

COLORADO STATE HIGHWAY DEPARTMENT

PLAN AND PROFILE OF PROPOSED A.W. PROJECT NO. 2002 STATE HIGHWAY NO. 4 MESA COUNTY

FED. ROAD DIST. NO.	STATE	A.W. PROJ. NO.	SHEET NO.	TOTAL SHEET
3	COLO.	2002	1	

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M-100-E
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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

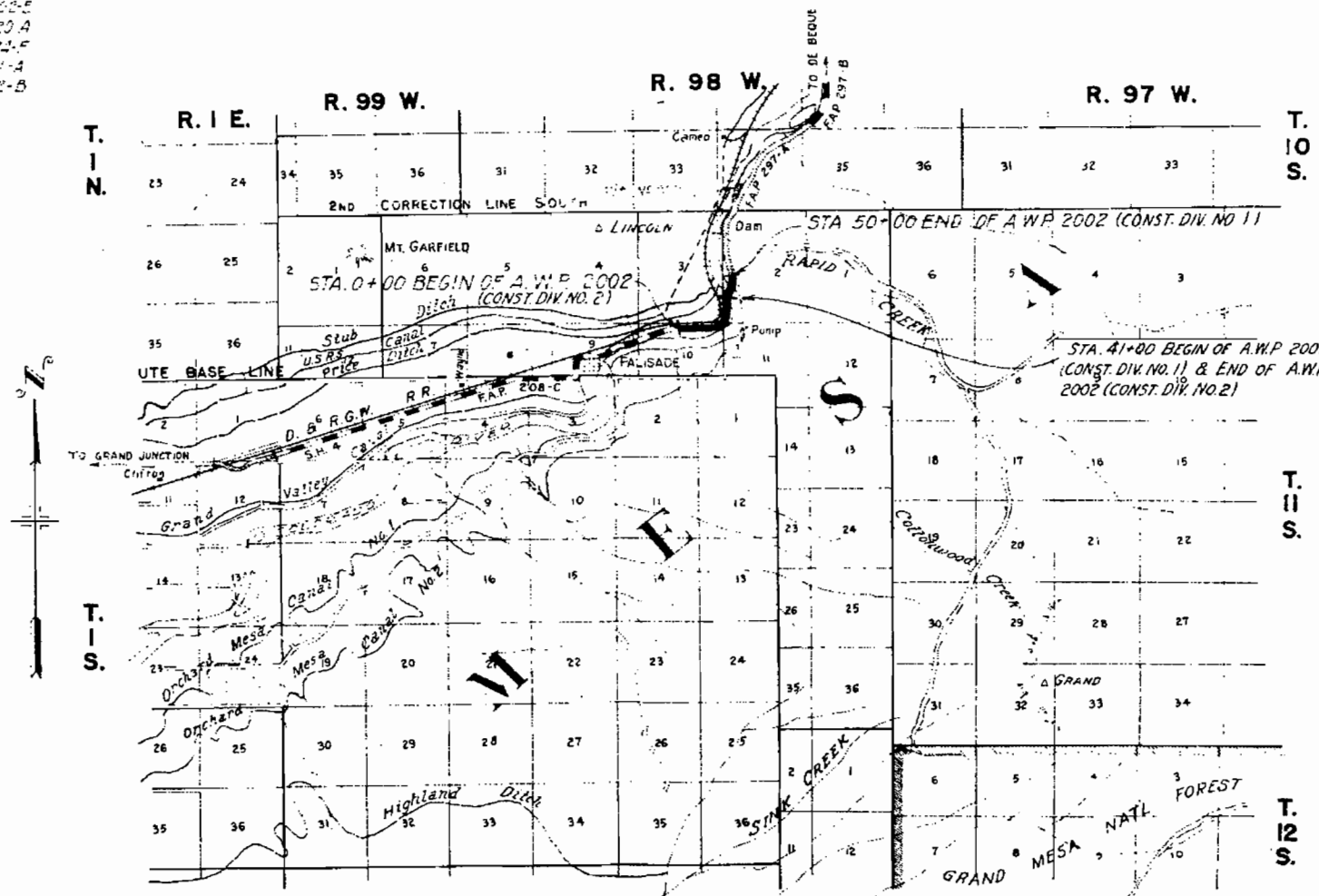
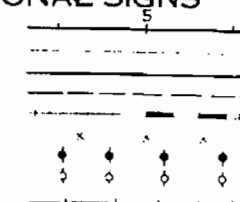
GROSS LENGTH OF PROJECT } 5000 FT. = 0.947 MI
NET LENGTH OF PROJECT } TOTAL

900 FT. = 0.170 MI
4100 FT. = 0.777 MI

CONST. DIV. #1
CONST. DIV. #2

CONVENTIONAL SIGNS

CENTER LINE OF SURVEY
RIGHT OF WAY LINES
SECTION LINES
ONE QUARTER SECTION LINES
RAILROADS
BARBED WIRE FENCE
POWER LINES
TEL. & TEL. LINES
PIPE LINE



NOTE

It is recommended that Bidders on this Project go over the plan details with one of the following field representatives of this Department:
J.J. Vandermoer, Div. Eng. located at Grand Junction.
A.H. Batten, Resident

RECOMMENDED FOR APPROVAL: 137

ASSISTANT ENGINEER

APPROVED: *Chris Davis*
STATE HIGHWAY ENGINEER

RECOMMENDED FOR APPROVAL

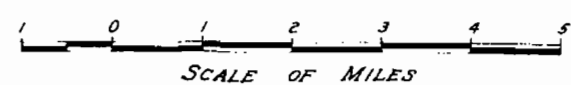
DIST. ENG. BUREAU PUBLIC ROADS

RECOMMENDED FOR APPROVAL

CHIEF ENG. BUREAU PUBLIC ROADS

APPROVED

DIRECTOR BUREAU PUBLIC ROADS

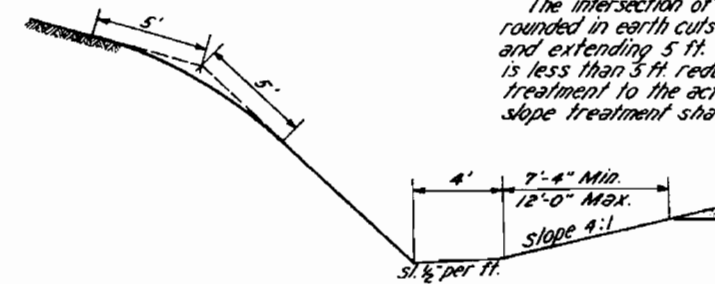


FED. ROAD DIST. NO.	STATE	A.W. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	2002	2	

TYPICAL CROSS SECTION OF IMPROVEMENT AND SUMMARY OF QUANTITIES

CUT SLOPE TREATMENT IN EARTH CUTS

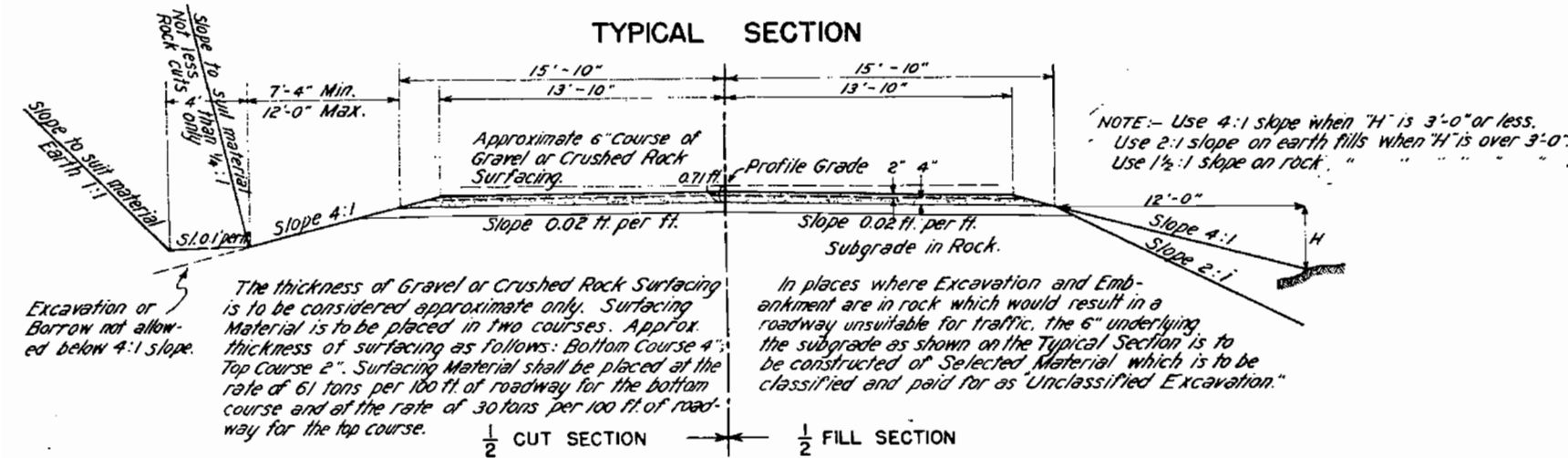
The intersection of cut slopes with the existing ground shall be rounded in earth cuts, beginning 5 ft. outside the slope stake and extending 5 ft. down the cut slope. Where the cut slope is less than 5 ft. reduce each of the above widths of slope treatment to the actual slope distance. Quantities involved in slope treatment shall not be included in Unclassified Excavation.



SUMMARY OF APPROXIMATE QUANTITIES

NO.	DESCRIPTION	UNIT	CONST. DIV. NO. 2	CONST. DIV. NO. 1	TOTALS
			ROADWAY	BRIDGE STA. 41+	
10 a	Clearing & Grubbing Entire Project	Lump Sum	•	•	•
10 b	Clearing & Grubbing Entire Project	"	•	•	•
11 b	Removal of 3 Structures	"	•	•	•
11 c	Removing Concrete Sidewalk	Sq. Ft.	180	•	180
12 a	Fence	Lin. Ft.	3900	500	4400
12 c	Remove & Rebuild Gates	Each	3	•	3
13 c	Unclassified Excavation	Cu. Yd.	11,700	5500	17200
13 d	Cut Slope Treatment	Mile	1	•	1
14 a	Dry Rock Excavation (Str.)	Cu. Yd.	15	10	25
14 b	Dry Common Excavation (Str.)	Cu. Yd.	150	2620	2770
14 c	Wet Rock Excavation (Str.)	Cu. Yd.	5	1160	1165
14 d	Wet Common Excavation (Str.)	Cu. Yd.	50	1280	1330
18 a	Sta. Yd. Overhaul	Sta. Yd.	78,200	34800	113000
18 b	Yard Mile Overhaul	Yd. Mi.	4200	2850	7050
26 a	Gravel or Crushed Rock Surfacing	Ton	3950	550	4500
26 c	Overhaul of Surfacing	Ton Mi.	4540	360	4900
42 a	Untreated Bridge Timber	M. ft. bm	•	0.6	0.6
46 a	Class "A" Concrete	Cu. Yd.	•	2223	2223
46 b	Class "B" Concrete	Cu. Yd.	2	•	2
46 r	Class "A" Concrete (Handrails)	Cu. Yd.	•	36	36
47	Reinforcing Steel	Lb.	•	194,200	194,200
48	Structural Steel	Lb.	•	458,400	458,400
49	Cement Rubble Masonry	Cu. Yds.	308	•	308
52 b	18" Cast Iron Culvert Pipe	Lin. Ft.	24	•	24
53 b	18" Corrugated Metal Culvert Pipe	Lin. Ft.	302	•	328
74	Wire Cable Guard Fence	Lin. Ft.	280	444	724
76 d	Comb. Wire Fence with Treated Wooden Posts	Lin. Ft.	4200	500	4700
76 g	Barbed Wire Gates	Each	4	•	4
76 h	Driveway Gates	Each	2	•	2
80 b	Bronze Name Plate	Each	•	2	2
81 a	Project Marker	Each	1	•	1
81 b	Right of Way Markers	Each	10	4	14
89 a	3" x 5'-6" Drain Pipe (Conc. Floor)	Each	•	17	17
FORCE ACCOUNT ITEMS (CONST. DIV. 2)					
	Removing & Replacing Flumes, Pipes etc.	Lump Sum	•	•	•
	Stas. 3+ to 8+; 6+; 7+ to 9+; 8+; 9+; 9+ to 10+; 10+ to 14+; 14+; 15+; 20+; 23+; 32+; 37+.	Lump Sum	•	•	•
	Extend Spur, Rem. & Reset Tower & Rem. Tracks (Work by R. R. Co. Forces)	Lmp. Sm.	•	•	•
	Rem. & Replace Water Lines (Work by City Forces)	Lmp. Sm.	•	•	•
	Removing & Replacing Water Conduit on Bridge (Work by City Forces)	Lmp. Sm.	•	•	•
FORCE ACCOUNT ITEMS (CONST. DIV. 1)					
	Remove House from R.O.W. Sta. 47+	Lump Sum	•	•	•

TYPICAL SECTION



GENERAL NOTES

- This Project is to be constructed in conformity with the Standard Specifications of the Colorado State Highway Dept. adopted Aug. 1, 1935.
- All quantities on preliminary plans are to be considered 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 or on the List of Structures as "Embankment," are to be classified and paid for as "Unclassified Excavation." These quantities are to be stated as part of the original Excavation at locations indicated on the plans. Slope stakes beyond the limits of the Typical Section as shown, are subject to change by the Engineer to fit conditions actually met in construction.
- All curves are to be superelevated as provided for by the Standard Superelevation Sheet.
- All poles encroaching on construction are to be moved by the owners.
- The entire project is to be cleared for variable widths which shall be held to the minimum required for the construction of the road, borrow pits, Channel Changes and widths required to accommodate visibility. Ordinarily the Clearing shall not extend more than eight (8) feet beyond the toes of fills or tops of cut banks, and the cost thereof included in the lump sum price for "Clearing and Grubbing the Entire Project."
- All corrugated metal pipe cross culverts are to be provided with one headwall on the inlet end, unless otherwise noted on the plans.
- The detour for this Project lies along the present traveled road. At all places on the Project where the new work lies along the present road, the contractor shall, at his own expense, prosecute construction in such a manner that traffic may safely and readily pass over the road. Also, the Contractor shall maintain, in safe condition, and at his own expense, all temporary approaches to, and crossings of, intersecting roads.
- Except where noted on plans, payment for Overhaul will be based on measurement along centerline of Project and distances from pits as shown on profile.
- All side approach roads to the Project shall be Gravel Surfaced with a 4" Thickness of "Gravel or Crushed Rock Surfacing" extending approximately 30 feet from the edge of the Highway. Estimated tonnage of Surfacing Material required in this operation is shown in List of Structures.

SURFACING PLAN

It is estimated that Gravel or Crushed Rock Surfacing for this Project is available from vicinity of pits shown in the following table. Estimated quantities involved in the operation are as follows:

MATERIAL TO BE PLACED	SOURCE	QUANTITY TONS	OVERHAUL TON MIS.
0+00 to 41+00	Pit # 2002 1.6 Mi. from Sta. 50	3740	4384
Est. for Approaches	"	120	150
41+00 to 41+75	"	70	54
45+61 to 50+00	"	400	257
Est. for Approaches	"	60	45
CONST. DIV. NO. 2		3860	4534
CONST. DIV. NO. 1		530	356
TOTALS		4390	4890

LOCATION	DESCRIPTION	REM STR	EXCAVATION	STRUCTURAL	GRAV SURF	CONCRETE	CORR. METAL	MISCELLANEOUS
		NO.	UNCL. EMBANK	CU YD	TONS	CL. A' CL. B'	LN. FT.	
0+00 - 3+75	Ditch Change on Rt.		40				18' 24' 36'	
0+42	Rd. Appr. C.M.P. Side Drain Lt.		10		10		40	
10+50	Rd. Appr. on Rt.		20		10		30	
12+00	Rd. Appr. & C.M.P. Side Drain Lt.		50		10			
14+12 - 34+50	Ditch Change on Rt.		200					
14+26	Rem. 4"x5.5' Iron Pipe	1	15		10		26	
14+77	Rd. Appr. Rt. & C.M.P. Side Drain							
16+50	Rem. 6' x 6' x 14' Wood Box				10		26	
16+50	Req'd. Rd. Appr. & C.M.P. Side Drain Rt.		30		10		26	
17+45	Rd. Appr. & C.M.P. Side Drain Lt.		15		10		28	
21+58	Rd. Appr. Rt.				10		26	
20+90	Rd. Appr. & C.M.P. Side Drain Rt.		20		10		26	
33+15	Rem. 4' x 14' C.I. Pipe	1	30		10		26	
33+15	Req'd. Rd. Appr. & Side Drain Rt.		20		10		52	
34+00	C.M.P. Cross Culvert			5		1.1		
34+75	Rd. Appr. on Rt.		100		10			
34+52 - 35+92	Cement Rubble Masonry Wall			180				304 Cu Yds. Cem. Rubble Masonry
35+42	Extend 18' C.I. Pipe		70	5	20		48	18" C.I. Pipe 24' Long
36+00	Rd. Appr. Rt. & C.M.P. Side Drain							Rem 180sq. Ft. Conc. Side Walk
36+00 - 36+90	Rem. Conc. Side Walk Rt.		20					
37+16 - 39+50	Ditch Change on Rt.							
0+00	Project Marker							Project Marker
41+00	Approach to Project				50			
41+75 - 45+61	Bridge		200					
40+00	Rd. Appr. & Side Drain Rt.		(See Summary of Quantities)		10		26	Project Marker
50+00	Project Marker		50					
(FORCE ACCOUNT ITEMS)								
3+75 - 7+98	Rem. & Rebuild 6"x6"x423' Wood Flume Rt.							
6+25	Rem. 6' x 62' Conc. Tile Pipe.							
6+25	Req'd. 6' x 68' Cast Iron Pipe.							
6+25	Req'd. Wood Receiving Trough.							
7+98 - 9+71	Rem. & Rebuild 12' x 10' x 173' Wood Flume Rt.							
8+66	Rem. 6' x 68' Riveted Steel Pipe							
8+66	Req'd. 6' x 72' C.I. Pipe							
8+67	Rem. 2' x 68' Galv. Iron Pipe							
8+67	Req'd. 2' x 72' Galv. Iron Pipe							
8+00 - 9+50	Extend Spur Track (WORK BY R.R. CO. FORCES)							
9+50	Rem. & Rebuild Signal Tower (WORK BY R.R. CO. FORCES)							
9+79	Rem. 2' x 15' Galv. Iron Pipe							
9+79	Req'd. 2' x 17' Galv. Iron Pipe							
9+71 - 10+66	Rem. 6' x 100' Vit. Clay Tile Siphon Pipe							
9+71 - 10+66	Req'd. 6' x 100' Vit. Clay Tile Siphon Pipe on Rt.							
10+66 - 14+12	Rem. & Rebuild 12' x 10' x 346' Wood Flume Rt.							
14+77.5	Rem. 2' x 55' Iron Pipe							
14+77.5	Req'd. 2' x 58' C.I. Pipe							
15+00	Rem. & Rebuild Loading Shed Rt.							
15+ - 23+	Rem. R.R. Tracks (WORK BY R.R. CO. FORCES)							
20+00	Rem. Coal Tipple							
20+88	Rem. 8' x 80' Iron Pipe							
20+88	Req'd. 8' x 87' C.I. Pipe							
20+88	Req'd. Three Way Diversion Box							
23+84.5	Rem. 6' x 62' Iron Pipe							
23+84.5	Req'd. 6' x 64' C.I. Pipe							
23+84.5	Req'd. 3/4" x 76' Galv. Iron Pipe							
23+84.5	Req'd. 3 Way Diversion Box							
23+84.5	Req'd. Conc. Receiving Well							
32+36	Rem. 4' x 60' Iron Pipe							
32+36	Req'd. 4' x 65' C.I. Pipe							
37+05	Rem. 2' x 40' Galv. Iron Pipe							
37+05	Req'd. 2' x 71' C.I. Pipe							
47+90	Rem. House from R.O.W.							
(FORCE ACCOUNT ITEMS CITY FORCES)								
9+17	Rem. 3/4" x 74' Galv. Iron Pipe							
9+17	Req'd. 3/4" x 76' Copper Pipe							
29+50 - 33+00	Lower Railroads Water Line							
TOTAL - CONST. DIV. NO. 1			50	200	60		26	
TOTAL - CONST. DIV. NO. 2		3	275	365	120	1.1	302	
SHEET TOTALS		3	325	565	180	1.1	328	

* Structural Excavation is estimated to be 90% Common and 10% Rock each of which is estimated to be 75% Dry and 25% Wet

STATION	SIDE	NO.
0+00	Lt. & Rt.	2
20+70	Lt.	1
21+70	Rt.	1
26+50	Rt.	1
27+20	Lt.	1
37+06	Lt. & Rt.	2
37+90.9	Rt.	2
41+35	Lt.	1
41+65	Lt.	1
50+00	Lt. & Rt.	2
CONST. DIV. NO. 1		4
CONST. DIV. NO. 2		10
TOTAL		14

FENCE REQUIREMENTS

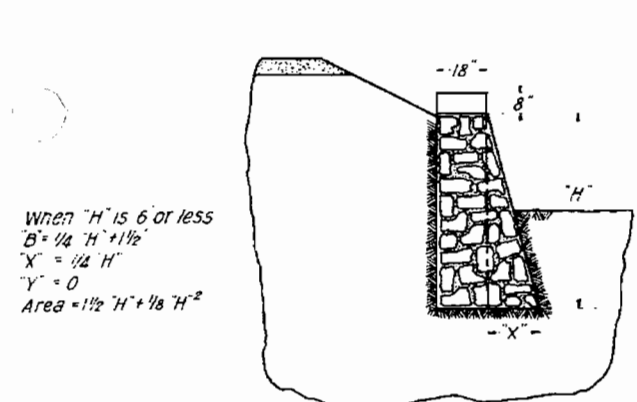
STATION TO STATION	SIDE	REMOVE LIN. FT.	BUILD COMB.	B.W.	GATES DR. WALK & REB.	REM.
0+00 - 41+20	Rt.	1488	1488			
0+00 - 48+70	R.L.X.					
45+00 - 46+70	Rt.	170'				
46+10 - 48+70	Lt.	260'				
GATES REQ'D						
16+50	Rt.					
21+58	Rt.					
26+90	Rt.					
33+15	Rt.					
34+75	Rt.					
36+00	Rt.					
GATES REMOVE & REBUILD						
10+12	Rt.					
10+50	Rt.					
36+90	Rt.					
CONST. DIV. NO. 1		500	470	4	2	3
CONST. DIV. NO. 2		3,870	4,120	4	2	3
TOTALS		4,370	4,590	4	2	3
* CONST. DIV. NO. 1						

