be removed by State Forces.

All side approach roads to the project shall be primed and asphaltic surfaced 2" thick as follows:

Field approaches; 4' out from edge of processed mat.

All others; 50' out from edge of processed mat or to Right of Way line, whichever is less.

SURFACING PLAN

MATERIAL TO BE PLACED	SOURCE	QUANTITY TONS		
		Ø BASE COURSE	PLANT MIX	
			LEVELING	TOP COURSE
33+00 TO 55+89.4	UNDESIGNATED	232	184	710
56+37 TO 63+10		68	54	209
FROM LIST OF STRUCTURES				26
TOTALS		300	238	945

Ø FOR BUILDING UP SHOULDERS

DELINEATORS

STATION	SPACING	TYPE I EACH	TYPE III EACH
55+89.4	BRIDGE	4	1
56+37	BRIDGE	4	1
63+10	BRIDGE	4	1
TOTALS		12	3

STRUCTURE QUANTITIES

LOCATION	PLANT MIX ASPH. SURF. TONS	MISCELLANEOUS
33+		{ I-IDENTIFICATION SIGN, RT. (STATE FORCES)
33+32	2	
34+29	2	
38+00	2	
39+22	2	
50+ TO 51+		{ REMOVE DEBRIS FROM R.O.W. & ADJ. PROP. (FORCE ACCOUNT)
50+23	2	
59+72	2	
59+84	12	
61+38	2	
63+		{ I-IDENTIFICATION SIGN, LT. (STATE FORCES)
TOTALS	26	

FENCING REQUIREMENTS

STATION	SIDE	REMOVE FENCE LIN. FT.	BUILD FENCE WITH MET. POSTS CORNER & BARB. WIRE LIN. FT.	POSTS REQUIRED	
				CORNER & LINE BR. EACH	END EACH
44+ TO 55+	RT.	1195	1195	1	3
56+ TO 63+	RT.	670	670	2	2
TOTALS		1865	1865	3	5

SUMMARY OF APPROXIMATE QUANTITIES

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	ER 42 (1) SECOND CONTRACT	3	

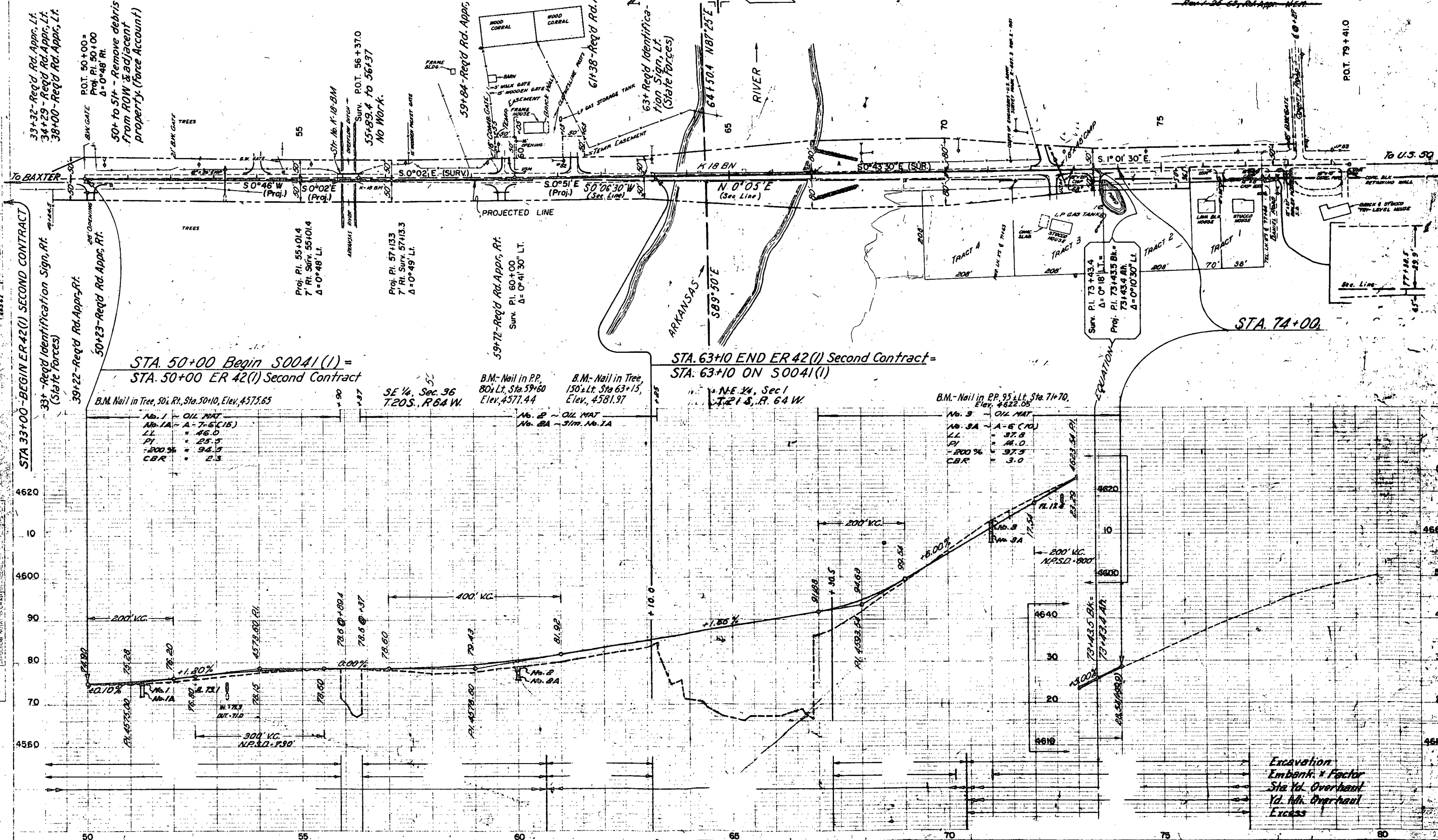
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SW 1/4, Sec. 31
T. 20 S., R. 63 W.

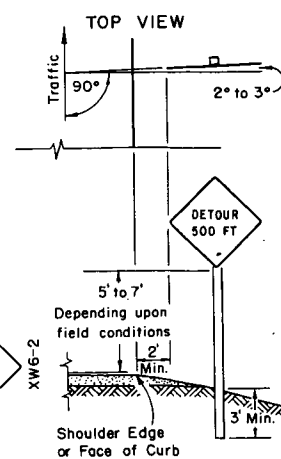
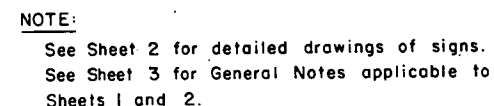
NW 1/4, Sec. 6
T.21S., R. 63W.

FED. ROAD DIST. NO.	DIVISION	PROJ. NO.	SHEET N°	TOTAL SHEETS
9	SOLO.	ER 42(1) SECOND CONTRACT	3	

~~Rev. 11-20-68, RAW. J.G.R.~~
~~Rev. 1-16-69, R.A.M. M.E.M.~~
~~Rev. 1-26-69, R.A.M. M.E.M.~~



FEBRUARY 1, 1965

[illegible]

Designed By: D.R.W.	Approved By: <u>ALP</u>
Made By: JLS	Date <u>Feb. 1</u> , 19 <u>65</u>
Checked By: J.B.	

STANDARD M-6-BA

(SHEET 2 OF 3 SHEETS)

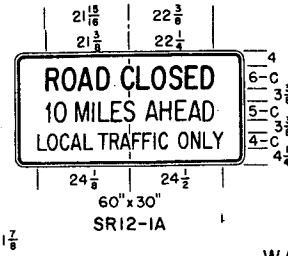
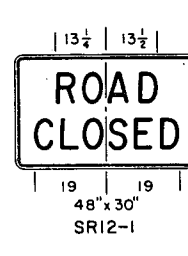
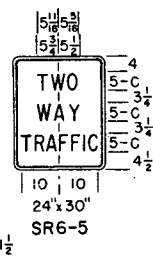
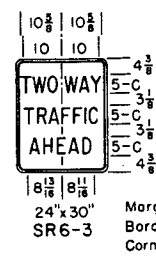
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FEDERAL ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLORADO		

REVISIONS	

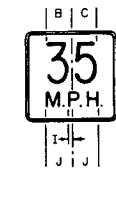
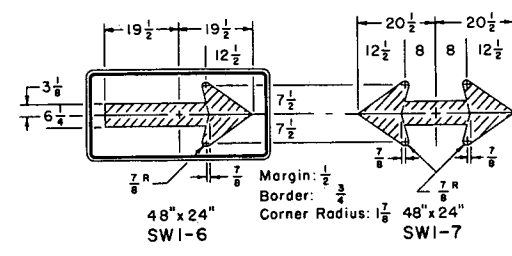
REGULATORY SIGNS

See Note No. 9



WARNING SIGNS

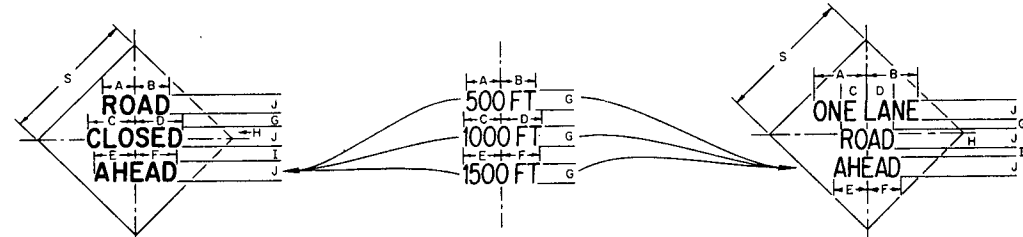
See Note No. 10



Panel	A	B	C	D	E	F	G	H	I	J
SW13-1	18" x 18"	3/8"	5/8"	5/8"	2 1/4"	8-C	2	3-E	2 3/4"	5 3/8"
XW13-1	24" x 24"	3/8"	5/8"	5/8"	3 1/4"	10-C	2 1/2"	4-E	4	6 7/8"

WARNING SIGNS

See Note No. 10



S	A	B	C	D	E	F	G	H	I	J
SW14-3	48	11 1/2	12 1/2	16 3/8	16 3/8	14 3/8	4 3/8	4 3/8	5 3/8	7-D
CW14-3	36	8 3/8	8 3/8	11 3/8	11 3/8	10 3/8	3 3/8	3 3/8	3 3/8	5-D

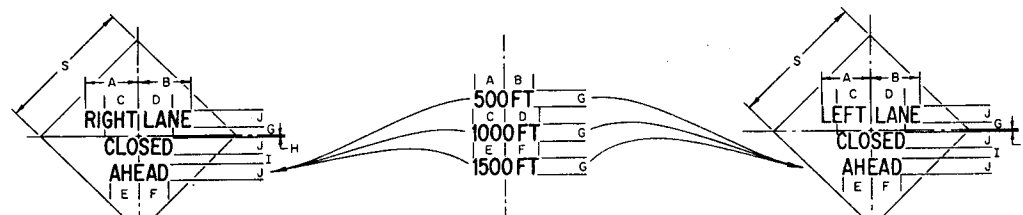
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CW14-3A	36	8 3/8	8 3/8	9 3/8	10 3/8	9 3/8	5-C
CW14-5A							

S	A	B	C	D	E	F	G	H	I	J
SW14-5	48	18 1/2	17 1/2	9 3/8	9 3/8	11 1/2	3 1/2	5 1/2	3 1/2	7-C
CW14-5	36	13 1/2	12 1/2	6 1/2	6 1/2	8 1/2	2 1/2	3 1/2	2 1/2	5-C

S	A	B	C	D	E	F	G
SW14-4	48	18 3/8	18 3/8	16 3/8	16 3/8	1 1/2	8-D
CW14-4	36	13 3/8	13 3/8	12 3/8	12 3/8	2 3/8	6-D

S	A	B	C	D	E	F	G
SW14-4A, SW14-4B	48	13 1/2	13 1/2	15	16 3/8	15 3/8	8-C
CW14-4A, CW14-4B	36	10 3/8	10 3/8	11 1/2	12 3/8	11 3/8	6-C

S	A	B	C	D	E	F	G	H
SW14-4B	48	9 3/8	9 3/8	18 3/8	18 3/8	4 1/2	6	5 8-D
CW14-4B	36	6 3/8	6 3/8	13 3/8	13 3/8	3 3/8	4 1/2	3 3/8 6-D



	S	A	B	C	D	E	F	G	H	I	J
SW14-6	48	18 $\frac{3}{8}$	18 $\frac{7}{16}$	11 $\frac{3}{4}$	11 $\frac{3}{4}$	10 $\frac{1}{4}$	10 $\frac{1}{4}$	2 $\frac{7}{8}$	7 $\frac{7}{16}$	3 $\frac{5}{16}$	6-C
CW14-6	36	15 $\frac{3}{8}$	15 $\frac{3}{8}$	9 $\frac{13}{16}$	9 $\frac{13}{16}$	8 $\frac{3}{4}$	8 $\frac{3}{4}$	2 $\frac{3}{8}$	3 $\frac{3}{8}$	2 $\frac{3}{8}$	5-C

