

FEDERAL ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	COLORADO	C 12-0024-02	1	

COLORADO DEPARTMENT OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED COLORADO PROJECT NO. C 12-0024-02 STATE HIGHWAY NO. 24 ADAMS COUNTY

CONVENTIONAL SIGNS

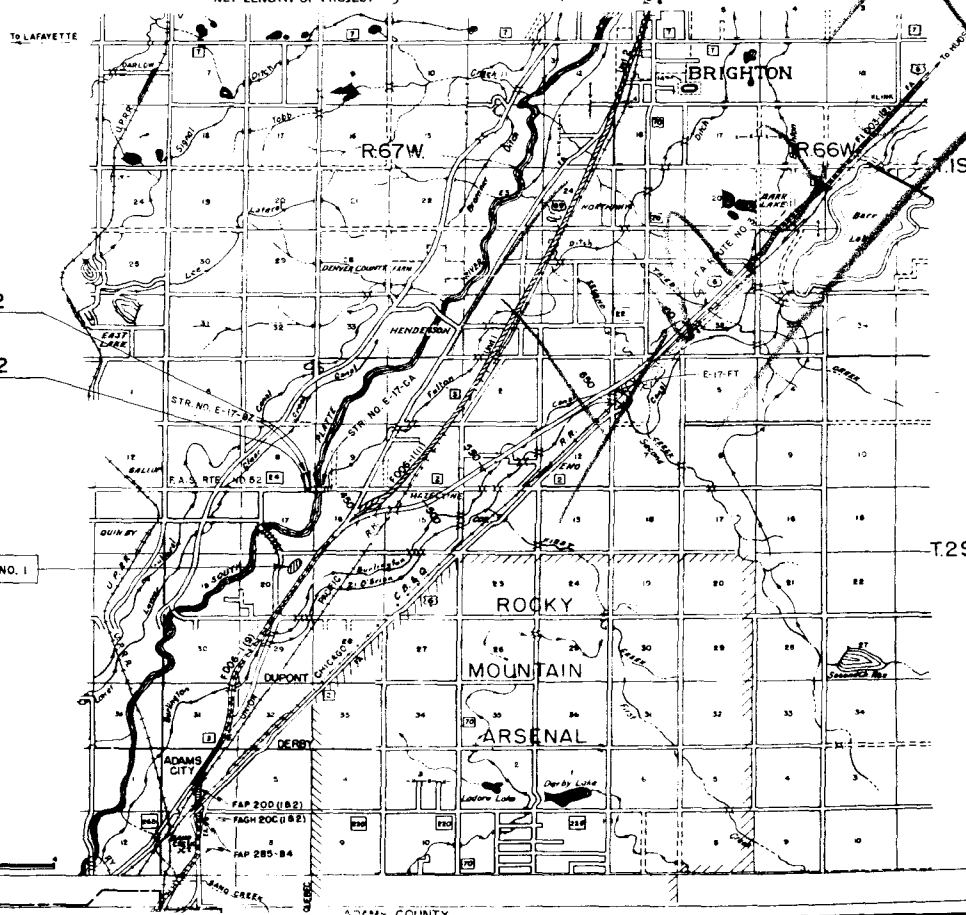
CENTER LINE
 RIGHT OF WAY LINE
 COUNTY LINE
 TOWNSHIP OR RANGE LINE
 LAND LINES
 RAILROAD
 BARBED WIRE FENCE
 COMBINATION WIRE FENCE
 SNOW FENCE
 TELEPHONE & TELEGRAPH LINES
 POWER LINE

PRESENT ROAD (Plan Sheets)

SCALES OF ORIGINAL DRAWINGS

ON PLAN, 1 IN. = 100 FT.
 ON PROFILE, 1 IN. = 100 FT. HORIZONTAL
 1 IN. = 10 FT. VERTICAL

GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD
 GROSS LENGTH OF PROJECT } 1258.0 FT. = 0.238 MI.
 NET LENGTH OF PROJECT }



Sta. 115+58 End C 12-0024-02

Sta. 103+00 Beg. C 12-0024-02

NOTICE TO BIDDERS

IT IS RECOMMENDED THAT BIDDERS ON THIS PROJECT GO OVER THE PLAN DETAILS WITH ONE OF THE FIELD REPRESENTATIVES OF THIS DEPARTMENT, LISTED ON PAGE 10 OF THE SPECIAL PROVISIONS.

