FED. ROAD DIST. NO.	STATE		SHEET NO.	TOTAL SHEETS
3	COLO.	SN FAP 210 C(I)	1	6

COLORADO
STATE HIGHWAY DEPARTMENT

PLAN AND PROFILE OF PROPOSED

S.N. FEDERAL AID PROJECTS NO. } S.N. F.A.P. 210-C (I)
STATE HIGHWAY NO. 4 }

MESA COUNTY

SCALES OF ORIGINAL TRACINGS
ON PLAN, 1 IN. = 100 FT.
ON PROFILE 1 IN. = 100 FT. HORIZONTAL
1 IN. = 10 FT. VERTICAL

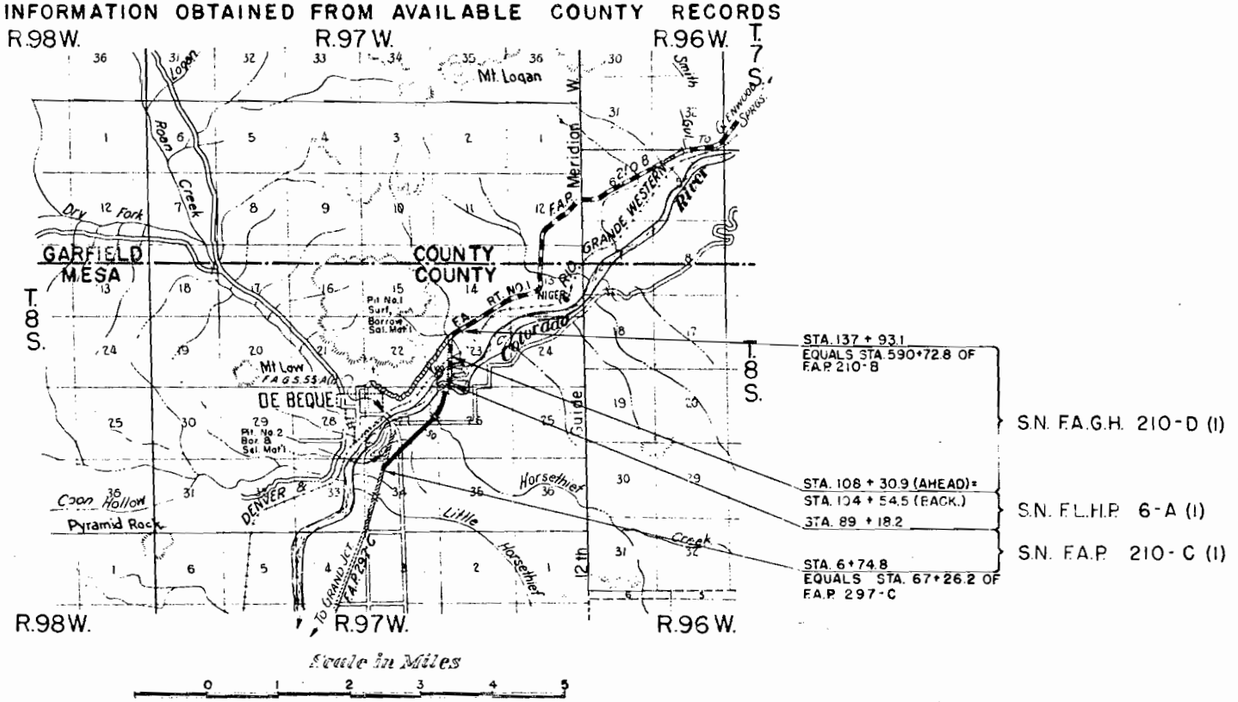
GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD

		FEET		MILES
GROSS LENGTH OF PROJECT	S.N. F.A.P. 210-C (I)	8,243.4	=	1.561
NET LENGTH OF PROJECT				

RIGHT OF WAY

INFORMATION OBTAINED FROM AVAILABLE COUNTY RECORDS

INDEX OF SHEETS



CONVENTIONAL SIGNS

CENTER LINE OF SURVEY 50
RIGHT OF WAY LINES
COUNTY LINE
SECTION LINES
ONE QUARTER SECTION LINES
QUARTER QUARTER SECTION LINES
RAILROAD TRACKS
BARBED WIRE FENCE
POLE LINES
PUBLIC LAND BOUNDARY

C.M. Anderson 12-5-41

Rev. Steel Wts for Simp. Str. Shapes 1-8-42 H.C.C.

FED. ROAD DIST. NO.	STATE	SN-F.A.P. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	210-C (1)	3	

Rev. 5-24-44 C.R.S. Summary.
Rev. 7-28-44 J.A.C. Fencing Summary.

TIMBER GUARD POSTS

STATION	CENTERS	NO. LEFT	NO. RIGHT
13 + 00 to 16 + 50	50'	8	
18 + 50 to 23 + 00	50'	10	
29 + 50 to 31 + 00	50'	4	4
35 + 00 to 36 + 00	50'	3	3
42 + 00	Culv	1	1
47 + 00	Culv	1	1
49 + 75 to 50 + 75	50'	3	3
52 + 75 to 53 + 75	50'	3	3
54 + 75 to 59 + 25	50'	10	
54 + 75 to 61 + 25	50'		14
61 + 51 to 61 + 62	Bridge	4	4
62 + 38 to 62 + 49	Bridge	4	4
62 + 99 to 63 + 49	50'	2	
62 + 99 to 84 + 49	50'		44
66 + 00 to 84 + 50	50'	38	
84 + 98 to 85 + 09	Bridge	4	4
TOTAL		180	

R.O.W. MARKERS

STATION	NO. SIDE LEFT	NO. SIDE RIGHT
6 + 74.8		1
17 + 32		1
18 + 10	1	
18 + 22	1	
29 + 06	1	
30 + 00		1
56 + 69	1	
56 + 73		1
61 + 44 (385')		1
61 + 56		1
61 + 60	1	
61 + 78 (250')	1	
62 + 19 (310')		1
62 + 37		1
62 + 46	1	
62 + 66 (250')	1	
65 + 50		1
65 + 74		1
67 + 76	1	
68 + 44	1	
72 + 86.5	1	1
74 + 00		1
79 + 00	1	
	1	
TOTAL	24	

FENCING REQUIREMENTS

STATIONS	SIDE	REMOVE FENCE LIN. FT.	BUILD B. WIRE FENCE LIN. FT.	BUILD B. WIRE GATES NO.
26 + 30	X	165		
29 + 90	X	150		
36 + 50	X	170		
47 + 00	X	55		
56 + 02	X	165		
66 + 15	X	225		
66 + 70	X	225		
67 + 25	X	350		
71 + 20	X	165		
81 + 55	X	110		
84 + 85	X	105		
56 + 80	X	165		
65 + 50	Lt			1 *
30 + 30 to 55 + 50	Lt.		2520	
56 + 25 to 61 + 60	Lt.		555 *	
62 + 45 to 67 + 00	Lt.		465 *	
67 + 00 to 71 + 00	Lt.		400	
71 + 00 to 81 + 40	Lt		1040 *	
29 + 35 to 56 + 10	Rt.		2735	
57 + 45 to 61 + 60	Rt.		435 *	
62 + 45 to 65 + 00	Rt.		275 *	
65 + 00 to 71 + 00	Rt.		600	
71 + 00 to 81 + 90	Rt.		1090 *	
50 + 90	Lt.			1
51 + 50	Rt.			1
65 + 50	Rt.			1
65 + 70	Rt.			1
67 + 75	Rt.			1
68 + 60	Lt.			1
75 + 50	L & R.			2 *
81 + 40 to 84 + 70	Lt.		330	
81 + 90 to 85 + 00	Rt.		310	
TOTAL NON F.A.			3860 *	3 *
TOTALS F.A.		2050	6895	6

*Non Participating in F.A.

SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO	ITEM	UNIT	SN-F.A.P. 210-C (1) STA. 6+74.8 TO STA. 89+18.2 ROADWAY	BRIDGES STA. 61+	BRIDGES STA. 85+	PROJECT TOTALS
10a	Clearing and Grubbing Entire Project	Lump Sum	•			•
12a	Removing Fence	Lin. Ft.	2,100			2,100
13c	Unclassified Excavation	Cu. Yd.	70,000			70,000
13d	Unclassified Ditch Excavation	Cu. Yd.	2,600			2,600
14a	Dry Rock Excavation (Str.)	Cu. Yd.	60		10	70
14b	Dry Common Excavation (Str.)	Cu. Yd.	510	170	400	1,080
14c	Wet Rock Excavation (Str.)	Cu. Yd.	10		360	370
14d	Wet Common Excavation (Str.)	Cu. Yd.	60	10	2,050	2,120
14e	Mechanical Tamping	Hour	380	50	500	930
15a	Rolling Embankments and Cuts	Hour	850			850
15b	Furnishing Roller	Roller Unit	4			4
15c	Wetting Embankments and Cuts	M. Gal.	1050			1050
18a	Station Yard Overhaul	Sta. Yd.	398,000			398,000
18b	Yard Mile Overhaul	Yd. Mile	9,400			9,400
26a	Gravel or Crushed Rock Surfacing	Ton	9,100			9,100
26c	Overhaul of Surfacing	Ton Mile	600			600
42a	Untreated Bridge Timber	M ft. b.m.		1.5	0.2	1.7
42b	Treated Bridge Timber	M ft b.m.		34.0		34.0
43	Asphalt Plank Wearing Surface	Sq. Ft.		2,001		2,001
46a	Class "A" Concrete	Cu. Yd.	69		1,230	1,299
46b	Class "B" Concrete	Cu. Yd.	97			97
46c	Class "A" Concrete (Handrails)	Cu. Yd.			2	2
47	Reinforcing Steel	Lb.	6,600		134,900	141,500
48	Structural Steel	Lb.			745,600	745,600
52b	18" Reinf. Concrete Culvert Pipe (Std. Strength)	Lin. Ft.	668			668
52c	24" Reinf. Concrete Culvert Pipe (Std. Strength)	Lin. Ft.	492			492
52e	36" Reinf. Concrete Culvert Pipe (Std. Strength)	Lin. Ft.	188			188
52g	48" Reinf. Concrete Culvert Pipe (Std. Strength)	Lin. Ft.	120			120
60a	Treated Timber Piling	Lin. Ft.		1,836		1,836
60e	Metal Pile Shoes	Each		66		66
64	Dry Rubble Slope and Ditch Paving (18" thick)	Sq. Yd.		68		68
76a	Barbed Wire Fence with Treated Wooden Posts	Lin. Ft.	6900			6900
76g	Barbed Wire Gates	Each	6			6
80b	Bronze Name Plates	Each			2	2
81a	Project Markers	Each	2			2
81b	Right of Way Markers	Each	24			24
89a	Drain Pipe (Concrete Floor) (3'x5'-0")	Each			24	24
89b	Drain Pipe (Timber Floor) (3'x2'-4")	Each		6		6
91	Pipe Railing (3" Diam.)	Lin. Ft.			806	806
92	Timber Guard Posts	Each	180			180
15z	Furnishing Flat Wheeled Roller	Lump Sum	•			•
15y	Rolling with Flat Wheeled Roller	Hour	100			100
	FORCE ACCOUNT Raise Power Lines, Sta. 30+ and 56+69 (Work by Grand Valley Power Lines, Inc., Forces.)		•			•
	Right of Way, Entire Project	Lump Sum	•			•
	NON PARTICIPATING IN F.A.					
76b	Barbed Wire Fence, Treated Wooden Posts	Lin. Ft.	3900			3900
76g	Barbed Wire Gates	Each	3			3

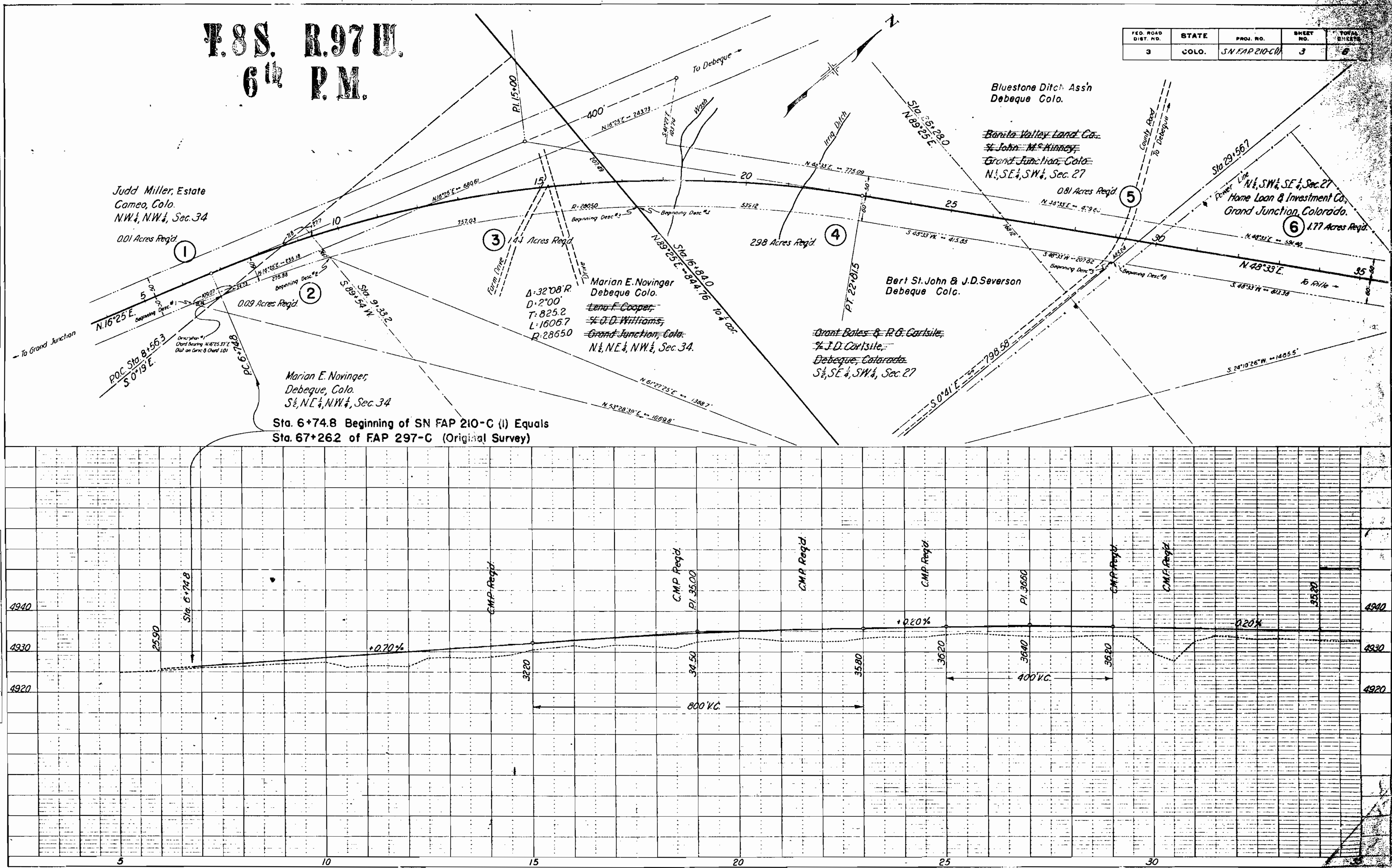
Rev. 2-15-45 - R.R.O. - Area Tr. #11

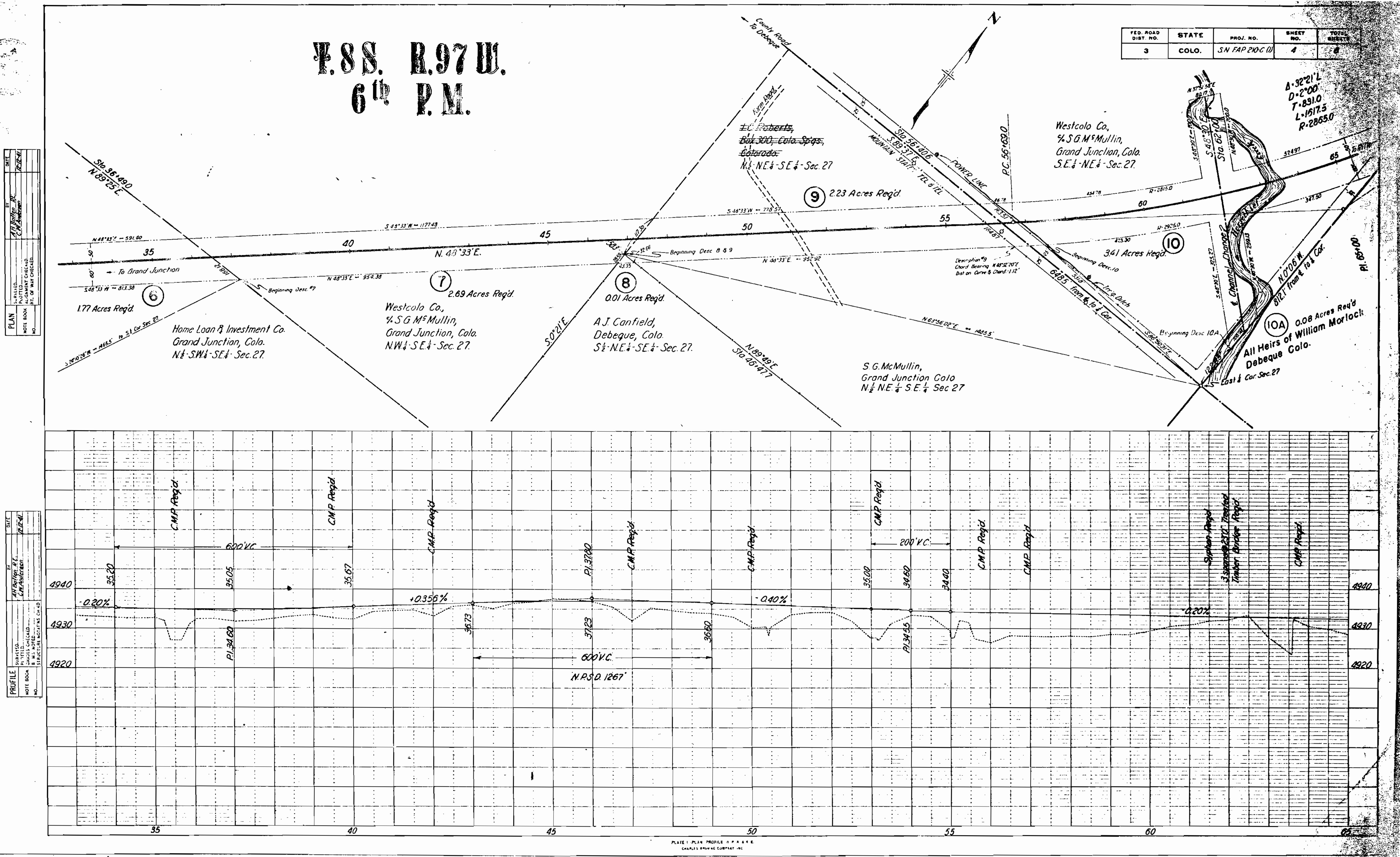
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	SN-FAP 210-C	2	

6th PRIN. MER. — SN-FAP 210-C (1) — MESA COUNTY

NO.	OWNER	LOCATION	AREA IN ACRES		ASSESSED VALUE			CONST. IMPR.		OWNER'S DESIRE	APPRAISAL BOARD	ESTIMATED DAMAGE	COURT DEPOSIT REQ'D.	REMARKS
			TOTAL	REQ'D.	IMPR'S.	LAND	PARCEL	REMOVE	REHABIL.					
1	Judd Miller Estate	NW¼ NW¼ Sec. 34 T8S R97W.	60	0.01		60 gra. 210								
2	Marian E. Novinger	S½ NE¼ NW¼ Sec. 34 T8S R97W	20	0.09		5 seep 15 cult. 100								
3	~~Long F. Cooper~~ Marian E. Novinger	N½ NE¼ NW¼ Sec. 34 T8S R97W	20	1.44		20 gra. 100								
4	~~Gran Estes & R.C. Corrigis~~ Bert St. John & J.D. Severson	S½ SE¼ SW¼ Sec. 27 T8S R97W.	19	2.98		19 gra. 180								
5	~~Bluestone Valley Land Co.~~ Bluestone Ditch Ass'n	N½ SE¼ SW¼ Sec. 27 T8S R97W	18	0.81		15 cult. 620 3 gra. 10								
6	Home Loan & Investment Co.	N½ SW¼ SE¼ Sec. 27 T8S R97W	10	1.77		10 gra. 90								
7	Westcolo Company	NW¼ SE¼ Sec. 27 T8S R97W	40	2.69		5 cult. 230 35 gra. 100								
8	A. J. Canfield	S½ NE¼ SE¼ Sec. 27 T8S R97W	20	0.01		20 gra. 200								
9	~~J.C. Roberts~~ S.G. McMullin	N½ NE¼ SE¼ Sec. 27 T8S R97W	20	2.23		5 gra. 30 15 cult. 300								
10	Westcolo Company	SE¼ NE¼ Sec. 27 T8S R97W	45	3.41	730	35 cult. 1490 10 gra. 20								
11	Orville A. Kelly	W½ NW¼ Sec. 26 T8S R97W	120	9.07	50	40 cult 600 3 seep 43 gra 230								
10a	All Heirs of William Morlock	SE¼ NE¼ Sec. 27 T8S R97W	1	0.08		lane								
10b	All Heirs of William Morlock	SE¼ NE¼ Sec. 27 T8S R97W	1	0.17		lane								
TOTAL														

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	SN FAP 210-C(I)	3	6

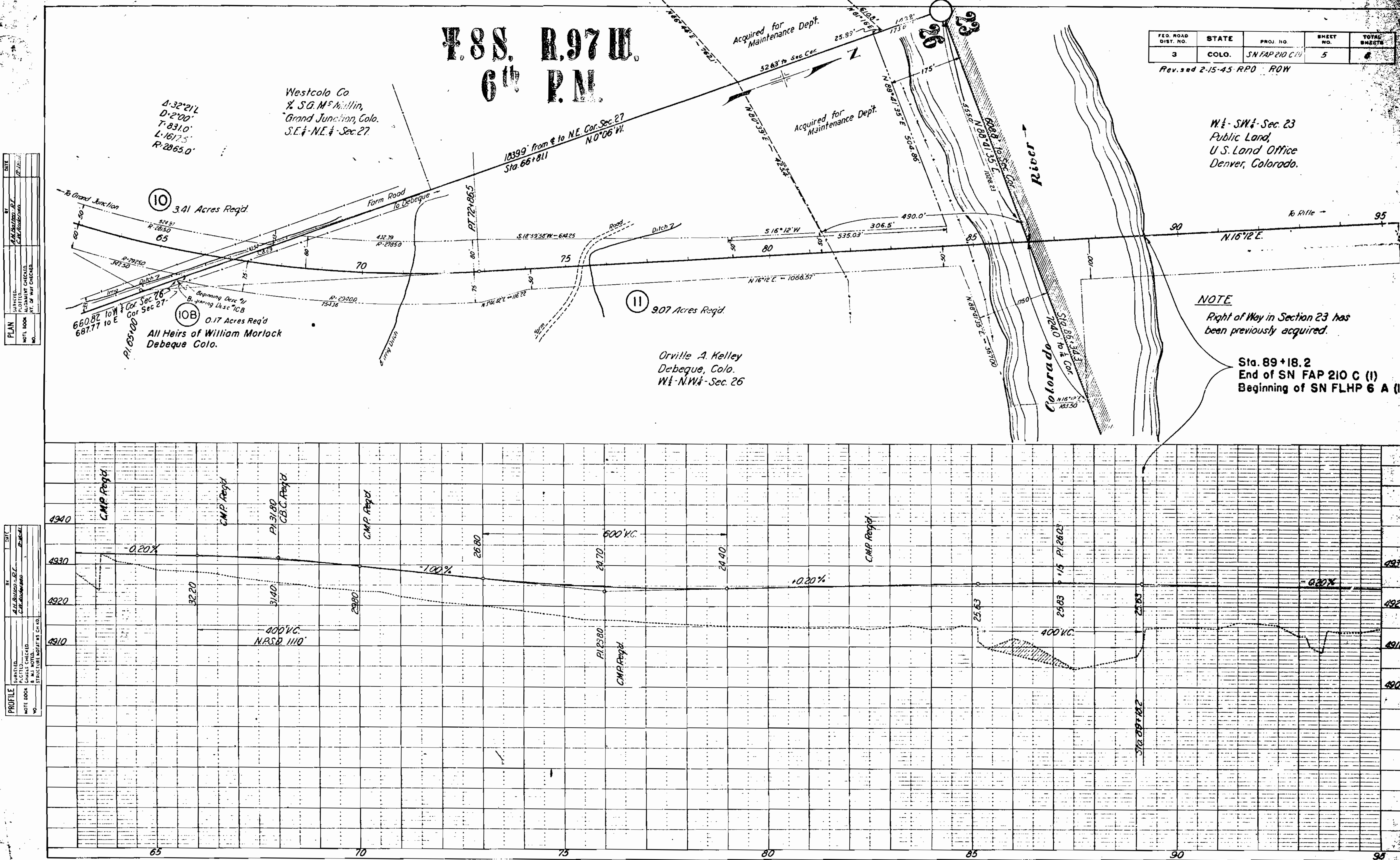




FED. ROAD DIST. NO. 3
STATE COLO.
PROJ. NO. S.N. FAP 210-C (1)
SHEET NO. 4
T. 8 S. R. 97 W.
6th P.M.
PLAN
SURVEYED
PLOTTED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
NOTE BOOK
NO.
BY
A.H. Batten R.E.
C.W. Andersen
DATE
12-12-41
Sta. 36+49.0
N. 89°25' E.
N 48°33' E – 591.40
S 48°33' W – 1177.48
N. 48°33' E.
To Grand Junction
S 48°33' W – 813.38
N 48°33' E – 954.38
Beginning Desc. #7
6
1.77 Acres Req'd.
Home Loan & Investment Co.
Grand Junction, Colo.
N.½-S.W.¼-S.E.¼-Sec. 27.
S 28°10'26" W – 1466.5' to S.¼ Cor. Sec. 27
7
2.69 Acres Req'd.
Westcolo Co.,
% S.G. McMullin,
Grand Junction, Colo.
N.W.¼-S.E.¼-Sec. 27.
S.0°21' E.
8
0.01 Acres Req'd.
A.J. Canfield,
Debeque, Colo.
S½-N.E.¼-S.E.¼-Sec. 27.
Beginning Desc 8 & 9
N 48°33' E. – 952.92
N. 89°49' E.
Sta. 46+47.7
County Road To Debeque
Farm Road
L.C. Roberts,
Box 300, Colo. Spgs.
Colorado.
N.½-N.E.¼-S.E.¼-Sec. 27
9
2.23 Acres Req'd.
S 48°33' W – 778.57
N 63°56'02" E – 1485.5'
S.G. McMullin,
Grand Junction Colo
N.½ N.E.¼ S.E.¼ Sec 27
Sta. 56+40.6
S. 89°37' E.
MOUNTAIN STATES TEL & TEL
POWER LINE
P.C. 56+69.0
Description #9
Chord Bearing N 48°52'20" E
Dist on Curve & Chord: 1.12'
Beginning Desc. 10
Irrig. Ditch
648.5' from ℄ to ¼ Cor.
S 86°50'31" E.
Westcolo Co.,
% S.G. McMullin,
Grand Junction, Colo.
S.E.¼-N.E.¼-Sec. 27.
R-2815.0
R-2925.0
10
3.41 Acres Req'd.
N
Δ-32°21' L
D-2°00'
T-831.0
L-1617.5
R-2865.0
S 48°30' E
Sta. 62+00
℄ Channel Change
Horse Tail
N.0°06' W.
812.1' from ℄ to ¼ Cor.
Beginning Desc 10A
10A
0.08 Acres Req'd
All Heirs of William Morlock
Debeque Colo.
East ¼ Cor. Sec. 27
P.I. 65+00
To Rifle
PROFILE
SURVEYED
PLOTTED
GRADES CHECKED
B.M.'s NOTED
STRUCTURE NOTATIONS CHKD
A.H. Batten R.E.
C.W. Andersen
12-12-41
4940
4930
4920
-0.20%
35.20
C.M.P. Req'd.
600' V.C.
35.05
P.I. 34.60
C.M.P. Req'd.
35.67
C.M.P. Req'd.
+0.356%
36.73
P.I. 37.80
37.23
C.M.P. Req'd.
600' V.C.
N.P.S.D. 1267'
36.60
C.M.P. Req'd.
-0.40%
C.M.P. Req'd.
200' V.C.
35.00
34.60
P.I. 34.55
34.40
C.M.P. Req'd.
C.M.P. Req'd.
-0.20%
Syphon Req'd
3 spans @ 23'0" Treated Timber Bridge Req'd
C.M.P. Req'd.
35
40
45
50
55
60
65
PLATE 1 PLAN PROFILE
CHARLES BRUNING COMPANY INC

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	SN FAP 210 C(1)	5	6

Revised 2-15-45 RPO ROW

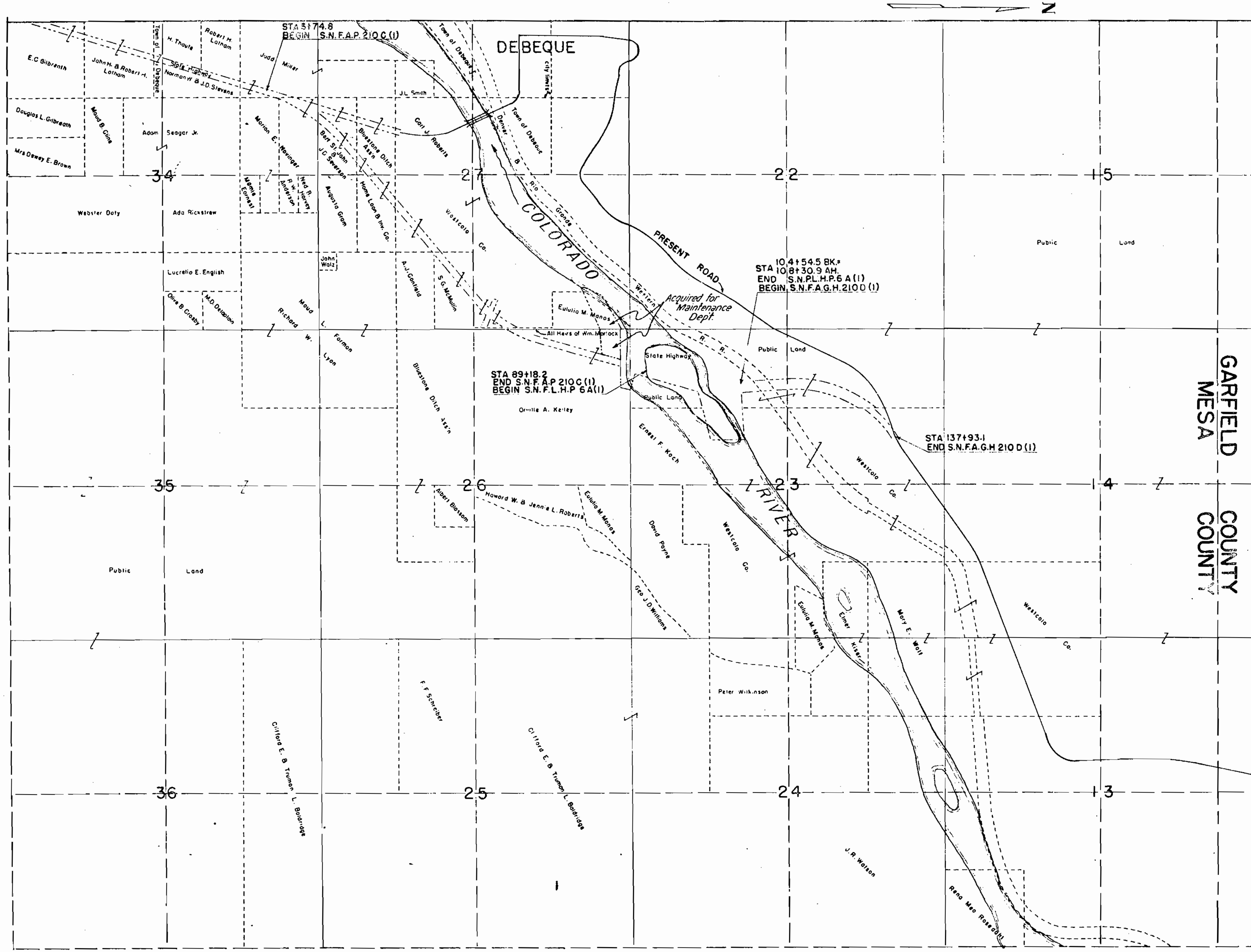


FED. ROAD DIST. NO	STATE	S.N FED. AID PROJ. NO	SHEET NO	TOTAL SHEETS
3	COLO	210 C (1)	6	6

Revised 2-15-45 R.P.O. R.O.W.

