

COLORADO DEPARTMENT OF HIGHWAYS

PROJECT: F005-4(5) DISTRICT: COLORADO PROJECT NO. F 005-4(5) SHEET NO. 1 TOTAL SHEETS 1
Rev. 2-28-55, Index of Sheets, J.C.R.

CONVENTIONAL SIGNS

CENTER LINE
RIGHT OF WAY LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
LAND LINES
RAILROAD
BARBED WIRE FENCE
COMBINATION WIRE FENCE
SNOW FENCE
TELEPHONE & TELEGRAPH LINES
POWER LINE

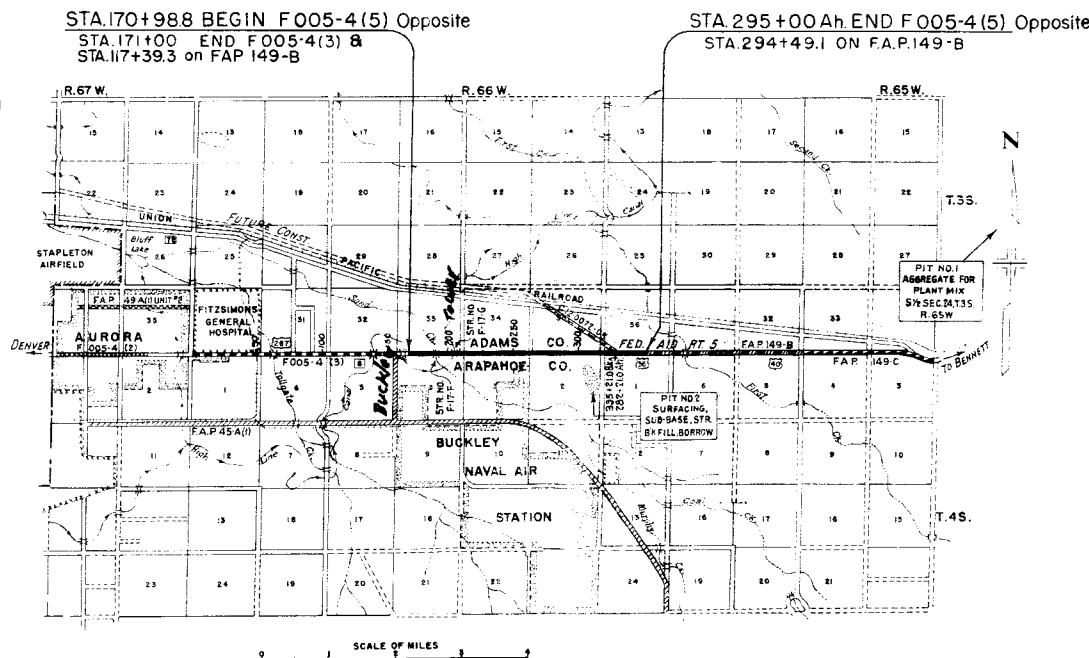
PRESENT ROAD (Plan Sheets)

INDEX OF SHEETS

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PLAN AND PROFILE OF PROPOSED FEDERAL AID PROJECT NO. F 005-4(5) STATE HIGHWAY NO. 8 ADAMS & ARAPAHOE COUNTIES

SCALES OF ORIGINAL DRAWINGS
ON PLAN. 1 IN. = 100 FT.
ON PROFILE 1 IN. = 100 FT. HORIZONTAL
1 IN. = 10 FT. VERTICAL
GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD
GROSS LENGTH OF PROJECT 17,721.5 FT = 3.356 MI.
NET LENGTH OF PROJECT



NOTICE TO BIDDERS

IT IS RECOMMENDED THAT BIDDERS ON THIS PROJECT GO OVER THE PLAN DETAILS, WITH ONE OF THE FOLLOWING FIELD REPRESENTATIVES OF THIS DEPARTMENT:
Glen McEldowney, Construction Engineer, Denver, Colo.
F.P. McNamara, Resident Engineer, Denver, Colo.
Office Phone AG 2-4641

COLORADO
DEPARTMENT OF HIGHWAYS

APPROVED:

Walter J. Nelson 2-9-55
CHIEF ENGINEER DATE

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED:

DATE

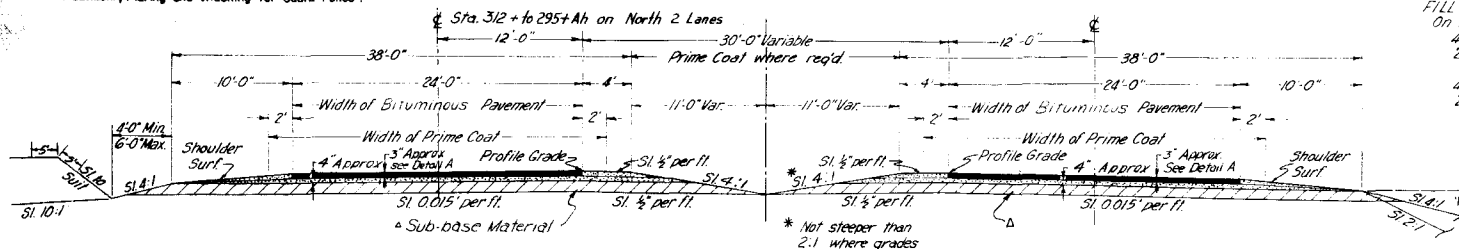
DISTRICT ENGINEER

Rev. 2-28-55 U.P.K.

TYPICAL CROSS SECTION OF IMPROVEMENT

NOTE: See Standard M-2-EM for details of Cut Slope Treatment, Flaring and Widening for Guard Fence.

FOUR LANE DIVIDED HIGHWAY



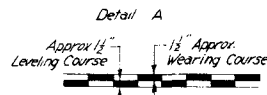
Excavation or Borrow below 4:1 Slope and/or 10:1 Slope will not be permitted except as shown on Cross Sections Rt. of Sta. 206+ to 218+.

The depth and width of the side ditch shall be varied where necessary in order to provide proper drainage and/or entrance to drainage structures.

Material above the subgrade is to be constructed of Sub-Base Material at locations designated in Sub-Base Material tabulation. Estimated quantities involved in this operation and thickness of material required are tabulated in the Sub-Base Material Plan.

Approximate 7" compacted thickness of Gravel or Crushed Rock Surfacing shall be placed in separate courses at the following rates per 100 lin. ft. of roadway.

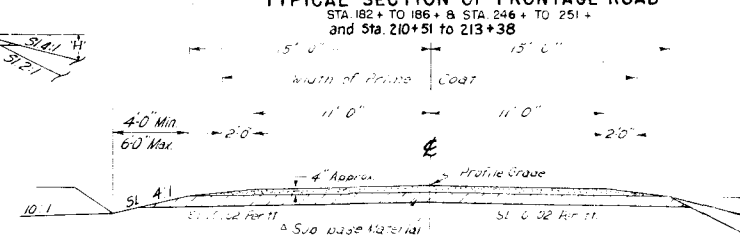
Plant Mixed Asphaltic Surfacing Bottom Course 88 Tons
Surfacing for Shoulder Areas 32 Tons



Does not include 3% commercial filler

FILL SLOPES
On Tangents & Curves (Four-Lane)
4:1 where H' is 10' or less.
2:1 where H' is over 10'.
for Frontage Road
4:1 where H' is 3' or less.
2:1 where H' is over 3'.

TYPICAL SECTION OF FRONTAGE ROAD



APPROXIMATE 4" BOTTOM COURSE SURFACING SHALL BE PLACED AT THE RATE OF 56 TONS PER 100 LIN. FT. OF ROADWAY

GENERAL NOTES

This project is to be constructed in conformity with the Standard Specifications of the Colorado Department of Highways, adopted June 1, 1952.

All quantities on preliminary plans are to be considered approximate only.

All poles encroaching on construction are to be moved by the owners.

All reinforced Concrete Pipe shall be laid with flared end sections on both ends except Median Drains.

It is estimated that old road is to be obliterated at the following location: Approach Lt. Sta. 323+ and Lt. Sta. 316+.

For preliminary plan quantities of Asphaltic Road Materials the following rates of application were used.

PRIME COAT - MC (Roadway)	@ 0.10 Gals. per Sq. Yd.
PRIME COAT - MC (Median Area)	@ 0.40 Gals. per Sq. Yd.
PAVING ASPHALT (85-100 Penetration)	@ 0.20 Gals. per Sq. Yd. on grades over 2%
	@ 5.36 Lbs. per Sq. Yd. per in. thick (Leveling Course)
	@ 6.55 Lbs. per Sq. Yd. per in. thick (Wearing Course)

Rate of application and grade of Asphaltic Road Material shall be as determined by the Engineer at time of application.

All side approach roads to the project designated by the Engineer shall be primed to approximately 50 feet out from the edge of the Asphaltic Surfacing or to the Right of Way line, whichever is less.

At Bridge Approaches, the Asphaltic Surfacing shall be widened to meet the curbed width of the bridge and shall take place gradually over a distance of 300 Ft. each way from the Bridge ends. The Prime Coat shall be widened beyond Mat as indicated on Typical Section.

Median Openings shall be primed and paved with Asphaltic Surfacing.

The force account item, 'Clearing of Building Sites, including Removal of Foundation and Appurtenances,' shall include removal of all foundations, wells, outhouses and other appurtenances not removed by the owner, and any necessary backfilling of cellars, cess pools, wells, etc., to provide neat road-side conditions. It is estimated that this item applies at the following locations: Lt. Sta. 202+ to Sta. 204+; Rt. Sta. 204+; Lt. Sta. 209+; Lt. Sta. 211+; Lt. Sta. 214+ and Lt. Sta. 252+.

Approximate location and quantities involved in construction of intercepting ditches are tabulated on Summary of Earthwork Quantities sheet.

TABULATION OF LENGTH AND DESIGN DATA

STATION	ROADWAY LIN. FT.	MAJOR STRUCTURE LIN. FT.	LOADING
NORTH & SOUTH LANES (STATIONS SHOWN ARE FOR NORTH 2 LANES)			
170 + 98.5 Beg. F 005-4(5) Opp. 171 + 00			
End F 005-4(3) 117 + 39.3 on F.A.P. 149-B	560.7		
176 + 59.5 = 123 + 00 Beg. Unit No. 3 F.A.P. 149-B(R)	979.5		
186 + 39 Bridge End		194.5	H=20
SAND CREEK			
188 + 33.5 Bridge End	2026.0		
208 + 59.5 = 155 + 00 End Unit No. 3 F.A.P. 149-B(R)	2600.0		
234 + 59.5 = 181 + 00 Beg. Unit No. 4 F.A.P. 149-B(R)	9000		
243 + 59.5 = 190 + 00 End Unit No. 4 F.A.P. 149-B(R)	6901.5		
312 + 61.0			
NORTH 2 LANES			
341 + 69.2 BK = 288 + 28.6 AN	2908.2		
SOUTH 2 LANES			
312 + 61.0	2260.0		

STATION	ROADWAY LIN. FT.	MAJOR STRUCTURE LIN. FT.	LOADING
EQUA			
335 + 21.0 BK + 282 + 21.0 AN	607.6		
288 + 28.6	2887.9		
AVERAGE NORTH & SOUTH LANES			
NORTH & SOUTH LANES			
(STATIONS SHOWN ARE FOR NORTH 2 LANES)			
288 + 28.6	671.4		
295 + 00 End F 005-4 (5) Opposite			
294 + 49.1 on F.A.P. 149-B			
TOTALS	17527.0	194.5	
SUMMARY			
Roadway	17,527.0		3.319
Major Structure	194.5		0.037
TOTALS (Net & Gross Length)	17,721.5		3.356
DESIGN DATA			
Maximum Degree of Curve			4°00'
Maximum Grade			3.00%
Minimum NPSD - horizontal			>1300'
Minimum NPSD - vertical			680'
Maximum Design Speed			70 M.P.H.

SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO.	ITEM	UNIT	ROADWAY	BRIDGE STA 186 +	NON FED AID	PROJECT TOTALS
10a	Clearing and Grubbing Entire Project	Lump Sum	•			•
11a	Removal of Portions of Present Structure Sta 186 +	Lump Sum	•			•
11b	Remove & Reset Street Present Sta 206 +	Lump Sum	•			•
11c	Removal of Portions of Present Structure Sta 206 +	Lump Sum	•			•
11d	Removal of 25 Structures	Lump Sum	•			•
11e	Plug Culverts	Each	•			•
11f	Removing & Resetting Mail Boxes	Lump Sum	•			•
11g	Resetting Old Posts	Lin Ft.	140			140
11h	Resetting Guard Posts	Each	16			16
11i	Remove & Reset Steel Handrail Sta 186 +	Lump Sum	•			•
11j	Remove Right of Way Markers	Each	21			21
11k	Remove & Reset Guard Posts	Each	31			31
12a	Removing Fence	Lin Ft.	37,700			37,700
12b	Removing & Rebuilding Fence	Lin Ft.	10			2,700
12c	Line Posts (Metal)	Each	10			10
13c	Unclassified Excavation	Cu Yd	150,000	1,000		151,000
13d	Unclassified Ditch Excavation	Cu Yd	700			700
13e	Drainage Excavation (S Str.)	Cu Yd	1,000			1,000
14a	Drainage Excavation (S Str.)	Cu Yd	90	10		100
14b	Drainage Excavation (S Str.)	Cu Yd	710	720		1,430
14c	Drainage Excavation (S Str.)	Cu Yd	10	10		20
14d	Drainage Excavation (S Str.)	Cu Yd	80	10		90
14e	Drainage Excavation (S Str.)	Cu Yd	80	400		1,540
14f	Structure Backfill (Class 1)	Cu Yd	20			20
14g	Mechanical Tamping	Hour	30			30
15a	Rolling with Tamping Roller (Two (2) Unit)	Hour	620			620
15b	Rolling with Tamping Roller (Four (4) Unit)	Hour	110			110
17c	Rolling with Flat Wheeled Roller (Tandem)	Hour	360			360
17d	Rolling with Flat Wheeled Roller (Three (3) Unit)	Hour	330			330
17e	Rolling with Rubber Tired Roller (One (1) Unit)	Hour	140			140
17f	Rolling with Rubber Tired Roller (Two (2) Unit)	Hour	140			140
17g	Furnishing Tamping Roller (Two (2) Unit)	Each	1			1
17h	Furnishing Tamping Roller (Four (4) Unit)	Each	1			1
17i	Furnishing Flat Wheeled Roller (Tandem)	Each	2			2
17j	Furnishing Flat Wheeled Roller (Three (3) Unit)	Each	1			1
17k	Furnishing Rubber Tired Roller (One (1) Unit)	Each	1			1
17l	Furnishing Rubber Tired Roller (Two (2) Unit)	Each	1			1
17m	Rolling with Flat Wheeled Roller (Tandem)	Each	1			1
17n	Rolling with Rubber Tired Roller (One (1) Unit)	Each	1			1
17o	Rolling with Rubber Tired Roller (Two (2) Unit)	Each	1			1
17p	Rolling with Rubber Tired Roller (Three (3) Unit)	Each	1			1
17q	Rolling with Rubber Tired Roller (Four (4) Unit)	Each	1			1
17r	Rolling with Rubber Tired Roller (Five (5) Unit)	Each	1			1
17s	Rolling with Rubber Tired Roller (Six (6) Unit)	Each	1			1
17t	Rolling with Rubber Tired Roller (Seven (7) Unit)	Each	1			1
17u	Rolling with Rubber Tired Roller (Eight (8) Unit)	Each	1			1
17v	Rolling with Rubber Tired Roller (Nine (9) Unit)	Each	1			1
17w	Rolling with Rubber Tired Roller (Ten (10) Unit)	Each	1			1
17x	Rolling with Rubber Tired Roller (Eleven (11) Unit)	Each	1			1
17y	Rolling with Rubber Tired Roller (Twelve (12) Unit)	Each	1			1
17z	Rolling with Rubber Tired Roller (Thirteen (13) Unit)	Each	1			1
17aa	Rolling with Rubber Tired Roller (Fourteen (14) Unit)	Each	1			1
17ab	Rolling with Rubber Tired Roller (Fifteen (15) Unit)	Each	1			1
17ac	Rolling with Rubber Tired Roller (Sixteen (16) Unit)	Each	1			1
17ad	Rolling with Rubber Tired Roller (Seventeen (17) Unit)	Each	1			1
17ae	Rolling with Rubber Tired Roller (Eighteen (18) Unit)	Each	1			1
17af	Rolling with Rubber Tired Roller (Nineteen (19) Unit)	Each	1			1
17ag	Rolling with Rubber Tired Roller (Twenty (20) Unit)	Each	1			1
17ah	Rolling with Rubber Tired Roller (Twenty One (21) Unit)	Each	1			1
17ai	Rolling with Rubber Tired Roller (Twenty Two (22) Unit)	Each	1			1
17aj	Rolling with Rubber Tired Roller (Twenty Three (23) Unit)	Each	1			1
17ak	Rolling with Rubber Tired Roller (Twenty Four (24) Unit)	Each	1			1
17al	Rolling with Rubber Tired Roller (Twenty Five (25) Unit)	Each	1			1
17am	Rolling with Rubber Tired Roller (Twenty Six (26) Unit)	Each	1			1
17an	Rolling with Rubber Tired Roller (Twenty Seven (27) Unit)	Each	1			1
17ao	Rolling with Rubber Tired Roller (Twenty Eight (28) Unit)	Each	1			1
17ap	Rolling with Rubber Tired Roller (Twenty Nine (29) Unit)	Each	1			1
17aq	Rolling with Rubber Tired Roller (Thirty (30) Unit)	Each	1			1
17ar	Rolling with Rubber Tired Roller (Thirty One (31) Unit)	Each	1			1
17as	Rolling with Rubber Tired Roller (Thirty Two (32) Unit)	Each	1			1
17at	Rolling with Rubber Tired Roller (Thirty Three (33) Unit)	Each	1			1
17au	Rolling with Rubber Tired Roller (Thirty Four (34) Unit)	Each	1			1
17av	Rolling with Rubber Tired Roller (Thirty Five (35) Unit)	Each	1			1
17aw	Rolling with Rubber Tired Roller (Thirty Six (36) Unit)	Each	1			1
17ax	Rolling with Rubber Tired Roller (Thirty Seven (37) Unit)	Each	1			1
17ay	Rolling with Rubber Tired Roller (Thirty Eight (38) Unit)	Each	1			1
17az	Rolling with Rubber Tired Roller (Thirty Nine (39) Unit)	Each	1			1
17ba	Rolling with Rubber Tired Roller (Forty (40) Unit)	Each	1			1
17bb	Rolling with Rubber Tired Roller (Forty One (41) Unit)	Each	1			1
17bc	Rolling with Rubber Tired Roller (Forty Two (42) Unit)	Each	1			1
17bd	Rolling with Rubber Tired Roller (Forty Three (43) Unit)	Each	1			1
17be	Rolling with Rubber Tired Roller (Forty Four (44) Unit)	Each	1			1
17bf	Rolling with Rubber Tired Roller (Forty Five (45) Unit)	Each	1			1
17bg	Rolling with Rubber Tired Roller (Forty Six (46) Unit)	Each	1			1
17bh	Rolling with Rubber Tired Roller (Forty Seven (47) Unit)	Each	1			1
17bi	Rolling with Rubber Tired Roller (Forty Eight (48) Unit)	Each	1			1
17bj	Rolling with Rubber Tired Roller (Forty Nine (49) Unit)	Each	1			1
17bk	Rolling with Rubber Tired Roller (Fifty (50) Unit)	Each	1			1
17bl	Rolling with Rubber Tired Roller (Fifty One (51) Unit)	Each	1			1
17bm	Rolling with Rubber Tired Roller (Fifty Two (52) Unit)	Each	1			1
17bn	Rolling with Rubber Tired Roller (Fifty Three (53) Unit)	Each	1			1
17bo	Rolling with Rubber Tired Roller (Fifty Four (54) Unit)	Each	1			1
17bp	Rolling with Rubber Tired Roller (Fifty Five (55) Unit)	Each	1			1
17bq	Rolling with Rubber Tired Roller (Fifty Six (56) Unit)	Each	1			1
17br	Rolling with Rubber Tired Roller (Fifty Seven (57) Unit)	Each	1			1
17bs	Rolling with Rubber Tired Roller (Fifty Eight (58) Unit)	Each	1			1
17bt	Rolling with Rubber Tired Roller (Fifty Nine (59) Unit)	Each	1			1
17bu	Rolling with Rubber Tired Roller (Sixty (60) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Sixty One (61) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Sixty Two (62) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Sixty Three (63) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Sixty Four (64) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Sixty Five (65) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Sixty Six (66) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Sixty Seven (67) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Sixty Eight (68) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Sixty Nine (69) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Seventy (70) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Seventy One (71) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Seventy Two (72) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Seventy Three (73) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Seventy Four (74) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Seventy Five (75) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Seventy Six (76) Unit)	Each	1			1
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17bv	Rolling with Rubber Tired Roller (Eighty (80) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Eighty One (81) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Eighty Two (82) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Eighty Three (83) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Eighty Four (84) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Eighty Five (85) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Eighty Six (86) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Eighty Seven (87) Unit)	Each	1			1
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17bv	Rolling with Rubber Tired Roller (Ninety (90) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Ninety One (91) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Ninety Two (92) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Ninety Three (93) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Ninety Four (94) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Ninety Five (95) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Ninety Six (96) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Ninety Seven (97) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Ninety Eight (98) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (Ninety Nine (99) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred (100) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred One (101) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Two (102) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Three (103) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Four (104) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Five (105) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Six (106) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Seven (107) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Eight (108) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Nine (109) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Ten (110) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Eleven (111) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Twelve (112) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Thirteen (113) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Fourteen (114) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Fifteen (115) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Sixteen (116) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Seventeen (117) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Eighteen (118) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Nineteen (119) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Twenty (120) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Twenty One (121) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Twenty Two (122) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Twenty Three (123) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Twenty Four (124) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Twenty Five (125) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Twenty Six (126) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Twenty Seven (127) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Twenty Eight (128) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Twenty Nine (129) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Thirty (130) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Thirty One (131) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Thirty Two (132) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Thirty Three (133) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Thirty Four (134) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Thirty Five (135) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Thirty Six (136) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Thirty Seven (137) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Thirty Eight (138) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Thirty Nine (139) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Forty (140) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Forty One (141) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Forty Two (142) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Forty Three (143) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Forty Four (144) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Forty Five (145) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Forty Six (146) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Forty Seven (147) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Forty Eight (148) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Forty Nine (149) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Fifty (150) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Fifty One (151) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Fifty Two (152) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Fifty Three (153) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Fifty Four (154) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Fifty Five (155) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Fifty Six (156) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Fifty Seven (157) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Fifty Eight (158) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Fifty Nine (159) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Sixty (160) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Sixty One (161) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Sixty Two (162) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Sixty Three (163) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Sixty Four (164) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Sixty Five (165) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Sixty Six (166) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Sixty Seven (167) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Sixty Eight (168) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Sixty Nine (169) Unit)	Each	1			1
17bv	Rolling with Rubber Tired Roller (One Hundred Seventy (170)					

It is estimated that material for Gravel Surfacing and Sub-Base for the Project is available in the vicinity of the Pits indicated in the following Tabulations.
Estimated quantities involved in this operation are shown below.
Alteration of the Plans as here outlined will be allowed only on written permission from the Department.

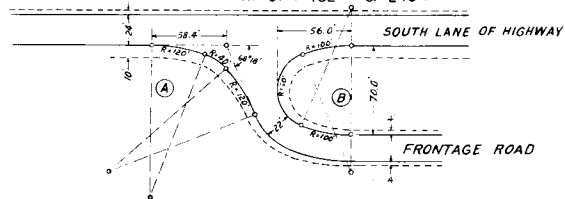
SUB-BASE MATERIAL PLAN

MATERIAL TO BE PLACED	SOURCE QUANTITY AVAILABLE B " R " VALUE		QUANTITY		OVERHAUL TON MILE	
			CLASS 3			
			THICKNESS # INCHES	TONS		
SOUTH 2 LANES						
182 + 00 to 186 + 70.1	Pit No. 2 (Cognhill) 228,000 + Cu. Yds. R = 70 ±		14	1,646	5,096	
188 + 64.7 to 190 + 00			14	474	1,423	
190 + 00 to 205 + 86.4			16	6,441	18,285	
206 + 19.3 to 210 + 00			16	1,546	4,092	
210 + 00 to 230 + 00			5	2,340	5,665	
230 + 00 to 253 + 00			4	2,139	4,308	
285 + 00 Bk to 314 + 00 Bk			16	11,774	10,775	
322 + 00 Bk to 295 + 00 Ah			16	10,556	10,105	
NORTH 2 LANES						
205 + 50 to 206 + 56.3			16	432	1,160	
206 + 78.1 to 210 + 00		16	1,307	3,452		
241 + 00 to 243 + 00		4	186	373		
249 + 50 to 253 + 00		4	326	597		
284 + 00 to 313 + 00		16	11,774	10,998		
320 + 00 to 295 + 00 Ah		16	11,533	10,866		
Frontage Roads (20.5) to (13.38) R						
182 + 00 to 186 + 54 R		* 11	1,022	3,242		
206 + 00 to 205 + 82 R		* 5	328	857		
Widening		* 4	579	1,175		
Est. for Median Openings			201	573		
Est. for North Appr. to SH # 72		16	1,054	1,786		
Est. for South Appr. to SH # 72		16	5,740	5,442		
Approach to Project		16	1,826	1,428		
Road Appr. Lt. 319 + 50 NL		16	7,460	9,553		
Est. for Irregularities in Subgrade		16	470	313		
			8,115	11,156		
TOTALS				89,269	122,720	

* Based on Curve D † Based on Curve A, Includes Rd. Appr. Rt. Sta 182+40, 210+51 & 246+00

DETAIL OF ROAD APPROACHES FOR FRONTAGE ROADS

RT. STA. 182 + & 246 +



Curve Data for 3-Centered Curves

- (A) $\Delta = 68^\circ 18'$
 $\Delta_1 = 20^\circ 22'$
 $\Delta_2 = 27^\circ 34'$
 $\Delta_3 = 20^\circ 22'$
 $R_1 = 120'$
 $R_2 = 40'$
 $R_3 = 120'$
 $T = 58.4'$
- (B) $\Delta = 180^\circ$
 $\Delta_1 = 21^\circ 47'$
 $\Delta_2 = 136^\circ 26'$
 $\Delta_3 = 21^\circ 47'$
 $R_1 = 100'$
 $R_2 = 30'$
 $R_3 = 100'$

SURFACING PLAN

MATERIAL TO BE PLACED	SOURCE, QUANTITY AVAILABLE & "R" VALUE	PLANT MIX	QUANTITY IN TONS		TON MILE OVERHAUL			
			GRADING & SURFACING BOTTOM COURSE	SHOULDER COURSE	PLANT MIX	BOTTOM COURSE	SHOULDER COURSE	
4 - LANE								
170 + 98.8 to 186 + 54.6	* Pit No. 1 for Plant Mix (Drahan) 150,000 Cu Yd	1,369	2,334	498	15,273	7,473	1,595	
188 + 49.1 to 206 + 21.4		1,560	2,659	568	16,855	7,578	1,619	
206 + 21.4 to 206 + 48.7		15		160				
206 + 48.7 to 312 + 61		9,339	15,919	3,396	89,897	26,614	5,678	
NORTH - 2 LANES								
312 + 61 to 316 + 14		156		265	57	1,341	168	
316 + 14 to 341 + 69.2 Bk	Pit No. 2 for Bottom & Shoulder Course (Cognhill) 228,000 Cu Yd R = 80 + on Base Course	1,125		1,917	409	1,614	345	
SOUTH - 2 LANES								
312 + 61 to 316 + 14		156		265	57	1,341	168	
316 + 14 to 335 + 21 Bk		839		1,431	306	7,026	1,117	
282 + 21 Ah to 288 + 28.6		268		456	98	2,181	465	
4 - LANE								
288 + 28.6 Ah to 295 + 00		591	1,007	215	4,237	1,148	245	
FRONTAGE ROADS								
182 + 40 to 186 + 54 (Rt)				232			736	
210 + 51 to 213 + 38 (Rt)				161			423	
246 + 00 to 251 + 82 (Rt)				416			844	
Est. for N. Appr. to SH #72		752	1,032	185	6,357	976	182	
Est. for S. Appr. to SH #72		242	336	75	2,028	263	60	
Est. for Median Openings		130	410	8	1,135	725	14	
Est. for Appr. to Proj.		823	1,336	220	6,462	1,519	261	
Est. for Road Appr.		955	1,748	24	523	1,320	43	
Est. for Widening		176	207		1,896	283		
3% Cottrell Dust				938				
TOTALS			17,896	32,129	6,096	149,547	54,034	10,455

* The Shoulder Surfacing shall not be placed across road approaches or median openings.

