INACTIVE AUG 15 1968 34.01 1st. Cont.

FEDERAL ROAD REGION NO.	DIVISION	PROJECT NO	SHEET NO.
9	COLORADO	ER 34(1) FIRST CONTRACT	1

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

PLAN AND PROFILE OF PROPOSED

FEDERAL AID PROJECT NO. ER 34(1) FIRST CONTRACT

STATE HIGHWAY NO. 6

PROWERS COUNTY

SCALES OF ORIGINAL DRAWINGS

PLAN: 1 IN. = 100 FT. HORIZONTAL

PROFILE: 1 IN. = 100 FT. HORIZONTAL, 10 FT. VERTICAL

GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD

INDEX OF SHEETS

CONVENTIONAL SIGNS

CENTER LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE AND LINES
SECTION LINE
¼ SECTION LINE
⅛ SECTION LINE
CITY LIMITS
RAILROAD
BARBED WIRE FENCE
WOVEN WIRE - COMBINATION FENCE
TELE & TELEG LINE
POWER LINE
PRESENT ROAD (PLAN SHEETS)
RIGHT OF WAY LINE
ROW MARKER
ACCESS POINTS (FREEWAYS)
C OF A LINE (CONTROL OF ACCESS)
ACCESS DENIED BY DEED

TABULATION OF LENGTH AND DESIGN DATA

STATION	BRIDGE Lin Ft		LOADING
[illegible]	[illegible]		
223+97 on P.W.A. 4002-B			
[illegible]	300.0'		

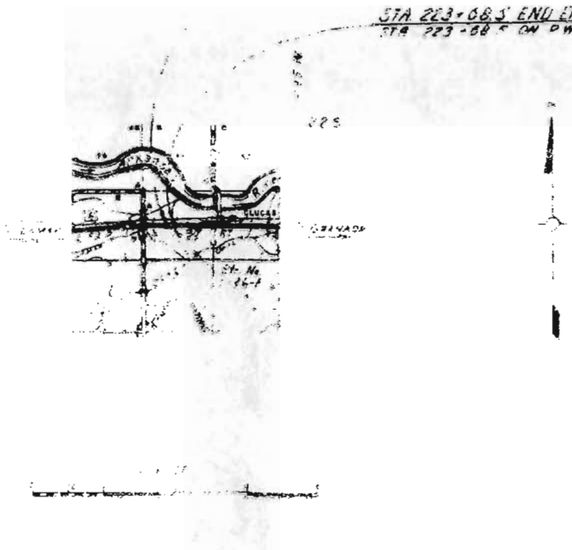
SUMMARY	Lin. Ft.	Miles
PROJECT TOTAL (Net & Gross)	300.0	0.057

DESIGN DATA

Maximum Degree of Curve	[illegible]
Maximum Grade	[illegible]
Minimum SSD (Vertical)	= 1300
Minimum SSD (Horizontal)	= 1900
Maximum Design Speed	70 M.P.H.

STA 220+68.5 BEGIN ER 34 (1) FIRST CONTRACT =
STA 220+68.5 ON P.W.A. 4002-B

STA 223+68.5 END ER 34 (1) FIRST CONTRACT =
STA 223+68.5 ON P.W.A. 4002-B



SEE SPECIAL PROVISIONS FOR NOTICE TO BIDDERS

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

APPROVED
Chas E. Shumate 2-17-65
CHIEF ENGINEER DATE

By L. to Bauer Deputy Chief Engr.

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED _____ DATE

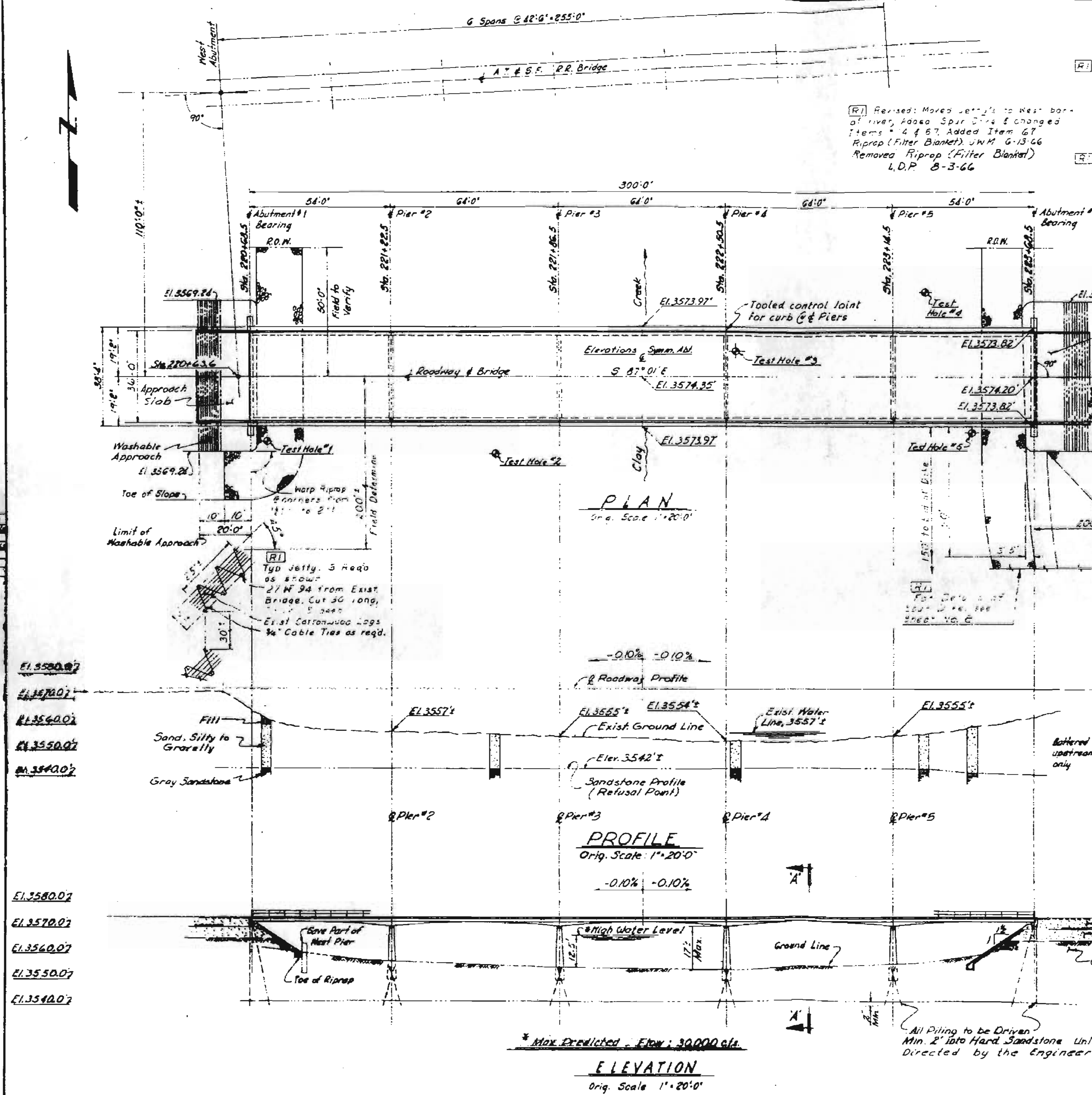
DIVISION ENGINEER

J.L.C

REVISIONS

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	ER 34 (1)	2	

FIRST CONTRACT



SUMMARY OF QUANTITIES

ITEM No.	ITEM	UNIT	TOTAL
10	Clearing of Channel	1	L.S.
11	Removal of Bridges, Structures & Obstructions	1	L.S.
14 [R1]	Unclassified Structure Excavation, Bridge	Cu. Yd.	980
16	Structure Backfill (Class I)	Cu. Yd.	616
37	Concrete Pavement (10" Thick)	Sq. Yd.	160
46	Class "A" Concrete	Cu. Yd.	1,116
47 **	Reinforcing Steel	LBS	230,117
48 *	Structural Steel	1	L.S.
61	Steel Piling (12BP53)	Lin. Ft.	916
67 [R1]	Riprap	Cu. Yd.	1215
91	Pipe Railing	Lin. Ft.	600
915	Jetties	Ea.	3
960	Washable Approach	1	L.S.
79	Bridge Expansion Joint Sealer	Lin. Ft.	74
84	Concrete Curb (Type I) (Variable)	Lin. Ft.	80

** Includes 7,592 Lbs for Approach Slabs
* Design Wt. 11,614 Lbs.

LOADING DATA

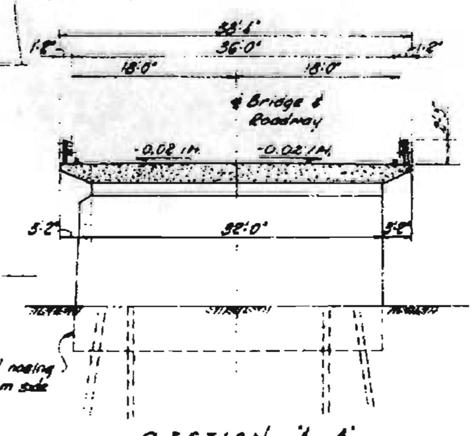
Live load = HS20-44
Dead load assumes 15 lbs. per sq. ft. additional wearing surface which includes the ½ inch concrete monolithic wearing surface shown

DESIGNING DATA

Reinforcing Steel fs = 20,000 psi
Reinforced Concrete fc = 1200 psi (n=10)
Structural Steel fs = 20,000 psi (A-36)
" " fs = 18,000 psi (A-7)

GENERAL NOTES

1. All work shall be done according to the standard specifications of the Colorado Department of Highways applicable to the project.
2. All concrete shall be Class "A"
3. All reinforcing steel shall be intermediate grade steel of a deformed type. Each bar shall be tagged with the bar designation and station number of the project.
4. If by permission of the Engineer primary bars are spliced, they shall lap a minimum of 28 diameters for bars near tops of beams having more than 12 inches of concrete under the bars, and 17 diameters for bars near bottom of members. Secondary bars when spliced shall lap 17 diameters of the bar.
5. Dimensions for reinforcing steel not shown as clear shall be to the centerline of the bar
6. Soundings and depth of footings are in accordance with the best available data, and when different conditions are encountered the bridge Engineer will inspect and determine if redesign is necessary
7. Footings in rock shall be poured out to rock and not formed.
8. When excavating for footings the final one foot in depth shall be done by hand-labor methods.
9. For details of structural excavation and structure backfill, see standard M-16-A
10. All concrete surfaces marked with the symbol "I" as shown on sheet no 16 shall receive Class "I" surface finish.
11. All structural steel shall be painted in accordance with Item 38 for Green paint.
12. Chamfer all exposed corners ¾".
13. Broken concrete from the old bridge will be acceptable as riprap.
14. The old bridge, except portions to be reused, is the property of the Contractor and should be removed from right-of-way and river channel.



SECTION "A-A"
Orig. Scale 1"=10'-0"

INDEX OF SHEETS	
Sh. # 2	GENERAL PLAN & ELEVATION
Sh. # 3	ABUTMENT
Sh. # 4	PIER DETAILS
Sh. # 5	DECK
Sh. # 6	EXPANSION DEVICE DETAIL
Sh. # 7	HANDRAIL
Sh. # 8	CLASS "I" SURFACE FINISH
Sh. # 9	HANDRAIL DETAILS (H.D. Standards)

H. JOE MEHEEN — REGISTERED PROFESSIONAL ENGINEER — STATE OF COLORADO — 2838

MEHEEN ENGINEERING CO.
CONSULTING ENGINEERS
2201 W. 32nd AVE. DENVER, COLO. 80211

STRUCTURE NO. L-26-F

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

GENERAL PLAN & ELEVATION

S.H. 6, EAST OF LAMAR
Across Clay Creek
Sta. 220+68.5
Near Lamar Sec. ___ T. ___ R. ___

Designed by H.J.M.	Approved by Bridge Engineer
Made by D.L., L.M.	
Checked by	Date: 19

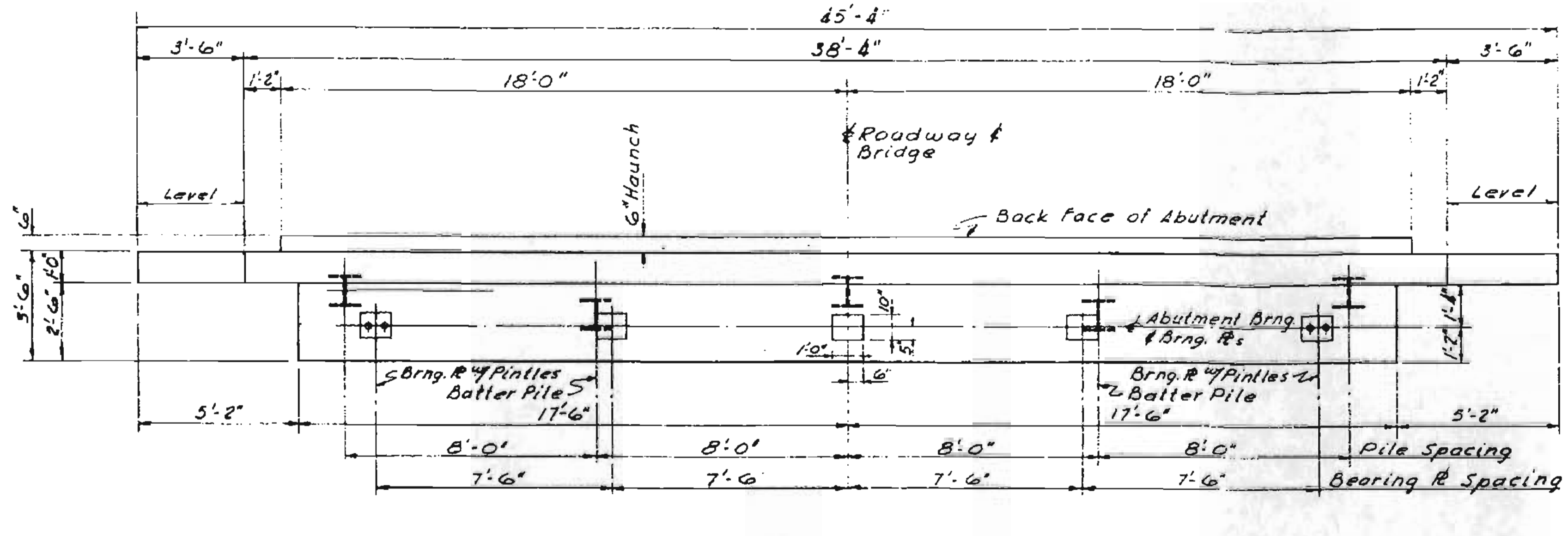
	Initials	Date
BY	H.J.M.	[illegible]
BY		
	D.L., L.M.	[illegible]
BY		
BY		

REVISIONS

R1 Revision Uncl. Struct. Excavation (Bridge) - Riprap, J.W.M. 6/3/66

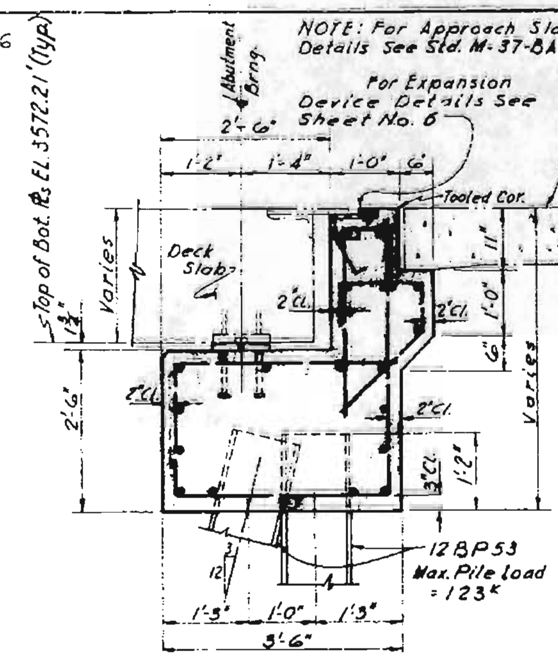
FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	ER 34 (1)	3	

FIRST CONTRACT



PLAN

Orig. Scale 3/8" = 1'-0"



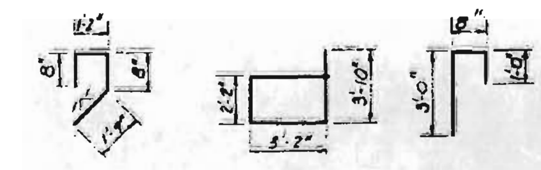
TYPICAL SECTION

Orig. Scale 1/2" = 1'-0"

REINFORCING SCHEDULE

Mark	Type	Length	A	B	Nº Req'd	Size
A701	Str.	34'-8"			16	#7
A402	Str.	34'-8"			12	#4
A403	Str.	35'-8"			8	#4
A404	Str.	6'-2"			40	#4
A405	Str.	4'-8"			48	#4
A406	Bent I	4'-1"			72	#4
A407	Bent II	12'-1"			70	#4
A408	Bent III	4'-6"			70	#4

Note: Nº Req'd shown is for 2 abutments.