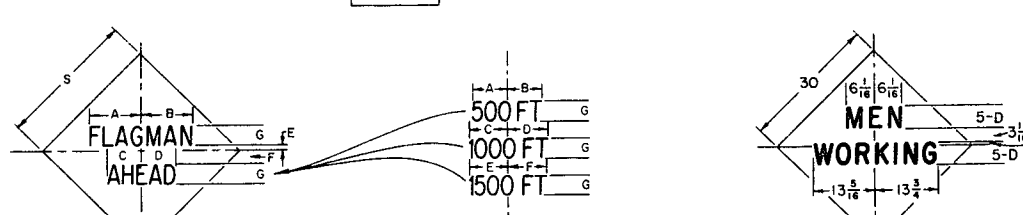
S	A	B	C	D	E	F	G
SW14-6A	48	17 3/8	17 3/8	11 3/8	12 3/8	11 3/8	6-C
SW14-7A	48	10 3/8	10 3/8	11 3/8	12 3/8	11 3/8	7-C
CW14-6A	36	8 3/8	8 3/8	9 3/8	10 3/8	9 3/8	5-C
CW14-7A							

	S	A	B	C	D	E	F	G	H	I	J
SW14-7	48	17 $\frac{7}{8}$	17 $\frac{7}{8}$	11 $\frac{3}{4}$	11 $\frac{3}{4}$	10 $\frac{1}{2}$	10 $\frac{1}{2}$	2 $\frac{7}{8}$	7 $\frac{7}{8}$	3 $\frac{5}{8}$	6-C
CW14-7	36	14 $\frac{1}{4}$	14 $\frac{1}{4}$	9 $\frac{13}{16}$	9 $\frac{13}{16}$	8 $\frac{9}{16}$	8 $\frac{9}{16}$	2 $\frac{3}{4}$	3 $\frac{3}{4}$	2 $\frac{3}{4}$	5-C

	S	A	B	C	D	E	F	G	H
SW14-8	48	13 $\frac{13}{16}$	13 $\frac{9}{16}$	9 $\frac{7}{16}$	10 $\frac{1}{16}$	11 $\frac{7}{8}$	11 $\frac{7}{8}$	3 $\frac{11}{16}$	3 $\frac{1}{2}$
CW14-8	36	11	10 $\frac{3}{4}$	8	8 $\frac{1}{2}$	10 $\frac{7}{8}$	10 $\frac{7}{8}$	2 $\frac{5}{8}$	2 $\frac{1}{2}$

S	A	B	C	D	E	F	G
SW14-1A	48	12	12 1/2	13 1/2	14 1/2	13 1/2	7-C
SW14-8A	48	12	12 1/2	13 1/2	14 1/2	13 1/2	7-C
CW14-1A	36	8 3/8	8 3/8	9 3/8	10 3/8	9 3/8	5-C
CW14-8A							

S	A	B	C	D	E	F	G	H	I	J
SW14-1	48	9	9 3/8	26	25 3/8	11 3/8	11 3/8	4 3/8	3 3/8	4 3/8 7-C
CW14-1	36	6 3/8	6 3/8	19	18 3/8	8 3/8	8 3/8	3 3/8	2 3/8	3 3/8 5-C



S	A	B	C	D	E	F	G
SW14-9	48	18	18	11 1/2	11 1/2	1 1/2	4 3/8 7-C
CW14-9	36	15 1/2	15 1/2	10 1/2	10 1/2	1 1/2	4 3/8 6-C

S	A	B	C	D	E	F	G
SW14-9A	48	12	12 1/2	13 1/2	14 1/2	13 1/2	7-C
CW14-9A	36	10 3/8	10 3/8	11 3/8	12 3/8	11 3/8	6-C

S	A	B	C	D	E	F	G
SW14-9A	48	12	12 1/2	13 1/2	14 1/2	13 1/2	7-C
CW14-9A	36	10 3/8	10 3/8	11 3/8	12 3/8	11 3/8	6-C

S	A	B	C	D	E	F	G
SW14-9A	48	12	12 1/2	13 1/2	14 1/2	13 1/2	7-C
CW14-9A	36	10 3/8	10 3/8	11 3/8	12 3/8	11 3/8	6-C

GUIDE SIGNS

See Note No. 11

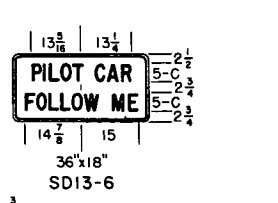
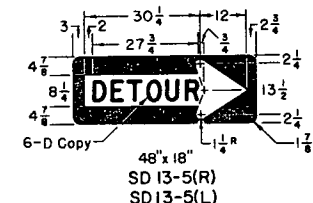
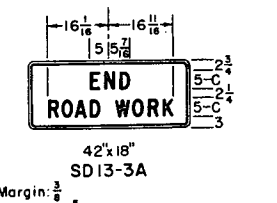
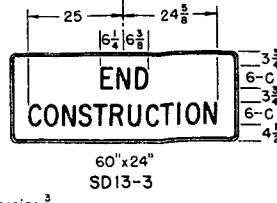
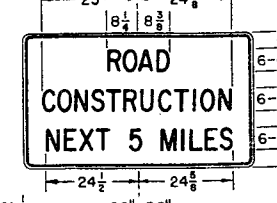
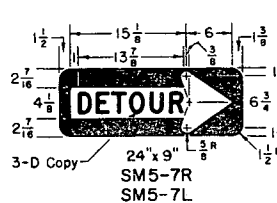
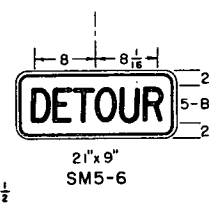
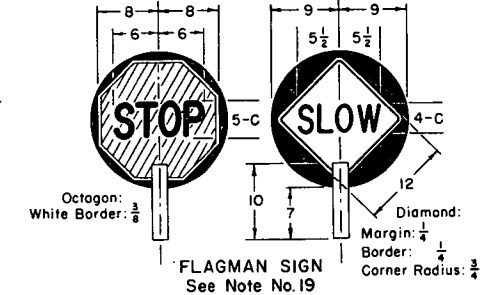
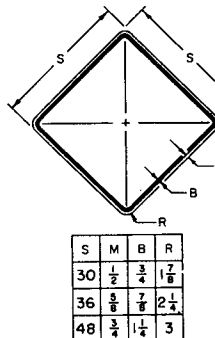


PLATE DETAILS



NOTES:

SEE SHEET 1 FOR TYPICAL SIGNING AND SIGN PLACEMENT.
SEE SHEET 3 FOR GENERAL NOTES APPLICABLE TO SHEETS 1 AND 2.

ALL DIMENSIONS THAT ARE NOT LABELED ARE IN INCHES.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

TRAFFIC SIGNING
FOR HIGHWAY
CONSTRUCTION

Designed By: D.R.W.
Made By: H.B.D.
Checked By: J.B.
Approved By: *[Signature]*
Date: Feb. 1, 1965

STANDARD M-6-BA
(SHEET 3 OF 3 SHEETS)
FEBRUARY 1, 1965

FEDERAL ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLORADO		
REVISIONS			

GENERAL NOTES

1. All work shall be done in accordance with: (a) the Standard Specifications of the Department of Highways applicable to the Project, and (b) the "Manual on Uniform Traffic Control Devices for all Classes of Streets and Highways" published by the Department of Highways.
2. 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 (including connecting roads) with well-maintained Barricades, Warning, and Guide Signs. All Barricades and Signs shall be moved, added to, changed or removed as required during the progress of construction and removed entirely when the Project is completed.
3. Where traffic is prohibited from the Project the Detour will be marked by the Department except that the Contractor shall provide, erect and maintain Barricades, complete, (when required) at the ends of the Project, ends of the Detour and connecting roads. All U. S. or State Route Markers required for the Project will be furnished and installed by the Department. The location and positioning of Warning Signs, Barricades, and Regulatory Signs shall be as recommended by the appropriate District Engineering Forces of the Department.
4. Work on the Project shall not be started until all required signs are in place and approved by the Engineer. Where speed control appears necessary such speed control shall be requested from the Engineer by the Contractor. Control of speed through a construction zone may be achieved by Advisory Speed plates in conjunction with Warning Signs (SW13-1 for use with 30" Warning Signs and XW13-1 for use with 36" and 48" Warning Signs). The Advisory Speed plate is to be posted only at those locations where the safe speed is lower than the imposed Regulatory speed limit.
5. All Signs and Barricades shall be placed for best visibility and legibility, maintained in good condition and kept clean and free of dirt at all times. Contractor's and Engineer's vehicles and equipment must be parked so that signs and barricades are visible to approaching traffic at all times.
6. Where two identical signs are used for dual posting they are to be staggered on the two sides of the roadway for a minimum distance of 75' to avoid a tunneling effect.
7. Examples for marking Projects, as shown on Sheet 1, are typical of signs required and are subject to alteration to fit actual conditions encountered in the field. Locations for control devices are to be staked by the Engineer. In all cases Warning signs are to be placed well in advance of the hazard, the distance depending on topography and existing approach speeds. 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.
8. Desirable sizes for signs are shown on Sheet 1 of this Standard. Where warranted larger or smaller signs shall be used. Detailed dimensions for signs normally used in connection with construction are shown on Sheet 2 of this Standard. For information on standard roadway signs not detailed on this Standard see the "Manual on Uniform Traffic Control Devices for all Classes of Streets and Highways" published by the Department of Highways.
9. Signs with the prefix "R" in the sign code are Regulatory signs and as such impose legal compulsions or restrictions on drivers and should only be used as authorized by the Engineer.
10. Signs with the prefix "W" in the sign code are Warning signs and are used to alert traffic to existing or potentially hazardous conditions.
11. Signs with the prefix "D" or "M" in the sign code are Guide signs. Those with the prefix "D" convey general information and those with the prefix "M" are used for marking the traffic route.
12. All signs shall be reflectorized unless otherwise specified on plans. Regulatory and Guide signs (unless otherwise specified) shall have a screen processed black legend and border on a white flexible reflective sheeting, non-exposed lens background. The back side of Regulatory and Guide signs shall be painted with two coats of "Exterior Sign White Paint." Warning signs shall have a screen processed black legend and border on a highway yellow flexible reflective sheeting, non-exposed lens background. The back side of Warning signs shall be painted with two coats of "Federal Yellow Synthetic Sign Enamel."
13. All paint and methods of painting shall conform with Item 38 of the Standard Specifications.
14. Posts for regulatory, warning, and guide signs will normally be 4" x 4" or 6" x 6" and shall conform to the Standard Specifications for Miscellaneous Untreated Timber S4S. Timber shall conform to Construction grade Paragraph 123B or 125B of Standard No. 15 Grading & Dressing Rules for West Coast Douglas Fir (1956) or Dense Structural 58 and LL Structural 58 Paragraph 284 or 285 of 1956 Grading Rules for Southern Pine. Posts shall be painted with one coat of "White Primer for Wood" and one coat of "Outside White Paint."

15. Sign panels furnished by the Contractor for use only during construction may be fabricated from plywood, aluminum, steel or other suitable material but shall be stable and durable enough to meet other requirements of this Standard.
16. All material shall be sound and durable. Barricades, signs, symbols, and lettering shall be of good workmanship. Uneven lettering will not be accepted.
17. Alternate methods of processing signs or the substitution of symbols or other reflecting elements for painted symbols will be permitted only after approval by the Department.
18. Torches and Lanterns shall be either of the fuel-burning or battery-powered type approved by the Department. Particular care shall be taken to protect all signs and barricades from smoke and smudge.
19. Barricades, Flashing Beacons and Flashers - Refer to appropriate "M" Standard (Timber Barricades) for details.
20. Flagman Sign - This sign shall have a black painted background on both sides to form a contrast for the octagonal Stop sign and the diamond Warning sign. The "STOP" sign shall be fabricated by reverse screen process using transparent red paint on smooth surface silver reflective sheeting. The "SLOW" side of the Flagman Sign shall be black process paint on smooth surface yellow reflective sheeting. Handle to be grooved on one side to indicate reading of sign to Flagman.
21. Sign "A": This is the first advance warning sign and shall be placed 1,500 feet ahead of Barricade or project terminal. Postings are required on both sides of the roadway on divided highways. Dual posting is required where warranted on two-lane, two-way highways.
Sign "B": This is the second advance warning sign and shall be placed 1,000 feet ahead of barricade or project terminal. Postings are required on both sides of the roadway on divided highways and singly on two-lane, two-way highways.
Sign "C": This is the third advance warning sign in cases where barricades are used and shall be placed 500 to 750 feet ahead of barricade or potentially hazardous condition. Postings are required on both sides of the roadway on divided highways and singly on two-lane, two-way highways.
Sign "D": SD13-2 - This sign shall be placed to mark the beginning of a Project of more than 2 miles in extent, where traffic is maintained through the project. It shall be placed singly and near the beginning of construction.
Sign "E": SD13-3 - This sign shall be placed to mark the end of the Project. It shall be placed singly and may be placed opposite barricade if desirable.
Sign "F": Construction identification signs shall be furnished and installed by the Department on all Federal-Aid and Forest Highway Projects where actual construction is in progress and visible to highway users. These signs should be located so as not to obscure or detract from the effectiveness of other official signs. Where two or more projects are contiguous the appropriate data may be included in one set of signs. Refer to appropriate "M" Standard (Identification Signs) for sign details.
Signs A through F shall be furnished, installed and maintained by the Department.

SPECIAL NOTE: Requirements of this Standard are optional to those of Standard M-6-B through 12-31-65. Following that date Standard M-6-B will be obsolete.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

TRAFFIC SIGNING
FOR HIGHWAY
CONSTRUCTION

Designed By: D.R.W. Approved By: *[Signature]*
Made By: J.L.S. Date: Feb 1, 1965
Checked By: J.B.

STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

STANDARD M-6-B
(SHEET 1 OF 2 SHEETS)
(MAY 1, 1962)

FED. ROAD DIST. NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLO.		

REVISIONS		
DATE	GENERAL REV.	BY
1-14-63		L.E.O.
1-31-64	DEPT. NAME	MRH

TYPICAL METHODS OF MARKING HIGHWAYS & DETOURS

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 issues of "Manual on Uniform Traffic Control Devices for Streets & Highways," issued by U.S.B.P.R., and the "Colorado Manual on Uniform Traffic Control Devices for Streets & Highways." Numbers adjacent to signs refer to Standards in the Colorado manual. Standard Warning, Regulatory and Directional Signs shall be reflectorized.

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

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

All Signs 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.

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.

Typical examples for marking Projects as shown hereon constitute a minimum of signs required and are 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.

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

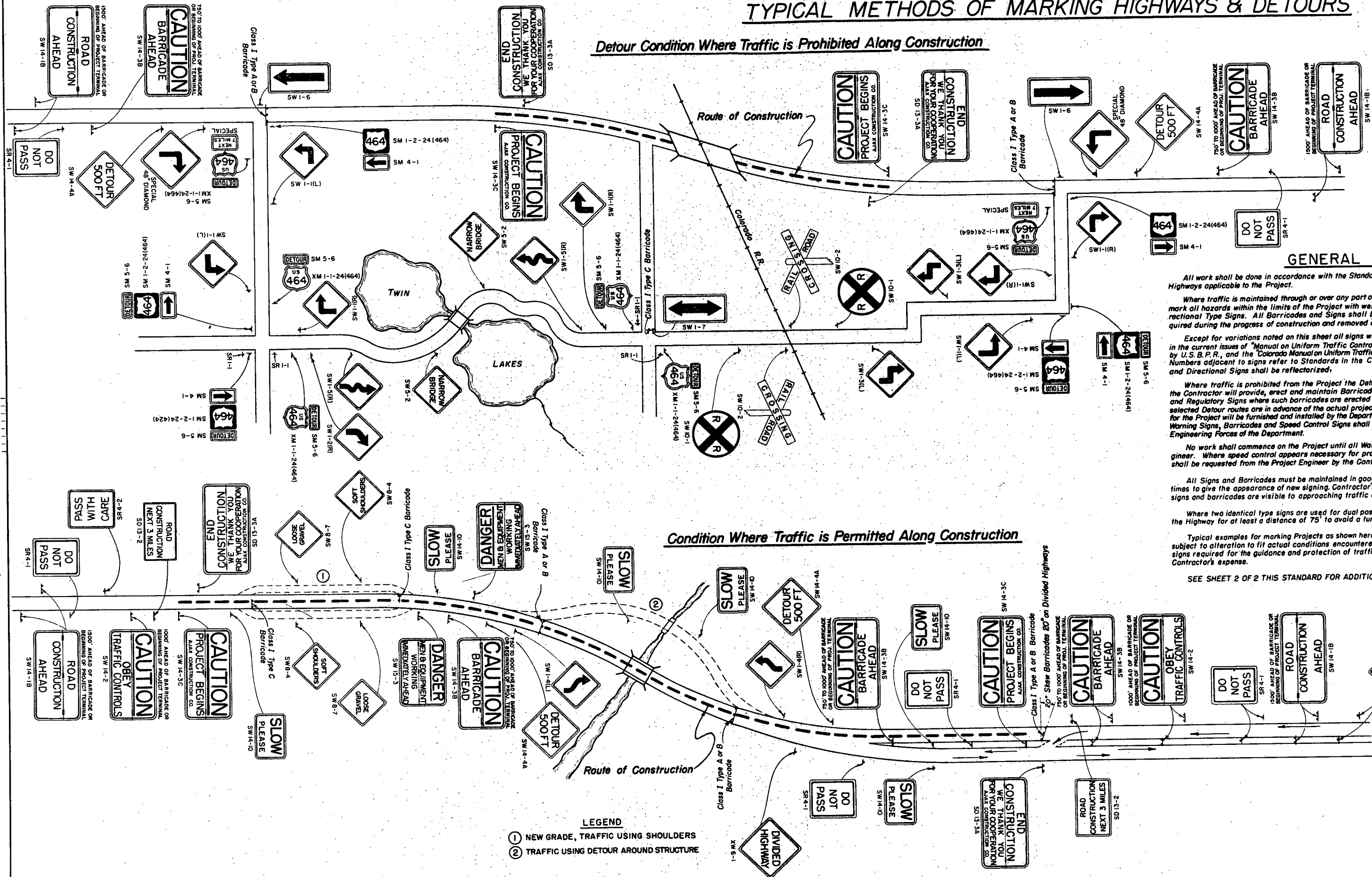
Condition Where Traffic is Permitted Along Construction

- LEGEND**
- ① NEW GRADE, TRAFFIC USING SHOULDERS
 - ② TRAFFIC USING DETOUR AROUND STRUCTURE

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

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



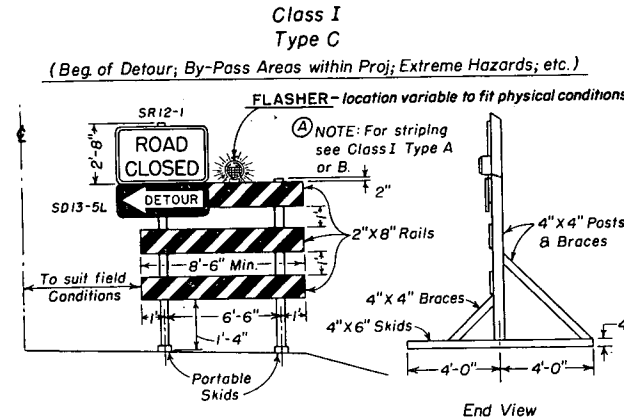
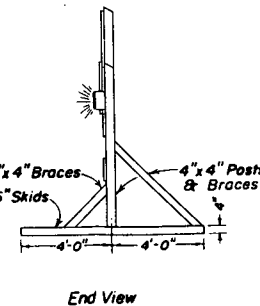
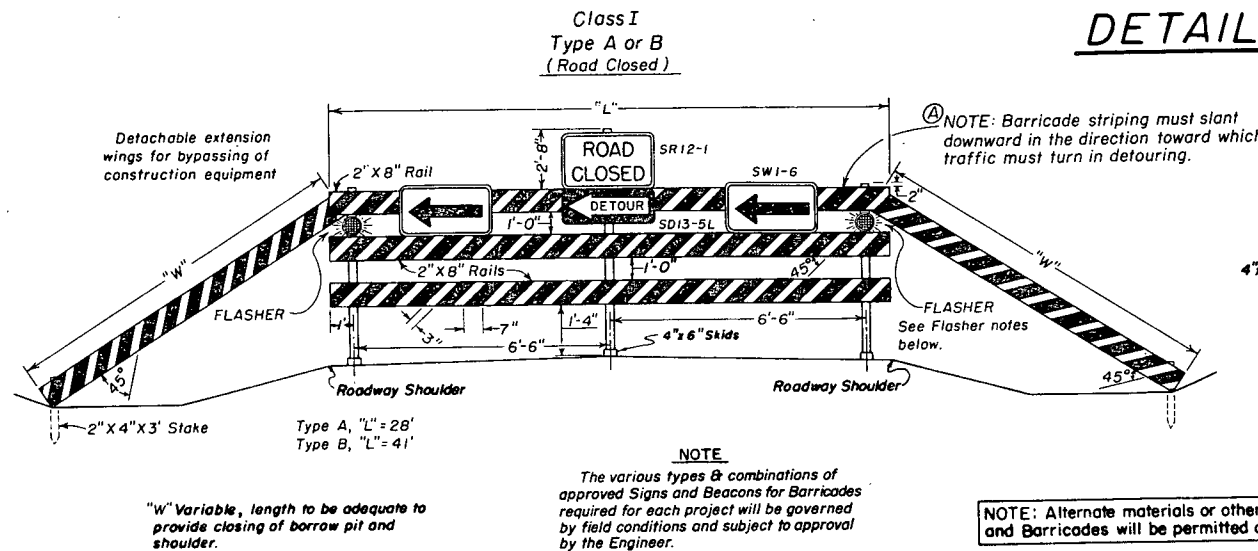
STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

STANDARD M-6-B
(SHEET 2 OF 2 SHEETS)
(MAY 1, 1962)

FEDERAL ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLORADO		

REVISIONS		
5-16-62	Rev. Margin & Border Color	L.E.O.
1-14-63	General Rev.	L.E.O.
1-31-64	DEPT. NAME	M.R.H.
8-24-64	Flashers and Striping Notes	M.R.H.

DETAILS OF BARRICADES



SPECIFICATIONS

PAINT - All paint and methods of painting shall be in conformity with Item 38 of the Standard Specifications.

STRIPING - Planking and Wings on all Barricades shall be painted with Maintenance Flat Black on both sides. Reflective Strips shall then be added to the face sides. Reflective Strips shall be Cutout Smooth Surface Yellow, of a type approved by the Department, 3" wide and spaced 7" apart as shown in the detail.

Division of traffic will be accomplished as follows:
1- Stripes for Barricades diverting traffic to the left shall start on the left hand side of the lower plank and progress up to the right, with the stripes making an angle of 45 degrees with the horizontal axis of the board as shown in the detail. 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 down in both directions.

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

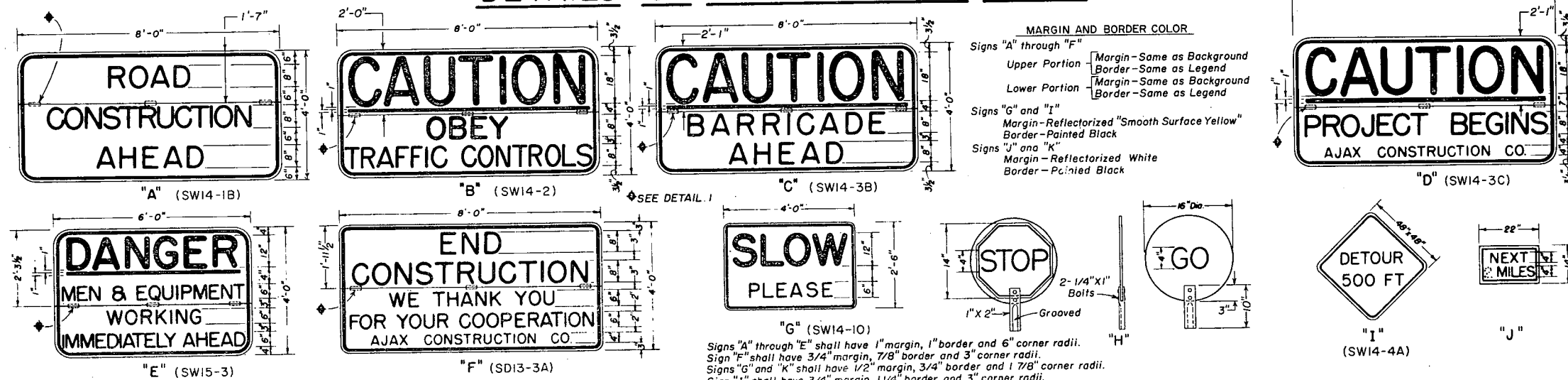
Planking	2" x 8"	S 4 S
Posts (Barricades)	4" x 4"	S 4 S
Posts (Signs)	4" x 4" or 6" x 6"	S 4 S

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

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

Bases to be weighted where necessary to provide stability.

DETAILS OF CONSTRUCTION SIGNS



NOTES

- Signs "A" through "F" shall be of the hinge and fold type to facilitate the closing down of the sign when the need is not prevalent. These signs shall be hinged with 3-4" Butt Hinges (tight pin) mortised into the face surface of the sign.
- The reflective sheeting used on the sign background shall be placed over the leaves of the hinges.
- Hinges shall be fastened to the sign with flat head stove bolts having a flat washer under the nut on back of sign.
- All hinges, bolts, nuts and washers to be rust resistant.
- Sign panels to be held in the open position with hooks and eyes or other approved fastening devices.
- 90° Countersunk Steel or Aluminum Lock Bolt Fasteners with Collars suitable for use on wood may be used in lieu of stove bolts.

DETAILS OF SIGN AND BEACON FABRICATION AND USAGE

Construction Signs "A" through "G" and "K" shall be made of 5/8" Plywood or other material approved by the Department and as per details above.

Signs having reflectorized Yellow or Red surfaces shall be fabricated from "Flexible Reflective Sheeting" of the "Non-Exposed Lens" type approved by the Department. Signs having reflectorized White surfaces shall be fabricated from "Flexible Reflective Sheeting" of the "Exposed Lens" type approved by the Department.

Construction Sign "A" - Reflectorized Yellow background with painted Black lettering.

Construction Signs "B" through "D" - Top background to be reflectorized "Smooth Surface Red" with the legend and 1" Underline to be a White process paint. Balance of lettering to be painted Black over a reflectorized Yellow background.

Construction Sign "E" - The word "DANGER" and the 1" Underline only are to be of a White process paint over a reflectorized "Smooth Surface Red". Balance of lettering to be painted Black over a reflectorized Yellow background.

Construction Sign "F" - The words "End Construction" and "Contractors Name" shall be painted Black over a reflectorized White background. Balance of lettering to be applied with a White process paint over a reflectorized "Smooth Surface Red" background.