PLAT
OF PART OF
T.8S. R.97W. 6th P.M.
SHOWING CLAIMANTS WITH REGARD TO RIGHT OF WAY FOR PROJECT S.N.F.A.P. 210 C (1)

SCALE 1 INCH = 800 FEET



June 1944

FED. ROAD DIST. NO.	STATE	S.N.-F.A.P. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	210-C(1)	1	

REV 5-24-44-E.P.

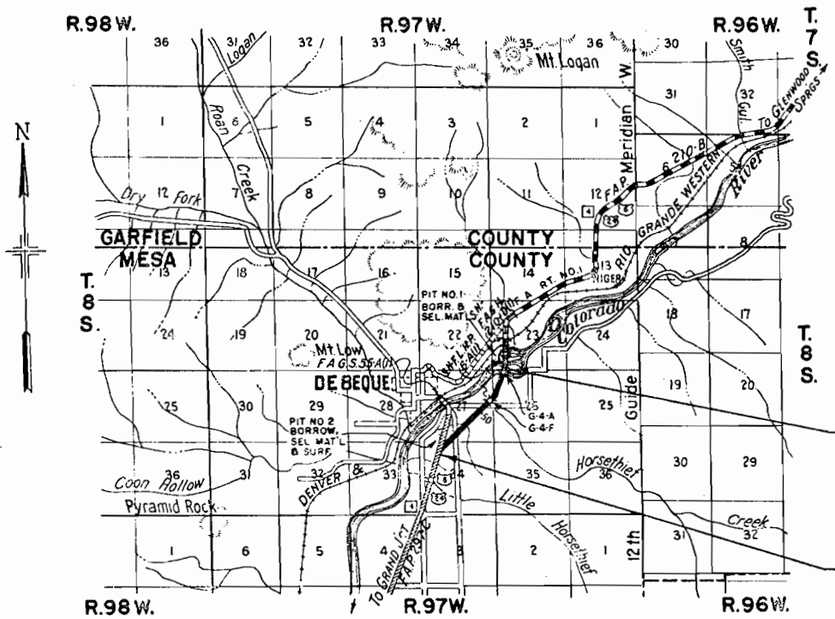
COLORADO
STATE HIGHWAY DEPARTMENT

PLAN AND PROFILE OF PROPOSED
FEDERAL AID PROJECT NO. S.N.-F.A.P. 210-C(1)
STATE HIGHWAY NO. 4

MESA COUNTY

SCALES OF ORIGINAL TRACINGS
ON PLAN, 1 IN. = 100 FT.
ON PROFILE { 1 IN. = 100 FT. HORIZONTAL / 1 IN. = 10 FT. VERTICAL
GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD
GROSS LENGTH OF PROJECT
NET LENGTH OF PROJECT 8,243.4 FT. = 1.561 MI.

INDEX OF SHEETS



STA. 89+18.2
END OF S.N.-F.A.P. 210-C(1) =
BEGINNING OF S.N. F.L.H.P. 6-A(1)

STA. 6+74.8
BEGINNING OF S.N.-F.A.P. 210-C(1) =
STA. 67+26.2 OF F.A.P. 297-C

CONVENTIONAL SIGNS

CENTER LINE OF SURVEY
RIGHT OF WAY LINES
COUNTY LINE
TOWNSHIP OR RANGE LINES
SECTION LINES
ONE QUARTER SECTION LINES
RAILROAD TRACKS
BARBED WIRE FENCE
POLE LINES

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

J.R. Cheney, Division Engineer, at Grand Junction.
A.H. Batten, Resident Engineer, at Grand Junction

RECOMMENDED FOR APPROVAL
ASSISTANT ENGINEER DATE 12-22-44

APPROVED
STATE HIGHWAY ENGINEER DATE

RECOMMENDED FOR APPROVAL
DISTRICT ENGINEER
PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY

RECOMMENDED FOR APPROVAL
CHIEF WESTERN REGION
PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY

APPROVED
COMMISSIONER
PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY

FED. ROAD DIST. NO.	STATE	SN-FAP 210-C(1)	SHEET NO.	TOTAL SHEETS
3	COLO.		2	

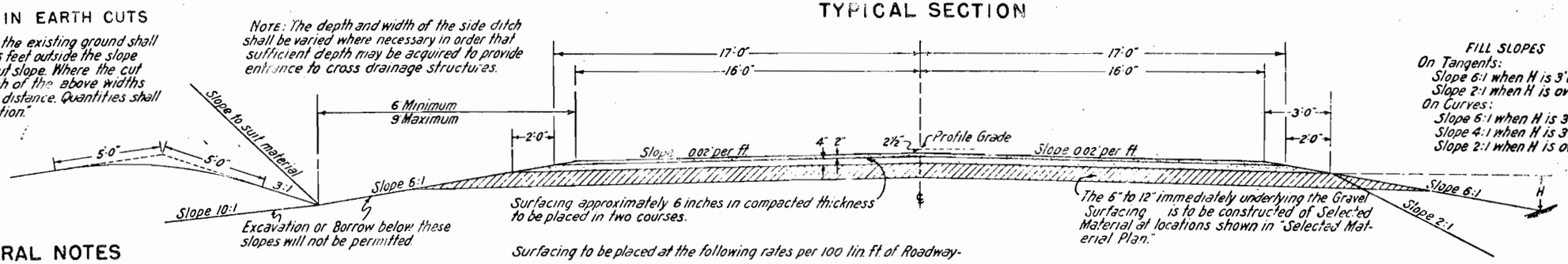
REV. 5-24-44-E.P.- SURFACING PLAN

TYPICAL CROSS SECTION OF IMPROVEMENT

CUT SLOPE TREATMENT IN EARTH CUTS

The intersection of cut slopes with the existing ground shall be rounded in earth cuts, beginning 5 feet outside the slope stake and extending 5 feet down the cut slope. Where the cut slope is less than 5 feet, reduce each of the above widths of slope treatment to the actual slope distance. Quantities shall be included in "Unclassified Excavation."

TYPICAL SECTION



Surfacing approximately 6 inches in compacted thickness to be placed in two courses.

The 6" to 12" immediately underlying the Gravel Surfacing is to be constructed of Selected Material at locations shown in "Selected Material Plan."

FILL SLOPES

On Tangents:
Slope 6:1 when H is 3' or less
Slope 2:1 when H is over 3'
On Curves:
Slope 6:1 when H is 3' or less
Slope 4:1 when H is 3' to 10'
Slope 2:1 when H is over 10'

GENERAL NOTES

This Project is to be constructed in conformity with the Standard Specifications of the Colorado State Highway Department adopted June 1, 1940.

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

All roadway excavation required to construct the project is to be obtained as indicated on the plans. Quantities involved beyond the limits of ditch as shown on the Typical Section, either noted on the profile as "Borrow" or on the Tabulation of Structures as "Excavation" and "Embankment" are to be classified and paid for as "Unclassified Excavation."

These quantities are to be staked as part of the original excavation at locations indicated on the plans. Slope stakes beyond the limits of the Typical Section are subject to change by the Engineer to fit embankment requirements actually encountered on construction.

If, after cut slopes are staked, it is found that the material will stand on a steeper slope, rights are reserved to change cut slopes after cuts have been opened up by the Contractor.

Except as noted on the plans, overhaul will be paid for as measured along center line of project.

All curves are to be superelevated and widened as provided by the standard superelevation sheet.

All side approach roads to the project shall be constructed in conformity with details shown on Standard M-208-B, and shall be gravel surfaced with a 4 inch thickness of Gravel or Crushed Rock Surfacing extending approximately 30 feet from edge of highway. Estimated tonnage of surfacing material required in this operation is shown in "Tabulation of Structures."

The alignment, grade lines and drainage structures shown on Plans are subject to adjustment by the Engineer in the field to meet construction requirements, after approval by the Denver Office of the Department.

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

All wire fences including line posts, shall be placed approximately six (6) inches inside the boundary of the highway right of way as shown on the plans.

The ends of all cuts shall be flared and backslopes flattened to discharge side ditch drainage away from the base of adjacent fill slopes. The transition of flattened backslopes and ditch shall be done in such a manner that a uniform appearance of slope and ditch results, and so as to promote the growth of native groundcover.

At all places on the project, where the new work lies along the present traveled road, the Contractor shall, at his own expense, prosecute construction in such a manner that traffic may readily pass over the road. The Contractor shall also at his own expense construct and maintain in safe condition, all temporary approaches to and crossings of intersecting roads.

The entire Project shall be cleared and grubbed in conformity with the requirements of the Standard Specifications, except that such trees or shrubs as the Engineer may designate, shall be left in place and protected from damage during construction operations.

All Concrete Pipe Culverts shall be provided with Type "A" headwalls at inlet and outlet ends unless otherwise noted on plans. The ends of the Pipe Culverts shall be covered with approximately 6 inches of Embankment material in such a manner that a minimum of pipe shall be exposed in the completed work. This shall be accomplished by warping embankment slopes around and adjacent to the culvert.

SURFACING PLAN

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

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

PLACE REQUIRED STA TO STA.	SOURCE	QUANTITY TONS AVAILABLE	QUANTITY TONS REQUIRED 2" TOP	QUANTITY TONS REQUIRED 4" BOTT.	OVERHAUL TON MILES
6+74.8 to 61+65 BRIDGE	Pit No 2, Surfacing 800 Ft left of Sta 17+00 in S.W.4 of the S.W.4 Sec. 27, T.8S., R.97W.		1867	4063	F.H.
62+35.5 to 85+11.7			774	1685	556
APPROACHES			200	410	41
TOTALS			2841	6158	597

GENERAL NOTES (CONT.)

Intercepting ditches shall be placed on light grades, (approx. 1%) following the ground contour and where possible shall be so constructed that the direction of flow will be away from the Roadway, in order to spread runoff and thereby avoid erosion. This work shall be done in accordance with the methods shown on Standard Sheet No. M-107-B included in the plans. These ditches shall be constructed at locations indicated and as staked by the Engineer.

BRIDGE WIDENING-
Roadway Embankment at Bridge Approaches shall be so constructed that the finish point of the subgrade shoulder is a minimum of 3 ft outside the curb line of the Bridge where widening of the section is necessary to achieve this result, it shall take place gradually over a distance of 300 feet. This is done to accommodate guard fence or guard posts at Bridge Approaches.

TABULATION OF SUBGRADE EXCAVATION & SELECTED MATERIAL

At the locations shown below, the 6" to 12" immediately underlying the Surfacing, is to be excavated and backfilled with Selected Material. Approximate quantities involved in this operation, together with disposition of excavated Material and sources of Selected Material, are shown in the following tabulation.

STA. TO STA.	SUBGRADE EXCAV FOR SELECT CU YDS.	DISPOSITION	THICKNESS OF SEL. MAT. INCHES	SELECTED MATERIAL REQUIRED CU. YDS.	SOURCE	OVERHAUL STA. YDS	OVERHAUL YD. MI.
6+74.8 to 10+00		(All Subgrade excavation to be used in roadway embankment.)	12	611	Pit No 2	6721	54
10+00 to 45+00			9	4,760	" " "	50,184	754
45+00 to 61+65			9	2,265	Pit No 1	24,915	1316
BRIDGE							
62+35.5 to 71+20			9	1,204	Pit No 1	13,244	393
71+20 to 89+18.2			No Selected Material required				
TOTALS				8840		95,064	2517

Pit No. 1, located 200 Ft. left of Sta. 90+50 to 104+00 on R.O.W.
Pit No. 2, located in the S.W.¼ of the S.W.¼ Sec. 27, T.8 S., R. 97 W. - 800' left Sta. 17+00.

FED. ROAD DIST. NO.	STATE	SN-FAP 210-C(1)	SHEET NO.	TOTAL SHEETS
3	COLO.		4	

Rev 5-23-44-CKS Structures

TABULATION OF STRUCTURES

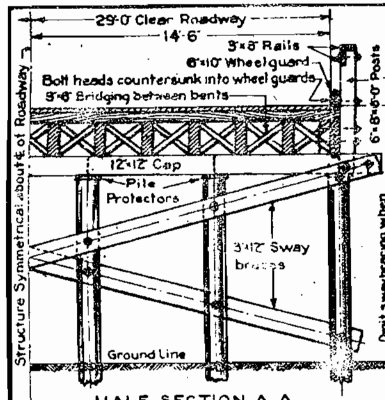
STATION	DESCRIPTION	REMOVE STRUCT.	UNCLASSIFIED EXCAVATION CU. YDS.		UNCLASSIFIED DITCH EXCAVATION	STRUCTURAL EXCAVATION CU. YDS.				MECHANICAL TAMPING	GRAVEL SURF.	CONCRETE CU. YDS.		REINF. STEEL	CONCRETE CULVERT PIPE				MISCELLANEOUS
		NO.	EXCAV.	EMB.	CU. YDS.	*				HOURS	TONS	CL "A"	CL "B"	LBS.	18"	24"	36"	48"	
6+74.8	Project Marker																		Project Marker
7+00 to 55+60	Intercepting Ditch, Rt				900														
9+	Road Approach, Lt			200							150								
14+00	Cross Culvert, Inlet and Outlet				10	25				11			3.8			52			
15+25	Side Drain (No Hdwlls) and Road Approach, Rt.			30		5				4	20				29				
17+	Road Approach, Lt.			500							200								
18+30	Remove 18" Muck and Backfill with Rock		10	20															
18+50	Cross Culvert, Inlet and Outlet				10	30				12			3.8			60			
21+55	Cross Culvert, Ditch Change, Rt and Lt				30	35				12			3.8			56			
24+50	Cross Culvert, Inlet and Outlet				30	40				11			3.8			52			
29+20	Road Approaches, Rt and Lt.			100							50								
30+30	Cross Culvert, Inlet and Outlet				5	30				34			13.8				55		
35+50	Cross Culvert, Inlet and Outlet				10	20				22			7.9			56			
39+50	Cross Culvert, Inlet and Outlet				25	25				11			3.8		52				
42+00	Cross Culvert, Inlet and Outlet				25	20				13			3.8		64				
47+00	Cross Culvert, Inlet and Outlet				40	40				26			7.9			68			
50+00	Cross Culvert, Inlet and Outlet				10	15				11			3.8		52				
51+15	Road Approaches, Rt. and Lt.			50							30								
53+15	Cross Culvert, Inlet and Outlet				10	20				25			7.9			64			
55+75	Cross Culvert, Inlet and Outlet				10	20				40			13.8				65		
56+50	Road Approaches, Rt. and Lt.			500							100								
56+95	Side Drain, Rt. (No Hdwlls)					5				7					32				
56+84	Cross Culvert, Inlet and Outlet				25	30				17			2.4		124				
61+50	Cross Culvert, Ditch Change, Rt and Lt				15	25				7			2.4		52				
61+65 to 62+35.5	Tr. Timber Bridge, 3 spans @ 23' (Details on Sh. No. 5)				(QUANTITIES IN SUMMARY)														
	Channel Change, Rt. & Lt.		⊕3500																
63+70	Cross Culvert, Inlet and Outlet				40	30				7			2.4		52				
65+50	Road Approaches, Rt and Lt.			100							30								
66+55	Cross Culvert, Inlet and Outlet				5	20				18			2.4		136				
68+00	6'x7'x 58' Concrete Box Culvert (Std M101-B) Inlet & Outlet				150	130				33		68.6		6592					
67+75 to 74+50	Drain Ditches, Rt and Lt.				1050														
71+21	Cross Culvert, Ditch Change, Rt and Lt.				10	25				19			2.4		148				
75+50	Road Approach, Rt and Lt., Side Drain Rt (No Hdwlls)			100						5	30				32				
76+40	Cross Culvert, Ditch Change, Rt. & Lt				25	20				9			2.4		64				
77+00 to 85+00	Intercepting Ditch, Rt.				130														
82+50	Cross Culvert, Inlet and Outlet				10	15				15			3.8			72			
83+117 to 89+18.2	Steel Through Truss, 2 spans at 200'				(QUANTITIES IN SUMMARY)														
	(Details on Sheets No. 6 to 10) Chan. Chg. Lt. & Rt		⊕15,000																
89+18.2	Project Marker																		Project Marker
30+ & 56+69	Raise Power Line				FORCE ACCOUNT (Work by Grand Valley Rural Power Lines, Inc., Forces)														
71+21	2-18"x 8' Culverts in drain ditch, Rt and Lt.	(No Hdwlls)				5				5					32				
	TOTALS		10	1600	2575	630				374	610	68.6	96.1	6592	668	492	188	120	

★ Structural Excavation is estimated to be 10 % Rock and 90 % Common, each of which is estimated to be 10 % Wet and 90% Dry.
⊕ Included in profile quantities for payment

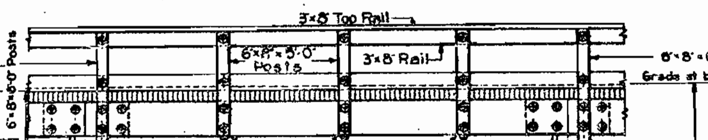
STANDARD P-117-BH-D

FED. ROAD DIST. NO.	STATE	SN. F.A.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	210-C(1)	5	

Revised 6-1-40 W.W.D. Changed to 1940 Specifications.
REV 4-1-41. W.B.S. Mechanical Tamping.



HALF SECTION A-A.
TYPICAL BENT AND SPAN SECTION



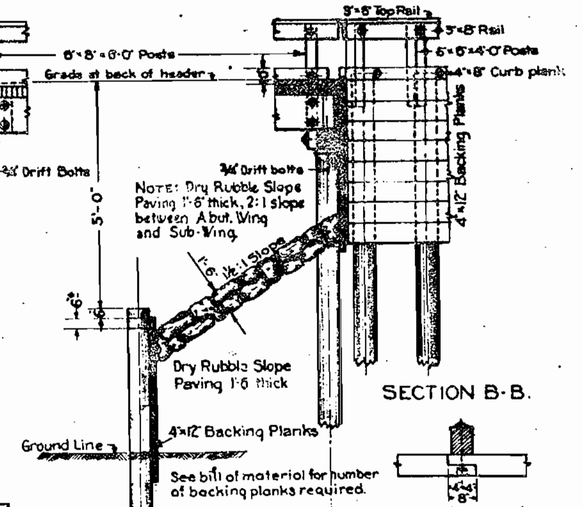
All intermediate posts to be flush with bottom of stringers

NAILING DIRECTIONS

RAILS TO POSTS,- 2-40d nails per rail per post.
STRINGER BLOCKING,- 4-40d nails per block.
STRINGER BRIDGING,- 4-40d nails per piece of bridging.
STRINGERS TO CAPS,- 2-40d nails per stringer per cap.
SWAYBRACES TO PILES,- 2-7" wire spikes per brace per pile, and bolts as called for.
BULKHEAD TO CAPS AND STRINGERS,- 2-7" wire spikes per bulkhead per stringer.
BACKING PLANKS TO PILES,- 2-7" wire spikes per plank per pile.
SWAYBRACES TO CAPS,- 2-7" wire spikes per brace per cap, and bolts as called for.
FLOOR PLANKS TO FLOOR PLANKS,- 1-40d. nail at 12" centers and toe nail planks to stringers with 1-30d nail per stringer, every other floor plank.
ASPHALT PLANK TO LAMINATED WOOD FLOOR,- 1-30d. galv. barbed nail per corner per plank and 30d. galv. barbed nails at 12" centers along each edge of plank, nails along edges of plank to stagger nails along opposite edge of same plank. ★
All 30d galvanized nails in asphalt plank to be barbed.

★ Based on 8"x6'-0" Size Planks.

TYPICAL ELEVATION OF SPAN.

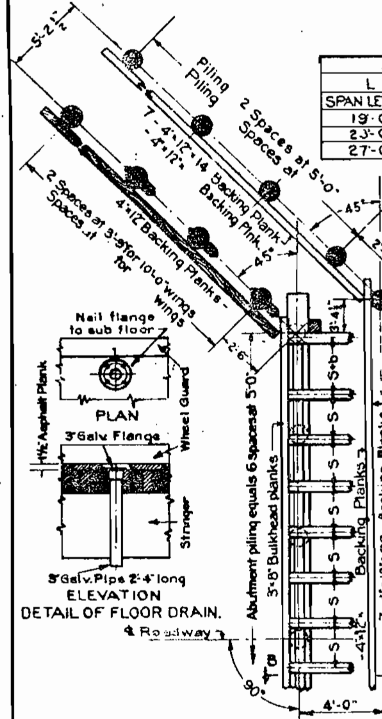


SECTION B-B.

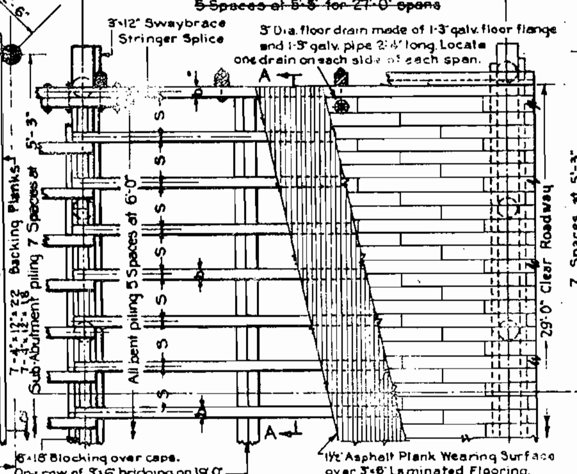
Countersink bolt heads into wheel guards
PLAN VIEW
DETAILS OF WHEEL GUARD SPLICE

STRINGER SPACING			STRINGER BLOCKING	
L	S	NUMBER OF	ABUTMENTS	BENTS
SPAN LENGTH	MULTIPLE SPAN	STRINGERS	MULTIPLE SPAN	MULTIPLE SPAN
19'-0"	2'-2 3/4"	14	12 Pcs. 1'-8 3/4", 1 Pc. 2'-2 3/4"	13 Pcs. 1'-2 3/4"
23'-0"	2'-2 3/4"	14	12 Pcs. 1'-8 3/4", 1 Pc. 2'-2 3/4"	13 Pcs. 1'-2 3/4"
27'-0"	2'-2 1/2"	14	12 Pcs. 1'-6 1/2", 1 Pc. 2'-2 1/2"	11 Pcs. 10 1/2", 2 Pcs. 1'-0 1/2"

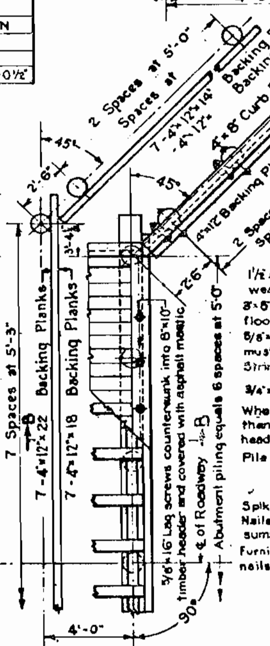
SPACING OF HANDRAIL POSTS
~~4 Spaces at 4'-9" for 19'-0" spans~~
4 Spaces at 5'-9" for 23'-0" spans
~~5 Spaces at 5'-5" for 27'-0" spans~~



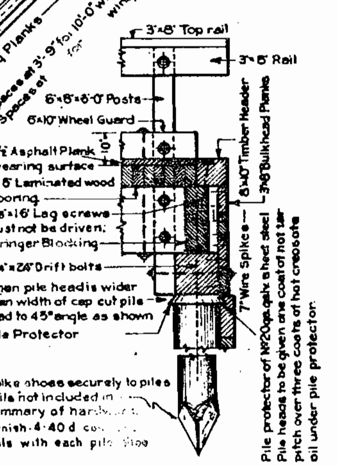
SECTIONAL HALF PLAN OF ABUTMENT



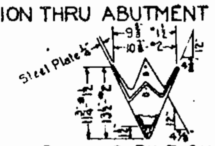
TYPICAL SECTIONAL HALF PLAN OF SPANS



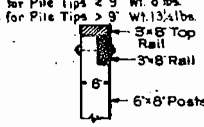
HALF PLAN OF ABUTMENT



SECTION THRU ABUTMENT

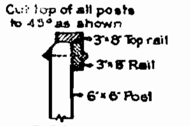


PLAN OF PILE SHOE
Furnish American Pulley Co's. Pile Shoe or Equiv.
Nº 1½ Shoe for Pile Tips 2" Wt. 8 lbs.
Nº 2 Shoe for Pile Tips 9" Wt. 13½ lbs.



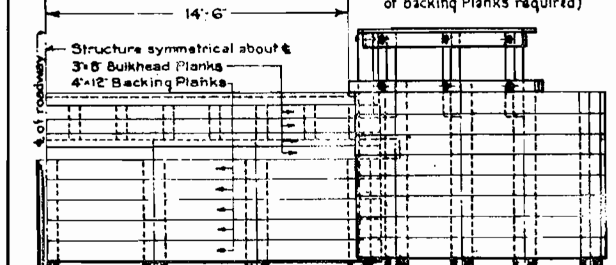
DETAIL OF HANDRAIL POSTS SUPERSTRUCTURE

Cut top of all posts to 45° as shown



DETAIL OF HANDRAIL POSTS WINGS.