COLORADO
DEPARTMENT OF HIGHWAYS

APPROVED: *Mark J. Hartman* 8-21-57
 CHIEF ENGINEER DATE

INDEX OF SHEETS

- 1 SKETCH MAP, TITLE PAGE & TABULATION OF LENGTH & DESIGN.
- 2 TYPICAL SECTION, GENERAL NOTES, SUMMARY OF APPROXIMATE QUANTITIES, SUMMARY OF EARTHWORK QUANTITIES & SKETCH MAP OF MATERIAL PIT.
- 3 STANDARD LETTERS & FIGURES FOR YEAR NUMBERS & STRUCTURE NUMBERS
- 4 STANDARD TIMBER GUARD POSTS
- 5 STANDARD METAL PLATE GUARD FENCE (BEAM TYPE)
- 7 STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS.
- 12 DETAILS OF BRIDGE.
- 13 ALIGNMENT PLAN & PROFILE.
- 17 CROSS SECTIONS.
- 24 STANDARD MARKER POSTS & BENCH MARKS

M-7-C

TABULATION OF LENGTH & DESIGN

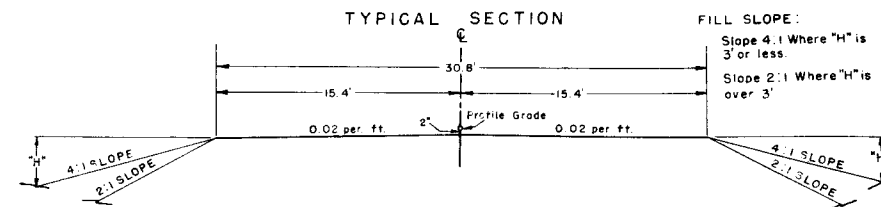
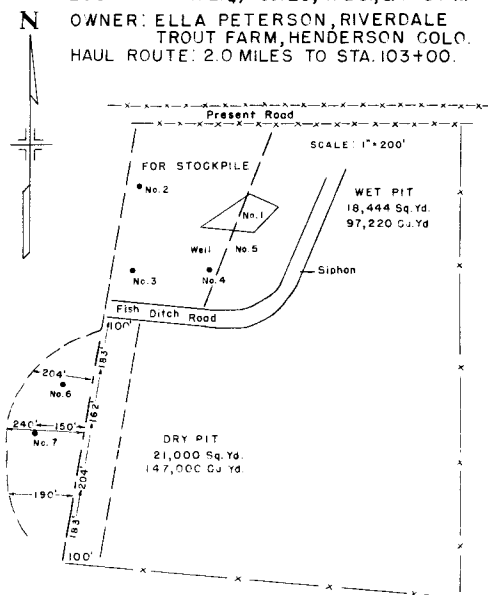
DESCRIPTION	ROADWAY Lin. ft.	BRIDGE Lin. ft.	LOADING
Begin C12-0024-02	777.0		
End Roadway Begin Bridge Overflow Str. No. E-17-BZ End Bridge Begin Roadway	387.7	93.3	H-20-S16-44
End C12-0024-02			
TOTAL	1164.7	93.3	
SUMMARY			
	Lin. ft.	Miles	
	1164.7	0.220	
	93.3	0.018	
TOTAL (Gross & Net Length)	1258.0	0.238	

SCALE OF MILES

FEDERAL ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	C 12-0024-02	2	

PIT NO. 1 BORROW MATERIAL SAMPLE NO. 202

LOCATION: N.E. $\frac{1}{4}$, Sec. 20, T. 2 S., & R. 67 W.
OWNER: ELLA PETERSON, RIVERDALE
TROUT FARM, HENDERSON COLO.
HAUL ROUTE: 2.0 MILES TO STA. 103+00.