† CBC N. Lane only.

* Consists of 1 1/2" Leveling Course & 1 1/2" Wearing Course

† Appr. Lt. Sta 319 + 50 NL & Sta 333 + Lt. S.L.

• Contractor may elect to use other source which will produce Spec. Mat.

RIGHT OF WAY MARKERS

STATION	SIDE	NO.	+ REMOVE
182 + 20	Rt.	1	
184 + 12	Rt. & Lt.		2
196 + 32	Lt.	1	
210 + 32	Lt.	1	
211 + 00	Rt.	1	
210 + 61	Rt.	1	
232 + 00	Lt.	1	
230 + 62	Rt.	1	
235 + 00	Rt.	1	
236 + 96	Lt. & Rt.		2
233 + 62	Rt.	1	
248 + 00	Lt.	1	
249 + 62	Lt.		2
255 + 62	Lt.	1	
261 + 00	Rt.	1	

STATION	SIDE	NO.	+ REMOVE
263 + 40	Lt.		1
270 + 62	Rt. & Lt.		2
274 + 00	Lt.	1	
287 + 00 Bk	Rt.	1	
289 + 82 Bk	Rt. & Lt.		2
300 + 00 Bk	Lt.	1	
312 + 61 Bk	Rt.	1	
315 + 98 Bk	Rt. & Lt.		2
332 + 35.9	NL Lt.	1	
288 + 28.6 Ah	Rt.	1	
289 + 65 Ah	Rt. & Lt.		2
295 + 00 Ah	Lt.	1	
609 + 35.9 (on N. Appr. to SH #72)	Lt.	1	
TOTAL		15	21

+ Item 11

FEDERAL ROAD DIVISION NO.	DISTRICT	PROJ. NO.	NO.
9	COLORADO	F 005 - 4 (5)	4

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TIMBER GUARD POSTS

STATION	TYPE	SPACING	NO.	REMOVE
171 + 00	Median Open		2	0
182 + 40	Median Open		2	2
182 + 70	Frontage Rd	Convert	12	
186 + 06 to 186 + 70	SL Rt & Lt	Bridge		
186 + 39	NL Rt & Lt	Bridge	2	
188 + 33.5 to 188 + 97.5	NL Rt & Lt	Bridge	12	
188 + 65	SL Rt & Lt	Bridge	2	
192 + 80	Median Open		0	
193 + 15	NL Lt	Convert	1	
204 + 26	Rt & Lt	Convert	2	
235 + 00	Median Open		6	
205 + 22.4 to 205 + 86.4	SL Rt & Lt	C. B. C.	12	
206 + 19.3	SL Rt & Lt	C. B. C.	2	
206 + 56.3	NL Rt & Lt	C. B. C.	12	
206 + 78.1 to 207 + 42.1	NL Rt & Lt	C. B. C.	12	
210 + 52	Median Open		12	
209 + 40 to 210 + 10	40 Rt S.L.	T	12	
210 + 87	NL Lt	Convert	1	
226 + 89	Median Open		6	
227 + 24	NL Lt	Convert	1	
246 + 00	Median Open		6	
244 + 75	NL Lt	Convert	1	
263 + 40	Median Open		6	
268 + 50	E. End S.L.	Convert	4	
275 + 00	Median Open		6	
275 + 35	Rt	Convert	1	
290 + 00 Bk	Median Open		6	
290 + 35 Bk	Median Open	Convert	2	
304 + 00 Bk	E. & Rt	Convert	3	
329 + 00 Bk	SL Rt & Lt	Convert	1	
333 + 51 Bk	Median Open		35	
333 + 90	NL Lt	Convert	1	
298 + 30 Ah	E. & Rt	Convert	3	
316 + Bk	West on Gravel	25'	6	
603 + on SH #72	Median	25'	5	
321 +	NL Rt & Lt	35'	18	12
326 + N. Appr. to SH #72			8	
324 + to 326 + S.L. (Road Appr)			10	9
Approach to Project	Lt. (Road Appr)		30'	
TOTALS			200	31

* See Approach Details Sheet No 36

† From Lt. Sta 323 + S.L.

+ Item 11

† From Sta 172 + to 174 +

Note: See List of Structure Quantities for Removal of Guard Posts.

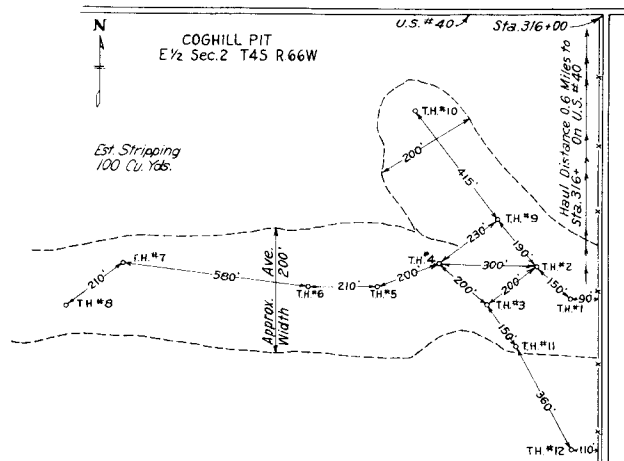
FEDERAL ROAD DESIGN NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	FOOS-4 (5)	5	

Rev. 2-28-55 J.P.K.

PIT NO. 2

SURFACING, SUB-BASE MATERIAL
STRUCTURE BACKFILL & BORROW

LOCATION - E 1/2, SEC. 2, T.4S, R.66W.
OWNER - L.W. COGHILL
AVAILABLE - 228,000 + CU. YDS.

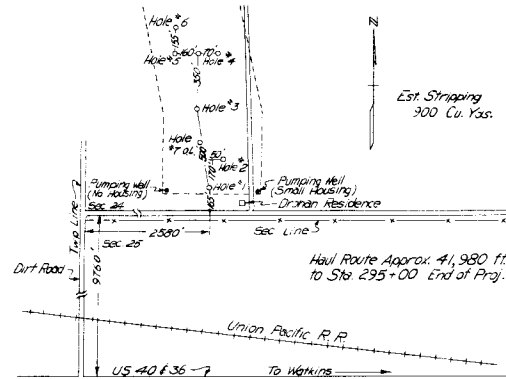


TEST No.	DEPTH	LOG OF PIT (SAMPLE No. 1327)
1	0.0-1.5	Dirty sand 0.B
1-A	1.5-12.0	Slightly clayey sand
1-B	12.0-27.0	Dirty sand (Unable to drill deeper - almost impossible to pull augers.)
2	0.0-1.0	0.B - Similar to #1
2-A	1.0-18.0	Sand
2-B	18.0-24.0	Clayey sand (Did not drill below 24 feet due to difficulty in pulling augers.)
3	0.0-1.0	0.B - Similar to #1
3-A	1.0-19.0	Sand - Similar to #2-A
3-B	19.0-28.0	Clayey sand - Similar to #2-B
4	0.0-3.0	0.B - Similar to #1
4-A	3.0-18.0	Sand - Similar to #2-A 18.0' - Sandy clay - No sample
5	0.0-2.0	0.B - Similar to #1
5-A	2.0-22.0	Sand - Similar to #2-A 22.0' - Sandy clay
6	0.0-0.5	0.B - Similar to #1
6-A	0.5-22.0	Sand - Similar to #2-A 22.0' - Sandy clay - Very hard drilling
7	0.0-4.5	0.B - Similar to #1
7-A	4.5-12.5	Slightly clayey sand - Similar to #1-A
7-B	12.5-13.5	Dirty sand - Similar to #1-B 13.5' - Clay - No sample
8	0.0-1.0	0.B - Similar to #1
8-A	1.0-20.0	Sand - Similar to #2-A 20.0' - Sandy clay - No sample
9	0.0-13.0	Sand - 13.0' - Sandy clay - No sample
10	0.0-10.0	Sand - Similar to #9 10.0' - Clay - No sample
11	0.0-4.0	0.B - Similar to #1
11-A	4.0-18.0	Sand - Similar to #2-A 18.0' - Sandy clay
12	0.0-1.0	0.B - Similar to #1
12-A	1.0-7.0	Slightly clayey sand - Similar to #1-A
12-B	7.0-8.5	Clay - No sample

PIT NO. 1

AGGREGATE FOR PLANT MIX

LOCATION - S 1/2, SEC. 24, T.3S, R.65W
OWNER - J. DROHAN
AVAILABLE - 150,000 CU. YDS.



TEST No.	DEPTH	LOG OF PIT (SAMPLE No. 264)
1		Hole drilled for exploratory purpose to see if gravel was present. No log or samples.
2	0.0-0.5	Over Burden
2-A	0.5-8.0	Sand and Gravel
2-B	8.0-10.0	Fine Sand
2-C	10.0-20.0	Sand and Gravel
2-D	20.0-20.5	Sand and Gravel with Clay Hole caved below 20.5'
3	0.0-0.5	Similar to #2
3-A	0.5-8.0	Sand and Gravel
3-B	8.0-9.0	Fine Sand Similar to #2-B
3-C	9.0-12.0	Sand and Gravel with Clay inclusions
3-D	12.0-17.5	Sand and Gravel
3-E	17.5-18.5	Sandy Clay
3-F	18.5-21.5	Similar to #2-A
3-G	21.5-23.0	Plastic Sand and Gravel Hole caved below 23.0'
4	0.0-1.5	Similar to #2
4-A	1.5-8.0	Sand and Gravel Similar to #3-A
4-B	8.0-10.0	Sand and Gravel
4-C	10.0-18.5	Plastic Sand and Gravel
4-D	18.5-20.0	Sand and Gravel
4-E	20.0-23.5	Sand and Gravel
5	0.0-7.0	Q.B. Sandy Loam
5-A	7.0-12.0	Sandy Clay
5-B	12.0-14.5	Similar to #3-A
6	0.0-2.0	Similar to #2 and #5
6-A	2.0-6.0	Sand and Gravel Similar to #2-A
6-B	6.0-12.0	Sandy Clay
6-C	12.0-17.5	Sand and Gravel Similar to #3-A
6-D	17.5-18.0	Sandy Clay
6-E	18.0	Sand and Gravel
7	0.0-1.5	Over Burden
7-A	1.5-10.0	Sand and Gravel
7-B	10.0-18.0	Clean Sand
7-C	18.0-23.5	Fine Sand
7-D	23.5-27.0	Coarse Sand and Gravel and Clay Balls

Field Sample No. 1589

Field Sample No. 6041

FENCING REQUIREMENTS

STA. TO STA.	SIDE	REMOVING	REMOVE &	BUILD	FENCE	COMB	BARBED	GATES	
		FENCE	REBUILD	WOVEN	FENCE				WIRE
		LIN. FT.	LIN. FT.	50'		LIN. FT.	LIN. FT.	EACH	DRIVEWAY
173+00 to 180+34	Lt.		734						
180+34 to 210+23	Lt.	3,580							
211+50 to 213+25	Lt.	180							
213+50 to 249+57	Lt.	4,000							
249+57 to 255+52	Lt.	595							
255+52 to 315+89	Lt.	6,280							
316+50 to 333+00	Lt.		1,740						
331+34 Bk to 316+10 Ah	Lt.	3,930							
170+50 to 187+50	Rt.	1,730							
188+80 to 208+13	Rt.	2,080							
208+34 to 209+33	Rt.		100						
210+52	Rt.	90							
217+50 to 244+10	Rt.	2,835							
244+50 to 250+10	Rt.	640							
252+75 to 253+35	Rt.	20		60					
253+83 to 315+89	Rt.	6,430							
316+56 to 316+10 Ah	Rt.	5,260							
170+50 to 187+50	Rt.					1,800			
172+25	Rt.					590			
180+34 to 186+10	Lt.								
182+20	Lt.								
182+40	Rt.								
187+00	Rt.								
188+10 to 204+50	Lt.					1,650			
188+80 to 190+30	Rt.					170			
190+30 to 192+80	Rt.						250		
192+80	Rt.								
192+90 to 208+13	Rt.					1,530			
201+00	Rt.								
202+26	Lt.								
204+30	Rt.								
204+50 to 210+23	Lt.			580					
210+80	Rt.								
206+00	Lt.								
208+05	Rt.								
210+50 to 212+90	Rt.					440			
213+25 to 236+35	Lt.			2,370					
213+40	Lt.								
217+50 to 250+10	Rt.						3340		
250+10 to 252+75	Rt.					325			
223+70	Lt.								
236+95 to 315+89	Lt.					7,910			
251+90	Rt.								
240+61	Lt.								
244+40	Rt.								
253+35 to 263+35	Rt.					1,015			
263+49	Rt.								
263+55 to 273+10	Rt.						955		
266+09	Rt.								
272+24	Rt.								
273+10 to 315+89	Rt.					4,290			
316+40.0 Bk to 316+10 Ah	Rt.					5,290			
332+35.9 Bk to 316+10 Ah	Lt.					3,740			
TOTALS		37,650	2,634	2,950		28,750	4545	7 1 13	

Details on Sheet No. 6

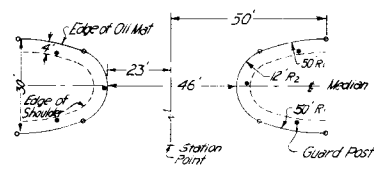
It is estimated that 10 New Metal Posts will be required to Remove & Rebuild Fence

Picket Fence

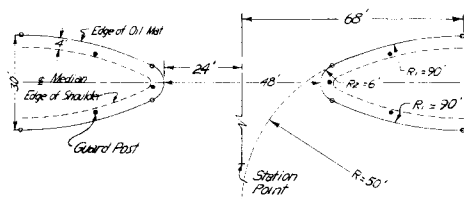
From Lt. SH. #72

Ornamental Fence

DETAILS OF MEDIAN OPENINGS



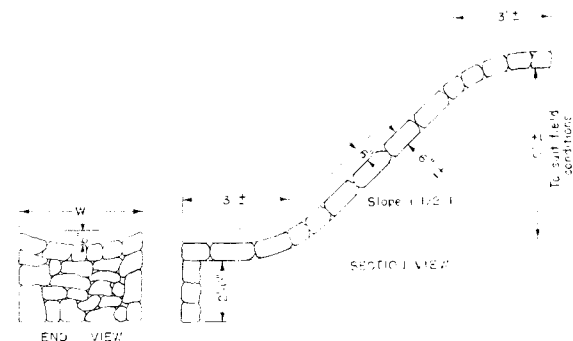
STATIONS
171 + 00
182 + 40
192 + 80
223 + 70
235 + 00
246 + 00
263 + 40
275 + 00
290 + 00 Bk.
303 + 50 Bk.



STATION
210 + 52

DETAILS OF CROUTED RUBBLE SLOPE & DITCH PAVING

LT STA 205 + 60
RT STA 207 + 50

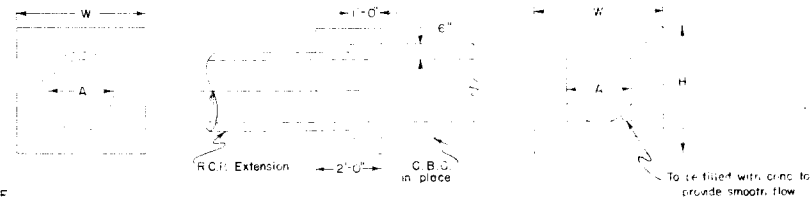


W = 10' Lt Sta 207 + 70 = 17 Sq Yds
W = 6' Rt Sta 205 + 60 = 9 Sq Yds

DETAILS OF WOVEN WIRE FENCE

SPACING OF HOLES FOR FASTENING
WOVEN WIRE TO END, CORNER,
AND GATE POSTS

DETAILS OF DOUBLE DRIVEWAY GATE

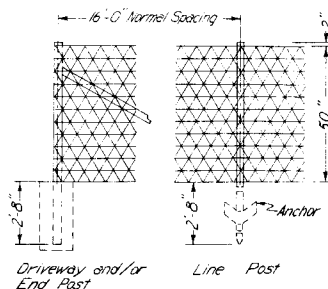


STA	SIDE	DIMENSION	*GORG
182 + 70	Rt B Lt	24" 4'-0" 4'-6"	1 lb
204 + 26	Lt	18" 4'-0" 4'-0"	88
278 + 53	Rt B Lt	24" 4'-6" 4'-6"	1 lb

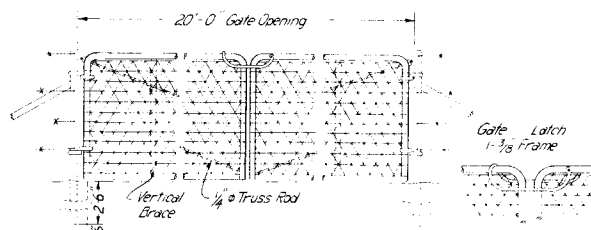
* GORG A GORG (includes quantity to provide smooth flow in C.B.C.)

Specifications for Metal Posts & Fence
Clamps for woven wire fences shall be
as indicated in Standard M-27-C except
that the minimum length for corner
posts, line posts, end posts & drive-
way gate posts shall be 7'-0" and
tie & angle posts ties shall be a
minimum of 6 ties per post.

Except as detailed hereon, all
material and construction
methods shall conform to
requirements in Standard M-27-C
for Combination Wire Fence
included with plans.



Specifications for 4"x4" Wire Mesh Fence
shall be as shown on Standard M-27-C
except width = 50" & Weight =
1.13 Lbs per Lin Ft. min



Specifications for Double Driveway Gates
Height - 42"
Weight - Not Less than 120 Lb complete
with Latch & Hinges
Width of Gate Opening - 20'-0"
Gate Frame
Wire
Latches & Hinges } See Standard M-27-C for
Specifications for Driveway Gates

Except as detailed hereon all
material and construction
methods shall conform to
requirements in Standard M-27-C
for Driveway Gates. Alternate's
equivalent standard metal gates
other than that shown will be
acceptable subject to the Engineer's approval.

LIST OF STRUCTURE QUANTITIES

Rev 2-28-55, J.C.R.

FILE NO. DISTRICT PROJECT NO. SHEET NO. TOTAL SHEETS
 3 100 1005-4(5) 7

SHEET NO.	NOTE REFERENCE NO.	REMARKS	MISCELLANEOUS	REMOVE STRUCTURE	EXCAVATION				STRUCTURAL EXCAVATION CUBIC YARDS	STRUCTURE BACKFILL CUBIC YARDS	WEIR TAMING	GRAVEL OR CRUSHED ROCK SURFACING	CONCRETE CUBIC YARDS	REINFORCING STEEL	RELAYING PIPE	REINFORCED CONCRETE CULVERT PIPE	CORRUGATED METAL CULVERT PIPE	FLARED END SECTION FOR CONCRETE PIPE	INLET GRATING AND FRAME (MEDIAN)
					NO.	UNCL.	EMB.	IN. WITH							LINEAR FEET	LINEAR FEET	LINEAR FEET	18" 24" 36"	NO.
29	1	2-Metal Aprons for 18" C.M.P. Culvert			15						*						60		
	2				700		6		17		51						32		
	4																		
	5					165	70												
	6																		
	7																		
	8																		
	9					250		6		14		22					28		
	10					15						*					28		
	11					40						10							
	12				2	Δ	5	40		54		*		1.88			160 Lt. 172 Rt.		2
	13																		
	14				20						15								
	15				1030	250		(Quantities in Summary)											
30	16																		
	17										*								
	18			3	250	10	16		25		34						26 Rt. 28 Lt. 130 Lt. 26		
	20a																		
	19				10		3		7		15								
	20			2		2	21		25			1.22	115			56		1	1
	21			1															
	22																		
	23			1															
	24				15		2		23		27	.88				52		1	
	25																		
	26				900														
	27				20				70	14	22	132	12,570						
	27a							162											
	28				Δ														
	29						4												
	30										40								
	31			1													290		
31	29a							25		62									
	32										*								
	33			1															
	34				15														
	35				65		6		12		90						44		
	36				Δ						*								
	37					7	36		22			1.22	115			52		1	1
	38				25		4		10		22						30		
	39				15		5		10		22						30		
	40			1	46		4		7		14						28		
	41				50		5		10		22						30		
	42																		
	43																		
	44																		
	45a																		
	45				35		5		10		21						26		
	46				15						*						50	30	
	46a				15		5		5		18						50		
	46b										*								

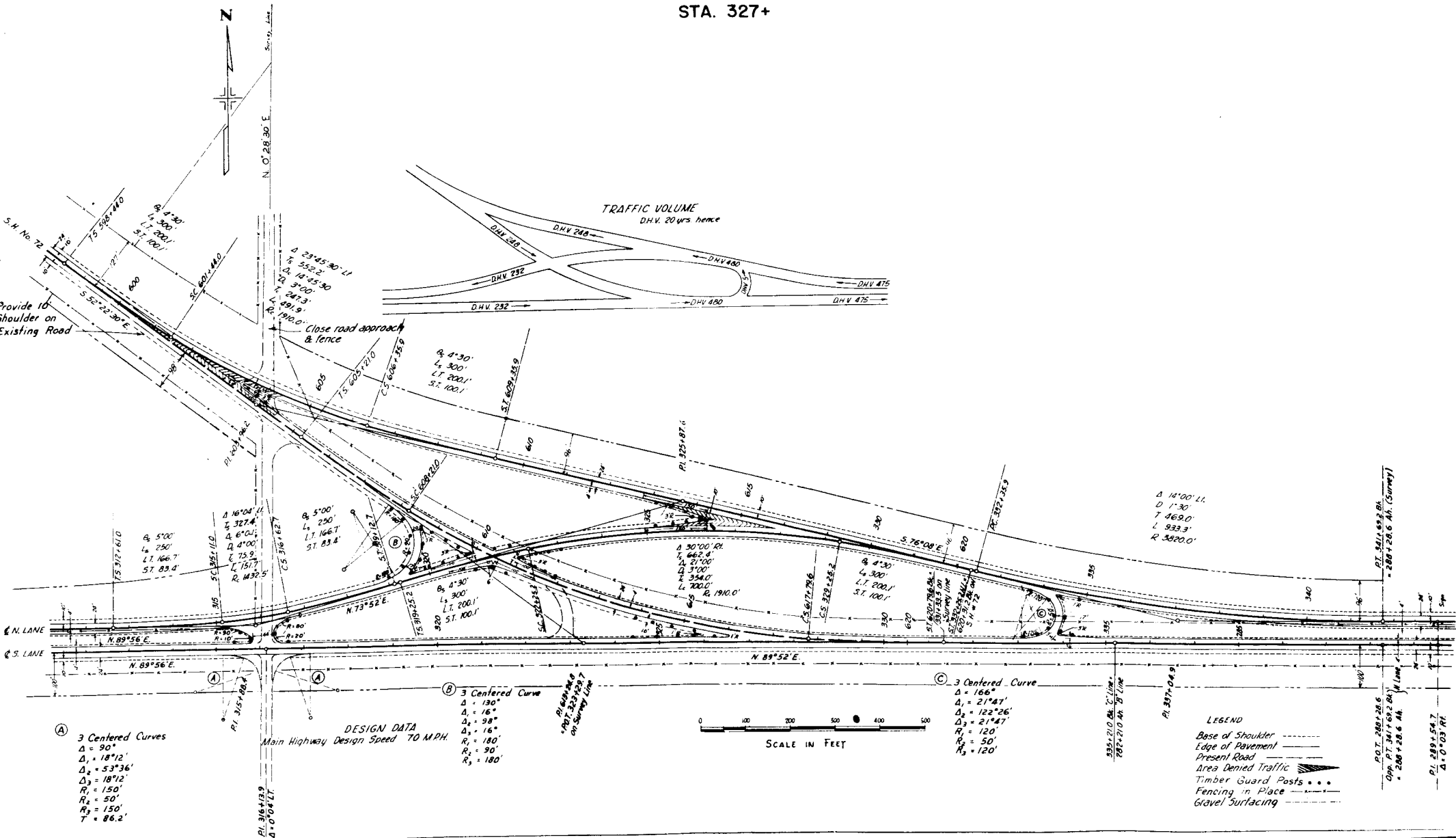
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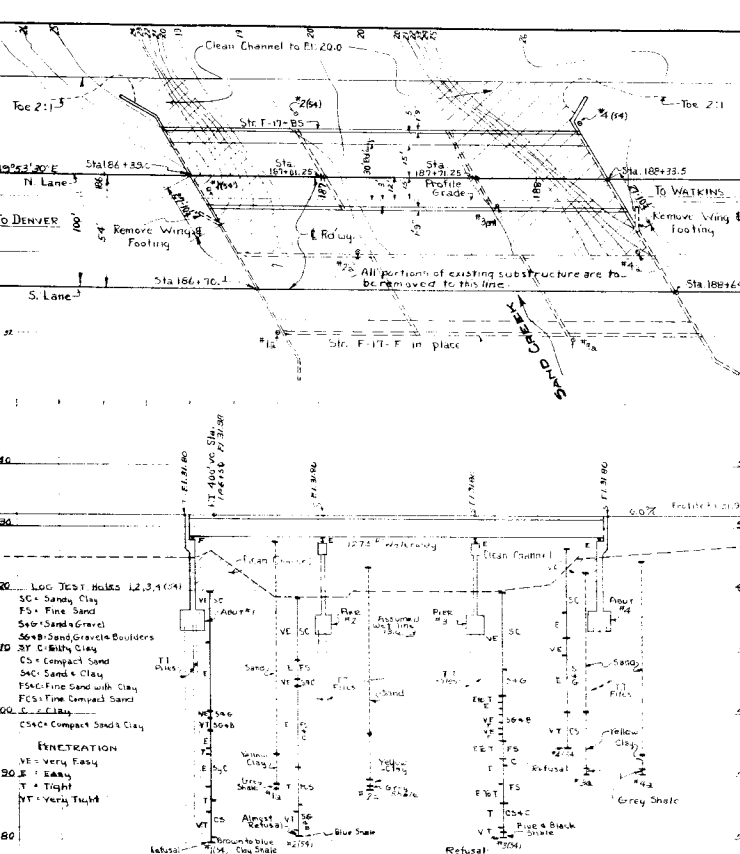
CONTINUED FROM SHEET NO.7

+ Structural Excavation is estimated to be 90 % Common and 10 % Rock, each of which is estimated to be 30 % Dry and 10 % Wet.
 Δ Included in Profile Quantities. © Mech. Tamping for all C.M. & Conc. Pipe Culverts.
 * Included in Surfacing Plan.
 / Includes Shoulder Surfacing. Does not include Plant Mix. See Surfacing Plan.