GUARD FENCE

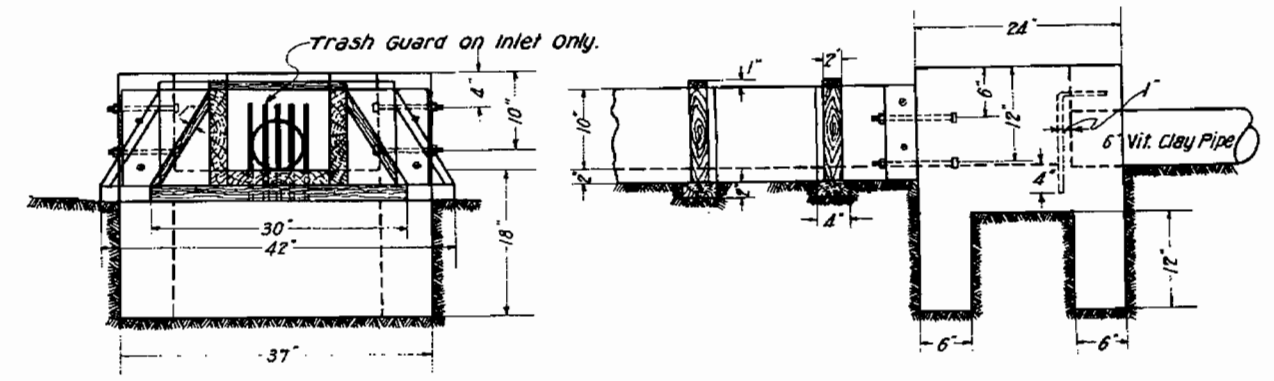
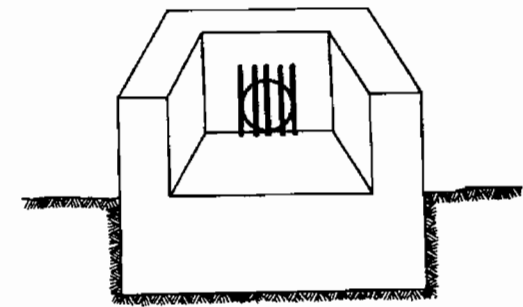
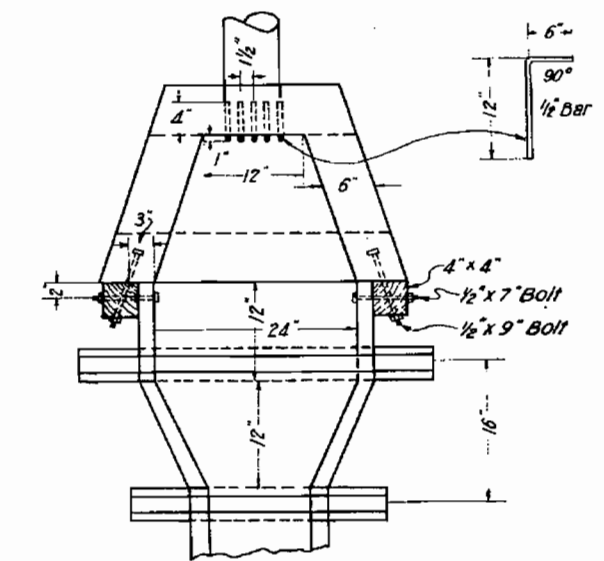
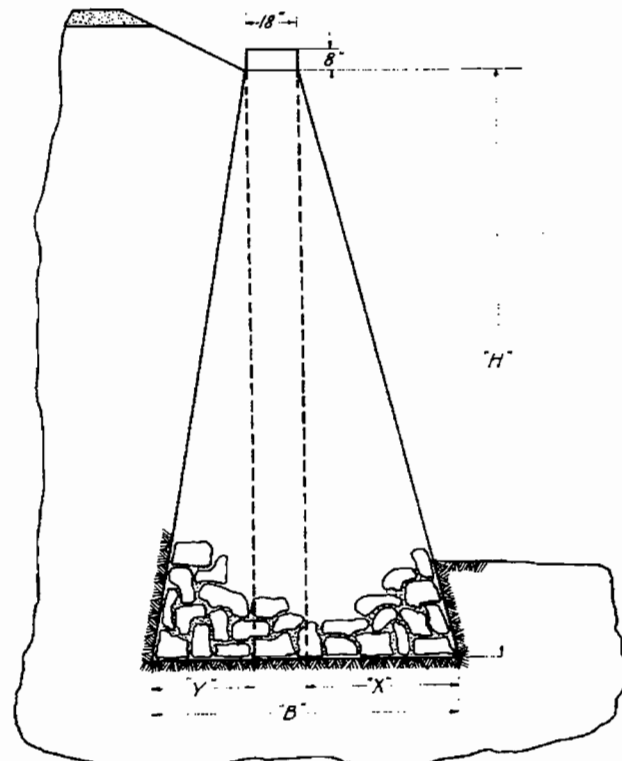
STATION TO STATION		LEFT	RIGHT
33+50	- 36+30		280
41+08.5	- 41+72.5	63	63
45+63.5	- 47+22.5	159	159
CONST. DIV. NO. 1			222
CONST. DIV. NO. 2		222	222
TOTALS		222	502
GRAND TOTAL			724

FED. ROAD DIST. NO.	STATE	A.W. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	2002	4	

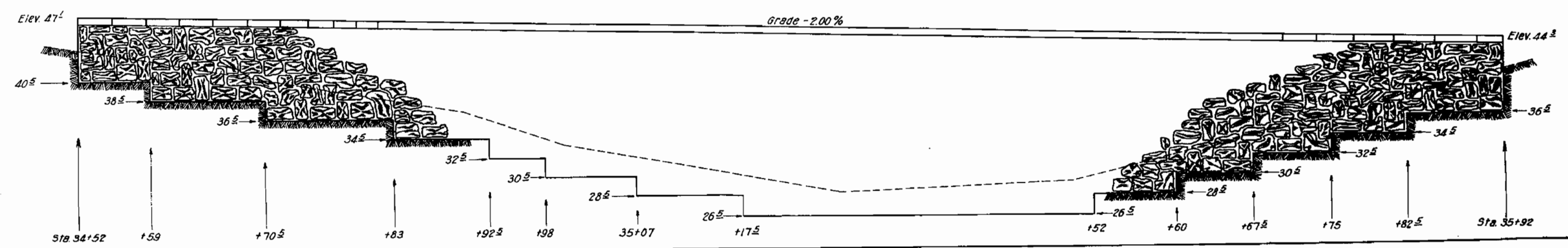
DETAILS OF RUBBLE WALL
STA. 34+52 TO STA. 35+92

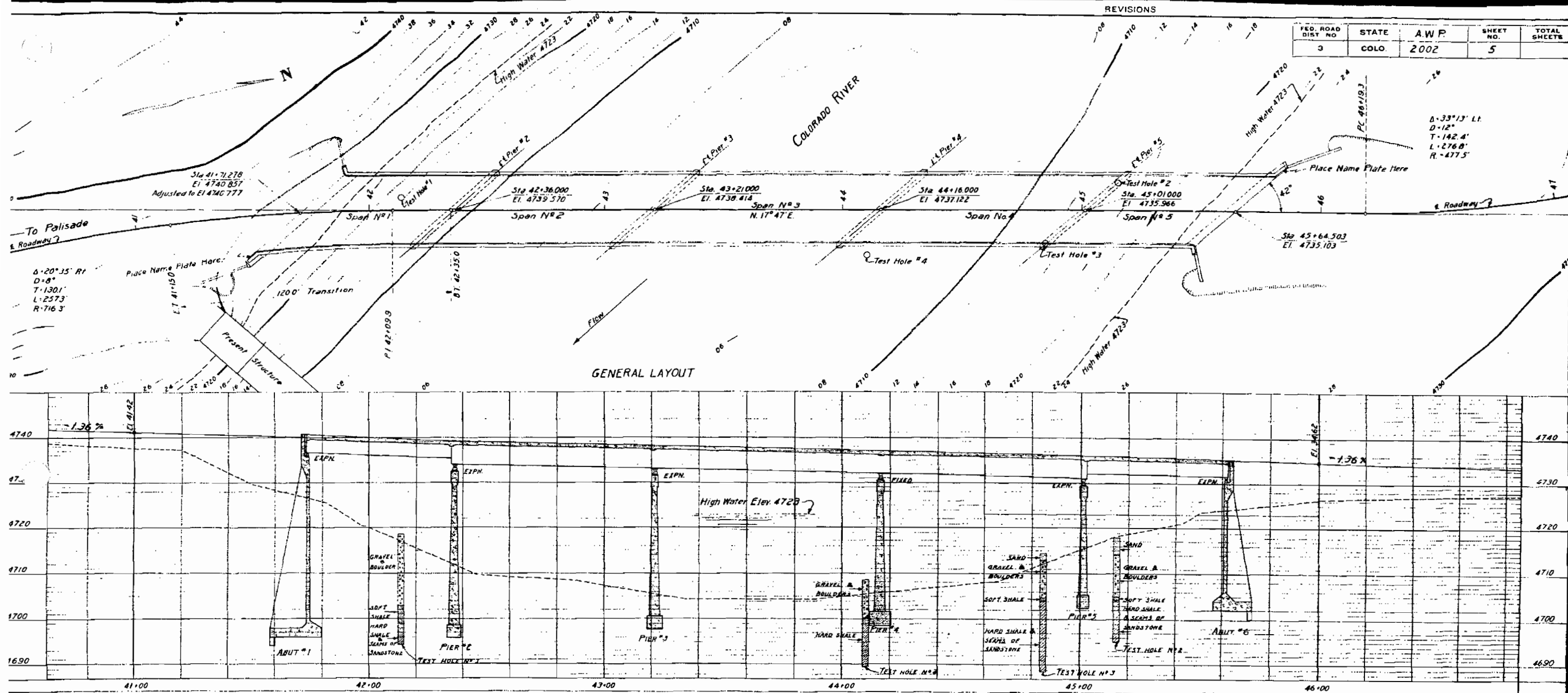


When "H" is over 6'
 $B = \frac{1}{2} H$
 $X = \frac{1}{4} H$
 $Y = \frac{1}{4} H - 1\frac{1}{2}$
 $Area = \frac{3}{4} H + \frac{1}{4} H^2$



DETAIL FOR SYPHON INLET
AND OUTLET
INLET AT STA. 9+71 OUTLET AT STA. 10+66
(WORK TO BE DONE BY FORCE ACCT.)





SUMMARY OF QUANTITIES									
Item No.	Description	Unit	Superstructure						Total
			App. Span #1	Cont. Girder	App. Span #5	Abut. #1	Pier #2	Pier #3	
14a	Dry Rock Excavation (Structural)	Cu. Yd.				1550	45	65	10
14b	Dry Common Excavation (Structural)	Cu. Yd.				600	125	85	280
14c	Wet Rock Excavation (Structural)	Cu. Yd.				580	125	85	1160
14d	Wet Common Excavation (Structural)	Cu. Yd.				0.280			1280
42a	Untreated Bridge Timber	M.F.Lbm				610	239	217	0.280
46a	Class "A" Concrete	Cu. Yd.	66	273	59	610	239	217	375
46b	Class "A" Concrete (Handrail)	Cu. Yd.	57	23	57	0.8			2223
47	Reinforcing Steel (Includes 1% for overrun)	Lb.	13120	56480	12850	60860	3920	3600	0.8
48	Structural Steel (Includes 1% for overrun)	Lb.	68420	319740	67870	60	550	620	36
80b	Bronze Name Plate	Each	1	12	4	60			1
89a	Drain Pipe (Concrete Floor) 13" x 5'-6"	Sq. Ft.		100		70			2
89b	1/4" Expansion Joint Material	Lb.							17
89c	20 Ga. Galv. Sheet Metal	Lb.							290
89d	Work to be done by Force Account - Removing and Replacing Water Conduit	Lump Sum							50
89e	Work to be done by Force Account - Removing and Replacing Water Conduit	Lump Sum							120

* The cost of these items is to be included in the unit bid price for Class "A" Concrete.
* Includes 13600 Lb. cast steel in rockers, and 12% for overrun on 34 x 76 Web Plates.
* Wet line assumed at Elevation 4712.0.

REFERENCE DRAWINGS

Sheet No. 6 Details of Superstructure Approach Span No. 1.
Sheet No. 7 Details of Superstructure Continuous Spans.
Sheet No. 8 Details of Superstructure Approach Span No. 5.
Sheet No. 9 Details of Continuous Girders.
Sheet No. 10 Details of Diaphragms and Shoes.
Sheet No. 11 Details of Abutment No. 1.
Sheet No. 12 Details of Pier No. 2.
Sheet No. 13 Details of Pier No. 3.
Sheet No. 14 Details of Pier No. 4.
Sheet No. 15 Details of Pier No. 5.
Sheet No. 16 Details of Abutment No. 6.
Sheet No. 17 Bar List for Abutments No. 1 & No. 6, Details of Abutment Posts, & Bronze Name Plate.

NOTE:

All dimensions are based on an assumed normal temperature of +60°F. In laying out structure in field, correction must be made to measured distances for temperatures other than +60°F.

GENERAL NOTES

ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE COLORADO STATE HIGHWAY DEPARTMENT.
ALL CONCRETE SHALL BE CLASS "A".
FORMS FOR CONCRETE SURFACES EXPOSED IN THE FINISHED WORK SHALL BE CONFORMED TO SHIP LAP OR TONGUE AND GROOVE LUMBER 3/8 UNLESS FACED WITH PANEL BOARD.
CONCRETE GIRDERS, FLOOR SLABS AND CURBS 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 1/2" DIA. AND ARE TO BE POWER DRIVEN.
AT LEAST TWO (2) CONCRETE PILES WITH A CAPACITY OF ONE HALF (1/2) CU. YD. MUST BE MAINTAINED IN RUNNING ORDER ON THIS JOB BY THE CONTRACTOR WHILE POURING THIS BRIDGE.
ALL STRUCTURAL STEEL SHALL BE GIVEN TWO (2) FIELD COATS OF ALUMINUM PAINT.

LOADING DATA.
LIVE LOAD A.A.S.H.O. 1936 CLASS A H-16.
DEAD LOAD ASSUMES 15 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE 1/4" INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA.
A.A.S.H.O. 1936 EXCEPT CONCRETE UNIT STRESSES PER A.A.S.H.O. AUG. 1928.

COLORADO
STATE HIGHWAY DEPARTMENT

3-SPANS CONTINUOUS GIRDER
2-60 FT. APPROACH SPANS
GENERAL LAYOUT &
SUMMARY OF QUANTITIES

Across Colorado River
Sta. 41+71.278 to 45+64.503
Near Palisade, Colo. S.D. T. 115 R. 98

Designed by B.R. Approved by C. B. Bailey
Made by R.S. Bridge Engineer
Checked by Date: Jan. 12, 1937

REVISIONS

FED. ROAD DIST. NO.	STATE	AWP	SHEET NO.	TOTAL SHEETS
3	COLO.	2002	6	

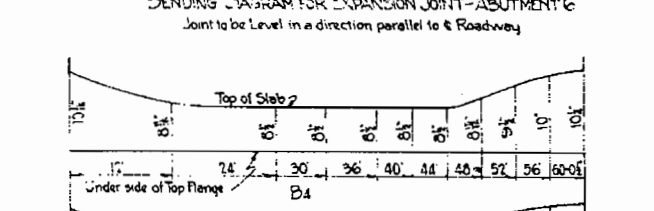
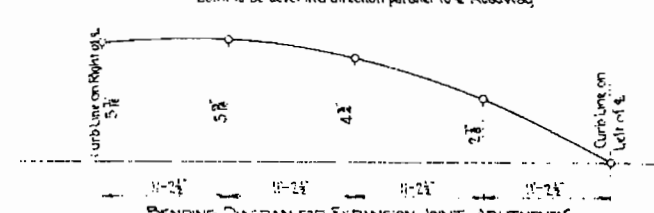
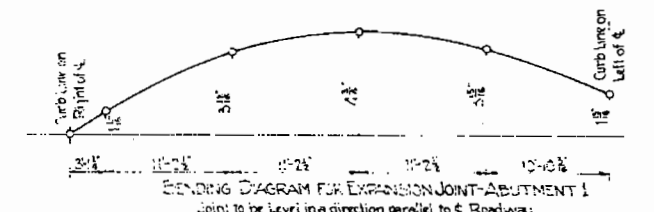
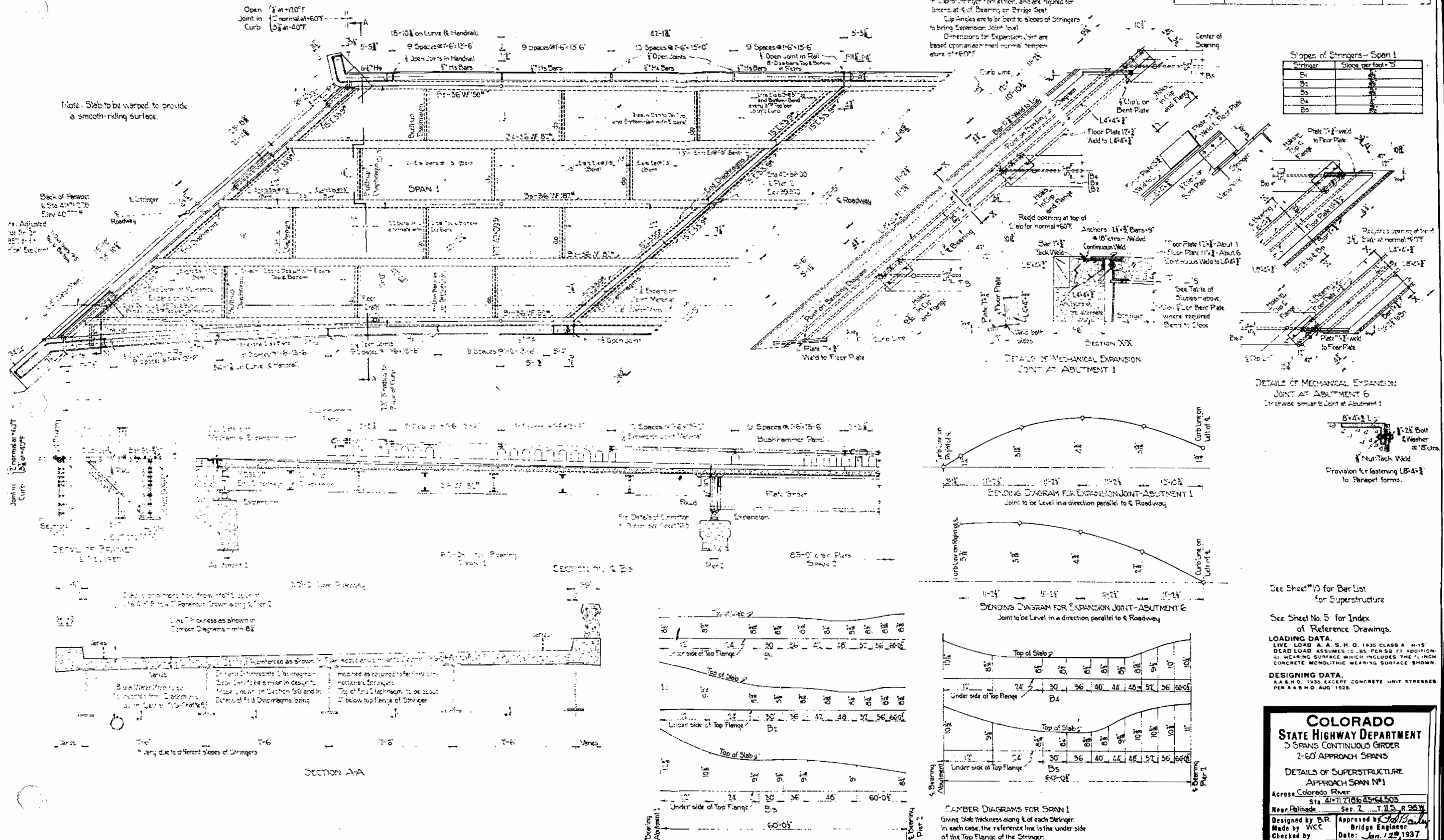
Note: All dimensions are measured on the horizontal.

NOTE: Dimensions given are based on the gages shown in Curb-Stringer connection, and are figured for joints at 6' of Beaming on Bridge Seat. Cup Angles are to be bent to slopes of Stringers to bring Expansion Joint level. Dimensions for Expansion Joint are based upon assumed normal temperature of +60°F.

Slopes of Stringers - Span 1

Stringer	Slope per foot
S1	1/8"
S2	1/8"
S3	1/8"
S4	1/8"
S5	1/8"

Note: Slab to be warped to provide a smooth-riding surface.



See Sheet #10 for Bar List for Superstructure

See Sheet No. 5 for Index of Reference Drawings.

LOADING DATA.
LIVE LOAD: A.A.S.H.O. 1936 CLASS A - H-15
DEAD LOAD: ASSUMES 10.85 PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE 1 INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA.
A.A.S.H.O. 1936 EXCEPT CONCRETE UNIT STRESSES PER A.A.S.H.O. AUG. 1929.

COLORADO STATE HIGHWAY DEPARTMENT

3 SPANS CONTINUOUS GIRDER

2-60' APPROACH SPANS

DETAILS OF SUPERSTRUCTURE

APPROACH SPAN NO. 1

Across Colorado River

Sta. 41+71.71 to 45+61.50

Near Palmdale

Sec. 2 T. 15 S. R. 93 N.

Designed by B.R. WCC

Approved by J.B. WCC

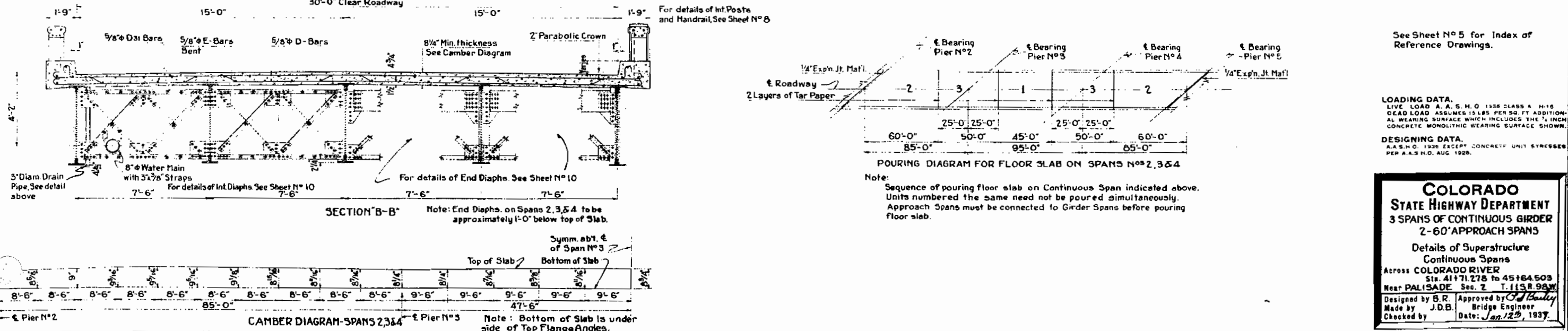
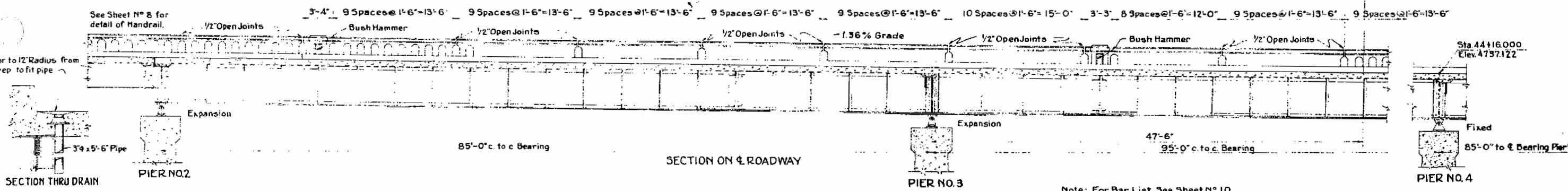
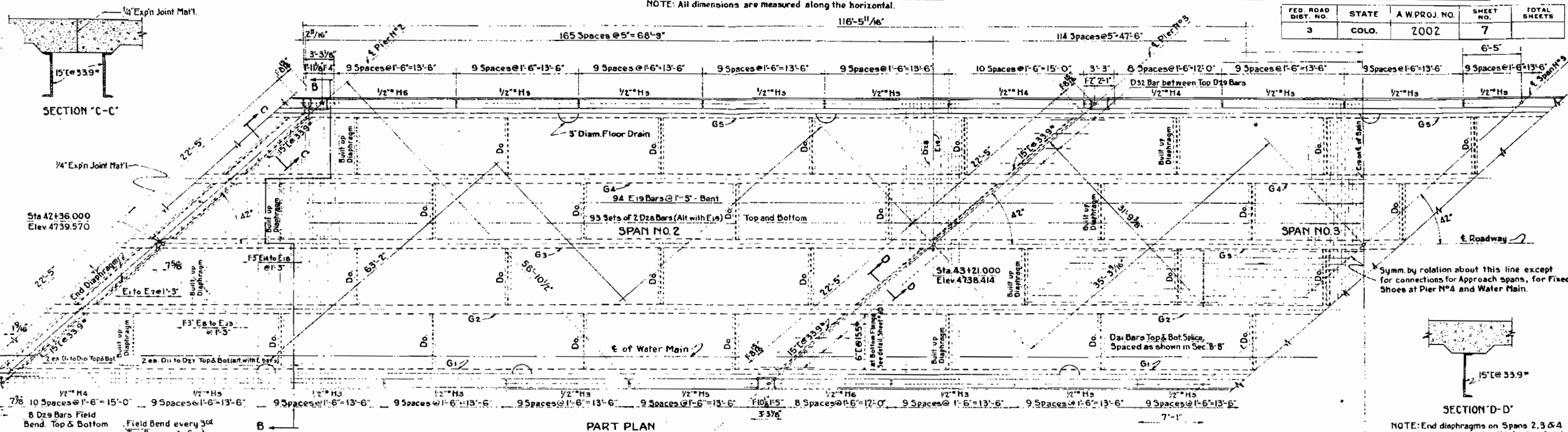
Made by WCC

Checked by

Date: Jan. 12, 1937

NOTE: All dimensions are measured along the horizontal.