HALF ELEVATION (See Bill of Material for number of Backing Planks required)



GENERAL NOTES

All work shall be done according to the standard specifications of the Colorado State Highway Department. Adopted June 1-1940.
All caps must be surfaced on vertical grain face.
All timber and piling to be treated or untreated as shown in bills of material.
All timber and piling shall be dense southern yellow pine or westcoast douglas fir.
All caps shall be edged to an even depth before treatment. The ends of all stringers shall be dapped on one edge before treatment, to obtain an even depth over caps.
All cut surfaces or bored holes in treated timber or piles shall be thoroly saturated with hot creosote oil.
All piling supporting caps shall be covered with galvanized pile protectors as specified, all other piling tops shall be saturated with hot creosote oil and covered with a thick layer of heavy asphalt or tar.
Joints in top handrail must be staggered with joints in side rail.
All handrailing and posts above the wheelguards shall be painted white and all handrail posts below the top of wheel guards shall be painted black as specified.
All bolts more than 12 inches long must be threaded not less than 4 inches.
Bolts in the finished structure shall not project more than one half inch beyond the nut.
All bolts must have Std. C.I.O.G. or Malleable Cast Washers under each head and nut.
Bolt lengths are calculated assuming C.I.O.G. washers will be used.
The contractor is cautioned to check bolt lengths before ordering because of variations in thickness of lumber and piling.
The entire exposed surface of all untreated timber shall be painted one coat as specified immediately after the material is delivered to the project.
Before placing handrailing the contact surfacing shall receive the second coat of paint.
When contractor is permitted to drill holes to facilitate pile driving, these holes must be drilled so piling will stand in vertical position after final driving.
Bid price for asphalt plank shall include galvanized barbed nails & necessary asphalt mop.
All unpainted hardware, except nails, shall be dipped in red lead before shipment. Nails shall be galvanized.
All necessary blocking for swaybracing shall be treated timber.

GENR'L. NOTES (CONT.)

Contractors' attention is called to Specifications covering Mechanical Tamping. Special care must be used to prevent deflection of abutments and wings by wedging action. Backfill in 6 in. earth layers shall be mechanically tamped beginning at the wall and proceeding outward and downward therefrom at a 4:1 min. slope. Below channel elevation mechanical tamp uniformly on both sides. Above original ground line mechanical tamp out to 6 ft. from the wall. Rolling equipment shall not be used within 6 ft. of any wall.

	INITIAL	DATE
ORIGINAL BY	A.D.N.	7-11-41
CHECKED BY	T.G.	7-14-41
VANDYKE BY	E.J.T.	7-24-41
CHECKED BY	S.T.B.	7-26-41

STANDARD P-117-BH-D

BOLTS AND WASHERS FOR ONE SPAN OF SUPERSTRUCTURE

LOCATION	SIZE	19'-0" SPAN NO.	LENGTH	LBS.	23'-0" SPAN NO.	LENGTH	LBS.	27'-0" SPAN NO.	LENGTH	LBS.
POSTS TO RAILS	5/8"	6	10"	7.0	6	10"	7.0	8	10"	9.0
POSTS TO WHEEL GUARDS	3/4"	6	14"	12.7	6	14"	12.7	8	14"	17.0
POSTS TO STRINGERS	3/4"	12	16"	28.3	12	16"	28.3	16	16"	42.0
WHEEL GUARD TO STRINGERS	3/4"	8	38"	29.0	6	38"	30.0	8	38"	40.0
WASHERS - STD. C.I. O.G. 5/8 & 3/4"		12/48		69.0	12/48		69.0	16/64		92.0
TOTAL WEIGHT				146.0			147.0			200.0

BOLTS AND WASHERS FOR ONE ABUTMENT

LOCATION	ITEM	SIZE	NO.	LENGTH	WT. EACH	TOTAL WT.
POSTS TO RAILS	BOLTS	5/8"	2	10"	1.08 LBS.	2.2 LBS.
POST TO BULKHEAD TO CAP	BOLTS	5/8"	2	23"	2.15 LBS.	4.3 LBS.
POSTS TO STRINGERS	BOLTS	3/4"	4	16"	2.60 LBS.	10.4 LBS.
POSTS TO WHEEL GUARDS	BOLTS	3/4"	2	14"	2.12 LBS.	4.3 LBS.
WHEEL GUARDS TO STRINGERS	BOLTS	3/4"	2	38"	5.00 LBS.	10.0 LBS.
TIMBER HEADER TO STRINGERS	LAG SCREWS	5/8"	14	16"	1.36 LBS.	19.1 LBS.
WASHERS - STD. C.I. O.G.	WASHERS 5/8-3/4"	22/16		0.75/1.25 LBS.		36.7 LBS.
CAPS TO PILES	DRIFT BOLTS	3/4"	7	24"	3.00 LBS.	21.0 LBS.
TOTAL WEIGHT						108.0 LBS.

BOLTS AND WASHERS FOR ONE WING

LOCATION	ITEM	SIZE	NO.	LENGTH	WT. EACH	TOTAL WT.
POSTS TO RAILS	BOLTS	5/8"	3	11"	1.16 LBS.	3.4 LBS.
POSTS TO PILES	BOLTS	3/4"	6	20"	2.84 LBS.	17.0 LBS.
PILES TO CURB PLANK	BOLTS	5/8"	3	18"	1.74 LBS.	5.2 LBS.
WASHERS - STD. C.I. O.G.	WASHERS 5/8-3/4"	12/12		0.75/1.25 LBS.		24.4 LBS.
TOTAL WEIGHT						50.0 LBS.

BOLTS AND WASHERS FOR ONE BENT

LOCATION	ITEM	SIZE	NO.	LENGTH	WT. EACH	TOTAL WT.
POSTS TO RAILS	BOLTS	5/8"	2	10"	1.08 LBS.	2.2 LBS.
POSTS TO WHEEL GUARDS	BOLTS	3/4"	2	14"	2.12 LBS.	4.3 LBS.
POSTS TO CAPS, WITHOUT SWAYS	BOLTS	5/8"	2	20"	1.90 LBS.	3.8 LBS.
WHEEL GUARDS TO STRINGERS	BOLTS	3/4"	2	38"	5.00 LBS.	10.0 LBS.
POSTS TO STRINGERS TO SPLICES	BOLTS	3/4"	4	24"	3.32 LBS.	13.3 LBS.
SPLICES TO STRINGERS	BOLTS	5/8"	12	16"	1.57 LBS.	18.8 LBS.
POSTS TO CAP TO SWAYS	BOLTS	5/8"	2	23"	2.15 LBS.	4.3 LBS.
SWAYS TO CAPS	BOLTS	5/8"	2	17"	1.66 LBS.	3.3 LBS.
SWAYS TO PILES	BOLTS	5/8"	12	17"	1.66 LBS.	19.9 LBS.
WASHERS - STD. C.I. O.G. NO SWAYS	WASHERS 5/8-3/4"	32/16		0.75/1.25 LBS.		44.5 LBS.
WASHERS - STD. C.I. O.G. WITH SWAYS	WASHERS 5/8-3/4"	60/16		0.75/1.25 LBS.		64.8 LBS.
CAPS TO PILES	DRIFT BOLTS	3/4"	6	24"	3.00 LBS.	18.0 LBS.
TOTAL WEIGHT - WITHOUT SWAYS						115.0 LBS.
TOTAL WEIGHT - WITH SWAYS						159.0 LBS.

NAILS

LOCATION	ITEM	19'-0" SPAN	23'-0" SPAN	27'-0" SPAN
ONE SPAN OF SUPERSTRUCTURE	30D. COMMON	25 LBS.	30 LBS.	35 LBS.
	30D. GALV. BARBED	125 LBS.	150 LBS.	175 LBS.
	40D. COMMON	165 LBS.	195 LBS.	225 LBS.
ONE ABUTMENT	40D. COMMON	5 LBS.	5 LBS.	5 LBS.
	7" WIRE SPIKES	LBS.	20 LBS.	LBS.
ONE WING	40D. COMMON	1 LBS.	1 LBS.	1 LBS.
	7" WIRE SPIKES	LBS.	5 LBS.	LBS.
ONE SUB-ABUTMENT	7" WIRE SPIKES	LBS.	30 LBS.	LBS.
ONE BENT	40D. COMMON	7 LBS.	7 LBS.	7 LBS.
	7" WIRE SPIKES	LBS.	4 LBS.	LBS.

SUMMARY FOR HARDWARE

BOLTS AND WASHERS				
	3 SPANS	AT	147 LBS. PER SPAN	441 LBS.
	2 ABUTMENTS	AT	108 LBS. PER ABUTMENT	216 LBS.
	4 WINGS	AT	50 LBS. PER WING	200 LBS.
	~~BENTS WITHOUT SWAYS~~	~~AT~~	~~115 LBS. PER BENT~~	~~LBS.~~
	2 BENTS WITH SWAYS	AT	159 LBS. PER BENT	318 LBS.
	TOTAL WEIGHT			1175 LBS.

NAILS	LOCATION	UNIT	30D. COMMON EACH	30D. COMMON TOTAL	30D. GALV. EACH	30D. GALV. TOTAL	40D. COMMON EACH	40D. COMMON TOTAL	7" WIRE SPIKES EACH	7" WIRE SPIKES TOTAL
	3 SPANS	LBS.	30	90	150	450	195	585	-	-
	2 ABUTMENTS	LBS.	-	-	-	-	5	10	20	40
	4 WINGS	LBS.	-	-	-	-	1	4	5	20
	2 SUB-ABUTS.	LBS.	-	-	-	-	-	-	30	60
	2 BENTS	LBS.	-	-	-	-	7	14	4	8
	TOTAL WEIGHT	LBS.		90		450		613		128

SUMMARY OF QUANTITIES

STRUCTURAL EXCAVATION				
ITEM 14a. DRY ROCK				- CU. YDS.
ITEM 14b DRY COMMON				162 CU. YDS.
ITEM 14c WET ROCK				- CU. YDS.
ITEM 14d. WET COMMON				10 CU. YDS.
ITEM 42a UNTREATED BRIDGE TIMBER				
3 SPANS	AT	312 BD. FT. EACH	=	936 BD. FT.
2 ABUTMENTS	AT	48 BD. FT. EACH	=	96 BD. FT.
4 WINGS	AT	84 BD. FT. EACH	=	336 BD. FT.
2 BENTS	AT	48 BD. FT. EACH	=	96 BD. FT.
		TOTAL	=	1464 BD. FT.
ITEM 42b TREATED BRIDGE TIMBER				
2 SPANS	AT	8552 BD. FT. EACH	=	17104 BD. FT.
1 SPANS	AT	8542 BD. FT. EACH	=	8542 BD. FT.
2 ABUTMENTS	AT	1336 BD. FT. EACH	=	2672 BD. FT.
4 WINGS	AT	232 BD. FT. EACH	=	928 BD. FT.
2 SUB-ABUTMENTS	AT	1512 BD. FT. EACH	=	3024 BD. FT.
2 BENTS	AT	846 BD. FT. EACH	=	1692 BD. FT.
		TOTAL		33962 BD. FT.
ITEM 43 ASPHALT PLANK WEARING SURFACE				
3 SPANS	AT	667 SQ. FT. EACH	=	2001 SQ. FT.
ITEM 60a PILING - TREATED				
2 ABUTMENTS	AT	210 LIN. FT. EACH	=	420 LIN. FT.
4 WINGS	AT	96 LIN. FT. EACH	=	384 LIN. FT.
2 SUB-ABUTMENTS	AT	336 LIN. FT. EACH	=	672 LIN. FT.
2 BENTS	AT	180 LIN. FT. EACH	=	360 LIN. FT.
		TOTAL	=	1836 LIN. FT.
ITEM 60e METAL PILE SHOES				
(SEE DETAIL)	Nº 1½ SHOES,	Nº 2 SHOES, TOTAL =		66 SHOES
ITEM 64 DRY RUBBLE SLOPE PAVING - 1'-6" THICK				
				66 SQ. YDS.
ITEM 89b DRAIN PIPE				
2 PIECES 3" DIA. GALV. PIPE 2'-4" LONG WITH ONE 3" GALV. FLANGE ON EACH PIPE.				
3 SPANS	AT	2 COMPLETE PER SPAN =		6 PIECES
ITEM 14e MECHANICAL TAMPING				
ABUT Nº 1 22 HRS. / ABUT. Nº 4 - 21 HRS. (SUB-ABUT. & WINGS INCL.) TOTAL =				43 HRS.

ONE SPAN OF SUPERSTRUCTURE

DESCRIPTION	SIZE	19'-0" SPAN NO.	LENGTH	TOTAL	23'-0" SPAN NO.	LENGTH	TOTAL	27'-0" SPAN NO.	LENGTH	TOTAL
UNTREATED TIMBER										
HANDRAILS S4S	3"x8"	4	20'-0"	160 BD. FT.	4	24'-0"	192 BD. FT.	4	28'-0"	224 BD. FT.
HANDRAIL POSTS S4S	6"x8"	6	5'-0"	120 BD. FT.	6	5'-0"	120 BD. FT.	8	5'-0"	160 BD. FT.
TOTAL UNTREATED TIMBER				280 BD. FT.			312 BD. FT.			384 BD. FT.
TREATED TIMBER										
FLOORING S4S	3"x6"	87	30'-0"	3915 BD. FT.	106	30'-0"	4770 BD. FT.	124	30'-0"	5580 BD. FT.
BRIDGING	3"x6"	4	16'-0"	96 BD. FT.	8	16'-0"	192 BD. FT.	8	16'-0"	192 BD. FT.
WHEEL GUARDS ▼	6"x10"	2	20'-0"	200 BD. FT.	2	24'-0"	240 BD. FT.	2	28'-0"	280 BD. FT.
STRINGERS OUTSIDE INTERMEDIATE SPANS	6"x18"	2	19'-0"	342 BD. FT.						
	6"x20"				2	23'-0"	460 BD. FT.			
	8"x20"							2	27'-0"	720 BD. FT.
STRINGERS OUTSIDE END SPANS	6"x18"	2	19'-6"	351 BD. FT.						
	6"x20"				2	23'-6"	470 BD. FT.			
	8"x20"							2	27'-6"	734 BD. FT.
STRINGERS INSIDE INTERMEDIATE AND END SPANS	6"x18"	12	20'-0"	2160 BD. FT.						
	6"x20"				12	24'-0"	2880 BD. FT.			
	8"x20"							12	28'-0"	4480 BD. FT.
TOTAL TR. TIMBER - END SPANS				6722 BD. FT.			8552 BD. FT.			11266 BD. FT.
TOTAL TR. TIMBER - INTER SPANS				6713 BD. FT.			8542 BD. FT.			11252 BD. FT.
ASPHALT PLANK WEARING SURF.				551 SQ. FT.			667 SQ. FT.			783 SQ. FT.

ONE ABUTMENT

UNTREATED TIMBER				
HANDRAIL POSTS S4S		2 PCS.	6"x8"x6'-0"	48 BD. FT.
TOTAL UNTREATED TIMBER				48 BD. FT.
TREATED TIMBER				
TIMBER HEADER		1 PC.	8"x10"x30'-0" FINISH TO 7"x9"	200 BD. FT.
CAP		1 PC.	12"x12"x34'-0"	408 BD. FT.
BULKHEAD PLANKS		4 PCS.	3"x8"x32'-0"	256 BD. FT.
BACKING PLANKS		2 PCS.	4"x12"x32'-0"	256 BD. FT.
STRINGER BLOCKING Cut before treatment	19 & 23' SPANS	1 PC.	6"x18"x24'-0"	216 BD. FT.
	~~27' SPANS~~	~~1 PC.~~	~~6"x18"x32'-0"~~	~~198 BD. FT.~~
TOTAL TREATED TIMBER				1336 BD. FT.
PILING - TREATED	7 PIECES AT 30 LIN. FT. EACH =			210 LIN. FT.

ONE WING

DESCRIPTION	SIZE	16'-0" LENGTH NO.	LENGTH	BD. FT.	20'-0" LENGTH NO.	LENGTH	BD. FT.	10'-0" LENGTH NO.	LENGTH	BD. FT.
UNTREATED TIMBER										
HANDRAILS S4S	3"x8"	1	12'-0"	24	1	12'-0"	24	1	12'-0"	24
	3"x8"	1	12'-0"	24	1	12'-0"	24	1	12'-0"	24
HANDRAIL POSTS S4S	6"x6"	3	4'-0"	36	3	4'-0"	36	3	4'-0"	36
TOTAL UNTREATED TIMBER - BD. FT.				84			84			84
TREATED TIMBER										
CURB PLANKS	4"x8"	1	12'-0"	32	1	12'-0"	32	1	12'-0"	32
BACKING PLANKS	4"x12"		16'-0"			20'-0"		5	10'-0"	200
TOTAL TREATED TIMBER - BD. FT.										232
PILING - TREATED	3 PIECES AT 32 LIN. FT. EACH = 96 LIN. FT.									

ONE SUB-ABUTMENT AND WINGS

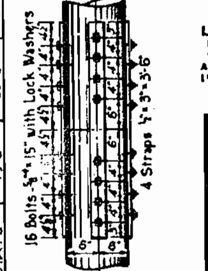
TREATED TIMBER			
BACKING PLANKS	7 PCS.	4"x12"x22'-0"	616 BD. FT.
BACKING PLANKS	7 PCS.	4"x12"x18'-0"	504 BD. FT.
BACKING PLANKS	7 PCS.	4"x12"x14'-0"	392 BD. FT.
BACKING PLANKS	PCS.	4"x12"x	BD. FT.
TOTAL TREATED TIMBER			1512 BD. FT.
PILING - TREATED	14 PIECES AT 24 LIN. FT. EACH =		336 LIN. FT.

ONE BENT

UNTREATED TIMBER				
HANDRAIL POSTS S4S		2 PCS.	6"x8"x6'-0"	48 BD. FT.
TOTAL UNTREATED TIMBER				48 BD. FT.
TREATED TIMBER				
STRINGER SPLICES		2 PCS.	6"x18"x4'-0"	72 BD. FT.
CAP		1 PC.	12"x12"x34'-0"	408 BD. FT.
SWAYBRACES		2 PCS.	3"x12"x34'-0"	204 BD. FT.
STRINGER BLOCKING Cut before treatment	19 & 23' SPANS	1 PC.	6"x18"x18'-0"	162 BD. FT.
	~~27' SPANS~~	~~1 PC.~~	~~6"x18"x12'-0"~~	~~108 BD. FT.~~
~~SHIMS~~		~~14 PCS.~~	~~2"x6"x1'-0"~~	BD. FT.
TOTAL TREATED TIMBER				846 BD. FT.
PILING - TREATED	6 PIECES AT 30 LIN. FT. EACH =			180 LIN. FT.

▼ Lengths of Wheel Guards.

SPANS	SINGLE	END	END	INTERMEDIATE
27'-0"	27'-0"	26'-7"	28'-0"	27'-8"
23'-0"	23'-0"	22'-7"	24'-0"	23'-8"
19'-0"	19'-0"	18'-7"	20'-0"	19'-8"



PILE SPLICE
~~Bolts and Straps Galv.~~
Note: Bolt length given for 12" dia. Pile.

STRUCTURE NO. G-4-F

STRUCTURES REQUIRED
3 SPANS AT 23'-0"
.... SPANS AT ....

LOADING DATA.
LIVE LOAD A.A.S.H.O. 1935 CLASS A. (H-15)
DEAD LOAD - ASSUMES 25 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE. THIS INCLUDES THE 1½" ASPHALT PLANK WEARING SURFACE.

COLORADO
STATE HIGHWAY DEPARTMENT
TREATED TIMBER PILE TRESTLE WITH 6" LAMINATED FLOOR AND 1½" ASPHALT PLANK WEARING SURFACE DOUBLE ABUTMENTS - 29 FT. ROADWAY
Across Horse Thief Wash
Sta. 61+65 to 62+35.5
Near De Beque Sec. 27 T. 8 S R. 97 W

Designed by E.W.T.
Made by E.W.T.
Check Design A.G.K.
Check Detail A.G.K.

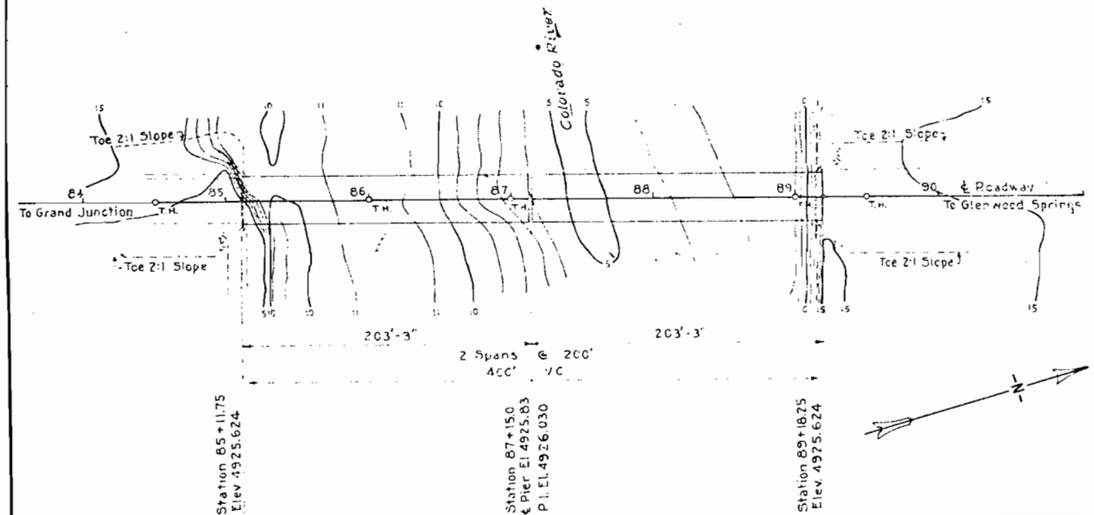
Approved by P.S. Bailey
Bridge Engineer
Date: March 30th 1936

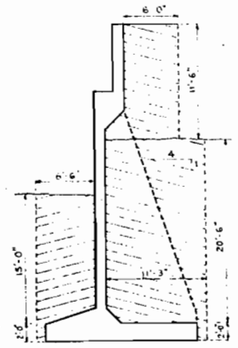
TRIM LINE

REVISIONS

Rev. Steel Wts. for Simp. Struct Shapes 1-8-42 H.C.C.
Changed ½" bars to ⅝" bars 5-24-44 GRB

FED. ROAD DIST. NO.	STATE	SN F.A.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	210-C	6	





Mechanical Tamping Diagram for Abutments 1 and 3.

Contractors attention is called to specifications covering Mechanical Tamping. Especial care must be used to prevent deflection of wall by wedging action. Earth shall be placed in (6") six inch layers, sloping up to wall on a minimum slope of 4:1. Mechanical Tamping of each layer shall start along wall and continue away from wall. Below the channel elevation, Mechanical Tamping shall be done uniformly on both sides. Above the original ground line Mechanical Tamping shall be done to a distance of (6') six feet from the wall. Rolling equipment shall not be used within six feet of walls.

BAR LIST FOR ABUTMENT NO. 1

BAR LIST FOR ABUTMENT NO 3 IS THE SAME. W.P.M. W.M.

Mark	Size	No Req'd	Length	Type	Dimentions ℓ	m	n	r	t
A1	⅝" ♦	28	30'-0"	Str.					
A2	⅝" ♦	14	32'-6"	II					
A3	⅝" ♦	56	24'-0"	XII					
A5	½" ♦	31	23'-6"	Str.					
A6	½" ♦	4	21'-4"	"					
A7	⅝" ♦	6	21'-4"	"					
A8	½" ♦	24	15'-7"	"					
A9	½" ♦	18	8'-0"	X	4'-7"	3'-0"		2"	2"
A10	½" ♦	8	10'-10"	X	7'-10"	2'-4"		2	2
A11	½" ♦	30	10'-4"	III				2	2
A12	½" ♦	30	12'-6"	IV				2	2
A13	½" ♦	12	4'-0"	Str.					
B1	⅝" ♦	60	19'-8"	Str.					
B2	⅝" ♦	28	21'-7"	V				2½"	2"
B3 to B8	½" ♦	2 Each	3'-4" to by 2'-8"	Str.					
B9	½" ♦	46	24'-0"	Str.					
B10 to B17	½" ♦	4 Each	3'-6" to by 9"	Str.					
C1	1⅛" ●	16	16'-2"	VI	6'-0"	6'-2"	1'-11"	4½"	4"
C2	1⅛" ●	16	22'-11"	VI	13'-9"	6'-2"	1'-11"	4½"	4
C3	1⅛" ●	16	29'-4"	VI	22'-0"	4'-4"	1'-4"	4½"	4
C4	1⅛" ●	16	33'-10"	VIII	23'-10"	4'-4"	1'-4"	4½"	4
H1	½" ♦	12	3'-2"	Str.					
H2	½" ♦	8	6'-10"	VIII					

Mark	Size	No Req'd	Length	Type	Dimentions ℓ	m	n	r	t
F1	⅛" ♦	26	27'-0"	Str.					
F2	1" ●	95	9'-4"	I	8'-0"				4" 3½
F3	1" ♦	40	9'-4"	I	8'-0"				4 3½
F4	1" ♦	40	8'-7"	I	7'-3"				4 3½
F5			22'-4" to		17'-2" to	5'-2" to			
to	⅞" ♦	4 Each	24'-10"	IX	18'-5"	6'-5"			
F11			by 5"		by 2½"	by 2½"			
F12			25'-4" to		18'-9" to	6'-7" to			
to	⅞" ♦	4 Each	26'-10"	IX	19'-6"	7'-4			
F15			by 6"		by 3"	by 3"			
F16			27'-10" to		20'-0" to	7'-10" to			
to	⅞" ♦	4 Each	29'-4"	IX	20'-9"	8'-7"			
F18			by 9"		by 4½"	by 4½"			
F19	⅝" ♦	78	11'-6"	Str.					
F20	⅝" ♦	14	24'-0"	"					
F21	⅝" ♦	2	15'-2"	IX	12'-6"	2'-8"			
U1	¾" ♦	8	24'-7"	XI	10'-7"	1'-5"			3" 2½
U2	¾" ♦	8	23'-7"	XI	10'-1"	1'-5"			3 2½
U3	¾" ♦	8	22'-7"	XI	9'-7"	1'-5"			3 2½
U4			21'-3" to		9'-1" to				
to	⅝" ♦	8 Each	10'-3"	XI	3'-7"	1'-5"			2½ 2
U15			by 1'-0"		by 6"				
V1	1" ●	16	9'-2"	I	7'-10"				4" 3½
V2	1" ♦	16	9'-2"	I	7'-10"				4 3½
V3	⅞" ♦	16	10'-6"	I	9'-4"				3½ 3
V4	¾" ♦	16	14'-6"	I	13'-6"				3 2½
V5	¾" ♦	16	16'-0"	I	15'-0"				3 2½
V6	⅝" ♦	16	21'-3"	I	20'-1"				2½ 2
V7	⅝" ♦	16	27'-4"	Str.					
V8	1" ♦	4	27'-4"	"					
V9	1" ●	6	30'-6"	"					
V10	⅝" ♦	10	24'-0"	"					
V11	1" ♦	10	7'-6"	I	6'-0"				4" 3½
V12	⅝" ♦	10	5'-8"	I	4'-10"				2½ 2"

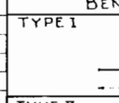
BAR SUMMARY ABUTMENT NO. 1

SAME FOR ABUTMENT NO. 3. W.M. W.P.M.

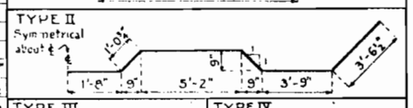
1636	Lin.Ft of 1⅛" ●	at 4.303	Lbs per Lin.Ft. =	7040	Lb
1033	" " " 1" ●	" 3.400	" " " =	3513	"
1231	" " " 1" ♦	" 2.670	" " " =	3286	"
2345	" " " ⅞" ♦	" 2.044	" " " =	4792	"
1054	" " " ¾" ♦	" 1.502	" " " =	1583	"
8459	" " " ⅝" ♦	" 1.043	" " " =	8823	"
3664	" " " ½" ♦	" 0.668	" " " =	2448	
	Plus 1% † for overrun			315	
	TOTAL			31,800	

BENDING DIAGRAMS

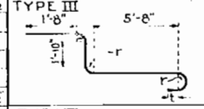
TYPE I



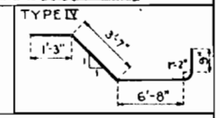
TYPE II Symmetrical about ℄



TYPE III



TYPE IV



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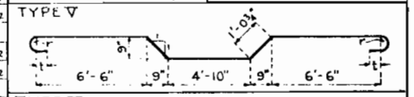
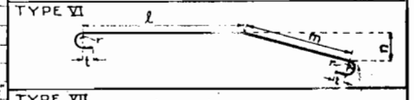
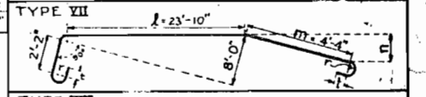


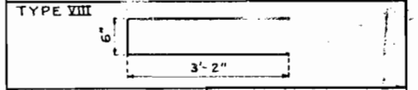
TYPE VI



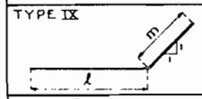
TYPE VII



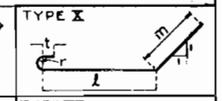
TYPE VIII



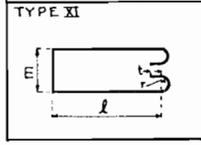
TYPE IX



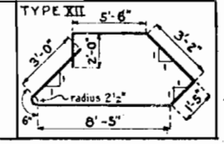
TYPE X



TYPE XI



TYPE XII



SUMMARY OF ALL QUANTITIES

W.M. W.P.M.