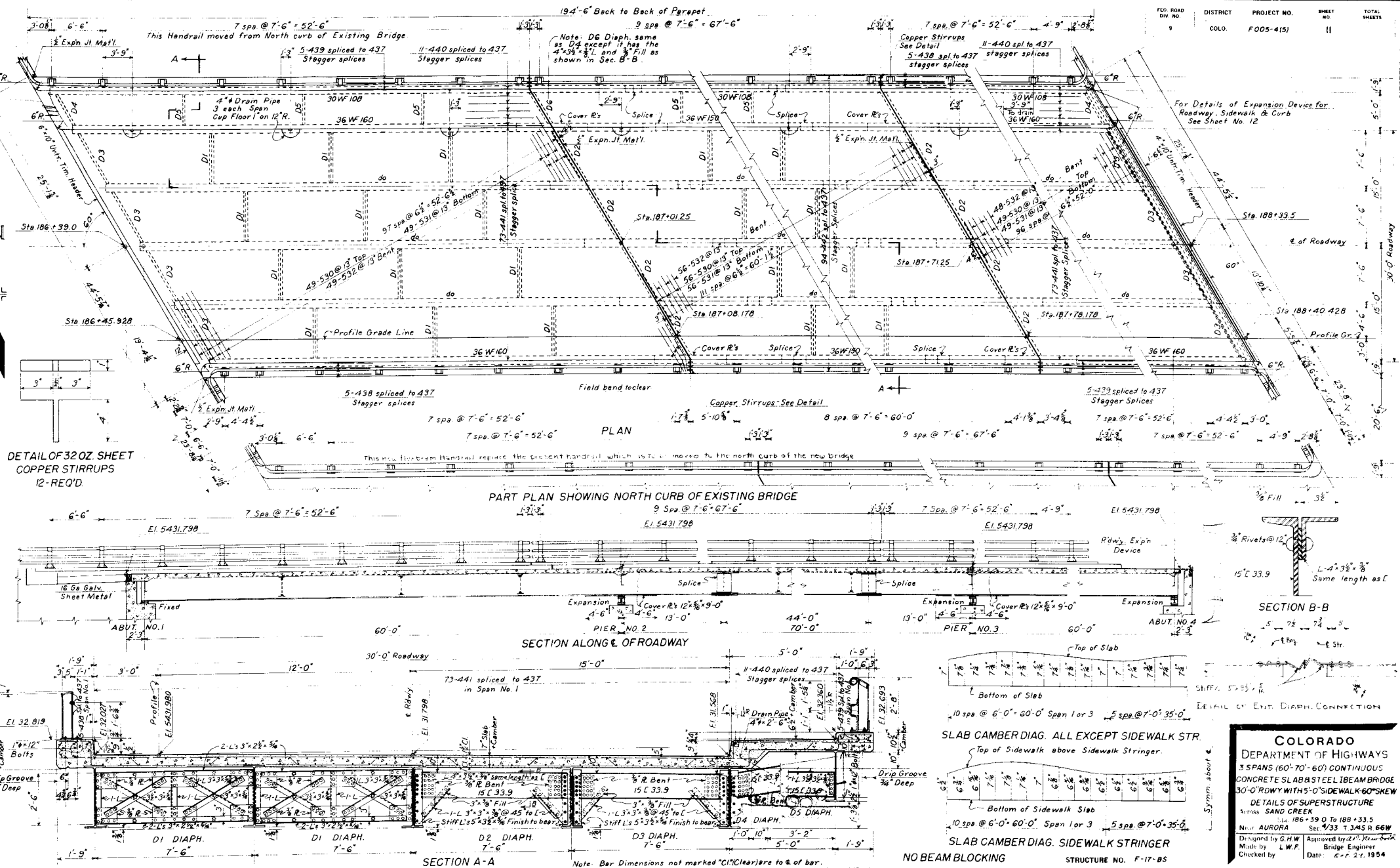
FEDERAL ROAD DIVISION NO.	DISTRICT	PROJ. NO.	CONST. EST.	TOTAL BUDGET
9	COLORADO	F 006-4 (5)	9	

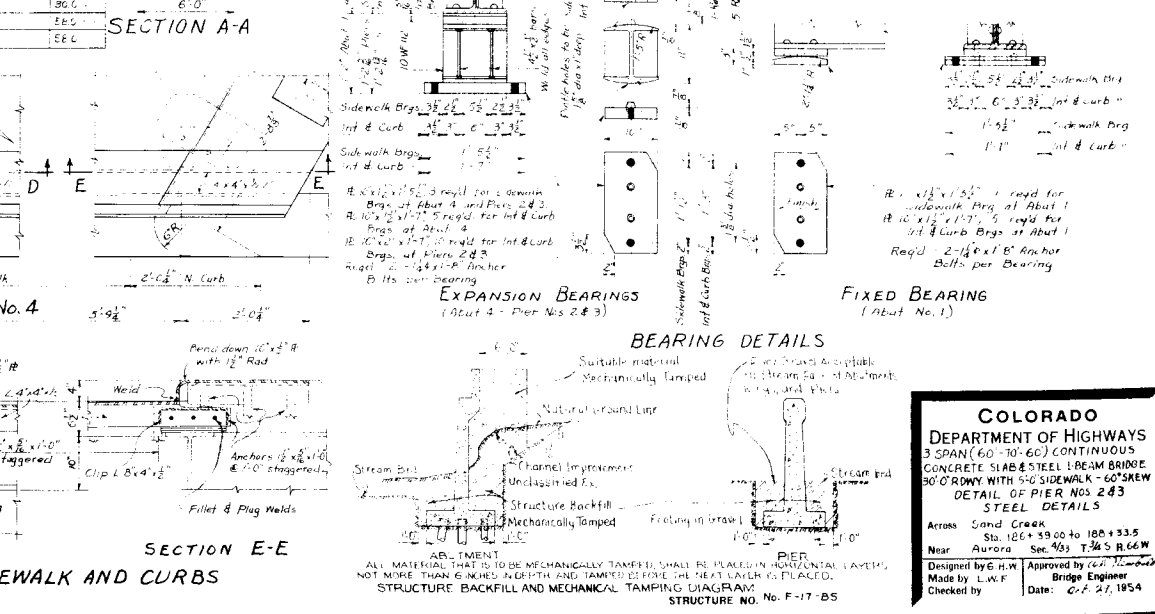
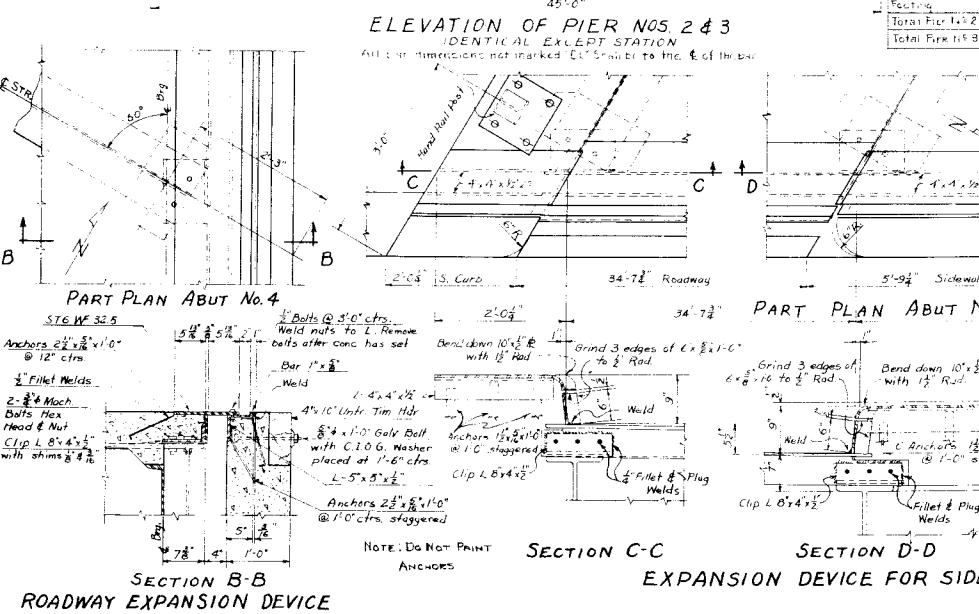
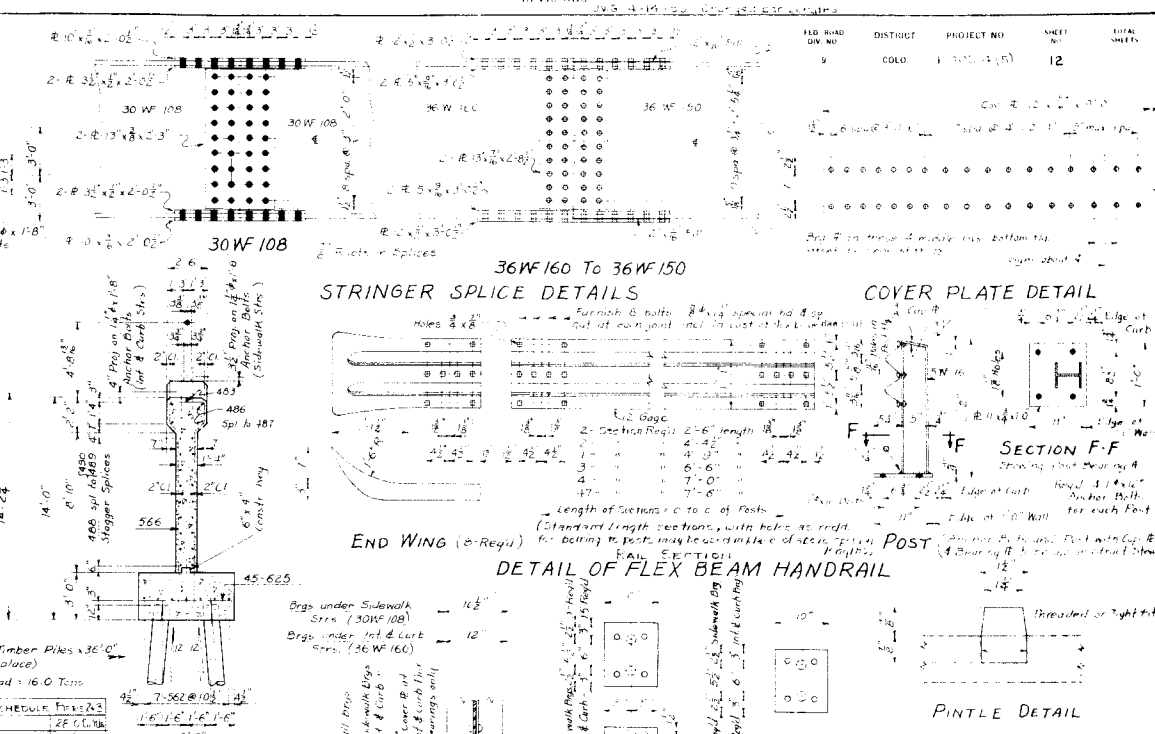
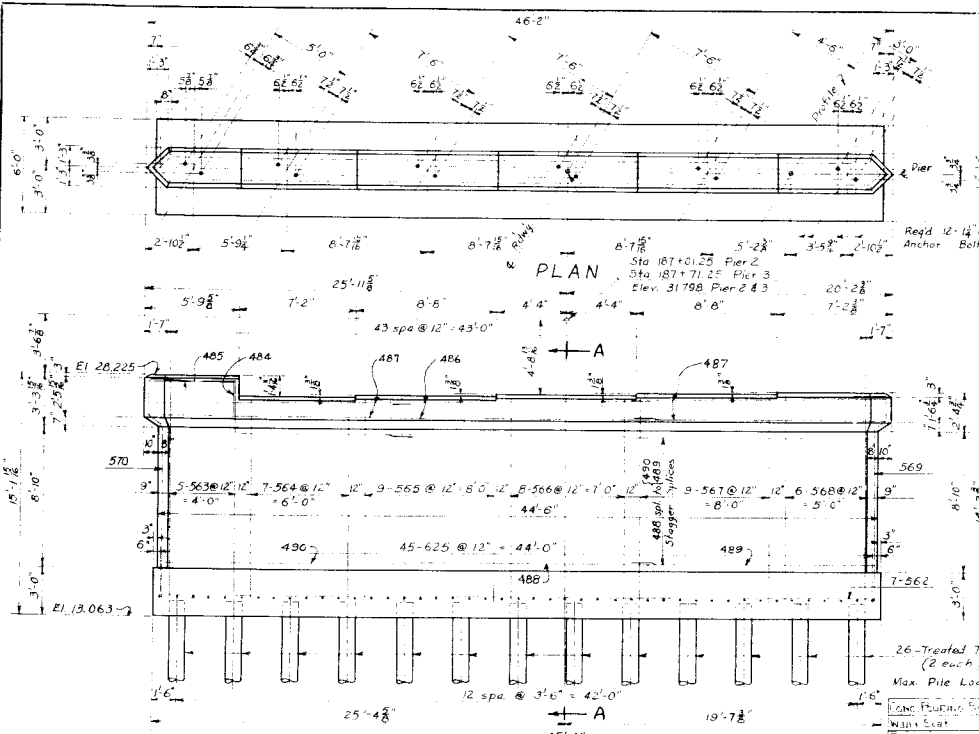
Rev. R.O.W 9-27-55 M.W.M





BAR LIST ABUT. NO. 1									
Mark	Size	Reqd	Length	Type	L	m	n	Mark	Size
401	1/2"	26	28'-9"	Str	Field bend			446	1/2"
402	1/2"	6	28'-6"	Str	Field bend			447	1/2"
403	1/2"	3	41'-0"	Str				448	1/2"
404	1/2"	3	8'-0"	Str				449	1/2"
405	1/2"	2	5'-3"	Str				450	1/2"
406	3/8"	2	7'-4"	Str				451	1/2"
407	1/2"	8	15'-5"	I	6'-9"	5'-10"	10'	452	1/2"
408	1/2"	6	15'-0"	I	5'-1"	2'-11"	11'-0"	453	1/2"
409	1/2"	8	14'-0"	I	5'-0"	2'-11"	11'-0"	454	1/2"
410	1/2"	8	14'-0"	I	4'-0"	2'-11"	11'-0"	455	1/2"
411	1/2"	8	14'-0"	I	4'-0"	2'-11"	11'-0"	456	1/2"
412	1/2"	7	14'-6"	I	4'-8"	2'-11"	11'-0"	457	1/2"
413	1/2"	8	14'-0"	I	4'-0"	2'-11"	11'-0"	458	1/2"
414	1/2"	7	18'-2"	I	6'-5"	3'-6"	14'-0"	459	1/2"
416	1/2"	1	1'-3"	I				460	1/2"
417	1/2"	10	20'-8"	Str				461	1/2"
423	1/2"	10	20'-8"	Str				462	1/2"
424	1/2"	10	20'-8"	Str				463	1/2"
425	1/2"	10	20'-8"	Str				464	1/2"
426	1/2"	10	20'-8"	Str				465	1/2"
427	1/2"	10	20'-8"	Str				466	1/2"
428	1/2"	10	20'-8"	Str				467	1/2"
429	1/2"	10	20'-8"	Str				468	1/2"
430	1/2"	10	20'-8"	Str				469	1/2"
431	1/2"	10	20'-8"	Str				470	1/2"
432	1/2"	10	20'-8"	Str				471	1/2"
433	1/2"	10	20'-8"	Str				472	1/2"
434	1/2"	10	20'-8"	Str				473	1/2"
435	1/2"	10	20'-8"	Str				474	1/2"
436	1/2"	10	20'-8"	Str				475	1/2"
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569	1/2"	10	20'-8"	Str				608	1/2"
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573	1/2"</								

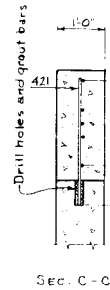




COLORADO
DEPARTMENT OF HIGHWAYS
3 SPAN (60'-10'-60') CONTINUOUS
CONCRETE SLAB & STEEL I-BEAM BRIDGE
30'0" ROWY WITH 5'0" SIDEWALK - 60'SCREW
DETAIL OF PIER NOS. 2 & 3
STEEL DETAILS

Across Sand Creek
Sta. 186+59.00 to 188+33.5
Near Aurora, Sec. 43, T.34S. R.66W.

Designed by E. H. W. Approved by C. A. T. B. C. W.
Made by L. W. F. Bridge Engineer
Checked by Date: 6-21-1954



All portions of existing substructure are to be removed to this line

bolts off flush with
rate finish smooth
sent bolts to remain
place for new
drail.

Existing Abut 34'-6" to Roadway

416 to 423 Dowels

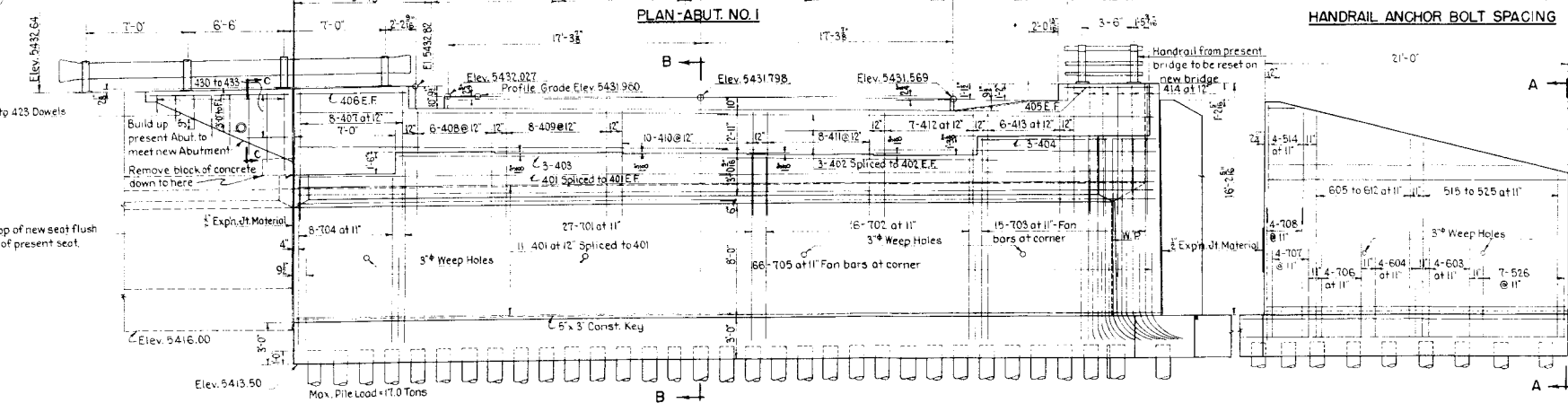
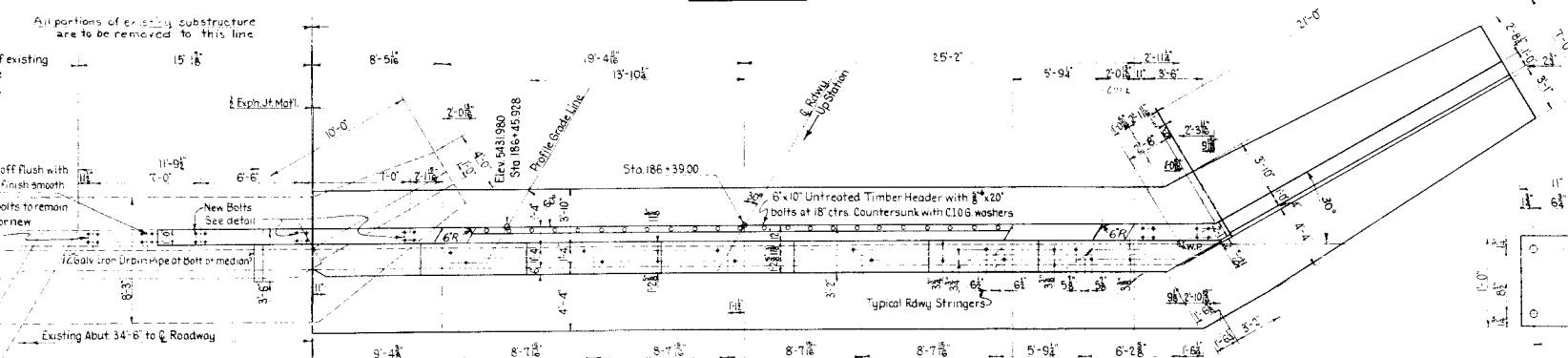
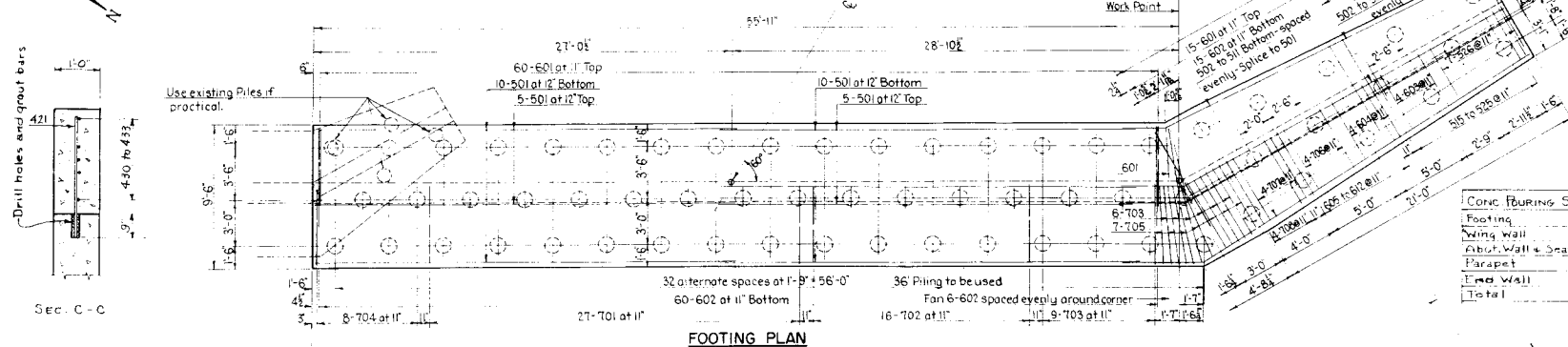
ish top of new seat flush
h top of present seat.

Elev. 5413.50

Max. Pile Load = 11.0 Tons

ELEVATION-ABUT. NO. I

Note: All bar dimensions marked "CL" shall be to the C. of the bar



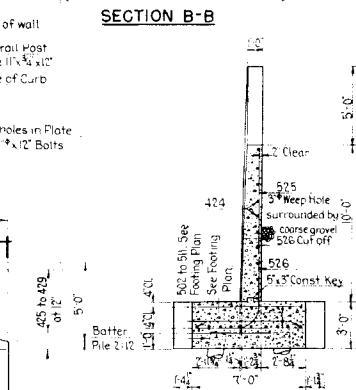
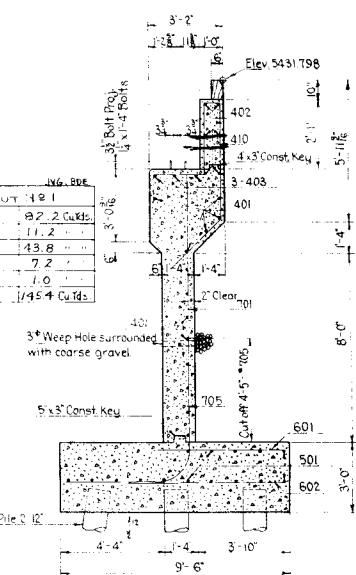
HANDRAIL ANCHOR BOLT SPACING

TRUE ELEVATION WING-ABUT. NO. I

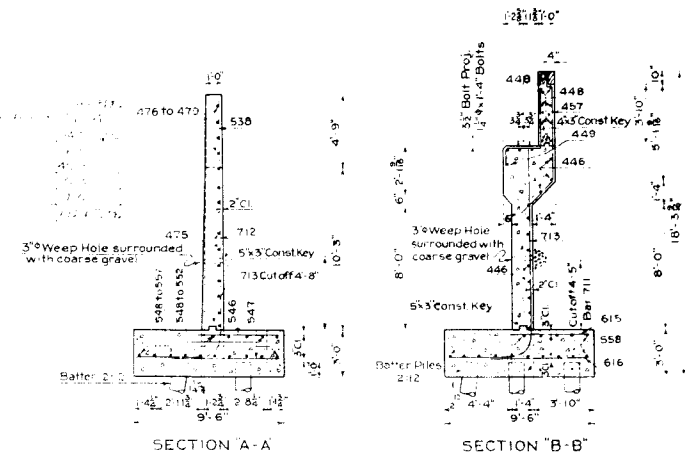
STRUCTURE NO. F-17-B5

CONC. POURING SCHEDULE ABOUT 181

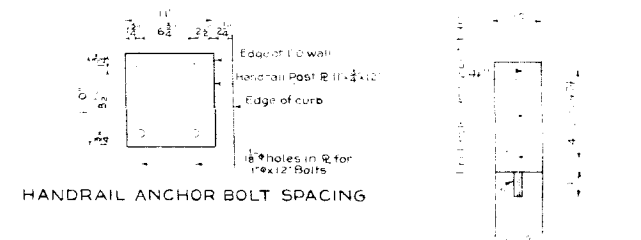
Footings	19.2
Wing Wall	11.2
Abut. Wall & Seat	13.8
Parapet	7.2
End Wall	1.0
Total	145.4 Cuds



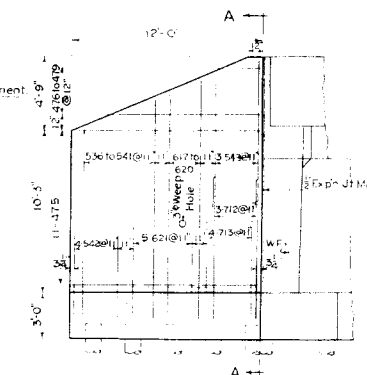
COLORADO
DEPARTMENT OF HIGHWAYS
3 SPAN (60'-10" TO 60'-10") CONT. CONC. SLAB &
STEEL I BEAM BRIDGE 60" SKEW
30'-0" RDWY. WITH 5'-0" SIDEWALK
DETAILS OF ABUTMENT NO. I
Across Sand Creek
Sta. 186+39.00 to 188+33.50
Near Aurora Sec. 4/33 T. 34S. R. 66W
Designed by S.H.W. Approved by R.L.P.
Made by M.L.P. Bridge Engineer
Checked by Date: 2/1, 1954



SECTION "B-B"

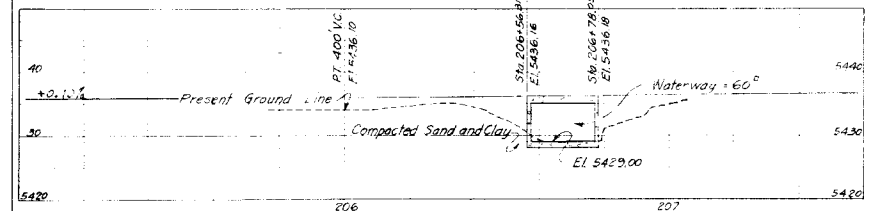
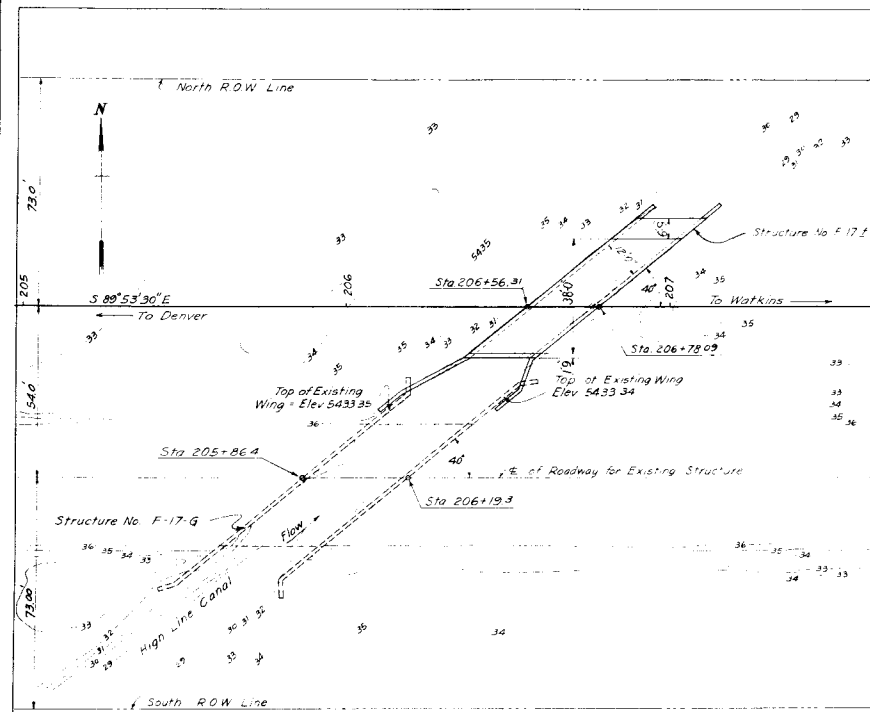


HANDRAIL ANCHOR BOLT SPACING

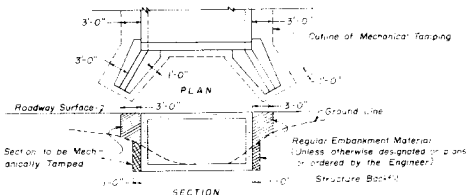


TRUE ELEVATION WING ABUT No.