Construction Sign "G" - The legend to be painted Black over a reflectorized "Smooth Surface Yellow" background.

Flagman Warning Sign "H" - This sign shall be made of Plastic or other lightweight material, approved by the Department, having a painted Red background with White lettering on the "Stop" side and a 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" - This sign shall be made of 3/8" (Min.) Plywood or other material suitable to the Department. Legend to be painted Black on a reflectorized "Smooth Surface Yellow" background.

Construction Sign "J" - This sign shall be made of 3/8" (Min.) Plywood or other suitable material. Legend to be painted Black on a reflectorized White background. 3/4" x 9" metal slides to be placed between "NEXT 5 MILES", spaced so as to accommodate appropriate sized numerals. Numerals calculated to the nearest Mile.

Construction Sign "K" - Reflectorized White background with painted Black lettering.

Signs "A" through "E" and "G" shall be painted on the backside with one coat of white primer and one coat of yellow enamel.

Signs "F", "J" and "K" shall be given 2 coats of white paint on the backside.

Construction Signs shall be placed as follows:

Sign "A" - This is the first advance warning sign and shall be placed 1,500 feet ahead of barricade or beginning of project terminal and on both sides of the traveled way in all cases.

Sign "B" - This is the second advance warning sign and shall be placed 1,000 feet ahead of barricade or beginning of project terminal and on both sides of the traveled way on divided highways and singly on two-lane highways.

Sign "C" - This is the third advance warning sign in cases where barricades are used and shall be placed 750 to 1,000 feet ahead of barricade or beginning of project terminal and on both sides of the traveled way on divided highways and singly on two-lane highways.

Sign "D" - This sign shall be placed to mark the beginning of the Project. It shall be placed singly and may be placed opposite barricade if desirable.

Sign "E" - This sign shall be placed 500 feet ahead of the situation being advised of.

Sign "F" - This sign shall be placed to mark the end of the Project. It shall be placed singly and may be placed opposite barricade if desirable.

Sign "G" - This sign shall be used frequently within the limits of the Project.

Sign "K" - This sign shall be erected at the limits of any project more than 2 miles in extent, where traffic is maintained through the job.

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

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:

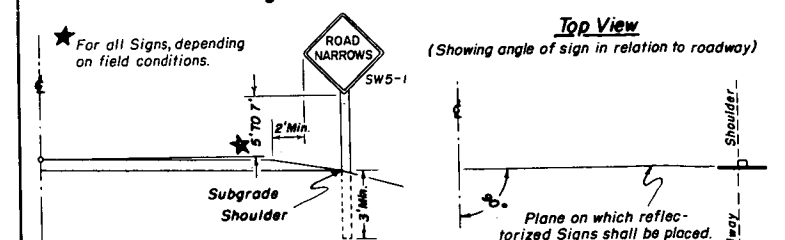
1. "ROAD CONSTRUCTION AHEAD" Minimum 4
2. "CAUTION OBEY TRAFFIC CONTROLS" Minimum 2
3. "CAUTION BARRICADE AHEAD" As Required
4. Standard Warning, Guide & Directional Signs As Required
5. "ROAD CONSTRUCTION NEXT 5 MILES" As Required

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. Torches and Flares as follows: Class I Type A or B Barricade Minimum 3
Class I Type C Barricade Minimum 1
9. Flashers - Class I Type A or B Barricade 2 Required
Class I Type C Barricade As Required

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

Position of Signs Relative to Roadbed & Hazards



NOTE:

Warning Signs to be made of 3/8" (Min.) plywood or other material suitable to the Department and shall be reflectorized.

Location to be governed by field conditions. Exact location to be staked by the Engineer.

In all cases warning signs are to be placed well in advance of hazard, the distance depending on topography, and existing approach speeds.

For all signs prefixed with the letters "R", "M" or "W" refer to the "Colorado Manual on Uniform Traffic Control Devices for Streets and Highways" of current issue.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

Construction Traffic Signs

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

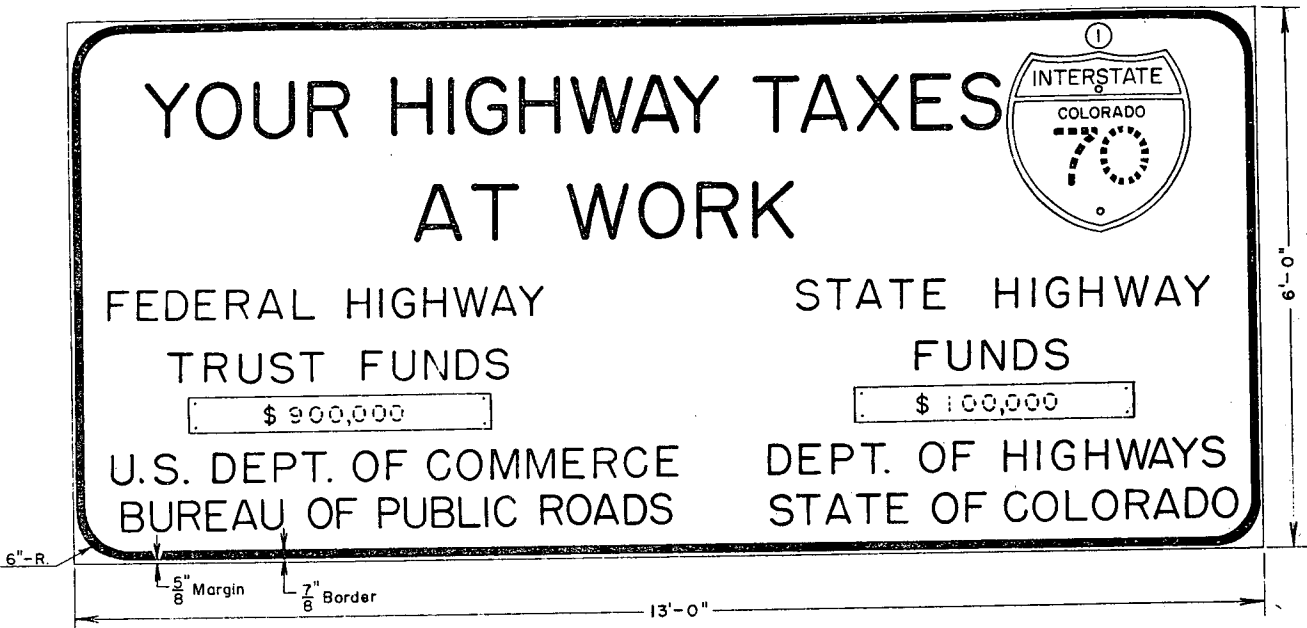
TYPICAL SIGNS

STANDARD M-6-CA
(JAN. 31, 1964)

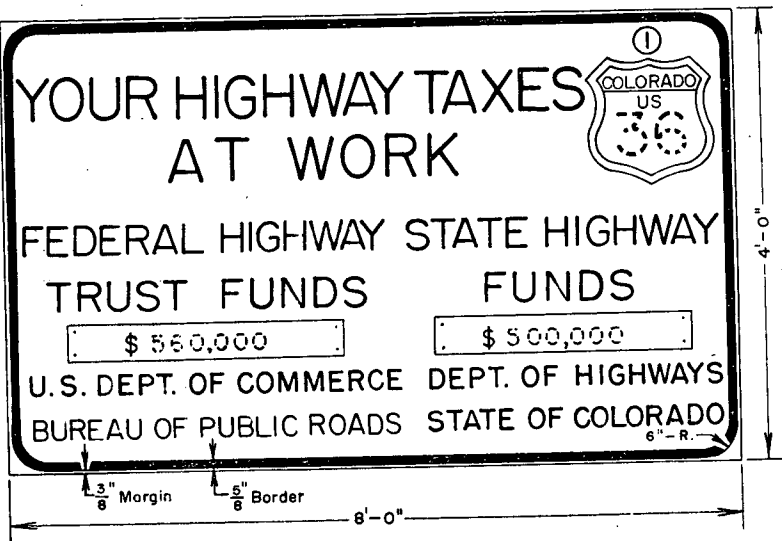
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO			

REVISIONS		
6-26-64	GENERAL NOTES	M.R.H.

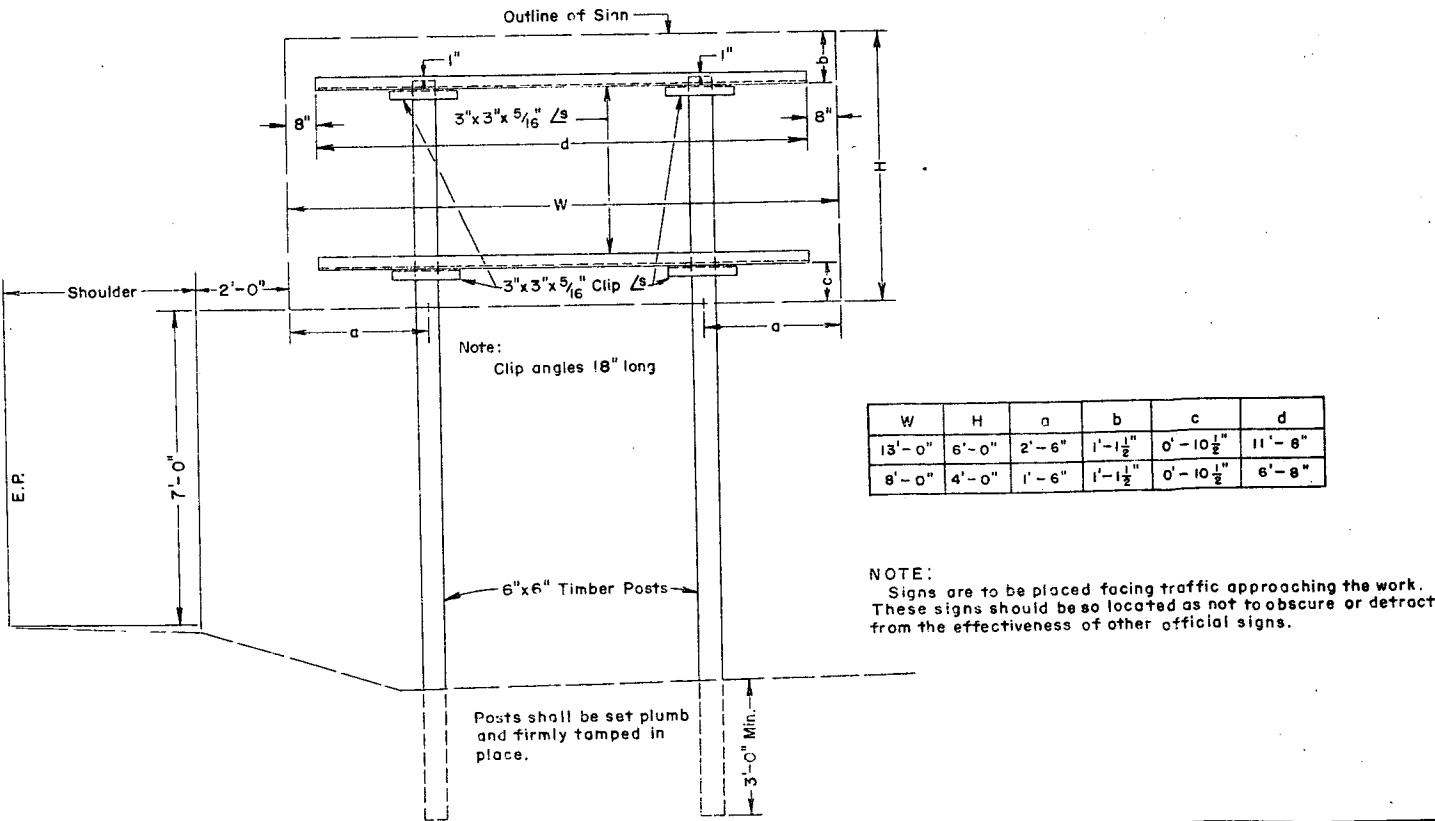
INTERSTATE SYSTEM



PRIMARY & SECONDARY SYSTEM



INSTALLATION DETAIL



GENERAL NOTES

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

Signs shall be made of 3/4" Plywood or other material approved by the Department.

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

When a third governmental agency is participating its official name should be included centrally in lines 6 and 7.

Posts shall be 6"x6" S4S timber or other material approved by the Department and shall be painted white.

Signs are to be non-reflectorized, black legend on plain white background. Route Marker plaques to be the appropriate standard colors, non-reflectorized.