FED. ROAD DIST. NO.	STATE	A.W.P.O.J. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	2002	7	



See Sheet No. 5 for Index of Reference Drawings.

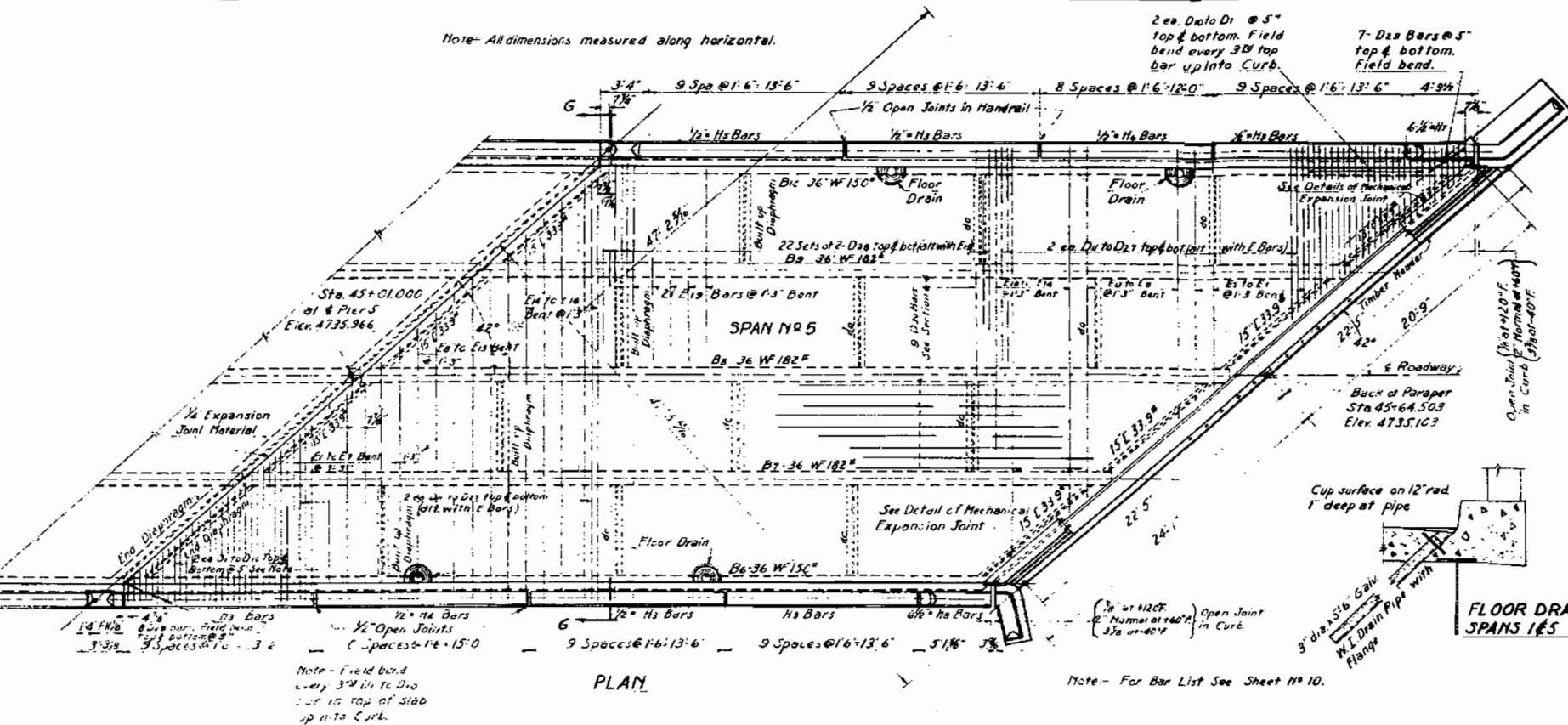
LOADING DATA:
LIVE LOAD: A.A.S.H.O. 1936 CLASS A, H-18
DEAD LOAD: ASSUMES 15 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE 7" INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA:
A.A.S.H.O. 1936 EXCEPT CONCRETE UNIT STRENGTH PER A.A.S.H.O. AUG. 1920.

COLORADO
STATE HIGHWAY DEPARTMENT
3 SPANS OF CONTINUOUS GIRDER
2-60' APPROACH SPANS
Details of Superstructure
Continuous Spans
Across COLORADO RIVER
Sta. 41+71.278 to 45+64.503
Near PALISADE Sec. 2 T. 115 R. 98 W.
Designed by B.R. Approved by J.D.B.
Made by J.D.B. Bridge Engineer
Checked by Date: Jan. 12th, 1937.

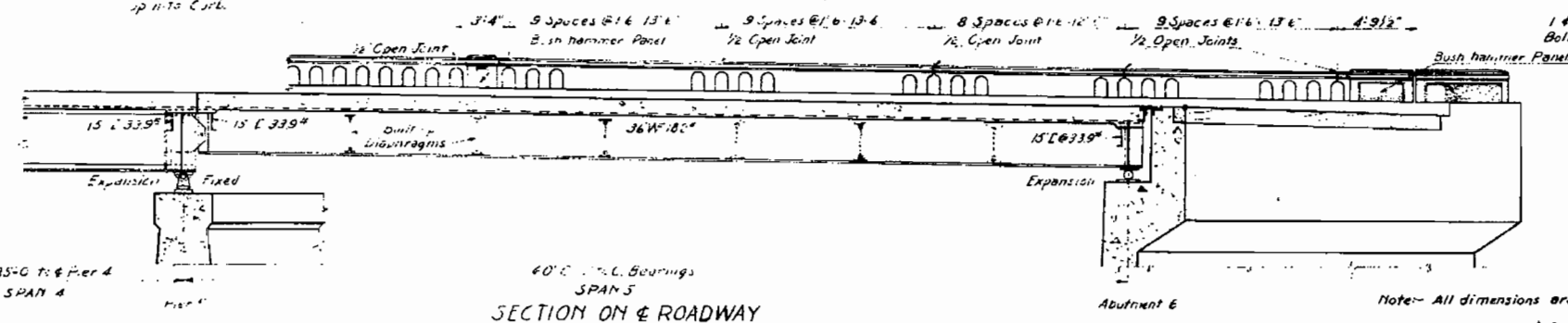
FED. ROAD DIST. NO.	STATE	A.W.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	2002	8	

Note: All dimensions measured along horizontal.



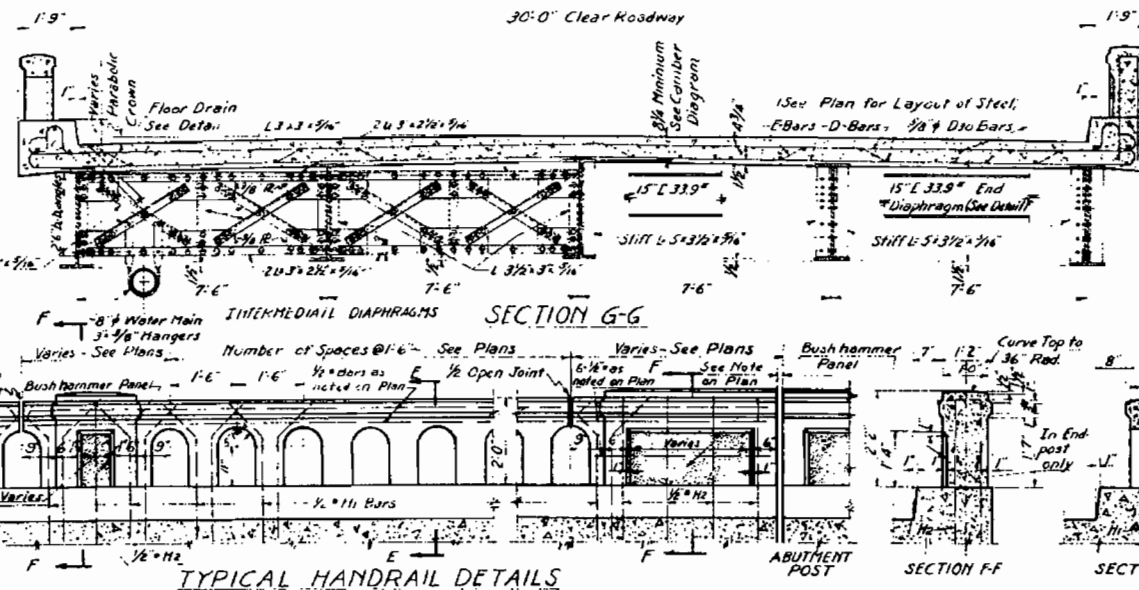
PLAN

Note: For Bar List See Sheet No. 10.

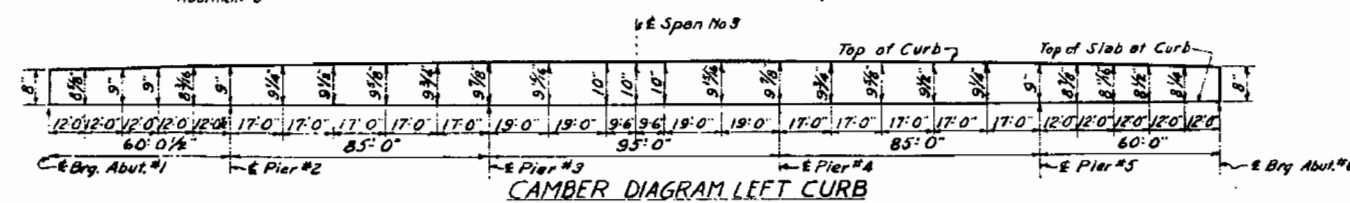


SECTION ON & ROADWAY

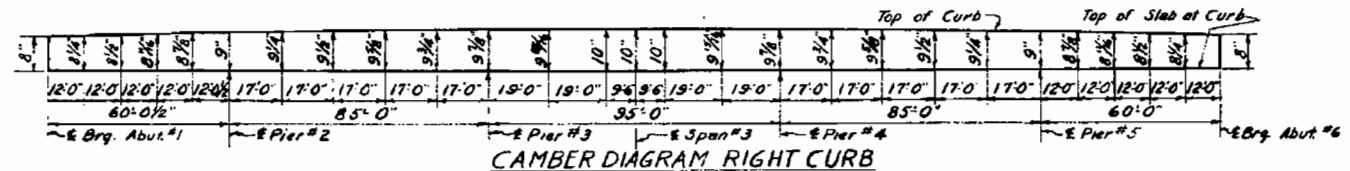
Note: All dimensions are measured along horizontal.



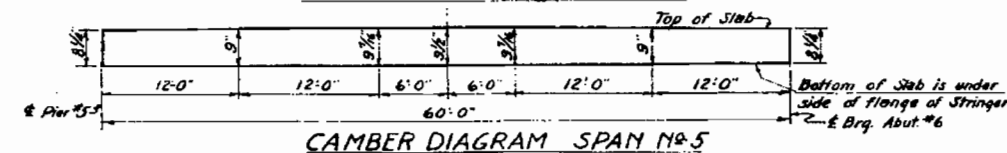
TYPICAL HANDRAIL DETAILS



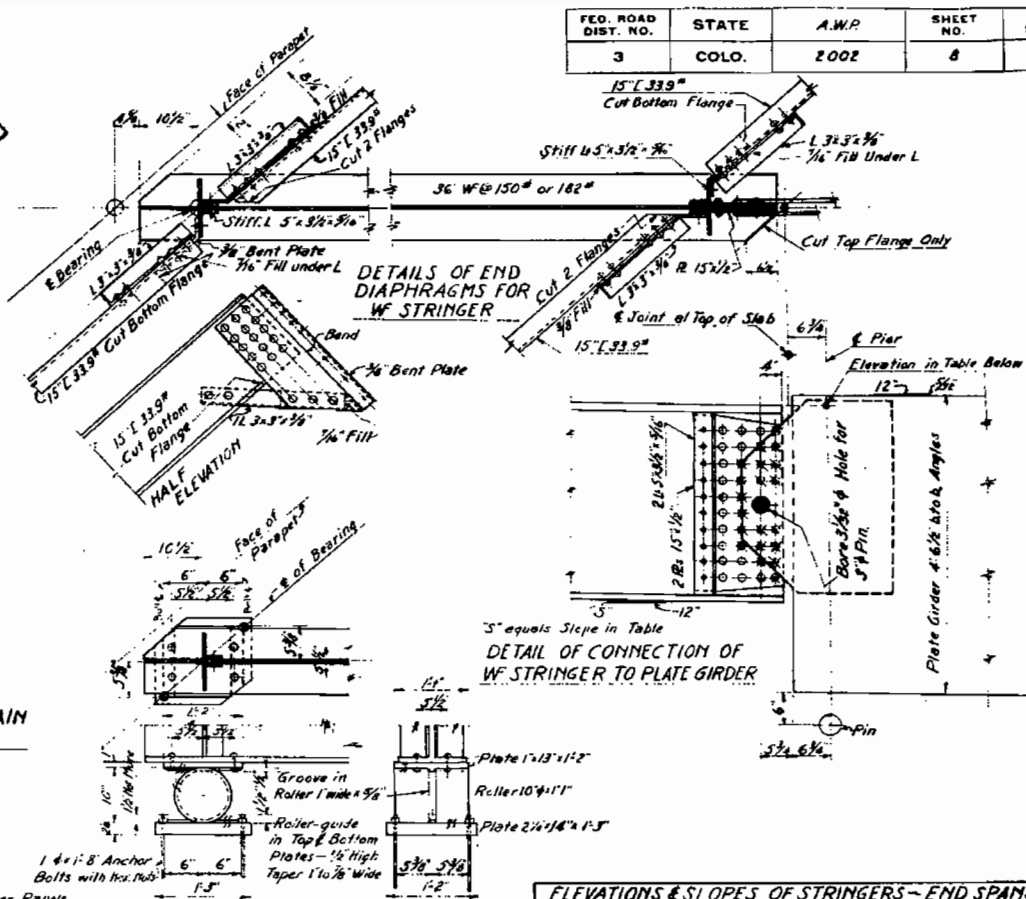
CAMBER DIAGRAM LEFT CURB



CAMBER DIAGRAM RIGHT CURB



CAMBER DIAGRAM SPAN NO. 5



DETAILS OF EXPANSION ROLLER USED AT ABUTMENTS (10 Required)

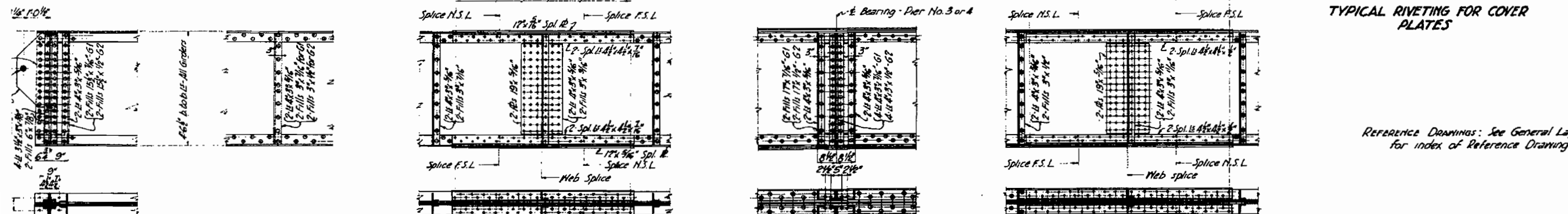
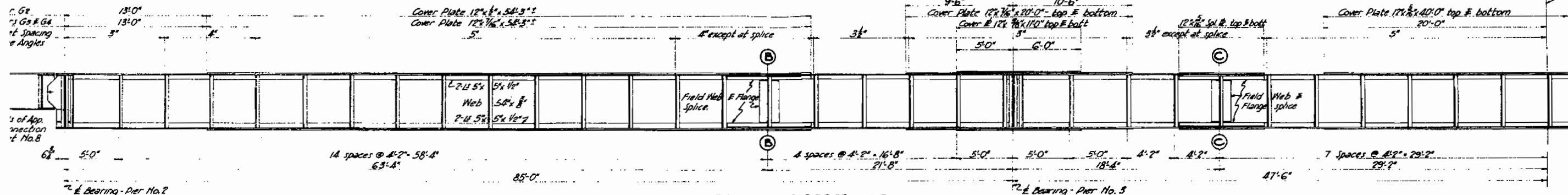
ELEVATIONS & SLOPES OF STRINGERS- END SPANS			
Stringer	Elevation of Top of Wf Flange at Pier	Slope per Foot	Elevation at E. Pin
Span 1			
B1	38.9664	0.0140' = 1/32"	33.9371
B2	39.0183	0.0137' = 1/32"	33.9540
B3	38.9813	0.0136' = 1/32"	33.8824
B4	38.6597	0.0208' = 1/4"	33.7274
B5	38.3372	0.0221' = 1/32"	33.4839
Span 5			
B6	35.4169	0.0136' = 1/32"	30.3330
B7	35.4495		30.3500
B8	35.3778		30.2784
B9	35.2229		30.1234
B10	34.9637		29.8800

Note: See Sheet No. 5 for index of Reference Drawings.

LOADING DATA.
LIVE LOAD A. A. S. H. O. 1935 CLASS A. M-18.
DEAD LOAD ASSUMES 14.8 PSF 50 FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE 1 INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA.
A. A. S. H. O. 1935 EXCEPT CONCRETE UNIT STRESSER PER A. A. S. H. O. AUG. 1929.

COLORADO
STATE HIGHWAY DEPARTMENT
3 SPANS CONTINUOUS GIRDER
2-60 FT. APPROACH SPANS
DETAILS OF SUPERSTRUCTURE
APPROACH SPAN NO. 5
Across COLORADO RIVER
Sta. 41+71.278 TO 45+64.503
Near PALISADE Sec. 2 T. 11 S. R. 98 W.
Designed by A.R. Bridge Engineer
Made by A.T.K.
Checked by Date: Jan. 12, 1937.



REFERENCE DRAWINGS: See General Layout Sheet No. 5
for index of Reference Drawing.

Splice C-C same except use $12 \times \frac{5}{16}$ splice lbs.
Top & Bottom.

All rivets shall be $\frac{3}{16}"$, open holes $\frac{1}{16}"$.
All field connections shall be power riveted.
All field holes in web & flanges of field splices and in approach span connections to be sub-punched $\frac{1}{16}"$ and reamed to $\frac{1}{16}"$. No other reaming required.
Contractor to furnish one pilot nut & one driving nut for each size pin.
All structural steel shall be given two (2) field coats of aluminum paint.
For General Notes see Sheet No. 5

LOADING DATA.
LIVE LOAD A. A. S. H. O. 1936 CLASS A, H-15'
DEAD LOAD ASSUMES 15 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE 1/2 INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

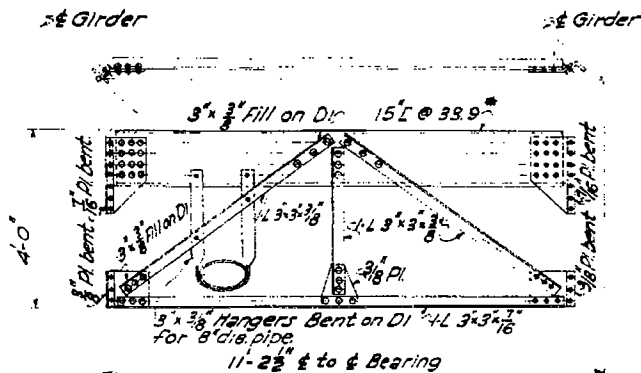
DESIGNING DATA.
A. A. S. H. O. 1936 EXCEPT CONCRETE UNIT STRESSER PER A. A. S. H. O. AUG. 1928.

COLORADO
STATE HIGHWAY DEPARTMENT
3 SPANS OF CONTINUOUS
GIRDER & 2-60' APPROACH
SPANS.
DETAILS OF GIRDERS

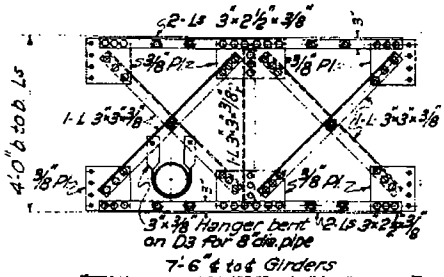
Across Colorado River
Sta. 41+7.278 to 45+68.593
Near Paolisade Sec. 2 T.15 S. 92 N

Designed by B.R.
Made by MS
Checked by _____
Approved by Ed. Bailey
Bridge Engineer
Date: Jan. 28, 1937.

FED. ROAD DIST. NO.	STATE	A.W.P. 2002	SHEET NO.	TOTAL SHEETS
3	COLO.		10	

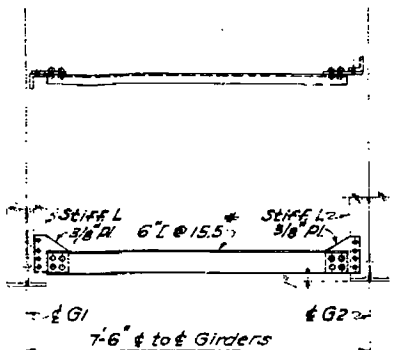


DETAIL OF SKEWED DIAPHRAGM
4 REQD - D1
12 REQD - D2

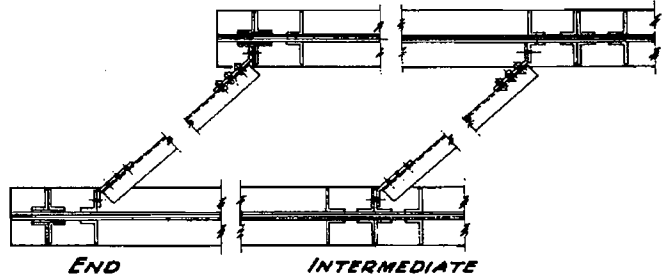


DETAIL OF 90° DIAPHRAGM
15 REQD - D3
45 REQD - D4

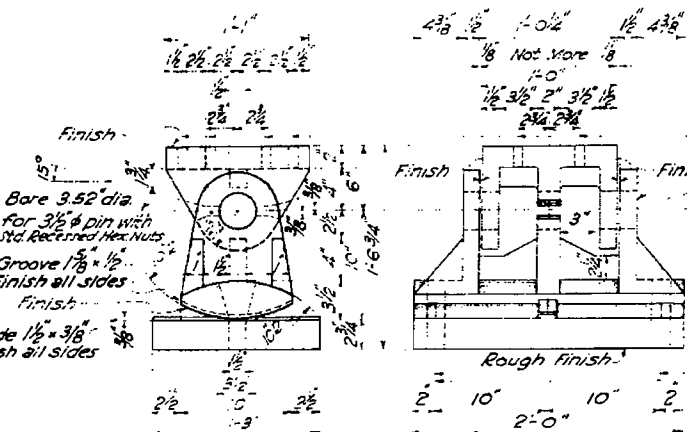
Note: Connect to Stiff Ls on Gdrs.