COLORADO
DEPARTMENT OF HIGHWAYS
3-SPAN (60'-70'-60') CONTINUOUS
CONCRETE SLAB & I-BEAM BRIDGE
30'-0" RDWY. WITH 5'-0" SIDEWALK
60° SKEW
DETAILS OF ABUTMENT NO. 3
At: Sand Creek
Sta. 186+39.00 to 188+33.50
Near Aurora 4/351 3454 60W
Designed by G.H.W. moved type
Made by W.L.P. Bridge Engineer
Checked by D. B. Feb 24, 1954



GENERAL LAYOUT



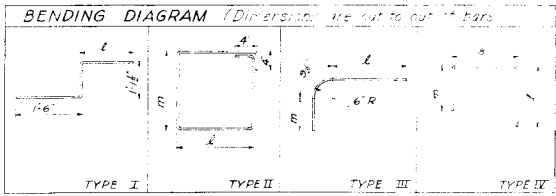
STRUCTURE BACKFILL AND MECHANICAL TAMPING DIAGRAM

Note: The fill shall be brought up uniformly on both sides in the center of the structure to avoid stresses in the structure caused by unsymmetrical loading.

BAR LIST					
MARK	SIZE	NUMBER REQUIRED	LENGTH	TYPE	DIMENSIONS
401	1/2"	1	6'-0"		
406	1/2"	1	1'-10"		
407	1/2"	3	6'-6"	II	1/3 1/4
408	1/2"	3	2'-0"	Str	
409	1/2"	33	5'-4"	III	2'-6 2/3
410	1/2"	6	20'-0"	Str	
411	1/2"	11	4'-4"	II	2'-6 1/4
412	1/2"	2	5'-8"	II	3'-0 2/3
413	1/2"	4	12'-0"	Str	
414	1/2"	8	7'-0"		
415	1/2"	2	16'-6"		
416	1/2"	1	22'-6"		
417	1/2"	3	19'-0"	Field Bend	
418	1/2"	2	3'-0"		
419	1/2"	12	29'-10"		
420	1/2"	12	29'-10"		
421	1/2"	12	14'-7"		
422	1/2"	8	6'-2"		
423	1/2"	13	6'-9"	III	5'-9 2/3
424	1/2"	12	6'-3"	Str	
425	1/2"	4	9'-0"		
426	1/2"	4	6'-0"		
427	1/2"	8	8'-9"		
428	1/2"	1	11'-0"	Field Bend	
429	1/2"	1	10'-6"		
430	1/2"	2	10'-6"		
431	1/2"	2	21'-3"	Field Bend	
432	1/2"	2	8'-6"		
433	1/2"	4	7'-3"		
434	1/2"	3	3'-0"		
435	1/2"	2	5'-3"		
436	1/2"	1	4'-0"		
437	1/2"	2	3'-6"	Field Bend	
501	1/2"	1	14'-4"		
502	1/2"	4	2'-1/2"	Str	
503	1/2"	38	29'-10"	Str	
504	1/2"	4	28'-10"		
505	1/2"	1	30'-0"		
506	1/2"	2	14'-3"		
507	1/2"	2	27'-3"		
508	1/2"	3	14'-3"	Str	
509	1/2"	1	14'-3"	Str	

BAR LIST					
MARK	SIZE	NUMBER REQUIRED	LENGTH	TYPE	DIMENSIONS
549	1/2"	1	25'-10"	Str	
550	1/2"	1	6'-5"		
551	1/2"	1	4'-1"		
552	1/2"	4	7'-9"	Str	
553	1/2"	40	7'-4"		
554	1/2"	87	7'-8"		
555	1/2"	16	6'-1"		
556	1/2"	4	2	III	2'-6 2/3
557	1/2"	1	2	III	2'-6 2/3
558	1/2"	1	2	III	2'-6 2/3
559	1/2"	1	2	III	2'-6 2/3
560	1/2"	1	2	III	2'-6 2/3
561	1/2"	1	2	III	2'-6 2/3
562	1/2"	1	2	III	2'-6 2/3
563	1/2"	1	2	III	2'-6 2/3
564	1/2"	1	2	III	2'-6 2/3
565	1/2"	1	2	III	2'-6 2/3
566	1/2"	1	2	III	2'-6 2/3
567	1/2"	1	2	III	2'-6 2/3
568	1/2"	1	2	III	2'-6 2/3
569	1/2"	1	2	III	2'-6 2/3
570	1/2"	1	2	III	2'-6 2/3
571	1/2"	1	2	III	2'-6 2/3
572	1/2"	1	2	III	2'-6 2/3
573	1/2"	1	2	III	2'-6 2/3
574	1/2"	1	2	III	2'-6 2/3
575	1/2"	1	2	III	2'-6 2/3
576	1/2"	1	2	III	2'-6 2/3
577	1/2"	1	2	III	2'-6 2/3
578	1/2"	1	2	III	2'-6 2/3
579	1/2"	1	2	III	2'-6 2/3
580	1/2"	1	2	III	2'-6 2/3
581	1/2"	1	2	III	2'-6 2/3
582	1/2"	1	2	III	2'-6 2/3
583	1/2"	1	2	III	2'-6 2/3
584	1/2"	1	2	III	2'-6 2/3
585	1/2"	1	2	III	2'-6 2/3
586	1/2"	1	2	III	2'-6 2/3
587	1/2"	1	2	III	2'-6 2/3
588	1/2"	1	2	III	2'-6 2/3
589	1/2"	1	2	III	2'-6 2/3
590	1/2"	1	2	III	2'-6 2/3
591	1/2"	1	2	III	2'-6 2/3
592	1/2"	1	2	III	2'-6 2/3
593	1/2"	1	2	III	2'-6 2/3
594	1/2"	1	2	III	2'-6 2/3
595	1/2"	1	2	III	2'-6 2/3
596	1/2"	1	2	III	2'-6 2/3
597	1/2"	1	2	III	2'-6 2/3
598	1/2"	1	2	III	2'-6 2/3
599	1/2"	1	2	III	2'-6 2/3
600	1/2"	1	2	III	2'-6 2/3
601	1/2"	1	2	III	2'-6 2/3
602	1/2"	1	2	III	2'-6 2/3
603	1/2"	1	2	III	2'-6 2/3
604	1/2"	1	2	III	2'-6 2/3
605	1/2"	1	2	III	2'-6 2/3
606	1/2"	1	2	III	2'-6 2/3
607	1/2"	1	2	III	2'-6 2/3
608	1/2"	1	2	III	2'-6 2/3
609	1/2"	1	2	III	2'-6 2/3
610	1/2"	1	2	III	2'-6 2/3
611	1/2"	1	2	III	2'-6 2/3
612	1/2"	1	2	III	2'-6 2/3
613	1/2"	1	2	III	2'-6 2/3
614	1/2"	1	2	III	2'-6 2/3
615	1/2"	1	2	III	2'-6 2/3
616	1/2"	1	2	III	2'-6 2/3
617	1/2"	1	2	III	2'-6 2/3
618	1/2"	1	2	III	2'-6 2/3
619	1/2"	1	2	III	2'-6 2/3
620	1/2"	1	2	III	2'-6 2/3
621	1/2"	1	2	III	2'-6 2/3
622	1/2"	1	2	III	2'-6 2/3
623	1/2"	1	2	III	2'-6 2/3
624	1/2"	1	2	III	2'-6 2/3
625	1/2"	1	2	III	2'-6 2/3
626	1/2"	1	2	III	2'-6 2/3
627	1/2"	1	2	III	2'-6 2/3
628	1/2"	1	2	III	2'-6 2/3
629	1/2"	1	2	III	2'-6 2/3
630	1/2"	1	2	III	2'-6 2/3
631	1/2"	1	2	III	2'-6 2/3
632	1/2"	1	2	III	2'-6 2/3
633	1/2"	1	2	III	2'-6 2/3
634	1/2"	1	2	III	2'-6 2/3
635	1/2"	1	2	III	2'-6 2/3
636	1/2"	1	2	III	2'-6 2/3
637	1/2"	1	2	III	2'-6 2/3
638	1/2"	1	2	III	2'-6 2/3
639	1/2"	1	2	III	2'-6 2/3
640	1/2"	1	2	III	2'-6 2/3
641	1/2"	1	2	III	2'-6 2/3
642	1/2"	1	2	III	2'-6 2/3
643	1/2"	1	2	III	2'-6 2/3
644	1/2"	1	2	III	2'-6 2/3
645	1/2"	1	2	III	2'-6 2/3
646	1/2"	1	2	III	2'-6 2/3
647	1/2"	1	2	III	2'-6 2/3
648	1/2"	1	2	III	2'-6 2/3
649	1/2"	1	2	III	2'-6 2/3
650	1/2"	1	2	III	2'-6 2/3
651	1/2"	1	2	III	2'-6 2/3
652	1/2"	1	2	III	2'-6 2/3
653	1/2"	1	2	III	2'-6 2/3
654	1/2"	1	2	III	2'-6 2/3
655	1/2"	1	2	III	2'-6 2/3
656	1/2"	1	2	III	2'-6 2/3
657	1/2"	1	2	III	2'-6 2/3
658	1/2"	1	2	III	2'-6 2/3
659	1/2"	1	2	III	2'-6 2/3
660	1/2"	1	2	III	2'-6 2/3
661	1/2"	1	2	III	2'-6 2/3
662	1/2"	1	2	III	2'-6 2/3
663	1/2"	1	2	III	2'-6 2/3
664	1/2"	1	2	III	2'-6 2/3
665	1/2"	1	2	III	2'-6 2/3
666	1/2"	1	2	III	2'-6 2/3
667	1/2"	1	2	III	2'-6 2/3
668	1/2"	1	2	III	2'-6 2/3
669	1/2"	1	2	III	2'-6 2/3
670	1/2"	1	2	III	2'-6 2/3
671	1/2"	1	2	III	2'-6 2/3
672	1/2"	1	2	III	2'-6 2/3
673	1/2"	1	2	III	2'-6 2/3
674	1/2"	1	2	III	2'-6 2/3
675	1/2"	1	2	III	2'-6 2/3
676	1/2"	1	2	III	2'-6 2/3
677	1/2"	1	2	III	2'-6 2/3
678	1/2"	1	2	III	2'-6 2/3
679	1/2"	1	2	III	2'-6 2/3
680	1/2"	1	2	III	2'-6 2/3
681	1/2"	1	2	III	2'-6 2/3
682	1/2"	1	2	III	2'-6 2/3
683	1/2"	1	2	III	2'-6 2/3
684	1/2"	1	2	III	2'-6 2/3
685	1/2"	1	2	III	2'-6 2/3
686	1/2"	1	2	III	2'-6 2/3
687	1/2"	1	2	III	2'-6 2/3
688	1/2"	1	2	III	2'-6 2/3
689	1/2"	1	2	III	2'-6 2/3
690	1/2"	1	2	III	2'-6 2/3
691	1/2"	1	2	III	2'-6 2/3
692	1/2"	1	2	III	2'-6 2/3
693	1/2"	1	2	III	2'-6 2/3
694	1/2"	1	2	III	2'-6 2/3
695	1/2"	1	2	III	2'-6 2/3
696	1/2"	1	2	III	2'-6 2/3
697	1/2"	1	2	III	2'-6 2/3
698	1/2"	1	2	III	2'-6 2/3
699	1/2"	1	2	III	2'-6 2/3
700	1/2"	1	2	III	2'-6 2/3

BAR SUMMARY			
2324	1/2"	1/2"	1552
426	1/2"	1/2"	4444
3268	1/2"	1/2"	5329
68	1/2"	1/2"	449
89	1/2"	1/2"	643
Total Weight 12,570			



GENERAL NOTES

1. ALL DIMENSIONS ARE IN FEET AND INCHES. DIMENSIONS IN PARENTHESES ARE FOR REFERENCE ONLY.

2. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.

3. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.

4. ALL DIMENSIONS ARE TO OUTLINE UNLESS OTHERWISE NOTED.

5. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.

6. ALL DIMENSIONS ARE TO OUTLINE UNLESS OTHERWISE NOTED.

7. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.

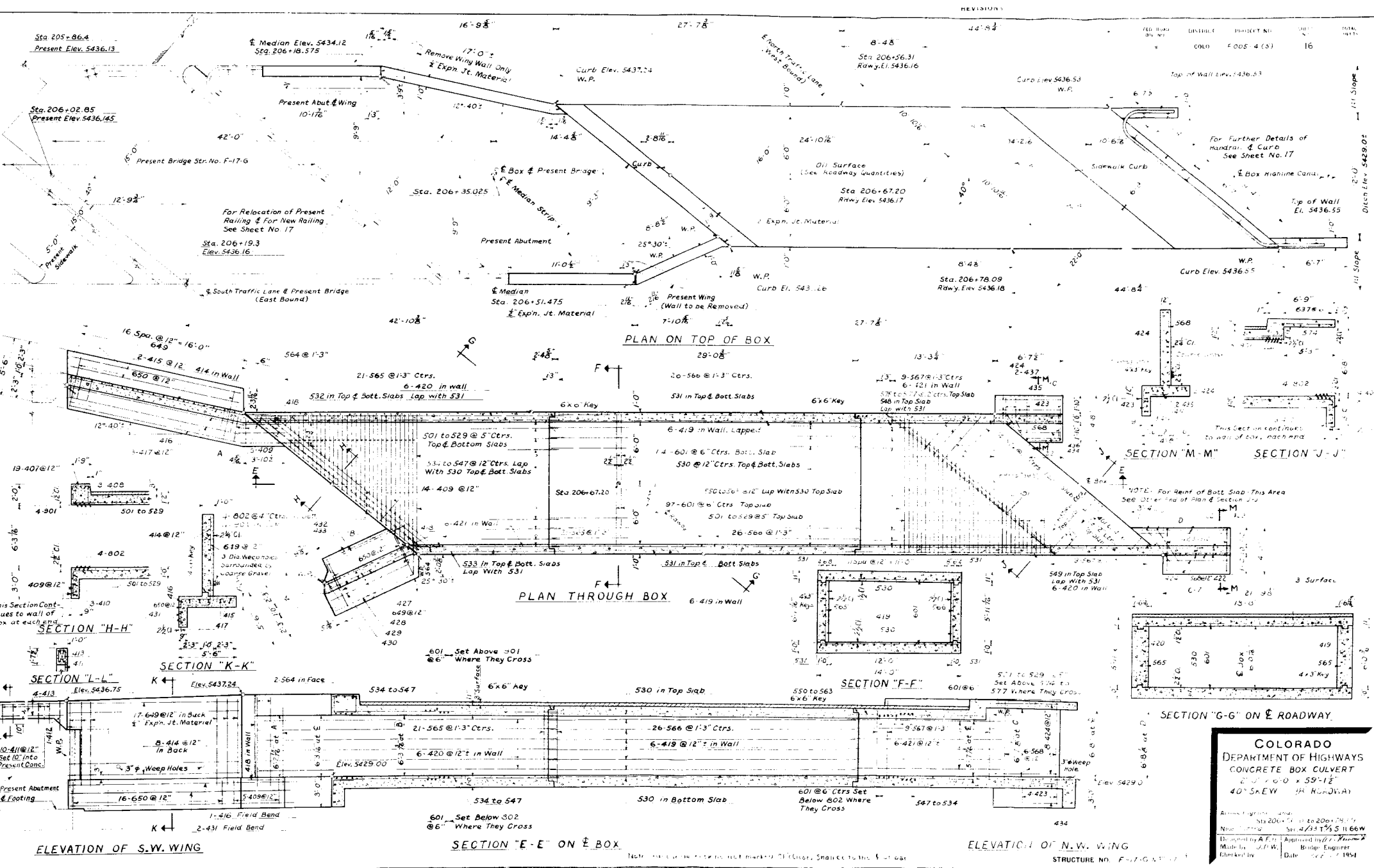
8. ALL DIMENSIONS ARE TO OUTLINE UNLESS OTHERWISE NOTED.

9. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.

10. ALL DIMENSIONS ARE TO OUTLINE UNLESS OTHERWISE NOTED.

COLORADO
DEPARTMENT OF HIGHWAYS
12 FT SPAN CBC ON 40° SKEW
GENERAL LAYOUT, NOTES
BAR LIST AND
SUMMARY OF QUANTITIES

DATE: 10/1/54
BY: [Signature]
CHECKED: [Signature]
APPROVED: [Signature]



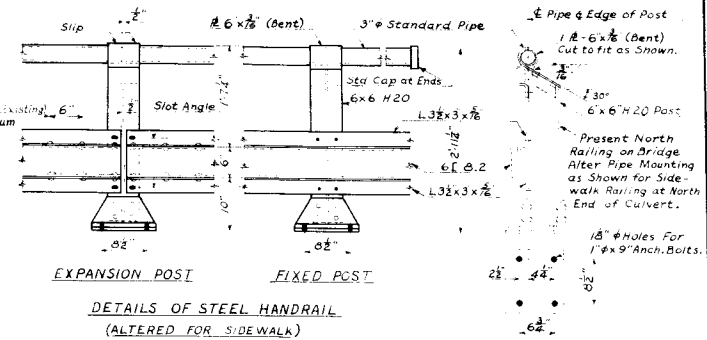
COLORADO
DEPARTMENT OF HIGHWAYS
CONCRETE BOX CULVERT
 20' x 6'0" x 59'-12"
 40' SKEW (R. R. ROADWAY)

Approved by: _____
 Date: 12/22/1994

Checked by: _____
 Date: 12/22/1994

Designed by: A. E. _____
 Drawn by: J. D. W. _____
 Bridge Engineer

Structure No. F-17-G, N-17-1

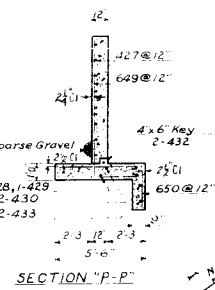


DETAILS OF STEEL HANDRAIL
(ALTERED FOR SIDEWALK)

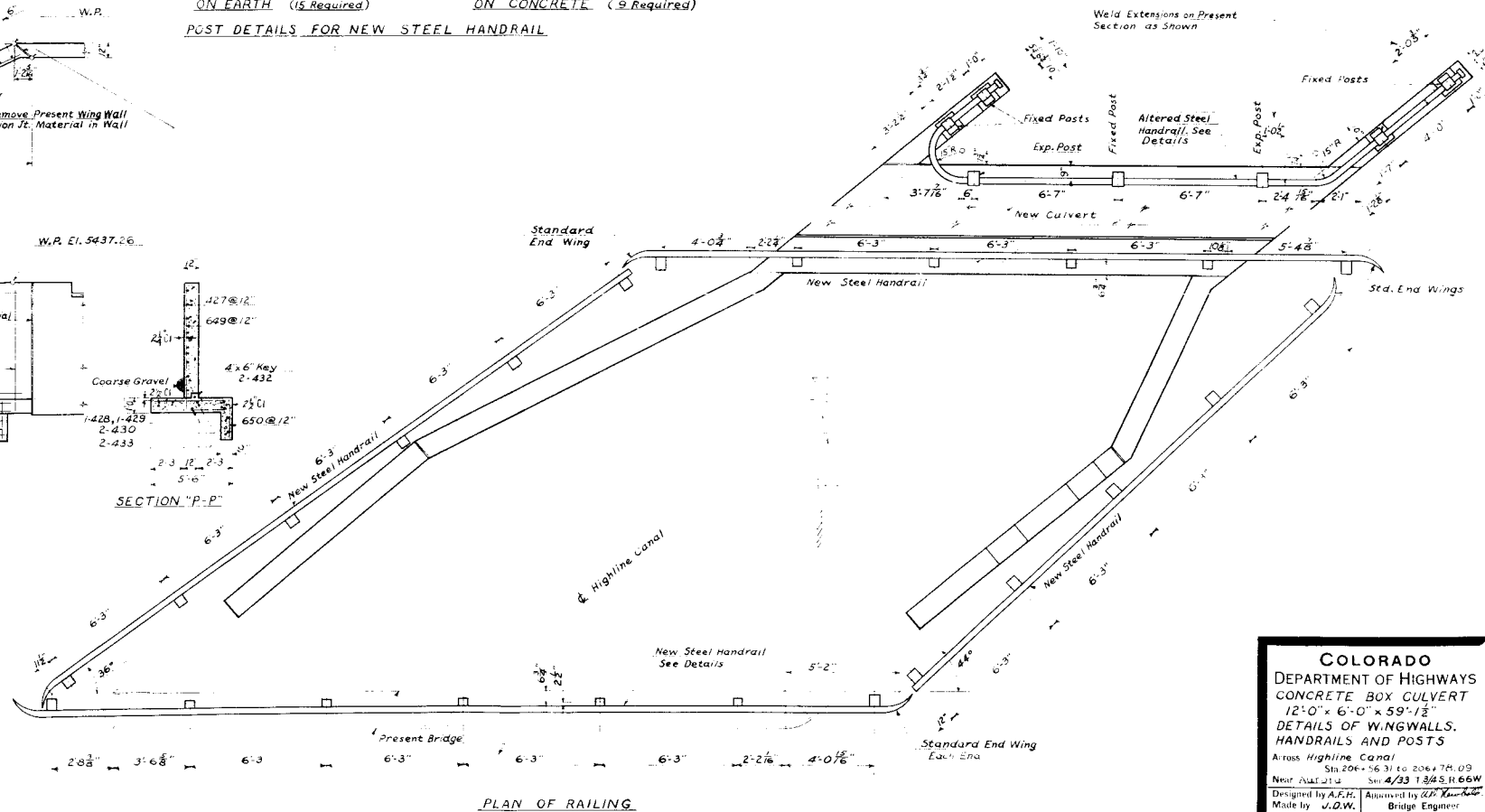


ON CONCRETE (9 Required)

POST DETAILS FOR NEW STEEL HANDRAIL



SECTION "P-P"



PLAN OF RAILING

Across Highline Canal	
Sta 206+56.31 to 206+74.09	
Near A-1212	See 4/33 1345 R.66W
Designed by A.F.H.	Approved by <i>W. R. Knepper</i>
Made by J.D.W.	Bridge Engineer
Checked by	Date: <i>Oct. 29, 1954</i>

STRUCTURE NO. F-17-G & F-17. ⁵

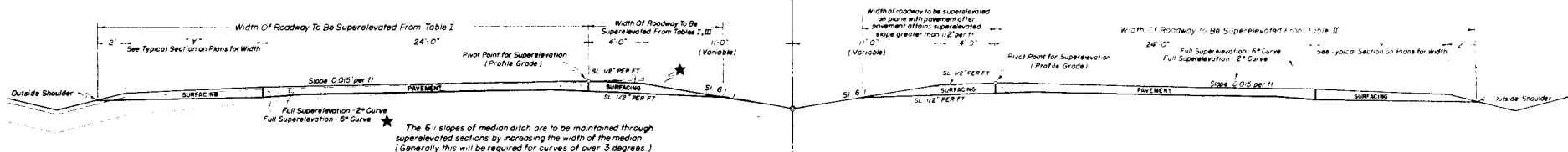
Standard Methods for Superelevating Curves on Divided Highway

STANDARD M-I-C I

FED. ROAD DISTRICT NO. 9 13

Roadway On Inside Of Curve

Roadway On Outside Of Curve



Superelevation Tables

TABLE I - FOR ROADWAY ON INSIDE OF CURVE

(Figures in columns are Rates of Superelevation per Foot of Roadway Width)

Percent Of Transition Distance	Distance From BT in Feet	DEGREE OF CURVE				
		2°-8+2°	3°-8+3°	4°-8+4°	5°-8+5°	6°-8+6°
2	5	0.000	0.000	0.000	0.000	0.000
4	10	0.000	0.001	0.002	0.003	0.004
6	15	0.000	0.001	0.002	0.003	0.004
8	20	0.001	0.002	0.003	0.004	0.005
10	25	0.001	0.003	0.004	0.005	0.006
12	30	0.002	0.003	0.004	0.005	0.006
14	35	0.002	0.004	0.005	0.006	0.007
16	40	0.003	0.004	0.005	0.006	0.007
18	45	0.004	0.005	0.006	0.007	0.008
20	50	0.005	0.006	0.007	0.008	0.009
22	55	0.006	0.007	0.008	0.009	0.010
24	60	0.007	0.008	0.009	0.010	0.011
26	65	0.008	0.009	0.010	0.011	0.012
28	70	0.010	0.010	0.011	0.012	0.013
30	75	0.011	0.011	0.012	0.013	0.014
32	80	0.013	0.012	0.013	0.014	0.015
34	85	0.014	0.013	0.014	0.015	0.016
36	90	0.016	0.014	0.015	0.016	0.017
38	95	0.018	0.016	0.017	0.018	0.019
40	100	0.020	0.018	0.019	0.020	0.021
42	105	0.022	0.020	0.021	0.022	0.023
44	110	0.024	0.022	0.023	0.024	0.025
46	115	0.026	0.024	0.025	0.026	0.027
48	120	0.028	0.026	0.027	0.028	0.029
50	125	0.030	0.028	0.029	0.030	0.031
52	130	0.032	0.030	0.031	0.032	0.033
54	135	0.034	0.032	0.033	0.034	0.035
56	140	0.036	0.034	0.035	0.036	0.037
58	145	0.038	0.036	0.037	0.038	0.039
60	150	0.040	0.038	0.039	0.040	0.041
62	155	0.042	0.040	0.041	0.042	0.043
64	160	0.044	0.042	0.043	0.044	0.045
66	165	0.046	0.044	0.045	0.046	0.047
68	170	0.048	0.046	0.047	0.048	0.049
70	175	0.049	0.047	0.048	0.049	0.050
72	180	0.050	0.048	0.049	0.050	0.051
74	185	0.052	0.050	0.051	0.052	0.053
76	190	0.053	0.051	0.052	0.053	0.054
78	195	0.054	0.052	0.053	0.054	0.055
80	200	0.055	0.053	0.054	0.055	0.056
82	205	0.056	0.054	0.055	0.056	0.057
84	210	0.057	0.055	0.056	0.057	0.058
86	215	0.058	0.056	0.057	0.058	0.059
88	220	0.058	0.056	0.057	0.058	0.059
90	225	0.059	0.057	0.058	0.059	0.060
92	230	0.059	0.057	0.058	0.059	0.060
94	235	0.060	0.058	0.059	0.060	0.061
96	240	0.060	0.058	0.059	0.060	0.061
98	245	0.060	0.058	0.059	0.060	0.061
Full Super	250	0.060	0.058	0.059	0.060	0.061

