FED. A. ID. DIST. NO.	STATE	A. W. PROJ. NO.	SHEET NO.	TOTAL SHEETS
	COLO.	2001 CONST. DIV. NO. 4	1	

2001.04

COLORADO
STATE HIGHWAY DEPARTMENT

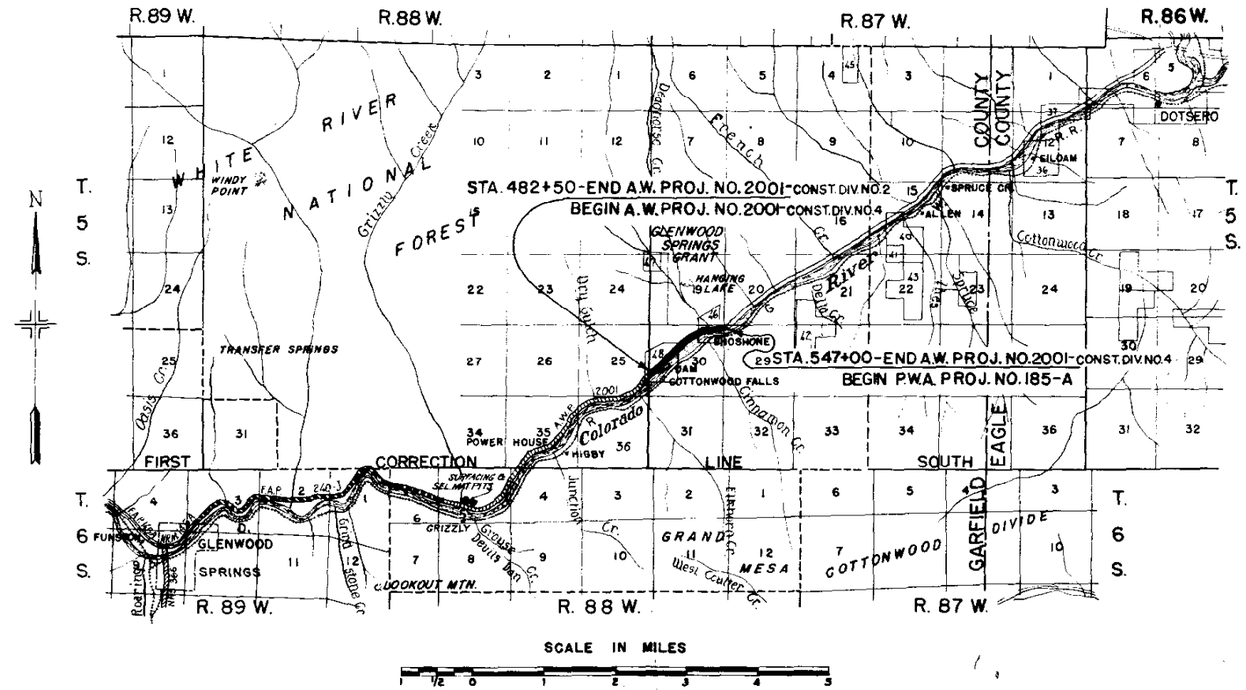
PLAN AND PROFILE OF PROPOSED
A. W. PROJECT NO. 2001-CONST. DIV. NO. 4
STATE HIGHWAY NO. 4
GARFIELD COUNTY

INDEX OF SHEETS

SCALES ON 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 6439.4 FT. = 1.219 MI.
NET LENGTH OF PROJECT 6439.4 FT. = 1.219 MI.

CONVENTIONAL SIGNS

CENTER LINE OF SURVEY 5/0
RIGHT OF WAY LINE
SECTION LINE
ONE QUARTER SECTION LINE
FENCE
POLE LINE ◇ ◇ ◇ ◇



SCALE IN MILES
1 1/2 0 1 2 3 4 5

NOTE

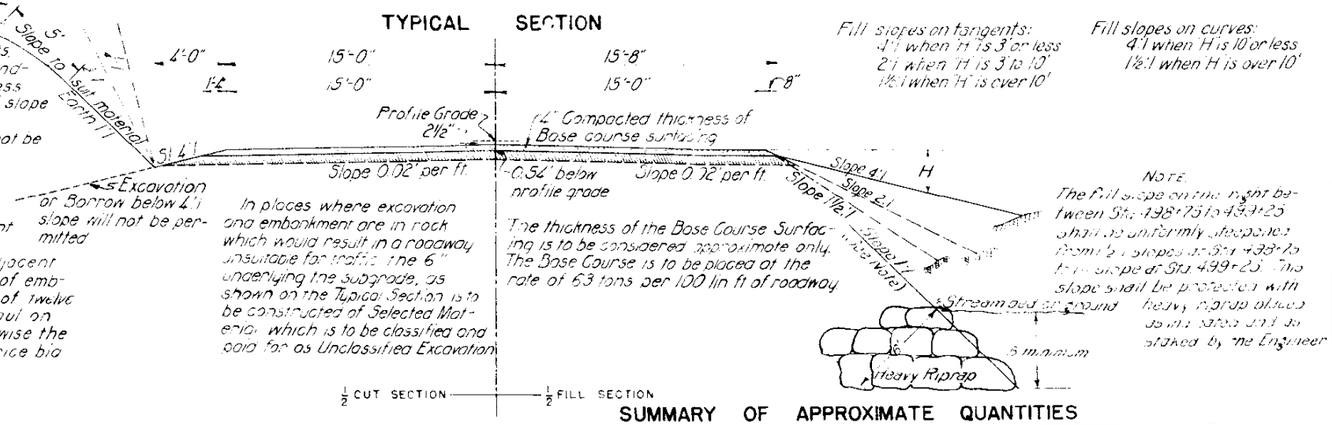
It is recommended that bidders on this project go over the plan details with one of the following field representatives of the department.
H. L. Jenness, Division Engineer, Glenwood Springs, Colorado
A. K. Langridge, Resident Engineer, Glenwood Springs, Colorado.

RECOMMENDED FOR APPROVAL 10-13-37
J. E. Williams
ASSISTANT ENGINEER
APPROVED
Chas. D. Vail
STATE HIGHWAY ENGINEER
RECOMMENDED FOR APPROVAL
DIST. ENG. BUREAU PUBLIC ROADS
RECOMMENDED FOR APPROVAL
CHIEF ENG. BUREAU PUBLIC ROADS
APPROVED
DIRECTOR BUREAU PUBLIC ROADS

FED. ROAD DIST. NO.	STATE	AW PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	CONST. DIV. 2001 NO. 4	2	

TYPICAL CROSS SECTION OF IMPROVEMENT AND SUMMARY OF QUANTITIES

TYPICAL SECTION



Fill slopes on tangents:
4:1 when H is 3' or less
2:1 when H is 3 to 10'
1½:1 when H is over 10'

Fill slopes on curves:
4:1 when H is 10' or less
1½:1 when H is over 10'

NOTE.
The Fill slope on the right between Sta 498+75 to 499+25 shall be uniformly steepened from a slope at Sta 498+75 to a slope at Sta 499+25. This slope shall be protected with heavy riprap placed as and where and to extent staked by the Engineer

CUT SLOPE TREATMENT IN EARTH CUTS

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

Quantities involved in slope treatment shall not be included in Unclassified Excavation

PROTECTION OF FILL SLOPES

At all places on this project where toe of Embankments, on river side, extend into present stream bed, such toes of embankments shall be constructed of large rocks and boulders from adjacent cuts. Rock and boulders shall be placed in toes of embankments on stream side to a minimum height of twelve (12) feet above normal water level. Actual overhaul on this material will be allowed and paid for. Otherwise the cost of this work shall be included in the unit price bid per cubic yard for "Unclassified Excavation."

In places where excavation and embankment are in rock which would result in a roadway unsuitable for traffic the 6" underlying the subgrade, as shown on the Typical Section is to be constructed of Selected Material which is to be classified and paid for as Unclassified Excavation

The thickness of the Base Course Surfacing is to be considered approximate only. The Base Course is to be placed at the rate of 63 tons per 100 lin ft of roadway

SELECTED MATERIAL.

Selected Material shall be placed and spread on the subgrade approximately 6 inches in thickness at the rate of 72 cu yds per 100 lin. ft of roadway.

This selected material shall be classified and paid for as "Unclassified Excavation." It is estimated that the material will be obtained in the vicinity of the pit indicated in tabulation below. The estimated quantities involved in the placing of this selected material are also shown in tabulation below

MATERIAL TO BE PLACED STA. TO STA.	APPROX. QUANTITY REQUIRED CU. YD.	SOURCE OF MATERIAL	ESTIMATED OVERHAUL STA. YD.	YD. MI.
482+50 - 495+71[1]	950	Pit located in N½ of	10470	3330
495+73[2] - 499+53[2]	280	SW¼ Sec 5 T5S	3050	1020
502+14[3] - 511+53[4]	880	R.88W Garfield County,	3020	3380
511+68[5] - 533+88[6]	1390	Colorado being on left	17510	6570
534+21[7] - 547+00	920	Sta 285+00 to 295+00	10130	4120
		AWP 2001 No. 2		
TOTAL	4020		50850	18420

GENERAL NOTES

This project is to be constructed in conformity with the Standard Specifications of the Colorado State Highway Department, adopted June 1 1937.

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

All roadway excavation required to construct this project is to be obtained as indicated on the plans. Quantities involved beyond the limits of the ditch as shown on the Typical Section, either noted on the Profile as "Borrow" or on List of Structures as "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

All curves are to be superelevated as provided for by the Standard Superelevation Sheet included with plans.

All poles encroaching on construction are to be moved by owners

All guard fence noted on plans for removing and rebuilding shall be rebuilt in accordance with details shown on Sheet No 12a.

All corrugated metal pipe cross culverts are to be provided with one headwall on the inlet end unless otherwise noted on the plans.

All side approach roads to the project shall be gravel surfaced with a 4 inch thickness of "Gravel or Crushed Rock Surfacing" extending approximately 30 ft from edge of highway. Estimated tonnage of surfacing material required in this operation is shown in List of Structures.

Overhaul will be paid for as measured along center line of project, except as otherwise noted on plans.

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.

Clearing and Grubbing shall be of variable widths and be held to the minimum required for the construction of the road and to accomodate visibility. Ordinarily the Clearing shall not extend more than 8 ft beyond the toes of the fills or the tops of the cut slopes.

DETOUR PLAN

The Contractor shall at his own expense, adequately provide for traffic requirements on this project as noted below:

Through traffic will be routed over neighboring roads only when construction activities on this project make it necessary to close present road to through traffic. Prior to closing the road to through traffic, the requirements of traffic shall be adequately provided for by the Contractor. Subsequent to closing the road to through traffic and to removal of present bridge Sta 501+ the Contractor shall adequately provide for the requirements of local traffic from the beginning of project Sta 482+50 to the dam Sta 499+. Also the Contractor shall construct and maintain in safe condition all temporary approaches to and crossings of intersecting roads.

SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO	DESCRIPTION	UNIT	ROADWAY	BRIDGE STA 499+	BRIDGE STA 533+	TOTAL
0a	Clearing and Grubbing the Entire Project	Lump Sum	•			•
11a	Removal of Disused Bridge Sta 501+	Lump Sum		•		•
11b	Rem of Portions of Prest Wall E Slope Paving R Sta 499+	Lump Sum		•		•
11c	Removal of Portions of Dry Rubble Wall Sta 502+	Lump Sum		•		•
11d	Removal of 1 Structure	Lump Sum	•			•
11e	Removal of Portions of Rock Wall Sta 485+-487+	Lump Sum	•			•
12a	Removing Guard Fence	Lin Ft	360			360
12b	Removing and Rebuilding Fence	Lin Ft	230			230
12c	Removing and Rebuilding Guard Fence	Lin Ft	4992			4992
13c	Unclassified Excavation	Cu Yd	83000			83000
13d	Cut Slope Treatment	Mi	10			10
14a	Dry Rock Excavation (Structural)	Cu Yd	115	5	5	125
14b	Dry Common Excavation (Structural)	Cu Yd	115	660	230	1005
14c	Wet Rock Excavation (Structural)	Cu Yd	75	5	5	85
14d	Wet Common Excavation (Structural)	Cu Yd	75	810	480	1365
18a	Station Yard Overhaul	Sta Yd	383000			383000
18b	Yard Mile Overhaul	Yd Mi	24500			24500
26a	Gravel or Crushed Rock Surfacing	Ton	4200			4200
26c	Overhaul of Surfacing	Ton Mi	14100			14100
42a	Untreated Bridge Timber	M ft bm		04	05	09
46a	Class 'A' Concrete	Cu Yd	220	8970	2940	12130
46b	Class 'B' Concrete	Cu Yd	170			170
46c	Class 'A' Concrete (Handrails)	Cu Yd		05	40	45
47	Reinforcing Steel	Lb	2050	102650	26400	131100
48	Structural Steel	Lb		359600	23600	383200
50	Dry Rubble Masonry	Cu Yd		12		12
53b	18" Corrugated Metal Culvert Pipe	Lin Ft	60			60
53c	24" Corrugated Metal Culvert Pipe	Lin Ft	712			712
60a	Treated Timber Piling	Lin Ft		4800	2440	7240
60e	Metal Pile Shoes	Each		200	122	322
65	Heavy Riprap	Cu Yd	700			700
66	Concrete Slope and Ditch Paving (8" thick)	Sq Yd		60		60
74	Wire Cable Guard Fence	Lin Ft	1617			1617
74x	Timber Guard Posts	Each	40			40
80b	Bronze Name Plates	Each		1		1
80c	Sheet Copper	Lb			30	30
81a	Project Markers	Each	2			2
81b	Right of Way Markers	Each	27			27
89a	Drain Pipe (Concrete Floor) (3"x4'-0")	Each		24	2	26
FORCE ACCOUNT	Build Permanent Sluiceway Sta 499+	Lump Sum		•		•
	Rem Flashbods & Install New Tainter Gate Sta 500+	Lump Sum	(By Public Service Co. Forces)			•
	Rem For of Sluiceway & Install Tem Sluiceway Sta 500+	Lump Sum		•		•
	Build New Trashboom Sta 501+	Lump Sum		•		•
	Move and Reset House and Garage Sta 502+	Lump Sum	•			•
	Move House off R.O.W. Sta 511+	Lump Sum	•			•
	Move Garage off R.O.W. Sta 513+	Lump Sum	•			•
	Move Rest Room off R.O.W. Sta 534+	Lump Sum	•			•
	Move Power Lines Sta 462+ to 501+ & 501+ to 547+	Lump Sum	• (Work by Pub. Serv. Co. Forces)			•

FENCING REQUIREMENTS

STATIONS	SIDE	REMOVE FENCE LIN. FT.	REM. & REB. WIRE FENCE LIN. FT.	BARB WIRE GATES NO.
510+93 - 512+50	L		230	
TOTAL			230	

GRAVEL OR CRUSHED ROCK SURFACING

It is estimated that Gravel or Crushed Rock Surfacing for this Project is available from vicinity of pits shown in the following table. If for his own convenience the contractor elects to use a plan other than that shown below, overhaul in excess of that shown by the Departments plan will not be allowed. Estimated quantities involved in the operation are as follows.

MATERIAL TO BE PLACED STA. TO STA.	APPROX. QUAN. REQ'D. TON	MATERIAL SOURCE	TON MILE OVERHAUL
482+50 - 495+71[8]	840	Pit located in the N½	2400
495+73[9] - 499+53[9]	250	of SW¼ Sec 5, T6S,	740
502+14[8] - 511+53[9]	600	R.88W, Garfield	1920
511+68[2] - 533+88[8]	1400	County Colorado, be-	4900
534+21[2] - 547+00	810	ing on left Sta. 283	3110
Road Approaches	285	AWP 2001 No. 2.	1000
TOTAL	4185		14070

R.O.W. MARKERS

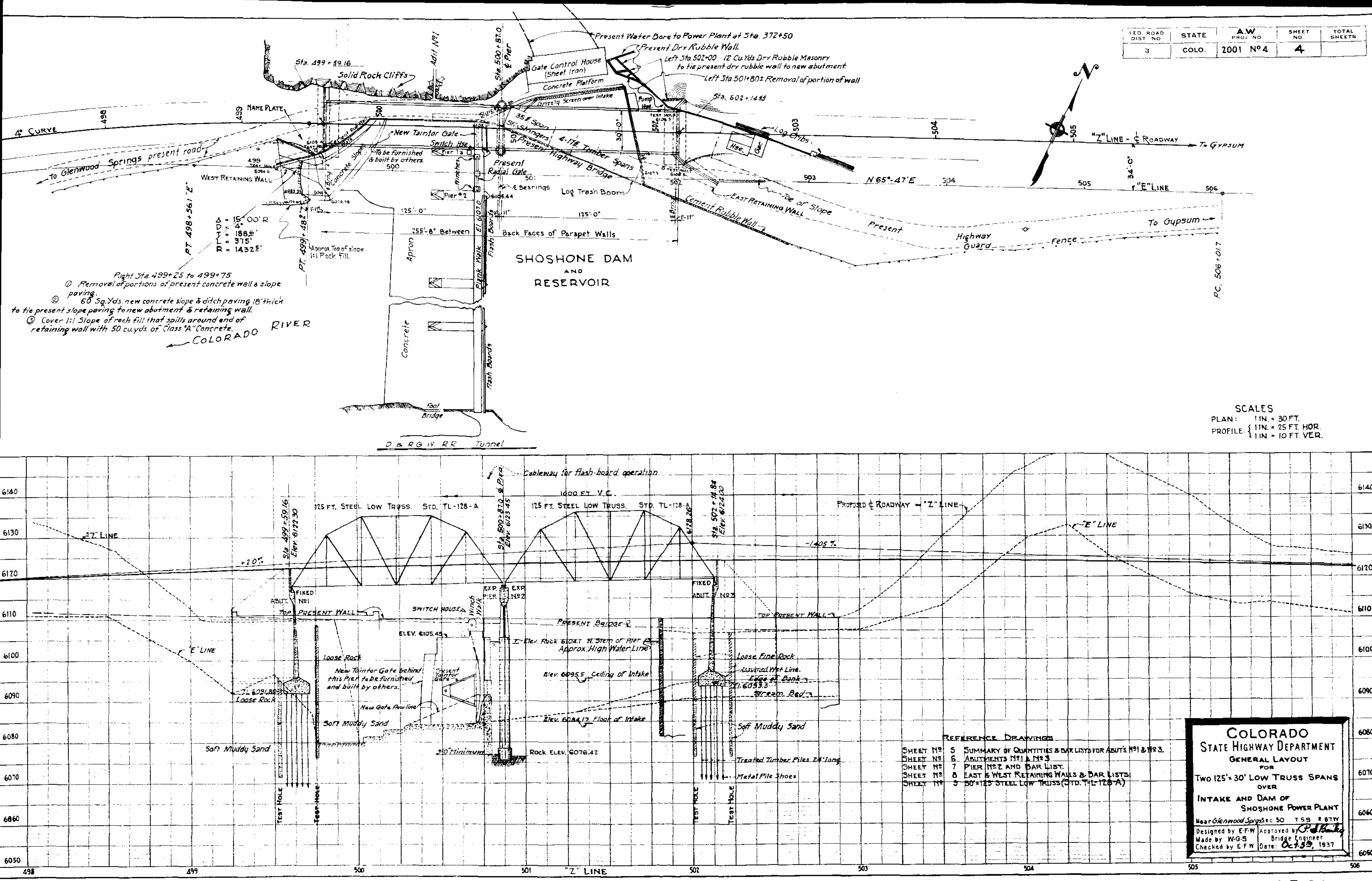
STATION	SIDE	NO.
482+50	L	2
488+10	L	1
494+00	L	1
495+50	L	1
499+48[2]	L	2
499+66	L	1
499+75	L	1
502+00	L	1
503+00	L	1
507+79	L	2
508+79	L	2
510+93	L	2
511+58	L	1
512+50	L	2
522+20	L	1
522+30	L	1
526+00	L	2
542+45	L	1
547+00	L	2
TOTAL		27

FED. ROAD DIST. NO.	STATE	A W PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	2001 Const Dw 4	3	

LIST OF STRUCTURES

STA. TO STA.	DESCRIPTION	REMOVE STRUCT. NO.	EXCAV CU. YD. UNCL.	EXCAV CU. YD. EMB	STRUCT. EXCAV. CU. YD. *	GR. OR CR. RK. SURF. TON	CONCRETE CU. YD. CL"A"	CONCRETE CU. YD. CL"B"	REINF. STEEL LB.	CORR. METAL CULVERT PIPE LIN. FEET 15"	18"	24"	30"	36"	GUARD FENCE LIN. FT.	GUARD POSTS EA.	REM. GD. FENCE LIN. FT.	REM. & REB. GD. FENCE LIN. FT.		MISCELLANEOUS
482+50	Project Marker																			1 Project Marker
482+50 - 485+05	Remove & rebuild guard fence Rt																	260		
483+00	Cross culvert, ditches & gd posts Lt		10		50			1.65				92				4				
484+70	4'x4'x38' CBC (Concrete box with wingwall aprons) ditches & remove structure. Gd posts Lt	1	20		40		218		2,018							4				
485+05 - 487+53	Remove portions of rock wall Rt																			Rem portions of rock wall
485+05 - 487+53	Guard fence Rt														248					
487+00	Cross culvert, ditches & gd posts Lt		10		30			165				64				4				
487+53 - 498+77	Remove & rebuild guard fence Rt																	1125		
489+25	Cross culvert				10			165				64								
498+75 - 499+25	Heavy riprap Rt				150															700 cu yds Heavy Riprap
498+84 - 499+16	Remove guard fence Rt																32			
497+24	Cross culvert, ditches & gd posts Lt		10		10			165				48				4				
498+77 - 499+56	Guard fence Rt														79					
499+59 - 502+14	2 spans at 125' steel truss bridge (Details Sh. 4-9)				(QUANTITIES IN SUMMARY)															
502+17 - 503+12	Guard fence Rt														95					
499+45 - 499+56	Guard posts Lt															4				
502+00 - 506+00	Road approach Rt			†4300		175														
502+17 - 502+96	Guard fence Lt														79					
503+12 - 504+85	Remove & rebuild guard fence Rt																	173		
504+45 - 504+85	Rebuild guard fence on Lt of road approach Rt, removed from Rt Sta 507+65 - 508+35																	40		
502+90 - 503+08	Remove guard fence Rt																18			
503+50 - 505+94	Rebuild guard fence on Rt of road appr Rt removed from Rt Sta 504+85 - 507+65																	300		
505+94 - 510+50	Guard fence Rt														456					
505+30	Cross culvert, ditches & gd posts Lt		10		15			165				98				4				
509+25 - 510+50	Remove guard fence Rt																225			
510+50 - 513+63	Remove & rebuild guard fence Rt																	313		
512+	Road approach Lt			200		30														
513+00	Cross culvert & ditches		5		10			165				70								
513+63 - 514+35	Guard fence Rt														72					
513+63 - 513+71	Remove guard fence Lt																8			
514+35 - 532+90	Remove & rebuild guard fence Rt																	1856		
530+00	Cross culvert, ditches & gd posts Lt		10		20			165				60				4				
520+50	Cross culvert, ditches & gd posts Lt		10		10			165				96				4				
524+40	Cross culvert, ditches & gd posts Lt		10		20			165				60				4				
532+90 - 533+85	Guard fence Rt														95					
532+97 - 533+43	Remove guard fence Lt																46			
533+20 - 533+85	Guard fence Lt														63					
533+00	Road approach Lt			100		50														
533+88 - 534+21	1 span at 30' concr & I-beam bridge (Det Sh. 10-12)				(QUANTITIES IN SUMMARY)															
534+24 - 535+03	Guard fence Lt														79					
534+24 - 537+75	Guard fence Rt														351					
536+50	Road approach & side drain Lt			100		30					60									
537+75 - 547+00	Remove & rebuild guard fence Rt																	925		
543+00	Cross culvert, ditches & gd posts Lt		10		10			165				70				4				
547+00	Project marker																			1 Project Marker
533+70 - 534+00	Remove guard fence Lt																30			
	FORCE ACCOUNT ITEMS																			
500+	Remove portions of Sluiceway & install Temporary Sluiceway				(WORK BY STATE FORCES)															
499+	Build Permanent Sluiceway				(WORK BY STATE FORCES)															
500+	Remove Flashboards & Install New Taintor Gate				(WORK BY PUBLIC SERVICE CO. FORCES)															
501+	Build New Trashboom				(WORK BY STATE FORCES)															
502+	Move & Reset House & Garage				(WORK BY STATE FORCES)															
511+	Move House off R.O.W.				(WORK BY STATE FORCES)															
513+	Move Garage off R.O.W.				(WORK BY STATE FORCES)															
534+	Move Restroom off R.O.W.				(WORK BY STATE FORCES)															
482+ - 501+	Move Power Lines				(WORK BY PUBLIC SERVICE CO. FORCES)															
501+ - 547+	Move Power Lines				(WORK BY PUBLIC SERVICE CO. FORCES)															
	TOTALS	1	105	400	375	285	218	1650	2018		60	712			1617	40	359	4992		

* Structural Excavation is estimated to be 50 % Rock and 50% Common; each of which is estimated to be 60% Dry and 40% Wet.
† Included for payment in profile quantities


FED. ROAD DIST. NO. 3 | STATE COLO. | A.W. PROJ. NO. 2001 Nº4 | SHEET NO. 4 | TOTAL SHEETS
Present Water Bore to Power Plant at Sta. 372+50
Present Dry Rubble Wall.
Left Sta. 502+00 12 Cu.Yds. Dry Rubble Masonry to tie present dry rubble wall to new abutment.
Left Sta. 501+80± Removal of portion of wall
Sta. 499+59.16
Solid Rock Cliffs
Adit No1
Sta. 500+87.0 ℄ Pier
Gate Control House (Sheet Iron)
Concrete Platform
Grizzly Screen over Intake
Sta. 502+14.84
Log Cribs
4° CURVE
NAME PLATE
New Taintor Gate
Switch Hse.
To be furnished & built by others.
Present Radial Gate
35 ft Span Steel Stringers
4-17 ft Timber Spans
Present Highway Bridge
To Glenwood Springs present road
West Retaining Wall
Concrete Slope
Bearings
Log Trash Boom
East Retaining Wall
Toe of Slope
Cement Rubble Wall
N 65°-47'E
"Z" LINE - ℄ ROADWAY
To Gypsum
"E" LINE
Present Highway Guard Fence
To Gypsum
PC 506+01.7
PT 498+56.1 "E"
PT 499+48.2 "Z"
Δ = 15°00'R
D = 4°
T = 188.6'
L = 375'
R = 1432.5'
Approx. Toe of slope 1:1 Rock Fill.
125'-0"
125'-0"
255'-8" Between Back Faces of Parapet Walls
Apron
Plank Walk
Flash Boards
SHOSHONE DAM AND RESERVOIR
Right Sta. 499+25 to 499+75
① Removal of portions of present concrete wall & slope paving.
② 60 Sq.Yds. new concrete slope & ditch paving 18" thick to tie present slope paving to new abutment & retaining wall.
③ Cover 1:1 Slope of rock fill that spills around end of retaining wall with 50 cu.yds. of Class "A" Concrete.
COLORADO RIVER
Concrete
Foot Bridge
D & R G W RR Tunnel
SCALES
PLAN: 1 IN. = 30 FT.
PROFILE: 1 IN. = 25 FT. HOR. 1 IN. = 10 FT. VER.
Cableway for flash-board operation
1000 FT. V.C.
125 FT. STEEL LOW TRUSS. STD. TL-128-A
125 FT. STEEL LOW TRUSS. STD. TL-128-A
Sta. 499+59.16 Elev. 6122.30
Sta. 500+87.0 ℄ Pier Elev. 6123.45
Sta. 502+14.84 Elev. 6124.00
+2.0%
-1.405%
PROPOSED ℄ ROADWAY - "Z" LINE
"Z" LINE
"E" LINE
FIXED ABUT. Nº1
EXP. PIER
EXP. Nº2
FIXED ABUT. Nº3
TOP PRESENT WALL
SWITCH HOUSE
Winch Walk
PRESENT BRIDGE ℄
ELEV. 6105.45
Elev. Rock 6104.1 N. Stem of Pier
Approx. High Water Line
Loose Rock
New Taintor Gate behind this Pier to be furnished and built by others.
Present Taintor Gate
New Gate Row line
Elev. 6095.5 Ceiling of Intake
Elev. 6084.17 Floor of Intake
Soft Muddy Sand
Soft Muddy Sand
Soft Muddy Sand
3'-0" Minimum
Rock Elev. 6076.42
Loose Rock
Loose Fine Rock
Assumed Wet Line.
Edge of Bank
Stream Bed
Treated Timber Piles 24' long
Metal Pile Shoes
TEST HOLE
6140 6130 6120 6110 6100 6090 6080 6070 6060 6050
498 499 500 501 502 503 504 505 506
"Z" LINE

REFERENCE DRAWINGS

SHEET Nº	5	SUMMARY OF QUANTITIES & BAR LISTS FOR ABUT'S Nº1 & Nº3.
SHEET Nº	6	ABUTMENTS Nº1 & Nº3
SHEET Nº	7	PIER Nº2 AND BAR LIST.
SHEET Nº	8	EAST & WEST RETAINING WALLS & BAR LISTS
SHEET Nº	9	30'×125' STEEL LOW TRUSS (STD. T-L-128-A)

COLORADO STATE HIGHWAY DEPARTMENT

GENERAL LAYOUT FOR TWO 125'×30' LOW TRUSS SPANS OVER INTAKE AND DAM OF SHOSHONE POWER PLANT

Near Glenwood Springs Sec. 30 T5S R87W

Designed by E-F-W | Approved by [signature] Bridge Engineer
Made by W-G-S | Date: Oct. 5, 1937
Checked by E-F-W

PLATE 1—PLAN-PROFILE D. P. R. & R. E. STANDARD

STD. Nº F-8-1

NOTE: All pole lines encroaching on construction are to be moved by owners.
Gates, fencing requirements, and right of way markers are tabulated on Sheet No 2.