TYPE I TYPE II TYPE III

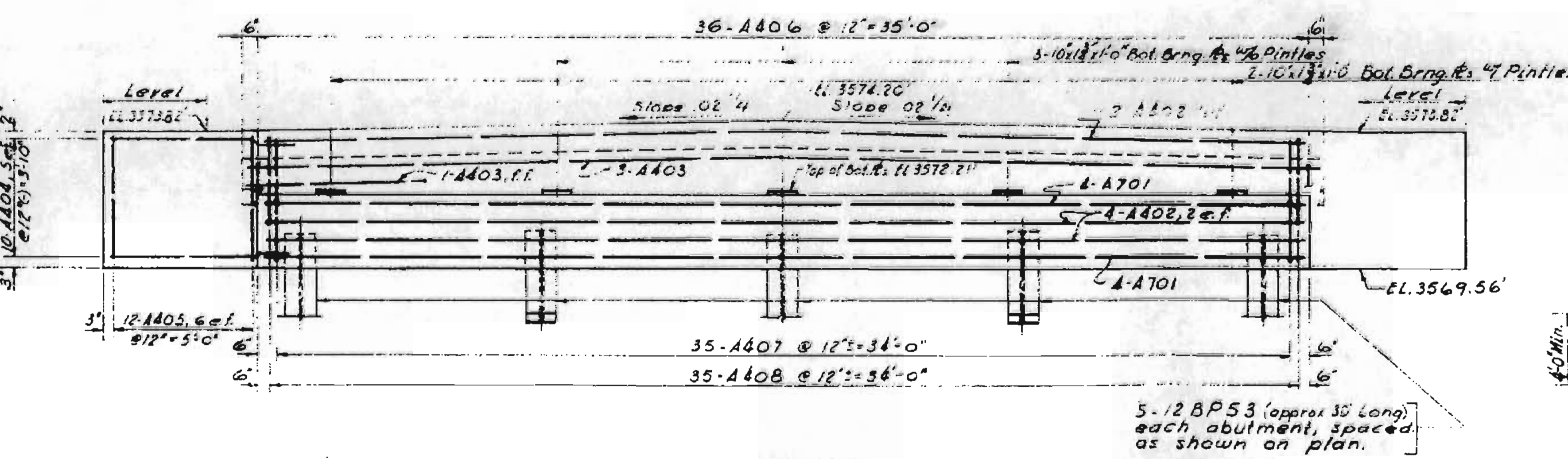
BAR SUMMARY

555 Lin. Feet #7 @ 2.044 #/ft. = 1,134#
2,603 " " #4 @ 0.668 #/ft. = 1,739#
Total .. = 2,873#

SUMMARY OF QUANTITIES (For 2 abutments)

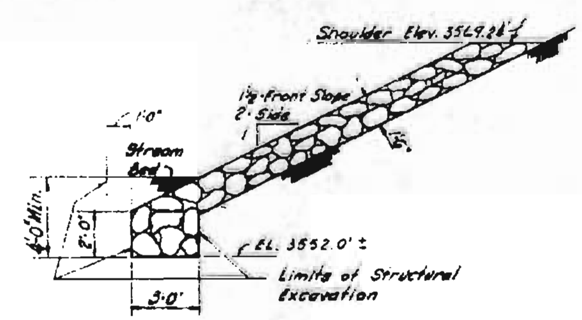
Item	Quantity	Unit
Class "A" Concrete	31	Cu. Yds.
Reinforcing Steel	2,873	Lbs.
Steel Piling 12 BP 53	300	Lin. Ft.
R1 Uncl. Struct. Excavation (Bridge)	680	Cu. Yds.
Structure Backfill (Class I)	274	Cu. Yds.
* Structural Steel A36	*	Lump Sum
R1 Riprap	1215	Cu. Yds.

* Design weight = 1,280 Lbs.



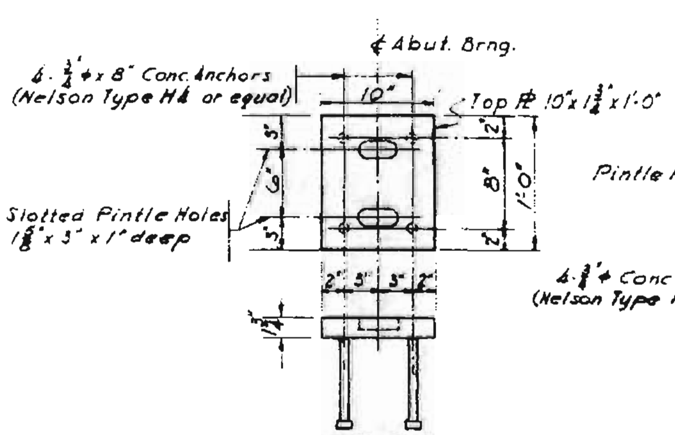
ELEVATION

Orig. Scale 3/8" = 1'-0"



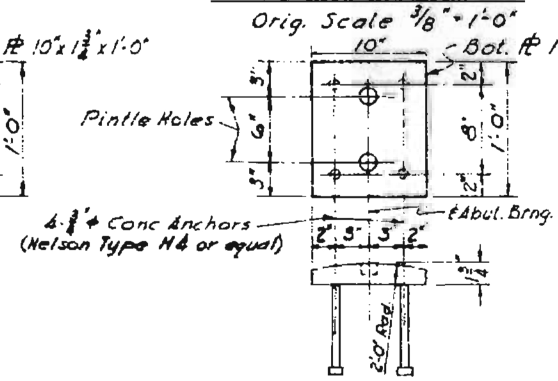
DETAIL OF RIPRAP

No Scale



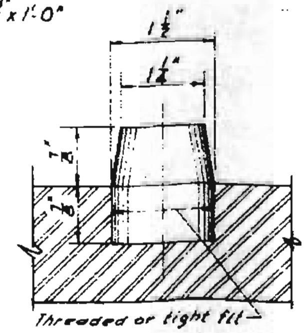
DETAIL TOP BEARING PLATE

4 REQD w/ Pintle Holes
6 REQD w/o Pintle Holes



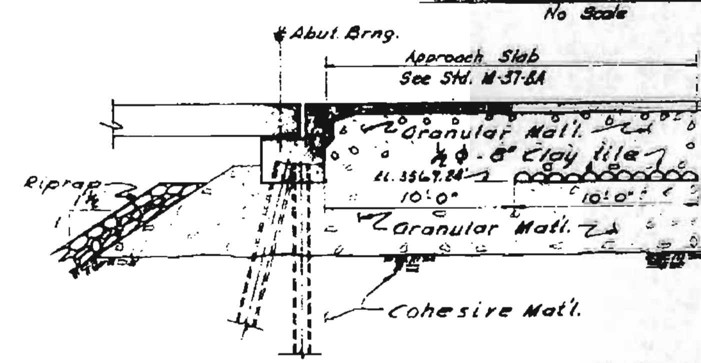
DETAIL BOTTOM BEARING PLATE

4 REQD w/ Pintle Holes
6 REQD w/o Pintle Holes



PINTLE DETAIL

8 REQD.



WASHABLE APPROACH DETAIL

No Scale

MEHEEN ENGINEERING CO.
CONSULTING ENGINEERS
2301 W. 32nd AVE. DENVER, COLO. 80211

STRUCTURE NO. L-26-F

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

ABUTMENT

S.H. 6, EAST OF LAMAR

Across Clay Creek
Sta. 220+64.5
Near Lamar Sec. T. R.

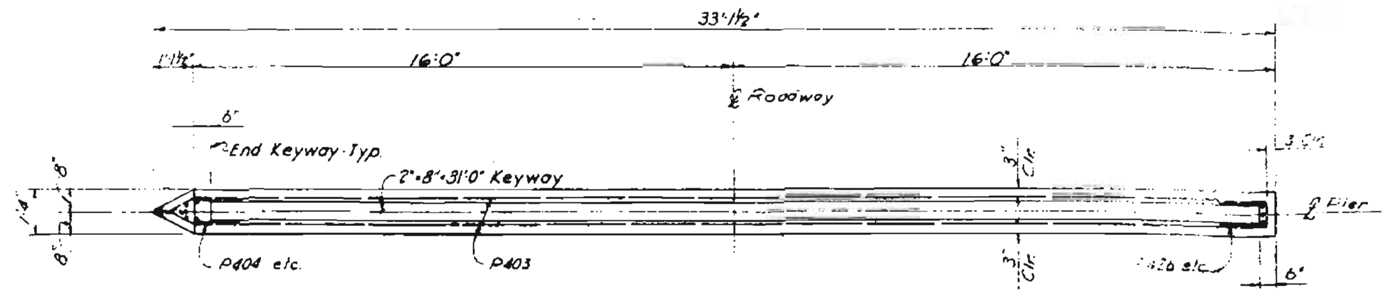
Designed by H.J.M.
Made by K.R.C.
Checked by

Approved by
Bridge Engineer
Date: 19

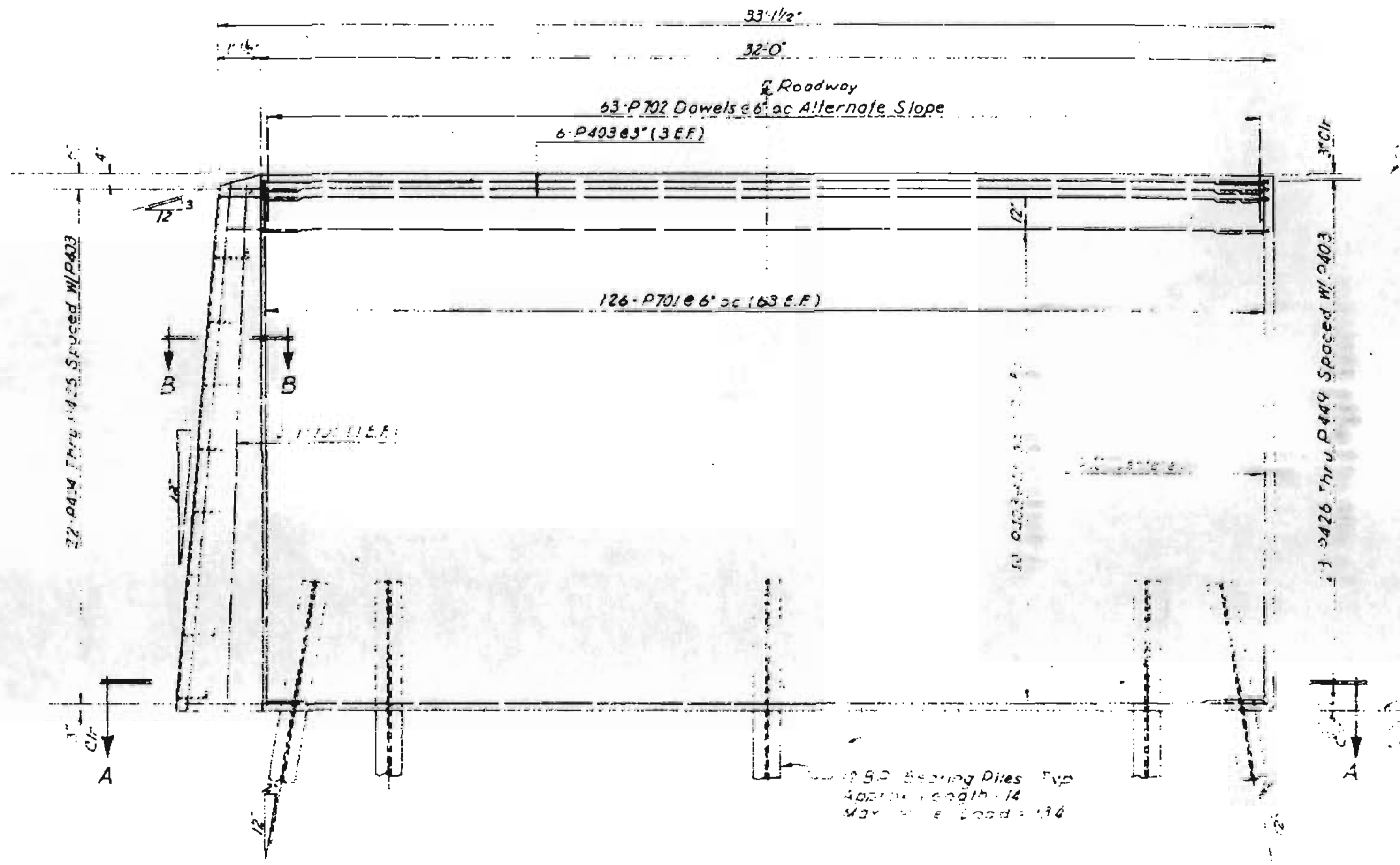
REVISIONS

FED. ROAD DIV. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	ER 34 (1)	4	

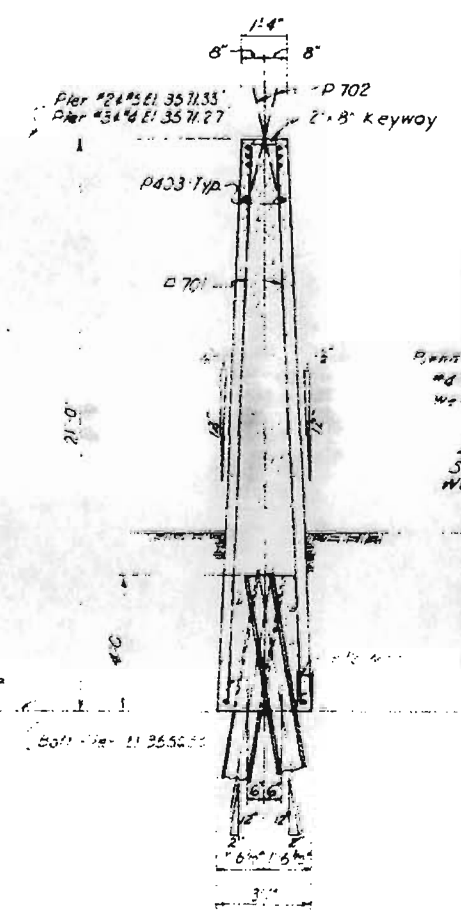
FIRST CONTRACT



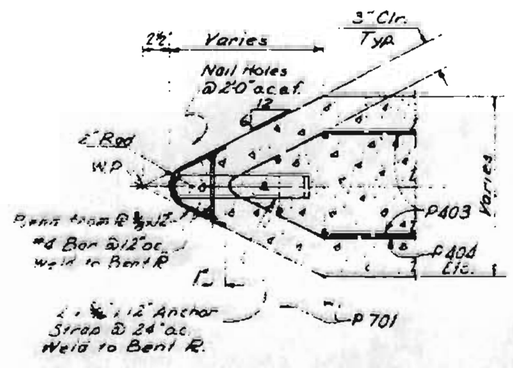
PLAN
Orig. Scale: ⅛"=1'-0"



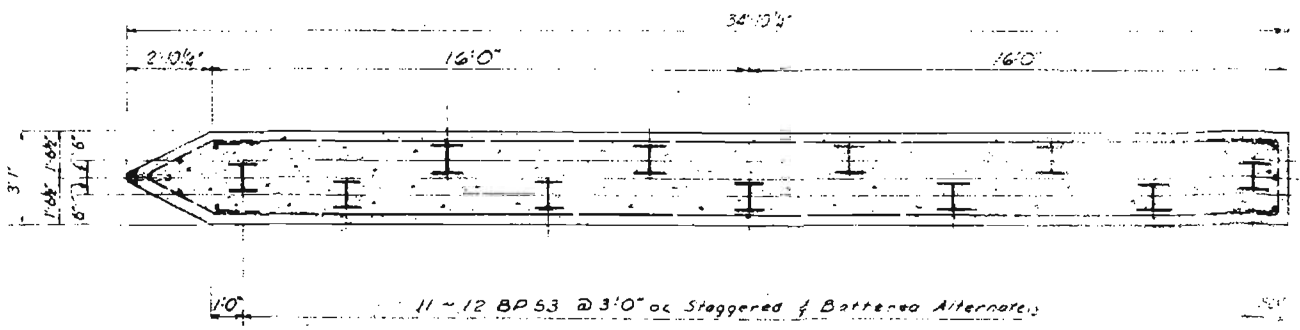
ELEVATION
Orig. Scale: ⅛"=1'-0"



TYPICAL SECTION
Orig. Scale: ⅛"=1'-0"



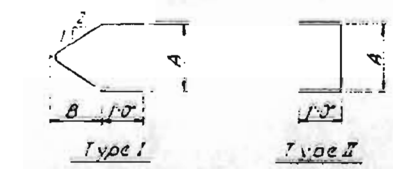
SECTION B-B
Orig. Scale: ½"=1'-0"



SECTION A-A
Orig. Scale: ⅜"=1'-0"

REINFORCING SCHEDULE 4 PIERS

Mark	Type	Length	"A"	"B"	No. Req'd	Size
P701	Str.	20'-6"			516	#7
P702	Str.	3'-0"			252	#7
P403	Str	31'-8"			184	#4
P404			0'-10"	0'-10"		
Avg. →	Type I	5'-10"	1'-8½"	1'-8½"	88	
P425			2'-7"	2'-7		
P426			0'-10"			
Avg. →	Type II	3'-8"	1'-8½"		92	
P449			2'-7"			#4



BAR SUMMARY (4 PIERS)

11,334 Lin Ft. #7 @ 2.044 #/ft	=	23,167 lbs
6,678 #4 @ 0.668 #/ft	=	4,461 lbs
Total		27,628 lbs

SUMMARY OF QUANTITIES (4 PIERS)

ITEM	QUANTITY	UNIT
Class "A" Concrete	221.6	C.Y.
Reinforcing Steel	27,628	lbs
Steel Piling 12 BP53	516	Lin Ft
Uncl. Struct Excavation (Bridge)	150	C.Y.
Structure Backfill (Class 1)	70	C.Y.
* Structural Steel (Nosing)		L.S.

* Design Wt = 1530 lbs.

MEHEEN ENGINEERING CORP.
CONSULTING ENGINEERS
DENVER COLO.