TABLE II - FOR ROADWAY ON OUTSIDE OF CURVE

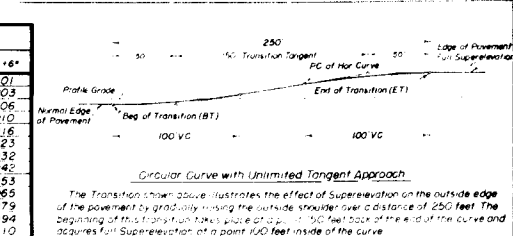
(Figures in columns are Rates of Superelevation per Foot of Roadway Width)

Percent Of Transition Distance	Distance From BT in Feet	DEGREE OF CURVE				
		2°-8+2°	3°-8+3°	4°-8+4°	5°-8+5°	6°-8+6°
2	5	0.000	0.000	0.000	0.000	0.000
4	10	0.001	0.002	0.002	0.003	0.004
6	15	0.001	0.002	0.003	0.004	0.005
8	20	0.002	0.003	0.004	0.005	0.006
10	25	0.002	0.003	0.004	0.005	0.006
12	30	0.003	0.004	0.005	0.006	0.007
14	35	0.003	0.004	0.005	0.006	0.007
16	40	0.004	0.005	0.006	0.007	0.008
18	45	0.004	0.005	0.006	0.007	0.008
20	50	0.005	0.006	0.007	0.008	0.009
22	55	0.006	0.007	0.008	0.009	0.010
24	60	0.006	0.007	0.008	0.009	0.010
26	65	0.007	0.008	0.009	0.010	0.011
28	70	0.007	0.008	0.009	0.010	0.011
30	75	0.008	0.009	0.010	0.011	0.012
32	80	0.008	0.009	0.010	0.011	0.012
34	85	0.009	0.010	0.011	0.012	0.013
36	90	0.009	0.010	0.011	0.012	0.013
38	95	0.010	0.011	0.012	0.013	0.014
40	100	0.010	0.011	0.012	0.013	0.014
42	105	0.011	0.012	0.013	0.014	0.015
44	110	0.011	0.012	0.013	0.014	0.015
46	115	0.012	0.013	0.014	0.015	0.016
48	120	0.012	0.013	0.014	0.015	0.016
50	125	0.013	0.014	0.015	0.016	0.017
52	130	0.013	0.014	0.015	0.016	0.017
54	135	0.014	0.015	0.016	0.017	0.018
56	140	0.014	0.015	0.016	0.017	0.018
58	145	0.015	0.016	0.017	0.018	0.019
60	150	0.015	0.016	0.017	0.018	0.019
62	155	0.016	0.017	0.018	0.019	0.020
64	160	0.016	0.017	0.018	0.019	0.020
66	165	0.017	0.018	0.019	0.020	0.021
68	170	0.017	0.018	0.019	0.020	0.021
70	175	0.018	0.019	0.020	0.021	0.022
72	180	0.018	0.019	0.020	0.021	0.022
74	185	0.019	0.020	0.021	0.022	0.023
76	190	0.019	0.020	0.021	0.022	0.023
78	195	0.020	0.021	0.022	0.023	0.024
80	200	0.020	0.021	0.022	0.023	0.024
82	205	0.021	0.022	0.023	0.024	0.025
84	210	0.021	0.022	0.023	0.024	0.025
86	215	0.022	0.023	0.024	0.025	0.026
88	220	0.022	0.023	0.024	0.025	0.026
90	225	0.023	0.024	0.025	0.026	0.027
92	230	0.023	0.024	0.025	0.026	0.027
94	235	0.024	0.025	0.026	0.027	0.028
96	240	0.024	0.025	0.026	0.027	0.028
98	245	0.024	0.025	0.026	0.027	0.028
Full Super	250	0.024	0.025	0.026	0.027	0.028

TABLE III - FOR INSIDE SHOULDER OF ROADWAY INSIDE OF CURVE

Percent Of Transition Distance	Distance Back Of BT	Rate Of Superelevation Per Foot Of Shoulder Width
100	BT	0.0566
80	10	0.0533
60	20	0.0400
40	30	0.0266
20	40	0.0133
0	50	0.0000

PROFILE VIEW SHOWING TRANSITION TO FULL SUPERELEVATION ON ROADWAY OUTSIDE OF CURVE



GENERAL NOTES

1. The transition shown above illustrates the effect of Superlevation on the outside edge of the pavement by gradually raising the outside shoulder over a distance of 250 feet. The beginning of this transition shall be at a point 150 feet back of the end of the curve and acquires full Superlevation at a point 100 feet inside of the curve.

2. The transition shown above illustrates the effect of Superlevation on the outside edge of the pavement by gradually raising the outside shoulder over a distance of 250 feet. The beginning of this transition shall be at a point 150 feet back of the end of the curve and acquires full Superlevation at a point 100 feet inside of the curve.

3. The transition shown above illustrates the effect of Superlevation on the outside edge of the pavement by gradually raising the outside shoulder over a distance of 250 feet. The beginning of this transition shall be at a point 150 feet back of the end of the curve and acquires full Superlevation at a point 100 feet inside of the curve.

COLORADO
STATE HIGHWAY DEPARTMENT

Standard Methods
For Superlevating Curves
On Divided Highways

Designed by CGM
Made by CGM
Checked by MRR

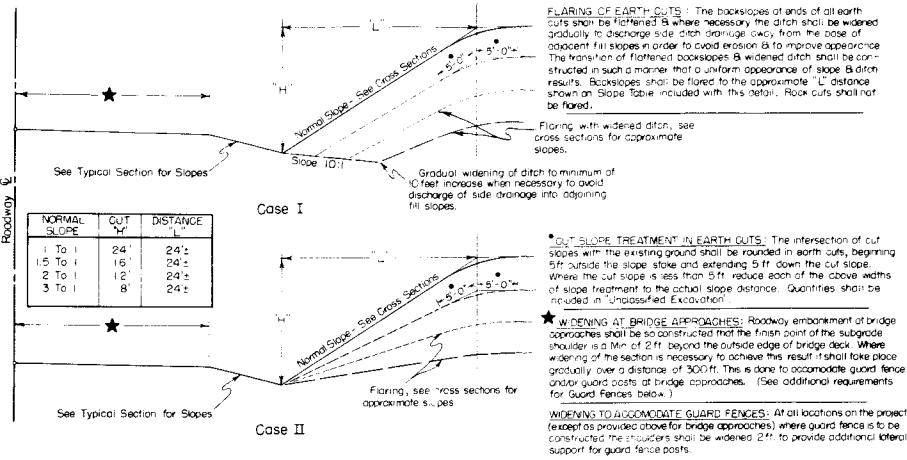
Approved by J. L. Smith
Engineer, Survey & Plans
Date: Feb. 1961

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

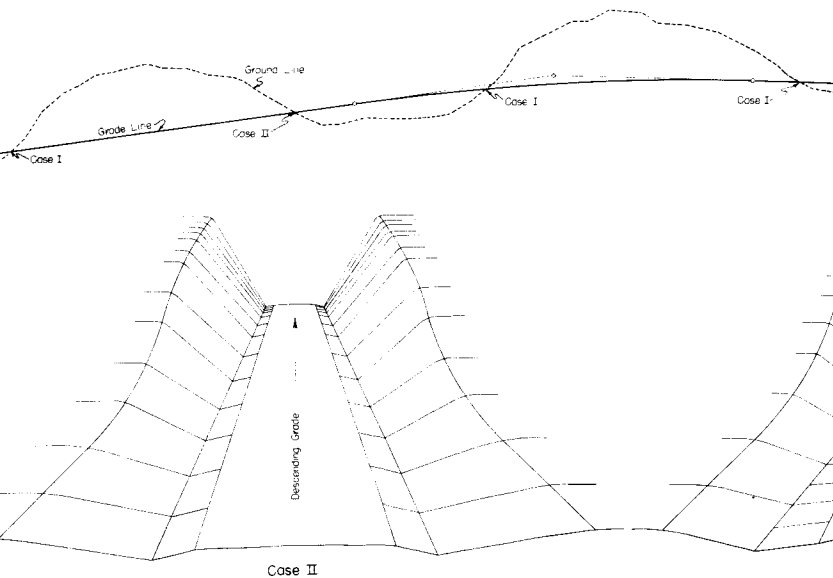
STANDARD M-2-EM

REVISIONS
FED. ROAD DISTRICT SHEET TOTAL
DIV. NO. 9 COLO. 404-4(9) 19 SHEETS
Rev. 12-9-53, Details of Road Approaches, J.G.R.

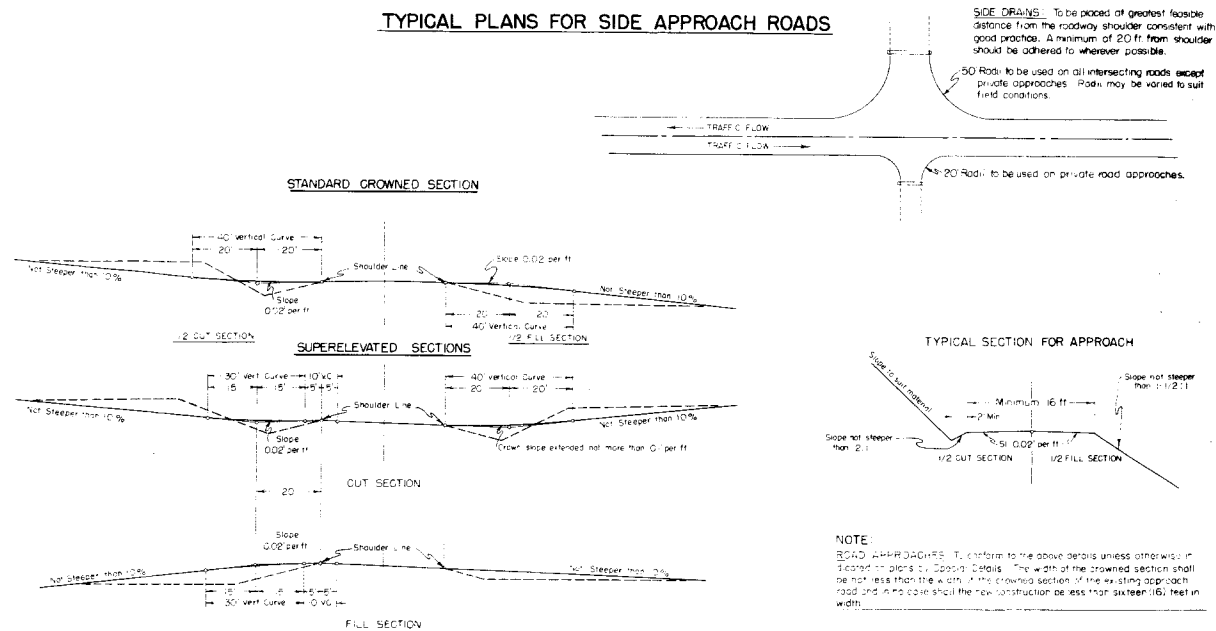
GENERAL DETAILS FOR FLARING OF EARTH CUTS, CUT SLOPE TREATMENT & WIDENING AT BRIDGES



PLAN OF FLARING IN EARTH CUTS

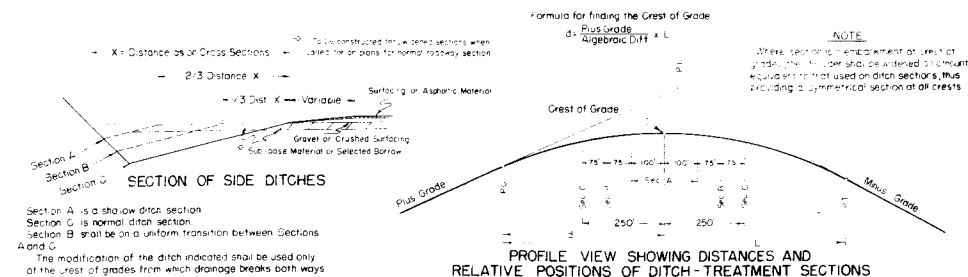


TYPICAL PLANS FOR SIDE APPROACH ROADS



DETAILS FOR DITCH & WIDENED SHOULDERS AT CREST OF GRADES

(TO BE USED ONLY WHERE SIGHT DISTANCE AT CREST OF GRADE IS 600 FT. OR LESS)



GENERAL NOTES

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

All side approach roads to the Project shall be: Gravel Surfaced with a four (4) inch thickness of Gravel or Crushed Rock Surfacing extending approximately to the right of Way Line. Estimated tonnage & type of material required for this operation are shown in the Surfacing Plan.

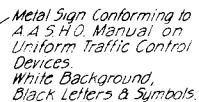
The maximum grades shown are to be the limiting grades for all road approaches. Modifications of grades will be permitted where adherence to the grades as shown would cause damage to property or create other unsatisfactory conditions. Grades less than the maximum shown are to be used wherever feasible.

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

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

STANDARD M-7-C

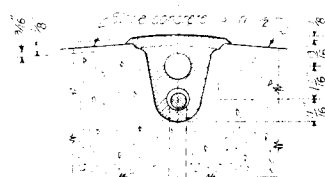
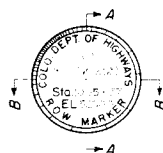
FEDERAL ROAD DIST. NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
	COLORADO	FO05-4 (5)	20	



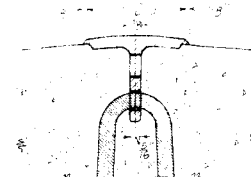
All work shall be done in accordance with the Standard Specifications of the U.S. State Department of Highways applicable to this project.

Numbers and arrows shall show the proper numbers and directions of the projects each way from where the post is placed. Post is to be set with sign facing the road at the end of the project, two feet inside the ROW line or at a point amply protected from traffic in such a position that the sign will indicate properly the projects to which it refers.

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

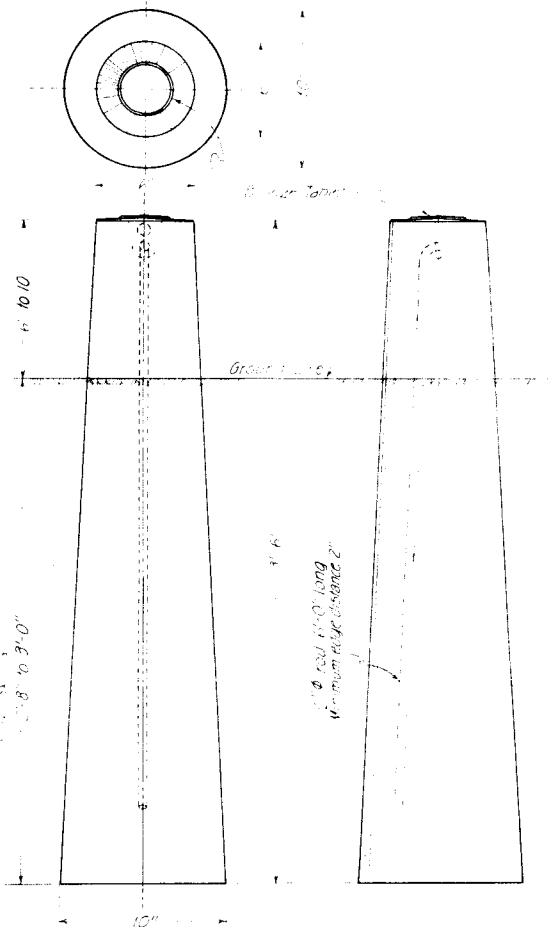
[illegible]

SECTION B-B



SECTION A-A

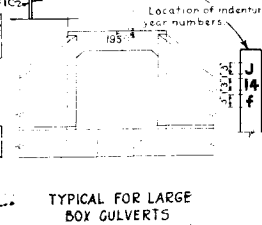
DETAIL OF BRONZE TABLET
FOR RIGHT OF WAY MARKER POST



Buyer's Name: _____

Cross-section diagram of a beam with a rectangular notch. The notch has a depth labeled y_0 . A scale bar at the bottom indicates "Scale in inches" with markings for 0, 1, and 2.

SAMPLE YEAR NUMBER



TYPICAL FOR LARGE
BOX GULVERTS

Designed by GFD	Approved by <i>C. L. Bailey</i>
Made by WPM	Bridge Engineer
Checked by	Date: June 1, 1948

STANDARD M-10-B

STANDARD TIMBER GUARD POSTS

STANDARD M-19-D

SPECIFICATIONS (Work By Contractor)

POSTS - Lodgepole Pine, Southern Yellow Pine or West Coast Douglas Fir, not less than six (6) inches in diameter. All posts shall be pressure treated with Pentachlorophenol as provided under paragraph 42-2.20 of the specifications, after being peeled and shaved in accordance with specifications.

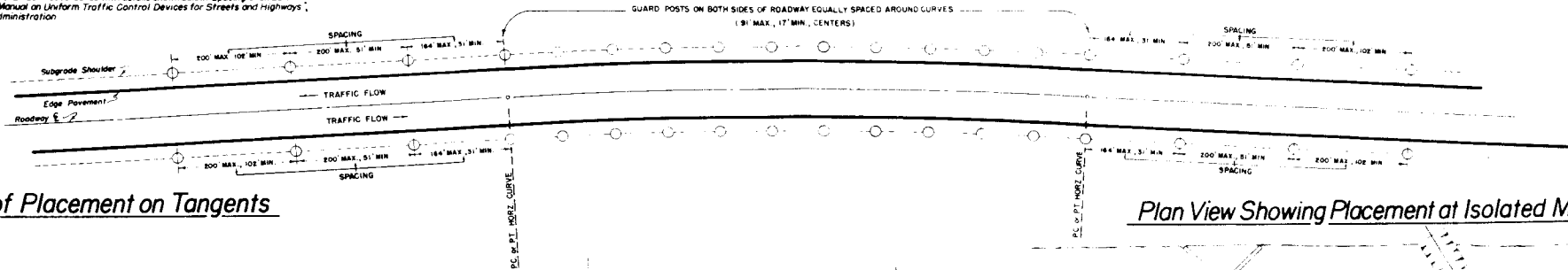
PAINTING - Posts shall be painted with aluminum paint and a black band placed around each post as per details on this sheet. Number of coats and 1/2 of paint applied shall be in accordance with specifications.

(Work By State Forces)

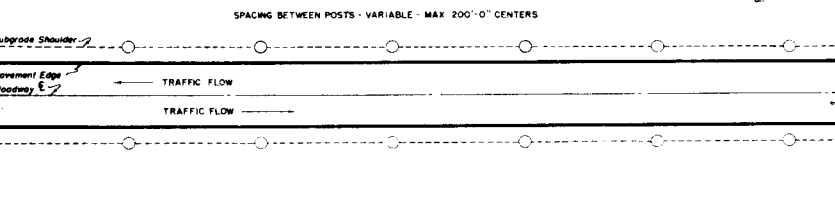
REFLECTIVE SHEETING - In accordance with the details hereon, State Forces will furnish and place the required 2' x 6" smooth surfaced reflective delineators fabricated from 3/8" x 1/4" aluminum alloy, minimum thickness .0025", reflectorized by means of wide-angle flat top silver "Scotch-lite". Strips shall be suitable for placement around a curved surface.

Typical Installation on Curves

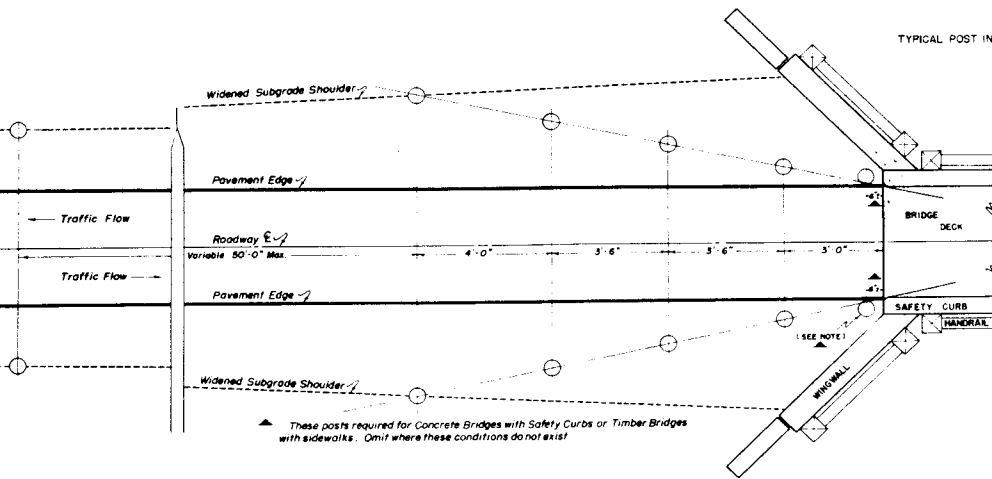
INSTALLATION of guard posts on curves shall be in accordance with details shown below. Spacing shall be in conformity with Section 157, Table 1 of "Manual on Uniform Traffic Control Devices for Streets and Highways", 1st Aug. 1948 by the Public Roads Administration.



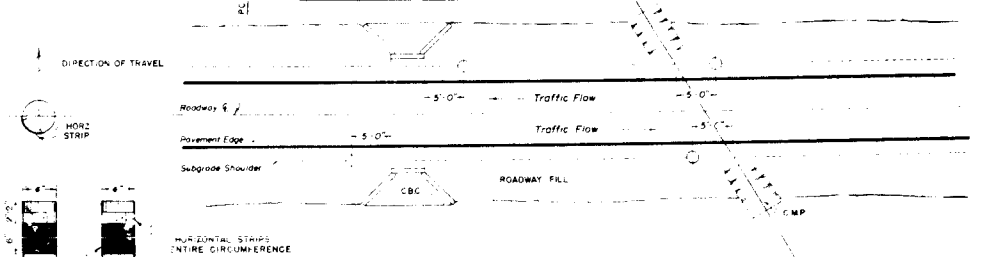
Method of Placement on Tangents



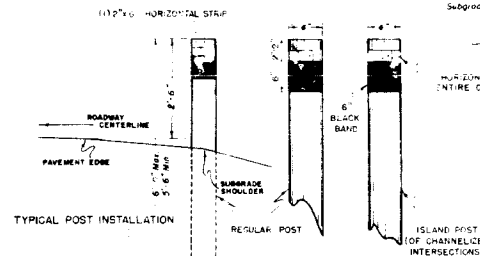
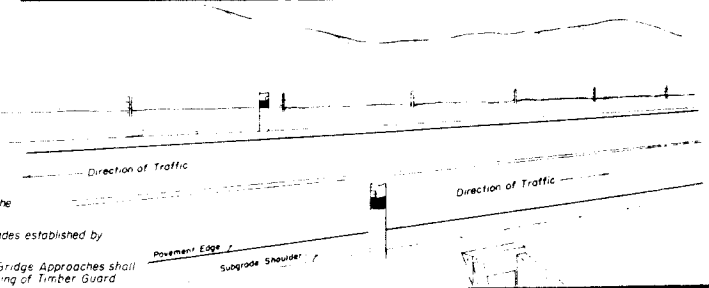
Typical Installation at Bridge Approaches



Plan View Showing Placement at Isolated Minor Structures



Pictorial View Showing Location at Isolated Minor Structures



INSTALLATION DETAILS OF REFLECTORIZED STRIPS (Work By State Forces)

GENERAL NOTES (Work By Contractor)

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

All posts shall be set and tamped in, plumb and firm, to the line and grades established by the Engineer.

INSTALLATION of Timber Guard Posts on Tangents, Curves and at Bridge Approaches shall be in conformity with details on this sheet. The number, location and spacing of Timber Guard Posts is shown on plans.

(Work By State Forces)

Reflective delineators shall be furnished and installed by State Forces after the Contractor has finished his operations.

Installation of reflective delineators shall be in accordance with the following: Wrap Around Reflective Sheeting Strips shall be installed horizontally one (1) sheet on all posts. Island posts shall have Wrap Around Reflective Sheeting Strips placed horizontally to cover entire circumference of Post.

On Divided Highways and Islands, Reflective Sheeting Strips shall be placed in a manner to obtain maximum visibility for the primary direction of travel in all instances tests shall be made to insure the maximum effectiveness of reflective delineators.

All Traffic Islands shall be marked with Island Posts as indicated hereon.

COLORADO
DEPARTMENT OF HIGHWAYS

STANDARD
TIMBER GUARD POSTS

Designed by
Made by
Checked by
Approved by
Engineer, Survey & Plans
Date: 11/26/53

Standard Wire Fence With Metal Posts

REVISIONS

Rev. 7-3-91, C.G.M., Alternate Gate Note
Rev. 4-30-93, Deleted Rod Brace from Driveway Gate, J.C.R.
STANDARD M-27-C
Rev. 6-30-93, Added acceptable equivalent for End, Corner & Gate Posts, J.C.R.
Rev. 8-14-93, Added Corrugate Bolt to Tubular Posts, J.C.R.