STRUT - D5
2-REQD

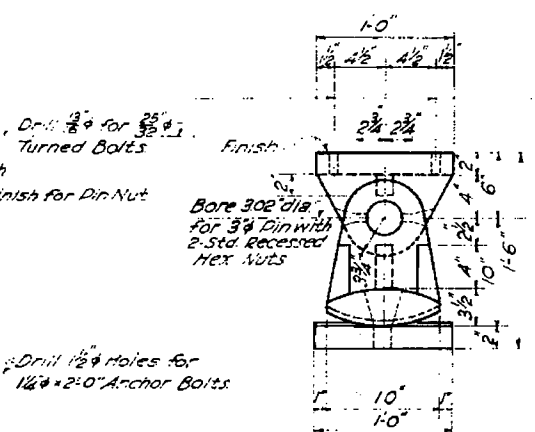


DETAILS OF SKEW DIAPHRAGM CONNECTIONS



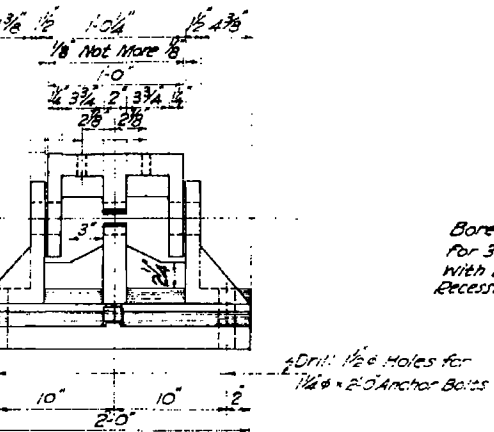
CAST STEEL ROCKER AT PIER NO. 3
5-REQUIRED

FURNISH ALSO
10-ANCHOR BOLTS 1 1/4\"/>



CAST STEEL ROCKER AT PIERS NO. 2 & NO. 5
10-REQUIRED

Details not shown same as for Rocker at Pier No. 3
FURNISH ALSO
20-ANCHOR BOLTS 1 1/4\"/>



CAST STEEL SHOE AT PIER NO. 4
5-REQUIRED

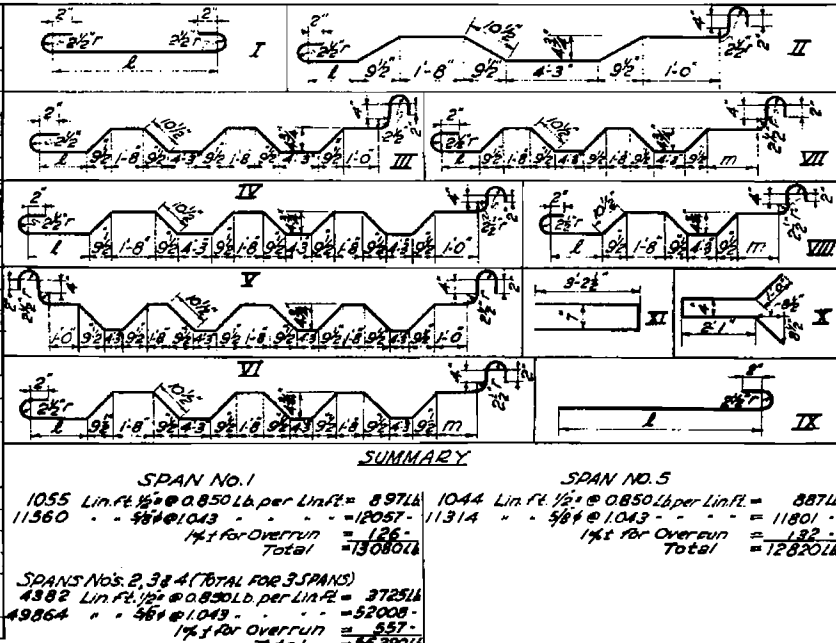
FURNISH ALSO
20-ANCHOR BOLTS 1 1/4\"/>

BAR LIST FOR SUPERSTRUCTURE

WCC-JOB

BENDING DIAGRAMS

MARK	SIZE	NO. REQD	LENGTH	TYPE	L	M	MARK	SIZE	NO. REQD	LENGTH	TYPE	L	M
SPAN NO. 1							SPAN NO. 2						
D1	3/8"	4ea	5'-5"	I	3'-9"	70	D37	3/8"	1ea	by 12"	VIII	by 13"	by 1'
D10	3/8"	4ea	by 9"	I	70-106	70	D33	5/8"	4ea	31'-5"	I	29'-9"	by 13"
D11	3/8"	4ea	13'-4"	I	11-8"	70	D50	5/8"	4ea	by 13"	I	31'-4"	by 13"
D27	3/8"	4ea	by 13 1/2"	I	by 13 1/2"	70	D51	5/8"	4ea	12'-2"	I	10'-6"	by 8"
D28	5/8"	88	34'-0"	I	32'-4"	70	D61	5/8"	4ea	by 8"	I	by 8"	by 8"
D29	5/8"	16	5'-0"	I	Field bend	70	D62	5/8"	14	9'-0"	IX	8'-2"	by 3'-10"
D30	5/8"	135	22'-0"	I	1'-11 1/2"	70	H1	1/2"	76	6'-6"	X		
E1	3/8"	1ea	13'-0"	II	by 13"	70	H2	1/2"	9	7'-0"	XI		
E7	3/8"	1ea	by 13"	II	70-77 1/2"	70	H3	1/2"	24	13'-2"			
E8	3/8"	1ea	21'-1"	III	1-6 1/2"	70	H4	1/2"	4	14'-8"			
E13	3/8"	1ea	by 13"	III	70-26'-6"	70	H5	1/2"	4	16'-6"			
E14	3/8"	1ea	27'-11"	IV	0-8 1/2"	70	H9	1/2"	12	4'-8"			
E18	5/8"	21	34'-0"	V	70-32'-3"	70	SPANS NOS. 2, 3 & 4 (TOTAL FOR 3 SPANS)						
E20	3/8"	1ea	32'-2"	VI	4'-9"	70	D1	3/8"	8ea	5'-5"	I	3'-9"	by 9"
E24	3/8"	1ea	by 12"	VI	by 13"	70	D10	3/8"	8ea	by 9"	I	by 9"	by 9"
E25	3/8"	1ea	26'-7"	VII	6'-0"	70	D11	3/8"	8ea	18'-4"	I	11-8"	by 13 1/2"
E30	3/8"	1ea	by 12"	VII	by 13"	70	D27	3/8"	8ea	by 13 1/2"	I	by 13 1/2"	20'-8"
E31	3/8"	1ea	19'-10"	VII	7'-2"	70	D28	3/8"	744	34'-0"	I	32'-4"	
							SPAN NO. 5						
							D1	3/8"	8ea	5'-5"	I	3'-9"	by 9"
							D10	3/8"	8ea	by 9"	I	by 9"	by 9"

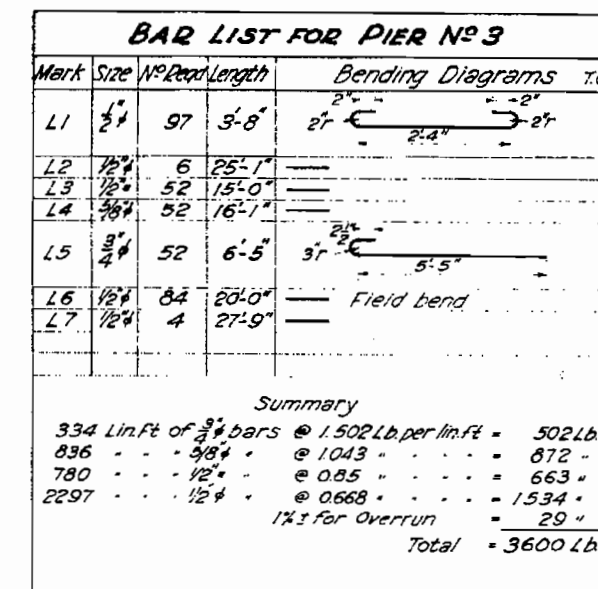


See Sheet No. 6 For Index of Reference Drawings

LOADING DATA.
LIVE LOAD A. A. S. H. O. 1935 CLASS A H-16.
DEAD LOAD ASSUMES 15 LBS PER SQ FT ADDITIONAL WEARING SURFACE WHICH INCLUDES THE 1/2 INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

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

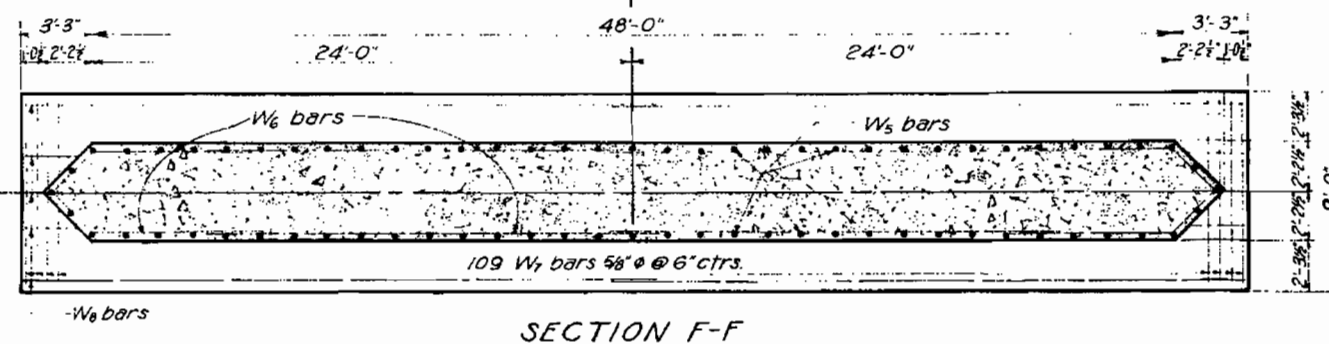
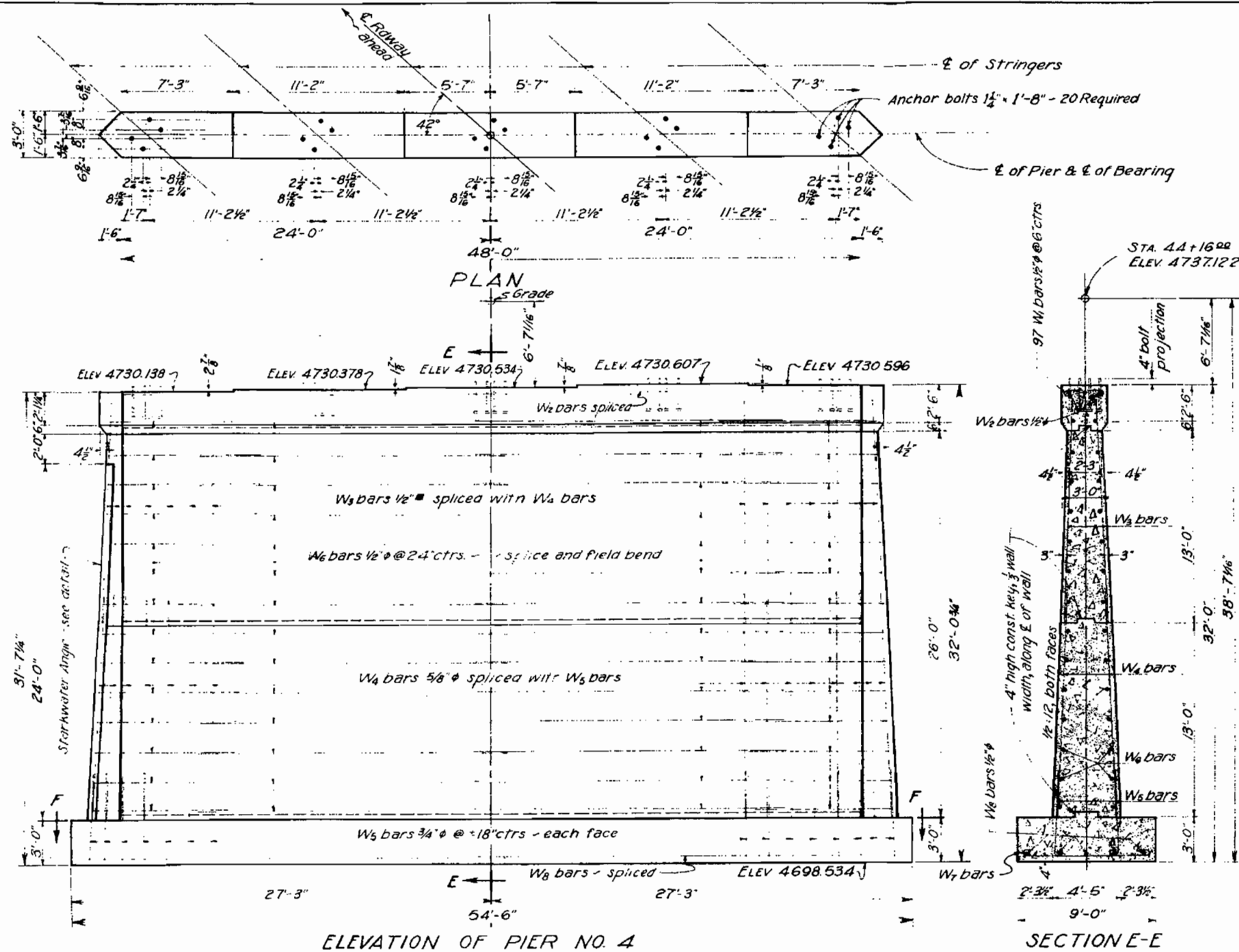
COLORADO
STATE HIGHWAY DEPARTMENT
3-SPANS CONTINUOUS GIRDER
2-60' APPROACH SPANS
DETAILS OF DIAPHRAGMS & SHOES
Across COLORADO RIVER
Near PALISADE Sec. 2 T. 11S. R. 98E
Designed by B. E. Bantley
Made by D. A. R.
Checked by B. E. Bantley
Date: Jan. 12, 1937



Across COLORADO RIVER
Sta. 41+71.278 to 45+64.503
Near FALLSIDE Sec. 2 T. 11S R. 68W
Designed by H.E.S. Approved by G.M. Houtley
Made by H.E.S. Bridge Engineer
Checked by D.A.P. Date: Jan. 120, 1937.

STRUCTURE NO *H-3-H*

FED ROAD DIST. NO.	STATE	A.W.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	2002	14	



Max. Toe Pressure = 6730 Lb.

BAR LIST FOR PIER NO. 4					M.S.R.
MARK	SIZE	NO REQD	LENGTH	TYPE	TYPE BENDING DIAGRAMS
W ₁	1/2"φ	97	3'-8"	I	
W ₂	1/2"φ	6	25'-1"	STR.	
W ₃	1/2"φ	72	15'-1"	"	
W ₄	3/8"φ	72	15'-1"	"	
W ₅	3/4"φ	72	6'-7"	II	
Y ₁	1/2"φ	84	20'-0"	STR*	
W ₇	3/8"φ	109	9'-7"	III	
W ₈	1/2"φ	10	28'-2"	STR.	
* Some W ₈ bars to have field bend					
SUMMARY					
474 Lin.Ft. of 3/4"φ bars @ 1.502 Lb.per Ft. =					712 Lb
2130 Lin.Ft. of 5/8"φ bars @ 1.043 Lb.per Ft. =					2222 Lb
1086 Lin.Ft. of 1/2"φ bars @ 0.850 Lb.per Ft. =					923 Lb
2468 Lin.Ft. of 1/2"φ bars @ 0.668 Lb.per Ft. =					1649 Lb
Add ±1% for overrun =					54 Lb
Total =					5560 Lb

For List of Reference Drawings See Sheet No 5

LOADING DATA.
LIVE LOAD A. A S. H. O. 1936 CLASS A H-15
DEAD LOAD ASSUMES 17 LBS PER SQ. FT. ADDITIONAL
WEARING SURFACE WHICH INCLUDES THE 2 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. 1920

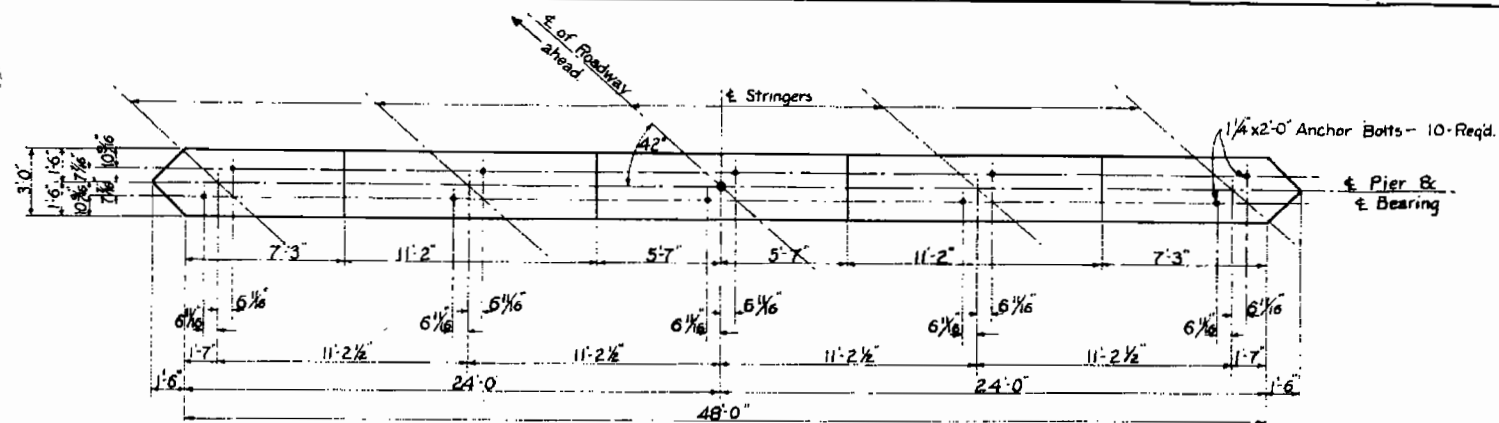
COLORADO
STATE HIGHWAY DEPARTMENT
3 SPANS CONTINUOUS GIRDER
2-60' APPROACH SPANS
DETAILS OF PIER NO. 4

Across COLORADO RIVER
Sta. 4+77.278 to 45+64.503
Near PALISADE Sec. 2 T.11S. R.90W.

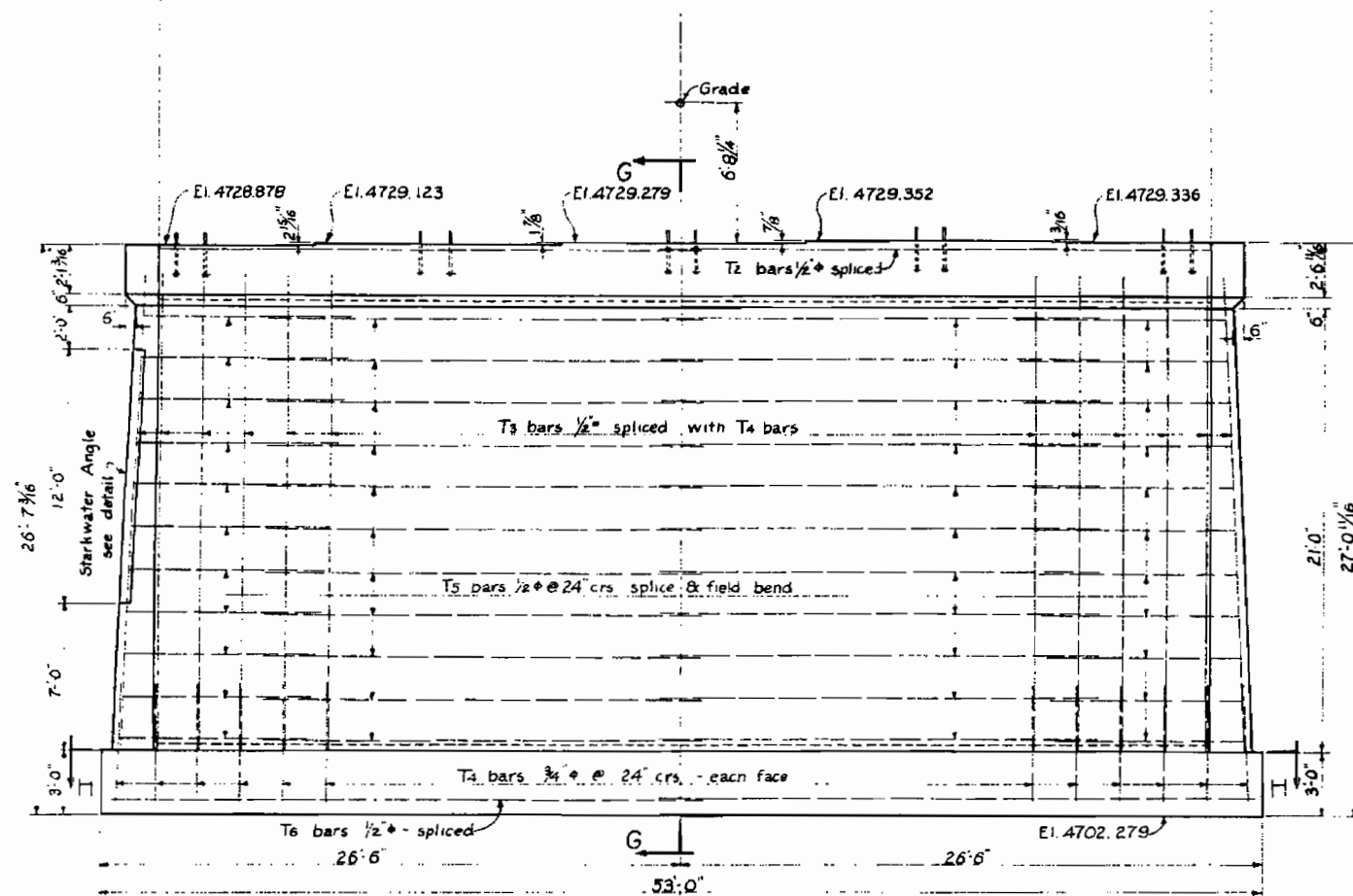
Designed by M.E.S. Approved by C.D. Bailey
Made by M.S.R. Bridge Engineer
Checked by MSR Date: Jan. 13, 1937.

STRUCTURE NO. H-3-H

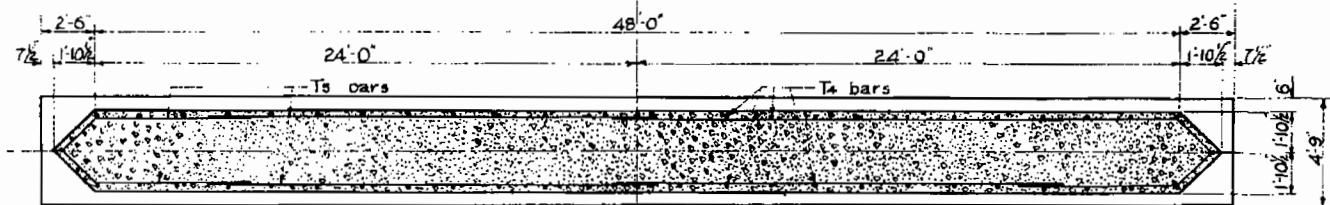
FED. ROAD DIST. NO.	STATE	AWP	SHEET NO.	TOTAL SHEETS
3	COLO.	2002	15	



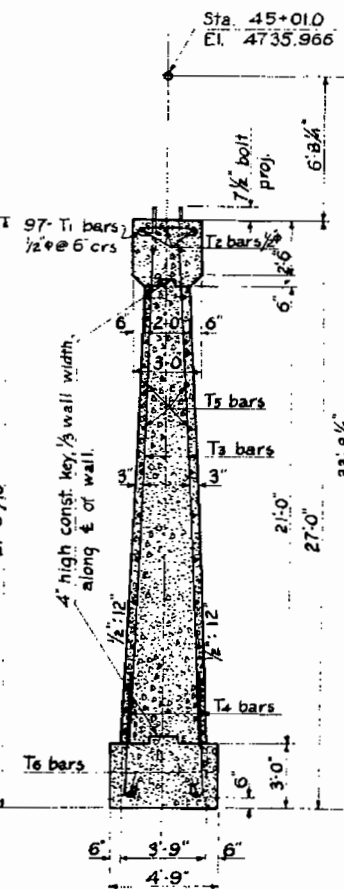
PLAN



ELEVATION OF PIER No. 5



SECTION 'H-H'



SECTION 'G-G'

BAR LIST FOR PIER No. 5. /T.G.

