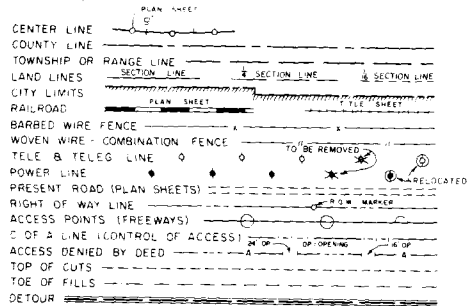


AS CORRECTED
REVISED DATE July 4, 1972

STATE DEPARTMENT OF HIGHWAYS DIVISION OF HIGHWAYS—STATE OF COLORADO

R-1 REV. 5-20-71 G.S.
R-2 REV. 6-3-71 G.S.
R-3 REV. 6-7-71 G.S.

CONVENTIONAL SIGNS



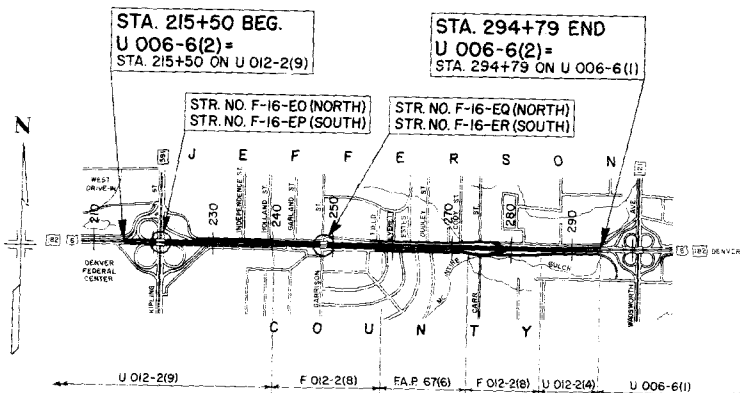
PLAN AND PROFILE OF PROPOSED FEDERAL AID PROJECT NO. U 006-6(2) STATE HIGHWAY NO. 6 JEFFERSON COUNTY

SCALES OF ORIGINAL DRAWINGS
ON PLAN: 1" = 50 FT.
ON PROFILE: 1" = 50 FT. HORIZONTAL
1" = 10 FT. VERTICAL
GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD
GROSS LENGTH OF PROJECT: 7,927.23 FT. = 1.501 MILES
NET LENGTH OF PROJECT: 7,927.23 FT. = 1.501 MILES

CONTRACTOR: THOMAS J. ...
PROJECT ENGINEER: ...
DATE COMPLETED: July 14, 1972

INDEX OF SHEETS

SHEET NO.	DESCRIPTION	QUANTITY
1	TITLE PAGE AND SKETCH MAP	1
2	TYPICAL SECTIONS AND DETAIL OF 8" BARRIER CURB	1
3	GENERAL NOTES, SUMMARY OF EARTHWORK, TABULATION OF LENGTH & DESIGN AND TRAFFIC MOVEMENT COUNT	1
4-5	SUMMARY OF APPROXIMATE QUANTITIES	2
6	TYPICAL RAMP DETAILS, DETAILS OF INLET CAP, HEADWALL REMOVAL AND MEDIAN BARRIER	1
7	TABULATION OF SUBBASE AND SURFACING, CURBS AND GUTTERS, STORM SEWERS, REMOVAL OF CURBS & GUTTERS AND MANHOLE & INLET ADJUSTMENTS	1
8	CURB & GUTTER TRANSITIONS, DETAIL OF MEDIAN INLET ADJUSTMENT, TABULATION OF DELINEATORS AND FENCING, AND LIST OF REMOVALS	1
9	DELETED	0
10	LIST OF STRUCTURES	1
11-28	DETAILS OF STR. NO. F-16-EQ & EP KIPLING ST.	18
29-40	DETAILS OF STR. NO. F-16-EQ & ER GARRISON ST.	12
41-46	DRAINAGE, FENCING, AND UTILITIES	6
47-52	ALIGNMENT PLAN, PROFILE, LIGHTING AND DELINEATORS	6
53-71	SIGNING PLANS	19
72-86	CROSS SECTIONS	15
M-203-C	DITCH TYPES	7-23 68
M-206-AA	EXCAVATION AND BACKFILL FOR STRUCTURES	3-11 71
M-412-AA	CONCRETE PAVEMENT JOINTS	4-10 70
M-500-A	LETTERS AND FIGURES FOR STRUCTURE NUMBERS	7-11 65
M-601-L	HEADWALL, INTERCEPTING HEADWALL AND CULVERT OUTLET RAVING	5-24 72
M-603-AM	METAL CULVERT PIPE - H-20 LOADING	3-11 71
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M-606-AB	GUARDRAIL, TYPE 3	13 SHEETS: 1-20 69
M-607-B	CHAIN LINK FENCE	12 SHEETS: 4-20 71
M-609-A	CURBS AND GUTTERS	5-7 71
M-612-A	MARKER POSTS AND BENCH MARKS	5-7 71
M-612-C	DELINEATORS	4 3 69
M-613-AA	HIGHWAY LIGHTING	2 SHEETS: 4 3 69
M-614-A	TIMBER BARRICADES	4 3 69
M-614-TA	STANDARD CONSTRUCTION IDENTIFICATION SIGNS	2 SHEETS: 9-25 70
M-614-TB	TRAFFIC SIGNING FOR HIGHWAY CONSTRUCTION	14 SHEETS: 10-20 69
* M-601-A	SINGLE AND DOUBLE CONCRETE BOX CULVERTS	10-20 69



SCALE IN FEET
0 100 200 300 400

INACTIVE

JUL 11 1973

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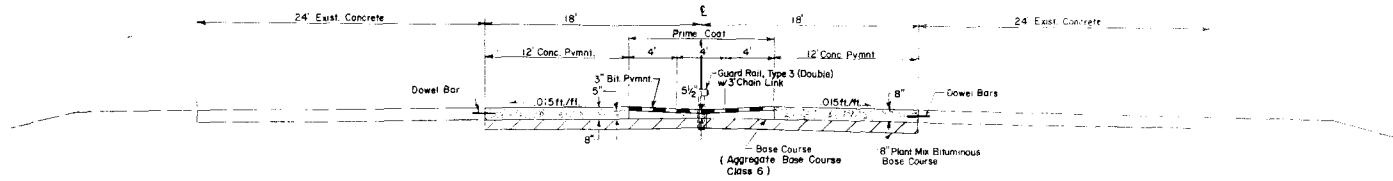
SEE SPECIAL PROVISIONS FOR
NOTICE TO BIDDERS

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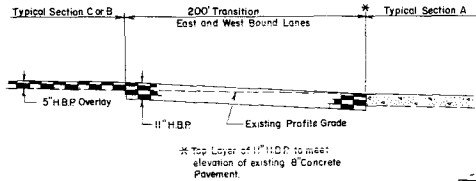
AS CONSTRUCTED
 REVISION 7/14/72

TYPICAL SECTIONS

SECTION A

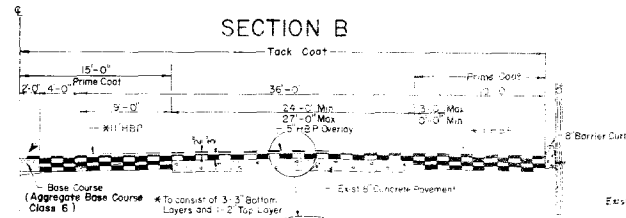


PROFILE TRANSITION (TYPICAL SECTION C TO A & B TO A)



The depth and width of any side ditches shall be varied where necessary in order to provide proper drainage.

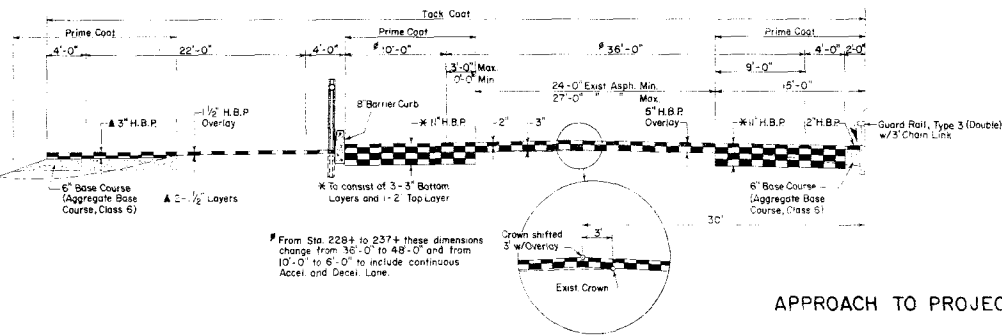
SECTION B



DETAIL OF DOWEL BARS



SECTION C

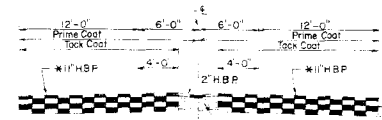


From Sta 228+ to 237+ these dimensions change from 36'-0" to 48'-0" and from 10'-0" to 6'-0" to include continuous Accel. and Decel. Lane.

TABULATION OF MATERIAL QUANTITIES

Item	Quantity	Unit
1. Bituminous Seal Coat	10,000	Sq. Yds.
2. 1 1/2" H.B.P. Overlay	10,000	Sq. Yds.
3. 11" H.B.P. Overlay	10,000	Sq. Yds.
4. 5" H.B.P. Overlay	10,000	Sq. Yds.
5. 24" Exist. Asph.	10,000	Sq. Yds.
6. 6" Base Course (Class 5)	10,000	Sq. Yds.
7. 6" Base Course (Class 6)	10,000	Sq. Yds.
8. 8" Barrier Curb	10,000	Lf.
9. 11" H.B.P.	10,000	Lf.
10. 2" H.B.P.	10,000	Lf.
11. 3" Bit Pymnt.	10,000	Sq. Yds.
12. 12" Conc. Pymnt.	10,000	Sq. Yds.
13. Prime Coat	10,000	Sq. Yds.
14. Tack Coat	10,000	Sq. Yds.
15. Dowel Bars	10,000	Lf.
16. Guard Rail	10,000	Lf.
17. Chain Link	10,000	Lf.

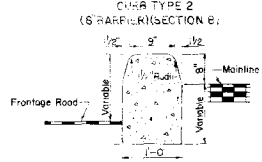
APPROACH TO PROJECT



* To consist of 3-3" Bottom Layers and 1-2" Top Layer (Aggregate Base Course Class 6)

NOTE: Profile grade for Section A is based on the profile grade at the median edge of the existing concrete pavement.
 Profile grade for Sections B and C shall be the thickness of the overlay above the existing pavement.
 At locations where the existing Conc. pavement is crowned the crown shall be retained. Where existing pavement is crowned, but is to be overlaid-shift crown 3 feet.

SPECIAL CURB DETAIL



AS PER NOTED
REV 7/14/72

TABULATION OF LENGTH AND DESIGN DATA

STATION	ROADWAY	MAJOR STRUCTURES (WIDEN)
	LIN. FT.	LIN. FT.
215+50 BEGIN U 006-6(2)+ 215+50 ON U 012-2(9)		
221+14.50 BEGIN BRIDGE KIPLING ST. F-16-EQ, F-16-EP	564.50	170.00
222+84.50 Bk. #1 222+87.39 Ah. #1 EQ. END BRIDGE	2,510.13	
247+97.52 BEGIN BRIDGE GARRISON ST. F-16-EQ, F-16-ER		131.66
249+29.18 Bk. #1 249+28.06 Ah. #1 EQ. END BRIDGE	4,550.94	
294+79 END U 006-6(2) 294+79 BEGIN U 006-6(1)		
TOTAL	7,625.57	301.66
ROADWAY SUMMARY	LIN. FT.	MILES
ROADWAY	7,625.57	1.444
MAJOR STRUCTURES	301.66	0.057
TOTAL NET & GROSS LENGTH	7,927.23	1.501
DESIGN DATA		
MAXIMUM DEGREE OF CURVE		TAN.
MAXIMUM GRADE		4.00%
MINIMUM S.S.D. (VERTICAL)		375'
MAXIMUM DESIGN SPEED		60 M.P.H.

SUMMARY OF EARTHWORK

	PLAN	FINAL
UNCLASSIFIED EXCAVATION (HAUL)		
From Roadway Cross Sections	8014 Cu. Yds.	
Ditch Excavation	15 Cu. Yds.	
TOTAL	8029 Cu. Yds.	8029 Cu. Yds. *
*EXCAVATION		
From Roadway Cross Sections	8014 Cu. Yds.	
▲ Less Excess Excavation	5576 Cu. Yds.	
TOTAL	2438 Cu. Yds.	
*EMBANKMENT (NET)		
From Roadway Cross Sections	2216 Cu. Yds.	
TOTAL	2216 Cu. Yds.	
* EMBANKMENT X FACTOR (1.1) TOTAL	2438 Cu. Yds.	
COMPACTION (AASHO T99)		
Base of Cuts and Fills	9097 Cu. Yds.	
EMBANKMENT (NET)	2216 Cu. Yds.	
TOTAL	11,313 Cu. Yds.	11,313 Cu. Yds. **

*For Information Only
▲ Excess Excavation to become property of Contractor and shall be disposed of by him.
** Contractor agreed to accept plan quantity
Plan quantity verified by State Forces
as being reasonable & accurate. (see Bk. #1, pg. 74)

GENERAL NOTES

This Project is to be constructed in conformity with the D.C. Standard Specifications for Highway Construction, 1972 Edition, as amended, and the Plans to this Project.

All quantities on preliminary plans are to be considered approximate.

For preliminary plan quantities the following rates of application were used:
Prime Coat Seal Coat at 0.60 gal. per sq. yd.
Bituminous Pavement at 110 lbs. per sq. yd. per 1" thickness
Emulsified Asphalt (SS-1H) Top Coat at 0.10 gal. per sq. yd.

Rate of application and grade of granular materials shall be determined by the Engineer at the time of application.

During the execution of this project traffic will be present on the existing roadway.

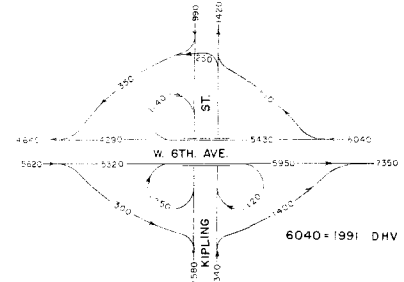
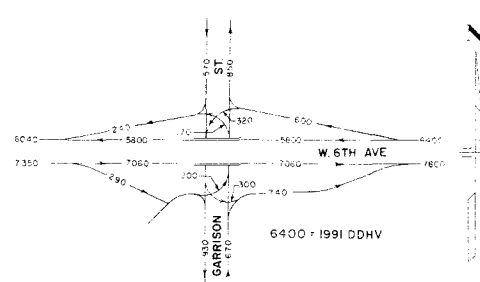
Water lines, gas lines, electric lines, sewer lines, and other utilities shall be located and marked in accordance with the Standard Specifications for Highway Construction, 1972 Edition, as amended, and the Plans to this Project.

For preliminary plan quantities the following rates of application were used:
Embankment 40 gal. per cu. yd.
Subgrade Surfacing 1.5 gal. per cu. yd.

The type and quantity of material to be used shall be determined by the Engineer and shall be completed 14 days before successive days of placement.

Plans of inspection and density control for this Project shall be as follows:
Plan of inspection and density control for this Project shall be as follows:
Plans of inspection and density control for this Project shall be as follows:
Plans of inspection and density control for this Project shall be as follows:
Plans of inspection and density control for this Project shall be as follows:

TRAFFIC MOVEMENT COUNT



AS CONSTRUCTED
REVISIONS

SUMMARY OF APPROXIMATE QUANTITIES

FEDERAL ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
	COLORADO	U 006-6(2)	4	

INDEX	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY	STR. NO. F-16-EQ,EP KIPLING ST.	STR. NO. F-16-EQ,ER GARR. ST.	PROJECT TOTALS	REVISED PLAN TOTALS	FINAL TOTALS	OVERLAP
4 4P	202	REMOVAL OF STRUCTURE	EACH	24			24	24	17	-7
4 4P	202	REMOVAL OF HEADWALL	EACH	5			5	5	5	
4 15	202	REMOVAL OF CONCRETE DITCH LINING	LIN. FT.	9			9	9	9	
4 15	202	REMOVAL OF CONDUIT	LIN. FT.	408			408	408	381	-27
4 17	202	REMOVAL OF CURB & GUTTER	LIN. FT.	6,962			6,962	6,962	7,821	+859
4 1P	202	REMOVAL OF CONCRETE PAVEMENT	SQ. YD.	80			80	80	95	+15
4 22	202	REMOVAL OF PORTIONS OF PRESENT STRUCTURE	EACH				2	2	2	
4 21	202	REMOVAL OF GROUND SIGN	EACH	56			56	56	56	
4 31	202	REMOVAL OF GUARD FENCE	LIN. FT.	533			533	533	510	-23
1 7	203	UNCLASSIFIED EXCAVATION (HAUL)	CU. YD.	8,100			8,100	8,100	8,039	-71
1 9	203	COMPACTION (AASHTO T-99)	CU. YD.	11,500			11,500	11,500	11,313	-187
1 11	206	STRUCTURE EXCAVATION	CU. YD.	856	165		1,090	1,090	1,066	-24
1 13	206	STRUCTURE BACKFILL (CLASS 2)	CU. YD.	520	130		520	520	508	-12
1 15	209	WETTING	M GAL.	520			520	520	265	-255
4 35	210	RESET MAILBOX STRUCTURE	EACH	16			16	16	17	+1
4 38	210	RESET GROUND SIGN	EACH	5			5	5	5	
4 40	210	RESET GUARD RAIL TYPE 3	LIN. FT.	250			250	250	275	+25
4 43	210	ADJUST STRUCTURE	EACH	10			10	10	10	
4 46	210	ADJUST MANHOLE	EACH	12			12	12	12	
1 17	301	PLANT MIX BITUMINOUS BASE (CLASS 6) (HAUL & ASPHALT)	TON	5,000			5,000	5,000	5,063.32	+63.32
1 17	304	AGGREGATE BASE COURSE (CLASS 6) (HAUL)	TON	4,300			4,300	4,300	5,415.7	+2,115.7
1 21	403	HOT BITUMINOUS PAVEMENT (PATCHING)	TON	60			60	60	13.07	+6.07
1 23	403	HOT BITUMINOUS PAVEMENT (GRADING) (HAUL & ASPHALT)	TON	29,500			29,500	29,500	27,532.38	-1,967.62
1 25	403	HOT BITUMINOUS PAVEMENT (GRADING) (HAUL & ASPHALT)	TON	60			60	60	13.07	+6.07
6 67	411	MULTISIFIED ASPHALT (SS-1H)	TON	7,000			7,000	7,000	7,000	
6 25	411	LIQUID ASPHALTIC MATERIAL (MC-70)	GAL.	16,300			16,300	16,300	16,300	
3 25	412	CONCRETE PAVEMENT (8 INCH)	SQ. YD.	7,610			7,610	7,610	7,364	-246
3 27	412	CONCRETE PAVEMENT (10 INCH)	SQ. YD.	286			286	286	284	-2
7A 24	502	STEEL PILING CUTOFF (10 BP42)	LB.	904			904	904	904	
7B 29	502	STEEL PILING (10 BP42)	LIN. FT.	12			12	12	12	
3 31	507	CONCRETE SLOPE AND DITCH PAVING (REINFORCED)	CU. YD.	24			24	24	23.52	-0.48
1 27	507	BITUMINOUS SLOPE AND DITCH PAVING	TON	214			214	214	222.39	+8.39
1 29	509	STRUCTURAL STEEL	LB.				78,271	78,271	78,271	
1 31	509	STRUCTURAL STEEL (GALVANIZED)	LB.		2,209		1,517	1,517	1,728	+211
3 33	516	DAMP PROOFING (LINSEED OIL)	SQ. YD.				1,356	1,356	1,348	-8
1 33	601	CONCRETE CLASS A	CU. YD.		39		97	97	97.00	
1 36	601	CONCRETE CLASS A (MISCELLANEOUS)	CU. YD.	13			13	13	13.60	+0.60
1 37	601	CONCRETE CLASS D	CU. YD.		255		364	364	364	
1 39	602	REINFORCING STEEL	LB.	13,973	93,469		152,000	152,000	152,344	+344
5 46	603	18 INCH CORRUGATED STEEL PIPE	LIN. FT.	398			398	398	404	+6
5 49	604	INLET TYPE C (5 FOOT)	EACH	3			3	3	3	
5 49	604	INLET TYPE C (10 FOOT)	EACH	1			1	1	1	
5 44	604	INLET TYPE 3 (5 FOOT)	EACH	3			3	3	3	
5 46	604	INLET TYPE 3 (10 FOOT)	EACH	5			5	5	5	
5 21	604	MANHOLE SLAB BASE (5 FOOT)	EACH	1			1	1	1	
5 7	604	MANHOLE SLAB BASE (10 FOOT)	EACH	1			1	1	1	
4 43	604	INLET GRATING AND FRAME TYPE C	EACH	8			8	8	8	
4 44	604	NUMBER 13 INLET GRATING AND FRAME	EACH	2			2	2	2	

SUMMARY OF APPROXIMATE QUANTITIES

R-1 REV. 5-26-71 G.S.

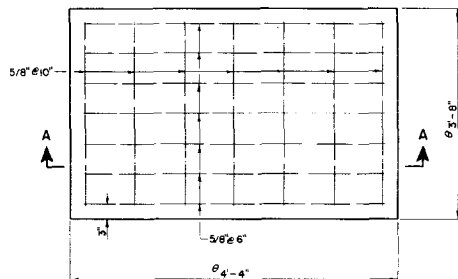
FEDERAL ROAD DISTRICT NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
	COLORADO	U 008-6(2)	5	

INDEX	CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	ROADWAY	W.O.#	W.O.#	STR. NO.	STR. NO.	PROJECT TOTALS				
									03400-F	16600-G	F-16-EQEP	F-16-EQ,ER	KLING ST.
47	604	18 INCH REINFORCED CONCRETE PIPE SEWER	LIN. FT.	776						776	776	770	-6
47	604	24 INCH REINFORCED CONCRETE PIPE SEWER	LIN. FT.	272						272	272	252	-20
41	604	30 INCH REINFORCED CONCRETE PIPE SEWER	LIN. FT.	6						6	0	0	
34	606	END ANCHORAGE TYPE 3	EACH	1		-6				1	0	0	
36	606	GUARD RAIL TYPE 3	LIN. FT.	50						50	50	48	-2
36	606	GUARD RAIL TYPE 3 (DOUBLE)	LIN. FT.	7,708						7,708	7,708	7,743	+35
16	606	GUARD RAIL TYPE 3A (DOUBLE)	LIN. FT.	292			163		129	292	292	292	
13	607	CHAIN LINK FENCE (36 INCH)	LIN. FT.	8,000						8,000	8,000	7,794	-206
12	609	CURB TYPE 2 (SECTION B)	LIN. FT.	5,031						5,031	5,031	5,232	+201
10	609	CURB AND GUTTER TYPE 2 (SECTION I-B)	LIN. FT.	238						238	238	281	+43
11	609	CURB AND GUTTER TYPE 2 (SECTION II-B)	LIN. FT.	1,289						1,289	1,289	1,340	+51
9	609	CURB AND GUTTER TYPE 2 (SECTION II-M)	LIN. FT.	213						213	213	256	+43
47	612	DELINEATORS TYPE I	EACH	24						24	24	21	-3
46	612	DELINEATORS TYPE II	EACH	18						18	18	22	+4
43	612	DELINEATORS TYPE III	EACH	5						5	5	5	
	614	FLAGGING	HOUR	1,570						1,570	1,570	2,115	+545
50	614	THERMOPLASTIC PAVEMENT MARKING	SQ. FT.	17,300						17,300	17,300	18,54	+1,244
14	614	PAVEMENT MARKING PAINT	GAL.	65						65	65	88	+23
18	614	SIGN PANEL (CLASS I)	SQ. FT.	131						131	131	13	-118
22	614	SIGN PANEL (CLASS II)	SQ. FT.	344						344	344	343	-1
23	614	SIGN PANEL (CLASS III)	SQ. FT.	640						640	640	646	+6
26	614	TIMBER SIGN POST 4X4 INCH	LIN. FT.	194						194	194	194	
31	614	TIMBER SIGN POST 6X6 INCH	LIN. FT.	819						819	819	543	-276
34	614	STEEL SIGN POST (6WF20)	LIN. FT.	61						61	61	61	
35	614	STEEL SIGN POST (8WF20)	LIN. FT.	41						41	41	41	
37	614	STEEL SIGN POST (10 WF 25)	LIN. FT.	86						86	86	77	-9
33	614	CONCRETE FOOTING (TYPE I-C)	EACH	4						4	4	4	
41	614	CONCRETE FOOTING (TYPE II)	EACH	2						2	2	2	
43	614	CONCRETE FOOTING (TYPE III)	EACH	4						4	4	4	
24	614	MODIFICATION OF SIGN LEGEND	LUMP SUM	•						•	•	•	
32	614	MODIFICATION OF TIMBER SIGN POST	EACH	3						3	3	3	
13	614	MODIFY OVERHEAD SIGN STRUCTURE	EACH	1						1	1	1	
44	614	BARRICADE (CLASS I TYPE M-1)	EACH	4						4	4	4	
45	614	BARRICADE (CLASS I TYPE M-4)	EACH	6						6	6	3	-3
46	620	FIELD OFFICE	EACH	1						1	1	1	
41	620	FIELD LABORATORY	EACH	1						1	1	1	
42	620	SANITARY FACILITY	EACH	1						1	1	1	
43	626	MOBILIZATION	LUMP SUM	•						•	•	•	
		FORCE ACCOUNT											
		FURNISH AND INSTALL POWER LINES FOR OVERHEAD SIGNS AS REQUIRED. (WORK BY PUBLIC SERVICE CO. FORCES).	LUMP SUM	•						•	•	•	
		FURNISH AND INSTALL ELECTRICAL SERVICE FROM POWER SOURCE TO SIGN SWITCH BOX.	LUMP SUM	•						•	•	•	
		ON THE JOB TRAINING	EACH	1						1	1	1	
		RESET 3 LIGHT STANDARDS & LUMINAIRES COMPLETE. (WORK BY PUBLIC SERVICE CO. FORCES)	LUMP SUM	•						•	•	•	
		STATE FORCES											
		FURNISH AND INSTALL IDENTIFICATION SIGN SIGNING (NON-FEDERAL AID)	EACH	2						2	2	2	
			LUMP SUM	•						•	•	•	

AS CONSTRUCTED
 REVISED DATE 7/14/72

FEDERAL AID REG. NO. 151	STATE AID NO. 1006-6(2)	PROJECT NO. 6
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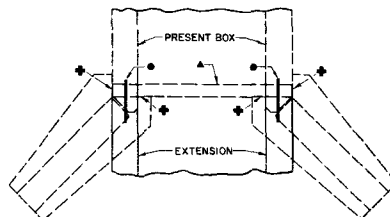
DETAIL OF INLET CAP



SECTION A-A

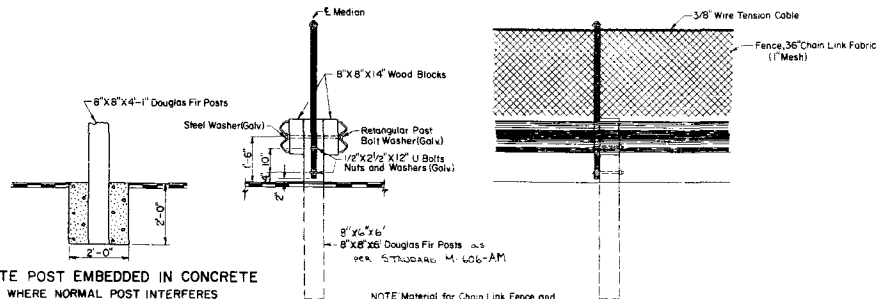
NOT: Inlet is to be broken to a neat work line as directed by the Engineer before capping.
 Payment to be included in the 1-601 Concrete Class A.
 Concrete 0.475 Cu Yds
 Reinforcing Steel 590 lbs
 Approximate only. Adjust to fit various inlets.

DETAIL FOR HEADWALL REMOVAL



- REMOVE ALONG THESE LINES.
- THIS HEADWALL IS TO BE REMOVED WHEN FILL OVER HEADWALL IS LESS THAN 1 FOOT.
- 2 FT REINFORCING BARS TO BE PLACED AT EVERY LONGITUDINAL BAR SHOWN ON THE STANDARD SIZE TO BE SAME AS LONGITUDINAL BARS.
- THE COST OF DRILLING HOLES AND PLACING TIE BARS IS TO BE INCLUDED IN PAYMENT FOR REMOVAL OF HEADWALLS.

DETAILS OF MEDIAN BARRIER
 GUARD RAIL TYPE 3 (DOUBLE) WITH CHAIN LINK FABRIC

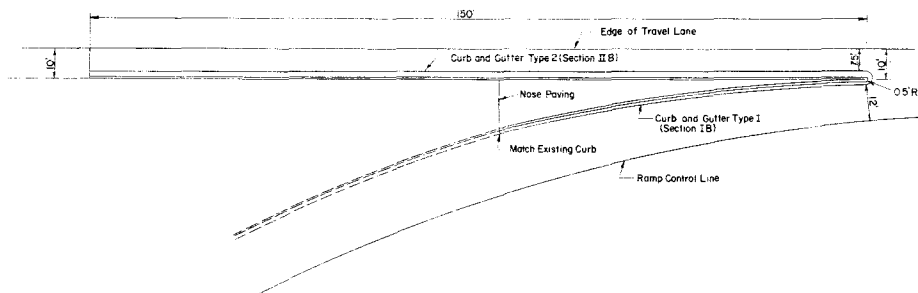


ALTERNATE POST EMBEDDED IN CONCRETE
 USED WHERE NORMAL POST INTERFERES
 WITH MEDIAN STORM SEWER

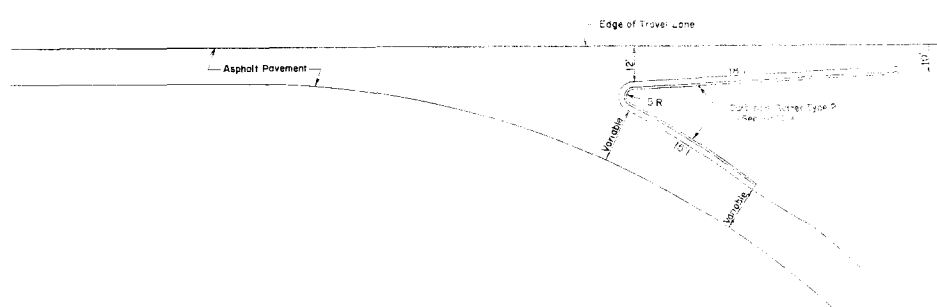
NOTE: Material for Chain Link Fence and Posts as shown on Standard M-607-B Chain Link Fence Posts spacing is twice that of Guard Rail Post spacing.

TYPICAL RAMP DETAILS

TYPICAL ONE LANE ENTRANCE RAMP TO FREEWAY



TYPICAL ONE LANE EXIT RAMP FROM FREEWAY



TABULATION OF SUBBASE AND SURFACING

Material for Base Course and Subbase may be obtained from any source providing specification material.
 Estimated quantities involved in these operations are shown below.
 Alterations of these plans as outlined will be allowed only on written permission of the Department.

LOCATION	STATION	PLANT MIX BITUMINOUS BASE CLASS 6	AGGREGATE BASE COURSE CLASS 6	HOT BITUMINOUS PAVEMENT GRADING E	8" CONCRETE PAVEMENT
		TONS	TONS	TONS	
MAINLINE (Eastbound)	Trans 210+50 to 215+50 215+50 to 221+14.5 BRIDGE	494	36 79	55.0 6.2	753
	222+87.39 to 229+22 229+22 to 240+45 240+45 to 247+97.6 BRIDGE	555	89 122 105	7.0 1.935 8.3 ⁸	846
	249+28.06 to 258+32 258+32 to 294+00	791	126 388	100 6.542	1205
SUB TOTAL		2498	945	9342	3808
MAINLINE (Westbound)	Trans 210+50 to 215+50 215+50 to 221+14.5 BRIDGE	494	36 79	55.0 6.2	753
	222+87.39 to 229+22 229+22 to 240+60 240+60 to 247+97.6 BRIDGE	555	89 124 103	7.0 2.357 8.1 ⁹	846
	249+28.06 to 258+36 258+36 to 295+00	794	127 399	100 6.512	1211
SUB TOTAL		2488	957	9732	3794
TOTAL MAINLINE		4986	1902	19074	7602
FR. RD., RAMPS & SHLD. (Eastbound)	229+22 to 240+45 248+88 to 292+00		115.6	7.52 4.093	
SUB TOTAL			115.6	4.845	
FR. RD., RAMPS & SHLD. (Westbound)	228+30 to 254+82 255+00 to 295+00		384 763	16.10 3.945	
SUB TOTAL			1147	5.555	
PROJECT TOTALS		4986	4205	29,474	7602
FINAL TOTALS		5063.32	554.57	27,532.36	7364

⁸ Includes quantity for sidewalk repair under structures if required.
 It is estimated that 60 tons of "Hot Bituminous Pavement (Patching)" will be required for maintenance of exist. streets.

NOTE: ⁸ Plant Mixed Bituminous Base is based on the following:
 Subgrade R value = 22
 ADTT = 6575
 Design k value = 425
 Modulus of Rupture = 500
 Load Safety Factor = 1.2

⁹ H.B.P. is based on the following:
 Subgrade R value = 22
 18" EDLA = 429
 Serviceability index = 2.5
 Regional Factor = 1.75
 R₁ Value of H.B.P. = 92

REMOVAL OF EXISTING CURBS AND GUTTER

STATION	LOCATION	LIN. FT.	FINAL
228+45 - 238+65	LT.	1223	1232.5
	RT.	0	217
257+12 - 277+82	LT.	2092	2093.2
	RT.	3477	3477
*STR. FILL BACKFILL		0	76.4
280+90 - 281+70	LT.	170	
316+30 - 317+30	RT.	0	145.3
PROJECT TOTALS		6962	2778.2

Includes Ramps

* Curb and gutter removal from
 316+30 to 317+30

AS CONSTRUCTED
REVISED DATE 7/1/72

STORM SEWERS

NO.	LOCATION	TYPE	H	ELEVATION		PIPE SIZE AND LENGTH			FL. ELEVATIONS		LINE		% GRADE	EXCAV. CU. YDS.	STRUCT. CL. 2	STRUCT. BACKFILL CL. 2	REMARKS
				RIM	INVERT	18"	24"	30"	M.H. OR INLET	FROM	TO						
				LINEAR FEET			IN	OUT	FT./100 FT.	CU. YDS.							
230B	230+00 LT.	3	5.4	36.00	31.31				31.31	31.31	*	*	133	7	3	* Exist. 24" R.C.P. (Inv. 31.43) * Exist. 24" R.C.P.	
MH 250	230+00 LT.	SLAB BASE	5.2	34.83	30.53	508	10		30.53	30.53	MH 235B	235B	2.38 2.05+	7	3	* Exist. 24" R.C.P. (Fl. 30.74) * 24" R.C.P. (Inv. 28.99)	
235B	235+10 LT.	C	5.0	24.50	20.05	190			20.05	20.05	*	*	2.05+	105	40	* Exist. Aero Inlet * Exist. 24" R.C.P.	
237B	237+00 LT.	C	6.7	22.20	16.22				16.22	16.22	*	*				* Exist. 24" R.C.P.	
242C	242+51 E	C	5.0	10.43	05.93	64			05.93	05.93	*	*	1.00	47	11	* Capped Inlet (Fl. 05.30)	
256B	256+07 LT.	C	5.5	94.00	88.97				88.97	88.97	*	*				* Exist. 24" R.C.P. * 24" R.C.P. (Inv. 79.18) * Exist. 24" R.C.P.	
263B	263+00 LT.	3	4.7	83.20	79.15		40		79.15	79.15	*	*	0.80	6	2	* Exist. 24" R.C.P.	
272A	272+00 RT.	3	5.2	70.00	65.50				65.50	65.50	*	*				* Exist. 24" R.C.P.	
272B	272+00 LT.	3	5.7	70.20	65.18		6		65.18	65.18	*	*				* 30" R.C.P. (Inv. 65.24) * Exist. 36" R.C.P.	
280A	280+90 RT.	3	4.6	53.30	49.33				49.33	49.33	*	*				* Exist. 24" R.C.P.	
280B	280+90 LT.	3	4.9	53.20	49.02		4		49.02	49.02	*	*	0.48	4	3	* 24" R.C.P. (Inv. 49.22) * Exist. 24" R.C.P.	
289A	289+00 RT.	3	5.1	39.10	34.70		60		34.70	34.70	*	*	0.94	5	2	* 18" R.C.P. (Inv. 34.78) * Exist. 18" R.C.P.	
MH 256	256+32 LT.	SLAB BASE	5.0	92.00	87.91		8		87.91	87.91	*	*	1.74	27	3	* Exist. 24" R.C.P.	
257B	257+40 LT.	C	3.3	89.90	87.13		104		87.13	87.13	MH 256	257B	0.75	75	37	* 24" R.C.P. (Fl. 86.29)	
PROJECT TOTALS						762	112	266	8				521	544.7	257		

SUMMARY OF INLETS

TYPE	DEPTH FT.	QUANTITY
3	5	3
3	10	3
C	5	3
C	10	1

SUMMARY OF MANHOLES

TYPE	DEPTH FT.	QUANT.
SLAB BASE	5	1
SLAB BASE	10	1

HEIGHT OF FILL ABOVE PIPE MINIMUM

* See Sheet 447
 for details of manholes

TABULATION OF CURBS AND GUTTERS

STATION	CURB & GUTTER TYPE 2 (SECTION IA)		CURB & GUTTER TYPE 2 (SECTION IB)		CURB & GUTTER TYPE 2 (SECTION BB)		CURB TYPE 2 (DOUBLE FACED)	
	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	
	228+45 - 235+00 LT.		150		184		471	
235+00 - 236+83 LT.				130		71		
237+64 - 239+14 LT.				152				
216+ RT.				100				
256+34 - 277+75 LT.						1956		
269+21 - 265+00 RT.						579		
265+00 - 291+81 RT.	213	88		603		1954		
218+ RT.				120				
PROJECT TOTALS		213	238	1289	5031			
Includes Ramps		286	281	1340	5612			

MANHOLE & INLET ADJUSTMENTS

LOCATION	ADJUST. MANHOLE	ADJUST. INLET	INLET GRATING & FRAME EACH
217+00 E			TYPE C
226+50 E			TYPE C
230+00 E			TYPE C
230+85 LT.	S.M.H. 230		TYPE C
235+40 LT.	S.M.H. 235		
257+90 LT.	S.M.H. 257		
237+00 E		237C	TYPE C
256+00 E		256C	TYPE C
262+10 LT.	S.M.H. 262		
266+90 LT.	S.M.H. 266		
271+40 LT.	S.M.H. 271		
263+00 E		263C	TYPE 13
275+90 LT.	S.M.H. 275		
272+00 E		272C	TYPE C
273+00 E		273C	TYPE C
280+90 E		280C	TYPE 13
283+10 LT.	S.M.H. 283		
284+40 LT.	S.M.H. 284		
289+00 E		289C	TYPE C
287+10 LT.	S.M.H. 287		
288+40 LT.	S.M.H. 288		
292+45 LT.	S.M.H. 292		
PROJECT TOTALS		12	8 TYPE C 2-TYPE 13

DETAILS OF INLET ADJUSTMENTS SHOWN ON SHEET 447

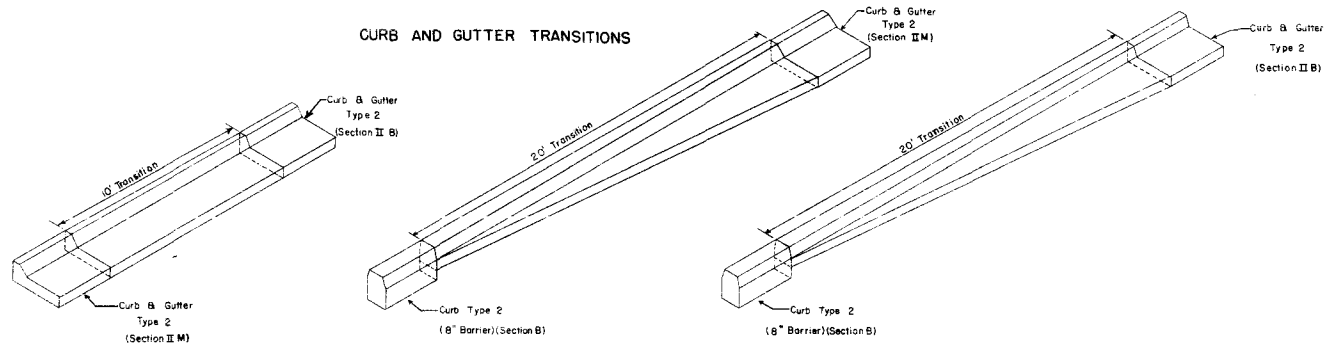
AS CONSTRUCTED
 REVISION DATE 7/14/02

LIST OF REMOVALS

NOTE NO.	LOCATION	DESCRIPTION
1	230+00 LT	REMOVE CONCRETE DROP INLET B 12'x24" R.C.P.
1A	228+ 6	REMOVE 17 SQ. YDS. CONC. PAVEMENT
2	230+00 LT	REMOVE 8' CONCRETE HEADWALL
3	230+30 LT	REMOVE 30'x12'x16" W.B.C.
4	231+35 LT	REMOVE 33'x24" R.C.P.
5	232+20 LT	REMOVE 32'x12'x16" W.B.C.
5A-5C	232+86-234+41 LT	REMOVE 3-30'x12'x16" W.B.C.'s
5D	235+35 LT	REMOVE 48'x15" C.S.P.
5E	236+11 LT	REMOVE 66'x15" R.C.P.
6	256+29 LT	REMOVE 24" FLARED END SECTION
7	257+70 LT	REMOVE 48'x18" C.S.P.
8	258+34 LT	REMOVE 12'x15" C.S.P.
9	263+00 LT	REMOVE CONCRETE DROP INLET → 3'x24" R.C.P.
10	263+00 LT	REMOVE 8' CONCRETE HEADWALL
11	263+00 RT	REMOVE CONCRETE DROP INLET → 3'x24" R.C.P.
12	263+65 LT	REMOVE 48'x18" C.S.P.
13	266+70 LT	REMOVE 48'x18" C.S.P.
14	269+50 LT	REMOVE 50'x18" C.S.P.
15	272+00 RT	REMOVE 8' CONCRETE HEADWALL
16	272+00 RT	REMOVE CONCRETE DROP INLET → 3'x24" R.C.P.
17	272+00 LT	REMOVE CONCRETE DROP INLET
19	273+00 RT	REMOVE 8' CONCRETE HEADWALL 9 LIN FT CONCRETE DITCH LINING
20	280+90 RT	REMOVE CONCRETE DROP INLET → 3'x24" R.C.P.
21	280+90 LT	REMOVE CONCRETE DROP INLET → 3'x24" R.C.P.
22	284+67 RT	REMOVE 32'x12'x16" W.B.C. 24'x12'x16" W.B.C.
23	285+72 RT	REMOVE 30'x12'x16" W.B.C. 24'x12'x16" W.B.C.
24	286+ RT	REMOVE 60 SQ. YDS. CONC. PAVEMENT
25	286+ RT	REMOVE 22'x18" C.S.P. 24'x18" W.B.C.
26	287+06 RT	REMOVE 24'x12'x16" W.B.C.
27	288+11 RT	REMOVE 30'x12'x16" W.B.C. 26'x12'x16" W.B.C.
28	289+00 RT	REMOVE 8' CONCRETE HEADWALL
29	289+00 RT	REMOVE CONCRETE DROP INLET
30	289+75 RT	REMOVE 30'x12'x16" W.B.C. 24'x12'x16" W.B.C.
31	290+16 RT	REMOVE 16'x18'x23" C.S.P.
ENTIRE PROJECT		REMOVE 533' GUARD FENCE

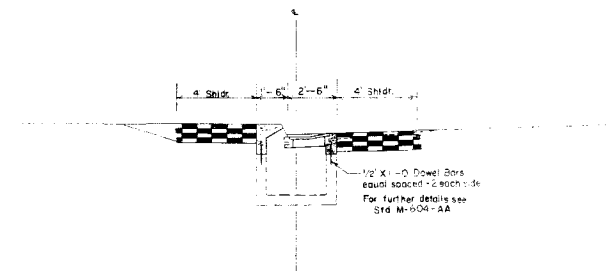
1. ALL REMOVALS SHALL BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWINGS.

CURB AND GUTTER TRANSITIONS

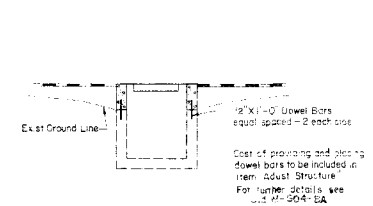


MEDIAN INLET ADJUSTMENT

W/ Type I3 Grating & Frame



W/ Type C Grating & Frame



TABULATION OF DELINEATORS

STATION	ITEM 612 DELINEATORS		
	EACH		
	TYPE I	TYPE II	TYPE III
210+00 to 220+00			2
220+00 to 235+00	4	5	2
235+00 to 250+00	3		1
250+00 to 265+00	7		
265+00 to 280+00	10		
280+00 to 295+00		13	
TOTAL	24	18	5

TABULATION OF FENCING

STATION	ITEM 605 GUARD RAIL TYPE 3	ITEM 606 GUARD RAIL TYPE 3 (DOUBLE)	ITEM 607 FENCE CHAIN LINK 36"
	LIN. FT.	LIN. FT.	LIN. FT.
212+25 to 220+00		775	775
220+00 to 235+00		1337	1500
235+00 to 250+00		1371	1500
250+00 to 265+00		1500	1500
265+00 to 280+00	50	1500	1500
280+00 to 292+25		1225	1225
TOTAL	50	7,708	8000

Note: For Item 607, Chain Link Fence, 250 Lin. Ft. Guard Rail Type 3 (Double). This item shall include resetting chain link mesh and removal of the End Anchorage.

SUMMARY

ITEM	UNITS	QUANTITY	FINAL PRICE
REMOVAL OF CONDUIT	LIN. FT.	408	291
REMOVAL OF STRUCTURES	EA.	* 24	80
REMOVAL OF HEADWALL	EA.	5	5
REMOVAL OF CONCRETE PAVEMENT	SQ. YDS.	77	95
REMOVAL OF CONCRETE DITCH LINING	LIN. FT.	9	9
REMOVAL OF GUARD FENCE	LIN. FT.	533	510

* Includes W.B.C.'s

LIST OF STRUCTURES

REV. 5-26-71 G.S.

FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U006-6(2)	10	

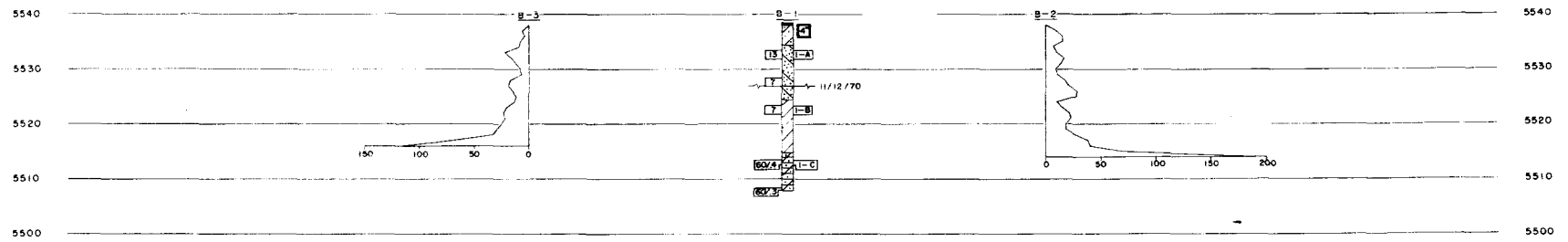
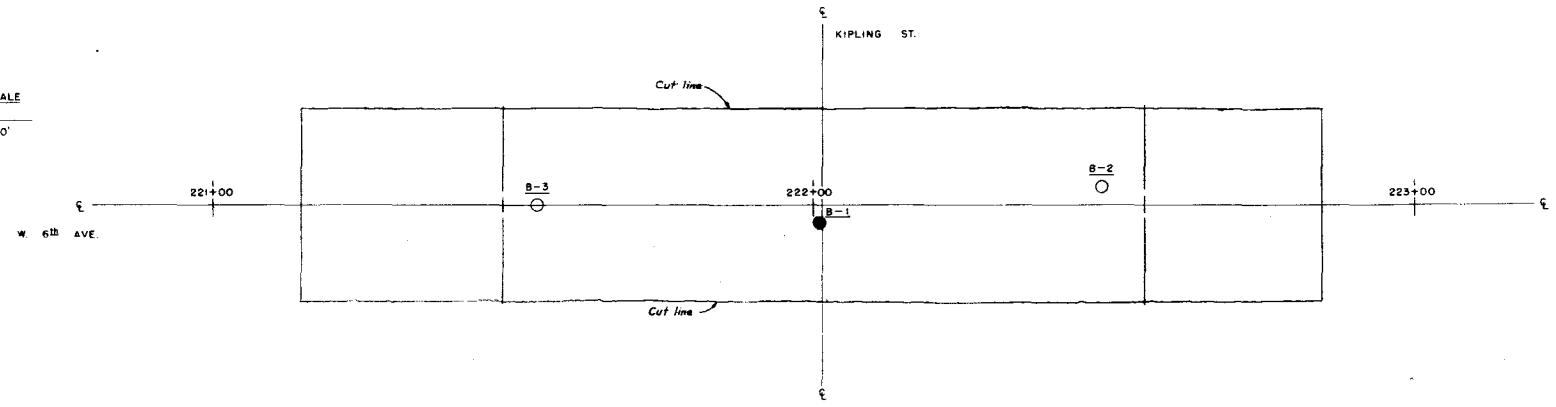
7-12-72

LOCATION	DESCRIPTION	NOTE NUMBER	ITEM 203	ITEM 206	ITEM 206			ITEM 507		ITEM 601	ITEM 602	ITEM 604	ITEM 603	REMARKS	
			UNCLASSIFIED EXCAVATION	STRUCTURE EXCAVATION	STRUCTURE BACKFILL CLASS 2			BITUMINOUS SLOPE AND DITCH PAVING		MISC. CONCRETE CLASS A	REINFORCING STEEL	REINFORCED CONC. PIPE SEWER	CORRUGATED STEEL PIPE		
			CU. YD.	CU. YD.	CU. YD.			TON	CU. YD.	LB.	LIN. FT.	LIN. FT.			
			DITCH								18"	24"	18"		
221+00	Req'd. Bridge Widening					QUANTITIES		IN						SUMMARY	
248+00	Req'd. Bridge Widening					QUANTITIES		IN						SUMMARY	
256+00.18.243+16E	Req'd.(2) Reinforced Conc. Cap on Inlet	A							1.0	118					
258+80 Lt.	Req'd Outlet Ditch	B	6												
260+70 Lt.	Req'd Extend 18" C.S.P. 6' each end	C		5	2								12		
263+00 Lt.	Req'd 6' X 24" R.C.P. w/Headwall	D		10	3				1.5			6			
263+65 Lt.	Req'd 48' X 18" C.S.P.	E		20	8								48		
266+70 Lt.	Req'd 50' X 18" C.S.P.	F		16	8								50		
269+50 Lt.	Req'd 52' X 18" C.S.P.	G		16	9								52		
272+00 Lt.	Req'd Extend 18" C.S.P. 10' BK.	H		5	2								10		
272+00 Rt.	Req'd Extend 24" R.C.P. 10' Rt. w/Headwall	I	9	12	4				1.5			10			
273+00 Rt.	Req'd Extend 6' X 4' C.B.C.-9' (Type 6A) w/Headwall & Grout 6' X 4' C.B.C. to Conc. Ditch Lining	J		24	9				6.8	610 ⁵					* Includes dowel bars
284+65 Rt.	Req'd 32' X 18" C.S.P.	K		14	6								32		
285+67 Rt.	Req'd 32' X 18" C.S.P.	L		14	6								32		
286+13 Rt.	Req'd 30' X 18" C.S.P.	M		14	5								30		
286+90 Rt.	Req'd 56' X 18" C.S.P.	O		23	9								56		
288+10 Rt.	Req'd 30' X 18" C.S.P.	P		14	4								30		
289+00 Rt.	Req'd Extend 18" R.C.P. 8' Rt. w/Headwall	Q		16	6				1.0			8			
289+75 Rt.	Req'd 30' X 18" C.S.P.	R		14	5								30		
290+08 Rt.	Req'd 16' X 18" C.S.P.	S		7	3								6		
280+ to 294+	Req'd. Bituminous Ditch Paving	T						214							
290+08 Rt.	Req'd 16' X 18" C.S.P.	U		212	112					35			6		
Entire Project	Req'd. Barricades Class I (Type M-1)-4ea. Barricades Class I (Type M-4)-6ea.														
211+00± Rt. & 292+00± Lt.	Req'd (2) Identification Signs (State Forces) Reset 16 Mailbox Structures Reset 3 Light Standards (Work by Public Service Co forces)														
Entire Project - Force Account															
PROJECT TOTALS			15.0	224 221.2	89 90.2			214	121 155	728	8	16	398 404		

▲ HEIGHT OF FILL ABOVE PIPE MINIMUM.

* See Book 5, Page 46 for Summary

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	U 006-6(2)	13	



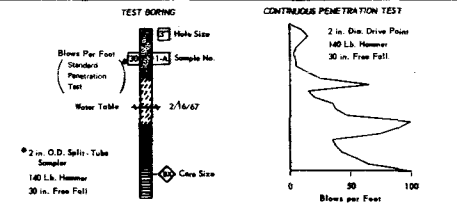
SUMMARY OF TEST RESULTS

No.	Depth	Classification	Grading Analysis				Atterberg Limits			Flow Cent. %	Wet Unit Weight	Moisture Content	Triaxial Shear Strength				Dis. Of Sample
			Gravel	Coarse Sand	Fine Sand	Silt and Clay	Liquid Limit	Plastic Limit	Plastic Index				Unconsolidated	Consolidated	Time	Pressure	
I-A	5.0 - 6.5	SANDY CLAY A-6(3)	11	15	38	42	38	22	16	10.2							
I-B	15.0 - 16.5	SANDY CLAY A-6(5)	5	12	36	47	39	22	17	31.8							
I-C	25.0 - 25.9	SANDY CLAY A-7-6(2)	1	2	18	79	55	30	25	23.3							

TYPE OF MATERIAL

- ASPHALT
- ▨ SANDY CLAY
- ▨ SILTY CLAY
- ▨ CLAYEY SAND
- ▨ SANDY CLAYSTONE

LEGEND



DIVISION OF HIGHWAYS STATE OF COLORADO

ENGINEERING GEOLOGY
 At: KIPLING ST (ST. NOS. F-17-ED) Sec. 221 TO 223
 Near LAKEWOOD, Sec. 9 T. 45 S. R. 69W
 Geologist: R. W. B. Approved by: D. K. D. Bridge Engineer
 Checked by: G. C. P. Date: 19

STRUCTURE NO. F-16-ED F-16-EP
 DWG. NO. B 3 OF 18

SVR, F-16-EQ W.R.L.
 (1000-KIP)
 DES. BY BS
 DET. BY YDR
 INPUT BY TOM 1-75-75
 ELEV. AND TOP OF
 CONC. DECK

INPUT DATA FOR BRIDGE F-16-F0

POT = 221 + 14.5000 ALPHA = 0 0 0.00 RONY = 54.6647 OR = 1.0000
 PI = 222 + 0.0000 FRI = 4563.6389 VC = 500 0AN = -0.0000
 TYPE = 1 SLOPE = .1150

CL ABUT 1 TO
 CL PIER 1

	STATION	ELEVATION
CUT LINF		
STA RACK	221 + 14.5000	5561.1755
1 10TH	221 + 18.7500	5561.1537
2 10TH	221 + 22.0000	5561.1108
3 10TH	221 + 24.2500	5561.0600
4 10TH	221 + 26.5000	5561.0010
5 10TH	221 + 31.7500	5561.0550
6 10TH	221 + 35.0000	5561.0247
7 10TH	221 + 38.2500	5561.0000
8 10TH	221 + 41.5000	5560.9714
9 10TH	221 + 44.7500	5560.9411
STA AHFAD	221 + 48.0000	5560.9000

	STATION	ELEVATION
CL GIRDER A		
STA RACK	221 + 14.5000	5561.2042
1 10TH	221 + 18.7500	5561.2074
2 10TH	221 + 22.0000	5561.1705
3 10TH	221 + 25.2500	5561.1056
4 10TH	221 + 28.5000	5561.1106
5 10TH	221 + 31.7500	5561.1044
6 10TH	221 + 35.0000	5561.0775
7 10TH	221 + 38.2500	5561.0401
8 10TH	221 + 41.5000	5561.0201
9 10TH	221 + 44.7500	5560.9999
STA AHFAD	221 + 48.0000	5560.9495

	STATION	ELEVATION
CL GIRDER T		
STA RACK	221 + 14.5000	5561.1517
1 10TH	221 + 18.7500	5561.1099
2 10TH	221 + 22.0000	5561.1070
3 10TH	221 + 25.2500	5561.2811
4 10TH	221 + 28.5000	5561.2981
5 10TH	221 + 31.7500	5561.2591
6 10TH	221 + 35.0000	5561.2054
7 10TH	221 + 38.2500	5561.1760
8 10TH	221 + 41.5000	5561.1474
9 10TH	221 + 44.7500	5561.1174
STA AHFAD	221 + 48.0000	5561.0860

	STATION	ELEVATION
N FACE MEDIAN		
STA RACK	221 + 15.5000	5561.4995
1 10TH	221 + 18.7500	5561.4737
2 10TH	221 + 22.0000	5561.4104
3 10TH	221 + 25.2500	5561.3576
4 10TH	221 + 28.5000	5561.3019
5 10TH	221 + 31.7500	5561.2500
6 10TH	221 + 35.0000	5561.2488
7 10TH	221 + 38.2500	5561.2096
8 10TH	221 + 41.5000	5561.1816
9 10TH	221 + 44.7500	5561.1611
STA AHFAD	221 + 48.0000	5561.1294

	STATION	ELEVATION
CL 6TH AVE.		
STA RACK	221 + 15.5000	5561.4175
1 10TH	221 + 18.7500	5561.3817
2 10TH	221 + 22.0000	5561.3708
3 10TH	221 + 25.2500	5561.3680
4 10TH	221 + 28.5000	5561.3219
5 10TH	221 + 31.7500	5561.2998
6 10TH	221 + 35.0000	5561.2722
7 10TH	221 + 38.2500	5561.2114
8 10TH	221 + 41.5000	5561.1811
9 10TH	221 + 44.7500	5561.1494
STA AHFAD	221 + 48.0000	5561.1090

CL PIER 2 TO
 CL PIER 1

	STATION	ELEVATION
CUT LINF		
STA RACK	221 + 48.0000	5560.9000
1 10TH	221 + 51.2500	5560.8950
2 10TH	221 + 54.5000	5560.7902
3 10TH	221 + 57.7500	5560.7396
4 10TH	221 + 61.0000	5560.6722
5 10TH	221 + 74.2500	5560.6119
6 10TH	221 + 80.1000	5560.5637
7 10TH	221 + 85.9500	5560.5172
8 10TH	221 + 90.8000	5560.4708
9 10TH	221 + 96.1500	5560.4270
STA AHFAD	222 + 1.5000	5560.2424

	STATION	ELEVATION
CL GIRDER A		
STA RACK	221 + 48.0000	5560.9595
1 10TH	221 + 51.2500	5560.9047
2 10TH	221 + 54.5000	5560.7884
3 10TH	221 + 57.7500	5560.7209
4 10TH	221 + 61.0000	5560.6094
5 10TH	221 + 74.2500	5560.5924
6 10TH	221 + 80.1000	5560.5214
7 10TH	221 + 85.9500	5560.4711
8 10TH	221 + 90.8000	5560.4274
9 10TH	221 + 96.1500	5560.3788
STA AHFAD	222 + 1.5000	5560.2411

	STATION	ELEVATION
CL GIRDER T		
STA RACK	221 + 48.0000	5561.0460
1 10TH	221 + 51.2500	5561.0327
2 10TH	221 + 54.5000	5560.9755
3 10TH	221 + 57.7500	5560.9050
4 10TH	221 + 61.0000	5560.8534
5 10TH	221 + 74.2500	5560.7981
6 10TH	221 + 80.1000	5560.7396
7 10TH	221 + 85.9500	5560.6890
8 10TH	221 + 90.8000	5560.6378
9 10TH	221 + 96.1500	5560.5883
STA AHFAD	222 + 1.5000	5560.6184

	STATION	ELEVATION
N FACE MEDIAN		
STA RACK	221 + 48.0000	5561.1908
1 10TH	221 + 51.2500	5561.1958
2 10TH	221 + 54.5000	5561.0109
3 10TH	221 + 57.7500	5560.9596
4 10TH	221 + 61.0000	5560.9122
5 10TH	221 + 74.2500	5560.8310
6 10TH	221 + 80.1000	5560.7637
7 10TH	221 + 85.9500	5560.6957
8 10TH	221 + 90.8000	5560.6188
9 10TH	221 + 96.1500	5560.5470
STA AHFAD	222 + 1.5000	5560.4624

	STATION	ELEVATION
CL 6TH AVE.		
STA RACK	221 + 48.0000	5561.1498
1 10TH	221 + 51.2500	5561.0908
2 10TH	221 + 54.5000	5561.0702
3 10TH	221 + 57.7500	5560.9796
4 10TH	221 + 61.0000	5560.9177
5 10TH	221 + 74.2500	5560.8310
6 10TH	221 + 80.1000	5560.7637
7 10TH	221 + 85.9500	5560.6957
8 10TH	221 + 90.8000	5560.6188
9 10TH	221 + 96.1500	5560.5470
STA AHFAD	222 + 1.5000	5560.4624

CL PIER 2 TO
 CL PIER 1

	STATION	ELEVATION
CUT LINF		
STA RACK	222 + 1.5000	5560.2424
1 10TH	222 + 4.7500	5560.1996
2 10TH	222 + 17.2500	5560.0744
3 10TH	222 + 30.2500	5559.9963
4 10TH	222 + 37.0000	5559.8951
5 10TH	222 + 38.2500	5559.4013
6 10TH	222 + 33.5000	5559.7846
7 10TH	222 + 38.2500	5559.6849
8 10TH	222 + 44.3000	5559.5404
9 10TH	222 + 49.0500	5559.3878
STA AHFAD	222 + 55.0000	5559.2487

	STATION	ELEVATION
CL GIRDER A		
STA RACK	222 + 1.5000	5560.2911
1 10TH	222 + 4.7500	5560.2487
2 10TH	222 + 17.2500	5560.1233
3 10TH	222 + 30.2500	5560.0751
4 10TH	222 + 37.0000	5559.9648
5 10TH	222 + 38.2500	5559.4581
6 10TH	222 + 33.5000	5559.7573
7 10TH	222 + 38.2500	5559.6536
8 10TH	222 + 44.3000	5559.5511
9 10TH	222 + 49.0500	5559.4487
STA AHFAD	222 + 55.0000	5559.3375

	STATION	ELEVATION
CL GIRDER T		
STA RACK	222 + 1.5000	5560.4186
1 10TH	222 + 4.7500	5560.3168
2 10TH	222 + 17.2500	5560.2009
3 10TH	222 + 17.5500	5560.1826
4 10TH	222 + 22.0000	5560.0722
5 10TH	222 + 28.2500	5559.9776
6 10TH	222 + 31.0000	5559.8888
7 10TH	222 + 37.0000	5559.7861
8 10TH	222 + 44.3000	5559.6786
9 10TH	222 + 49.0500	5559.5732
STA AHFAD	222 + 55.0000	5559.4650

	STATION	ELEVATION
N FACE MEDIAN		
STA RACK	222 + 1.5000	5560.4624
1 10TH	222 + 4.7500	5560.3788
2 10TH	222 + 17.2500	5560.2487
3 10TH	222 + 17.5500	5560.2044
4 10TH	222 + 22.0000	5560.1153
5 10TH	222 + 28.2500	5560.0664
6 10TH	222 + 33.0000	5559.9246
7 10TH	222 + 38.0000	5559.8240
8 10TH	222 + 44.3000	5559.7474
9 10TH	222 + 49.0500	5559.6178
STA AHFAD	222 + 55.0000	5559.4998

	STATION	ELEVATION
CL 6TH AVE.		
STA RACK	222 + 1.5000	5560.4874
1 10TH	222 + 4.7500	5560.3708
2 10TH	222 + 12.2500	5560.3144
3 10TH	222 + 17.5500	5560.2763
4 10TH	222 + 22.0000	5560.1851
5 10TH	222 + 28.2500	5560.0613
6 10TH	222 + 31.0000	5559.9664
7 10TH	222 + 38.0000	5559.8440
8 10TH	222 + 44.3000	5559.7474
9 10TH	222 + 49.0500	5559.6378
STA AHFAD	222 + 55.0000	5559.5287

CL PIER 4 TO
 CL ABUT 5

	STATION	ELEVATION
CUT LINF		
STA RACK	222 + 55.0000	5559.2987
1 10TH	222 + 57.5000	5559.2990
2 10TH	222 + 60.7500	5559.1703
3 10TH	222 + 63.5500	5559.1494
4 10TH	222 + 66.4000	5559.0486
5 10TH	222 + 69.2500	5558.9885
6 10TH	222 + 72.1000	5558.9236
7 10TH	222 + 74.9500	5558.8690
8 10TH	222 + 77.8000	5558.7954
9 10TH	222 + 80.6500	5558.7380
STA AHFAD	222 + 83.5000	5558.6439

	STATION	ELEVATION
CL GIRDER A		
STA RACK	222 + 55.0000	5559.3375
1 10TH	222 + 57.5000	5559.2787
2 10TH	222 + 60.7500	5559.2190
3 10TH	222 + 63.5500	5559.1506
4 10TH	222 + 66.4000	5559.0973
5 10TH	222 + 69.2500	5559.0392
6 10TH	222 + 72.1000	5558.9723
7 10TH	222 + 74.9500	5558.9086
8 10TH	222 + 77.8000	5558.8441
9 10TH	222 + 80.6500	5558.7788
STA AHFAD	222 + 83.5000	5558.7124

	STATION	ELEVATION
CL GIRDER T		
STA RACK	222 + 55.0000	5559.4495
1 10TH	222 + 57.5000	5559.4461
2 10TH	222 + 60.7500	5559.3465
3 10TH	222 + 63.5500	5559.2961
4 10TH	222 + 66.4000	5559.2290
5 10TH	222 + 69.2500	5559.1627
6 10TH	222 + 72.1000	5559.0900
7 10TH	222 + 74.9500	5559.0361
8 10TH	222 + 77.8000	5558.9716
9 10TH	222 + 80.6500	5558.9041
STA AHFAD	222 + 83.5000	5558.8441

	STATION	ELEVATION
N FACE MEDIAN		
STA RACK	222 + 55.0000	5559.5088
1 10TH	222 + 57.5000	5559.4490
2 10TH	222 + 60.7500	5559.3983
3 10TH	222 + 63.5500	5559.3298
4 10TH	222 + 66.4000	5559.2686
5 10TH	222 + 69.2500	5559.2045
6 10TH	222 + 72.1000	5559.1436
7 10TH	222 + 74.9500	5559.0790
8 10TH	222 + 77.8000	5559.0154
9 10TH	222 + 80.6500	5558.9508
STA AHFAD	222 + 83.5000	5558.8839

	STATION	ELEVATION
CL 6TH AVE.		
STA RACK	222 + 55.0000	5559.5287
1 10TH	222 + 57.5000	5559.4499
2 10TH	222 + 60.7500	5559.3983
3 10TH	222 + 63.5500	5559.3494
4 10TH	222 + 66.4000	5559.2986
5 10TH	222 +	

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U006-6(2)	15	

REVISIONS	

STD. F-1A-EP F.O.
 (HDA-A12)
 DES. BY GS
 DFT. BY TDR
 INPRT BY TDR (1-25-71)
 PLEVS. ARE TYP. OF
 COMC. DECK

TEMP. DATA FOR ROJING F-1A-EP

DOT = 221 + 14.5000 ALPHA = 0 0 0.0000 BMY = 54.6667 GR = 1.0000
 D1 = 222 + 0.0000 ERI = 5561.6100 VC = 500.0000 G4H = -4.0000
 TYPF = 1 CURVE = 0.0150

CL ABUT 1 TO
 CL PIER 3

STATION ELEVATION

CL 6TH AVE.	STA RACK	STA	ELEV
1	107H	221 + 15.5000	5561.6155
2	107H	221 + 18.7500	5561.7937
3	107H	221 + 22.0000	5561.1708
4	107H	221 + 25.2500	5561.3459
5	107H	221 + 28.5000	5561.5210
6	107H	221 + 31.7500	5561.6961
7	107H	221 + 35.0000	5561.8712
8	107H	221 + 38.2500	5561.1463
9	107H	221 + 41.5000	5561.3214
0	107H	221 + 44.7500	5561.4965
1	107H	221 + 48.0000	5561.6716
STA AHEAD			

K FACE MEDIAN	STA RACK	STA	ELEV
1	107H	221 + 15.5000	5561.3955
2	107H	221 + 18.7500	5561.5737
3	107H	221 + 22.0000	5561.1508
4	107H	221 + 25.2500	5561.3259
5	107H	221 + 28.5000	5561.5010
6	107H	221 + 31.7500	5561.6761
7	107H	221 + 35.0000	5561.8512
8	107H	221 + 38.2500	5561.1263
9	107H	221 + 41.5000	5561.3014
0	107H	221 + 44.7500	5561.4765
1	107H	221 + 48.0000	5561.6516
STA AHEAD			

CL GIRDERS 1	STA RACK	STA	ELEV
1	107H	221 + 18.7500	5561.1917
2	107H	221 + 22.0000	5561.3678
3	107H	221 + 25.2500	5561.5439
4	107H	221 + 28.5000	5561.7190
5	107H	221 + 31.7500	5561.8941
6	107H	221 + 35.0000	5561.1692
7	107H	221 + 38.2500	5561.3443
8	107H	221 + 41.5000	5561.5194
9	107H	221 + 44.7500	5561.6945
0	107H	221 + 48.0000	5561.8696
STA AHEAD			

CL GIRDERS 2	STA RACK	STA	ELEV
1	107H	221 + 15.5000	5561.2267
2	107H	221 + 18.7500	5561.4028
3	107H	221 + 22.0000	5561.5789
4	107H	221 + 25.2500	5561.7540
5	107H	221 + 28.5000	5561.9291
6	107H	221 + 31.7500	5561.2042
7	107H	221 + 35.0000	5561.3793
8	107H	221 + 38.2500	5561.5544
9	107H	221 + 41.5000	5561.7295
0	107H	221 + 44.7500	5561.9046
1	107H	221 + 48.0000	5561.1797
STA AHEAD			

CUT LANE	STA RACK	STA	ELEV
1	107H	221 + 15.5000	5561.1758
2	107H	221 + 18.7500	5561.3519
3	107H	221 + 22.0000	5561.5280
4	107H	221 + 25.2500	5561.7041
5	107H	221 + 28.5000	5561.8802
6	107H	221 + 31.7500	5561.1553
7	107H	221 + 35.0000	5561.3314
8	107H	221 + 38.2500	5561.5075
9	107H	221 + 41.5000	5561.6836
0	107H	221 + 44.7500	5561.8597
1	107H	221 + 48.0000	5561.1348
STA AHEAD			

CL PIER 3 TO
 CL PIER 5

STATION ELEVATION

CL 6TH AVE.	STA RACK	STA	ELEV
1	107H	221 + 48.0000	5561.1404
2	107H	221 + 51.2500	5561.3165
3	107H	221 + 54.5000	5561.4926
4	107H	221 + 57.7500	5561.6687
5	107H	221 + 61.0000	5561.8448
6	107H	221 + 64.2500	5561.1209
7	107H	221 + 67.5000	5561.2970
8	107H	221 + 70.7500	5561.4731
9	107H	221 + 74.0000	5561.6492
0	107H	221 + 77.2500	5561.8253
1	107H	221 + 80.5000	5561.1014
2	107H	221 + 83.7500	5561.2775
3	107H	221 + 87.0000	5561.4536
4	107H	221 + 90.2500	5561.6297
5	107H	221 + 93.5000	5561.8058
6	107H	221 + 96.7500	5561.1819
7	107H	221 + 100.0000	5561.3580
STA AHEAD			

K FACE MEDIAN	STA RACK	STA	ELEV
1	107H	221 + 48.0000	5561.1204
2	107H	221 + 51.2500	5561.2965
3	107H	221 + 54.5000	5561.4726
4	107H	221 + 57.7500	5561.6487
5	107H	221 + 61.0000	5561.8248
6	107H	221 + 64.2500	5561.1009
7	107H	221 + 67.5000	5561.2770
8	107H	221 + 70.7500	5561.4531
9	107H	221 + 74.0000	5561.6292
0	107H	221 + 77.2500	5561.8053
1	107H	221 + 80.5000	5561.1814
2	107H	221 + 83.7500	5561.3575
3	107H	221 + 87.0000	5561.5336
4	107H	221 + 90.2500	5561.7097
5	107H	221 + 93.5000	5561.8858
6	107H	221 + 96.7500	5561.1619
7	107H	221 + 100.0000	5561.3380
STA AHEAD			

CL GIRDERS 1

STA RACK	STA	ELEV	
1	107H	221 + 48.0000	5561.0900
2	107H	221 + 51.2500	5561.2661
3	107H	221 + 54.5000	5561.4422
4	107H	221 + 57.7500	5561.6183
5	107H	221 + 61.0000	5561.7944
6	107H	221 + 64.2500	5561.1705
7	107H	221 + 67.5000	5561.3466
8	107H	221 + 70.7500	5561.5227
9	107H	221 + 74.0000	5561.6988
0	107H	221 + 77.2500	5561.8749
1	107H	221 + 80.5000	5561.1510
2	107H	221 + 83.7500	5561.3271
3	107H	221 + 87.0000	5561.5032
4	107H	221 + 90.2500	5561.6793
5	107H	221 + 93.5000	5561.8554
6	107H	221 + 96.7500	5561.1315
7	107H	221 + 100.0000	5561.3076
STA AHEAD			

CL GIRDERS 2

STA RACK	STA	ELEV	
1	107H	221 + 48.0000	5560.9585
2	107H	221 + 51.2500	5561.1346
3	107H	221 + 54.5000	5561.3107
4	107H	221 + 57.7500	5561.4868
5	107H	221 + 61.0000	5561.6629
6	107H	221 + 64.2500	5561.0390
7	107H	221 + 67.5000	5561.2151
8	107H	221 + 70.7500	5561.3912
9	107H	221 + 74.0000	5561.5673
0	107H	221 + 77.2500	5561.7434
1	107H	221 + 80.5000	5561.1195
2	107H	221 + 83.7500	5561.2956
3	107H	221 + 87.0000	5561.4717
4	107H	221 + 90.2500	5561.6478
5	107H	221 + 93.5000	5561.8239
6	107H	221 + 96.7500	5561.2000
7	107H	221 + 100.0000	5561.3761
STA AHEAD			

CUT LANE

STA RACK	STA	ELEV	
1	107H	221 + 48.0000	5560.9690
2	107H	221 + 51.2500	5561.1451
3	107H	221 + 54.5000	5561.3212
4	107H	221 + 57.7500	5561.4973
5	107H	221 + 61.0000	5561.6734
6	107H	221 + 64.2500	5561.0495
7	107H	221 + 67.5000	5561.2256
8	107H	221 + 70.7500	5561.4017
9	107H	221 + 74.0000	5561.5778
0	107H	221 + 77.2500	5561.7539
1	107H	221 + 80.5000	5561.1300
2	107H	221 + 83.7500	5561.3061
3	107H	221 + 87.0000	5561.4822
4	107H	221 + 90.2500	5561.6583
5	107H	221 + 93.5000	5561.8344
6	107H	221 + 96.7500	5561.2105
7	107H	221 + 100.0000	5561.3866
STA AHEAD			

CL PIER 3 TO
 CL PIER 5

STATION ELEVATION

CL 6TH AVE.	STA RACK	STA	ELEV
1	107H	222 + 1.5000	5560.4824
2	107H	222 + 4.7500	5560.6585
3	107H	222 + 8.0000	5560.8346
4	107H	222 + 11.2500	5561.0107
5	107H	222 + 14.5000	5561.1868
6	107H	222 + 17.7500	5561.3629
7	107H	222 + 21.0000	5561.5390
8	107H	222 + 24.2500	5561.7151
9	107H	222 + 27.5000	5561.8912
0	107H	222 + 30.7500	5561.1673
1	107H	222 + 34.0000	5561.3434
2	107H	222 + 37.2500	5561.5195
3	107H	222 + 40.5000	5561.6956
4	107H	222 + 43.7500	5561.8717
5	107H	222 + 47.0000	5561.2478
6	107H	222 + 50.2500	5561.4239
7	107H	222 + 53.5000	5561.6000
8	107H	222 + 56.7500	5561.7761
9	107H	222 + 60.0000	5561.9522
0	107H	222 + 63.2500	5561.1283
1	107H	222 + 66.5000	5561.3044
2	107H	222 + 69.7500	5561.4805
3	107H	222 + 73.0000	5561.6566
4	107H	222 + 76.2500	5561.8327
5	107H	222 + 79.5000	5561.2088
6	107H	222 + 82.7500	5561.3849
7	107H	222 + 86.0000	5561.5610
8	107H	222 + 89.2500	5561.7371
9	107H	222 + 92.5000	5561.9132
0	107H	222 + 95.7500	5561.2893
1	107H	222 + 99.0000	5561.4654
2	107H	222 + 102.2500	5561.6415
3	107H	222 + 105.5000	5561.8176
4	107H	222 + 108.7500	5561.9937
5	107H	222 + 112.0000	5561.3698
6	107H	222 + 115.2500	5561.5459
7	107H	222 + 118.5000	5561.7220
8	107H	222 + 121.7500	5561.8981
9	107H	222 + 125.0000	5561.2742
0	107H	222 + 128.2500	5561.4503
1	107H	222 + 131.5000	5561.6264
2	107H	222 + 134.7500	5561.8025
3	107H	222 + 138.0000	5561.9786
4	107H	222 + 141.2500	5561.3547
5	107H	222 + 144.5000	5561.5308
6	107H	222 + 147.7500	5561.7069
7	107H	222 + 151.0000	5561.8830
8	107H	222 + 154.2500	5561.2591
9	107H	222 + 157.5000	5561.4352
0	107H	222 + 160.7500	5561.6113
1	107H	222 + 164.0000	5561.7874
2	107H	222 + 167.2500	5561.9635
3	107H	222 + 170.5000	5561.3396
4	107H	222 + 173.7500	5561.5157
5	107H	222 + 177.0000	5561.6918
6	107H	222 + 180.2500	5561.8679
7	107H	222 + 183.5000	5561.2440
8	107H	222 + 186.7500	5561.4201
9	107H	222 + 190.0000	5561.5962
0	107H	222 + 193.2500	5561.7723
1	107H	222 + 196.50	

REVISIONS	

Mark	No. Req'd	Length	Type	Dimensions	
				h	v
427	24	9'-0"	V		
428	2	31'-8"	Str.		
805	4	31'-8"	Str.		