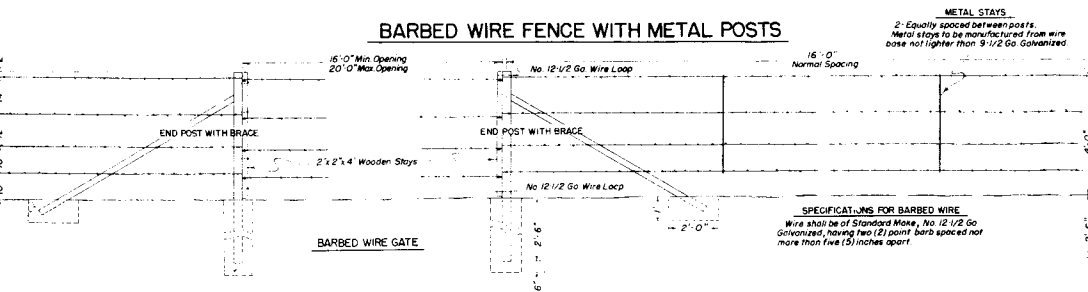
FIG. NO.	DISTRICT	SHEET	TOTAL
9	CON.	23	

FOOS-4(5)

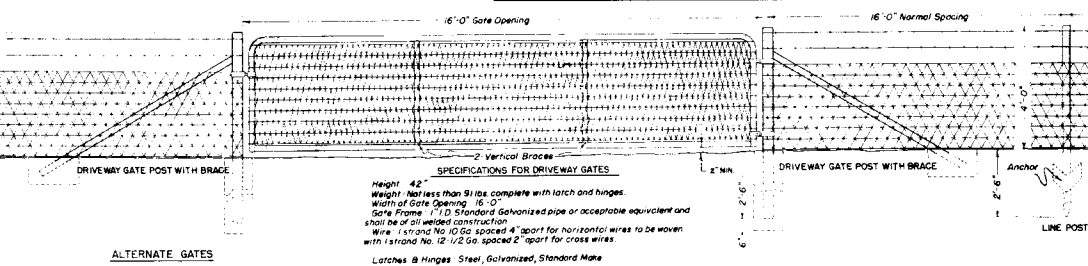
Rev. 5-9-90, C.G.M., Specs for Driveway Gates & Posts and Walk Gates.
Rev. 6-7-90, C.G.M., Rev. detail & specs for Tee & Angle Post Clips.
Rev. 8-9-90, J.C.R., Tee, Note for Fastening Fence Wire.

Typical Metal Posts & Fence Clamps

BARBED WIRE FENCE WITH METAL POSTS



COMBINATION WIRE FENCE WITH METAL POSTS



ALTERNATE GATES

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

Acceptable Equivalent for End, Corner & Gate Posts

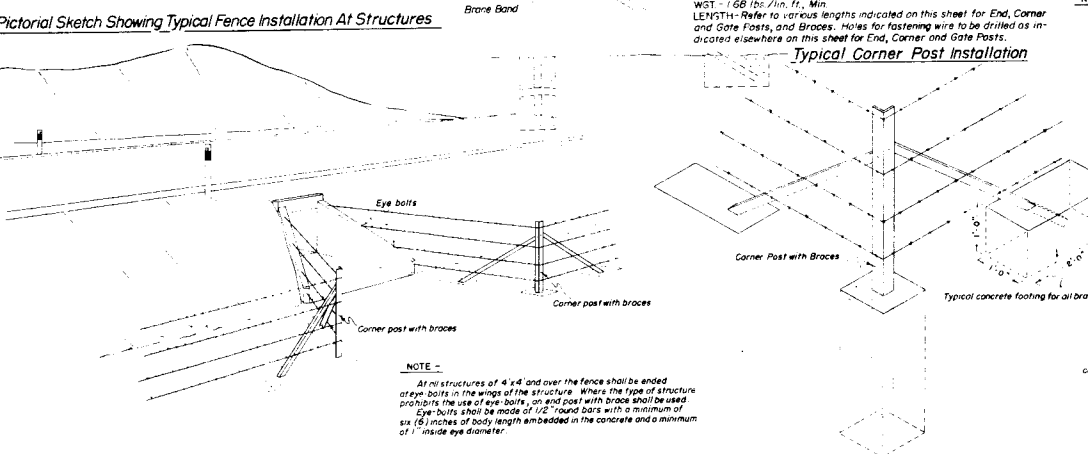
Brace band and rail end as per Fig. 905-C of H & B catalog No. 150, page 905 or acceptable equivalent.
Drill hole for 1/4" Corrugate Bolt to prevent slippage of Brace Band.

SPECIFICATIONS

END, CORNER & GATE POSTS
TYPE: 2-1/2" O.D. Galvanized Tubular Steel
WGT: 3.65 lbs./lin. ft., Min.

BRACES
TYPE: 1-1/2" x 3/8" U.D. Tubular Steel with 2-1/2" Brace Band, Hinge Bolt and 1-3/8" U.D. Rail End, all Galvanized.
WGT: 1.68 lbs./lin. ft., Min.
LENGTH: Refer to various lengths indicated on this sheet for End, Corner and Gate Posts, and Braces. Holes for fastening wire to be drilled as indicated elsewhere on this sheet for End, Corner and Gate Posts.

Typical Corner Post Installation



SPECIFICATIONS

CORNER POSTS
TYPE: 2-1/2" x 2-1/2" x 1/4" Structural Steel Angles
WGT: 4.1 lbs./lin. ft., Min.
LENGTH: 6'-6" Min.
NO BRACES

LINE POSTS
TYPE: Structural Steel "Tees"
WGT: 14 lbs./lin. ft., Min.
LENGTH: 6'-6" Min.
ANCHOR: Secure, fastened, with bearing surface sufficient to resist movement of post.

END POSTS
TYPE: 2-1/2" x 2-1/2" x 1/4" Structural Steel Angles
WGT: 4.1 lbs./lin. ft.
LENGTH: 6'-6" Min.
NO BRACES

DRIVEWAY GATE POSTS
TYPE: 2-1/2" x 2-1/2" x 3/8" Structural Steel Angles
WGT: 5.9 lbs./lin. ft.
LENGTH: 6'-6" Min.
NO BRACES

BRACES
TYPE: 2" x 1/4" Structural Steel Angles
WGT: 3.18 lbs./lin. ft.
LENGTH: Same as corner and end posts used

TEE & ANGLE POST TIES
Min. No. 12-1/2 Ga. Galvanized wire or acceptable equivalent.
Min. 4 ties per post for Comb. Wire.
Min. 1 tie per Barbed Wire per post.

SPECIFICATIONS FOR 4"x4" WIRE MESH FENCE

Width: 34"
Height: 42"
Weight: 0.76 lbs. per sq. ft. minimum
Horizontal Wires: 2 strands No. 12-1/2 Ga.
Cross Wires: 1 strand No. 14 Ga.
Construction: Cross wires to be woven with horizontal wires making a one piece fabric.

Typical Installation At Fence Intersections

NOTE

All footings or bases for corner, end and driveway gate posts shall be of Class "A" Concrete and shall have crowned tops. The cost involved shall be included in the bid price for the fence.

End Post with Brace

Typical concrete footing for all braces

Typical concrete footing for all end, corner, and driveway gate posts

Typical concrete footing for all braces

Typical concrete footing for all braces

Typical concrete footing for all braces

Typical concrete footing for all braces

Typical concrete footing for all braces

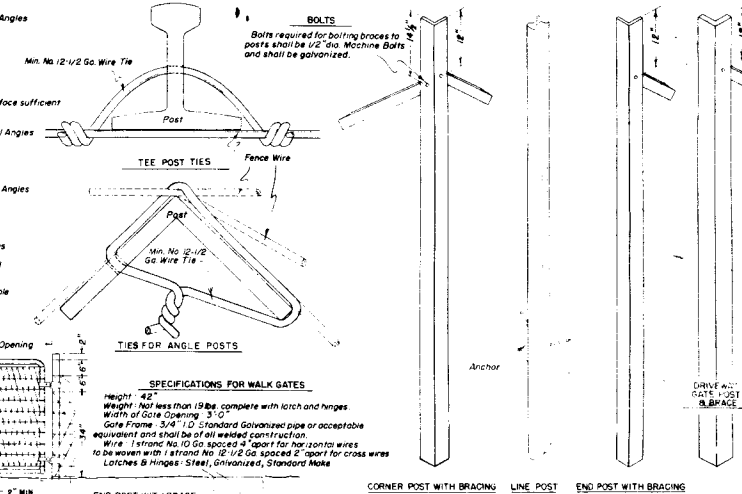
Typical concrete footing for all braces

Typical concrete footing for all braces

Typical concrete footing for all braces

Typical concrete footing for all braces

Typical concrete footing for all braces



General Notes

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

All posts and braces shall be of the types and weights as shown on this sheet or acceptable equivalents. Posts and braces to be of structural steel, hot dip galvanized or painted with an approved waterproof asphalt or mineral paint. Holes to be provided in end, corner and gate posts as detailed herein.

Wire mesh used in Combination Wire Fence as shown above shall be galvanized. Wire mesh used in walk & driveway gates shall be galvanized or painted with an approved waterproof asphalt or mineral paint.

Fence wire to be placed on either road or field side of posts depending on local conditions. On curves the wire should be placed on side of post which would prevent tension on fence ties. This will also apply where wind drift, tumble weeds or other conditions would exert unusual pressure against the wire.

Instead of Galvanized Finish on Gate Frames, Cadmium Plated Pipe or Aluminum Painting with zinc chromate primer as per specifications will be considered to be equivalent.

Spacing of Holes for Fastening Fence Wire to End, Corner, & Gate Posts

NOTE

All holes to be 1/4" Diameter. Fence wire to be securely fastened with No. 12 or 14 (Min.) Galvanized Wire bound around fence wire and passed through hole in post. Holes may be in either leg of angle post. For convenience, the department will approve the use of angle posts with holes spaced for barbed wire fence on one leg and combination wire fence on the other leg.

COLORADO
DEPARTMENT OF HIGHWAYS
Standard Wire Fence With Metal Posts

Designed by C.G.M.
Made by C.G.M.
Checked by
Approved by
Engineer, Survey & Plans
Date: 11-1-90

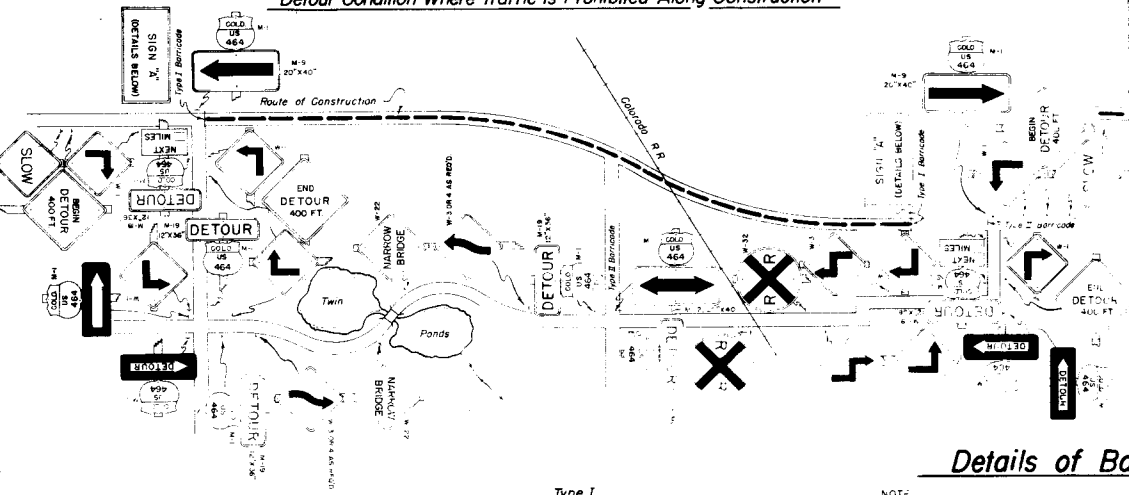
STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

STANDARD M-29-A

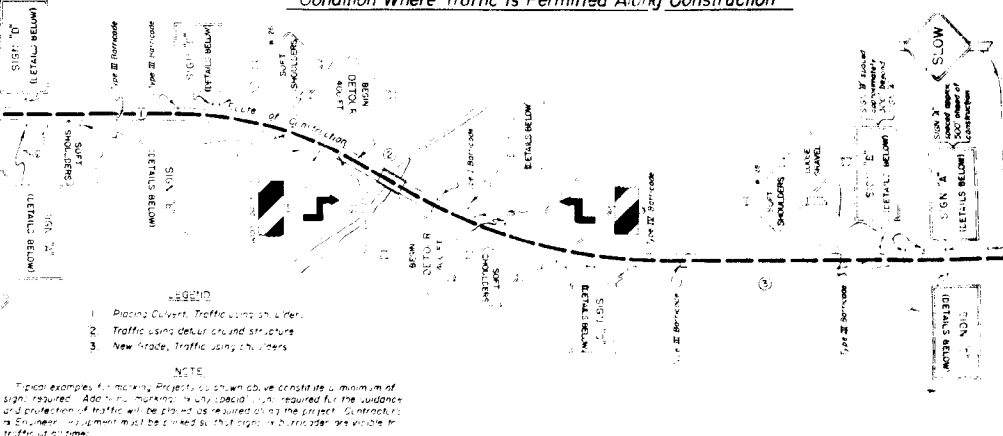
FED. ROAD DIST. NO.	DIST. NO.	SHEET NO.	TOTAL SHEETS
5	5	24	24

Typical Methods of Marking Highways & Detours

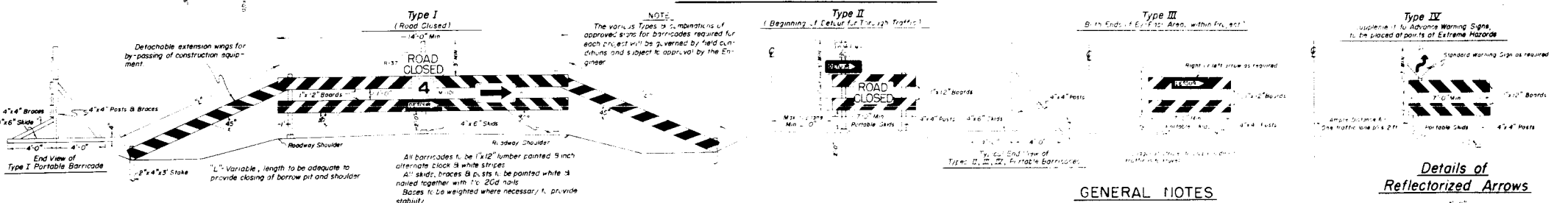
Detour Condition Where Traffic is Prohibited Along Construction



Condition Where Traffic is Permitted Along Construction

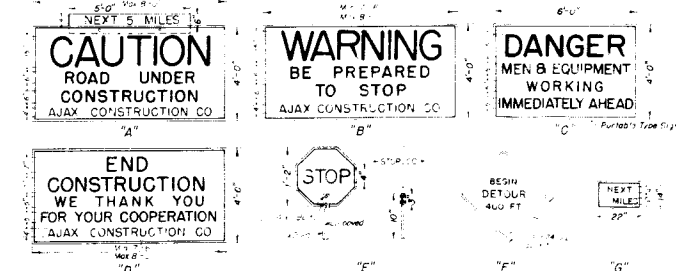
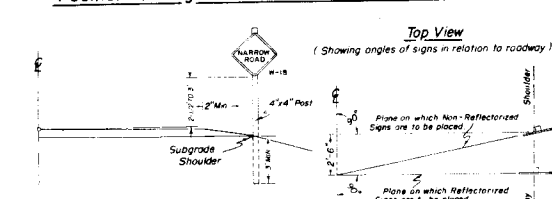


Details of Barricades



Details of Construction Signs

Position of Signs Relative to Roadbed & Hazards



GENERAL NOTES

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

2. Where traffic is maintained through or over any part of the Project, the Contractor will be required to mark all hazards within the limits of the Project with well painted, well maintained barricades, cones, signs and directional type signs. All barricades & signs shall be moved, added, changed or removed as required during the progress of construction and removed entirely when project is completed.

3. A Warning of Directional Type Signs will be 'Reflectorized' with 'Scotchite' Reflective Sheeting to a suitable equivalent. Except for variations noted on this sheet, all signs will be in conformity with the specifications outlined in 'Manual on Uniform Traffic Control Devices for Streets & Highways', 3rd Edition, 1948 by the U.S. Public Roads Administration. 'State Route Markers' required for the Project will be furnished by the Department and installed by the Contractor. Numbers adjacent to signs refer to Standards in the Manual.

4. The Contractor shall furnish & install the following as required within the limits of the Project:

- All Barricades
- 'CAUTION, ROAD UNDER CONSTRUCTION, NEXT 5 MILES, CONTRACTOR'S NAME'
- 'Standard Warning of Directional Signs'
- 'WARNING, BE PREPARED TO STOP, CONTRACTOR'S NAME'
- Approved Directional Arrow for Barricades
- 'DANGER, MEN & EQUIPMENT WORKING IMMEDIATELY AHEAD'
- 'END OF CONSTRUCTION, WE THANK YOU FOR YOUR COOPERATION, CONTRACTOR'S NAME'

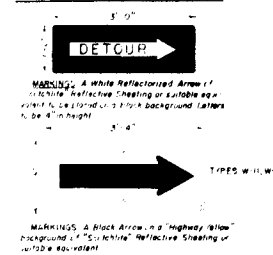
5. Turches and flags as follows:

Type I Barricades	Minimum	Maximum
Type II, III & IV Barricades	Minimum	Maximum
Standard Warning Signs	Minimum	Maximum

6. Where traffic is prohibited from the Project, the first sign will be marked by the Department except for Barricades complete with approved Warning Signs & Arrows which will be provided, erected & maintained by the Contractor at ends of Project and intersecting roads.

7. A number used shall be 1/4\"/>

Details of Reflectorized Arrows



COLORADO
DEPARTMENT OF HIGHWAYS

Standard Roadway
Construction Traffic Signs

Designed by
M. J. J. R.
Checked by
J. R. J. R.

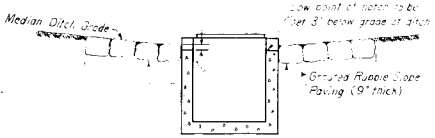
Approved by
J. R. J. R.
Date
October 10, 1952

STANDARD M-46-A

Rev. PC 9-18-52 Added 18" pipe.
Rev. CUM 12-5-58 Added Grating Note
Rev. DWH 6-6-54 Rev Quantities & Added Steps

FED. ROAD DIVISION NO.	DISTRICT	SHEET NO.	TOTAL SHEETS
9	COLO.	FOO5-4-3	25

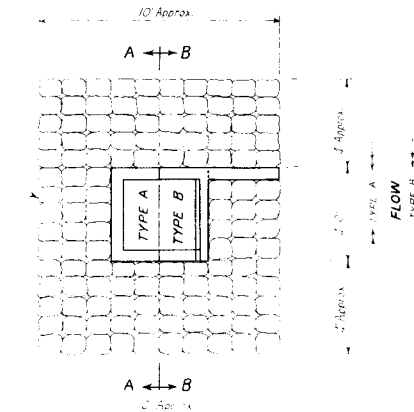
TYPE A FOR USE AT BOTTOM OF VERTICAL CURVE



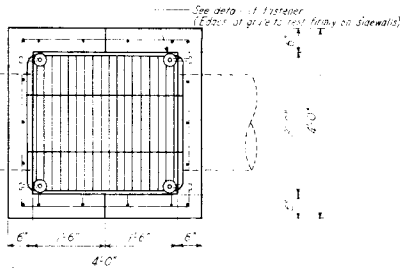
SECT. "A-A"

Materials used in the construction of inlet gratings shall meet with the requirements of Item 4.3 Structural Steel in the Standard Specifications.

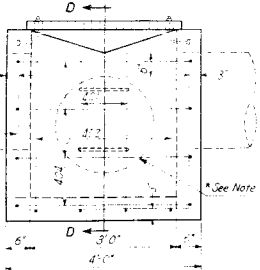
Tracked Rubber Slope Paving (9" thick) where required by project



LAYOUT OF INLET IN MEDIAN DITCH



PLAN



FRONT ELEV.

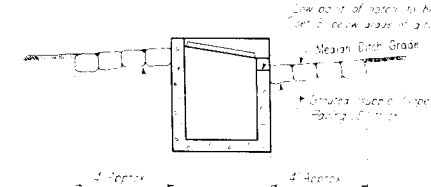
* Note for Longitudinal Pipe: 6" minimum between bottom of inlet opening and top of Longitudinal Pipe.

BAR LIST FOR H=4'-0"

MARK	NO REQ.	KIND	TYPE A				TYPE B			
			DIMENSIONS			LENGTH	DIMENSIONS			LENGTH
			M	N	O	LENGTH	M	N	O	LENGTH
401	2	I	3'-5"	3'-3"	3'-6"	3'-10"	3'-5"	3'-3"	3'-5"	3'-10"
402	2	I	2'-5"	3'-6"	3'-6"	10'-4"	3'-5"	3'-4"	3'-5"	10'-4"
403	5	I	4'-1"	3'-7"	3'-7"	10'-7"	3'-7"	4'-1"	4'-5"	10'-4"
404	4	II	3'-7"	3'-7"		15'-4"	3'-8"	3'-6"		15'-4"
405	1	I					3'-8"	3'-7"	3'-7"	10'-9"
406	2	I					0'-8"	2'-4"	2'-10"	6'-3"
407	2	Str.								1'-1"
408	2	Str.								1'-5"
601	1	IV	1'-0"	0'-10"	0'-10"	2'-6"	1'-0"	0'-10"	0'-10"	2'-6"

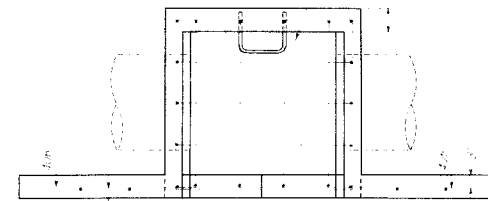
TYPE B

FLOW FROM ONE SIDE ONLY

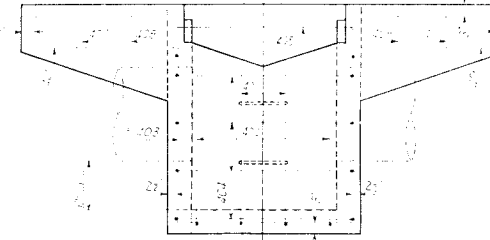


SECT. "B-B"

Grating same as for Type A



PLAN



FRONT ELEV.

QUANTITIES FOR ONE INLET

H	CLASS "A" CONCRETE		REINFORCING STEEL	
	CU. YDS.	Ø LBS.	TYPE A	TYPE B
3'-6"	1.05	1.36	98	127
4'-0"	1.18	1.49	104	133
4'-6"	1.31	1.62	115	143
5'-0"	1.44	1.75	135	163
5'-6"	1.56	1.88	141	169
6'-0"	1.69	2.01	158	185
6'-6"	1.82	2.13	168	195
7'-0"	1.95	2.26	184	212
7'-6"	2.08	2.39	190	218
8'-0"	2.21	2.52	211	238
8'-6"	2.34	2.65	217	244
9'-0"	2.47	2.78	233	261
9'-6"	2.60	2.91	243	270
10'-0"	2.73	3.04	259	287
10'-6"	2.86	3.17	265	293
11'-0"	2.99	3.30	286	313
11'-6"	3.12	3.43	292	320
12'-0"	3.25	3.56	308	336

Ø Includes 1 1/2% for overrun

▲ Volume occupied by pipes to be deducted for pay quantity of concrete

SIZE	C.M.P.	CONCRETE PIPE
18"	0.03 Cu Yd./pipe	0.05 Cu Yd./pipe
24"	0.06 " " "	0.09 " " "
30"	0.09 " " "	0.14 " " "
36"	0.13 " " "	0.20 " " "

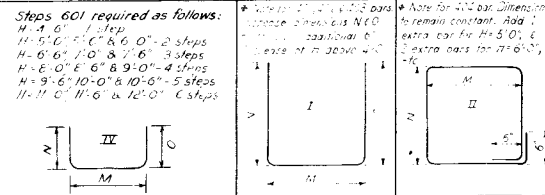
SECT. "C-C"

DETAIL OF GRATING

MATERIAL LIST FOR GRATING AND FASTENERS	
Grating Frame	2 x 4 x 8 x 10 x 12
Grating Grates	4 pcs. 2 x 4 x 8 x 10 x 12
Grating Pipe Spacers	54 pcs. 2 x 4 x 8 x 10 x 12
Grating	2 pcs. 1/4 x 3/16"
Boils	6 pcs. 1/4 x 3/16"
Washers	1 pc. 1/4 x 3/16"
Fasteners	2 x 4 x 8 x 10 x 12

DETAIL OF FASTENER
4 WEDD FOR PAIR INLET

▲ BENDING DIAGRAMS (SAME FOR TYPES A & B) All dimensions out to out of bars



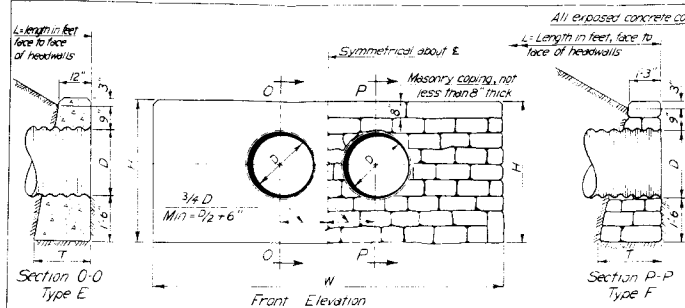
▲ Note: Cut or bend bars to fit around pipes as required

GENERAL NOTES

1. All work shall be done according to the Standard Specifications for Highway Construction.
2. All concrete shall be Class A or better.
3. All reinforcing bars shall be Grade 60 or better.
4. All reinforcing bars shall be bent to fit around pipes as required.
5. All reinforcing bars shall be bent to fit around pipes as required.
6. All reinforcing bars shall be bent to fit around pipes as required.
7. All reinforcing bars shall be bent to fit around pipes as required.
8. All reinforcing bars shall be bent to fit around pipes as required.
9. All reinforcing bars shall be bent to fit around pipes as required.
10. All reinforcing bars shall be bent to fit around pipes as required.