FED. ROAD DIST. NO.	STATE	A.W. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	2001- CONST. DIV. NO. 4	21	

S.W. ¼ SEC. 30 T.5S., R.87W.

N.W. ¼ SEC. 30 T.5S., R.87W.

N.E. ¼ SEC. 30 T.5S., R.87W.

Sta. 487+53 to 498+77.2 – Req'd remove & rebuild 1125 lin ft guard fence Rt.

Sta 489+25 – Req'd 24"×64' CMP. cross culvert.

Sta. 497+24 – Req'd. 24"×48' CMP. cross culvert & 10 cu yds. Uncl Excav for ditches, 4 guard posts.

Sta 498+75 to 499+25 Req'd 700 cu yds heavy riprap on Rt.

Sta 502+17.3 to 503+12.3 – Req'd 95 lin ft guard fence Rt

Sta 503+12.3 to 504+85 – Req'd remove and rebuild 173 lin ft guard fence Rt

Sta 503+50 to 505+94 – Req'd rebuild 300 lin ft guard fence Rt of Rd Appr on Rt; Remove fence from Sta 504+85 to 507+85 Rt

Sta 499+45.2 to 499+56.2 ↔ Req'd 4 guard posts Left.

Sta 502+17.3 to 502+96.3 ↔ Req'd. 79 Lin. ft guard fence Lt.

Sta 484+70 – Req'd. 4'×4'×38' C.B.C (no wingwall or apron) 2 Curb Walls, & 20 cu yds Uncl Excav for ditches & remove 5'×9'×20' C.B.C. 4 guard posts. Req'd.

Sta. 482+50 – Req'd project marker.

Sta 482+50 to 485+05 – Req'd remove and rebuild 260 lin ft guard fence Rt.

Sta 483+00 – Req'd 24"×92' CMP. cross culvert & 10 cu yds. Uncl Excav for ditches 4 guard posts.

Sta 482+ to 501+ ↔ Req'd Move Power Lines (FORCE ACCOUNT) (Work by Pub Ser Co Forces)

Sta 485+05 to 487+53 – Req'd 248 lin ft guard fence Rt

Sta. 487+00 – Req'd. 24"×64' CMP cross culvert & 10 cu yds Uncl Excav for ditches, 4 guard posts.

Sta 485+05 to 487+53 – Remove portions of rock wall Rt.

Sta 498+84 to 499+16, 502+90 to 503+08 and 508+25 to 510+50 – Req'd remove guard fence Rt.

Force Account (Work by Public Service Co. Forces) Sta 500+ – Req'd remove flashboards and install new tainter gate.

Sta 499+59.2 to 502+14.8 – Req'd 2 spans at 125' Steel Truss Bridge (Details on Sheets No. 4 to 9)

Force Account (Work by State Forces)
Sta 499+ – Req'd build permanent sluiceway.
Sta 500+ – Req'd remove portions of sluiceway and install temporary sluiceway.
Sta 501+ – Req'd build new trashboom after present bridge is removed.
Sta 502+ – Req'd. move and reset house and garage.

Sta 498+77.2 to 499+56.2 – Req'd 79 lin ft guard fence Rt

Sta 505+94 to 510+50 Req'd 456 lin ft guard fence Rt.

Sta 502+00 to 506+00 – Req'd 4300 cu yd Emb for road approach Rt.

Sta 505+30 – Req'd 24"×98' CMP cross culvert & 10 cu yds Uncl Excav for ditches. 4 guard posts.

Sta 510+50 to 513+63 – Req'd remove and rebuild 313 lin ft guard fence Rt

Sta 511+ – Req'd. move house off R.O.W. (FORCE ACCOUNT)

STRUCTURE NO. F-8-L.

HIGHWAY No. 4 U.S. No 40S
STREAM – Intake to Shoshone Power Plant
PRESENT STRUCTURE:
Span – 1 at 35'-0" and 4 at 17'-0"
Clear Roadway – 16'-0"
Clear Waterway – 2000 sq. ft ±
Type of Superstructure – Timber and I-Beams
Type of Substructure – Timber Bents on Mud Sills
Requirements As To Removal – Remove
STREAM DATA:
Drainage Area in Sq. Miles – 4500 Colo. River
Velocity During High Water – Slow at Reservoir
ELEVATION OF:
Maximum High Water – 6105.0 Low Water
Normal Stage Stream Bed
Drift – Heavy
Scour – None

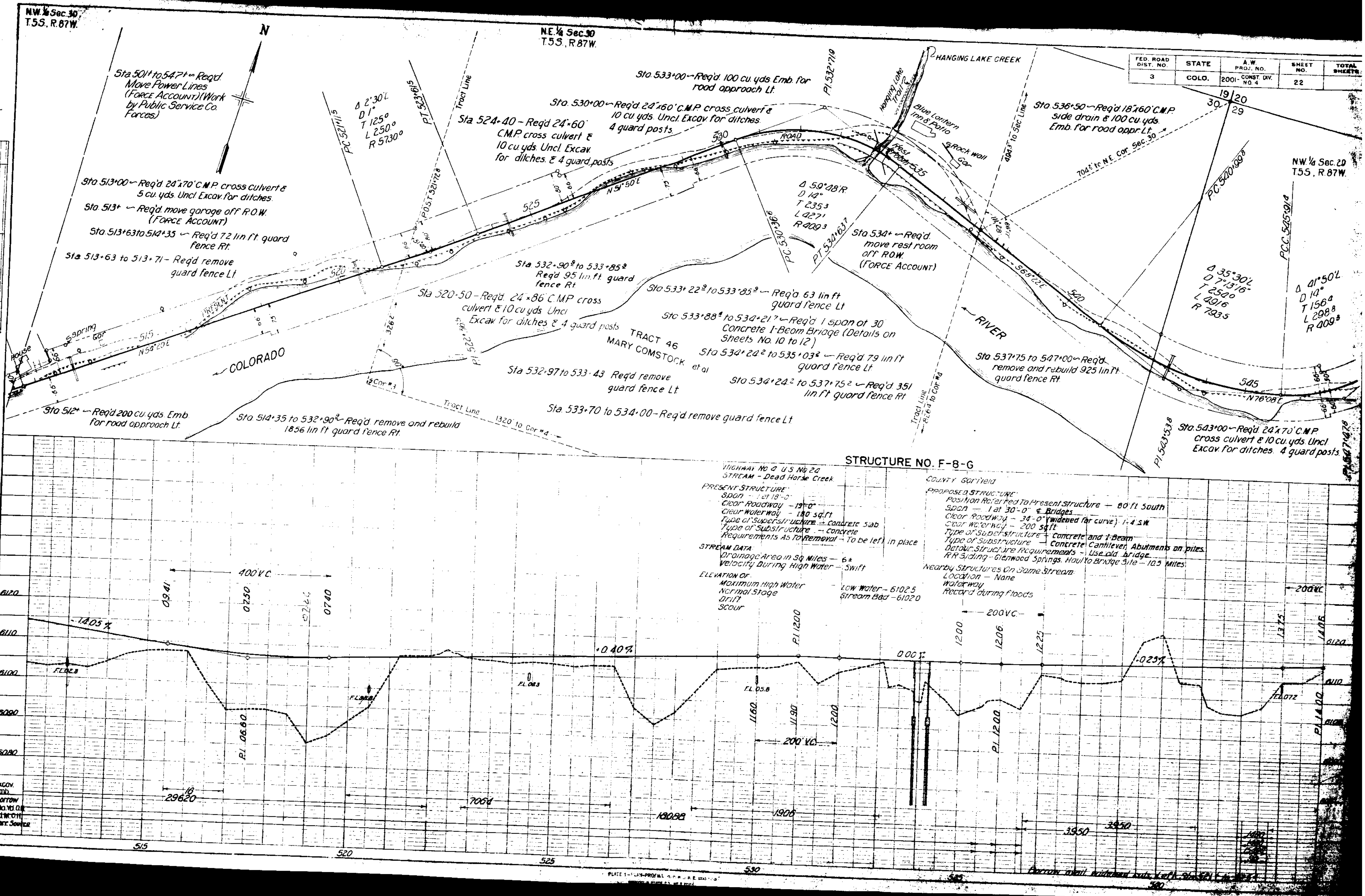
County Garfield
PROPOSED STRUCTURE:
Position Referred To Present Structure – Same Location
Span – 2 at 125'-0"
Clear Roadway – 30'-0"
Clear Waterway – 2500 sq. ft ±
Type of Superstructure – Steel Low Truss, Concrete Floor
Type of Substructure – Conc. Caisson Pier & Conc. Closed Abut.
Detour Structure Requirements – Cottonwood Pass
R.R Siding – Glenwood Springs. Haul to Bridge Site – 10 Miles ±

Nearby Structures On Same Stream:
Location – At Power Plant 3 mi. Downstream
Waterway – 1 span at 67 ft.
Record during floods – Sufficient

STA. 482+50 – END A.W.P. NO. 2001 (CONST. DIV. NO. 2)
BEGIN A.W.P. NO. 2001 (CONST. DIV. NO. 4)

SHOSHONE DAM
RESERVOIR
RIVER
COLORADO

FED. ROAD DIST. NO.	STATE	A.W. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	2001- CONST. DIV. NO. 4	22	



REVISIONS

FED. ROAD DIST. NO.	STATE	AWP	SHEET NO.	TOTAL SHEETS
3	COLO.	2001- #4	5	

BAR LIST

VIEW.

ABUTMENT Nº 1

Mark	Size	Nº Req.	Length	Type	ℓ	m	r	t
A1	1"■	39	12'-9"	I	7'-11"	1'-7"	4"	3½"
A2	1"●	40	17'-6"	Str.				
A3	1"■	40	18'-0"	I	7'-11"	6'-10"	4"	3½"
A4	1"■	40	22'-3"	I	14'-11"	4'-1"	4"	3½"
A5	½"●	19	32'-0"	Str				
A6	½"●	20	11'-8"	VIII				
A7	½"●	18	13'-2"	VIII				
A8	½"●	38	12'-8"	II	5'-0"	2'-0"	2"	2"
A9	½"●	38	10'-1"	III	5'-5"	4'-0"	2"	2"
A10	½"●	15	37'-6"	Str.				
A11	1"●	8	20'-9"	Str.				
B1	1"■	5	10'-4"	I	5'-7"	1'-6"	4"	3½"
B2	1"●	5	26'-10"	Str.				
B3	1"●	4	19'-0"	I	12'-9"	3'-0"	4"	3½"
B4	1"●	1	18'-0"	I	12'-9"	2'-0"	4"	3½"
B5			17'-0"			6'-7"		
T0	1"●	1ea	13'-0" TO 19'-0" BY 1'-0"	I	7'-2" TO 2'-7" BY 1'-0"		4"	3½"
B9								
B10	½"●	21	9'-3"	IX	7'-0"	2'-3"		
B11	½"●	6	8'-0"	IX	5'-6"	2'-6"		
B12	1"●	5	13'-9"	VII	11'-1"		4"	3½"
C1	1"■	8	17'-9"	I	5'-7"	8'-11"	4"	3½"
C2	1"●	8	26'-10"	Str.				
C3	1"■	8	16'-0"	I	7'-2"	5'-7"	4"	3½"
C4	1"■	8	17'-6"	I	12'-9"	1'-6"	4"	3½"
C5	½"●	27	10'-0"	Str.				
F1	½"●	22	29'-6"	Str.				
F2	½"●	22	26'-0"	Str.				
F6	⅞"●	114	11'-0"	VI	5'-4"	4'-6"	3½"	3"
F7	⅝"●	48	11'-2"	V	10'-4"		2½"	2"
F8	⅞"●	26	9'-2"	VI	3'-6"	4'-6"	3½"	3"
F9			3'-10"		2'-8"			
T0	⅞"●	1ea	7'-2" TO 6'-0" BY 4"	V	TO 6'-0" BY 4"		3½"	3"
F19								
F20			5'-10"		5'-0"			
T0	⅝"●	1ea	11'-10" TO 11'-0" BY 1'-6"	V	TO 11'-0" BY 1'-6"		2½"	2"
F24								
H1	½"	6	9'-0"	IV				
H2	½"	8	2'-6"	Str.				

Summary:

3375	lin. ft.	½"● @ 0.668	lbs per ft.	2254 lbs.
939	" "	½"■ @ 0.850	" " "	798 "
580	" "	⅝"● @ 1.043	" " "	605 "
1593	" "	⅞"● @ 2.044	" " "	3174 "
1215	" "	1"● @ 2.670	" " "	3244 "
2806	" "	1"■ @ 3.400	" " "	9543 "
		Over-run 1% ±		192 "
		TOTAL		19,810 Lbs.

ABUTMENT Nº 3

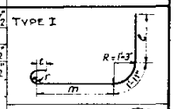
Mark	Size	Nº Req.	Length	Type	ℓ	m	r	t
A1	1"■	39	12'-9"	I	7'-11"	1'-7"	4"	3½"
A2	1"●	39	17'-6"	Str.				
A3	1"■	40	18'-0"	I	7'-11"	6'-10"	4"	3½"
A4	1"■	40	22'-3"	I	14'-11"	4'-1"	4"	3½"
A5	½"●	19	32'-0"	Str.				
A6	½"●	20	11'-8"	VIII				
A7	½"●	18	13'-2"	VIII				
A8	½"●	38	12'-8"	II	5'-0"	2'-0"	2"	2"
A9	½"●	38	10'-1"	III	5'-5"	4'-0"	2"	2"
A10	½"●	15	37'-6"	Str.				
A11	1"●	8	20'-9"	Str.				
B1	1"■	10	10'-4	I	5'-7"	1'-6"	4"	3½"
B2	1"■	10	26'-10"	Str.				
B3	1"●	8	19'-0"	I	12'-9"	3'-0"	4"	3½"
B4	1"●	2	18'-0"	I	12'-9"	2'-0"	4"	3½"
B5			17'-0"			6'-7"		
T0	1"●	2ea	13'-0" TO 19'-0" BY 1'-0"	I	7'-2"	TO 2'-7" BY 1'-0"	4"	3½"
B9								
B10	½"●	42	9'-3"	IX	7'-0"	2'-3"		
B11	½"●	12	8'-0"	IX	5'-6"	2'-6"		
B12	1"■	10	13'-9"	VII	11'-1"		4"	3½"
F2	½"●	44	26'-0"	Str.				
F6	⅞"●	114	11'-0"	VI	5'-4"	4'-6"	3½"	3"
F7	⅝"●	38	11'-2"	V	10'-4"		2½"	2"
F9			3'-10"		2'-8"			
T0	⅞"●	2ea	7'-2" TO 6'-0" BY 4"	V	TO 6'-0" BY 4"		3½"	3"
F19								
F20			5'-10"		5'-0"			
T0	⅝"●	2ea	11'-10" TO 11'-0" BY 1'-6"	V	TO 11'-0" BY 1'-6"		2½"	2"
F24								
H1	½"	6	9'-0"	IV				
H2	½"	8	2'-6"	Str.				

Summary:

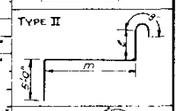
3270	lin. ft.	½"● @ 0.668	lbs per ft.	2184 lbs.
939	" "	½"■ @ 0.850	" " "	798 "
512	" "	⅝"● @ 1.043	" " "	534 "
1375	" "	⅞"● @ 2.044	" " "	2810 "
1117	" "	1"● @ 2.670	" " "	2982 "
2686	" "	1"■ @ 3.400	" " "	9132 "
		Over-run 1% ±		180 "
		TOTAL		18,620 lbs.

BENDING DIAGRAMS

TYPE I



TYPE II



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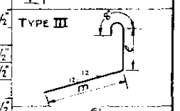

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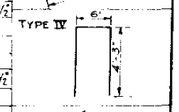

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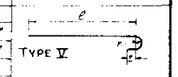

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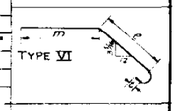

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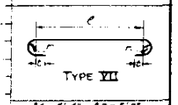
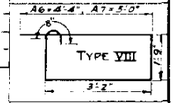
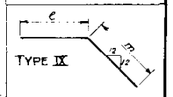


TYPE VIII



TYPE IX



SUMMARY OF QUANTITIES FOR ENTIRE STRUCTURE

Item	Description	Unit	Super-str.	Abut Nº1	W. Ret. Wall	Pier Nº2	Abut. Nº3	E. Ret Wall	Rock Fill	TOTAL	Item
11a	REMOVAL OF DISUSED BRIDGE STA 501+	Lump Sum								ONE BRIDGE	11a
11b	REMOVAL OF PORTIONS OF PRESENT WALL & SLOPE PAVING R. STA. 499+	Lump Sum								LUMP SUM	11b
11c	REMOVAL OF PORTIONS OF DRY RUBBLE WALL L. STA. 501+	Lump Sum								Lump Sum	11c
14a	DRY ROCK STRUCTURAL EXCAVATION	Cu. Yd				3				3	14a
14b	DRY COMMON STRUCTURAL EXCAVATION	Cu. Yd			140	9	350	155		654	14b
14c	WET ROCK STRUCTURAL EXCAVATION	Cu. Yd				4				4	14c
14d	WET COMMON STRUCTURAL EXCAVATION	Cu. Yd		658		75	80	40		803	14d
42a	UNTREATED BRIDGE TIMBER HEADERS	M Ft. B.M.		0.18			0.18			0.36	42a
46a	CLASS "A" CONCRETE	Cu. Yd	208	210.75	75.5	84	193.75	75	50	897	46a
46r	CLASS "A" CONCRETE - HANDRAIL	Cu. Yd		0.22			0.22			0.44	46r
47	REINFORCING STEEL	Lb.	44,700	19,810	6420	6580	18,620	7020		102,650	47
48	STRUCTURAL STEEL	Lb.	355,000			4600				359,600	48
50	DRY RUBBLE MASONRY	Cu. Yd.					12			12	50
60a	TREATED TIMBER PILING 200 Pcs. 24'-0" Long.	Lin. Ft.		1680	696		1680	744		4800	60a
60e	METAL PILE SHOES. (TIMBER)	Ea.		70	29		70	31		200	60e
		Sq. Yd									
66	CONCRETE SLOPE & DITCH PAVING (18" Thick.)	Sq. Yd.		60						60	66
80b	BRONZE NAME PLATES	Ea.	1							1	80b
89a	DRAIN PIPES - (CONCRETE FLOOR) (3"Φ x 4'-0" Lg.)	Ea.	24							24	89a
▲	EXPANSION JOINT MATERIAL, ½" THICK	Sq. Ft.		5.25	51.25		5.25	51.25		113	
▲	GALVANIZED SHEET METAL, Nº 16 Ga. 24" WIDE	Lb.		170			170			340	

▲ Include in bid price per cu. yd of Class "A" Concrete.

REFERENCE DRAWINGS:

SHEET Nº 4 General Layout.
SHEET Nº 5 Summary of Quantities and Bar Lists Abuts. Nº1 & Nº3
SHEET Nº 6 Abutments Nº1 & Nº3
SHEET Nº 7 Pier Nº 2 and Pier Bar List.
SHEET Nº 8 East and West Retaining Walls & Bar Lists.
SHEET Nº 9 30'-125' Steel Low Truss - Standard T-L-128-A

LOADING DATA.
LIVE LOAD A.A.S.H.O. 1935 CLASS A. H-18.
DEAD LOAD ASSUMES 15 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE ¾ INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA.
A.A.S.H.O. 1937 EXCEPT CONCRETE UNIT STRESSES PER A.A.S.H.O. AUG. 1928

GENERAL NOTES

ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE COLORADO STATE HIGHWAY DEPARTMENT, ADOPTED JUNE 1, 1937.
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 S2S UNLESS FACED WITH PANEL BOARD.
CONCRETE GIRDERS, 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.
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.

COLORADO
STATE HIGHWAY DEPARTMENT

TWO SPANS @ 125 Ft. STEEL LOW TRUSS
SUMMARY OF QUANTITIES AND BAR LISTS FOR ABUTS. Nº1 & Nº3

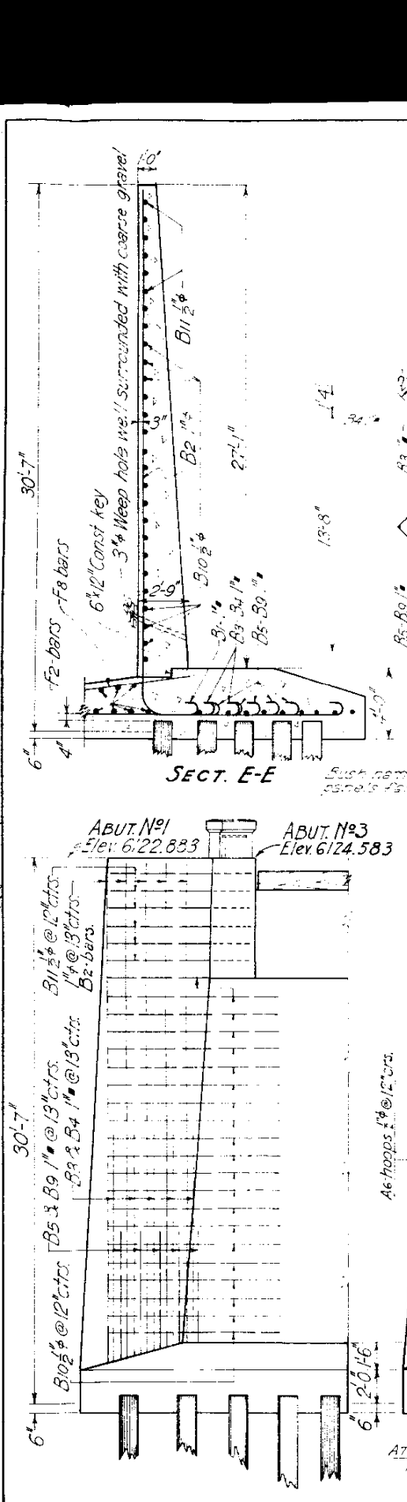
BRIDGE OVER Dam AND INTAKE FOR SHOSHONE POWER PLANT.

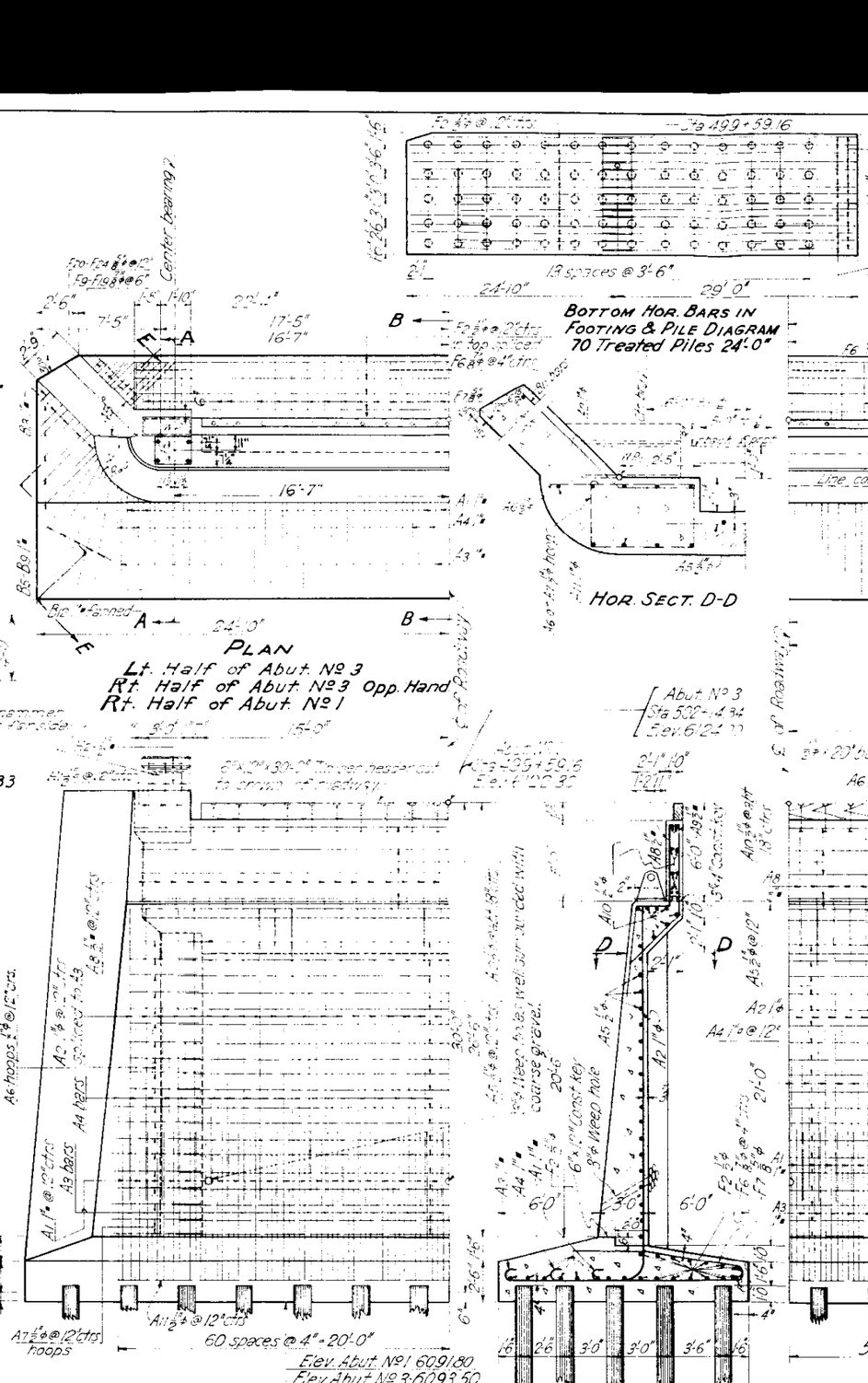
Across Colorado River
Sta. 499+59.16 to Sta. 502+48.84
Near Glenwood Sec. 30 T 5S R 87W.