SUMMARY ~ ABUTMENT 1
 279 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 186 Lbs.
 127 Lin.Ft. #8 Bar @ 2.670 Lbs./Lin.Ft. = 339 Lbs.
 Total = 525 Lbs.

SUMMARY ~ ABUTMENT 5
 279 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 186 Lbs.
 127 Lin.Ft. #8 Bar @ 2.670 Lbs./Lin.Ft. = 339 Lbs.
 Total = 525 Lbs.

Mark	No. Req'd	Length	Type	Dimensions	
				h	v
434	44	6'-3"	VIII		
701	36	5'-8"	Str.		

SUMMARY
 1004 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 670 Lbs.
 1006 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 670 Lbs.
 Total = 1340 Lbs.

SUMMARY
 275 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 184 Lbs.
 204 Lin.Ft. #7 Bar @ 2.044 Lbs./Lin.Ft. = 417 Lbs.
 363 Lin.Ft. #10 Bar @ 4.303 Lbs./Lin.Ft. = 1,562 Lbs.
 83 Lin.Ft. #11 Bar @ 5.313 Lbs./Lin.Ft. = 441 Lbs.
 Total = 2,604 Lbs.

Mark	No. Req'd	Length	Type	Dimensions	
				h	v
401	27	4'-8"	I	0'-10"	1'-2"
402	85	4'-4"	II	2'-2"	1'-1"
403	48	4'-10"	VI	0'-6"	1'-10"
404	32	6'-9"	II	1'-1"	2'-6"
405	36	6'-9"	I		2'-6"
406	20	6'-9"	I		2'-10"
407	16	7'-5"	I		3'-2"
408	16	6'-3"	I		3'-7"
409	16	9'-3"	I		4'-1"
410	40	9'-3"	I		4'-1"
411	40	6'-3"	I		3'-7"
412	40	7'-5"	I		3'-2"
413	24	6'-9"	I		2'-10"
414	32	6'-5"	I		2'-8"
415	120	6'-1"	I		2'-6"
416	40	6'-5"	I		2'-8"
417	24	7'-1"	I		3'-0"
418	40	7'-11"	I		3'-5"
419	40	8'-11"	I		3'-11"
420	40	10'-1"	I		4'-6"
421	16	9'-3"	I		4'-1"
422	16	8'-3"	I		3'-2"
423	16	7'-5"	I		2'-10"
424	20	6'-1"	I		2'-6"
425	16	6'-1"	I		2'-6"
426	16	5'-9"	II	1'-1"	2'-4"
429	60	11'-1"	VI	1'-9"	4'-4"
430	12	34'-4"	Str.		
431	8	9'-2"	II	1'-9"	3'-8"
432	4	10'-2"	II	1'-9"	4'-2"
433	30	12'-1"	VI	1'-9"	4'-10"

SUMMARY
 501 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 502 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 503 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 504 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 505 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 506 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 507 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 508 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 509 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 510 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 511 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 512 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 513 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 514 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 515 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.

SUMMARY
 801 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 802 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 803 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 806 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.
 807 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 334 Lbs.

Mark	No. Req'd	Length	Type	Dimensions	
				h	v
1106	8	25'-4"	Str.		
1107	24	15'-8"	VI	7'-10"	1'-3"
1108	24	21'-8"	VI	10'-10"	1'-6"
1109	8	28'-4"	Str.		
1110	32	12'-0"	Str.		
1111	24	22'-0"	Str.		
1112	8	32'-0"	Str.		
1113	16	37'-6"	Str.		
1114	16	43'-6"	Str.		
1115	8	26'-0"	Str.		
1116	8	58'-2"	Str.		
1117	8	21'-4"	Str.		
1118	8	24'-4"	Str.		

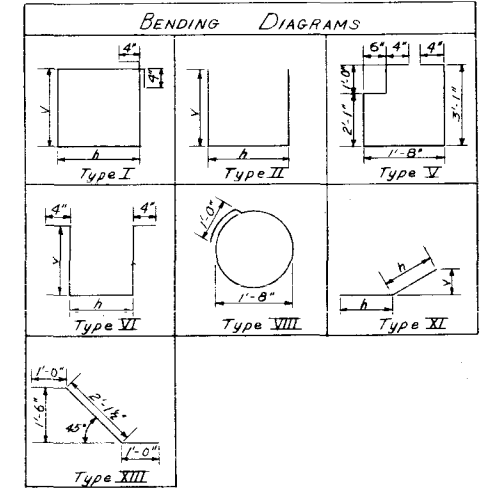
SUMMARY
 7610 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 5083 Lbs.
 34004 Lin.Ft. #5 Bar @ 1.043 Lbs./Lin.Ft. = 35466 Lbs.
 1154 Lin.Ft. #8 Bar @ 2.670 Lbs./Lin.Ft. = 4683 Lbs.
 936 Lin.Ft. #10 Bar @ 4.303 Lbs./Lin.Ft. = 4028 Lbs.
 6644 Lin.Ft. #11 Bar @ 5.313 Lbs./Lin.Ft. = 35300 Lbs.
 Total = 84,560 Lbs.

Mark	No. Req'd	Length	Type	Dimensions	
				h	v
434	46	6'-3"	VIII		
701	36	5'-8"	Str.		
1004	14	4'-9"	Str.		
1007	4	22'-4"	Str.		

SUMMARY
 285 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 192 Lbs.
 204 Lin.Ft. #7 Bar @ 2.044 Lbs./Lin.Ft. = 417 Lbs.
 379 Lin.Ft. #10 Bar @ 4.303 Lbs./Lin.Ft. = 1,631 Lbs.
 83 Lin.Ft. #11 Bar @ 5.313 Lbs./Lin.Ft. = 441 Lbs.
 Total = 2,681 Lbs.

Mark	No. Req'd	Length	Type	Dimensions	
				h	v
434	42	6'-3"	VIII		
701	36	5'-8"	Str.		

SUMMARY
 263 Lin.Ft. #4 Bar @ 0.668 Lbs./Lin.Ft. = 176 Lbs.
 204 Lin.Ft. #7 Bar @ 2.044 Lbs./Lin.Ft. = 417 Lbs.
 358 Lin.Ft. #10 Bar @ 4.303 Lbs./Lin.Ft. = 1,540 Lbs.
 83 Lin.Ft. #11 Bar @ 5.313 Lbs./Lin.Ft. = 441 Lbs.
 Total = 2,574 Lbs.



DESIGNED BY: G.S. SINGH
 CHECKED BY: R. SCHIFF
 DATE: 12/23/07
 QUANTITY BY: G.S. SINGH
 DATE: 12/23/07

DIVISION OF HIGHWAYS

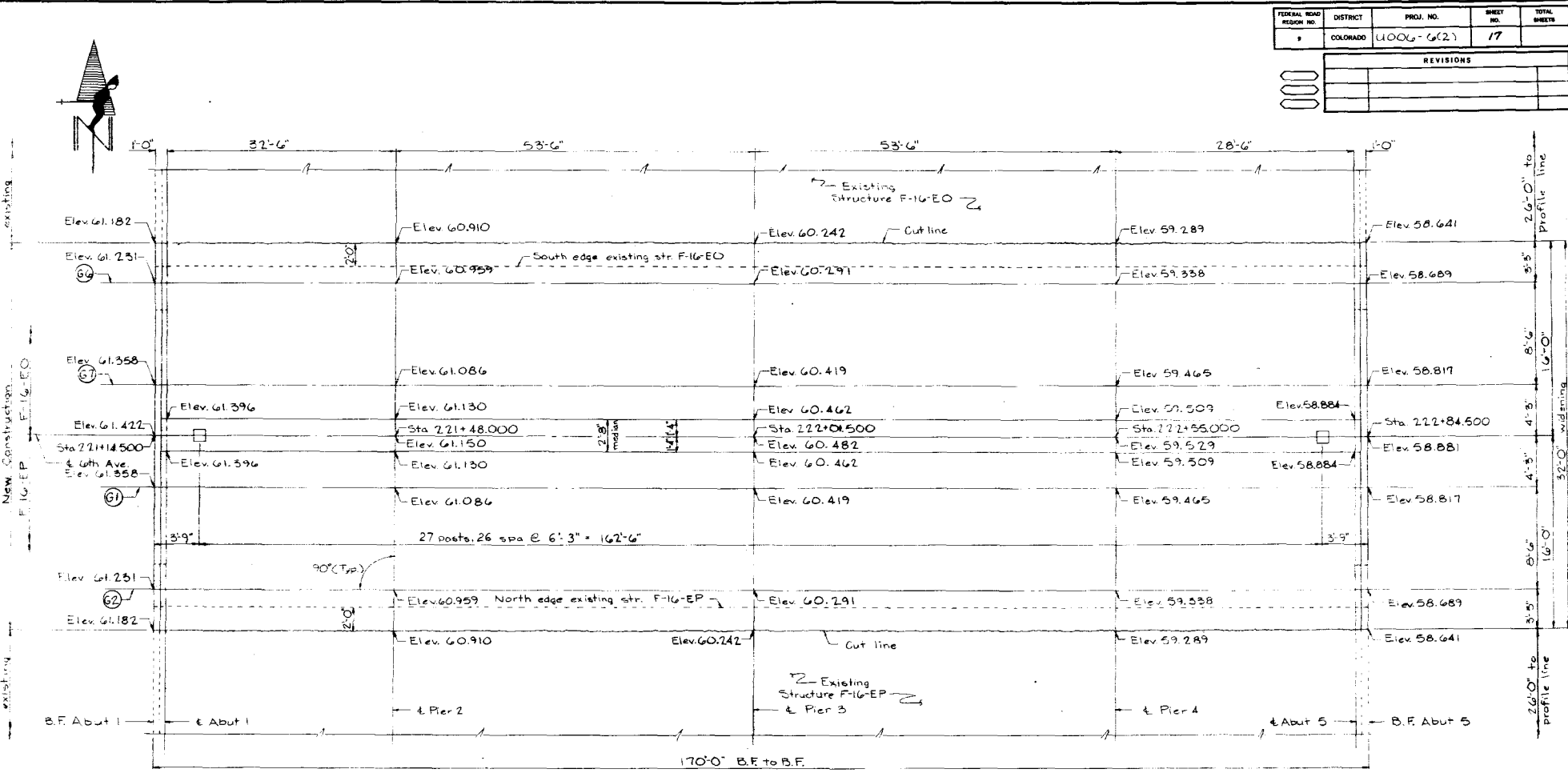
BAR LIST ~ BAR SUMMARY
 BENDING DIAGRAMS

Approved:	Designer: G. Singh	Checker: R. Schiff
Bridge Engineer	Structure Numbers: F-16-EQ	F-16-EP
Date:	DWG. No. B 6 OF 18	

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	4006-6(2)	17	

REVISIONS	

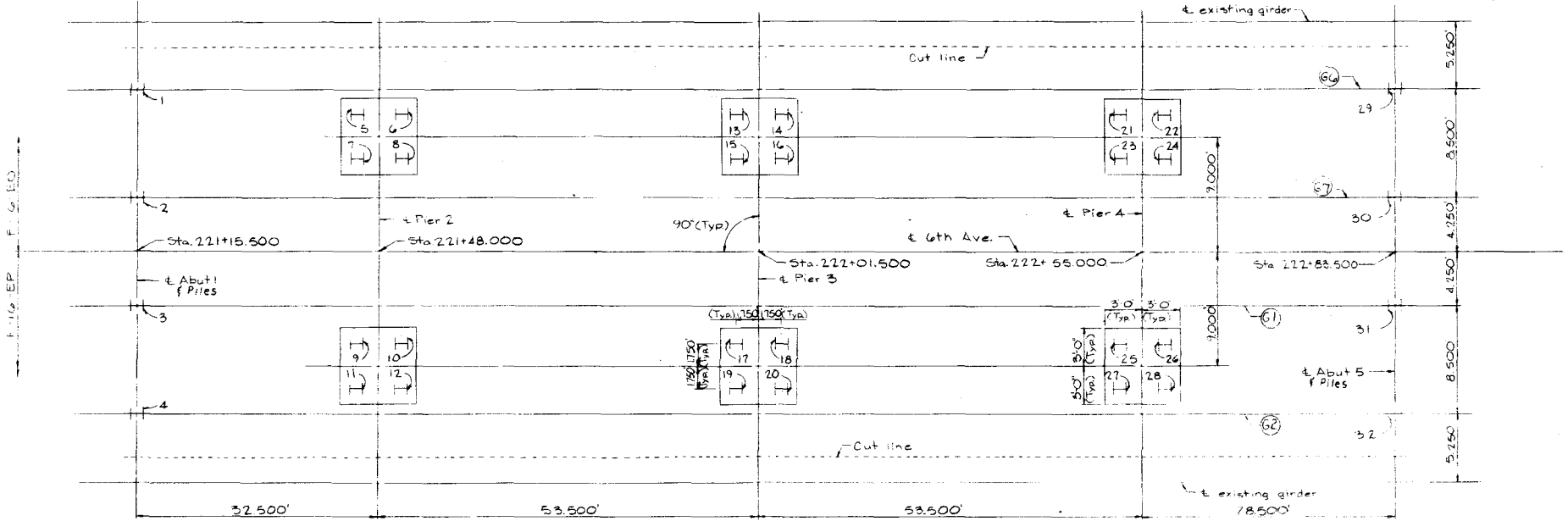
DESIGNED BY	DATE	SCALE
CHECKED BY		
APPROVED BY		



Notes
 Existing bridge rail and posts shall be dismantled from curbs. Salvaged bridge rail shall become property of the Colorado Division of Highways.
 Stations and elevations shown are calculated from the plans for existing structures F-16-EO and F-16-EP. These elevations may be adjusted to meet elevations of the existing structure.

DIVISION OF HIGHWAYS	
CONSTRUCTION LAYOUT	
Approved:	Designer: G. Singh / Detailer: T. Proctor
Structure:	F-16-EO W.B.
Bridge Engineer:	Numbers: F-16-EP E.D.
Date:	DWG. No. 8 7 OF 18

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	U00G-6(2)	18	
REVISIONS				



DESIGNED BY	DATE	APPROVED BY	DATE
CHANGED BY		DATE	
DETAILS BY			
CHECKED BY			
DATE			

PILE CUT-OFF	ELEVATIONS
Pile No.	Elevation
1	58.72
2	58.85
3	58.85
4	58.72
5 to 12	32.26
13 to 20	32.26
21 to 28	32.14
29	56.21
30	56.34
31	56.34
32	56.21

Notes
 All piling 10BP42
 Dimensions are at bottom of concrete.

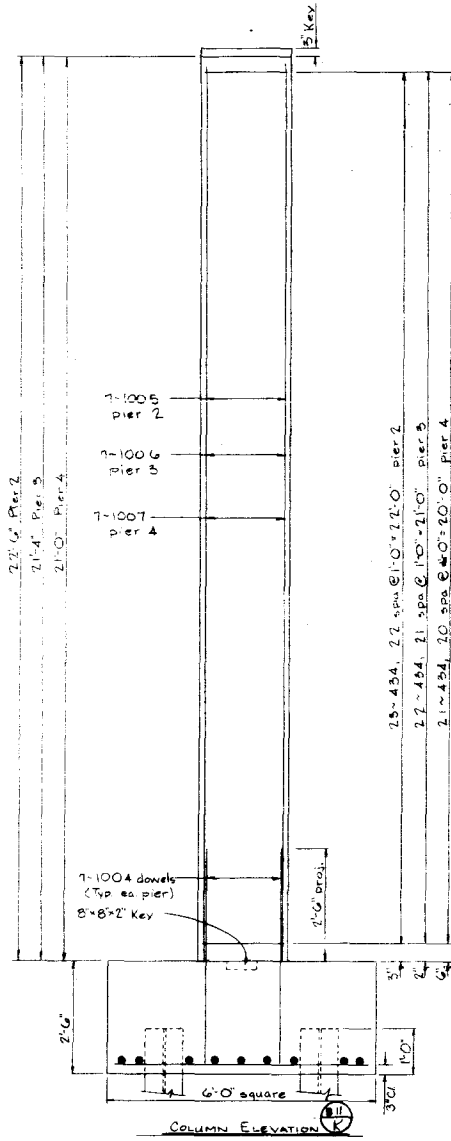
PILING AND FOOTING LAYOUT

DIVISION OF HIGHWAYS

PILING AND FOOTING LAYOUT

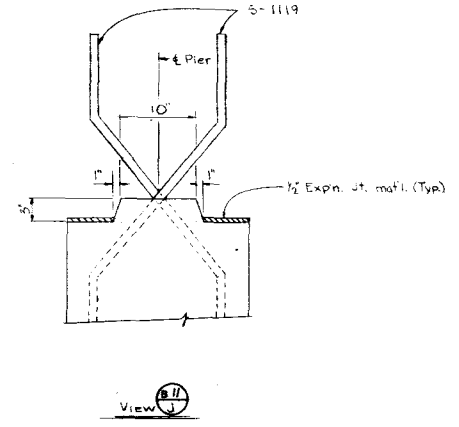
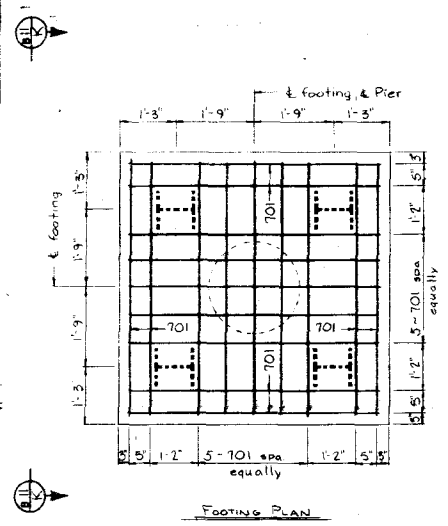
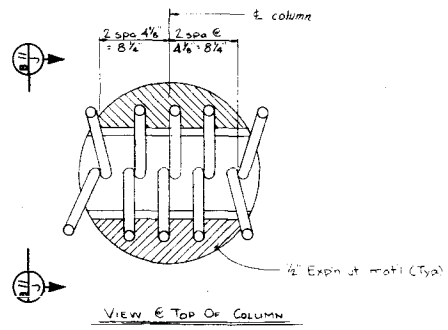
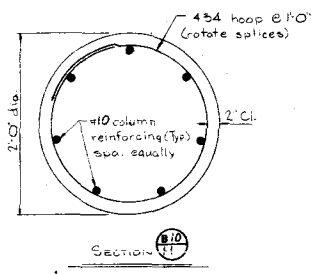
Approved:	Designer: G. Singh Detailer: T. Prasad
Structure Number:	F-16-EP W.B.
Bridge Engineer:	F-16-EP E.B.
Date:	DWG. No. 8 of 18

DESIGNED BY	CHKD BY	DATE	REVISED BY	DATE
W.S.	W.S.	1-27	W.S.	7-21
DESIGNED BY	CHKD BY	DATE	REVISED BY	DATE
W.S.	W.S.	1-27	W.S.	7-21



2'-0" pier 2
 2'-0" pier 3
 2'-0" pier 4

25-434, 22 sps @ 1'-0" = 22'-0" pier 2
 22-434, 21 sps @ 1'-0" = 21'-0" pier 3
 21-434, 20 sps @ 1'-0" = 20'-0" pier 4



FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	0006-6(2)	21	
REVISIONS				

Notes
 Max pile load = 50.5 tons

DIVISION OF HIGHWAYS

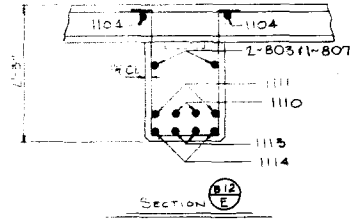
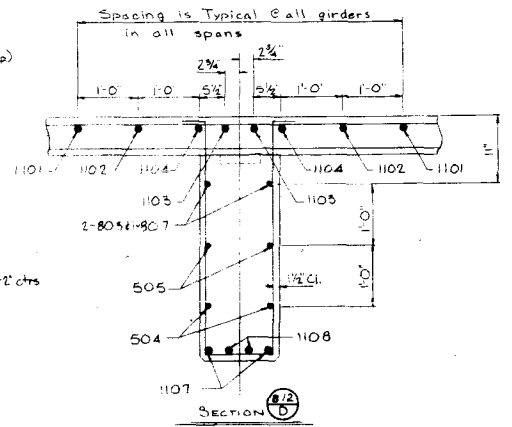
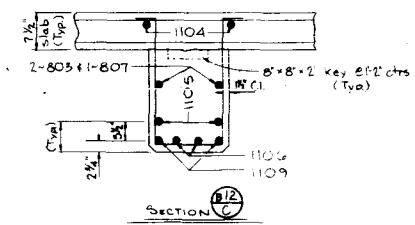
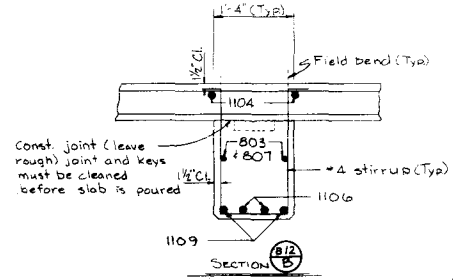
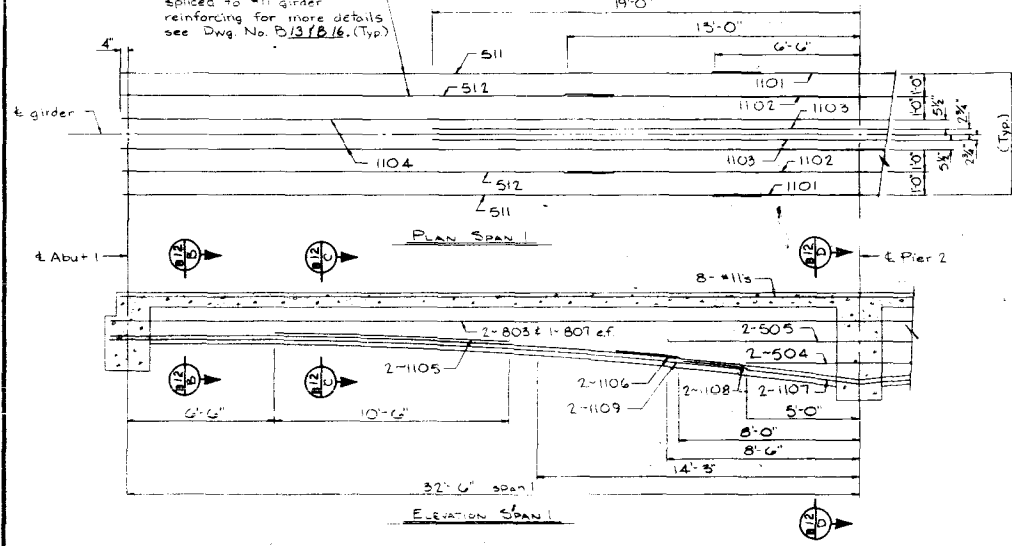
PIER DETAILS

Approved:	Designer: G. Singh	Checker: F. Greig
Bridge Engineer	Structure Number: F-16-EO W.B.	Date: F-16-EP E.B.
	DWG. No. 8	of 18

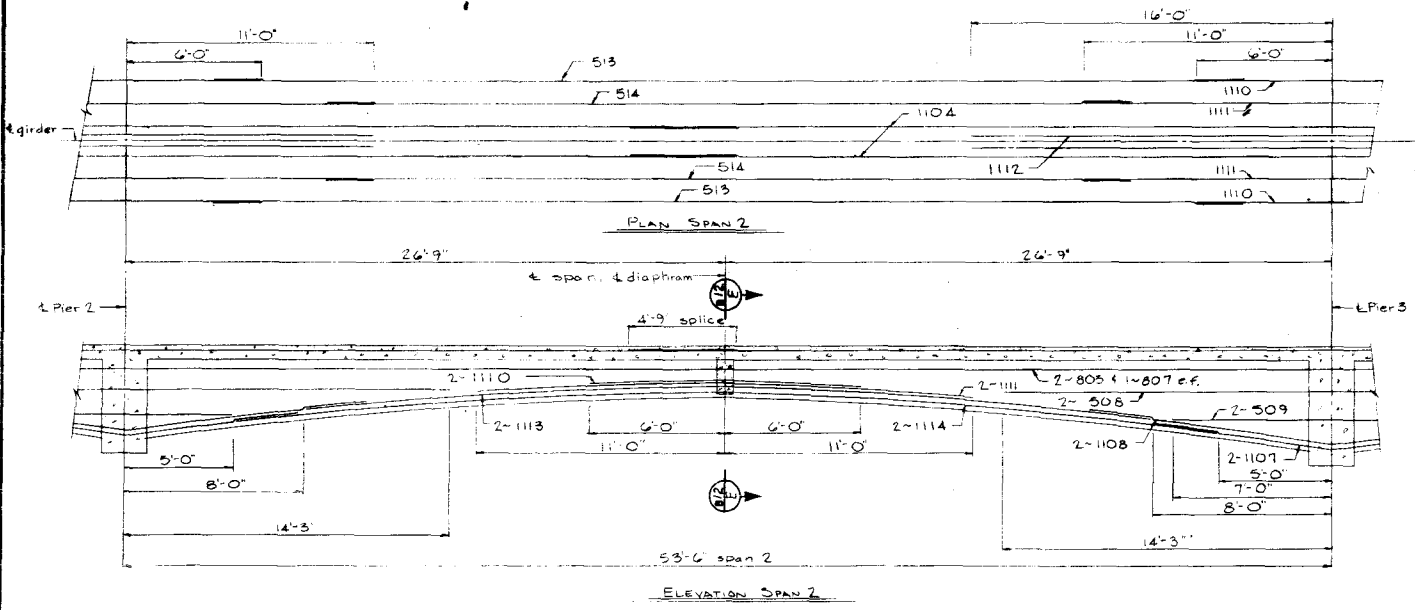
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	U006-6(2)	22	

REVISIONS	

*5 slab reinforcing to be spliced to #11 girder reinforcing for more details see Dwg. No. B.1318.18.(Typ)



Notes
 Girder shores shall remain in place full length in every span until all pours have reached min. strength of 2400 psi in that span. And the slab shall not be poured until the girder pours have reached a minimum strength of 2400 psi.
 For stirrup spacing see Dwg. No. B.14.

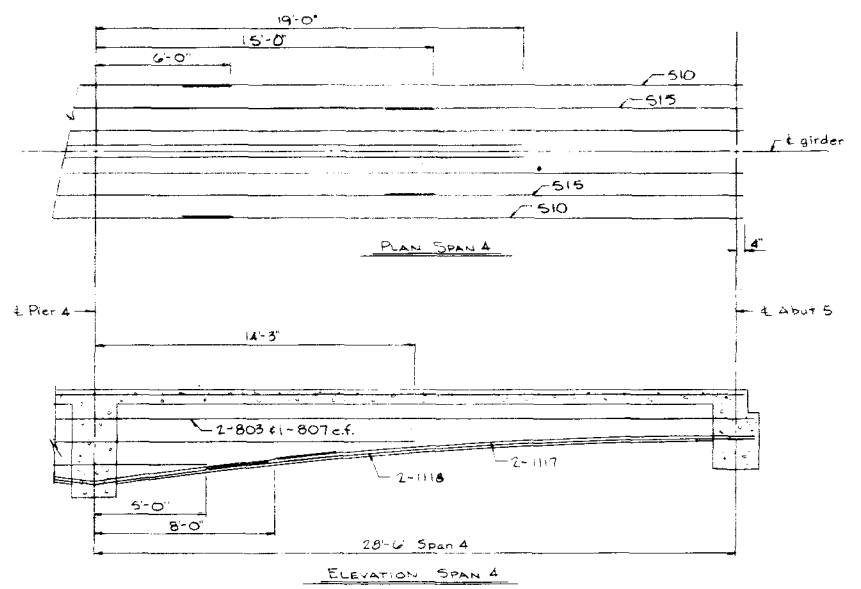
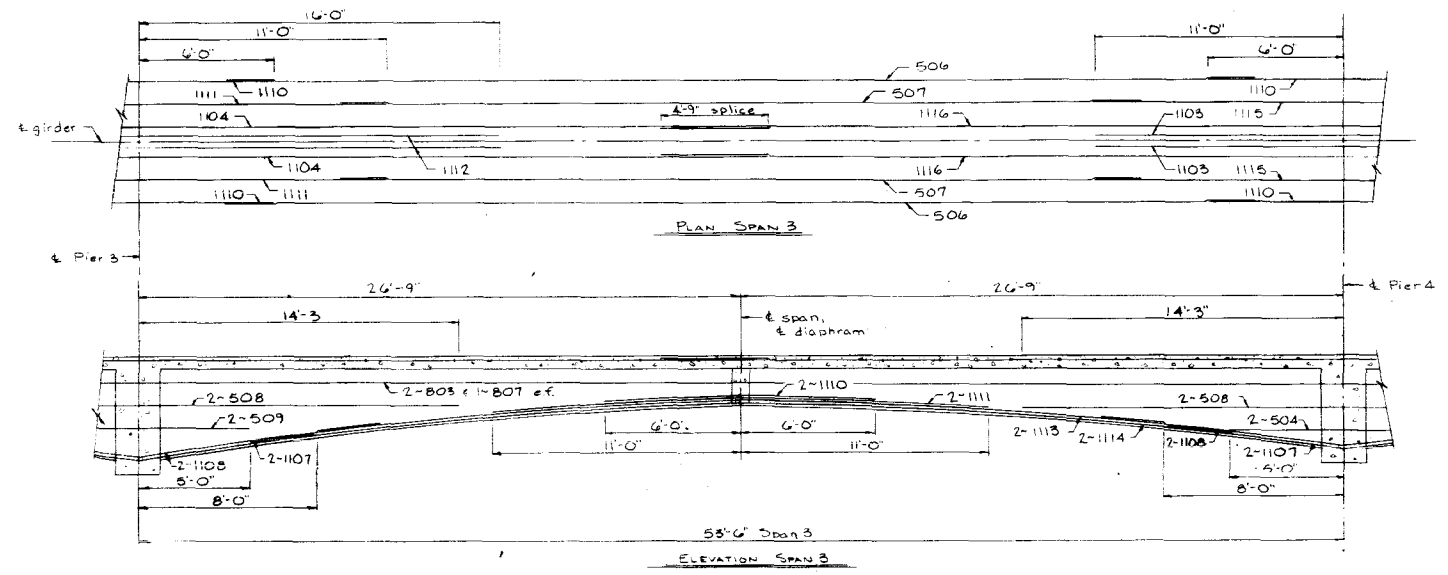


DIVISION OF HIGHWAYS	
GIRDER REINFORCING SPAN 1 TO 2	
Approved:	Designer: G. Singh Detailer: J. Breder
Structure Numbers:	F-16-EO W.B.
Bridge Engineer:	F-16-EP E.B.
Date:	DWG. No. B. 12 OF 18

DESIGNED BY	
CHECKED BY	
APPROVED BY	
DATE	

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	U006-6(2)	23	

REVISIONS	



DATE	BY	CHECKED BY	DATE	BY	CHECKED BY
1-11	G.S.	1-11	1-11	G.S.	1-11
2-11	E.C.R.	2-11	2-11	E.C.R.	2-11

For notes see Dwg No B.12.

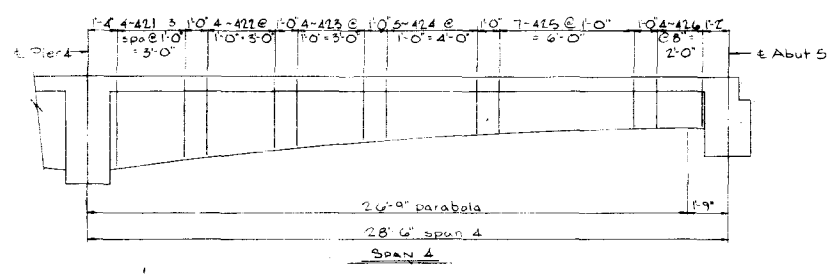
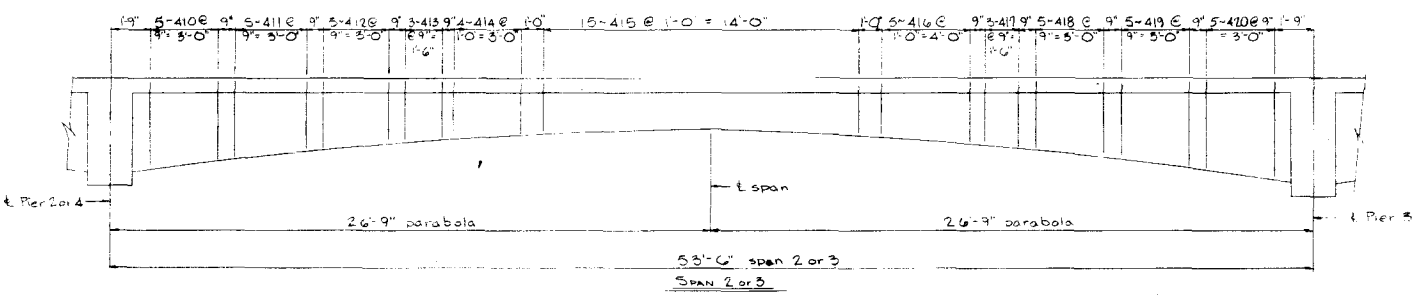
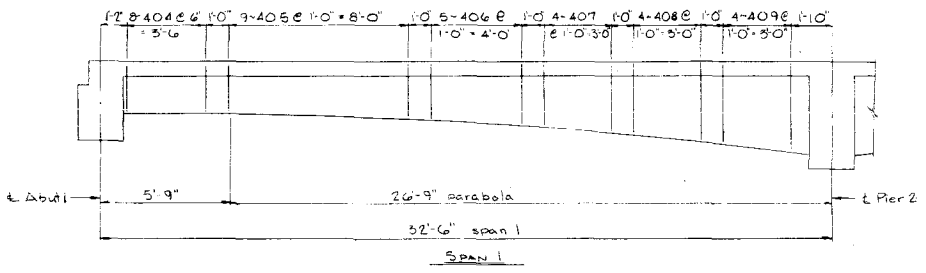
DIVISION OF HIGHWAYS

GIRDER REINFORCING
SPAN 3 AND 4

Approved: _____ Bridge Engineer	Designer: G. Singh Detailer: T. Breder Structure Numbers: F-16-EO W.B. F-16-EP E.B. Date: DWG No. 8 13 OF 18
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FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	1006-6(2)	24	

REVISIONS	



DESIGNED BY	DATE	CHECKED BY	DATE
QUANTITIES BY		APPROVED BY	
DRAWN BY			

DIVISION OF HIGHWAYS

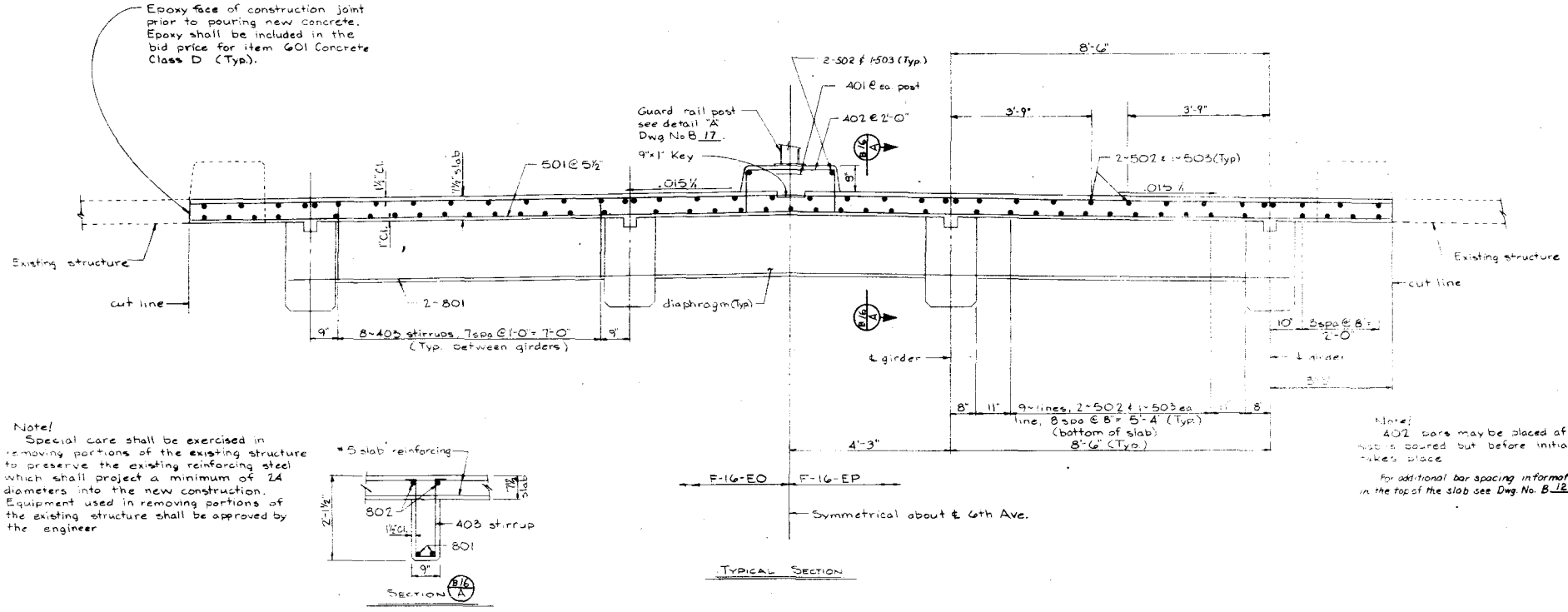
GIRDER STIRRUP SPACING

Approved:	Designer: G. Singh	Detailer: T. Breder
Bridge Engineer:	Structure Numbers: F-16-EO W.B.	
Date:	F-16-EP E.B.	
	DWG. No. B 14	OF 18

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	1006-6(2)	26	

REVISIONS	

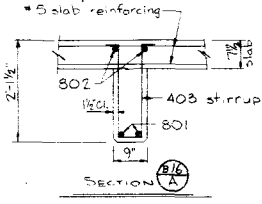
DATE	BY	REVISION



Epoxy face of construction joint prior to pouring new concrete. Epoxy shall be included in the bid price for item G01 Concrete Class D (Typ).

Note!
 Special care shall be exercised in removing portions of the existing structure to preserve the existing reinforcing steel which shall project a minimum of 24 diameters into the new construction. Equipment used in removing portions of the existing structure shall be approved by the engineer.

Note!
 402 bars may be placed after spalls poured but before initial set takes place.
 For additional bar spacing information in the top of the slab see Dwg. No. B.12.113.



TYPICAL SECTION

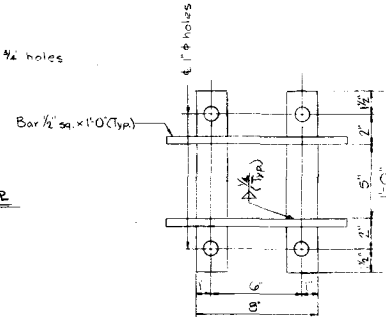
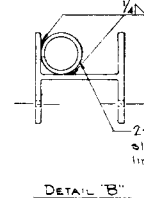
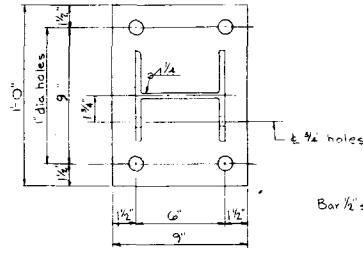
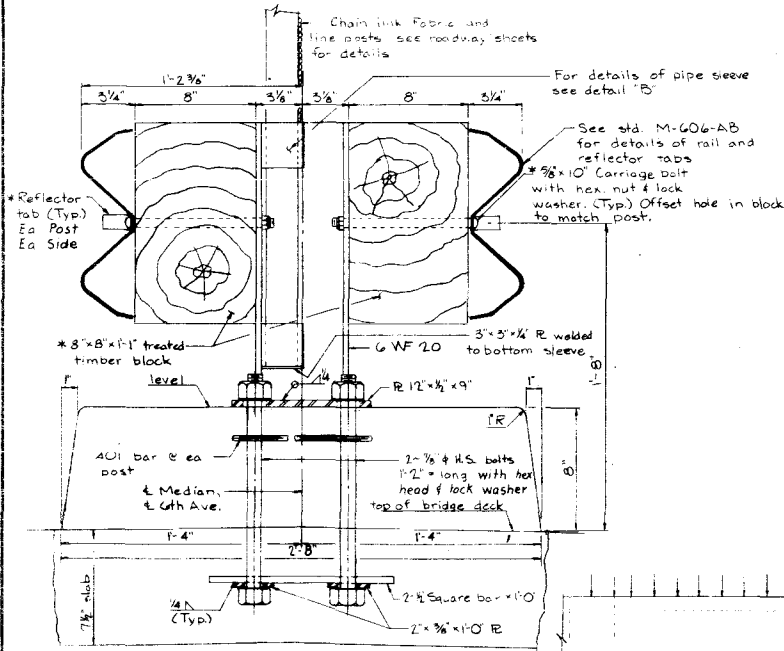
DIVISION OF HIGHWAYS

TYPICAL SECTION

Approved: _____ Bridge Engineer: _____ Date: _____	Designer: G. Singh Checker: J. Breder Structure: F-16-EO W.P. Number: F-16-EP E.B. DWG. No. 8 16 of 18
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FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	U006-6(2)	27	

REVISIONS	

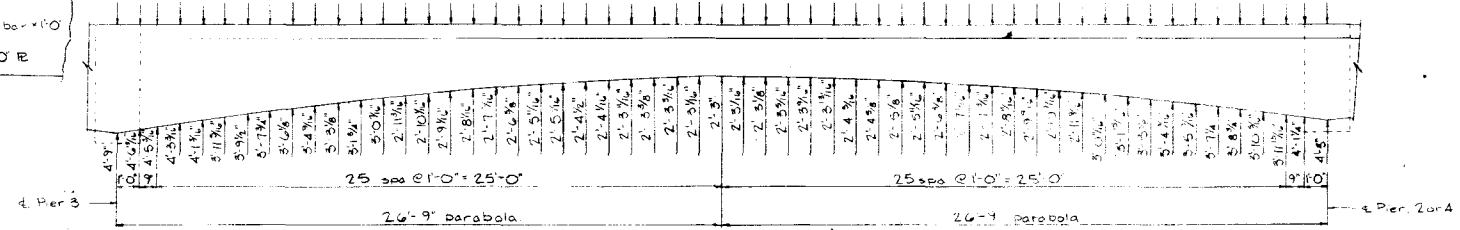


Notes
Posts shall be perpendicular to grade of deck.
All posts, clips anchor assemblies anchor bolts, nuts, and washers shall be galv after fabrication in accordance with the specifications.
Lap splices in direction of traffic.
Aluminum guard rail 0.125" thick will be an acceptable equivalent for steel guard rail.
* To be included in the bid price for item 606 Guard Rail, Type 3A (double).

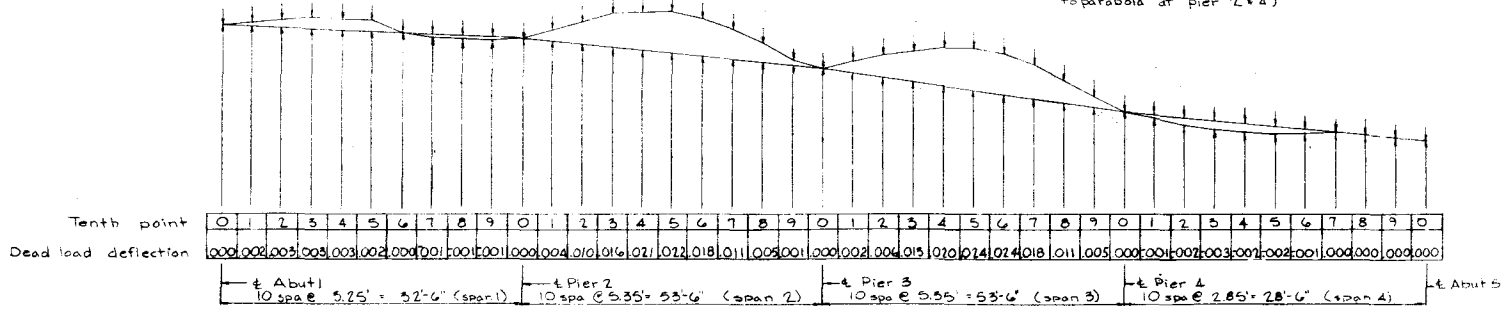
DATE	BY	DATE	BY

DETAIL 'A'

No. of Guardrail posts req'd = 27
No. of Guardrail pcs. 12'-6" long req'd = 26



PARABOLA DETAILS
(parabola for span and 4 similar to parabola at pier 2 & 4)



CAMBER DIAGRAM

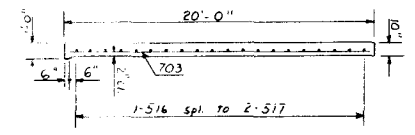
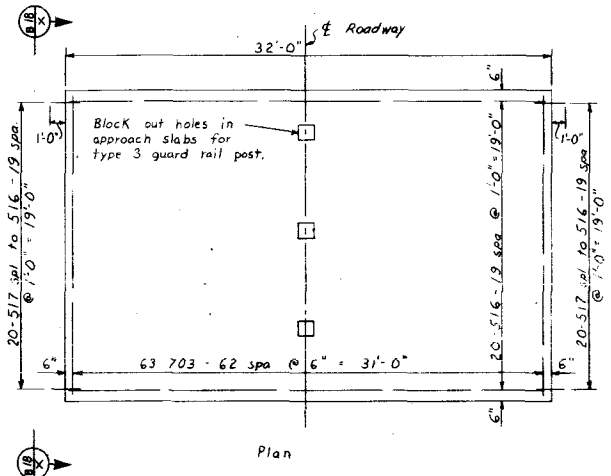
DIVISION OF HIGHWAYS	
MISCELLANEOUS DETAILS	
Approved:	Checked: G. Singh Drawn: J. Breder
Structure Number:	F-16-EQ-WB
Bridge Engineer:	F-16-EP-E.S.
Date:	DWG No. 8 17 of 18

FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 006-6(2)	28	
REVISIONS				

Mark	No. Req'd	Length	Type	Dimensions	
				h	v
516	40	31'-8"	Str.		
517	80	2'-5"	Str.		
703	126	19'-8"	Str.		
SUMMARY					
460 Lin Ft #5 Bar @ 1043 lbs./Lin.Ft = 1,523 Lbs.					
2,478 Lin Ft #7 Bar @ 2044 lbs./Lin.Ft = 5,065 Lbs.					
Total = 6,588 Lbs.					

Item No.	Description	Unit	Total
412	Concrete Pavement (10 inch)	Sq. Yd.	143
@02	Reinforcing Steel	Lb.	6,588

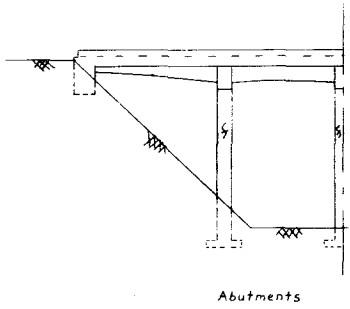
Concrete for approach slabs may be class A, D, or P.



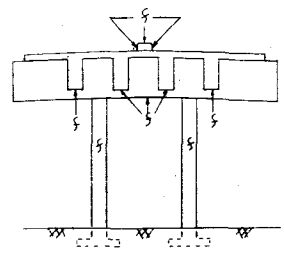
APPROACH SLAB DETAILS

Note
Drill and grout 517 bars into existing approach slab. All modifications of the existing approach slab to be included in the bid price for item No. 412 Concrete Pavement 10".

DATE	BY	CHECKED BY	DATE	BY	CHECKED BY
10-1-58	W.S.	10-1-58	10-1-58	W.S.	10-1-58
DESIGNED BY	W.S.	QUANTITIES BY	W.S.	DESIGNED BY	W.S.
CHECKED BY	R.V.C.	CHECKED BY	R.V.C.	CHECKED BY	R.V.C.



Abutments



Piers & Superstructure

SURFACE FINISH DETAILS

DIVISION OF HIGHWAYS			
APPROACH SLAB DETAILS			
SURFACE FINISH DETAILS			
BAR LIST - BAR SUMMARY 2 APP'R SLABS			
SUMMARY OF QUANTITIES 2 APP'R SLABS			
Approved:	Designer: G. Singh	Detailer: R. Gilliland	
Structure:	F-16-EO	W.B.	
Bridge Engineer:	Numbers: F-16-EP	E.B.	
Date:	DWG. No. B 18 OF 18		

GENERAL NOTES

ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE DIVISION OF HIGHWAYS, STATE OF COLORADO, APPLICABLE TO THE PROJECT.

EACH REINFORCING BAR SHALL BE TAGGED WITH BAR DESIGNATION, STRUCTURE NUMBER AND STATION OF THE PROJECT. THE FIRST DIGIT OF DIGITS, 4-11 OF THE REINFORCING BAR DESIGNATION INDICATES THE BAR SIZE. EXAMPLE: 406 = #4 BAR, 1103 = #11 BAR. ALL DIMENSIONS ON BAR BENDING DIAGRAM ARE OUT TO OUT. DIMENSIONS FOR REINFORCING BARS NOT SHOWN AS CLEAR SHALL BE TO THE CENTERLINE OF THE BAR. IF BY PERMISSION OF THE ENGINEER PRIMARY BARS ARE SPLICED, THEY SHALL LAP A MINIMUM OF 40 DIAMETERS.

ALL CONCRETE SURFACES MARKED WITH THE SYMBOL \int AS SHOWN ON DRAWING NO. B-5 SHALL RECEIVE A CLASS 2 SURFACE FINISH.

ALL CONCRETE CHAMBERS SHALL BE 3/4" UNLESS OTHERWISE NOTED.

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M 213-65 UNLESS OTHERWISE NOTED.

SOUNDINGS AND DEPTH OF FOOTINGS ARE IN ACCORDANCE WITH THE BEST AVAILABLE DATA. WHEN DIFFERENT CONDITIONS ARE ENCOUNTERED, THE BRIDGE ENGINEER WILL INSPECT AND DETERMINE IF REVISION IS NECESSARY.

WHEN TREATED TIMBER PILING IS SHOWN ON THE PLANS, THE PRESERVATIVE FOR TREATMENT SHALL BE CREOSOTE OIL.

WHEN EXCAVATING FOR FOOTINGS THE FINAL SIX INCHES IN DEPTH SHALL BE DONE BY HAND-LABOR METHODS.

FOR DETAILS OF STRUCTURE EXCAVATION AND STRUCTURE BACKFILL, SEE STANDARD M-206-A.

ALL STRUCTURAL STEEL NOT OTHERWISE NOTED SHALL BE AASHTO SPECIFICATION M-183.

ALL STRUCTURAL STEEL NOT OTHERWISE NOTED SHALL BE PAINTED IN ACCORDANCE WITH SECTION 509 FOR ALUMINUM PAINT.

ALL BOLTS SHALL BE 3/4" DIAMETER, HIGH STRENGTH, UNLESS OTHERWISE NOTED.

NO WELDING OF ANY KIND SHALL BE PERMITTED ON THE FLANGES OF STEEL GIRDEPS UNLESS SPECIFICALLY CALLED FOR ON THE PLANS.

ALL REINFORCING BAR SPLICES SHOWN IN THE SUPERSTRUCTURE SHALL HAVE A MINIMUM LAP OF 40 DIAMETERS UNLESS OTHERWISE NOTED. WHERE SPLICES CONTAIN BARS OF DIFFERENT DIAMETERS THE SPLICE LENGTH SHALL BE GOVERNED BY THE SMALLEST BAR.

THE FOLLOWING TABLE SHOWS THE MINIMUM 40 DIAMETER LAP FOR COMMON BAR SIZES.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
LAP	1'-0"	2'-10"	2'-6"	2'-11"	3'-4"	3'-10"	4'-3"	4'-9"

LOADING DATA

LIVELOAD: AASHTO HS-20-44 OR INTERSTATE ALTERNATE.
DEADLOAD: ASSUMES 20 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE (FUTURE)
NO PROVISION HAS BEEN MADE FOR ADDITIONAL OVERLAYS.

DESIGN DATA

AASHTO UNIT STRESSES EXCEPT AS NOTED.

REINFORCING STEEL:	GRADE 40	$F_s = 20,000$ LBS. PER SQ. IN.
	GRADE 60	$F_s = 24,000$ LBS. PER SQ. IN.
STRUCTURAL STEEL:	A 36	$F_s = 20,000$ LBS. PER SQ. IN.
	A 572 GRADE 50	$F_s = 27,000$ LBS. PER SQ. IN.
CONCRETE:	$F_c = 1,200$ LBS. PER SQ. IN.	$n = 10$

SUMMARY OF QUANTITIES

Item	Description	Unit	Super-struct	Abut. 1	Pier 2	Pier 3	Abut. 4	Total
202	Removal of Portions of Present Structure	Each						1
206	Structure Excavation	Cu. Yd.		14	22	25	14	75
208	Structure Backfill (Class 2)	Cu. Yd.		6	7	7	6	26
② 502	Steel Piling (10BP42)	Lin. Ft.		260	352	352	258	1220
509	Structural Steel	Lbs.	76040	341	178	171	341	78271
509	Structural Steel (Galvanized)	Lbs.	4517					4517
516	Dampproofing (Linseed oil)	Sq. Yd.	611					611
601	Concrete, Class A	Cu. Yd.		9	20	20	9	58
601	Concrete, Class D	Cu. Yd.		109				109
507	Concrete Slope & Ditch Paving (Rein)	Cu. Yd.		6			6	12
602	Reinforcing Steel	Lbs.	31262	1205	5443	5443	1205	44,558
506	Guard Rail Type 3A (Double)	Lin. Ft.	129					129
①	16 Gage Galvanized Sheet Metal	Sq. Ft.	260					260
①	1/2" Expansion Joint Material	Sq. Ft.	120					120

- ① To be included in the bid price for Item 601, Concrete Class A.
- ② 10W-45 May be used in lieu of 10BP42.
- ③ Includes 143 sq. yds. for two approach slabs.

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
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- B2 General Layout
- B3 Engineering Geology
- B4 Elevations
- B5 Bar List - Bar Summary - Bending Diagram - Surface Finish Details
- B6 Construction & Piling Layout
- B7 Details of Abutments
- B8 Pier Details
- B9 Superstructure Detail
- B10 Superstructure Sections
- B11 Details of Girder
- B12 Miscellaneous Details

VOID

LEGEND

- TOP FACE
- NEAR FACE
- FAR FACE
- BY EQUAL INCREMENTS
- CROSS REFERENCE DRAWING NUMBER
- SECTION OR DETAIL IDENTIFICATION

BRIDGE DESCRIPTION

3-Simple Spans (30'-0", 66'-0", 30'-0")
Concrete Slab and I-Beam - Span 1+3
Concrete Slab and Welded Steel Girder - Span 2

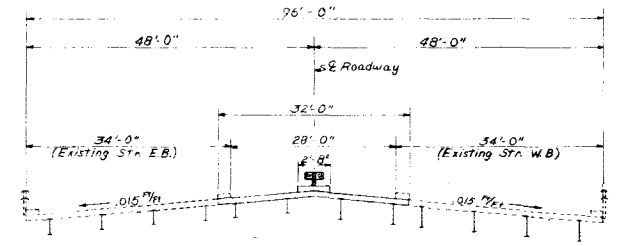
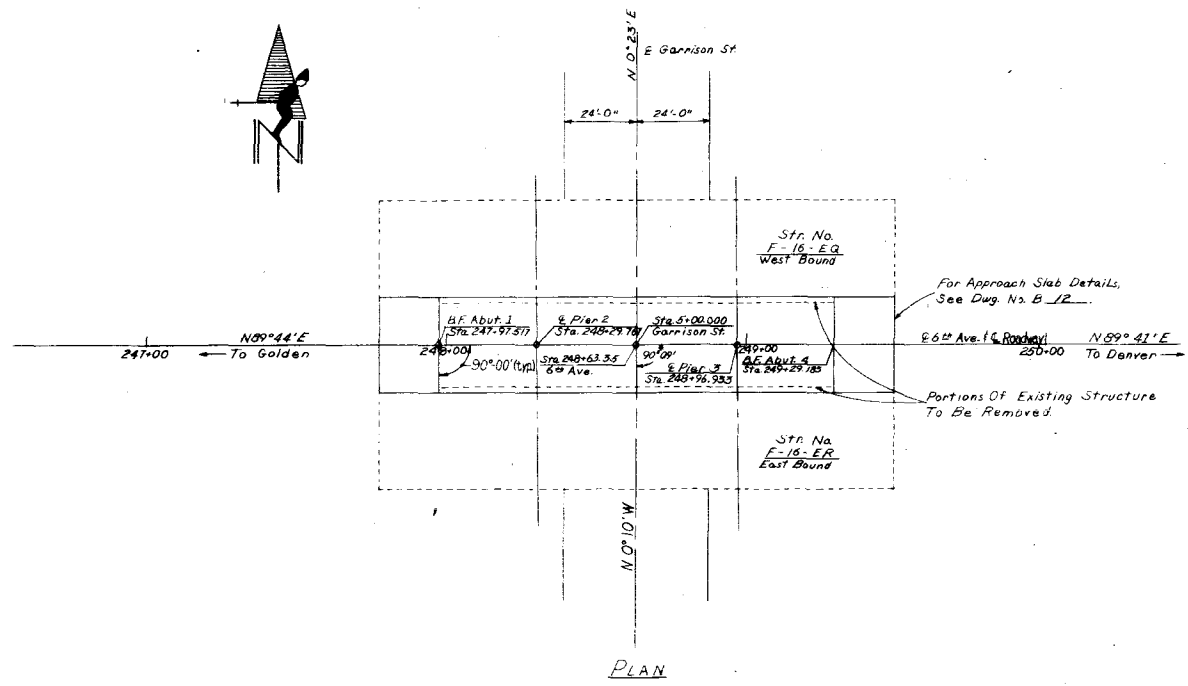
Over Existing St.
Approach to 92.0' Roadway, 90°00' Skew
Guard Rail Type 3A (Double)



DIVISION OF HIGHWAYS	
GENERAL INFORMATION	
SUMMARY OF QUANTITIES	
Station: 247+97.5:7 to 249+22.183	
Section: 2/10 T 45 R 69 W	
Approp'd: <i>Pruthi</i>	Designer: <i>G. Singh</i> / Detailer: <i>R. Schiff</i>
Structure Number: <i>F-16-EQ</i>	Bridge Number: <i>F-16-ER</i>
Date: <i>05/23/71</i>	DWG. No. <i>B-1</i> OF <i>12</i>

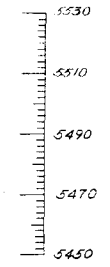
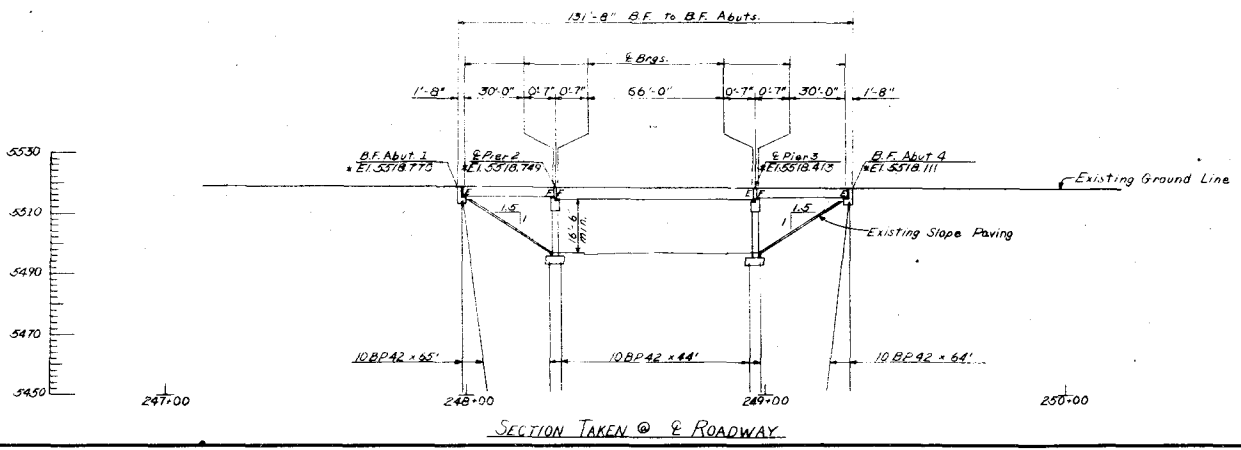
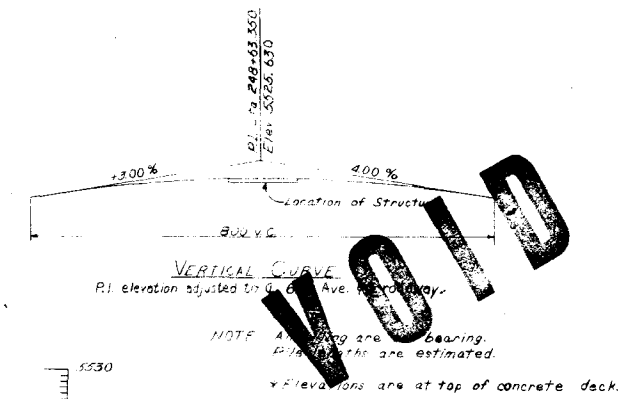
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	U006-6(2)	30	

REVISIONS	



TYPICAL SECTION

DESIGNED BY	CHECKED BY	DATE	APPROVED BY
G.S.	R.F.S.	12-78	G.S.
G.S.	R.F.S.	12-77	G.S.
G.S.	R.F.S.	12-77	G.S.