STRUCTURE NO. L-26-F

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

PIER DETAILS

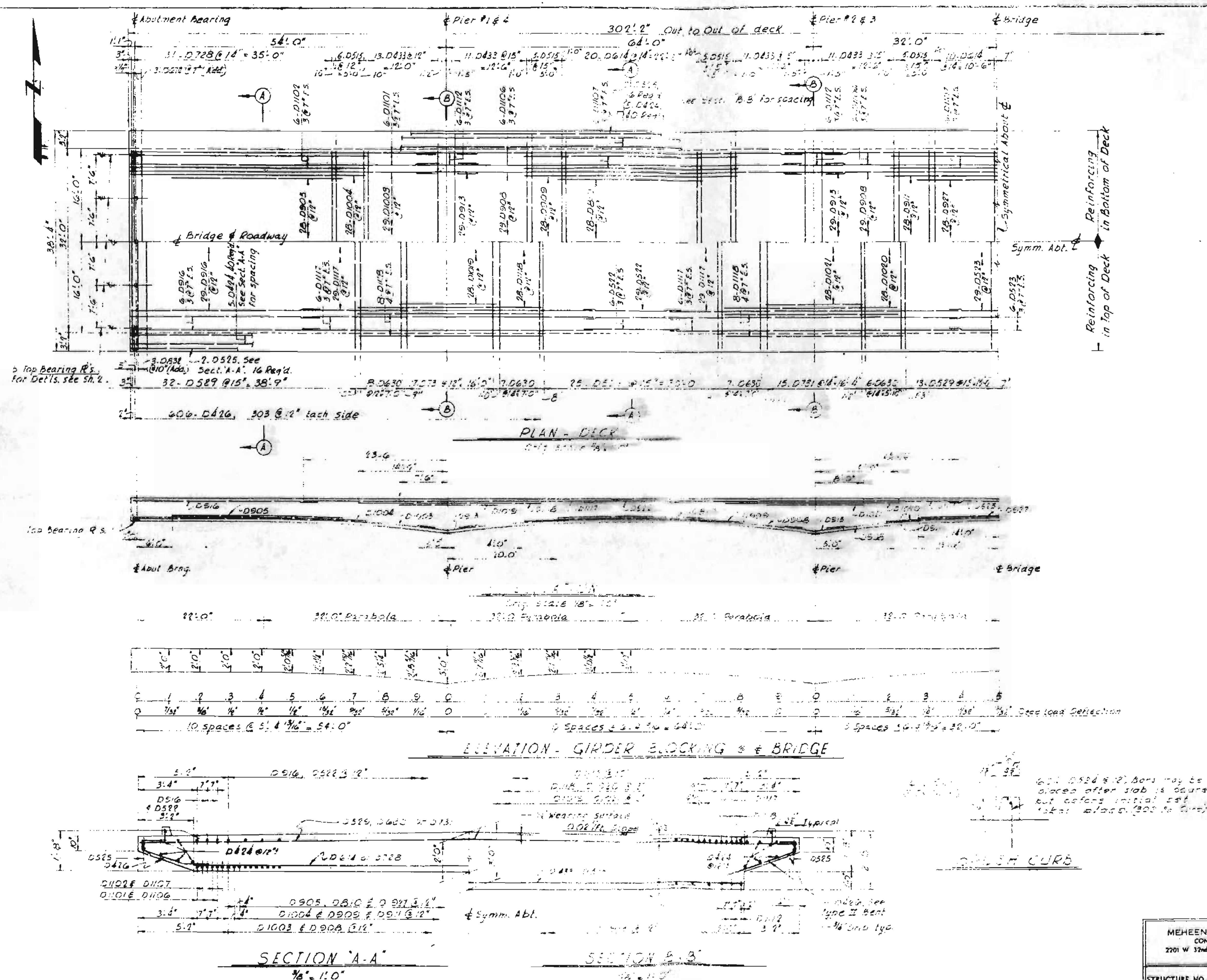
S.H. 6, EAST OF LAMAR

Across Clay Creek
Sta. 220+68.5
Near Lamar Sec. ___ T. ___ R. ___

Designed by HJM
Made by VV
Checked by

Approved by
Bridge Engineer
Date: 19

REVISIONS



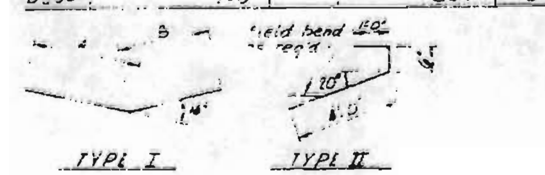
(D 524 @12") Bars may be placed after slab is poured but before initial set takes place. (303 Ea. Curb)

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	ER 34(1)	5	

FIRST CONTRACT

REINFORCING SCHEDULE

Mark	Type	Length	A	B	No Req'd	Size
D1101	Str.	53'-0"			12	#11
D1102	"	41'-0"			12	#11
D1003	"	53'-0"			58	#10
D1004	"	41'-0"			56	#10
D 905	"	30'-0"			56	#9
D1106	"	60'-0"			18	#11
D1107	"	37'-0"			18	#11
D908	"	60'-0"			87	#9
D909	"	37'-0"			56	#9
D810	"	25'-0"			56	#8
D911	"	39'-0"			28	#9
D1112	Bent I	10'-0"	5'-0"	5'-0"	24	#11
D913	Bent I	5'-0"	4'-6"	4'-6"	116	#9
D614	Str.	31'-9"			66	#6
D515	"	31'-9"			42	#5
D 916	"	34'-6"			70	#9
D1117	"	50'-0"			140	#11
D1118	"	31'-0"			88	#11
D1119	"	16'-0"			56	#10
D1020	"	29'-0"			56	#10
D1021	"	17'-0"			56	#10
D 522	"	15'-0"			70	#5
D 523	"	16'-6"			35	#5
D 424	"	38'-9"			80	#4
D525	"	39'-0"			48	#5
D426	Bent II	5'-6"			606	#4
D927	Str.	28'-0"			28	#9
D728	"	31'-9"			62	#7
D529	"	38'-0"			140	#5
[illegible]	"	38'-0"			56	#6
D731	"	38'-0"			64	#7
D832	"	38'-0"			6	#8
D433	"	31'-9"			92	#4
D534	"	1'-0"			604	#5



BAR SUMMARY

12,842 L.Ft.	#11 Rebar	@ 5.313 #/Ft.	= 68,230#
8,842 " "	#10 "	@ 4.303 "	= 38,047#
4,302 " "	#9 "	@ 3.4 "	= 48,600#
1,628 " "	#8 "	@ 2.67 "	= 4,347#
4,401 " "	#7 "	@ 2.044 "	= 8,996#
4,219 " "	#6 "	@ 1.502 "	= 6,336#
10,757 " "	#5 "	@ 1.043 "	= 11,220#
9,354 " "	#4 "	@ 0.668 "	= 6,248#
		Total	= 192,024#

SUMMARY OF QUANTITIES

Item	Quantity	Unit
Class "A" Concrete	863	C.Y.
Reinforcing steel	192,024	lbs.
* Structural Steel (Exp. Devices)		L.S.

* Design Wt. = 8,804 lbs.

MEHEEN ENGINEERING CO.
CONSULTING ENGINEERS
2201 W 32nd AVE. DENVER, COLO. 80211

STRUCTURE NO. L-26-F

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

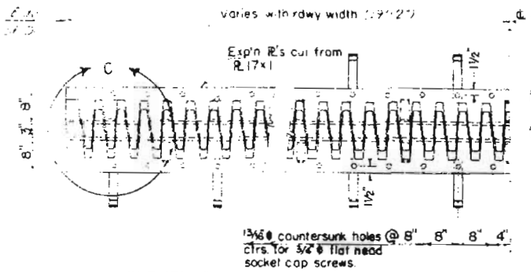
DECK

S.H. 6, EAST OF LAMAR
Across Clay Creek
Sta. 220+63.6
Near Lamar Sec. ___ T. ___ R. ___

Designed by H.J.M.	Approved by
Made by R.V.B.	Bridge Engineer
Checked by	Date: 19

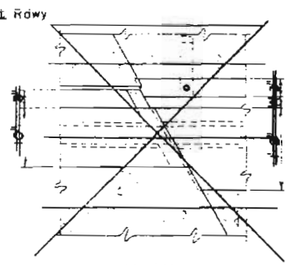
REVISIONS

FED. ROAD REG. NO	DIVISION	PROJECT NO.	SHEET NO	TOTAL SHEETS
9	COLO.	ER 34(1) FIRST CONTRACT	6	

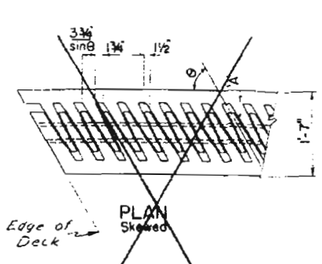


ABUTMENTS

PLAN

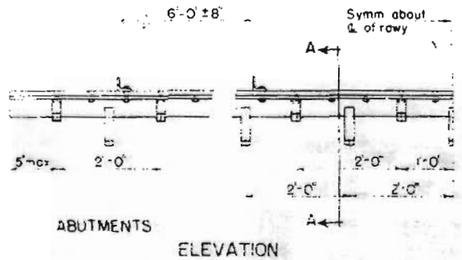


~~PLAN~~
~~Curb Expansion Device~~



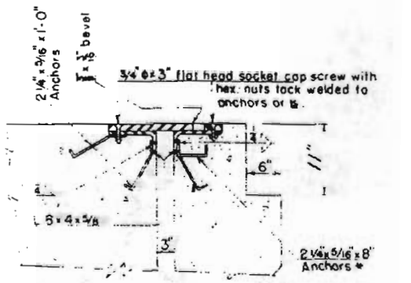
PLAN
Skewed

*Note: Granular flux filled concrete anchors 3/4" ϕ automatically end welded, spaced similar to 2 1/4" x 5/16" anchors, may be used as an alternate.



ABUTMENTS

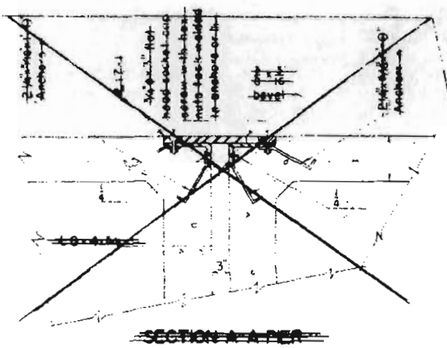
ELEVATION



2 1/4" x 5/16" x 1'-0" Anchors *

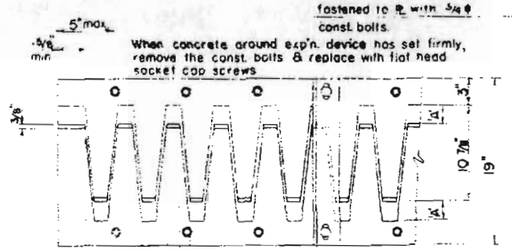
3/4" ϕ flat head socket cap screw end threads to be coated with tallow & white lead

SECTION A-A-ABUTMENT



~~SECTION A-A-PIER~~

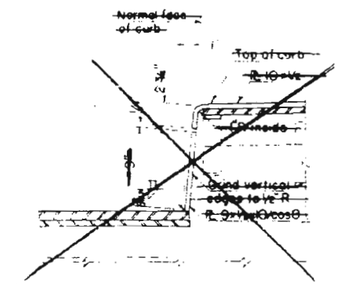
B 3 x 3 x 5/16 x 19" @ 6'-0" ± ctrs fastened to R with 3/4" ϕ const. bolts.



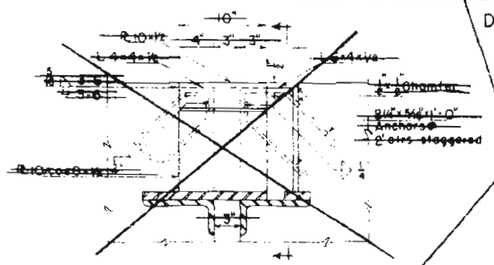
DETAIL 'C'

Outside Temp	Dimension 'A'
40°F	2 3/8"
60°	2 1/8"
80°	1 7/8"
100°	1 5/8"

Note: After concrete has attained initial set, loosen const. bolts to allow movement due to temp. change.

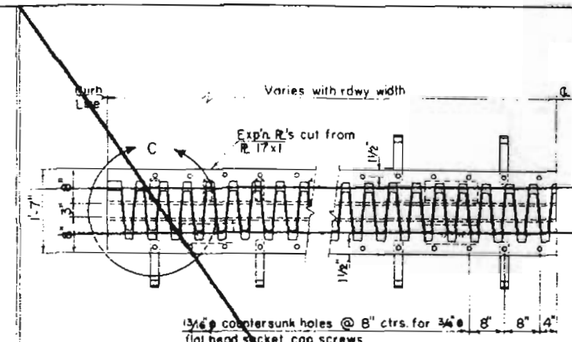


~~SECTION THRU CURB~~

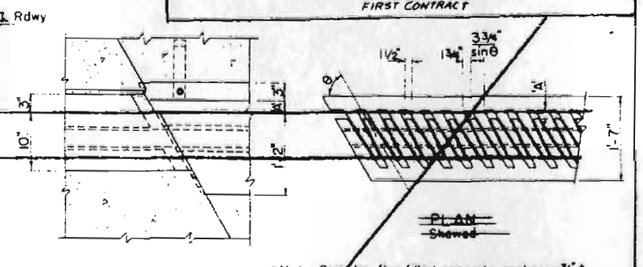


~~CURB EXPANSION DEVICE~~

DETAILS of EXPANSION DEVICE - Concrete Slab & Girders



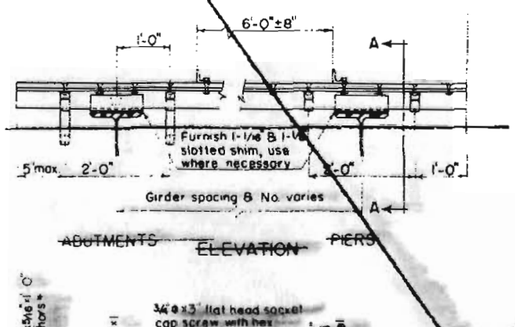
~~ABUTMENTS PLAN PIERS~~



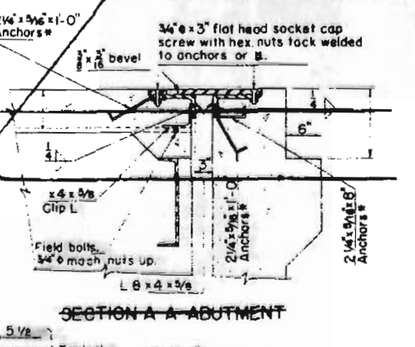
~~PLAN~~
~~Skewed~~

~~PLAN~~
~~Curb Expansion Device~~

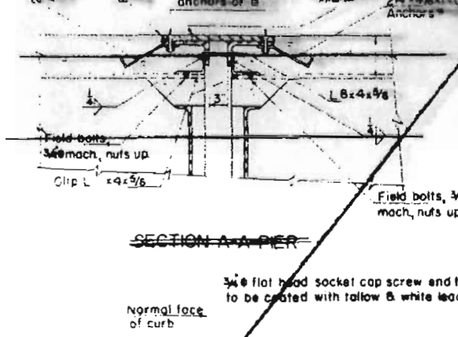
*Note: Granular flux filled concrete anchors 3/4" ϕ automatically end welded, spaced similar to 2 1/4" x 5/16" anchors, may be used as an alternate.



~~ABUTMENTS ELEVATION PIERS~~

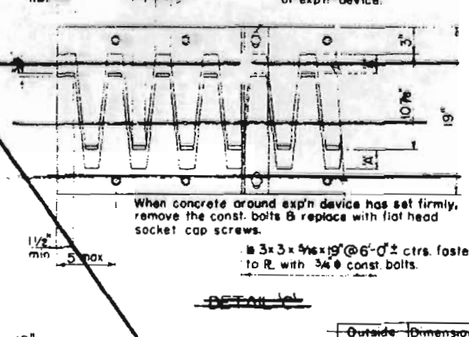


~~SECTION A-A-ABUTMENT~~



~~SECTION A-A-PIER~~

3/4" ϕ flat head socket cap screw end threads to be coated with tallow & white lead.

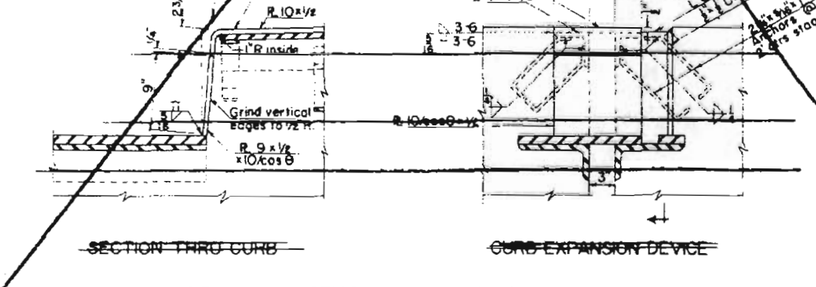


B 3 x 3 x 5/16 x 19" @ 6'-0" ± ctrs. fastened to R with 3/4" ϕ const. bolts.

~~DETAIL 'C'~~

Outside Temp	Dimension 'A'
40°	
60°	2 1/8"
80°	
100°	

Note: After concrete has attained initial set, loosen const. bolts to allow movement due to temp change



~~SECTION THRU CURB~~

~~CURB EXPANSION DEVICE~~

~~DETAILS of EXPANSION DEVICE~~ - Concrete Slab & Steel Girders

(May be made from A7 steel)

STRUCTURE NO. L-26-F

COLORADO
DEPARTMENT OF HIGHWAYS
EXPANSION
DEVICE DETAILS
S.H. #6 EAST of LAMAR

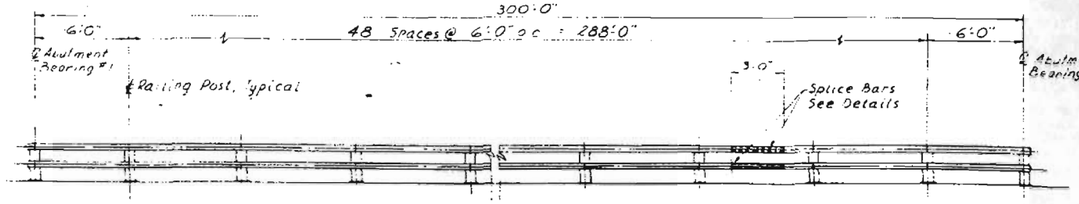
Across Clay Creek
Sta. 220+60.5
Near Lamar Sec. T. R.

Designed by	Approved by
Made by V.V.	Bridge Engineer
Checked by	Date: Jan. 15, 1964

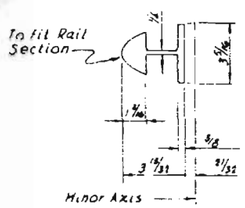
Sh. #5

FED. RD. DIV. NO.	STATE	PROJECT NO.	SHT. NO.	TOTAL SHTS.	BRIDGE SHT. NO.
8	COLO.	ER 34 (1)	7		

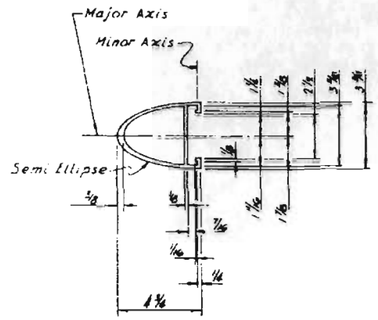
FIRST CONTRACT



ELEVATION - RAILING



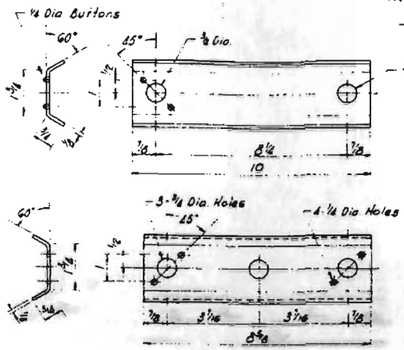
SPLICE SECTIONS



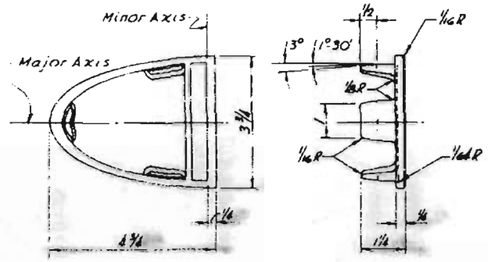
BARRIER RAIL

NOTE: If cut threads are used bolt dia. shall not be less than nominal d'a If rolled threads are used bolt d.a shall not be less than root dia. of nominal dia.