ITEM NO	ITEM	UNIT	SUPER-STRUCTURE	ABUT. No.1	PIER 2	ABUT No.3	TOTAL
		Cu.yd					
14a	Dry Rock Excavation	"		5		5	10
14b	Dry Common Excavation	"		200		200	400
14c	Wet Rock Excavation	"		140	72	140	352
14d	Wet Common Excavation	"		940	170	940	2050
14e	Mechanical Tamping	Hrs		250		250	500
80a	Bronze Name Plate	Each		1		1	2
42a	Untreated Bridge Timber	M.ft.bm.		0.1		0.1	0.2
46	Class "A" Concrete	Cu.yd	333	362	173	362	1230
46r	Class "A" Concrete, Handrail	Cu.yd		0.6		0.6	1.2
47	Reinforcing Steel	Lbs	64580	31800	6710	31800	134890
48*	Structural Steel + 2½% Overun	Lbs	745000	130	260	130	745520
89a	Drain Pipes - 3"♦ W.I. 5'-0"	Each	24				24
91	3" Std. black S. Pipe @ 7.575* per lin ft.	Lin Ft	806				806
†	¼" Expansion Joint Material	Sq.Ft.		86		86	172

* Including 9000 # for cast steel shoes.
† Included in Class "A" Concrete

REFERENCE DRAWINGS
Sheet № 7 Truss Portal & Floor Details
Sheet № 8 200' Truss Details & General Notes
Sheet № 9 Abutments 1 & 3
Sheet № 10 Pier 2

COLORADO
STATE HIGHWAY DEPARTMENT
2-200'-0" THRU TRUSSES
GENERAL LAYOUT
BAR LIST ABUTMENT 1+3
SUMMARY OF QUANTITIES

Across Colorado River
Sta. 85+11.75 to 89+18.25
Near Debeque Sec. 23: 26T. 8S. R. 97W.

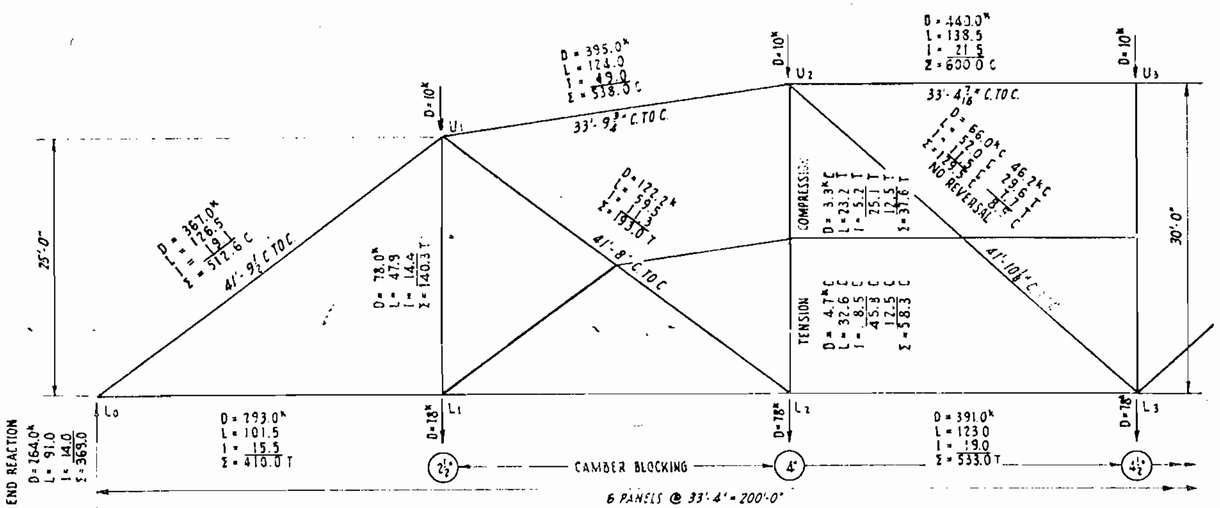
Designed by W.M.	Approved by C. D. Galloway
Made by	Bridge Engineer
Checked by	Date: Dec. 29 1941.

STRUCTURE NO. G-4-A

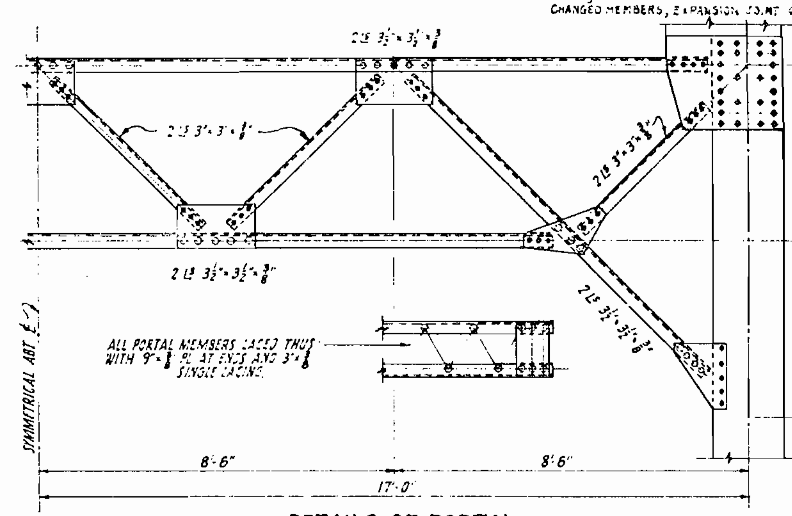
REVISIONS

CORRECTED DIMENSION, COLLISION RAIL 6-29-44 RCB
CHANGED EXPANSION DEVICE 7/19 44 RCB
Rev. Steel Wts. for Simp. Str. Shapes 1-8-42 H.C.C.
Changed 1/2" bars to 5/8" bars 5-24-44 G.R.B.
CHANGED MEMBERS, EXPANSION JOINT 6-29-44 RCB

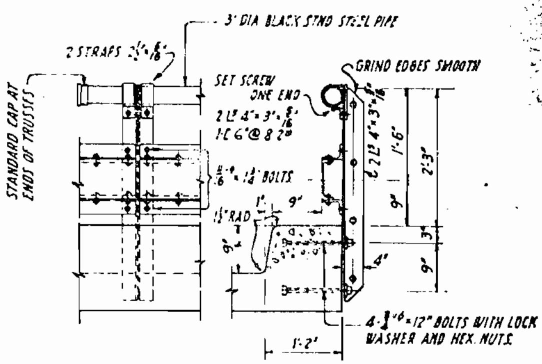
FED. ROAD DIST. NO.	STATE	SN, F.A.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	210-C	7	



STRESS DIAGRAM

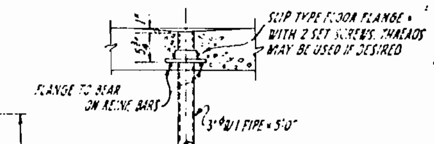


DETAILS OF PORTAL

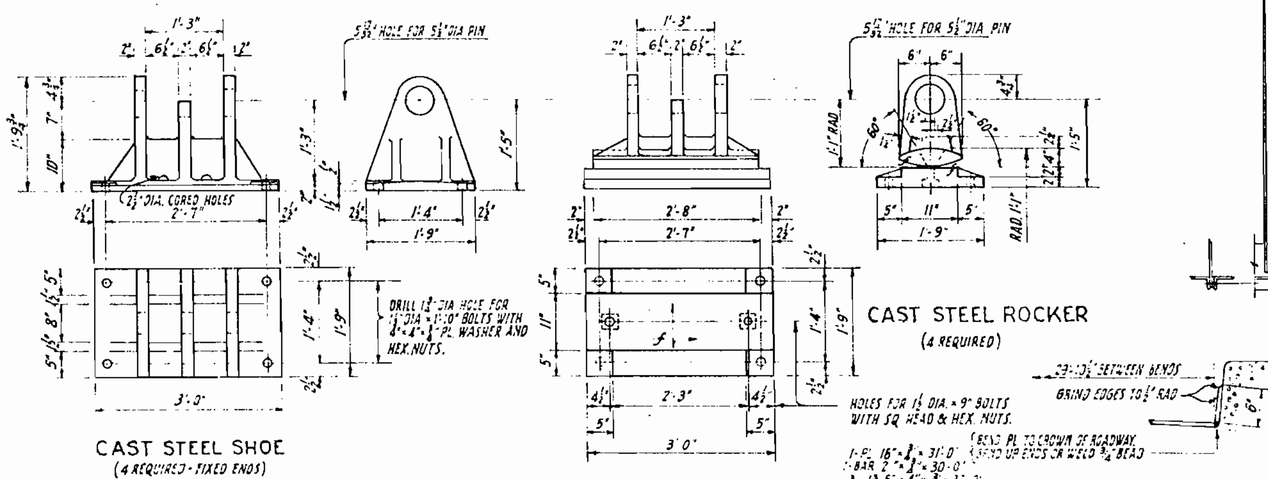


DETAILS OF HANDRAIL
RIVETS AND BOLTS 7/8"

SPACING OF POSTS FOR HANDRAIL

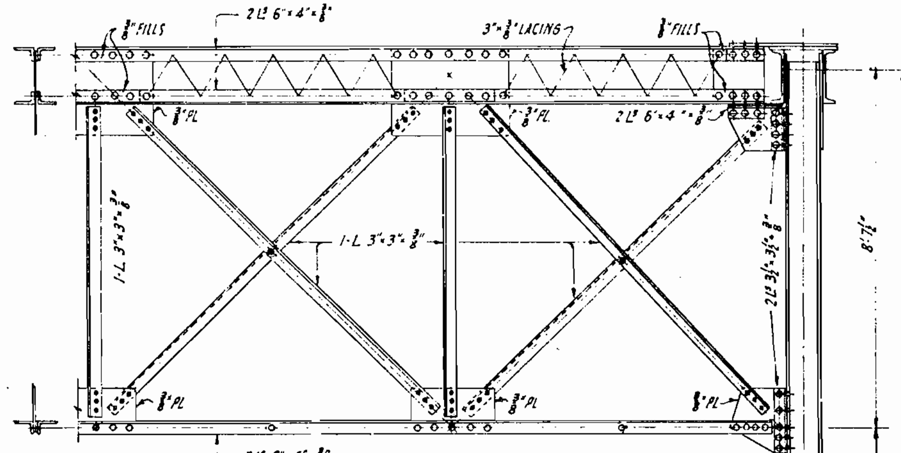


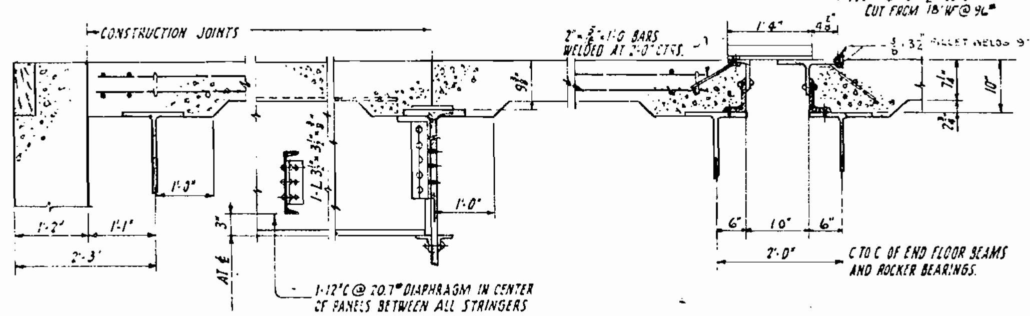
DETAILS OF FLANGE SUPPORT OF DRAIN



CAST STEEL SHOE (4 REQUIRED - FIXED ENDS)

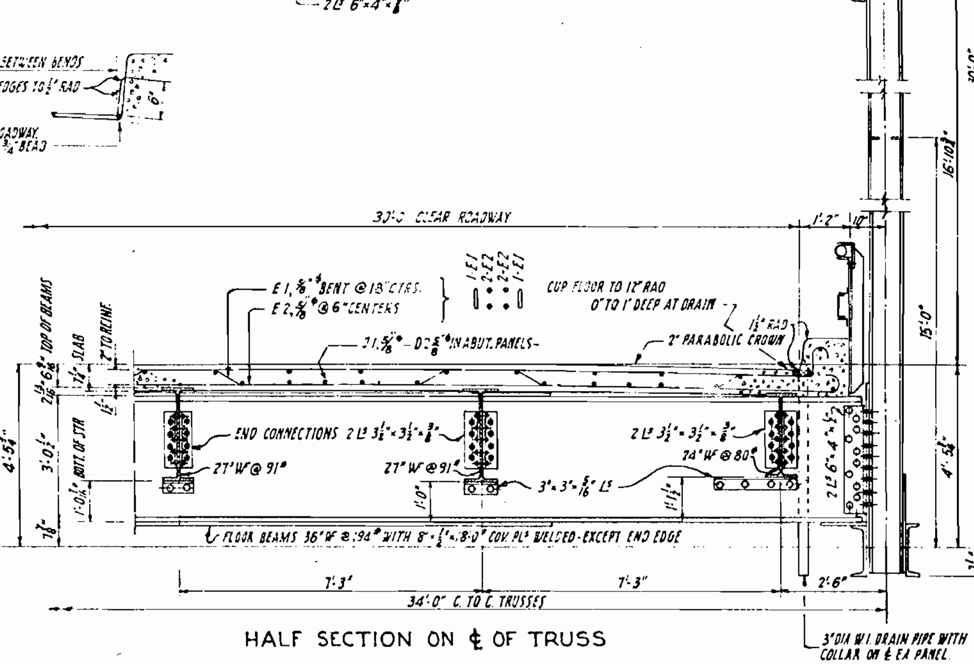
CAST STEEL ROCKER (4 REQUIRED)





ABUTMENTS — INTERIOR FLOOR BEAMS — BETWEEN TRUSSES (OVER PIER)

DETAILS OF JOINTS IN FLOOR



HALF SECTION ON ℄ OF TRUSS

BAR LIST FOR ONE SPAN OF SUPERSTRUCTURE				
MARK	Nº	SIZE	LENGTH	BENDING DIAGRAMS
D1	210	5/8"φ	33'-0"	STRAIGHT
D2	42	5/8"φ	34'-0"	
E1	138	5/8"φ	33'-8"	SYMMETRICAL ABT. ℄; 1'-0", 6", 4'-3", 6", 7'-0", 6", 4'-3", 6", 1'-1"; RAD 2 1/2"
E2	932	5/8"φ	33'-2"	2", 31'-6", 2"; Rad. 2 1/2", t = 2"

BAR SUMMARY
30,649 LIN. FT. OF 5/8"φ BARS @ 1.043 LBS. PER LIN. FT. = 31,967 LBS.
PLUS 1% FOR OVERRUN = 323 LBS.
TOTAL = 32,290 LBS.

ESTIMATED QUANTITIES					
	ITEM Nº	DESCRIPTION	UNIT	ONE SPAN	SPANS
	46a	CLASS "A" CONCRETE	CU.YD.	168.5	
	47	REINFORCING STEEL (INCLUDES 1% FOR OVERRUN)	LBS	32,290	
*	48	STRUCTURAL STEEL (INCLUDES 2 1/2% FOR OVERRUN)	LBS	*372,500	
	89a	DRAIN PIPE (CONC. FLOOR) (FLANGE INCL.)	EACH	12	
	91	PIPE RAILING (BLACK STND. STL. 3" DIA @ 7.575#/LIN. FT.)	LIN. FT.	403	

* THIS INCLUDES 4,500 LBS. FOR CAST STEEL SHOES

LOADING DATA.
LIVE LOAD A.A.S.H.O. 1941 CLASS A (H-15)
DEAD LOAD - ASSUMES 16 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE 1/2 INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA.
A.A.S.H.O. 1941. f_s = 18,000#/□"; f_c = 833#/□"; n = 12

REFERENCE DRAWINGS
Sheet Nº 6 Gen. Layout, Bar Lists
Sheet Nº 8 200' Truss Details & General Notes
Sheet Nº 9 Abutments 1 & 3
Sheet Nº 10 Pier # 2

COLORADO
STATE HIGHWAY DEPARTMENT
2-200 FT. THRU TRUSSES
30 FT. CLEAR ROADWAY
PORTAL & FLOOR DETAILS

Across COLORADO RIVER
Sta. 85+11.75 TO STA. 89+18.75
Near DE BEQUE Sec. 15/26 T. 8S R. 97W

Designed by W.H. — Made by W.G.S. — Checked by
Approved by C.J. Bailey, Bridge Engineer
Date: Dec. 8th, 1941.

STRUCTURE NO. G-4-A

	Initial	Date
Designed By	W.H.	
Checked By		
Drawn By	W.H.	
Checked By		
Traced By	W.G.S.	11-18-41
Checked By		

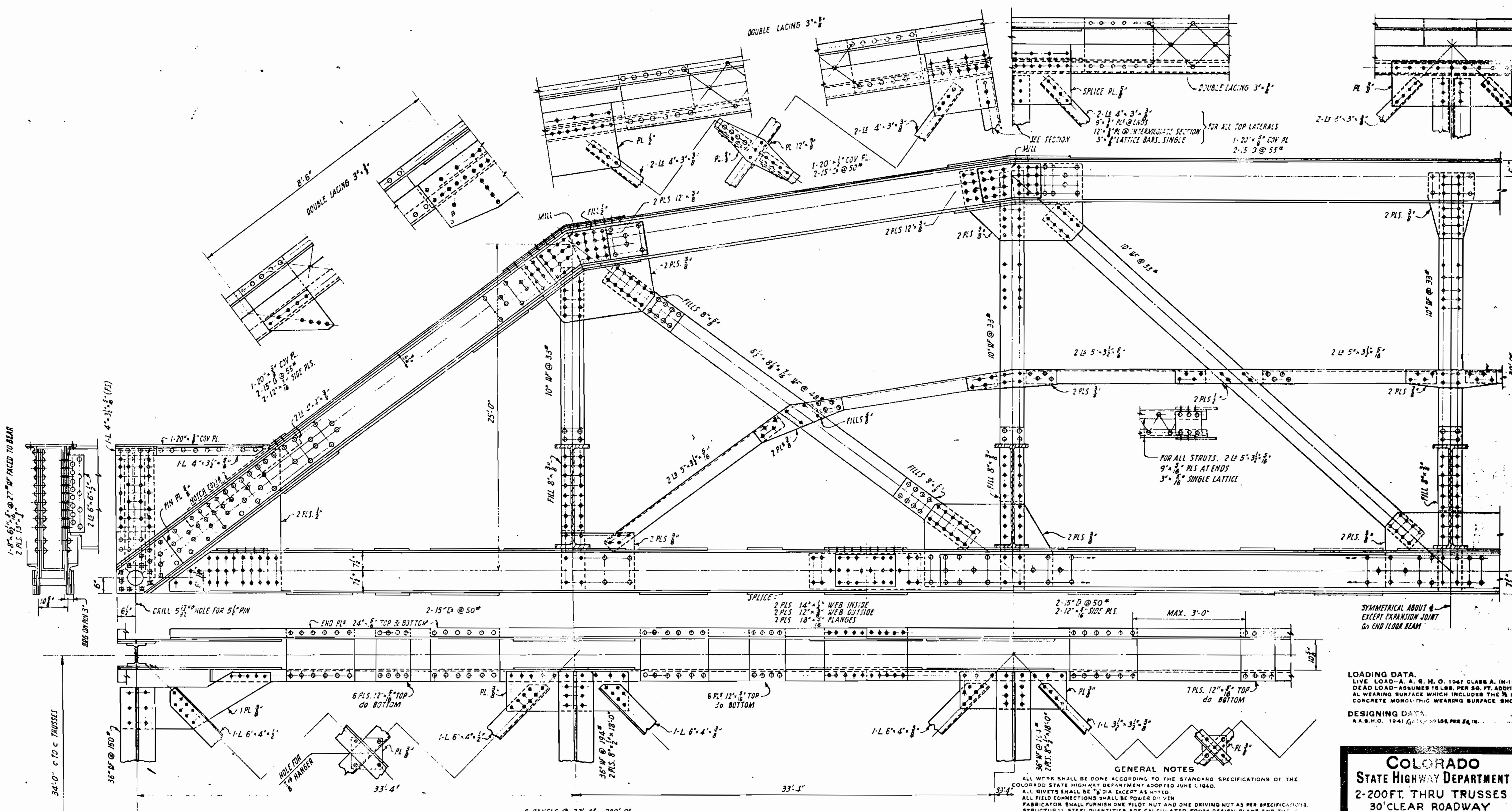
TRIM LINE

REVISIONS

REV 1-8-42. W.G.S. Rivets & extension side ... end post; also Lower Chord ℄ Section H.C.C.

FED. ROAD DIST. NO.	STATE	SN. F.A.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	210-C	8	

	Initial	Date
Designed By	W.M.	
Checked By		
Drawn By	W.M.	
Checked By		
Traced By	W.G.S.	11-6-41
Checked By		



GENERAL NOTES

ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE COLORADO STATE HIGHWAY DEPARTMENT ADOPTED JUNE 1, 1940.

ALL RIVETS SHALL BE 7/8" DIA. EXCEPT AS NOTED.

ALL FIELD CONNECTIONS SHALL BE POWER DRIVEN

FABRICATOR SHALL FURNISH ONE PILOT NUT AND ONE DRIVING NUT AS PER SPECIFICATIONS.

STRUCTURAL STEEL QUANTITIES ARE CALCULATED FROM DESIGN PLANS AND THESE APPROXIMATE ONLY.

ALL HOLES IN TOP AND BOTTOM CHORD SPLICES SHALL BE SUB-PUNCHED 11/16" DIA. AND REAMED.

ALL HOLES IN FLOOR BEAM AND STRINGER FIELD CONNECTIONS SHALL BE SUB-PUNCHED AND REAMED TO AN IRON TEMPLATE

FOR GENERAL NOTES ON CONCRETE AND DETAILS OF SUB-STRUCTURE SEE SHEET Nº

ALL CONCRETE SHALL BE CLASS "A".

FORMS FOR CONCRETE SURFACES EXPOSED IN THE FINISHED WORK SHALL BE CONSTRUCTED OF SHIPLAP OR TONGUE AND GROOVE LUMBER S 3 S UNLESS FACED WITH PANEL BOARD.

CONCRETE FLOOR SLABS AND CURB SHALL BE POURED MONOLITHICALLY.

FOOTINGS IN ROCK SHALL BE POURED OUT TO THE ROCK AND NOT FORMED.

ALL REINFORCING BARS SHALL BE DEFORMED AND TAGGED WITH THE STATION NUMBER AND LETTER DESIGNATION. MAIN BARS SHALL NOT BE SPLICED.

GENERAL NOTES (CONT.)

SOUNDINGS AND DEPTH OF FOOTINGS SHOWN ARE ACCORDING TO THE BEST AVAILABLE DATA. IF ESSENTIALLY DIFFERENT CONDITIONS ARE ENCOUNTERED THE BRIDGE ENGINEER WILL INSPECT AND DETERMINE IF REDESIGN IS NECESSARY.

ROADWAY FLOOR SLAB AS SHOWN INCLUDES 1/2 IN. MONOLITHIC WEARING SURFACE.

A VERTICAL CONSTRUCTION JOINT IS REQUIRED TRANSVERSELY IN THE CONCRETE FLOOR OVER EACH FLOOR BEAM.

REFERENCE DRAWINGS
Sheet Nº 6 Gen. Layout, Bar List
Sheet Nº 7 Truss Portal & Floor Details
Sheet Nº 9 Abutments 1 & 3
Sheet Nº 10 Pier #2

LOADING DATA.
LIVE LOAD—A. A. S. H. O. 1941 CLASS A. (H-15)
DEAD LOAD—ASSUMES 15 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE 1/2 INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA.
A.A.S.H.O. 1941 ... LBS. PER SQ. IN.

COLORADO
STATE HIGHWAY DEPARTMENT
2-200 FT. THRU TRUSSES
30' CLEAR ROADWAY
DETAILS

Across COLORADO RIVER
Sta. 85+11.75 TO STA. 89+18.25
Near DE BEQUE Sec. 23/26 T. 6 S. R. 97 W.

Designed by W.M. Made by W.M. Checked by	Approved by P. S. Bailey Bridge Engineer Date: Dec. 8th, 1941.

STRUCTURE NO. G-4-A

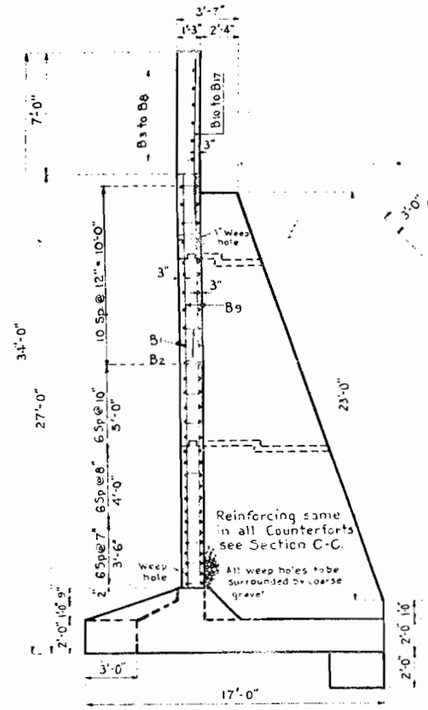
TRIM LINE

REVISIONS

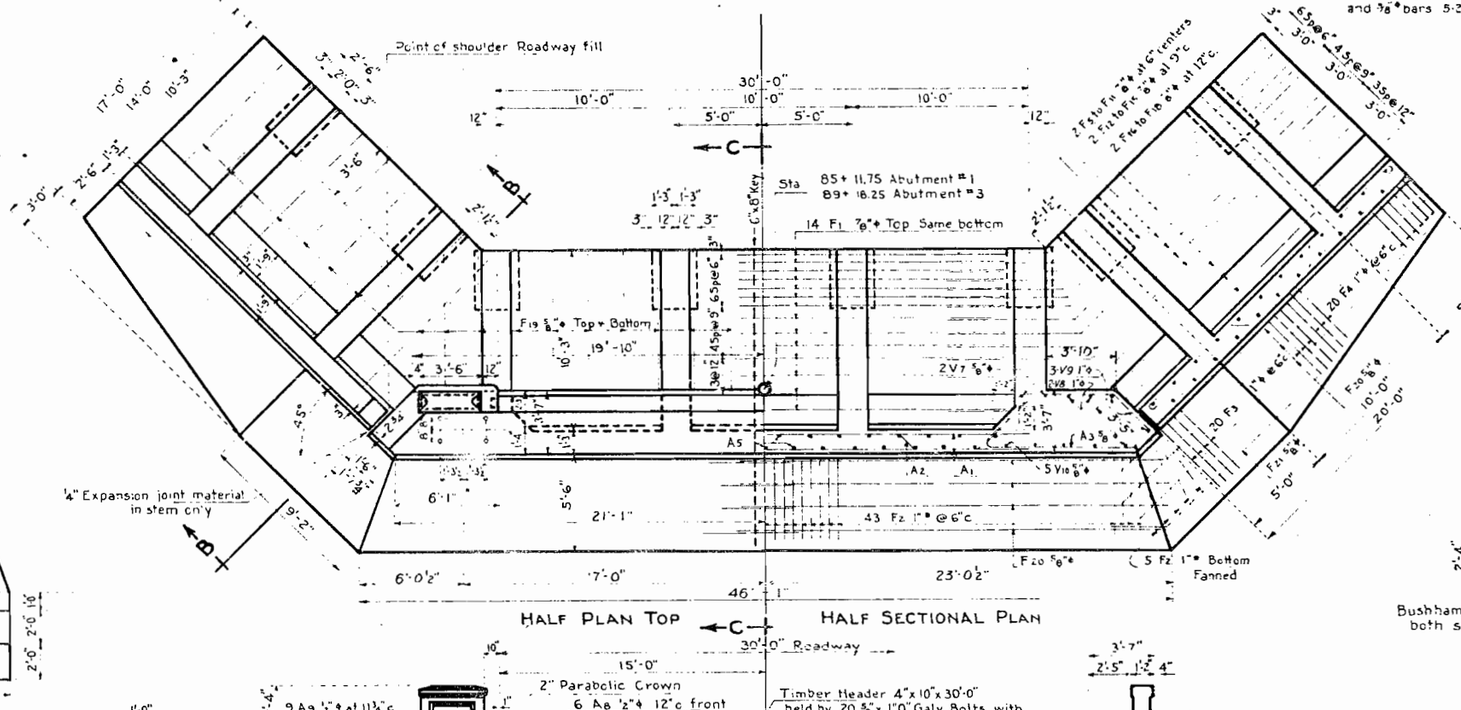
Changed ½" bars to ⅝" and ⅜" bars 5-24-44 GRB.