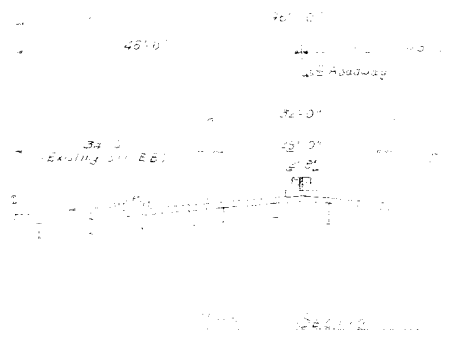
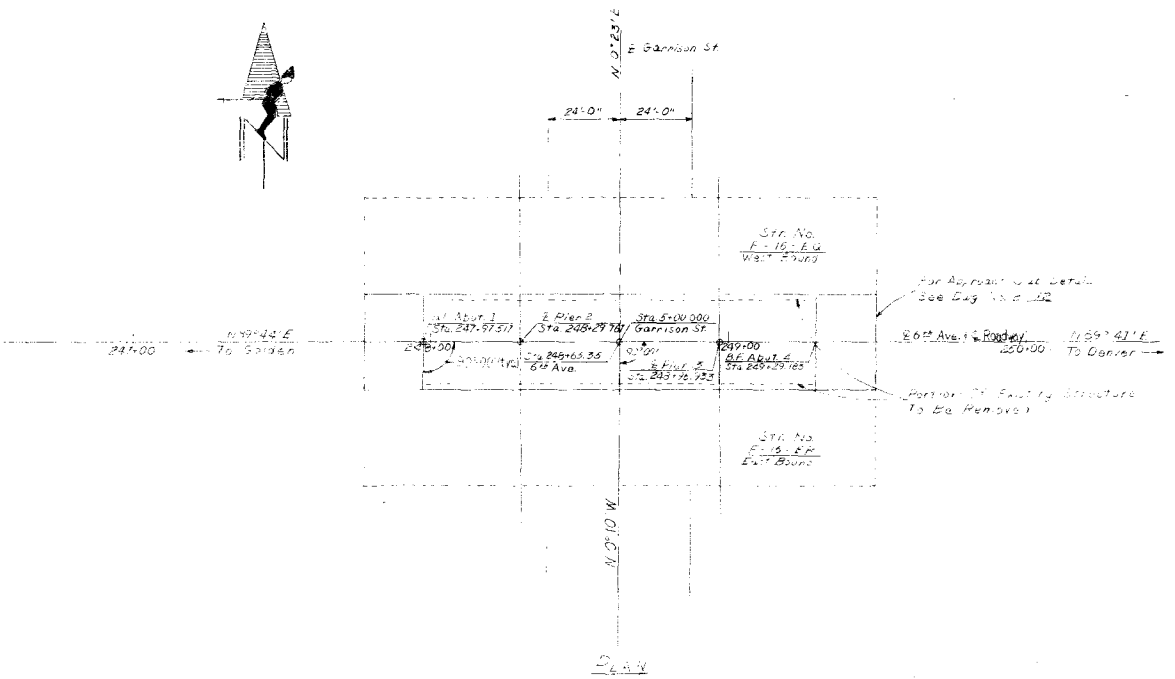
DIVISION OF HIGHWAYS

GENERAL LAYOUT

Approved:	Designer: G. Singh	Detailer: R. Schiff
Bridge Engineer:	Structure Numbers: F-16-EG	
Date:	Structure Numbers: F-16-ER	
	DWG. No. B 2 OF 12	

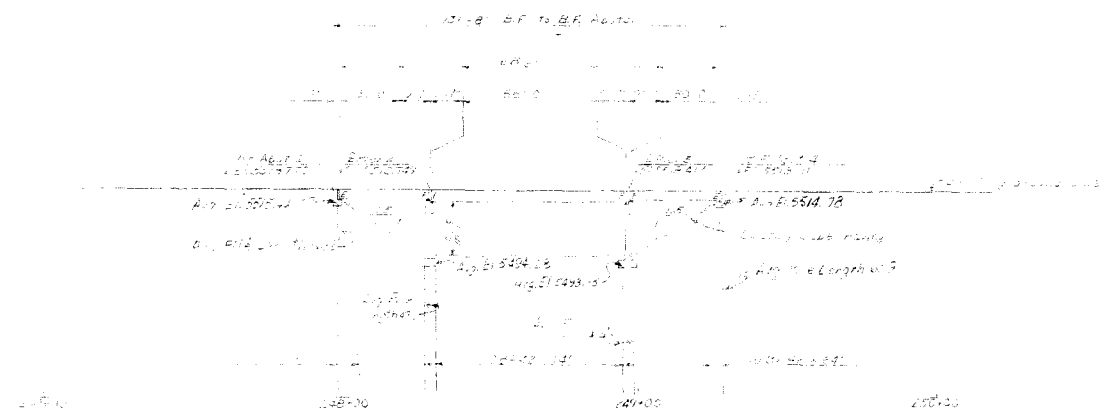
AS CONSTRUCTED
 GRADED

FEDERAL ROAD DISTRICT NO.	COUNTY	SECTION	POST MILE	STATION
1	COMAL	100	1.00	100+00



NO.	DATE	BY	REVISION
1	10/27/72	J. W. [unclear]	ISSUED FOR CONSTRUCTION
2	11/15/72	J. W. [unclear]	REVISED TO SHOW CHANGES

100+00
 100+10
 100+20
 100+30
 100+40
 100+50

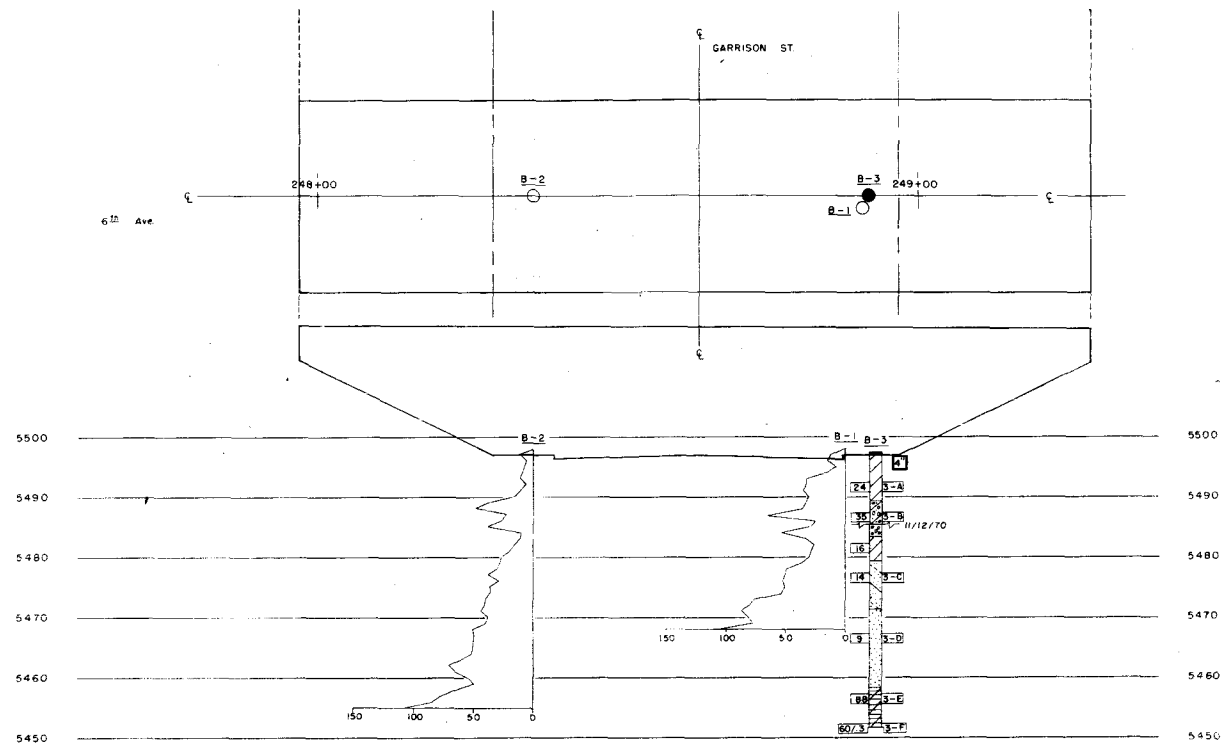


100+00
 100+10
 100+20
 100+30
 100+40
 100+50

NO.	DATE	BY	REVISION
1	10/27/72	J. W. [unclear]	ISSUED FOR CONSTRUCTION
2	11/15/72	J. W. [unclear]	REVISED TO SHOW CHANGES

F. H. SHAW
 12 CO. ROAD
 CA 114

FED. ROAD DIST. NO.	DIVISION	PROJECT NO.	SHEET NO.	TOTAL SHEETS
8	COLO.	U 006-6(2)	37	



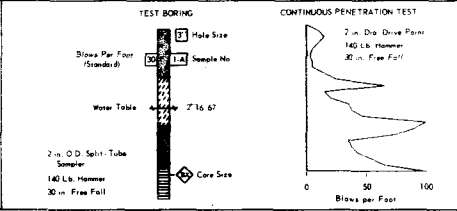
SUMMARY OF TEST RESULTS

Dist.	Depth	Class.	Grading Analysis		Atterberg Limits		Torsion Shear Strength		Cone	SPT
			Gravel	Coarse Sand	Liquid Limit	Plasticity Index	Unconf. Comp.	Conf. Comp.		
0-1.50	0-1.50	E-S SANDY CLAY A-7-6(2)	7	22	70	54	23	32	220	
0-8.00	1.5-8.00	CLAYEY SANDY GRAVEL A-2-6(1)	48	10	17	25	34	18	16	10.5
0-20.00	8.00-20.00	SANDY CLAY A-6(5)	9	9	33	49	38	22	16	30.0
0-30.00	20.00-30.00	SILTY SAND -2-4(1)	15	24	41	20	NV	NP	25.5	
0-40.00	30.00-40.00	CLAYSTONE A-7-5(3)	0	0	10	90	68	39	29	32.8
0-45.00	40.00-45.00	CLAYSTONE A-7-6(2)	0	0	10	90	47	27	20	30.0, 125.7, 7.00

TYPE OF MATERIAL

- CLAY
- SAND
- GRAVEL
- ASPHALT
- CLAYSTONE
- SAND, SILTY & CLAYEY
- GRAVELLY CLAY, SANDY

LEGEND



- Location of Test Boring
- Location of Continuous Penetration Test
- Drive Ring
- Auger Boring
- Core Boring

**DEPARTMENT OF HIGHWAYS
 STATE OF COLORADO**

ENGINEERING GEOLOGY

Across GARRISON ST. ST. NO. (F-16-EQ)
 No. 248 To 249 (F-16-ER)
 Near LAKEWOOD Sec. T R
 Geologist K. W. B. Approved by
 Made by D. K. D. Bridge Engineer
 Checked by G. C. P. Date 10

STRUCTURE NO. E-16-EQ, F-16-ER
 DWG NO. B-3 OF 12

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	U006-6(2)	32	

REVISIONS	

PROJ NO U006-6(2)
STR NO
F-16-EQ
E-LEADER
INPUT KE AND WRA
JAN 13 1971

INPUT DATA FOR BRIDGE F-16-ED

PDF = 248 - 63.3500 ALPHA = 0 0 0.00 RMY = 32.0000 GB = 3.0000
PT = 248 - 63.3500 EPI = 5525.6300 VC = 800.0000
TYPE = 2 SLOPE = .0150

TENTH POINTS

CL E BRG PIER 1
CL W BRG PIER 2

STATION	ELEVATION	
247 + 99.1833	5518.5307	
1 10TH	248 + 2.1833	5618.6383
2 10TH	248 + 5.1833	5518.5327
3 10TH	248 + 8.1833	5518.5318
4 10TH	248 + 11.1833	5518.5318
5 10TH	248 + 14.1833	5518.5318
6 10TH	248 + 17.1833	5518.5276
7 10TH	248 + 20.1833	5518.5263
8 10TH	248 + 23.1833	5518.5263
9 10TH	248 + 26.1833	5518.5154
STA AHEAD	248 + 29.1833	5518.5098

CL E BRG PIER 2
CL W BRG PIER 3

STATION	ELEVATION	
248 + 30.3500	5518.5074	
1 10TH	248 + 36.9500	5518.4915
2 10TH	248 + 43.5500	5518.4718
3 10TH	248 + 50.1500	5518.4484
4 10TH	248 + 56.7500	5518.4211
5 10TH	248 + 63.3500	5518.3908
6 10TH	248 + 69.9500	5518.3551
7 10TH	248 + 76.5500	5518.3164
8 10TH	248 + 83.1500	5518.2738
9 10TH	248 + 89.7500	5518.2275
STA AHEAD	248 + 96.3500	5518.1774

CL E BRG PIER 3
CL BRG ABUT 4

STATION	ELEVATION	
248 + 97.5167	5518.1681	
1 10TH	249 + .5167	5518.1437
2 10TH	249 + 3.5167	5518.1186
3 10TH	249 + 6.5167	5518.0924
4 10TH	249 + 9.5167	5518.0659
5 10TH	249 + 12.5167	5518.0388
6 10TH	249 + 15.5167	5518.0111
7 10TH	249 + 18.5167	5517.9810
8 10TH	249 + 21.5167	5517.9511
9 10TH	249 + 24.5167	5517.9255
STA AHEAD	249 + 27.5167	5517.8899

CL GIRDER 1

STA BACK	ELEVATION	
247 + 99.1833	5518.5757	
1 10TH	248 + 2.1833	5618.5771
2 10TH	248 + 5.1833	5518.5778
3 10TH	248 + 8.1833	5518.5777
4 10TH	248 + 11.1833	5518.5768
5 10TH	248 + 14.1833	5518.5751
6 10TH	248 + 17.1833	5518.5726
7 10TH	248 + 20.1833	5518.5693
8 10TH	248 + 23.1833	5518.5664
9 10TH	248 + 26.1833	5518.5604
STA AHEAD	248 + 29.1833	5518.5548

CL GIRDER 1

STA BACK	ELEVATION	
248 + 30.3500	5518.5524	
1 10TH	248 + 36.9500	5518.5365
2 10TH	248 + 43.5500	5518.5168
3 10TH	248 + 50.1500	5518.4934
4 10TH	248 + 56.7500	5518.4661
5 10TH	248 + 63.3500	5518.4358
6 10TH	248 + 69.9500	5518.4001
7 10TH	248 + 76.5500	5518.3614
8 10TH	248 + 83.1500	5518.3188
9 10TH	248 + 89.7500	5518.2725
STA AHEAD	248 + 96.3500	5518.2224

CL GIRDER 1

STA BACK	ELEVATION	
248 + 97.5167	5518.2131	
1 10TH	249 + .5167	5518.1887
2 10TH	249 + 3.5167	5518.1636
3 10TH	249 + 6.5167	5518.1376
4 10TH	249 + 9.5167	5518.1110
5 10TH	249 + 12.5167	5518.0834
6 10TH	249 + 15.5167	5518.0551
7 10TH	249 + 18.5167	5518.0264
8 10TH	249 + 21.5167	5517.9961
9 10TH	249 + 24.5167	5517.9655
STA AHEAD	249 + 27.5167	5517.9348

CL GIRDER 2

STA BACK	ELEVATION	
247 + 99.1833	5618.7055	
1 10TH	248 + 2.1833	5518.7071
2 10TH	248 + 5.1833	5518.7078
3 10TH	248 + 8.1833	5518.7077
4 10TH	248 + 11.1833	5518.7068
5 10TH	248 + 14.1833	5518.7051
6 10TH	248 + 17.1833	5518.7026
7 10TH	248 + 20.1833	5518.6993
8 10TH	248 + 23.1833	5518.6964
9 10TH	248 + 26.1833	5518.6804
STA AHEAD	248 + 29.1833	5518.6648

CL GIRDER 2

STA BACK	ELEVATION	
248 + 30.3500	5518.6824	
1 10TH	248 + 36.9500	5518.6665
2 10TH	248 + 43.5500	5518.6468
3 10TH	248 + 50.1500	5518.6234
4 10TH	248 + 56.7500	5518.5961
5 10TH	248 + 63.3500	5518.5658
6 10TH	248 + 69.9500	5518.5301
7 10TH	248 + 76.5500	5518.4914
8 10TH	248 + 83.1500	5518.4488
9 10TH	248 + 89.7500	5518.4025
STA AHEAD	248 + 96.3500	5518.3524

CL GIRDER 2

STA BACK	ELEVATION	
248 + 97.5167	5518.2631	
1 10TH	249 + .5167	5518.2387
2 10TH	249 + 3.5167	5518.2136
3 10TH	249 + 6.5167	5518.1876
4 10TH	249 + 9.5167	5518.1610
5 10TH	249 + 12.5167	5518.1344
6 10TH	249 + 15.5167	5518.1067
7 10TH	249 + 18.5167	5518.0789
8 10TH	249 + 21.5167	5518.0511
9 10TH	249 + 24.5167	5518.0234
STA AHEAD	249 + 27.5167	5518.0000

CL MEDIAN

STA BACK	ELEVATION	
247 + 99.1833	5518.7787	
1 10TH	248 + 2.1833	5518.7721
2 10TH	248 + 5.1833	5518.7728
3 10TH	248 + 8.1833	5518.7727
4 10TH	248 + 11.1833	5518.7718
5 10TH	248 + 14.1833	5518.7701
6 10TH	248 + 17.1833	5518.7676
7 10TH	248 + 20.1833	5518.7643
8 10TH	248 + 23.1833	5518.7614
9 10TH	248 + 26.1833	5518.7554
STA AHEAD	248 + 29.1833	5518.7498

CL MEDIAN

STA BACK	ELEVATION	
248 + 30.3500	5518.7474	
1 10TH	248 + 36.9500	5518.7315
2 10TH	248 + 43.5500	5518.7118
3 10TH	248 + 50.1500	5518.6884
4 10TH	248 + 56.7500	5518.6611
5 10TH	248 + 63.3500	5518.6308
6 10TH	248 + 69.9500	5518.5951
7 10TH	248 + 76.5500	5518.5564
8 10TH	248 + 83.1500	5518.5138
9 10TH	248 + 89.7500	5518.4675
STA AHEAD	248 + 96.3500	5518.4174

CL MEDIAN

STA BACK	ELEVATION	
248 + 97.5167	5518.4401	
1 10TH	249 + .5167	5518.4207
2 10TH	249 + 3.5167	5518.4000
3 10TH	249 + 6.5167	5518.3734
4 10TH	249 + 9.5167	5518.3468
5 10TH	249 + 12.5167	5518.3191
6 10TH	249 + 15.5167	5518.2914
7 10TH	249 + 18.5167	5518.2637
8 10TH	249 + 21.5167	5518.2360
9 10TH	249 + 24.5167	5518.2083
STA AHEAD	249 + 27.5167	5518.1806

CL GIRDER 3

STA BACK	ELEVATION	
247 + 99.1833	5618.7997	
1 10TH	248 + 2.1833	5518.7971
2 10TH	248 + 5.1833	5518.7978
3 10TH	248 + 8.1833	5518.7977
4 10TH	248 + 11.1833	5518.7968
5 10TH	248 + 14.1833	5518.7951
6 10TH	248 + 17.1833	5518.7926
7 10TH	248 + 20.1833	5518.7893
8 10TH	248 + 23.1833	5518.7864
9 10TH	248 + 26.1833	5518.7804
STA AHEAD	248 + 29.1833	5518.7748

CL GIRDER 3

STA BACK	ELEVATION	
248 + 30.3500	5518.6824	
1 10TH	248 + 36.9500	5518.6665
2 10TH	248 + 43.5500	5518.6468
3 10TH	248 + 50.1500	5518.6234
4 10TH	248 + 56.7500	5518.5961
5 10TH	248 + 63.3500	5518.5658
6 10TH	248 + 69.9500	5518.5301
7 10TH	248 + 76.5500	5518.4914
8 10TH	248 + 83.1500	5518.4488
9 10TH	248 + 89.7500	5518.4025
STA AHEAD	248 + 96.3500	5518.3524

CL GIRDER 3

STA BACK	ELEVATION	
248 + 97.5167	5518.3431	
1 10TH	249 + .5167	5518.3187
2 10TH	249 + 3.5167	5518.2936
3 10TH	249 + 6.5167	5518.2676
4 10TH	249 + 9.5167	5518.2410
5 10TH	249 + 12.5167	5518.2144
6 10TH	249 + 15.5167	5518.1867
7 10TH	249 + 18.5167	5518.1590
8 10TH	249 + 21.5167	5518.1313
9 10TH	249 + 24.5167	5518.1036
STA AHEAD	249 + 27.5167	5518.0760

CL GIRDER 4

STA BACK	ELEVATION	
247 + 99.1833	5518.5757	
1 10TH	248 + 2.1833	5518.5771
2 10TH	248 + 5.1833	5518.5778
3 10TH	248 + 8.1833	5518.5777
4 10TH	248 + 11.1833	5518.5768
5 10TH	248 + 14.1833	5518.5751
6 10TH	248 + 17.1833	5518.5726
7 10TH	248 + 20.1833	5518.5693
8 10TH	248 + 23.1833	5518.5664
9 10TH	248 + 26.1833	5518.5604
STA AHEAD	248 + 29.1833	5518.5548

CL GIRDER 4

STA BACK	ELEVATION	
248 + 30.3500	5518.5524	
1 10TH	248 + 36.9500	5518.5365
2 10TH	248 + 43.5500	5518.5168
3 10TH	248 + 50.1500	5518.4934
4 10TH	248 + 56.7500	5518.4661
5 10TH	248 + 63.3500	5518.4358
6 10TH	248 + 69.9500	5518.4001
7 10TH	248 + 76.5500	5518.3614
8 10TH	248 + 83.1500	5518.3188
9 10TH	248 + 89.7500	5518.2725
STA AHEAD	248 + 96.3500	5518.2224

CL GIRDER 4

STA BACK	ELEVATION	
248 + 97.5167	5518.2131	
1 10TH	249 + .5167	5518.1887
2 10TH	249 + 3.5167	5518.1636
3 10TH	249 + 6.5167	5518.1376
4 10TH	249 + 9.5167	5518.1110
5 10TH	249 + 12.5167	5518.0834
6 10TH	249 + 15.5167	5518.0551
7 10TH	249 + 18.5167	5518.0264
8 10TH	249 + 21.5167	5517.9961
9 10TH	249 + 24.5167	5517.9655
STA AHEAD	249 + 27.5167	5517.9348

S CUT LINE

STA BACK	ELEVATION	
247 + 99.1833	5518.5387	
1 10TH	248 + 2.1833	5518.5321
2 10TH	248 + 5.1833	5518.5328
3 10TH	248 + 8.1833	5518.5327
4 10TH	248 + 11.1833	5518.5318
5 10TH	248 + 14.1833	5518.5301
6 10TH	248 + 17.1833	5518.5276
7 10TH	248 + 20.1833	5518.5243
8 10TH	248 + 23.1833	5518.5202
9 10TH	248 + 26.1833	5518.5154
STA AHEAD	248 + 29.1833	5518.5098

S CUT LINE

STA BACK

FEDERAL ROAD DISTRICT NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	U006-6(2)	33	

REVISIONS				

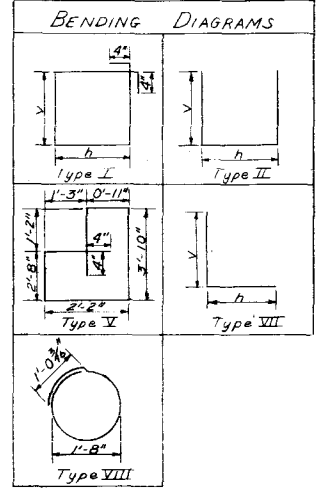
BAR LIST ~ ABUT. 1 & 4

Mark	No. Req'd	Length	Type	Dimensions h v
404	41	7'-0"	II	0'-8" 3'-2"
405	41	8'-6"	I	2'-4" 1'-7"
406	6	32'-0"	Str.	
501	2	32'-0"	Str.	
601	32	1'-6"	Str.	
801	6	32'-0"	Str.	

BAR LIST ~ PIER 2 & 3 (CONT)

SUMMARY ~ PIER 3

263 Lin Ft. #4 Bar @ 0.568 Lbs./Lin Ft. = 176 Lbs.
 614 Lin Ft. #5 Bar @ 1.043 Lbs./Lin Ft. = 640 Lbs.
 260 Lin Ft. #7 Bar @ 2.044 Lbs./Lin Ft. = 531 Lbs.
 771 Lin Ft. #11 Bar @ 5.313 Lbs./Lin Ft. = 4096 Lbs.
 Total = 5443 Lbs.



BAR LIST ~ SUPERSTRUCTURE

Mark	No. Req'd	Length	Type	Dimensions h v
407	66	4'-3"	II	2'-3" 1'-0"
408	24	4'-8"	I	1'-0" 1'-0"
502	702	31'-11"	Str.	
503	70	31'-8"	Str.	
504	74	30'-0"	Str.	
505	74	39'-0"	Str.	

SUMMARY ~ ABUT. 1

828 Lin Ft. #4 Bar @ 0.668 Lbs./Lin Ft. = 553 Lbs.
 64 Lin Ft. #5 Bar @ 1.043 Lbs./Lin Ft. = 67 Lbs.
 48 Lin Ft. #6 Bar @ 1.502 Lbs./Lin Ft. = 72 Lbs.
 92 Lin Ft. #8 Bar @ 2.670 Lbs./Lin Ft. = 513 Lbs.
 Total = 1205 Lbs.

SUMMARY ~ ABUT. 4

828 Lin Ft. #4 Bar @ 0.668 Lbs./Lin Ft. = 553 Lbs.
 64 Lin Ft. #5 Bar @ 1.043 Lbs./Lin Ft. = 67 Lbs.
 48 Lin Ft. #6 Bar @ 1.502 Lbs./Lin Ft. = 72 Lbs.
 192 Lin Ft. #8 Bar @ 2.670 Lbs./Lin Ft. = 513 Lbs.
 Total = 1205 Lbs.

SUMMARY

385 Lin Ft. #4 Bar @ 0.668 Lbs./Lin Ft. = 256 Lbs.
 29,728 Lin Ft. #5 Bar @ 1.043 Lbs./Lin Ft. = 31,006 Lbs.
 Total = 31,262 Lbs.

*** BAR LIST ~ 2 APPROACH SLABS**

Mark	No. Req'd	Length	Type	Dimensions h v
506	40	31'-8"	Str.	
507	80	2'-5"	Str.	
703	126	19'-8"	Str.	

SUMMARY

1460 Lin Ft. #5 Bar @ 1.043 Lbs./Lin Ft. = 1523 Lbs.
 2478 Lin Ft. #7 Bar @ 2.044 Lbs./Lin Ft. = 5065 Lbs.
 Total = 6588 Lbs.

* To be included in roadway quantities.

*** SUMMARY OF QUANTITIES
 2 APPROACH SLABS**

Item No.	Description	Unit	Total
412	Concrete Pavement (10 inch)	Sq Yd	143
602	Reinforcing Steel	Lb	6,588

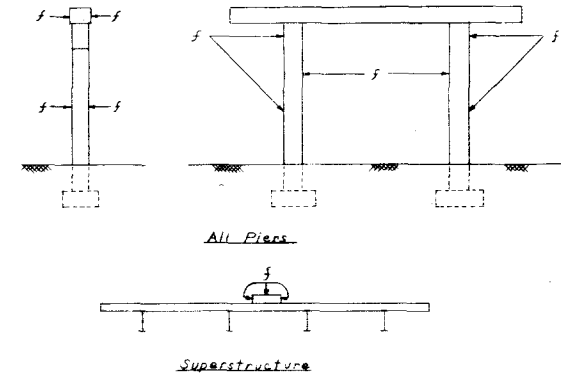
Concrete for approach slabs may be class A, D, or P.

BAR LIST ~ PIER 2 & 3

Mark	No. Req'd	Length	Type	Dimensions h v
401	42	6'-3"	VIII	
508	2	28'-2"	Str.	
509	44	12'-8"	V	
701	36	5'-8"	Str.	
702	2	28'-2"	Str.	
1101	20	16'-10"	Str.	
1102	20	6'-2"	VII	1'-5" 4'-9"
1103	5	20'-0"	Str.	
1104	6	28'-2"	Str.	
1105	4	10'-6"	Str.	

SUMMARY ~ PIER 2

263 Lin Ft. #4 Bar @ 0.568 Lbs./Lin Ft. = 176 Lbs.
 614 Lin Ft. #5 Bar @ 1.043 Lbs./Lin Ft. = 640 Lbs.
 260 Lin Ft. #7 Bar @ 2.044 Lbs./Lin Ft. = 531 Lbs.
 771 Lin Ft. #11 Bar @ 5.313 Lbs./Lin Ft. = 4096 Lbs.
 Total = 5443 Lbs.



SURFACE FINISH DETAILS
 (Details showing portions of structure to receive Class 2 surface finish)

DIVISION OF HIGHWAYS

BAR LIST ~ BAR SUMMARY
 BENDING DIAGRAMS
 SURFACE FINISH DETAILS

Approved: _____ Designer: G. Singh | Drafter: R. Smith
 Structure Number: F-16-EQ
 Bridge Engineer: _____
 Date: _____ DWG. No. 8 5 OF 12

CHECKED BY: [Signature] DATE: [Date]
 QUANTITIES BY: [Signature] DATE: [Date]
 CHECKED BY: [Signature] DATE: [Date]
 QUANTITIES BY: [Signature] DATE: [Date]

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 006-6 (2)	34	

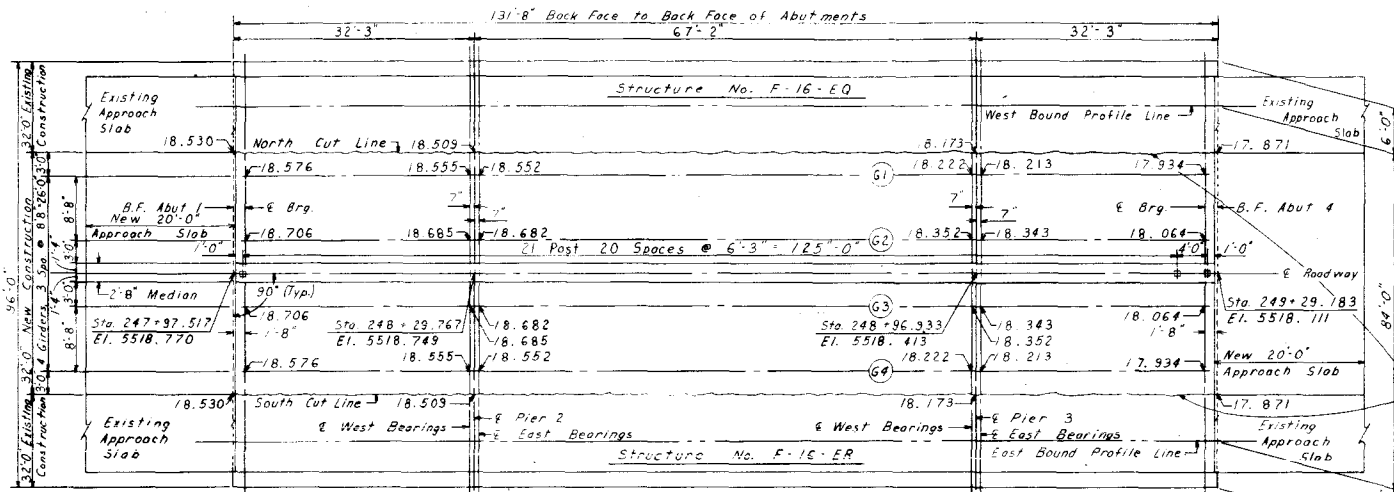
REVISIONS	



Cut lines - Coat surfaces with epoxy bonding material. Epoxy shall be included in the bid price for Item 601 Concrete Class D.

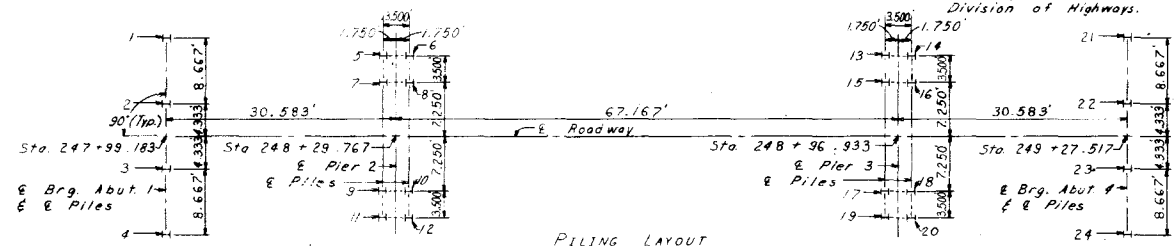
CUTOFF ELEVATIONS OF PILING

No.	Elevation	No.	Elevation
1	5514.34	13	5493.95
2	5514.37	14	
3	5514.37	15	
4	5514.24	16	
5	5494.28	17	
6		18	
7		19	
8		20	5493.95
9		21	5513.58
10		22	5513.71
11		23	5513.71
12	5494.28	24	5513.58



CONSTRUCTION LAYOUT

Notes:
 All elevations shown are at top of concrete deck.
 Structure Number F-16-EQ is similar to Structure Number F-16-ER except as noted.
 Stations and Elevations shown are calculated from "As Constructed Plans" for Structure No. F-16-EQ & F-16-ER. These elevations may be adjusted to meet elevations of the Existing Structures.
 Salvaged material shall become the property of the Colorado Division of Highways.



PILING LAYOUT

Notes:
 Piling numbered 1, 4, 21 and 24 are to be battered 2:12.
 The piling dimensions shown are at the bottom of the concrete.
 All pilings are 10 BP 42. Maximum piling load = 32 tons at Abutments and 54 tons at Piers.

DIVISION OF HIGHWAYS

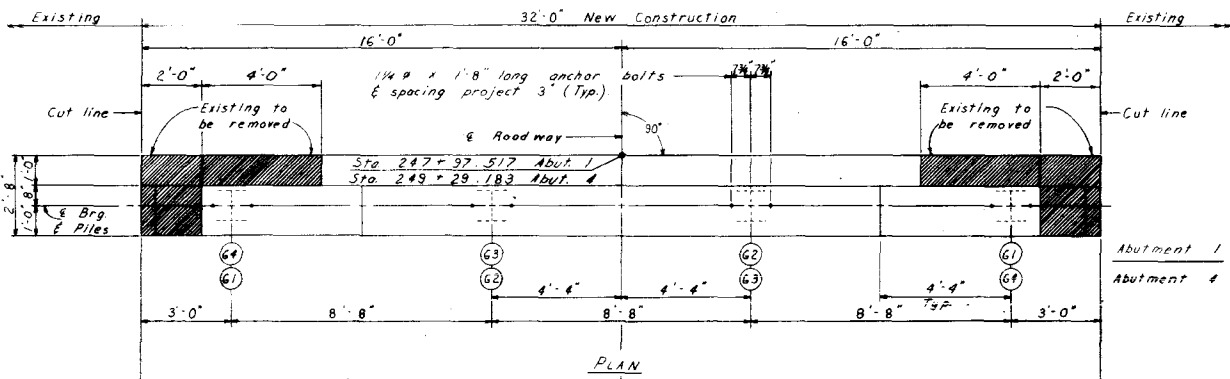
CONSTRUCTION & PILING LAYOUT

Approved:	Designer: G. Singh	Designer: K. Sharpley
Bridge Engineer:	Structure Number:	F-16-EQ
Date:	DWG. No. B. G.	OF 12

DESIGNED BY	DATE	CHECKED BY	DATE
QUANTITIES BY			

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	U 006-6 (2)	35	

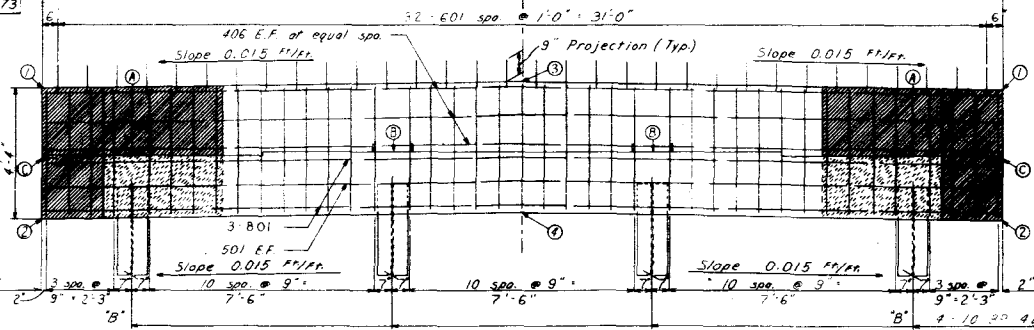
REVISIONS				



PLAN

Table of Elevations

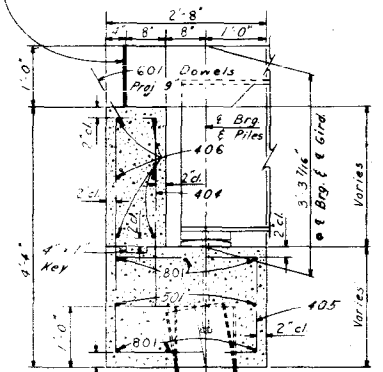
Location	Point	Abut 1	Abut 4
Back Face of Abut	①	5517.530	5516.871
	②	5513.196	5512.538
	③	5517.770	5517.111
Brig. Seats	④	5513.436	5512.778
	⑤	5515.289	5514.648
	⑥	5515.419	5514.778
	⑦	5515.214	5514.573



ELEVATION

ABUTMENT 1
(Abutment 4 Same except as noted)

1/2" Exp'n. Jt. Material nailed in place. Tool corners, set 1" below concrete surface and fill with poured mastic joint filler.



SECTION THRU ABUTMENT

DIVISION OF HIGHWAYS

DETAILS OF ABUTMENTS

Approved:	Designer: <i>S. Singh</i>	Checker: <i>N. Sharpley</i>
Bridge Engineer:	Structure Numbers: <i>F-16, E.O.</i>	<i>F-16, E.R.</i>
Date:	DWG. No. <i>87</i> OF <i>12</i>	

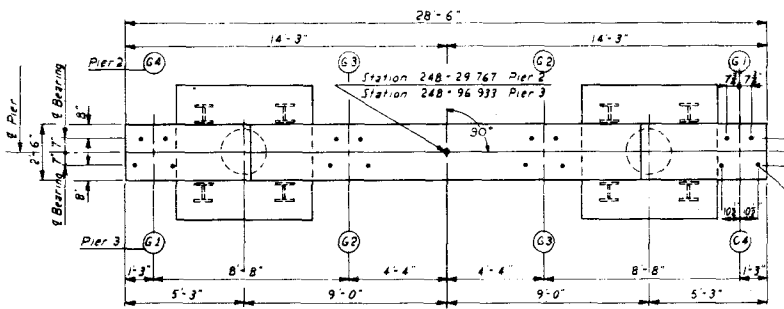
1-10 #2 @ 42" required of each abutment, spaced as shown. Better piles marked "B" at 2:12. Maximum pile loading = 32 Tons.

ELEVATIONS TABLE						
ELEVATION	A	B	C	D	E	F
Pier 2	15,198	15,206	14,245	14,115	14,115	5492.26
Pier 3	5,057	4,927	3,915	3,785	10,785	5492.95

Base elevation 5500

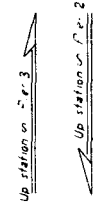
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 066-6(2)	36	

REVISIONS	

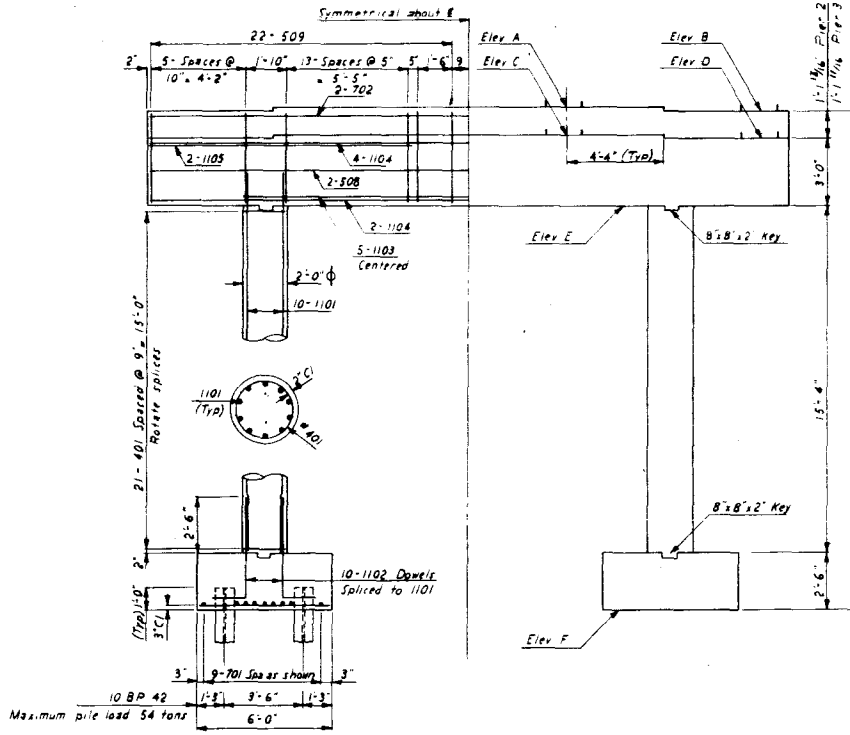


PLAN OF PIER

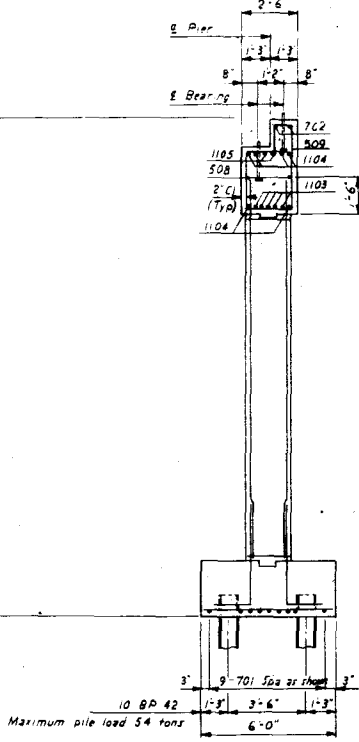
1 1/2" ϕ x 18" Anchor bolt (Typ)
 (Project 3)



INITIAL	DATE	CHECKED BY	DATE	QUANTITY BY	DATE	QUANTITY BY	DATE



ELEVATION OF PIER



TYPICAL SECTION THRU PIER

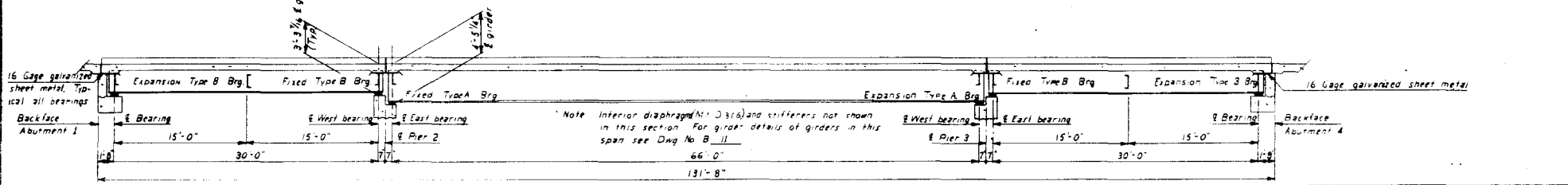
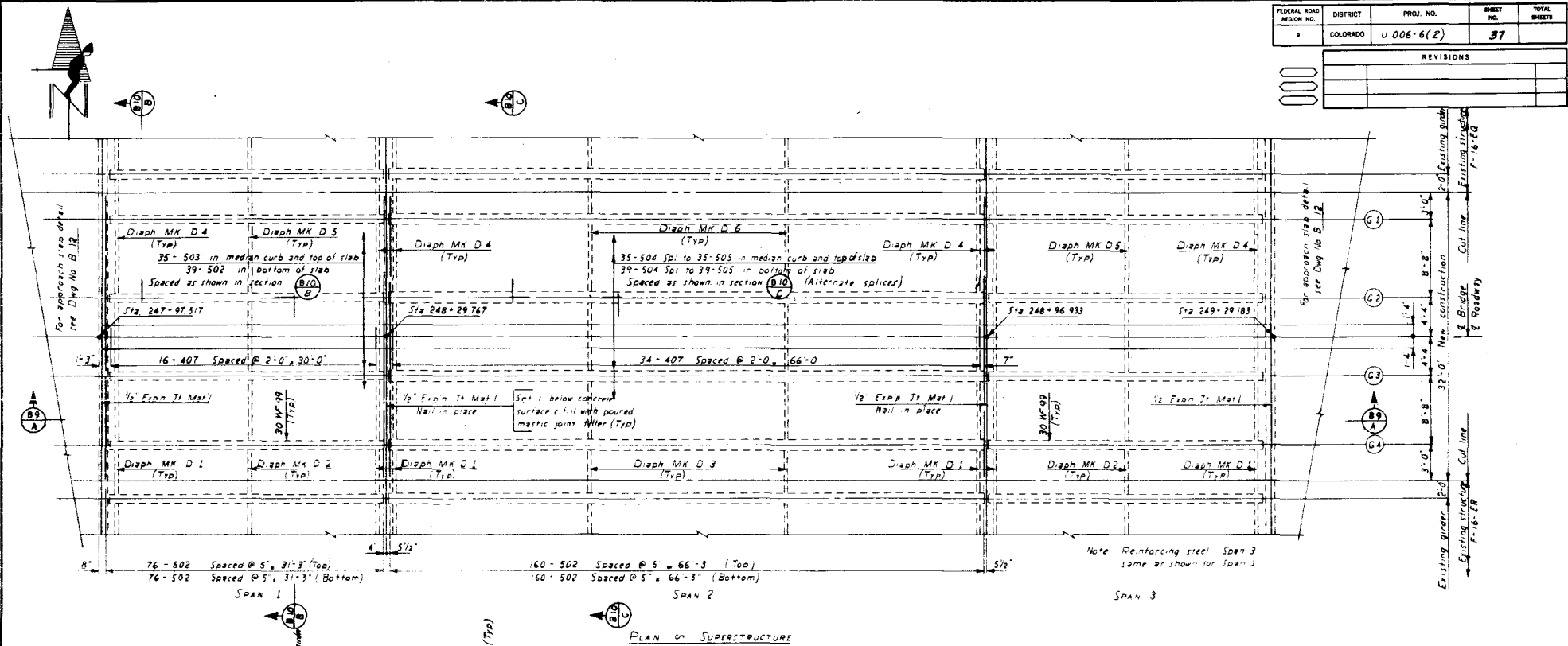
Note: Pier 3 is the same as Pier 2 unless otherwise noted

DIVISION OF HIGHWAYS		
PIER DETAILS		
Approved:	Designer: G. Singh	Checker: J. J. Sawyer
Bridge Engineer:	Structure Numbers: F-16-EG	
Date:	F-16-EG	
DWG. No. B. 8 OF 12		

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 006-6(2)	37	

REVISIONS	

DESIGNED BY	CHECKED BY	DATE	QUANTITY BY	DATE
WJS	WJS	12-7-47	WJS	12-7-47
WJS	WJS	1-11-48	WJS	1-11-48
WJS	WJS	1-11-48	WJS	1-11-48



Section **B-9 A**

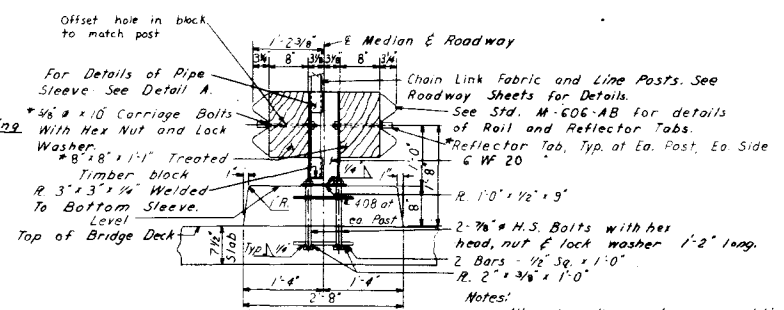
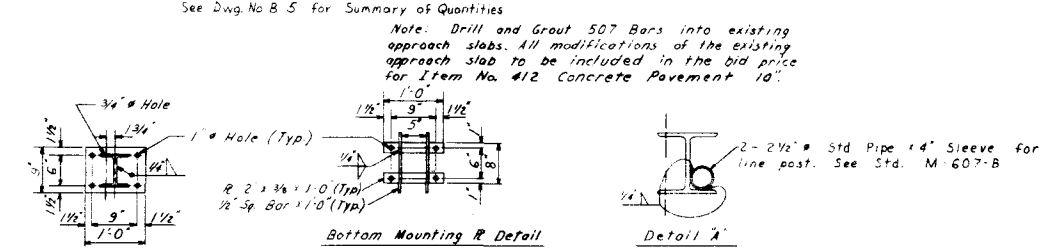
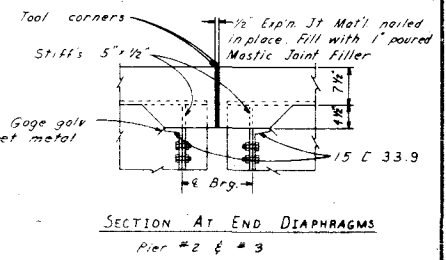
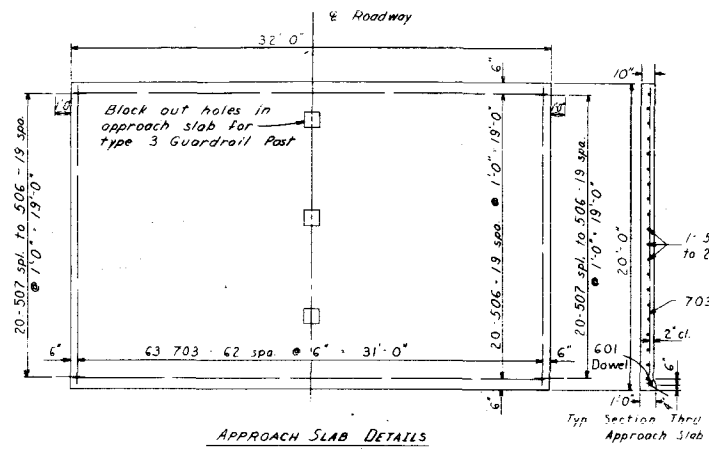
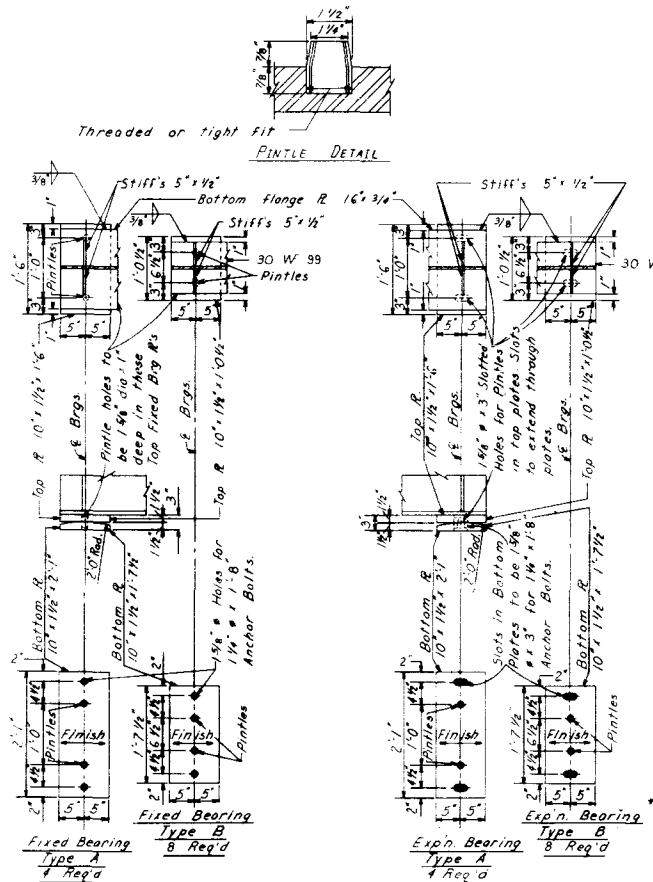
Notes:
 407 may be placed after slabs poured out before initial set takes place.
 Special care shall be exercised in removing portions of the existing structure to preserve the existing reinforcing steel which shall be cleaned and straightened and project a minimum of 24 bar diameters into new construction.
 Equipment used in removing portions of the existing structure shall be approved by the engineer.
 For details of bearings see Dwg No B-12

DIVISION OF HIGHWAYS		
SUPERSTRUCTURE DETAIL		
Approved:	Designer: G. Smith	Detailer: P. J. Houser
Bridge Engineer:	Structure Number: F-16-EQ	
Date:	F-16-EQ	DWG No. B-9 OF 12

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 006-6 (2)	40	

REVISIONS	

DESIGNED BY	DATE	CHECKED BY
CHECKED BY	QUANTITIES BY	



DIVISION OF HIGHWAYS			
MISCELLANEOUS DETAILS			
Approved:	Designer: G. Singh	Checker: K. Sharkey	
	Structure: F-16-EQ	Number: F-16-ER	
DWG. No. 12	OF 12		

7-57
 NORTH
 1:50,000
 1:50,000
 1:50,000

7-57
 NORTH
 1:50,000
 1:50,000
 1:50,000

STATE FORCES
 21100 Road, Identification
 Sign Rt.



U 006-6(2) 4
 DRAINAGE, FENCING AND UTILITIES

N. W. FRONTAGE ROAD

SECTION LINE

210

220

CENTERLINE
 N 89°44' E

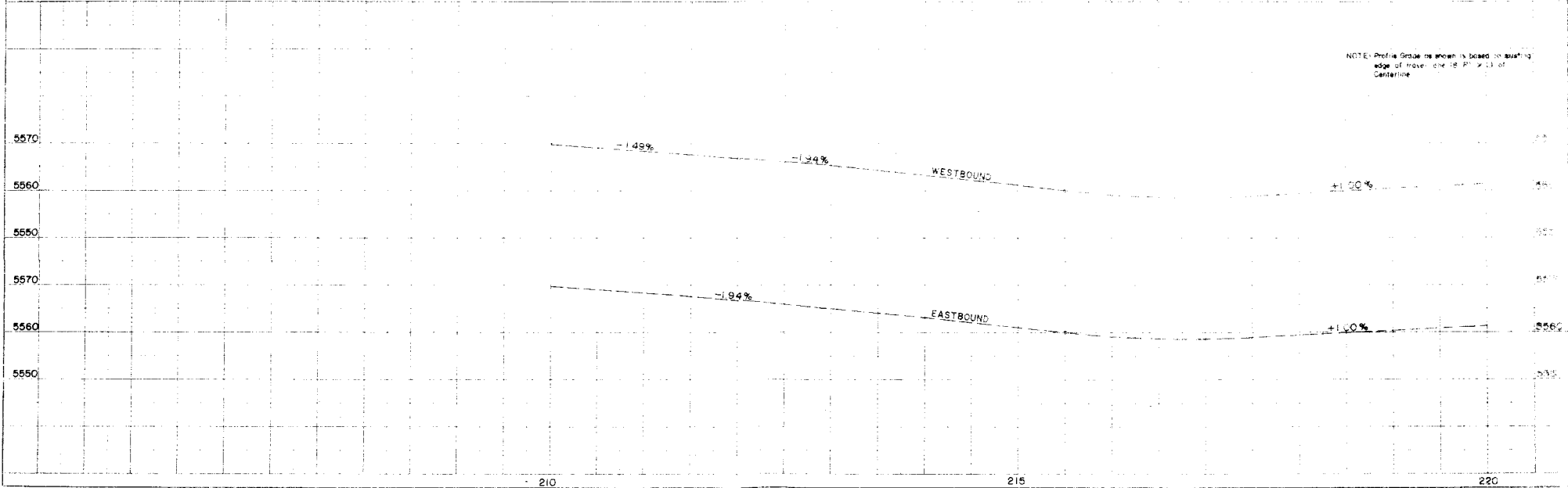
- UTILITY LINES**
- Tel. & Tel. lines (underground)
 - Gas lines
 - Water lines
- CURBS**
- Curb & Gutter, Type 2 (Section I B)
 - Curb & Gutter, Type 2 (Section II B)
 - Curb & Gutter, Type 2 (Section II M)
 - Curb Type 2, 8' Barrier (Section B)

- LEGEND**
- STORM SEWERS**
- Exist. lines, Manholes & Inlets
 - New lines, manholes & Inlets
 - Inlet & Manhole Adjustment
- SANITARY SEWERS**
- Exist. Sanitary Sewer & Manhole
 - Exist. Manhole adjustment
 - New lines & Manhole

- MISCELLANEOUS**
- New Structure Items
 - Plugged Utility or Sewer Line
 - Removals
- Miscellaneous**
- Mailboxes
 - Water Valves
- FENCING**
- Guard Rail Type 3
 - Guard Rail Type 3 (DB) w/chain link
 - Reset Guard Rail Type 3 (DB) w/chain link

STA. 215+50 BEG.
 U 006-6(2)=
 STA. 215+50 ON U 012-2(9)

NOTE: All driveways shall be built with 5 feet. All street intersections shall be built with 20' radii, unless otherwise shown on plans, or as directed by the Engineer.