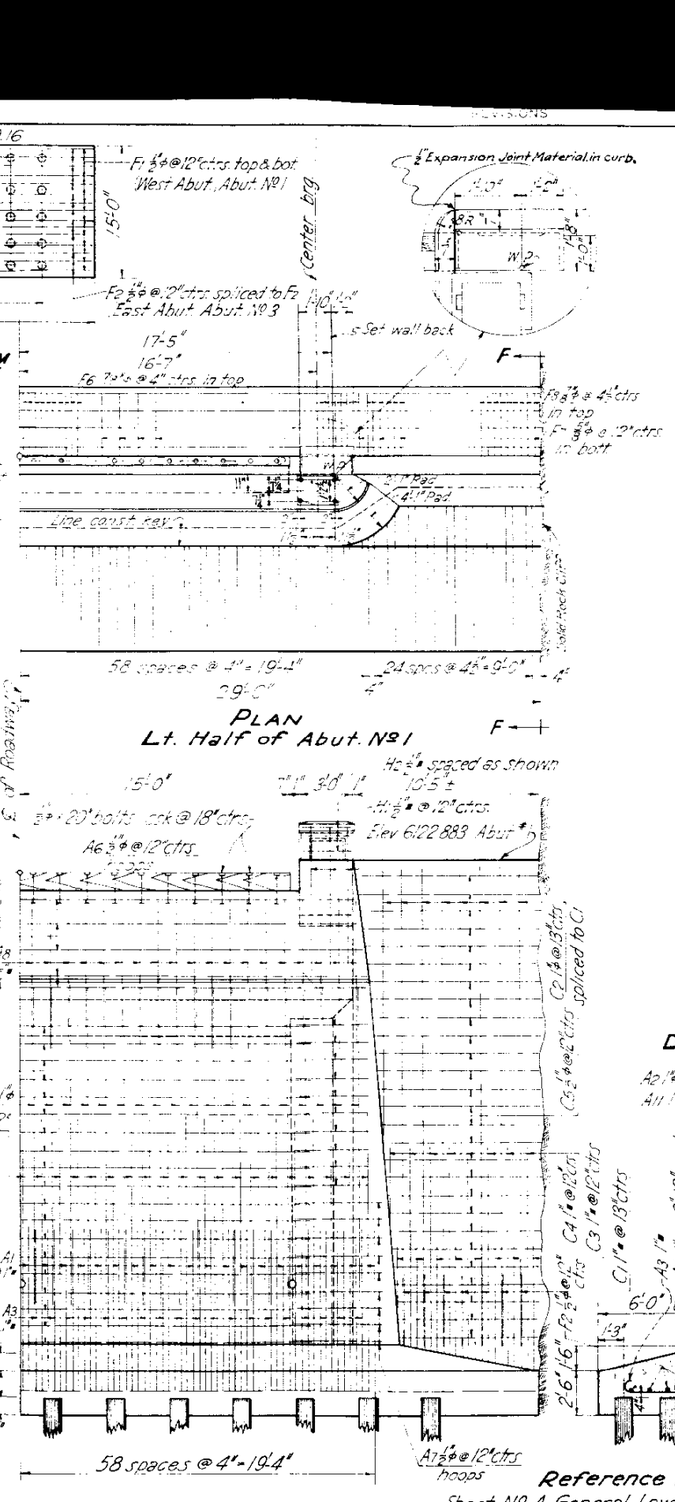
Designed by E.F.W. | Approved by R.L. Bailey
Made by W.G.S. | Bridge Engineer
Checked by E.F.W. | Date: Oct 5th 1937

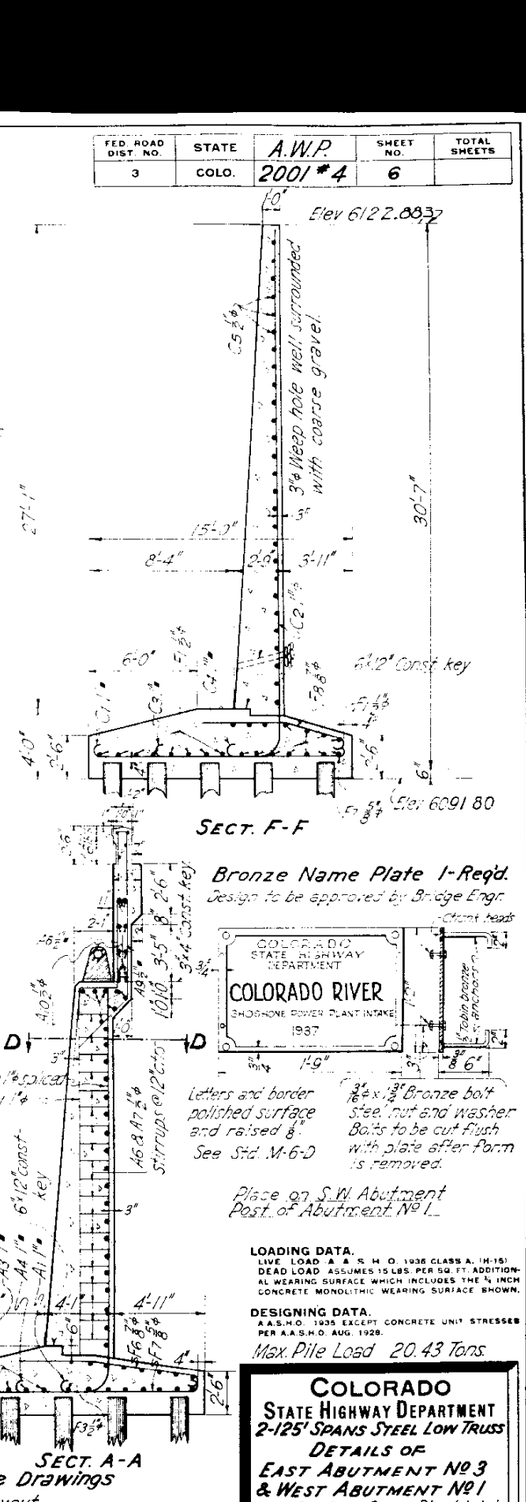
STRUCTURE NO. F-8-1

FED. ROAD DIST. NO.	STATE	A.W.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	2001 #4	6	









Reference Drawings

Sheet No 4 General Layout.
Sheet No 5 Summary of Quantities & Bar List Abuts 1 & 3
Sheet No 7 Pier No 2 & Bar List
Sheet No 8 E. & W. Retaining Walls & Bar Lists
Sheet No 9 30' × 125' Steel Low Truss (Std T-L-128-A).

LOADING DATA.
LIVE LOAD A. A. S. H. O. 1935 CLASS A. (H-15)
DEAD LOAD ASSUMES 15 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE ¼ INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA.
A.A.S.H.O. 1935 EXCEPT CONCRETE UNIT STRESSES PER A.A.S.H.O. AUG. 1928.

Max. Pile Load 20.43 Tons.

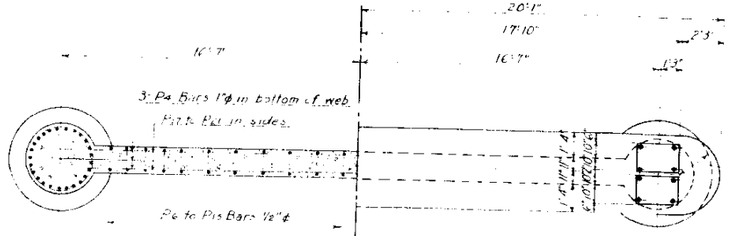
COLORADO
STATE HIGHWAY DEPARTMENT
2-125' Spans Steel Low Truss
DETAILS OF EAST ABUTMENT No 3 & WEST ABUTMENT No 1

Across Shoshone Power Plant Intake
Sta. 499+59.16 - 502+14.84
Near Glenwood Spg Sec. 30 T. 5 S R. 87 W

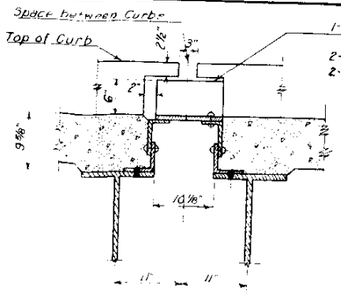
Designed by E.E.D.	Approved by P.D. Bailey
Made by D.A.P.	Bridge Engineer
Checked by A.L.F.	Date: Oct. 5, 1937

E-8-1

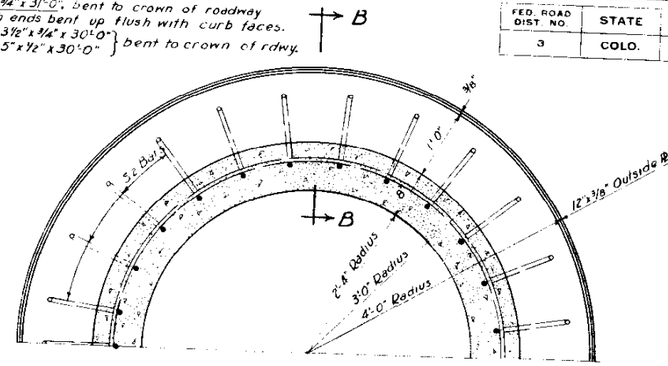
FED. ROAD DIST. NO.	STATE	A.W.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	2001-#4	7	



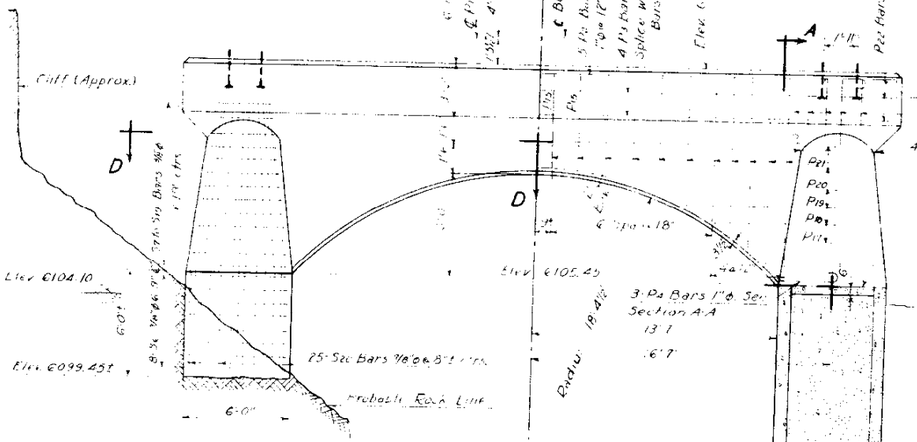
HALF SECTION D-D



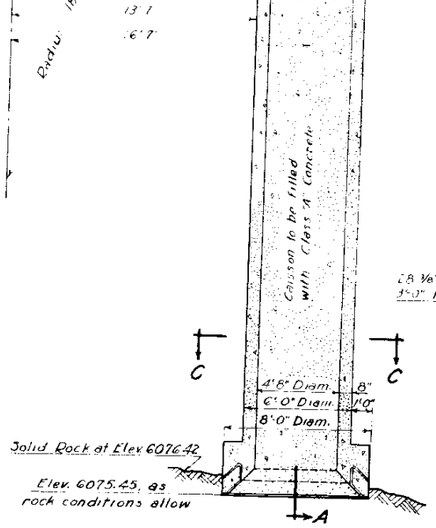
EXPANSION DEVICE
STRUCTURAL STEEL-3230 LB



HALF PLAN - SECTION C-C

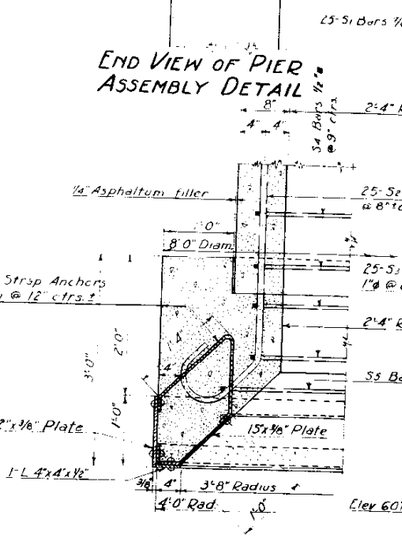


HALF PLAN PIER CAP



ELEVATION OF PIER

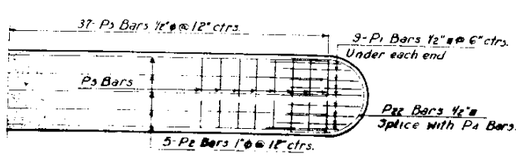
SECTION THRU CAISSON



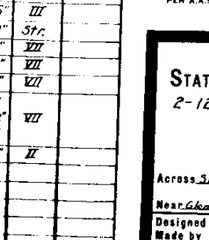
END VIEW OF PIER ASSEMBLY DETAIL

SECTION A-A

SECTION B-B
CUTTING EDGE DETAIL
STRUCTURAL STEEL 1380 LBS.



HALF PLAN CAP REINFORCEMENT



DETAIL OF CONSTRUCTION JOINT

Construction Joints shown are the maximum number allowed - less may be used if the contractor desires.

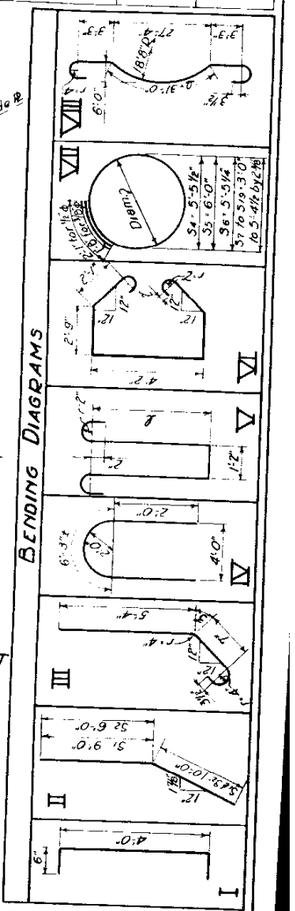
BAR SUMMARY — W.G.S.

542	Lin. Ft. 3/8"ϕ @	0.376 Lb per ft =	204 Lb
1211	" " 1/2"ϕ @	0.668 " " " =	809 "
1048	" " 5/8"ϕ @	0.850 " " " =	891 "
875	" " 7/8"ϕ @	2.044 " " " =	1789 "
1057	" " 1"ϕ @	1.670 " " " =	2822 "
		1% for Overrun =	63 "
		Total =	6580 Lb

BAR LIST PIER No. 2 — W.G.S.

Mark	Size	No. Reqd	Length	Type	ℓ
D1	1/2" ϕ	18	5'-0"	I	
P2	1" ϕ	5	36'-0"	Str.	
P3	1/2" ϕ	4	36'-0"	Str.	
P4	1" ϕ	3	40'-0"	VIII	
P5	1/2" ϕ	37	15'-2"	VI	
Pe to Pio	1/2" ϕ	2 Each	24'-10" by 1'-6" to 18'-10"	V	11'-2" by 9" to 8'-2"
Pii to Pi4	1/2" ϕ	2 Each	17'-6" by 1'-2" to 14'-0"	V	7'-6" by 7" to 5'-9"
Pi5	1/2" ϕ	4	11'-2"	V	4'-4"
Pi7	1/2" ϕ	4	5'-0"	Str.	
Pi8	1/2" ϕ	4	6'-9"	Str.	
Pi9	1/2" ϕ	4	8'-6"	Str.	
Pi0	1/2" ϕ	4	11'-0"	Str.	
Pi1	1/2" ϕ	4	34'-0"	Str.	
Pi2	1/2" ϕ	4	10'-3"	IV	
S1	7/8" ϕ	25	19'-0"	II	
S2	1" ϕ	25	7'-6"	III	
S3	1" ϕ	25	22'-9"	Str.	
S4	1/2" ϕ	39	19'-3"	VII	
S5	1/2" ϕ	1	21'-0"	VII	
S6	3/8" ϕ	8	19'-2"	VII	
S7 to S20	3/8" ϕ	2 Each	11'-2" by 7 1/2" to 18'-8"	VII	
S00	3/8" ϕ	25	16'-0"	II	

BENDING DIAGRAMS



REFERENCE DRAWINGS

Sheet No. 4 General Layout.
Sheet No. 5 Summary of Quantities and Bar List Abutments No. 1 and 3.
Sheet No. 6 Abutments No. 1 and 3.
Sheet No. 8 East and West Retaining Walls and Bar Lists.
Sheet No. 9 30'x125' Steel Low Truss Std. T-L-128-A.

LOADING DATA.
LIVE LOAD A. A. S. H. O. 1935 CLASS A. H-18.
DEAD LOAD ASSUMES 15 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE ½ INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN

DESIGNING DATA.
A.A.S.H.O. 1935 EXCEPT CONCRETE UNIT STRESSES PER A.A.S.H.O. AUG. 1926.

COLORADO
STATE HIGHWAY DEPARTMENT

2-125' SPANS STEEL
LOW TRUSS
DETAILS OF
PIER NO. 2

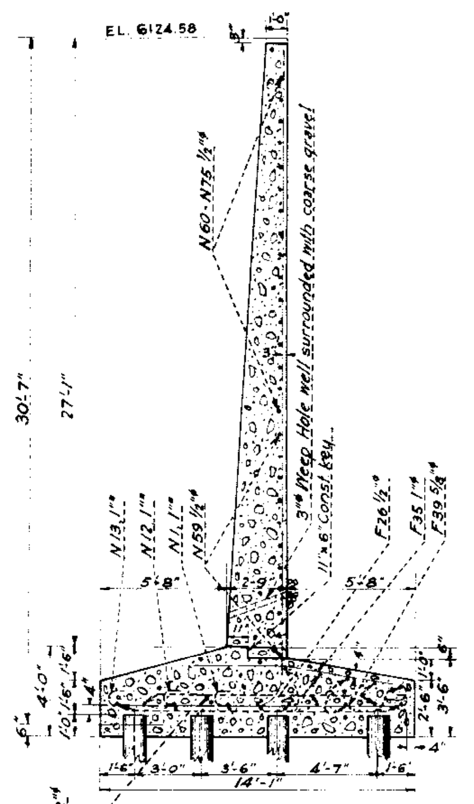
Across Shoshone Power Plant Intake
Sta. 499+29.16 - 502+14.84
Near Glenwood Spg. Sec. 30 T 5 S R 87 W

Designed by E.F.W. Approved by Ed Bailey
Made by A.L.F. Bridge Engineer
Checked by D.A.P. Date: Oct. 5th 1937

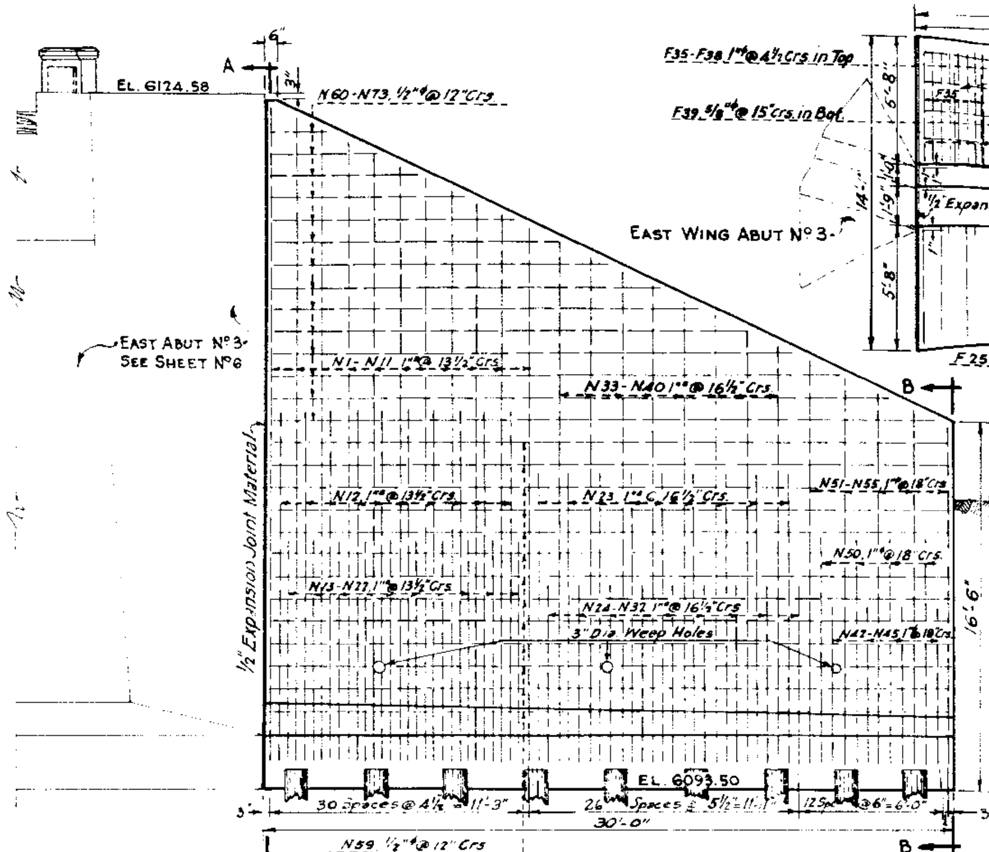
STRUCTURE NO. F-B-1

REVISIONS

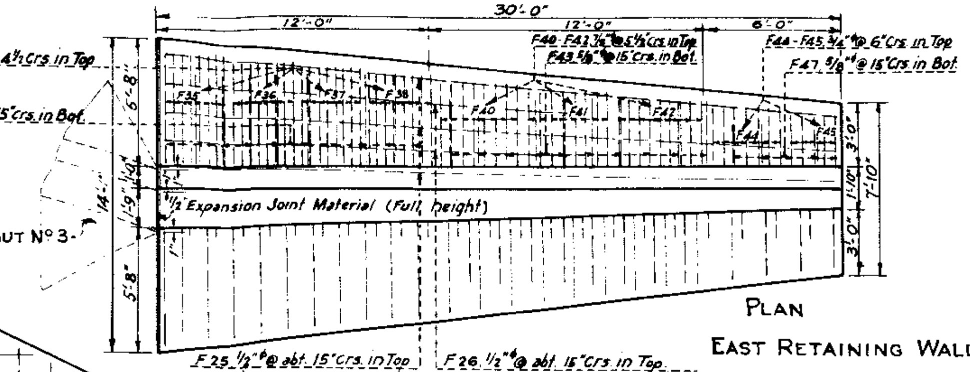
FED. ROAD DIST. NO.	STATE	A.W.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	2001- #4	8	



SECT. "A-A"

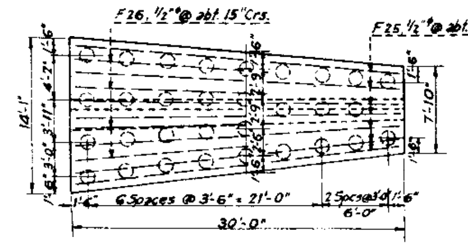


ELEVATION EAST RETAINING WALL



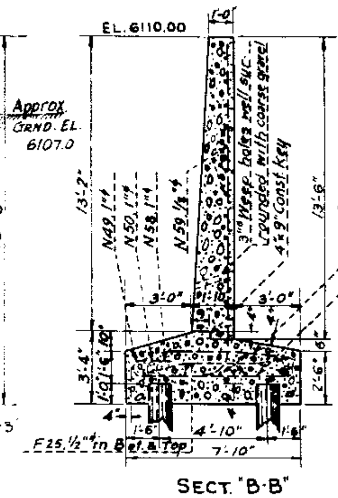
PLAN

EAST RETAINING WALL



PILE SPACING DIAGRAM AND HOR. BOTTOM FOOTING BARS - E. RETAINING WALL

31 PILES - 24'-0" EACH



SECT. "B-B"

BAR LIST

√E.F.W

EAST RETAINING WALL

MK.	SIZE	NO. REQD.	LENGTH	TYPE	l	m	r	t
N1			37'-10"		28'-1"			
TO	1"	1ea	TO 27'-5"	I	TO 22'-8"	1'-6"	4"	3½"
N11			BY 6½"		BY 6½"			
N12	1"	10	21'-7"	I	14'-5"	3'-11"	4"	3½"
N13			18'-2"		8'-8"	6'-3"		
TO	1"	1ea	TO 16'-8"	I		TO 4'-9"	4"	3½"
N22			BY 2"			BY 2"		
N23	1"	9	18'-3"	I	11'-8"	3'-4"	4"	3½"
N24			14'-7"			4'-8"		
TO	1"	1ea	TO 13'-3"	I	6'-8"	TO 3'-4"	4"	3½"
N32			BY 2"			BY 2"		
N33			26'-11"		22'-2"			
TO	1"	1ea	TO 22'-3"	I	TO 17'-6"	1'-6"	4"	3½"
N40			BY 8"		BY 8"			
N42			13'-1"			3'-2"		
TO	1"	1ea	TO 11'-7"	I	5'-8"	TO 2'-8"	4"	3½"
N45			BY 6"			BY 2"		
N50	1"	4	13'-9"	I	8'-8"	1'-10"	4"	3½"
N51			21'-6"		16'-9"			
TO	1"	1ea	TO 18'-6"	I	TO 13'-9"	1'-6"	4"	3½"
N55			BY 9"		BY 9"			
N59	½"	13	29'-6"	Str.				
N60			2'-2"					
TO	½"	1ea	TO 29'-3"	Str.				
N73			BY 2'-1"					
F25	½"	10	29'-5"	Str.				
F26	½"	6	18'-0"	Str.				
F35	1"	8	10'-7"	VI	4'-9"	4'-6"	4"	3½"
F36	1"	8	10'-4"	VI	4'-6"	4'-6"	4"	3½"
F37	1"	8	10'-1"	VI	4'-3"	4'-6"	4"	3½"
F38	1"	8	9'-9"	VI	3'-11"	4'-6"	4"	3½"
F39	⅝"	10	8'-6"	V	7'-8"		2½"	2"
F40	⅞"	8	9'-1"	VI	3'-8"	4'-3"	3½"	3"
F41	⅞"	8	8'-8"	VI	3'-3"	4'-3"	3½"	3"
F42	⅞"	9	8'-4"	VI	2'-11"	4'-3"	3½"	3"
F43	⅝"	10	7'-2"	V	6'-4"		2½"	2"
F44	¾"	8	6'-9"	VI	2'-6"	3'-3"	3"	2½"
F45	¾"	5	6'-5"	VI	2'-7"	3'-3"	3"	2½"
F47	⅝"	4	5'-8"	V	4'-10"		2½"	2"

Summary:

1006 lin. ft.	½"●	@ 0.688 lbs. per lin. ft.	672	lbs.
180 " "	⅝"●	" 1.043 " " " "	188	"
87 " "	¾"●	" 1.502 " " " "	131	"
217 " "	⅞"●	" 2.044 " " " "	444	"
529 " "	1"●	" 2.670 " " " "	1413	"
1208 " "	1"■	" 3.400 " " " "	4107	"
		Over-run 1% ±	65	"
		TOTAL	7020	Lbs.