FED. ROAD DIST. NO.	STATE	SN F.A.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	210-C	9	

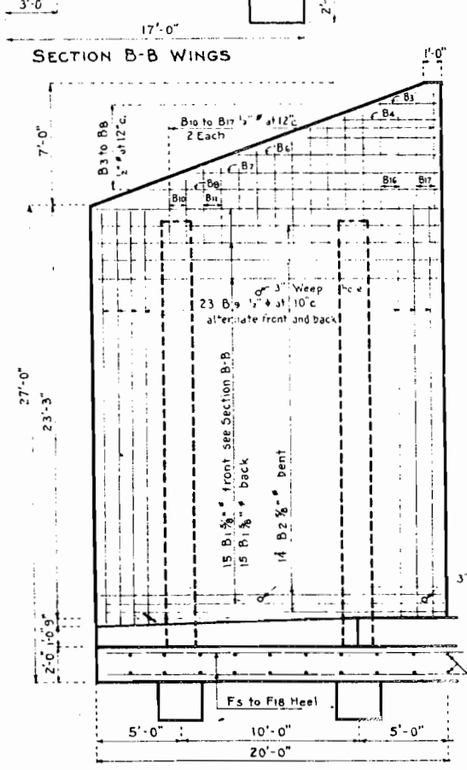
	Initial	Date
Designed By	W.M.	9-26-41
Checked By	R.M.A.	
Drawn By	W.M.	
Checked By	R.M.A.	10-31-41
Traced By	W.P.M.	
Checked By	W.M.	11-7-41



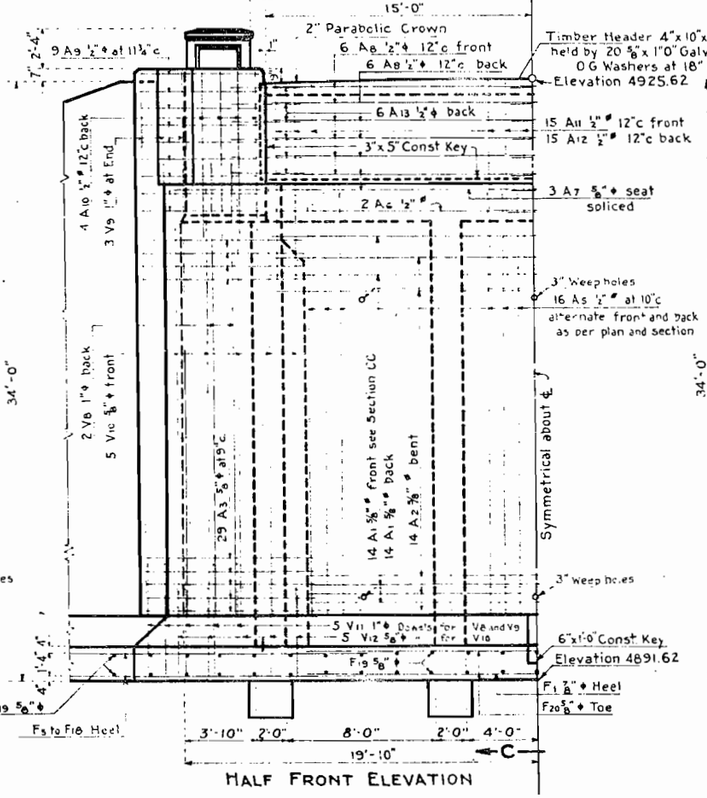
SECTION B-B WINGS



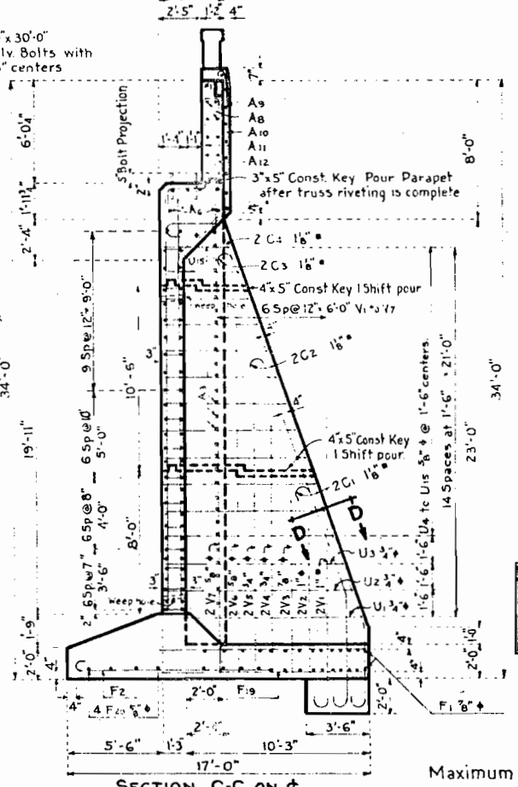
HALF PLAN TOP — HALF SECTIONAL PLAN



TRUE ELEVATION WINGS.



HALF FRONT ELEVATION

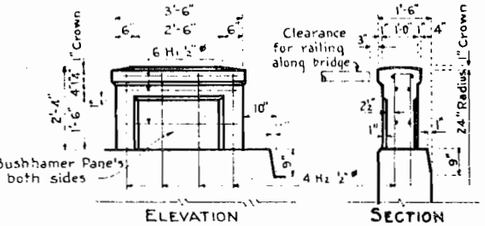


SECTION C-C on ℄

Maximum toe pressure = 3½ Tons

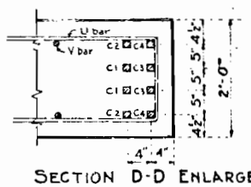
STRUCTURE NO G-4-A

BRONZE NAME PLATE
(2 REQUIRED)
PLACE ON SE POST OF ABUTMENT N°1 AND ON NW POST OF ABUTMENT N°3

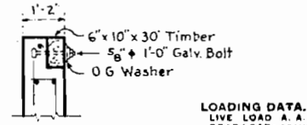


ELEVATION — SECTION

DETAILS OF RAILING



SECTION D-D ENLARGED



DETAIL OF HEADER ENLARGED

LOADING DATA.
LIVE LOAD A. A. S. H. O. 1941 CLASS A. (H-18)
DEAD LOAD - ASSUMED 18 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE ½ INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA.
A. A. S. H. O. 1941
f_s = 18000 #/in. f_c = 833 #/in n = 12

REFERENCE DRAWINGS
Sheet N° 6 Gen Layout, Bar Lists
Sheet N° 7 Truss Portal & Floor Details
Sheet N° 8 200' Truss Details & General Notes
Sheet N° 10 Pier

COLORADO
STATE HIGHWAY DEPARTMENT
2-200'-0" THRU TRUSSES
DETAILS OF ABUTMENTS 1 AND 3

Across COLORADO RIVER
Sta. 85+11.75 to 89+16.25
Near Debeque Sec. 23-26 T. 8S R. 97W.

Designed by W.M.
Made by W.P.M.
Checked by

Approved by C. H. Bailey
Bridge Engineer
Date: Dec. 8th, 1941.

TRIM LINE

FED ROAD DIST NO	STATE	SN-FED.AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO	210-C(1)	21	

Revised 5-24-44 Structures C.W.

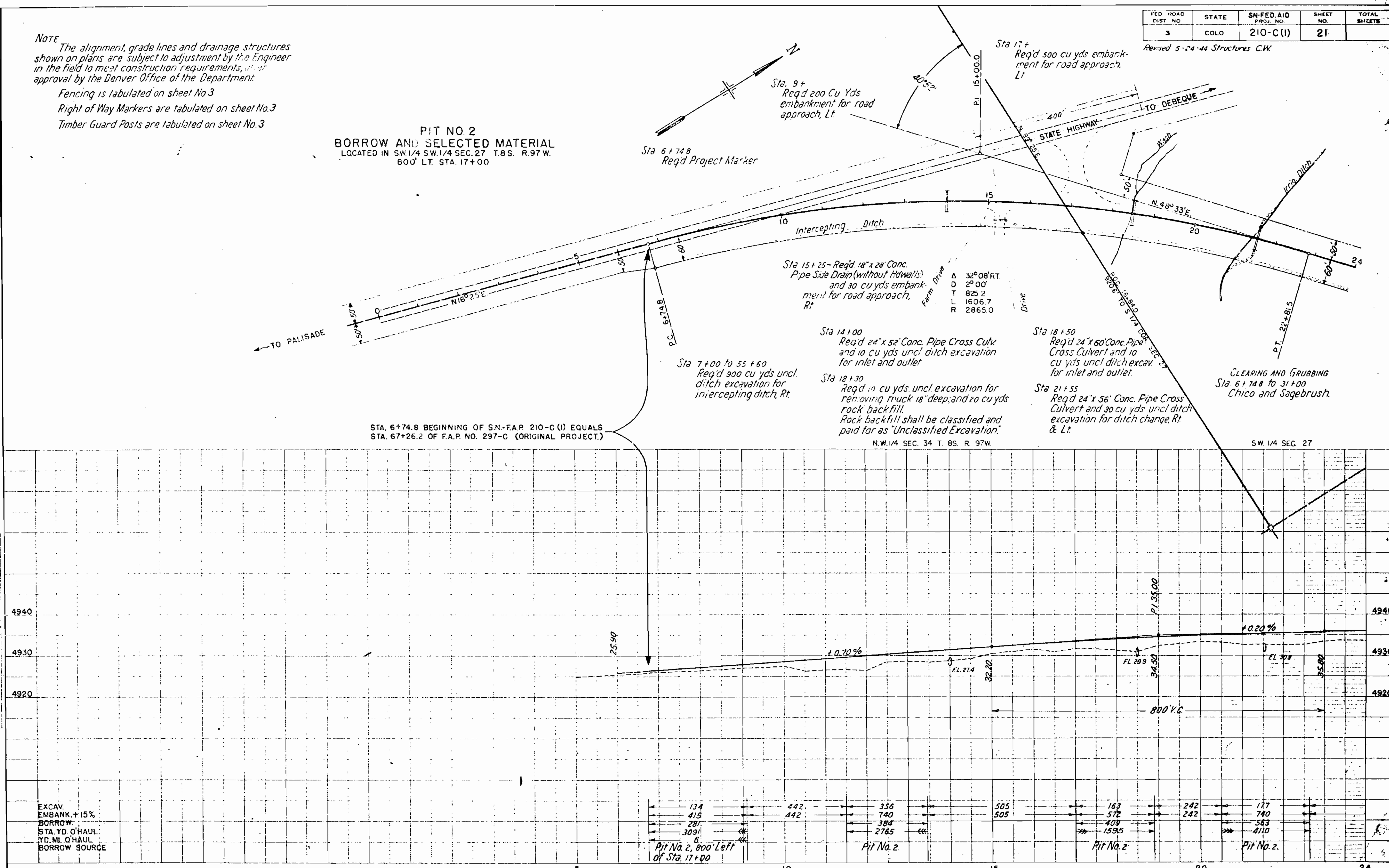
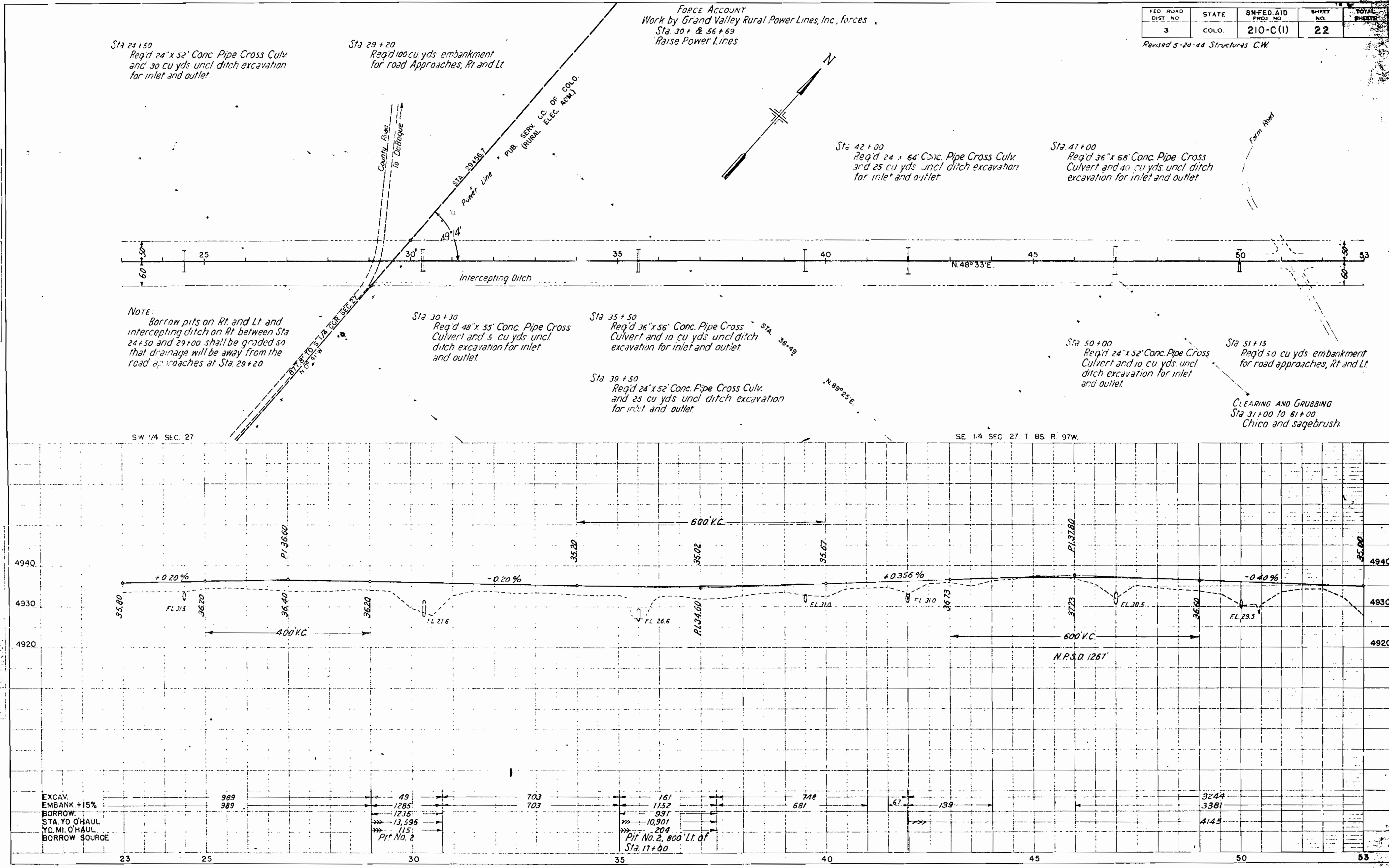


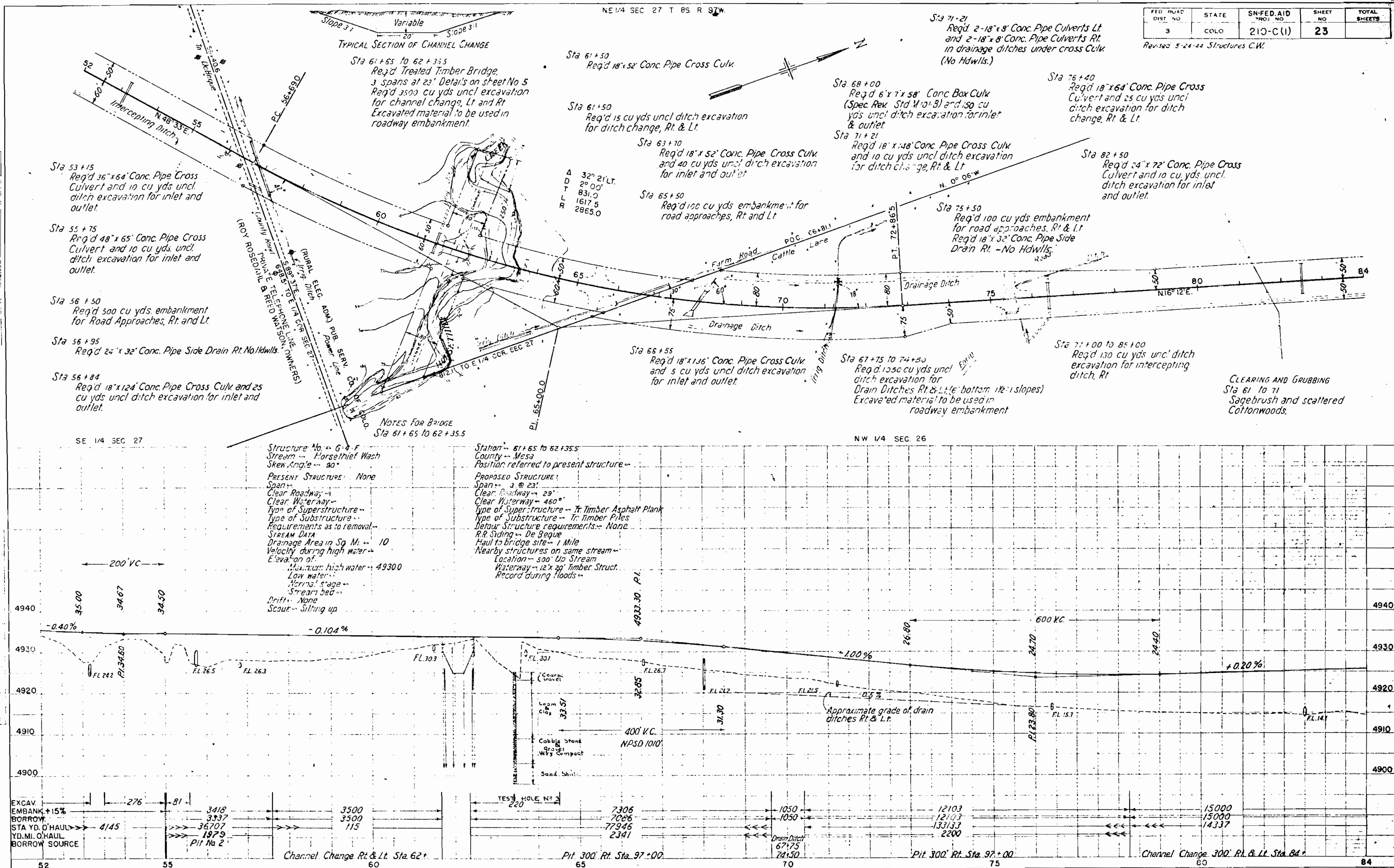
PLATE 1 - PLAN PROFILE ... PRECISE
CHARLES BRUNING COMPANY, INC.



FED. ROAD DIST. NO. 3
STATE COLO.
SN-FED. AID PROJ. NO. 210-C(1)
SHEET NO. 22
TOTAL SHEETS
Revised 5-24-44 Structures C.W.
FORCE ACCOUNT
Work by Grand Valley Rural Power Lines, Inc., forces
Sta. 30+ & 56+69
Raise Power Lines.
Sta 24+50
Req'd 24"x 52' Conc Pipe Cross Culv and 30 cu yds uncl ditch excavation for inlet and outlet
Sta 29+20
Req'd 100 cu yds embankment for road Approaches, Rt and Lt
N
County Road To DeBeque
STA. 29+56.7
Power Line
PUB. SERV. CO. OF COLO. (RURAL ELEC. ADM.)
49°14'
Sta 42+00
Req'd 24"x 64' Conc. Pipe Cross Culv. and 25 cu yds uncl ditch excavation for inlet and outlet
Sta 47+00
Req'd 36"x 68' Conc. Pipe Cross Culvert and 40 cu yds uncl ditch excavation for inlet and outlet
Farm Road
25
30
35
40
45
50
53
N.48°33'E.
Intercepting Ditch
NOTE:
Borrow pits on Rt. and Lt. and intercepting ditch on Rt. between Sta 24+50 and 29+00 shall be graded so that drainage will be away from the road approaches at Sta. 29+20
Sta 30+30
Req'd 48"x 55' Conc. Pipe Cross Culvert and 5 cu yds uncl ditch excavation for inlet and outlet
Sta 35+50
Req'd 36"x 56' Conc. Pipe Cross Culvert and 10 cu yds uncl ditch excavation for inlet and outlet
STA. 36+49
Sta 39+50
Req'd 24"x 52' Conc. Pipe Cross Culv. and 25 cu yds uncl ditch excavation for inlet and outlet
N.89°25'E.
Sta 50+00
Req'd 24"x 52' Conc. Pipe Cross Culvert and 10 cu yds uncl ditch excavation for inlet and outlet
Sta 51+15
Req'd 50 cu yds embankment for road approaches, Rt and Lt
CLEARING AND GRUBBING
Sta 31+00 to 61+00
Chico and sagebrush
SW 1/4 SEC. 27
SE 1/4 SEC. 27 T. 8S. R. 97W.
600' V.C.
P.I. 36.60
35.20
35.02
35.67
P.I. 37.80
35.00
4940
4930
4920
+0.20%
-0.20%
+0.356%
-0.40%
35.80
FL 31.5
36.20
36.40
36.20
FL 27.6
FL 26.6
P.I. 34.60
FL 31.0
FL 31.0
36.73
37.23
FL 30.5
36.50
FL 29.5
400' V.C.
600' V.C.
N.P.S.D. 1267'
EXCAV.
EMBANK.+15%
BORROW
STA. YD. O'HAUL
YD. MI. O'HAUL
BORROW SOURCE
989
989
49
1285
1236
13,596
115
Pit No. 2
703
703
161
1152
991
10,901
204
Pit No. 2, 800' Lt. of Sta. 17+00
748
681
67
139
3244
3381
4145
23
25
30
35
40
45
50
53
PLAN
PROFILE

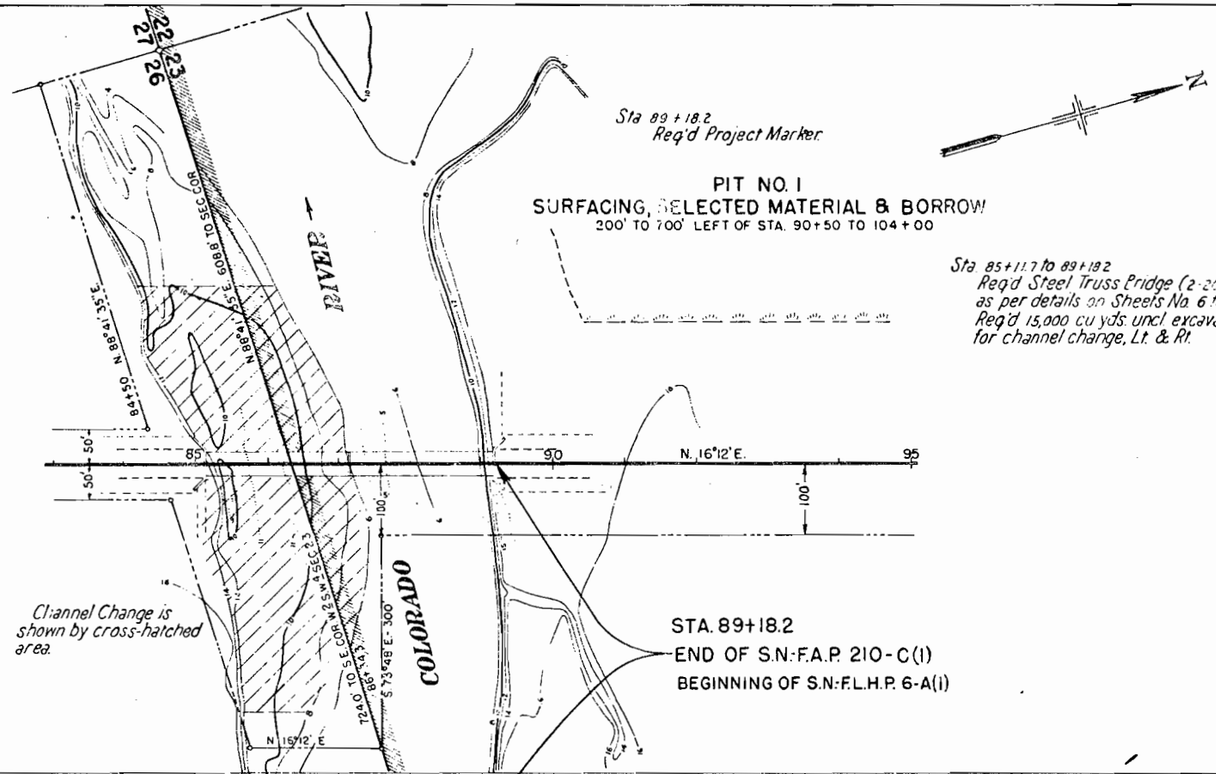
FED. ROAD DIST. NO.	STATE	SN-FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO	210-C(1)	23	

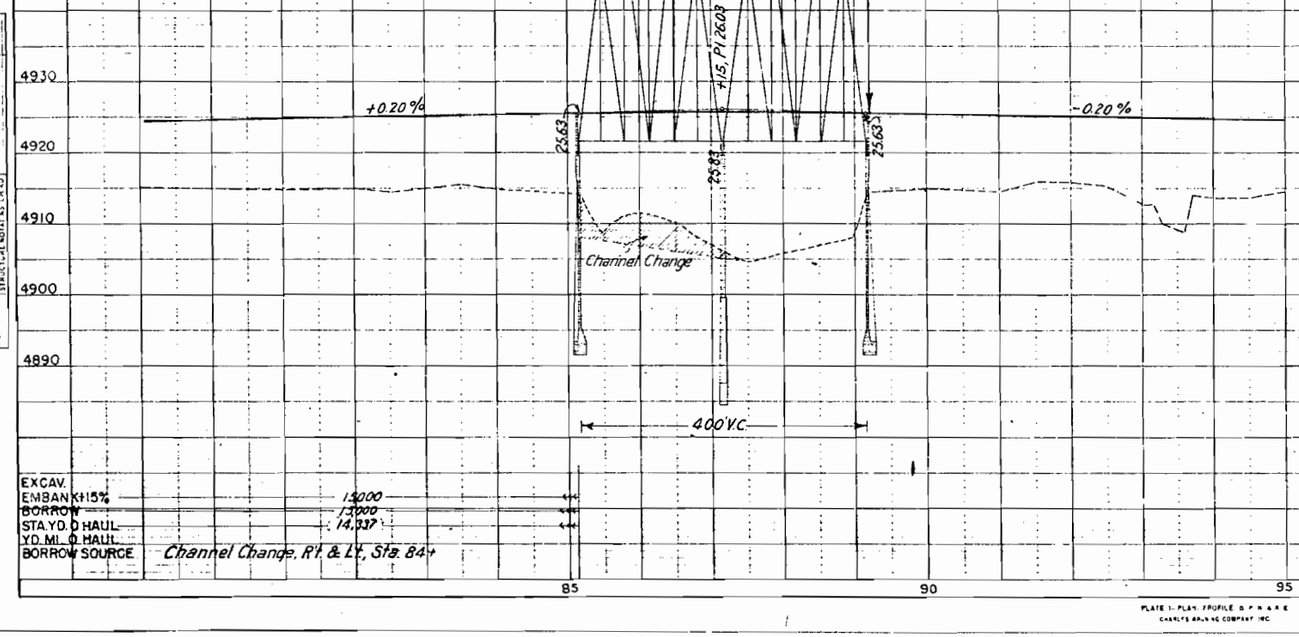
Revised 5-24-44 Structures C.W.



FED. ROAD DIST. NO.	STATE	S.N.-FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	210-C(1)	24	

Rev. 5-24-44 - A.Z. - Earthwork





EXCAV. 15000
EMBANK+15% 13000
BORROW 14,937
STA.YD.O HAUL
YD.MI. O HAUL
BORROW SOURCE Channel Change, Rt. & Lt. Sta. 84+

BRIDGE DATA

STRUCTURE NO. G-4-A
STREAM- Colorado River
SKEW ANGLE- 90°

PRESENT STRUCTURE
SPAN- 1 TT 256'0" and 1-150'0"
CLEAR ROADWAY- 15'-0"
CLEAR WATERWAY- 4800 sq. ft. below chord
TYPE OF SUPERSTRUCT.- Steel thru truss
TYPE OF SUBSTRUCT.- Concrete Gravity
REQUIREMENTS FOR REMOVAL- None

STREAM DATA
DRAINAGE AREA IN SQ MI.- 6685

ELEVATIONS
MAXIMUM HIGH WATER- 4917 Low Water-
NORMAL STAGE Stream Bed- 4904.8
DRIFT- Heavy
SCOUR- None
VELOCITY DURING HIGH WATER - 10 ft. sec. estimated
U.S.G. Survey indicate peak flow of 52,400 Sec ft at Palisade in 1921

STATION 85+11.7 TO 89+18.2
COUNTY- Mesa
POSITION REFER. PRESENT STRUCT.- 2 Miles Upstream

PROPOSED STRUCTURE
2-200'0"
30'-0"
4930 to Elev. 4916.0
2-Steel T. Trusses
Conc. Counterfort
DETOUR STRUCT. REQD.- None
HAUL TO BRIDGE SITE- 3 Mi.

NEARBY STRUCTURES ON SAME STREAM- See Struct. G-4-0, Overflow Bridge-S.N.-F.L.H.P. 6-A(1)
LOCATION-
WATERWAY-
R.R. SIDING- De Beque

PLATE 1- PLAN, PROFILE & DETAILS
CHARLES ARMING COMPANY, INC.