210

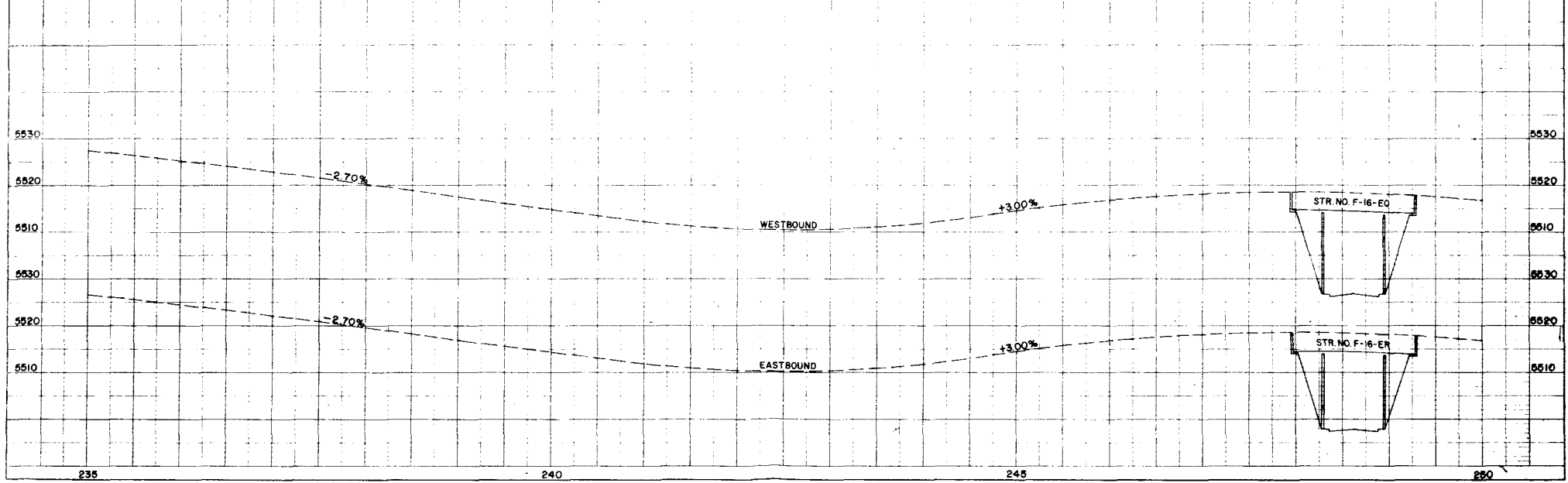
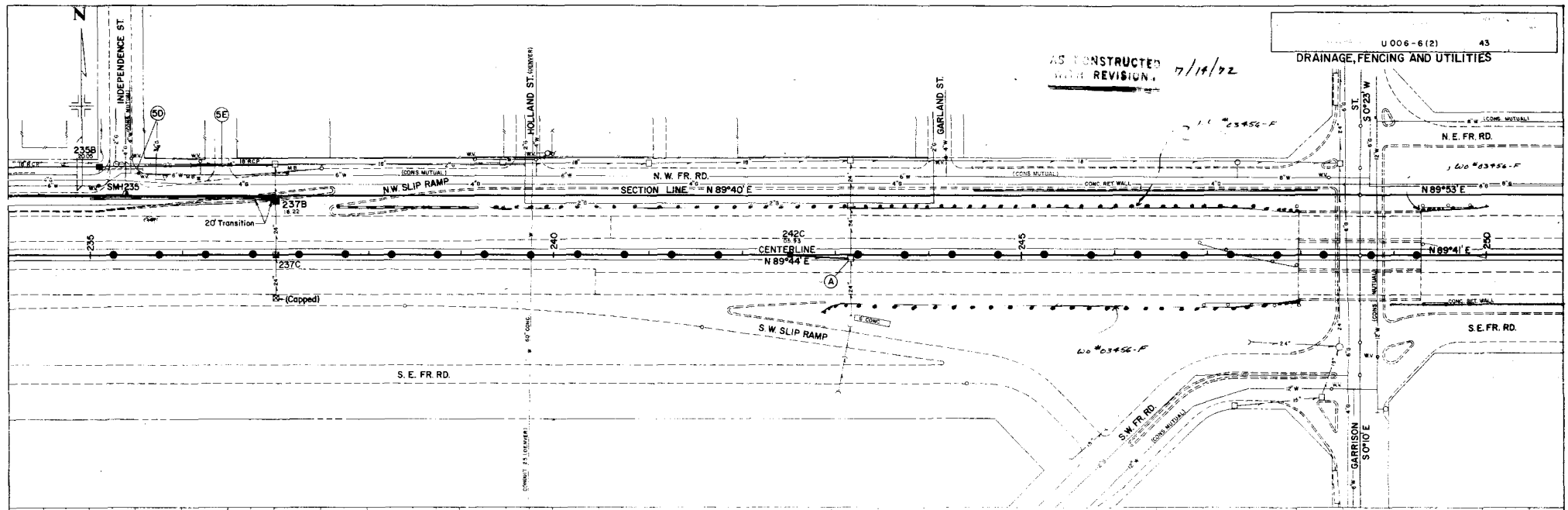
215

220

PLAN
NOT TO SCALE
DATE: 7/11/72

U 006-6(2) 43
DRAINAGE, FENCING AND UTILITIES

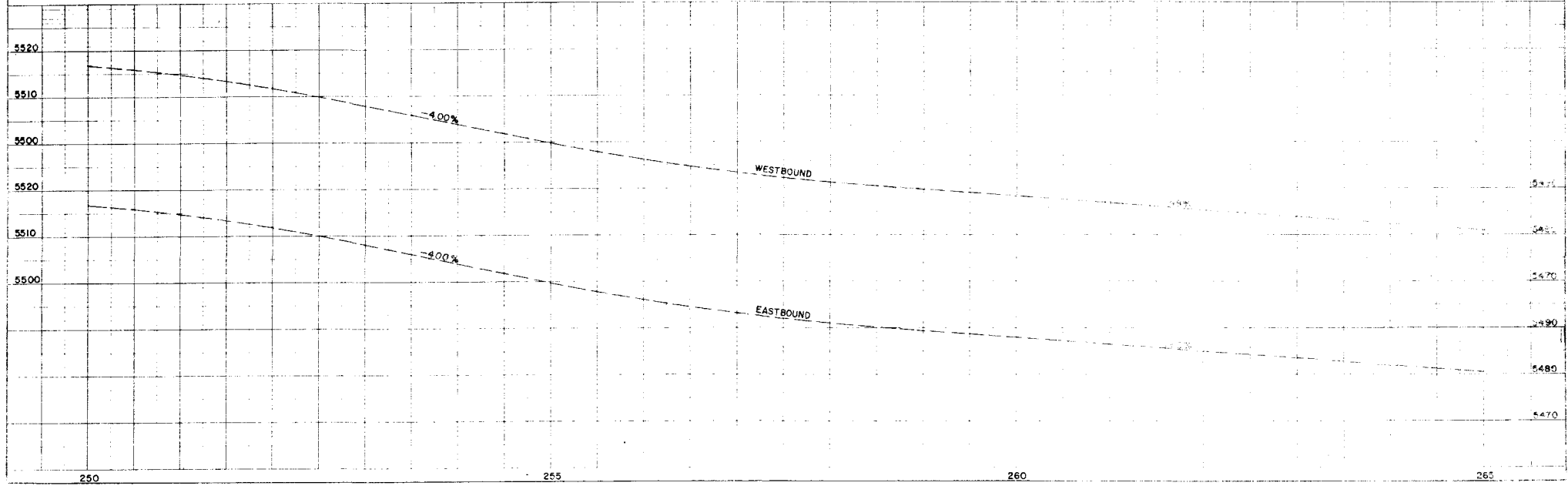
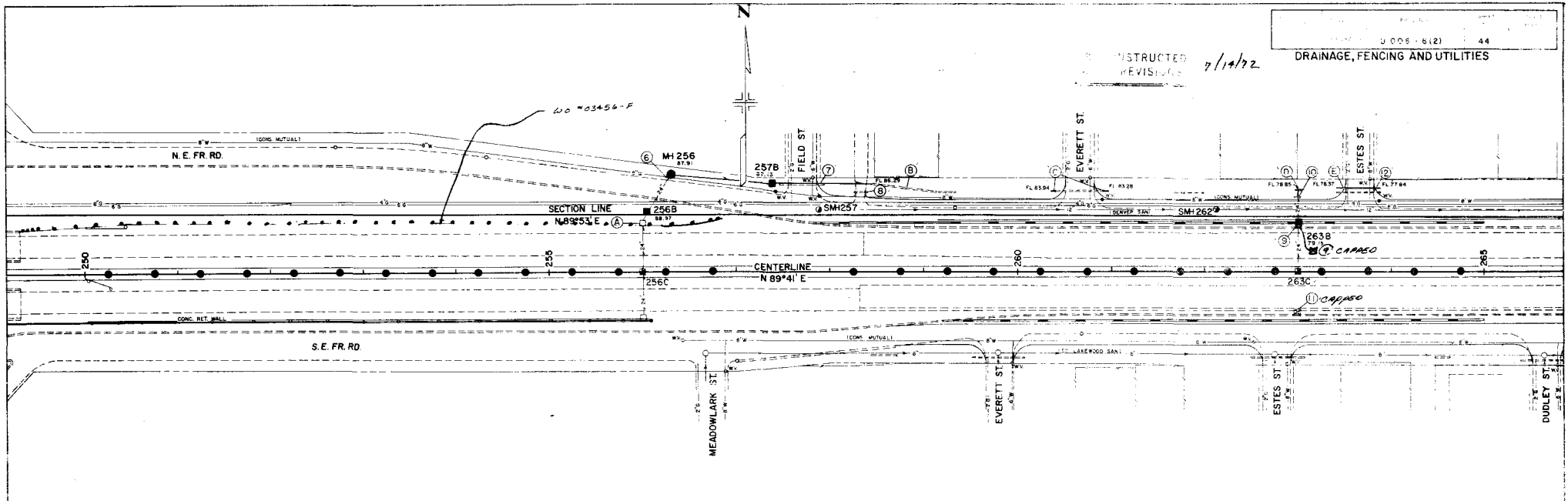
AS CONSTRUCTED
WITH REVISION. 7/11/72



PLAN
NOT TO SCALE
DATE: 7/11/72

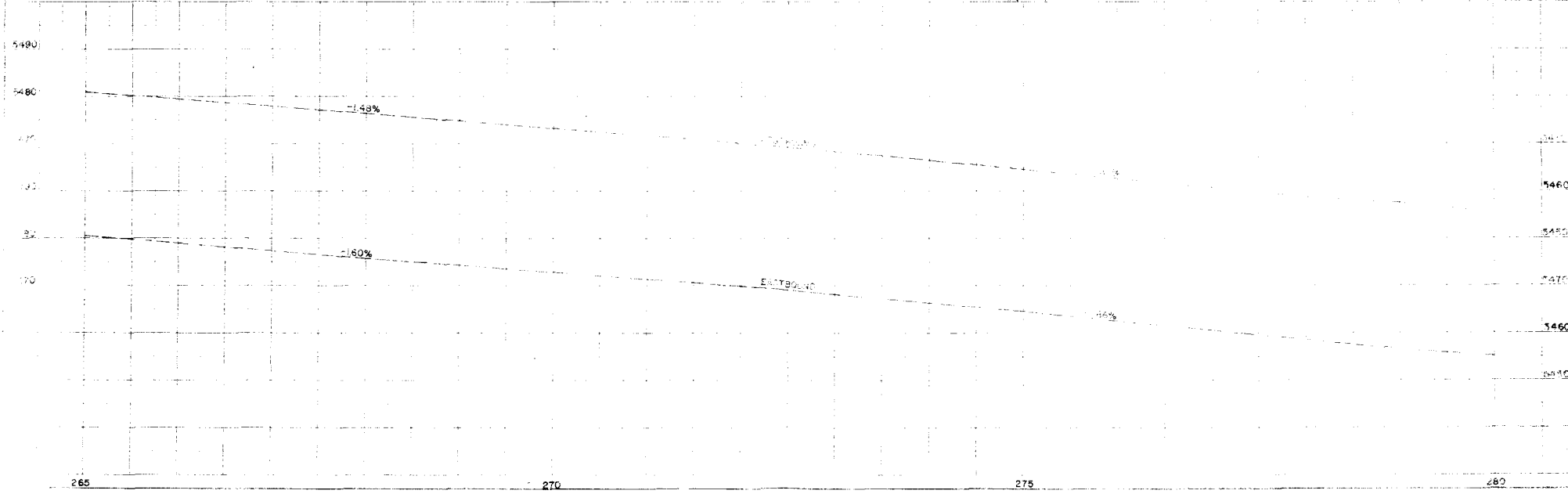
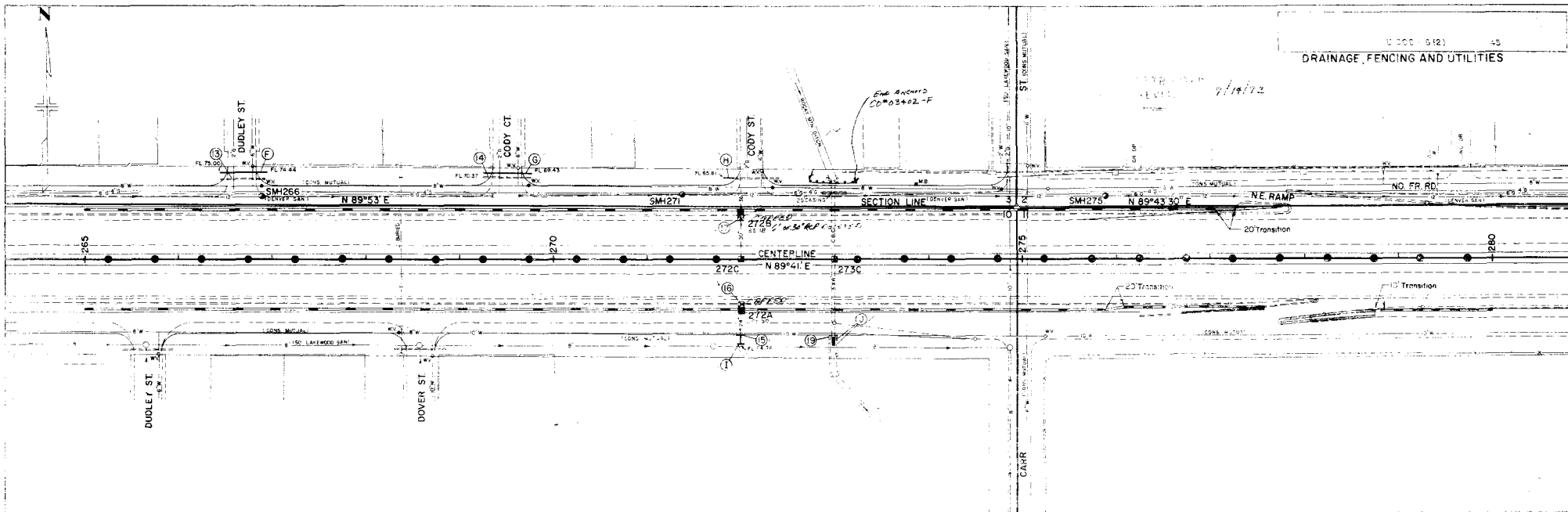
PLAN
NOT TO SCALE
DATE: 7/11/72

UNSTRUCTURED
 REVISIONS
 7/11/72



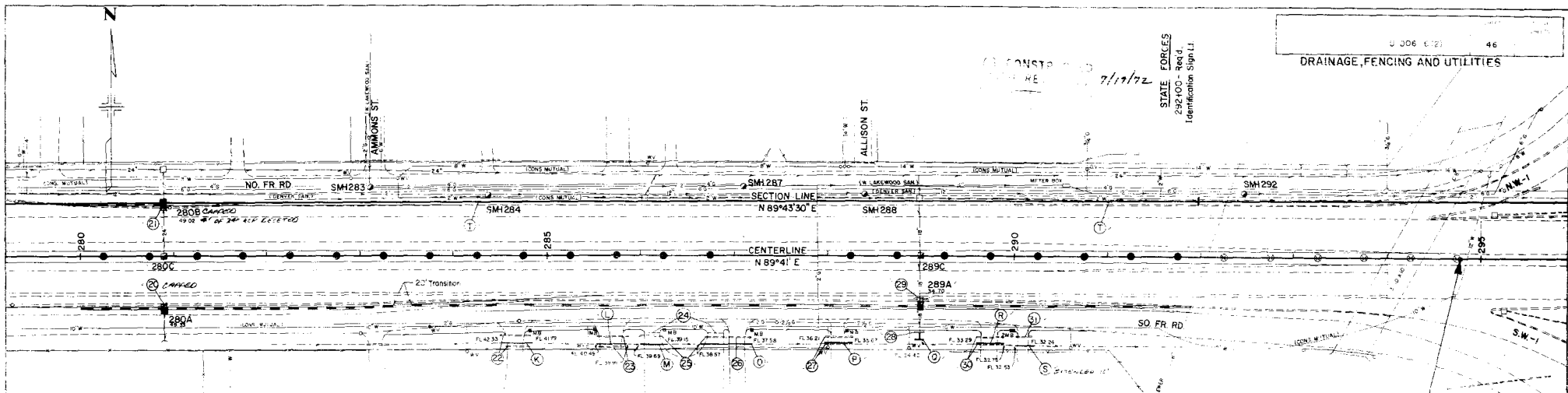
PLAN
 NOTE BOOK
 PROJECT NO. 103456-F
 SHEET NO. 44

PROFILE
 NOTE BOOK
 PROJECT NO. 103456-F
 SHEET NO. 44

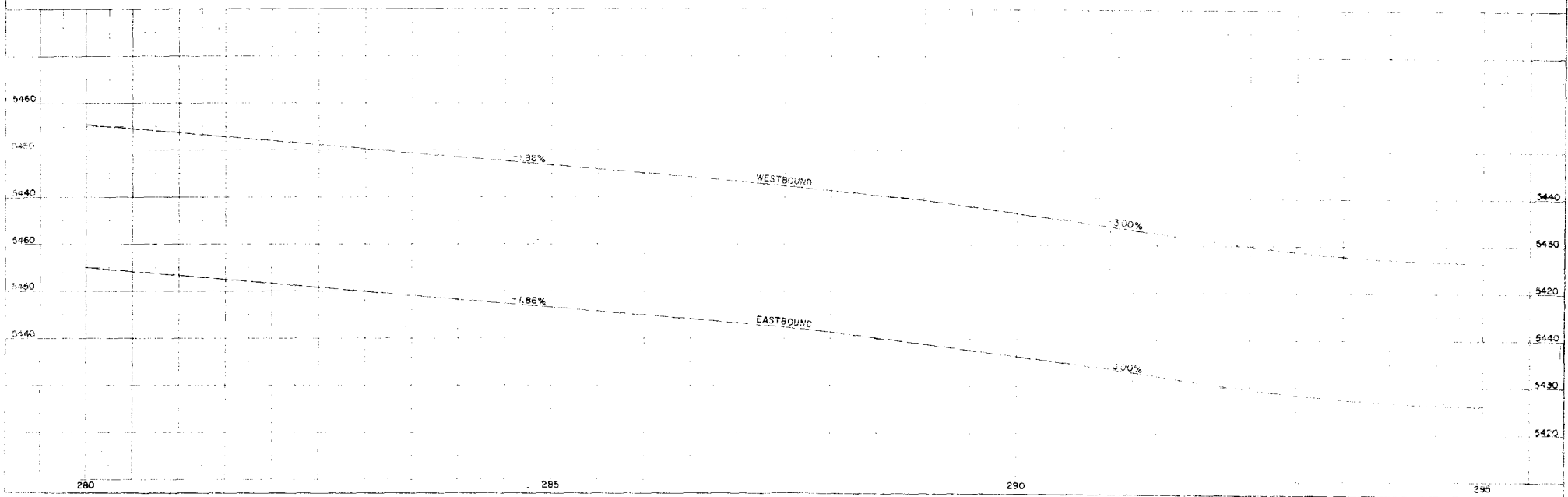


CONST. SHE. 7/17/72

STATE FORCES
282.00 - 282.11
Identification Sign 11



STA. 294+79 END
U 006-6(2)
STA. 294+79BEG U 006-6(1)

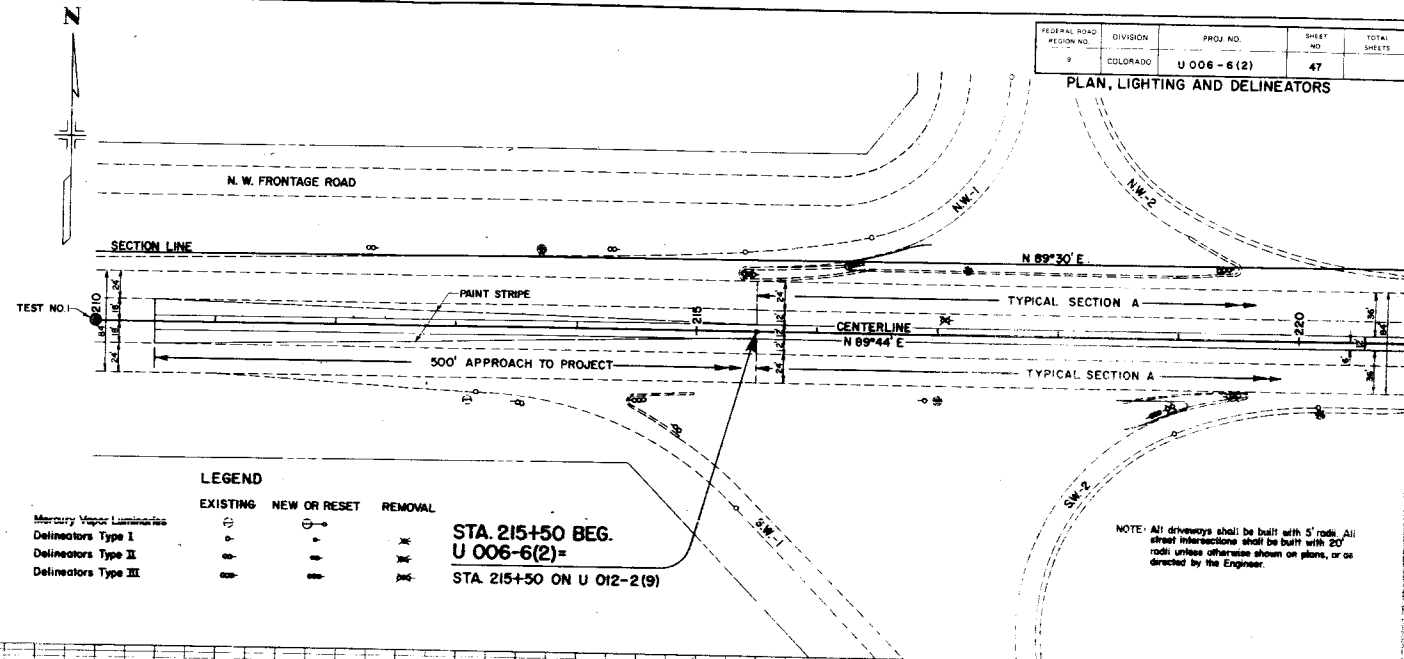


PLAN

PROFILE

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 006-6(2)	47	

PLAN, LIGHTING AND DELINEATORS

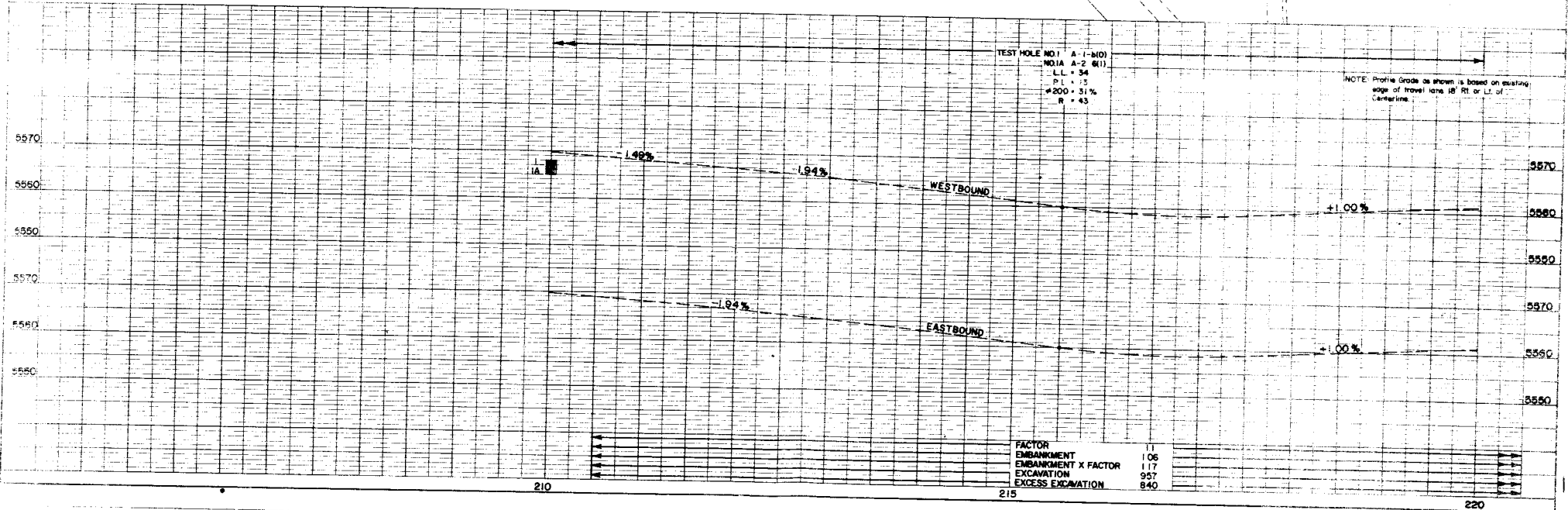


LEGEND

	EXISTING	NEW OR RESET	REMOVAL
Mercury Vapor Luminaries	⊙	⊙	⊙
Delineators Type I	○	○	✕
Delineators Type II	⊖	⊖	✕
Delineators Type III	⊗	⊗	✕

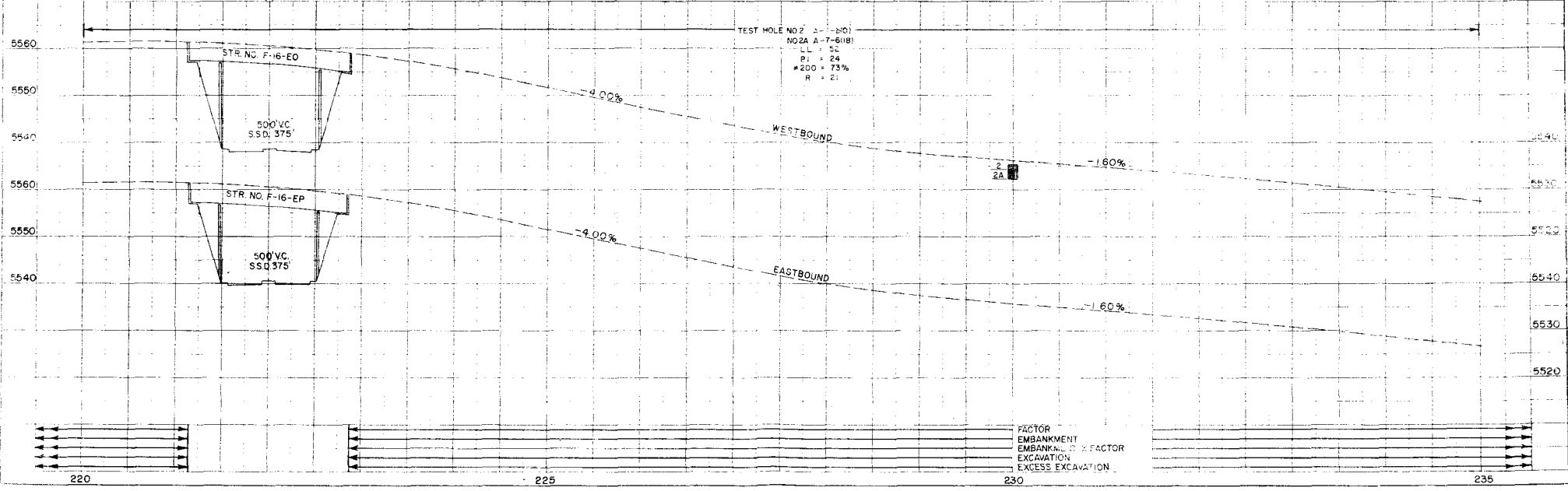
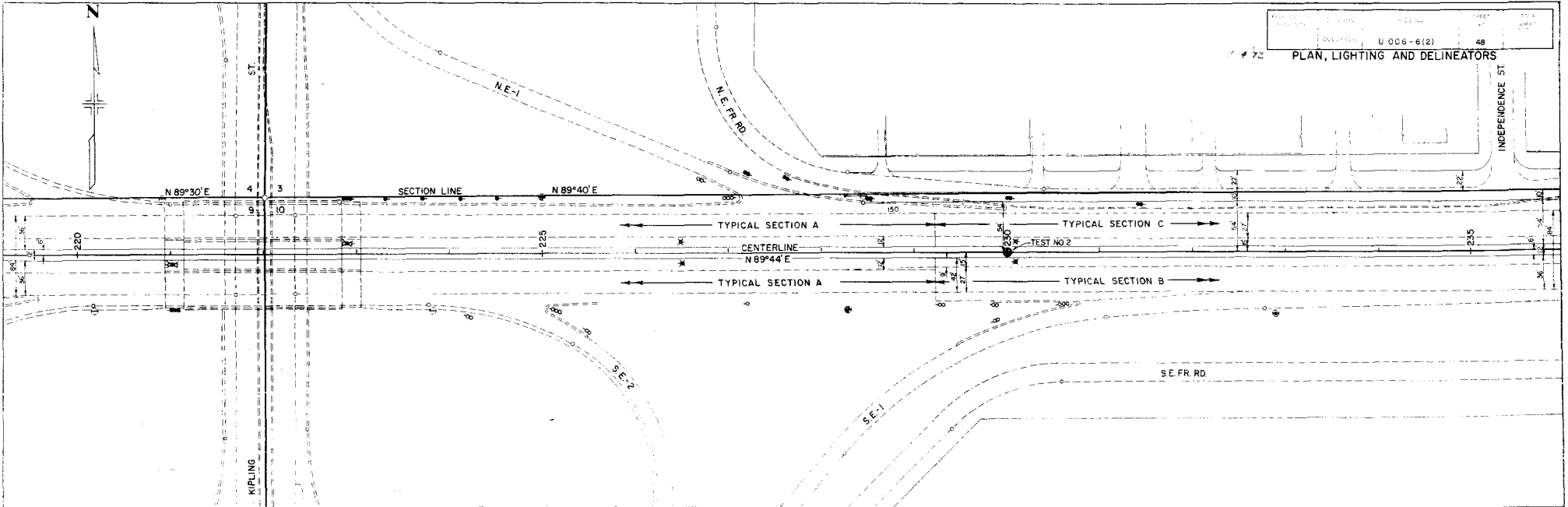
STA. 215+50 BEG.
U 006-6(2)=
STA. 215+50 ON U 012-2(9)

NOTE: All driveways shall be built with 5' radii. All street intersections shall be built with 20' radii unless otherwise shown on plans, or as directed by the Engineer.



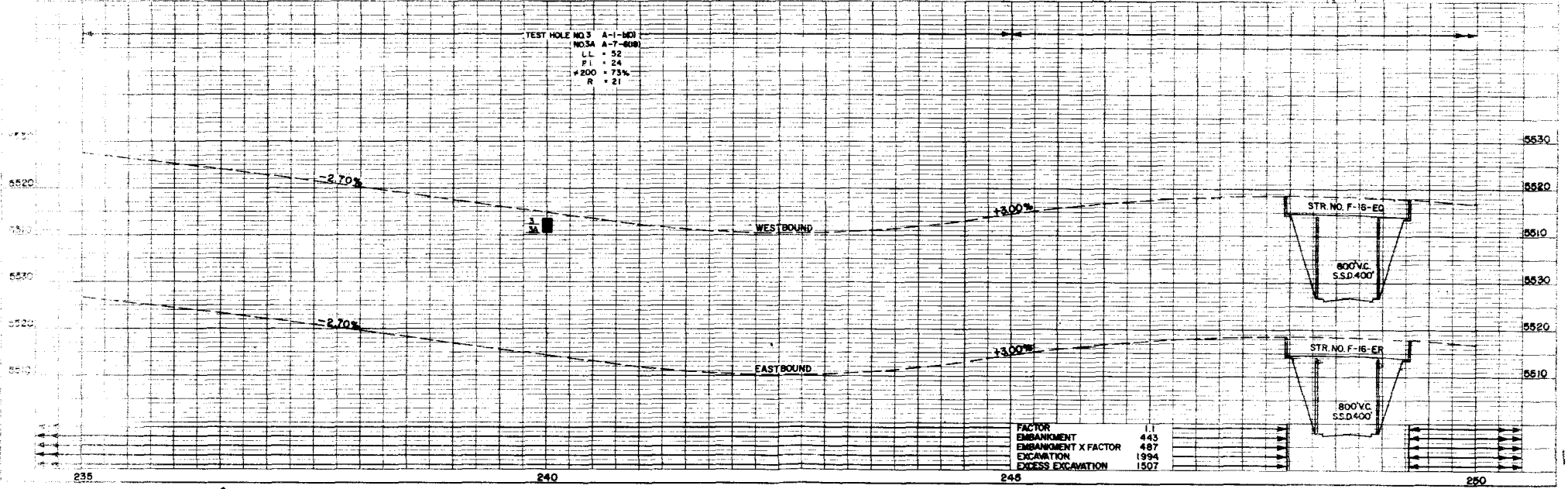
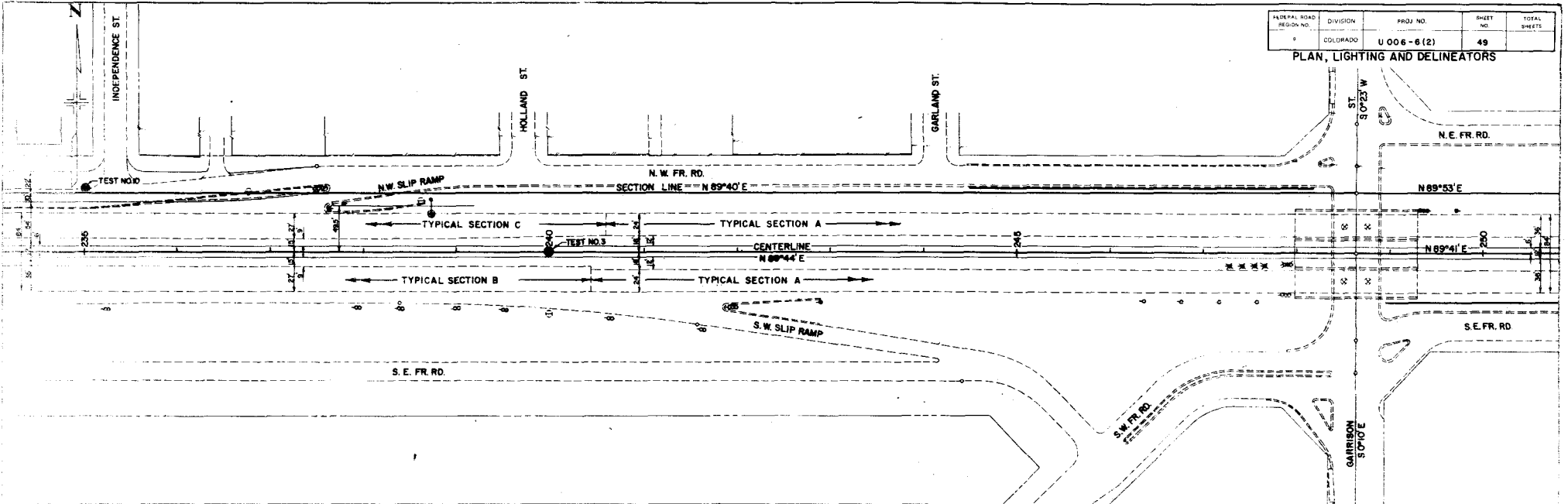
PLAN

PROFILE



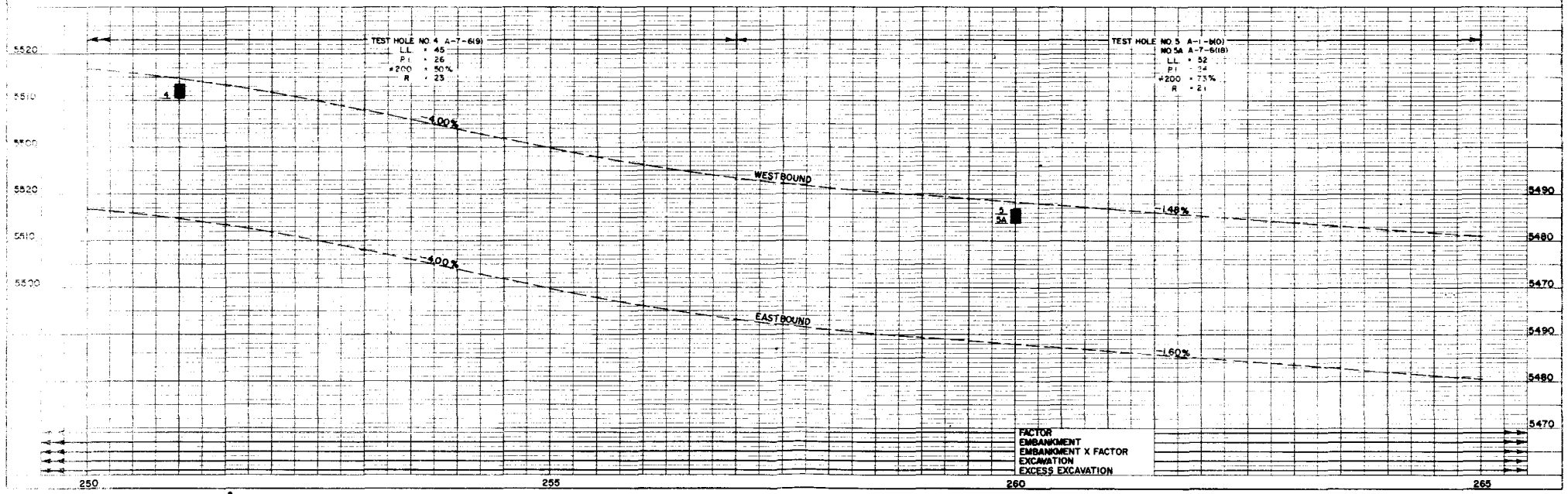
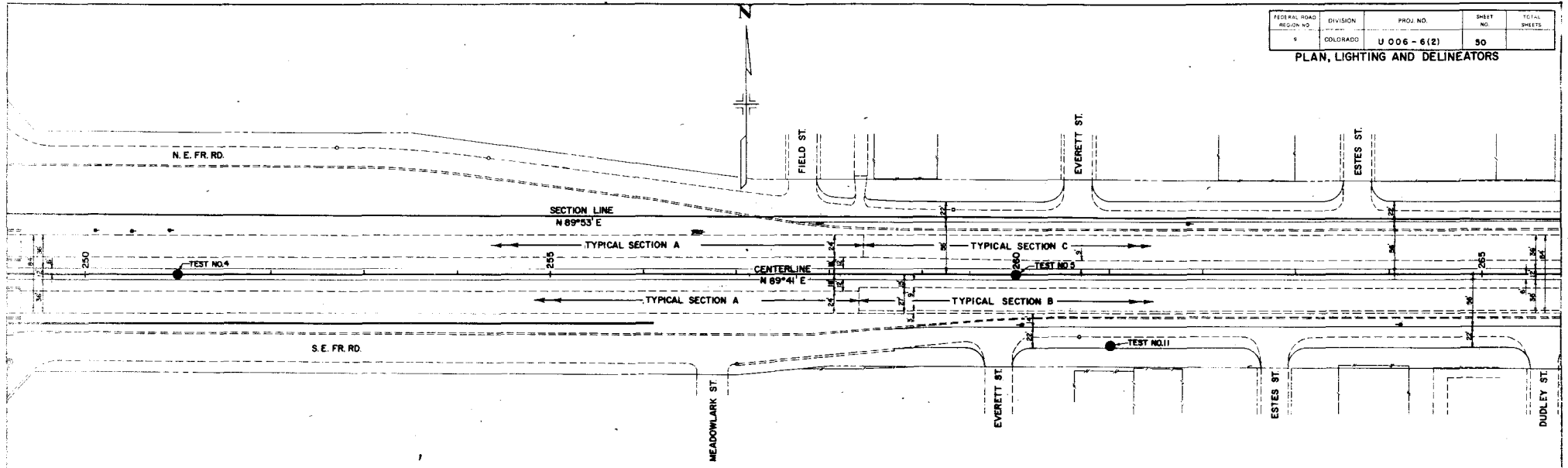
FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	U 006 - 6 (2)	49	

PLAN, LIGHTING AND DELINEATORS



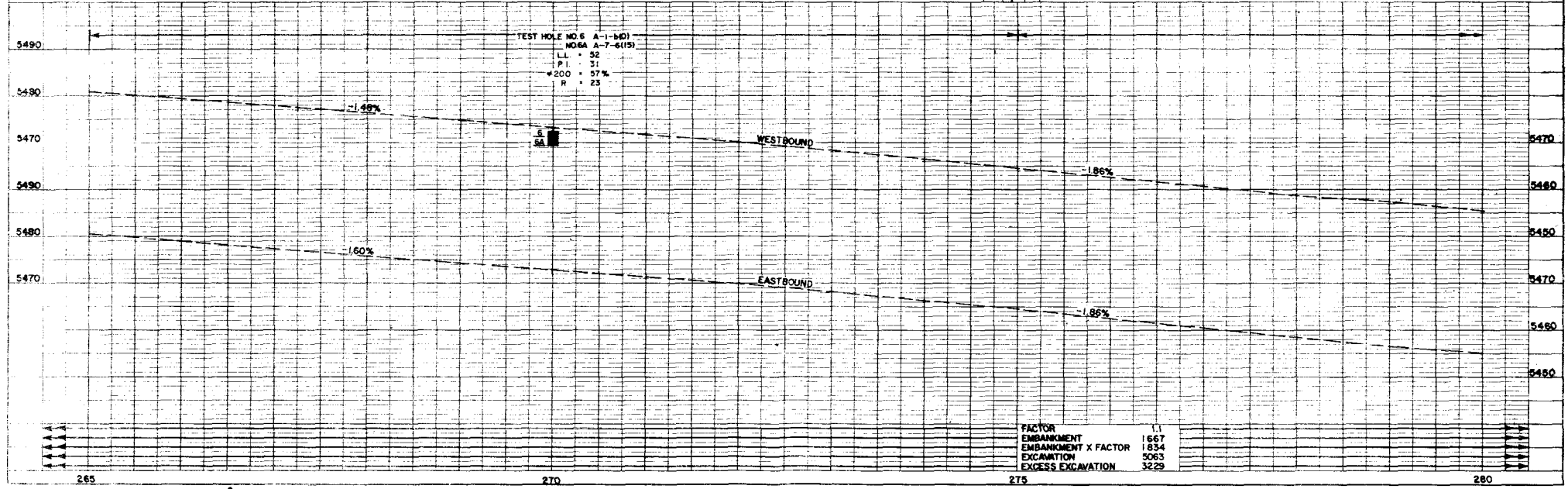
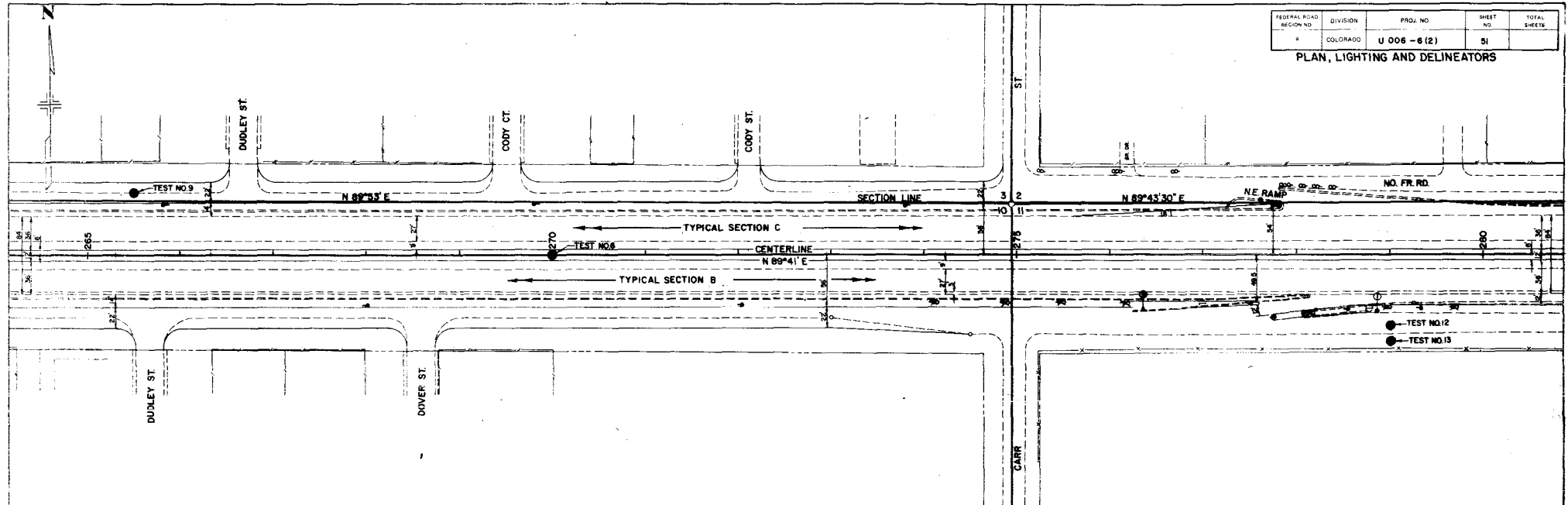
FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	U 006 - 6(2)	50	

PLAN, LIGHTING AND DELINEATORS



FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
4	COLORADO	U 006 - 6 (2)	51	

PLAN, LIGHTING AND DELINEATORS

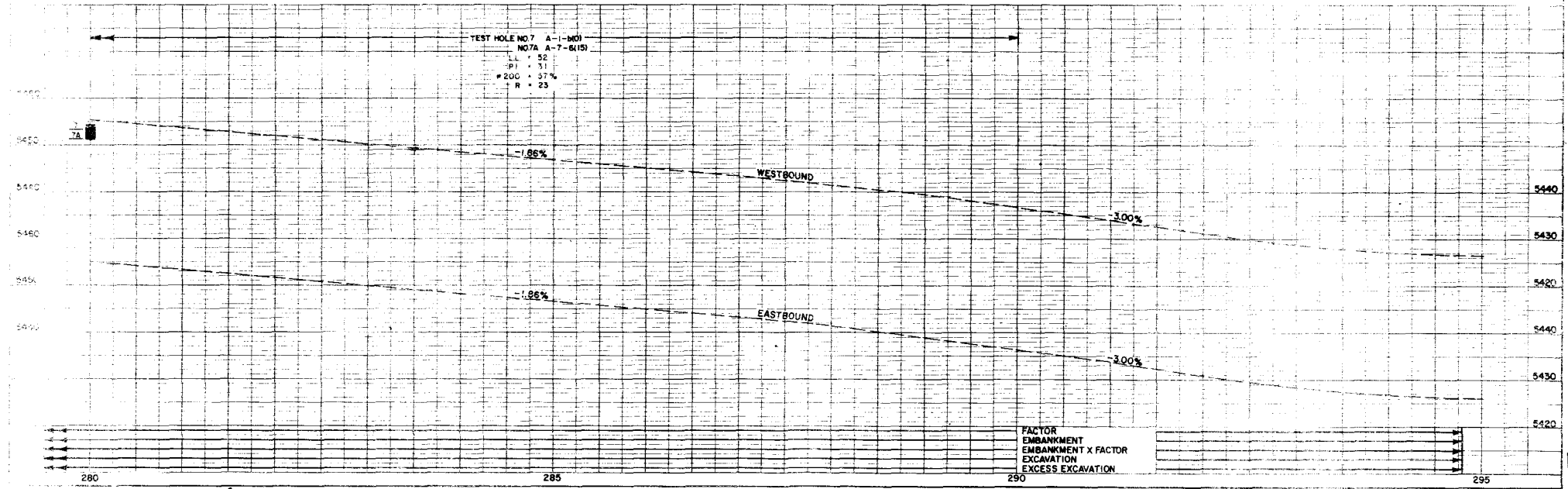
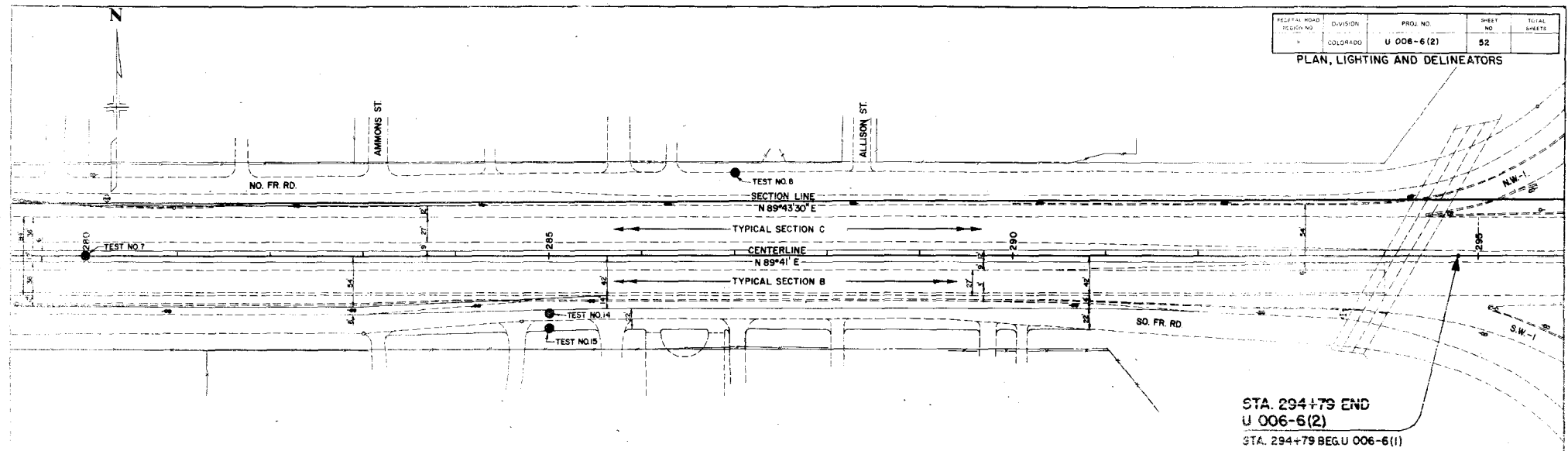


PLAN
 DATE: 10/1/1964
 DRAWN BY: [illegible]
 CHECKED BY: [illegible]

PROFILE
 DATE: 10/1/1964
 DRAWN BY: [illegible]
 CHECKED BY: [illegible]

FEDERAL ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
UTAH	COLORADO	U 006-6(2)	52	

PLAN, LIGHTING AND DELINEATORS



FEDERAL ROAD DISTRICT	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9 COLORADO	U. S. 16-815	83	

7/19/72

TABULATION OF SIGNING QUANTITIES

ITEM NO.	ITEM	UNIT	PROJECT TOTALS	Final Estimate 7/19/72
202	REM. GROUND SIGN	EA.	56	56
210	RES. GROUND SIGN	EA.	5	5
614	THERMOPLASTIC PVMT. MKG.	SQ. FT.	17,295	17,571
614	PVMT. MKG. PAINT	GAL.	65	183
614	SIGN PANEL (CL. I)	SQ. FT.	131	131
614	SIGN PANEL (CL. II)	SQ. FT.	344	343
614	SIGN PANEL (CL. III)	SQ. FT.	646	642
614	TIMBER SIGN POST (4x4)	LIN. FT.	194	194
614	TIMBER SIGN POST (6x6)	LIN. FT.	819	819
614	STEEL SIGN POST (6WF20)	LIN. FT.	61	60
614	STEEL SIGN POST (8WF20)	LIN. FT.	41	41
614	STEEL SIGN POST (10WF25)	LIN. FT.	86	75
614	CONC. FOOTING (TY. I-C)	EA.	4	4
614	CONC. FOOTING (TY. II)	EA.	2	2
614	CONC. FOOTING (TY. III)	EA.	4	4
614	MODIFICATION SIGN LEGEND	L. S.	•	•
614	MODIFICATION TIM SIGN POST	EA.	3	3
614	MOD. OVERHEAD SIGN STR.	EA.	1	1

TABULATION OF SIGNS

7/14/72

FEDERAL ROAD DISTRICT	PRJ. NO.	SHEET NO.	TOTAL SHEETS
4 COLORADO	0908-6701	54	

SIGN NO	SIGN CODE	STATION	SIGN PANEL SIZE	BACK-GROUND COLOR	REMOVE		RESET		MODIFY		NO OF POSTS	LENGTH OF POST	POST TYPE (LIN FT)					CONC FOOTING TYPE (EACH)				SIGN PANEL (SQ FT)			SIGN BOARD WIDTH			
					GROUND SIGN (EACH)	SIGN STRUCTURE (EACH)	GROUND SIGN (EACH)	TIMBER SIGN POST (EACH)	STEEL SIGN POST (EACH)	4x4 TIMBER			6x6 TIMBER	6WF20 BEAM	8WF20 BEAM	10WF25 BEAM	12WF30 BEAM	I-C	II	III	IV	CLASS I	CLASS II	CLASS III				
1	DELETED																											
2		218 + 00						1							18													
3		219 + 90								1																		
4		219 + 40																										
5	SPECIAL	219 + 40	6' x 5'	GREEN								2	17'		34													30.00
6	DELETED																											
7		214 + 15						1																				
8	IR13-1(25)	214 + 20	4' x 5'	YELLOW								1	17'		17													20.00
9		216 + 90													18													
10	DELETED																											
11	DELETED																											
12	DELETED																											
13		225 + 00																										
14		228 + 15																										
15		228 + 15																										
16	SPECIAL	233 + 00	3' x 5'	WHITE								1	10'-6"		15.5													15.00
17	SPECIAL	234 + 60	2' x 4'	WHITE								1	16'		16													8.00
18		235 + 00																										
19		225 + 15																										
20	SPECIAL	225 + 15	6' x 5'	GREEN								2	17'		34													30.00
21		224 + 60																										
22		227 + 00																										
23		228 + 50																										
24		234 + 50																										
25	IR2-1(60)	235 + 00	4' x 5'	WHITE								1	17'		17													20.00
26	DELETED																											
27	DELETED																											
28	DELETED																											
29A	SR1-1		OCTAGON 30" x 30"	RED																								8.25
29B	SR3-2	OPPOSITE 235 + 00	24" x 30"	WHITE								1	18'		18.0													5.00
30		OPPOSITE 235 + 05																										
31	SR6-1(R)	OPPOSITE 235 + 15	36" x 12"	BLACK								1	10'		10													1.00
32		OPPOSITE 235 + 15																										
33		236 + 00																										
34		237 + 00																										
35		237 + 30																										
36	SW12-1	237 + 30	DIAMOND 24" SIDES	YELLOW								1	12'		12													4.00
37		238 + 50																										

NOTES:

- SEE PLANS FOR FABRICATION DETAILS OF REGULATORY SIGNS, WARNING SIGNS, ROUTE MARKERS, AND AUXILIARY MARKERS
- PANELS FOR CLASS I SIGNS SHALL BE EITHER SINGLE SHEET ALUMINUM OR SINGLE SHEET STEEL AND SHALL BE REFLECTORIZED AS INDICATED SEE STANDARD S-614-20B
- PANELS FOR CLASS II SIGNS SHALL BE EITHER SINGLE SHEET ALUMINUM OR SINGLE SHEET STEEL, SHALL HAVE BACKING ZEES, AND SHALL BE REFLECTORIZED AS INDICATED SEE STANDARDS S-614-21B AND S-614-22C
- PANELS FOR CLASS III SIGNS SHALL BE EITHER LAMINATED ALUMINUM, EXTRUDED ALUMINUM, OR SHEET ALUMINUM. SEE STANDARDS S-614-23C, S-614-24B, AND S-614-25C
- CLASS III SIGNS WITH A GREEN BACKGROUND SHALL BE FABRICATED FROM EITHER LAMINATED ALUMINUM OR SHEET ALUMINUM AND SHALL HAVE A REFLECTORIZED BACKGROUND. CLASS III SIGNS WITH A BLUE OR A BLACK BACKGROUND SHALL BE FABRICATED FROM EITHER LAMINATED ALUMINUM OR EXTRUDED ALUMINUM AND SHALL HAVE A PORCELAIN ENAMELED BACKGROUND
- LEGEND AND BORDER ON ALL CLASS III SIGNS SHALL BE FABRICATED FROM ALUMINUM WITH REFLEX REFLECTORS
- FOR TYPICAL GROUND SIGN PLACEMENT SEE STANDARD S-614-20A
- FOR DETAILS OF SIGN SUPPORTS FOR GROUND SIGNS SEE STANDARD S-614-21A
- FOR DETAILS OF FOOTINGS, PEDESTALS, AND SIGN FRAMES SEE STANDARD S-614-27B
- POST LENGTHS ARE APPROXIMATE ONLY. EXACT LENGTHS TO BE DETERMINED BY THE ENGINEER

TABULATION OF PAVEMENT MARKINGS

FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 006-6(2)	59	

STATION	LOCATION	PAVEMENT MARKING LINES (Linear Feet)							MARKING
		LANE WHITE BROKEN 4 INCH	EDGE WHITE SOLID 3 INCH	BARRIER YELLOW SOLID 4 INCH	CHANNELIZING WHITE SOLID 4 INCH	WHITE SOLID 10 INCH	STOP WHITE SOLID 24 INCH	CROSS-HATCH WHITE SOLID 12 INCH	
206+00 To 300+00	Mainline E.B. & W.B.	9,400	18,800						
215+50 To 217+80	Mainline E.B.	230							
217+80 To 300+00	Mainline E.B. & W.B.	8,220	16,440						
213+20 To 214+90	Decel. Lane S.W. Ramp 1					170	75		
215+00 To 219+10	Mainline E.B.						120		
219+00 To 220+15	Accel. Lane S.W. Ramp 2		115			115			
222+50 To 221+00	Decel. Lane N.E. Ramp 1	150							
221+00 To 219+20	Decel. Lane N.E. Ramp 1					360	75		
219+00 To 215+90	Mainline W.B.						90		
213+30 To 213+70	Accel. Lane N.W. Ramp 1		160			160	60		
213+70 To 211+40	Accel. Lane N.W. Ramp 1	230							
223+80 To 225+40	Decel. Lane S.E. Ramp 2					320	90		
225+60 To 229+90	Mainline E.B.						135		
230+30 To 232+70	Accel. Lane S.E. Ramp 1		240			240	100		
232+70 To 235+00	Accel. Lane S.E. Ramp 1	320							
235+00 To 230+40	Mainline W.B.					560	110		
229+40 To 228+40	Decel. Lane N.E. Ramp 1	100							
229+40 To 226+80	Decel. Lane N.E. Ramp 1					320	120		
226+80 To 224+00	Decel. Lane N.E. Ramp 1						65		
240+00 To 242+30	Decel. Lane S.W. Ramp					460	130		
233+10 To 236+60	Accel. Lane N.W. Ramp		150			150	70		
DELETED									
DELETED									
276+10 To 277+10	Accel. Lane So. Fr. Rd.						60		
277+10 To 279+10	Accel. Lane So. Fr. Rd.		200			200	60		
279+10 To 281+10	Accel. Lane So. Fr. Rd.	300							
277+20 To 280+00	Decel. Lane No. Fr. Rd.					560	150		
280+00 To 284+40	Decel. Lane No. Fr. Rd.	440							
281+10 To 295+40	Decel. Lane So. Fr. Rd.					460	110		
285+40 To 299+00	Mainline E.B.						105		
298+90 To 300+00	Accel. Lane S.W. Ramp 2		110			110	40		
298+30 To 298+50	Mainline W.B.						70		
298+50 To 300+00	Decel. Lane N.W. Ramp 2					300	60		
293+30 To 295+00	Accel. Lane N.W. Ramp 1		170			170			
Opp 237+50 To Opp 237+50	N.E. Frontage Rd.	1,050	2,100						
Opp 275+10 To Opp 275+00	Independence St.		100				15		
Opp 260+00 To Opp 260+00	So. Frontage Rd.	1,800	3,600						
Opp 260+00 To Opp 260+00	Everett St.	50	100				15		
Opp 260+90 To Opp 260+90	Estes St.	50	100				15		
Opp 263+90 To Opp 263+90	Dudley St.	50	100				15		
Opp 269+90 To Opp 269+90	Dover St.	50	100				15		
Opp 275+00 To Opp 275+00	Carr St.	50	100				15		
Opp 275+00 To Opp 277+80	So. Frontage Rd.		560	840					
Opp 277+80 To Opp 293+20	So. Frontage Rd.	1,440	2,880						
Opp 276+00 To Opp 276+80	N.E. Frontage Rd.	2,280	4,560						
DELETED									
DELETED									
Opp 276+80 To Opp 277+90	N.E. Frontage Rd.		220	220					
Opp 277+80 To Opp 280+00	N.E. Frontage Rd.	210	420						
Opp 251+80 To Opp 251+80	Field St.	50	100				15		
Opp 260+80 To Opp 260+80	Everett St.	50	100				15		
Opp 261+80 To Opp 261+80	Estes St.	50	100				15		
Opp 266+40 To Opp 266+40	Dudley St.	50	100				15		
Opp 269+40 To Opp 269+40	Cody Ct.	50	100				15		
Opp 272+00 To Opp 272+00	Cody St.	50	100				15		
Opp 275+00 To Opp 275+00	Carr St.	50	100				15		

STATION	LOCATION	PAVEMENT MARKING LINES (Linear Feet)							MARKING
		LANE WHITE BROKEN 4 INCH	EDGE WHITE SOLID 3 INCH	BARRIER YELLOW SOLID 4 INCH	CHANNELIZING WHITE SOLID 4 INCH	WHITE SOLID 10 INCH	STOP WHITE SOLID 24 INCH	CROSS-HATCH WHITE SOLID 12 INCH	
PROJECT TOTALS THERMOPLASTIC		19,390	36,395		4,655			1,895	
PROJECT TOTALS PAVEMENT MARKING PAINT		7,380	15,640	1,060				195	

NOTE:
 FOR DETAILS OF PAVEMENT MARKING LINES AND LINE PLACEMENT, SEE STANDARD 5-614-29A.

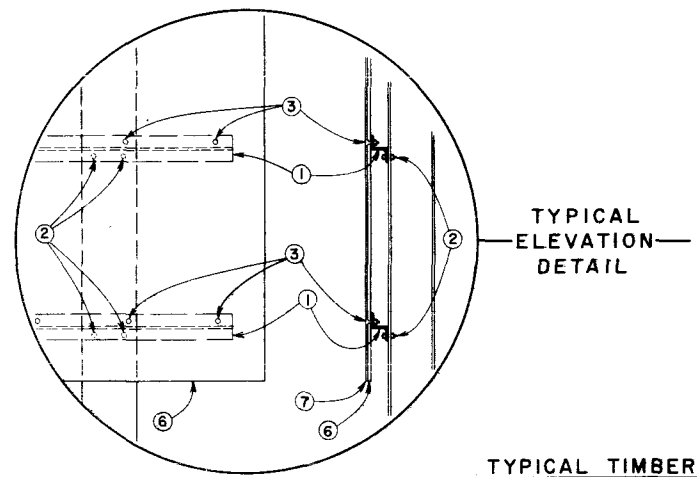
PAVEMENT MARKING QUANTITIES		
COLOR	THERMOPLASTIC (SQ. FT.)	PAINT (GAL.)
YELLOW		5
WHITE	17,295	60
TOTAL	17,295	65

STANDARD S-614-25 C

(SHEET 2 OF 2 SHEETS)
REVISED FOR THIS PROJECT

FEDERAL ROAD DISTRICT	PROJ NO	SHEET NO	TOTAL SHEETS
9	U 006-6(2)	61	

REVISIONS	



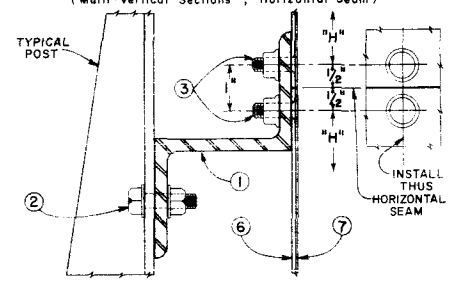
TYPICAL ELEVATION-DETAIL

FABRICATION NOTES

- ① BACKING ZEE. See "SPACING TABLE" Aluminum Alloy 6061-T6. Each zee to be provided with a $\frac{3}{16}$ " x 2" horizontal slot for each post mounting bolt. The length of each zee to be 1" less than the sign panel width.
- ② $\frac{3}{8}$ " # HEX-HEAD BOLT. With nut and washers; 2 per backing zee per post are required.
- ③ $\frac{3}{8}$ " # (No. 6) 90° COUNTERSUNK ALUMINUM LOCKBOLT FASTENER.
- ④ 2" x 0.080" ALUMINUM CLOSURE STRIP.
- ⑤ $\frac{1}{8}$ " # x $\frac{3}{16}$ " UNIVERSAL-HEAD, HOLLOW SHANK ALUMINUM RIVET.
- ⑥ SHEET ALUMINUM. 0.125" minimum thickness.
- ⑦ NON-EXPOSED LENS REFLECTIVE SHEETING. To have a dry (heat activated) adhesive backing.

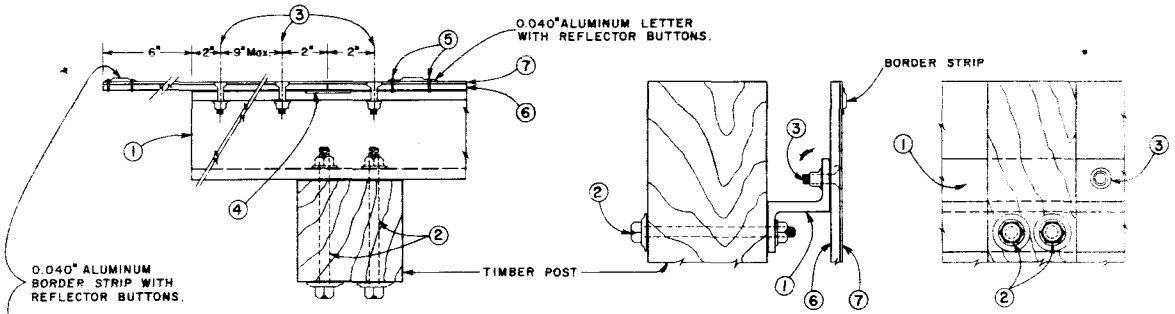
TYPICAL DETAIL SEAM CLOSURE ZEE

(Multi-Vertical Sections , Horizontal Seam)

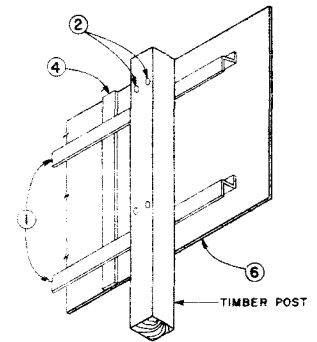


TYPICAL TIMBER POST INSTALLATION

PANEL FABRICATION AND MOUNTING DETAILS

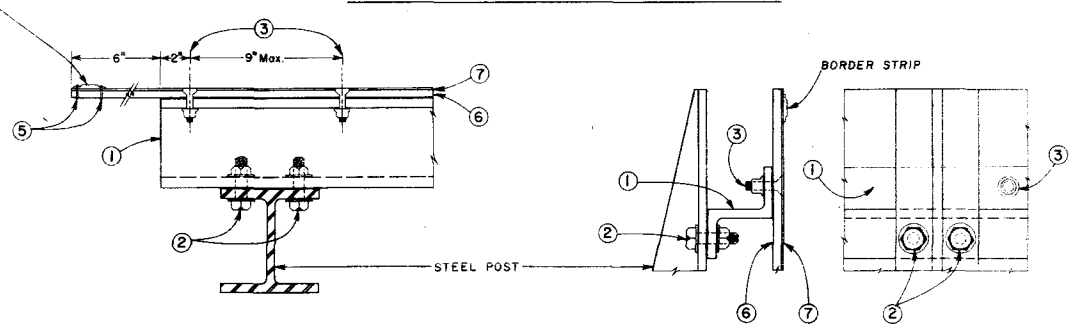


TYPICAL VIEW

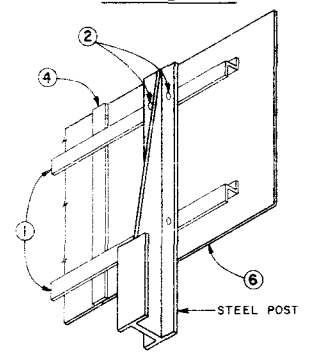


TYPICAL STEEL POST INSTALLATION

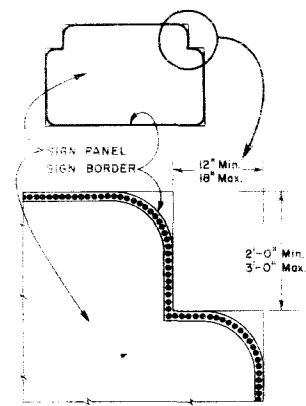
PANEL FABRICATION AND MOUNTING DETAILS



TYPICAL VIEW



TYPICAL DETAIL EXIT NUMBER PANEL



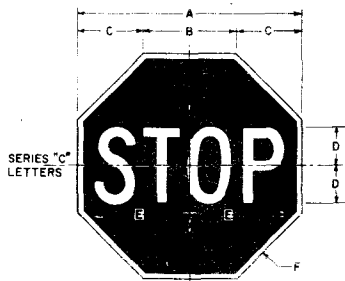
DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

SHEET ALUMINUM
PANELS FOR
CLASS III SIGNS

Designed By: J.J.B. Approved By: J.J.B.
Made By: F.J.B. Traffic Engineer
Checked By: J.S. Date: 12/12/1962

UNIFORM STANDARD REGULATORY & WARNING SIGNS

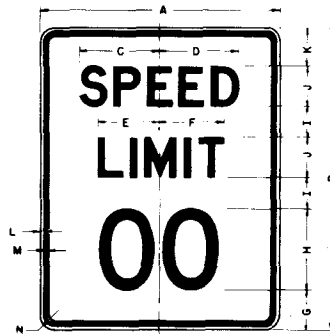
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 006-6(2)	62	



SERIES "C"
LETTERS

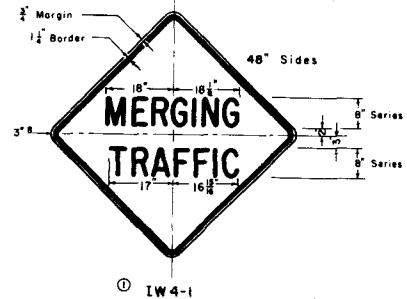
CODE	A	B	C	D	E	F
CR-1	24"	9 1/2"	7 1/2"	4"	10 1/2"	8"
SR-1	30"	12 1/2"	9 1/2"	5"	12 1/2"	10"
XR-1	48"	19 1/2"	14 1/2"	8"	20 1/2"	16"

Legend and border - ReflectORIZED white
Background - ReflectORIZED red (Reverse
screened on reflective sheeting).

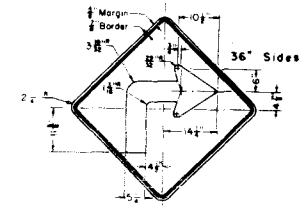


CODE	A	B	C	D	E	F	G	H	I	J	K	L	M	N
CR2-1(-)	5'	24"	2 1/2"	2 1/2"	3 1/2"	6"	4 1/2"	6"	0"	4"	4 1/2"	8"	8"	12"
SR2-N(-)	24"	30"	9 1/2"	9 1/2"	7 1/2"	7 1/2"	4"	20"	2"	4"	4"	8"	8"	12"
XR2-1(-)	36"	48"	14"	14"	10 1/2"	10 1/2"	7 1/2"	14"	4 1/2"	6"	6"	12"	12"	20"
LR2-1(-)	48"	60"	18 1/2"	18 1/2"	12 1/2"	12 1/2"	8"	16 1/2"	6 1/2"	8"	8"	16"	16"	30"

Legend and border - Screen processed black
Background - ReflectORIZED white

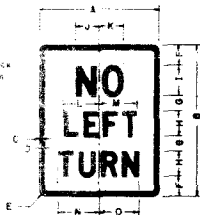


① IW4-1



① XW1-1(R)

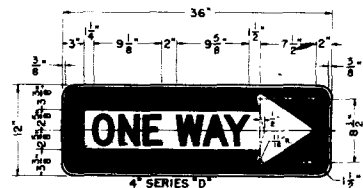
NOTES:
1. Screen Processed Black
Legend and Border on
ReflectORIZED White
Background



SIGN CODE	PLATE DIMENSIONS						LEGEND																				
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
① SR3-2	24	30	9 1/2"	9 1/2"	7 1/2"	7 1/2"	4"	3"	5"	0"	4"	4"	8"	8"	12"	12"	16"	16"	20"	20"	24"	24"	28"	28"	32"	32"	36"
① XR3-2	36	48	14"	14"	10 1/2"	10 1/2"	7 1/2"	6"	7"	0"	6"	6"	12"	12"	16"	16"	20"	20"	24"	24"	28"	28"	32"	32"	36"	36"	40"

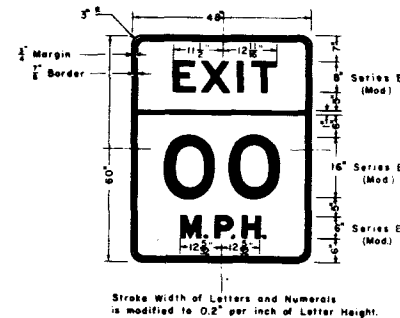
NOTES

- All Warning Signs shall have a Screen Processed Black Legend and Border on a ReflectORIZED Yellow Background.
- Galvanized Sheet Steel shall be hot dip Galvanized sheets of structural quality, 0.0598" min. thick, Grade A per ASTM Spec. A446-60T, 2 oz. coating class with a light Phosphate coating on surfaces that are to receive reflective sheeting per Federal Spec. TT-C-490 for Galvanized sheets.
- See applicable Standard for installation details: Class I or Class II as denoted in the Tabulation of Signs.



① SR6-1(R or L)

Reverse Arrow Design for Left.
Legend and border area - Screen processed black.
Margin and arrow background - ReflectORIZED white



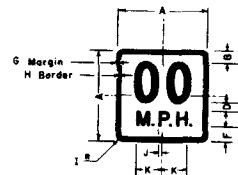
② IW13-1(-)

Stroke Width of Letters and Numerals is modified to 0.2" per inch of Letter Height.

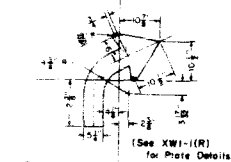
PANEL MATERIAL

- Sheet Steel U.S. Standard Gauge No. 16 or Sheet Aluminum 0.100" Min. Thick.
- Sheet Aluminum 0.125" Min. Thick.

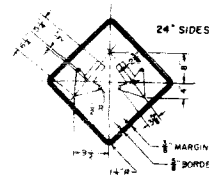
ALL SHEET STEEL TO BE GALVANIZED
(SEE NOTE NO. 2)



CODE	A	B	C	D	E	F	G	H	I	J	K
① SW13-1(-)	18"	24"	8"	8"	2"	5"	2 1/2"	2 1/2"	4"	4"	8"
① XW13-1(-)	24"	30"	10"	10"	2"	6"	2 1/2"	2 1/2"	4"	4"	8"



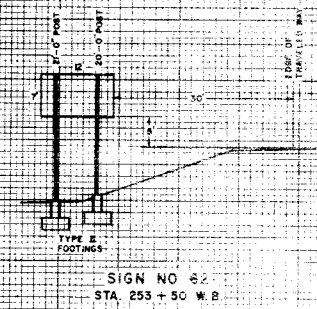
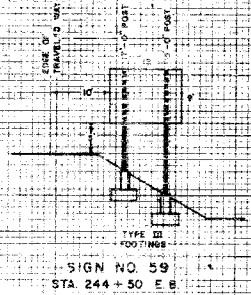
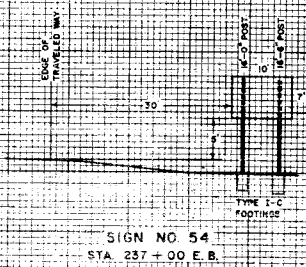
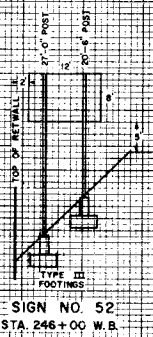
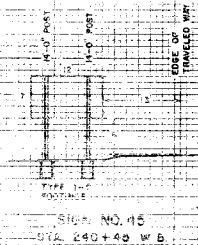
① XW1-2(R)



① SW12-1

CROSS SECTIONS AT CLASS III SIGN LOCATIONS

FEDERAL ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	COLORADO	U 006-6(2)	63	2



FEDERAL ROAD DISTRICT NO. 5
 DIVISION COLORADO
 PROJECT NO. U 006-6(2)
 SHEET NO. 63
 TOTAL SHEETS 2
 DRAWN BY: [blank]
 CHECKED BY: [blank]
 DATE: [blank]

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO	U 006 - 6 (2)	64	

SPEED
LIMIT
60

12'
SIMMS ST
EXIT 1/2 MILE

N.W. FRONTAGE ROAD

19+00

10

195

200

205

210

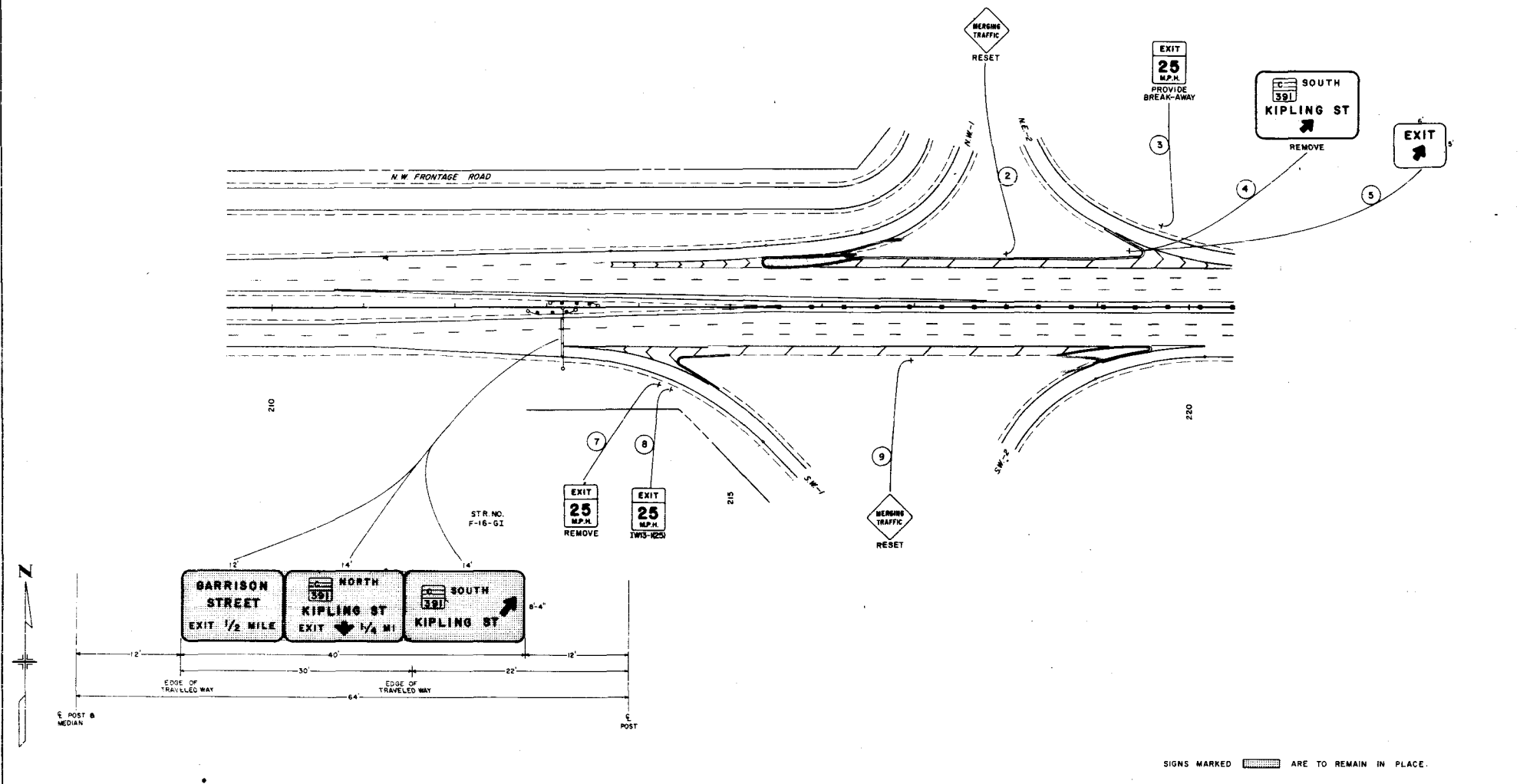
5
DENVER FEDERAL
CENTER
NEXT RIGHT

12'
SOUTH
391
KIPLING ST
RIGHT LANE

NOTE:
SIGNS MARKED  ARE TO REMAIN IN PLACE.