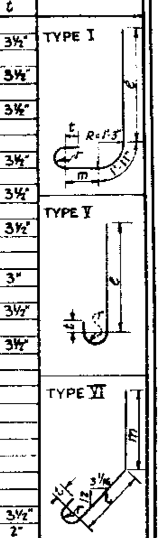
WEST RETAINING WALL

MK.	SIZE	NO. REQD.	LENGTH	TYPE	l	m	r	t
B13			30'-1"		25'-4"			
TO	1"	1ea	TO 33'-0"	I	TO 28'-3"	1'-6"	4"	3½"
B20			BY 5"		BY 5"			
B21	1"	7	22'-1"	I	14'-11"	3'-11"	4"	3½"
B22			17'-4"			5'-8"		
TO	1"	1ea	TO 17'-10"	I	8'-5"	TO 6'-2"	4"	3½"
B28			BY 1"			BY 1"		
B29			26'-8"		21'-11"			
TO	1"	1ea	TO 29'-8"	I	TO 24'-11"	1'-6	4"	3½"
B35			BY 6"		BY 6"			
B36	1"	7	19'-4"	I	12'-2"	3'-11"	4"	3½"
B37			14'-0"			4'-8"		
TO	1"	1ea	TO 14'-9"	I	6'-1"	TO 5'-5"	4"	3½"
B43			BY 1½"			BY 1½"		
B44			23'-1"		18'-6"			
TO	⅞"	1ea	TO 25'-7"	I	TO 21'-0"	1'-6"	3½"	3"
B49			BY 6"		BY 6"			
B50	1"	8	17'-6"	I	10'-6"	3'-9"	4"	3½"
B51			13'-0"			3'-9"		
TO	1"	1ea	TO 13'-9"	I	6'-0"	TO 4'-6"	4"	3½"
B57			BY 1½"			BY 1½"		
B58	½"	18	26'-6"	Str.				
B59			3'-8"					
TO	½"	1ea	TO 25'-0"	Str.				
B67			BY 2'-8"					
F27	½"	4	13'-6"	Str.				
F28	½"	12	28'-5"	Str.				
F29	1"	24	10'-0"	VI	4'-4"	4'-4"	4"	3½"
F30	⅝"	8	8'-7"	V	7'-9"		2½"	2"
F31	1"	21	9'-4"	VI	3'-8"	4'-4"	4"	3½"
F32	⅝"	7	7'-11"	V	7'-1"		2½"	2"
F33	⅞"	19	8'-1"	VI	3'-1"	3'-10"	3½"	3"
F34	⅝"	7	7'-4"	V	6'-6"		2½"	2"

Summary:

977 lin. ft.	½"●	@ 0.688 lbs. per lin. ft.	653	lbs.
176 " "	⅝"●	@ 1.043 " " " "	183	"
300 " "	⅞"●	" 2.044 " " " "	614	"
886 " "	1"●	" 2.670 " " " "	2365	"
748 " "	1"■	" 3.400 " " " "	2543	"
		Over-run 1% ±	62	"
		TOTAL	6420	Lbs.

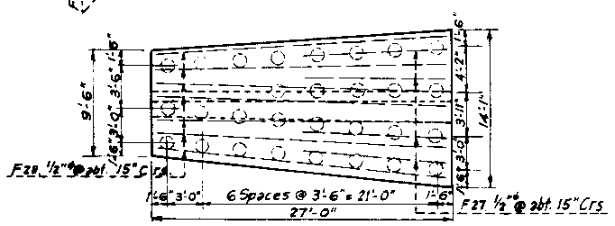
BENDING DIAGRAMS



TYPE I

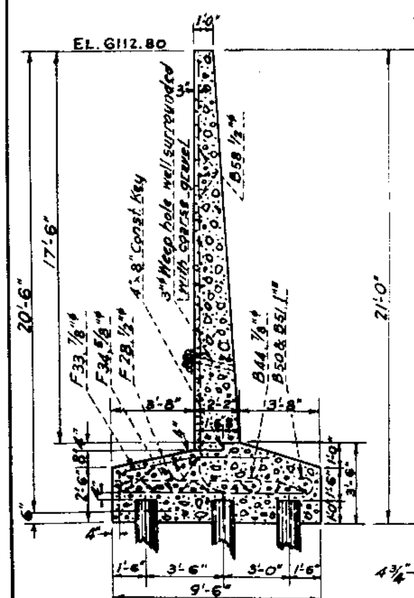
TYPE V

TYPE VI

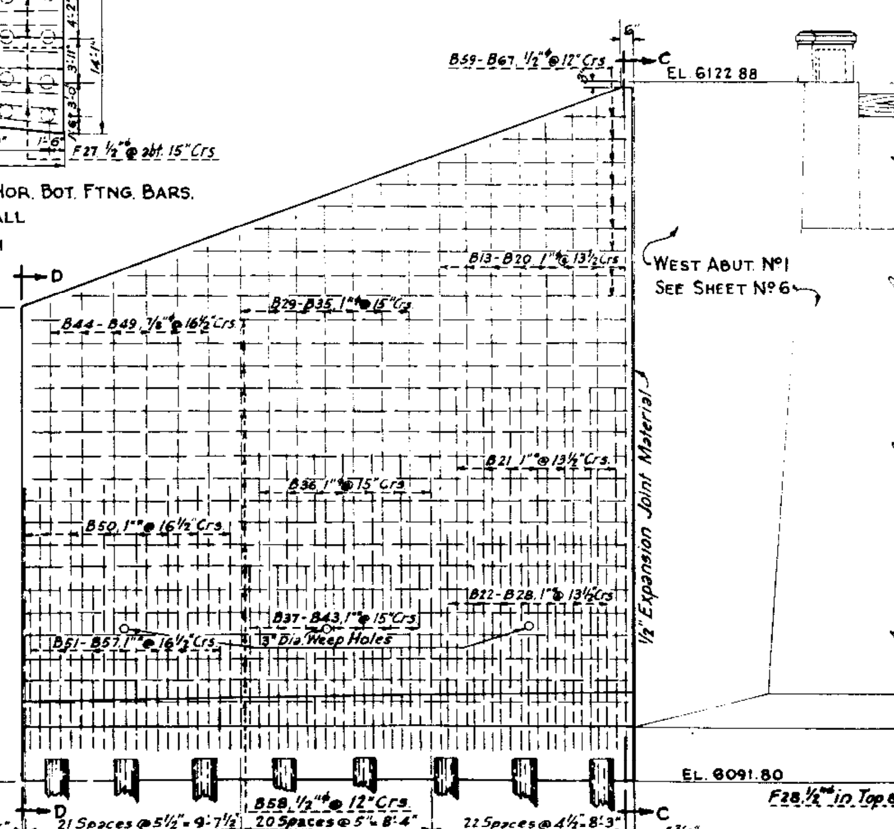


PILE SPACING DIAGRAM & HOR. BOT. FTNG. BARS. WEST RETAINING WALL

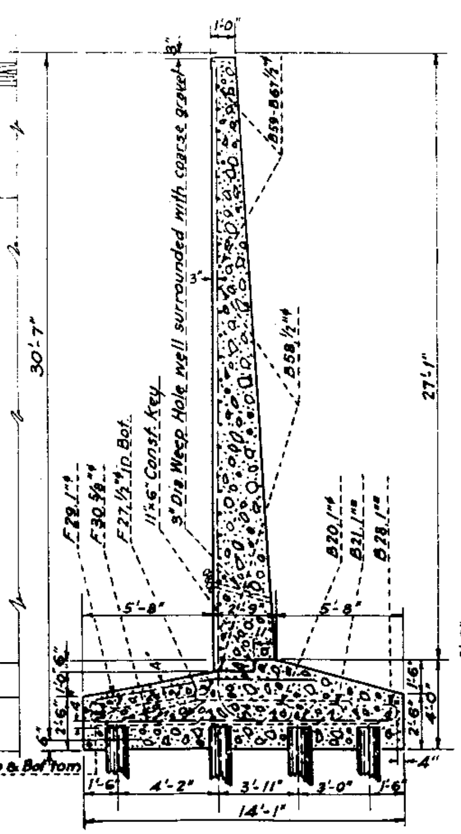
29 PILES - 24'-0" EACH



SECT. "D-D"



ELEVATION WEST RETAINING WALL



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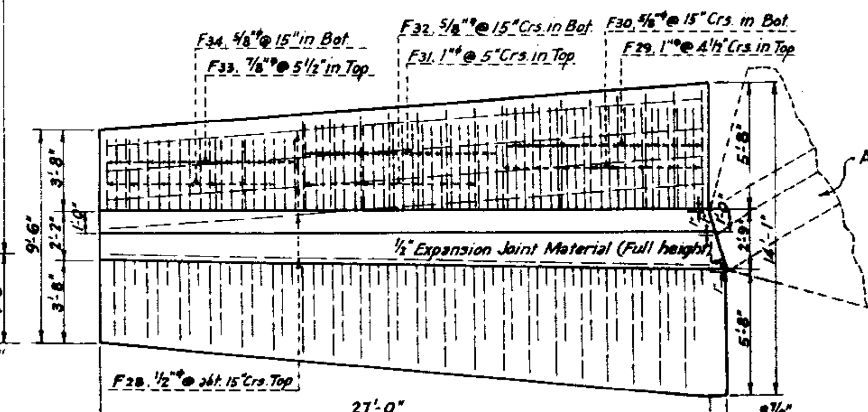


PLAN - WEST RETAINING WALL

FOR REFERENCE DRAWINGS SEE SHT. #4

LOADING DATA.
LIVE LOAD = A. A. S. H. O. 1935 CLASS A. (H-15)
DEAD LOAD - ASSUMES 15 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE ¾ INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA.
A.A.S.H.O. 1937 EXCEPT CONCRETE UNIT STRESSES PER A.A.S.H.O. AUG. 1928.

COLORADO
STATE HIGHWAY DEPARTMENT
TWO SPANS @125 FT. STEEL LOW TRUSS EAST AND WEST RETAINING WALLS AND BAR LISTS.

BRIDGE OVER DAM AND INTAKE OF SHOSHONE POWER PLANT.

Across *Colorado River*
Sta. *499+59.16 to Sta. 502+14.84*
Near *Glenwood* Sec. *30* T. *5 S* R. *87 W*

Designed by E·F·W Made by W·G·S Checked by E·F·W	Approved by [signature] Bridge Engineer Date: *Oct 5th* 1937

STRUCTURE NO. F-8-L

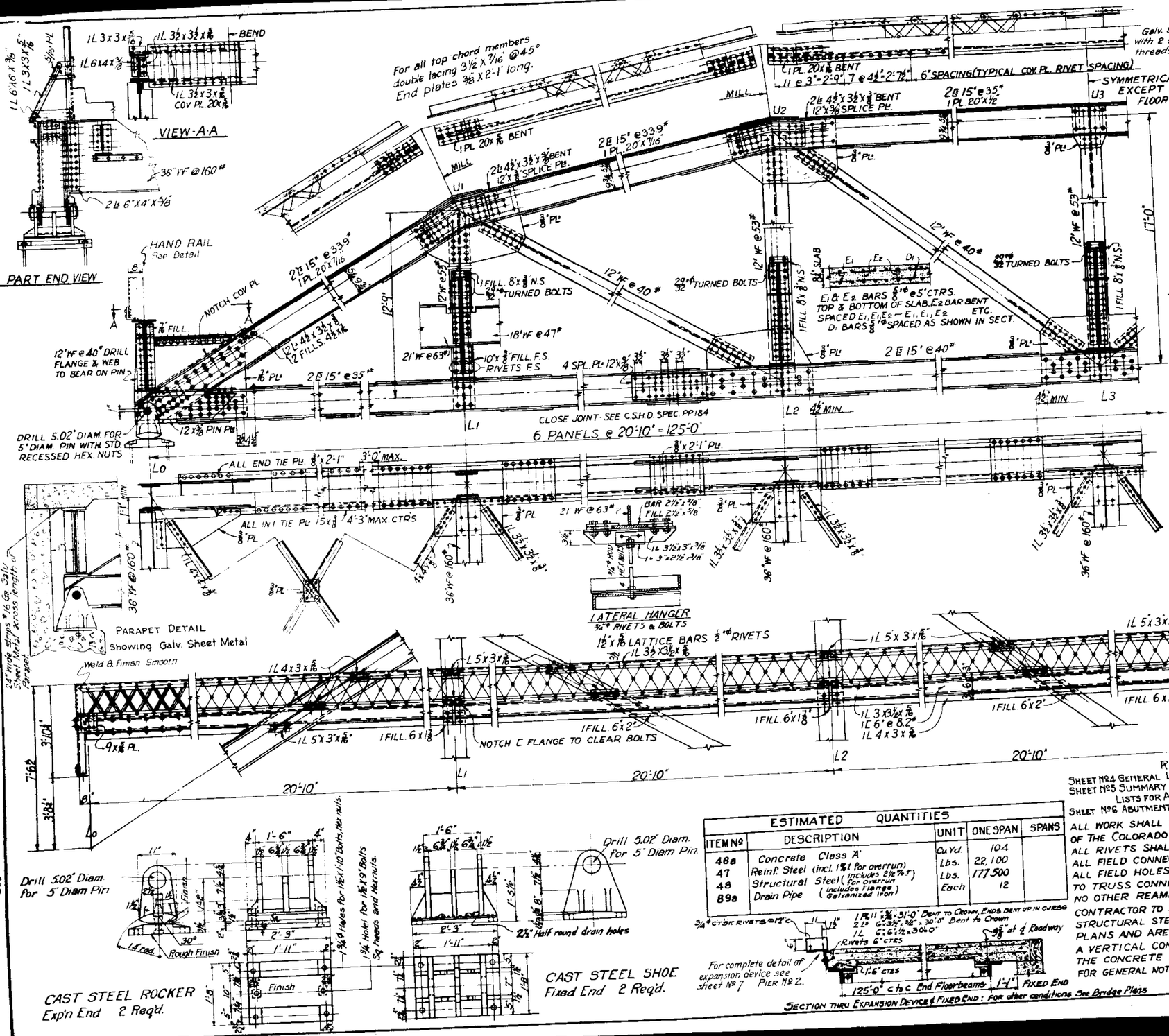
TL 128 A

FED. ROAD DIST. NO.	STATE	AWP	SHEET NO.	TOTAL SHEETS
3	COLO.	2001-"A	9	

Revised & 1937 A.G.K. Changed to 1937 Specifications.
Revised 8-1-37 A.G.K. Approved Design, Detail, Added.

COLORADO STATE HIGHWAY DEPARTMENT 19■■

C1 NAME PLATE
2 Required
Letters and border to be raised ⅛"
Place one on right hand end post at each end of bridge



ESTIMATED QUANTITIES				
ITEM №	DESCRIPTION	UNIT	ONE SPAN	SPANS
46a	Concrete Class 'A'	Cu Yd	104	
47	Reinf. Steel (incl. 1%‡ for overrun) (includes 2½%‡)	Lbs.	22,100	
48	Structural Steel (For overrun (includes Flange Galvanized Iron)	Lbs.	177,500	
89a	Drain Pipe	Each	12	

BAR LIST FOR ONE SPAN OF SUPERSTRUCTURE				
MARK	№	SIZE	LENGTH	BENDING DIAGRAM
D1	240	⅞"ø	20'-8"	Straight
E1	400	⅞"ø	32'-0"	2½R 30'-4" 1'-2"
E2	100	⅞"ø	32'-8"	1'-8" 4 @ 4'-4" 2'-4" 6'-8" 4 @ 4'-4" 2'-4" 1'-8" Symm. about ℄

20,987 Lin ft of ⅞"ø Bars @ 1.043 Lbs. per ft. = 21,890 Lbs.
Plus 1%‡ for overrun 210 Lbs.
Total 22,100 Lbs.

REFERENCE DRAWINGS
Sheet №4 General Layout
Sheet №5 Summary of Quantities and Bar Lists for Abut's. №1 & №3
Sheet №6 Abutments №1 & №3
Sheet №7 Pier №2 & Bar List.
Sheet №8 East & West Retaining Walls & Bar Lists.

LOADING DATA.
LIVE LOAD A.A.S.H.O. AUG. 1935 CLASS A M-18
DEAD LOAD ASSUMES 18 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE ¼ IN. CONCRETE MONOLITHIC WEARING SURFACE SHOWN.
‡ CONCRETE STRESSES AS PER 1928 SPECIF.

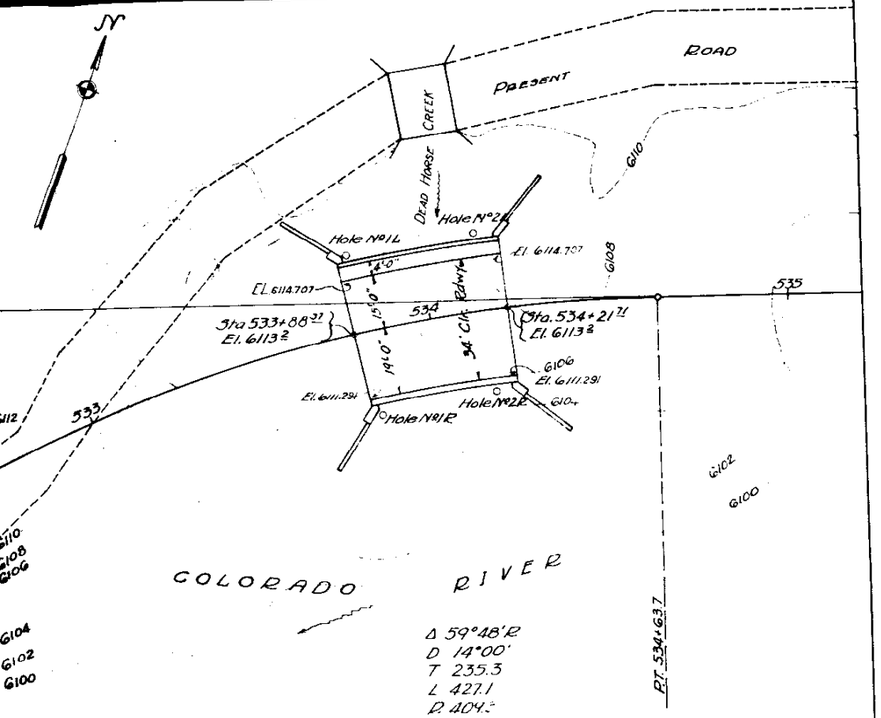
ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE COLORADO STATE HIGHWAY DEPARTMENT ADOPTED JUNE 1 1937.
ALL RIVETS SHALL BE ⅞"ø EXCEPT IN HANDRAIL, AND LATERAL HANGER
ALL FIELD CONNECTIONS SHALL BE POWER RIVETED, EXCEPT AS NOTED.
ALL FIELD HOLES IN TOP AND BOTTOM CHORD SPLICES AND FLOORBEAM TO TRUSS CONNECTIONS TO BE SUB-PUNCHED 11/16"ø AND REAMED TO 13/16"ø
NO OTHER REAMING REQUIRED.
CONTRACTOR TO FURNISH ONE PILOT NUT & ONE DRIVING NUT SEE SPEC. PP. 185
STRUCTURAL STEEL QUANTITIES ARE CALCULATED FROM DESIGN PLANS AND ARE THEREFORE APPROXIMATE ONLY.
A VERTICAL CONSTRUCTION JOINT IS REQUIRED TRANSVERSLY IN THE CONCRETE FLOOR OVER EACH FLOORBEAM.
FOR GENERAL NOTES ON CONCRETE SEE SHEET №5

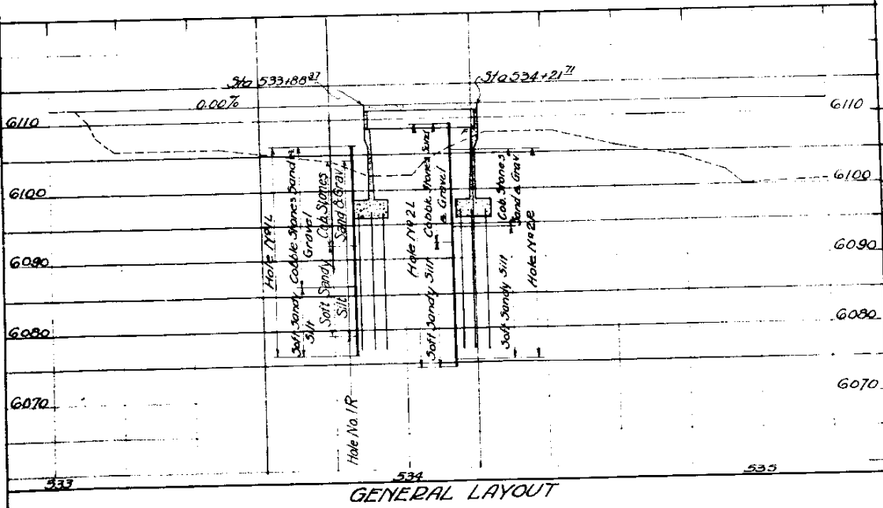
COLORADO
STATE HIGHWAY DEPARTMENT
125 Ft. SPAN STEEL LOW TRUSS
30 Ft CLEAR ROADWAY
Across: Shoshone Power Co. Intake
Sta. 499+59.16 to Sta. 502+14.84
Near: Glenwood Sec. 30 Twp 5 S R. 87 W

Designed by A.L.C.	Approved by P.D. Bail
Made by W.M.H.E.T.	Bridge Engineer
Check Design	Date: Sept 5th 1936
Check Detail A.L.C.	

STRUCTURE NO. F-8-1

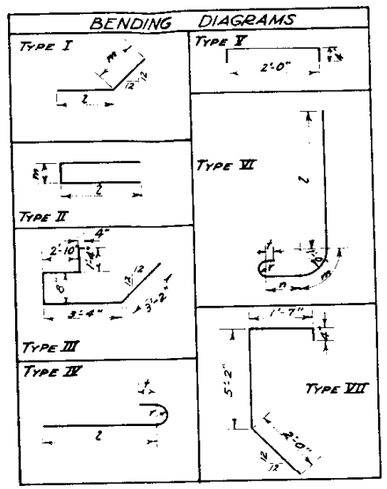
FED. ROAD DIST. NO.	STATE	AWP	SHEET NO.	TOTAL SHEETS
9	COLO.	2001*4	10	





GENERAL LAYOUT

BENDING DIAGRAMS



A.D.N.

BAR LIST ABUT NO 1 - ABUT NO. 2 IDENTICAL

Mark	Size	No.	Type	Length	l	m	n	r	t
A_1	7/8"ϕ	6	VI	16'-3"	9'-6"	1'-7"	4'-0"	3½"	3"
A_2	7/8"ϕ	8	VI	16'-11"	10'-2"	1'-7"	4'-0"	3½"	3"
A_3	7/8"ϕ	7	VI	17'-5"	10'-8"	1'-7"	4'-0"	3½"	3"
A_4	7/8"ϕ	7	VI	13'-3"	6'-6"	1'-7"	4'-0"	3½"	3"
A_5	7/8"ϕ	7	VI	13'-11"	7'-2"	1'-7"	4'-0"	3½"	3"
A_6	7/8"ϕ	7	VI	14'-3"	7'-6"	1'-7"	4'-0"	3½"	3"
A_7	1"ϕ	8	VI	18'-4"	11'-5"	1'-7"	4'-0"	4"	3½"
A_8	1"ϕ	7	VI	19'-0"	12'-1"	1'-7"	4'-0"	4"	3½"
A_9	1"ϕ	5	VI	19'-8"	12'-9"	1'-7"	4'-0"	4"	3½"
A_{10}	1"ϕ	3	VI	20'-6"	14'-3"	1'-7"	3'-4"	4"	3½"
A_{11}	1"ϕ	4	VI	23'-6"	17'-3"	1'-7"	3'-4"	4"	3½"
A_{12}	1"ϕ	7	VI	14'-5"	7'-6"	1'-7"	4'-0"	4"	3½"
A_{13}	1"ϕ	7	VI	15'-1"	8'-2"	1'-7"	4'-0"	4"	3½"
A_{14}	1"ϕ	7	VI	15'-7"	8'-8"	1'-7"	4'-0"	4"	3½"
A_{15}	1"ϕ	6	VI	15'-5"	9'-0"	1'-7"	3'-4"	4"	3½"
A_{16}	½"ϕ	10	I	25'-10"	20°3"	5'-7"			
A_{17}	½"ϕ	7	I	25'-7"	20°3"	5'-4"			
F_1	5/8"ϕ	38	IV	7'-1"	6'-3"			2½"	2"
F_2	¾"ϕ	38	IV	7'-8"	6'-8"			3"	2½"
F_3	5/8"ϕ	41	IV	8'-0"	7'-2"			2½"	2"
F_4	1"ϕ	14	IX	8'-8"	7'-4"			4"	3½"
F_5	½"ϕ	8	Str.	21'-6"					
F_6	½"ϕ	14	Str.	20'-6"					
H_5	½"ϕ	3	II	6'-6"	3'-1"	0'-4"			
H_6	½"ϕ	3	II	8'-6"	4'-1"	0'-4"			
H_7	½"ϕ	16	Str.	3'-2"					
M	½"ϕ	70	V	2'-8"					
P	½"ϕ	40	III	11'-8"					
P_1	½"ϕ	14	I	24'-8"	21'-0"	3'-8"			
P_2	½"ϕ	6	Str.	21'-6"					
T_1	5/8"ϕ	14	IV	6'-0"	5'-2"			2½"	2"
T_2	5/8"ϕ	14	IV	6'-11"	6'-1"			2½"	2"
T_3	½"ϕ	10	IV	5'-11"	5'-3"			2"	2"
T_4	½"ϕ	10	IV	6'-3"	5'-7"			2"	2"
T_5	½"ϕ	3	Str.	24'-8"					
T_6	½"ϕ	6	Str.	20'-6"					
V_1	½"ϕ	1 each	Str.	3'-9"					
to		to		13'-9"					
V_{11}		by		2'-6"					
V_2	½"ϕ	7	Str.	15'-8"					
V_7	½"ϕ	2 each	VI	10'-9"	6'-10"	1'-7"	1'-8"	2"	2"
to		to		13'-7"	9'-2½"		2'-2"		
V_{10}		by		0'-11"	0'-9½"	1'-7"	0'-2"	2"	2"

Mark	Size	No.	Type	Length	l	m	n	r	t
V_8	5/8"ϕ	2 each	VI	14'-10"	10'-0"	1'-7"	2'-5"	2½"	2"
to		to		17'-8½"	12'-4½"	1'-7"	2'-11"		
V_{16}		by		0'-11⅞"	0'-9½"	1'-7"	0'-2"	2½"	2"
V_{12}	½"ϕ	5	VI	8'-9"	4'-9"	1'-7"	1'-9"	2"	2"
V_{13}	½"ϕ	5	VI	10'-2"	5'-10"	1'-7"	2'-1"	2"	2"
V_{14}	½"ϕ	6	VI	12'-1"	7'-0"	1'-7"	2'-6"	3"	2½"
V_{17}	¾"ϕ								
W_1	½"ϕ	1-ea.	Str.	2'-8"					
to		to		13'-0"					
W_{21}		by		2'-7"					
W_4	½"ϕ	11	Str.	15'-8"					
W_7	⅜"ϕ	7	VI	13'-7"	8'-4"	1'-7"	2'-6"	3½"	3"
W_8	⅞"ϕ	5	VI	11'-8"	6'-10"	1'-7"	2'-1"	3½"	3"
W_9	⅞"ϕ	5	VI	9'-10"	5'-4"	1'-7"	1'-9"	3½"	3"
W_{10}	⅞"ϕ	3 each	VI	15'-3"	10'-10"	1'-7"	1'-8"	3½"	3"
to		to		22'-8"	16'-3"		3'-4"		
W_{15}		by		1'-5"	1'-1"	1'-7"	0'-4"	3½"	3"
W_6	⅛"ϕ	4	VI	19'-2"	13'-8"	1'-7"	3'-1"	3½"	3"
W_{17}	⅞"ϕ	2	VI	15'-4"	9'-6"	1'-7"	3'-1"	3½"	3"
W_{11}	⅞"ϕ	6	VI	12'-10"	7'-0"	1'-7"	3'-1"	3½"	3"
W_{18}	⅞"ϕ								
W_{19}	½"ϕ	5	VII	9'-1"					
W_{20}	½"ϕ	2	Str.	3'-8"					
Y_1	5/8"ϕ	20	IX	6'-8"	5'-10"			2½"	2"
Y_2	5/8"ϕ	20	IX	6'-0"	5'-2"			2½"	2"
Y_3	½"ϕ	10	IX	5'-11"	5'-3"			2"	2"
Y_4	½"ϕ	10	IX	6'-2"	5'-6"			2"	2"
Y_5	½"ϕ	3	Str.	24'-8"					
Y_6	½"ϕ	6	Str.	20'-6"					

SUMMARY for ONE ABUT.