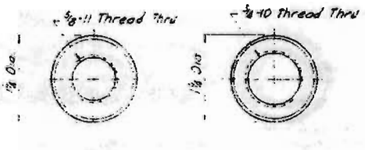
ANCHOR BOLT DETAILS



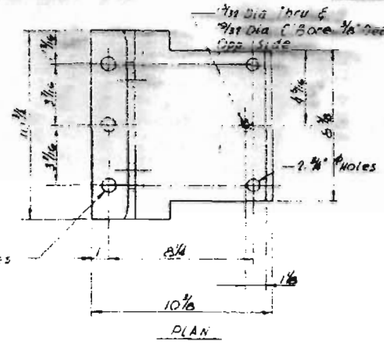
ANCHOR CHANNEL BAR DETAILS



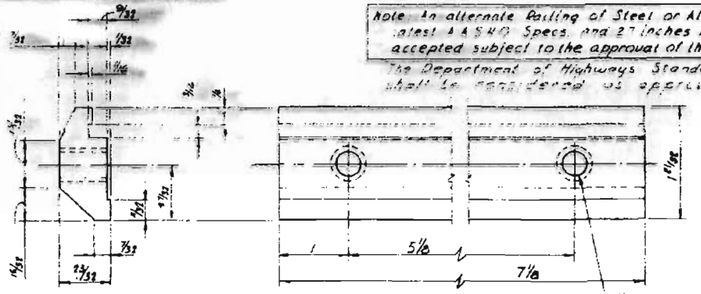
BARRIER RAIL DRIVE PLUGS



THREADED WASHER DETAILS

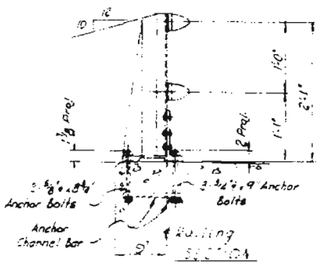


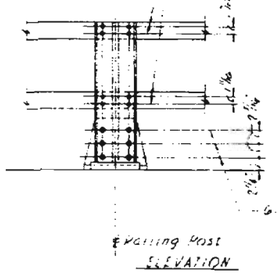
PLAN



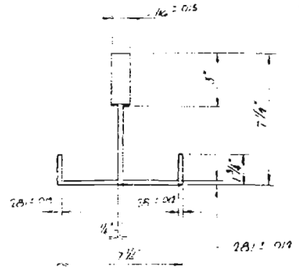
POST CONNECTION DETAILS

½-13 Thread (2) Holes for ¼-13 x 1" Stainless Steel Hex Hd. Bolt & ⅜ O.D., ¼ I.D. 1/16 Thick Washer Aluminum 2024-T3.

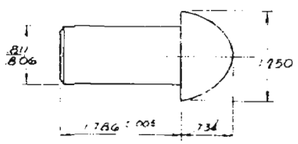




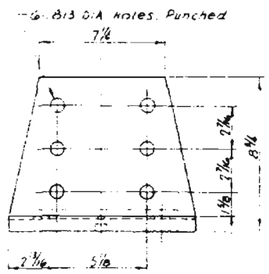
RAILING DETAILS



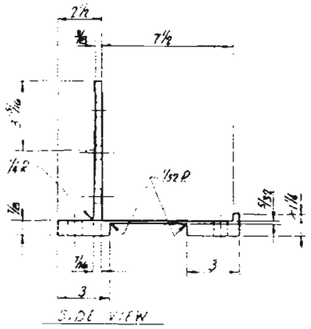
BARRIER POST SECTION



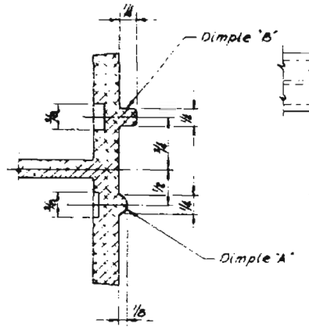
RIVET DETAIL



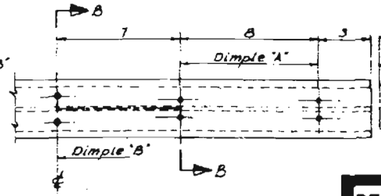
FRONT VIEW



POST BASE DETAILS



SECTION "B-B"



RAIL SPLICE DETAILS

NOTES:

DESIGN SPECIFICATIONS
Designed in accordance with 1964 Interim A.A.S.H.O. Specs.

1. Material for anchor bolts shall conform to A.S.T.M. A 276 Type 430 stainless steel except with a min. of 100,000 p.s.i. ultimate strength. Threads may be rolled or cut.
2. Material for set screws and cap screws to be stainless steel A.S.T.M. A 276.
3. Material for aluminum nuts shall be A.S.T.M. B-221 Alloy 6061 or 6062-T6. Aluminum nuts to be American Standard finished hexagon thick nuts class 2B thread. Lower steel nuts shall conform to A.S.T.M. A 307. All nuts to comply with American hex. A.S.A. Specs. B 18.2.
4. Exposed ends of rail tube shall be closed with drive-in type rail end caps. Caps may be either (a) aluminum alloy permanent mold castings complying to A.S.T.M. Spec. B108-59T Alloy SG 70A or (b) Sand mold castings complying to A.S.T.M. Spec. B26-60T Alloy 43-F.
5. All welding shall be metal inert gas process.
6. End of tube sections to be sawed or milled. Cut ends to be true, smooth and free from burrs or ragged edges.
7. Railing system shall be continuous. See Elevations. Each joint in rail length shall be spliced as detailed. Each rail section shall be attached to a min. of four posts.
8. Material for post bases, splice bars, rails, aluminum bolts and aluminum nuts shall be A.S.T.M. B-221, Alloy 6061, 6062-T6
9. Material for aluminum washers shall be A.S.T.M. B-209 Alloy Alclad 2024-T3. Material for rivets shall be A.S.T.M. B-316, or B 221 Alloy 6061, 6062-T6. Rivets shall be button head and cone point, cold driven as per drawing.
10. Material for anchor channel bars shall conform to A.S.T.M. A 7 or A 36
11. All Aluminum surfaces in contact with concrete shall be given one shop coat of chromate paint.

ALTERNATE

Note: An alternate Railing of Steel or Aluminum meeting latest A.A.S.H.O. Specs. and 27 inches high will be accepted subject to the approval of the Bridge Engineer.

The Department of Highways Standard Handrail shall be considered as approved

SUMMARY OF QUANTITIES		
Item	Quantity	Unit
Handrail	600	Lin.Ft.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

S.H. #6, EAST of LAMAR

HANDRAIL

MEHEEN ENGINEERING CORPORATION
CONSULTING ENGINEERS
DENVER COLO.

Designed by: W.H.M.
Made by: R.V.D.
Checked by: W.H.M.
Approved by:
Date 19

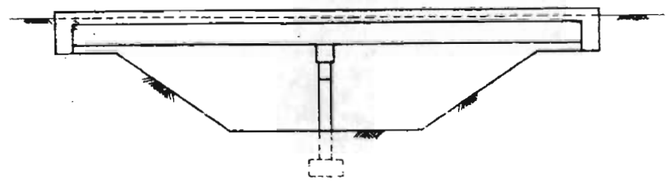
STRUCTURE No. L-26-F

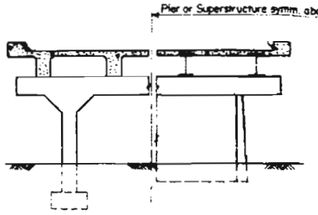
REVISIONS

R1 Rev. Added Spur Dike, JWM 6/9/66
R2 Rev. Removed - Filter Blanket, L DP 83-66

FED. ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.	TOT. SHEETS
9	COLO.	ER 34 (1)	8	

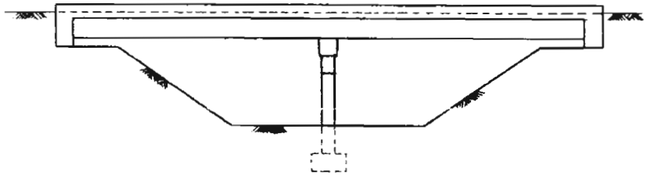
FIRST CONTRACT

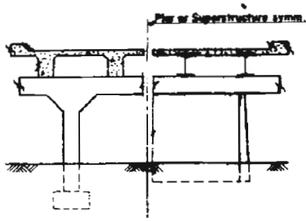




PIER AND SUPERSTRUCTURE

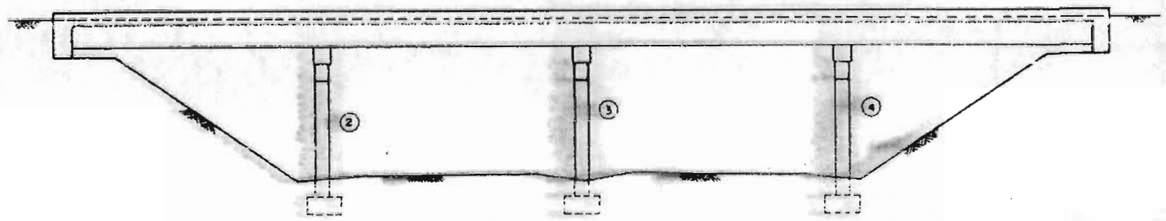
RURAL STREAM CROSSING

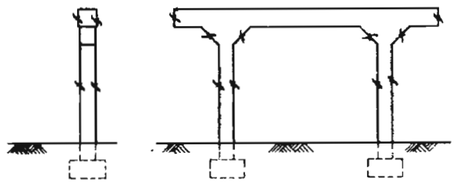




PIER AND SUPERSTRUCTURE

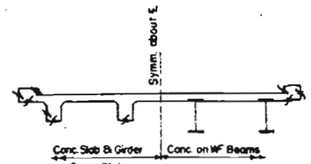
STREAM CROSSING IN OR NEAR URBAN AREA





Piers 2,3 & 4

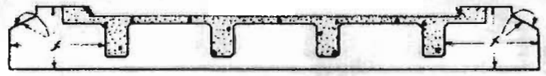
All Piers



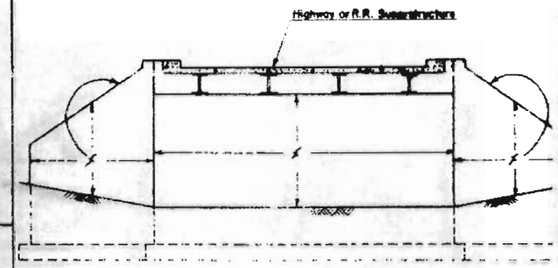
Superstructure

In case of round columns the whole column shall receive Class "L" finish on all Piers.

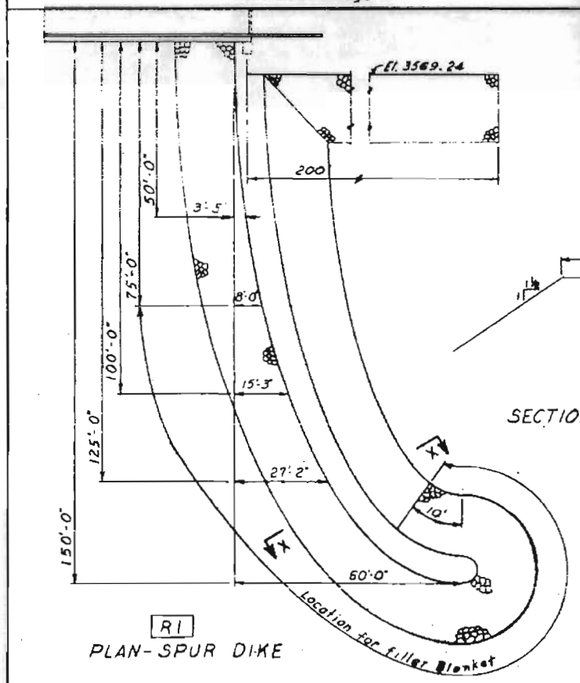
UNDERPASS



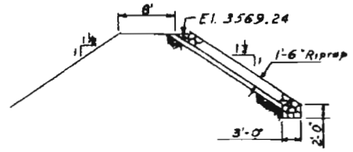
STUB ABUTMENTS
(Underpass Only)



CANTILEVER ABUTMENTS
(Underpass Only)



R1
PLAN-SPUR DIKE



SECTION X-X

COLORADO
DEPARTMENT OF HIGHWAYS

DETAILS SHOWING PORTIONS OF STRUCTURE TO RECEIVE CLASS "L" SURFACE FINISH.

S.H. 6, EAST OF LAMAR

Across Clay Creek

Dist. No. 3-42-3

Near Lamar Dist. T. R.

Designed by R.R.A.
Drawn by R.R.A.-JWM
Checked by

Approved by Bridge Engineer
Date: 19

STRUCTURE NO. L-26-F

RACING
PLAIN

REVISIONS

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	EP 38 (1) FIRST CONTRACT	9	

6'-0" ℄ to ℄ Posts ⑤

¾" ϕ hex. hd. bolt with hex. nut & lock washers, 11/16" ϕ holes in R's

¼ Post Spc.

PLAN

Note: L's to be continuous over 2 or 3 panels as shown on plans before splicing.

Varies ℄ Joint ℄ Post

Omit End R's 2"

DETAIL @ EXP'N BREAK

(Omit R. at exp'n. break.)

R 8 x ¼, ⅛" R. all edges

⑤ 5"x5"x ½" Tube

3/8" R. (same as splice R.) except holes) weld to L

Interior post End post

11/16" x 15/16" slots

2½" x ⅛"

③ 2-1"ϕ x 1'-0" hex. hd. bolt with hex. nut & lock washers & 2¼" sq. x ⅛" cut washers.

ELEVATION

8 Lit. 5

SECT. D-D

(Omit R. at exp'n. break.)

℄ Splice (See detail)

R 8 x ¼, ⅛" R. all edges.

Interior post End post

3/8" R. (same as splice R., except holes), weld to L

3/8" R. (Typ.)

R 12 x 12 x ½

③ 2-⅞" ϕ bolts, hex. hd. & nut, & lock washer, set thru 1¼" ϕ std. galv. pipe sleeves

① ⅝" x 7" bolts, hex. nuts & lock washers at each end post.

ELEVATION

SECT. E-E

SECT. C-C

Note: Posts to be perpendicular to grade of deck in both directions.

13/16" ϕ holes in top R.

SECT. A-A

5½" x 5⅛" slot in L

SECT. B-B

Tight fit

13/16" ϕ holes

3/8" R. (Typ.)

Seal Weld

11/16" x 1⅛" slot in L

② ⅝" ϕ hex. hd. bolt with hex. nut & lock washer, 11/16" ϕ hole in L

SPLICE DETAIL

⅝" ϕ hex. hd. bolt w/hex. nut & lock washer, 11/16" ϕ hole in L & post.

L 3 x 3½ x ⅜ x 0'-3½"

SECT. F-F

SECT. G-G

① For each pair of bolts provide one plate 2" x ⅜" x 1'-1" punched with 13/16" ϕ holes.

② ⅝" ϕ granular flux filled, full threaded studs welded to L may be used, increase size of slot in L to 13/16" x 1¼".

③ Anchor bolts to be H.S.

④ 5" x 5" x ⅜" tube with f_y = 50,000 psi may be used in lieu of post shown.

⑤ Post spacing not to exceed 8'-0".

¾" H.S. bolts 2½" 2½" Clip R

SECT. H-H

GALVANIZED STEEL HANDRAIL

℄ to ℄ Posts C

Note: L's & L's to be continuous over 2 or 3 panels as shown on plans before splicing.

L 5 x 5 x ⅜

¼ Post Spc.

℄ Splice

7 E 9.8

3/8" R. (same as splice R.), weld to L

R 7 x ¼, ⅛" R. all edges.

(Omit R. at exp'n. break.)

3/8" R. (same as splice R.), weld to L

3'-3"

4'-4" tube, 0.25" walls. Tubes to be hot rolled, elec. welded, conforming to spec. for Structural Steel Institute (A-7 Steel)

Interior post End post

L 3 x 3½ x ⅜ x 1'-

11/16" x 15/16" slots

4'-4"

ELEVATION

2-1"ϕ x 1'-0" sq. hd. bolt with hex. nut & lock washers & 2¼" sq. cut washers.

SECT. C-C

4½" x 4⅝" slot in L

SECT. A-A

⅝" ϕ hex. hd. bolt w/hex. nut & lock washer, 11/16" ϕ hole in L

SECT. D-D

1/8" max.

PLAN

F F

7 E 9.8

⅜" R. (Typ.)

ELEVATION

SECT. B-B

4½" x ⅝" slot in L

⅝" ϕ hex. hd. bolt w/hex. nut & lock washer, 11/16" ϕ holes in L & post

L 3 x 3½ x ⅜ x 0'-3"

SECT. E-E

1/8" max.

PLAN

G G

⅜" R. (Typ.)

ELEVATION

SECT. F-F

CHANNEL SPLICE

Clip R

2½" ¾" H.S. bolts or threaded rod (ASTM A 449 or equiv.)

SECT. G-G

ANGLE SPLICE

L 5 x 5 x ⅜

PLAN

H H

ELEVATION

SECT. J-J

3 x 2 x ⅜ x 0'-3½" L's

DETAIL @ TOP RAIL & POST

⅜" R. (same as splice R.)

PLAN

ELEVATION (End R. at Top Rail)

R 9 x ⅜ x 6", weld to 5" L.

L 5 x 5 x ⅜

1'-1" to top of L.

(R. to L's)

SECT. H-H

NOTES

All iron elements to be galvanized.

Posts to be perpendicular to grade of deck.

* ⅝" ϕ granular flux filled, full threaded studs welded to L may be used, increase size of slot in L to 13/16" x 1⅛".

GALVANIZED STEEL HANDRAIL

℄ of post 6'-3" 12'-6" 6'-3" ℄ of post 1'-9⅛"

⅜" ℄ Post bolt hole 12 Gage Material One 11/16" hole in N.S. flange MK L & R for opposite railings ⅜"

Lap in direction of traffic ¾" Lap terminal section on traffic face.

11/16" x 1⅜" slotted holes

1'-3" 1⅜" 3½"

INSTALLATION

No. Req'd

Pieces 13'-6" for steel posts

Pieces for steel posts

℄ Post bolt hole ¾"

3" x 1¾" 8 Gage Galv. Rectangular Post Bolt Washer with 3/32" x 1⅛" Slotted Hole

2¾" x 1⅛" slotted holes

4½" 4½" 2"

12½"

2¾" x 2⅛" slot in rail only

5⅛" 12⅛" 6⅛"

2" 4¼" 4¼" 2"

12⅛" ϕ 60°

5⅝" 21½" 27½"

TERMINAL SECTION

Terminal Bipass Each.