FED. ROAD DIST. NO.	STATE	SN-FAP	SHEET NO.	TOTAL SHEETS
3	COLO.	310-C-(1)	9-A	

SECTION BB-WINGS

HALF PLAN-TOP

HALF SECTIONAL PLAN

ELEVATION

SECTION

DETAILS OF RAILING

SECTION DD

HEADER DETAIL

TRUE ELEVATION - WINGS

SECTION EE

COLORADO
STATE HIGHWAY DEPARTMENT
COLORADO RIVER
1944
FEDERAL WORKS AGENCY
PUBLIC ROADS ADMINISTRATION

Letters and border polished surfaces one raised 1/8" (See Struct. M-6-E)

BRONZE NAME PLATE
(2 required)
Place one on SE post of Abutment No. 1
and one on NW post of Abutment No. 2

COLORADO
STATE HIGHWAY DEPARTMENT
2-200'-0" THRU TRUSSES
DETAILS OF ABUTMENT No. 3
Across Colorado River
Sta 85+11.75 to 89+18.25
Near De Beque
Sec. 23-24-T8S-R92W

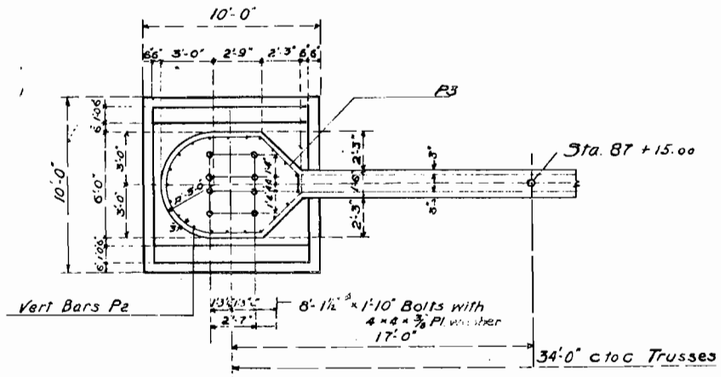
Designed by WVM
Made by WVM
Checked by APK

Approved by
Bridge Engineer
Date

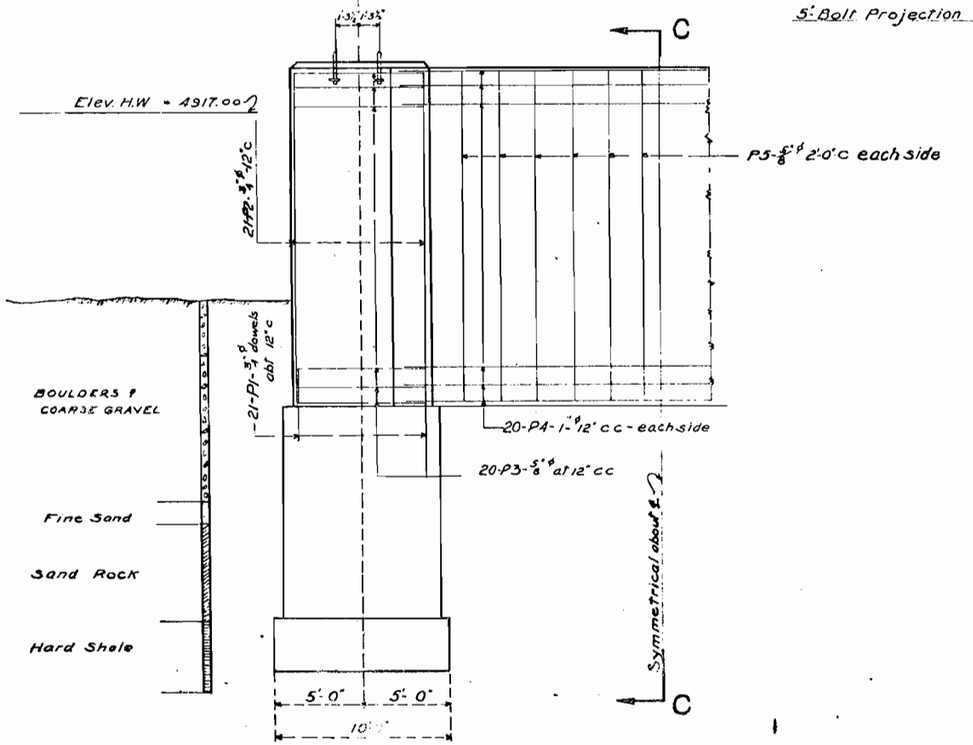
Str. No. 6-4-A

REVISIONS

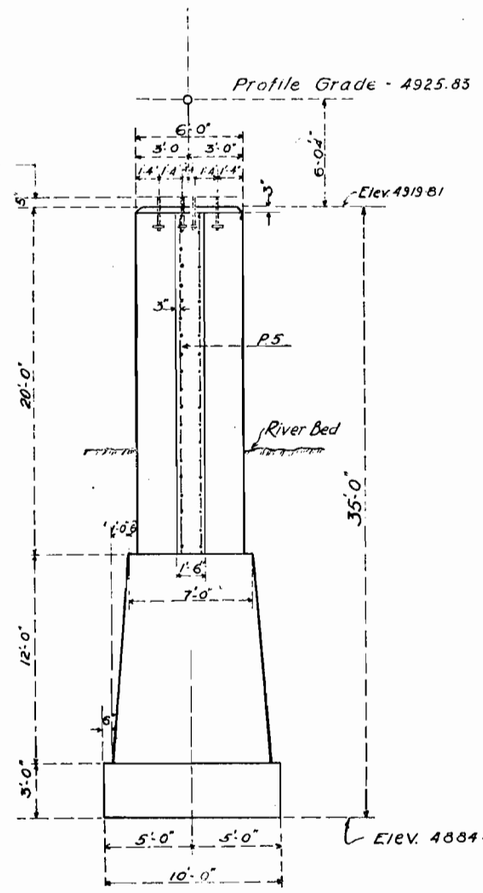
FED. ROAD DIST. NO.	STATE	SN.F.A.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	210-C-1	10	



Half Plan



Half Elevation



Section CC.

Pressure on footings - 5 Tons ▫'

BAR LIST PIER No. 2

W.M. W.P.N.

Mark	Size	No. Reqd	Length	Type	Total Length	Diagram
P1	¾" ϕ	42	6'4"	Str.	266	I
P2	¾" ϕ	42	19'8"	Str.	826	
P3	⅝" ϕ	40	21'5"	I	857	
P5	⅝" ϕ	24	19'3"	Str.	462	
P4	1" ϕ	40	34'0"	Str.	1360	

1360 Lin. Ft.	1" ϕ	@ 2670 Lbs per lin. ft. =	3631 Lbs.
1032 " "	¾" ϕ	@ 1502 " " " =	1641 "
1319 " "	⅝" ϕ	@ 1043 " " " =	1376 "
		Add 1% overrun	62 "
		Total	6710 "

Summary - Quantities - Pier #2

14c.	Wet Rock	Cu.Yds.	72
14d	Wet Common	"	170
46	Class A Concrete	Cu.Yds.	173
47	Reinforcement	Lbs.	6710
48	Structural Steel	Lbs.	260

	Initial	Date
Designed By	W.M.	
Detailed By		
Traced By	W.M.	
Checked By		
Traced By	S.H.C.	12-7-41
Checked By		

REFERENCE DRAWINGS
Sheet No. 6 Gen. Layout, Bar Lists
Sheet No. 7 Truss Portal & Floor Details
Sheet No. 8 200' Truss Details & Gen. Notes
Sheet No. 9 Abutments 1 & 3

COLORADO
STATE HIGHWAY DEPARTMENT
2-200'0" Thru Trusses
Details, Pier-#2
OVER COLORADO RIVER
Across Sta. 85+11.18 To 89+16.26
Near DeBeque Sec. 8 T 8 S R 97 W

Designed by W.M.	Approved by C. H. Scheffey
Made by	Bridge Engineer
Checked by	Date: Dec. 8th, 1941.

STRUCTURE NO. 6-4-A

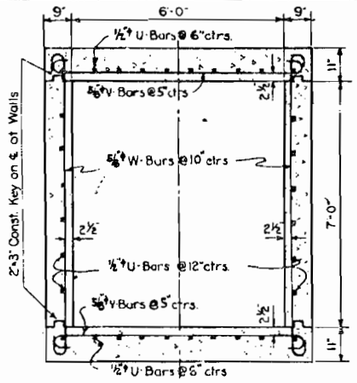
REVISED TO JUNE 1 1940 W.W.D.

STANDARD M-101-B

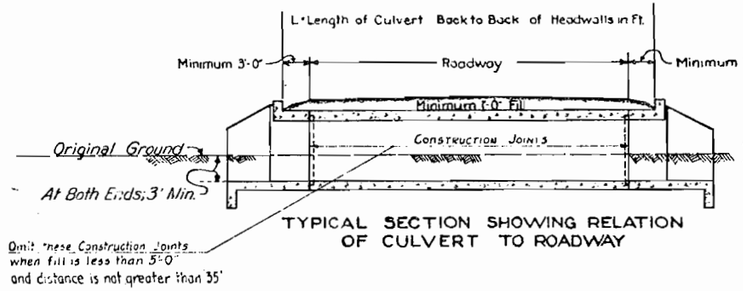
SPECIAL REVISION Revised 9-24-40- Corrected bar list-Added note 8
Revised Size and number of Bars, 8-25-44. ADM, S.J.B.

8-13-41 Revised to 1941 A.A.S.H.O. Specs. (Temp. Steel) added notes for Minimum depth and tamping. I.M.R.

FED. ROAD DIST. NO.	STATE	PROJECT	SHEET	TOTAL SHEETS
3	COLO.	S.N. FAP 210 C (1)	12	



TYPICAL SECTION THRU BOX

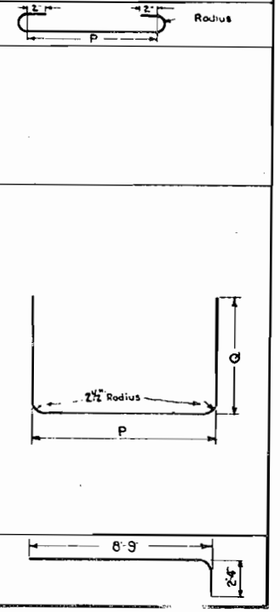


TYPICAL SECTION SHOWING RELATION OF CULVERT TO ROADWAY

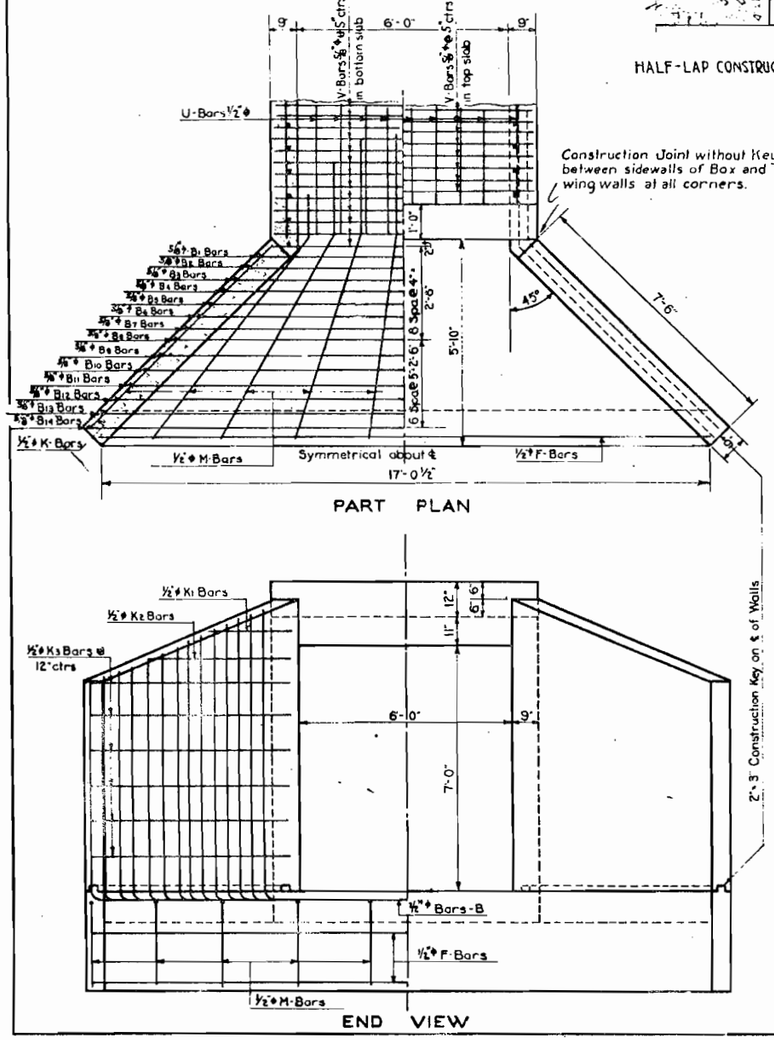
Floor at both ends of culvert shall be held to a depth of not less than 3 Ft. below original ground. (Drainage to be obtained by excavating outflow channel.)

BAR LIST

MARK	SIZE	NUMBER	DIMENSION P	DIMENSION Q	TOTAL LENGTH	BENDING DIAGRAM
V	⅝ϕ	48 L+10	6'-10"		8'-6"	
W	⅝ϕ	24 L+5	7'-10"		9'-6"	
F	½ϕ	4	Str.		17'-3"	
U	½ϕ	36	"		L+1'-8"	
K1	½ϕ	4	"		2'-6"	
K2	½ϕ	4	"		4'-8"	
K3	½ϕ	24	"		7'-2"	
B1	⅝ϕ	2	7'-11"	8'-1"	23'-11"	
B2	⅝ϕ	2	8'-7"	7'-11"	24'-3"	
B3	⅝ϕ	2	9'-3"	7'-10"	24'-9"	
B4	⅝ϕ	2	9'-11"	7'-5"	25'-1"	
B5	⅝ϕ	2	10'-7"	7'-6"	25'-5"	
B6	⅝ϕ	2	11'-3"	7'-5"	25'-11"	
B7	⅝ϕ	2	11'-11"	7'-3"	26'-3"	
B8	⅝ϕ	2	12'-7"	7'-1"	26'-7"	
B9	⅝ϕ	2	13'-5"	6'-11"	27'-1"	
B10	⅝ϕ	2	14'-3"	6'-9"	27'-7"	
B11	⅝ϕ	2	15'-1"	6'-7"	28'-1"	
B12	⅝ϕ	2	15'-11"	6'-4"	28'-5"	
B13	⅝ϕ	2	16'-9"	6'-2"	28'-11"	
B14	⅝ϕ	2	17'-7"	6'-0"	29'-5"	
M	½ϕ	20			11'-0"	



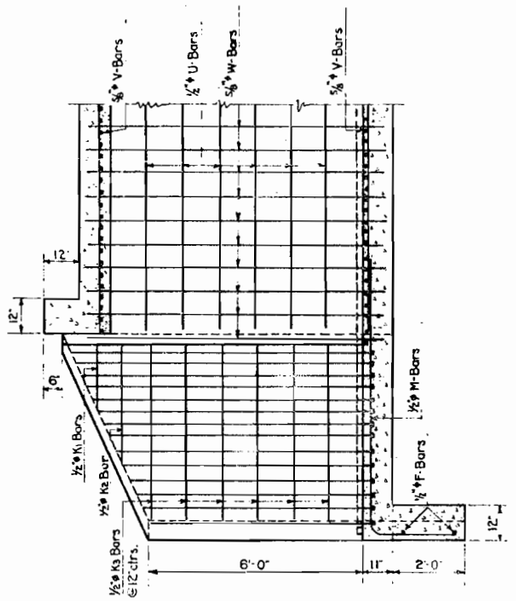
NOTE:-TO BE USED AS A STOCK PASS ONLY



PART PLAN

END VIEW

HALF-LAP CONSTRUCTION JOINT

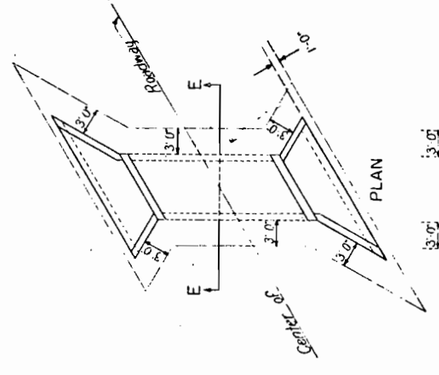


LONGITUDINAL SECTION ON ℄ OF BOX

TABLE OF QUANTITIES

I.M.R. — G.A.M. — E.W.T.

SPAN S	HEIGHT H	QUANTITIES FOR ONE LINEAL FT OF BOX: CLASS "A" CONCRETE CU. YDS.	QUANTITIES FOR ONE LINEAL FT OF BOX: STEEL LBS.	QUANTITIES FOR TWO HEADWALLS: CLASS "A" CONCRETE CU YDS.	QUANTITIES FOR TWO HEADWALLS: STEEL LBS.
6'-0"	7'-0"	0.898	91.3	16.5	1298



MECHANICALLY TAMPED BACKFILL

Contractor's attention is called to Specifications covering Mechanical Tamping. Especial care shall be taken to prevent deflection of the wing walls by wedging action.

GENERAL NOTES

ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE FOLLOWING STATE HIGHWAY DEPARTMENT ADOPTED JUNE 1, 1940

ALL CONCRETE SHALL BE CLASS "A"

FORMS FOR CONCRETE SURFACES EXPOSED IN THE FINISHED WORK SHALL BE CONSTRUCTED OF SHIPLAP OR TONGUE AND GROOVE LUMBER, S4S.

ALL EXPOSED SURFACES SHALL BE SMOOTH, FREE OF FORM MARKS.

ALL CURBS TO HAVE FORMS ON BOTH SIDES.

ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED BEFORE FRESH CONCRETE IS PLACED.

FOOTINGS IN ROCK SHALL BE PUMPED OUT TO THE ROCK AND NOT FORMED.

ALL REINFORCING BARS SHALL BE DEFORMED AND BENT OR SQUARE AS SHOWN AND NOTED.

ALL REINFORCING BARS SHALL BE TAGGED WITH THE STATION NUMBER AND LETTER DESIGNATION.

SECONDARY BARS WHEN SPLICED SHALL BE GIVEN A LAP OF 12 DIAMETERS.

MAIN BARS SHALL NOT BE SPLICED.

SOUNDINGS AND DEPTH OF FOOTINGS SHOWN ARE ACCORDING TO THE BEST AVAILABLE DATA. IF ESSENTIALLY DIFFERENT CONDITIONS ARE ENCOUNTERED THE BRIDGE ENGINEER WILL INSPECT AND DETERMINE IF REDESIGN IS NECESSARY.

POUR WING FOOTINGS MONOLITHICALLY WITH FLOOR OF BOX.

THE USE OF ADDITIONAL CONSTRUCTION JOINTS UNDESIRABLE SHOULD FIELD CONDITIONS REQUIRE CONSTRUCTION JOINTS, MAY BE MADE ON A VERTICAL PLANE PERPENDICULAR TO CENTERLINE OF CULVERT AND SHALL BE LAP-TYPE. (SEE DETAIL)

SUPPORTING SOILS FOR ALL CULVERTS MUST BE COMPOSED OF FIRM AND UNIFORM MATERIAL THROUGHOUT.

ALL BACKFILLING IN APPROACHES, TO AND OVER CULVERTS, SHALL BE LAID IN LAYERS NOT EXCEEDING 6" IN DEPTH AND EACH LAYER SHALL BE ROLLED OR MECHANICALLY TAMPED WHERE INACCESSIBLE TO ROLLER. ALSO PUDDLED WHEN NECESSARY.

LOADING DATA

THIS STANDARD IS FOR H 15 AND CLASS A 11-15 LOADS AND MAXIMUM 9'-0" FILL

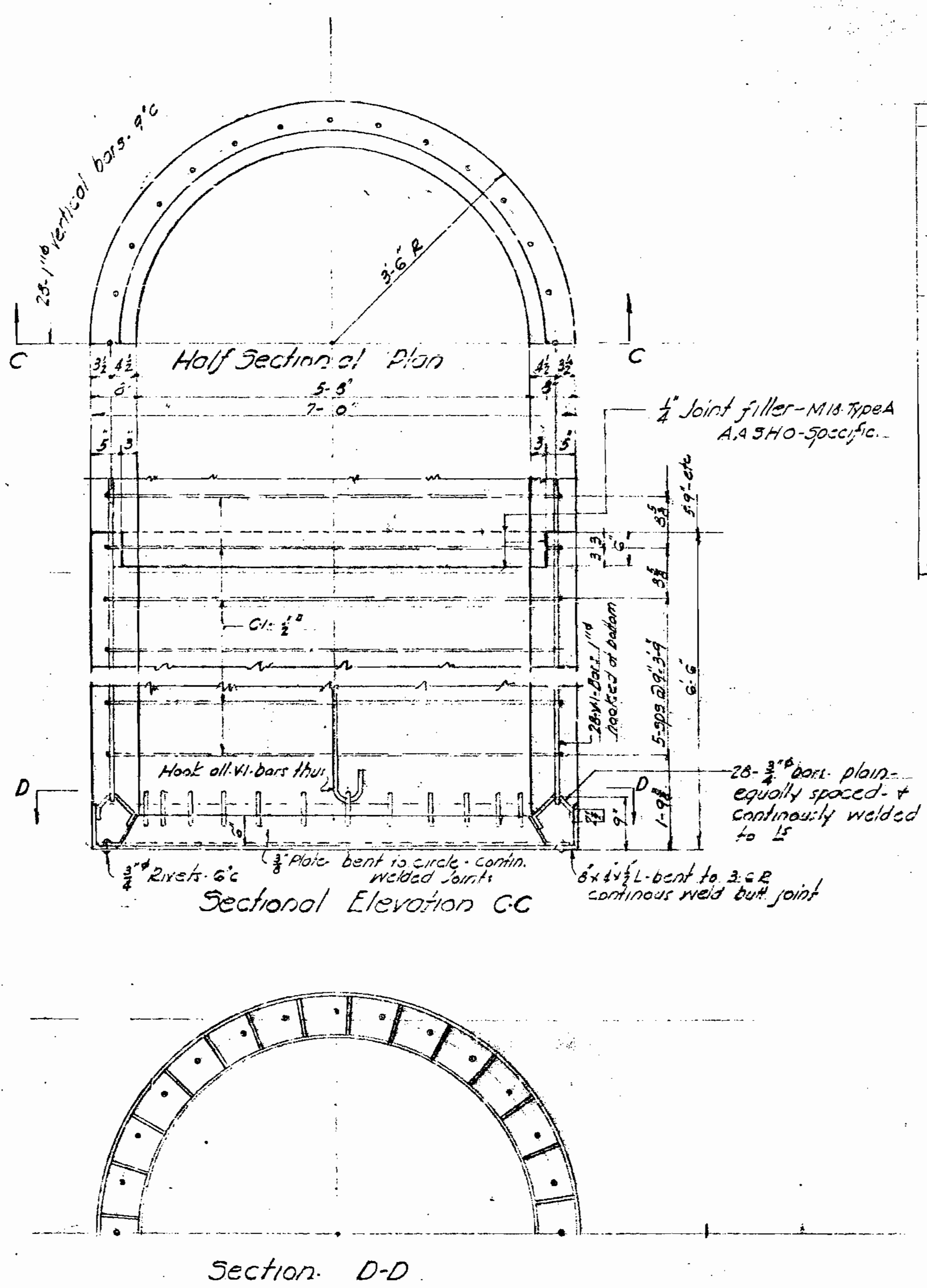
COLORADO
STATE HIGHWAY DEPARTMENT
SPECIAL 6FT x 2FT
CONCRETE BOX CULVERT
FOR
STOCK PASS
Sta.
Near Sec. T. R.

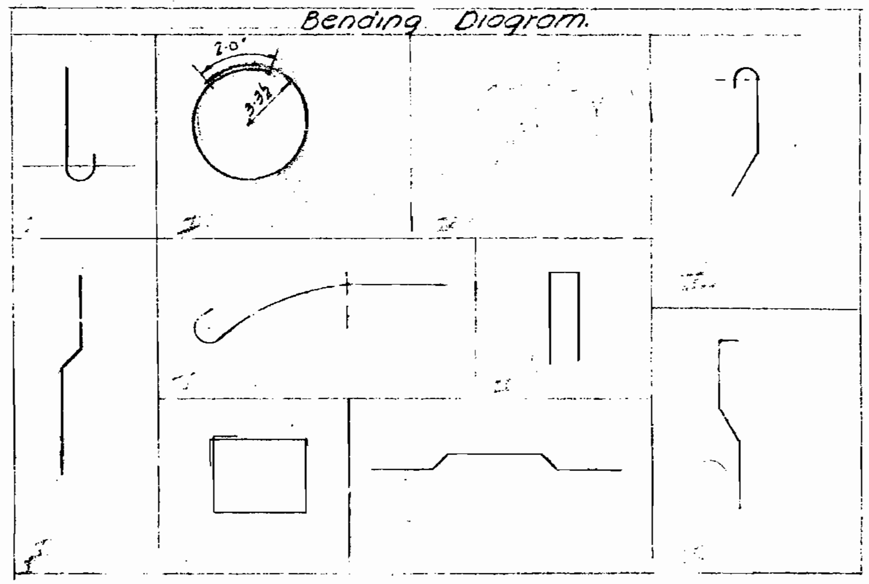
Designed by G.A.M.	Approved by C. D. Bailey
Made by E.W.T.	Bridge Engineer
Checked by G.A.M.	Date: May 27th, 1935

STRUCTURE NO.

D

		F.A.P.		
		S.N. FAP 210(C1)		

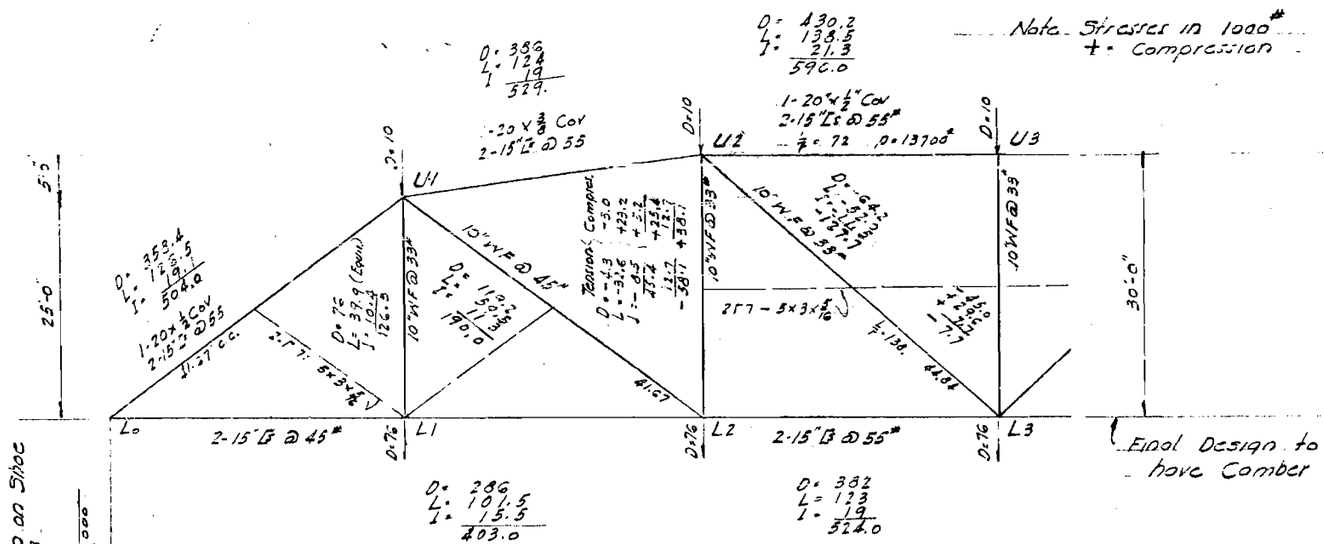


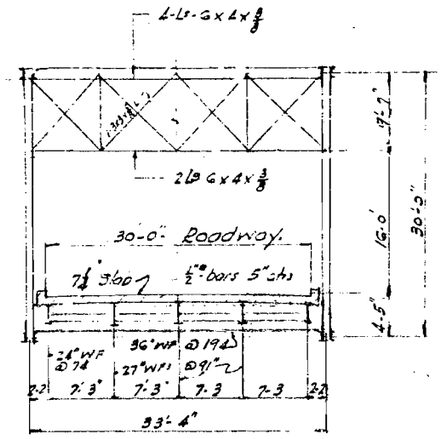


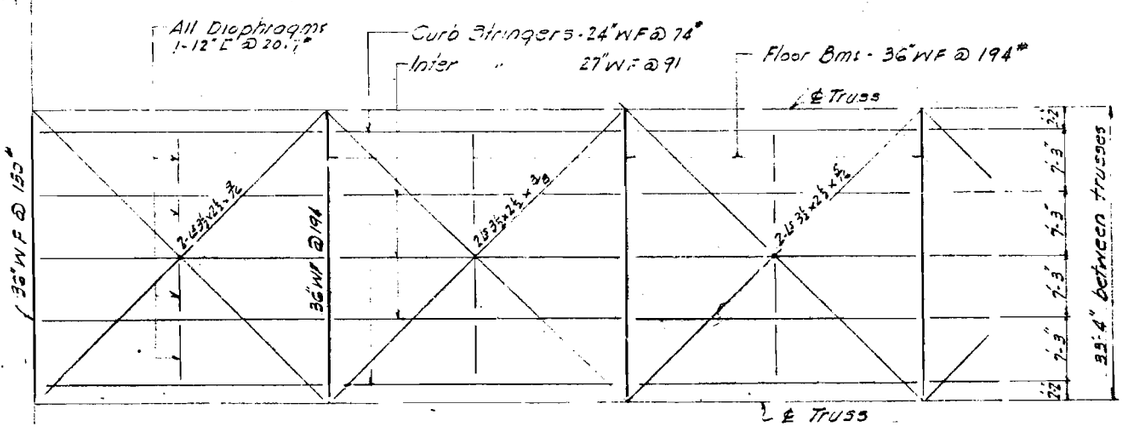
COLORADO
State Highway Dept.
3-150'-0" Thro. Trusses
30'-0" Roadway-with
light concrete grill Floor
Abutments & Piers.
Across-Colorado River
Sta-84+85.75 to 39+84.35
Near De Beque S 2¾ - T8S R97W

Design by W.H.	Appr. by
Made by W.M.	Bridge Engineer
Ck by	Date

		SN. FAP.		
		210-C		







LOADING

Live Load:- AASHO-1941- H15
Dead Load:- Present Slab less 1" wear, plus 15 lbs sq ft for future wearing surface

DESIGN

AASHO-1941
f_s=18000 f_c=833, n=12

Preliminary.