2568 Lin.Ft. ½"ϕ Bars @ 0.668#/Lin.ft. =	1715#
801 Lin.Ft. ½"ϕ Bars @ 0.850#/Lin.ft. =	681#
1162 Lin.Ft. ⅝"ϕ Bars @ 1.043#/Lin.ft. =	1212#
365 Lin.Ft. ¾"ϕ Bars @ 1.502#/Lin.ft. =	548#
1370 Lin.Ft. ⅞"ϕ Bars @ 2.044#/Lin.ft. =	2800#
1063 Lin.Ft. 1"ϕ Bars @ 2.670#/Lin.ft. =	2836#
1% ± for overrun =	108#
TOTAL =	9900#

SUMMARY OF QUANTITIES

E.F.W. A.D.N.

Item Nº	Item	Unit	Super-Structure	Abutment Nº1	Abutment Nº2	Total
14a	Dry Rock Excav.(3ft.)	Cu.Yd.				5
14b	" Common " "	" "		85	145	230
14c	Wet Rock " "	" "				5
14d	" Common " "	" "		240	240	480
42a	Untreated Bridge Timber	Mfl. bm.		0.204	0.204	0.408
46a	Class "A" Concrete	Cu.Yd.	38	128	128	294
46r	" " " (Handrail)	" "	2.6	0.7	0.7	4.0
47	Reinforcing Steel	lb.	6560	9900	9900	26,360
48	Structural Steel	"	23,500	35	35	23,570
60a	Treated Timber Piling	Lin. ft.	122 pcs @ 20'	1220	1220	2440
60e	Metal Pile Shoes	Each		61	61	122
480c	Sheet Copper	lb.		15	15	30
89a	Drain Pipe (Conc. Fl) (3"x4'-0")	Each	2			2
*	½" Exp.n. Joint Material	Lin.ft.		34		34
*	½" " "	Sq. ft.		34	34	68
*	#16 ga. Galv. Sheet Steel 18"x 42'-0" x 2 Abuts.	lb.		167	167	334

* To be included in Unit price of Concrete

ϕ Supplier to check details of sheet copper with Approved structural steel shop plans before fabricating.

GENERAL NOTES

ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE COLORADO STATE HIGHWAY DEPARTMENT, ADOPTED JUNE 1, 1937.

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 S2S UNLESS FACED WITH PANEL BOARD.

CONCRETE GIRDERS, 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.

BOUNDINGS 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.

ALL RIVETS TO BE ⅞ϕ FIELD RIVETS TO BE POWER DRIVEN.

REFERENCE DRAWINGS:
Sheet No. 11 Details of Superstructure.
Sheet No. 12 Details of Abuts #1 and #2.

LOADING DATA.
LIVE LOAD A.A.S.H.O. 1935 CLASS A. M-15.
DEAD LOAD ASSUMES 140 LBS PER SQ FT ADDITIONAL WEARING SURFACE WHICH INCLUDES THE 4" NON-CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA.
A.A.S.H.O. 1937 EXCEPT CONCRETE UNIT STRESSES PER A.A.S.H.O. AUG. 1926.

COLORADO
STATE HIGHWAY DEPARTMENT

GENERAL LAYOUT
SUMMARY of QUANTITIES
& BAR LIST

Across DEAD HORSE CREEK
Sta. 533+88.37 to 534+21.71
Near Glenwood Sec. 19 T. 5 S R 87 W

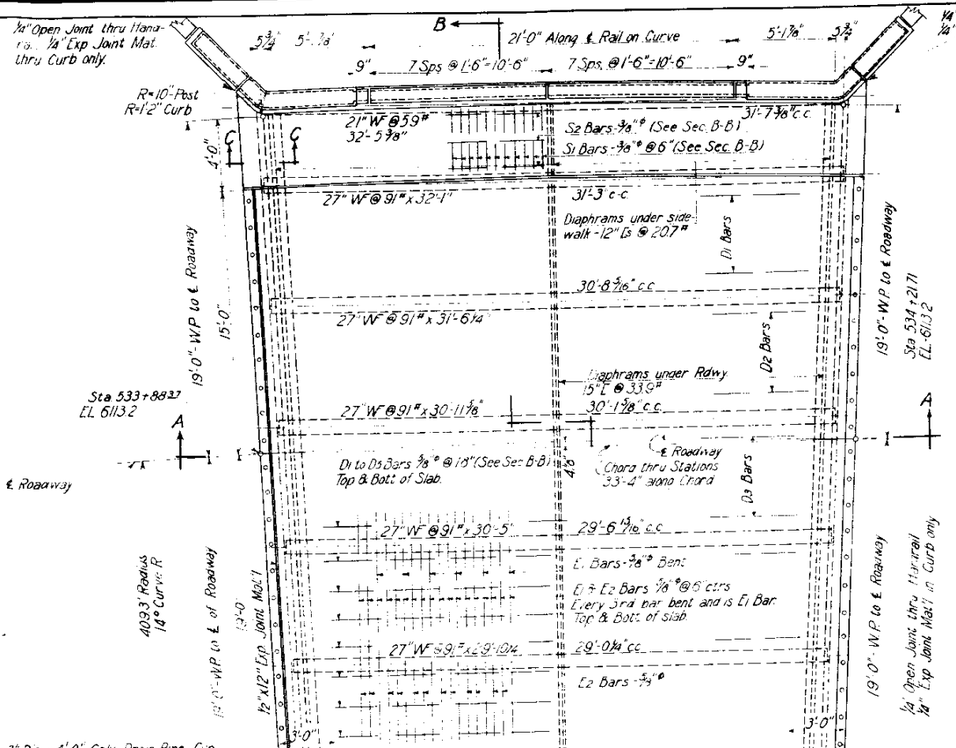
Designed by E.F.W.
Made by A.D.N.
Checked by E.F.W.

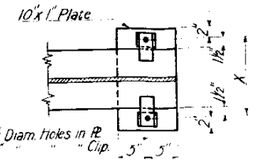
Approved by C. H. Scully
Bridge Engineer
Date: Jan. 15th, 1937.

STRUCTURE NO. F-B-G

REVISIONS

FED. ROAD DIST. NO.	STATE	A.W.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	2001*4	11	





DETAIL OF EXP. BEARING

NUMBER REQUIRED

6 For 27" WF @ 91# - X = 1½"

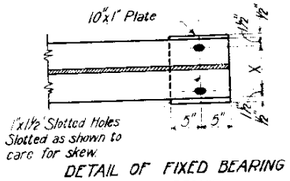
1 For 21" WF @ 59# - X = 1¼"

38 OZ COPPER LINERS REQUIRED

6 For 27" WF @ 91# - 10½"x1'-5"

1 For 21" WF @ 59# - 10"x1'-3⅛"

Furnish 14-¾"ø x 15" Anchor Bolts with Hex. Head & Nut.



DETAIL OF FIXED BEARING

NUMBER REQUIRED

6 For 27" WF @ 91# - X = 7"

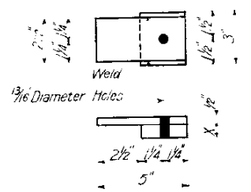
1 For 21" WF @ 59# - X = 5¼"

38 OZ COPPER LINERS REQUIRED

6 For 27" WF @ 91# - 10" x 11"

1 For 21" WF @ 59# - 10" x 9¼"

Furnish 14-¾"ø x 16" Anchor Bolts with Hex. Head & Nut.

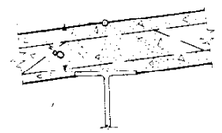


DETAIL OF BEAM CLIP

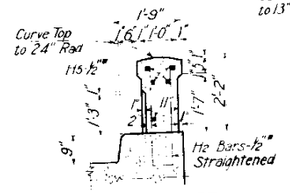
NUMBER REQUIRED

12 For 27" WF @ 91# - X = 7/16"

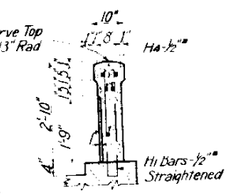
2 For 21" WF @ 59# - X = ¾"



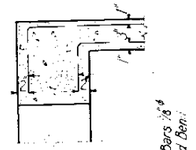
DETAIL OVER STRINGER



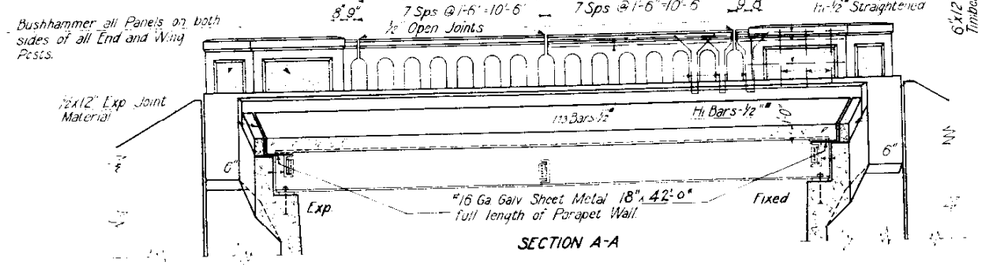
SECTION OF LEFT END POST



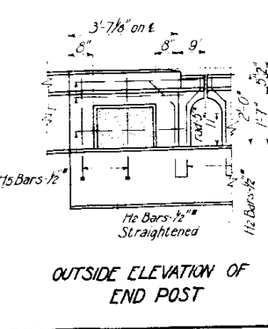
SECTION OF RIGHT END POST



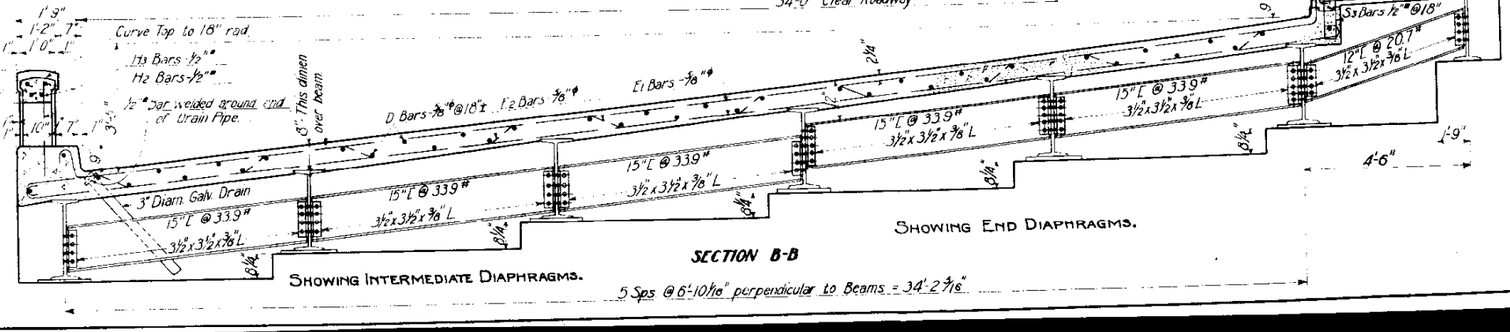
SECTION C-C



SECTION A-A



OUTSIDE ELEVATION OF END POST



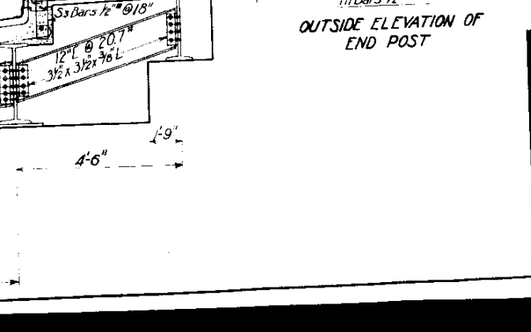
SHOWING INTERMEDIATE DIAPHRAGMS.

SHOWING END DIAPHRAGMS.

SECTION B-B

5 Spc @ 6'-10 11/16" perpendicular to Beams = 34'-2 7/16"

If sidewalk is not poured monolithically with roadway slab, make 4"x2" construction joint as shown along ℄ of curb.



OUTSIDE ELEVATION OF END POST

REFERENCE DRAWINGS

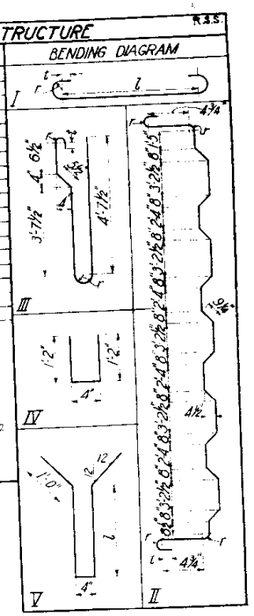
Sheet No. 10 - General Layout, Summary of Quantities & Abutment Bar List.

Sheet No. 12 - Details of Abutments No. 1 & No. 2

BAR LIST FOR SUPERSTRUCTURE

R.S.S.

MARK	SIZE	No. REQD.	LENGTH	TYPE	l	r	t
C1	⅝"ø	22	38'-4"	II		2½"	2"
E2	⅜"ø	88	37'-8"	I	36'-0"	2½"	2"
D1	⅜"ø	8	32'-9"	Str.			
D2	⅜"ø	7	32'-2"	Str.			
D3	⅜"ø	7	31'-7"	Str.			
D4	⅜"ø	7	31'-0"	Str.			
D5	⅜"ø	9	30'-6"	Str.			
H1	½"ø	22	7'-5"	V	2'-6"		
H2	½"ø	20	6'-6"	V	2'-1"		
H3	½"ø	16	10'-2"	Str.			
H4	½"ø	10	6'-0"	Str.	Field Bend		
H5	½"ø	10	3'-7"	Str.			
S1	⅜"ø	70	10'-1"	III		1½"	1"
S2	⅜"ø	16	19'-0"	Str.	Field Bend	Std.	
S3	½"ø	24	2'-8"	IV			



BAR SUMMARY

5358 Lin. Ft.	⅜"ø Bars @ 10.03# per Ft.	= 5588 Lb.
616 " "	½"ø " @ 0.850# " " "	= 524 "
1010 " "	⅝"ø " @ 0.376# " " "	= 380 "
	1% for Overrun	= 68 "
	Total	= 6560 Lb.

LOADING DATA.
LIVE LOAD A. A. S. H. O. 1935 CLASS A. H-15 DEAD LOAD ASSUMES 15 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE ¼ INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA.
A.A.S.H.O. 1937 EXCEPT CONCRETE UNIT STRESSES PER A.A.S.H.O. AUG. 1926.

COLORADO
STATE HIGHWAY DEPARTMENT
30'-0" I BEAM & CONCRETE SPAN
DETAILS OF SUPERSTRUCTURE

Across DEAD HORSE CREEK
Sta 533+88.37 to 534+21.71
Near GLENWOOD SPGS. Sec 10 T. 5S R. 87W

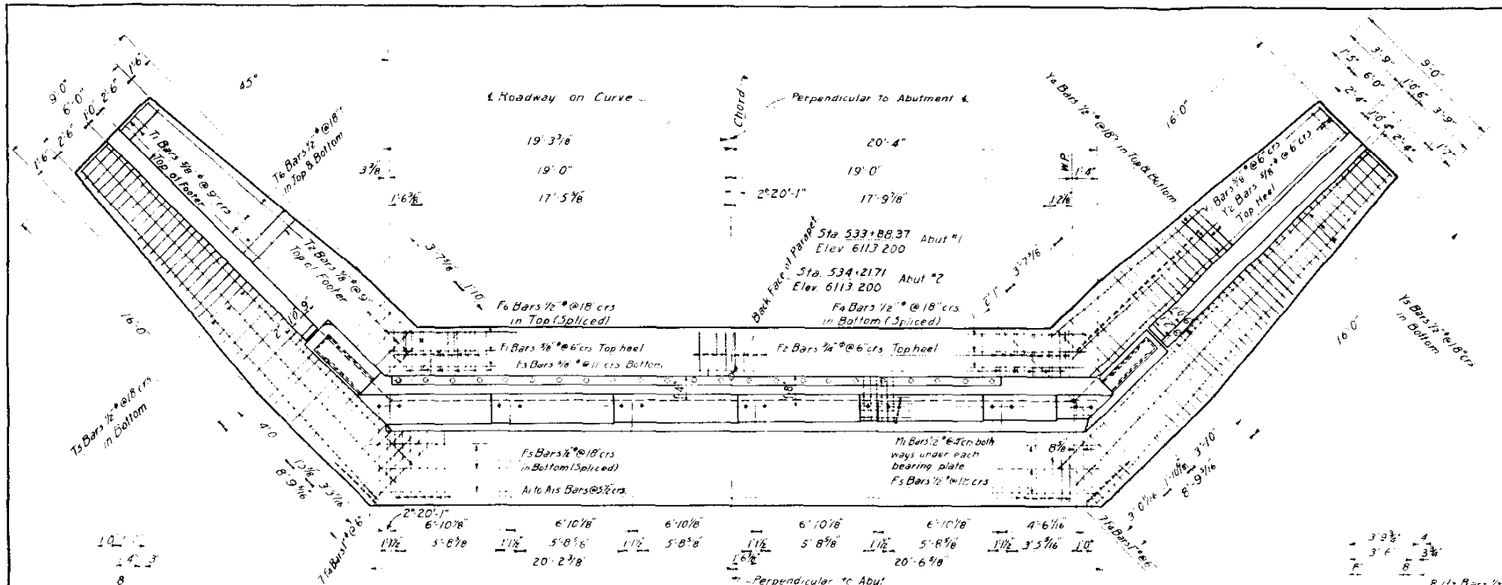
Designed by J.J.M. Made by M.F.T. Checked by R.S.S.

Approved by C. D. Bailey, Bridge Engineer
Date: Oct. 5th, 1937

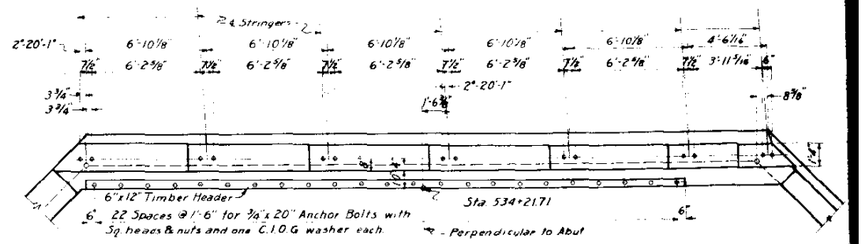
STRUCTURE NO. F-8-6

REVISIONS

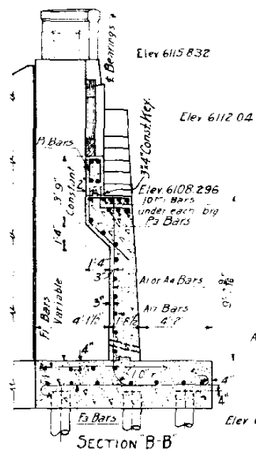
FED. ROAD DIST. NO.	STATE	A.W.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	2001-#4	12	



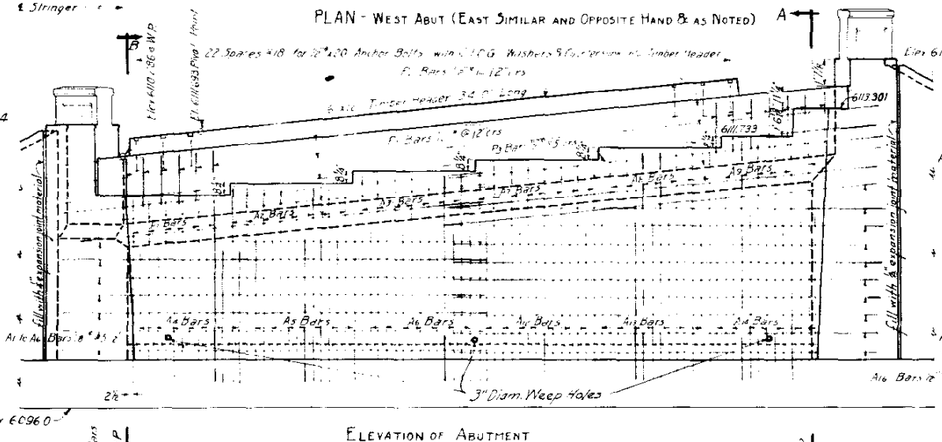
PLAN - WEST ABUT (EAST SIMILAR AND OPPOSITE HAND & AS NOTED)



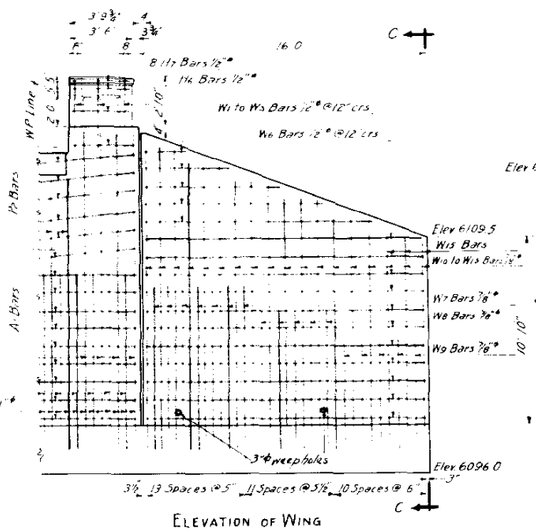
PLAN - EAST ABUT
Showing Position of Anchor Bolts



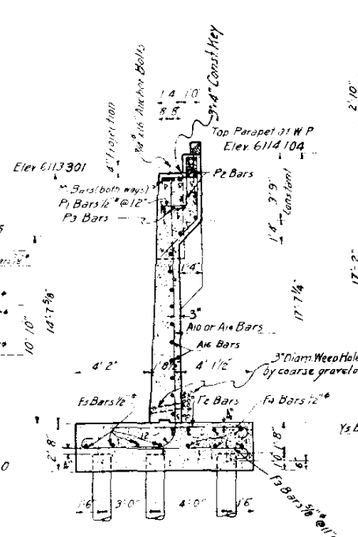
SECTION B-B



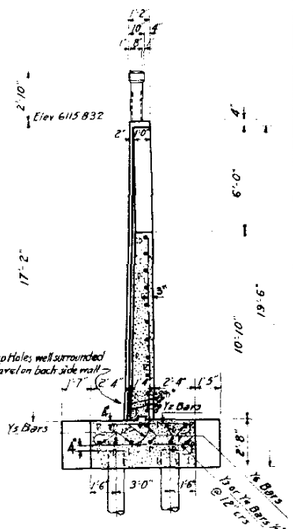
ELEVATION OF ABUTMENT



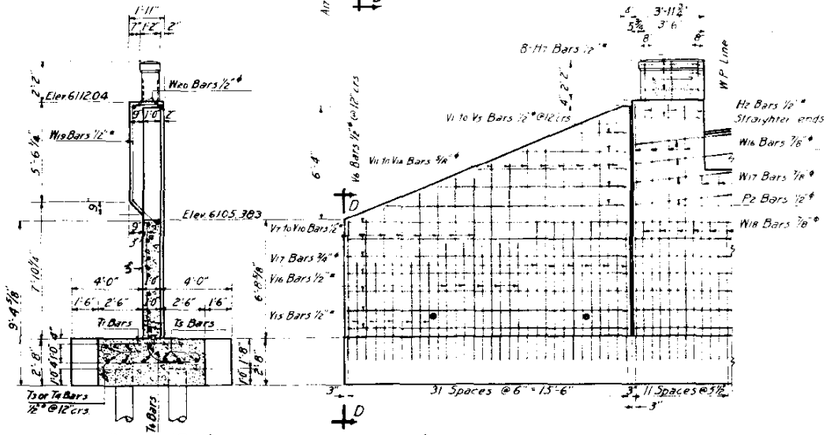
ELEVATION OF WING



SECTION "A-A" @ W.P.

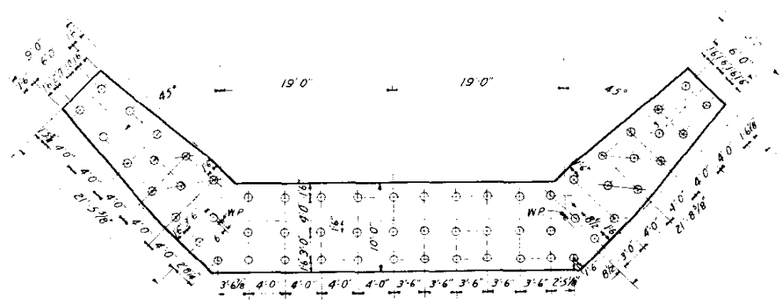


SECTION "C-C"



SECTION "D-D"

ELEVATION OF WING



PILE LAYOUT

LOADING DATA.
LIVE LOAD A.A.S.H.O. 1935 CLASS A. H-15
DEAD LOAD ASSUMES 150 LBS PER SQ. FT. ADDITIONAL WEARING SURFACE WHEN INCLUDES THE 5 INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA.
A.A.S.H.O. 1937 EXCEPT CONCRETE UNIT STRESSES PER A.A.S.H.O. AUG. 1929.

REFERENCE DRAWINGS

Sheet No. 10 General Layout, Summary of Quantities & Abutment Bar List

Sheet No. 11 Details of Superstructure.