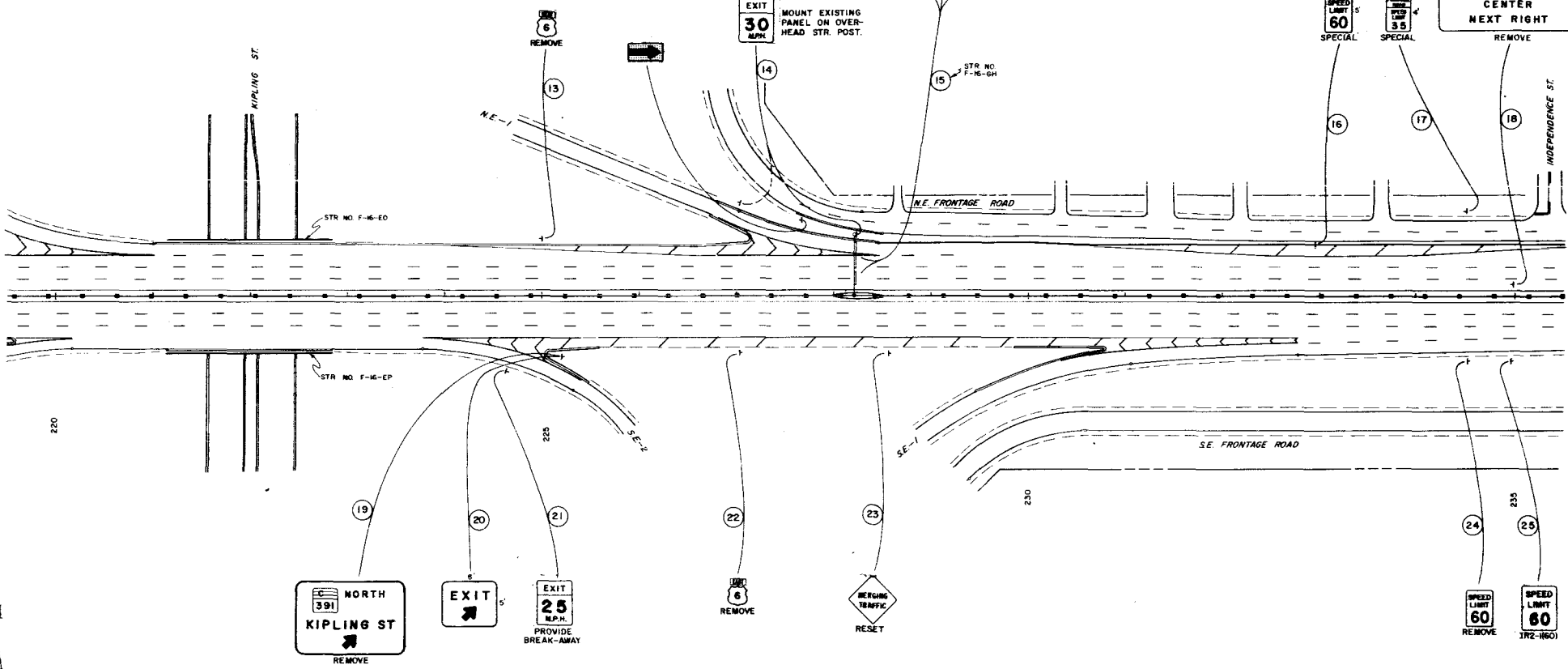
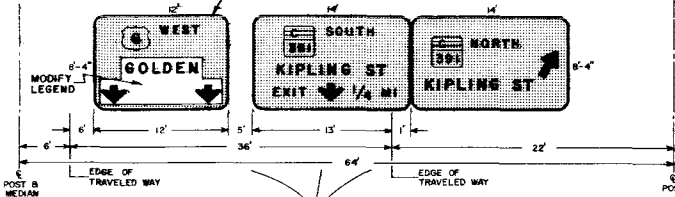
FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 006-6 (2)	65	



SIGNS MARKED  ARE TO REMAIN IN PLACE.

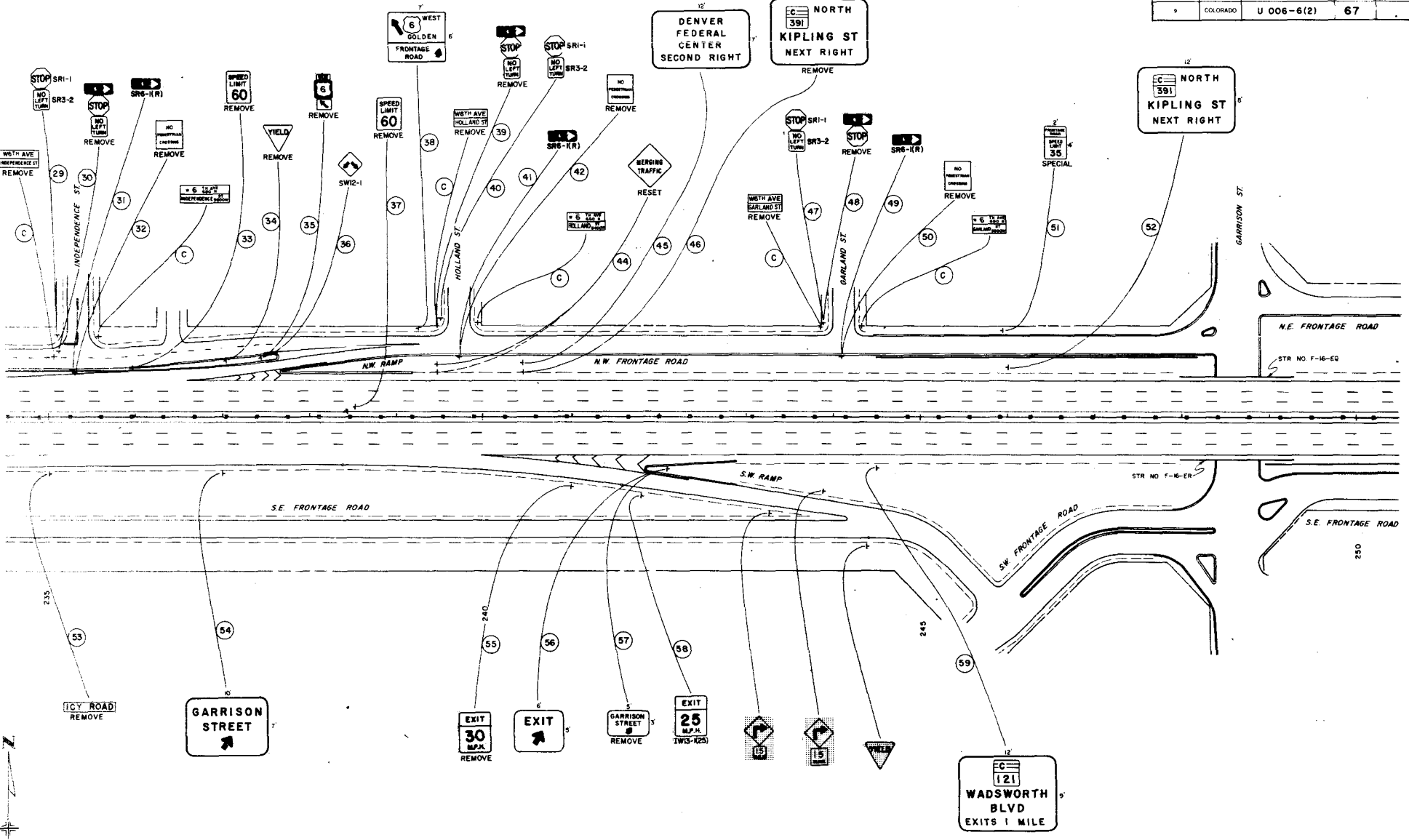
REV. 6-7-71 G.S.
 REV. 6-7-71 G.S.

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 006-6 (2)	66	



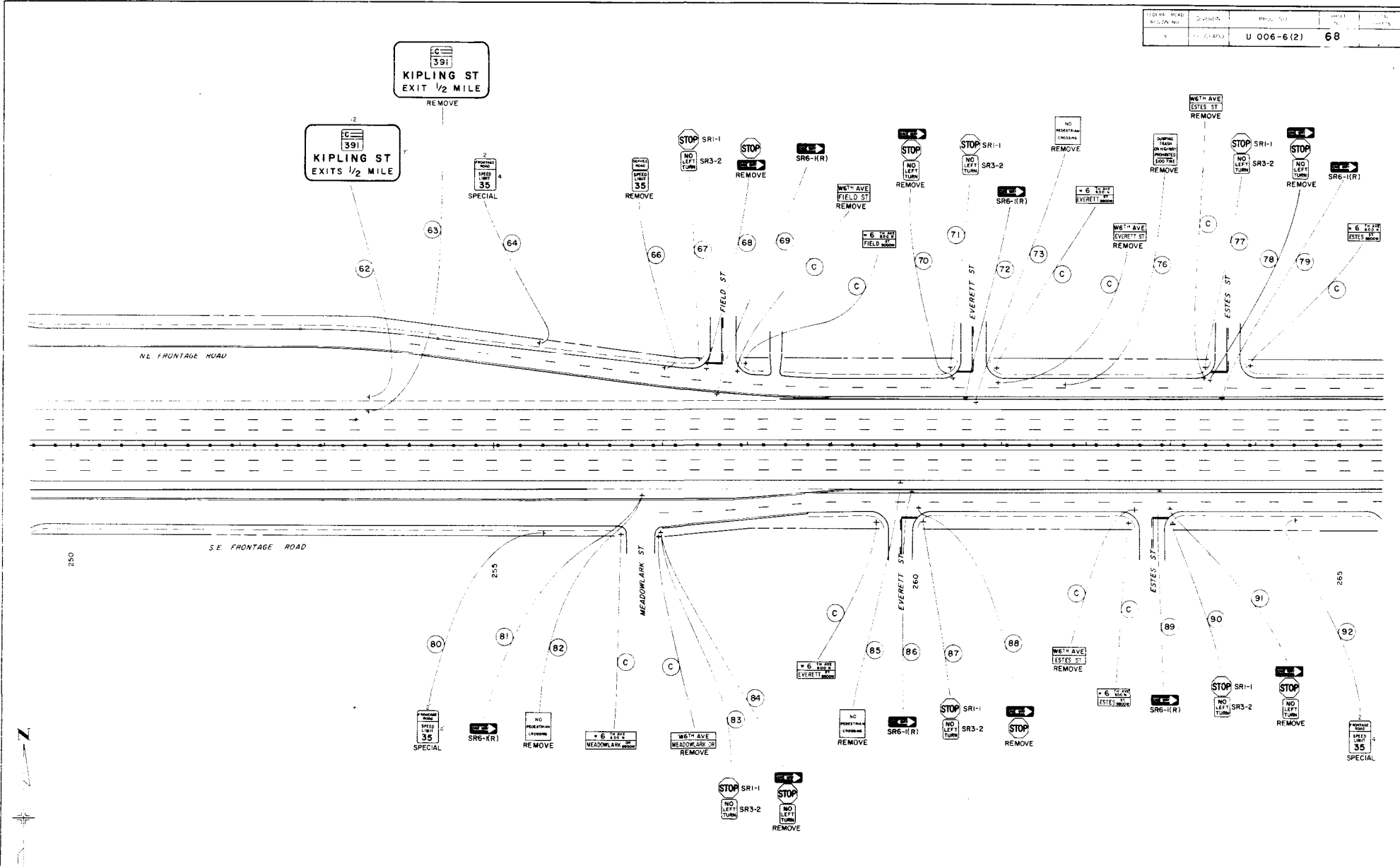
NOTE:
 SIGNS MARKED [] ARE TO REMAIN IN PLACE.

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 006-6(2)	67	



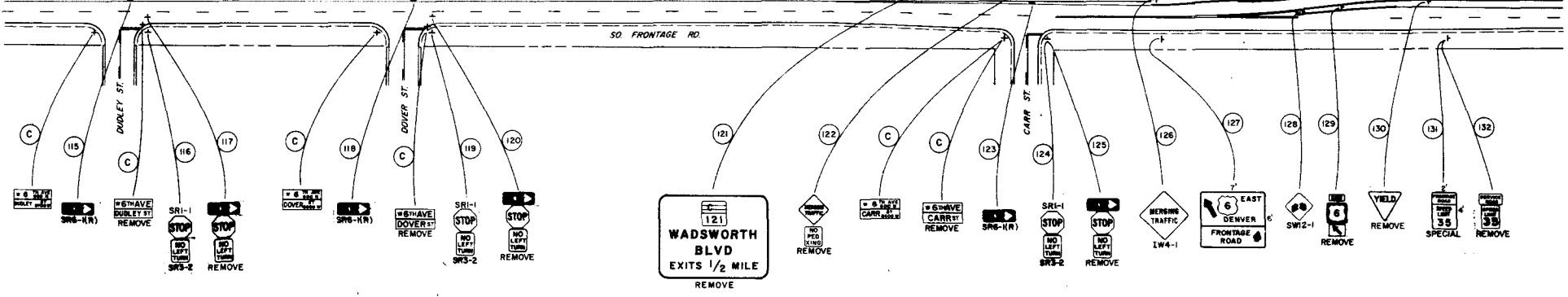
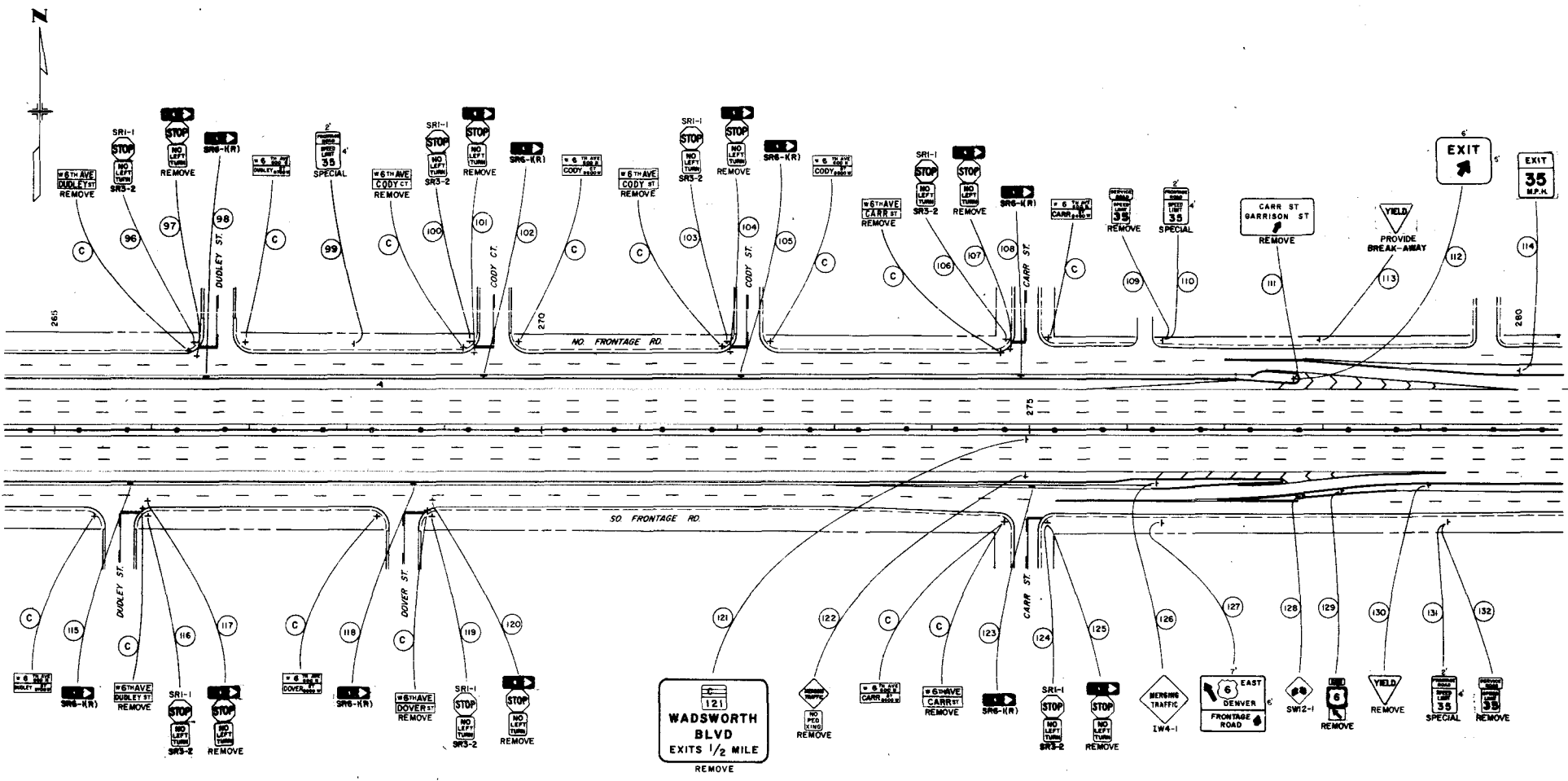
NOTES:
 SIGNS MARKED (C) ARE CITY OF LAKEWOOD RESPONSIBILITY.
 SIGNS MARKED (R) ARE TO REMAIN IN PLACE.

PROJECT NO.	DATE	BY	SCALE
U 006-6(2)	68		



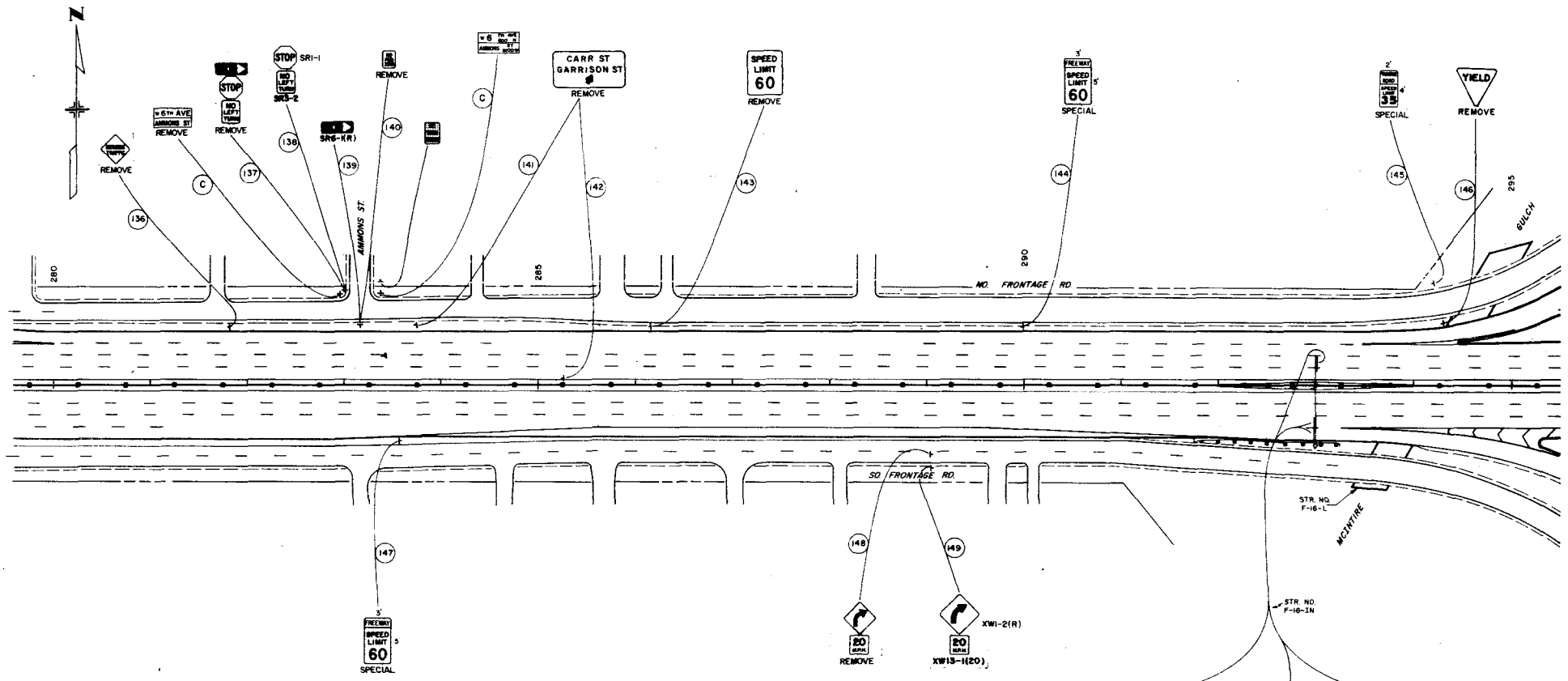
NOTE:
 SIGNS MARKED (C) ARE CITY OF LAKEWOOD RESPONSIBILITY.

FEDERAL ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 006-6(2)	69	



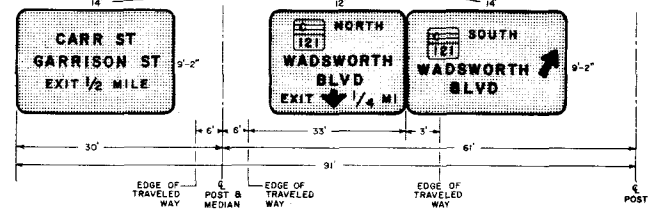
SIGNS MARKED (C) ARE CITY OF LAKEWOOD RESPONSIBILITY.

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 006-6 (2)	70	

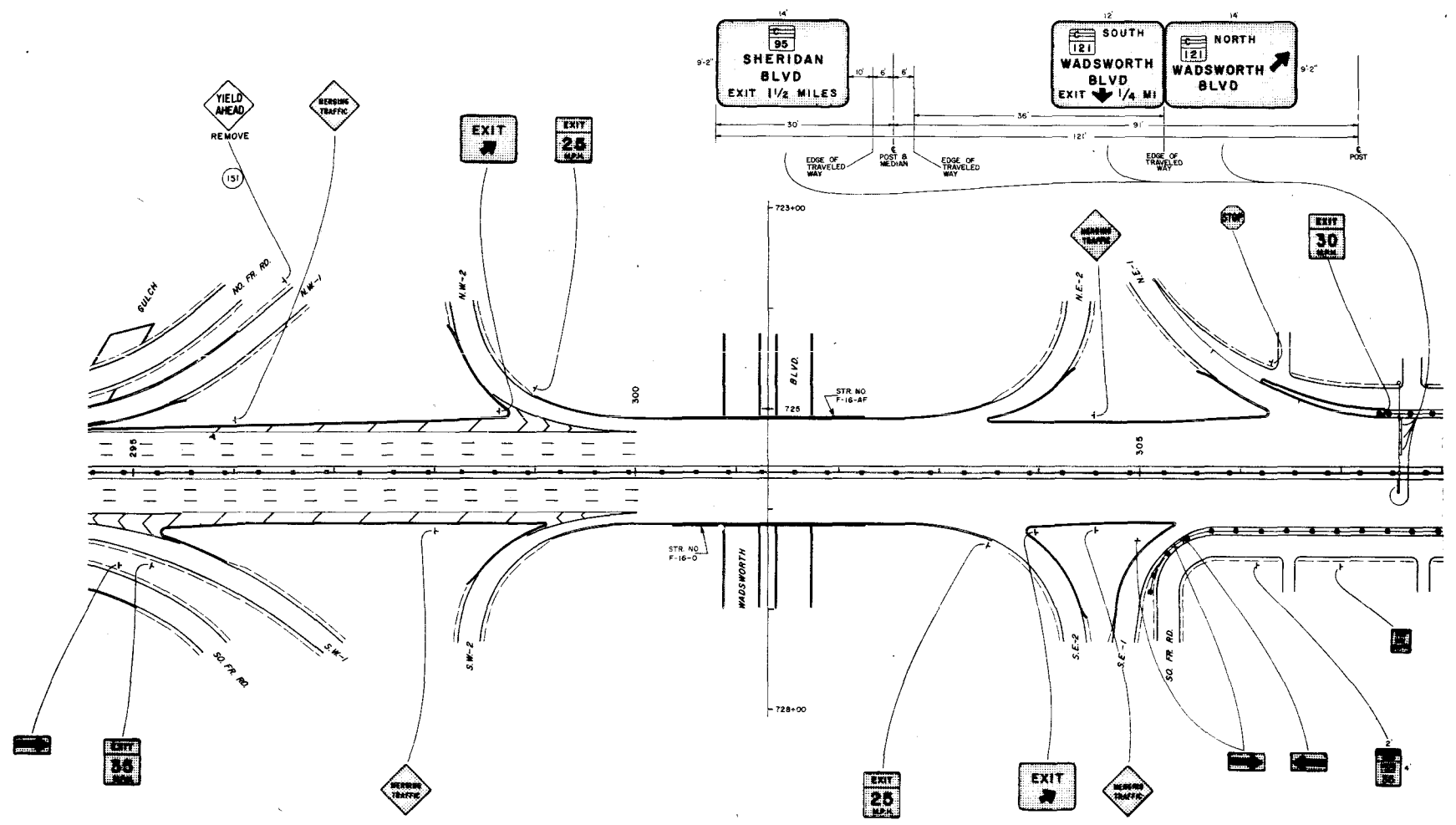


NOTES:
 SIGNS MARKED (C) ARE CITY OF LAKEWOOD RESPONSIBILITY
 SIGNS MARKED [Hatched Box] ARE TO REMAIN IN PLACE.

MODIFY SIGN LEGEND



FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	U 006-6 (2)	71	



NOTE:
 SIGNS MARKED  ARE TO REMAIN IN PLACE.

STANDARD TYPES of DITCHES and CONSTRUCTION METHODS

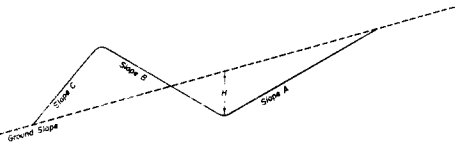
STANDARD M-203-C

(JULY 1, 1965)

FED. ROAD RES. NO.	DIVISION	PROJECT NO.	SHEET NO.
5.	COLO.		

DETAILS for CONTOUR INTERCEPTING DITCHES

Typical Section for Contour Intercepting Ditches



PURPOSE & USE OF THE TABLE
 The primary purpose of the information for Contour and Intercepting Ditches shown on this sheet is to serve as a guide in construction and to readily arrive at yardages of excavation involved.
 Foremost consideration in constructing these ditches is given first to the natural ground line slope confronted in construction, thence to the other values shown on the Typical Section.
 By properly arriving at the combination of values shown on the Typical Section and in the Table for a specified condition, the number of cubic yards of excavation per 100 lin. ft. of ditch may be read under the appropriate column for this item.

Typical Construction Layouts

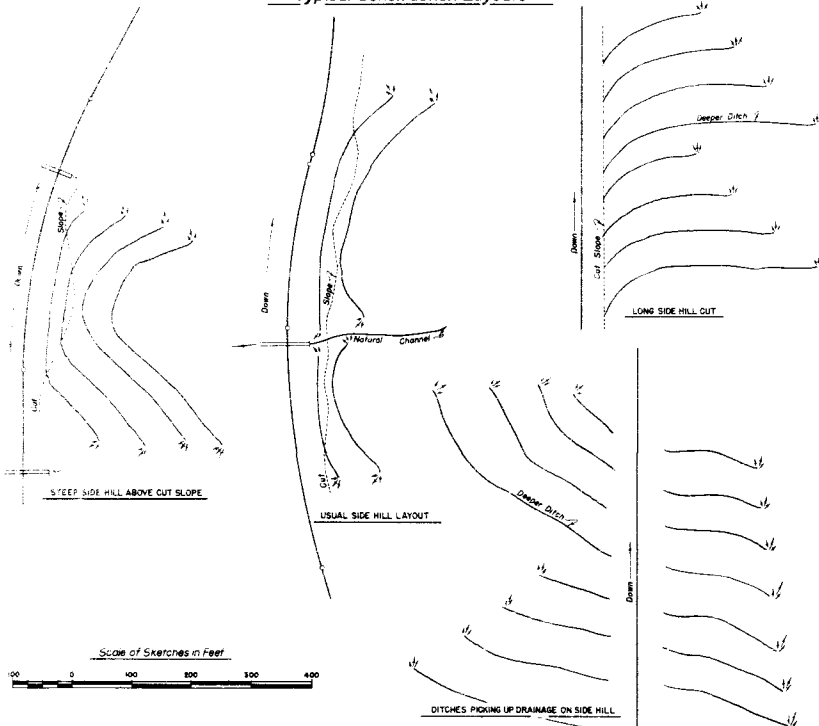
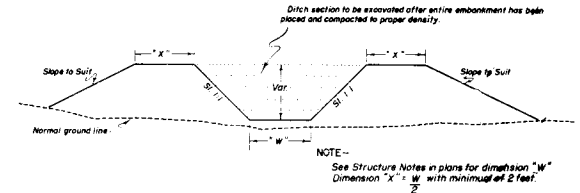


Table of Slopes and Yardages

Ground Or Flatter	SLOPES			H	Cubic Yards per 100 lin. ft. of Ditch
	A	B	C		
2:1	4:1	3:1	2:1	15"	12
				16"	21
				17"	32
				18"	15
				19"	22
				20"	30
				21"	14
				15"	20
				16"	13
				17"	27
				18"	39
				19"	25
				20"	12
				21"	18
				22"	25
1-1/2:1	4:1	1-1/2:1	1-1/2:1	15"	12
				16"	18
				17"	25
				18"	12
				19"	18
				20"	25
				21"	12
				22"	18
				23"	25
				24"	12
				25"	18
				26"	25
				27"	12
				28"	18
				29"	25
4:1	2:1	4:1	2:1	15"	10
				16"	14
				17"	17
				18"	24
				19"	15
				20"	22
				21"	30
				22"	15
				23"	21
				24"	29
				25"	13
				26"	18
				27"	25
				28"	15
				29"	22
3:1	2:1	3:1	2:1	15"	16
				16"	21
				17"	28
				18"	16
				19"	23
				20"	31
				21"	16
				22"	23
				23"	31
				24"	16
				25"	23
				26"	31
				27"	16
				28"	23
				29"	31
2:1	1-1/2:1	2:1	1-1/2:1	15"	20
				16"	29
				17"	40
				18"	13
				19"	19
				20"	26
				21"	12
				22"	17
				23"	24
				24"	12
				25"	17
				26"	23
				27"	32
				28"	15
				29"	22
1-1/2:1	1:1	1-1/2:1	1:1	15"	9
				16"	13
				17"	17
				18"	21
				19"	25
				20"	29
				21"	33
				22"	37
				23"	41
				24"	45
				25"	49
				26"	53
				27"	57
				28"	61
				29"	65
1-1/2:1	1:1	1-1/2:1	1:1	15"	11
				16"	16
				17"	21
				18"	26
				19"	31
				20"	36
				21"	41
				22"	46
				23"	51
				24"	56
				25"	61
				26"	66
				27"	71
				28"	76
				29"	81

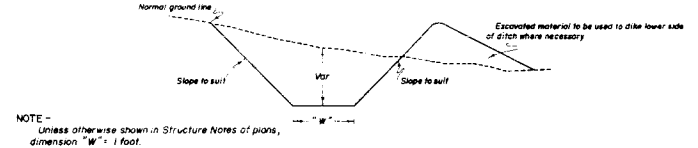
▲ Slopes are approximate and may be varied to suit conditions encountered during construction.

TYPICAL SECTIONS for DRAINAGE, IRRIGATION DITCHES and CHANNEL CHANGES



For Embankment Sections

(Generally for use in Irrigation Ditches & Channel Changes)



For Cut Sections

REVISIONS

(R-1)	7-23-68	Dept. Name	M. R. H.

GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications applicable to the Project.
- All ditches are to be constructed to lines and grades as staked by the Engineer using the ditch section shown on plans or as ordered by the Engineer.
- CONTOUR INTERCEPTING DITCHES:** Ditches are to be laid out along the ground contour on a grade of not over 1% (Type of soil shall govern the grade).
- Ends of ditches are to be lined up so that concentration of flow from a higher contour ditch into one of lower contour is, as far as possible avoided. The use of a deeper ditch is recommended where this condition is encountered.
- The following horizontal spacing of ditches is recommended:
 - 4% to 6% Approximately 70' Centers
 - 8% to 10% Approximately 60' Centers
 - 20% to 4:1 Slope Approximately 55' Centers
 - 30% to 1-1/2:1 Slope Approximately 50' Centers
- Where ditch checks are required the intervening ditch between one set of ditch checks shall not exceed a grade of 1.0%. Details of checks will be shown on plans when required.

DEPARTMENT OF HIGHWAYS
 STATE OF COLORADO
 DIVISION OF HIGHWAYS

DITCH TYPES

Designed by C.E.M. Approved by C.E.M.
 Made by C.G.W. Staff Design Eng.
 Checked by Date: July 1, 1965

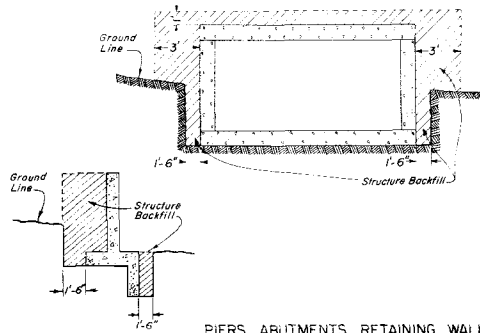
STANDARD M-206-AA

(MARCH 1, 1971)
(SHEET 1 OF 2)

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

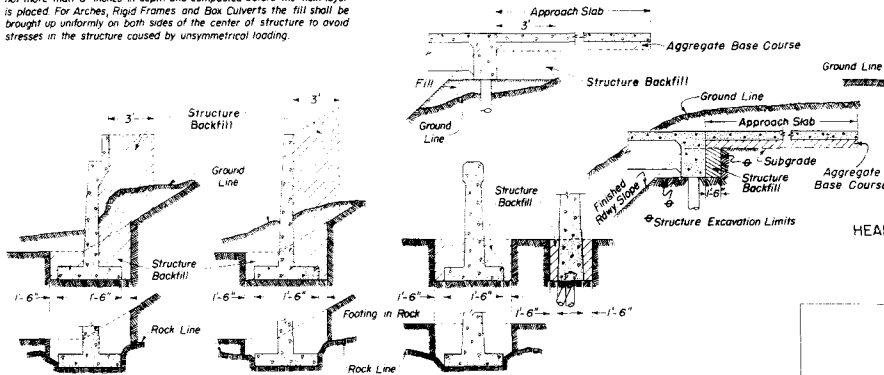
REVISION	

CONCRETE BOX CULVERTS & WINGWALLS

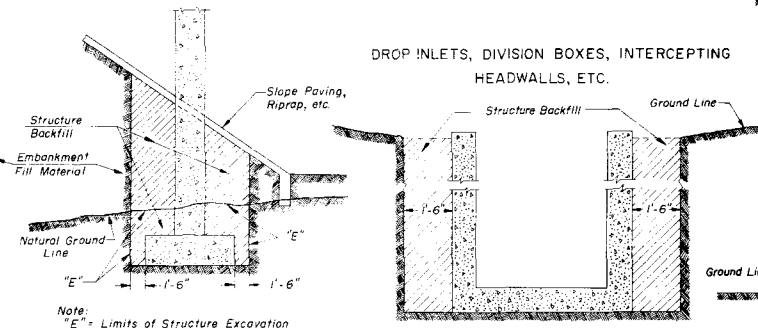


PIERS, ABUTMENTS, RETAINING WALLS ETC.

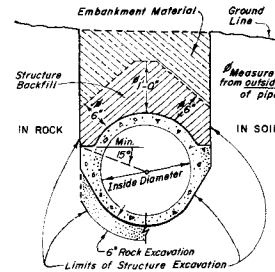
All material that is to be compacted shall be placed in horizontal layers not more than 6" inches in depth and compacted before the next layer is placed. For Arches, Rigid Frames and Box Culverts the fill shall be brought up uniformly on both sides of the center of structure to avoid stresses in the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



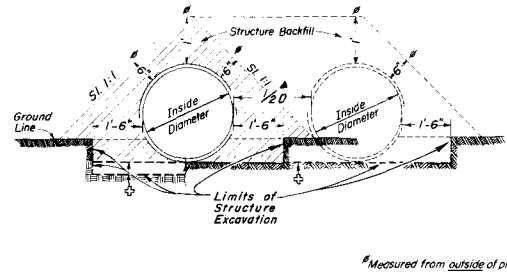
DROP INLETS, DIVISION BOXES, INTERCEPTING HEADWALLS, ETC.



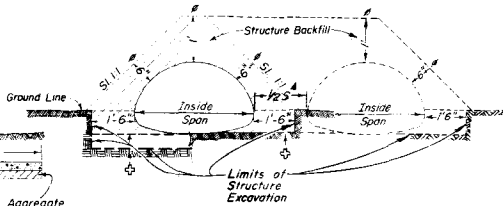
CAST IN PLACE CONDUIT



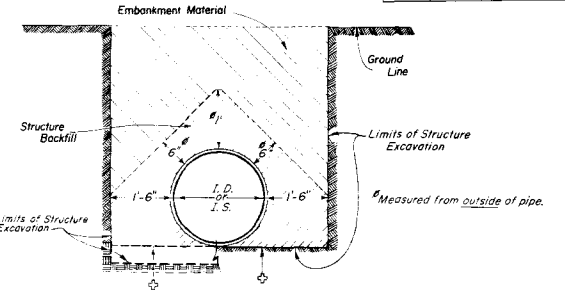
CIRCULAR CONDUIT



ELLIPTICAL OR ARCH CONDUIT



SIPHONS OR CONDUIT IN TRENCH



NOTES:

- When two or more conduits are laid side by side they shall be spaced so that the adjacent pipes will be $1/2 I.D.$, $1/2 S.$ or 3 feet apart (including wall thickness), whichever is less. Minimum spacing shall be not less than 1 foot between outside walls of pipe. For additional conduit installation details see M Standards for metal, concrete, or structural plate pipe culverts.
- Bottom of trench is excavated. For applicable limits of Structure Excavation, see leading details on standards for culverts.

GENERAL NOTES

All work shall be done according to the Standard Specifications applicable to the Project.

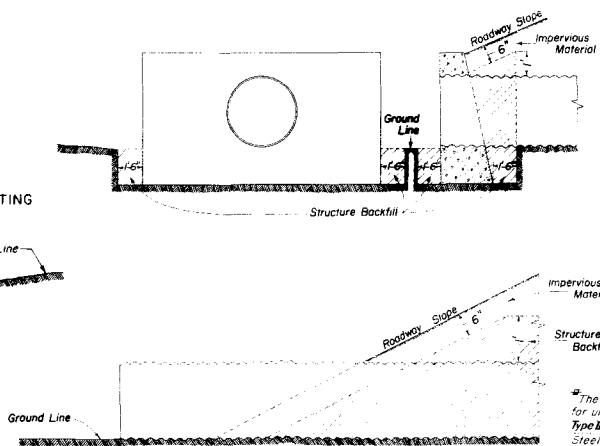
Where the roadway cross section is in fill, excavation for concrete footings (except those in rock or those on piers) and for box culverts shall be done according to the following:

Embankment shall be built up and compacted to a point one foot above the bottom of the box or one foot above the bottom of the footing. The trench shall then be excavated to accommodate construction of the box or footing.

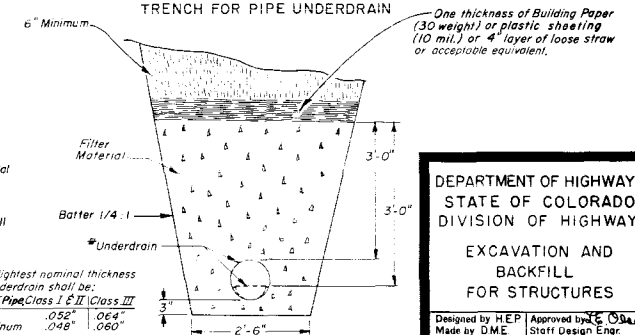
Excavation and backfill patterns different from those indicated on these sheets will be shown elsewhere on the plans.

Excavation for structure installation shall be classified as "Structure Excavation" unless otherwise shown on plans.

HEADWALLS AND END OF CULVERTS



TRENCH FOR PIPE UNDERDRAIN



The lightest nominal thickness for underdrain shall be:
Type III Pipe Class I & II Class III
Steel .052" .064"
Aluminum .048" .060"

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

EXCAVATION AND BACKFILL FOR STRUCTURES

Designed by HEP Approved by E. O'Brien
Made by DME Staff Design Engr.
Checked by L.E.O. Date: March 1, 1971

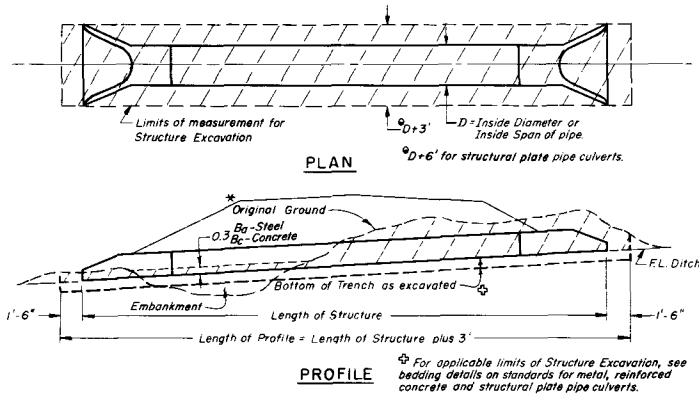
STANDARD M-206-AA

(MARCH 1, 1971)
(SHEET 2)

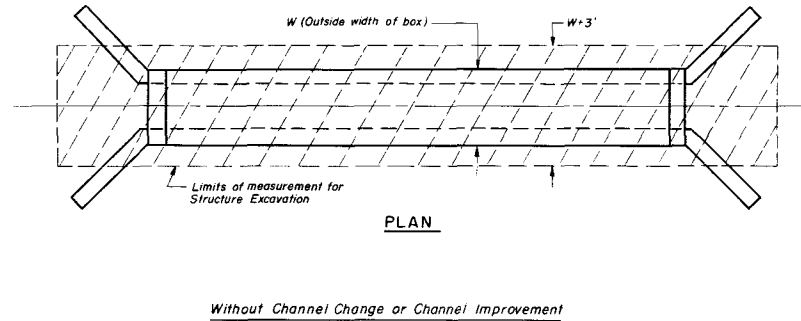
FEDERAL ROAD REGION NO.	DIVISION	PRJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO			

REVISIONS:	

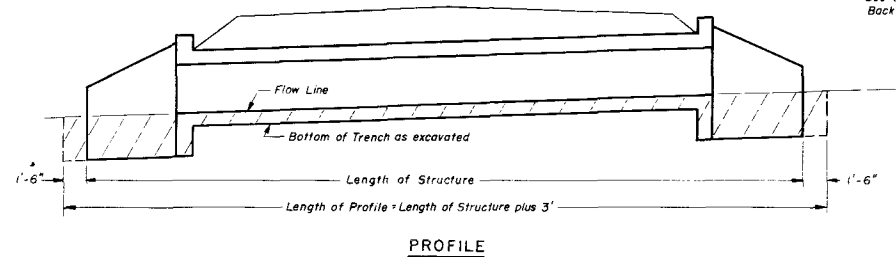
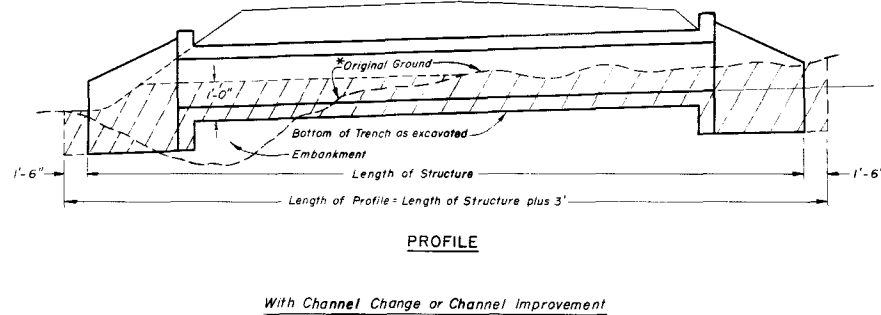
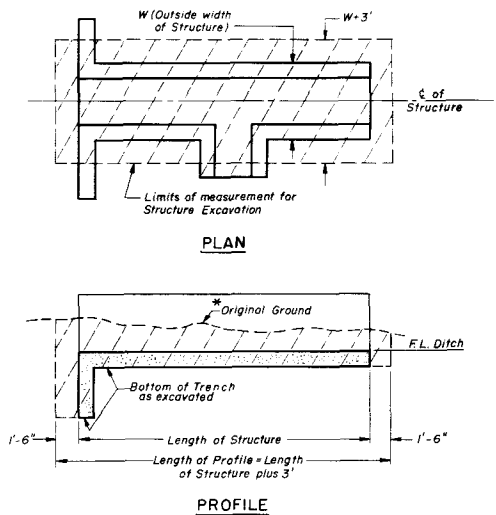
STRUCTURE EXCAVATION MEASUREMENT FOR PIPE CULVERTS



STRUCTURE EXCAVATION MEASUREMENT FOR CONCRETE BOX CULVERTS



STRUCTURE EXCAVATION MEASUREMENT FOR DIVERSION OR DIVISION BOXES



NOTE:
See Sheet 1 for General Notes and Backfilling Details.

* Along C of Structure
Areas to be used for Structure Excavation computations.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS
EXCAVATION AND BACKFILL FOR STRUCTURES
Designed by M.R.H. Approved by J.C. (J.L.M.)
Made by H.P.B. Staff Design Engr.
Checked by Date March 1, 1971

STANDARD CONCRETE PAVEMENT JOINT DETAILS

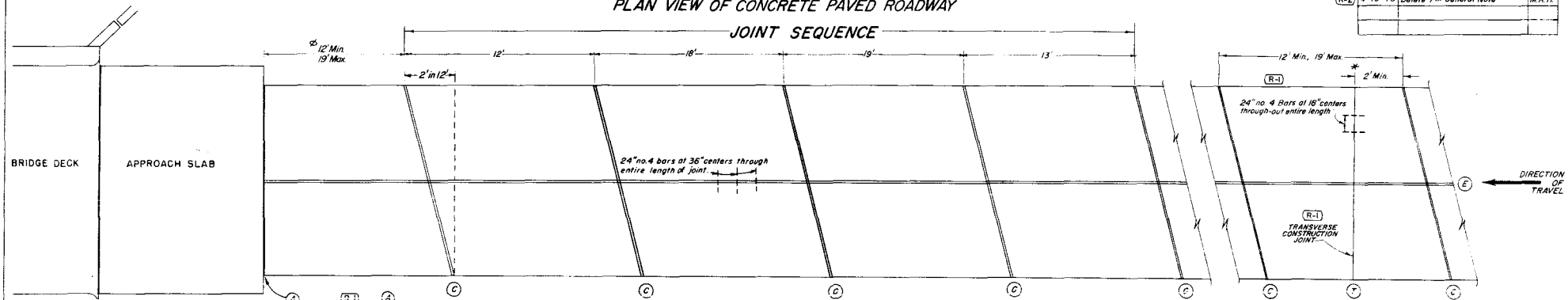
STANDARD M-412-AA

(MARCH 3, 1969)

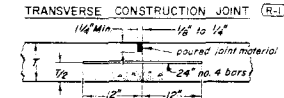
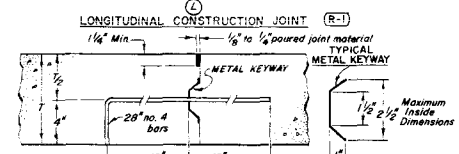
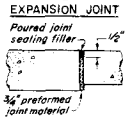
FED. ROAD REG. NO.	DIVISION	PROJECT NO.	Sh. No.
9	COLORADO		

REVISIONS		
(R-1)	5-7-69	Constr. Joints - Re-arrange dis. M.R.H.
(R-2)	4-10-70	Detail 7th General Note M.R.H.

PLAN VIEW OF CONCRETE PAVED ROADWAY
JOINT SEQUENCE



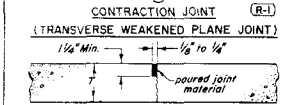
The spacing of the joint sequence (4 slabs) preceding this slab shall be adjusted, if necessary, in order to establish a slab length within this range.



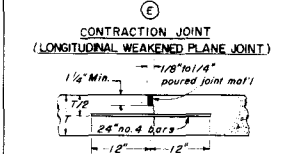
To be used when traffic lane is added and poured separately or for intersections, tapers or speed change lanes. Alternate longitudinal construction joint designs may be used if approved by the Engineer.

GENERAL NOTES

- All work shall be done in conformity with the Standard Specifications applicable to the Project.
- Bars designated by number in "no. 4 bars" are deformed reinforcing bars, intermediate grade.
- The cost of all bars and joint material shown on this sheet is to be included in the bid price for Concrete Pavement.
- See plans for dimension "T".
- Concrete pavement shall receive a drag finish unless another type finish is permitted by the Engineer.
- Type II cement shall be used in pavement concrete.

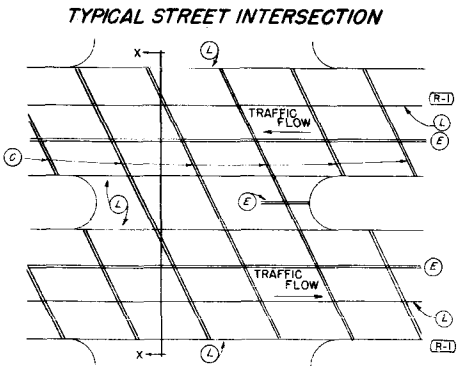
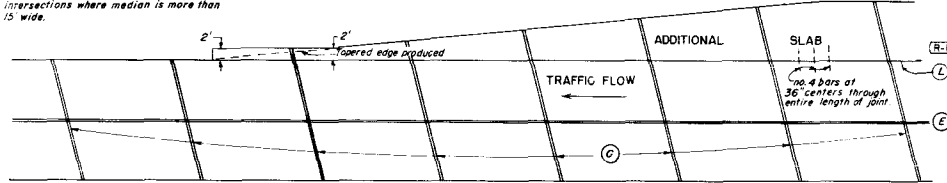


Transverse weakened plane joints shall be spaced in a regular series successively of 13, 19, 18 and 12 feet. Joints shall be diagonal with an offset of 2 feet in 12 feet skewed counterclockwise.



- To be used for the following:
- To divide lanes as shown in plan view above and to divide lanes when 3 lanes are built simultaneously by slip-form method.
 - Along centerline of divided highway at intersections where median is more than 15' wide.

DETAILS FOR CONSTRUCTION OF ACCELERATION LANE, DECELERATION LANE OR ADDITIONAL TRAFFIC LANE.



SECTION X-X

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

CONCRETE
PAVEMENT JOINTS

Designed by M.R.H. Approved by R.E. COLWELL
Made by J.R.B. Staff Design Engr.
Checked by R.S.M. Date: March 3, 1969

STANDARD M-500-A

(JULY 1, 1965)

FED. ROAD RES. NO.	DIVISION	PROJECT NO.	SHEET NO.
8	COLO.		

1 2 3 4 5 6 7 8 9 0 .

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

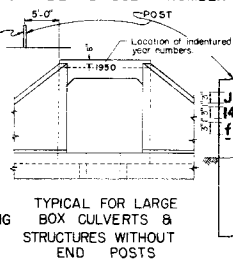
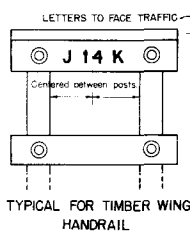
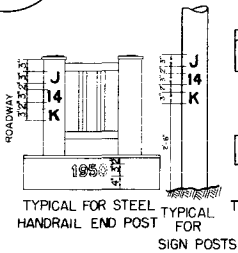
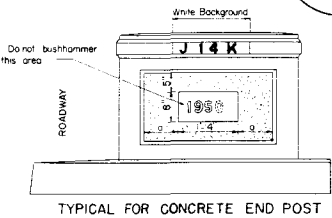
M N O P Q R S T U V W

a f g l J 1 4 K 1 9 5 0

Scale in inches
1
2
3

SECTION

abcdefghijklmnopqrstuvwxyz



GENERAL NOTES

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS APPLICABLE TO THE PROJECT.

THE SIZE SHAPE AND FINISH 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 NUMBER AND RECEIVED IN CONCRETE SHALL BE SHOWN AS SHOWN IN THE PLAN. 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 SIGN THE NUMBER SHALL BE PLACED ON SIGN POSTS ON THE RIGHT HAND SIDE OF THE ROADWAY.

THE CORRECT NUMBER FOR BRIDGE OR SIGN IS SHOWN ON THE PLANS.

THE NUMBERS FOR MAJOR STRUCTURES OF OVER 20 FEET CLEAR SPAN SHALL BE UPPER CASE LETTERS. THE NUMBERS FOR MINOR STRUCTURES OF 12 TO 20 FEET CLEAR SPAN SHALL BE LOWER CASE LETTERS. SIGN BRACES SHALL BE CONSIDERED AS MAJOR STRUCTURES.

A PROPER 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 SIZED ON TIMBER HANDRAILS 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 WITH "EXTERIOR BLACK PAINT" AS SPECIFIED IN SECTION JOB PAINTS, OR AN ACCEPTABLE EQUIVALENT. THE BRACES 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 COST OF PAINTING OF STRUCTURE NUMBERS AND FURNISHING AND PLACING POSTS FOR STRUCTURE NUMBERS SHALL BE CONSIDERED SUBSIDIARY WORK AND SHALL BE INCLUDED IN THE ORIGINAL CONTRACT ITEMS AND WILL NOT PAID FOR AS SEPARATE ITEMS.

THE SPACING OF NUMBERS SHALL BE MEASURED ALONG CENTER LINE OF ROADWAY. IN CASE OF DOUBLE OR MULTIPLE BOX CULVERTS THE CENTER WALL OR WALLS SHALL BE OBSERVED AND CLEAR SPAN MEASURED FROM INSIDE OF END WALLS.

IN ADDITION TO THE REQUIREMENTS STATED ABOVE, STRUCTURE NUMBERS FOR HIGHWAYS PASSING UNDER CROSSROADS ARE TO BE PLACED AT THE FOLLOWING POINTS:

(A) FOR 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.

(B) FOR 2-SPAN STRUCTURES, THE STRUCTURE NUMBER SHALL BE STENCILED, FACING TRAFFIC, ON THE OUTSIDE FACE OF EACH END COLUMN IN THE CENTER PIER.

SAMPLE YEAR NUMBER

REVISIONS

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO

LETTERS AND FIGURES
FOR
STRUCTURE NUMBERS

Designed by _____
Made by _____
Checked by _____

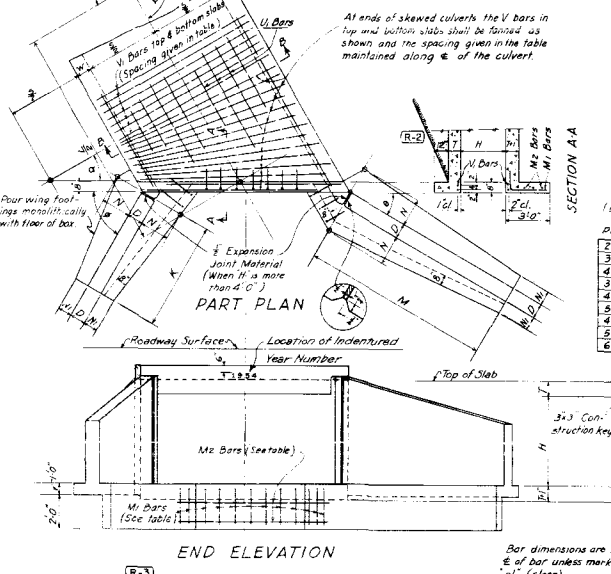
Approved by *A. L. ...*
Bridge Engineer
Date: July 1, 1965

STRUCTURE NO. _____

Dimensions & Quantities (see Wingwall Standard for Wings)

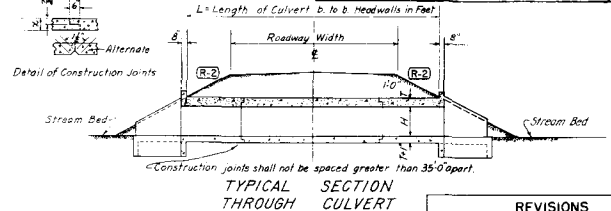
Height of Fill Allowed	Type	Span	Height	Slope	Wall	Bar Size	Spacing	No. Bars Required	Quantities for Concrete Slab	Quantities for Concrete Walls	Quantities for Two Headwalls
ft.		ft.	ft.	ft.	ft.	in.	ft.		cu. yds.	sq. ft.	cu. yds.
35'-0"	2A	2'-0"	2'-0"	1:1	8"	3"	12"	8	0.235	7.9	1.0
30'-0"	3A	3'-0"	3'-0"	1:1	8"	3"	12"	8	0.349	12.5	1.6
20'-0"	4A	4'-0"	4'-0"	1:1	8"	3"	12"	8	0.472	17.2	2.2
16'-0"	5A	5'-0"	5'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
20'-0"	5B	5'-0"	5'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
14'-0"	6A	6'-0"	6'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
20'-0"	6B	6'-0"	6'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
12'-0"	7A	7'-0"	7'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
15'-0"	7B	7'-0"	7'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
20'-0"	7C	7'-0"	7'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
10'-0"	8A	8'-0"	8'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
16'-0"	8B	8'-0"	8'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
20'-0"	9C	9'-0"	9'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
5'-0"	10A	10'-0"	10'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
10'-0"	10B	10'-0"	10'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
16'-0"	10C	10'-0"	10'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
5'-0"	11A	11'-0"	11'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
9'-0"	11B	11'-0"	11'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
13'-0"	11C	11'-0"	11'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
5'-0"	12A	12'-0"	12'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
10'-0"	12B	12'-0"	12'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
4'-0"	13A	13'-0"	13'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
8'-0"	13B	13'-0"	13'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
4'-0"	14A	14'-0"	14'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7
6'-0"	14B	14'-0"	14'-0"	1:1	8"	3"	12"	8	0.550	20.2	2.7

SINGLE CONCRETE BOX CULVERT



STANDARD M-60I-A (JULY 1, 1965)

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



REVISIONS

Rev.	Date	Dept. Name	MR.H.
R-1	7-23-68	Dept. Name	MR.H.
R-2	10-25-68	Delete Slope	MR.H.
R-3	5-10-71	Add General Notes	MR.H.

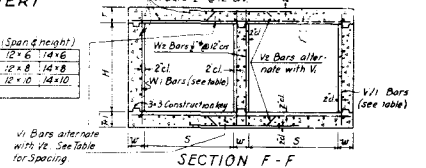
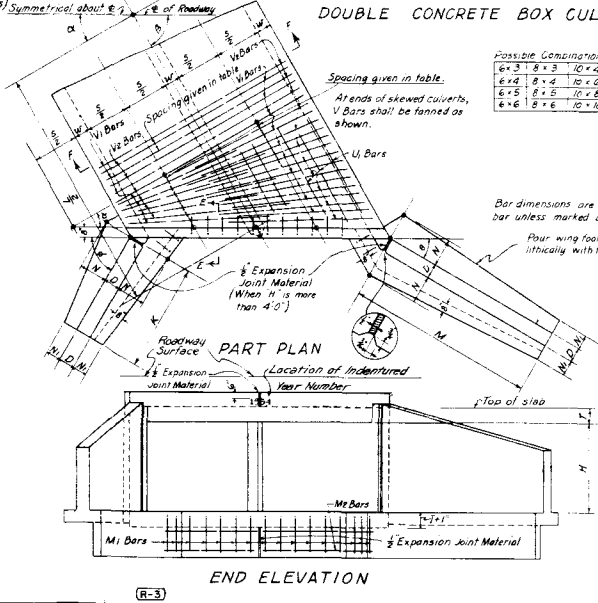
GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications applicable to the project.
- All wing surfaces to receive Class I finish.
- All construction joints shall be thoroughly cleaned before fresh concrete is poured. Secondary bars when solicited shall be given a top of 24 bar diameters.
- All reinforcing bars shall be tagged with the station number and bar designation.
- All dimensions not shown as clear are to the ϵ of the bar.
- All exposed corners on concrete shall be chamfered $3/4"$.
- All concrete shall be Class A.
- Footings in rock shall be poured out to rock and not formed.

Note: K, M, N, Ni and D are dimensioned on Wingwall Standard for the various heights of culverts.

Dimensions & Quantities (see Wingwall Standard for Wings)

Height of Fill Allowed	Type	Span	Height	Slope	Wall	Bar Size	Spacing	No. Bars Required	Quantities for Concrete Slab	Quantities for Concrete Walls	Quantities for Two Headwalls
ft.		ft.	ft.	ft.	ft.	in.	ft.		cu. yds.	sq. ft.	cu. yds.
10'-0"	6-6A	6'-0"	6'-0"	1:1	8"	3"	12"	8	0.793	17.7	2.6
15'-0"	6-6B	6'-0"	6'-0"	1:1	8"	3"	12"	8	0.877	20.3	3.4
20'-0"	6-6C	6'-0"	6'-0"	1:1	8"	3"	12"	8	0.961	22.9	4.8
10'-0"	8-8A	8'-0"	8'-0"	1:1	8"	3"	12"	8	1.167	28.3	6.3
15'-0"	8-8B	8'-0"	8'-0"	1:1	8"	3"	12"	8	1.251	30.9	8.0
20'-0"	8-8C	8'-0"	8'-0"	1:1	8"	3"	12"	8	1.335	33.4	9.7
10'-0"	10-10A	10'-0"	10'-0"	1:1	8"	3"	12"	8	1.541	38.8	12.1
15'-0"	10-10B	10'-0"	10'-0"	1:1	8"	3"	12"	8	1.625	41.4	13.8
20'-0"	10-10C	10'-0"	10'-0"	1:1	8"	3"	12"	8	1.709	44.0	15.5
10'-0"	12-12A	12'-0"	12'-0"	1:1	8"	3"	12"	8	1.915	49.4	18.9
15'-0"	12-12B	12'-0"	12'-0"	1:1	8"	3"	12"	8	2.000	52.0	20.6
20'-0"	12-12C	12'-0"	12'-0"	1:1	8"	3"	12"	8	2.084	54.6	22.3
10'-0"	14-14A	14'-0"	14'-0"	1:1	8"	3"	12"	8	2.290	60.0	26.7
15'-0"	14-14B	14'-0"	14'-0"	1:1	8"	3"	12"	8	2.375	62.6	28.4
20'-0"	14-14C	14'-0"	14'-0"	1:1	8"	3"	12"	8	2.459	65.2	30.1



DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

SINGLE AND DOUBLE
CONCRETE BOX CULVERTS

(FOR SIZES SEE TABLE OF
POSSIBLE COMBINATIONS)

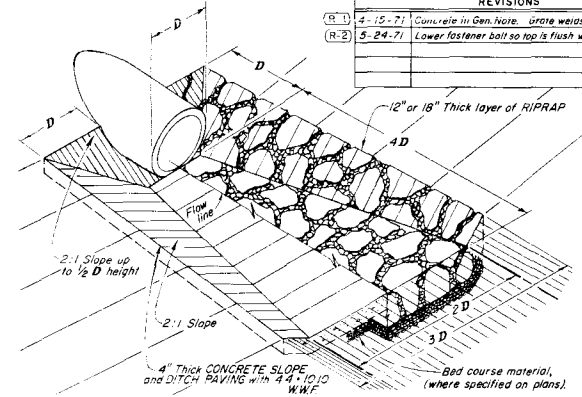
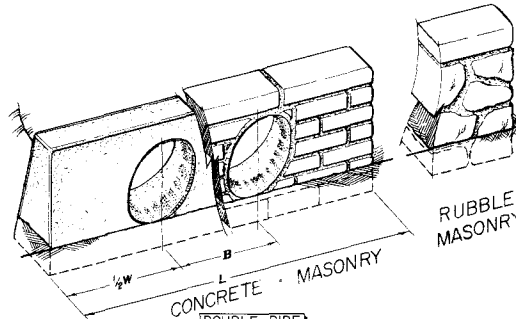
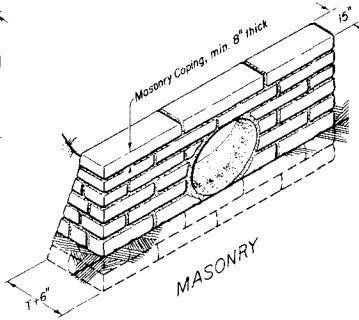
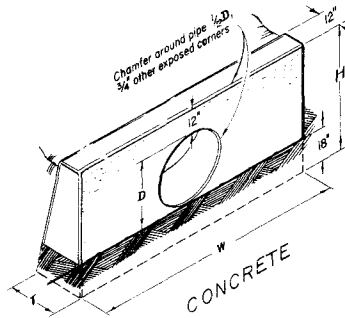
Designed by V.W.D. Approved by E.D. K...
Made by W.W.D. Bridge Engineer
Checked by J.M. Date: July 1, 1965

STANDARD M-601-L

(JANUARY 8, 1969)

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

REVISIONS				
(R-1)	4-15-71	Concrete in Gen. Note. Grate weirs.	M.R.H.	
(R-2)	5-24-71	Lower fastener bolt so top is flush w conc.	M.R.H.	