Rivets 7/8"

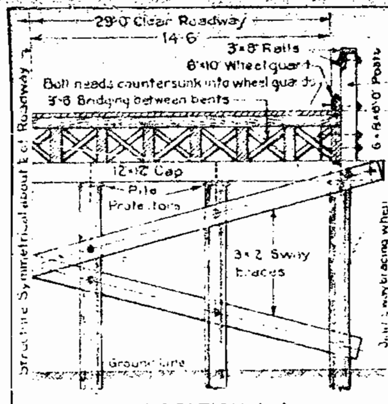
COLORADO
State Highway Dept.
2-200'-0" Thru. Trusses
Stress Sheet
across Colorado River
Near Debeque
WM.

Mortensen. - Sept. 5-1941

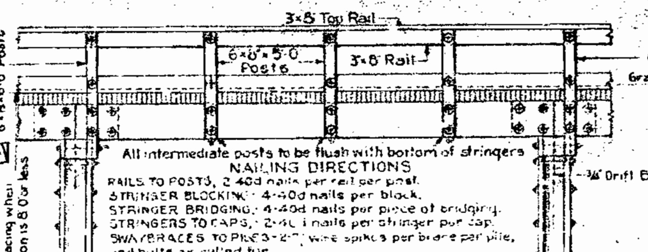
STANDARD P-117-BH-D

FED. ROAD DIST. NO.	STATE	S.N.F.A.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	210 C (1)		

Nailing revised 6-1-40 ... Changed to 1940 Specifications.
REV 4-1-41 W&S Mechanical Tamping



HALF SECTION A-A
TYPICAL BENT AND SPAN SECTION

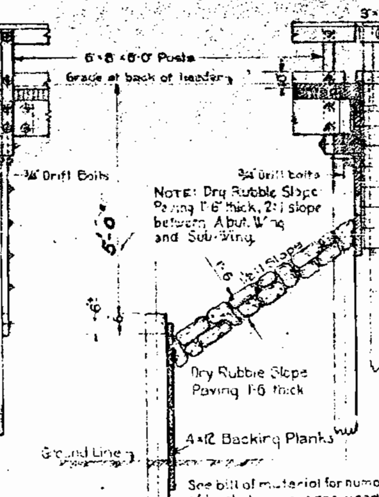


All intermediate posts to be flush with bottom of stringers

NAILING DIRECTIONS

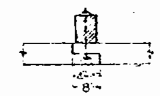
RAILS TO POSTS, 2-40d nails per rail per post.
STRINGER BLOCKING, 4-40d nails per block.
STRINGER BRIDGING, 4-40d nails per piece of bridging.
STRINGERS TO CAPS, 2-40d nails per stringer per cap.
SWAYBRACES TO PILES, 2-7" wire spikes per brace per pile, and bolts as called for.
BULKHEAD TO CAPS AND STRINGERS, 2-7" wire spikes per bulkhead per stringer.
BACKING PLANKS TO PILES, 2-7" wire spikes per plank per pile.
SWAYBRACES TO CAPS, 2-7" wire spikes per brace per cap, and bolts as called for.
FLOOR PLANKS TO FLOOR PLANKS, 1-40d nail at 12" centers and toe nail planks to stringers with 1-40d nail per stringer every other floor plank.
ASPHALT PLANK TO LAMINATED WOOD FLOOR, 1-30d galv. barbed nail per corner per plank and 30d galv. barbed nails at 12" centers along each edge of plank, nails along edges of plank to stagger nails along opposite edge of same plank. ★
All 30d galvanized nails in asphalt plank to be barbed.
★ Based on 8×6'0" Size Planks.

TYPICAL ELEVATION OF SPAN.



NOTE: Dry Rubble Slope Paving 1'6" thick, 2:1 slope between Abut. Wing and Sub-Wing.

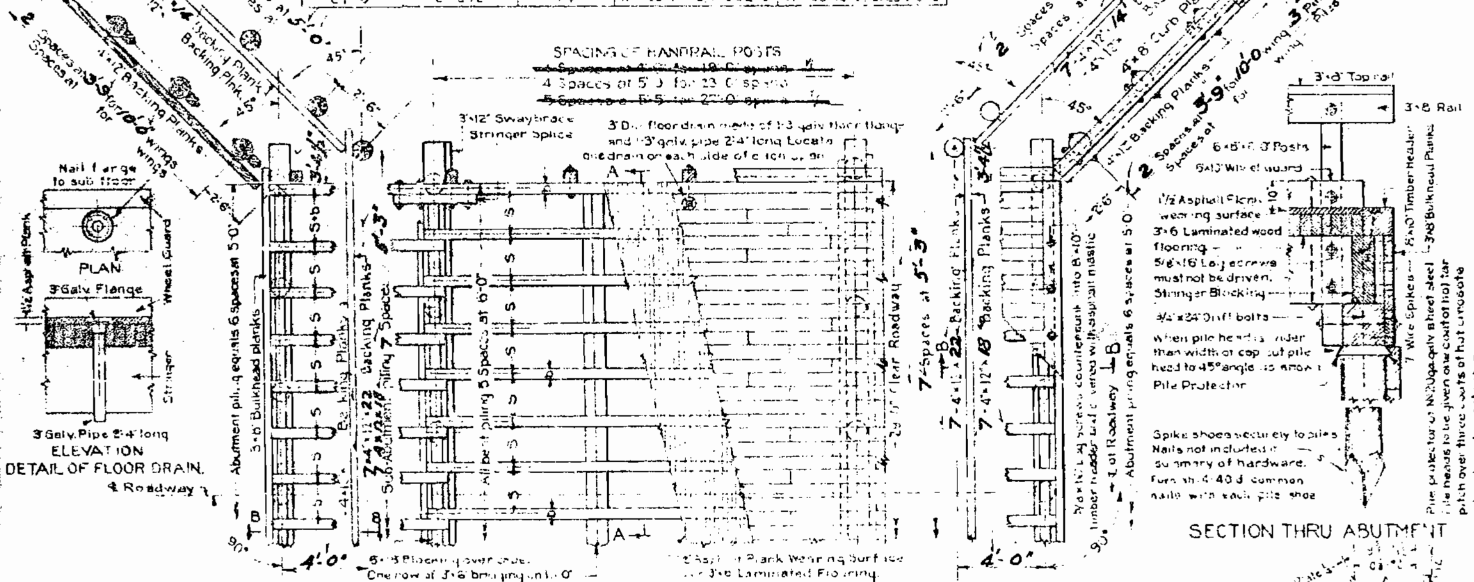
SECTION B-B.



Countersink bolt ends into wheel guards.
PLAN VIEW
DETAILS OF WHEEL GUARD SPLICE

STRINGER SPACING			STRINGER BLOCKING	
L	S	NUMBER OF	ABUTMENTS	BENTS
SPAN LENGTH	MULTIPLE SPAN	STRINGERS	MULTIPLE SPAN	MULTIPLE SPAN
19'-0"	2'-2 3/4"	14	12 Pcs 1'-8 3/4", 1 Pc 2'-2 1/4"	13 Pcs 1'-2 3/4"
23'-0"	2'-2 3/4"	14	12 Pcs 1'-8 3/4", 1 Pc 2'-2 1/4"	13 Pcs 1'-2 3/4"
27'-0"	2'-2 1/2"	14	12 Pcs 1'-8 1/2", 1 Pc 2'-2"	11 Pcs 10 1/2", 2 Pcs 1'-0 1/2"

SPACING OF HANDRAIL POSTS
~~4 Spaces at 4'-9" for 19'-0" spans~~
4 Spaces at 5'-9" for 23'-0" spans
~~5 Spaces at 5'-5" for 27'-0" spans~~



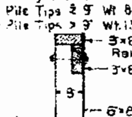
SECTIONAL HALF PLAN OF ABUTMENT

TYPICAL SECTIONAL HALF PLAN OF SPANS

HALF PLAN OF ABUTMENT

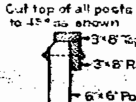
SECTION THRU ABUTMENT

PLAN OF PILE SHOE
Furnish American Pulley Co's. Pile Shoe or Equal
Nº 1½ Shoe for Pile Tips 2½" Wt. 8 lbs.
Nº 2 Shoe for Pile Tips > 9" Wt. 12 lbs.



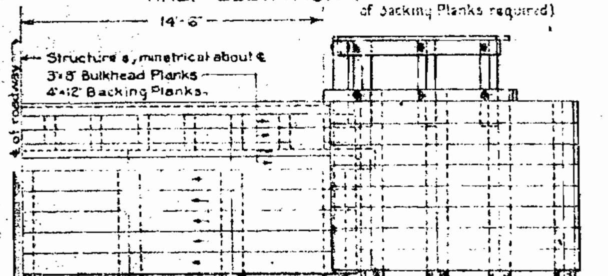
DETAIL OF HANDRAIL POSTS SUPERSTRUCTURE

Cut top of all posts to 45° as shown



DETAIL OF HANDRAIL POSTS WINGS.

HALF ELEVATION (See Bill of Material for number of Backing Planks required)



GENERAL NOTES

All work shall be done according to the standard specifications of the Colorado State Highway Department. Adopted June 1-1940.
All caps must be surfaced on vertical grain face.
All timber and piling to be treated or untreated as shown in bills of material.
All timber and piling shall be dense southern yellow pine or westcoast douglas fir.
All caps shall be edged to an even depth before treatment. The ends of all stringers shall be dapped on one edge before treatment, to obtain an even depth over caps.
All cut surfaces or bored holes in treated timber or piles shall be thoroly saturated with hot creosote oil.
All piling supporting caps shall be covered with galvanized pile protectors as specified, all other piling tops shall be saturated with hot creosote oil and covered with a thick layer of heavy asphalt or tar.
Joints in top handrail must be staggered with joints in side rail.
All handrailing and posts above the wheelguards shall be painted white and all handrail posts below the top of wheel guards shall be painted black as specified.
All bolts more than 12 inches long must be threaded not less than 4 inches.
Bolts in the finished structure shall not project more than one half inch beyond the nut.
All bolts must have Std. C.I.O.G. or Malleable Cast Washers under each head and nut.
Bolt lengths are calculated assuming C.I.O.G. washers will be used.
The contractor is cautioned to check bolt lengths before ordering because of variations in thickness of lumber and piling.
The entire exposed surface of all untreated timber shall be painted one coat as specified immediately after the material is delivered to the project.
Before placing handrailing the contact surfacing shall receive the second coat of paint.
When contractor is permitted to drill holes to facilitate pile driving, these holes must be drilled so piling will stand in vertical position after final driving.
Bid price for asphalt plank shall include galvanized barbed nails & necessary asphalt mop.
~~All hardware to be galvanized ... as shown ... material.~~
All necessary blocking for swaybracing shall be treated timber. *Unpainted* *dipped in red lead before shipment except ...* ... given 3rd ...

GENRL. NOTES (CONT.)
Contractors' attention is called to Specifications covering Mechanical Tamping. Special care must be used to prevent deflection of abutments and wings by wedging action. Backfill in 6 in. earth layers shall be mechanically tamped beginning at the wall and proceeding outward and downward therefrom at a 4:1 min. slope. Below channel elevation mechanical tamp uniformly on both sides. Above original ground line mechanical tamp out to 6 ft. from the wall. Rolling equipment shall not be used within 6 ft. of any wall.

	INITIAL	DATE
ORIGINAL BY	A.D.N.	7-11-41
CHECKED BY	T.G.	7-14-41
... BY	S.H.E.	[illegible]
CHECKED BY	T.T.E.	7/19/41

STANDARD P-117-BH-D

BOLTS AND WASHERS FOR ONE SPAN OF SUPERSTRUCTURE

LOCATION	SIZE	19'0" SPAN NO	LENGTH	LBS	23'0" SPAN NO	LENGTH	LBS	27'0" SPAN NO	LENGTH	LBS
POSTS TO RAILS	5/8	6	[illegible]	7.0	6	10"	7.0	[illegible]	[illegible]	9.0
POSTS TO WHEEL GUARDS	3/4	6	14"	12.7	6	14"	12.7	3	[illegible]	7.0
POSTS TO STRINGERS	3/4	12	16"	28.3	12	16"	28.3	10	[illegible]	42.0
WHEEL GUARD TO STRINGERS	3/4	6	[illegible]	29.0	6	38"	30.0	[illegible]	38	40.0
WASHERS-STD. C.I.O.G. 5/8 & 3/4		12/48		69.0	12/48		69.0	16/64		92.0
TOTAL WEIGHT				[illegible]			147.0			200.0

BOLTS AND WASHERS FOR ONE ABUTMENT

LOCATION	ITEM	SIZE	NO	LENGTH	WT. EACH	TOTAL WT.
POSTS TO RAILS	BOLTS	5/8"	2	10"	1.08 LBS	2.2 LBS
POST TO BULKHEAD TO CAP	BOLTS	5/8"	2	23"	2.15 LBS	4.3 LBS
POSTS TO STRINGERS	BOLTS	3/4"	4	18"	2.60 LBS	10.4 LBS
POSTS TO WHEEL GUARDS	BOLTS	3/4"	2	14"	2.12 LBS	4.3 LBS
WHEEL GUARDS TO STRINGERS	BOLTS	3/4"	2	33"	5.00 LBS	10.0 LBS
TIMBER HEADER TO STRINGERS	LAG SCREWS	5/8"	14	16"	1.36 LBS	19.1 LBS
WASHERS-STD. C.I.O.G.	WASHERS	5/8 & 3/4	20/6		0.75/1.25 LBS	36.7 LBS
CAPS TO PILES	DRIFT BOLTS	3/4"	7	24"	3.00 LBS	21.0 LBS
TOTAL WEIGHT						108.0 LBS

BOLTS AND WASHERS FOR ONE WING

LOCATION	ITEM	SIZE	NO	LENGTH	WT. EACH	TOTAL WT.
POSTS TO RAILS	BOLTS	5/8"	3	11"	1.16 LBS	3.5 LBS
POSTS TO PILES	BOLTS	[illegible]	[illegible]	20"	2.84 LBS	17.0 LBS
PILES TO CURB PLANK	BOLTS	5/8"	3	18"	1.74 LBS	5.2 LBS
WASHERS-STD. C.I.O.G.	WASHERS	5/8 & 3/4	12/12		0.75/1.25 LBS	24.4 LBS
TOTAL WEIGHT						50.0 LBS

BOLTS AND WASHERS FOR ONE BENT

LOCATION	ITEM	SIZE	NO	LENGTH	WT. EACH	TOTAL WT.
POSTS TO RAILS	BOLTS	5/8	2	10"	1.08 LBS	2.2 LBS
POSTS TO WHEEL GUARDS	BOLTS	3/4	2	14"	2.12 LBS	4.3 LBS
POSTS TO CAPS, WITHOUT SWAYS	BOLTS	5/8	2	20"	1.90 LBS	3.8 LBS
WHEEL GUARDS TO STRINGERS	BOLTS	3/4	2	36"	5.00 LBS	10.0 LBS
POSTS TO STRINGERS TO SPLICES	BOLTS	3/4	4	24"	3.32 LBS	13.3 LBS
SPLICES TO STRINGERS	BOLTS	5/8	12	16"	1.57 LBS	18.9 LBS
POSTS TO CAP TO SWAYS	BOLTS	5/8	2	23"	2.15 LBS	4.3 LBS
SWAYS TO RAILS	BOLTS	[illegible]	2	17"	1.66 LBS	3.3 LBS
SWAYS TO PILES	BOLTS	5/8	12	17"	1.66 LBS	19.9 LBS
WASHERS-STD. C.I.O.G. NO SWAYS	WASHERS	5/8 & 3/4	32/16		0.75/1.25 LBS	44.5 LBS
WASHERS-STD. C.I.O.G. WITH SWAYS	WASHERS	5/8 & 3/4	60/16		0.75/1.25 LBS	64.8 LBS
CAPS TO PILES	DRIFT BOLTS	3/4	6	24"	3.00 LBS	18.0 LBS
TOTAL WEIGHT WITHOUT SWAYS						115.0 LBS
TOTAL WEIGHT WITH SWAYS						159.0 LBS

NAILS

LOCATION	ITEM	19'0" SPAN	23'0" SPAN	27'0" SPAN
ONE SPAN OF SUPERSTRUCTURE	30D. COMMON	25 LBS	30 LBS	35 LBS
	30D GALV. BARBED	125 LBS	150 LBS	175 LBS
	40D COMMON	165 LBS	195 LBS	225 LBS
ONE ABUTMENT	40D COMMON	5 LBS	5 LBS	5 LBS
	7" WIRE SPIKES	LBS	20 LBS	LBS
ONE WING	40D COMMON	1 LBS	1 LBS	1 LBS
	7" WIRE SPIKES	LBS	5 LBS	LBS
ONE SUB-ABUTMENT	7" WIRE SPIKES	LBS	30 LBS	LBS
ONE BENT	40D COMMON	7 LBS	7 LBS	7 LBS
	7" WIRE SPIKES	LBS	4 LBS	LBS

SUMMARY FOR HARDWARE

BOLTS AND WASHERS	3 SPANS	AT	147 LBS PER SPAN		441 LBS
	2 ABUTMENTS	AT	108 LBS PER ABUTMENT		216 LBS
	4 WINGS	AT	50 LBS PER WING		200 LBS
	~~BENTS WITHOUT SWAYS~~	~~AT~~	~~45 LBS PER BENT~~		LBS
	2 BENTS WITH SWAYS	AT	159 LBS PER BENT		318 LBS
	TOTAL WEIGHT				1175 LBS

NAILS LOCATION	UNIT	30D COMMON EACH	TOTAL	30D GALV. EACH	TOTAL	40D COMMON EACH	TOTAL	7" WIRE SPIKES EACH	TOTAL
3 SPANS	LBS.	30	90	150	450	195	585	–	–
2 ABUTMENTS	LBS.	–	–	–	–	5	10	20	40
4 WINGS	LBS.	–	–	–	–	1	4	5	20
2 SUB-ABUTS.	LBS.	–	–	–	–	–	–	30	60
2 BENTS	LBS.	–	–	–	–	7	14	4	8
TOTAL WEIGHT	LBS.		90		450		613		128

SUMMARY OF QUANTITIES

STRUCTURE EXCAVATION

ITEM 14 a	DRY ROCK	–	CU. YDS.
ITEM 14 b	DRY COMMON	162	CU. YDS.
ITEM 14 c	WET ROCK		CU. YDS.
ITEM 14 d.	WET COMMON	10	CU. YDS.

ITEM 42 a UNTREATED BRIDGE TIMBER

3 SPANS	AT	312 BD. FT. EACH	=	936 BD. FT.
2 ABUTMENTS	AT	48 BD. FT. EACH	=	96 BD. FT.
4 WINGS	AT	84 BD. FT. EACH	=	336 BD. FT.
2 BENTS	AT	48 BD. FT. EACH	=	96 BD. FT.
		TOTAL		1464 BD. FT.

ITEM 42 b TREATED BRIDGE TIMBER

2 SPANS	AT	8552 BD. FT. EACH	=	17104 BD. FT.
1 SPANS	AT	8542 BD. FT. EACH	=	8542 BD. FT.
2 ABUTMENTS	AT	1336 BD. FT. EACH	=	2672 BD. FT.
4 WINGS	AT	232 BD. FT. EACH	=	928 BD. FT.
2 SUB-ABUTMENTS	AT	1512 BD. FT. EACH	=	3024 BD. FT.
2 BENTS	AT	846 BD. FT. EACH	=	1692 BD. FT.
		TOTAL		33962 BD. FT.

ITEM 43 ASPHALT PLANK WEARING SURFACE

3 SPANS	AT	667 SQ. FT. EACH	=	2001 SQ. FT.

ITEM 60a PILING-TREATED

2 ABUTMENTS	AT	210 LIN. FT. EACH	=	420 LIN. FT.
4 WINGS	AT	96 LIN. FT. EACH	=	384 LIN. FT.
2 SUB-ABUTMENTS	AT	336 LIN. FT. EACH	=	672 LIN. FT.
2 BENTS	AT	180 LIN. FT. EACH	=	360 LIN. FT.
		TOTAL		1836 LIN. FT.

ITEM 60 METAL PILE SHOES
(SEE DETAIL) Nº 1½ SHOES. Nº 2 SHOES. TOTAL = 66 SHOES

ITEM 64 DRY RUBBLE SLOPE PAVING 1'6" THICK — 63 SQ. YDS.

ITEM 89b DRAIN PIPE
2 PIECES 3" DIA. GALV. PIPE 2'4" LONG WITH ONE 3" GALV. FLANGE ON EACH PIPE
3 SPANS AT 2 COMPLETE PER SPAN = 6 PIECES
ITEM ... MECHANICAL TAMPING
ABUT. NO. 1 22 HRS. / ABUT. NO. 2 21 HRS (SUB-ABUT. & WINGS INCL.) TOTAL = 43 HRS.

ONE SPAN OF SUPERSTRUCTURE

UNTREATED TIMBER

DESCRIPTION	SIZE	19'0" SPAN NO	LENGTH	TOTAL	23'0" SPAN NO	LENGTH	TOTAL	27'0" SPAN NO	LENGTH	TOTAL
HANDRAILS S4S	3×8	4	20'0"	160 BD. FT.	4	24'0"	192 BD. FT.	4	28'0"	224 BD. FT.
HANDRAIL POSTS S4S	6×8	6	5'0"	120 BD. FT.	6	5'0"	120 BD. FT.	8	5'0"	160 BD. FT.
TOTAL UNTREATED TIMBER				280 BD. FT.			312 BD. FT.			384 BD. FT.

TREATED TIMBER

DESCRIPTION	SIZE	19'0" NO	LENGTH	TOTAL	23'0" NO	LENGTH	TOTAL	27'0" NO	LENGTH	TOTAL
FLOORING S4S	3×6	87	30'0"	3915 BD. FT.	106	30'0"	4770 BD. FT.	124	30'0"	5580 BD. FT.
BRIDGING	3×6	4	16'0"	96 BD. FT.	8	16'0"	192 BD. FT.	8	16'0"	192 BD. FT.
WHEEL GUARDS ▼	8×10	2	20'0"	200 BD. FT.	2	24'0"	240 BD. FT.	2	28'0"	280 BD. FT.
STRINGERS OUTSIDE INTERMEDIATE SPANS	6×18	2	19'0"	342 BD. FT.						
	8×20				2	23'0"	460 BD. FT.			
	8×20							2	27'0"	720 BD. FT.
STRINGERS OUTSIDE END SPANS	6×18	2	13'6"	301 BD. FT.						
	6×20				2	23'6"	470 BD. FT.			
	8×20							2	27'6"	733 BD. FT.
STRINGERS INSIDE INTERMEDIATE AND END SPANS	6×18	12	20'0"	2160 BD. FT.						
	6×20				12	24'0"	2880 BD. FT.			
	8×20							[illegible]	[illegible]	[illegible]
TOTAL TR. TIMBER-END SPANS				6722 BD. FT.			8552 BD. FT.			11266 BD. FT.
TOTAL TR. TIMBER-INTER. SPANS				6713 BD. FT.			8542 BD. FT.			11252 BD. FT.
ASPHALT PLANK WEARING SURF.				551 SQ. FT.			667 SQ. FT.			789 SQ. FT.

ONE ABUTMENT

UNTREATED TIMBER

HANDRAIL POSTS S4S	2 PCS.	6×8×6'0"	48 BD. FT.
TOTAL UNTREATED TIMBER			48 BD. FT.

TREATED TIMBER

TIMBER HEADER		1 PC.	8×10×30'0" FINISH TO 7'9"	200 BD. FT.
CAP		1 PC.	12×12×34'0"	408 BD. FT.
BULKHEAD PLANKS		4 PCS.	3×8×32'0"	256 BD. FT.
BACKING PLANKS		2 PCS.	4×12×32'0"	256 BD. FT.
STRINGER BLOCKING Cut before treatment	19 & 23 SPANS	1 PC.	6×18×24'0"	216 BD. FT.
	~~27 SPANS~~	~~1 PC.~~	~~6×18×22'0"~~	~~198 BD. FT.~~
TOTAL TREATED TIMBER				1336 BD. FT.
PILING-TREATED	7 PIECES AT 30 LIN. FT. EACH =			210 LIN. FT.

ONE WING

UNTREATED TIMBER

DESCRIPTION	SIZE	16'0" LENGTH NO	LENGTH	BD. FT.	20'0" LENGTH NO	LENGTH	BD. FT.	10'0" LENGTH NO	LENGTH	BD. FT.
HANDRAILS S4S	3×8	1	12'0"	24	1	12'0"	24	1	12'0"	24
	3×8	1	12'0"	24	1	12'0"	24	1	12'0"	24
HANDRAIL POSTS S4S	6×6	3	4'0"	36	3	4'0"	36	3	4'0"	36
TOTAL UNTREATED TIMBER-BD. FT.				84			84			84

TREATED TIMBER

DESCRIPTION	SIZE	NO	LENGTH	BD. FT.	NO	LENGTH	BD. FT.	NO	LENGTH	BD. FT.
CURB PLANKS	4×8	1	12'0"	32	1	12'0"	32	1	12'0"	32
BACKING PLANKS	4×12		16'0"			20'0"		5	10'0"	200
TOTAL TREATED TIMBER-BD. FT.										232
PILING-TREATED	3 PIECES AT 32 LIN. FT. EACH = 96 LIN. FT.									

ONE SUB-ABUTMENT AND WINGS

TREATED TIMBER

BACKING PLANKS	7 PCS.	4×12×22'0"	616 BD. FT.
BACKING PLANKS	7 PCS.	4×12×18'0"	504 BD. FT.
BACKING PLANKS	7 PCS.	4×12×14'0"	392 BD. FT.
BACKING PLANKS	PCS.	4×12×	BD. FT.
TOTAL TREATED TIMBER			1512 BD. FT.
PILING TREATED	14 PIECES AT 24 LIN. FT. EACH =		336 LIN. FT.

ONE BENT

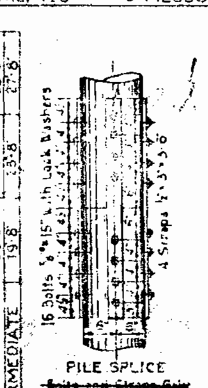
UNTREATED TIMBER

HANDRAIL POSTS S4S	2 PCS.	6×8×6'0"	48 BD. FT.
TOTAL UNTREATED TIMBER			48 BD. FT.

TREATED TIMBER

STRINGER SPLICES		2 PCS.	6×18×4'0"	72 BD. FT.
CAP		1 PC.	12×12×34'0"	408 BD. FT.
SWAYBRACES		2 PCS.	3×12×34'0"	204 BD. FT.
STRINGER BLOCKING Cut before treatment	19 & 23 SPANS	1 PC.	6×18×18'0"	162 BD. FT.
	~~27 SPANS~~	~~1 PC.~~	[illegible]	~~[illegible]~~ BD. FT.
SHIMS		[illegible]	[illegible]	BD. FT.
TOTAL TREATED TIMBER				846 BD. FT.
PILING-TREATED	6 PIECES AT 30 LIN. FT. EACH =			180 LIN. FT.

▼ Lengths of Wheel Guards	19'0" SPAN	23'0" SPAN	27'0" SPAN
SINGLE	19'0"	23'0"	27'0"
END	19'6"	23'6"	27'6"
END	18'6"	22'6"	26'6"
INTERMEDIATE	19'8"	23'8"	27'8"



PILE SPLICE
~~Bolts and Straps Galv.~~
Note: Bolt length given for 12" dia. Pile.