COLORADO
STATE HIGHWAY DEPARTMENT

30'-0"-I-BEAM & CONCRETE SPAN
DETAILS OF
ABUTMENTS No. 1 & No. 2

Across Dead Horse Creek
Sta. 533+88.37 to 534+21.71
Near Glenwood Sp. Sec. 19 T. 5 S. R. 87 W.

Designed by ~~E.F.W.~~
Made by R.S.S.
Checked by M.G.D.

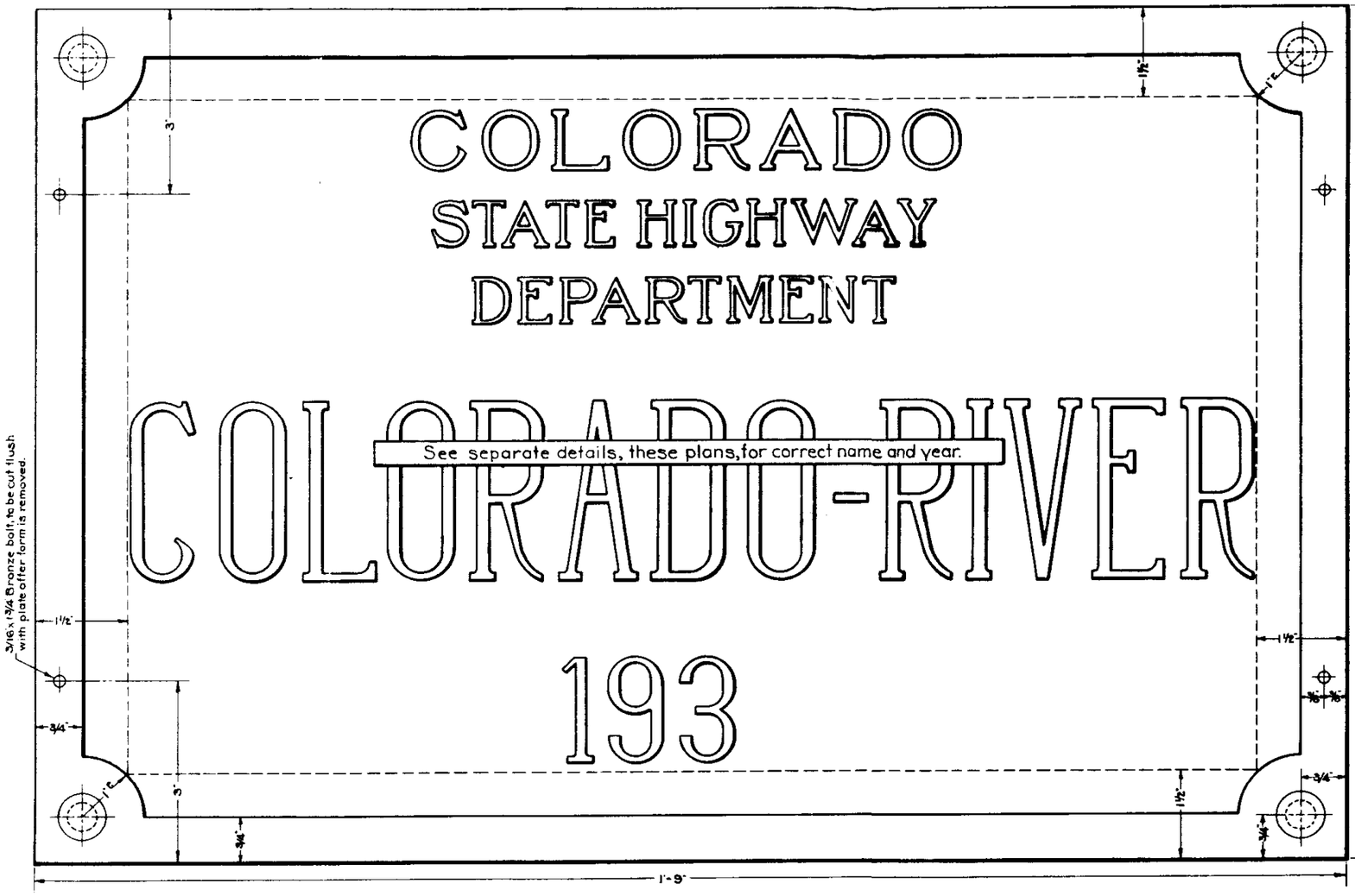
Approved by Ged Bailey
Bridge Engineer
Date: Jan. 15th 1938

STRUCTURE NO. F-8-G

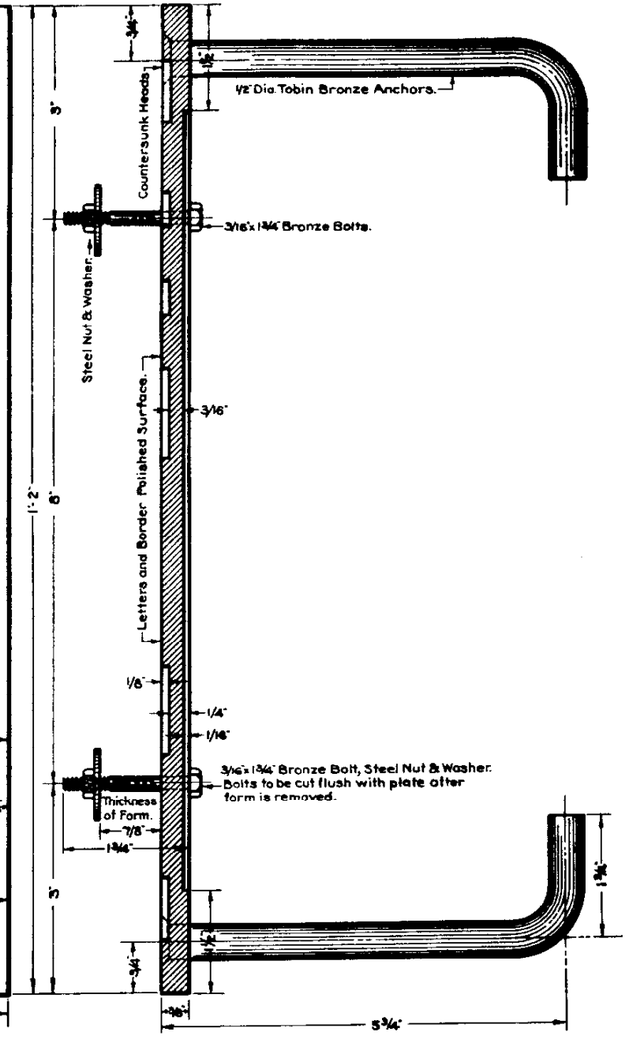
REVISIONS

FED. ROAD DIST. NO.	STATE	SHEET NO.	TOTAL SHEETS
3	COLO.	A.W.P. 2001 #4 13	

STANDARD M-6-D



BRONZE NAME PLATE.
ITEM Nº 80 b.



SECTION.

GENERAL NOTES.

All work shall be done according to the standard specifications of the Colorado State Highway Department. Adopted June 1-1937.

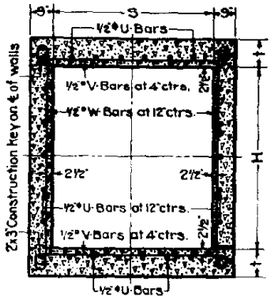
COLORADO
STATE HIGHWAY DEPARTMENT
TYPICAL
STANDARD
NAME PLATE

Across____ Sta.____
Near____ Sec.____ T.____ R.____
Designed by A.G.K. Made by A.G.K. Checked by
Approved by C. D. Thurby Bridge Engineer
Date: May 25th 1937

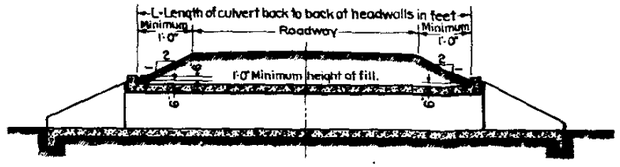
REVISIONS

FED. ROAD DIST. NO.	STATE	SHEET NO.	TOTAL SHEETS
3	COLO.	AWP 2001 #4	14

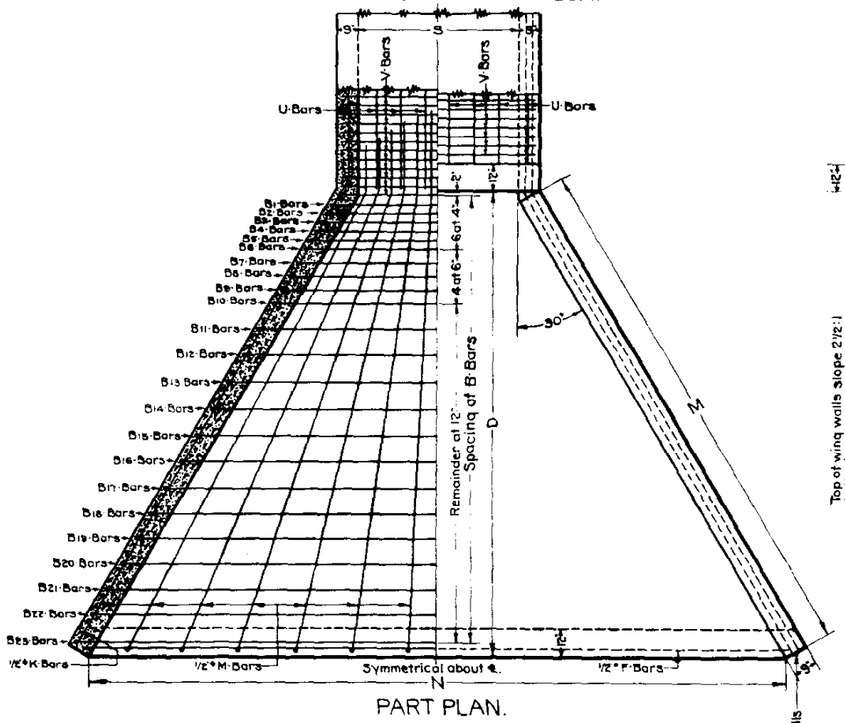
STANDARD M-103-D



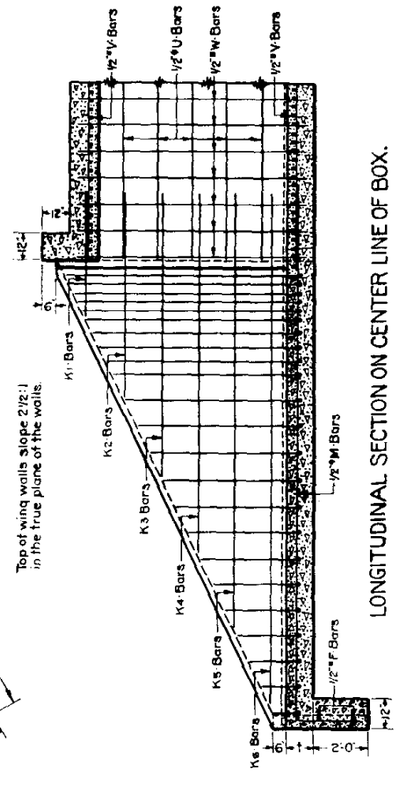
TYPICAL SECTION THRU BOX.



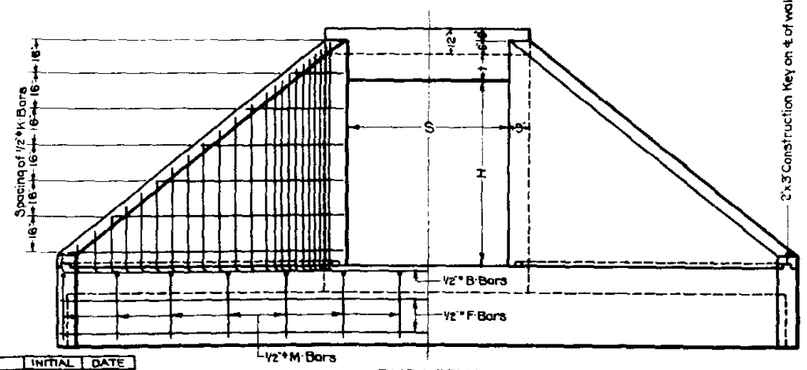
TYPICAL SECTION SHOWING RELATION OF CULVERT TO ROADWAY.



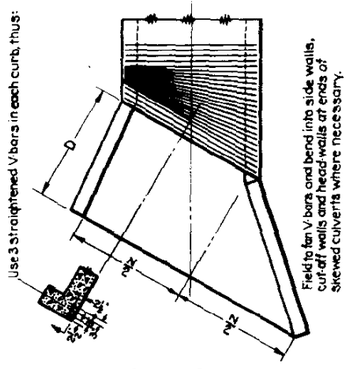
PART PLAN.



LONGITUDINAL SECTION ON CENTER LINE OF BOX.



END VIEW.



PART PLAN FOR SKEWED HEADWALLS.

REINFORCEMENT BAR LIST

W.W.D.

USE BARS FOR	MARK	SIZE	NUMBER	DIMENSION P	DIMENSION Q	TOTAL LENGTH	BENDING DIAGRAM ALL DIMENSIONS ARE TO ℄ OF BARS
All Sizes	V	½"	(S+1)+14	S + 10"		S + 2'-2"	2"Radius
" "	W	½"	(S+1)+6	H + 10"		H + 2'-2"	
" "	F	½"	4			N + 0'-5"	
" "	U	½"	★			L + 1'-6"	
" "	K 1	½"	4		3'-4"	5'-4"	
H=2'-0" or more	K 2	½"	4		6'-8"	8'-8"	
H=3'-0" "	K 3	½"	4		10'-0"	12'-0"	
H=5'-0" "	K 4	½"	4		13'-4"	15'-4"	
H=6'-0" "	K 5	½"	4		16'-8"	18'-8"	
H=7'-0" "	K 6	½"	4		20'-0"	22'-0"	
All Sizes	B 1	½"	2	S + 1'-6"	H + 1'-3"	P+(2+Q)-2"	
" "	B 2	½"	2	S + 1'-11"	H + 1'-1"		
" "	B 3	½"	2	S + 2'-5"	H + 0'-11"		
" "	B 4	½"	2	S + 2'-8"	H + 0'-9"		
" "	B 5	½"	2	S + 3'-0"	H + 0'-8"		
" "	B 6	½"	2	S + 3'-5"	H + 0'-6"		
" "	B 7	½"	2	S + 4'-0"	H + 0'-3"		
" "	B 8	½"	2	S + 4'-7"	H + 0'-0"		
" "	B 9	½"	2	S + 5'-2"	H - 0'-3"		
H=1'-6" or more	B 10	½"	2	S + 5'-9"	H - 0'-5"		
H=2'-0" " "	B 11	½"	2	S + 6'-11"	H - 0'-11"		
H=3'-0" " "	B 12	½"	2	S + 8'-1"	H - 1'-4"		
H=3'-0" " "	B 13	½"	2	S + 9'-3"	H - 1'-10"		
H=3'-0" " "	B 14	½"	2	S + 10'-5"	H - 2'-3"		
H=4'-0" " "	B 15	½"	2	S + 11'-7"	H - 2'-9"		
H=4'-0" " "	B 16	½"	2	S + 12'-9"	H - 3'-3"		
H=5'-0" "	B 17	½"	2	S + 13'-11"	H - 3'-8"		
H=5'-0" "	B 18	½"	2	S + 15'-1"	H - 4'-2"		
H=6'-0" "	B 19	½"	2	S + 16'-3"	H - 4'-7"		
H=6'-0" "	B 20	½"	2	S + 17'-5"	H - 5'-1"		
H=6'-0" "	B 21	½"	2	S + 18'-7"	H - 5'-6"		
H=7'-0" "	B 22	½"	2	S + 19'-9"	H - 6'-0"		
H=7'-0" "	B 23	½"	2	S + 20'-11"	H - 6'-5"		
All Sizes	M	½"	(S+1)x4	D + 3'-0"		D + 5'-3"	

★ See table of Dimensions and Quantities.

TABLE OF DIMENSIONS AND QUANTITIES

W.W.D.

STEEL QUANTITIES GIVEN BELOW INCLUDE ALLOWANCE FOR OVERRUN OF 1%.

TOTAL QUANTITIES FOR ONE BOX EQUALS THE QUANTITY FOR TWO HEADWALLS PLUS (L x QUANTITY FOR ONE LINEAL FT. OF BOX)

SPAN S	HEIGHT H	HEIGHT OF FILL ALLOWED	DIMENSION M	DIMENSION N	DIMENSION D	THICKNESS OF SLAB t	NUMBER OF U-BARS PER BOX	QUANTITIES FOR ONE LINEAL FT. OF BOX: CONCRETE CU.YDS.	QUANTITIES FOR ONE LINEAL FT. OF BOX: STEEL LBS.	QUANTITIES FOR TWO HEADWALLS: CONCRETE CU.YDS.	QUANTITIES FOR TWO HEADWALLS: STEEL LBS.	STRUCTURAL EXCAVATION: TWO HEADWALLS 30 FT.	STRUCTURAL EXCAVATION: TWO CUT-OFF WALLS CU.YDS.
1'-6"	1'-6"	29'-6"	5'-6¼"	7'-2⅝"	5'-1⅞"	8½"	8	0.241	30.6	4.5	320	116.91	4.40
2'-0"	2'-0"	22'-6"	6'-9¼"	8'-11⅜"	6'-2⅞"	8½"	8	0.235	34.0	6.1	430	153.44	5.18
3'-0"	1'-0"	19'-0"	4'-7"	7'-9⅜"	4'-4⅛"	10"	8	0.332	37.5	5.0	360	116.50	4.65
3'-0"	2'-0"	19'-0"	7'-1"	10'-3⅜"	6'-6⅛"	10"	10	0.388	40.5	7.7	495	178.11	5.76
3'-0"	3'-0"	19'-0"	9'-7"	12'-9⅜"	8'-8⅛"	10"	12	0.444	43.6	11.0	680	250.88	6.87
4'-0"	2'-0"	15'-0"	7'-1"	11'-3⅜"	6'-6⅛"	10"	12	0.450	47.0	8.5	565	195.13	6.15
4'-0"	3'-0"	15'-0"	9'-7"	13'-9⅜"	8'-8⅛"	10"	14	0.506	50.0	12.0	755	272.24	7.31
4'-0"	4'-0"	15'-0"	12'-1"	16'-3⅜"	10'-10⅛"	10"	16	0.562	53.1	16.0	910	353.71	8.42
5'-0"	3'-0"	11'-6"	9'-7"	14'-9⅜"	8'-8⅛"	10"	16	0.567	56.6	12.6	835	293.60	7.76
5'-0"	4'-0"	11'-6"	12'-1"	17'-3⅜"	10'-10⅛"	10"	18	0.623	58.6	17.1	995	385.43	8.87
5'-0"	5'-0"	11'-6"	14'-7"	19'-9⅜"	13'-0"	10"	20	0.679	62.7	21.9	1220	466.07	9.96
6'-0"	2'-0"	10'-0"	7'-4⅜"	13'-7⅛"	6'-9⅜"	11½"	16	0.645	60.0	11.3	705	239.50	7.63
6'-0"	3'-0"	10'-0"	9'-10⅜"	16'-1⅛"	8'-11¼"	11½"	18	0.699	63.0	15.3	920	325.95	8.54
6'-0"	4'-0"	10'-0"	12'-4⅜"	18'-7⅛"	11'-1¼"	11½"	20	0.755	66.2	20.1	1090	423.57	9.45
6'-0"	5'-0"	10'-0"	14'-10⅜"	21'-1⅛"	13'-3¼"	11½"	22	0.810	69.2	25.6	1320	532.02	10.56
6'-0"	6'-0"	10'-0"	17'-4⅜"	23'-7⅛"	15'-5¼"	11½"	24	0.866	72.3	31.7	1620	651.48	11.67
6'-0"	7'-0"	10'-0"	19'-10⅜"	26'-1⅛"	17'-7¼"	11½"	26	0.923	75.3	38.5	1900	781.58	12.79

GENERAL NOTES.

All work shall be done according to the Standard Specifications of the Colorado State Highway Department, Adopted June 1 1937.

All concrete shall be class "A".

All exposed surfaces shall be rubbed free of form marks.

All walls shall have forms on both sides.

Minimum distance between centerline of bar and edge of concrete to be 2½".

All construction joints shall be thoroughly cleaned before fresh concrete is poured.

Footings in rock shall be poured out to the rock and not formed.

For culverts required and governing dimensions see sheet № 2.

All reinforcing bars shall be deformed.

All reinforcing bars shall be tagged with the station number and letter designation.

Secondary bars when spliced shall be given a lap of 30 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 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 have a 2'x 3' key.

This design not to be used when height of fill exceeds the allowable tabulated.

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 six inches in depth and each layer shall be rolled or hand tamped where inaccessible to roller, also moistened when necessary.

LOADING DATA

L.L.-A.A.S.H.O. 1935 Class "A" (H-15)

COLORADO
STATE HIGHWAY DEPARTMENT
CONCRETE BOX CULVERTS

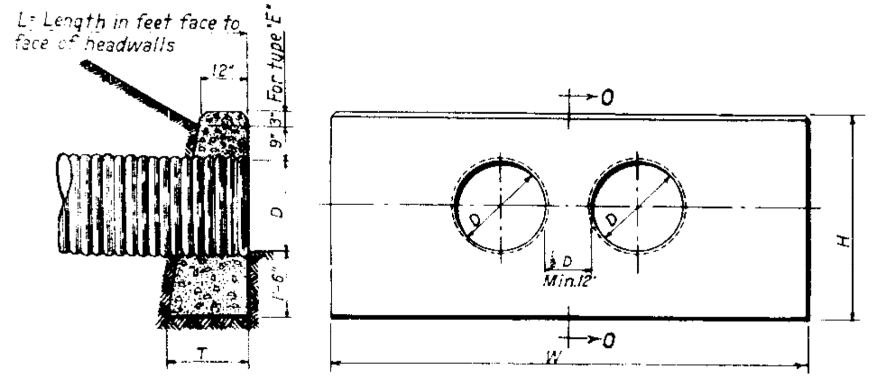
1½'x1½'	4'x2'	5'x4'	6'x4'
2'x2'	4'x3'	5'x5'	6'x5'
3'x1'	4'x4'	6'x2'	6'x6'
3'x2'	5'x3'	6'x3'	6'x7'
3'x3'			

Designed by A.G.K. Approved by C. H. Scholer
Made by A.G.K. Bridge Engineer
Checked by Date: May 10th, 1937.

	INITIAL	DATE
ORIGINAL BY		
CHECKED BY		
CHECKED BY		
CHECKED BY		

STANDARD M-103-D.

STRUCTURE NO.

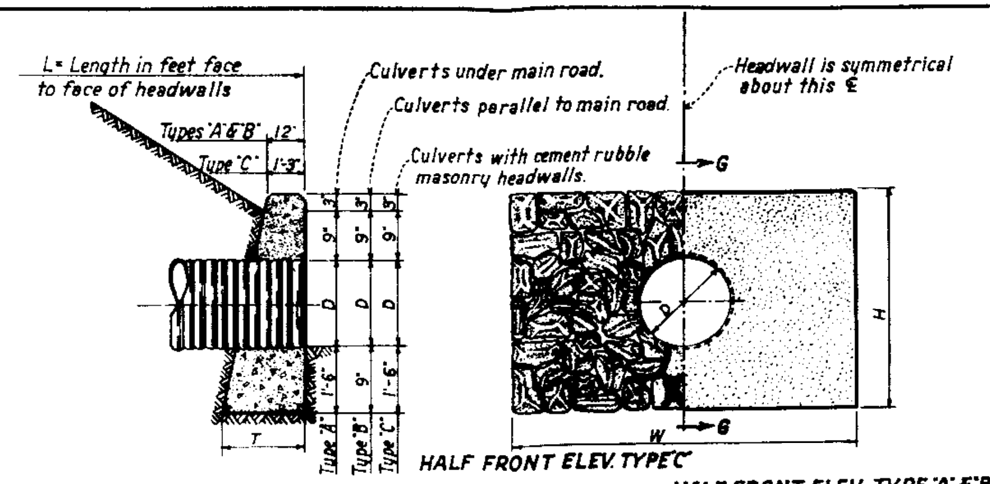


SECTIONAL ELEV. O-O

FRONT ELEVATION

TABLE OF DIMENSIONS & QUANTITIES FOR DOUBLE CORRUGATED METAL PIPE CULVERT & HEADWALLS								
	D	W	H	T	CL."B" CONCRETE FOR 2 HDWALLS	CORRUGATED METAL PIPE		CEMENT RUBBLE MASONRY
TYPE "E"	15"	7'-6"	3'-9"	1'-6"	2.4 CU. YDS.	16 GAGE	2×L = LIN. FT.	
	18"	8'-6"	4'-0"	1'-7"	3.0 DO.	16 DO	2×L = DO	
	24"	10'-6"	4'-6"	1'-10"	4.4 DO	14 DO	2×L = DO	
	30"	12'-9"	5'-0"	2'-0"	6.1 DO	14 DO	2×L = DO	
	36"	15'-0"	5'-6"	2'-2"	8.1 DO	12 DO	2×L = DO	
	42"	17'-3"	6'-0"	2'-5"	10.8 DO	10 DO	2×L = DO	
	48"	19'-6"	6'-6"	2'-7"	13.6 DO	10 DO	2×L = DO	
TYPE "F"								

STD. HEADWALLS FOR DOUBLE CORR. METAL PIPE CULV'S.