SINGLE PIPE

DOUBLE PIPE

HEADWALL INSTALLATIONS

CULVERT OUTLET PAVING

QUANTITIES FOR ONE CONCRETE HEADWALL (Cubic Yards)

PIPE	DIAMETER (AND EQUIVALENT DIAMETER) inches						(S = Span)		(R = Rise)				
	18		24		30		36		42		48		
TYPE	MAT'L	SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE
C	RCP	1.0	1.3	1.5	2.0	2.0	2.7	2.8	3.6	4.6	4.6	6.0	6.0
	CSP	1.1	1.4	1.6	2.1	2.2	3.0	3.0	3.9	5.3	5.0	6.8	6.8
A	RCP	0.9	1.2	1.3	1.8	1.7	2.3	2.3	2.9	3.9	3.1	4.4	4.4
	CSP	0.9	1.3	1.4	1.9	1.8	2.4	2.4	3.4	4.4	3.4	5.0	5.0
		S	R	S	R	S	R	S	R	S	R	S	R
		22	13	29	18	36	22	43	27	50	31	58	36

QUANTITIES FOR ONE MASONRY HEADWALL (Cubic Yards)

TYPE	MAT'L	SGL 18 DBL		SGL 24 DBL		SGL 30 DBL		SGL 36 DBL		SGL 42 DBL		SGL 48 DBL	
		18	24	30	36	42	48	18	24	30	36	42	48
C	RCP	1.3	1.7	1.9	2.5	2.6	3.4	3.5	4.5	4.4	6.1	5.6	7.2
	CSP	1.4	1.8	2.0	2.7	2.8	3.7	3.8	5.0	4.8	6.8	6.1	8.2
A	RCP	1.4	1.9	2.1	2.8	2.9	3.9	3.9	5.3	5.0	7.2	6.4	8.8
	CSP	1.4	1.9	2.1	2.9	3.0	4.1	4.0	5.5	5.2	7.8	6.6	9.2
		S	R	S	R	S	R	S	R	S	R	S	R
		22	13	29	18	36	22	43	27	50	31	58	36

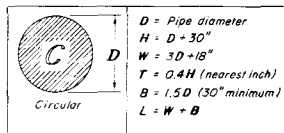
CONCRETE FOR INTERCEPTING HEADWALL (Cubic Yards)

TYPE	MAT'L	18	24	30	36	42	48
C	RCP	1.6	1.9	2.2	2.5	2.8	3.1
	CSP	1.7	2.0	2.3	2.6	2.9	3.3

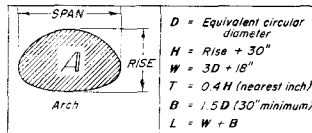
PAVING FOR CULVERT OUTLET (Cubic Yards)

Thick-Material	18	24	30	36	42	48
4" CONCRETE	0.4	0.8	1.2	1.7	2.4	3.1
12" RIPRAP	1.3	2.3	3.6	5.2	7.1	9.3
18" RIPRAP	2.0	3.5	5.4	7.8	10.7	13.9

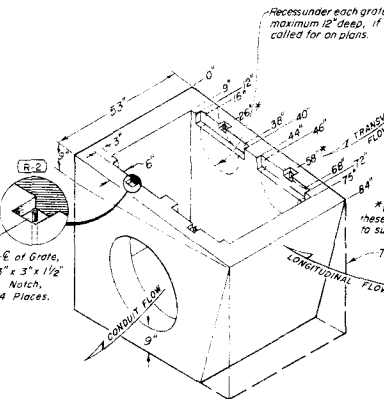
TYPE OF PIPE HEADWALL DIMENSIONS



TYPE OF PIPE HEADWALL DIMENSIONS

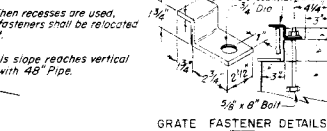


NOTE: Volume occupied by pipe has been deducted.

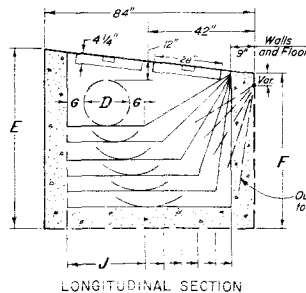


INTERCEPTING HEADWALL DIMENSIONS

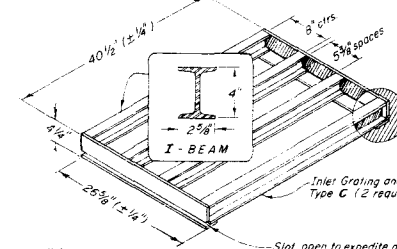
SYMBOL	FORMULA	DIMENSION IN INCHES							
D	Pipe Diam.	18	24	30	36	42	48		
E	D + 25.5"	43.5	49.5	55.5	61.5	67.5	73.5		
F	D + 16.5"	34.5	40.5	46.5	52.5	58.5	64.5		
G	(D/11 + 5)"	6.9	7.0	7.5	8.0	8.5	9.0		
J	D + 26"	31.0	38.0	45.0	52.0	59.0	66.0		



GRATE FASTENER DETAILS



LONGITUDINAL SECTION



STEEL FOR ONE GRATE (2 required)

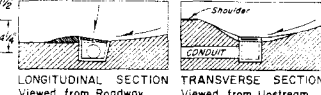
NO. PIECES	DESCRIPTION	LENGTH	LB.	WT. (LB.)
4	4" x 2 1/2" Beam	40"	7.70	10.3
2	3 1/2" x 1/4" Flat	26 5/8"	2.98	1.3
2	3" x 1/4" Flat	26 5/8"	2.55	1.2
2	Fastener Assembly as shown		1.90 ea.	4

TOTAL = 132 lbs each

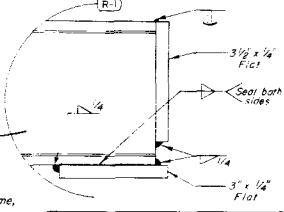
INTERCEPTING HEADWALL AND GRATE

GENERAL NOTES (R-1)

- All work shall be done in accordance with the Standard Specifications applicable to the project.
- For size and location of culverts, see plans.
- All concrete shall be Class A, B or D.
- All exposed concrete surfaces shall receive Class I finish.
- Footings in rock shall be poured out to rock and not formed.
- Inset Gratings shall be galvanized as described for Frames, Grates, Covers and Steps in Section 712.



LONGITUDINAL SECTION TRANSVERSE SECTION



DEPARTMENT OF HIGHWAYS STATE OF COLORADO DIVISION OF HIGHWAYS HEADWALL, INTERCEPTING HEADWALL AND CULVERT OUTLET PAVING

Designed by M.R.H. Approved by J.R.B.
Made by J.R.B. Staff Design Engineer
Checked by R.S.M. Date: January 8, 1969

STANDARD M-603-M

(MARCH 20, 1967)

FEDERAL ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEET.
9	COLORADO			

REVISIONS				
(R-1)	4-5-68	Add notes.		MRH
(R-2)	7-23-68	Dept. Name & Note		MRH
(R-3)	2-11-71	Thickness Tables, General Notes.		MRH

FILL HEIGHT & THICKNESS TABLES FOR METAL CULVERT PIPE (RIVETED, WELDED OR HELICAL FABRICATION)

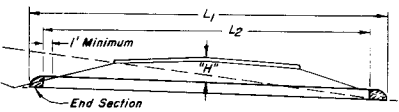
TABLE I
CORRUGATED STEEL PIPE
(2" x 1/2") OR (2-2/3" x 1/2") CORRUGATIONS

PIPE SIZE (B _g) Inches	AREA (Sq. Ft.)	HEIGHT OF FILL OVER TOP OF PIPE IN FEET																	
		THICKNESS IN INCHES																	
		1 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 70	70 to 80	80 to 90	90 to 100			
12	0.8	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
15	1.2	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
18	1.8	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
24	3.1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
30	4.9	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
36	7.1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
42	9.6	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
48	12.6	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
54	15.9	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
60	19.6	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
66	23.8	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
72	28.3	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
78	33.0	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
84	38.0	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	

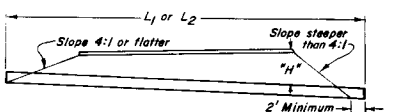
TABLE II
CORRUGATED STEEL PIPE ARCH
(2" x 1/2") OR (2-2/3" x 1/2") CORRUGATIONS

PIPE SIZE Spans-Rise (Inches)	AREA (Sq. Ft.)	CORNER RADIUS (Inches)	HEIGHT OF FILL OVER TOP OF PIPE IN FEET									
			THICKNESS IN INCHES									
			1.5 to 7	7 to 8	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13			
18 x 11	1.1	3 1/2	.064	.064	.064	.064	.064	.064	.064	.064	.064	
22 x 13	1.6	4	.064	.064	.064	.064	.064	.064	.064	.064	.064	
25 x 16	2.2	4	.064	.064	.064	.064	.064	.064	.064	.064	.064	
29 x 18	2.8	4 1/2	.064	.064	.064	.064	.064	.064	.064	.064	.064	
36 x 22	4.4	5	.064	.064	.064	.064	.064	.064	.064	.064	.064	
43 x 27	6.4	5 1/2	.064	.064	.064	.064	.064	.064	.064	.064	.064	
50 x 31	8.7	6	.064	.064	.064	.064	.064	.064	.064	.064	.064	
58 x 36	11.4	7	.064	.064	.064	.064	.064	.064	.064	.064	.064	
65 x 40	14.3	8	.064	.064	.064	.064	.064	.064	.064	.064	.064	
72 x 44	17.6	9	.064	.064	.064	.064	.064	.064	.064	.064	.064	

METAL CULVERT WITH END SECTIONS



METAL CULVERT WITHOUT END SECTIONS



"H" = Maximum height of fill over top of Culvert, including pavement.
 L₁ = Length of Culvert to be measured when placed in accordance with Section 617.
 L₂ = Length of pipe to be measured when placed in accordance with Section 603.
 Length of extension, when placed in accordance with Section 617, shall be the actual number of feet of new culvert required.

TABLE III
CORRUGATED STEEL PIPE
RIVETED OR HELICAL FABRICATION
3" x 1" CORRUGATIONS

PIPE SIZE (B _g) Inches	AREA (Sq. Ft.)	HEIGHT OF FILL OVER TOP OF PIPE IN FEET																	
		THICKNESS IN INCHES																	
		10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 70	70 to 80						
36	7.1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
42	9.6	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
48	12.6	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
54	15.9	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
60	19.6	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
66	23.8	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
72	28.3	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
78	33.0	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
84	38.0	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
90	44.0	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
96	50.3	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
102	57.0	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
108	64.0	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
114	70.9	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
120	78.6	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	

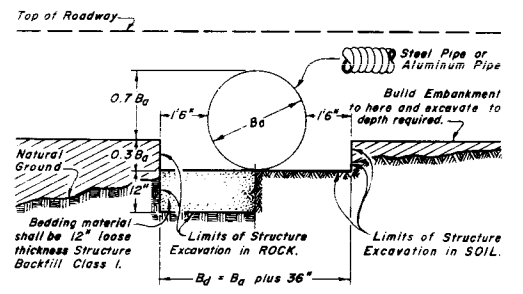
TABLE IV
CORRUGATED STEEL PIPE
SPOT WELDED OR BOLTED (1/2" ASTM A 325 BOLTS) FABRICATION
3" x 1" CORRUGATIONS

PIPE SIZE (B _g) Inches	AREA (Sq. Ft.)	HEIGHT OF FILL OVER TOP OF PIPE IN FEET																	
		THICKNESS IN INCHES																	
		10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 70	70 to 80						
36	7.1	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
42	9.6	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
48	12.6	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
54	15.9	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
60	19.6	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
66	23.8	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
72	28.3	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
78	33.0	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
84	38.0	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
90	44.0	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
96	50.3	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
102	57.0	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
108	64.0	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
114	70.9	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	
120	78.6	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	.064	

TABLE V
CORRUGATED STEEL PIPE ARCH
(R-2)
3" x 1" CORRUGATIONS

PIPE SIZE Spans-Rise (Inches)	AREA (Sq. Ft.)	CORNER RADIUS (Inches)	HEIGHT OF FILL OVER TOP OF PIPE IN FEET									
			THICKNESS IN INCHES									
			1.5 to 10	10 to 11	11 to 12	12 to 14	14 to 15					
43 x 27	6.4	7 3/4	.064	.064	.064	.064	.064	.064	.064	.064		
50 x 31	8.7	9	.064	.064	.064	.064	.064	.064	.064	.064		
58 x 36	11.4	10 1/2	.064	.064	.064	.064	.064	.064	.064	.064		
65 x 40	14.3	12	.064	.064	.064	.064	.064	.064	.064	.064		
72 x 44	17.6	13 1/4	.064	.064	.064	.064	.064	.064	.064	.064		
78 x 55	22.0	18	.064	.064	.064	.064	.064	.064	.064	.064		
81 x 59	26.0	18	.064	.064	.064	.064	.064	.064	.064	.064		
87 x 63	31.0	18	.064	.064	.064	.064	.064	.064	.064	.064		
95 x 67	35.0	18	.064	.064	.064	.064	.064	.064	.064	.064		
103 x 71	41.0	18	.064	.064	.064	.064	.064	.064	.064	.064		

INSTALLATION OF METAL CULVERT PIPE



STANDARD M-603-RC

(MARCH 20, 1967)

FEDERAL ROAD REGION NO.	DIVISION	PRJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO			

REVISIONS

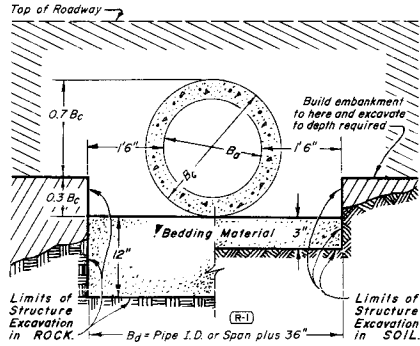
(R-1)	4-19-68	Added Arch and Elliptical Pipe. Gen. Notes.	M.R.H.
(R-2)	7-23-68	Dept. Name.	M.R.H.
(R-3)	3-1-71	GIW's for B bed and NRCC. CL 2 bed mat'l.	M.R.H.

(R-1) NOTE: B_c is the outside dimension for diameter, span or rise

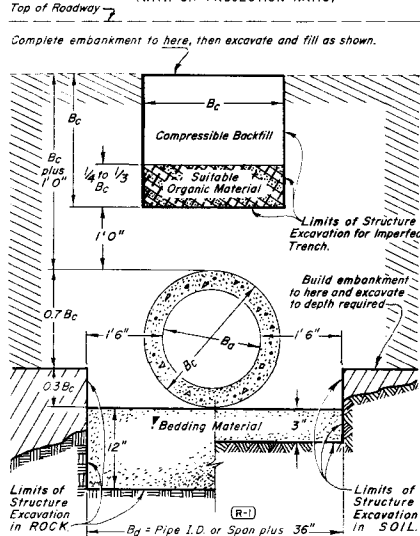
DIMENSIONS FOR REINFORCED CONCRETE PIPE

(For Information Only)

PIPE INSTALLATION (WITH 0.7 PROJECTION RATIO)



IMPERFECT TRENCH PIPE INSTALLATION (WITH 0.7 PROJECTION RATIO)



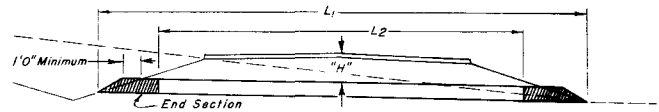
Bedding Material for SOIL shall be 3" loose thickness Structure Backfill Class 2. Bedding Material for ROCK shall be 12" loose thickness Structure Backfill Class 1.

# PIPE SIZE: B_c (In. I.D.)	Wall Thickness (Inches)	0.3 B_c Outside Dia. (Feet)	ARCH		VERTICAL ELLIPTICAL (VE)		HORIZONTAL ELLIPTICAL (HE)	
			ϕ Span (Inches)	ϕ Rise (Inches)	Span (Inches)	Rise (Inches)	Span (Inches)	Rise (Inches)
12	2	0.40						
15	2-1/4	0.49	18	11	2-1/4	0.39		
21	2-1/2	0.58	22	13	2-1/2	0.45		
24	2-3/4	0.66	25	16	2-3/4	0.54		
27	3	0.75	29	18	3	0.60		
30	3-1/4	0.84					23	14
33	3-1/2	0.92	36	22	3-1/2	0.73		
36	3-3/4	1.01	43	27	4	0.88		
39	4	1.10					29	45
42	4-1/2	1.18	50	31	4-1/2	1.00	4-1/2	1.35
48	5	1.45	58	36	5	1.15	5	1.46
54	5-1/2	1.62	65	40	5-1/2	1.28	6	2.00
60	6	1.80	72	44	6	1.40	6	2.23
66	6-1/2	1.97					7	2.43
72	7	2.15	88	54	7	1.70	7-1/2	2.65
78	7-1/2	2.32					8	2.85
84	8	2.50	102	62	8	1.95	8-1/2	3.08
90	8-1/2	2.68	115	72	8-1/2	2.23	9	3.28
96	9	2.85	122	77	9	2.38	9-1/2	3.50
102	9-1/2	3.02					10	3.69
108	10	3.20	138	87	10	2.68	10	3.90

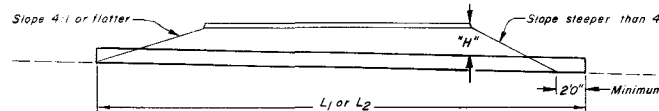
Also equivalent round dimension for Arch and Elliptical pipe.

Sizes shown are for identification purposes only. Actual sizes shall conform to those listed in Fig. 1 of ASTM Spec. C506.

CONCRETE CULVERT WITH END SECTIONS



CONCRETE CULVERT WITHOUT END SECTIONS



"H" = Maximum height of fill over top of Culvert, including pavement.
 L_1 = Length of Culvert to be measured when placed in accordance with Section 617.
 L_2 = Length of Pipe to be measured when placed in accordance with Section 603.

Length of extension, when placed in accordance with Section 617, shall be the actual number of feet of new culvert required.

HEIGHTS OF FILL OVER REINFORCED CONCRETE PIPE

ALL SIZES

TYPE OF PIPE	HEIGHT OF FILL OVER TOP OF PIPE IN FEET					
	CLASS OF PIPE (0.01" Crack D-Load)					
	Class II	Class III	Class IV	Class V	Class VI	Class VII
	Class VE II	Class VE III	Class VE IV	Class VE V	Class VE VI	Class VE VII
	1000 D	1350 D	2000 D	3000 D	4000 D	
PIPE INSTALLATION WITH 0.7 PROJECTION RATIO						
CIRCULAR	Min. to 18	Min. to 25	25+ to 37	37+ to 45		
ARCH	Min. to 18	Min. to 25	25+ to 37			
VERTICAL ELLIPTICAL	Min. to 18	Min. to 25	25+ to 37	37+ to 45	45+ to 62	
HORIZONTAL ELLIPTICAL	Min. to 18	Min. to 25	25+ to 37			
PIPE INSTALLATION WITH IMPERFECT TRENCH						
ALL TYPES	up to 35	up to 48	48+ to 75	75+ to 96		

GENERAL NOTES

All work shall be done in accordance with the Standard Specifications applicable to the project.
 Minimum cover excluding pavement shall be 1 foot.
 Fill heights greater than maximum allowed in the Heights of Fill Table on this sheet will require special design of structure.

Pipe design is based on safety factor of 1.33 on ultimate strength.
 The heights of fill over top of pipe are based on unit weight of soil of 120 lbs. per cubic foot.
 Pipe Class is determined from .01 inch crack D-load.
 Bedding is Class B (Modified) with Settlement Ratio $R_{ss} = 0.0$ (Yielding Bed).

Changes in design factors will require compensating change in pipe design.
 Minimum wall thickness dimensions are based on AASHTO Designation M 170 (Wall B) for Circular Pipe, AASHTO Designation M 206 for Arch Pipe and AASHTO Designation M 207 for Elliptical Pipe.

Spacing for multiple pipe installations shall conform to the details shown on M Standard for Excavation and Backfill for Structures.
 When a culvert is to be extended with pipe of different material, the connection shall conform to the detail on plans or be approved.

NONREINFORCED CONCRETE PIPE
 Nonreinforced Concrete Pipe is required to meet the same D-Load to produce the ultimate load under the three-edge-bearing method as specified for Reinforced Concrete Pipe in accordance with AASHTO M-170. Wall thickness of pipe may be increased as required to meet D-Load requirement.

All requirements for Reinforced Concrete Pipe, except those referring to reinforcement shall apply to Nonreinforced Concrete Pipe.

DEPARTMENT OF HIGHWAYS
 STATE OF COLORADO
 DIVISION OF HIGHWAYS
REINFORCED CONCRETE PIPE

Designed by M. R. H. Approved by J. R. B.
 Made by J. R. B. Staff Design Eng.
 Checked by A. S. M. Date: 4-19-68

STANDARD M-604-AA

(APRIL 21, 1967)

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

NO. 13 GRATING & FRAMES

Approx. Weight 680 lbs.

QUANTITIES

H	NO. OF 402 CLASS A REINFORCING BARS REQ'D	TYPE 3 INLET		CLASS A REINFORCING CONCRETE		STEEL	
		X	Y	XCU. YD.	Ø LB.	XCU. YD.	Ø LB.
3'-0"	3	1.30	64.29	2.20	110.77		
3'-6"	4	1.47	78.35	2.51	132.47		
4'-0"	4	1.64	82.40	2.82	139.22		
4'-6"	5	1.81	96.46	3.13	160.92		
5'-0"	6	1.98	110.51	3.44	182.63		
5'-6"	6	2.15	114.56	3.75	189.38		
6'-0"	7	2.32	128.62	4.06	211.08		
6'-6"	8	2.49	142.68	4.37	232.78		
7'-0"	8	2.66	146.73	4.68	239.53		
7'-6"	9	2.83	160.79	4.99	261.24		
8'-0"	10	3.00	174.85	5.30	282.94		
8'-6"	10	3.17	178.90	5.61	289.69		
9'-0"	11	3.34	192.96	5.92	311.39		
9'-6"	12	3.51	207.02	6.23	333.10		
10'-0"	12	3.68	211.07	6.54	339.84		

Ø includes 1% for overrun
 (R-2) X includes volume occupied by pipes

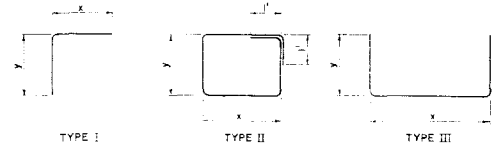
BAR LIST FOR H = 3'-0"

MARK	TYPE	NO. REQ'D	TYPE 3 INLET DIMENSIONS		LENGTH	NO. REQ'D	TYPE 3 DOUBLE INLET DIMENSIONS		LENGTH
			x	y			x	y	
401	I	4	1'-0"	1'-0"	2'-0"	7	1'-0"	1'-0"	2'-0"
402	II	3	3'-7/4"	2'-10/2"	14'-11/2"	3	7'-2/2"	2'-10/2"	22'-2"
403	III	2	3'-5/8"	* 2'-0/2"	7'-6/4"	2	7'-1/2"	* 2'-0/2"	11'-2"
404	III	4	2'-9"	* 2'-1"	6'-11"	8	2'-9"	* 2'-1"	6'-11"
405	STR					2			3'-0"

* Add 6" to this dimension for each 6" increase in "H" above 3'-0".

BENDING DIAGRAM

All dimensions are out to out of bar.



REVISIONS			
(R-1)	7-19-68	Dcpr Name	M.R.H.
(R-2)	12-2-68	Delete All Frame, Note & Details	M.R.H.

GENERAL NOTES

All work shall be done in accordance with the Standard Specifications applicable to the project.

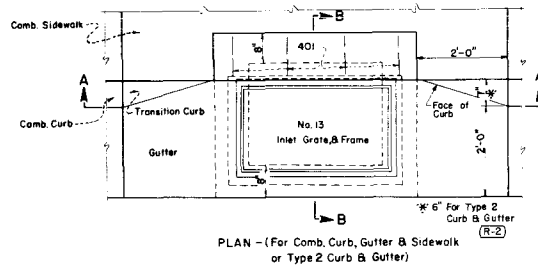
All concrete shall be class "A"
 All concrete walls shall be formed on both sides
 All exposed concrete corners shall be beveled to a 1" face
 All reinforcing bars shall be tagged with bar designation and station number.

All dimensions not shown as clear are to \bar{L} of bar.
 All gratings, rings and covers shall be cast iron.

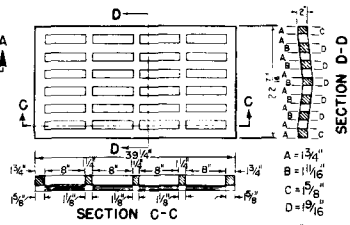
▲ When bituminous material is to extend to the edge of the grating frame, concrete may be depressed.

NOTE: Use steps for all inlets with H=3'-6" or more. Start 2'-0" below gutter line and space equally at Minimum of 18"

Details of Steps on Standard M-604-D

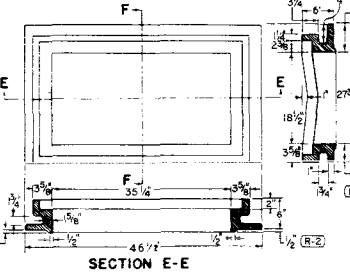


PLAN - (For Comb. Curb, Gutter & Sidewalk or Type 2 Curb & Gutter)



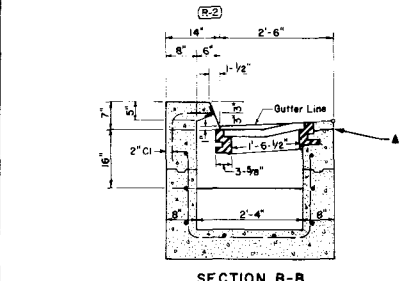
SECTION C-C

SECTION D-D

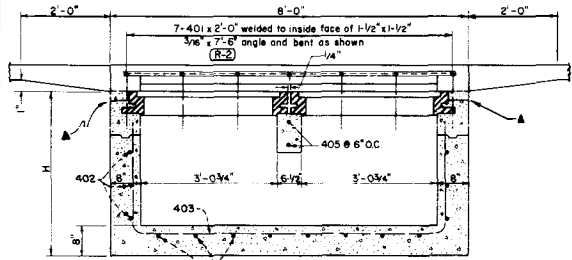


SECTION E-E

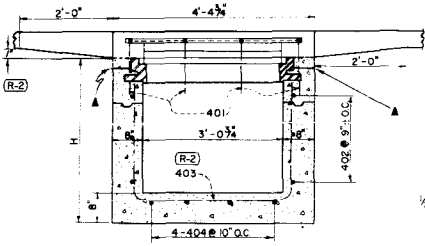
SECTION F-F



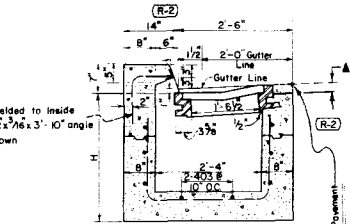
SECTION B-B



SECTION A-A
DOUBLE INLET
TYPE 3

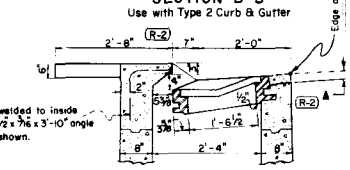


SECTION A-A (For Comb. Curb, Gutter, & Sidewalk or Type 2 Curb & Gutter)



SECTION B-B
Use with Type 2 Curb & Gutter

4-401s 2'-0" welded to inside face of 1/2 x 1/2 x 3/8 x 3'-10" angle and bent as shown



SECTION B-B
Use with Comb. Curb, Gutter, & Sidewalk

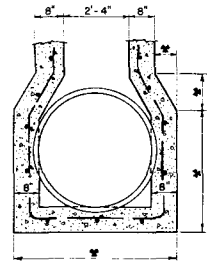
4-401s 2'-0" welded to inside face of 1/2 x 1/2 x 3/8 x 3'-10" angle and bent as shown.

INLET TYPE 3

No. 13 Grate and Frame to be used with Type 3 Inlet

DETAILS OF INLET ALTERATION

For Larger Size or Skewed Pipes



* Variable - to suit pipe size or skew angle.

NOTE: Vary steel shape and quantity as required.

DEPARTMENT OF HIGHWAYS
 STATE OF COLORADO
 DIVISION OF HIGHWAYS

CONCRETE INLETS
 TYPES 3 & 3 DOUBLE

Designed by *M.H.A.* Approved by *S.G.C.*
 Made by *J.P.B.* Staff Design Eng.
 Checked by *M.M.H.* Date *APRIL 21, 1967*

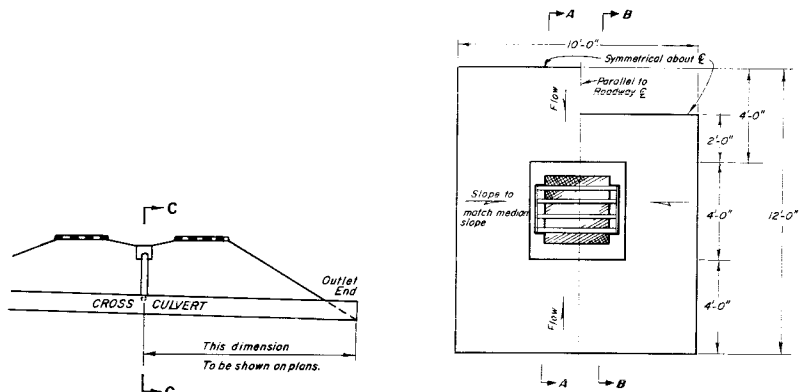
STANDARD M-604-BA

(JUNE 1, 1967)

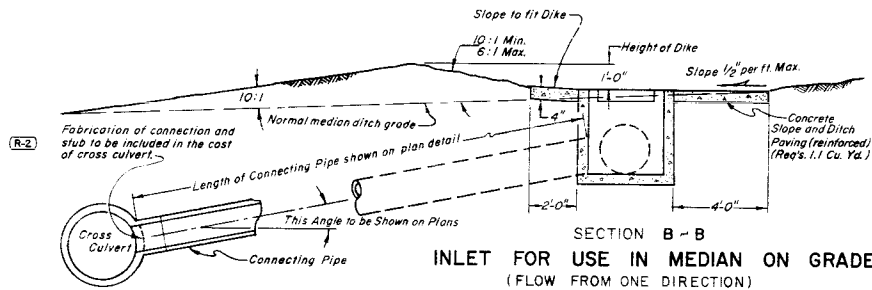
FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO			

REVISIONS

NO.	DATE	DESCRIPTION	BY
(R-1)	9-13-67	Grate Detail & Quantities	M.R.R.
(R-2)	12-18-67	Correct to skewed culvert, General Note	M.R.R.
(R-3)	7-19-68	Note B Detail Name	M.R.R.
(R-4)	4-15-71	Conc in G. Note and table. Re-do grate welds.	M.R.R.
(R-5)	5-24-71	Lower fastener bolt so top is flush w. conc.	M.R.R.

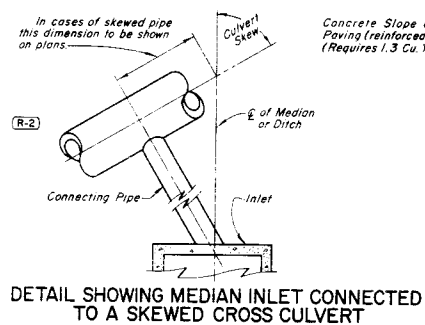


LAYOUT OF INLET IN MEDIAN DITCH

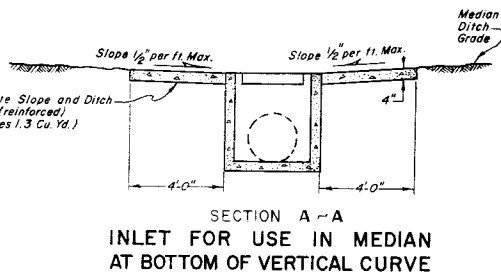


SECTION B-B
INLET FOR USE IN MEDIAN ON GRADE
(FLOW FROM ONE DIRECTION)

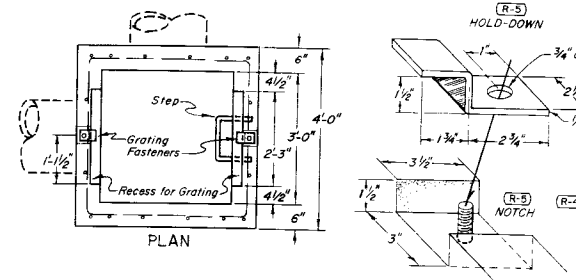
SECTION C-C
DETAIL SHOWING MEDIAN INLET
CONNECTED TO A CROSS CULVERT



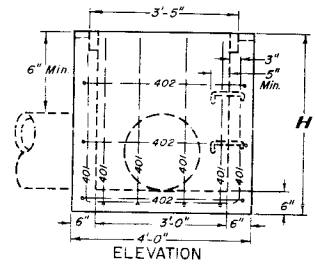
DETAIL SHOWING MEDIAN INLET
CONNECTED TO A SKEWED CROSS CULVERT



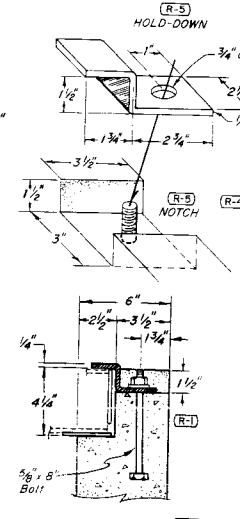
SECTION A-A
INLET FOR USE IN MEDIAN
AT BOTTOM OF VERTICAL CURVE



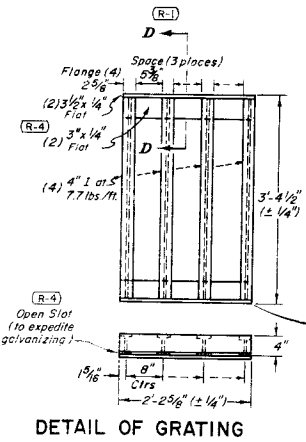
PLAN



ELEVATION
CONCRETE INLET



DETAIL OF RECESS AND
GRATING FASTENER
(2 REQUIRED)



DETAIL OF GRATING

GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications applicable to the project.
- All concrete shall be Class A, B or D.
- For detail of Inlet Step, see M-Standard "Steps for Manholes and Inlets".
- All reinforcing bars shall be deformed, of intermediate grade, and shall be tagged with the station number and bar designation.
- All edge distances not marked "clear" are to E of bar.
- Concrete slope and ditch paving shall conform to Section 507.
- Reinforcement for concrete slope paving shall be 4 x 4, 10/10.
- Grating shall conform to Section 604.
- Inlet grating shall be galvanized as described for Frames, Grates, Covers and Steps in Section 712.
- Steps or ladder will be required when Inlet depth exceeds 3'-6".

QUANTITIES FOR ONE INLET

H	CONCRETE (CU. YDS.)	REINF. STEEL (LBS.)	NO. STEPS REQ'D.
3'-0"	1.0	83	0
3'-6"	1.1	89	0
4'-0"	1.2	105	0
4'-6"	1.4	111	1
5'-0"	1.5	127	2
5'-6"	1.6	134	2
6'-0"	1.7	150	2
6'-6"	1.9	157	3
7'-0"	2.0	172	3
7'-6"	2.1	179	3
8'-0"	2.3	194	4
8'-6"	2.4	201	4
9'-0"	2.5	217	4
9'-6"	2.7	223	5
10'-0"	2.8	239	5
11'-0"	3.0	261	6
12'-0"	3.3	283	6

BAR LIST FOR H=3' AND BENDING DIAGRAM

MARK	NO. REQ'D.	HGT. "U"	LENGTH
401	9	2'-7"	8'-6"
402	3		15'-4"

Increase dimension "U" for each 6" increase of H above 3'-0"

Add one bar for each 6" increase of H above 3'-0"

MATERIAL LIST FOR GRATING, FASTENERS

PART	NO. REQ'D.	SIZE	LBS PER UNIT	WEIGHT
Flat	2	3/8" x 1/4" x 2'-2 1/2"	2.98/ft	
Flat	2	3" x 1/4" x 2'-2 1/2"	2.6/ft	
Beam	4	4 1/2" x 3/4" x 4"	7.7/ft	31.5
Fastener	2	6 1/4" x 2 1/2" x 8"	1.0 ea	
Bolt	2	5/8" x 8"	0.8 ea	
Washer	2		0.1 ea	
TOTAL WEIGHT				31.5

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

INLET, TYPE C

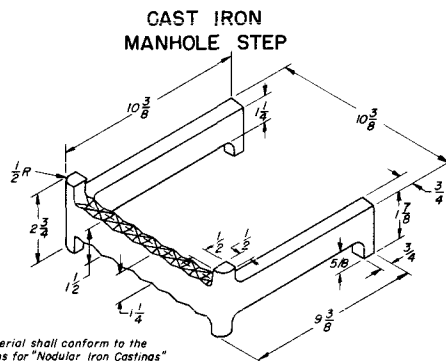
Designed by D.B.R. Approved by J.R.B.
Made by J.R.B. Draft Design Engineer
Checked by R.S.M. Date: JUNE 1, 1967

STANDARD M-604-D

(JULY 1, 1965)

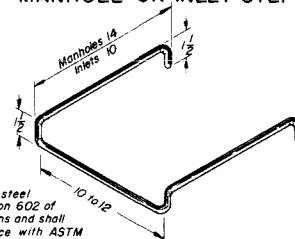
FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	COLORADO			

REVISIONS			
(R-1)	7-23-68	Dept. Name.	M.R.H.



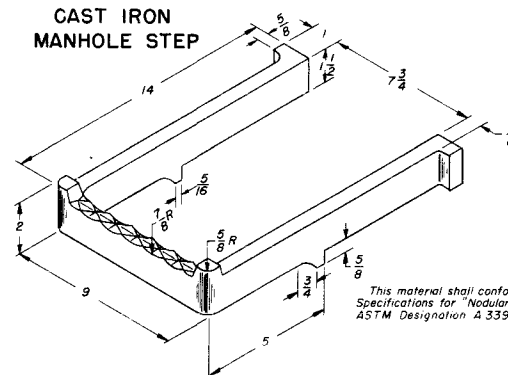
This material shall conform to the Specifications for "Nodular Iron Castings" ASTM Designation A 339 Grade 60-45-10

MILD STEEL MANHOLE OR INLET STEP



Step shall be 3/4 Dia steel bars conforming to Section 602 of the Standard Specifications and shall be galvanized in accordance with ASTM Designation A 123.

CAST IRON MANHOLE STEP



This material shall conform to the Specifications for "Nodular Iron Castings" ASTM Designation A 339 Grade 60-45-10.

GENERAL NOTES

All work shall be done according to the Standard Specifications applicable to the project.

Steps shall be included in the cost of "Manholes" or "Inlets".

All dimensions shown in inches.

(R-1)

DEPARTMENT OF HIGHWAYS
 STATE OF COLORADO
 DIVISION OF HIGHWAYS

STEPS FOR MANHOLES AND INLETS

Designed by: M.R.H. | Approved by:
 Made by: H.P.B. Staff Design Engr.
 Checked by: Date: July 1, 1965

STANDARD M-606-AB

(MARCH 1, 1968)
(SHEET 1 OF 3)

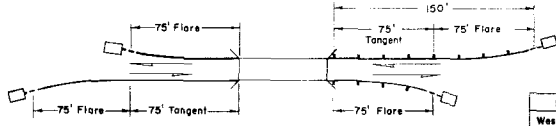
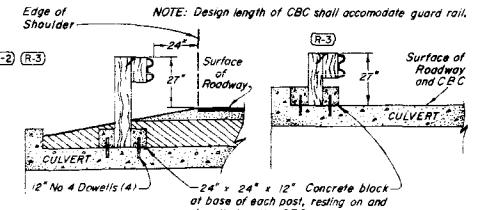
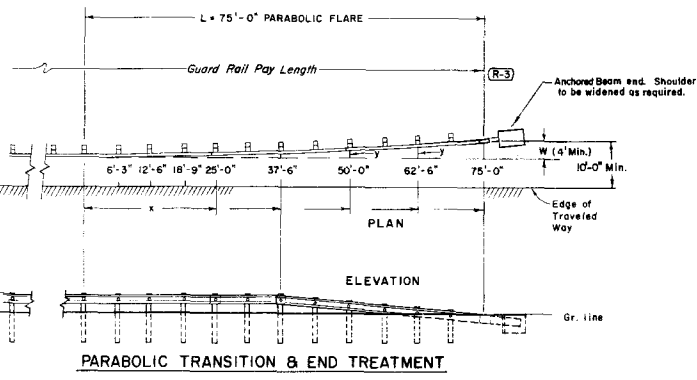
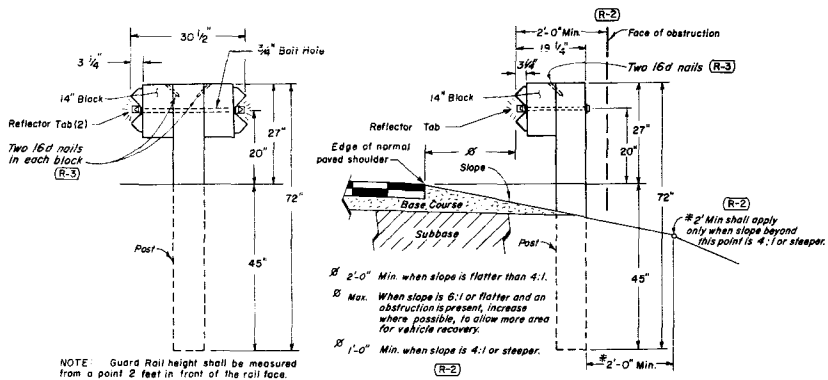
FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO			

REVISIONS				
(R-1)	7-10-68	Add typical post & abstr.		M.R.H.
(R-2)	4-1-69	Widening, Bevel, Gen. notes		M.R.H.
(R-3)	2-18-70	Pay length, Blocks, Gen. Notes		M.R.H.
(R-4)	11-25-70	Timber, Hols and Gen. Notes		M.R.H.

TABLE OF OFFSETS FOR 75' PARABOLIC FLARES

x	W=4'	W=5'	W=10'	W=12'	W=14'	W=16'
12'-6"	0.11	0.14	0.28	0.33	0.39	0.44
25'-0"	0.44	0.55	1.11	1.33	1.56	1.78
37'-6"	1.00	1.25	2.50	3.00	3.50	4.00
50'-0"	1.78	2.22	4.44	5.33	6.23	7.11
62'-6"	2.79	3.48	6.95	8.34	9.73	11.11
75'-0"	4.00	5.00	10.00	12.00	14.00	16.00

LEGEND
 W = Full parabolic offset.
 L = Length of parabolic transition.
 X = Longitudinal dist. from beginning of flare.
 Y = Offset = $W \sqrt{L/X}$



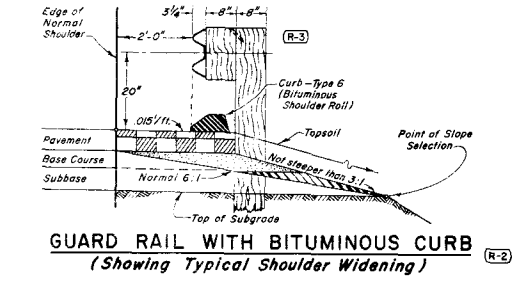
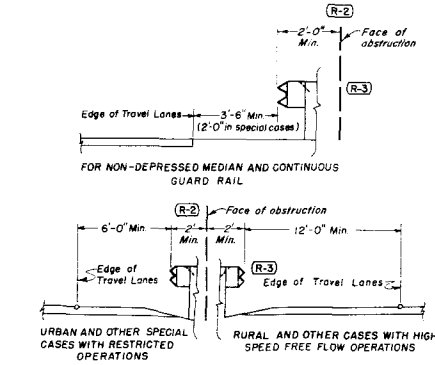
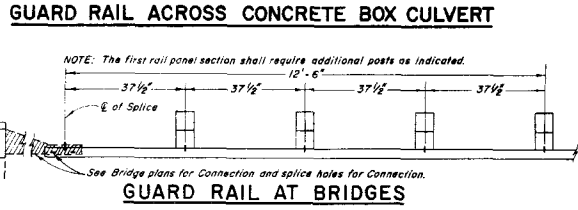
GENERAL NOTES

All work shall be done in accordance with the Standard Specifications applicable to the project.
 All timber shall be close grained Douglas Fir of the Coast Region, Dense Longleaf or Shortleaf Southern Pine, Lodgepole Pine, Ponderosa Pine, Western Hemlock, or Larch, and shall conform to the following grading specifications and requirements:

SPECIES	POST & BLOCK CROSS SECTION	FOHC	GRADING RULES
West Coast D. F.	6" x 6"	Yes	WCLA Par. 125 b
West Coast Hemlock	6" x 8"	Yes	WCLA Par. 226 b
Larch	6" x 8"	Yes	WWPA Par. 80.11
Southern Pine	6" x 8"	No	SPA Par. 253
Lodgepole Pine	6" x 8"	No	WWPA Par. 80.11
Ponderosa Pine	8" x 8"	No	WWPA Par. 80.11

WCLA - Standard Grading Rule 15, Grading and Dressing rules of West Coast Douglas Fir, issued by the West Coast Lumber Inspection Bureau.
 WWPA - Standard Grading Rules, published by Western Wood Products Association.
 SPA - Standard Grading Rules for Southern Pine Lumber, issued by the Southern Pine Inspection Bureau.
 FOHC - Free of Heart Centers. See paragraph 612 c of WCLA.
 NOTE - 6" x 8" Posts and Blocks shall be installed with the 6" dimension parallel to the roadway.

All timber shall be rough, square cut and full sawn.
 At the time the post or block is installed, any seasoning check which extends the full length of the piece shall not exceed one-quarter inch in width at its maximum width.
 Blocks shall be cut from timber of the same cross section and species as the posts.
 Timber shall be incised and pressure treated in accordance with AASHTO Designation M133, except that blocks need not be incised.
 Post bolt holes are to be drilled before treatment if applied.
 The preservative shall be either (a) Creosote or (b) Pentachlorophenol in a petroleum carrier (liquid or L.P. gas).
 Posts shall be spaced at 6'-3" center-to-center except when otherwise designated on this Standard or in the guardrail tabulation on the plans.
 Where pedestrian hazard exists and sidewalk is constructed on the roadway shoulder, guard rail shall be placed between the sidewalk and the edge of traffic lane.
 Guard rail plate shall not be lighter than No. 12 U.S. Standard Gage. 25' length of rail panels will be permitted.
 Metal plate guard rail shall be painted in accordance with standard specifications or shall be galvanized in accordance with AASHTO Designation M-111 or with ASTM Designation A 525, Coating Class 2.50.
 Posts used for vertical transition shall be adjusted in length so that a minimum of 45" will be buried.
 Standard galvanized wrought steel washers shall be used under all bolt heads or nuts coming in contact with wood posts.
 Concrete shall be Class "A" or Class "B".
 Blocks shall be toenailed to posts with two 16 penny galvanized nails in the top of each block.
 If posts are cut in the field, cut ends shall receive 2 coats of hot creosote.



DEPARTMENT OF HIGHWAYS
 STATE OF COLORADO
 DIVISION OF HIGHWAYS
GUARD RAIL TYPE 3

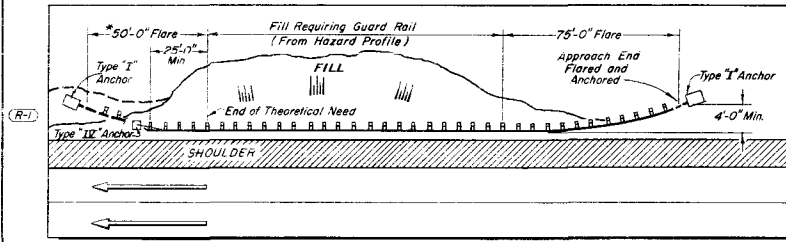
Designed by M.R.H. Approved by [Signature]
 Made by [Signature] Steel Design Engineer
 Checked by R.S.M. Date March 1, 1968

STANDARD M-606-AB

(MARCH 1, 1968)
(SHEET 2)

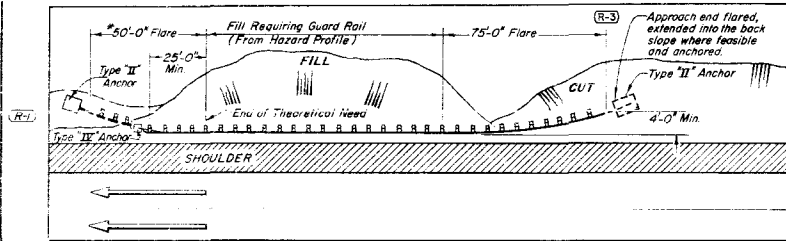
FEDERAL ROAD REGION NO.	DIVISION	PROJ NO.	SHEET NO.	TOTAL SHEETS
3	COLORADO			

REVISIONS			
(R-1)	7-10-66	Add end anchorage	M.R.H.
(R-2)	4-1-69	Bridge exit guard rail note	M.R.H.
(R-3)	2-18-70	Pay length	M.R.H.
(R-4)	11-25-70	Timber dimension	M.R.H.

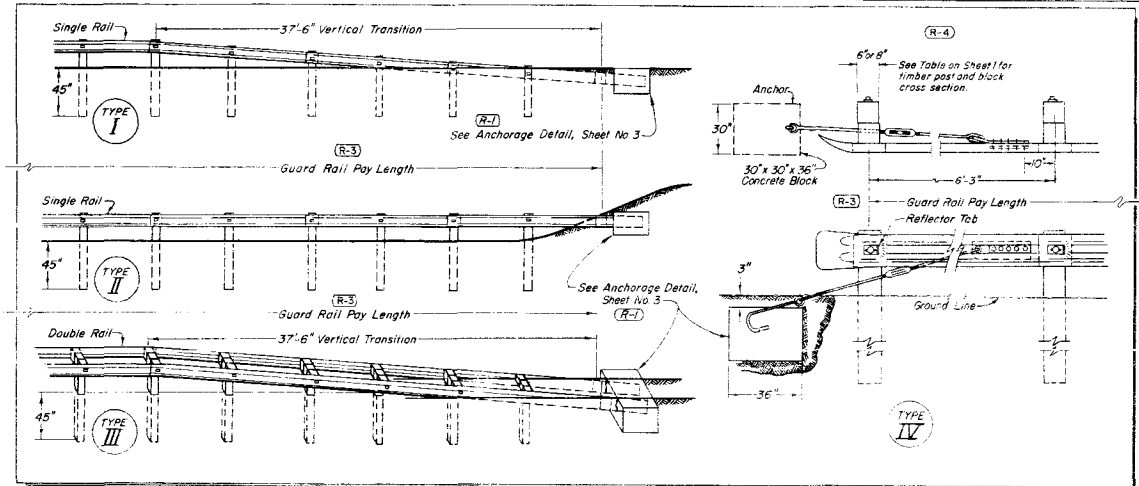


GUARD RAIL INSTALLATION ——— ROADSIDE FILL CONDITION

NOTES:
* 2-Lane Highways — The exit end of Guard Rail shall extend 50 feet past the end of theoretical need and shall be flared and anchored.



GUARD RAIL INSTALLATION ——— ROADSIDE CUT TO FILL CONDITION



TYPICAL END ANCHORAGE

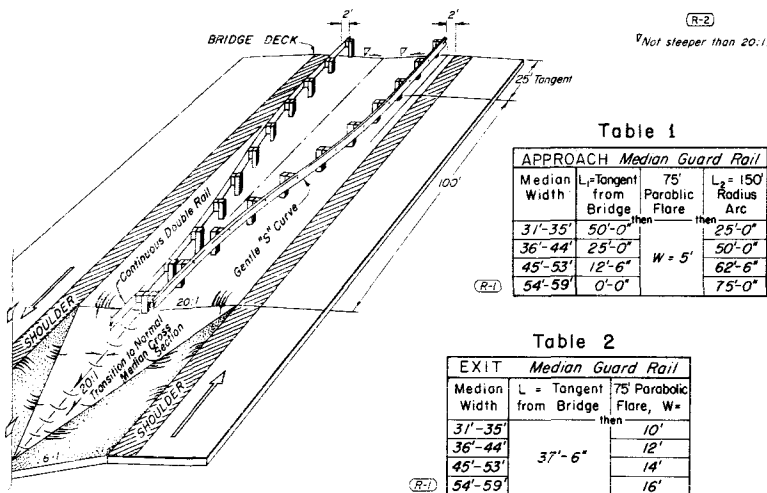


Table 1

APPROACH Median Guard Rail			
Median Width	$L = \text{Tangent from Bridge}$	75' Parabolic Flare	$L_2 = 150'$ Radius Arc
31'-35'	50'-0"	then	25'-0"
36'-44'	25'-0"	then	50'-0"
45'-53'	12'-6"	then	62'-6"
54'-59'	0'-0"	then	75'-0"

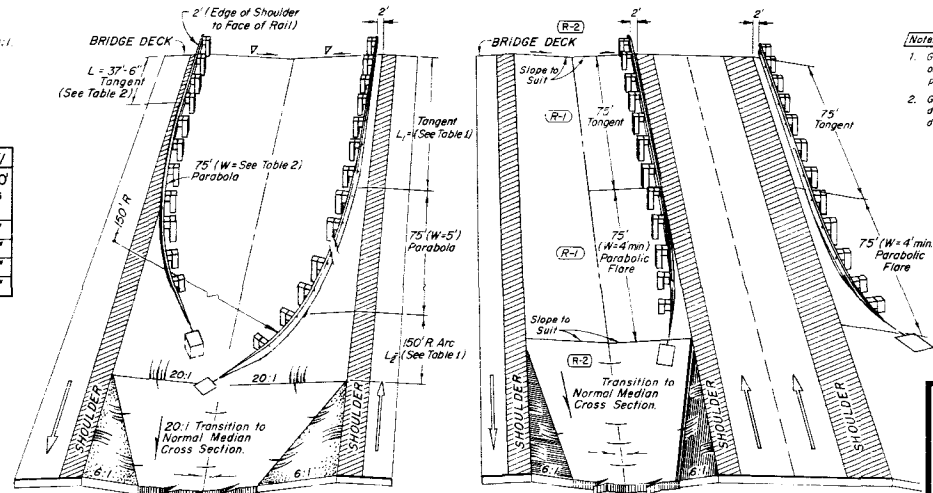
$W = 5'$

Table 2

EXIT Median Guard Rail		
Median Width	$L = \text{Tangent from Bridge}$	75' Parabolic Flare, $W =$
31'-35'	then	10'
36'-44'	37'-6"	12'
45'-53'		14'
54'-59'		16'

21' to 30' MEDIAN

GUARD RAIL AT BRIDGE APPROACH



(R-1) 31' to 59' MEDIAN

(R-1) MEDIAN 60' AND OVER

- Notes: EXIT FROM BRIDGES:
- Guard rail for OUTSIDE shoulders at exit end of bridges on divided highways to be determined from hazard profile.
 - Guard rail for INSIDE shoulders at exit end of bridges on divided highways with medians 60' and over to be determined from hazard profile.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

GUARD RAIL
TYPE 3

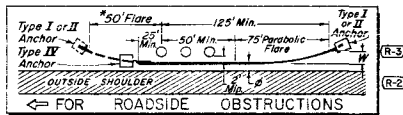
Designed by M.R.H. Approved by J.G.
Made by J.A.B. Staff Design Engineer
Checked by R.S.M. Date: March 1, 1968

STANDARD M-606-AB

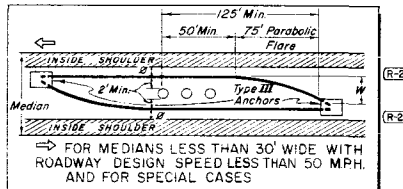
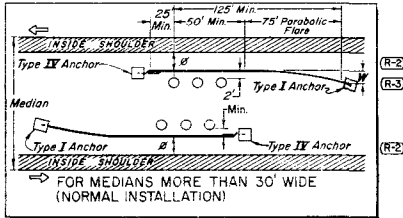
(MARCH 1, 1968)
(SHEET 3)

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

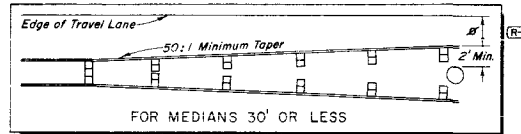
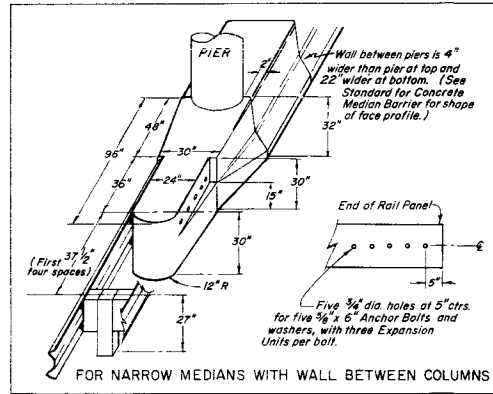
REVISIONS			
(R-1)	7-10-68	Entire sheet redrawn.	M.R.H.
(R-2)	4-1-69	Recomparisons. Delete timber bevel. Rail tab.	M.R.H.
(R-3)	2-18-70	Pay Length.	M.R.H.
(R-4)	11-25-70	Block of pier.	M.R.H.



* 2-Lane Highways - The exit end of Guard Rail shall extend 30 ft past the end of theoretical need and shall be flared and anchored.



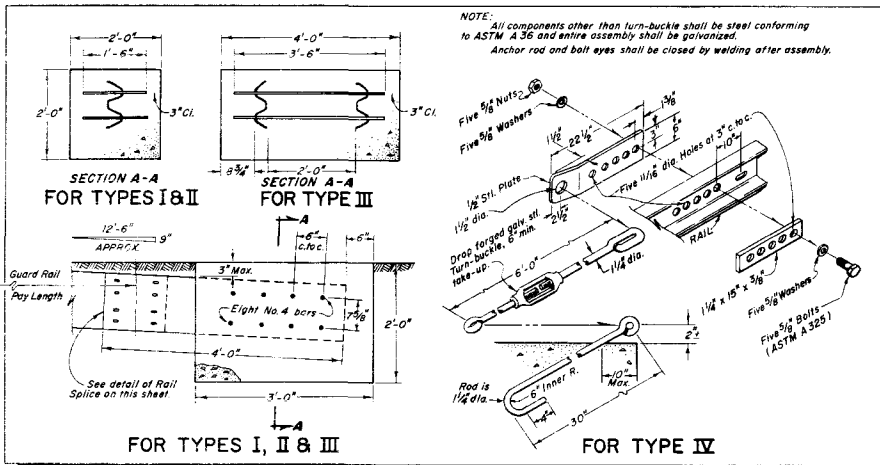
NON-CONTINUOUS RAIL



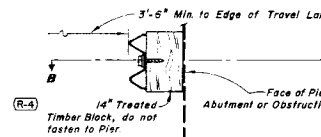
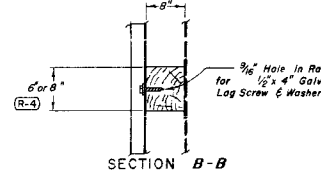
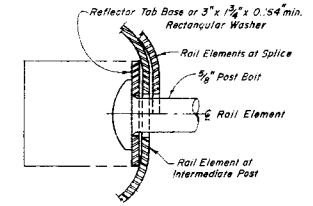
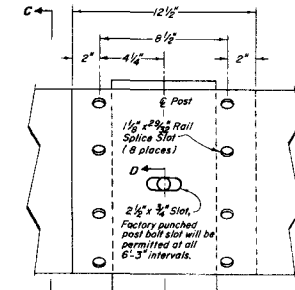
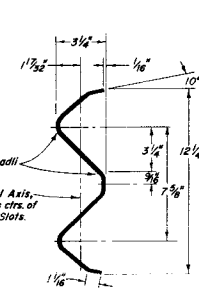
CONTINUOUS RAIL

When slope is 6:1 or flatter and an obstruction is present, increase where possible, to allow more area for vehicle recovery.

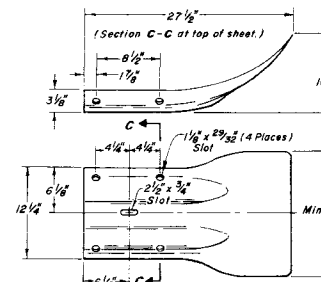
TYPICAL GUARD RAIL FOR OBSTRUCTIONS



DETAILS FOR TYPICAL END ANCHORAGE



SEE TABLE ON SHEET 1 FOR TIMBER CROSS SECTION



NOTE: Slots shown shall match outer 4 and center Rail end slots.

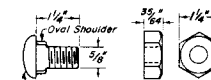
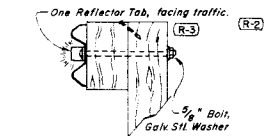
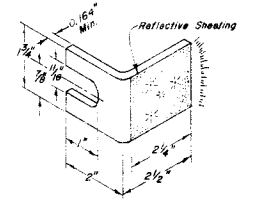
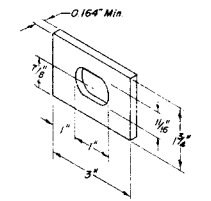


TABLE OF POST BOLT SIZES

Block	Post	RAIL	BOLT SIZE
8" x 8"	Double	5/8" x 25 3/4"	
8" x 8"	Single	5/8" x 17 1/2"	

NOTE: When 6" x 6" timber is used, the 8" dimension shall be perpendicular to the roadway.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

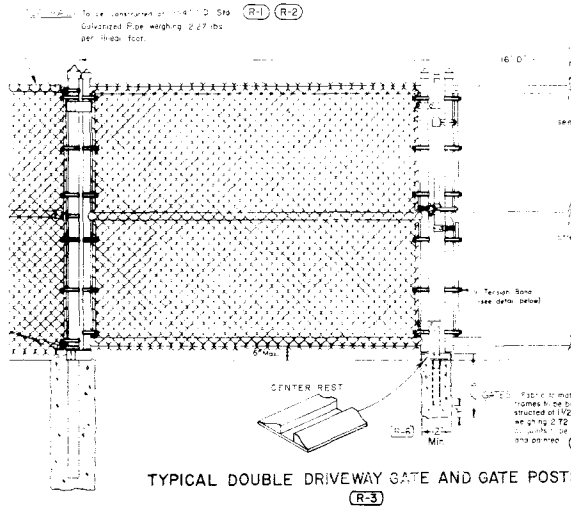
GUARD RAIL
TYPE 3

Designed by M.R.H. Approved by J.C.C.
Made by J.R.B. Staff Design Engineer
Checked by R.S.M. Date: March 1, 1968

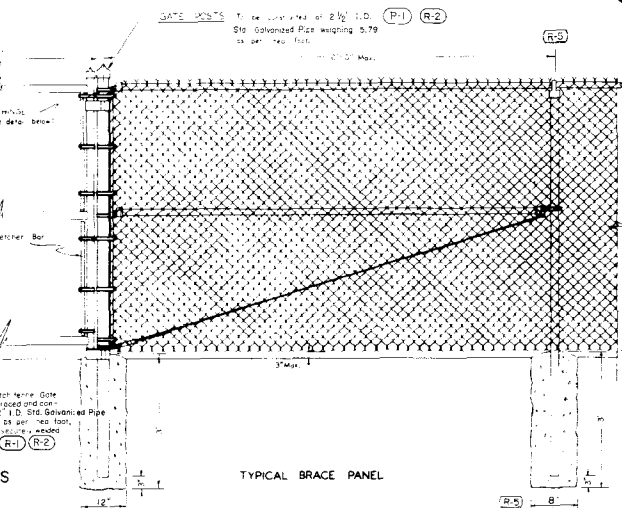
STANDARD M-607-B

(JULY 1, 1965)
(SHEET 1 OF 2)

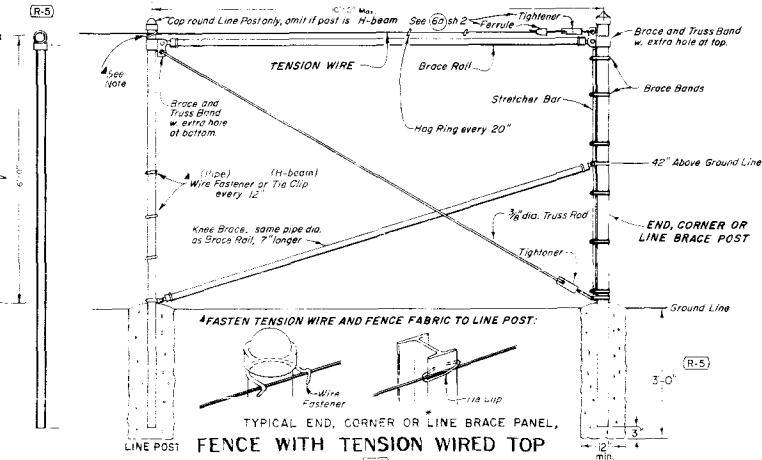
FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLORADO		



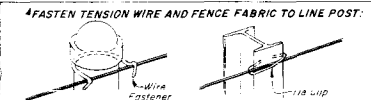
TYPICAL DOUBLE DRIVEWAY GATE AND GATE POSTS (R-3)



TYPICAL BRACE PANEL (R-3)



TYPICAL END, CORNER OR LINE BRACE PANEL, FENCE WITH TENSION WIRED TOP (R-6)



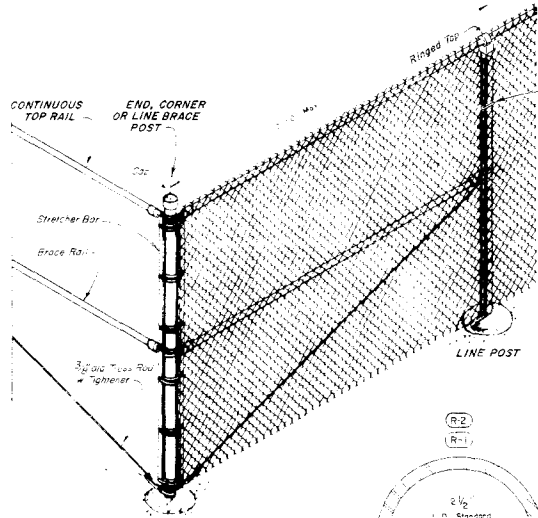
FASTEN TENSION WIRE AND FENCE FABRIC TO LINE POST:

WIRE FASTENER

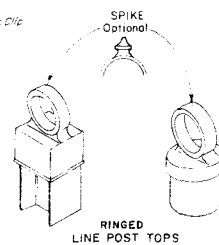
TIE CLIP

Note: Line Brace Posts shall be used in fence at intervals at not more than 400 feet (R-6)

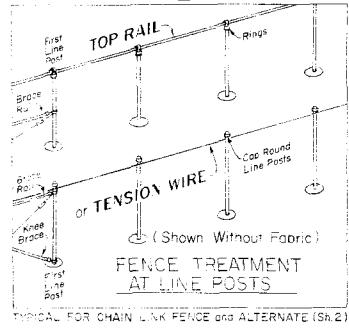
REVISION			
R-1	3-28-66	Pipe, Fence height & Gen'l. Notes	M.R.H.
R-2	4-7-66	Pipe diameters clarified	M.R.H.
R-3	5-6-67	Delete spec. No's; add Gen. Notes	M.R.H.
R-4	7-14-68	Dept. Name	M.R.H.
R-5	7-22-70	Post titles & tops, Line brace Gen. Notes	M.R.H.
R-6	3-1-70	Add details for tension wire	M.R.H.
R-7	4-20-71	Conc. in Gen. Note	M.R.H.



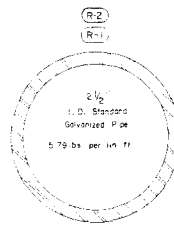
TYPICAL END, CORNER OR LINE BRACE PANEL for FENCE WITH RAILED TOP (R-6)



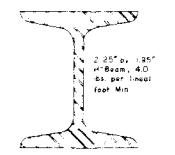
RINGED LINE POST TOPS



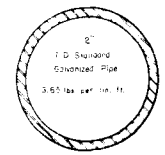
TYPICAL FOR CHAIN LINK FENCE AND ALTERNATE (SH-2)



END, CORNER AND LINE BRACE POSTS (R-5)



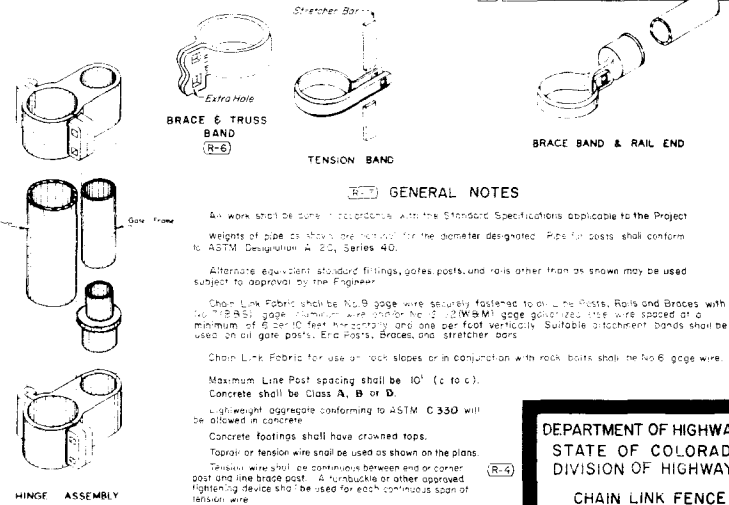
ALTERNATE LINE POST (R-5)



LINE POST (R-5)



BRACE RAIL & TOP RAIL (R-5)



GENERAL NOTES

All work shall be done in accordance with the Standard Specifications applicable to the Project.

Weights of pipe as shown are nominal for the diameter designated. Pipe for posts shall conform to ASTM Designation A 20, Series 40.

Alternate equivalent standard fittings, gates, posts, and rails other than as shown may be used subject to approval by the Engineer.

Chain Link Fabric shall be No. 9 gage wire securely fastened to all Line Posts, Rails and Braces with No. 8 gage aluminum wire (under No. 20 W.M.) gage galvanized steel wire spaced at a minimum of 6 inch O.C. horizontally and one inch vertically. Suitable attachment bands shall be used on all gate posts, End Posts, Braces and stretchers bars.

Chain Link Fabric for use on rock slopes or in conjunction with rock bolts shall be No. 6 gage wire.

Maximum Line Post spacing shall be 10' (c to c).

Concrete shall be Class A, B or D.

Lightweight aggregate conforming to ASTM C 330 will be allowed in concrete.

Concrete footings shall have crowned tops.

Toprail or tension wire shall be used as shown on the plans.

Tension wire shall be continuous between end or corner post and line brace post. A turnbuckle or other approved tightening device shall be used for each continuous span of tension wire.

Tension wire shall be 7 gage galvanized coil spring steel, or approved equal.