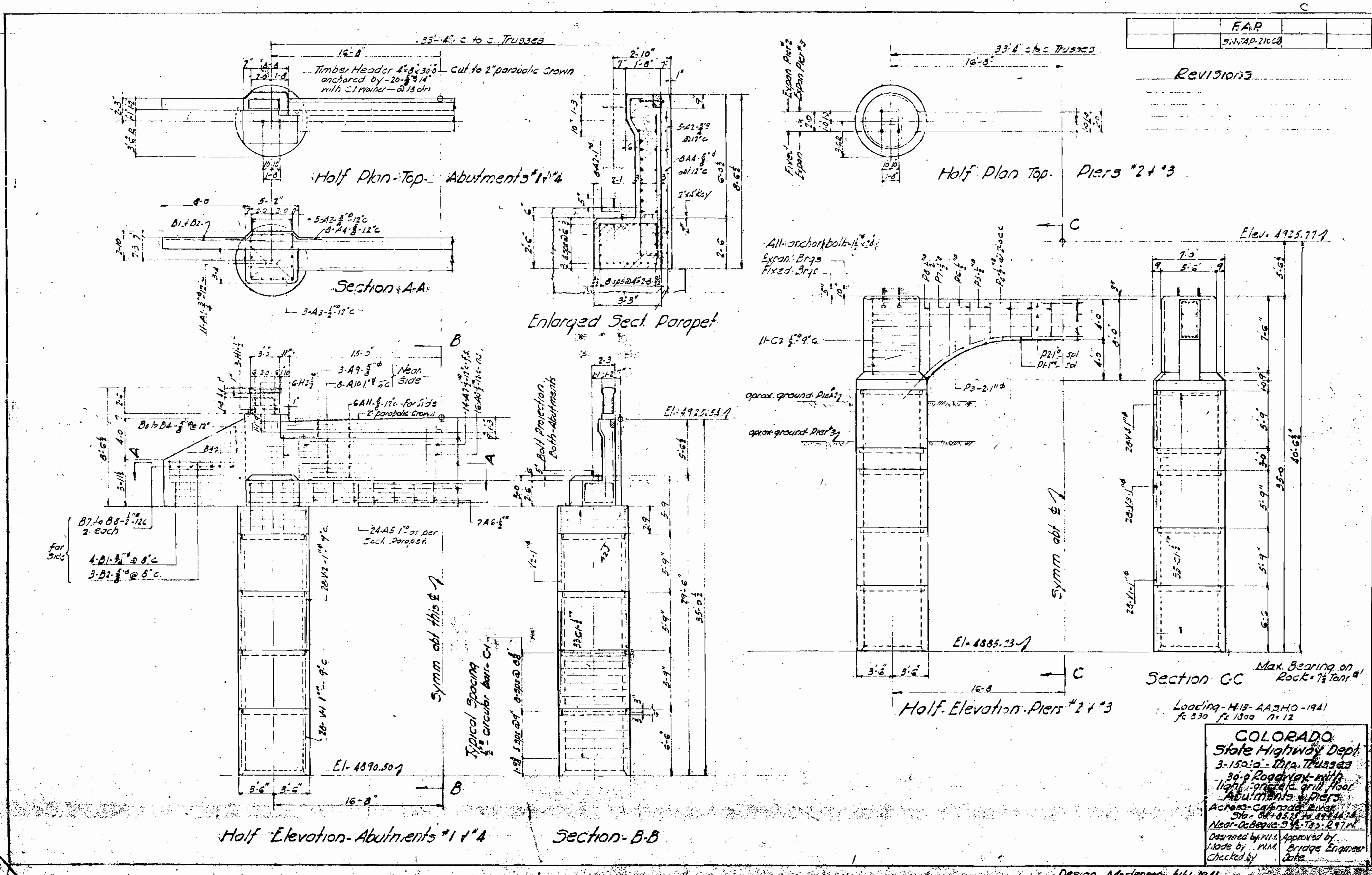
STRUCTURES REQUIRED
3 SPANS AT 23'-0"
SPANS AT

LOADING DATA.
LIVE LOAD A.A.S.H.O. 1938 CLASS A. H-15.
DEAD LOAD ASSUMES 25 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE. THIS INCLUDES THE 1½" ASPHALT PLANK WEARING SURFACE.

COLORADO
STATE HIGHWAY DEPARTMENT
TREATED TIMBER PILE TRESTLE WITH 6" LAMINATED FLOOR AND 1½" ASPHALT PLANK WEARING SURFACE
DOUBLE ABUTMENTS-29 FT. ROADWAY
Across *Horse Thief Wash*
Sta. *61+65.5* to *62+35.5*
Near *De Beque* Sec. *27* T. *8 S* R. *97 W*

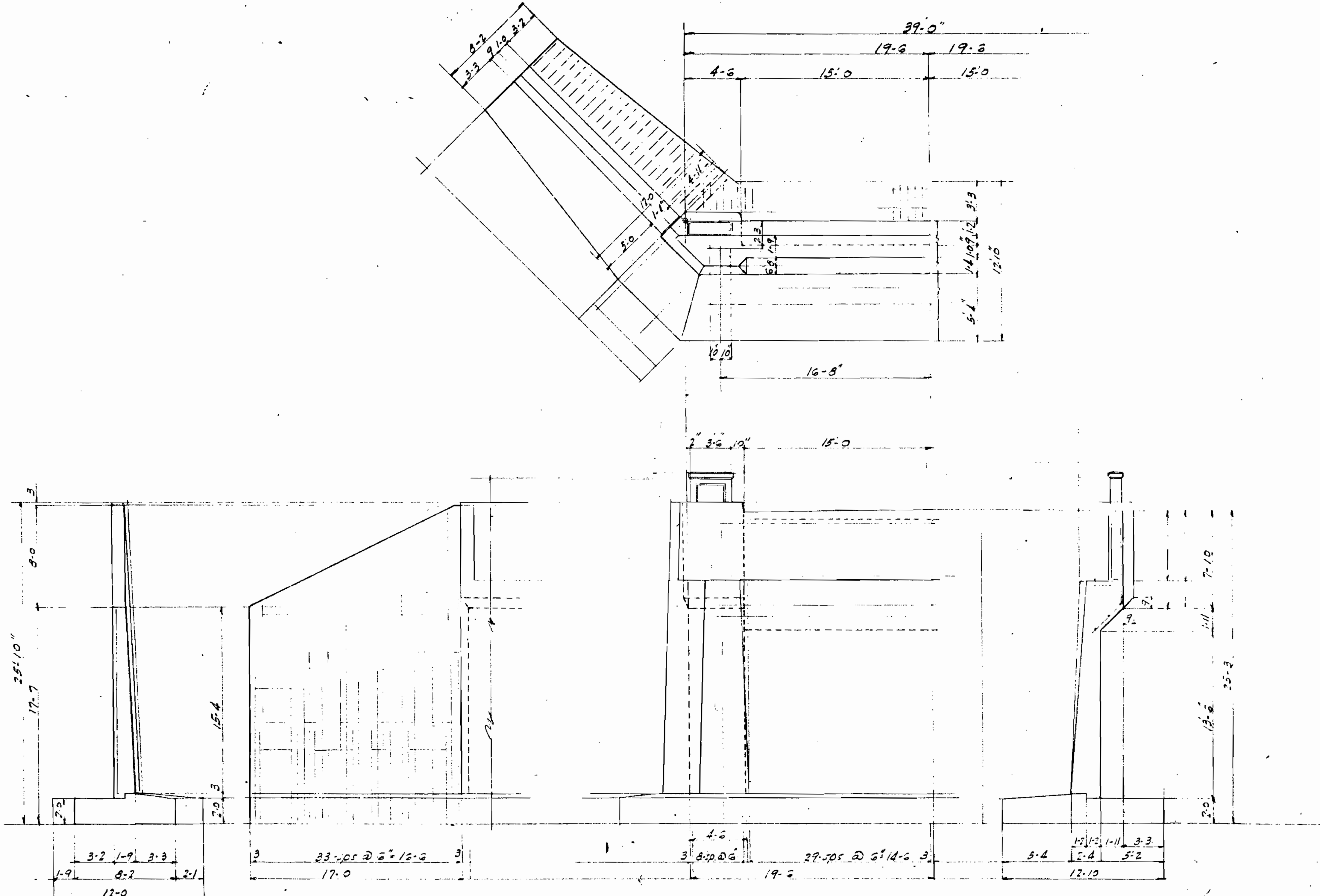
Designed by E.W.T. Made by E.W.T. Check Design A.S.H. Check Detail A.S.H.	Approved by *R. J. Bailey* Bridge Engineer Date *March 1936*

STRUCTURE NO. *G-4-F*



F.A.P.
Revisions
Half Plan-Top- Abutments #1 & #4
Section A-A
Enlarged Sect. Parapet
Half Plan Top. Piers #2 & #3
Half Elevation-Abutments #1 & #4
Section-B-B
Half-Elevation-Piers #2 & #3
Section C-C
Symm abt this ℄
Typical Spacing
All anchor bolts
Max. Bearing on Rock
Loading-H15-AASHO-1941
COLORADO
State Highway Dept.
3-150'-0" Thru Trusses
30-0 Roadway with light concrete grid floor
Abutments & Piers
Designed by
Made by
Checked by
Approved by
Bridge Engineer
Date
Design. Mortensen July 1941

		F.A.P. 196 C(1)		



39'-0"
19-6
19-6
4-6
15'-0
15'-0
16-8"
2" 3-6 10"
15-0
25'-10"
17-7
15-4
8-0
3-2 1-9 3-3
1-9 8-2 2-1
12-0
33-spa @ 6"= 16-6
17-0
4-6
29-spa @ 6"= 14-6
19-6
7-10
13-6
25-2
5-4
5-2
12-10

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	COLO.	S.N. A.P.		1

210 C (1)

Layout Sheet for 2 Spans @ 200'
H.W.L. 5-21-41.

DATA REQUIRED TO ACCOMPANY SITUATION PLAN.

I. GENERAL REMARKS.

Fill out all blanks with care, giving information on all points listed, and supplementary remarks on features not listed. High water and foundation conditions are especially important and should be thoroughly investigated.

II. PROFILE.

Plot profile of centerline of roadway. Use natural scale, preferably 1"=10', or multiple of 10'.

At proper locations show section of test pits, noting material encountered, if available at time of survey.

Show present, and if possible, proposed finished grade noting elevations and gradients.

III. MAP.

Show present and proposed alignment of bridge and all approaches, as far as affected. Extend Cross sections at least 100-ft. each side of C. L., giving location and elevation of points so that at least 2-foot contours may be accurately plotted. Show edge of water, islands, shoals, other obstructions, and direction of current at high water and at low water. Plot location of test pits, position and pointing of camera for each photo, all buildings, fences, and other features affected. Establish bench marks and give location of same. Reference C. L. and show North point. Give a C. L.-profile of stream-bed for 500 feet up-stream and 500 feet down-stream from center line of survey. Plot proposed structure in soft pencil only. Do not ink.

IV. REPORT OF EXAMINATION OF BRIDGE-SITE.

Div.____ County Mesa Route____ Sec.____ Sta.____

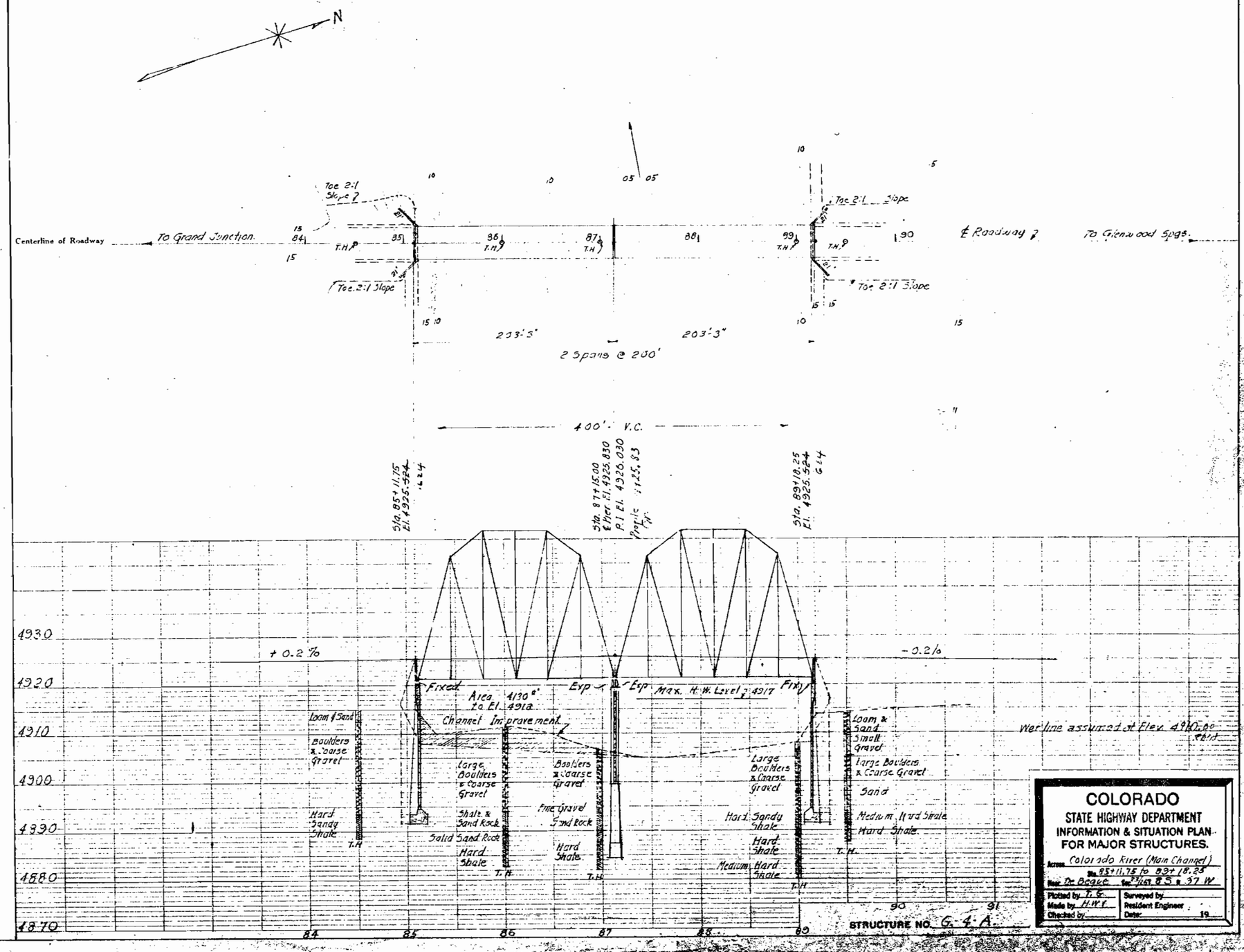
Date of survey____ To be built by____

1. Bridge Site 1½ Miles E. of De Beque
   Location____
   Sec. 13-24 Twp. 8 S Range 97 W Local name____
   Over Colorado River Main Channel River Creek
   Distance from nearest shipping point 1½ miles
2. Source of materials____
   Sand____ Length of haul to site____ miles
   Gravel____ " " " " " "
   Stone____ " " " " " "
   Falsework Timber____ " " " " " "
   Piling____ " " " " " "
3. Cost Data.—
   Cost of following materials at site____
   Portland Cement____ Per Bbl.
   Sand, coarse and clean____ " Cu. Yd.
   Gravel____ " " "
   Stone____ " " "
   Falsework Timber____ " Ft. B. M.
   Piling____ " Lin. Ft.
   Cost per ton-mile for hauling____
4. Waterway.—
   Drainage area in Sq. Miles (approximate)____
   Character of watershed____
   Elevation of Highest water 4917 Date____
   Source of information on water elevation____
   Elevation of ordinary high water____
   Elevation of low water____
   Elevation of permanent ground-water____
   Is stream ever dry? No During what months?____
   Will all flood water pass through recommended structure?____
   Can channel be cleaned to afford more waterway?____
   Is stream-bed cutting or silting up?____
   Is stream stable in its banks?____ Depth of scour?____
   Does stream carry light, medium, or heavy drift?____
   What clearance above high water should be allowed?____
   Is channel change necessary?____
   If channel change is necessary, illustrate location on sketch map.
5. Foundation Data.—
   Character of material____
   Distance from stream-bed to solid foundation____
   Recommended depth of footings____
   Should piles be used?____ What length?____ Pile Shoes?____
6. Old Bridge.—
   If there is no bridge at the present location include here data on nearest bridge over same stream. If possible show location of such bridge or bridges on the map. Photographs if available.
   Type____ Roadway Width____ Number and length of spans____
   Area of waterway provided under old structure____ Sq. Ft., Elev. of Underclearance____
   Has this area proved sufficient at flood times?____ Skew Angle____
   Is it too large?____ Disposition of Existing Structure____
7. Give foundation data on bridges in vicinity. When possible, get pile driving data, logs of borings, etc., for adjoining structures, and where considered advantageous procure plans.
   Sketch profile of Rail Road Crossing if within 1000 ft. of Highway. (Show X-section of entire waterway.)
   Elevation of base of Rail____ Elevation of Rail Road Underclearance____
   Remarks____
8. Recommendations for New Structure.—
   Type____ Width curb to curb____ Number and length of spans____
   What is the least clear span permissible?____
   Are sidewalks desired?____ Lighting conduit?____ Light standards?____
   Angle of Skew recommended____
   Will approaches be desired, or will same be filled?____
   Approximate cost per Cu. Yd. of approach-filling at bridge site?____
   Is it necessary to maintain traffic alongside old structure?____
   If so, how shall it be done?____
   R. R. Siding____ Haul to Bridge Site____ Mi.
   Remarks____

Submitted by____
Engineer.

NOTE.—When bridge is recommended to be left in place, complete structural details shall be procured from the bridge itself or from existing plans of the structure. When possible these plans shall be forwarded with the plans of the project.

SHEET DATA	Survey	Soundings	Piling	Layout	B.P.R. Approval	Detail Sheets
NOTE BOOK No.____ PAGE____						
No.____ PAGE____						
BY						
DATE						



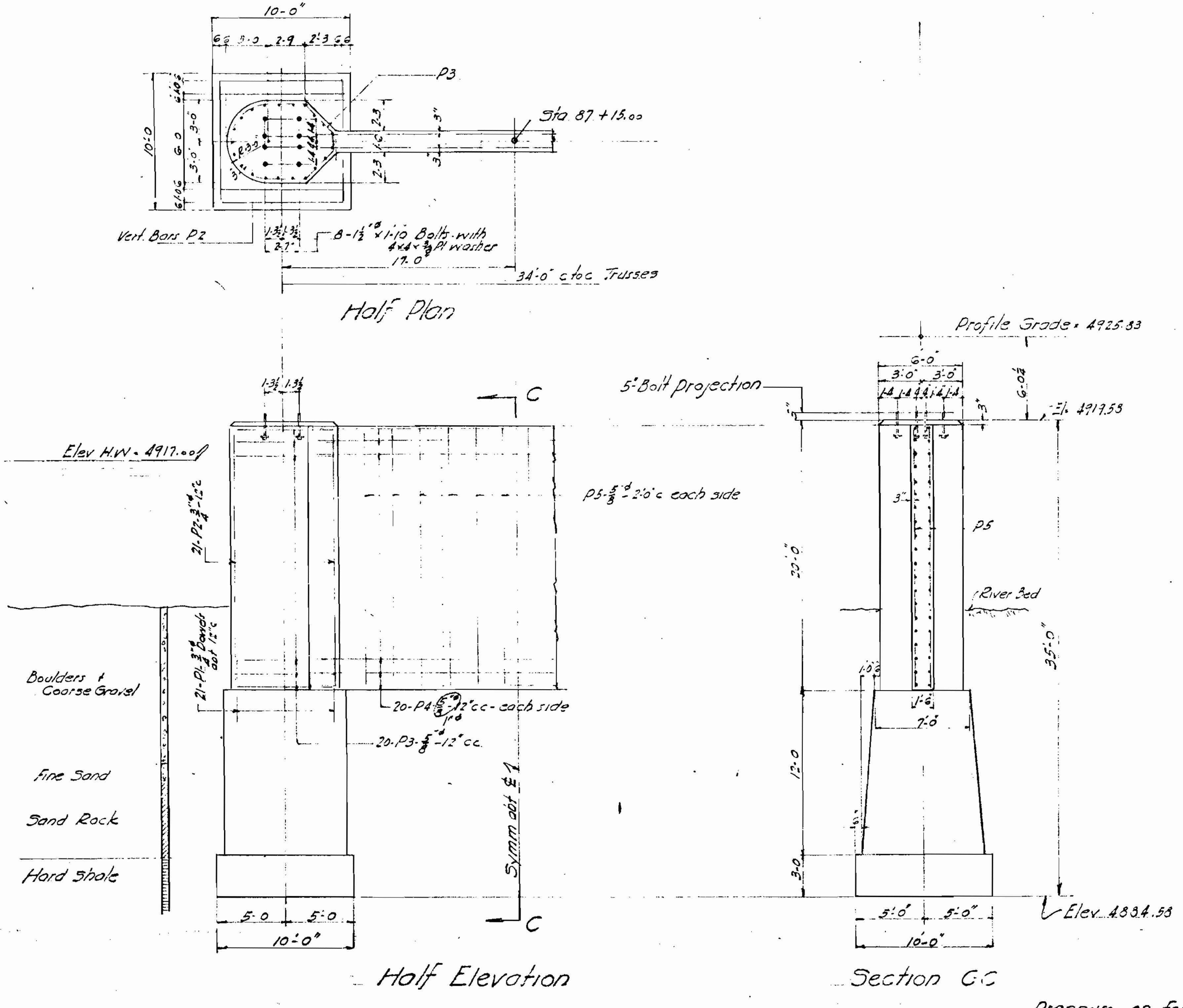
COLORADO
STATE HIGHWAY DEPARTMENT
INFORMATION & SITUATION PLAN FOR MAJOR STRUCTURES.

Across Colorado River (Main Channel)
Sta. 85+11.15 to 89+18.25
Near De Beque Sec. 13 T 8 S R 97 W

Plotted by T. S.	Surveyed by
Made by H.W.E.	Resident Engineer
Checked by	Date: 19

STRUCTURE NO. G. 4. A.

SN. F.A.P. 310-C-1



Pressure on footing = 5 Tons □'

Structure Nº G-4-A

COLORADO
State Highway Dept
2-200'-0" Thro. Trusses
Details - Pier #2
over Colorado River
Sta 35+11.75 to 89+18.25
Near DeBeque S 33/34 T8S R97W

Design - W.M. Made - W.M. Check	Approved Bridge Eng. Date

Mortensen Nov. 4. 1941

DATA REQUIRED TO ACCOMPANY SITUATION PLAN.

I. GENERAL REMARKS.

Fill out all blanks with care, giving information on all points listed, and supplementary remarks on features not listed. High water and foundation conditions are especially important and should be thoroughly investigated.

II. PROFILE.

Plot profile of centerline of roadway. Use natural scale, preferably 1″=10′, or multiple of 10′.

At proper locations show section of test pits, noting material encountered, if available at time of survey.

Show present, and if possible, proposed finished grade noting elevations and gradients.

III. MAP.

Show present and proposed alignment of bridge and all approaches, as far as affected. Extend Cross sections at least 100-ft. each side of C. L., giving location and elevation of points so that at least 2-foot contours may be accurately plotted. Show edge of water, islands, shoals, other obstructions, and direction of current at high water and at low water. Plot location of test pits, position and pointing of camera for each photo, all buildings, fences, and other features affected. Establish bench marks and give location of same. Reference C. L. and show North point. Give a C. L.-profile of stream-bed for 500 feet up-stream and 500 feet down-stream from center line of survey. Plot proposed structure in soft pencil only. Do not ink.

IV. REPORT OF EXAMINATION OF BRIDGE-SITE.

Div.______ County______ Route______ Sec.______ Sta.______

Date of survey______ To be built by______

1. Bridge Site______
   - Location______
   - Sec.______ Twp.______ Range______ Local name______
   - Over______ River Creek______
   - Distance from nearest shipping point______
2. Source of materials______
   - Sand______ Length of haul to site______ miles
   - Gravel______ " " " " " ______ "
   - Stone______ " " " " " ______ "
   - Falsework Timber______ " " " " " ______ "
   - Piling______ " " " " " ______ "
3. Cost Data.—
   - Cost of following materials at site______
   - Portland Cement______ Per Bbl.
   - Sand, coarse and clean______ " Cu. Yd.
   - Gravel______ " " "
   - Stone______ " " "
   - Falsework Timber______ " Ft. B. M.
   - Piling______ " Lin. Ft.
   - Cost per ton-mile for hauling______
4. Waterway.—
   - Drainage area in Sq. Miles (approximate)______
   - Character of watershed______
   - Elevation of Highest water______ Date______
   - Source of information on water elevation______
   - Elevation of ordinary high water______
   - Elevation of low water______
   - Elevation of permanent ground-water______
   - Is stream ever dry?______ During what months?______
   - Will all flood water pass through recommended structure?______
   - Can channel be cleaned to afford more waterway?______
   - Is stream-bed cutting or silting up?______
   - Is stream stable in its banks?______ Depth of scour?______
   - Does stream carry light, medium, or heavy drift?______
   - What clearance above high water should be allowed?______
   - Is channel change necessary?______
   - If channel change is necessary, illustrate location on sketch map.
5. Foundation Data.—
   - Character of material______
   - Distance from stream-bed to solid foundation______
   - Recommended depth of footings______
   - Should piles be used?______ What length?______ Pile Shoes?______
6. Old Bridge.—
   - If there is no bridge at the present location include here data on nearest bridge over same stream. If possible show location of such bridge or bridges on the map. Photographs if available.
   - Type______ Roadway Width______ Number and length of spans______
   - Area of waterway provided under old structure______ Sq. Ft., Elev. of Underclearance______
   - Has this area proved sufficient at flood times?______ Skew Angle______
   - Is it too large?______ Disposition of Existing Structure______
7. Give foundation data on bridges in vicinity. When possible, get pile driving date, logs of borings, etc., for adjoining structures, and where considered advantageous procure plans.
   - Sketch profile of Rail Road Crossing if within 1000 ft. of Highway. (Show X-section of entire waterway.)
   - Elevation of base of Rail______ Elevation of Rail Road Underclearance______
   - Remarks______
8. Recommendations for New Structure.—
   - Type______ Width curb to curb______ Number and length of spans______
   - What is the least clear span permissible?______
   - Are sidewalks desired?______ Lighting conduit?______ Light standards?______
   - Angle of Skew recommended______
   - Will approaches be desired, or will same be filled?______
   - Approximate cost per Cu. Yd. of approach-filling at bridge site?______
   - Is it necessary to maintain traffic alongside old structure?______
   - If so, how shall it be done?______
   - R. R. Siding______ Haul to Bridge Site______ Mi.
   - Remarks______

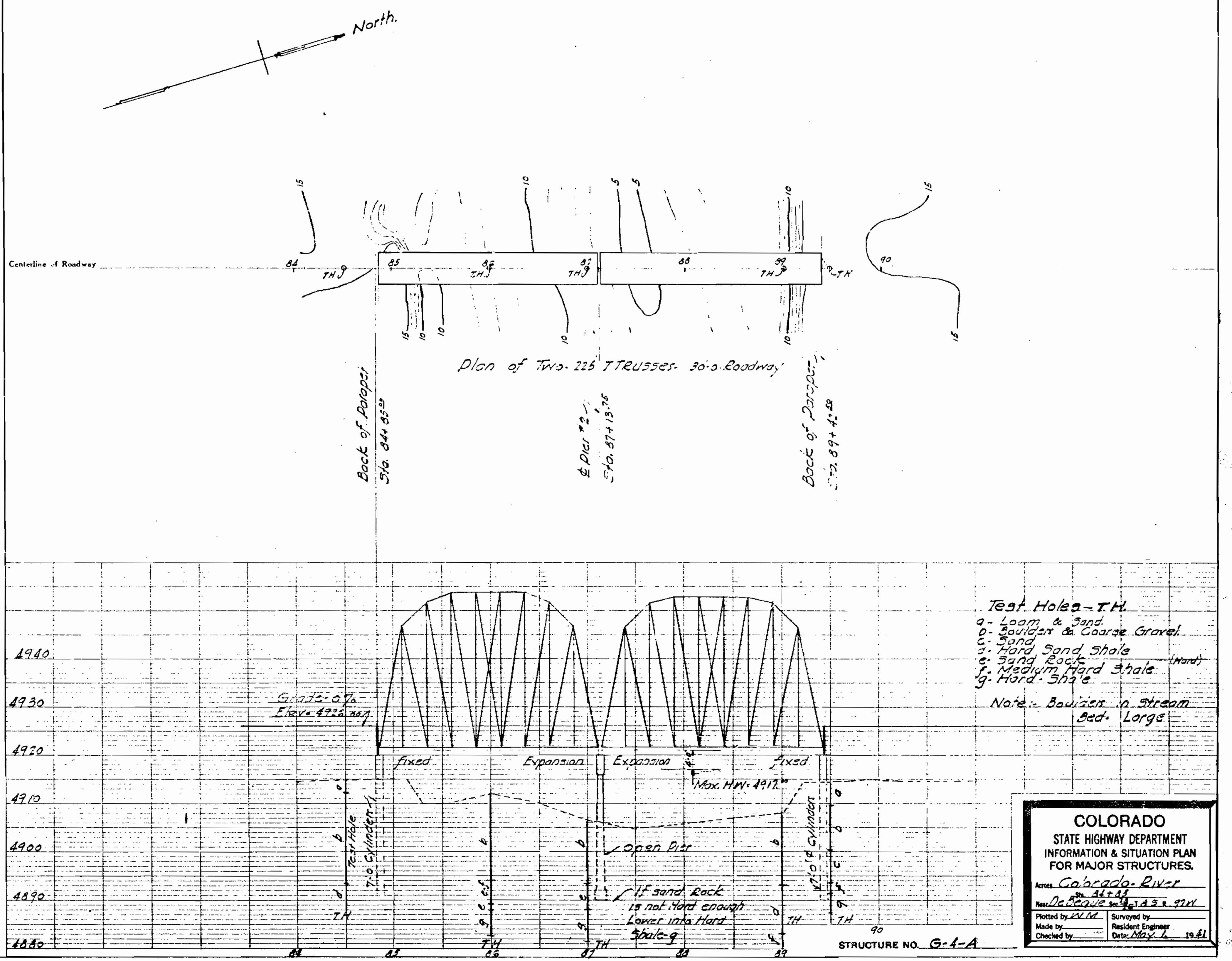
Submitted by______
Engineer.

NOTE.—When bridge is recommended to be left in place, complete structural details shall be procured from the bridge itself or from existing plans of the structure. When possible these plans shall be forwarded with the plans of the project.

SHEET DATA — Note Book No.____ Page____ / No.____ Page____ — Field / Office — Survey, Soundings, Plotted, Layout, B.P.R. Approval, Detail Sheets — By — Date

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	FAP 210C		

Layout Sheet #2



STRUCTURE NO. G-4-A

COLORADO
STATE HIGHWAY DEPARTMENT
INFORMATION & SITUATION PLAN FOR MAJOR STRUCTURES.

Across Colorado River
Sta. 84+85
Near De Beque Sec. 1/2 T 8 S R 97 W

Plotted by W.M. — Surveyed by______
Made by______ — Resident Engineer
Checked by______ — Date: May 1, 1941