SECTIONAL ELEV. G-G

HALF FRONT ELEV. TYPE "C"

HALF FRONT ELEV. TYPE "A" & "B"

TABLE OF DIMENSIONS & QUANTITIES FOR CORRUGATED METAL PIPE CULVERTS & HEADWALLS								
	D	W	H	T	CL."B" CONCRETE FOR 2 HEADWALLS	CORRUGATED METAL PIPE		CEMENT RUBBLE MASONRY
TYPE "A"	12"	4'-6"	3'-6"	1'-5"	1.4 CU. YDS.	16 GAGE	L = LIN. FT.	
	15"	5'-3"	3'-9"	1'-6"	1.8 DO	16 DO	L = DO	
	18"	6'-0"	4'-0"	1'-7"	2.2 DO	16 DO	L = DO	
	24"	7'-6"	4'-6"	1'-10"	3.3 DO	14 DO	L = DO	
	30"	9'-0"	5'-0"	2'-0"	4.5 DO	14 DO	L = DO	
	36"	10'-6"	5'-6"	2'-2"	6.0 DO	12 DO	L = DO	
	42"	12'-0"	6'-0"	2'-5"	8.0 DO	10 DO	L = DO	
	48"	13'-6"	6'-6"	2'-7"	10.0 DO	10 DO	L = DO	
TYPE "B"	12"	4'-0"	2'-9"	1'-0"	0.8 CU. YDS.	16 GAGE	L = LIN. FT.	
	15"	4'-3"	3'-0"	1'-2"	0.9 DO	16 DO	L = DO	
	18"	4'-6"	3'-3"	1'-3"	1.1 DO	16 DO	L = DO	
	24"	5'-0"	3'-9"	1'-6"	1.2 DO	14 DO	L = DO	
	30"	5'-6"	4'-3"	1'-7"	1.8 DO	14 DO	L = DO	
TYPE "C"	12"	4'-6"	3'-6"	2'-0"		16 GAGE	L = LIN. FT.	1.6 CU. YDS.
	15"	5'-3"	3'-9"	2'-0"		16 DO	L = DO	2.2 DO
	18"	6'-0"	4'-0"	2'-1"		16 DO	L = DO	2.8 DO
	24"	7'-6"	4'-6"	2'-4"		14 DO	L = DO	4.1 DO
	30"	9'-0"	5'-0"	2'-6"		14 DO	L = DO	5.6 DO
	36"	10'-6"	5'-6"	2'-8"		12 DO	L = DO	7.4 DO

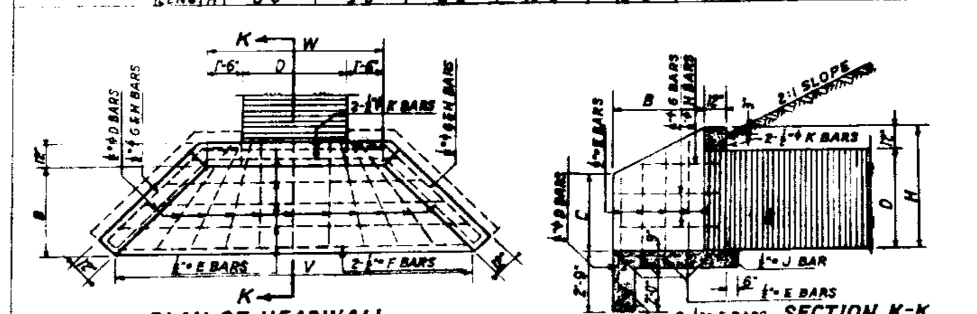
	D	W	H	V	B	C	UNIT	CONCRETE CLASS "A"	CORRUGATED METAL PIPE		UNIT	REINFORCING STEEL
TYPE "G"	54"	7'-6"	5'-6"	15'-6"	4'-0"	3'-6"	CU. YDS.	12.6 *	8 GAGE	L = LIN. FT.	LBS.	446 ▲
	60"	8'-0"	6'-0"	16'-0"	4'-0"	4'-0"	DO	13.5 *	8 DO	L = DO	DO	482 ▲
	66"	8'-6"	6'-6"	16'-6"	4'-0"	4'-6"	DO	14.4 *	8 DO	L = DO	DO	498 ▲
	72"	9'-0"	7'-0"	19'-0"	5'-0"	4'-6"	DO	17.9 *	8 DO	L = DO	DO	610 ▲
	78"	9'-6"	7'-6"	19'-6"	5'-0"	5'-0"	DO	18.9 *	8 DO	L = DO	DO	630 ▲
	84"	10'-0"	8'-0"	20'-0"	5'-0"	5'-6"	DO	20.0 *	8 DO	L = DO	DO	684 ▲

▲ REINFORCING STEEL QUANTITIES ARE FOR TWO HEADWALLS * CONCRETE QUANTITIES ARE FOR TWO HEADWALLS

BAR LIST FOR TYPE "G"

DIAMETER OF PIPE		54"	60"	66"	72"	78"	84"
D BARS ½"⌀	SPACING	18"	18"	18"	18"	18"	18"
	NUMBER	11	11	11	12	12	13
	LENGTH	7'-7"	7'-7"	7'-7"	8'-7"	8'-7"	8'-7"
E BARS ½"⌀	SPACING	12"	12"	12"	12"	12"	12"
	NUMBER	1 EACH	1 EACH	1 EACH	1 EACH	1 EACH	1 EACH
	LENGTH	24'-0" TO 20'-0"	25'-6" TO 21'-6"	27'-0" TO 23'-0"	[illegible]	31'-0" TO 26'-0"	32'-6" TO 27'-6"
	DECREASE	BY 12"	BY 12"	BY 12"	BY 12"	BY 12"	BY 12"
F BARS ½"⌀	SPACING	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"	1'-2"
	NUMBER	2	2	2	2	2	2
	LENGTH	15'-6"	16'-0"	[illegible]	19'-0"	19'-6"	20'-0"
G BARS ½"⌀	SPACING	18"	18"	[illegible]	18"	18"	[illegible]
	NUMBER	4	6	[illegible]	6	6	[illegible]
	LENGTH	7'-2"	7'-0"	7'-0"	8'-5"	8'-5"	[illegible]
H BARS ½"⌀	SPACING	18"	18"	18"	18"	18"	18"
	NUMBER	2	2	2	2	2	2
	LENGTH	5'-11"	5'-11"	5'-11"	5'-11"	5'-11"	5'-11"
J BARS ½"⌀	SPACING	12"	12"	12"	12"	12"	12"
	NUMBER	1	1	1	1	1	1
	LENGTH	8'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"
K BARS ½"⌀	SPACING	6"	6"	6"	6"	6"	6"
	NUMBER	2	2	2	2	2	2
	LENGTH	8'-6"	9'-0"	[illegible]	10'-0"	10'-6"	11'-0"

BENDING DIAGRAM



PLAN OF HEADWALL

TYPE "G"

SECTION K-K

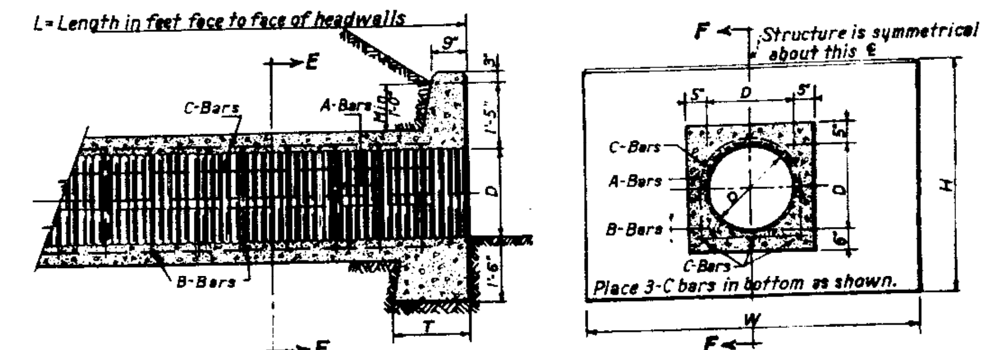
STD. HEADWALLS FOR CORRUGATED METAL PIPE CULVERTS

STANDARD M-102-E

[redacted]

FED. ROAD DIST. NO.	STATE	A.W.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	2001 #4	15	

Revised 6-1-37. A.&K. Changed to 1937 Specifications



LONGITUDINAL SECTION F-F

SECTIONAL ELEVATION E-E

TABLE OF DIMENSIONS AND QUANTITIES FOR INCASED PIPE CULVERTS							
Diameter of pipe		D	12"	15"	18"	24"	30"
Width of headwall		W	4'-6"	5'-3"	6'-0"	7'-6"	9'-0"
Height of headwall		H	4'-2"	4'-5"	4'-8"	5'-2"	5'-8"
Width of headwall base		T	1'-7"	1'-8"	1'-9"	2'-0"	2'-3"
A BARS		SPACING	12"	12"	12"	12"	12"
		NUMBER	L-1	L-1	L-1	L-1	L-1
		LENGTH	3'-9"	4'-5"	5'-0"	6'-4"	7'-7"
B BARS		SPACING	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"
		NUMBER	0.5 L	0.5 L	0.5 L	0.5 L	0.5 L
		LENGTH	1'-7"	1'-10"	2'-1"	2'-7"	3'-1"
C BARS		SPACING					
		NUMBER	6	8	8	8	8
		LENGTH	L-(2'-0")	L-(2'-0")	L-(2'-0")	L-(2'-0")	L-(2'-0")
ITEM No.	DESCRIPTION	UNIT					
46a	Concrete Class "A" *	Cu. Yds.	1.4+0.101L	1.6+0.122L	2.2+0.149L	3.2+0.19L	4.5+0.239L
47	Reinforcing Steel	Lbs.	8.96L-16.2●	11.19L-17.2▼	11.863L-17.8▼	13.159L-18.3▼	14.909L-19.4▼
53	Galv. Corr. Metal Pipe	Lin. Ft.	L	L	L	L	L

BENDING DIAGRAM

* Concrete quantities shown above include two headwalls.

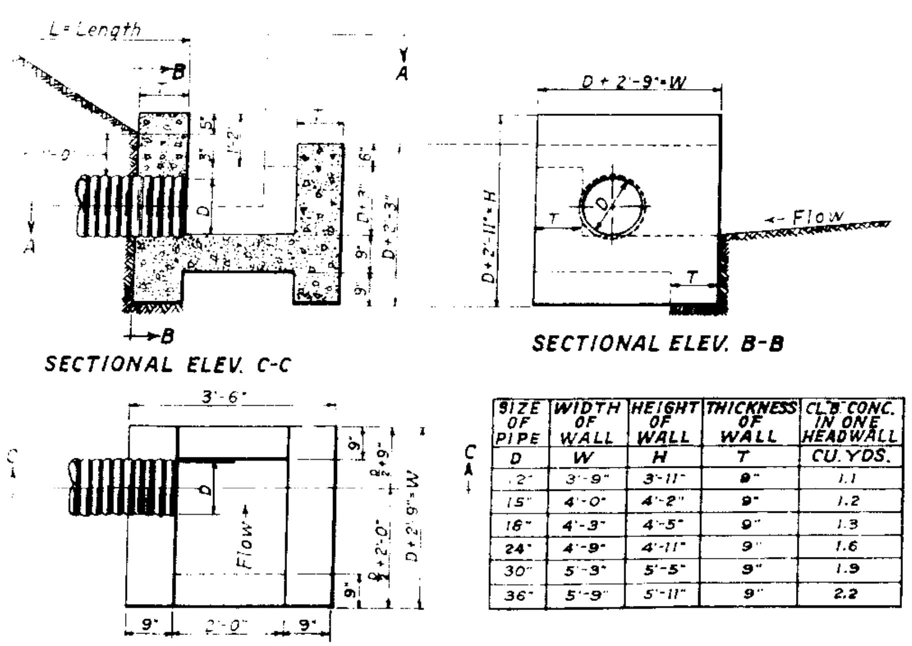
● When L = 40 feet or more add 10.6 Lbs. for lap in C-bars.

▼ When L = 40 feet or more add 14.17 Lbs. for lap in C-bars.

SPECIAL NOTES

All reinforcing bars shall be ½"⌀.
Minimum distance ℄ of bar to surface of concrete shall be 2".
Pipe shall be thoroughly cleaned before incasing with concrete.

INCASED PIPE CULVERTS



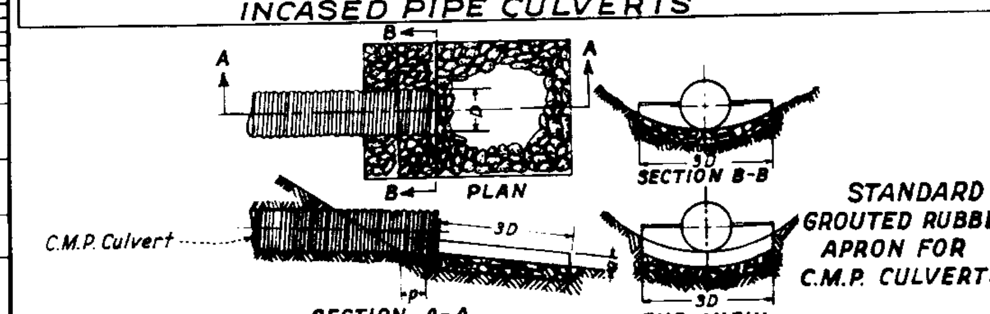
SECTIONAL ELEV. C-C

SECTIONAL ELEV. B-B

SECTIONAL PLAN A-A

SIZE OF PIPE	WIDTH OF WALL	HEIGHT OF WALL	THICKNESS OF WALL	CL."B" CONC. IN ONE HEADWALL
D	W	H	T	CU. YDS.
12"	3'-9"	3'-11"	9"	1.1
15"	4'-0"	4'-2"	9"	1.2
18"	4'-3"	4'-5"	9"	1.3
24"	4'-9"	4'-11"	9"	1.6
30"	5'-3"	5'-5"	9"	1.9
36"	5'-9"	5'-11"	9"	2.2

INTERCEPTING HEADWALLS



STANDARD GROUTED RUBBLE APRON FOR C.M.P. CULVERTS

SQUARE YARDS GROUTED RUBBLE SLOPE & DITCH PAVING "1 FOOT THICK"														
FILL SLOPE	D	15"	18"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"
	B / d	7½"	9"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
1½:1	2'-0"	3	4	6	9	12	17	21	27	33	[illegible]	46	54	62
2:1	2'-0"	3	4	7	10	13	18	22	28	34	41	49	57	66
3:1	3'-0"	3	4	7	11	15	20	25	31	38	43	54	63	72
4:1	4'-0"	3	5	8	12	16	22	28	34	42	[illegible]	[illegible]	[illegible]	79

GENERAL NOTES FOR ALL STRUCTURES

All work shall be done according to the standard specifications of the Colorado State Highway Department, adopted June 1-1937.
All concrete shall be class "A" except types A & B, which shall be class "B".
All exposed surfaces shall be rubbed free of form marks.
All exposed corners shall be beveled to a 2" face.
All construction joints shall be thoroughly cleaned before fresh concrete is poured.
All walls shall have forms on both sides.
All reinforcing bars shall be deformed.
All reinforcing bars shall tagged with the station number & letter designation.
Secondary bars when spliced shall be given a lap of 50 diameters.
Main bars shall not be spliced.
Minimum fill over top of culverts shall be 1'-0"
When culvert is skewed, headwalls shall be placed parallel to ℄ of roadway
Minimum grade of pipe shall be 1%
For size and location of culverts see sheet No. 2
Footings in rock shall be poured out to the rock and not formed.

COLORADO
STATE HIGHWAY DEPARTMENT

STANDARD HEADWALLS
INTERCEPTING HEADWALLS
INCASED METAL PIPE CULVERT WITH HEADWALLS
FOR CORRUGATED METAL PIPE CULVERTS

Designed R.S.B.-G.H.D.	Approved by [signature]
Made by L.S.-A.V.K.	Bridge Engineer
Checked G.H.D.-W.M.M.	Date: April 27th 1937.

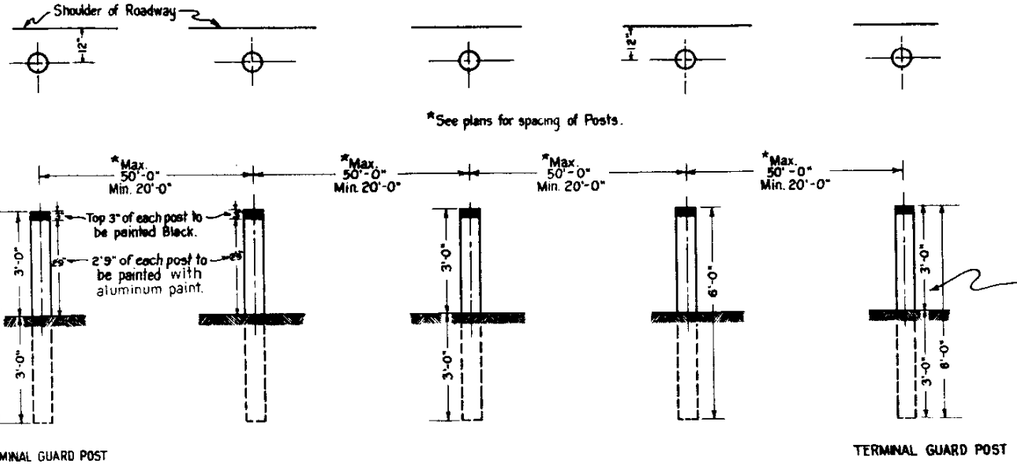
102-E

REVISIONS

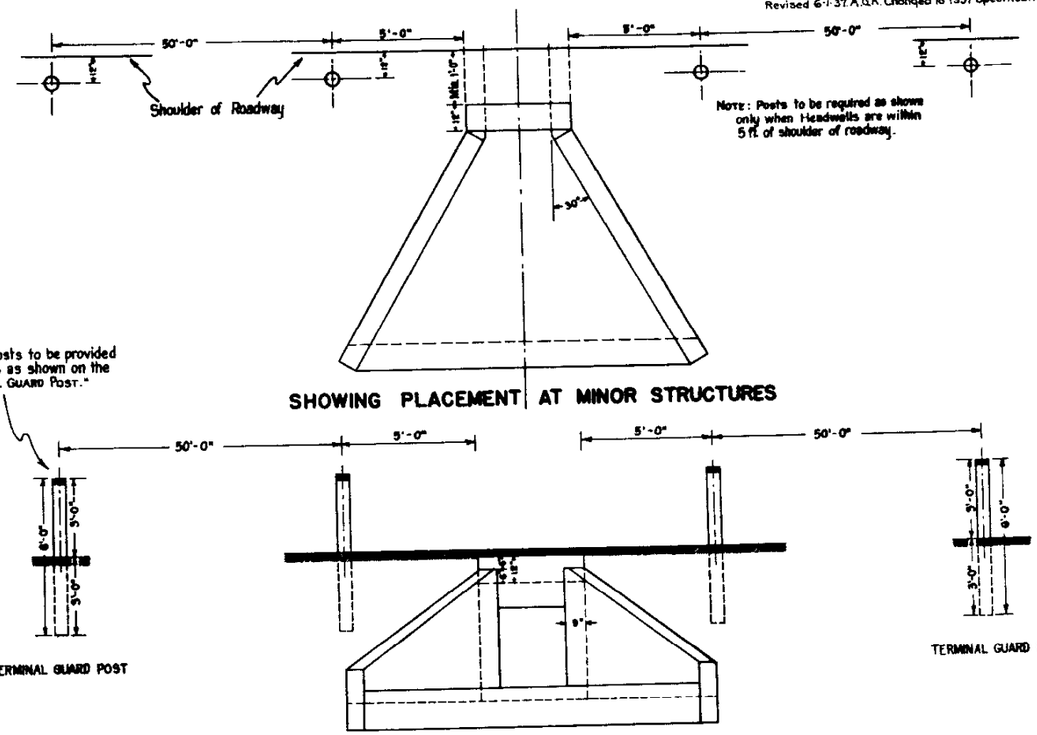
FED. ROAD DIST. NO.	STATE	SHEET NO.	TOTAL SHEETS
3	COLO.	A.W.P. 2001 #4	16

STANDARD M-19-A

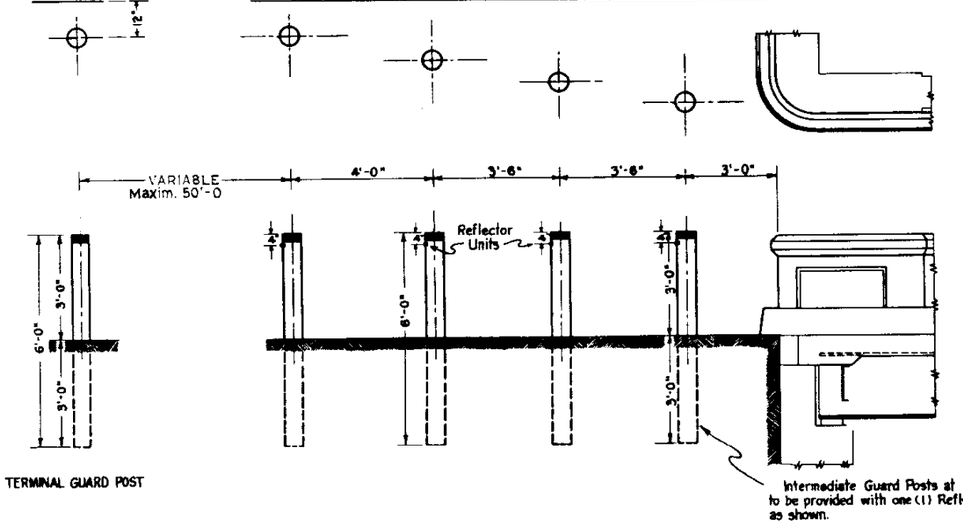
Revised 3-26-37
Revised 6-1-37 A.G.K. Changed to 1937 Specifications.



SHOWING PLACEMENT ON NORMAL ROADWAY FILLS



SHOWING PLACEMENT AT MINOR STRUCTURES



SHOWING PLACEMENT AT BRIDGE APPROACHES

GENERAL NOTES

All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department, adopted on June 1-1937.

All wood posts shall be made from seasoned, straight, sound, Lodge Pole Pine, Southern Yellow Pine, or West Coast Douglas Fir.

No section of wood posts shall be less than 6" in diameter.

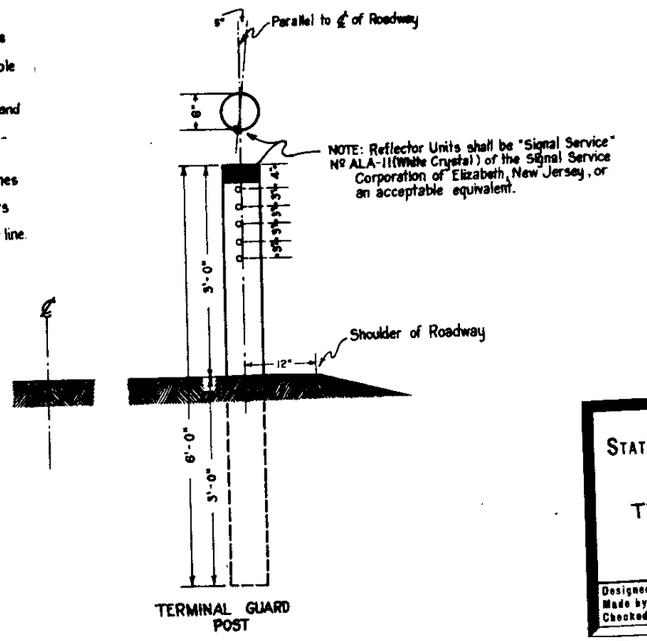
All wood posts shall be entirely peeled and shaved, thoroly seasoned and dry, with square tops.

All wood posts shall be pressure treated with a standard creosote treatment for the full length of posts, as provided for in the specifications.

All wood posts shall be set and tamped in plumb and firm, to the lines and grades as directed by the Engineer.

Posts with Reflector Units shall be rotated so that Reflector Units will function at a distance of 500 feet from posts.

On tangents the rotation shall be 5 degrees toward roadway center line.



COLORADO
STATE HIGHWAY DEPARTMENT
STANDARD
TIMBER GUARD POSTS

Designed by	Approved by
Made by R.E.B.	Bridge Engineer
Checked by	Date: 193

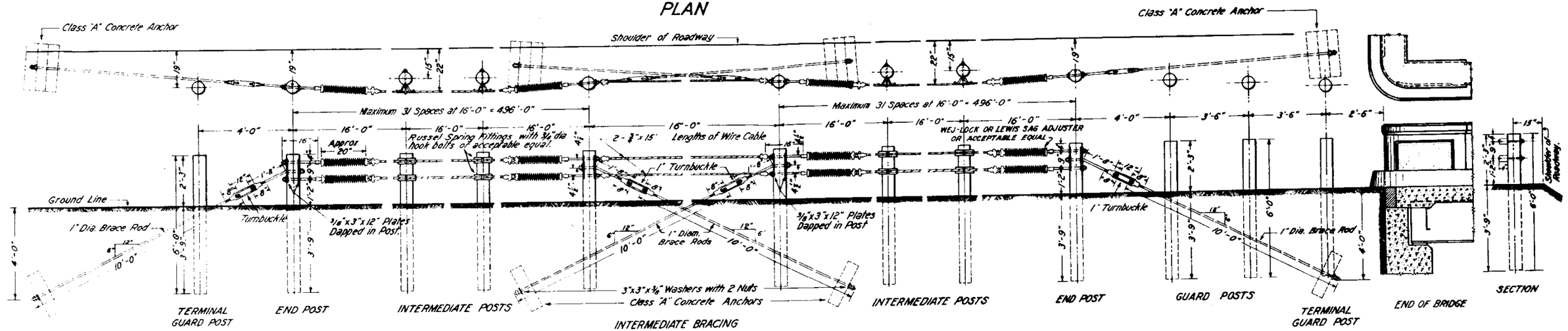
REVISIONS
Rev 2-19-37 - E.L.K. NOTES RE BRIDGE & SIDEWALK
Rev 6-1-37 A.O.K. (1937 Specifications)

FED. ROAD DIST. NO.	STATE	SHEET NO.	TOTAL SHEETS
3	COLO.	A.W.P. 2001-34	17

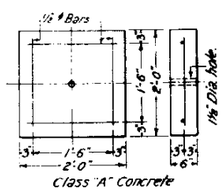
STANDARD M-20-B

NOTE: The 3 guard posts between the End Post and the end of bridge railings shall be so placed that the faces of the posts are in a direct line between the face of the end post and the face of the handrailing on bridge.

PLAN

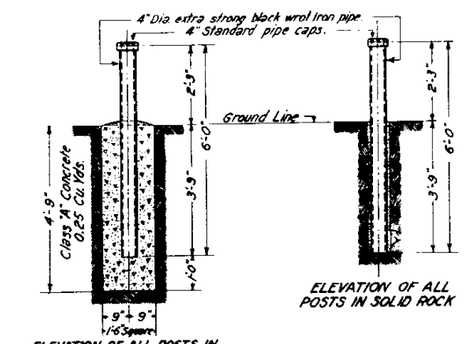


ELEVATION

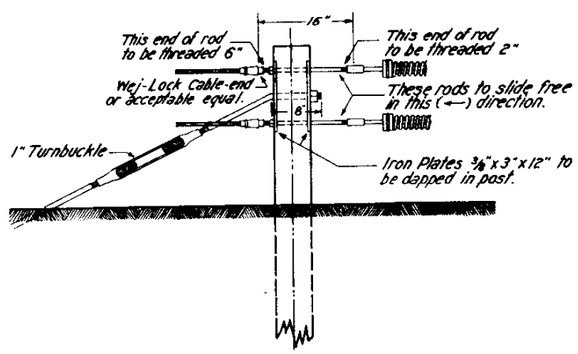


DETAIL OF ANCHORS

NOTE: Holes in rock shall be constructed as near as possible to diameter of pipe, the remaining space between pipe and wall of hole to be filled with cement grout.
Holes necessary for type of fence used shall be drilled in pipe posts.



DETAILS FOR WROT IRON PIPE



SIDE VIEW OF POST AT INTERMEDIATE BRACING

GENERAL NOTES

All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department, adopted June 1-1937.

The length of guard fence to be paid for and designated on plans shall be measured from terminal guard post to terminal guard post.

When continuous wire cable fence is more than 500 Ft. in length it shall have intermediate bracing complete with turnbuckles.

All wood posts shall be made from seasoned, straight, sound Lodge Pole Pine, Southern Yellow Pine, or West Coast Douglas Fir.

No section of wood posts shall be less than 6" diameter.

All wood posts shall be entirely peeled and shaved, thoroly seasoned and dry, with square tops and all holes to be drilled ½₂" larger than diameter of bolt or rod before treatment is applied.

All wood posts shall be pressure treated with creosote for the full length of posts, as provided for in the Specifications.

All wood posts shall be set and tamped in plumb and firm, to the lines and grades directed by the Engineer.

Standard galvanized cast iron O.G. or galvanized malleable cast washers shall be used under all bolt heads and nuts coming in contact with wood posts.

Only one style of eyebolts, turnbuckles, and other fittings may be used on a project.