Mark	Size	No. Req'd	Length	Bending Diagram
T1	1/2"	97	3'-8"	
T2	1/2"	6	25'-1"	Str.
T3	1/2"	52	22'-6"	Str.
T4	3/4"	52	6'-5"	Str.
T5	1/2"	66	20'-0"	Str.
T6	1/2"	4	27'-6"	Str.

SUMMARY

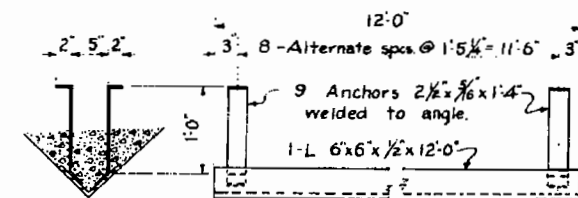
334 lin. ft.	3/4" bars @ 1502 lb per ft.	=	502 lb.
1170 lin. ft.	1/2" bars @ 0850 lb per ft.	=	995 lb.
1936 lin. ft.	1/2" bars @ 0668 lb per ft.	=	1293 lb.
	Plus 1/2" for overrun	=	30 lb.

TOTAL = 2820 lb.

For List of Reference Drawings see Sheet No. 5

Maximum Toe Pressure = 5220 lb/sq. ft.

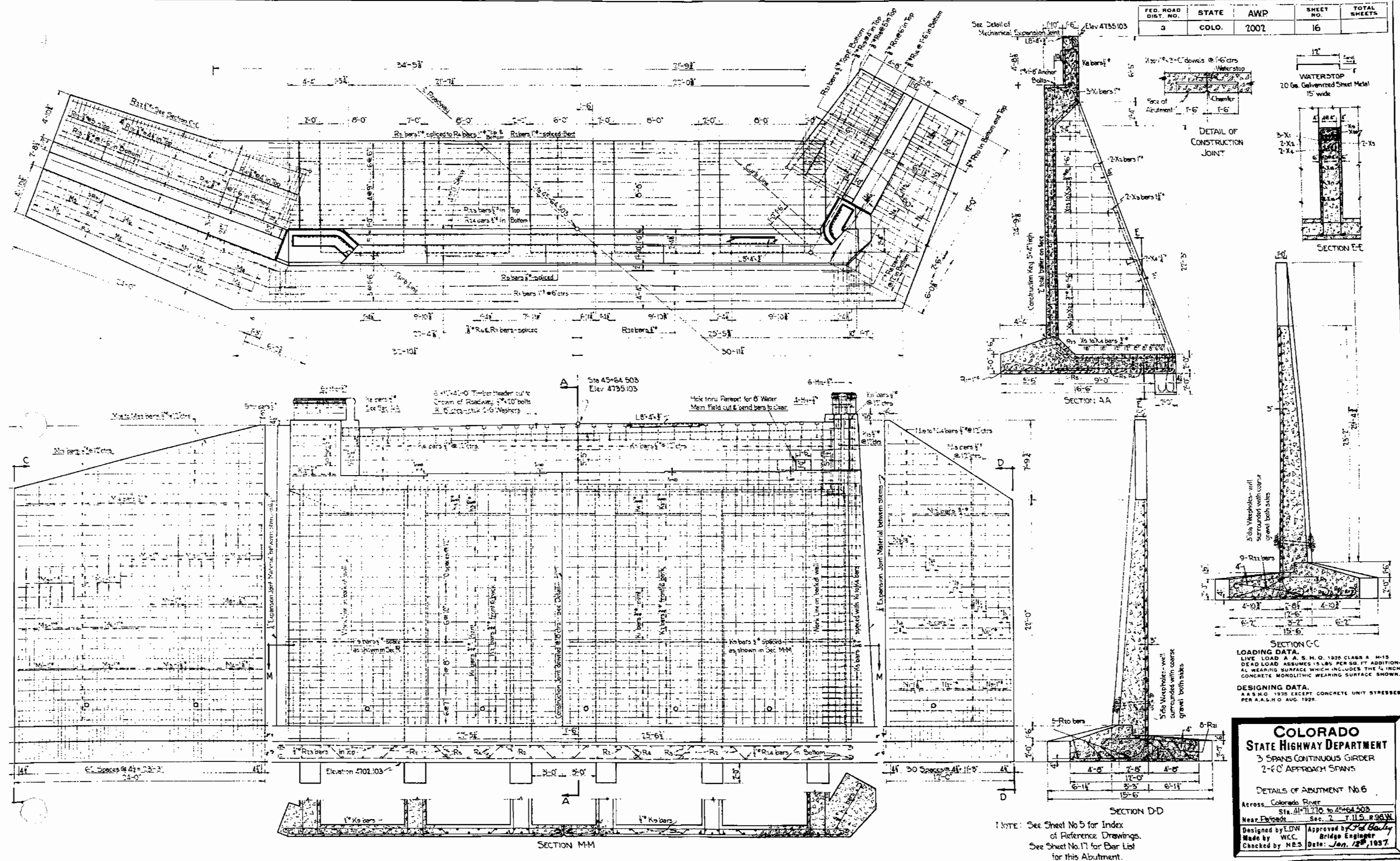
LOADING DATA.
LIVE LOAD A. A. S. H. O. 1935 CLASS A. M-15
DEAD LOAD ASSUMES 16 LBS. PER SQ. FT. ADDITION-
AL WEARING SURFACE WHICH INCLUDES THE 3/4 INCH
CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

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


DETAIL OF STARKWATER ANGLE

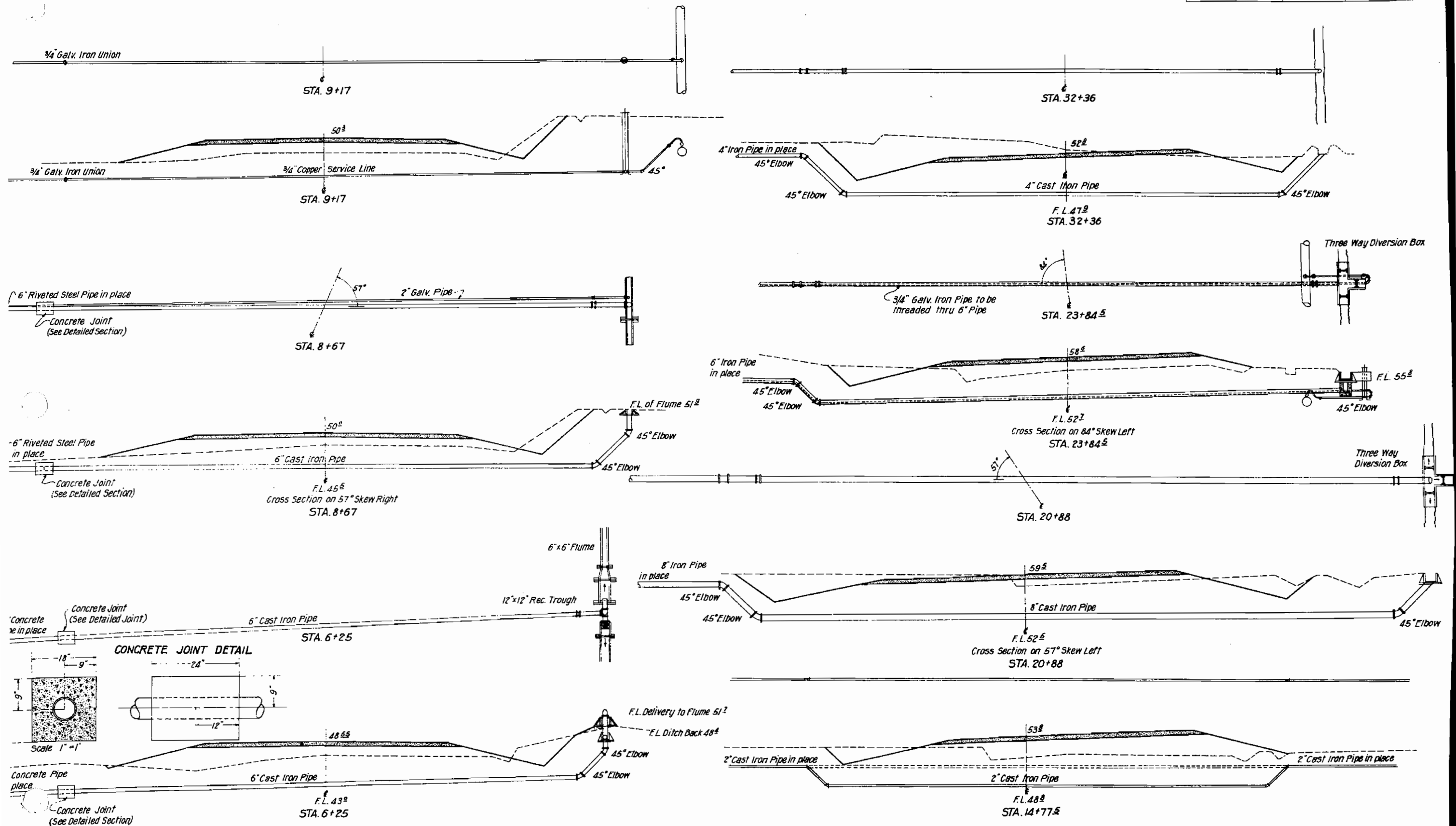
STR. STEEL 1-REQD.

COLORADO
STATE HIGHWAY DEPARTMENT
3-SPAN CONTINUOUS GIRDER
2-60' APPROACH SPANS
DETAILS OF PIER No. 5
Across COLORADO RIVER
Sta. 41+712.78 to 45+64.503
Near Palisade, Sec. 2, T. 115 N. R. 98 W.
Designed by M.E. R.A.D.
Made by R.A.D.
Checked by R.A.D.
Approved by C. Bailey
Bridge Engineer
Date: Jan. 25, 1937.



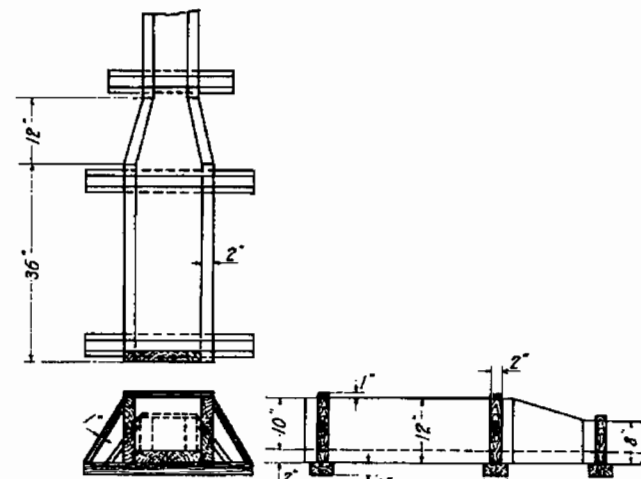
ITEMS TO BE CONSTRUCTED BY FORCE ACCOUNT

FED. ROAD DIST. NO.	STATE	A.W. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	2002	18	

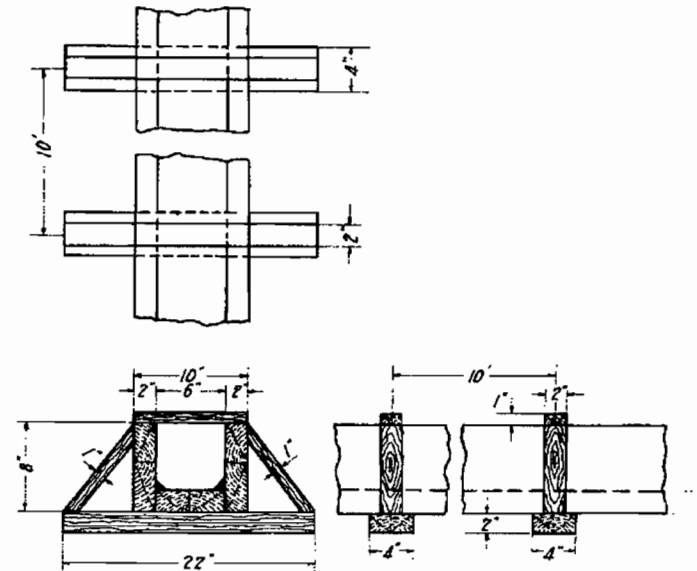


ITEMS TO BE CONSTRUCTED BY FORCE ACCOUNT (EXCEPT 18" x 26" C.I. PIPE AT STA. 35+42)

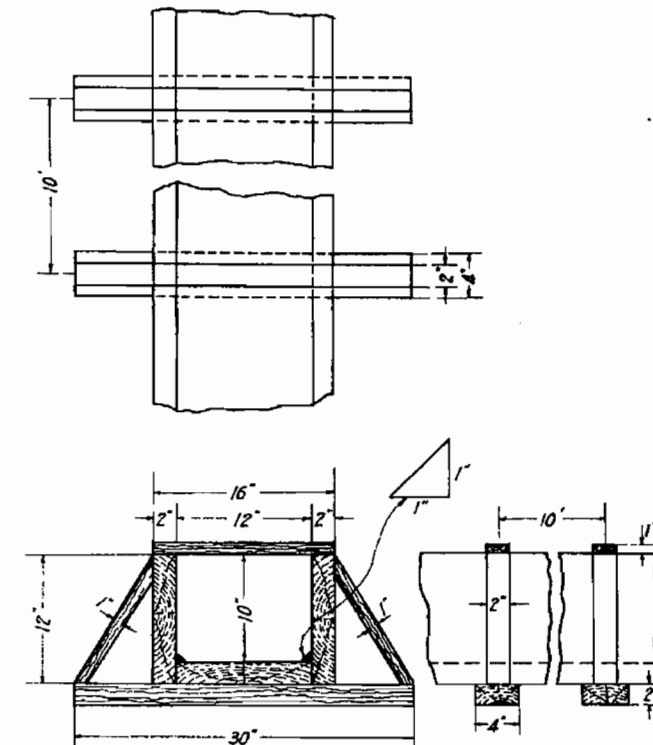
FED. ROAD DIST. NO.	STATE	A.W. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	2002	19	



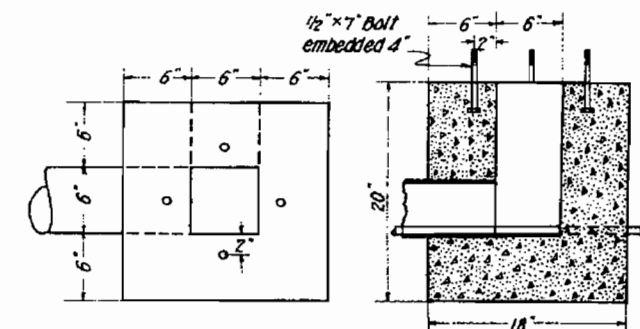
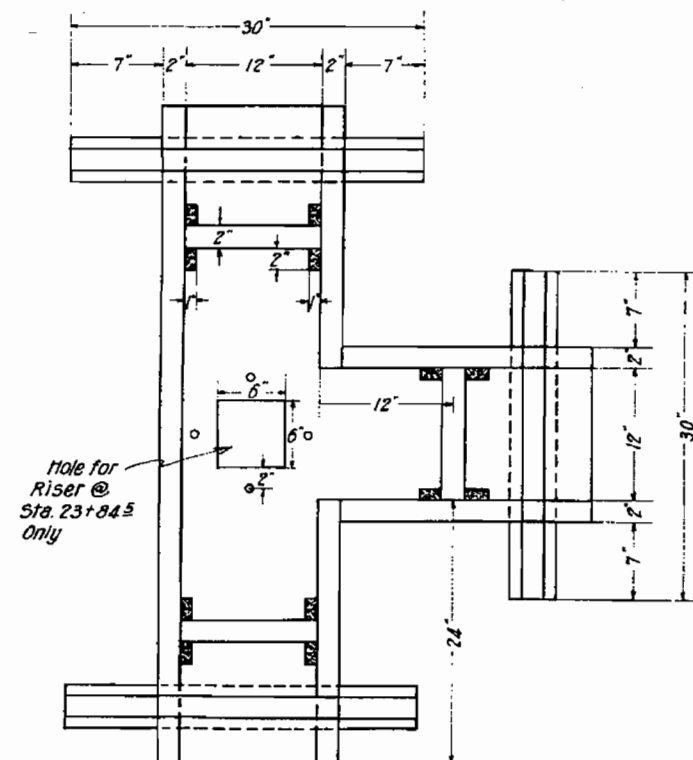
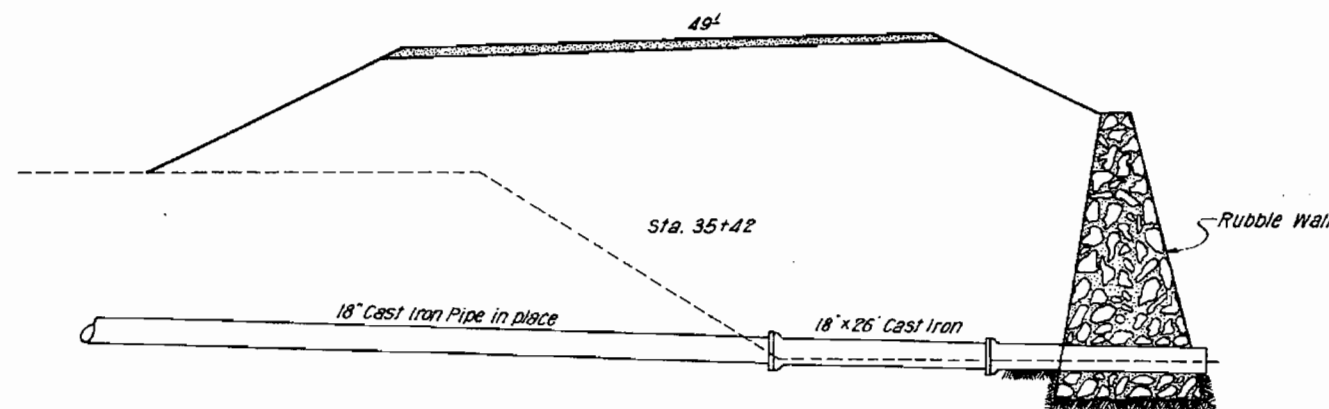
DETAIL OF RECEIVING TROUGH STA. 6+25



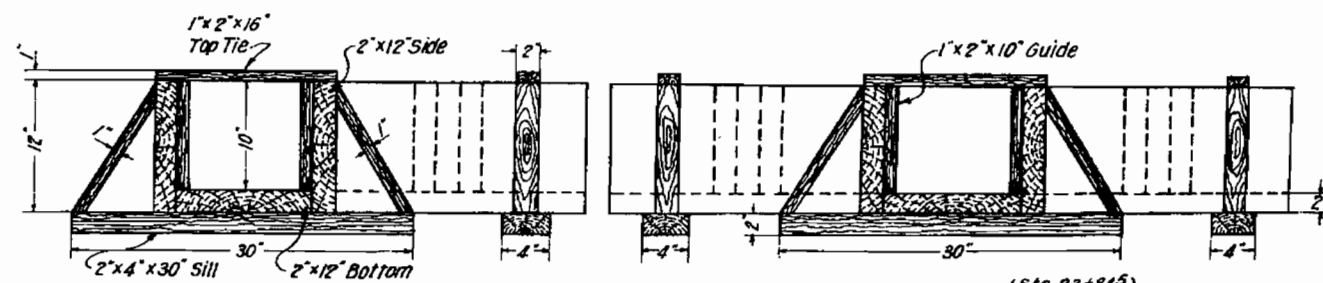
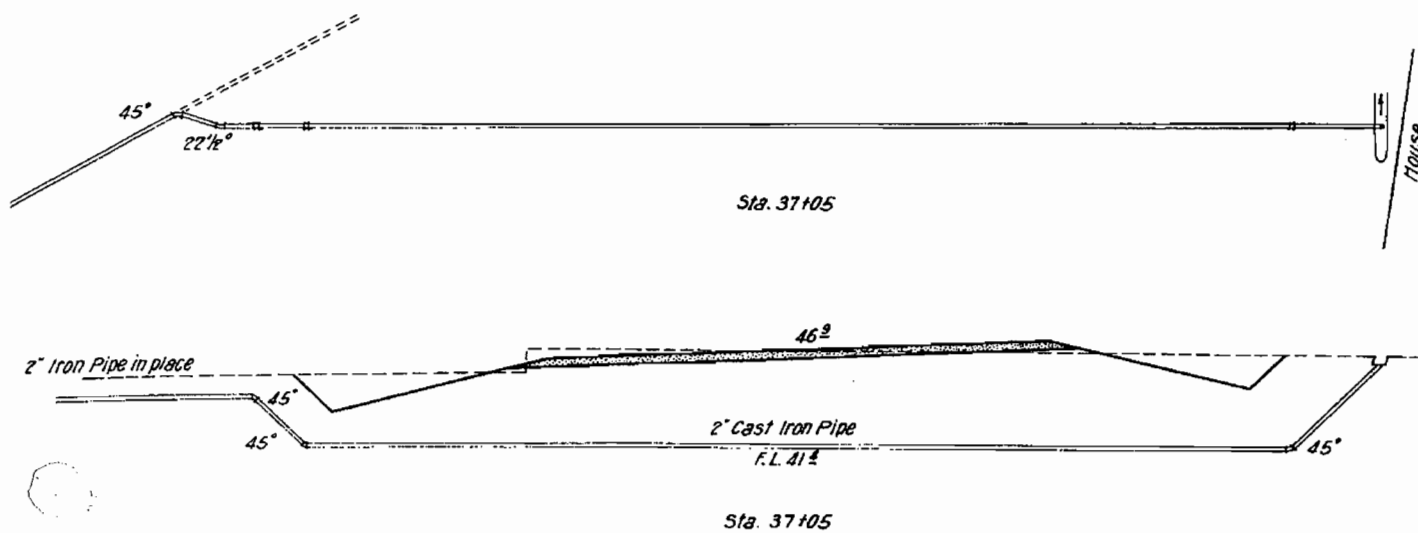
DETAIL OF 6" x 6" WOOD FLUME {Sta. 3+75 to Sta. 7+98}



DETAIL OF 12" x 10" WOOD FLUME
Sta. 7+98 to Sta. 9+71



Receiving Well Sta. 23+84.5



DETAIL OF THREE WAY DIVERSION BOX {Sta. 23+84.5 to Sta. 20+88}

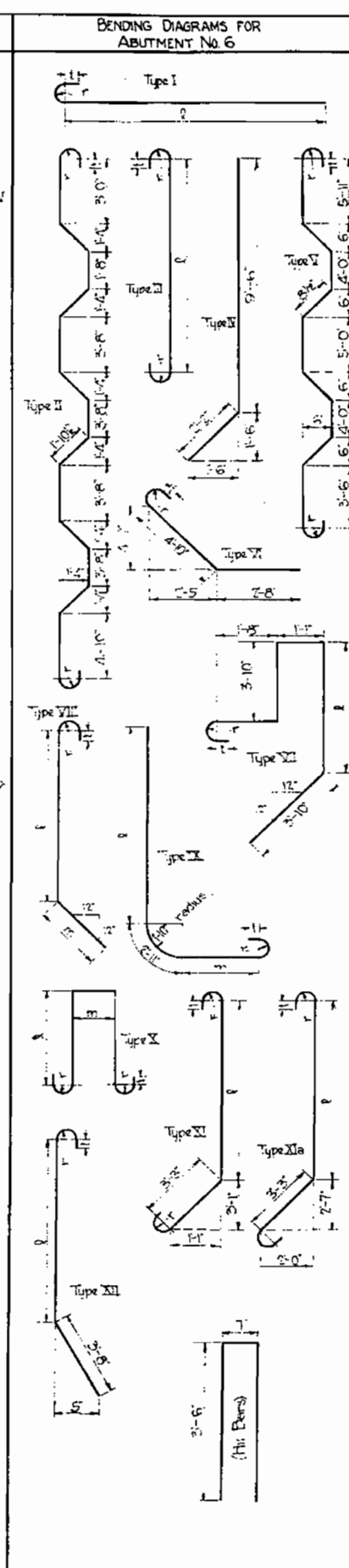
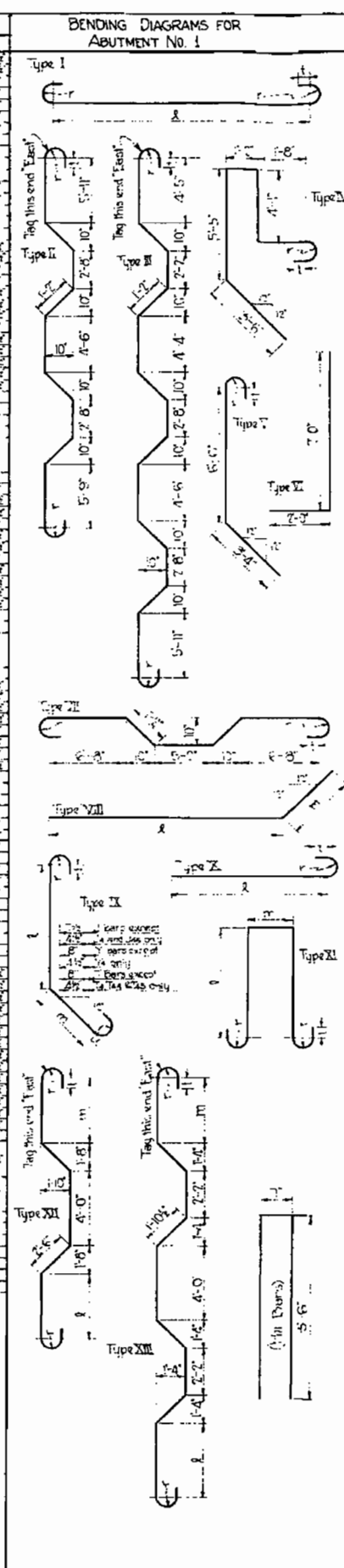
BAR LIST FOR ABUTMENT No. 1

-HCS

-B.R.