6 WF 20 post *

2'-3" 3'-0" 1'-0"

2-1"ϕ x 12" hex. hd. bolts w/hex. nut & lock washer.

ARRANGEMENT AT POSTS

Note: Aluminum Guard Rail 0.125" thick will be an acceptable equivalent for steel guard rail.

* All posts to be galvanized.

1¼" ⅝" Oval shoulder Button head

1¼"

SPLICE BOLT NUT

Post Bolt similar except length

METAL PLATE GUARD RAIL

COLORADO
DEPARTMENT OF [illegible]
HANDRAIL
DETAILS
S.H. 6, EAST OF LAMAR
Across Clay Creek
Sta. 220+68.9
Near Lamar Sec. T. R.
Designed by
Made by RLS
Checked by
Approved by [illegible]
Bridge Engineer
Date: June, 1964

STRUCTURE NO. L-26-F

STANDARD M-5-A

(MAY 1, 1962) REV. 1-31-64, DEPT. NAME, M.R.H.
REV. 11-17-64, GEN. NOTES, M.R.H.

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

1 2 3 4 5 6 7 8 9 0 .

A B C D E F G H I J K L

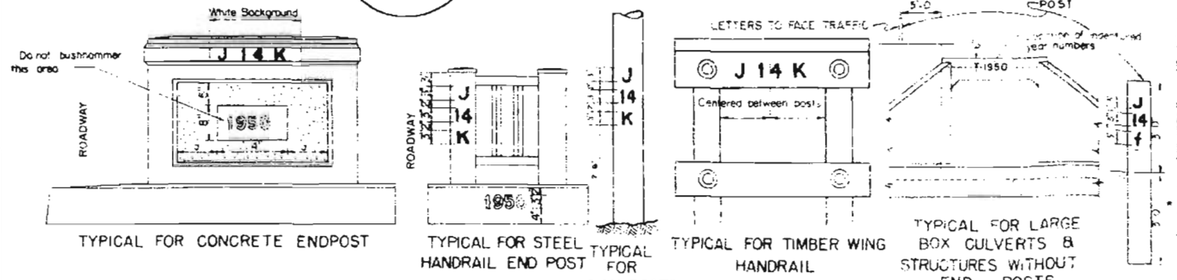
M N O P Q R S T U V W

a f g l J 14 K 1950

abcdefghijklmnopqrstuvwxyz

SAMPLE BRIDGE NUMBER

SAMPLE YEAR NUMBER



TYPICAL FOR CONCRETE ENDPOST

TYPICAL FOR STEEL HANDRAIL END POST

TYPICAL FOR SIGN POSTS

TYPICAL FOR TIMBER WING HANDRAIL

TYPICAL FOR LARGE BOX CULVERTS & STRUCTURES WITHOUT END POSTS

GENERAL NOTES

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE COLORADO DEPARTMENT OF HIGHWAYS APPLICABLE TO THE PROJECT.
THE SIZE, SHAPE AND SPACING OF THE LETTERS AND FIGURES SHALL BE IN ACCORDANCE WITH THE FULL SIZE SHOWN ON THIS SHEET. ADDITIONAL COPIES OF THIS FULL SIZE SHEET CAN BE OBTAINED FROM THE DEPARTMENT WITHOUT CHARGE.
THE YEAR NUMBERS ARE RECESSED IN CONCRETE 3/8" MINIMUM AS SHOWN INTO THE PANEL OF THE ENDPOST ON THE RIGHT HAND SIDE OF EACH BRIDGE END AND INTO THE FACE OF THE DOWNSTREAM HEADWALL OF CULVERTS AS SHOWN ON PLAN DETAILS. NUMBERS TO BE MADE OF WOOD, METAL OR OTHER SUITABLE MATERIAL AND ATTACHED TO THE FORMS BEFORE CONCRETE IS POURED. THE YEAR NUMBER OF EACH STRUCTURE SHALL CORRESPOND WITH THE YEAR IN WHICH THE CONCRETE IS POURED.
THE STRUCTURE NUMBER SHALL BE STENCILED ON THE RIGHT HAND SIDE OF EACH BRIDGE END AS SHOWN ON THIS STANDARD AND AS SPECIFIED WHERE THE STRUCTURE HAS NO END POSTS THE NUMBER SHALL BE PLACED ON A POST ON THE RIGHT HAND SIDE OF THE ROAD AS SHOWN FOR SIGNS THE NUMBER SHALL BE PLACED ON SIGN POSTS ON THE RIGHT HAND SIDE OF THE ROADWAY.

THE CORRECT NUMBER FOR EACH BRIDGE OR SIGN IS SHOWN ON THE PLANS.
THE NUMBERS FOR MINOR STRUCTURES (WITH 0' TO 20' FREE CLEAR SPAN) SHALL BE TIMBER BASE LETTERS. THE NUMBERS FOR MINOR STRUCTURES OF 10' TO 20' FREE CLEAR SPAN SHALL BE LOWER CASE LETTERS. SIGN BRIDGES SHALL BE CONSIDERED AS MAJOR STRUCTURES.
A PAINTED WHITE BACKGROUND, RECTANGULAR IN SHAPE AND EXTENDING THREE INCHES BEYOND THE LIMITS OF THE NUMBER SHALL BE PAINTED WITH TWO COATS OF ACCEPTABLE WHITE PAINT UNLESS AN APPROVED WHITE CONCRETE PAINT IS USED BEFORE PAINTING, THE SURFACE MUST BE THOROUGHLY DRIED, CLEANED AND PROPERLY PREPARED. UNDER NO CIRCUMSTANCES IS THE WHITE PAINT USED ON THE BRIDGE WILL BE SATISFACTORY.
AFTER THE WHITE BACKGROUND HAS DRIED SUFFICIENTLY, THE CORRECT STRUCTURE NUMBER SHALL BE CAREFULLY STENCILED ON IT, WITH TWO COATS OF "SECOND FIELD GRAY" COLOR FOR BLACK PAINT (PAINTING SPECIFIED UNDER ITEM 56 "PAINTS AND PAINTING"). THE SPACES OF THE STENCILED LETTERS AND FIGURES SHALL BE CAREFULLY FILLED IN BY HAND, TO MAKE SOLID FIGURES.
SUFFICIENT TIME BETWEEN SUCCESSIVE COATS SHALL BE ALLOWED TO PERMIT THOROUGH DRYING.
THE INSTALLATION OF STRUCTURE NUMBERS AND FURNISHING AND PLACING POSTS FOR STRUCTURE NUMBERS SHALL BE CONSIDERED SUBSIDIARY WORK AND SHALL BE INCLUDED IN THE CONTRACT ITEM AND WILL NOT BE PAID FOR AS A SEPERATE ITEM.
THE LENGTH OF SPAN OF STRUCTURE SHALL BE MEASURED ALONG CENTER LINE OF ROADWAY IN CASE OF DOUBLE OR MULTIPLE BOX CULVERTS THE CENTER WALL OR WALLS SHALL BE DISREGARDED, AND FIGURE SHOWN MEANS NET FROM INSIDE OF END WALLS.
IN ADDITION TO THE REQUIREMENTS STATED ABOVE, STRUCTURE NUMBERS, FOR HIGHWAYS PASSING UNDER CROSSROADS, ARE TO BE PLACED
ON THE [illegible] SIDE.
ON STRUCTURES OF 3 OR MORE SPANS, THE STRUCTURE NUMBER SHALL BE STENCILED, FACING TRAFFIC, ON THE OUTSIDE FACE OF THE END COLUMN OF THE RIGHT-HAND PIER.
FOR 2-SPAN STRUCTURES, THE STRUCTURE NUMBER SHALL BE STENCILED, FACING TRAFFIC, ON THE OUTSIDE FACE OF EACH END PIER IN THE CENTER PIER.

STRUCTURE NO._____

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

LETTERS AND FIGURES
FOR
STRUCTURE NUMBERS

Designed by	Approved by: D. D. Woodall
Made by	Bridge Engineer
Checked by	Date: Oct. 17, 1950

STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

STANDARD M-6-B

(SHEET 1 OF 2 SHEETS)

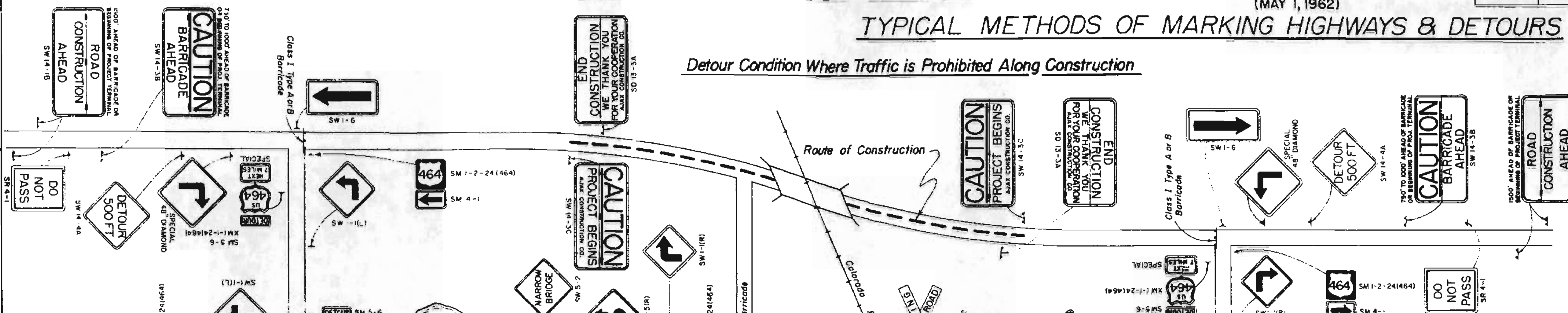
(MAY 1, 1962)

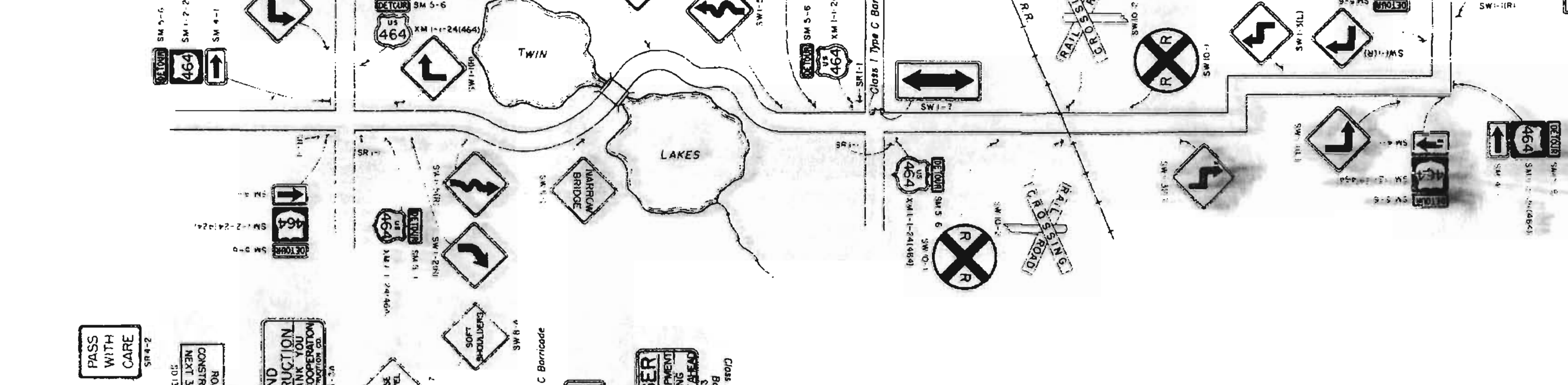
FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLO.	[redacted]	[redacted]

REVISIONS		
1-14-63	GENERAL REV.	L.E.O.
1-31-64	DEPT. NAME	M.R.H.

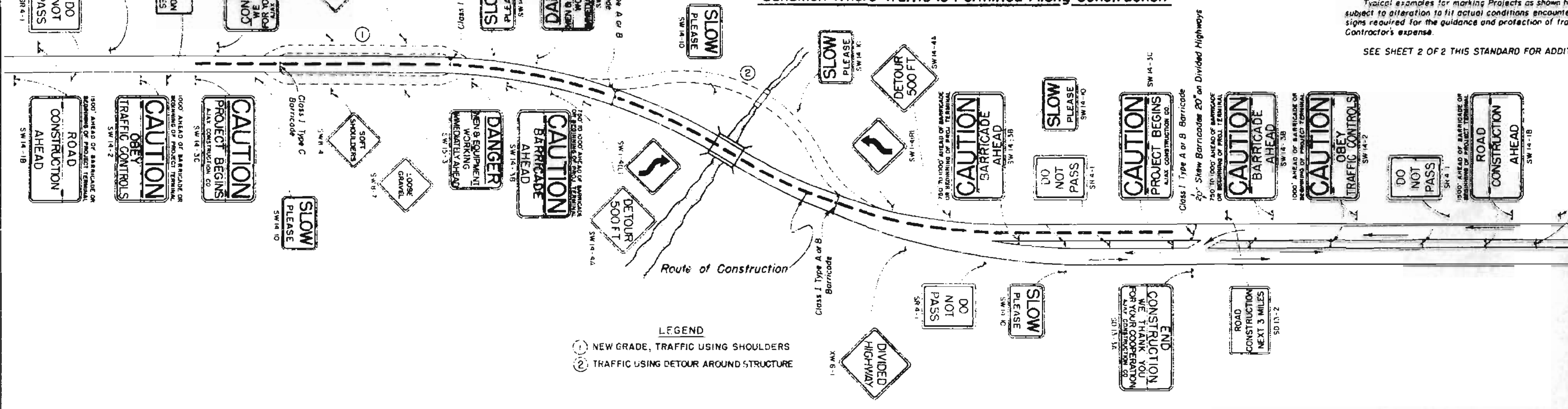
TYPICAL METHODS OF MARKING HIGHWAYS & DETOURS

Detour Condition Where Traffic is Prohibited Along Construction





Condition Where Traffic is Permitted Along Construction



LEGEND

(1) NEW GRADE, TRAFFIC USING SHOULDERS

(2) TRAFFIC USING DETOUR AROUND STRUCTURE

GENERAL NOTES

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

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

Except for variations noted on this sheet all signs will be in conformity with the specification outlined in the current issue of "Manual on Uniform Traffic Control Devices for Streets & Highways," 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.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

Construction Traffic Signs

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

STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

STANDARD M-6-B

(SHEET 2 OF 2 SHEETS)

(MAY 1, 1962)

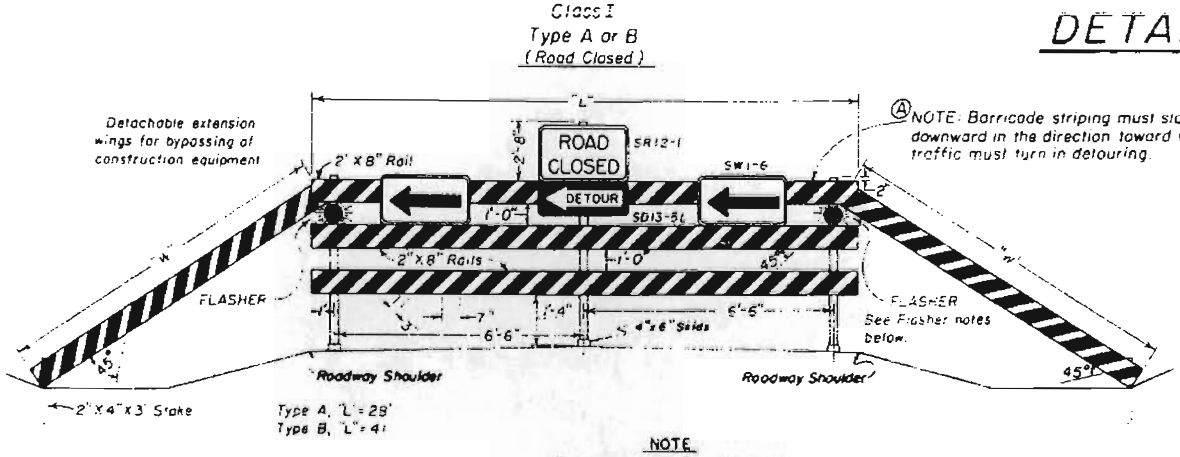
FEDERAL ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLORADO		

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

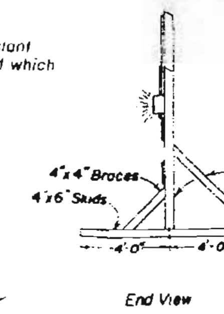
Class I
Type A or B
(Road Closed)



Ⓐ NOTE: Barricade striping must slant downward in the direction toward which traffic must turn in detouring.

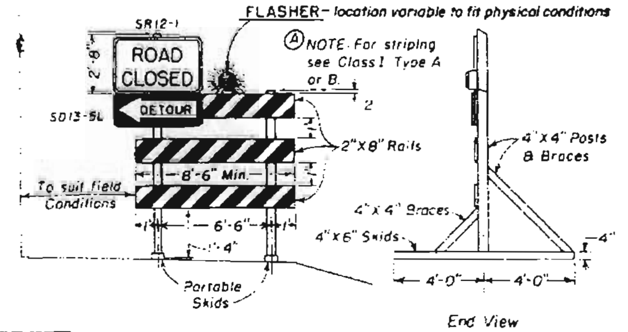
"W" Variable, length to be adequate to provide closing of borrow pit and shoulder

NOTE
The various types & combinations of approved Signs and Beacons for Barricades required for each project will be governed by field conditions and subject to approval by the Engineer



NOTE: Alternate materials or other reflective elements on Construction Traffic Signs and Barricades will be permitted only after approval of such material by the Department.

Class I
Type C
(Beg of Detour; By-Pass Areas within Proj; Extreme Hazards; etc.)



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

Diversion 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.