Termination of fence at bridges or other structures shall be as shown on the plans.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

CHAIN LINK FENCE

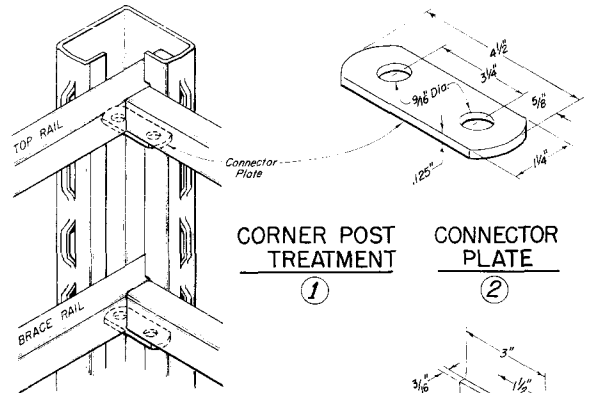
Designed by: V.L.A.
Made by: E.L.N.
Checked by: [Signature]

Approved by: [Signature]
Staff Design Engr.
Date: July 1, 1965

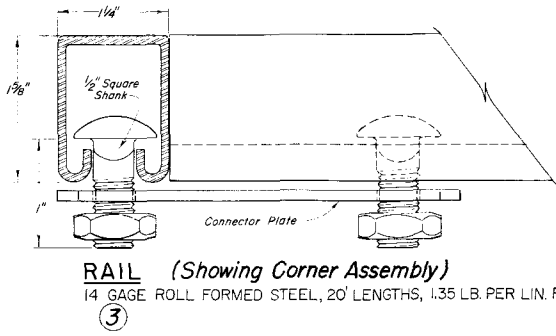
STANDARD M-607-B

(SHEET 2)
(JULY 13, 1970)

REV. NO.	DATE	DESCRIPTION	BY	CHKD.
R-5	7-13-70	Entire sheet.	M.R.H.	
R-6	12-11-70	Add details 6a and 13.	M.R.H.	
R-7	4-20-71	Line brace title. Tension wire clamp.	M.R.H.	



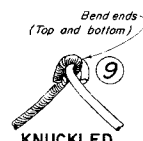
CORNER POST TREATMENT (1)
CONNECTOR PLATE (2)



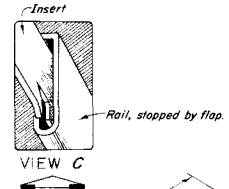
RAIL (Showing Corner Assembly)
14 GAGE ROLL FORMED STEEL, 20' LENGTHS, 1.35 LB. PER LIN. FT.



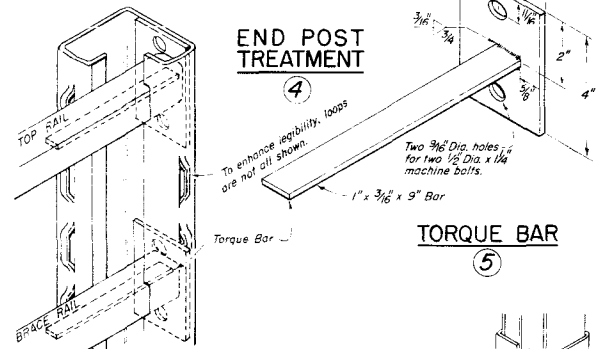
BARBED SELVAGE



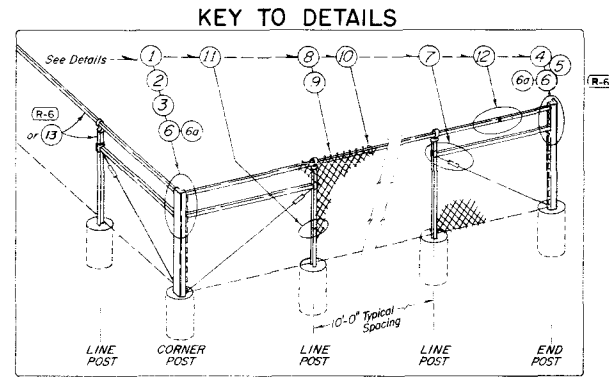
KNUCKLED SELVAGE
Alternate, use only when called for on plans.



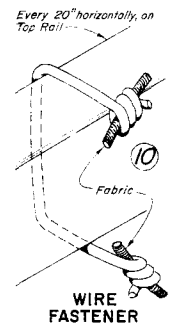
RAIL SPLICE INSERT (12)



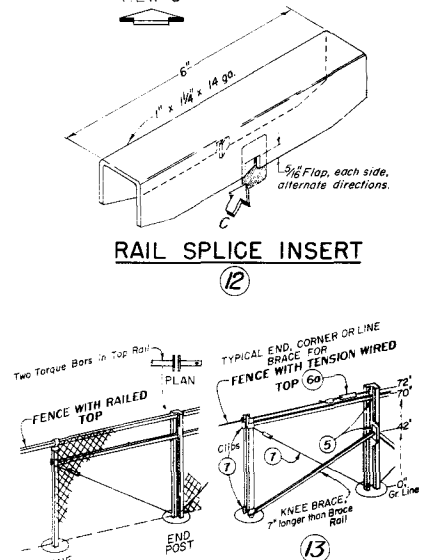
END POST TREATMENT (4)
TORQUE BAR (5)



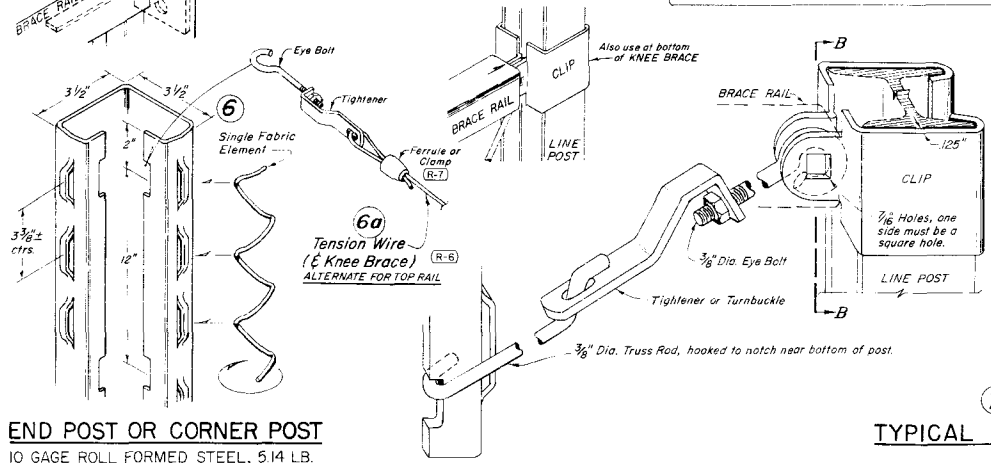
TYPICAL BRACING (7)



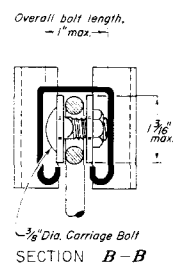
WIRE FASTENER



LINE BRACE (1/2 shown)
400 FT. INTERVALS (R-6) (R-7)



END POST OR CORNER POST
10 GAGE ROLL FORMED STEEL, 5.14 LB. PER LINEAR FOOT



TIE CLIP

WIRE WORK

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS
CHAIN LINK FENCE
(ALTERNATE)

Designed by M.R.H. Approved by
Made by J.R.B. Staff Design Engineer
Checked by R.S.M. Date: July 13, 1970

STANDARD CURBS AND GUTTERS

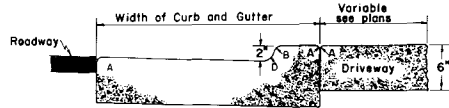
STANDARD M-609-A

(JULY 1, 1965)

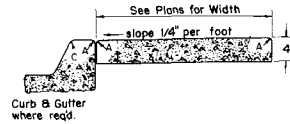
FED. ROAD DIST. NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLC.		

REVISIONS		
(R-1)	11-16-65	Subtitles. M.R.H.
(R-2)	2-14-66	General Notes. M.R.H.
(R-3)	7-19-68	Dept. Name and Rev. Gen'l. Note. M.R.H.
(R-4)	5-21-69	Provide variable width on conc. gtr. M.R.H.
(R-5)	5-7-71	Add class B to conc. in Gen. Note. M.R.H.

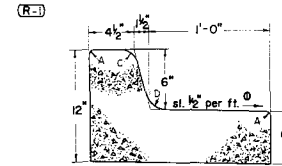
CONCRETE PAVEMENT (DRIVEWAYS)



CONCRETE SIDEWALK

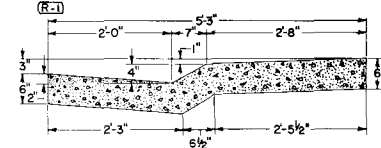


CURB AND GUTTER Type 2 (6\"/>

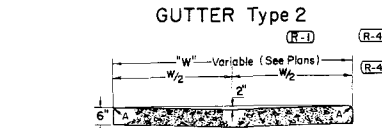
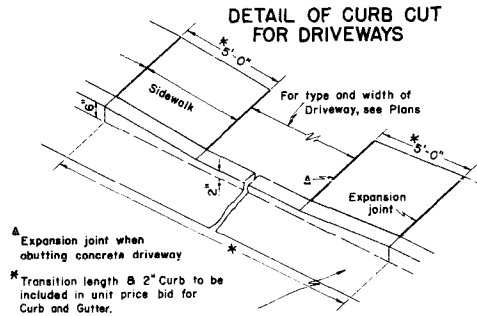


LEGEND FOR RADII	
A	= V_8
B	= 1"
C	= $1\frac{1}{2}$ "
D	= $1\frac{1}{2}$ to 2"

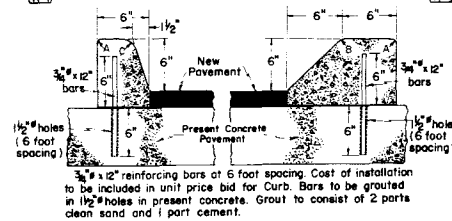
CURB AND GUTTER (Type 2) (4\"/>



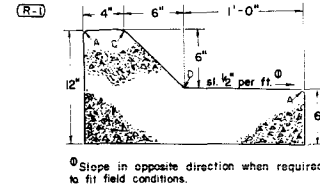
DETAIL OF CURB CUT FOR DRIVEWAYS



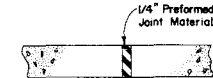
CURB Type 4 (6\"/>



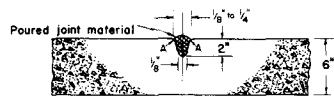
CURB AND GUTTER Type 2 (6\"/>



SIDEWALK EXPANSION JOINT

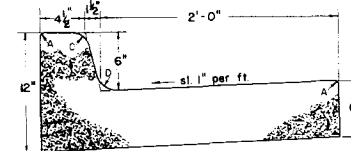


TRANSVERSE CONTRACTION JOINT FOR CONCRETE PAVEMENT (DRIVEWAYS)

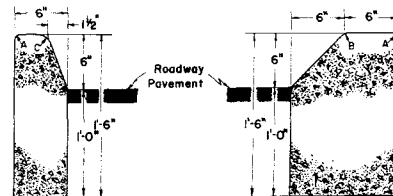


This joint required where length of slab exceeds 15 feet.

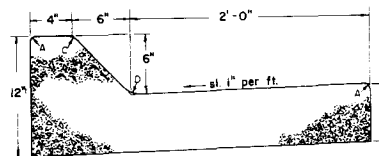
CURB AND GUTTER Type 2 (6\"/>



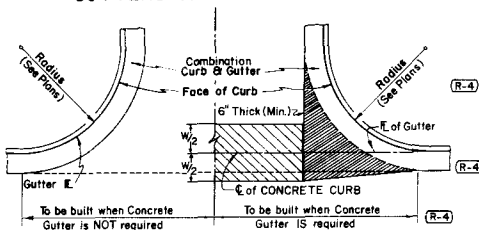
CURB Type 2 (6\"/>



CURB AND GUTTER Type 2 (6\"/>

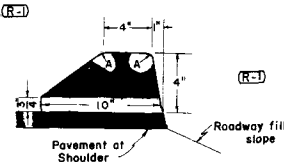


CONSTRUCTION OF CONCRETE GUTTERS AT INTERSECTIONS



This area shall be poured monolithically with curb and gutter and paid for as Concrete Pavement of specified thickness.

CURB Type 6 (4\"/>



GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications applicable to the project.
- On Curves 3 degrees and sharper, Curbs and/or Gutters are to be placed on the Arc of the Curve unless otherwise noted on plans. A maximum chord length of 10 feet may be used when the degree of curve is less than 3 degrees.
- Expansion joints shall be installed between concrete curb and any fixed structure, sidewalk or bridge. Expansion joint material shall be 1/2\"/>

Concrete shall be Class A, B or D.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

CURBS AND GUTTERS

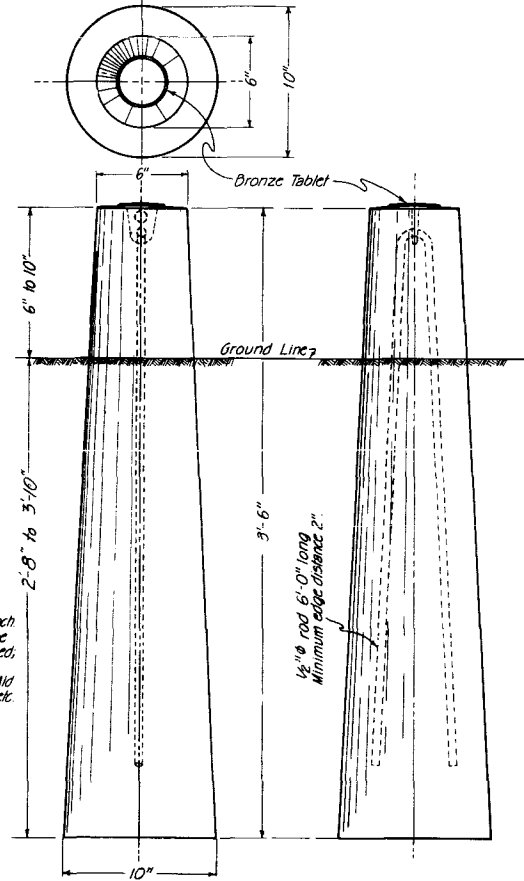
Designed by *[Signature]* Approved by *[Signature]*
Made by *[Signature]* Staff Design Engr.
Checked by *[Signature]* Date: July 1, 1969

RIGHT OF WAY MARKER POST STANDARD M-612-A

(JULY 1, 1965)

FEDERAL ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.
1	COLORADO		

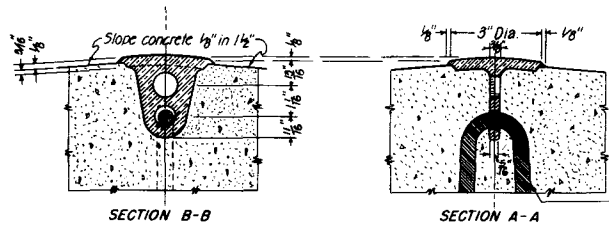
REVISIONS			
(R-1)	5-2-66	R.O.W. Marker Note	M.R.H.
(R-2)	7-24-68	Dept. Name	M.R.H.
(R-3)	5-7-71	Add note on concrete	M.R.H.



NOTES FOR R.O.W. MARKER POSTS

- All work shall be done in accordance with the Standard Specifications applicable to the project.
- (R-3) Posts shall be Class A, B or D 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.
 - (R-4) Light weight aggregate conforming to ASTM C 330 will be allowed.

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.)



Omit and use 1/2" x 1/2" rod for Bench Mark Tablet.

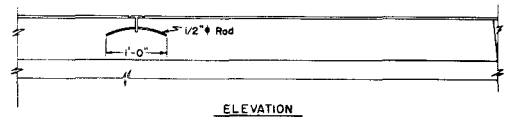
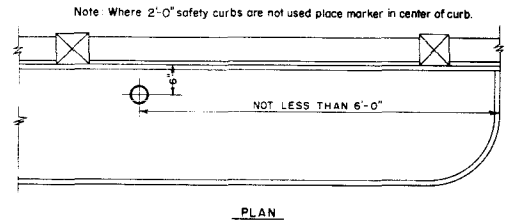
BENCH MARK

All work shall be done in accordance with Standard Specifications 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. B 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.

(R-2)

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

**MARKER POSTS
AND
BENCH MARKS**

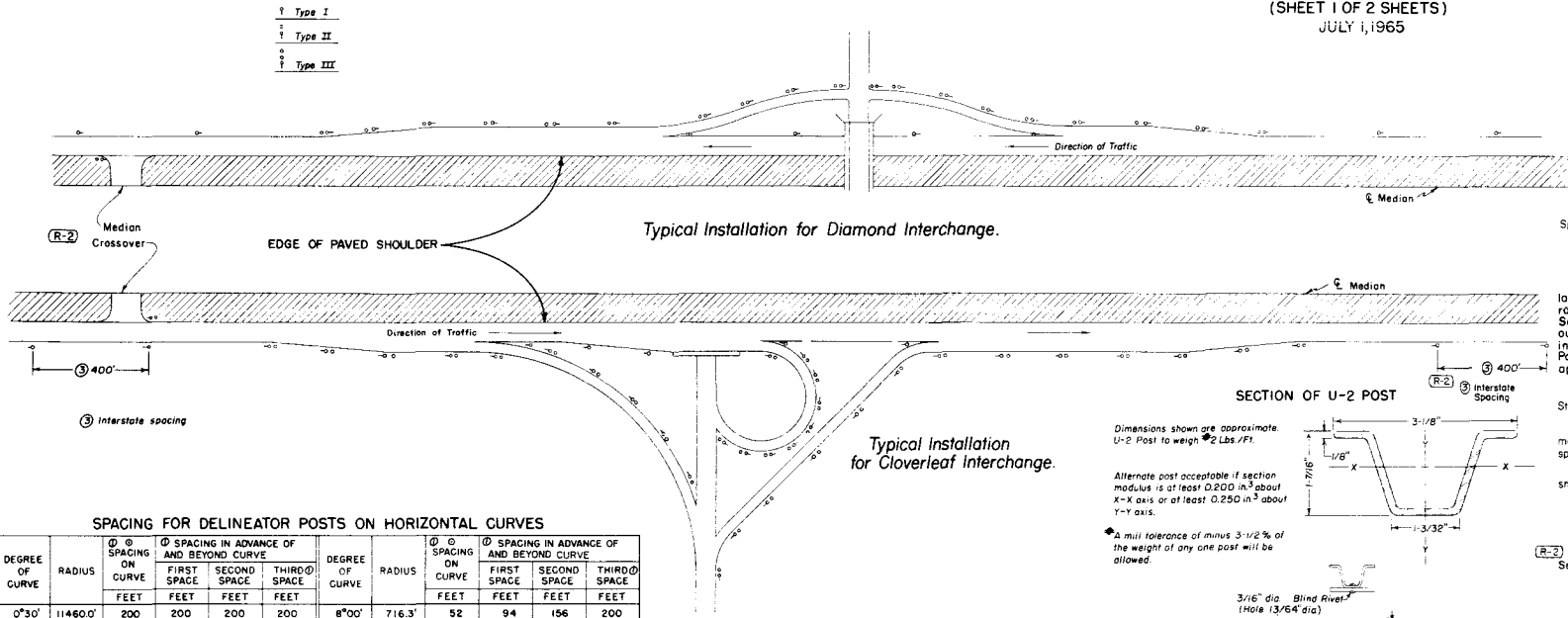
Designed by R.E.L. Approved by G.O.M.
Made by E.E.D. Staff Design Engr.
Checked by R.E.L. Date: July 1, 1965

STANDARD M-612-C

(SHEET 1 OF 2 SHEETS)

JULY 1, 1965

FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLORADO		
REVISIONS			
(R-2)	1-9-68	Median Crossover, Gen'l. Note	M.R.H.
(R-3)	7-11-68	Division Name	M.R.H.



GENERAL NOTES

All work shall be done in accordance with the Standard Specifications 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 B84-51. Acceptable material includes re-rolled railroad rails.

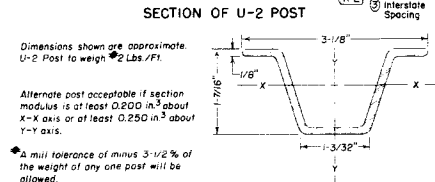
When normal delineator spacing falls on a road approach or crossroad, move delineator either direction a distance not to exceed 1/4 normal spacing.

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.

(R-2) Delineators will not be required on tangents for Primary and Secondary roadways.



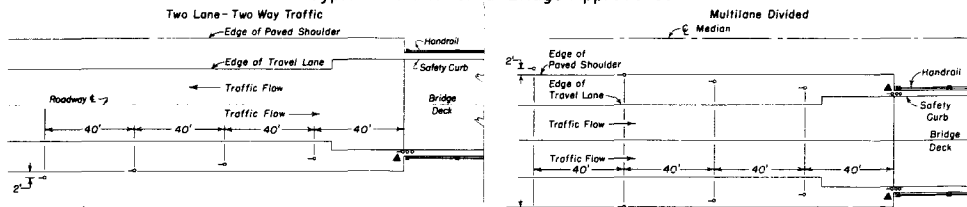
SPACING FOR DELINEATOR POSTS ON HORIZONTAL CURVES

DEGREE OF CURVE	RADIUS	SPACING IN ADVANCE OF AND BEYOND CURVE				DEGREE OF CURVE	RADIUS	SPACING IN ADVANCE OF AND BEYOND CURVE			
		ON CURVE	FIRST SPACE	SECOND SPACE	THIRD SPACE			ON CURVE	FIRST SPACE	SECOND SPACE	THIRD SPACE
0°30'	11480.0'	200	200	200	200	8°00'	716.3'	52	94	156	200
1°00'	5750.0'	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'	2862.0'	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	136	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						

$\phi_s = 2 \sqrt{R-50}$ 1-ST. SPACE = 1.8S 2-ND. SPACE = 3.5 3-RD. SPACE = 6S
 NO SPACES TO EXCEED 200 FT.

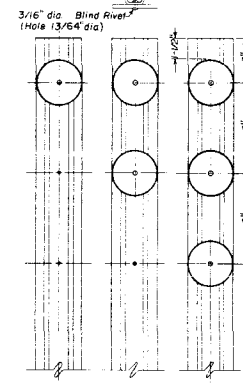
① Omit third space on Secondary and Primary Routes and double the distance on the curve and in advance of and beyond curve. For curves less than 2 degrees on Interstate through roadways use Interstate tangent spacing.

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.

When approach slab has curb, place Type III delineator immediately behind curb.



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

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

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

Min. 3 holes in all posts required as shown.

**DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS**

DELINEATORS

Designed by CKM	Approved by <i>[Signature]</i>
Made by WNC	Staff Design Engr.
Checked by LEO	Date: July 1, 1965

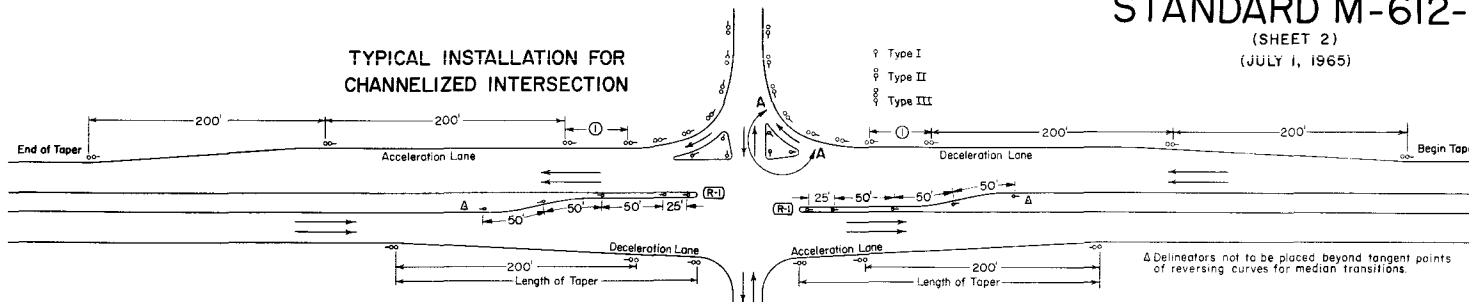
STANDARD M-612-C

(SHEET 2)
(JULY 1, 1965)

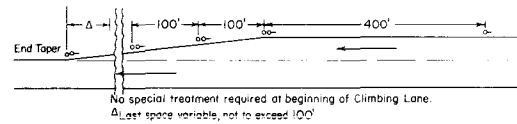
FED. ROAD REG. NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLORADO		

REVISIONS			
(R-1)	5-4-67	Median and Island Delineators.	M.R.H.
(R-2)	1-9-68	Median Crossover	M.R.H.
(R-3)	7-11-68	Division Name	M.R.H.

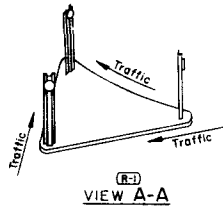
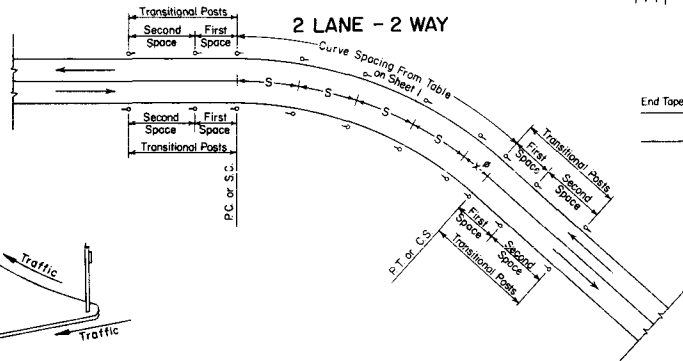
TYPICAL INSTALLATION FOR CHANNELIZED INTERSECTION



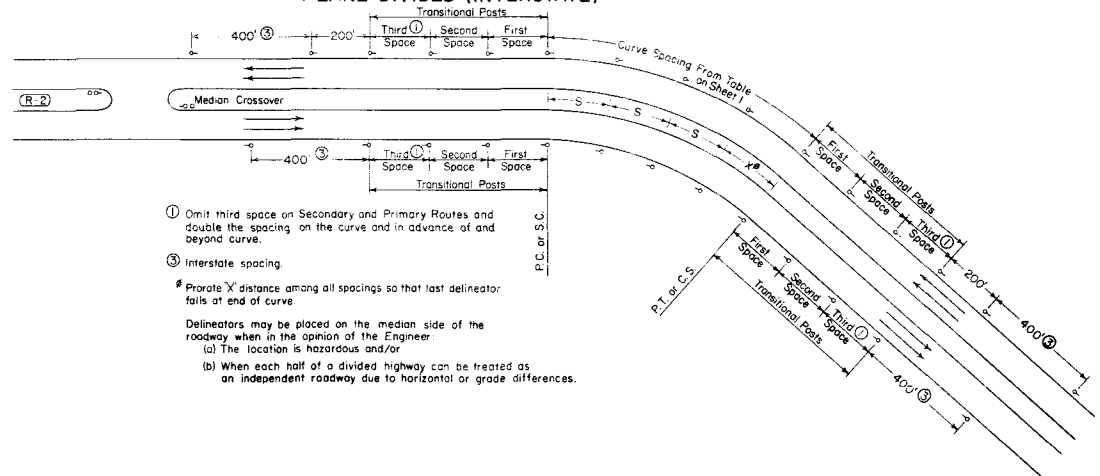
TYPICAL INSTALLATION FOR CLIMBING LANE TRANSITION



2 LANE - 2 WAY



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

(R-2)

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

(R-3)

DELINEATORS

Designed by C.K.M. Approved by J.C. O'Connell
 Made by T.E.F. Staff Design Engr.
 Checked by L.E.C. Date: July 1, 1965

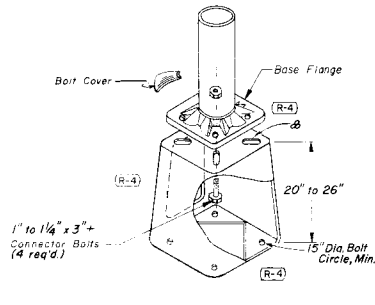
HIGHWAY LIGHTING

STANDARD M-613-AA

(APRIL 7, 1967)

FEDERAL ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
	COLORADO			

TYPICAL (R-1) (R-2) DETAIL OF TRANSFORMER BASES

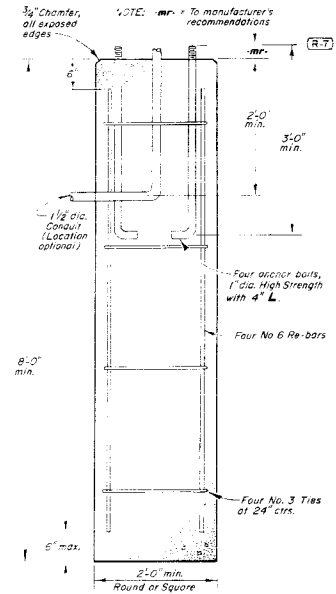


NOTES FOR TRANSFORMER BASES (R-5)

Transformer base to be mounted on concrete foundation pad shown below.
Anchor bolts shall be secured and shall terminate above the top of foundation pad as recommended by the manufacturer. Anchor bolts shall not project through the transformer base.

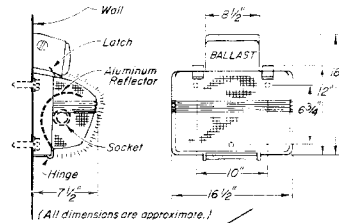
- (R-3) Minimum Bolt Circle for top of Transformer Base:
Aluminum Poles: 40' M.H. = 13 1/2"
30' M.H. = 10"
40' M.H. = 12"
Steel Poles: 40' M.H. = 16 1/2"
30' M.H. = 12 1/2"

TYPICAL CONCRETE FOUNDATION PAD (R-6) SECTION THRU ELEVATION VIEW

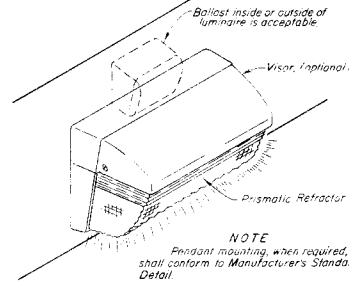


NOTE: Dimensions for transformer base, base flange, anchor bolts, bolt circle diameters are variable.
All components shall fit and shall accommodate the requirements of the light standard supplied.
Foundation pad depth is based on average compacted or undisturbed soils. Resisting moment of foundation pad and fragility base shall be equal to or greater than load test requirements of the light standard.

TYPICAL WALL TYPE LUMINAIRE (R-3) FOR UNDERPASS LIGHTING

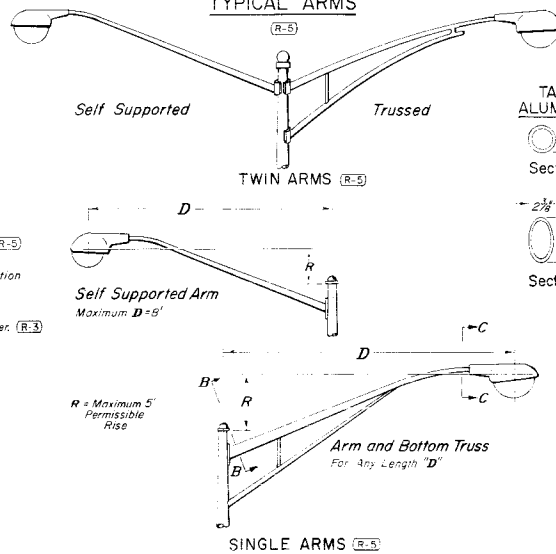


(All dimensions are approximate.)

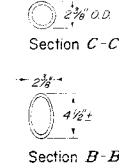


NOTE
Pendant mounting, when required, shall conform to Manufacturer's Standard Detail.

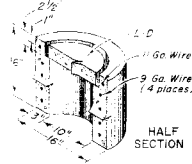
TYPICAL ARMS (R-5)



(R-5) TAPER FOR ALUMINUM ARM



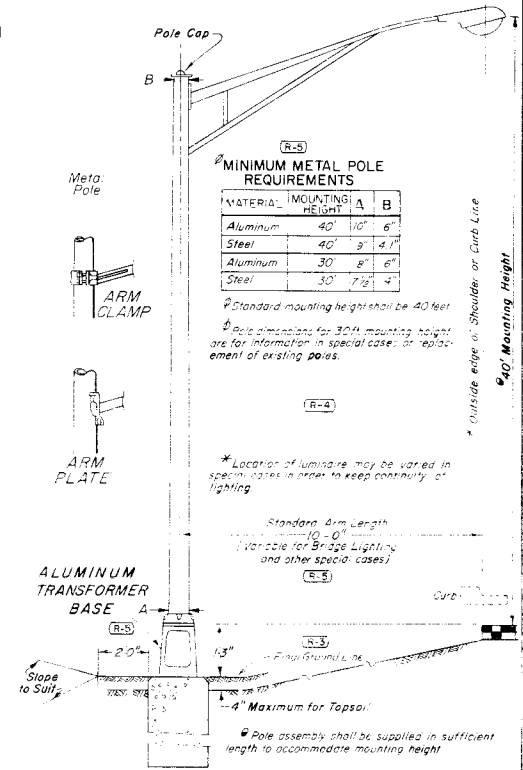
CONCRETE PULL BOX (R-3)



(R-7) General Notes:

All work shall be done in accordance with the Standard Specifications applicable to the project.
When island or cut slope recess is required for Light Standard installation, the cost of excavation or embankment will be included in the work. Embankment shall be completed in accordance with Section 205.
The physical shapes of pole caps, brackets, concrete pull boxes are to be considered approximate as shown.
Concrete shall be Class A, B or D.

TYPICAL HIGHWAY LIGHT STANDARD (R-5)



MINIMUM METAL POLE REQUIREMENTS

MATERIAL	HEIGHT	A	B
Aluminum	40'	10"	6"
Steel	40'	9"	4"
Aluminum	30'	8"	6"
Steel	30'	7 1/2"	4"

Standard mounting height shall be 40 feet.

Pole dimensions for 30ft mounting height are for information in special cases or replacement of existing poles.

* Location of luminaire may be varied in special cases in order to keep continuity of lighting.

Standard Arm Length
Variable for Bridge Lighting and other special cases.

4' Maximum for Topsoil.

Pole assembly shall be supplied in sufficient length to accommodate mounting height.

NO.	DATE	REVISIONS	BY
R-1	7-19-67	Typical Arms	MRH
R-2	8-12-68	Concrete Foundation Pad	MRH
R-3	12-10-69	Pole, Min. Lum. Steel & Notes	MRH
R-4	6-20-69	Bolt circles - Pole table - Notes	MRH
R-5	5-10-70	Decor. Wdg. and Twin. Notes	MRH

DEPARTMENT OF HIGHWAYS STATE OF COLORADO DIVISION OF HIGHWAYS

HIGHWAY LIGHTING

NO.	DATE	REVISIONS CONTINUED	BY
R-6	3-10-71	Concrete Foundation Pad	MRH
R-7	4-9-71	Conc. Class Gen. Note - Anch. bolt dim.	MRH

Designed by MPH Staff, Design Engineer
Checked by RSM Date: APRIL 7, 1967

STANDARD M-614-A

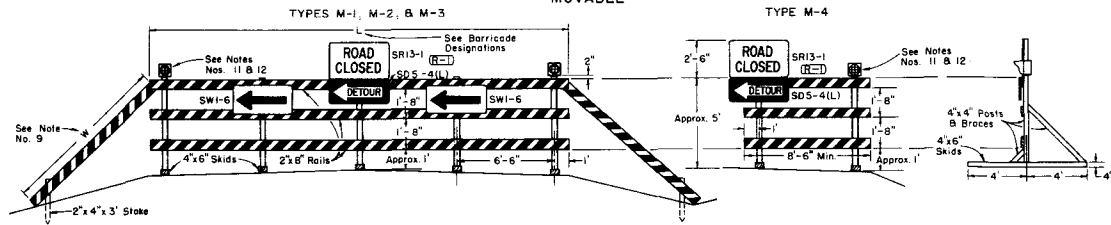
(JULY 1, 1965)

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

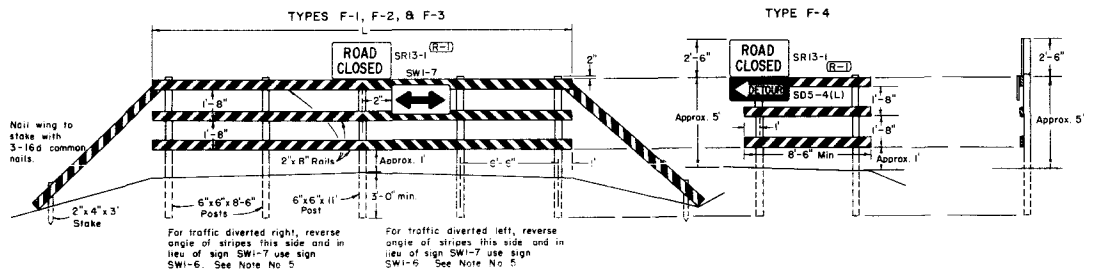
REVISIONS			
(R-1)	11-15-68	Rev. Dept. Name & Code Nos	J.L.S.
(R-2)	4-23-69	Rev. Code No. & Notes	J.L.S.

CLASS I BARRICADES (3 RAILS)

MOVABLE

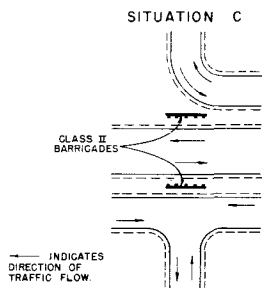
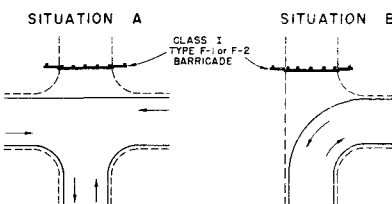
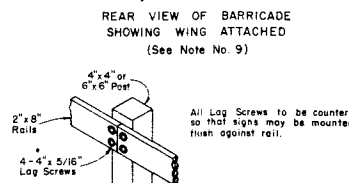
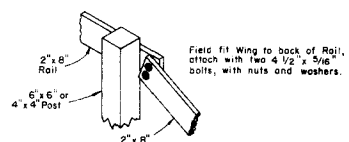
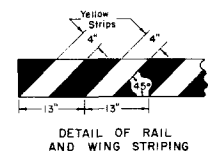
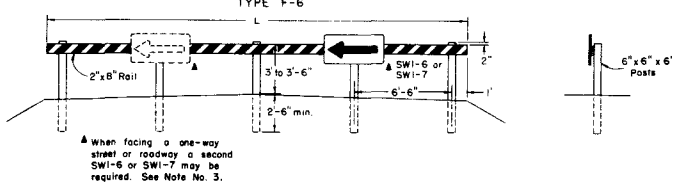


FIXED



CLASS II BARRICADE (1 RAIL)

FIXED
TYPE F-6



GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications 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 Division 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. Oversighting is to be avoided.
- Painting shall conform with Subsection 608.08 of the Standard Specifications. All skids, braces, and posts shall be painted with 2 coats of "Exterior Black Point." Planking and wings on all barricades shall be painted with 2 coats of "Exterior Black Point" on all sides before adding reflective strips. Reflective strips shall be "cut from smooth surface yellow reflective sheeting" of a type approved by the Division.
- 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 barricades are designated on plans 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 Point."
- 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.
- Timber shall be Standard Grade or better, S4S, Douglas Fir or Larch, as described in the 1965 Standard Grading Rules published by the Western Wood Products Association, and shall conform to paragraph 123c for the rails and paragraphs 122c and 125c for the posts.
- Detachable extension wings for bypassing of construction equipment are permitted. "W" is variable, length shall be provided 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 Division 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 product 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.
- Barricades will be paid for separately when designated on plans as bid items.
- 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 X, 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				
(R-1)	I	M-1	F-1	26'-34'	28'	Barricade complete with SR13-1 sign and SWI-6 or SWI-7 signs as required.
(R-2)	I	M-2	F-2	35'-44'	41'	Barricade complete with SR13-1 sign and SWI-6 or SWI-7 signs as required.
(R-3)	I	M-3	F-3	Variable	28'	Barricade (without extension wings) complete with SR13-1 sign and SWI-6 or SWI-7 signs as required.
I	M-4	F-4	Variable	Variable 8'-6' min.	28'	Wing Barricade (signs only as appropriate).
II	-	F-6	Variable	Variable	28'	Barricade complete with appropriate signs.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

TIMBER BARRICADES

Designed By: D.R.W.
Made By: J.L.S.
Checked By: J.B.

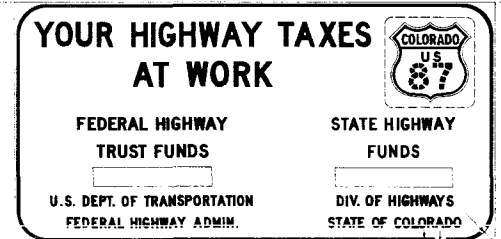
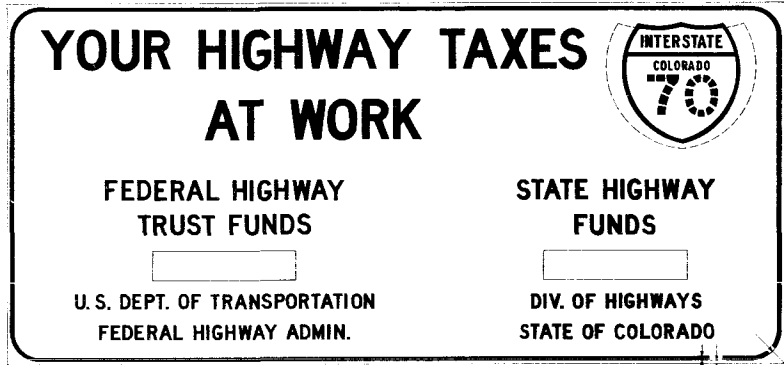
Approved By: *[Signature]*
Date: JULY 1, 1965

STANDARD M-614-IC

JULY 5, 1968
(SHEET 1 OF 2 SHEETS)

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

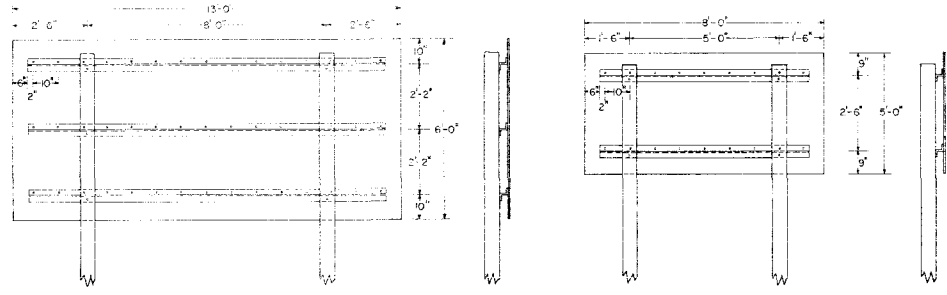
REVISIONS				
(R-1)	7-26-68	Rev. Legend and Notes	J. J. B.	G.W.F.
(R-2)	5-20-69	Rev. Lateral Placement	J. J. B.	J. J. B.
(R-3)	9-25-70	Rev. Legend	J. J. B.	



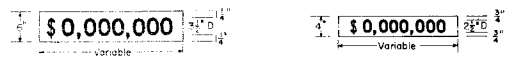
ALTERNATE LEGEND
4'-0" FEDERAL FUNDS

ALTERNATE LEGEND
2'-0" FEDERAL FUNDS

FABRICATION DETAILS



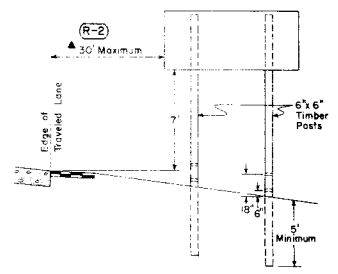
"AMOUNT OF FUNDS" PLAQUE DETAILS



GENERAL NOTES

- These signs shall be furnished and installed by state forces.
- All work shall be done in accordance with Standard Specifications applicable to the Project.
- Signs are to be placed facing traffic approaching the Project. They shall be installed at a location where they will not obscure or detract from the effectiveness of other official signs.
- The lateral placement may be reduced to a minimum of 2 ft. outside of the shoulder edge where necessary to fit field conditions.
- When these signs are used on Identification Projects, the words "HIGHWAY" and "TRUST" in lines 3 and 4 shall be deleted and the words "FEDERAL" and "FUNDS" shall be used in accordance with the spacing as shown under "Alternate Legend".
- Sign panel shall be fabricated with 1/4" plywood.
- Route Marker plaques and "Amount of Funds" plaques shall be sheet aluminum 0.080" min. thickness.
- Signs shall have a screen processed black legend and border on a plain white background. "Amount of Funds" plaques shall have a screen processed black legend on a plain white background.
- Route Marker plaques shall be plain as indicated on the applicable standards.
- Backing zees shall be 3" x 2 3/4" x 1/4". Steel zees shall weigh 6.7 lbs. per ft. and aluminum zees shall be of 6061-T6 alloy weighing 2.33 lbs. per ft.
- Posts shall be 6" x 6", S4S timber, painted white.
- Each timber post shall be provided with two 2" diameter holes through the neutral axis, one at 6" and one at 18" above the ground level. The inside portion of each 2" diameter hole shall be painted white.
- Panels shall be fastened to backing zees with 1/4" thrust head lockbolt fasteners.
- Backing zees shall be fastened to posts with 3/8" machine bolts.
- Route Marker plaques and "Amount of Funds" plaques shall be fastened to the sign panels with 5/8" #9 round head wood screws.
- Exposed lockbolt fastener heads and wood screw heads on the face of the sign shall be dipped or painted to match the surrounding color.
- The underground portion of each timber post shall be treated with creosote.
- Where a third governmental agency is shown as participating, its official name should be included centrally in lines 6, 7, and 8.
- It will not be necessary to change DEPT. to DIV. on any existing signs.

INSTALLATION DETAIL



DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

**STANDARD
CONSTRUCTION
IDENTIFICATION
SIGNS**

Designed By: J. J. B. Approved By: J. J. B.
Made By: J. J. B. Traffic Engineer
Checked By: G.W.F. Date: July 5, 1968

STANDARD M-614-TB

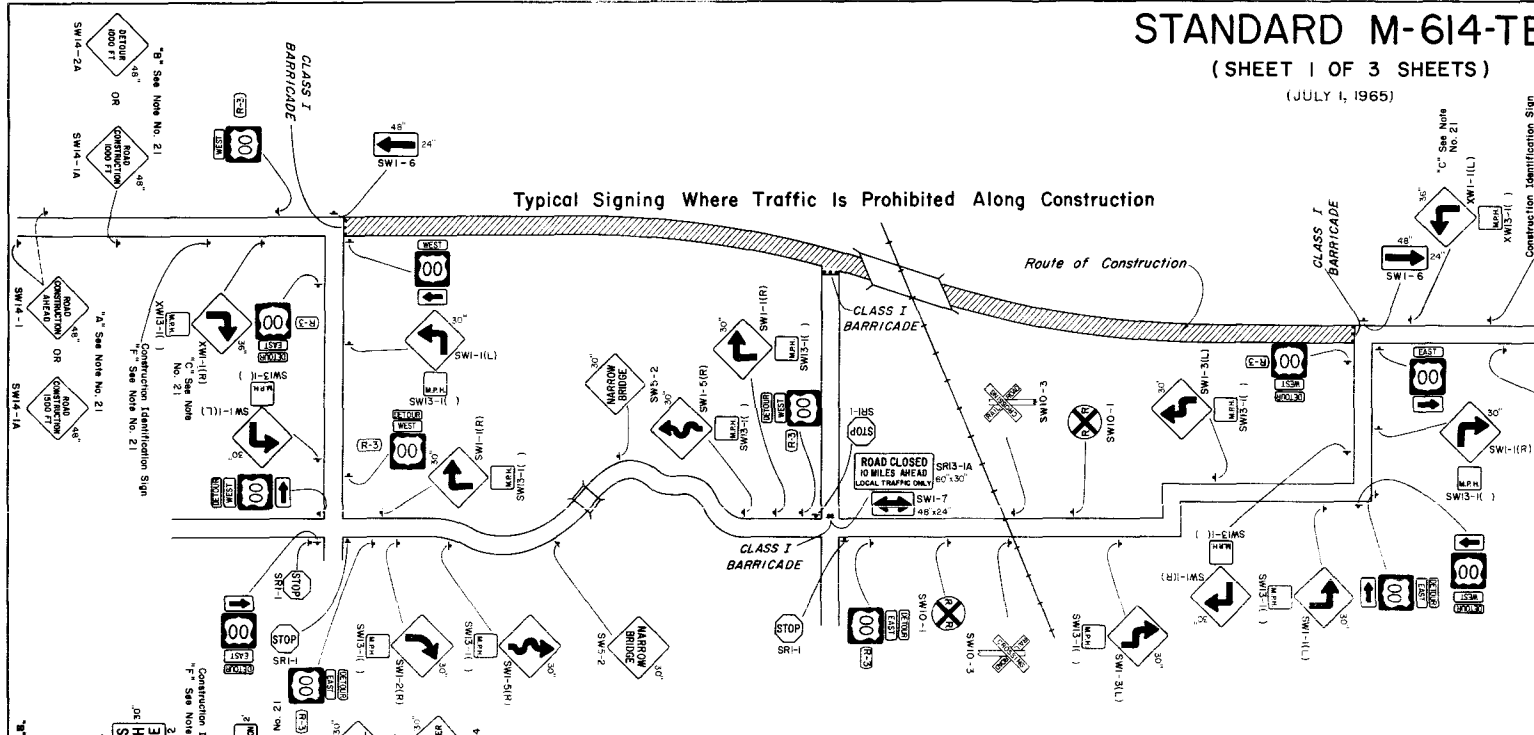
(SHEET 1 OF 3 SHEETS)

(JULY 1, 1965)

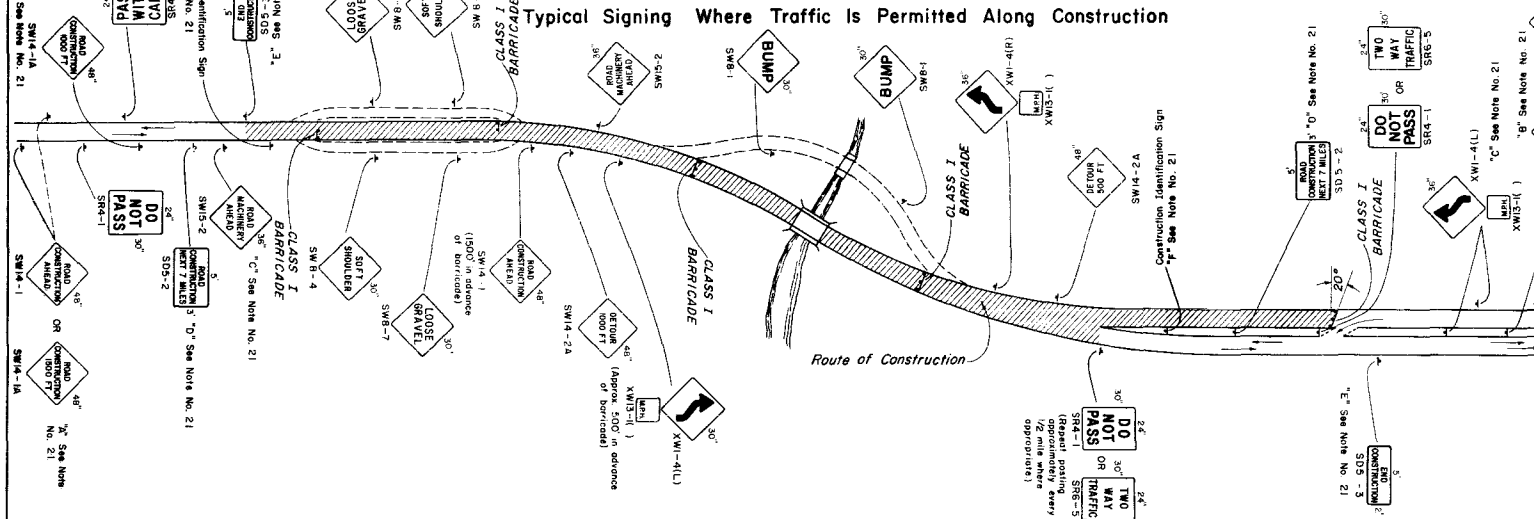
FEDERAL ROAD REGION NO.	DIVISION	PROJECT NO.	SHEET NO.
9	COLORADO		

REVISIONS			
(R-1)	7-12-67	Note 23	C.W.F.
(R-2)	7-8-68	Rev. Break-away, Placement,	
		Code No's, & Dept. Name	G.W.F.
(R-3)	12-24-68	Rev. U.S. Shields	J.L.S.

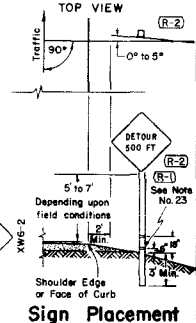
Typical Signing Where Traffic Is Prohibited Along Construction



Typical Signing Where Traffic Is Permitted Along Construction



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



STANDARD M-614-TB

(SHEET 3 OF 3 SHEETS)

(JULY 1, 1965)

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

REVISIONS			
(R-1)	7-12-67	Added Note 23	G.W.F.
(R-2)	7-8-68	Rev. Note 23 & Dept. Name - Deleted Note	G.W.F.
(R-3)	12-24-68	Rev. Note No 18	J.L.S.

GENERAL NOTES

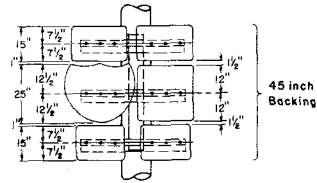
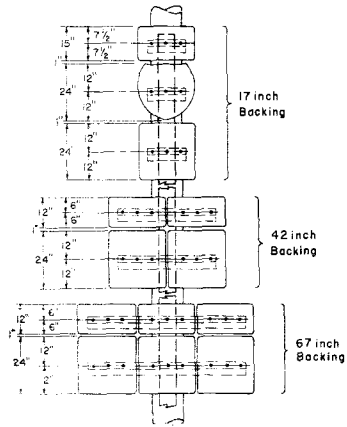
- All work shall be done in accordance with: (a) the Standard Specifications applicable to the Project, and (b) the "Manual on Uniform Traffic Control Devices for all Classes of Streets and Highways" published by the Department of Highways.
- Where traffic is maintained through or over any part of the 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.
- 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, 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.
- 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.
- 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.
- 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.
- 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 stated 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.
- Desirable sizes for signs are shown on Sheet 1 of this Standard. Larger or smaller signs shall be used where warranted. 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.
- 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.
- Signs with the prefix "W" in the sign code are Warning signs and are used to alert traffic to existing or potentially hazardous conditions.
- 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.
- 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."
- Painting for wood surfaces shall conform with Section 506 of the Standard Specifications.
- Posts for regulatory, warning, and guide signs will normally be 4"x4" or 6"x6" and shall conform to the Standard Specifications for 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 5B and LL Structural 5B Paragraph 2B4 or 2B5 of 1956 Grading Rules for Southern Pine. Posts shall be painted with one coat of "White Wood Primer" and one coat of "Outside White Paint."
- 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.
- All material shall be sound and durable. Barricades, signs, symbols, and lettering shall be of good workmanship. 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 by the Department.
- (R-3) 18. Lanterns and Torches - Lanterns, with red globes, shall be used only in low speed urban areas. Open-flame torches shall not be used under any circumstances.
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": SD5-2 - 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": SD5-3 - 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.
22. When Flags are used in lieu of the Flagman Sign, they shall be a minimum of 18"x18", made of a good grade of bright red material, and fastened securely to a staff of approximately 3 foot length. The free edge should be weighted to insure that the flag will hang vertically, even in heavy winds.
- (R-1) (R-2) 23. Each 6"x6" timber sign post shall be provided with two 2" diameter holes through the neutral axis normal to the roadway, one hole at 6" and one hole at 18" above the ground level. The 4"x4" timber posts shall not be provided with any type of break-away device. The inside portion of each 2" diameter hole shall be painted white. The underground portion of each timber post shall be treated with creosote.

(R-2)

(R-2)

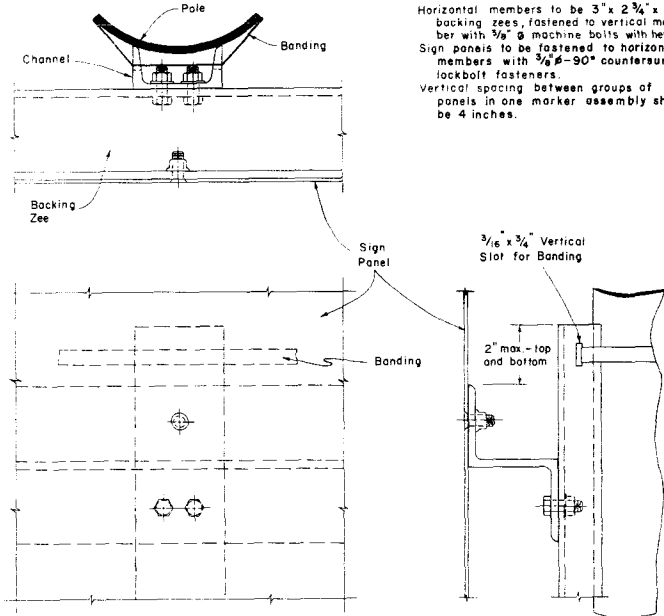
DEPARTMENT OF HIGHWAYS STATE OF COLORADO DIVISION OF HIGHWAYS	
TRAFFIC SIGNING FOR HIGHWAY CONSTRUCTION	
Designed By D.R.W. Made By J.L.S. Checked By J.B.	Approved By <i>[Signature]</i> Traffic Engineer Date AUGUST 9, 1965

TYPICAL POLE MOUNT INSTALLATION
for Class II Marker Assembly



FABRICATION NOTES

Horizontal and vertical members to be the same material as the sign panel.
Vertical member to be 3" x 1.420 lbs. 6061-T6 channel banded to the pole with a minimum of two bands.
Horizontal members to be 3" x 2 3/4" x 1/4" backing zeels, fastened to vertical member with 3/8" dia machine bolts with hex nut.
Sign panels to be fastened to horizontal members with 3/8" dia - 90° countersunk lockbolt fasteners.
Vertical spacing between groups of panels in one marker assembly shall be 4 inches.



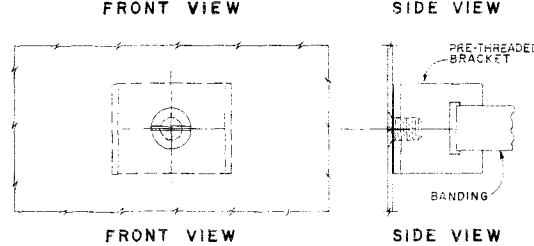
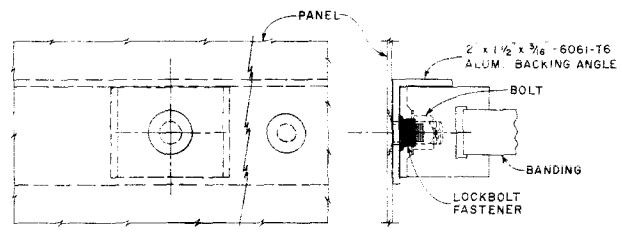
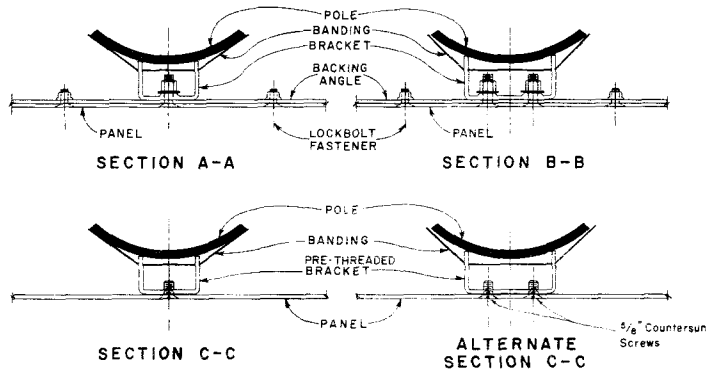
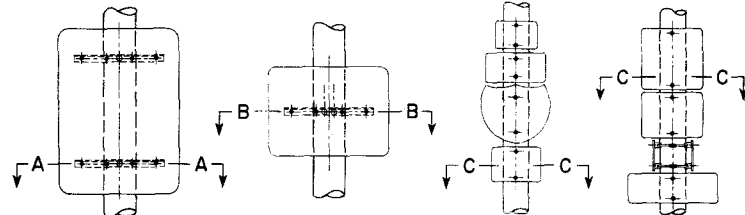
STANDARD S-614-18A

JANUARY 14, 1971

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOT. SHEETS
9	COLORADO			

REVISIONS	

TYPICAL POLE MOUNT INSTALLATION
for Class I and II Sign Panels



FABRICATION NOTES

Shapes other than the brackets or backing angle shown may be used.
Maximum spacing between panels in one assembly shall be 1 inch.
Panels may be installed back-to-back on the same bands.
In no case shall bolts of less than 3/8" dia be used for any portion of the assembly.
Only fiber washers may be used on the face of the sign panel.

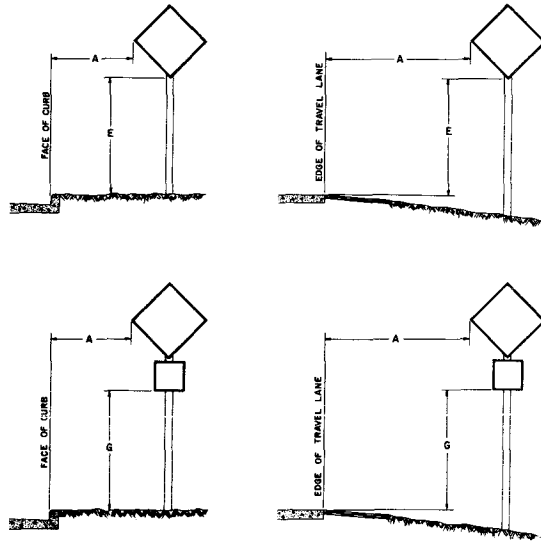
GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications applicable for this project.
- Signs shall be located in accordance with the details shown on the plans. Special care shall be taken to insure an unobstructed view of each sign.
- Brand-name attachment hardware and banding material to be approved by the Engineer.
- For sign panel fabrication, mounting height of 3 hole spacing for backing zeels, see applicable Standard.
- All bolts, nuts and metal washers, unless made of stainless steel, shall be galvanized or cadmium plated.
- All holes shall be drilled or punched.
- Exposed bolt heads and fiber washers on the face of the panel shall be painted or reflectorized to match the surrounding color.
- Banding shall be 1/2" x .025 (min.) stainless steel, round-edge strap with an ultimate breaking strength of 1500 lbs (min.). There shall be a maximum of two bands per panel or assembly except where a single backing angle is used.
- Panels of 36" or greater width must have backing members in addition to brackets. Class II panels of less than 36" width and Class I panels of greater than 24" width should use pre-threaded brackets similar to alternate section C-C (2 screws).

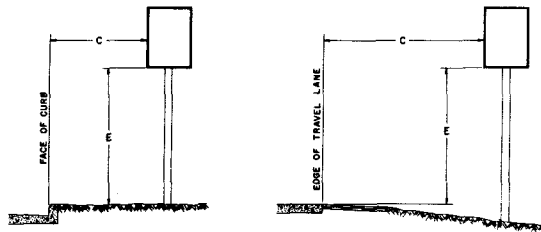
DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS
TYPICAL POLE MOUNT SIGN INSTALLATION

Designed By: F. J. B. Approved By: [Signature]
Made By: F. J. B. Traffic Engineer
Checked By: J. S. Date: [Signature] 12/15/70

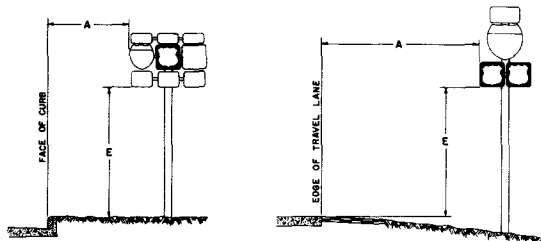
**WARNING SIGN
PLACEMENT**



**REGULATORY SIGN
PLACEMENT**



**ROUTE MARKER ASSEMBLY
PLACEMENT**



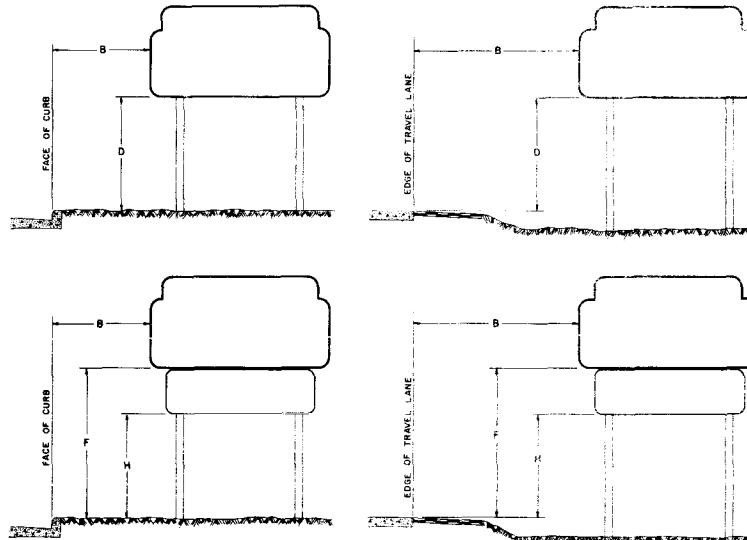
STANDARD S - 614 - 19B

NOVEMBER 16, 1970.

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

REVISIONS	

**CLASS III SIGN
PLACEMENT**



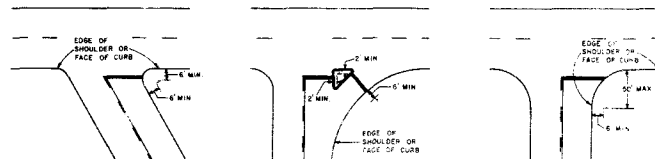
GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications applicable to the project.
- The Engineer shall establish grades and locations for all sign posts in accordance with details shown on the plans.
- Special care shall be taken in sign location to ensure an unobstructed view of each sign.
- Signs shall be set to provide as much lateral clearance as existing conditions permit but shall not exceed maximum clearances as shown in the LATERAL PLACEMENT TABLE.
- The lateral placement for all signs may be reduced to a minimum of 2 ft. outside of the shoulder edge or face of curb where necessary to fit field conditions or improve sight distance.
- Minimum post embedment shall be 3 ft. for U-2 posts and 4x4" timber posts, and 5 ft. for 6x6" timber posts. For footing depth see applicable Standard.

**CLASS III SIGNS
PANEL GROUND CLEARANCE**



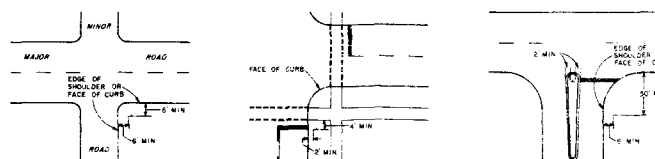
**TYPICAL LOCATIONS
STOP SIGNS AND YIELD SIGNS**



ACUTE ANGLE INTERSECTION

CHANNELIZED INTERSECTION

WIDE THROAT INTERSECTION



MINOR CROSSROAD

URBAN INTERSECTION

DIVISIONAL ISLAND

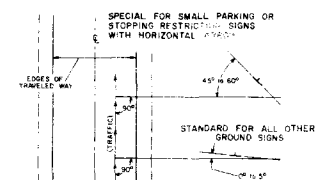
PLACEMENT TABLES

LATERAL			MINIMUM VERTICAL					
KEY	ALL SYSTEMS		KEY	INTERSTATE	EXPRESSWAY		NON-EXPRESSWAY	
	MIN.	MAX.			URBAN	RURAL	URBAN	RURAL
A	*	22'-0"	D	5'-0"	7'-0"	6'-0"	7'-0"	5'-0"
B	*	30'-0"	E	6'-0"	7'-0"	5'-0"	7'-0"	5'-0"
C	*	16'-0"	F	8'-0"				
			G	6'-0"	6'-0"	4'-0"	6'-0"	4'-0"
			H	5'-0"	4'-0"	4'-0"	4'-0"	4'-0"

* In no case shall any part of a sign be less than 2 ft. beyond any surface prepared for normal or emergency travel of vehicles.