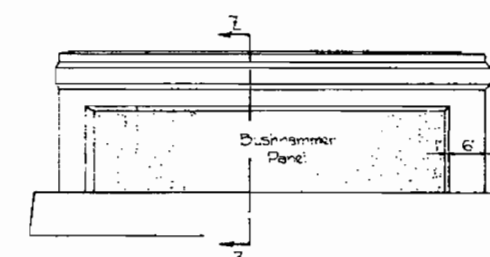
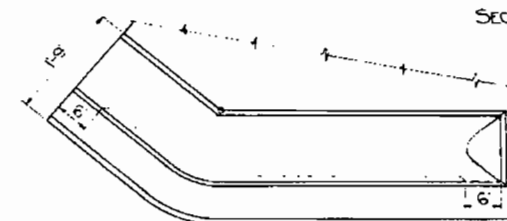
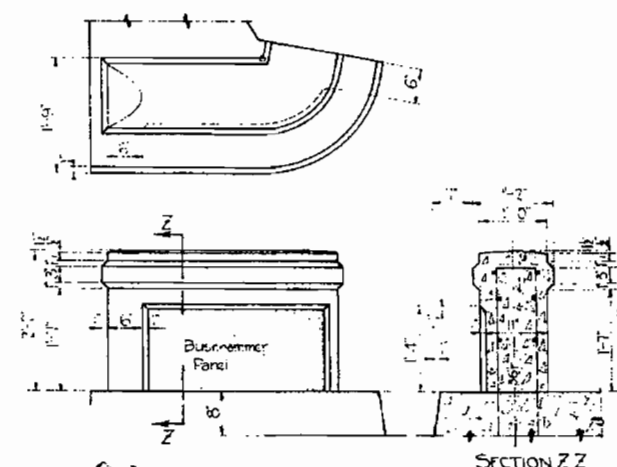
BAR LIST FOR ABUTMENT No. 6

No.	Bar	Length	Type	Size	m	ft	Area	Weight	Notes	No.	Bar	Length	Type	Size	m	ft	Area	Weight	Notes	No.	Bar	Length	Type	Size	m	ft	Area	Weight
1	62	25-0	Str	24-4	7.4	24	1.1	1.1		1	62	25-0	Str	24-4	7.4	24	1.1	1.1		1	62	25-0	Str	24-4	7.4	24	1.1	1.1
2	63	25-0	Str	24-4	7.4	24	1.1	1.1		2	63	25-0	Str	24-4	7.4	24	1.1	1.1		2	63	25-0	Str	24-4	7.4	24	1.1	1.1
3	64	25-0	Str	24-4	7.4	24	1.1	1.1		3	64	25-0	Str	24-4	7.4	24	1.1	1.1		3	64	25-0	Str	24-4	7.4	24	1.1	1.1
4	65	25-0	Str	24-4	7.4	24	1.1	1.1		4	65	25-0	Str	24-4	7.4	24	1.1	1.1		4	65	25-0	Str	24-4	7.4	24	1.1	1.1
5	66	25-0	Str	24-4	7.4	24	1.1	1.1		5	66	25-0	Str	24-4	7.4	24	1.1	1.1		5	66	25-0	Str	24-4	7.4	24	1.1	1.1
6	67	25-0	Str	24-4	7.4	24	1.1	1.1		6	67	25-0	Str	24-4	7.4	24	1.1	1.1		6	67	25-0	Str	24-4	7.4	24	1.1	1.1
7	68	25-0	Str	24-4	7.4	24	1.1	1.1		7	68	25-0	Str	24-4	7.4	24	1.1	1.1		7	68	25-0	Str	24-4	7.4	24	1.1	1.1
8	69	25-0	Str	24-4	7.4	24	1.1	1.1		8	69	25-0	Str	24-4	7.4	24	1.1	1.1		8	69	25-0	Str	24-4	7.4	24	1.1	1.1
9	70	25-0	Str	24-4	7.4	24	1.1	1.1		9	70	25-0	Str	24-4	7.4	24	1.1	1.1		9	70	25-0	Str	24-4	7.4	24	1.1	1.1
10	71	25-0	Str	24-4	7.4	24	1.1	1.1		10	71	25-0	Str	24-4	7.4	24	1.1	1.1		10	71	25-0	Str	24-4	7.4	24	1.1	1.1
11	72	25-0	Str	24-4	7.4	24	1.1	1.1		11	72	25-0	Str	24-4	7.4	24	1.1	1.1		11	72	25-0	Str	24-4	7.4	24	1.1	1.1
12	73	25-0	Str	24-4	7.4	24	1.1	1.1		12	73	25-0	Str	24-4	7.4	24	1.1	1.1		12	73	25-0	Str	24-4	7.4	24	1.1	1.1
13	74	25-0	Str	24-4	7.4	24	1.1	1.1		13	74	25-0	Str	24-4	7.4	24	1.1	1.1		13	74	25-0	Str	24-4	7.4	24	1.1	1.1
14	75	25-0	Str	24-4	7.4	24	1.1	1.1		14	75	25-0	Str	24-4	7.4	24	1.1	1.1		14	75	25-0	Str	24-4	7.4	24	1.1	1.1
15	76	25-0	Str	24-4	7.4	24	1.1	1.1		15	76	25-0	Str	24-4	7.4	24	1.1	1.1		15	76	25-0	Str	24-4	7.4	24	1.1	1.1
16	77	25-0	Str	24-4	7.4	24	1.1	1.1		16	77	25-0	Str	24-4	7.4	24	1.1	1.1		16	77	25-0	Str	24-4	7.4	24	1.1	1.1
17	78	25-0	Str	24-4	7.4	24	1.1	1.1		17	78	25-0	Str	24-4	7.4	24	1.1	1.1		17	78	25-0	Str	24-4	7.4	24	1.1	1.1
18	79	25-0	Str	24-4	7.4	24	1.1	1.1		18	79	25-0	Str	24-4	7.4	24	1.1	1.1		18	79	25-0	Str	24-4	7.4	24	1.1	1.1
19	80	25-0	Str	24-4	7.4	24	1.1	1.1		19	80	25-0	Str	24-4	7.4	24	1.1	1.1		19	80	25-0	Str	24-4	7.4	24	1.1	1.1
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22	83	25-0	Str	24-4	7.4	24	1.1	1.1		22	83	25-0	Str	24-4	7.4	24	1.1	1.1		22	83	25-0	Str	24-4	7.4	24	1.1	1.1
23	84	25-0	Str	24-4	7.4	24	1.1	1.1		23	84	25-0	Str	24-4	7.4	24	1.1	1.1		23	84	25-0	Str	24-4	7.4	24	1.1	1.1
24	85	25-0	Str	24-4	7.4	24	1.1	1.1		24	85	25-0	Str	24-4	7.4	24	1.1	1.1		24	85	25-0	Str	24-4	7.4	24	1.1	1.1
25	86	25-0	Str	24-4	7.4	24	1.1	1.1		25	86	25-0	Str	24-4	7.4	24	1.1	1.1		25	86	25-0	Str	24-4	7.4	24	1.1	1.1
26	87	25-0	Str	24-4	7.4	24	1.1	1.1		26	87	25-0	Str	24-4	7.4	24	1.1	1.1		26	87	25-0	Str	24-4	7.4	24	1.1	1.1
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30	91	25-0	Str	24-4	7.4	24	1.1	1.1		30	91	25-0	Str	24-4	7.4	24	1.1	1.1		30	91	25-0	Str	24-4	7.4	24	1.1	1.1
31	92	25-0	Str	24-4	7.4	24	1.1	1.1		31	92	25-0	Str	24-4	7.4	24	1.1	1.1		31	92	25-0	Str	24-4	7.4	24	1.1	1.1
32	93	25-0	Str	24-4	7.4	24	1.1	1.1		32	93	25-0	Str	24-4	7.4	24	1.1	1.1		32	93	25-0	Str	24-4	7.4	24	1.1	1.1
33	94	25-0	Str	24-4	7.4	24	1.1	1.1		33	94	25-0	Str	24-4	7.4	24	1.1	1.1		33	94	25-0	Str	24-4	7.4	24	1.1	1.1
34	95	25-0	Str	24-4	7.4	24	1.1	1.1		34	95	25-0	Str	24-4	7.4	24	1.1	1.1		34	95	25-0	Str	24-4	7.4	24	1.1	1.1
35	96	25-0	Str	24-4	7.4	24	1.1	1.1		35	96	25-0	Str	24-4	7.4	24	1.1	1.1		35	96	25-0	Str	24-4	7.4	24	1.1	1.1
36	97	25-0	Str	24-4	7.4	24	1.1	1.1		36	97	25-0	Str	24-4	7.4	24	1.1	1.1		36	97	25-0	Str	24-4	7.4	24	1.1	1.1
37	98	25-0	Str	24-4	7.4	24	1.1	1.1		37	98	25-0	Str	24-4	7.4	24	1.1	1.1		37	98	25-0	Str	24-4	7.4	24	1.1	1.1
38	99	25-0	Str	24-4	7.4	24	1.1	1.1		38	99	25-0	Str	24-4	7.4	24	1.1	1.1		38	99	25-0	Str	24-4	7.4	24	1.1	1.1
39	100	25-0	Str	24-4	7.4	24	1.1	1.1		39	100	25-0	Str	24-4	7.4	24	1.1	1.1		39	100	25-0	Str	24-4	7.4	24	1.1	1.1
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41	102	25-0	Str	24-4	7.4	24	1.1	1.1		41	102	25-0	Str	24-4	7.4	24	1.1	1.1		41	102	25-0	Str	24-4	7.4	24	1.1	1.1
42	103	25-0	Str	24-4	7.4	24	1.1	1.1		42	103	25-0	Str	24-4	7.4	24	1.1	1.1		42	103	25-0	Str	24-4	7.4	24	1.1	1.1
43	104	25-0	Str	24-4	7.4	24	1.1	1.1		43	104	25-0	Str	24-4	7.4	24	1.1	1.1		43	104	25-0	Str	24-4	7.4	24	1.1	1.1
44	105	25-0	Str	24-4	7.4	24	1.1	1.1		44	105	25-0	Str	24-4	7.4	24	1.1	1.1		44	105	25-0	Str	24-4	7.4	24	1.1	1.1
45	106	25-0	Str	24-4	7.4	24	1.1	1.1		45	106	25-0	Str	24-4	7.4	24	1.1	1.1		45	106	25-0	Str	24-4	7.4	24	1.1	1.1
46	107	25-0	Str	24-4	7.4	24	1.1	1.1		46	107	25-0	Str	24-4	7.4	24	1.1	1.1		46	107	25-0	Str	24-4	7.4	24	1.1	1.1
47	108	25-0	Str	24-4	7.4	24	1.1	1.1		47	108	25-0	Str	24-4	7.4	24	1.1	1.1		47	108	25-0	Str	24-4	7.4	24	1.1	1.1
48	109	25-0	Str	24-4	7.4	24	1.1	1.1		48	109	25-0	Str	24-4	7.4	24	1.1	1.1		48	109	25-0	Str	24-4	7.4	24	1.1	1.1
49	110	25-0	Str	24-4	7.4	24	1.1	1.1		49	110	25-0	Str	24-4	7.4	24	1.1	1.1		49	110	25-0	Str	24-4	7.4	24	1.1	1.1
50	111	25-0	Str	24-4	7.4	24	1.1	1.1		50	111	25-0	Str	24-4	7.4	24	1.1	1.1		50	111	25-0	Str	24-4	7.4	24	1.1	1.1
51	112	25-0	Str	24-4	7.4	24	1.1	1.1		51	112	25-0	Str	24-4	7.4	24	1.1	1.1		51	112	25-0	Str	24-4	7.4	24	1.1	1.1
52	113	25-0	Str	24-4	7.4	24	1.1	1.1		52	113	25-0	Str	24-4	7.4	24	1.1	1.1		52	113	25-0	Str	24-4	7.4	24	1.1	1.1
53	114	25-0	Str	24-4	7.4	24	1.1	1.1		53	114	25-0	Str	24-4	7.4	24	1.1	1.1		53	114	25-0	Str	24-4	7.4	24	1.1	1.1
54	115	25-0	Str	24-4	7.4	24	1.1	1.1		54	115	25-0	Str	24-4	7.4	24	1.1	1.1		54	115	25-0	Str	24-4	7.4	24	1.1	1.1
55	116	25-0	Str	24-4	7.4	24	1.1	1.1		55	116	25																

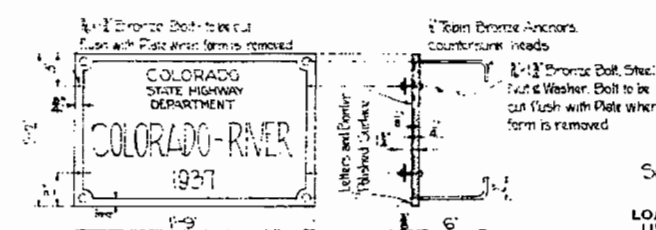


REVISIONS

FED ROAD DIST NO	STATE	A.W.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	2007	17	



TYPICAL DETAILS OF ABUTMENT POSTS



BRONZE NAME PLATE

2 Required
See General Layout for Location

See Sheet No 5 for Index
of Reference Drawings

LOADING DATA.
LIVE LOAD A.A.S.H.O. 1975 CLASS A, H-15
DEAD LOAD ASSUMES 14.85 PER SQ. FT. ADDITION
AL WEARING SURFACE WHICH INCLUDES THE 2 1/2 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
3 SPANS OF CONTINUOUS GIRDER
2-60' APPROACH SPANS
BAR LIST FOR ABUTMENTS NO.1 & NO.6
DETAILS OF ABUTMENT POSTS
BRONZE NAME PLATE

Across Colorado River
Sta. 41+71.78 to 45+64.503
Near Delisade Sec. 2 T. 11S R. 9E
Designed by BR Approved by C. J. Paul
Made by WCC Bridge Engineer
Checked by Date: Jan. 12, 1937

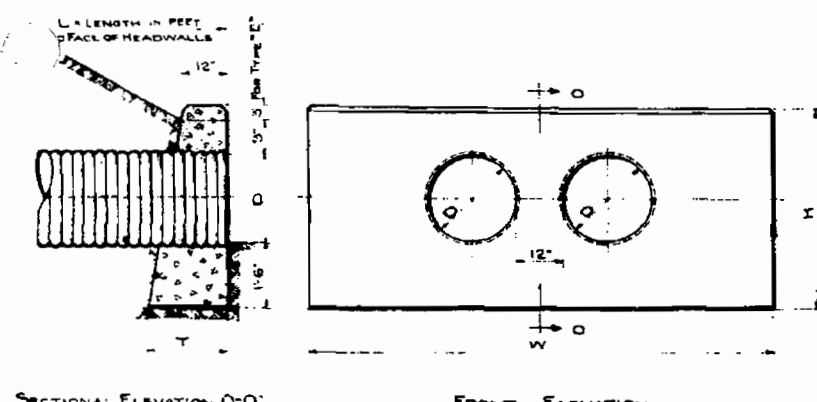


TABLE OF DIMENSIONS & QUANTITIES FOR DOUBLE CORRUG METAL PIPE CULVERT & HEADWALLS

TYPE	D	W	H	T	CL. CONCRETE FOR 2 HEADWALLS		CORRUGATED METAL PIPE		CEMENT RUBBLE MASONRY	
					CU. YDS.	16 GAGE	2 XL LIN. FT.	CU. YDS.	16 GAGE	2 XL LIN. FT.
TYPE C	12	12	5-0	1-6	2.3	16	2	1.6	1.6	1.6
TYPE C	15	15	5-0	1-6	3.1	20	2	2.0	2.0	2.0
TYPE C	18	18	5-0	1-6	4.0	24	2	2.4	2.4	2.4
TYPE C	24	24	5-0	1-6	6.0	36	2	3.6	3.6	3.6
TYPE C	30	30	5-0	1-6	9.0	54	2	5.4	5.4	5.4
TYPE C	36	36	5-0	1-6	12.0	72	2	7.2	7.2	7.2

STD. HEADWALLS FOR DOUBLE CORRUGATED METAL PIPE CULVERTS.

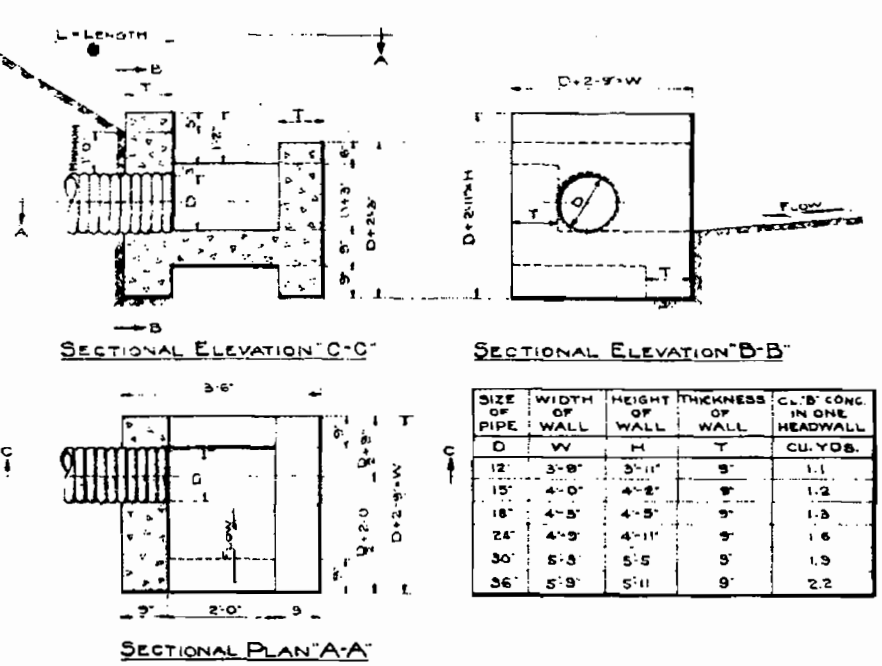


TABLE OF DIMENSIONS & QUANTITIES FOR INTERCEPTING HEADWALLS

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	3-0	5-11	9	1.1
15	4-0	4-2	9	1.2
18	4-5	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.

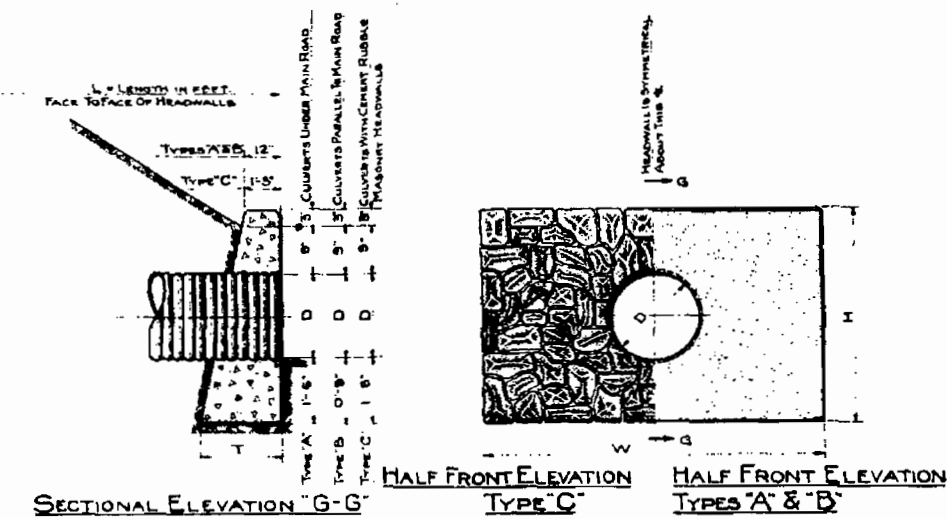


TABLE OF DIMENSIONS & QUANTITIES FOR CORRUGATED METAL PIPE CULVERTS & HEADWALLS

TYPE	D	W	H	T	CL. CONCRETE FOR 2 HEADWALLS		CORRUGATED METAL PIPE		CEMENT RUBBLE MASONRY	
					CU. YDS.	16 GAGE	L - LIN. FT.	CU. YDS.	16 GAGE	L - LIN. FT.
TYPE A	12	12	5-0	1-6	1.8	16	2	1.6	1.6	1.6
TYPE A	15	15	5-0	1-6	2.2	20	2	2.0	2.0	2.0
TYPE A	18	18	5-0	1-6	2.6	24	2	2.4	2.4	2.4
TYPE A	24	24	5-0	1-6	4.0	36	2	3.6	3.6	3.6
TYPE A	30	30	5-0	1-6	6.0	54	2	5.4	5.4	5.4
TYPE A	36	36	5-0	1-6	8.0	72	2	7.2	7.2	7.2

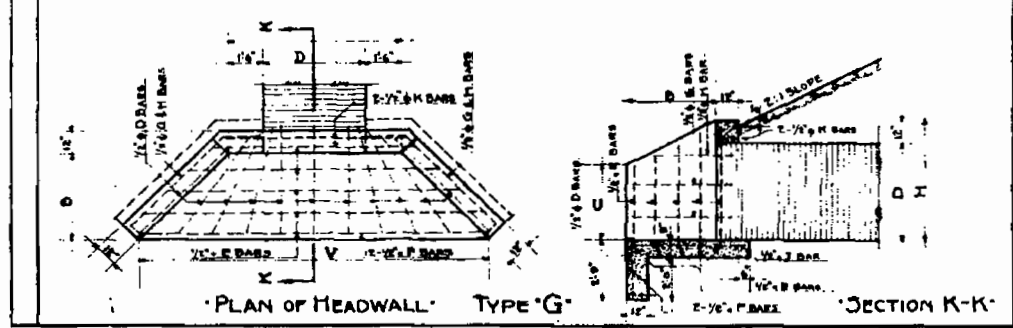
TABLE OF DIMENSIONS & QUANTITIES FOR CORRUGATED METAL PIPE CULVERTS & HEADWALLS

TYPE	D	W	H	T	CL. CONCRETE FOR 2 HEADWALLS		CORRUGATED METAL PIPE		CEMENT RUBBLE MASONRY	
					CU. YDS.	16 GAGE	L - LIN. FT.	CU. YDS.	16 GAGE	L - LIN. FT.
TYPE B	12	12	5-0	1-6	0.8	16	2	1.6	1.6	1.6
TYPE B	15	15	5-0	1-6	1.1	20	2	2.0	2.0	2.0
TYPE B	18	18	5-0	1-6	1.2	24	2	2.4	2.4	2.4
TYPE B	24	24	5-0	1-6	1.8	36	2	3.6	3.6	3.6
TYPE B	30	30	5-0	1-6	2.7	54	2	5.4	5.4	5.4
TYPE B	36	36	5-0	1-6	3.6	72	2	7.2	7.2	7.2

D	W	H	V	B	C	UNIT	CONCRETE CLASS "A"	CORRUGATED METAL PIPE	UNIT	REINFORCING STEEL
54"	7'-6"	5'-6"	15'-6"	4'-0"	3'-6"	CU. YDS.	12.6	16 GAGE	L - LIN. FT.	LBS.
60"	8'-0"	6'-0"	16'-0"	4'-0"	4'-0"	do	13.5	20 do	do	482
66"	8'-6"	6'-6"	16'-6"	4'-0"	4'-6"	do	14.4	24 do	do	498
72"	9'-0"	7'-0"	17'-0"	5'-0"	5'-0"	do	15.3	28 do	do	510
78"	9'-6"	7'-6"	17'-6"	5'-0"	5'-6"	do	16.2	32 do	do	530
84"	10'-0"	8'-0"	18'-0"	5'-0"	6'-6"	do	17.9	36 do	do	564
▲ REINFORCING STEEL QUANTITIES ARE FOR TWO HEADWALLS.							* CONCRETE QUANTITIES ARE FOR TWO HEADWALLS.			