Turnbuckles on all brace rods shall be so placed that the entire turnbuckle clears the ground line.

All sag adjusters shall be compressed a minimum of 1" @ 100°F to allow for initial tension in the cable. The adjusted amount of compression of springs due to temperature shall be figured in the following manner. For every 10° of temperature below 100°F an additional ½₂" of compression per 100 ft. of cable shall be used. Illustration: Length between end posts 400ft, Temp. 40°F: (4X6X½₂)+1 = 1¾".

Sag adjusters and appurtenances shall be either hot dip galvanized or painted with 2 coats of approved aluminum paint. Paint and painting shall conform to requirements of Item 41 of the Standard Specifications.

Where sidewalks are constructed adjacent to the lane for traffic, Guard Fence shall be placed in such manner that the cable lies on the line between the sidewalk area and the normal roadway shoulder.

Where Guard Fences are constructed on the approaches to bridges with sidewalks, the cable at bridge shall be placed in line with the face of the curbing on the bridge.

COLORADO
STATE HIGHWAY DEPARTMENT
STANDARD
WIRE CABLE GUARD FENCE

Designed by A.J.
Made by P.B.B.
Checked by

Approved by
Date: May 6, 1937

STANDARD NO. M-20-B

SCALE OF LETTERING

STANDARD M-10-A

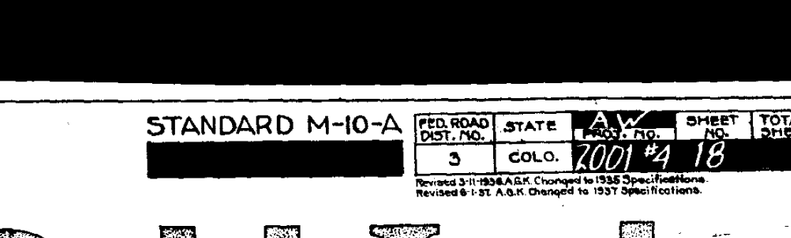
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	2001 #4	18	

Revised 3-11-1936 A.G.K. Changed to 1935 Specifications.
Revised 6-1-37. A.G.K. Changed to 1937 Specifications.

A B C D E F G H I J

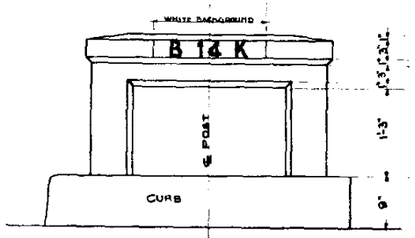
K L M N O P Q R S T

U V W X Y Z

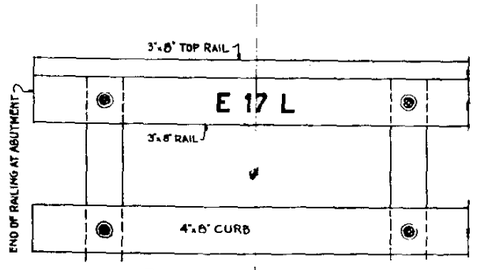


SAMPLE BRIDGE NUMBER

1 2 3 4 5 6 7 8 9 0 .



TYPICAL CONCRETE ENDPOST.



TYPICAL TIMBER WING

General Notes

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE COLORADO STATE HIGHWAY DEPARTMENT, ADOPTED JUNE 1-1937.

THE STRUCTURE NUMBER SHALL BE STENCILED ON THE RIGHT HAND SIDE OF EACH BRIDGE END AS SHOWN ON THIS STANDARD AND AS SPECIFIED.

THE CORRECT NUMBER FOR EACH BRIDGE IS SHOWN IN THE LOWER RIGHT HAND CORNER OF THE DETAIL SHEETS FOR THAT PARTICULAR BRIDGE.

THE SIZE, SHAPE AND SPACING OF THE LETTERS AND FIGURES SHALL BE IDENTICAL WITH THE FULL SIZE SHOWN ON THIS SHEET. ADDITIONAL COPIES OF THIS FULL SIZE SHEET CAN BE OBTAINED FROM THE DEPARTMENT WITHOUT CHARGE.

BEFORE STENCILING THE NUMBER ON THE BRIDGE, THE SURFACE MUST BE THOROLY CLEANED. A PROPER WHITE BACKGROUND SHALL BE PAINTED ON CONCRETE SURFACES. ON TIMBER HANDRAILS THE WHITE PAINT USED ON THE BRIDGE WILL BE SATISFACTORY. ON CONCRETE ENDPOSTS THE DRY CONCRETE SURFACE SHALL BE PROPERLY SIZED BEFORE PLACING THE WHITE RECTANGLE, UNLESS AN APPROVED WHITE CONCRETE PAINT IS USED.

TWO COATS OF ACCEPTABLE WHITE PAINT SHALL BE APPLIED TO THE CONCRETE IN A NEAT RECTANGULAR SHAPE AND EXTEND THREE INCHES BEYOND THE LIMITS OF THE STRUCTURE NUMBER.

AFTER THIS WHITE BACKGROUND HAS DRIED SUFFICIENTLY, THE CORRECT STRUCTURE NUMBER SHALL BE CAREFULLY STENCILED ON IT WITH TWO COATS OF STANDARD "C" SECOND FIELD COAT DARK" AS SPECIFIED UNDER ITEM 41 "STEEL BRIDGES." THE BRACES OF THE STENCILED LETTERS AND FIGURES SHALL BE CAREFULLY FILLED IN BY HAND, TO MAKE SOLID FIGURES. SUFFICIENT TIME BETWEEN SUCCESSIVE COATS SHALL BE ALLOWED TO PERMIT THE PRECEDING COAT TO DRY.

THIS WORK WILL NOT BE PAID FOR AS A SEPERATE ITEM. COMPENSATION SHALL BE INCLUDED IN THE ORIGINAL CONTRACT ITEMS.

COLORADO
STATE HIGHWAY DEPARTMENT
STANDARD STRUCTURE NUMBER LETTERING.

Across Sta.
Near Sec. T. R.

Designed by G.H.D.
Made by G.K.D.
Check Design
Check Detail

Approved by P. D. Bailey
Bridge Engineer
Date: Feb. 6th 1938.

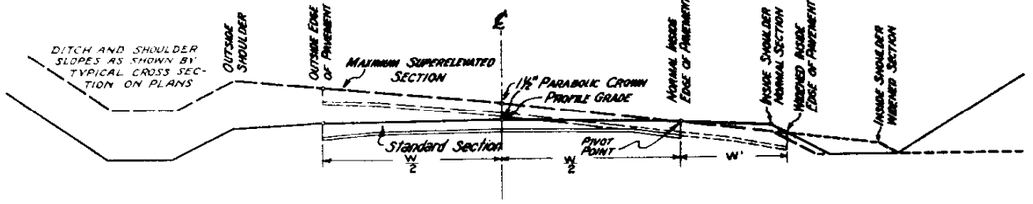
STANDARD M-10-A

STRUCTURE NO.

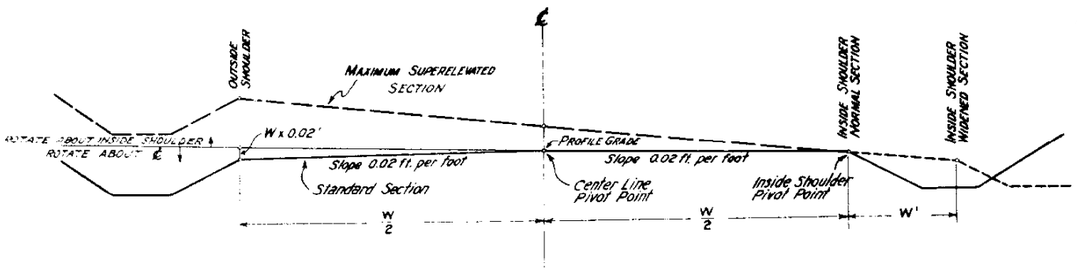
REVISIONS

STANDARD M-I-B

FED ROAD DIST NO	STATE	SHEET NO.	TOTAL SHEETS
3	COLO	A.W.P. 1001 #4	19



PAVEMENT SECTION

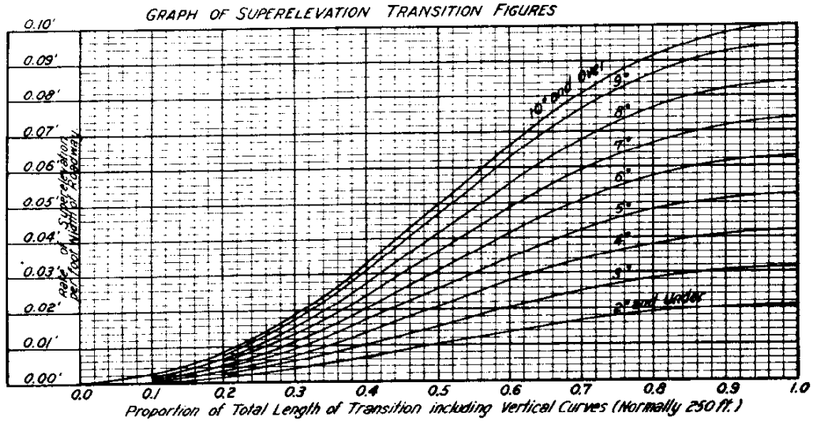


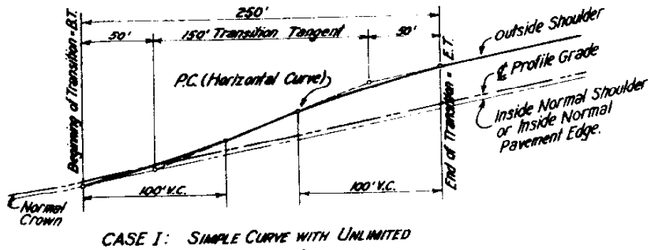
GRADED OR SURFACED SECTION

SUPERELEVATION AND WIDENING TABLES

DISTANCE FROM B.T. (PROPORTION)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	Max. 1.0
Degree of Curvature	RATE OF SUPERELEVATION (IN FEET) PER FOOT WIDTH OF ROADWAY									
2° and Under	0.00044	0.00175	0.00394	0.00700	0.01050	0.01400	0.01706	0.01925	0.02056	0.02100
3°	0.00066	0.00263	0.00591	0.01050	0.01575	0.02100	0.02559	0.02888	0.03084	0.03150
4°	0.00088	0.00350	0.00788	0.01400	0.02100	0.02800	0.03413	0.03850	0.04113	0.04200
5°	0.00109	0.00438	0.00984	0.01750	0.02625	0.03500	0.04266	0.04813	0.05141	0.05250
6°	0.00131	0.00525	0.01181	0.02100	0.03150	0.04200	0.05119	0.05775	0.06169	0.06300
7°	0.00153	0.00613	0.01378	0.02450	0.03675	0.04900	0.05972	0.06738	0.07197	0.07350
8°	0.00175	0.00700	0.01575	0.02800	0.04200	0.05600	0.06825	0.07700	0.08225	0.08400
9°	0.00197	0.00788	0.01772	0.03150	0.04725	0.06300	0.07678	0.08663	0.09253	0.09450
10° and Over	0.00208	0.00833	0.01875	0.03333	0.05000	0.06667	0.08125	0.09166	0.09792	0.10000
	OFFSETS FOR WIDENING - W' - (IN FEET)									
Over 10° - Under 12°	0.03	0.12	0.27	0.48	0.75	1.08	1.47	1.92	2.43	3.00
" 12° - " 15°	0.04	0.16	0.36	0.64	1.00	1.44	1.96	2.56	3.24	4.00
" 15° - " 20°	0.05	0.20	0.45	0.80	1.25	1.80	2.45	3.20	4.05	5.00
" 20°	0.06	0.24	0.54	0.96	1.50	2.16	2.94	3.84	4.86	6.00

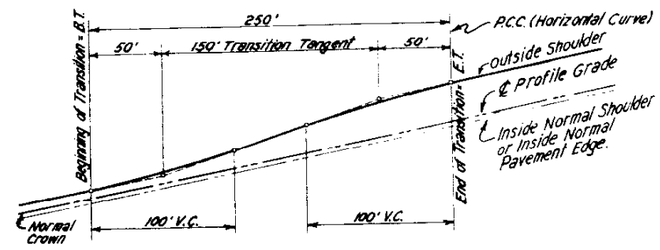
GRAPH OF SUPERELEVATION TRANSITION FIGURES





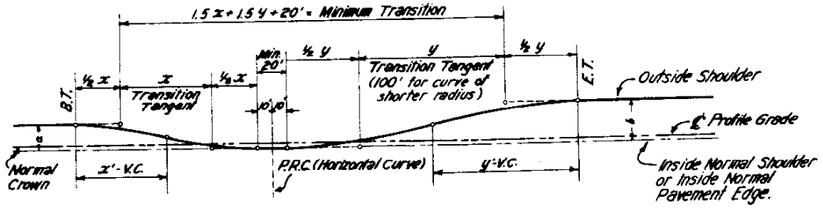
CASE I: SIMPLE CURVE WITH UNLIMITED TANGENT APPROACH

NOTE: CASE I
The transition in this case, from crowned section to superelevated section, shall proceed uniformly by raising the outside shoulder, over a distance of 250 ft. as shown, beginning at a point on the tangent 150 ft. from the end of the curve and acquiring full superelevation at a point 100 ft. inside the curve.



CASE II: COMPOUND CURVE

NOTE: CASE II
Superelevation transitions at the outside ends of compound curves shall be constructed in accordance with rules given under CASE I.
Superelevation transition between the arcs of different radii shall be made as in CASE I, except that the entire transition shall lie within the limits of the curve of the longer radius.
In cases where curves in the same direction have a tangent distance of less than 300 ft. between points of curve, the intervening tangent shall be superelevated an amount equal to that of the curve of greater radius and the transition shall be made as in the case of a true compound curve.



CASE III: REVERSE CURVES

NOTE: CASE III
Transitions between true reverse curves shall be accomplished as shown on the above diagram.
Transition tangents shall be directly proportional to the amount of superelevation of the respective curves.
EXAMPLE: Let a represent the amount of superelevation on 1st curve;
" b " " " " " " 2nd " ;
" x " " " " transition tangent on 1st " ;
" y " " " " " 2nd " ;
then, a : b = x : y.
The transition tangent of the curve having the shorter radius shall be set at 100 ft.
A normal crowned section 20 ft. long, 10 ft. on each side of the P.R.C. shall be used.
In cases where curves in opposite directions are in such proximity that a standard transition can not be had, the practice outlined for true reversing curves shall be used.
The total distance between the P.T. of the first curve and the P.C. of the succeeding curve shall be prorated into the transition distance of the respective curves until a maximum of 150 ft. of transition tangent for each curve is achieved.

GENERAL NOTES

Curves on projects using the Sections shown are to be superelevated and widened as indicated in the accompanying drawings and tables.

The normal inside edge of the Pavement slab is to remain at the standard elevation of 0.125 ft. below the profile grade, and the outside edge of the slab is to be superelevated at the rate per foot width of roadway given in the table. The Section is to be rotated about the normal inside edge of the Pavement, with a 1½" parabolic crown for curves of 10° and under, and a flat crown for widened Sections.

The normal inside edge of the Graded or Surfaced Section is to remain at the standard elevation of 0.02 ft. per foot width of roadway below the profile grade, or as shown on the Typical Section for the Project. Also, the centerline pivot point is to be used until the superelevation equals 0.02 ft. per foot width of roadway, but when this elevation is exceeded the normal inside shoulder pivot point is to be used.

When the degree of curvature exceeds 10°, the inside edge of the Pavement slab or the inside shoulder of the Graded or Surfaced Section is to be widened from the normal inside edge or shoulder, respectively, as shown by the table and plan or by cross-sections. Curves of 10° or less are not to be widened.

The slope of the shoulders and widened sections shall conform to the rate per foot width of roadway required, except that the inside shoulder of paved sections shall maintain the Typical Section slope until this slope is exceeded by the required superelevation slope.

The outside ditch on superelevated Sections is to be modified, where necessary to provide drainage. Otherwise, this ditch shall conform to normal ditch section shown for Project.

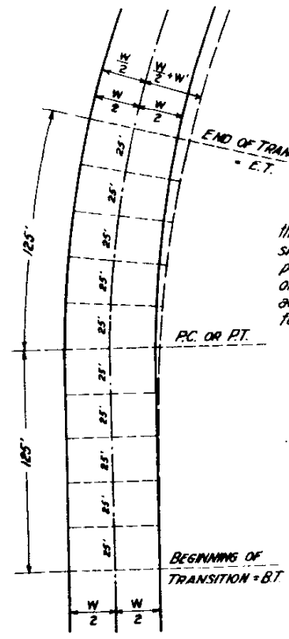
The rate of superelevation per foot width of roadway to be applied at the outside shoulder of the roadway is computed as follows:

The full superelevation per foot width of roadway rate for a given degree of curvature is

0.0105 ft. x Degree of Curvature.

The maximum superelevation of 0.10 ft per foot width, applying to curves of 10° and over, is not to be exceeded.

Special transition problems not covered by this standard sheet shall be covered by appropriate notes included with curve data on plans.



GENERAL PLAN OF WIDENING

Curves of over 10° are to have the inside portion of the pavement slab and shoulder, or the inside portion and shoulder in a graded or surfaced section, widened in accordance with the plan, offsets for widening, and cross sections.

COLORADO
STATE HIGHWAY DEPARTMENT
STANDARD METHODS FOR SUPERELEVATION & WIDENING OF CURVES

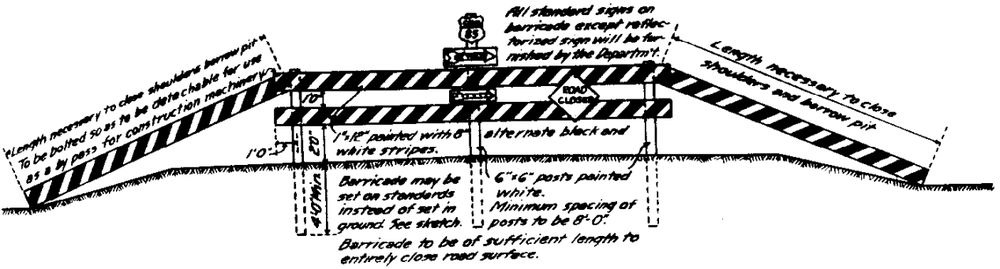
Designed by R.E.L. Approved by [signature]
Made by P.B.B.
Checked by F.S.A. & P.M. Date FEB 23RD 1937

STANDARD M-2-B

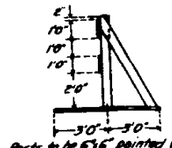
FED. ROAD DIST. NO.	STATE	FED. AID NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	2001 #4	20	

Revised 6-1-37. A.G.K. Changed to 1937 Specifications.

Details of Permanent Barricade

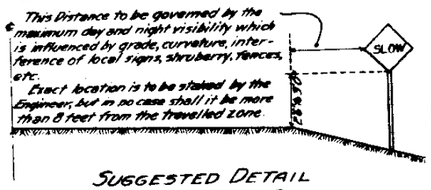


End View of Portable Barricade

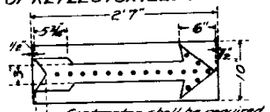


Posts to be 6"x6" painted white. Base and brace to be 2"x6", painted white, and nailed with 12d nails. Base to be weighted if necessary for stability.

Position of Signs Relative Road Bed



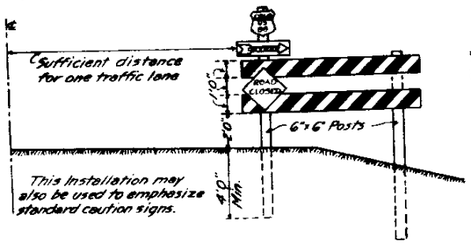
Suggested Detail of Reflectorized Arrow



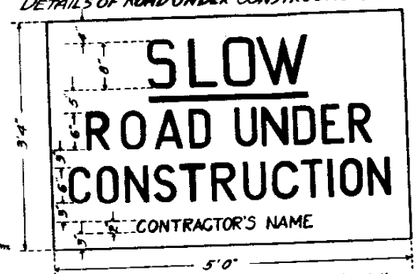
Contractor shall be required to have at least two such arrows for use on barricades at the ends of each project.
Reflector Buttons shall be of a type and size, and the sign shall be subject to Department approval.

Barricades to be placed as construction conditions require.

Details of Partial Barricade

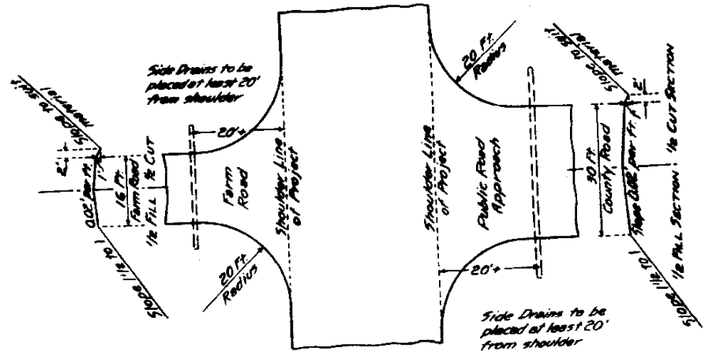


Details of Road Under Construction Sign

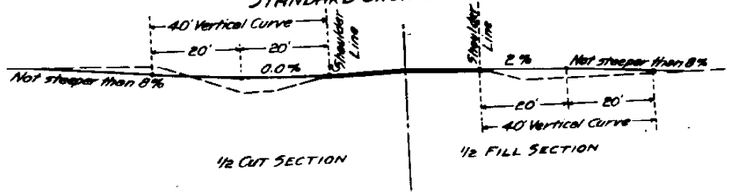


Sign to be made on 1" material with at least three cleats on the back. Background to be white, SLOW and underline to be red, and other lettering to be black. Sign to be set on 2-6"x6" posts 4 ft. in the ground.

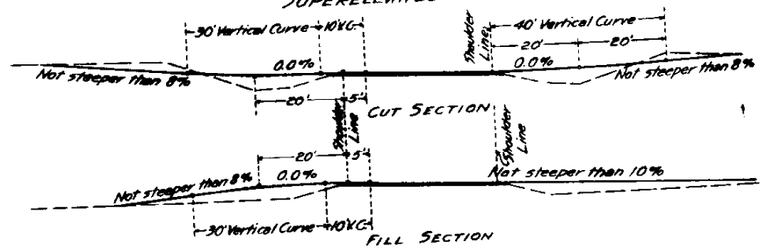
Typical Plan for Side Approach Roads



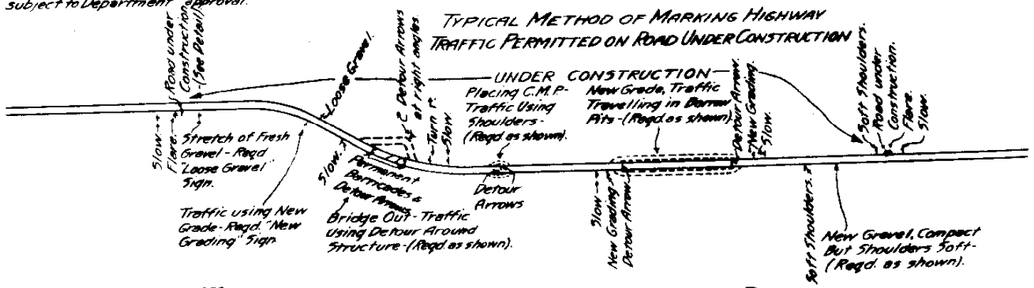
Standard Crowned Section



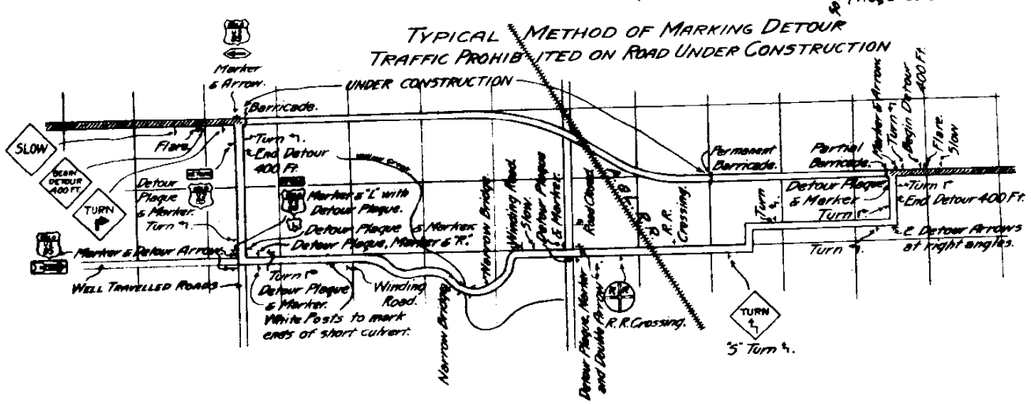
Superelevated Section



Typical Method of Marking Highway Traffic Permitted on Road Under Construction



Typical Method of Marking Detour Traffic Prohibited on Road Under Construction



General Notes on Approaches

The maximum grades shown are to be the limiting grades for all except extreme cases.

When the length of the approach as determined by the intersection of these grades with the natural ground is such as to damage the Property so served, or cause unreasonable conditions, the grades may be modified.

In such cases, method used, and maximum grades, shall be as indicated on the plans, or provided by work order.

General Notes for Roadway Construction Traffic Signs

Adopted June 1, 1937

All Work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department adopted June 1, 1937.

Whenever traffic is permitted on a road while under construction, the Contractor shall at all times adequately and appropriately mark any and all hazards on the Project with well painted, well maintained barricades, and standard caution and warning signs. The Contractor shall also mark with standard directional signs any places where the direction of the flow of traffic is not plain.

Whenever traffic is prohibited from a Project under construction, the Detour will be marked by the Department and the barricades at either end of the Project shall be erected and maintained by the Contractor.

All signs and barricades shall be immediately moved, added to, removed, or changed to appropriately mark hazards, or conditions altered, corrected, or changed by construction progress.

The Contractor shall furnish:

(1.) All barricade material. It shall always be well painted, as per sketch, and well maintained.

(2.) A reflectorized arrow of an approved type for each barricade at the ends of the Project, and at other barricades required where traffic is permitted on road under construction.

(3.) "SLOW-ROAD UNDER CONSTRUCTION" signs as required.

(4.) Any special signs the Department may deem necessary for the protection of traffic over the Project.

(5.) At least three (3) flares or torches for each barricade, and other flares to illuminate such signs as are called for on these plans, or as the Department may direct.

Flares or torches shall be placed between 3 and 5 feet ahead of the sign or object to be illuminated, and shall be kept burning from sunset to sunrise.

Costs of all of the foregoing materials and work by the Contractor shall be included in the original contract prices for the Project.

The Highway Department will furnish all standard signs not required to be furnished by the Contractor.

COLORADO STATE HIGHWAY DEPARTMENT

TYPICAL SIDE APPROACH ROADS

ROADWAY CONSTRUCTION TRAFFIC SIGNS

Designed by J.S.M.	Approved by
Made by J.S.M.	
Check J.S.M.	Date: Nov. 20, 1935
Check K.A.K.	

FED. ROAD DIST. NO.	STATE	A.W. PROJ. NO.	NO.	
3	COLO.	2001- CONST. DIV. NO.4	23