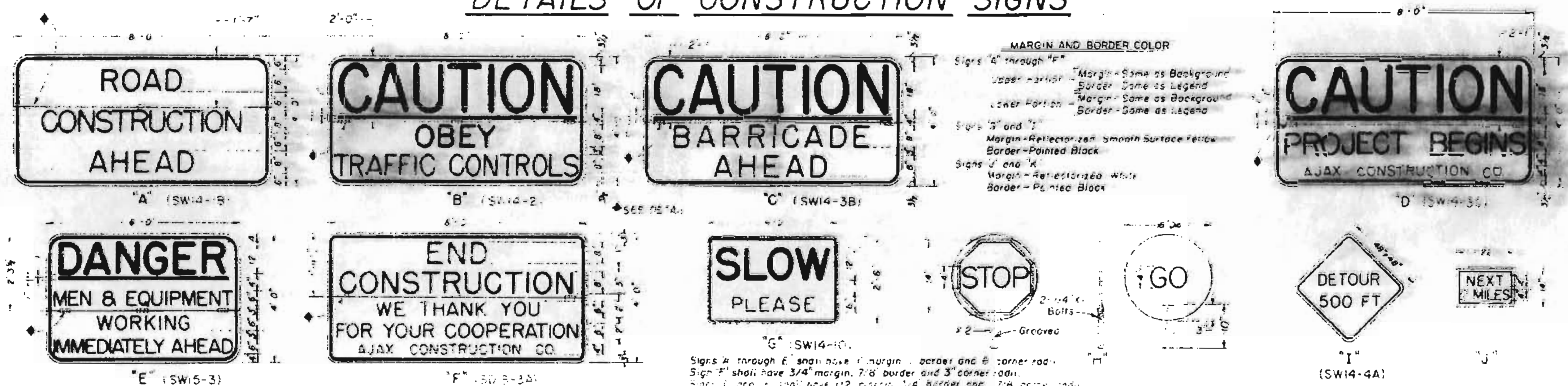
Planking	2" x 8"	S 4 S
Posts (Barricades)	4" x 4"	S 4 S
Posts (Signs)	4" x 4" or 6" x 6"	S 4 S

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

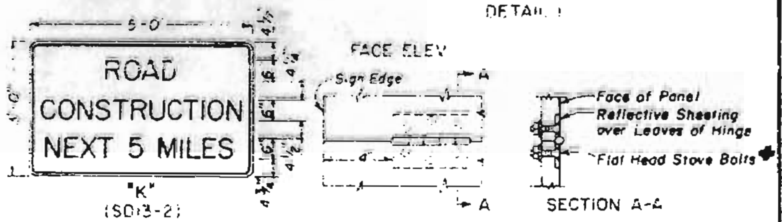


Signs "A" through "E" shall have 1" margin, border and 6" corner radii.
Sign "F" shall have 3/4" margin, 7/8" border and 3" corner radii.
Sign "I" shall have 3/4" margin, 1 1/4" border and 3" corner radii.

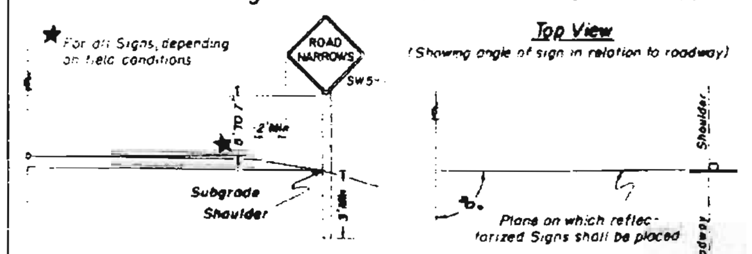
NOTES

1. 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.
2. The reflective sheeting used on the sign background shall be placed over the leaves of the hinges.
3. ✚ Hinges shall be fastened to the sign with flat head stove bolts having a flat washer under the nut on back of sign.
4. All hinges, bolts, nuts and washers to be rust resistant.
5. 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.



Position of Signs Relative to Roadbed & Hazards



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 underline shall be 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. ... 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" ... 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_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 "F" 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 ... 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 ... project more than 2 miles in extent ...

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

On 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.

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 [signature]
Made by J.C.R.	Engineer, Surveys & Plans
Checked by	Date: July 22, 1955

STANDARD M-6-BA

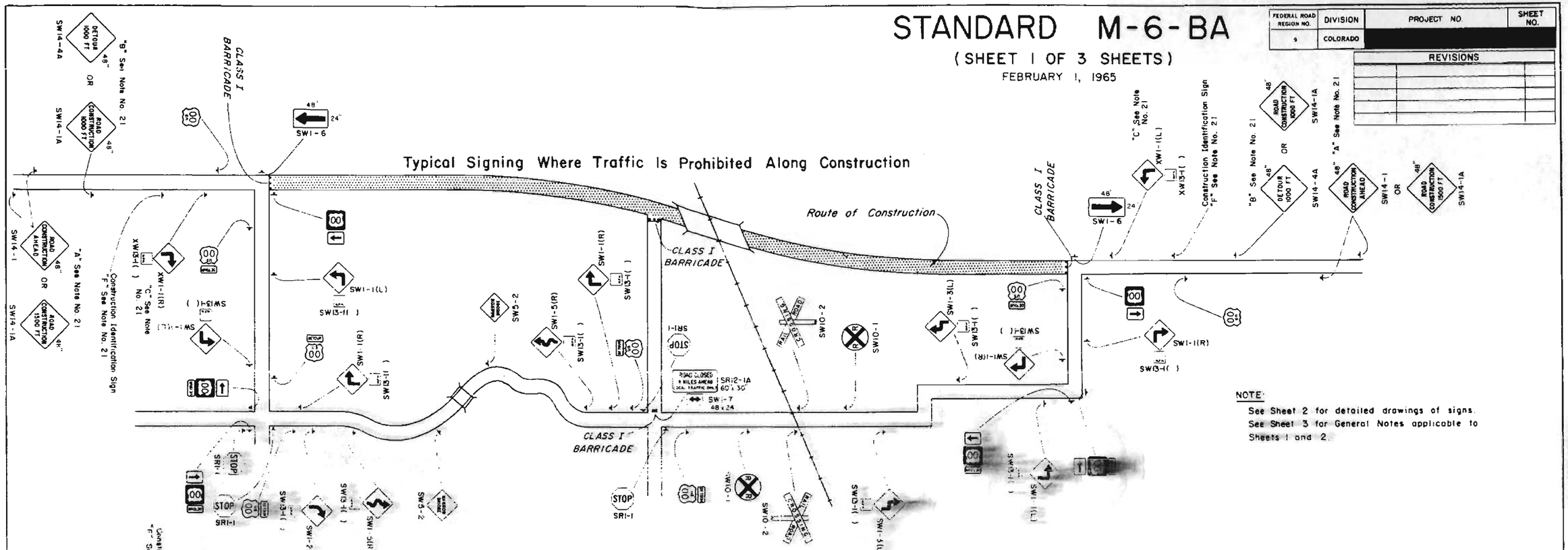
(SHEET 1 OF 3 SHEETS)

FEBRUARY 1, 1965

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

REVISIONS		

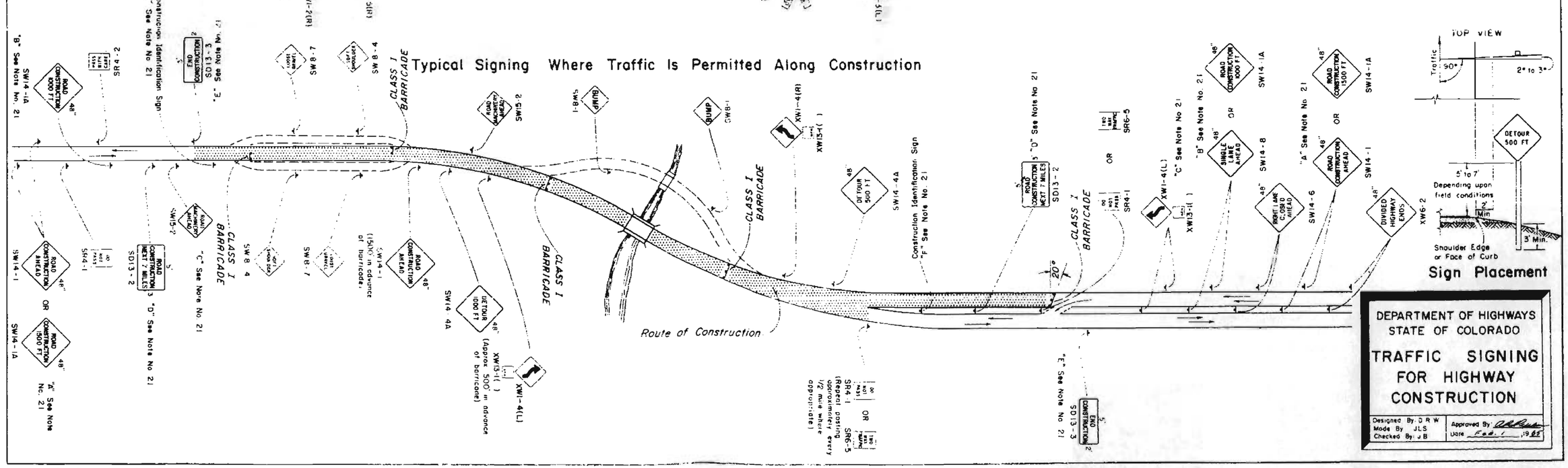
Typical Signing Where Traffic Is Prohibited Along Construction



NOTE:

See Sheet 2 for detailed drawings of signs.
See Sheet 3 for General Notes applicable to Sheets 1 and 2.

Typical Signing Where Traffic Is Permitted Along Construction



Sign Placement

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

TRAFFIC SIGNING FOR HIGHWAY CONSTRUCTION

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

STANDARD M-6-BA

(SHEET 2 OF 3 SHEETS)

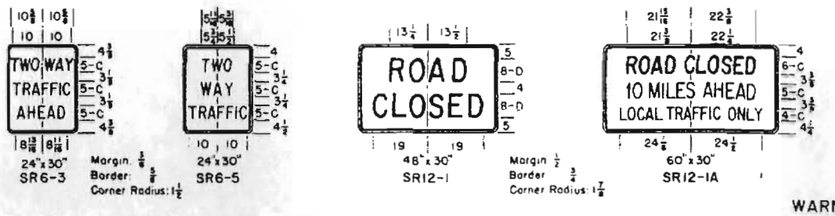
FEBRUARY 1, 1965

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

REVISIONS			

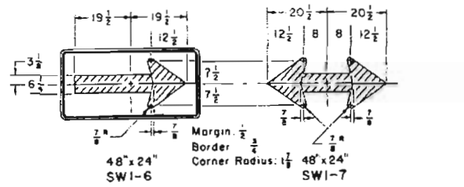
REGULATORY SIGNS

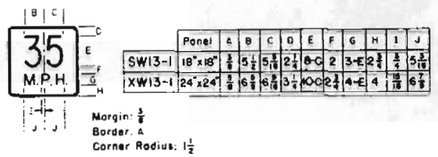
See Note No. 9



WARNING SIGNS

See Note No. 10

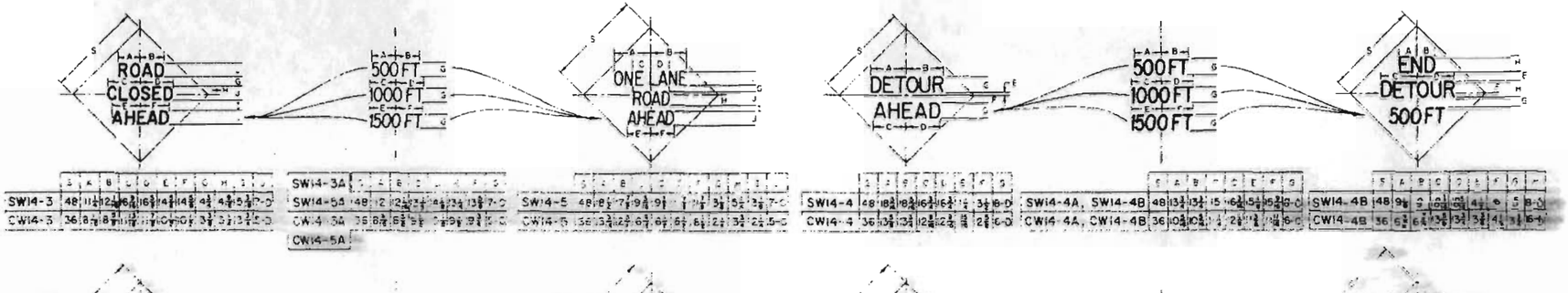


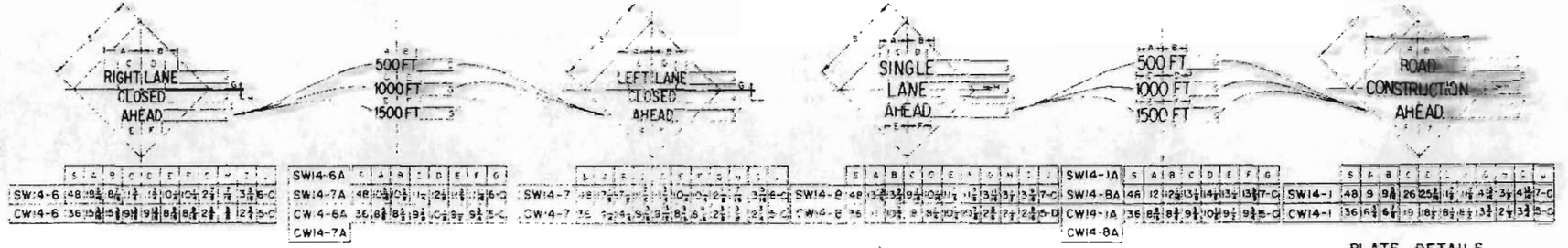


	Panel	A	B	C	D	E	F	G	H	I	J
SW13-1	18"x18"	3/8	5 1/16	5 1/16	2 1/4	8-C	2	3-E	2 3/8	3/4	5 3/16
XW13-1	24"x24"	3/8	6 5/8	6 5/8	3 1/4	10-C	2 3/4	4-E	4	15/16	6 7/8

WARNING SIGNS

See Note No. 10





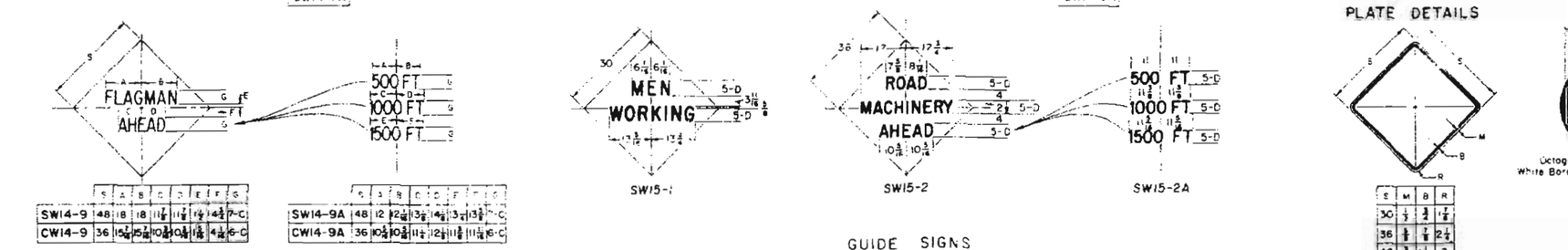
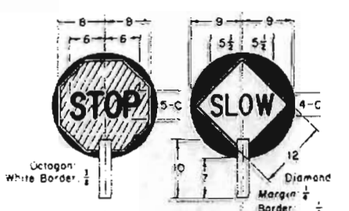


PLATE DETAILS

E	M	B	R
30	1/2	3/4	1 7/8
36	5/8	7/8	2 1/4
48	3/4	1 1/16	3



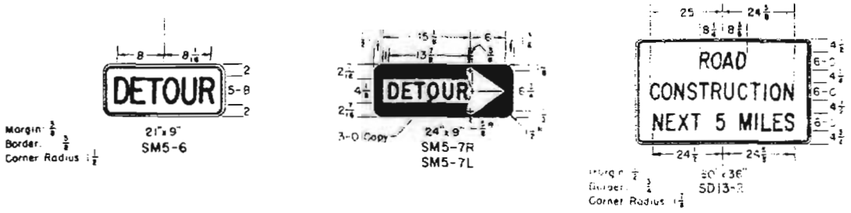
NOTES:

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.

GUIDE SIGNS

See Note No 11



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

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

REVISIONS		

STANDARD M-6-BA

(SHEET 3 OF 3 SHEETS)

FEBRUARY 1, 1965

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 funneling 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 "G" or "M" in the sign code are Guide signs. Those with the prefix "G" 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. Made By J.L.S. Checked By J.B.	Approved By: [signature] Date Feb. 1, 1965

TYPICAL SIGNS

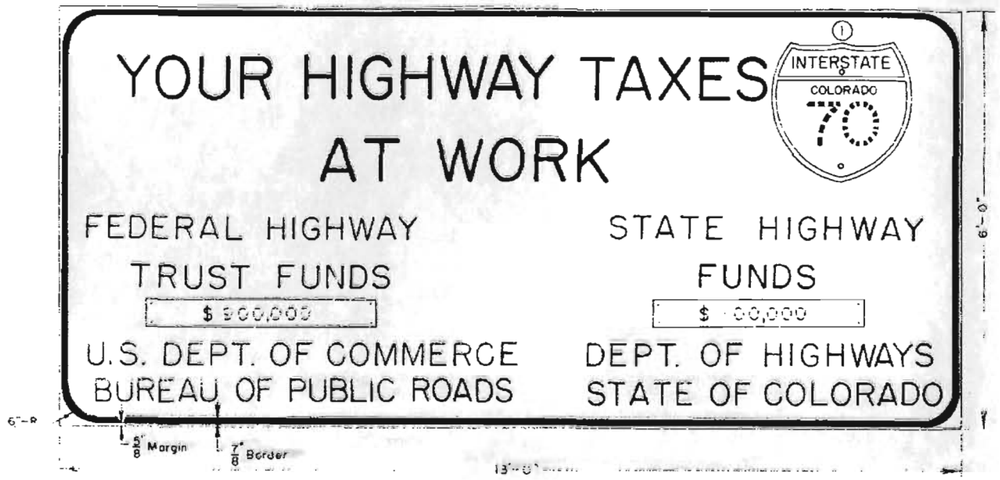
STANDARD M-6-CA

(JAN. 31, 1964)

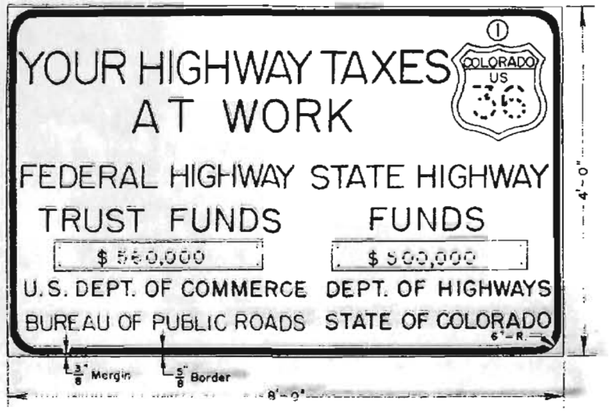
FEDERAL ROAD REGION NO	DISTRICT	PROJ NO	SHEET NO	TOTAL SHEETS
9	COLORADO			

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

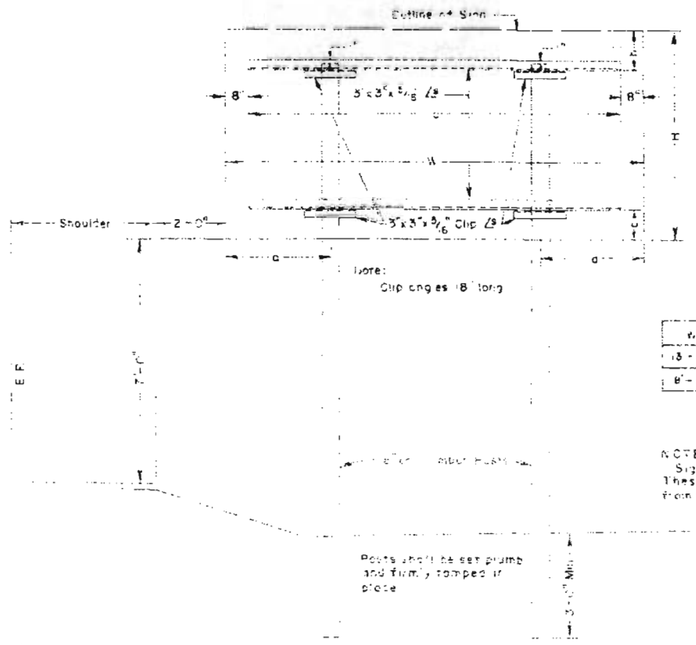
INTERSTATE SYSTEM



PRIMARY & SECONDARY SYSTEM



INSTALLATION DETAIL



a	b	c	d	e	f
8'-0"	6'-0"	2'-6"	1'-1½"	0'-10½"	11'-8"
8'-0"	4'-9"	1'-6"	1'-1½"	0'-10½"	6'-8"

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

GENERAL NOTES

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

Signs shall be made of ¾" Plywood or other material approved by the Department.