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

These signs will be furnished and installed by State Forces.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

IDENTIFICATION
SIGNS

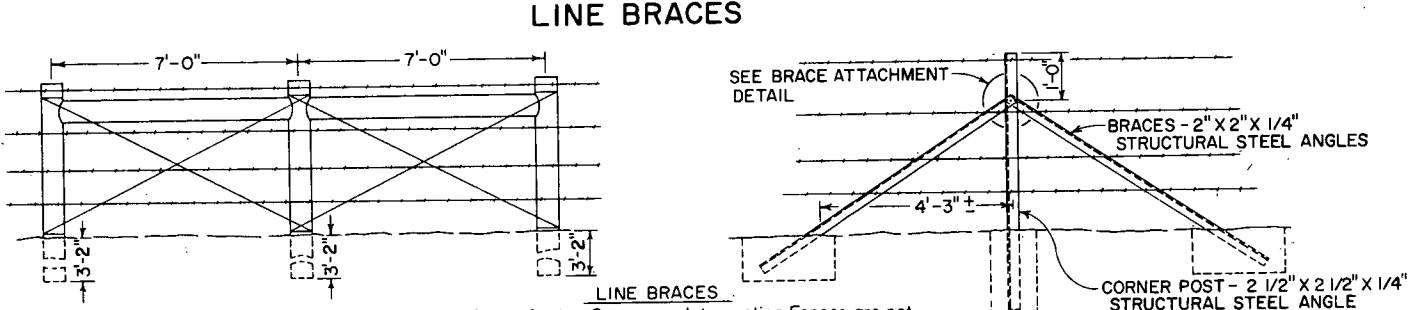
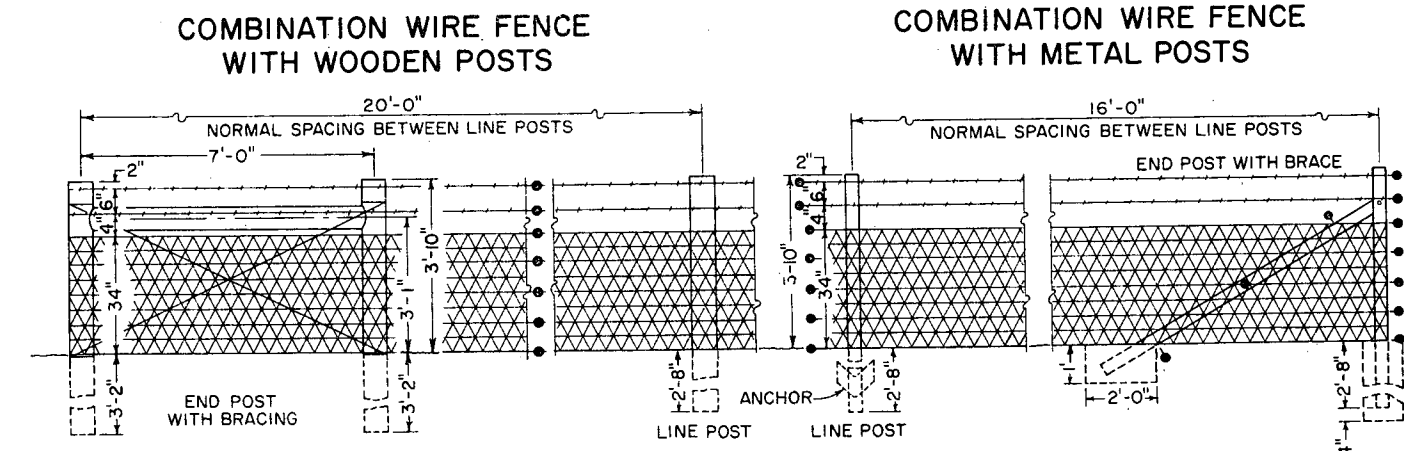
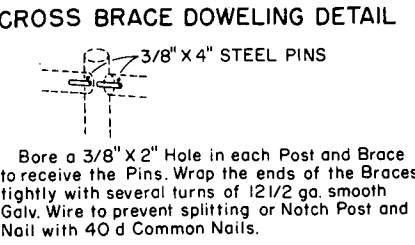
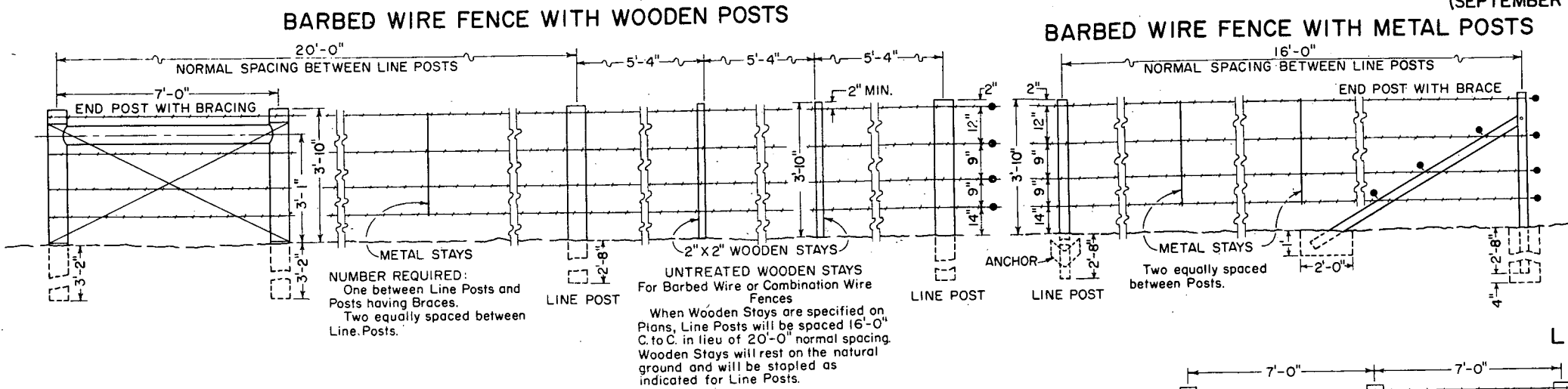
Designed by B.F.R. Approved by [Signature]
Made by D.J.B. Staff Design Engr.
Checked by M.R.H. Date: 2-5-64

STANDARD M-76-A

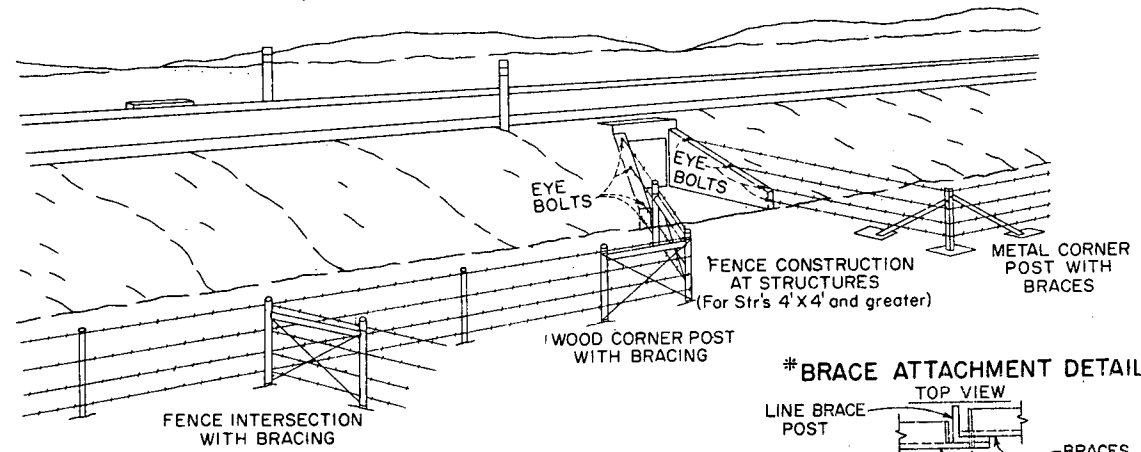
(SHEET 1 OF 2 SHEETS)
(SEPTEMBER 24, 1964)

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLORADO		

REVISIONS		
4-8-65	Conc. Figs. & Eye bolts	M.R.H.

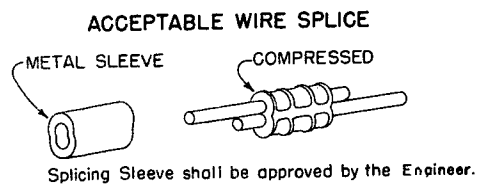


ILLUSTRATIVE SKETCH SHOWING TYPICAL EXAMPLES FOR CONSTRUCTING FENCES

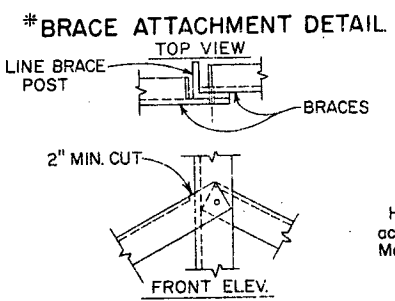
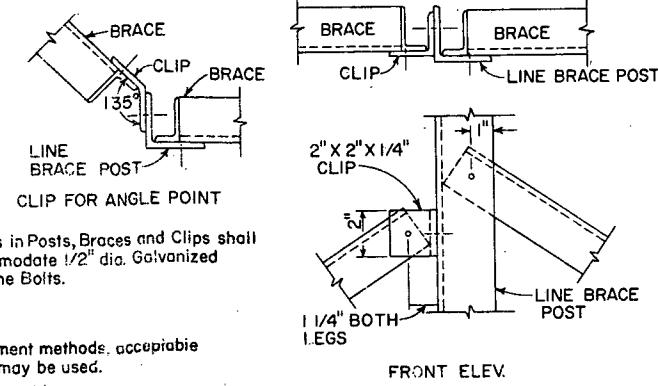


NOTE:
At all structures of 4'x4' and over, the fence shall be ended at eye-bolts in the wings of the structure. Where the type of structure prohibits the use of eye-bolts, an end post with brace shall be used. Eye-bolts shall be made of 1/2" round bars with a minimum of six (6) inches of body length embedded in the concrete and a minimum of 1" inside eye diameter.
(R-1) Eye-bolts shall be furnished and installed by the Contractor. Cost of eye bolts will be included in the contract price for fencing.

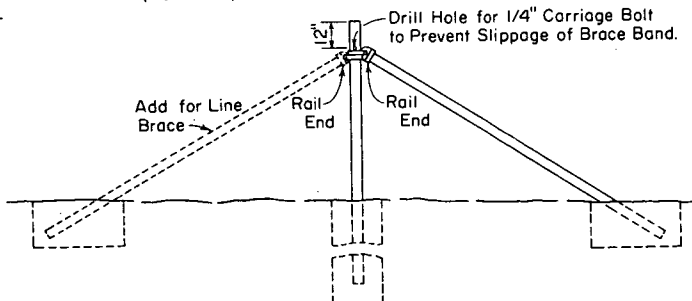
Fence wire will be stapled to wooden posts or tied to metal posts as shown marked on barbed wire or combination wire fence details.



*ALTERNATE BRACE ATTACHMENT DETAIL



ALTERNATE POST



DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
WIRE FENCES
AND
GATES
Designed by L.E.O. Approved by C. Zulema
Made by T.E.F. Engr. Surveys & Plans
Checked by E.E.O. Date: 6-12-1961