COLORADO
DEPARTMENT OF HIGHWAYS
TYPES A & B
CONCRETE INLETS
FOR MEDIAN DITCH

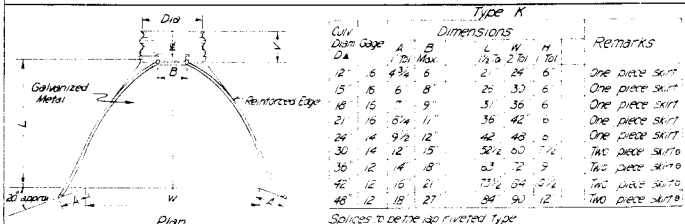
18", 24", 30" and 36" CULVERTS
Designed by W.C. Approved by T. C. R.
Made by T. C. R. Bridge Engineer
Checked by T. C. R. Date: March 1, 1952



STANDARD HEADWALLS FOR DOUBLE CORRUGATED METAL PIPE CULVERTS

Table of Dimensions and Quantities

Type E		Both Types		Type F	
D	T	W	H	W	H
15"	1'-6"	7'-6"	3'-9"	15'-0"	2'-11"
18"	1'-7"	8'-6"	4'-0"	16'-0"	2'-11"
24"	1'-10"	10'-6"	4'-6"	18'-0"	2'-4"
30"	2'-0"	12'-9"	5'-0"	20'-0"	2'-6"
36"	2'-2"	15'-0"	5'-0"	22'-0"	2'-8"
42"	2'-5"	17'-3"	6'-0"	24'-0"	2'-10"
48"	2'-7"	19'-6"	6'-6"	26'-0"	3'-0"



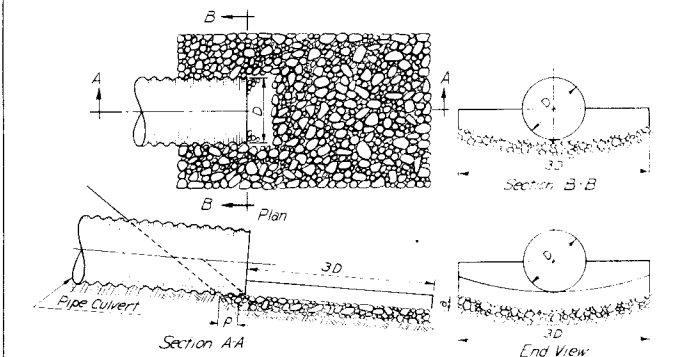
STANDARD HEADWALLS FOR SINGLE CORRUGATED METAL PIPE CULVERTS

Table of Dimensions and Quantities

Type A		Both Types		Type C	
D	T	W	H	W	H
15"	1'-6"	7'-6"	3'-9"	15'-0"	2'-11"
18"	1'-7"	8'-6"	4'-0"	16'-0"	2'-11"
24"	1'-10"	10'-6"	4'-6"	18'-0"	2'-4"
30"	2'-0"	12'-9"	5'-0"	20'-0"	2'-6"
36"	2'-2"	15'-0"	5'-0"	22'-0"	2'-8"
42"	2'-5"	17'-3"	6'-0"	24'-0"	2'-10"
48"	2'-7"	19'-6"	6'-6"	26'-0"	3'-0"

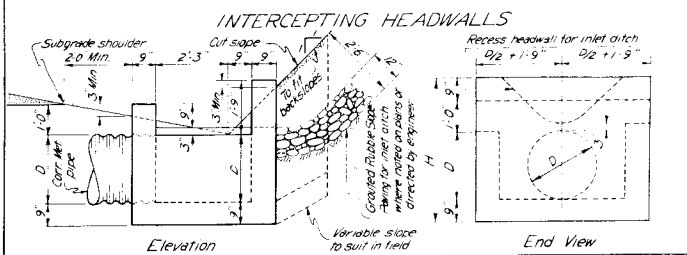
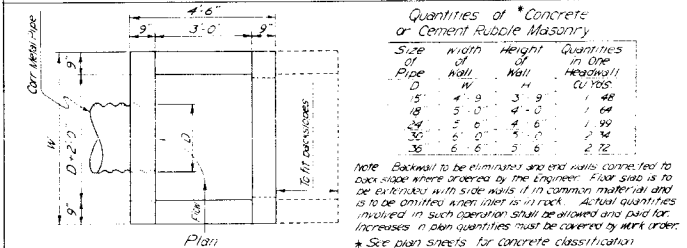
STANDARD M-102-H

FEDERAL ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.
9	COLORADO	102-102-H	1

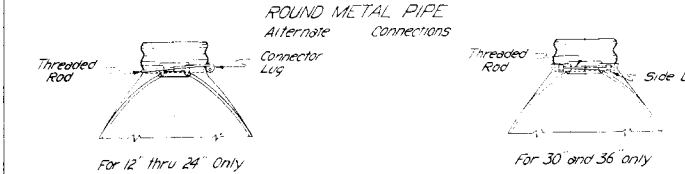


STANDARD GROUDED RUBBLE APRON FOR PIPE CULVERT

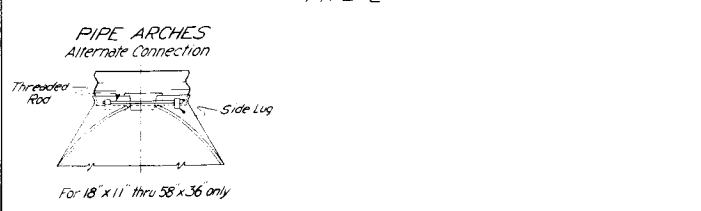
Fill	15"	18"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"
1/2 ft	2'-0"	2'-0"	3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"
1/4 ft	2'-0"	2'-0"	3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"
1/8 ft	2'-0"	2'-0"	3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"



STANDARD METAL APRONS FOR CORRUGATED METAL PIPE CULVERTS TYPE K



STANDARD METAL APRONS FOR CORRUGATED METAL PIPE ARCH CULVERTS TYPE L



COLORADO
DEPARTMENT OF HIGHWAYS

STANDARD HEADWALLS
INTERCEPTING HEADWALLS
GALVANIZED METAL APRONS
GROUDED RUBBLE APRONS
FOR CORR. METAL PIPE CULVERT

General Notes for All Structures
All work shall be done according to the standard specifications of the Colorado Department of Highways applicable to the Project.
All exposed concrete surfaces shall receive class 1 surface finish.
All construction joints shall be thoroughly cleaned before fresh concrete is poured.
All walls shall have forms on both sides.
The minimum fill over top of culverts shall be 1'-0".
When culvert is viewed, headwalls shall be placed parallel to E of roadway.
Minimum grade of pipe shall be 1%.
For size and location of culverts see plan sheets for project.
Footings in rock shall be poured out to rock and not formed.
Mechanical tamping, as provided under item No. 16 of the specifications, shall be applied over such areas as shown on the plans or as ordered by the Engineer.

Designed by PSB-604 Approved by HGP
Checked by MWM

STANDARD TYPES *of* DITCHES *and* CONSTRUCTION METHODS

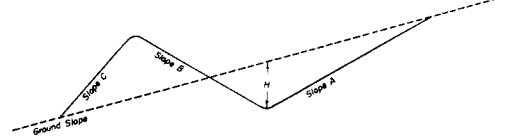
STANDARD M-107-C

REVISIONS

SECTION NO.	DISTRICT	SHEET NO.	TOTAL SHEETS
9.	COLO.	FOOS-49	27

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, hence 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

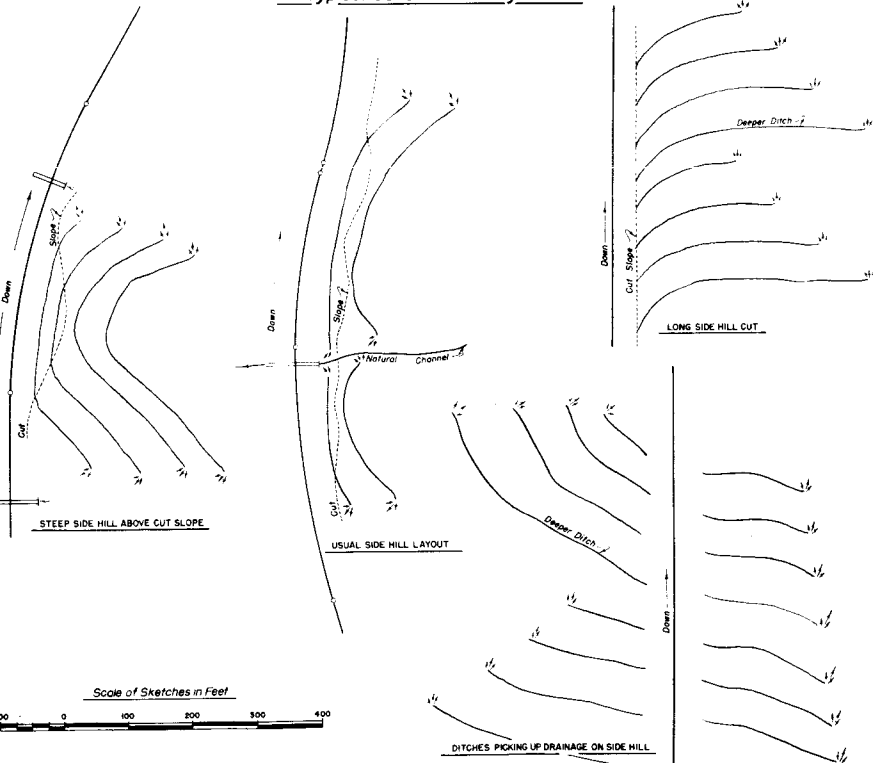
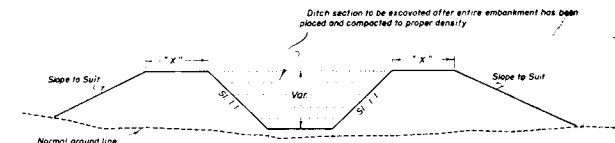


Table of Slopes and Yardages

▲ SLOPES				H	Cubic Yards per 100 lin. ft. of Ditch
Ground	A	B	C		
5:1 Or Flatter	2:1	4:1	2:1	15"	16
				18"	23
				21"	32
				15"	15
				18"	22
	3:1	2:1	1:1/2:1	21"	30
				15"	14
				18"	20
				21"	27
				15"	13
4:1	1:1/2:1	4:1	1:1/2:1	18"	19
				21"	25
				15"	12
				18"	18
				21"	25
				15"	12
				18"	17
				21"	23
				15"	10
				18"	15
	2:1	4:1	2:1	21"	20
				15"	10
				18"	14
				21"	19
				15"	17
				18"	25
				21"	34
				15"	17
				18"	24
				21"	32
3:1	1:1/2:1	4:1	1:1/2:1	15"	15
				18"	18
				21"	25
				15"	12
				18"	17
				21"	23
				15"	11
				18"	16
				21"	21
				15"	10
	2:1	3:1	2:1	18"	14
				21"	20
				15"	22
				18"	31
				21"	43
				15"	21
				18"	30
				21"	41
				15"	20
				18"	29
2:1	1:1/2:1	3:1	1:1/2:1	21"	40
				15"	13
				18"	19
				21"	26
				15"	12
				18"	17
				21"	24
				15"	12
				18"	17
				21"	23
	1:1	2:1	1:1	15"	20
				18"	29
				21"	40
				15"	8
				18"	12
				21"	16
				15"	11
				18"	16
				21"	21
				15"	9
1:1/2:1	1:1	1:1/2:1	1:1	18"	13
				21"	17
				15"	6
				18"	12
				21"	16
				15"	11
				18"	16
				21"	21
				15"	9
				18"	13

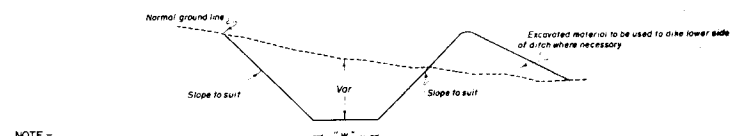
▲ Slopes are approximate and may be varied to suit conditions encountered during construction.

TYPICAL SECTIONS *for* DRAINAGE, IRRIGATION DITCHES *and* CHANNEL CHANGES



NOTE -
Ditch section to be excavated after entire embankment has been placed and compacted to proper density.
See Structure Notes in plans for dimension "W".
Dimension "X" = $\frac{W}{2}$ with minimum of 2 feet.

For Embankment Sections (Generally for use in Irrigation Ditches & Channel Changes)



NOTE -
Unless otherwise shown in Structure Notes of plans, dimension "W" = 1 foot.

For Cut Sections

GENERAL NOTES

All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department 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).

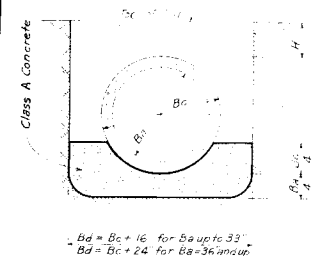
Ends of ditches are to be lined up so that concentration of flow from a higher contour ditch into one of lower contour is, as far as possible avoided. The use of a deeper ditch is recommended where this condition is encountered.

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.

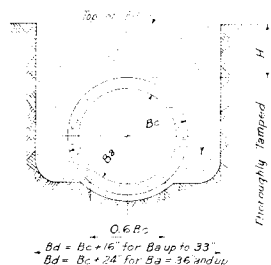
COLORADO
STATE HIGHWAY DEPARTMENT
Standard Types of Ditches
and
Construction Methods

Designed by C.G.M.
Made by C.G.M.
Checked by
Approved by *[Signature]*
Engineer, Surveys & Plans
Date: Aug. 16, 1950



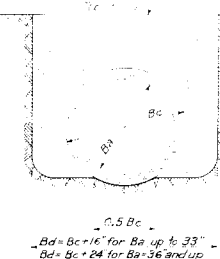
CONCRETE CRADLE BEDDING IN TRENCHES

CONCRETE CRADLE
BEDDING IN FILLS



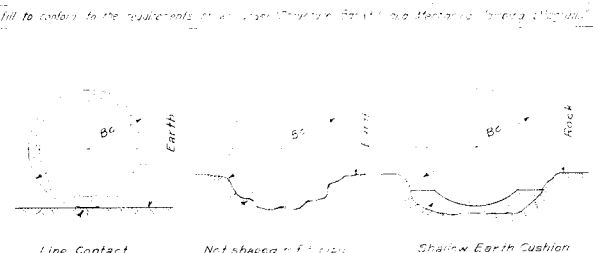
FIRST CLASS,
BEDDING IN TRENCHES

FIRST CLASS
BEDDING IN FILLS

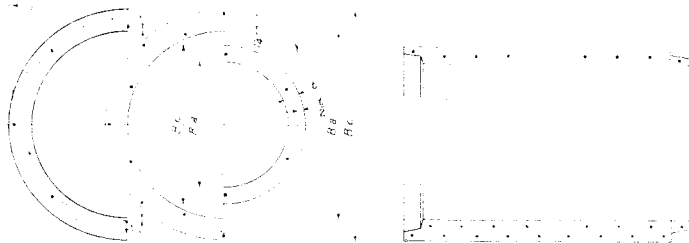


ORDINARY
BEDDING IN TRENCHES

ORDINARY BEDDING IN FILLS



IMPERMISSIBLE BEDDINGS IN TRENCHES OR FILLS
THESE THREE TYPES SHAL. NOT BE USED



Section with one line of
twisting reinforcement

PIPE CROSS SECTIONS

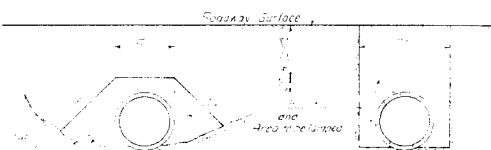
When two lines of steel are required, a single No. 4 area efficiently may be used, and the area of steel shall be at least 50% of the total steel area required for two lines of reinforcement.

LONGITUDINAL SECTIONS

1. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ (probability of getting two heads)
 + $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ (probability of getting two tails)
 = $\frac{1}{4} + \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$

GRACE OF COLLEGE

With the jaw open, grasp the tip of the tongue at the base and the root and draw up or toward the tip and toward the middle of the tongue. The drawing up of the tongue should be toward the middle of the tongue, not toward the tip of the tongue.

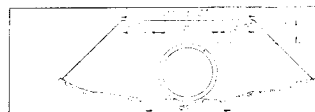


STRUCTURE, JACKING AND MECHANICAL JACKING DIAGRAM

It is not possible to demonstrate by simple direct measurement that the frequency of the light is the same in both media. It is, however, possible to demonstrate that the frequency of the light is the same in both media by using a Michelson interferometer. The interferometer is a device that splits a beam of light into two paths, which are then recombined to form an interference pattern. The frequency of the light is the same in both paths, and the interference pattern is the same in both media.

When a firm foundation is not required, it is recommended that unsuitable material at such depth be removed under the pipe for a 6" dth of 12" to 18" and be removed and the area backfilled with suitable material approved by the Engineer and compacted at optimum moisture for a relative density not less than 90% to provide lateral support for the pipe.

When suitable material is encountered in place at the foundation but the relative compaction does not meet the minimum requirement for this material, it shall be removed and replaced at optimum moisture and to at least 90% of bulk density.



If the desired light is to be in full accordance with the color and appearance of the surrounding area, a system of two fixtures, the top of the upper fixture being concealed in the substructure, and the lower mounted adjacent to a picture frame, is also a good type of arrangement. It is usually better than the first.

GENERAL NOTES:

[illegible][illegible]

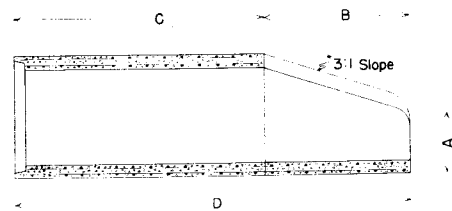
* To determine grade of concrete to be used in the table
of concrete strength, loadings were determined by using
3900 psi average strength of grade 4 strength concrete
used in the design of the bridge.

COLORADO
STATE HIGHWAY DEPARTMENT
REIN. CONCRETE CULVERT PIPE
12" DIA. 10' L. 12" DIA. 10' L. 12" DIA. 10' L.
12" DIA. 10' L. 12" DIA. 10' L. 12" DIA. 10' L.
12" DIA. 10' L. 12" DIA. 10' L. 12" DIA. 10' L.
CONCRETE SEWER PIPE
12" DIA. 10' L. 12" DIA. 10' L. 12" DIA. 10' L.
12" DIA. 10' L. 12" DIA. 10' L. 12" DIA. 10' L.
12" DIA. 10' L. 12" DIA. 10' L. 12" DIA. 10' L.
Approved by **Paul B. B.**
City Engineer
Date: **5/11/27** 1954

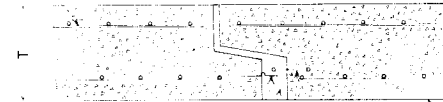
FED ROAD DIV. NO.	DISTRICT	SHEET NO.	TOTAL SHEETS
9	COLORADO	FOO5-4(5)	28a

Rev. Dimensions of End Sec. = 10/18/49 - E. E. O.
 Rev. Dim. line of End Sec. 12/15/49 - C. J. W.
 Rev. Dim. of Seal & added Note - 1/17/50 - E. E. O.

COPPER EXPANSION JOINT FOR CONCRETE PIPE
(WHEN REQUIRED ON PLANS)

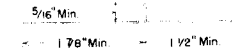


7:30



1:1 Mortar Joint.

° COPPER SEALING STRIP



DIAMETER	A	B	C	D	E
12"	4"	2'-0"	4'-0 7/8"	6'-0 7/8"	2'-0"
15"	6"	2'-3"	3'-10"	6'-1"	2'-6"
18"	8"	2'-3"	3'-10"	6'-1"	3'-0"
24"	9 1/2"	3'-7 1/2"	4'-6"	8'-1 1/2"	4'-0"
30"	1'-0"	4'-6"	3'-7 3/4"	8'-1 3/4"	5'-0"
36"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	5'-0"
42"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"
48"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"
54"	2'-6"	6'-0"	2'-3"	8'-3"	7'-6"
60"	2'-6"	5'-0"	3'-3"	8'-3"	8'-0"

DIAMETER OF PIPE	LENGTH ON OUTSIDE OF PIPE				AVERAGE LAYING LENGTH ON
	A	B	C	D	
12"	4 1/2"	4 1/2"	3 1/2"	3 1/2"	8'
15"	5 1/2"	5 1/8"	4 1/4"	3 7/8"	9 3/8'
18"	6"	6 1/2"	2"	5"	8 1/2'
24"	4"	6 1/2"	2"	4 9/16"	8 1/2'
30"	4 1/2"	7"	2"	4 1/2"	9'
36"	4 7/8"	8 3/16"	2"	5 1/16"	10 7/16'
42"	6"	9 1/2"	2 5/8"	6 1/8"	12 1/8'
48"	7"	11"	3 3/16"	7 3/16"	14 3/16'
54"	8 1/8"	12 1/8"	4"	8"	16 1/8'
60"	9 3/8"	14"	4 3/8"	9 1/4"	18 3/8'

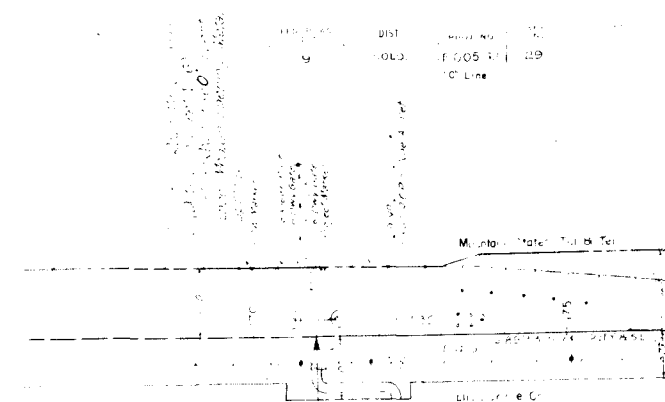
COLORADO
STATE HIGHWAY DEPARTMENT
STANDARD
FLARED END SECTION
7'30" ANGLE SECTION
AND
COPPER EXPANSION JOINT
FOR
CONCRETE PIPE STRUCTURES

Designed by R S M Approved by
Made by J M K *John M. K.*
Checked by R S M Date January 14, 1949

Alignment and Grades as shown are subject to modification during construction after approval by the Denver Office.

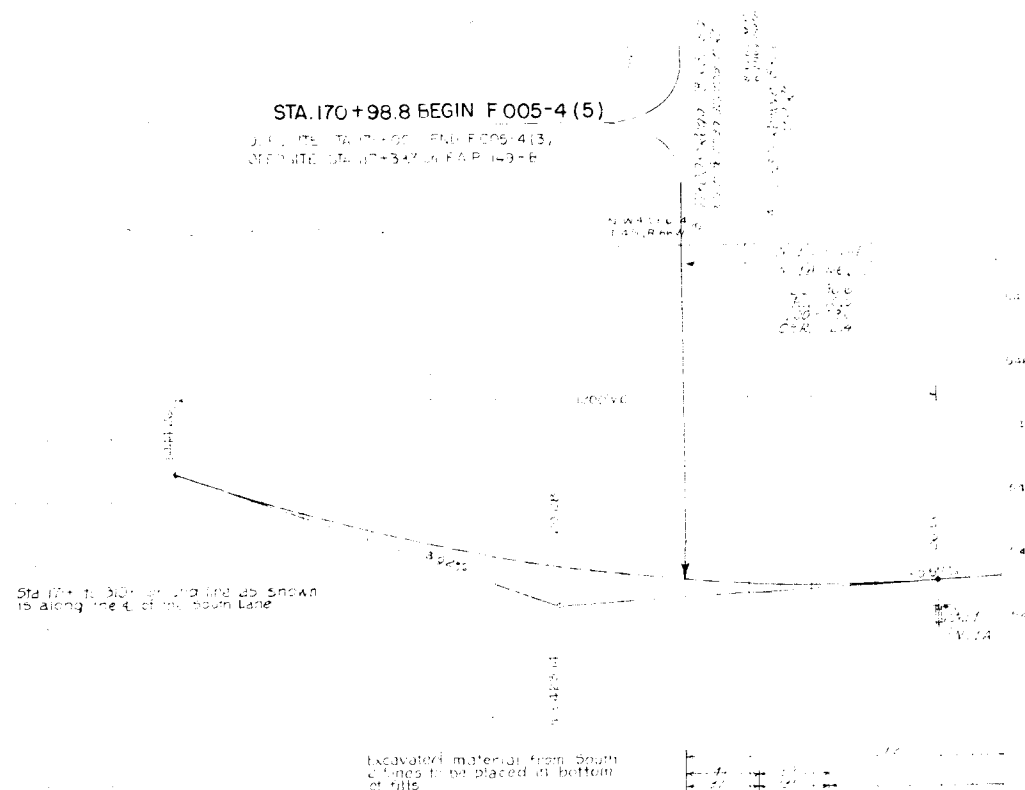
Soil data shown on the plans is obtained from best available testing laboratory information. This information is shown for convenience of the Contractor and the Department does not guarantee the accuracy of these tests. If materials not conforming to the data on plans are encountered during construction the grading plan shown on plans will be modified where necessary to secure dense, stable embankments.

Timber Guard Posts & ROW Markers are tabulated on sheet No. 4
Fencing is tabulated on sheet No. 5

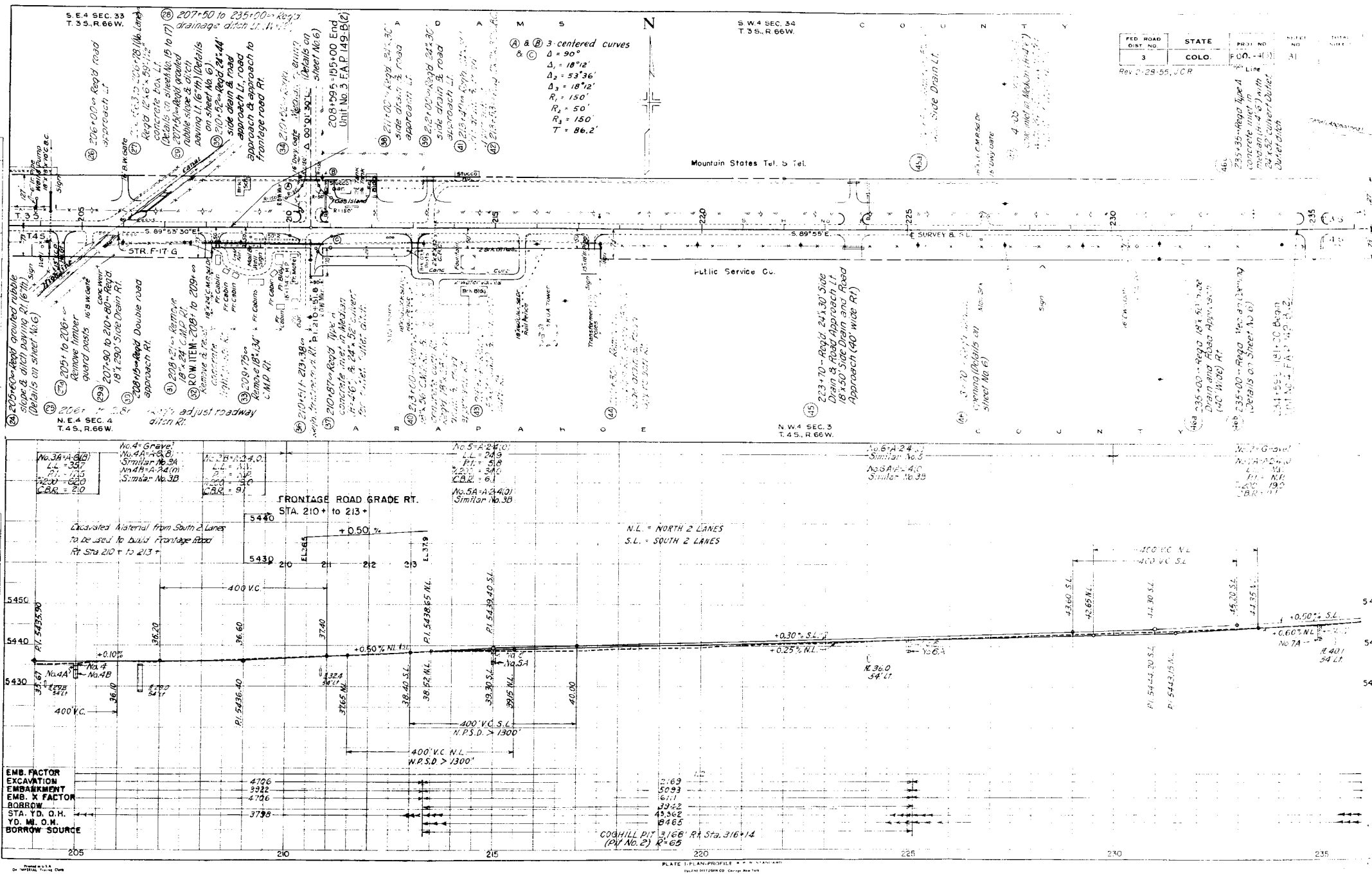


STA. 170+98.8 BEGIN F 005-4 (5)