** When lateral placement is minimum, "D" shall be 7'-0".

**ANGULAR PLACEMENT
(ALL GROUND SIGNS)**



**DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS**

**TYPICAL
GROUND SIGN
PLACEMENT**

Designed By J. J. S. Approved By _____
Made By J. E. M. Traffic Engineer
Checked By J. B. [Signature] 11/16/70

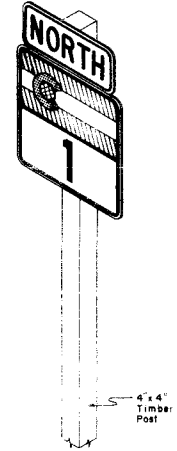
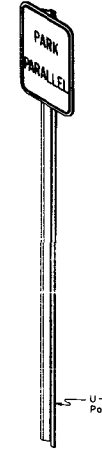
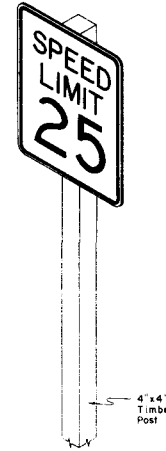
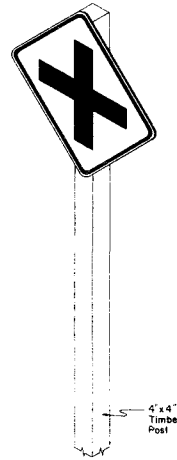
STANDARD S-614-20B

JULY 1, 1968

FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO			

REVISIONS	

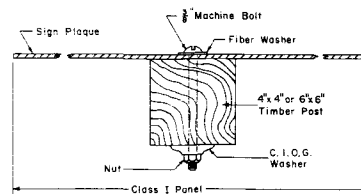
TYPICAL CLASS I GROUND SIGN INSTALLATIONS



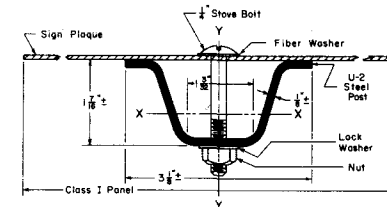
GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications applicable to the Project.
- All Class I sign panels shall be either sheet steel, 0.0598" minimum thickness, or sheet aluminum, 0.100" minimum thickness.
- Class I sign panels shall be fastened directly to the post. Fasten to U-2 Post with 2- $\frac{1}{2}$ " stove bolts and to timber posts with 2- $\frac{3}{8}$ " machine bolts. See "Typical Multi-Sign Installations" Standard for exceptions.
- A plastic fiber washer shall be placed between the bolt head and the face of the sign panel. Use a C.I.G.G. washer under the nut on the back of the timber post.
- Bolts, nuts and metal washers shall be galvanized or cadmium plated.
- Exposed bolt heads and fiber washers on the face of the sign panel shall be painted or reflectorized to match the surrounding color.
- All reflective sheeting shall be of the Non-Exposed Lens Type.
- For sign placement see "Typical Ground Sign Placement" Standard.
- Steel posts shall meet requirements of Paragraph 4.5 U.S. Department of Commerce Commercial Standard 184-51. U-2 post to weigh 2 lbs./ft. A mill tolerance of minus 3 $\frac{1}{2}$ % of the weight of any one post will be allowed. Alternate post acceptable if section modulus is at least 0.200 in.³ about the X-X axis and at least 0.250 in.³ about the Y-Y axis.
- For additional information, refer to "TABULATION OF SIGNS". Timber posts shall be 4"x4" or 6"x6" as noted therein and shall conform to Standard Dressed (S4S) sizes.

TYPICAL TIMBER POST SECTION



TYPICAL U-2 POST SECTION



DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS
CLASS I
GROUND SIGN
INSTALLATIONS

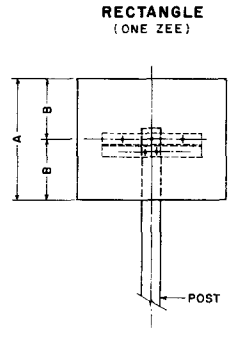
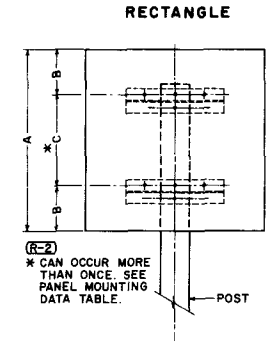
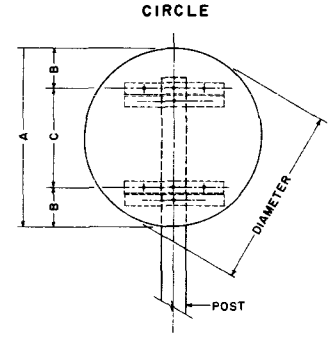
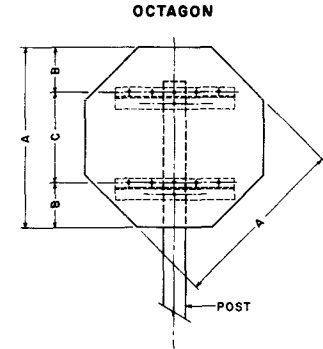
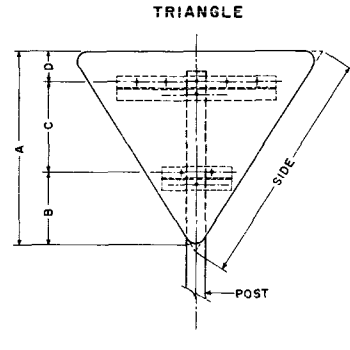
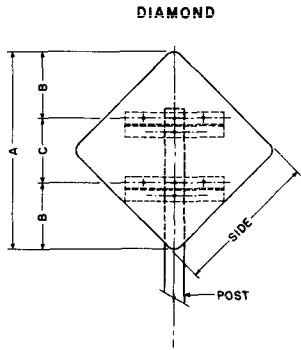
Designed By: J.C.S. Approved By: J.C.S.
Made By: J.V.M. Traffic Engineer
Checked By: G.W.F. Date: JUL 1, 1968

STANDARD S-614-21B

JULY 1, 1968

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

REVISIONS			
(R-1)	4-22-69	REVISED TABLE	J.L.S.
(R-2)	12-2-69	REV TABLE & ADD NOTE	J.J.B.

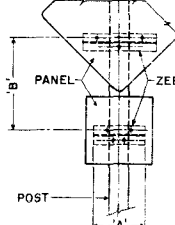


SIGN TYPE	CLASS II PANEL MOUNTING DATA (R-1) (R-2)				POST SIZE	BACKING ZEE LENGTH
	A	B	C	D		
DIAMOND 30" SIDES	40 7/8"	14 7/8"	12"	---	4" x 4"	1'-8"
36" SIDES	49 1/8"	14 1/2"	21"	---	6" x 6"	1'-8"
48" SIDES	65 3/8"	20 3/8"	25"	---	6" x 6"	2'-8"
TRIANGLE 36" SIDES	39 3/8"	14 3/8"	9"	6"	4" x 4"	1'-8", 1'-2"
48" SIDES	38 3/8"	14 3/8"	18"	6"	4" x 4"	2'-8", 1'-2"
60" SIDES	48"	20"	22"	6"	6" x 6"	2'-8", 1'-8"
OCTAGON 30" x 30"	30"	9"	12"	---	4" x 4"	1'-8"
48" x 48"	48"	12"	24"	---	6" x 6"	2'-8"
CIRCLE 36" DIAMETER	36"	8"	20"	---	6" x 6"	1'-8"
RECTANGLE 40" x 20"	20"	10"	---	---	4" x 4"	2'-8"
36" x 24"	24"	12"	---	---	4" x 4"	1'-8"
40" x 24"	24"	12"	---	---	4" x 4"	2'-2"
48" x 24"	24"	12"	---	---	6" x 6"	3'-2"
30" x 30"	30"	9"	12"	---	4" x 4"	1'-8"
48" x 30"	30"	9"	12"	---	6" x 6"	1'-2"
60" x 30"	30"	9"	12"	---	6" x 6"	4'-2"
30" x 36"	36"	9"	18"	---	6" x 6"	1'-8"
36" x 36"	36"	9"	18"	---	6" x 6"	2'-2"
42" x 36"	36"	9"	18"	---	6" x 6"	5'-2"
40" x 40"	40"	9"	22"	---	6" x 6"	2'-8"
36" x 42"	42"	9"	24"	---	6" x 6"	2'-2"
36" x 48"	48"	12"	24"	---	6" x 6"	2'-2"
40" x 48"	48"	12"	24"	---	6" x 6"	2'-8"
42" x 48"	48"	12"	24"	---	6" x 6"	2'-8"
48" x 48"	48"	12"	24"	---	6" x 6"	3'-2"
50" x 48"	48"	12"	24"	---	6" x 6"	4'-2"
48" x 54"	54"	12"	30"	---	6" x 6"	3'-2"
48" x 60"	60"	12"	36"	---	6" x 6"	3'-2"
36" x 72"	72"	10"	26" (21)	---	6" x 6"	2'-2"
48" x 96"	96"	12"	24" (3)	---	6" x 6"	3'-2"

GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications applicable to the project.
- All Class II sign panels shall be either single sheet steel, 0.0598" minimum thickness, or single sheet aluminum, 0.100" minimum thickness, and shall be furnished with backing zeos.
- Timber posts shall be 4" x 4" or 6" x 6" as noted in the "Tabulation of Signs" and shall conform to Standard Dressed (S4S) Sizes.
- Backing zeos are 3" x 2 3/4" x 1/4" of 6.7 lbs. per ft. for steel or 2.33 lbs. per ft. for 6061-T6 aluminum.
- Exposed bolt heads on the face of the sign shall be painted or reflectorized to match the surrounding color.
- For sign placement see "Typical Ground Sign Placement" Standard.
- All reflective sheeting shall be of the Non-Exposed Lens Type.
- Bolts, nuts and metal washers shall be galvanized or cadmium plated.

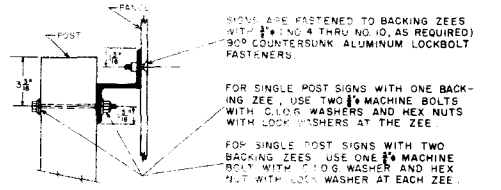
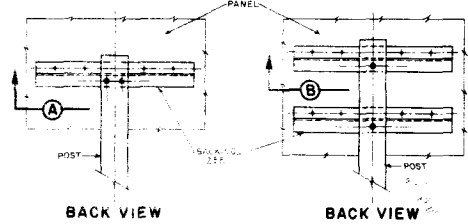
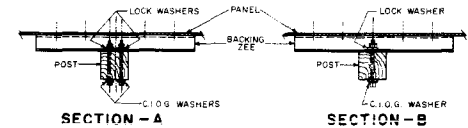
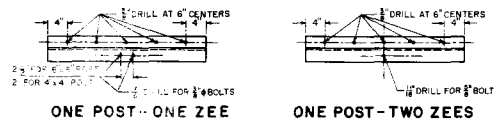
SECONDARY PANEL MOUNTING



PANEL SIZE		'A' ZEE LENGTH	'B' ZEE SPACING	POST SIZE
PRIMARY	SECONDARY			
30" SIDES	18" SQUARE	1'-2"	24 7/8"	6" x 6"
36" SIDES	24" SQUARE	1'-8"	27 1/2"	6" x 6"
48" SIDES	24" SQUARE	1'-8"	33 3/8"	6" x 6"

NOTE: SEE CLASS II PANEL MOUNTING DATA AND TYPICAL BACKING ZEES FOR OTHER DIMENSIONS AND FASTENERS.

TYPICAL BACKING ZEES



END VIEW

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

CLASS II GROUND SIGN INSTALLATIONS

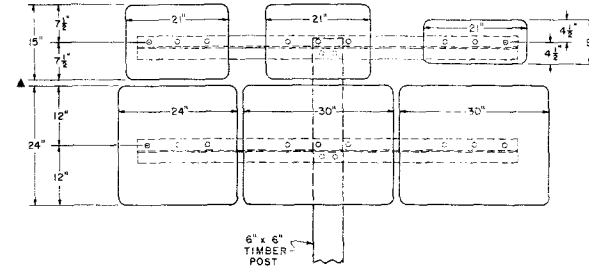
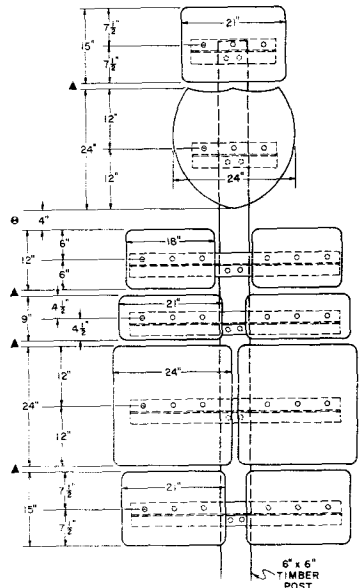
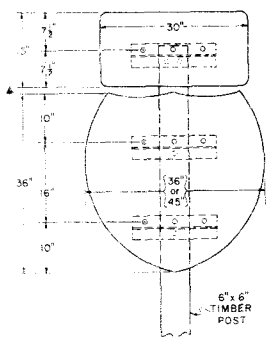
Designed By: J.L.S. Approved By: *[Signature]*
Made By: F.J.B. Traffic Engineer
Checked By: G.W.P. Date: JULY 1, 1968

STANDARD S-614-22C

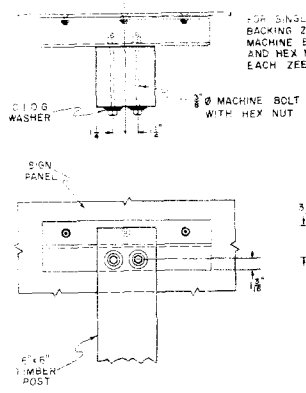
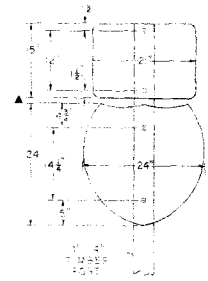
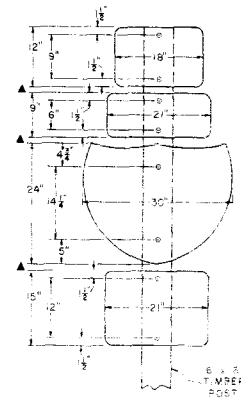
(DECEMBER 11, 1970)

TOTAL SHEET NO.	DIVISION	REV. NO.	DATE
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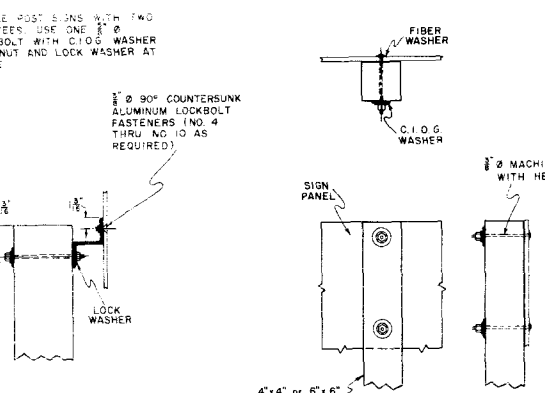
REVISIONS	



PANEL COMBINATIONS	ZEE LENGTH	HOLE SPACING
24", 30", 36", 45"	17"	2 1/2", 6", 6", 2 1/2"
24" @ 24"	42"	2 1/2", 6", 6", 13", 6", 6", 2 1/2"
24" @ 30"	45"	2 1/2", 6", 6", 16", 6", 6", 2 1/2"
30" @ 30"	48"	2 1/2", 6", 6", 19", 6", 6", 2 1/2"
24" @ 24" @ 24"	67"	2 1/2", 6", 6", 13", 6", 6", 13", 6", 6", 2 1/2"
24" @ 24" @ 30"	70"	2 1/2", 6", 6", 13", 6", 6", 16", 6", 6", 2 1/2"
24" @ 30" @ 24"	73"	2 1/2", 6", 6", 16", 6", 6", 16", 6", 6", 2 1/2"
30" @ 24" @ 30"	73"	2 1/2", 6", 6", 16", 6", 6", 16", 6", 6", 2 1/2"
24" @ 30" @ 30"	76"	2 1/2", 6", 6", 16", 6", 6", 19", 6", 6", 2 1/2"
30" @ 30" @ 30"	79"	2 1/2", 6", 6", 19", 6", 6", 19", 6", 6", 2 1/2"



CLASS II MARKER ASSEMBLY INSTALLATION



CLASS I MARKER ASSEMBLY INSTALLATION

GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications applicable to the project.
- For sign placement see "TYPICAL GROUND SIGN PLACEMENT" STANDARD.
- For sign panel fabrication details, see applicable STANDARDS.
- Timber posts shall be 4"x4" or 6"x6" as noted in the "TABULATION OF SIGNS" and shall conform to standard dressed (S4S) sizes.
- Posts shall be set in drilled or excavated holes, placed plumb, and firmly tamped in place.
- Backing zeos are 3"x2 1/2" x 1/4". Steel zeos shall weigh 6.7 lbs per foot and aluminum zeos shall be of 6061-T6 alloy weighing 2.33 lbs per foot.
- All reflective sheeting shall be of the non-exposed lens type.
- Vertical spacing between panels shall be 1" minimum to 1 1/2" maximum.
- Vertical spacing between groups of panels shall be 4".
- Bolts, nuts, and metal washers shall be galvanized or cadmium plated.
- Exposed bolt heads and fiber washers on the face of the sign panel shall be painted or reflectorized to match the surrounding color.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

**TYPICAL MARKER
ASSEMBLY
INSTALLATIONS**

Designed By J.J.B. Approved By *[Signature]*
Made By J.E.M. Traffic Engineer
Checked By J.J.B. Date *[Signature]*, 1972

TYPICAL PANEL ELEVATIONS

STANDARD S-614-23 C

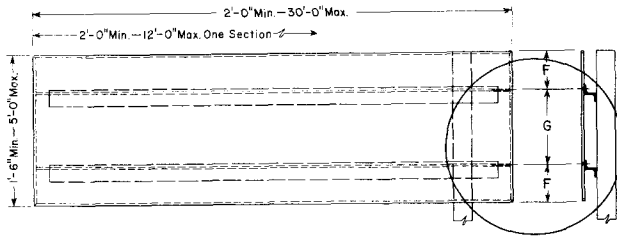
(SHEET 1 OF 2 SHEETS)

OCTOBER 20, 1969

FEDERAL ROAD RESION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO			

REVISIONS	

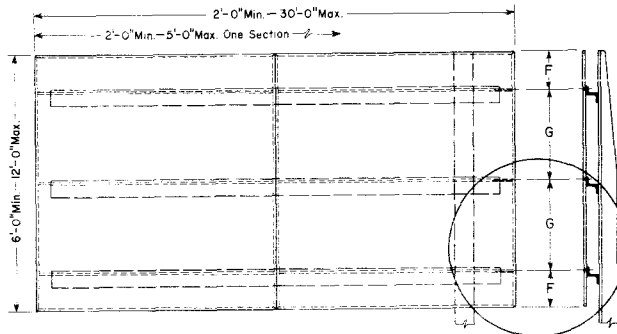
HORIZONTAL SECTIONS



SECTIONS REQUIRED
 Height x 2'-0" to 12'-0" = 1 Section
 Height x 12'-6" to 24'-0" = 2 Sections
 Height x 24'-6" to 30'-0" = 3 Sections

SEE TYPICAL
 DETAIL
 ON SHEET 2

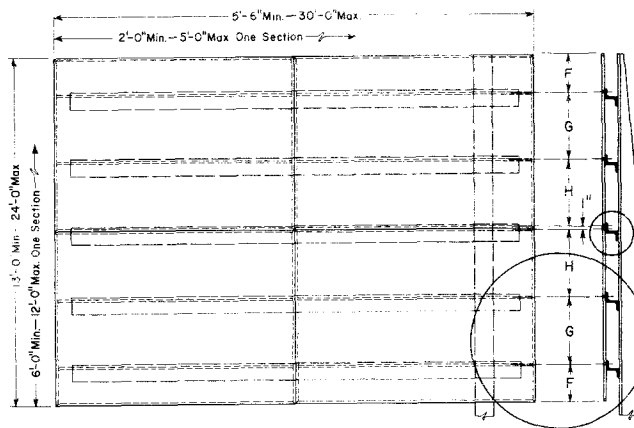
VERTICAL SECTIONS



SECTIONS REQUIRED
 Height x 2'-0" to 5'-0" = 1 Section
 Height x 5'-6" to 10'-0" = 2 Sections
 Height x 10'-6" to 15'-0" = 3 Sections
 Height x 15'-6" to 20'-0" = 4 Sections
 Height x 20'-6" to 25'-0" = 5 Sections
 Height x 25'-6" to 30'-0" = 6 Sections

SEE TYPICAL
 DETAIL
 ON SHEET 2

MULTI-VERTICAL SECTIONS



SECTIONS REQUIRED
 Height x 5'-6" to 10'-0" = 4 Sections
 Height x 10'-6" to 15'-0" = 6 Sections
 Height x 15'-6" to 20'-0" = 8 Sections
 Height x 20'-6" to 25'-0" = 10 Sections
 Height x 25'-6" to 30'-0" = 12 Sections

SEE TYPICAL
 SEAM CLOSURE
 ZEE DETAIL
 ON SHEET 2

SEE TYPICAL
 DETAIL
 ON SHEET 2

GENERAL NOTES

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS APPLICABLE TO THE PROJECT.
- SEE THE APPLICABLE STANDARDS FOR SIGN PLACEMENT AND FOOTING DETAILS.
- FASTENERS: A BUTTON-HEAD BOLT WITH NUT AND WASHERS SHALL BE USED TO FASTEN THE SIGN PANEL TO THE BACKING ZEE. A HEX-HEAD BOLT WITH NUT AND WASHERS SHALL BE USED TO FASTEN THE BACKING ZEE TO A TIMBER POST OR TO A STEEL POST.
- WASHERS: A FLAT WASHER WITH NEOPRENE SEAL SHALL BE PLACED BETWEEN THE BOLT HEAD AND THE PANEL FACE. A FLAT WASHER SHALL BE PLACED BETWEEN THE BOLT HEAD AND THE BACKING ZEE. A LOCK WASHER SHALL BE PLACED UNDER THE NUT ON A STEEL POST OR A BACKING ZEE. A C.I.G. WASHER SHALL BE PLACED UNDER THE BOLT HEAD ON A TIMBER POST.
- BOLT HEADS AND WASHERS ON THE PANEL FACE SHALL BE DIPPED, PAINTED OR COVERED WITH REFLECTIVE SHEETING TO MATCH THE BACKGROUND COLOR OF THE SIGN.
- SIGN PANELS SHALL BE CONSTRUCTED FROM THE LEAST NUMBER OF SECTIONS. THE SECTIONS SHALL BE AS LARGE AS POSSIBLE AND AS NEARLY EQUAL IN SIZE AS POSSIBLE, ACCORDING TO THE LIMITS SHOWN.
- FOR ADDITIONAL POST AND PANEL INFORMATION SEE THE "TABULATION OF SIGNS" INCLUDED IN THE PLANS.

SPACING TABLE for
 ALUMINUM BACKING ZEES AND SUPPORT TUBES

SIGN PANEL HEIGHT	NUMBER OF ZEES AND SUPPORT TUBES	OVERHANG "F"	SPACING "G"	SIGN PANEL HEIGHT	NUMBER OF ZEES AND SUPPORT TUBES	OVERHANG "F"	SPACING "G"	SPACING "H"
1'-6"	2	0'-4"	0'-10"	13'-0"	7-6	1'-0"	1'-10"	1'-9 1/2"
2'-0"	2	0'-5"	1'-2"	14'-0"	7-6	0'-6"	2'-2"	2'-1 1/2"
2'-6"	2	0'-6"	1'-6"	15'-0"	7-6	1'-0"	2'-2"	2'-1 1/2"
3'-0"	2	0'-7"	1'-10"	16'-0"	7-6	0'-6"	2'-6"	2'-5 1/2"
4'-0"	2	0'-11"	2'-2"	17'-0"	7-6	1'-0"	2'-6"	2'-5 1/2"
5'-0"	3	1'-3"	2'-6"	18'-0"	8-6	0'-4"	2'-2"	2'-1 1/2"
6'-0"	3	0'-10"	2'-2"	19'-0"	8-6	0'-10"	2'-2"	2'-1 1/2"
7'-0"	3	1'-0"	2'-6"	20'-0"	9-8	1'-4"	2'-2"	2'-1 1/2"
8'-0"	4	0'-9"	2'-2"	21'-0"	9-8	0'-6"	2'-6"	2'-5 1/2"
9'-0"	4	1'-3"	2'-2"	22'-0"	9-8	1'-0"	2'-6"	2'-5 1/2"
10'-0"	4	1'-3"	2'-6"	23'-0"	11-10	0'-8"	2'-2"	2'-1 1/2"
11'-0"	5	1'-2"	2'-2"	24'-0"	11-10	1'-2"	2'-2"	2'-1 1/2"
12'-0"	5	1'-0"	2'-6"					

DEPARTMENT OF HIGHWAYS
 STATE OF COLORADO
 DIVISION OF HIGHWAYS
 LAMINATED ALUMINUM
 PANELS AND POST
 SPACING TABLE FOR
 CLASS III SIGNS

Designed By: J.J.B.
 Made By: F.J.B.
 Checked By: J.L.S. Date: Oct 20, 1969

STANDARD S-614-23C

(SHEET 2 OF 2 SHEETS)

OCTOBER 20, 1969

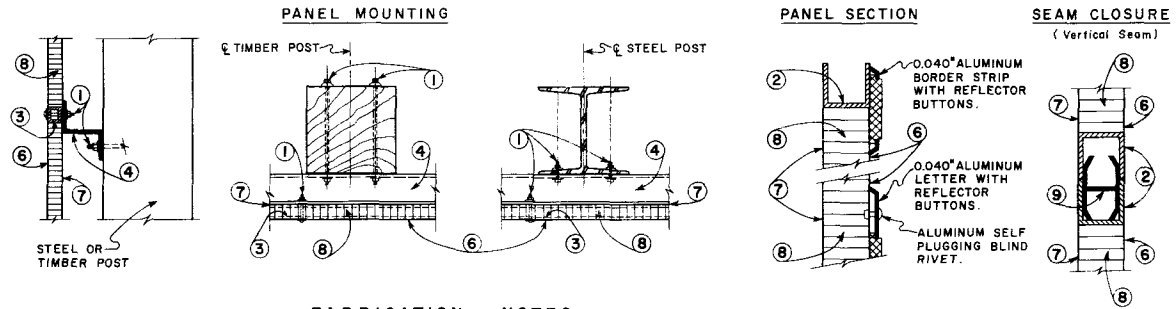
FEDERAL ROAD DISTRICT NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO			

REVISIONS	

POST SPACING TABLE for LAMINATED, EXTRUDED, and SHEET ALUMINUM SIGN PANELS

WIDTH OF SIGN	NO. OF POSTS	OVERHANG "A"	POST SPACING "B"	NO. OF POSTS	OVERHANG "A"	POST SPACING "C"	NO. OF POSTS	OVERHANG "A"	POST SPACING "C"
1'-6"	1	0'-9"							
2'-0"	1	1'-0"							
2'-6"	1	1'-3"							
3'-0"	1	1'-6"							
4'-0"	1	2'-0"							
5'-0"	1	2'-6"							
6'-0"	2	1'-0"	4'-0"						
7'-0"	2	1'-3"	4'-6"						
8'-0"	2	1'-6"	5'-0"						
9'-0"	2	1'-10"	5'-4"						
10'-0"	2	2'-0"	6'-0"						
11'-0"	2	2'-0"	7'-0"	3	2'-0"	3'-6"			
12'-0"	2	2'-6"	7'-0"	3	2'-0"	4'-0"			
13'-0"	2	2'-6"	8'-0"	3	2'-6"	4'-0"			
14'-0"	2	2'-6"	9'-0"	3	2'-6"	4'-6"			
15'-0"	2	3'-0"	9'-0"	3	3'-0"	4'-6"			
16'-0"	2	3'-3"	9'-8"	3	3'-0"	5'-0"			
17'-0"	2	3'-3"	10'-6"	3	3'-0"	5'-6"			
18'-0"	2	3'-6"	11'-0"	3	3'-0"	6'-0"			
19'-0"	2	3'-9"	11'-6"	3	3'-0"	6'-6"			
20'-0"	2	4'-0"	12'-0"	3	3'-0"	7'-0"			
21'-0"				3	3'-3"	7'-3"	4	2'-0"	5'-8"
22'-0"				3	3'-4"	7'-8"	4	2'-0"	6'-0"
23'-0"				3	3'-6"	8'-0"	4	2'-0"	6'-4"
24'-0"				3	3'-8"	8'-4"	4	2'-0"	6'-8"
25'-0"				3	4'-0"	8'-6"	4	2'-0"	7'-0"
26'-0"				3	4'-0"	9'-0"	4	2'-0"	7'-4"
27'-0"				3	4'-0"	9'-6"	4	2'-0"	7'-8"
28'-0"				3	4'-0"	10'-0"	4	2'-0"	8'-0"
29'-0"				3	4'-0"	10'-6"	4	2'-0"	8'-4"
30'-0"				3	4'-0"	11'-0"	4	2'-0"	8'-8"

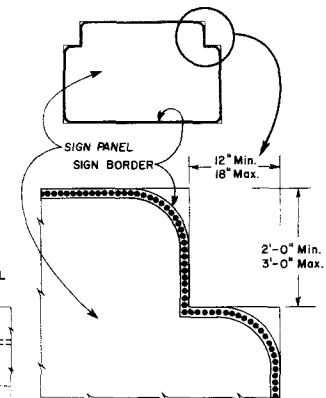
TYPICAL PANEL FABRICATION AND MOUNTING DETAILS



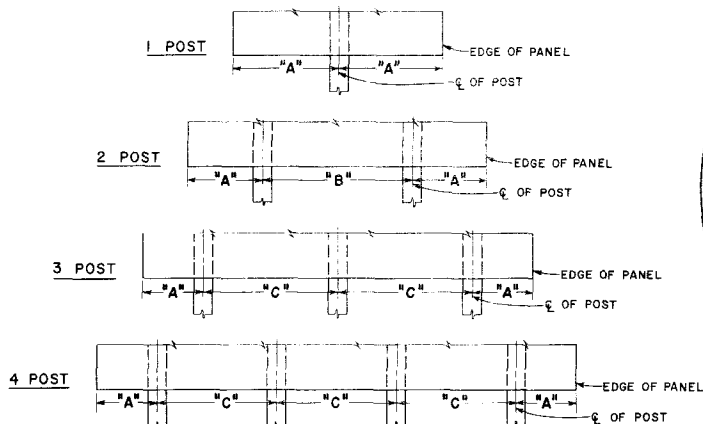
FABRICATION NOTES

- 3/8" BOLTS:** Panel to Backing Zee: maximum spacing between bolts shall be 9". Backing Zee to Post: minimum of 2 bolts per backing zee per post.
- PERIMETER FRAME:** 1" x 1" x 1/8" extruded aluminum channel.
- SUPPORT TUBE:** 1" x 1" x 1/8" extruded aluminum tubing.
- BACKING ZEE:** 3 1/2" x 2 1/8" x 2.33, Aluminum Alloy 6061-T6. Each Zee to be provided with a 3/4" x 2" horizontal slot for each post mounting bolt. The length of each Zee to be 1" less than the sign panel width.
- WEEP HOLE:** Three 1/8" weep holes to be provided in the perimeter frame at the bottom of each section. They shall be spaced approximately 3" from each end and in the center of the section.
- FACE SHEET:** 0.063" Aluminum Sheet.
- BACK SHEET:** 0.040" Aluminum Sheet.
- CORE:** 1" Phenolic Impregnated Honeycombed Core.
- ALIGNMENT EXTRUSION:** 0.062" Aluminum Extrusion.

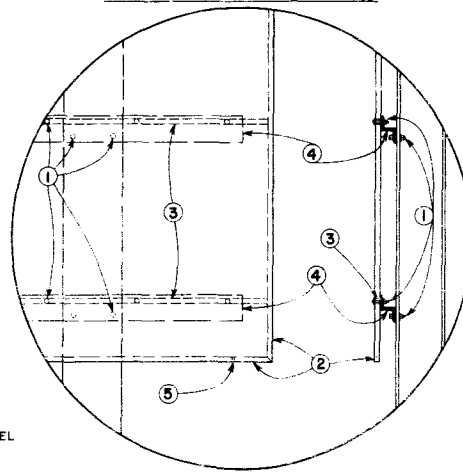
TYPICAL DETAIL EXIT NUMBER PANEL



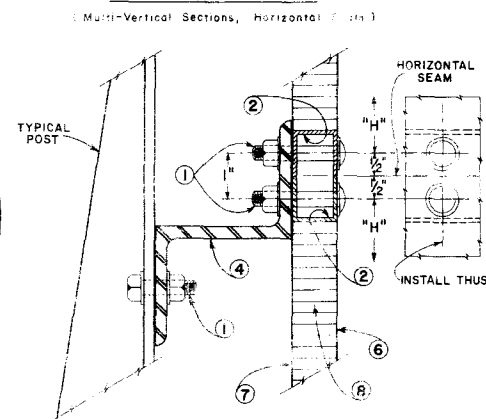
TYPICAL POST SPACING



TYPICAL ELEVATION DETAIL



TYPICAL DETAIL SEAM CLOSURE ZEE



DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

LAMINATED ALUMINUM PANELS AND POST SPACING TABLE FOR CLASS III SIGNS

Designed By: J.J.B. Traffic Engineer
Made By: J.J.B.
Checked By: J.L.S. Date: Oct 20, 1969

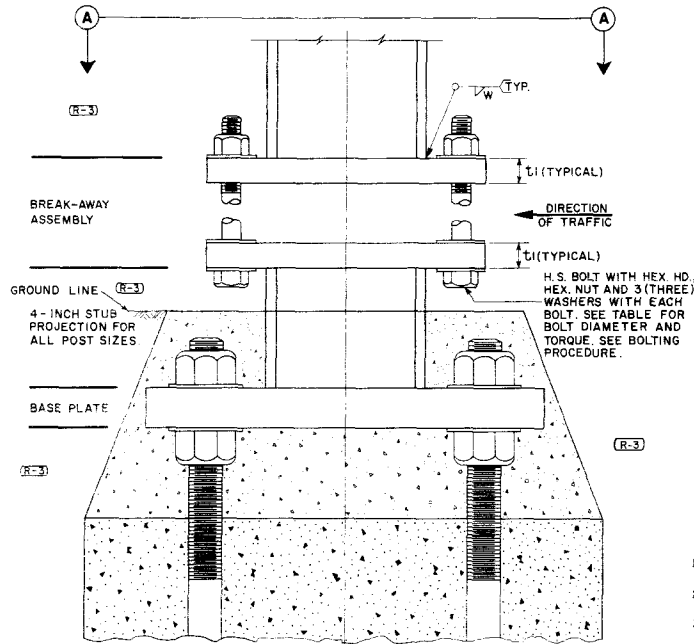
STANDARD S-614-26B

(SHEET 1 OF 2 SHEETS)
(MAY 4, 1967)

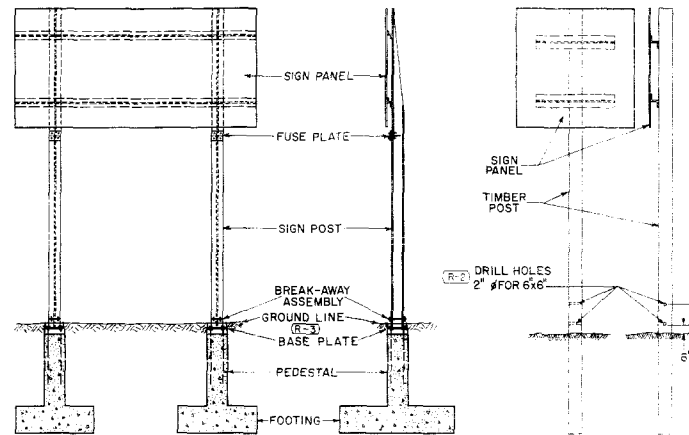
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	SHEETS
9	COLORADO			

REVISIONS				
(R-1)	7-11-67	Rev. Ground line	G.W.F.	
(R-2)	8-7-68	Rev. of hole sizes for timber posts and rev. of notes 1, 2, 3, 13	G.W.F.	
(R-3)	12-9-68	Rev. Title Block, Footing Details & Table	J.L.S.	

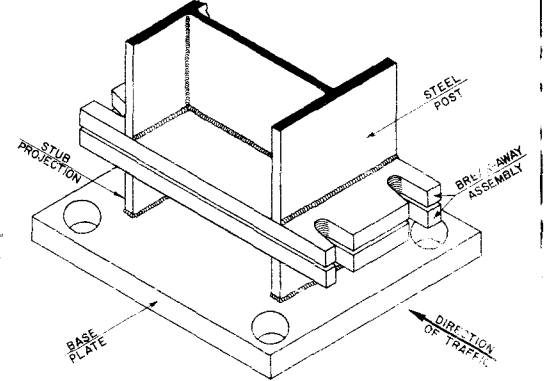
**TYPICAL ELEVATION
STEEL POST ASSEMBLY**



**TYPICAL BREAK-AWAY SIGN SUPPORT INSTALLATIONS
FOR STEEL AND TIMBER POSTS**



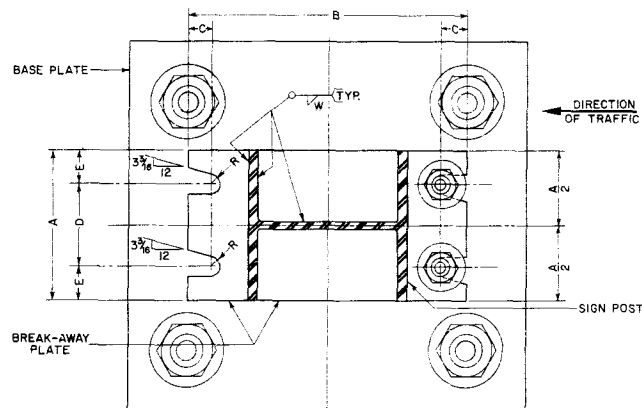
**TYPICAL VIEW
STEEL POST ASSEMBLY**



SECTION A-A

TYPICAL TOP VIEW

(SEE BREAK-AWAY PLATE DATA TABLE)



GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications applicable to the Project.
- Design conforms with AASHO specifications for the design and construction of Structural Supports for Highway Signs.
- All structural steel shall conform to ASTM Designation A36 and Section 509 of the Standard Specifications.
- Notched steel fuse plates shall conform to the requirements of ASTM-A441.
- All high strength bolts, nuts, and washers shall conform to ASTM-A325.
- All bolts other than high strength bolts shall conform to ASTM-307, Class A.
- All bolts, nuts, and washers shall be galvanized or cadmium plated as per Section 713 of the Standard Specifications.
- All holes shall be drilled.
- All steel cuts shall preferably be saw cuts; however, flame cutting will be permitted, provided all edges are ground. Metal shall not project beyond the plane of the plate face.
- High strength bolts in the break-away assembly shall be tightened only to the torque shown in the table.
- The "STUB POST" and "BREAK-AWAY PLATES" are considered part of the post.
- Timber posts shall be provided with two (2) 2" diameter holes drilled through the neutral axis. One shall be 6" and one shall be 18" above the ground level. The inside portion of the drilled hole shall be painted.
- All timber posts shall be provided with creosote treatment of underground portion.
- For base plate and footing details, see applicable STANDARD.
- For additional information, refer to "Tabulation of Signs" included in the plans.

BREAK-AWAY PLATE DATA TABLE (R-3)

DIMENSION	BOLT SIZE AND TORQUE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	STUB POST LENGTH
POST SIZE																				
12 WF 40	5/8" # x 3 3/4" 1,135 In. Lb.	8"	19 1/4"	1 3/8"	4"	2"	1/4"	3/8"	1 5/16"	1 5/16"	1 5/16"	1 5/16"	1 5/16"	1 5/16"	1 5/16"	1 5/16"	1 5/16"	1 5/16"	1 5/16"	0'-4"
12 WF 31	5/8" # x 3 1/2" 750 In. Lb.	6 1/2"	16 3/4"	1 3/8"	3 1/2"	1 1/2"	1"	3/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	0'-4"
10 WF 25	5/8" # x 3 1/2" 750 In. Lb.	5 3/4"	14 3/4"	1 3/8"	2 3/4"	1 1/2"	1"	3/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	0'-4"
8 WF 20	5/8" # x 2 3/4" 450 In. Lb.	5 1/4"	12 3/4"	1 3/8"	2 3/4"	1 1/4"	1"	3/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	0'-4"
6 WF 20	5/8" # x 2 3/4" 450 In. Lb.	6"	10 1/4"	1 3/8"	3 1/2"	1 1/4"	3/4"	3/4"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	0'-4"

**BOLTING PROCEDURE FOR ASSEMBLY
OF BREAK-AWAY PLATES**

- Assemble post in stub with bolts and with one flat washer on each bolt top, bottom, and between the break-away plates.
- Tighten all bolts to a "snug tight" condition with a 12" to 15" wrench to set washers and to clean bolt threads, then loosen each bolt in turn and retighten in a systematic order to the prescribed torque. (See Break-Away Plate Data Table).
- Butt threads at junction with nut using a center punch to prevent nut loosening.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS
**BREAK-AWAY SIGN
SUPPORT DETAILS
FOR
GROUND SIGNS**

Designed By G.W.F. Approved By J.L.S.
Made By P.U.R. Field Engineer
Checked By G.W.F. Date 12/4/68

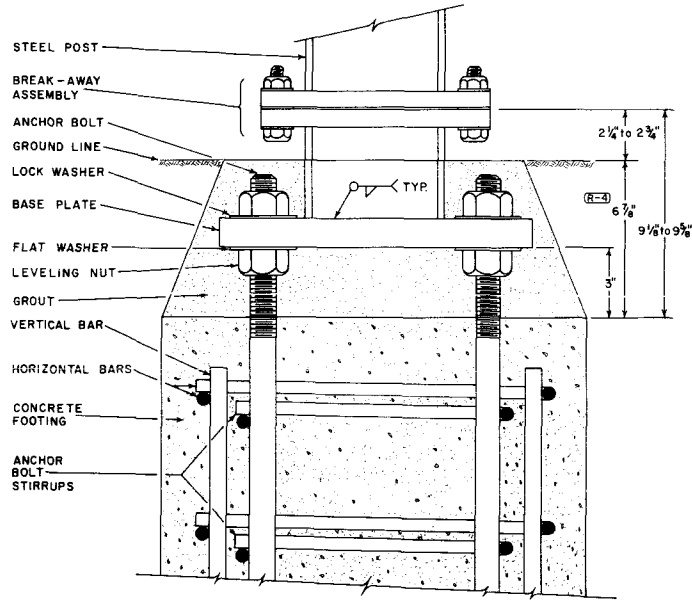
STANDARD S-614-27B

(SHEET 1 OF 2 SHEETS)
MAY 4, 1967

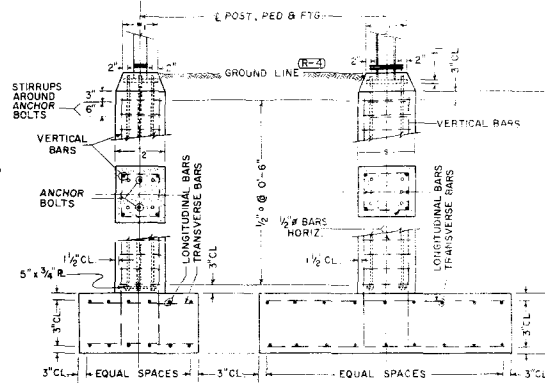
FEDERAL ROAD REGION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO			

REVISIONS				
(R-1)	7-11-67	Rev. Ground Line		G.W.F.
(R-2)	11-20-67	Rev. Title		G.W.F.
(R-3)	6-26-68	Rev. Table and Title Block		G.W.F.
(R-4)	11-21-68	Rev. Table, Fig. D11 and Ground Line		J.L.S.
(R-5)	5-16-69	Rev. Lateral Placement		J.J.B.

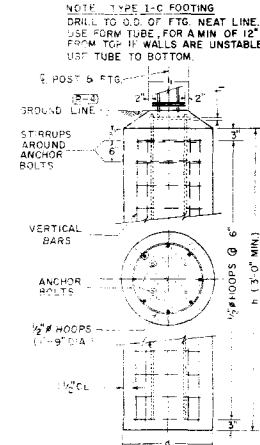
TYPICAL FOOTING ASSEMBLY



TYPICAL DETAIL TYPE I THRU V FOOTINGS - PEDESTALS



DETAIL TYPE I-C FOOTING



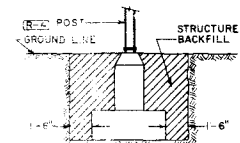
NOTES:

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS APPLICABLE TO THE PROJECT.
- WHEN FOOTINGS OVERLAP USE ONE FOOTING OF THE LENGTH SHOWN, AND OF WIDTH EQUAL TO THE DISTANCE BETWEEN POSTS PLUS THE WIDTH OF ONE FOOTING SHOWN IN "PEDESTALS AND FOOTINGS DATA TABLE"
- ANCHOR BOLT TO PROJECT ABOVE PEDESTAL 4" PLUS BASE PLATE THICKNESS PLUS BOLT DIAMETER. THREAD UPPER PORTION - PROJECTION PLUS 2" GALVANIZE UPPER PORTION - PROJECTION PLUS 4"
- ALL CONCRETE IS TO BE CLASS "A" OR CLASS "D"
- FOR ADDITIONAL INFORMATION, REFER TO "TABULATION OF SIGNS" INCLUDED IN THE PLANS.
- WOOD POSTS SHALL BE FREE OF HEART CENTERS, COAST REGION, WEST COAST DOUGLAS FIR. ALL WOOD POSTS SHALL BE SELECT STRUCTURAL GRADE WITH A MINIMUM WORKING STRESS OF 1900 PSI ON THE EXTREME FIBERS WHEN SUBJECTED TO BENDING AND 1500 PSI WHEN SUBJECTED TO COMPRESSION PARALLEL TO THE GRAIN.
- THE LONGER DIMENSION OF THE FOOTINGS, PEDESTALS, AND BASE PLATES SHALL BE PARALLEL TO THE ROADWAY.

PEDESTALS AND FOOTINGS DATA TABLE (R-2)

POST	MAXIMUM ALLOWABLE MOMENT	WELD POST TO BASE PL.	BASE PLATE (R-3)			ANCHOR BOLTS	PEDESTAL		VERTICAL BARS IN PEDESTAL	FOOTINGS			LONGITUDINAL FOOTING BARS		TRANSVERSE FOOTING BARS		STIRRUPS AROUND ANCHOR BOLTS	
			l ₁	W ₁	t ₁		s	t ₂		TYPE	l ₂	W ₂	d	TOP	BOTTOM	TOP		BOTTOM
12 WF 40	73.0 ^k	1/2" FILLET	21 1/2"	16"	2 1/4"	6 - 1 1/2" # x 3'-5"	2'-4" 1'-10"	6 - 1" # x h + 18"	V	12'-3"	6'-3"	—	8 - 3/8" # x 11'-9"	12 - 3/8" # x 11'-9"	7 - 1/2" # x 5'-9"	7 - 1/2" # x 5'-9"	2 - 1/2" #	
12 WF 31	53.4 ^k	3/8" FILLET	19 3/4"	14"	2"	4 - 1 3/8" # x 3'-5"	2'-2" 1'-8"	6 - 1" # x h + 18"	IV	11'-6"	5'-6"	—	7 - 3/8" # x 11'-0"	9 - 3/8" # x 11'-0"	6 - 1/2" # x 5'-0"	5 - 1/2" # x 5'-0"	2 - 1/2" #	
10 WF 25	34.8 ^k	3/8" FILLET	16 1/4"	14"	1 3/8"	4 - 1 1/8" # x 3'-5"	1'-11" 1'-8"	6 - 7/8" # x h + 18"	III	10'-3"	4'-6"	—	5 - 5/8" # x 9'-9"	6 - 5/8" # x 9'-9"	6 - 1/2" # x 4'-0"	3 - 1/2" # x 4'-0"	2 - 1/2" #	
8 WF 20	21.8 ^k	3/8" FILLET	14"	13 1/4"	1 3/8"	4 - 1 1/8" # x 3'-5"	1'-8" 1'-6"	6 - 3/4" # x h + 18"	II	8'-6"	4'-0"	—	3 - 3/8" # x 8'-0"	4 - 3/8" # x 8'-0"	5 - 1/2" # x 3'-6"	3 - 1/2" # x 3'-6"	2 - 1/2" #	
6 WF 20	17.8 ^k	3/8" FILLET	14"	12 1/4"	1 3/8"	4 - 1 1/8" # x 3'-5"	1'-7" 1'-8"	6 - 3/4" # x h + 18"	I	8'-3"	3'-6"	—	3 - 3/8" # x 7'-9"	4 - 3/8" # x 7'-9"	5 - 1/2" # x 3'-0"	3 - 1/2" # x 3'-0"	2 - 1/2" #	
	12.5 ^k																	4 - 1 1/8" # x 3'-0"
6x6 TIMBER	5.0 ^k																	
4x4 TIMBER	1.4 ^k																	

Timber Posts shall be set in drilled or excavated holes - depth shall be 5' for 6x6 post and 3' for 4x4 post. Posts shall be placed plumb, backfilled with excavated materials, and thoroughly tamped into place.



TYPICAL FOUNDATION INSTALLATION

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS
**PEDESTALS, FOOTINGS
AND SIGN ISLANDS
FOR CLASS III SIGNS**

Designed By: G.W.F. (Approved By: J.L.S.)
Made By: G.W.F. Traffic Engineer
Checked By: G.W.F. Date: 5/4/67

STANDARD S-614-27B

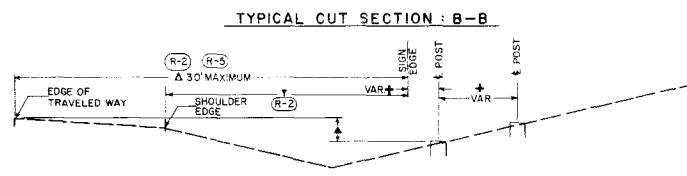
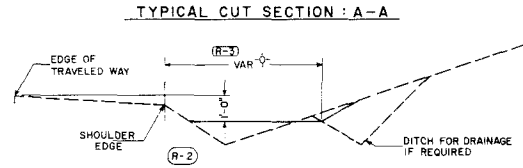
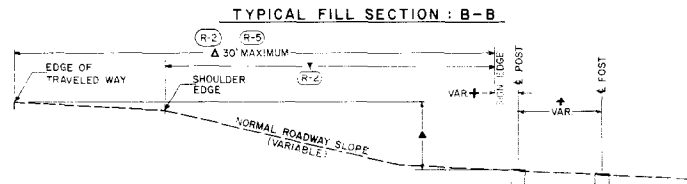
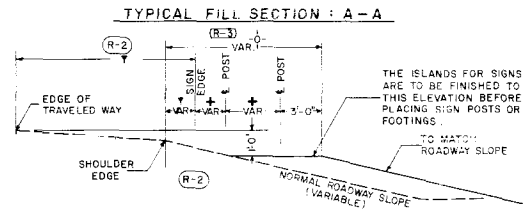
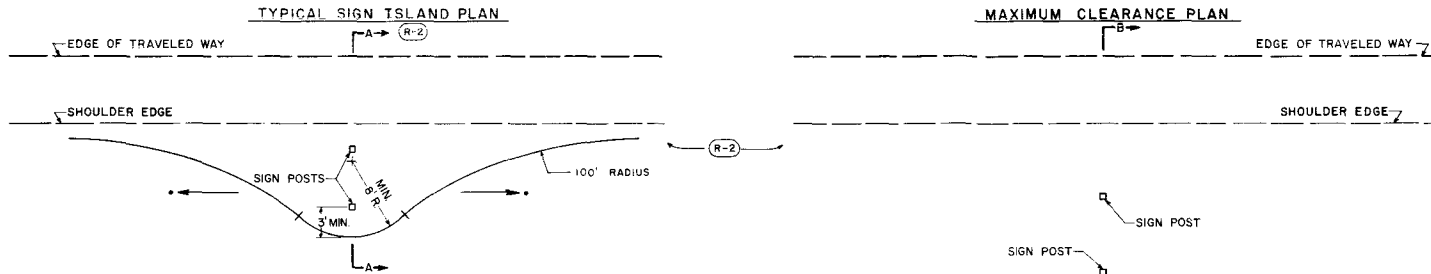
(SHEET 2 OF 2 SHEETS)

(MAY 4, 1967)

DETAILS OF SIGN PLACEMENT

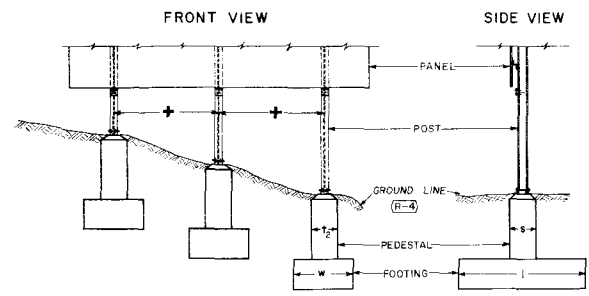
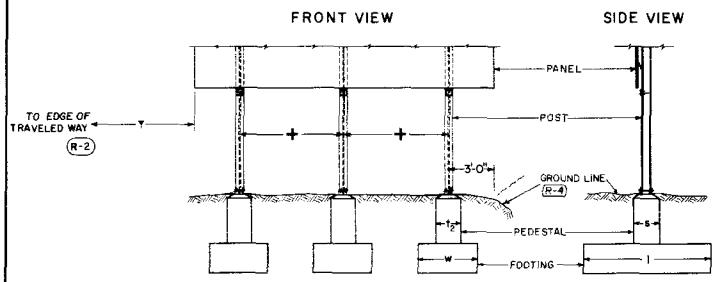
FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO			

REVISIONS				
(R-1)	7-11-67	Rev Ground Line	G.W.F.	
(R-2)	11-20-67	Rev Max Dist for Sign Placement	G.W.F.	
(R-3)	6-26-68	Rev Title Block	G.W.F.	
(R-4)	11-21-68	Rev Ground Line	J.L.S.	
(R-5)	5-16-69	Rev Lateral Placement	J.J.B.	



TYPICAL SIGN ISLAND ELEVATIONS

TYPICAL ELEVATIONS



LEGEND

- +... FOR DIMENSIONS SEE APPLICABLE STANDARD INCLUDED IN THE PLANS.
- ... THE SIGN ISLAND SIDE SLOPE PARALLEL TO THE ROADWAY SHALL BE 4:1 OR FLATTER.
- (R-3) -... VARIABLE, SEE SIGN ISLAND WIDTH COLUMN IN TABULATION OF SIGNS INCLUDED WITH THE PLANS, OR SEE APPLICABLE STANDARD.
- (R-2) T... VARIABLE, SEE CROSS-SECTIONS.
- ▲... VARIABLE FOOTING ELEVATIONS, SEE CROSS-SECTIONS FOR PLACEMENT.
- (R-2) Δ... THE LATERAL PLACEMENT MAY BE REDUCED TO A MINIMUM OF 2 FT FROM THE SHOULDER EDGE TO FIT FIELD CONDITIONS WHEN THE DESIRABLE 30 FT MAXIMUM PLACEMENT IS NOT FEASIBLE. (SEE CROSS-SECTIONS)

NOTE

1. EMBANKMENT FOR SIGN ISLANDS TO BE COMPACTED AS REQUIRED UNDER ITEM 203 OF THE STANDARD SPECIFICATIONS.
2. FOR ANGULAR PLACEMENT OF SIGNS, SEE APPLICABLE STANDARD INCLUDED IN THE PLANS.
3. THERE SHALL BE A MINIMUM EARTH COVER OF 3'-0" TO ANY PORTION OF THE FOOTING.

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

**PEDESTALS, FOOTINGS
AND SIGN ISLANDS
FOR CLASS III SIGNS**

Designed By: G.W.F. Approved By: *[Signature]*
 Made By: F.J.B. Traffic Engineer
 Checked By: G.W.F. Date: *May 4, 1967*

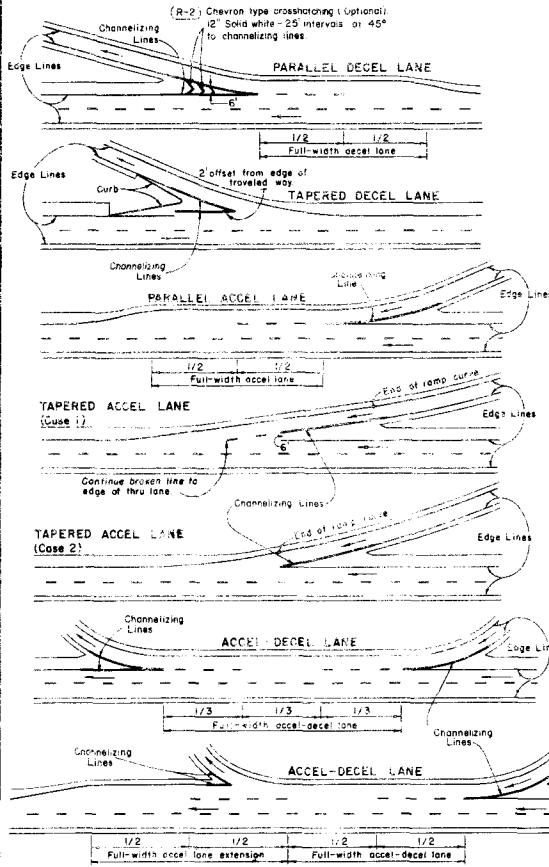
STANDARD S-614-29A

(AUG. 1, 1965)

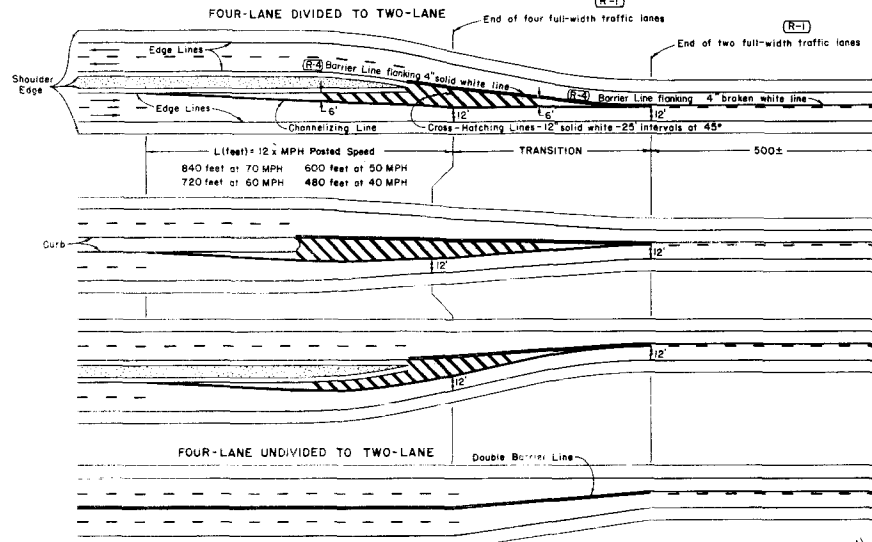
FEDERAL ROAD REGION NO.	DIVISION	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLORADO			

REVISIONS				
(R-1)	7-11-67	Stopline & Notes	G.W.F.	
(R-2)	2-15-68	Diag edge line & Chevron X-hatch	G.W.F.	
(R-3)	7-10-68	Rev Title Block	G.W.F.	
(R-4)	12-1-70	Line Width	J.J.B.	

ENTRANCE AND EXIT RAMP MARKINGS



PAVEMENT WIDTH TRANSITION MARKINGS

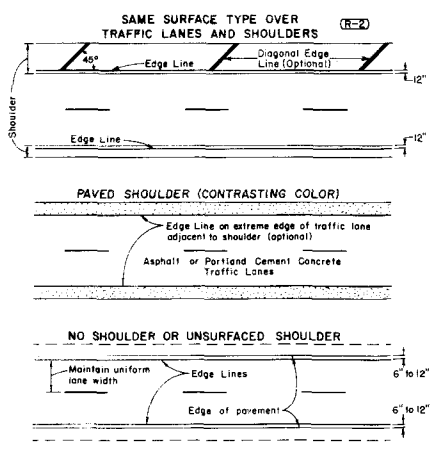


GENERAL NOTES:

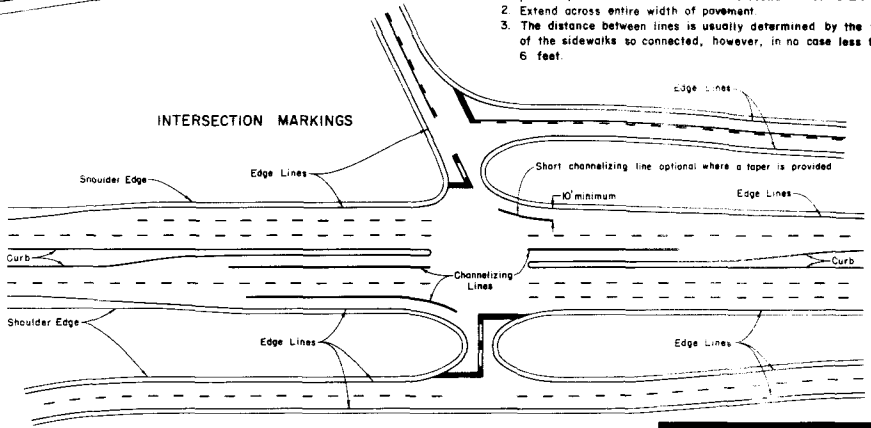
All work shall be done in accordance with the Standard Specifications applicable to the Project.

- (R-3) LANE LINES AND CENTER LINES
- Broken white, 4 inches wide - 15 foot segments with 25 foot gaps.
 - Solid white, 4 inches wide (if noted).
- BARRIER LINES
- (R-4) 1. Solid yellow, 4 inches wide.
- Apply parallel to and spaced 3 inches from other indicated line.
- (R-2) EDGE LINES
- Parallel - Solid white, 3 inches wide.
 - Diagonal - Solid white, 12 inches wide, spaced at intervals of 20' - 100'.
- CHANNELIZING LINES
- Solid white, 10 inches wide.
- STOP LINES
- Solid white, 24 inches wide.
 - Shall extend across all approach lanes at locations indicated on plans.
 - Locate at the desired stopping point, not more than 30 feet nor less than 4 feet from the nearest edge of the intersecting traffic lane.
- CROSSWALK LINES
- Solid white, 12 inches wide. If no advance stop line is provided, increase the width of the crosswalk lines to 24 inches.
 - Extend across entire width of pavement.
 - The distance between lines is usually determined by the width of the sidewalks to be connected, however, in no case less than 6 feet.

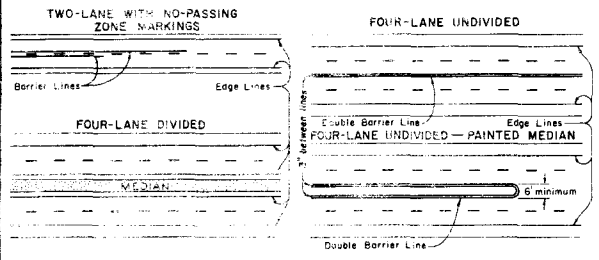
PAVEMENT EDGE LINE TYPICAL APPLICATIONS



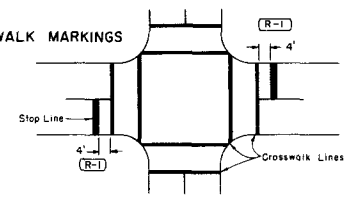
INTERSECTION MARKINGS



CENTER LINE AND LANE LINE MARKINGS



CROSSWALK MARKINGS



DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

TYPICAL PAVEMENT MARKINGS

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

Approved By: *[Signature]*
Traffic Engineer

Date: AUGUST 11, 1965

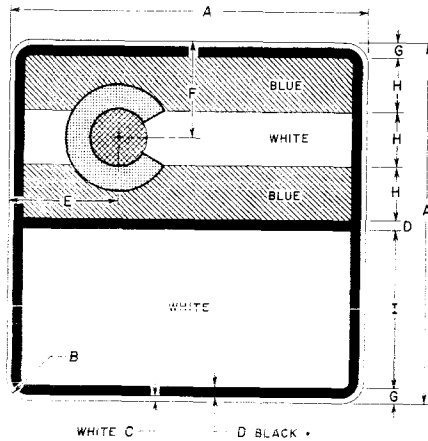
STANDARD S-614-31C

NOVEMBER 18, 1970

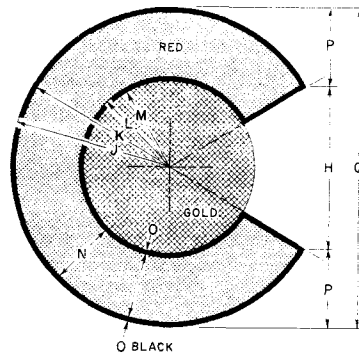
FEDERAL AID DISTRICT NO.	DIVISION	PROJECT NO.	SHEET NO.	SHEETS

REVISIONS	

STATE ROUTE MARKERS FOR INDEPENDENT USE OR USE AS SHIELDS ON GUIDE SIGN PANELS



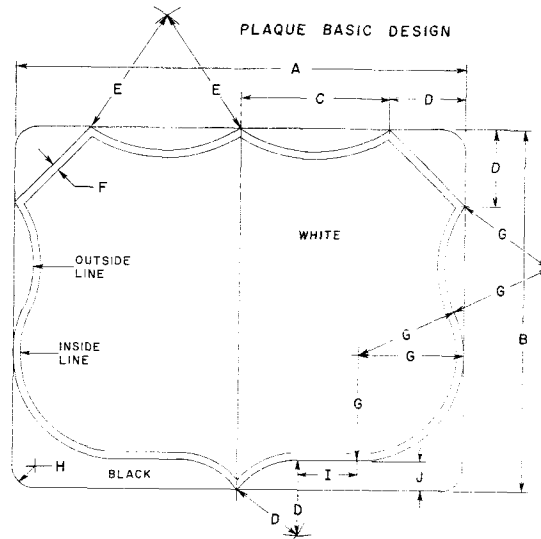
WHITE C D BLACK



NOTE: All dimensions in inches

CODE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	RTE. NUM. ▲ 1 or 2 DIGIT	RTE. NUM. ▼ 3 DIGIT
XMI-3-24()	24	1 1/2	3	3	7 1/2	9 1/2	1 1/2	3 1/2	10 1/2	3 1/2	3 1/2	7	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	8" "E"	8" "D"
XMI-3-30()	30	2	3	3	9 1/2	11 1/2	1 1/2	3 1/2	11 1/2	3 1/2	3 1/2	10 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	10" "E"	10" "D"
XMI-3-36()	36	2	3	3	11 1/2	13 1/2	1 1/2	3 1/2	13 1/2	3 1/2	3 1/2	12 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	12" "E"	12" "D"
XMI-3-42()	42	2	3	3	13 1/2	15 1/2	1 1/2	3 1/2	15 1/2	3 1/2	3 1/2	14 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	14" "E"	14" "D"

U. S. ROUTE MARKERS

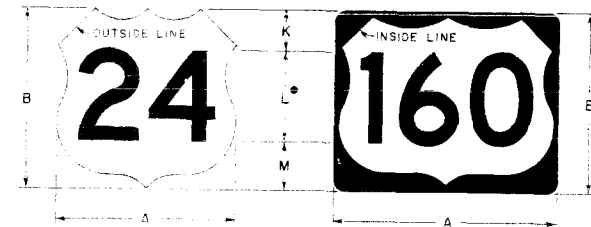


NOTE: All dimensions in inches

CODE	A	B	C	D	E	F	G	H	I	J	K	L	M	CODE
XMI-1A-24()	24	24	7	5	5	7	12	1	2	5 1/2	12	6 1/2	1 or 2 DIGIT	SMI-2-24()
XMI-1A-36()	36	36	10	6	9	9	12	1	4	2	5 1/2	12	6 1/2	3 DIGIT
XMI-1A-48()	48	48	15	7 1/2	13 1/2	13 1/2	12	1	2	3	8 1/2	18	9 1/2	1 or 2 DIGIT
	48	48	10	10	14	14	12	1	4	11	24	13	3 DIGIT	XMI-2-36()
	50	48	20	10	18	14	14	1	8	4	11	24	13	3 DIGIT

MI-1A-
FOR USE AS SHIELDS
ON GUIDE SIGN PANELS

MI-2-
FOR INDEPENDENT USE



GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications applicable to the Project.
- Route markers for independent use shall be either sheet steel 0.0598" min. thick, or sheet aluminum 0.080" min. thick, for plaques 24" in height and 0.100" for plaques greater than 24" in height. Route markers used on guide sign panels shall be either sheet steel 0.0598" min. thick or sheet aluminum 0.080" min. thick.
- All reflective sheeting shall be Non-Exposed Lens Type.
- All route markers shall have reflectorized white background and screen processed black legend and border.
- The flag colors shall be correlated with specifications for the State Flag in 131-B-4 CRS, 1963.
- Red, gold and blue shall be reflectorized (direct screened transparent paint on reflective white sheeting).
- Route numerals are to be visually centered in the available background area.
- Series "D" standard numerals (in cases where these numerals cannot be accommodated within the space available they may be reduced to series "C" or as a second choice to the next smaller height numerals available).
- Series "D" modified numerals (shall have a stroke width of 0.18 x letter height).
- Series "E" modified numerals (shall have a stroke width of 0.18 x letter height).
- The CODE number indicates type, shape, height and route number.
 - MI-1A U.S. Shield for guide sign panels
 - MI-2 U.S. Shield for independent use
 - MI-3 U.S. Shield for independent use

DEPARTMENT OF HIGHWAYS
STATE OF COLORADO
DIVISION OF HIGHWAYS

U. S. & COLORADO
ROUTE MARKERS

Designed By: J. B. Approved By: *[Signature]*
 Made By: J. B. Traffic Engineer
 Checked By: J. B. Date: 10/26/70