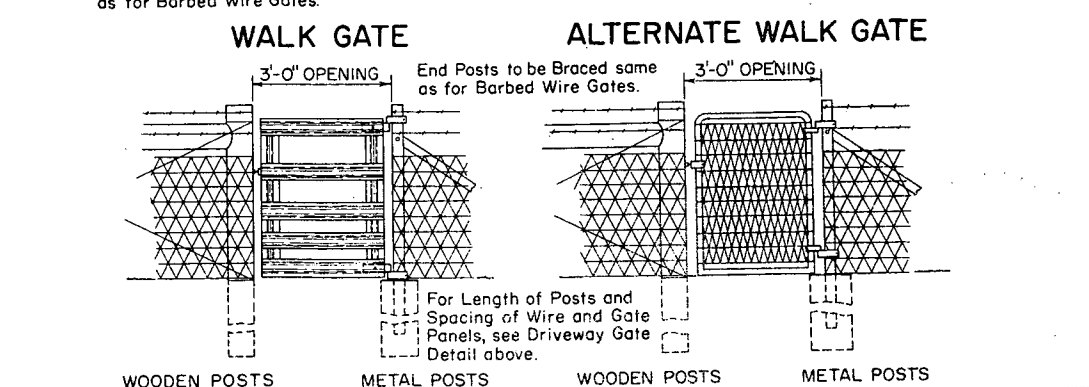
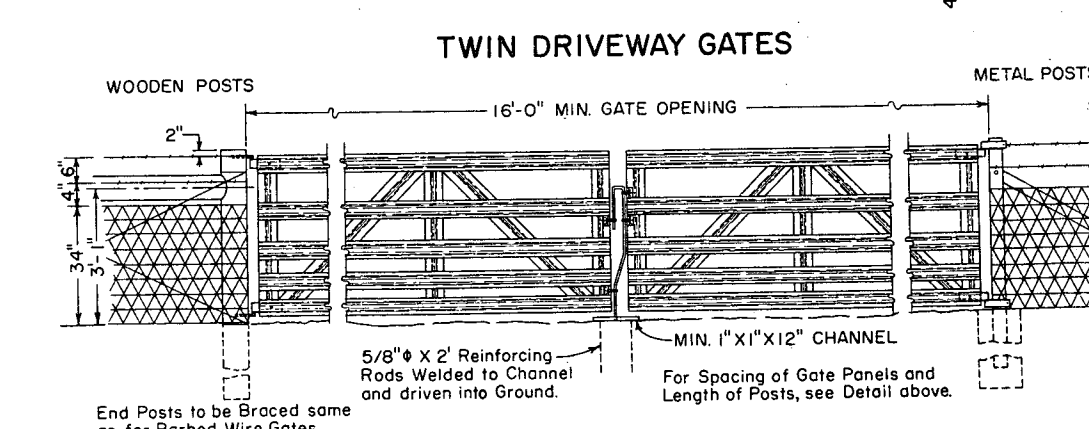
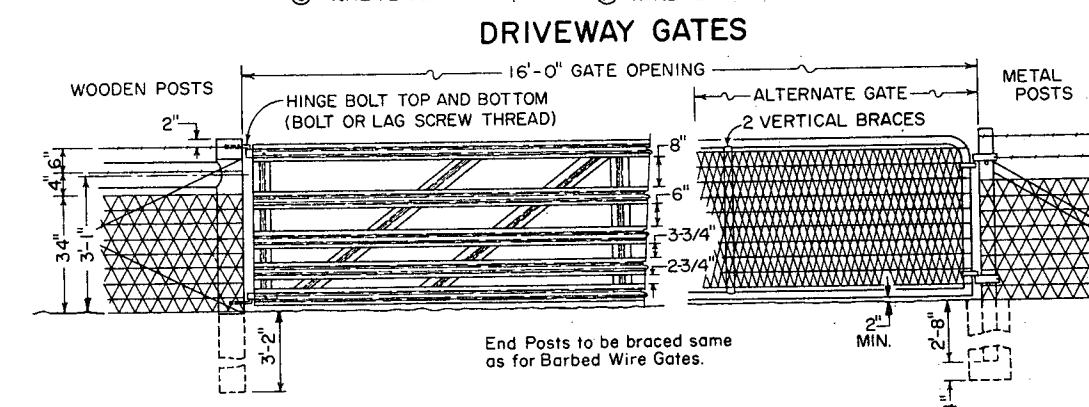
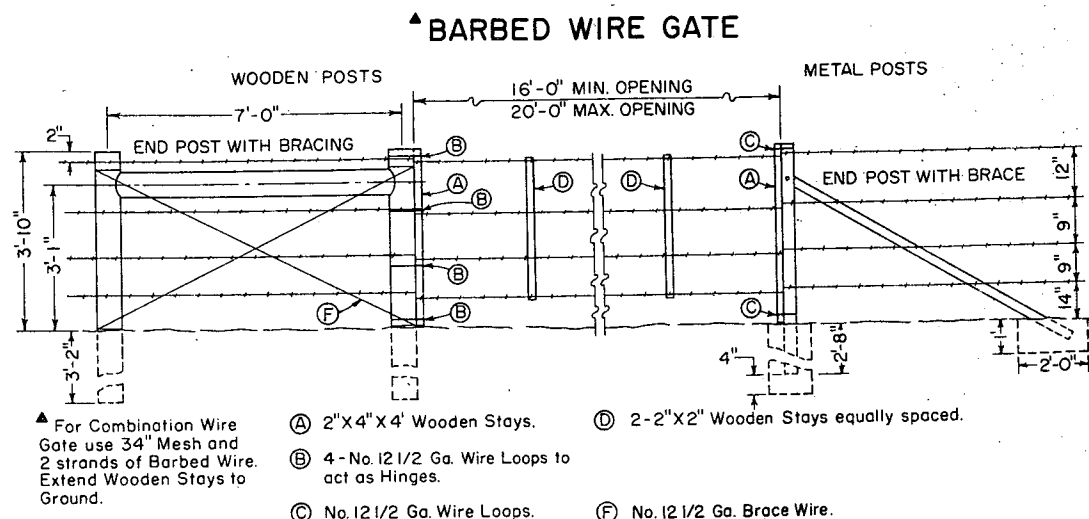
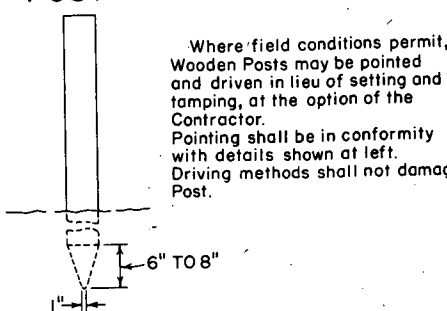
STANDARD M-76-A

(SHEET 2 OF 2 SHEETS)
(SEPTEMBER 24, 1964)

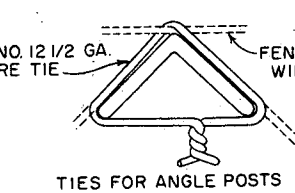
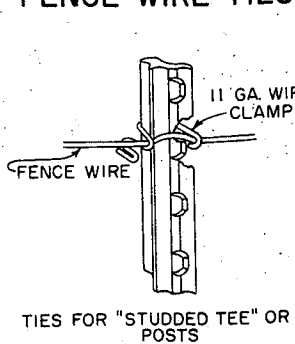
FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLO.		

REVISIONS		
(R-1)	4-8-65	Fence Wire & General Notes M.R.H.

POST POINTING DETAILS



FENCE WIRE TIES



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

(R-1) Fence wire shall be ended, double wrapped and tied off at end posts, angle posts and line brace posts. Fence to be continued shall then be restarted in like manner. 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 the side of the post which would prevent tension on fence ties. This will also apply where wind drift, tumble weeds or other conditions would exert unusual pressure against the wire.

WOOD POSTS:
All line posts shall have a min. dia. of four (4) inches & be 6'-6" long. All end, corner, intersection and brace posts shall have a minimum diameter of five (5) inches and be 7'-0" long. Fence wire will be stapled to wooden posts or tied to metal posts as shown marked on barbed wire or combination wire fence details.

METAL POSTS:
All posts and braces shall be of the types and weights shown or acceptable equivalents. Holes to be provided in end, corner and gate posts as detailed.

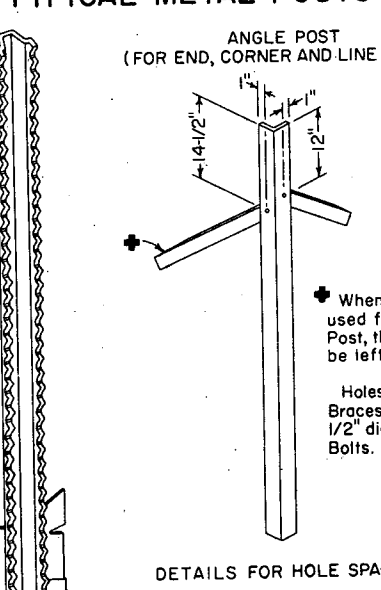
CORNER POSTS:
Type - 2 1/2" X 2 1/2" X 1/4" Structural Steel Angles.
Weight - 3.8 lbs./lin. ft. Min.
Length - 6'-6" Min.
No. of Braces - 2

LINE POSTS:
Type - "Studded Tee" or "U".
Weight - 1.28 lbs./lin. ft. Min. (without Anchor)
Length - 6'-6" Min.
Anchor - Securely fastened, with bearing surface sufficient to resist movement of post. Weight - 0.57 lb. Min.

END POSTS:
Type - 2 1/2" X 2 1/2" X 1/4" Structural Steel Angles.
Weight - 3.8 lbs./lin. ft. Min.
Length - 6'-6" Min.
No. of Braces - 1

BRACES: (For Corner, End or Line Brace Posts)
Type - 2" X 2" X 1/4" Structural Steel Angles.
Weight - 3.08 lbs./lin. ft. Min.
Length - Same as corner and end posts used.
Posts shall meet requirements of Par. 4.5 of U.S. Dept. of Commerce Commercial Standard 184-51. Acceptable material includes re-rolled railroad rails.

TYPICAL METAL POSTS



GENERAL NOTES

ALTERNATES:
END, CORNER AND LINE BRACE POSTS
(R-1) Type - 2 1/2" Std. Galvanized Pipe.
Weight - 3.65 lbs./lin. ft. Min.

BRACES:
Type - 1 3/8" O.D. Tubular Steel with 2 1/2" Brace Band, Hinge Bolt and 1 3/8" I.D. Rail End; all Galvanized.
Weight - 1.6 lbs./lin. ft. Min.
Length - 6'-6" Min.

BARBED WIRE:
Barbed wire shall conform to Standard Specifications and shall have No. 14 Gauge Galvanized double wrapped barbs. 80 rod reels shall weigh a min. of 78 lbs. net & shall meet ASTM A121-57, Class I.

4" X 4" WIRE MESH:
Wire mesh used in combination wire fence as shown shall be galvanized and conform to the following:
Width - 34"
Weight - 0.76 lbs./lin. ft. Min.
Horizontal Wires - 2 strands, 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.
Shall meet ASTM A116-57, Class I.

GATES:
DRIVEWAY GATES:
Height - approximately 42" (5 panels) --- Width of gate opening - 16'-0"
Weight - Galvanized Steel, 90 lbs. Min. --- Tempered Aluminum, 45 lbs. Min.
① Gates to be of Riveted construction as follows: Min. 4 No. 10 rivets at each right angle connection and where diagonal braces connect to horizontal panels; Min. 3 No. 10 rivets where diagonal braces connect to top and bottom panels.
ALTERNATE DRIVEWAY GATES:
Height - 42"
Weight - Not less than 79 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.
Mesh to be of same construction as shown for 4" X 4" wire mesh except it shall be 2" X 4" mesh 42" high.

① **WALK GATES:**
Height - approx. 42" (5 panels)
Weight - Galvanized Steel, 18 lbs. Min.
Width of gate opening - 3'-0"

ALTERNATE WALK GATES:
Height - 42"
Weight - Not less than 16 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.
Mesh to be of same construction as shown for Driveway Gate.

Alternate equivalent standard metal gates other than shown will be acceptable subject to the Engineer's approval.

(R-1) In lieu of galvanized finish on gate frames, Cadmium Plated pipe or Aluminum painting will be considered to be equivalent.

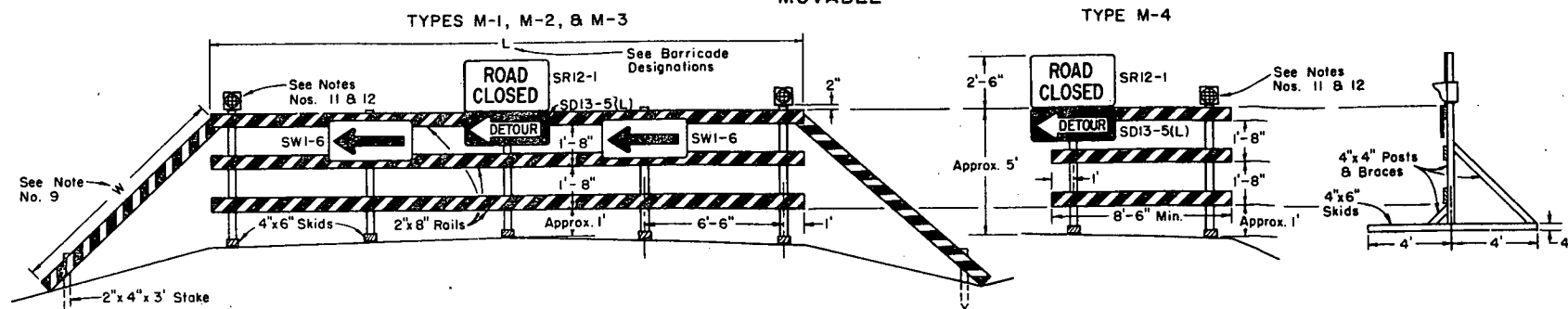
LATCHES AND HINGES:
Galvanized steel or Aluminum of standard make.
Hinges shall be placed as shown, to prevent theft.
In lieu of standard make latches it will be permissible to use an electro-galvanized chain, eyebolt and snaphook type latch. Eyebolt, chain and snaphook assembly to be secured to latch side of gate. Gate closure effected by wrapping chain around end post and snapping hook into chain.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
WIRE FENCES
AND
GATES

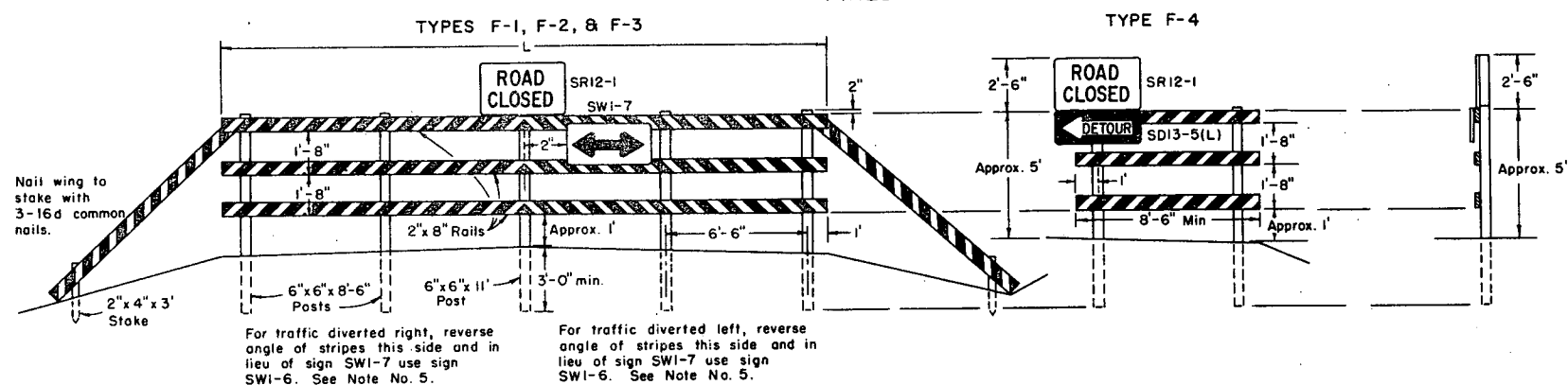
Designed by L.E.O. Approved by T.E.F.
Made by T.E.F. Engr. Surveys & Plans
Checked by E.E.O. Date: 6-12-1961

CLASS I BARRICADES (3 RAILS)