BAR LIST FOR TYPE "G"

D - DIAMETER OF PIPE	54"	60"	66"	72"	78"	84"	BENDING DIAGRAM
D BARS 1/2"	11	11	11	11	11	11	
E BARS 1/2"	11	11	11	11	11	11	
F BARS 1/2"	11	11	11	11	11	11	
G BARS 1/2"	11	11	11	11	11	11	
H BARS 1/2"	11	11	11	11	11	11	
J BARS 1/2"	11	11	11	11	11	11	
K BARS 1/2"	11	11	11	11	11	11	
L BARS 1/2"	11	11	11	11	11	11	



STANDARD HEADWALLS FOR CORRUGATED METAL PIPE CULVERTS.

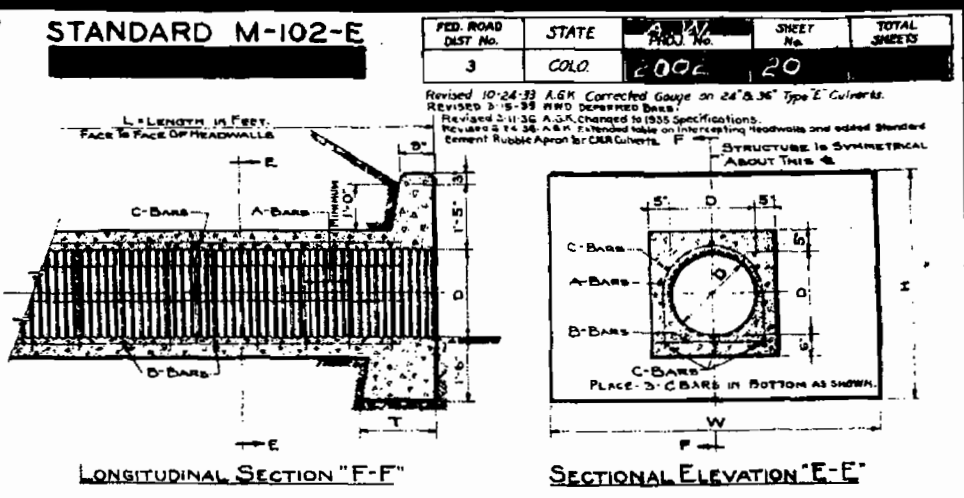
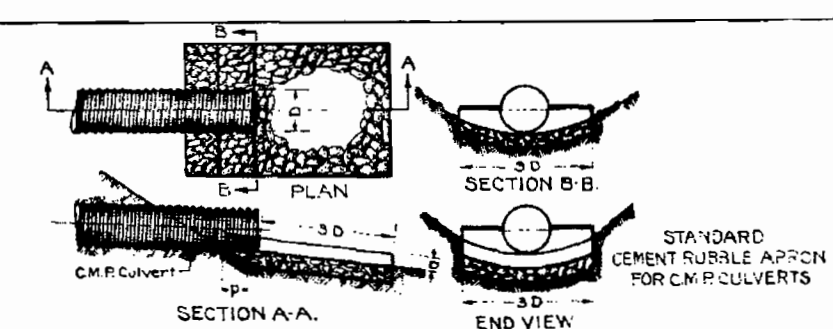


TABLE OF DIMENSIONS & QUANTITIES FOR INCASED PIPE CULVERT

DIAMETER OF PIPE	D	W	H	T	CL. CONCRETE FOR 2 HEADWALLS		CORRUGATED METAL PIPE		CEMENT RUBBLE MASONRY		BENDING DIAGRAM
					CU. YDS.	16 GAGE	L - LIN. FT.	CU. YDS.	16 GAGE	L - LIN. FT.	
12"	12	12	5-0	1-6	1.8	16	2	1.6	1.6	1.6	
15"	15	15	5-0	1-6	2.2	20	2	2.0	2.0	2.0	
18"	18	18	5-0	1-6	2.6	24	2	2.4	2.4	2.4	
24"	24	24	5-0	1-6	4.0	36	2	3.6	3.6	3.6	
30"	30	30	5-0	1-6	6.0	54	2	5.4	5.4	5.4	
36"	36	36	5-0	1-6	8.0	72	2	7.2	7.2	7.2	

SPECIAL NOTES
ALL REINFORCING BARS SHALL BE 1/2" DIA.
MINIMUM DISTANCE 4" OF BAR TO SURFACE OF CONCRETE SHALL BE 2".
PIPE SHALL BE THOROUGHLY CLEANED BEFORE INCASING WITH CONCRETE.

INCASED PIPE CULVERTS.



SQUARE YARDS CEMENT RUBBLE PAVING "1 FOOT THICK"

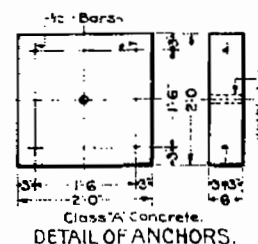
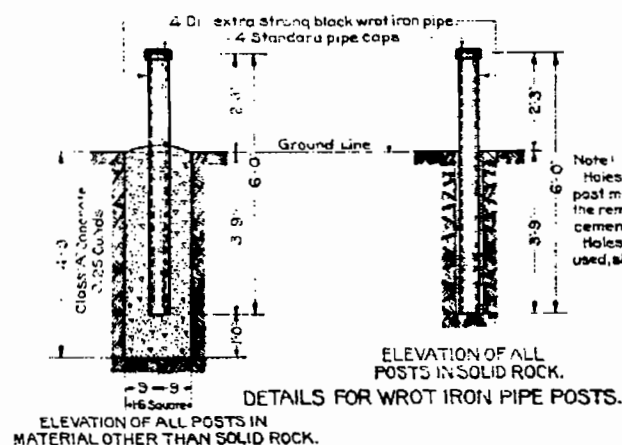
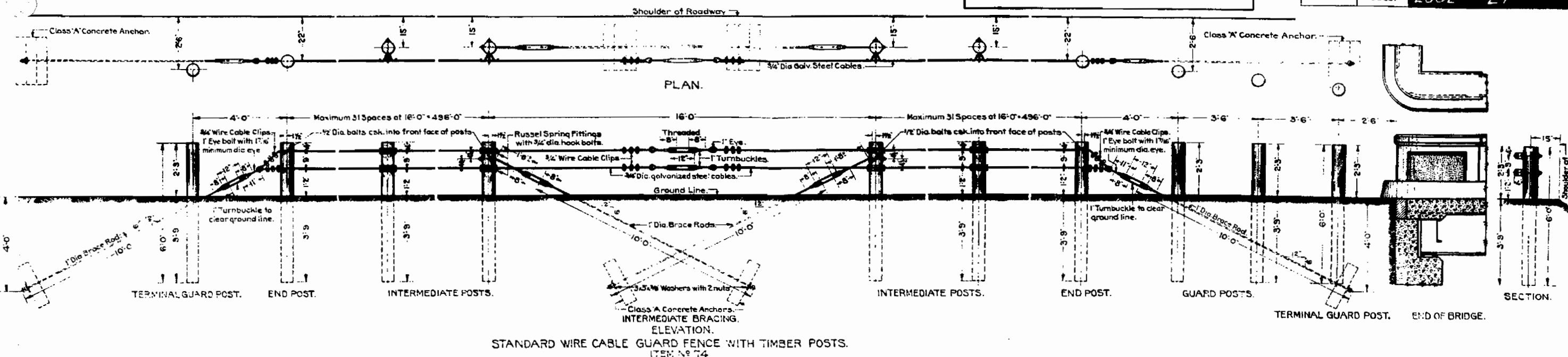
Fill Slope	D	15"	18"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"
1 1/2:1	2-0	3	4	6	8	12	17	21	27	33	39	46	54	62
2:1	2-0	3	4	7	10	13	18	22	28	34	41	49	57	66
3:1	3-0	3	4	7	11	15	20	25	31	38	45	54	63	72
4:1	4-0	3	5	8	12	16	22	28	34	42	50	59	69	79

GENERAL NOTES FOR ALL STRUCTURES
ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE COLORADO STATE HIGHWAY DEPARTMENT, ADOPTED AUGUST 1-1935.
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 BE TAGGED WITH THE STATION NUMBER AND LETTER DESIGNATION.
SECONDARY BARS WHEN SPLICED SHALL BE GIVEN A LAP OF 50 DIAMETERS.
MAIN BARS SHALL NOT BE SPLICED.
MINIMUM FILLOVER TOP OF CULVERTS SHALL BE 1'-0".
WHEN CULVERT IS SKEWED, HEADWALLS SHALL BE PLACED PARALLEL TO 1/2 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 by: [Signature] Approved by: [Signature]
Made by: GND-MWD Bridge Engineer
Checked: GND-MWD Date: April 20, 1937

STANDARD M-20-A

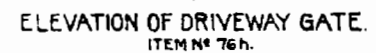
FED. ROAD DIST. NO.	STATE	A.W.P.	SHEET NO.	TOTAL SHEETS
3	COLO.	2002	21	



GENERAL NOTES

- All work shall be done in accordance with the Standard Specifications of The Colorado State Highway Department, adopted August 1, 1935.
- The length of guard fence to be paid for and installed 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 12\"/>
- All wood posts shall be entirely peeled and shaved, thoroughly seasoned and dry, with square tops and all holes to be drilled 1/8\"/>
- 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 place and firm, to the lines and grades directed by the engineer.
- All fittings, cables and hardware shall be hot dip galvanized steel with sizes as noted and located as shown.
- Eye bolts shall be welded or drop forged.
- Standard galvanized cast iron 0.6 or galvanized malleable cast washers shall be used under all bolt heads and nuts coming in contact with wood posts.
- Wedge lock fittings or other fittings equivalent to those shown on plans and approved by the engineer may be used in lieu of offset fittings, turnbuckles, eye bolts and clips as shown. Only one style of offset fittings, turnbuckles, eye bolts and clips may be used on a project.

COLORADO STATE HIGHWAY DEPARTMENT STANDARD WIRE CABLE GUARD FENCE	
Designed by A.G.K. Made by A.G.K. Check Design Check Detail	Approved by <i>Red Bull</i> Bridge Engineer Date: <i>March 20, 1936</i>



Al: work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department, Adopted August 1 1935.

Barbed Wire shall be of Standard Make, not lighter than No 12½ Gauge, Galvanized and with Two Point Barbs spaced not more than 5' apart.

Wire Mesh must be galvanized and not lighter than shown and noted on this plan.

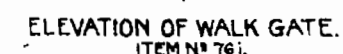
Wire Mesh used in D-1-wayway Gates shall be painted with an approved waterproof asphalt or mineral paint.

Staples shall be of at least 1½" long, made of No 9 Gauge Wire Base Galv., 8 staples required per post for barbed wire fences and 4 Staples per post for Combination Wire Fence.

All wooden posts shall be made from seasoned, straight, sound Longpole or Southern Yellow Pine, peeled, and tops sawed off square before pressure treatment, as provided in the Specifications.

Cross Braces, Brace Posts and Tie Wires are to be used at all places where intersecting fences are encountered.

Cross Braces to be securely nailed with 4-40d. nails at each post.



All Letters and Numbers shall be 2" Plain Upright Black, Painted or Stenciled on the Concrete with a good quality of Black Paint. See Item No. 41 "Second Field Coat-Dark".
Numbers and arrows shall show the proper numbers and directions of the projects each way from where the post is placed.
Post is to be set with sign facing the road on the end of the project, two feet inside the R.W.M. line or at a point amply protected from traffic in such a position that the sign will indicate properly the projects to which it refers.
All work shall be done in accordance with Standard Specifications of the Colorado State Highway Department, adopted in June 1935.
Posts shall be made of Class "V" Concrete (Group "B") except use White Portland Cement.
All exposed surfaces shall be rubbed free of form marks.

All work shall be done in accordance with Standard Specifications of the Colorado State Highway Department, adopted on Aug. 1, 1938.

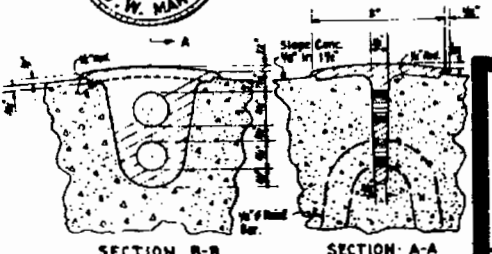
All exposed surfaces of the Bronze Tablet to be ground to a smooth surface.

All letters are to be depressed a minimum of the inch.

Information on the Bronze Tablet indicated by pin holes is to be stamped in the field by the engineering party, after text is placed. No letters & figures to be used.

Posts shall be made of Class "A" Concrete.

The upper 12 inches of marker shall be ribbed free of three marks, and the top surface of marker must be constructed to drain thoroughly.



RIGHT OF WAY MARKER POST.
ITEM NO 81b.

Designed by AMK	Approved by P. J. Gentry
Made by AMK	Bridge Engineer
Checked by AMK	Date: Feb. 1, 1982.



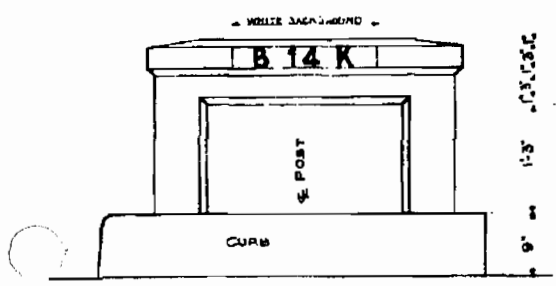
STANDARD M-10-A

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	2092	23	

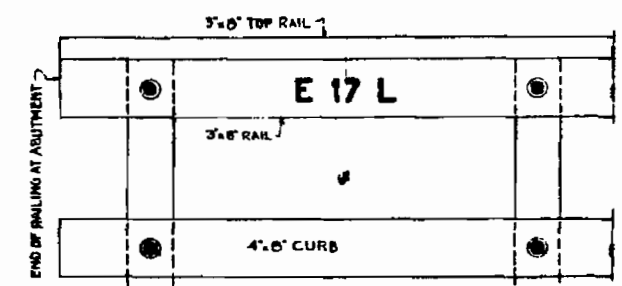
Revised 3-11-1936 AGK. Changed to 1935 Specifications.

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
I 1 4 K
1 2 3 4 5 6 7 8 9 0 .

SAMPLE BRIDGE NUMBER



TYPICAL CONCRETE ENDPOST.



TYPICAL TIMBER WING.

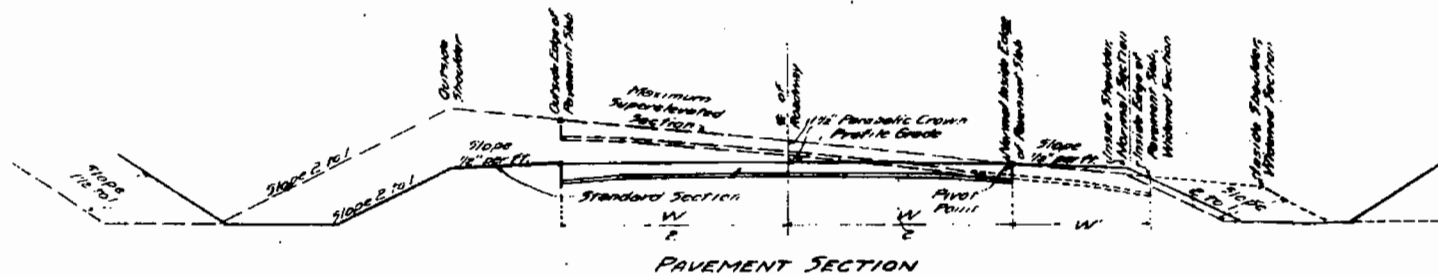
GENERAL NOTES

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE COLORADO STATE HIGHWAY DEPARTMENT, ADOPTED AUGUST 1-1935.
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 THOROUGHLY 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 "G" SECOND FIELD COAT DURA" 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 SEPARATE ITEM. COMPENSATION SHALL BE INCLUDED IN THE ORIGINAL CONTRACT ITEMS.

COLORADO
STATE HIGHWAY DEPARTMENT
STANDARD STRUCTURE
NUMBER LETTERING.

Across Sta. Sec. T. R.

Designed by G.H.D.
Made by G.H.D.
Check Design Approved by *Ed Bailey*
Check Detail Bridge Engineer
Date: Feb. 6th 1935.



SUPERELEVATION AND WIDENING NOTES FOR PAVEMENT SECTION

Curves on projects using the pavement section are to be super-elevated and widened as indicated in the accompanying drawings and table.

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 super-elevated at the rate per foot width of roadway given in the table or graph. The section is to be related about the normal inside edge of the pavement.

When the degree of curvature exceeds 10°, the inside portion of the pavement slab is to be widened from the normal inside edge as per the table below. Curves of 10° or less are not to be widened. The 1/2% parabolic crown is to be used for curves of 10° and under. The widened section is to have a flat top.

The slope of the shoulders shall conform to the rate per foot width of roadway required except that the inside shoulder shall maintain the standard slope of 0.037 ft per foot width until the super-elevation rate exceeds this standard slope.

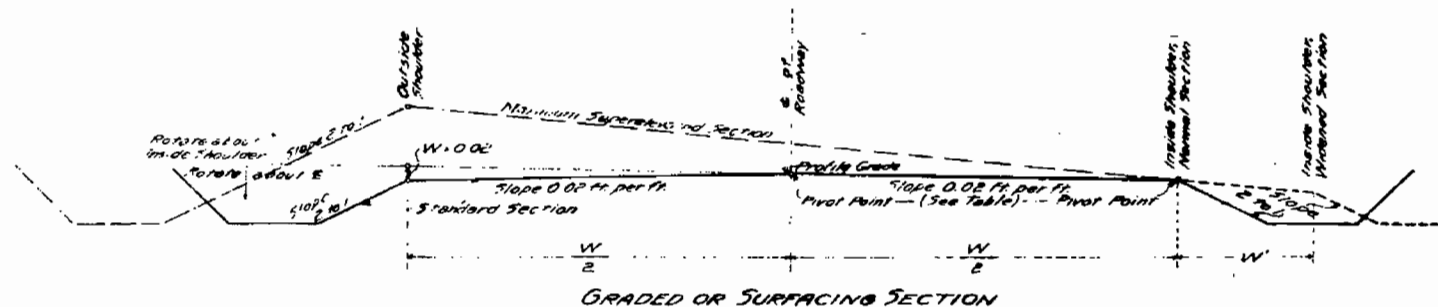
The outside ditch along a super-elevated section is to be modified from the standard where a deeper ditch is required to provide drainage.

Details of plans for super-elevating and widening are shown on the General Plan for Widening and the Graph of Super-elevation Factors.

The subgrade for future pavement is to be constructed to conform to the super-elevation and widening requirements for the pavement section.

SUPERELEVATION FACTORS AND OFFSETS FOR WIDENING FOR PAVEMENT SECTION

Distance from B.T.	20 FT.	40 FT.	60 FT.	80 FT.	100 FT. P.C.	120 FT.	140 FT.	160 FT.	180 FT.	200 FT. E.T.	On Curve
Factor	0.02	0.08	0.18	0.32	0.50	0.68	0.82	0.92	0.98	1.00	1.00
Degree of Curve	Rate of Super-elevation (in Feet) per Foot Width of Roadway										
2° and Under	0.0004	0.0017	0.0038	0.0067	0.0105	0.0143	0.0172	0.0193	0.0206	0.0210	0.0210
3°	0.0006	0.0025	0.0057	0.0101	0.0158	0.0214	0.0258	0.0290	0.0309	0.0315	0.0315
4°	0.0008	0.0034	0.0076	0.0134	0.0210	0.0286	0.0344	0.0386	0.0412	0.0420	0.0420
5°	0.0010	0.0042	0.0094	0.0168	0.0262	0.0357	0.0430	0.0483	0.0514	0.0525	0.0525
6°	0.0013	0.0050	0.0113	0.0202	0.0315	0.0428	0.0517	0.0580	0.0617	0.0630	0.0630
7°	0.0015	0.0059	0.0131	0.0235	0.0368	0.0500	0.0603	0.0676	0.0720	0.0735	0.0735
8°	0.0017	0.0067	0.0151	0.0269	0.0420	0.0571	0.0689	0.0773	0.0823	0.0840	0.0840
9°	0.0019	0.0070	0.0170	0.0302	0.0472	0.0643	0.0775	0.0889	0.0945	0.0965	0.0965
10° and Over	0.0020	0.0080	0.0180	0.0320	0.0500	0.0680	0.0820	0.0920	0.0980	0.1000	0.1000
Offsets for Widening (in Feet)											
Over 10° - Under 12°	0.06	0.24	0.54	0.96	1.50	2.04	2.46	2.76	2.94	3.00	3.00
12° - " 15°	0.08	0.32	0.72	1.28	2.00	2.72	3.28	3.68	3.92	4.00	4.00
15° - " 20°	0.10	0.40	0.90	1.60	2.50	3.40	4.10	4.60	4.90	5.00	5.00
Over 20°	0.12	0.48	1.08	1.92	3.00	4.08	4.92	5.52	5.88	6.00	6.00



SUPERELEVATION AND WIDENING NOTES FOR GRADED OR SURFACING SECTIONS

Curves on projects using the graded or surfacing section are to be super-elevated and widened as indicated in the accompanying drawings and table.

The normal inside shoulder and ditch are to remain as shown in the typical section shown on sheet #2. The outside shoulder is to be the high point of the section.

The outside ditch along a super-elevated section is to be modified from the standard where a deeper ditch is required to provide drainage.