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

When a third governmental agency is participating its offical 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.

① Applicable Interstate, U.S. Shield or State Route Shield.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

IDENTIFICATION SIGNS

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

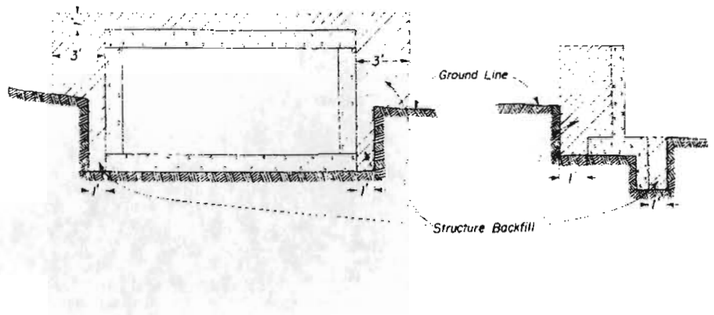
STANDARD M-16-A

(MAY 1, 1962)

FED. ROAD REGION NO	DIVISION	PROJECT NO.	SHEET NO.
8	COLO.	[redacted]	[redacted]

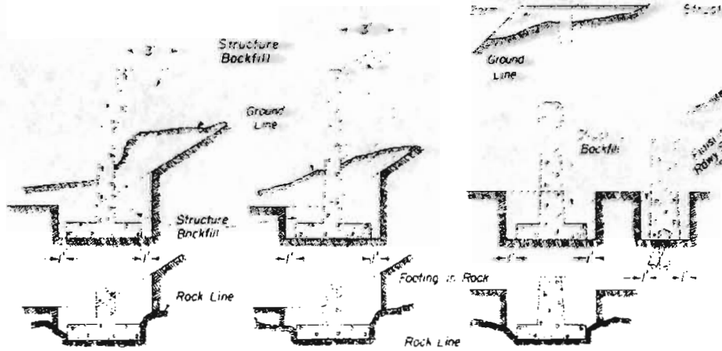
REVISION		
5 2 63	Rev. Backfill	L.E.O.
1-31-64	DEPT. NAME	M.R.H.

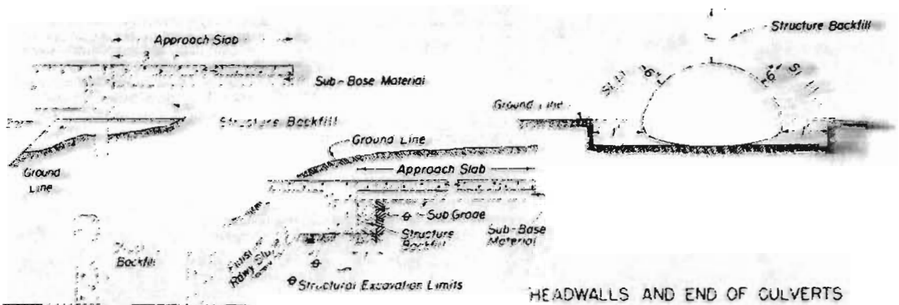
CONCRETE BOX CULVERTS & WINGWALLS



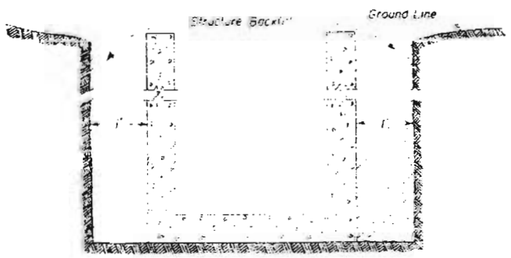
PIERS, ABUTMENTS, RETAINING WALLS ETC

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

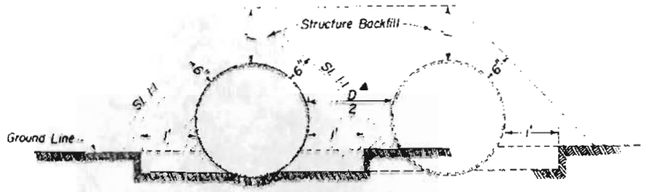




DROP INLETS, DIVISION BOXES, INTERCEPTING HEADWALLS ETC.



♦CIRCULAR CONDUIT

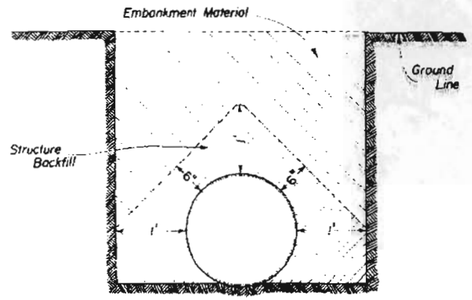


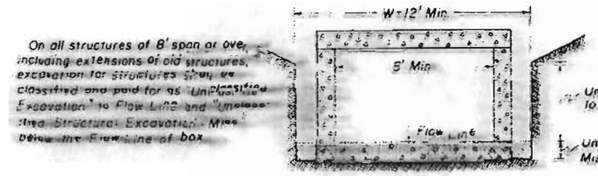
▲When two or more conduits are layed side by side, the distance between conduits shall be 1/2 the conduit diameter but not less than 1'-0".

♦See Design Aid No. 16, 16a or 16b for computation of quantities.

♦ELLIPTICAL OR ARCH CONDUIT

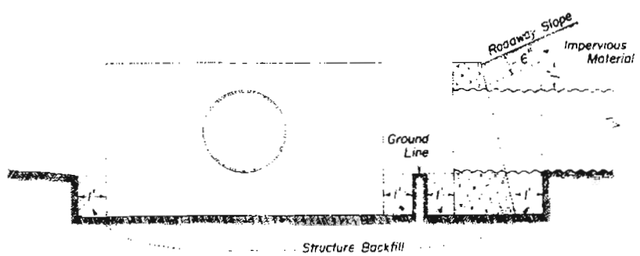
♦SIPHONS OR CONDUIT IN TRENCH





On all structures of 8' span or over, including extensions of old structures, excavation for structures shall be classified and paid for as "Unclassified Excavation" to Flow Line and "Unclassified Structural Excavation - Misc." below the Flow Line of box.

HEADWALLS AND END OF CULVERTS



GENERAL NOTES

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

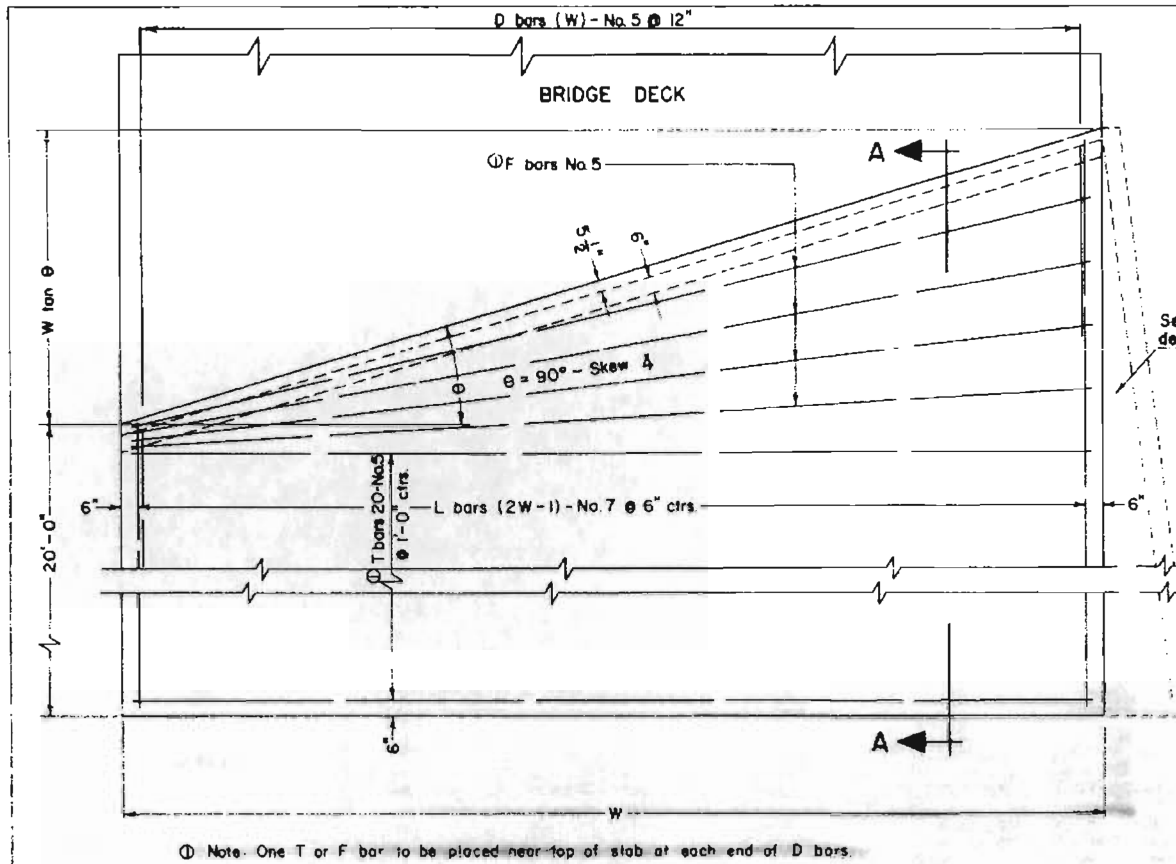
If, in the opinion of the Engineer, the material beneath the Structure is of such character as to cause unequal settlement along the length of the Structure, the material shall be removed to such a depth ordered, and backfilled with gravel or Structure Backfill and compacted in accordance with Item 16 of the Standard Specifications.

For concrete box culverts located where roadway cross section is in Fill, embankment shall be built up and compacted to a point one (1) ft. above flow line of box. The trench shall then be excavated as shown to accommodate construction of the box.

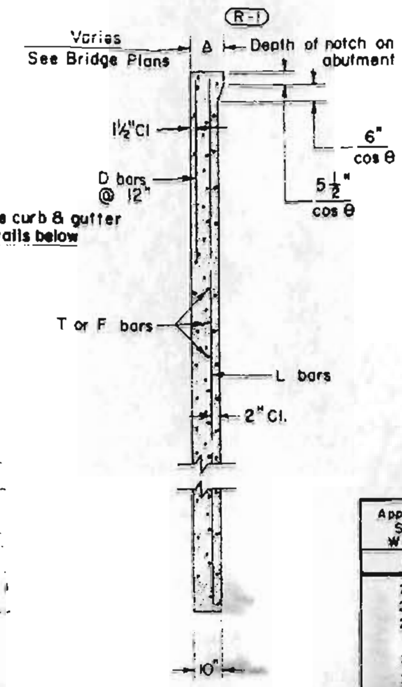
DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

BACKFILL AROUND STRUCTURES

Designed by H.E.P.	Approved by E.D. Kaufhold
Made by D.M.E.	Bridge Engineer
Checked by L.E.O.	Date: May 2, 1958



APPROACH SLAB - PLAN



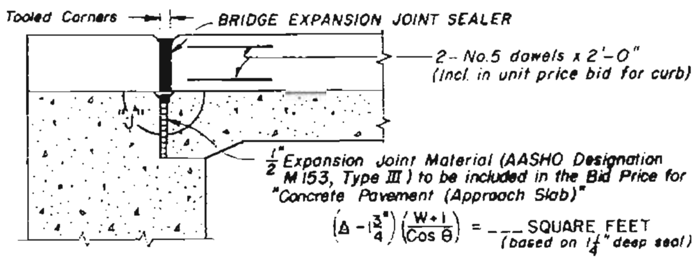
SECTION A-A

STANDARD M-37-BA

(AUGUST 24, 1964)

Quantity of Bridge Expansion Joint Sealer Material for one Approach Slab

SAFETY CURB	BRUSH CURB
$\frac{W+1}{\cos\theta} + 2' = $ ___ LINEAR FEET	$\frac{W}{\cos\theta} + 1' = $ ___ LINEAR FEET



$\left(\Delta - 1\frac{3}{4}"\right)\left(\frac{W+1}{\cos\theta}\right) = $ ___ SQUARE FEET (based on 1¼" deep seal)

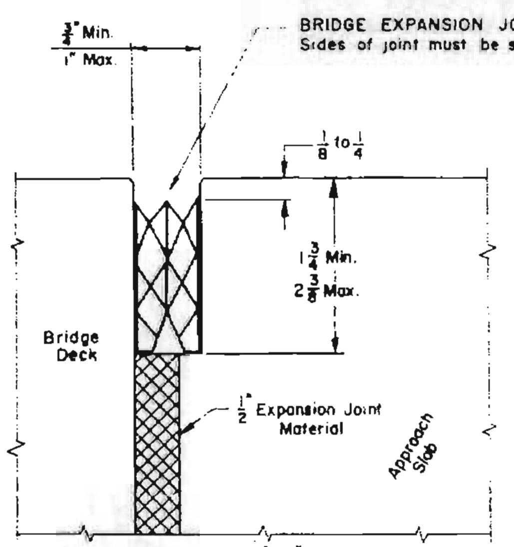
(R-1) DETAIL AT BRIDGE ABUTMENT

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

REVISIONS		
3-9-65	Gen. Notes & Added dowels	M.R.H.
(R-1) 6-17-65	Exp. Jt. Sealer & Rem. dowels	M.R.H.

Bar List and Quantities required for one Approach Slab

Approach Slab Width	T = No. 5; Str.		D = No. 5; Str.		L = No. 7; Str.		F = No. 5; Str.		Reinforcing Steel (Lbs.)			Additional Steel for Skew (Lbs.)		Concrete Pavement
W	No.	Length	No.	Length	No.	Length	No.	Length	T Bar	D Bar	L Bar	F Bar	L Bar	(Sq. Yds.)
20	20	19'-6"	20	5'-0"	39	1'-6" by (6" tan θ) to (19'-6" + [(W-1) tan θ])	10 tan θ	19'-6"	411	105	1570	205 tan θ	765 tan θ	44.4 + 22.2 tan θ
22	↓	21'-6"	22	↓	43		11 tan θ	21'-6"	452	116	1731	249 tan θ	932 tan θ	48.9 + 26.9 tan θ
24		23'-6"	24		47		12 tan θ	23'-6"	494	126	1892	297 tan θ	1116 tan θ	53.3 + 32.0 tan θ
26		25'-6"	26		51		13 tan θ	25'-6"	537	137	2055	349 tan θ	1318 tan θ	57.8 + 37.6 tan θ
28		27'-6"	28		55		14 tan θ	27'-6"	580	147	2214	406 tan θ	1533 tan θ	62.2 + 43.6 tan θ
30		29'-6"	30		59		15 tan θ	29'-6"	621	158	2375	466 tan θ	1766 tan θ	66.7 + 50.0 tan θ
32		31'-6"	32		63		16 tan θ	31'-6"	663	169	2536	531 tan θ	2016 tan θ	71.1 + 56.9 tan θ
34		33'-6"	34		67		17 tan θ	33'-6"	706	179	2697	600 tan θ	2282 tan θ	75.6 + 64.2 tan θ
36		35'-6"	36		71		18 tan θ	35'-6"	748	190	2858	673 tan θ	2565 tan θ	80.0 + 72.0 tan θ
38		37'-6"	38		75		19 tan θ	37'-6"	790	200	3019	751 tan θ	2864 tan θ	84.4 + 80.2 tan θ
40		39'-6"	40		79		20 tan θ	39'-6"	832	211	3180	832 tan θ	3180 tan θ	88.9 + 88.9 tan θ
42		41'-6"	42		83		21 tan θ	41'-6"	874	221	3341	918 tan θ	3513 tan θ	93.3 + 98.0 tan θ
44		43'-6"	44		87		22 tan θ	43'-6"	916	232	3502	1008 tan θ	3862 tan θ	97.8 + 107.6 tan θ
46		45'-6"	46		91		23 tan θ	45'-6"	958	242	3663	1102 tan θ	4227 tan θ	102.2 + 117.6 tan θ
48		47'-6"	48		95		24 tan θ	47'-6"	1001	253	3824	1201 tan θ	4609 tan θ	106.7 + 128.0 tan θ
50		49'-6"	50		99		25 tan θ	49'-6"	1043	263	3985	1304 tan θ	5007 tan θ	111.1 + 138.9 tan θ
52	↓	51'-6"	52	↓	103		26 tan θ	51'-6"	1084	274	4146	1411 tan θ	5422 tan θ	115.6 + 150.2 tan θ
54	20	53'-6"	54	5'-0"	107		27 tan θ	53'-6"	1127	284	4307	1522 tan θ	5854 tan θ	120.0 + 162.0 tan θ

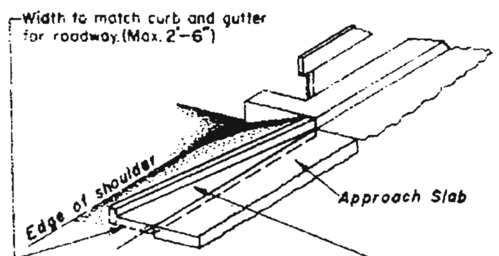


Min dimensions based on 1¼" x 1¼" uncompressed seal

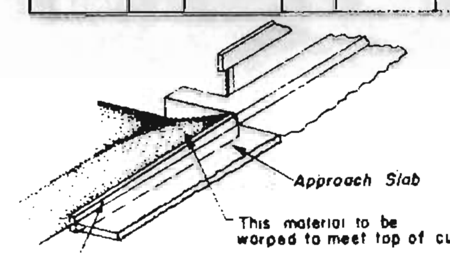
Max dimensions based on 1¾" x 2" uncompressed seal

(R-1) DETAIL "J"

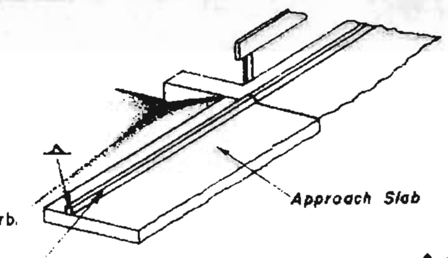
Configuration of uncompressed Joint Sealer



CONCRETE COMBINATION CURB & GUTTER (VARIABLE)



CONCRETE CURB (VARIABLE)



CONCRETE CURB (6" BARRIER-DOWELED) TYPE I (VARIABLE)

GENERAL NOTES

Class of Concrete for Approach slabs shall be "Pavement."