MOVABLE

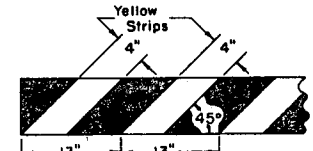
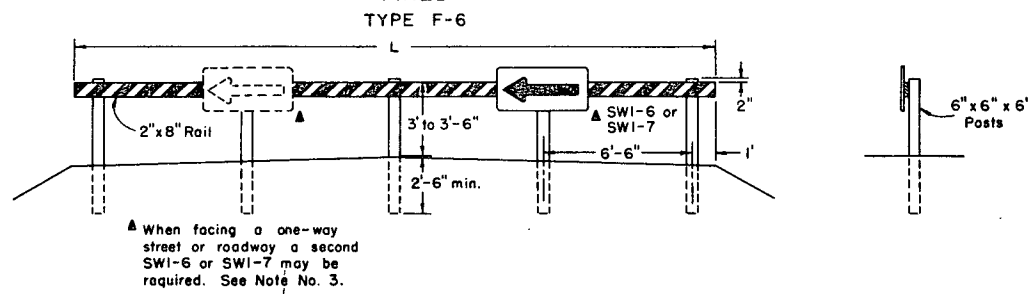


FIXED

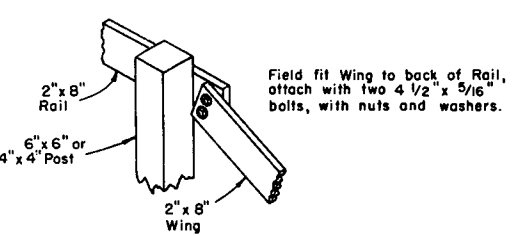


CLASS II BARRICADE (1 RAIL)

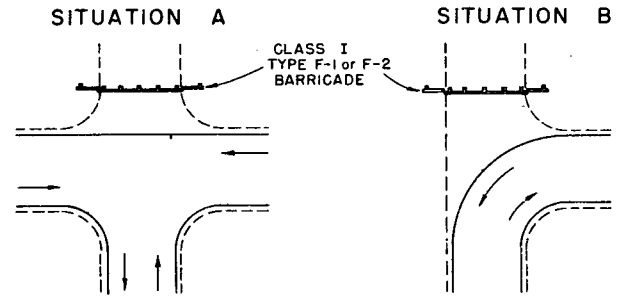
FIXED



DETAIL OF RAIL AND WING STRIPING

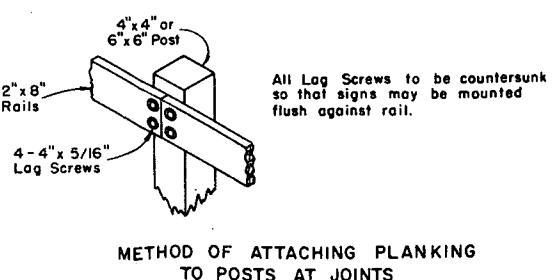
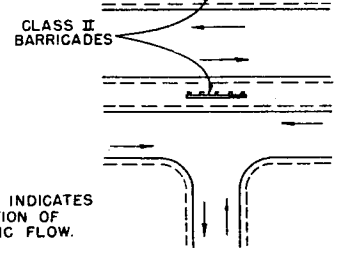


REAR VIEW OF BARRICADE SHOWING WING ATTACHED (See Note No. 9)



INDICATES DIRECTION OF TRAFFIC FLOW.

SITUATION C



METHOD OF ATTACHING PLANKING TO POSTS AT JOINTS

STANDARD M-142-AA

FEBRUARY 1, 1965

FEDERAL ROAD REGION NO.	DISTRICT	PROJECT NO.	SHEET NO.
9	COLORADO		

GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the Project.
- All signs and sign materials shall conform to the standards set forth in the "Manual on Uniform Traffic Control Devices for all classes of Streets and Highways" published by the Department of Highways and this standard.
- The various types and combinations of approved Signs and Beacons for Barricades required for each project shall be governed by field conditions and subject to approval by the Engineer. All traffic controls shall be placed for best visibility and legibility and maintained in good condition at all times. Oversigning is to be avoided.
- All paint and methods of painting shall be in conformity with Item 38 of the Standard Specifications. All skids, braces, and posts shall be painted with 2 coats of "Exterior Black Paint." Planking and wings on all barricades shall be painted with 2 coats of "Exterior Black Paint" on all sides before adding reflective strips. Reflective strips shall be "cut from smooth surface yellow reflective sheeting" of a type approved by the Department.
- Each barricade rail shall be striped on the face side only with reflective yellow strips slanting downward at a 45° angle toward the side to which traffic is to turn or pass. See "DETAIL OF RAIL AND WING STRIPING."
- When fixed barricades are designated on plans as a bid item the portion of the posts below ground line shall either be dipped in or painted with hot creosote oil. The portion of the post above ground line shall be painted with 2 coats of "Exterior Black Paint."
- All skids, braces, and posts shall be nailed together with No. 20d nails. All screws, bolts, nuts, and washers shall be galvanized or cadmium plated. Skids (bases) of movable barricades shall be weighted where necessary to provide stability.
- All timber used shall conform to the Standard Specifications for Miscellaneous Untreated Timber S4S. Timber shall conform to Construction grade Paragraph 123B or 125B of Standard No. 15 Grading & Dressing Rule for West Coast Douglas Fir (1956) or Dense Structural 58 and LL Structural 58 Paragraph 284 or 285 of 1956 Grading Rules for Southern Pine.
- Detachable extension wings for bypassing of construction equipment are permitted. "W" is variable, length shall be adequate to provide closing of borrow pit and/or shoulder as required.
- Alternate materials or other reflective elements on Traffic signs or Barricades will be permitted only after approval of such material by the Department in writing.
- A Flashing Beacon for use on Barricades is a section of a standard traffic signal head or a similar-type device having a yellow lens in the face, which is illuminated by intermittent flashes. Where commercial power is not available, the beacon may be adapted to operate from storage batteries. Each signal unit lens shall have a visible diameter of not less than 8 inches. Each unit complete shall be of such design as to render the lens when illuminated clearly visible to traffic facing the signal at all distances up to 1000 feet under all atmospheric conditions except dense fog. The color of the yellow lens for caution shall be in accordance with Technical Report No. 1 of the Institute of Traffic Engineers. All beacon flashers shall be equipped with filters for suppression of radio interference. The illuminating element in a flashing yellow beacon shall be flashed at a rate of not less than 50 times nor more than 60 times per minute. The illuminated period of each flash shall be not less than half and not more than two-thirds of the total cycle. The use of Flashing Beacons will be governed by field conditions. Flashing Beacons when warranted generally should be operated continuously throughout the 24 hours of the day. Warrant for Flashing Beacons may be found in Sec. 3G of the "Manual on Uniform Traffic Control Devices for Streets and Highways" published by the U.S. Department of Commerce, Bureau of Public Roads, June, 1961 (or latest revision).
- Flashers are portable, power-operated, lens-directed, enclosed lights, illuminated by rapid intermittent flashes of short duration. Flashers may be used in connection with barricades when approved by the Engineer. An array of random flashers which tends to obscure rather than delineate the traveled way will not be permitted. The use of flashers on a job will be governed by Sec. 5D of the "Manual on Uniform Traffic Control Devices for Streets and Highways" published by the U.S. Department of Commerce, Bureau of Public Roads, June, 1961 (or latest revision). The color of the light emitted by a flasher shall be yellow.
- Flashing Beacons and Flashers, when used, shall be positioned above the top rail of the barricades to produce the most effective results.
- Barricades used as "Traffic Controls for Highway Construction" are not to be paid for separately.
- Class I or Class II fixed barricades will be paid for separately when designated on plans as bid item.
- For additional general information on control of traffic through work areas refer to the "Manual on Uniform Traffic Control Devices for Streets and Highway", Part V, published by the U.S. Department of Commerce, Bureau of Public Roads, June, 1961 (or latest revision).

BARRICADE DESIGNATIONS					
Class	Type	Roadway Width	L	Description	
I	M-1	F-1	26'-34'	28'	Barricade complete with SR12-1 sign and SW1-6 or SW1-7 signs as required.
I	M-2	F-2	35'-44'	41'	Barricade complete with SR12-1 sign and SW1-6 or SW1-7 signs as required.
I	M-3	F-3	Variable	28'	Barricade (without extension wings) complete with SR12-1 sign and SW1-6 or SW1-7 signs as required.
I	M-4	F-4	Variable	Variable 8'-6" min.	Wing Barricade (signs only as appropriate).
II	-	F-6	Variable	28'	Barricade complete with appropriate signs.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

TIMBER BARRICADES

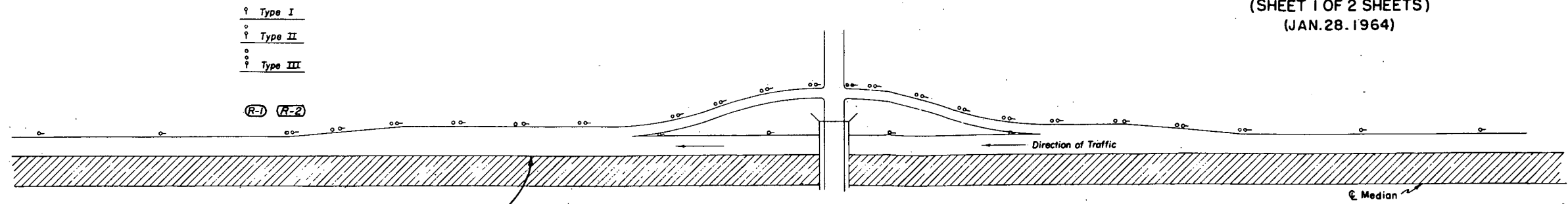
Designed By: D.R.W.
Made By: JLS
Checked By: J.B.

Approved By: *[Signature]*
Date: Feb. 1, 1965

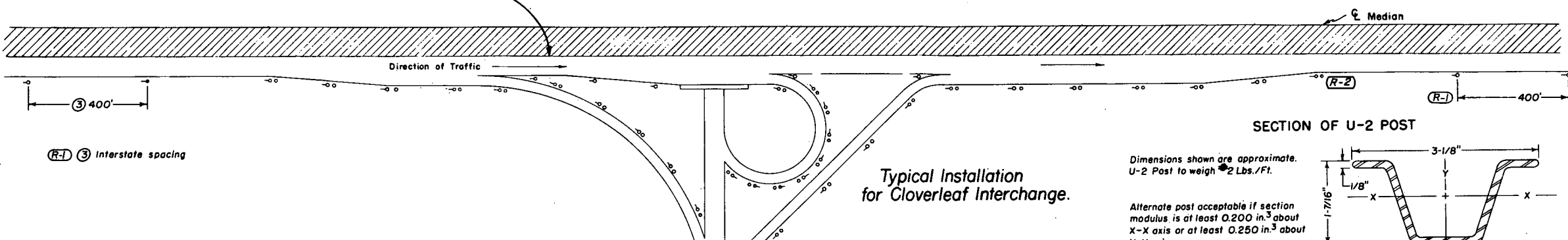
STANDARD M-192-AA
(SHEET 1 OF 2 SHEETS)
(JAN. 28, 1964)

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLORADO		

REVISIONS			
10-27-64	Delete (2), (4) & Tangent spacing	M.R.H.	
(R-1) 7-14-65	Post height & delete (5)	M.R.H.	
(R-2) 10-19-65	Type II for speed change lanes	M.R.H.	



Typical Installation for Diamond Interchange.



Typical Installation for Cloverleaf Interchange.

SPACING FOR DELINEATOR POSTS ON HORIZONTAL CURVES

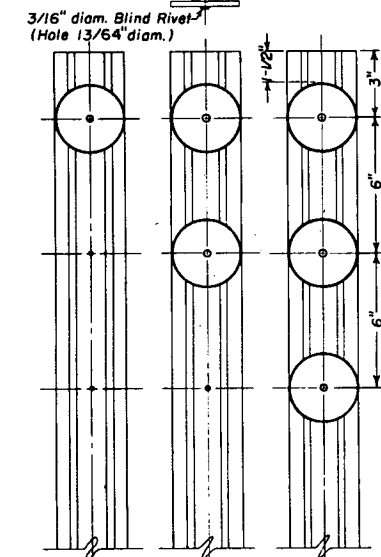
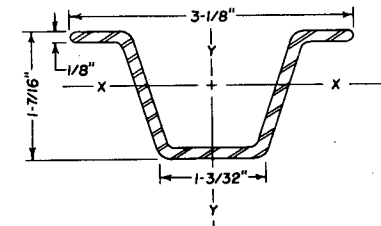
DEGREE OF CURVE	RADIUS	SPACING IN ADVANCE OF AND BEYOND CURVE				DEGREE OF CURVE	RADIUS	SPACING IN ADVANCE OF AND BEYOND CURVE			
		SPACING ON CURVE	FIRST SPACE	SECOND SPACE	THIRD SPACE			SPACING ON CURVE	FIRST SPACE	SECOND SPACE	THIRD SPACE
0°30'	11460.0'	200	200	200	200	8°00'	716.3'	52	94	156	200
1°00'	5730.0'	151	200	200	200	8°30'	674.1'	50	90	150	200
1°30'	3820.0'	123	200	200	200	9°00'	636.7'	48	86	144	200
2°00'	2865.0'	106	191	200	200	9°30'	603.2'	47	85	141	200
2°30'	2292.0'	95	171	200	200	10°00'	573.0'	46	83	138	200
3°00'	1910.0'	86	155	200	200	10°30'	545.7'	45	81	135	200
3°30'	1637.1'	80	144	200	200	11°00'	520.9'	43	77	129	200
4°00'	1432.5'	74	133	200	200	11°30'	498.3'	42	76	126	200
4°30'	1273.3'	70	126	200	200	12°00'	477.5'	41	74	123	200
5°00'	1146.0'	66	119	198	200	15°00'	382.0'	36	65	108	200
5°30'	1041.8'	63	113	189	200	18°00'	318.3'	33	59	99	198
6°00'	955.0'	60	108	180	200	21°00'	272.9'	30	54	90	180
6°30'	881.5'	58	104	174	200	25°00'	229.2'	27	49	81	162
7°00'	818.6'	55	99	165	200	30°00'	191.0'	24	43	72	144
7°30'	764.0'	53	95	159	200						

$S = 2 \sqrt{R - 50}$ 1-ST. SPACE = 1.8S 2-ND. SPACE = 3S 3-RD. SPACE = 6S
NO SPACES TO EXCEED 200 FT.