JOINTS: JTA 47-95 FILE: ECOS-4(3,
JOINTS: JTA 47-342 JOINTS: 149-B



EMB. FACTOR
EXCAVATION
EMBANKMENT
EMB. X FACTOR
BORROW
STA. YD. O. H.
YD. MI. O. H.
BORROW SOURCE



EMB. FACTOR
EXCAVATION
EMB. X FACTOR
BORROW
STA. Y.O. O.H.
Y.O. M. O.H.
BORROW SOURCE

COGHILL PIT
3168 RA Sta. 316+14
(PI No. 2) R=65

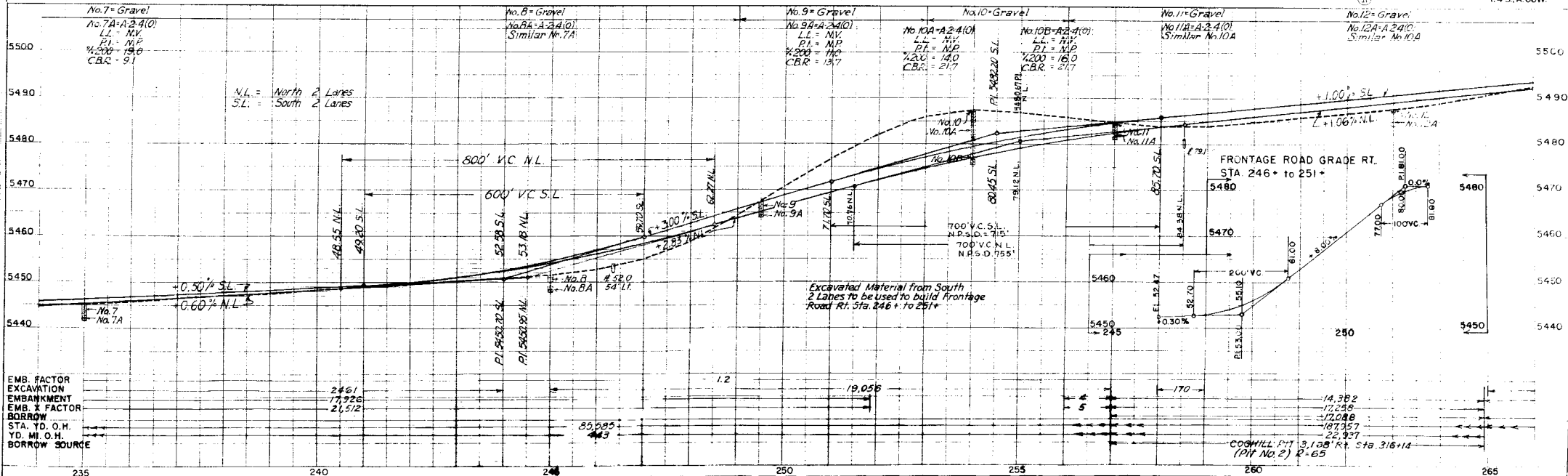
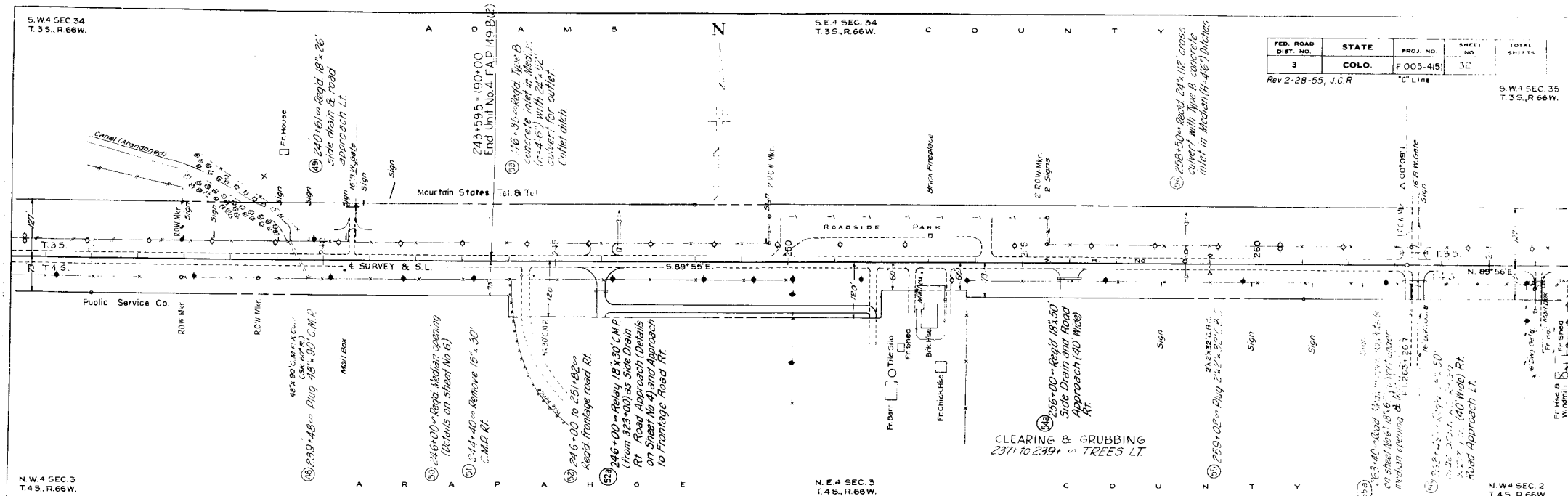
S.W.4 SEC. 34
T.35.S., R.66.W.

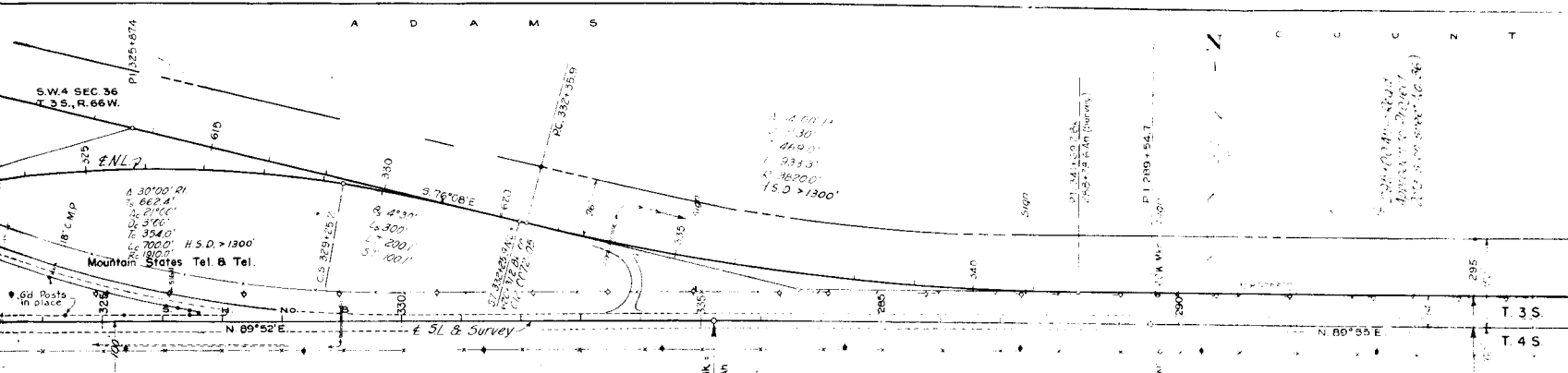
S.E.4 SEC. 34
T.35.S., R.66.W.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	F 005-4(5)	32	

Rev 2-28-55, J.C.R.

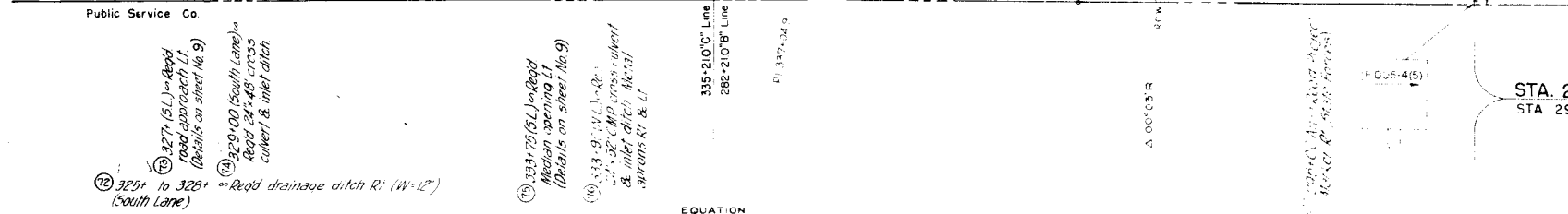
S.W.4 SEC. 35
T.35.S., R.66.W.



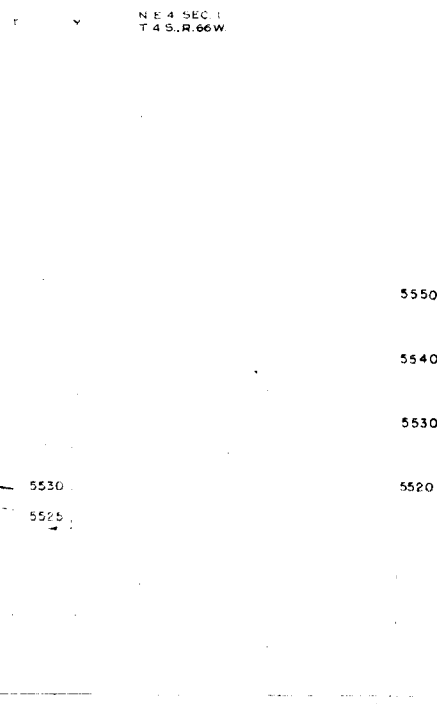
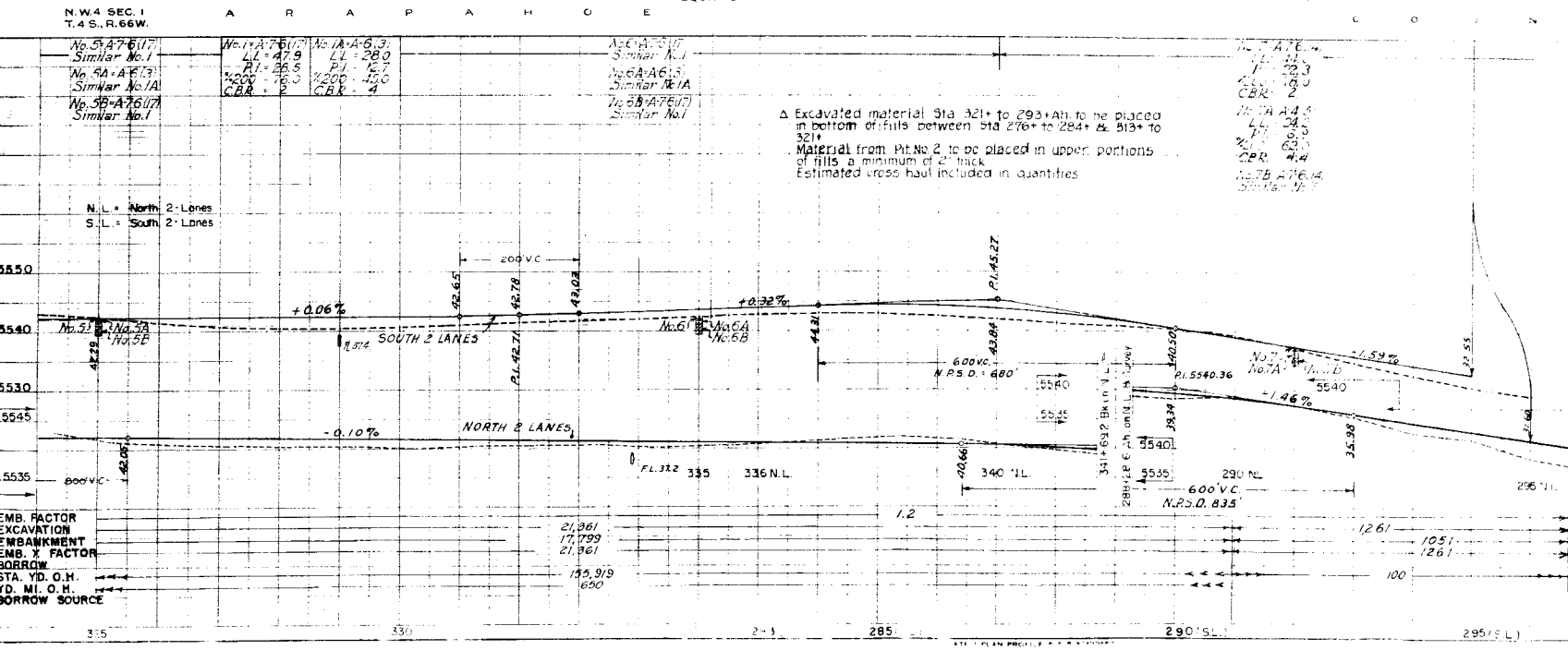


FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	F005-4(5)	35	

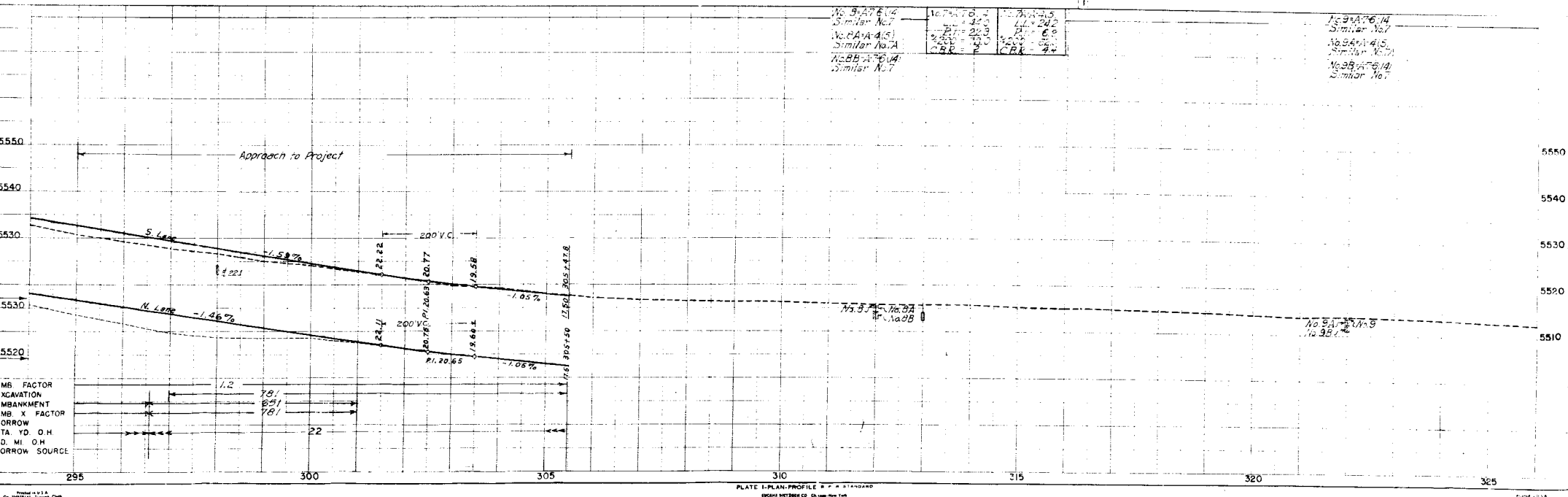
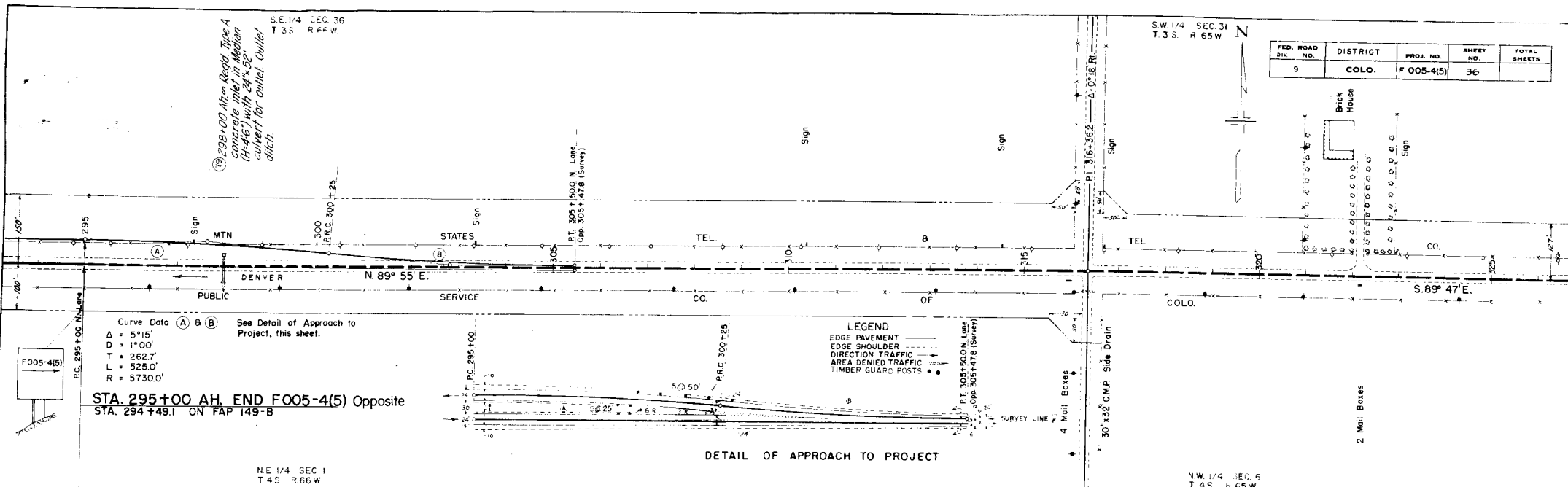
NE 4 SEC. 36
T. 3 S., R. 66 W.



STA. 295+00 AH. END F.005-4(5) Opposite
STA 294+49.1 ON FAP 149-B

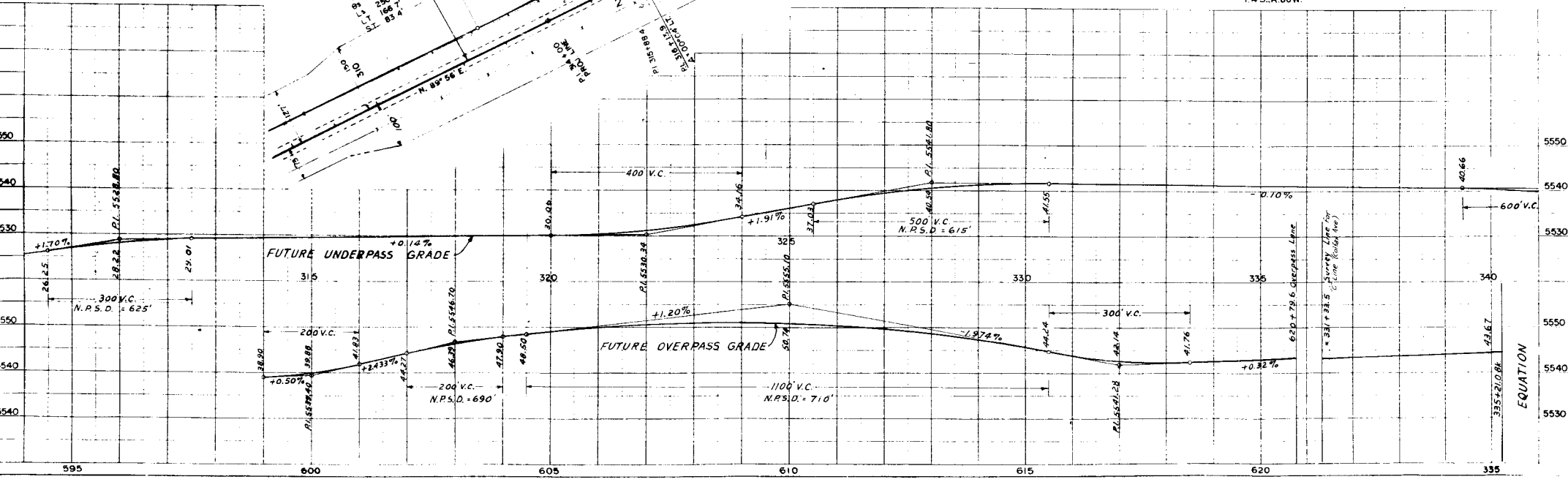
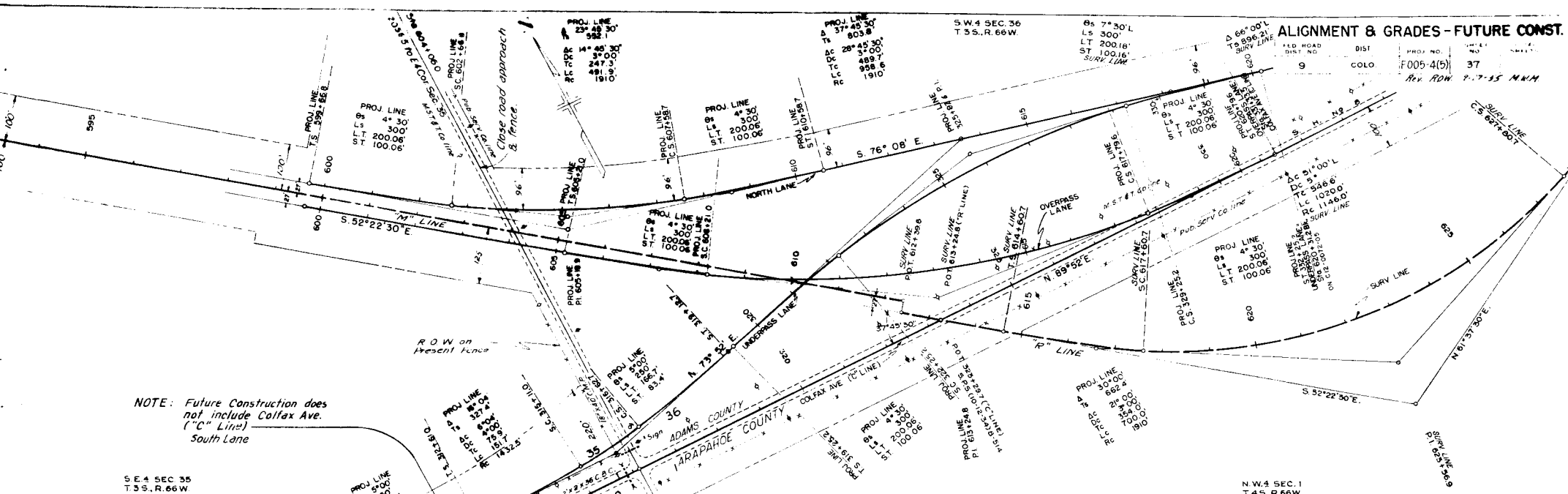


FED. ROAD DIV.	DISTRICT NO.	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	F 005-4(5)	36	

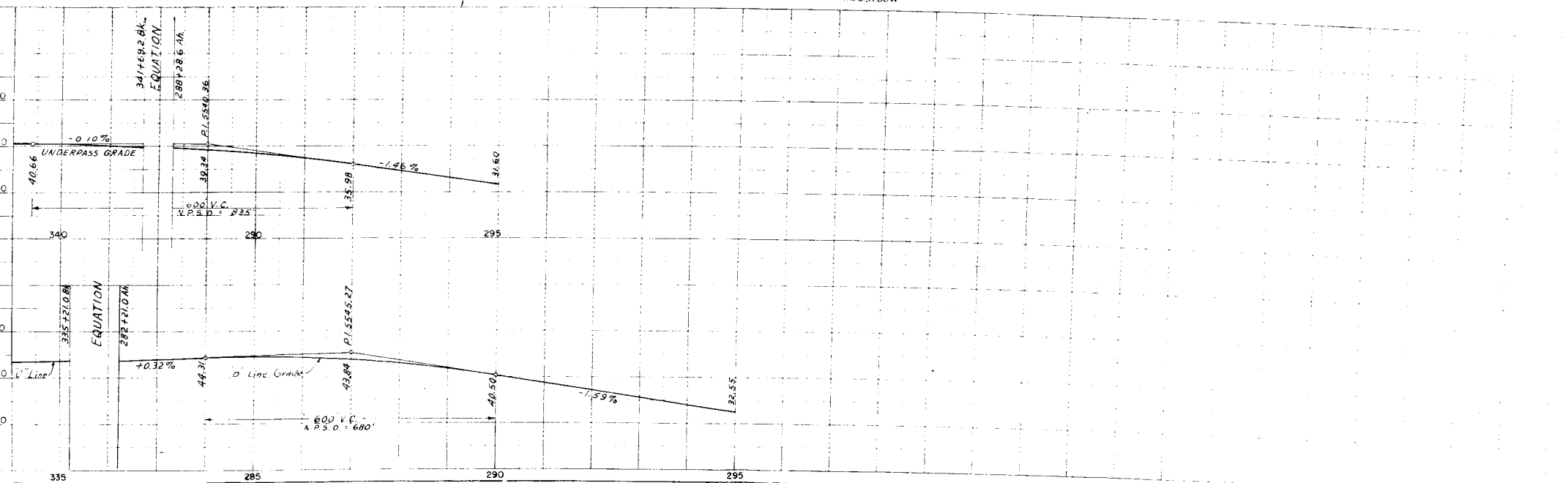


ALIGNMENT & GRADES - FUTURE CONST.

PROJ. NO. F005-4(b)
REV. ROW 7-7-35 M.W.M.



FED. R. AD. DIST. NO. 9 DIST. COLO. F005-4(5) 38



EXCAVATION
Cu. Yds. Area

EMBANKMENT
Area Cu. Yds.

EXCAVATION
Cu. Yds. Area

Area Cu. Yds.

PAGE NO. NO. SHEET
F025-121 33

SUMMARY OF EARTHWORK QUANTITIES

EXCAVATION

FROM CROSS SECTIONS	70,320	CU. YDS. ✓
BORROW	59,444	" " ✓
ESTIMATED FOR SUBSIDENCE	12,976	" " ✓
LIST OF STRUCTURES AS EXCAVATION	960	" " ✓
LIST OF STRUCTURES AS EMBANKMENT	5,179	" " ✓
ESTIMATED FOR CUT SLOPE TREATMENT	250	" " ✓
ESTIMATED FOR COVERING ENDS OF CULVERTS	96	" " ✓
TOTAL	149,225	CU. YDS.

EXCAVATION

BORROW (NET)

70,320	CU. YDS. ✓
59,444	" " ✓
TOTAL	129,764

EMBANKMENT

EMBANKMENT FROM X SECTIONS

x FACTOR

108,136	CU. YDS. ✓
129,764	CU. YDS. ✓

STATION YARD OVERHAUL

FROM MASS DIAGRAM	90,082	STA. YDS. ✓
ESTIMATED FOR SUBSIDENCE	90,806	" " ✓
ESTIMATED FOR STRUCTURE BACKFILL	8987	" " ✓
TOTAL	1,007,877	STA. YDS.

YARD MILE OVERHAUL

FROM MASS DIAGRAM	114,272	YD. MI. ✓
ESTIMATED FOR SUBSIDENCE	11,427	" " ✓
ESTIMATED FOR STRUCTURE BACKFILL	1565	" " ✓
TOTAL	127,267	YD. MI. ✓

UNCLASSIFIED DITCH EXCAVATION

INTERCEPTING DITCHES

* STATION	SIDE	CU. YDS.
316+00 to 341+00 N.L.	LH	250
FROM LIST OF STRUCTURES - 426		
TOTAL		676

* APPROXIMATE LOCATION MAY BE CHANGED DURING CONSTRUCTION