The center-line pivot point is to be used as long as the super-elevation does not exceed 0.02 feet per foot width of roadway. The normal inside shoulder pivot point is to be used for a super-elevation rate in excess of 0.02 ft per foot width of roadway.

When the degree of curvature exceeds 10°, the inside shoulder is to be widened from the normal inside shoulder line as shown by the table and cross section. Curves of 10° and less are not to be widened.

Details of plans for super-elevation and widening are shown on the General Plan for Widening and the Graph of Super-elevation Factors.

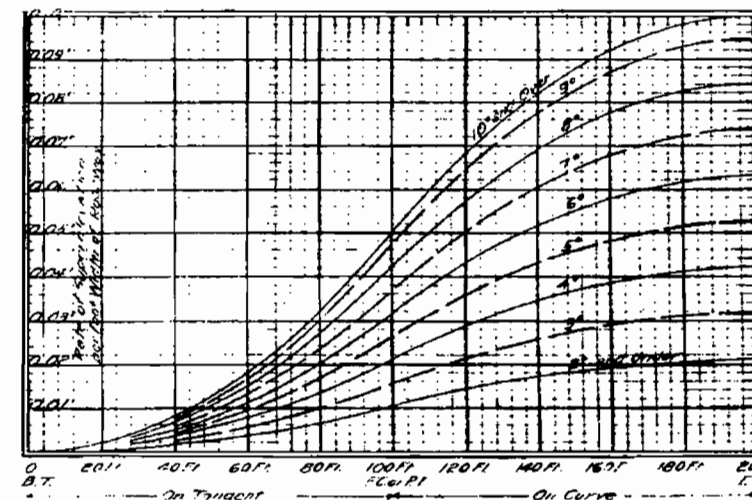
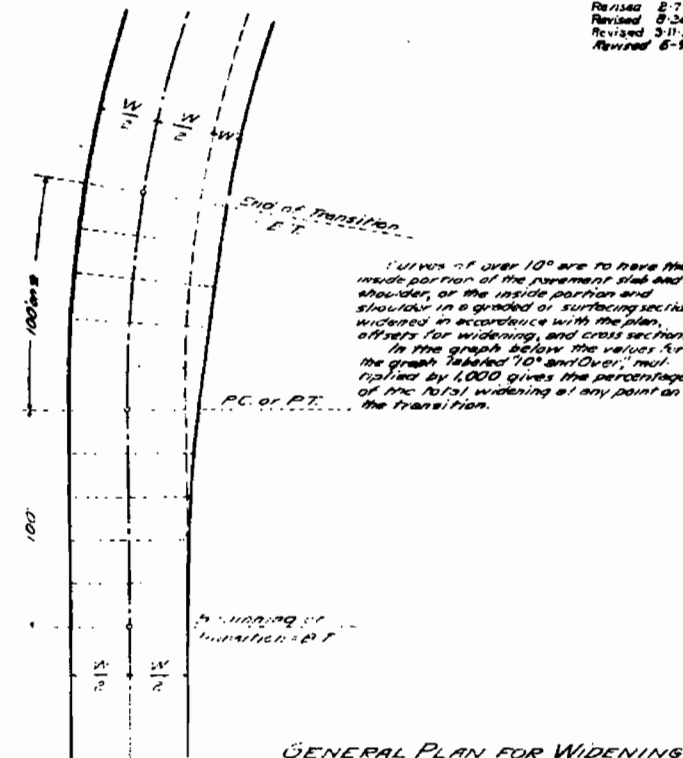
SUPERELEVATION FACTORS AND OFFSETS FOR WIDENING FOR GRADED OR SURFACING SECTIONS

Distance from B.T.	20 FT.	40 FT.	60 FT.	80 FT.	100 FT. P.C.	120 FT.	140 FT.	160 FT.	180 FT.	200 FT. E.T.	On Curve	Length of Transition, Related to:
Factor	0.02	0.08	0.18	0.32	0.50	0.68	0.82	0.92	0.98	1.00	1.00	Center Line
Degree of Curve	Rate of Super-elevation (in Feet) per Foot Width of Roadway											Inside Shoulder
2° and Under	0.0004	0.0017	0.0038	0.0067	0.0105	0.0143	0.0172	0.0193	0.0206	0.0210	0.0210	169 ft.
3°	0.0006	0.0025	0.0057	0.0101	0.0158	0.0214	0.0258	0.0290	0.0309	0.0315	0.0315	115 "
4°	0.0008	0.0034	0.0076	0.0134	0.0210	0.0286	0.0344	0.0386	0.0412	0.0420	0.0420	90 "
5°	0.0010	0.0042	0.0094	0.0168	0.0262	0.0357	0.0430	0.0483	0.0514	0.0525	0.0525	87 "
6°	0.0013	0.0050	0.0113	0.0202	0.0315	0.0428	0.0517	0.0580	0.0617	0.0630	0.0630	80 ft.
7°	0.0015	0.0059	0.0131	0.0235	0.0368	0.0500	0.0603	0.0676	0.0720	0.0735	0.0735	74 "
8°	0.0017	0.0067	0.0151	0.0269	0.0420	0.0571	0.0689	0.0773	0.0823	0.0840	0.0840	69 "
9°	0.0019	0.0070	0.0170	0.0302	0.0472	0.0643	0.0775	0.0889	0.0945	0.0965	0.0965	65 "
10° and Over	0.0020	0.0080	0.0180	0.0320	0.0500	0.0680	0.0820	0.0920	0.0980	0.1000	0.1000	63 "
Offsets for Widening (in Feet)												
Over 10° - Under 12°	0.06	0.24	0.54	0.96	1.50	2.04	2.46	2.76	2.94	3.00	3.00	
12° - " 15°	0.08	0.32	0.72	1.28	2.00	2.72	3.28	3.68	3.92	4.00	4.00	
15° - " 20°	0.10	0.40	0.90	1.60	2.50	3.40	4.10	4.60	4.90	5.00	5.00	
Over 20°	0.12	0.48	1.08	1.92	3.00	4.08	4.92	5.52	5.88	6.00	6.00	

STANDARD M-1-A

FED. ROAD DIST. No.	STATE	Project No.	SHEET No.	TOTAL SHEETS
3	COLO.	2002	24	

Revised 8-11-32 S.B.L. (200' Length)
 Revised 8-31-32 S.B.L.
 Revised 8-7-34 S.B.L.
 Revised 8-24-34 S.B.L. (Special Cases)
 Revised 8-11-36 A.G.I. (1935 Specifications)
 Revised 8-9-36 S.B.L. (Notes on Special Cases)



GRAPH OF SUPERELEVATION TRANSITION FACTORS

The rate of super-elevation per foot width of roadway to be applied at the outside edge of the pavement slab, and at the outside shoulder of the roadway, is computed as follows:

The full super-elevation per foot width of roadway rate for a given degree of curvature is:

$$0.0105 \text{ ft} \times \text{Degree of Curvature}$$

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

This graph has been prepared from the rates of super-elevation shown in the table above.

SPECIAL CASES—When the roadway alignment does not permit the use of the 200 ft transition lengths, the segment lengths may be proportionately shortened. A minimum distance of 200 ft plus the e.g. of the tangent between the curves shall be used between the points of full super-elevation and the widening required for a distance of one-half the length of the curve plus 100 ft (1/2 L + 100 ft) as shown for the regular 200 ft transition for that degree of curve shall be used. This maximum of super-elevation and widening will be reached at the center of the curve.

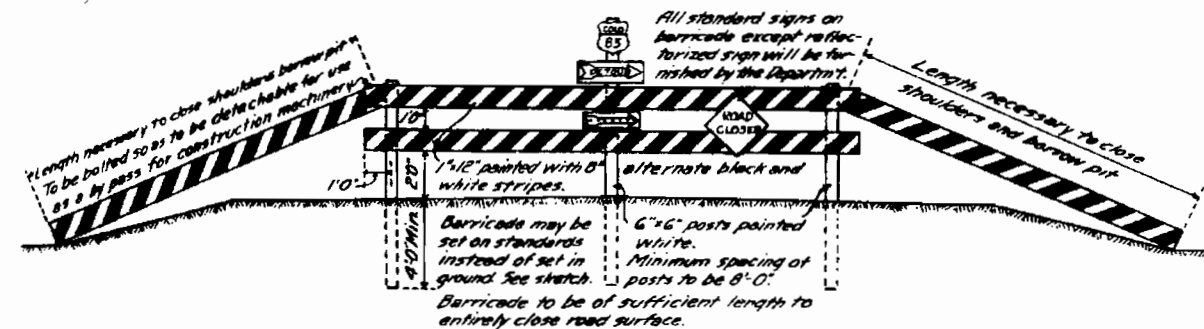
When the tangent distance between two curves in the same direction is less than 200 ft, the super-elevation and widening required by the curve of lesser degree is to be carried across the connecting tangent in such a way that good appearance and riding qualities will be maintained.

COLORADO
STATE HIGHWAY DEPARTMENT

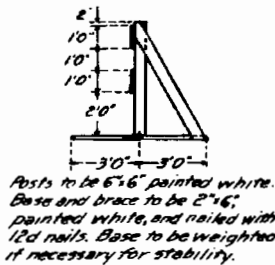
STANDARD METHODS
FOR SUPERELEVATION AND
WIDENING OF CURVES

Designed by S.B.L. Approved by
 Made by S.B.L. Checked by A.M.
 Date: Aug. 17, 1932.

DETAILS OF PERMANENT BARRICADE



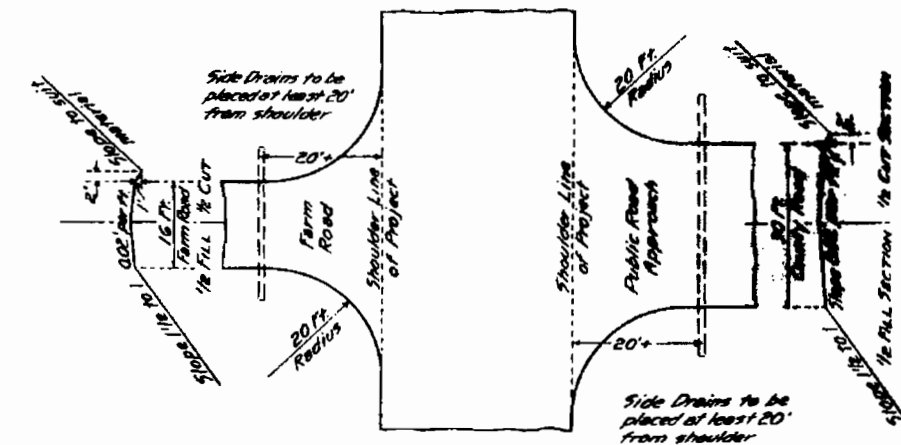
END VIEW OF PORTABLE BARRICADE



STANDARD M-2-B

FED. ROAD DIST. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9.	COLO.	2006	25	

TYPICAL PLAN FOR SIDE APPROACH ROADS



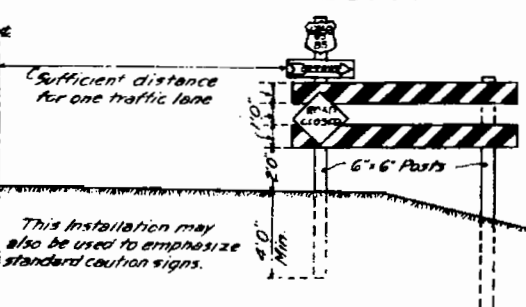
POSITION OF SIGNS RELATIVE ROAD BED

This distance to be governed by the maximum day and night visibility which is influenced by grade, curvature, interference of local signs, shrubbery, fences, etc.

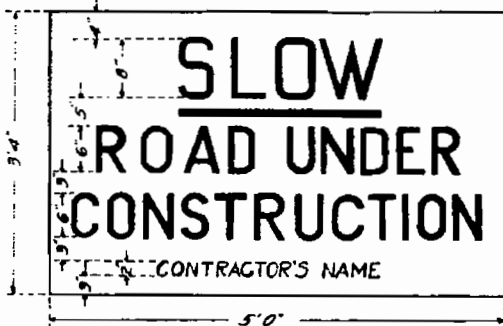
Exact location is to be stated by the Engineer, but in no case shall it be more than 8 feet from the travelled zone.

Barricades to be placed as construction conditions require.

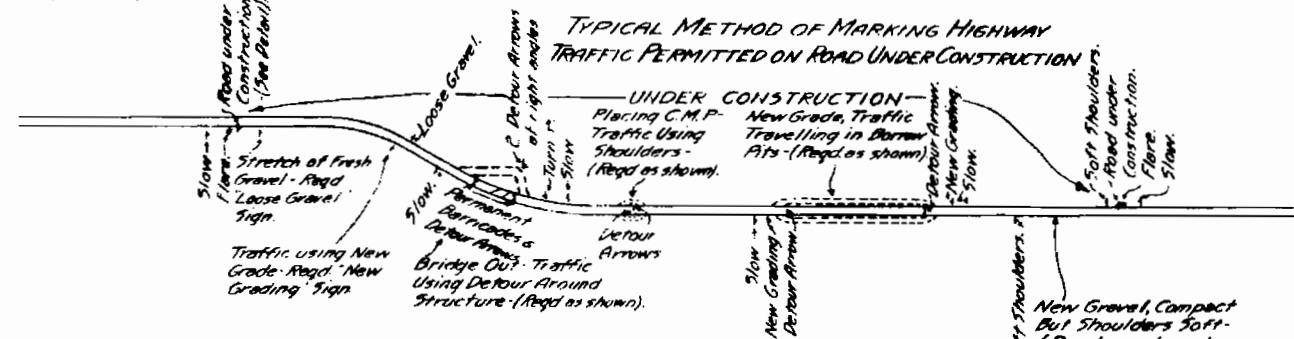
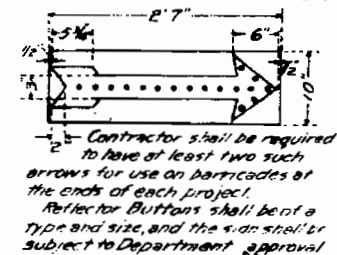
DETAILS OF PARTIAL BARRICADE



DETAILS OF ROAD UNDER CONSTRUCTION SIGN



SUGGESTED DETAIL OF REFLECTORIZED ARROW



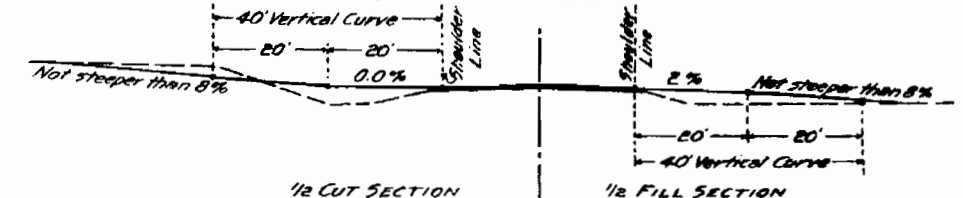
GENERAL NOTES ON APPROACHES

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

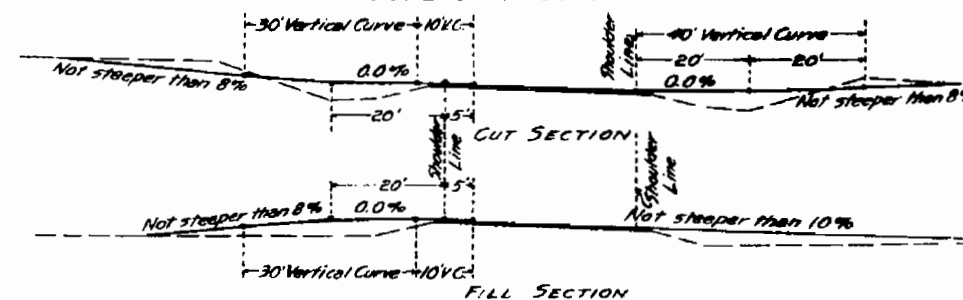
When the length of the approach as determined by the intersection of these grades with the natural ground is such as to damage the property so served, or cause unreasonable conditions, the grades may be modified.

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

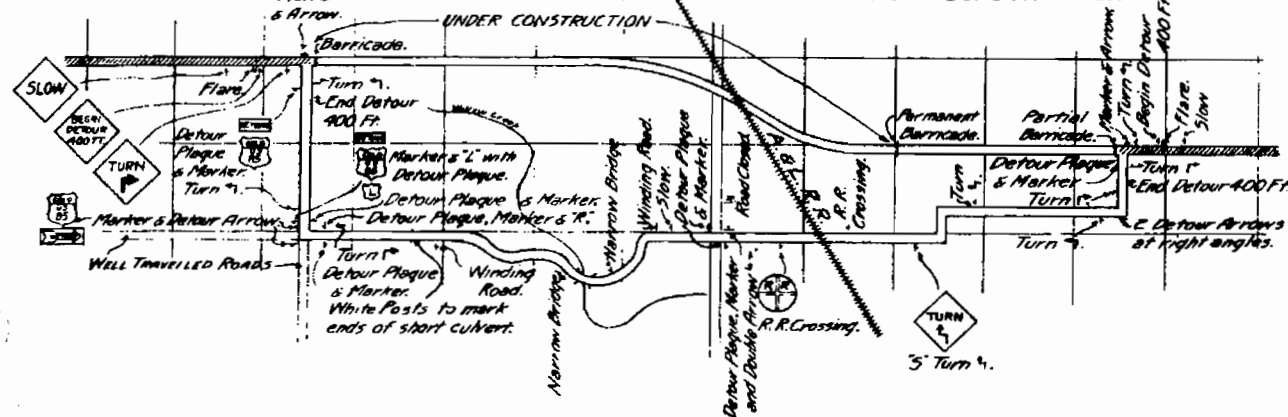
STANDARD CROWNED SECTION



SUPERELEVATED SECTION



TYPICAL METHOD OF MARKING DETOUR TRAFFIC PROHIBITED ON ROAD UNDER CONSTRUCTION



GENERAL NOTES FOR ROADWAY CONSTRUCTION TRAFFIC SIGNS

All Work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department adopted August 1, 1935.

Whenever traffic is permitted on a road while under construction, the Contractor shall at all times adequately and expeditiously 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.

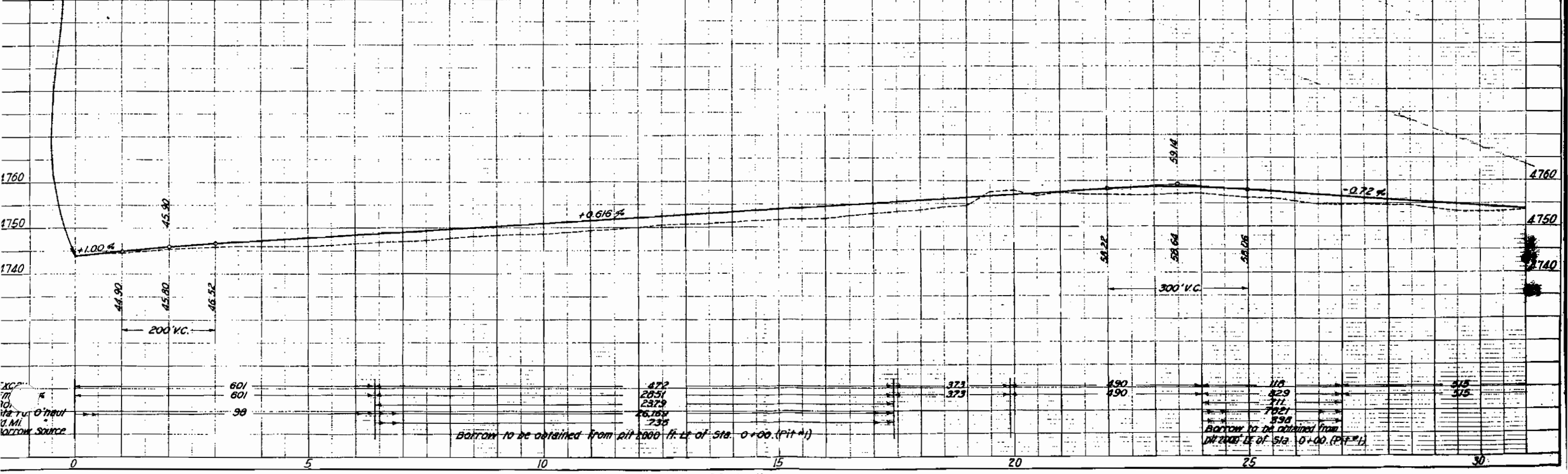
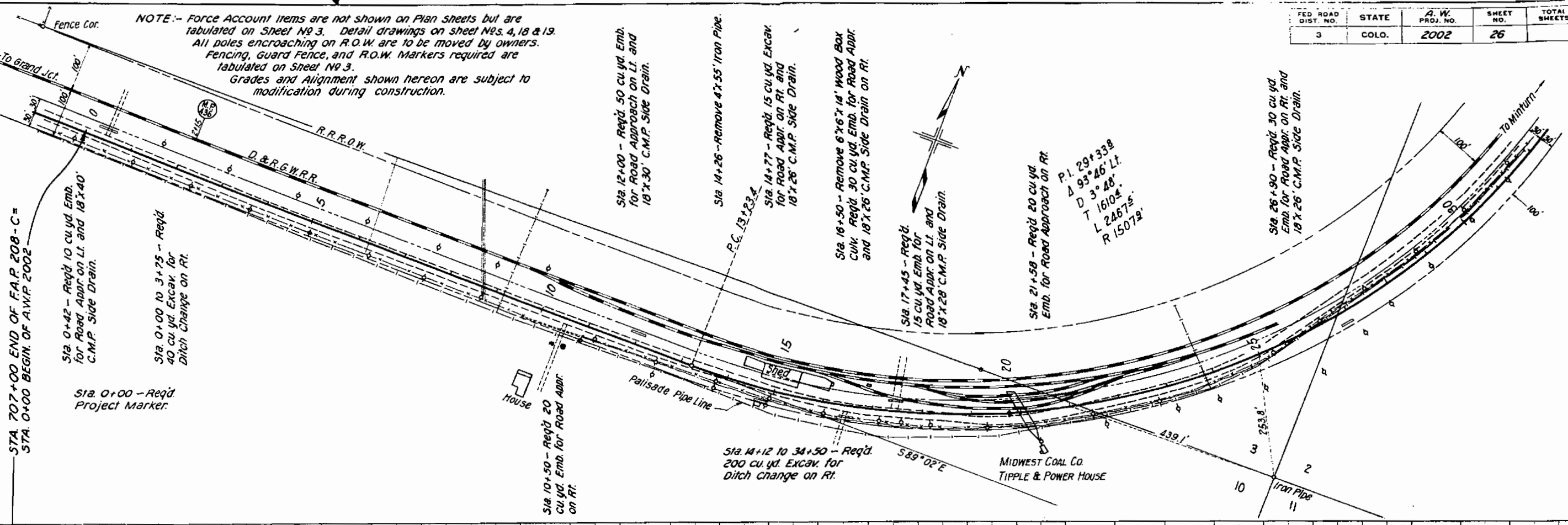
COLORADO
STATE HIGHWAY DEPARTMENT
TYPICAL
SIDE APPROACH ROADS
ROADWAY CONSTRUCTION
TRAFFIC SIGNS

Designed by J.E.M.
Made by J.E.M.
Check - J.E.M.
Book - J.E.M.

Approved by J.E.M.
Date: Aug. 28, 1935

FED. ROAD DIST. NO.	STATE	A.W. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	2002	26	

NOTE: Force Account items are not shown on Plan sheets but are tabulated on Sheet No 3. Detail drawings on sheet Nos. 4, 18 & 19. All poles encroaching on R.O.W. are to be moved by owners. Fencing, Guard Fence, and R.O.W. Markers required are tabulated on Sheet No 3. Grades and Alignment shown hereon are subject to modification during construction.



107 - FORCE ACCOUNT items are shown on Plan Sheets but are tabulated on Sheet No 3.

STATE	A.W.	SHEET	TOTAL
COLO	2002	27	SHEETS