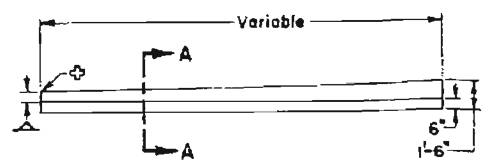
Approach slab shall be paid for under item 37 by the Sq. Yd. as "Concrete Pavement" of the specified thickness.

Reinforcing Steel required in Approach Slab will be paid for under item 47.

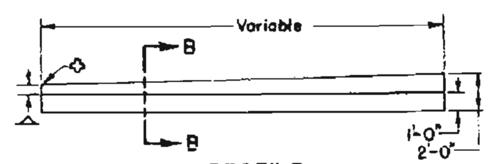
Class "A" concrete aggregate may be used in the pavement.

△ { 6" min. curb height when no curb is used on roadway.
4" where Asphaltic Shoulder Roll is used. (Shape shoulder roll to meet concrete curb.)
6" To meet Concrete Combination Curb & Gutter. }

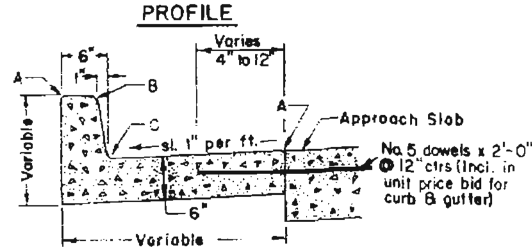
✥ Use 1½" R. when no asphaltic or concrete curb is to be met. No radius required when meeting asphaltic or concrete curb.



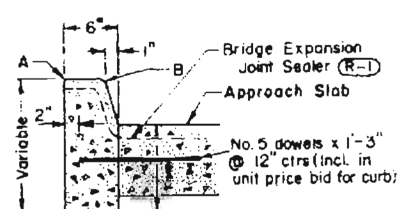
PROFILE



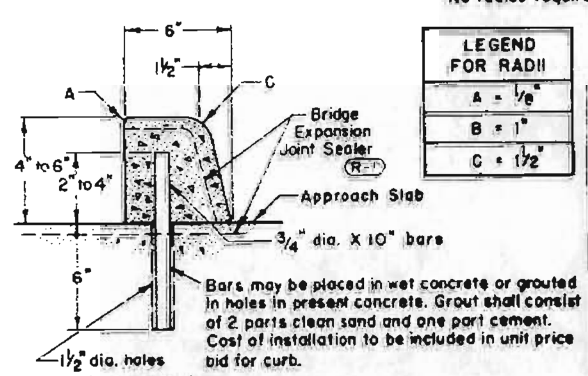
PROFILE



SECTION A-A



SECTION B-B



Bars may be placed in wet concrete or grouted in holes in present concrete. Grout shall consist of 2 parts clean sand and one part cement. Cost of installation to be included in unit price bid for curb.

LEGEND FOR RADII
A = ⅛"
B = 1"
C = 1½"

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

CONCRETE PAVEMENT BRIDGE APPROACH SLAB

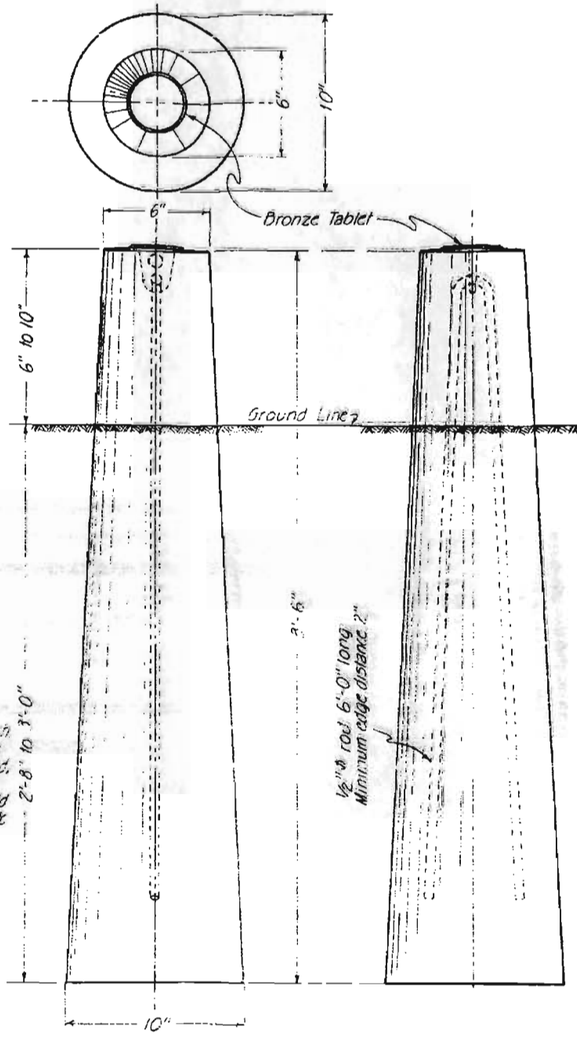
Designed by J.E.G. | Made by T.F. | Checked by P.C. | Approved by [signature] Bridge Engineer | Date: March 7, 1962

RIGHT OF WAY MARKER POST STANDARD M-81-A

(MAY 1, 1962)

FEDERAL ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLORADO	[redacted]	[redacted]

REVISIONS		
1-31-64	DEPT. NAME	M.R.H.



NOTES FOR R.O.W. MARKER POSTS

All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the project. Posts shall be made of Class 'A' Concrete. The upper 12 inches of marker posts shall be rubbed free of form marks and the top surface of the post must be constructed to drain thoroughly.

All exposed surfaces of the bronze tablet are to be ground to a smooth surface. All letters are to be depressed a minimum of 1/16 inch. Information on the bronze tablet indicated by pin lines is to be stamped in field by the engineering party after post is placed. 3/16 inch letters and figures to be used. Project designations on tablets shall be properly shown (i.e.; I for Fed. Aid Interstate, F for Fed. Aid Primary, S for Fed. Aid Secondary, etc. & C for State Projects. See detail below.)

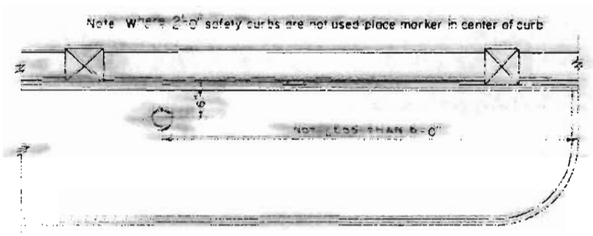
BENCH MARK

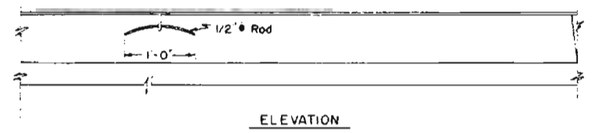
All work shall be done in accordance with Standard Specifications of the Colorado Department of Highways applicable to the project.

All exposed surfaces of the bronze tablet are to be ground to a smooth surface. All letters are to be depressed a minimum of 1/16 inch. Information on the bronze tablet indicated by pin lines is to be stamped in field by the engineering party after marker is placed. 3/16 inch letters and figures to be used. Project designation on tablets shall be properly shown (i.e.; I for Fed. Aid Interstate, F for Fed. Aid Primary, S for Fed. Aid Secondary, etc. & C for State Projects. See details below).

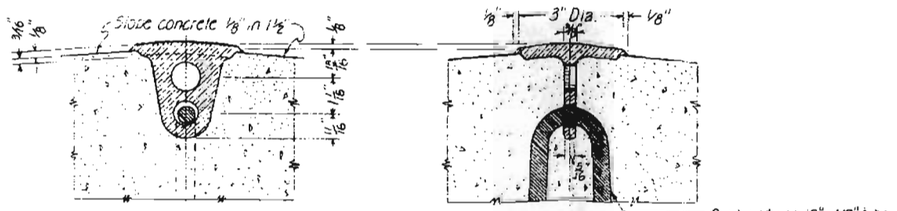
Bronze Bench Mark Tablets will be furnished by the Department at no expense to the Contractor.

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





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



SECTION B-B

SECTION A-A

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

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

MARKER POSTS AND BENCH MARKS

Designed by R.E.L. | Approved by: C. Julian
Mo'e by E.E.O.
Ch ked by R.E.L. | Date: Nov. 12, 1953

STANDARD M-142-AA

FEBRUARY 1, 1965

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

REVISIONS

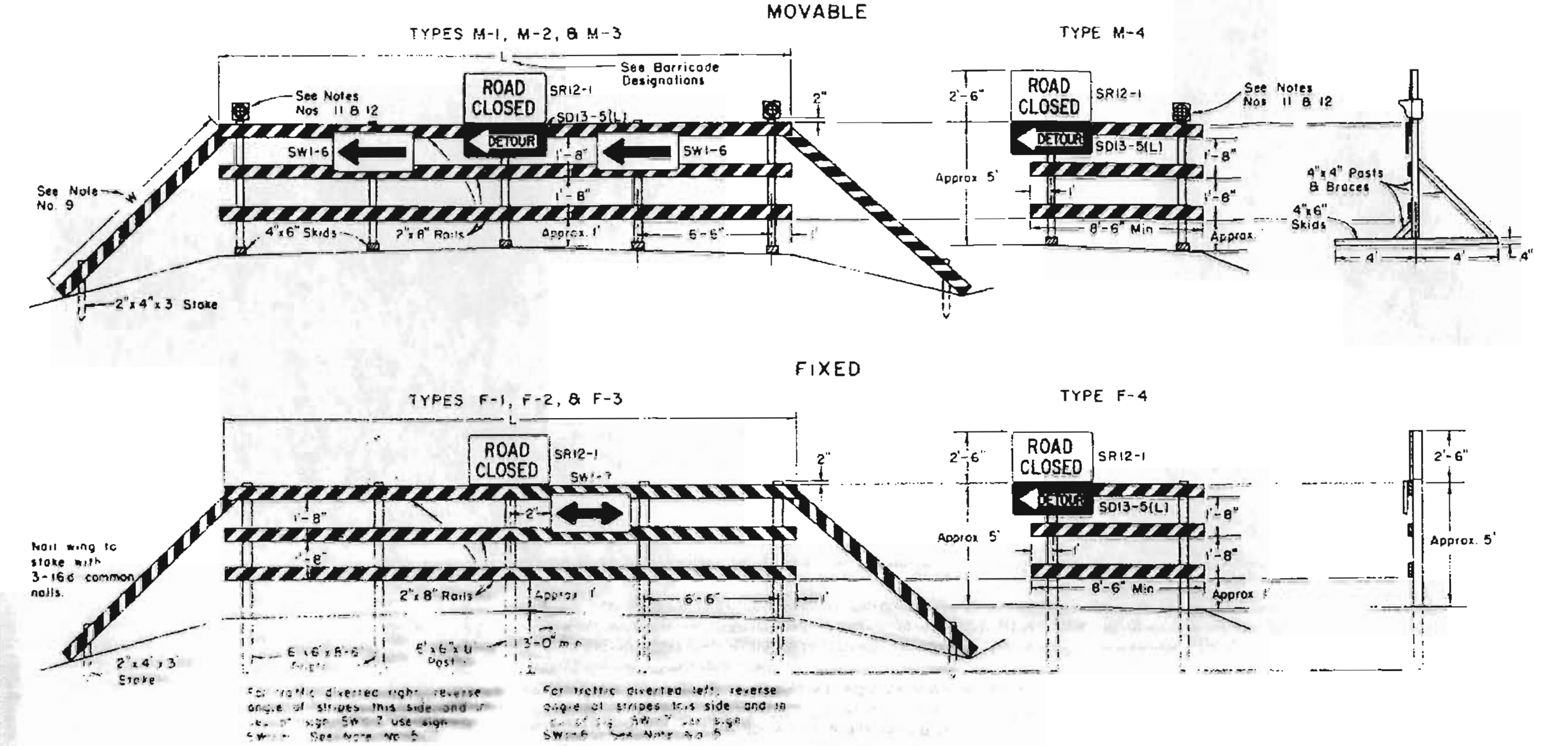
CLASS I BARRICADES
(3 RAILS)

MOVABLE

TYPES M-1, M-2, & M-3 — TYPE M-4

FIXED

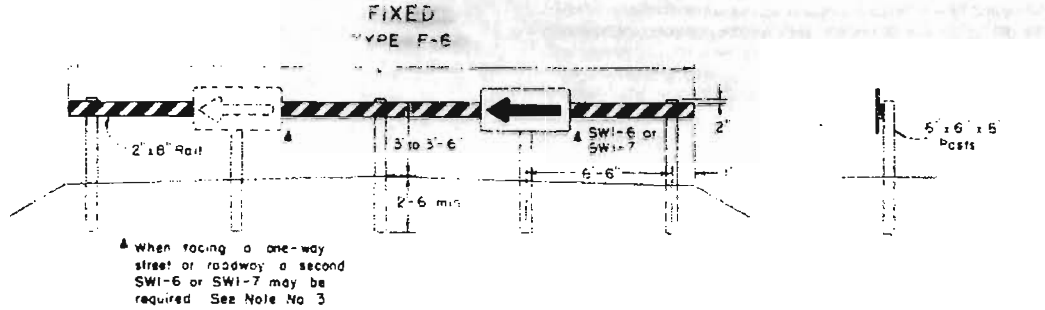
TYPES F-1, F-2, & F-3 — TYPE F-4

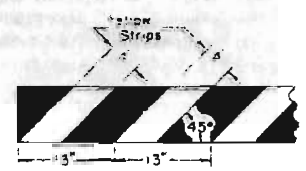


CLASS II BARRICADE
(1 RAIL)

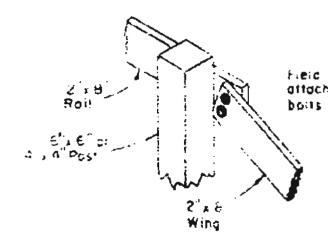
FIXED

TYPE F-6

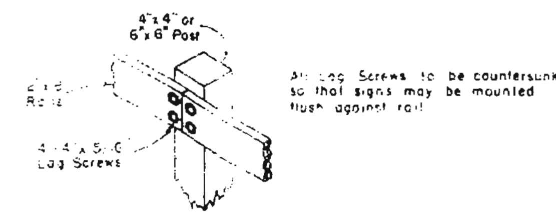




DETAIL OF RAIL AND WING STRIPING

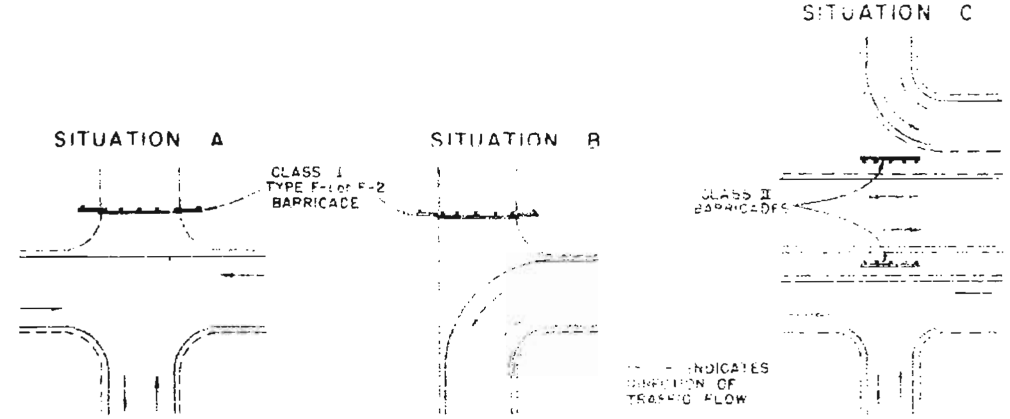


REAR VIEW OF BARRICADE SHOWING WING ATTACHED (See Note No 9)



METHOD OF ATTACHING PLANKING TO POSTS AT JOINTS

SITUATION A — SITUATION B — SITUATION C



GENERAL NOTES

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

2 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.

3 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.

4 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.

5 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".

6 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."

7. 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.

8. 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 L.L. Structural 58 Paragraph 284 or 285 of 1956 Grading Rules for Southern Pine.

9 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.

10 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.

11 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. 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).

12 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.

13 Flashing Beacons and Flashers, when used, shall be positioned above the top rail of the barricades to produce the most effective results.

14. Barricades used as "Traffic Controls for Highway Construction" are not to be paid for separately.

15 Class I or Class II fixed barricades will be paid for separately when designated on plans as bid item.

16. 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
	Movable	Fixed			
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'	4[illegible]	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.P.W. Made By J.E.S. Checked By J.S. Approved By [signature] Date Feb 1, 1965