① Omit third space on Secondary and Primary Routes and double the distance on the curve and in advance of and beyond curve.
(R-1) For curves less than 2 degrees on Interstate through roadways use Interstate tangent spacing.

SECTION OF U-2 POST

Dimensions shown are approximate.
U-2 Post to weigh 2 Lbs./Ft.
Alternate post acceptable if section modulus is at least 0.200 in.³ about X-X axis or at least 0.250 in.³ about Y-Y axis.
A mill tolerance of minus 3-1/2% of the weight of any one post will be allowed.



TYPE I
1-3" diam. Crystal Reflector on U-2 Post

TYPE II
2-3" diam. Yellow Reflectors on U-2 Post

TYPE III
3-3" diam. Yellow Reflectors on U-2 Post

Min. 3 holes in all posts required as shown.

GENERAL NOTES

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

See tabulation in plans for delineator post requirements.

Spacing between Posts on acceleration and deceleration lanes and on relatively straight portions of interchange ramps shall be 100' on Interstate and 200' on Primary and Secondary Projects. Spacing between Posts on the outside of interchange ramp curves shall be as indicated in table for the appropriate degree of curve with a 24' min. spacing. Post spacing in advance and beyond curve shall not apply to ramp curves.

Posts shall meet requirements of Par. 4.5 of U.S. Dept. of Commerce Commercial Standard 184-51. Acceptable material includes re-rolled railroad rails.

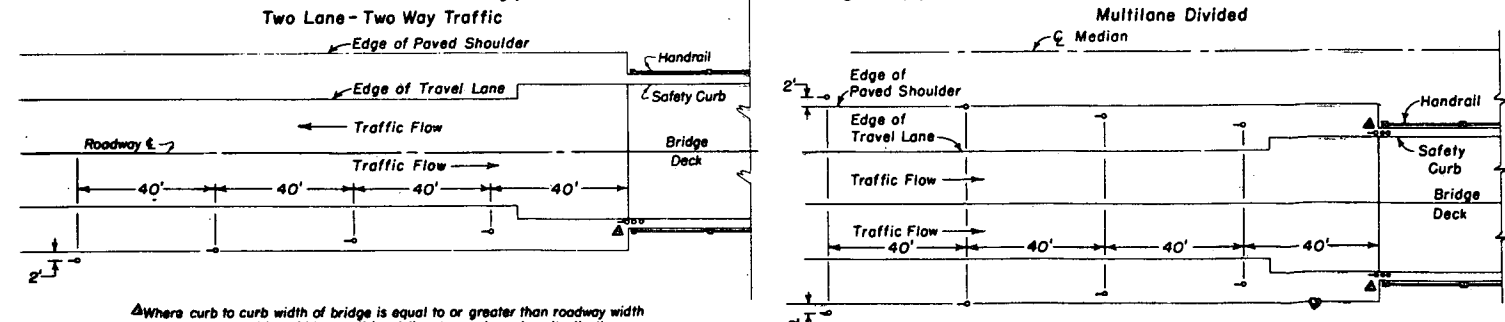
When normal delineator spacing falls on a road approach or crossroad, move delineator either direction a distance not to exceed 1/4 normal spacing.

Type, location and spacing of delineators for tunnels and snow sheds shall be as directed by the Engineer.

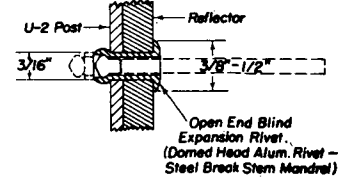
Delineator Posts are not to be placed along Frontage Roads.

Color of Posts shall be Interstate Green.

Typical Installation at Bridge Approaches



Where curb to curb width of bridge is equal to or greater than roadway width plus usable shoulder width, use this delineator only and omit all others.
Note: Where guard rail is present, place delineators outside of guard rail and at height which will permit clear view of all three Delineator buttons.



DETAIL
RIVETING REFLECTOR TO POST

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

DELINEATORS

Designed by CKM
Made by WNC
Checked by LEO

Approved by P. J. Julian
Engineer, Survey & Plans
Date: October 19, 1962

STANDARD M-192-AA

(SHEET 2 OF 2 SHEETS)

(JAN. 28, 1964)

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLORADO		

REVISIONS			
10-27-64	Add. note & culvert marking	M.R.H.	
7-14-65	Spacing & Add. note.	M.R.H.	
10-19-65	Added Hazard Note.	M.R.H.	

GENERAL NOTES

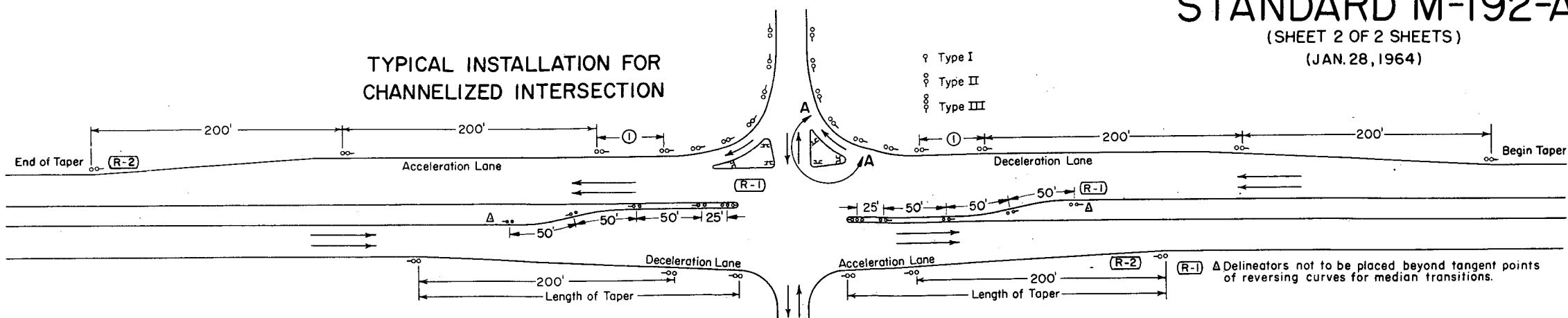
For Radii greater than 200 Feet, use spacing from Table included on Sheet 1 of this Standard.

For additional General Notes, see Sheet 1 of this Standard.

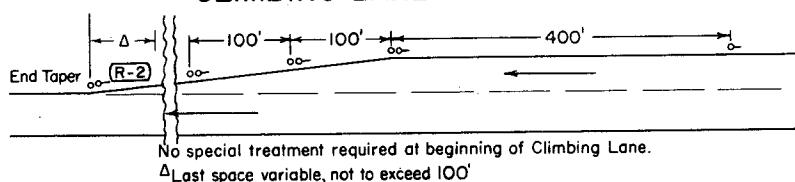
Place face of button at 90° to C.L. of roadway.

(R-1) Lengths of speed change lanes including tapers shall be as shown on plans.

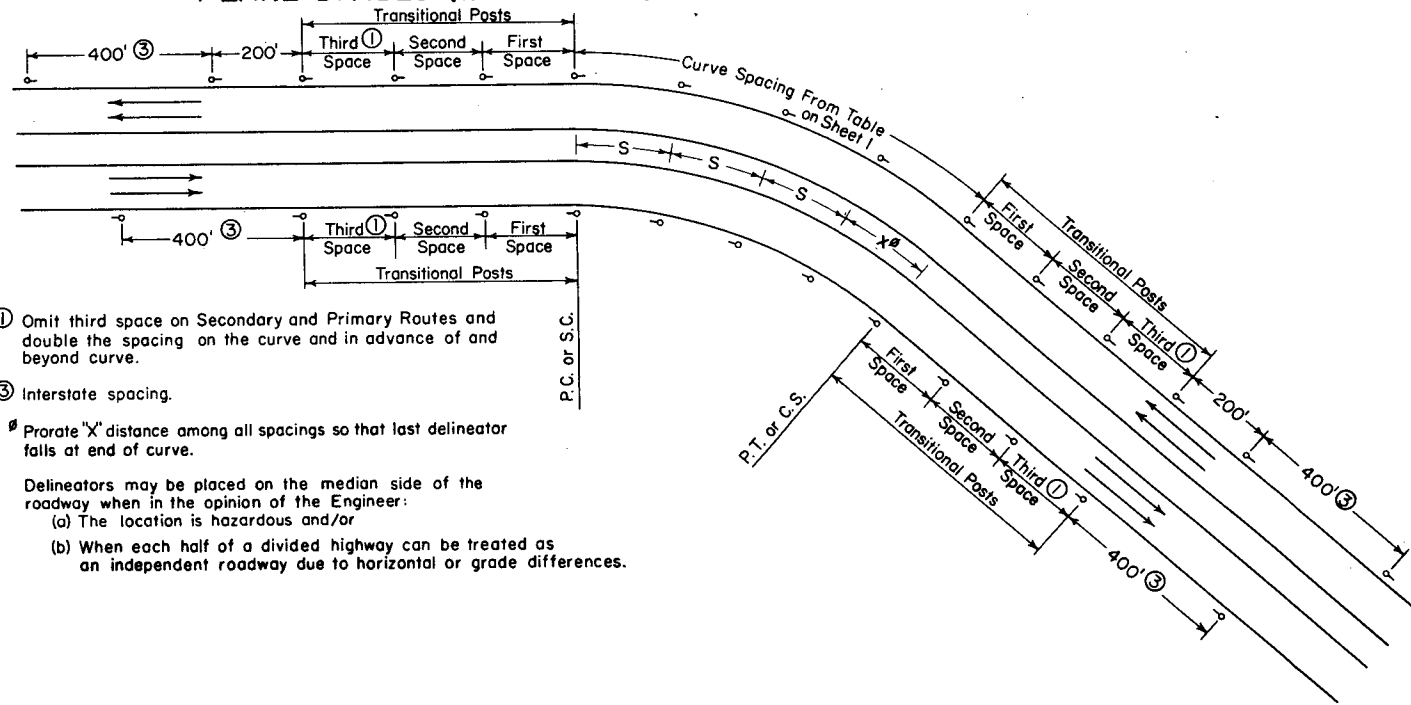
TYPICAL INSTALLATION FOR CHANNELIZED INTERSECTION



TYPICAL INSTALLATION FOR CLIMBING LANE TRANSITION



4 LANE DIVIDED (INTERSTATE)



① Omit third space on Secondary and Primary Routes and double the spacing on the curve and in advance of and beyond curve.

(R-1) ③ Interstate spacing.

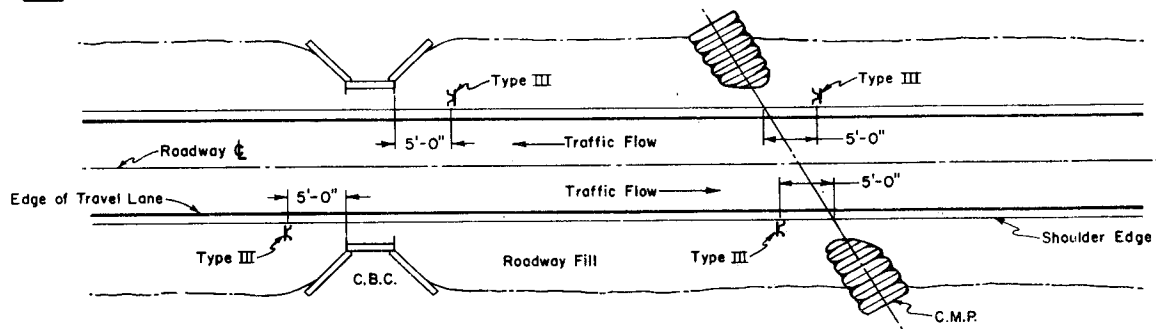
Prorate "X" distance among all spacings so that last delineator falls at end of curve.

Delineators may be placed on the median side of the roadway when in the opinion of the Engineer:

- The location is hazardous and/or
- When each half of a divided highway can be treated as an independent roadway due to horizontal or grade differences.

VIEW A-A
(R-1)

(R-2) TYPE III DELINEATOR PLACEMENT AT HAZARDOUS MINOR STRUCTURES



(R-2) Type III Delineators shall be placed as shown to mark hazardous ends of culverts and other minor structures. These structures are considered hazardous when the exposed barrel of the culvert or the roadway side of headwall or box is 6' or less from the edge of travel lane.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

DELINEATORS

Designed by C.K.M. Approved by
Made by T.E.F. Engineer, Surveys & Plans
Checked by L.E.O. Date: Jan. 28, 1964