GENERAL NOTES

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

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

SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO	ITEM	UNIT	PROJECT TOTALS
11a	Removal of 1 Structure	Lump Sum	0
13c	Unclassified Excavation	Cu. Yd.	9,000
14g	Common Excavation (Str.)	Cu. Yd.	63
16a	Structure Backfill (Class 1)	Cu. Yd.	20
16c	Mechanical Tamping	Hour	10
17k	Gravel	M. Gal.	250
17w	Compaction	Cu. Yd.	10,000
18a	Station Yard Overhaul	Sta. Yd.	89,000
18b	Yard Mile Overhaul	Yd. Mi.	14,900
42b	Treated Bridge Timber	Mft. bm.	0.3
46a	Class "A" Concrete	Cu. Yd.	171
47	Reinforcing Steel	Lb.	32,700
48	Structural Steel	Lb.	2,700
61a	Steel Piling (12 BP53)	Lin. Ft.	544
65m	Concrete Slope & Ditch Paving (Wire Mesh)	Cu. Yd.	50
75c	Metal Plate Guard Fence (Beam Type)	Lin. Ft.	50
75cx	Metal Plate Guard Rail (Beam Type)	Lin. Ft.	175
89a	Drain Pipe (4"x1'-6") (Concrete Floor)	Each	6
92	Timber Guard Posts	Each	24

SUMMARY OF EARTHWORK QUANTITIES

EXCAVATION
FROM CROSS SECTION & CHANNEL CHANGES ----- 474
BORROW ----- 7,312
EST. FOR SUBSIDENCE ----- 779

TOTAL 8,565 Cu. Yds.

EXCAVATION
FROM CROSS SECTIONS ----- 44
BORROW ----- 7,312

TOTAL 7,356 Cu. Yds.

EMBANKMENT
FROM CROSS SECTIONS ----- 6,130 Cu. Yds.

EMBANKMENT X FACTOR ----- 7,356 Cu. Yds.

STATION YARD OVERHAUL
FROM MASS DIAGRAM ----- 80,432
EST. FOR OVERBREAK & SUBSIDENCE ----- 8,044
EST. FOR STRUCTURE BACKFILL ----- 154

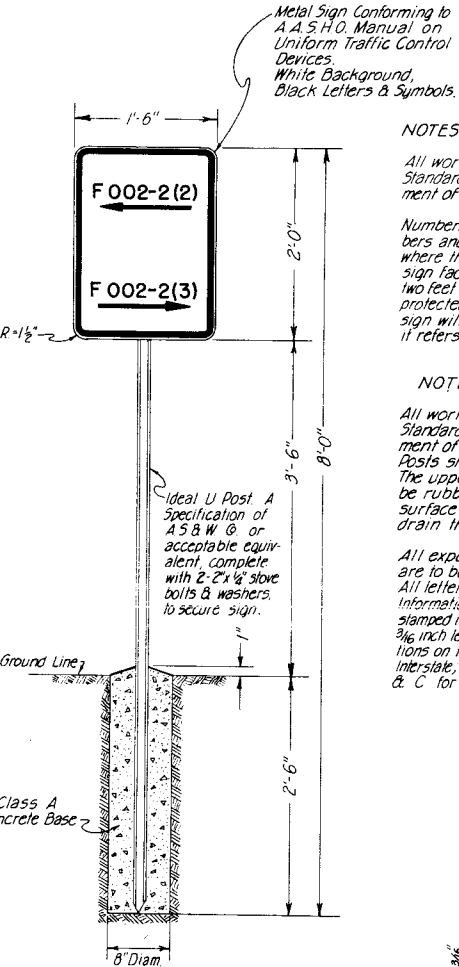
TOTAL 88,630 Sta. Yds.

YARD MILE OVERHAUL
FROM MASS DIAGRAM ----- 13,458
EST. FOR OVERBREAK & SUBSIDENCE ----- 1,346
EST. FOR STRUCTURE BACKFILL ----- 26

TOTAL 14,830 Yd. Miles

COMPACTION
UNCLASSIFIED EXCAVATION ----- 8,565
BASE OF CUTS & FILLS ----- 1,200
TOTAL 9,765 Cu. Yds.

PROJECT MARKER POST



NOTES FOR PROJECT MARKER POSTS

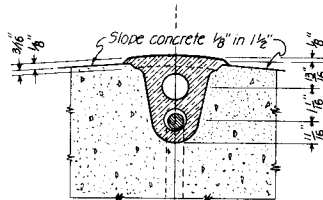
All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to this project.

Numbers and arrows shall show the proper numbers and directions of the projects each way from where the post is placed. Post is to be set with sign facing the road at the end of the project, two feet inside the R.O.W. 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.

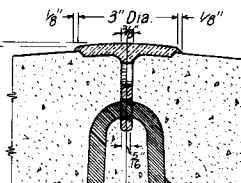
NOTES FOR R.O.W. MARKER POSTS

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

All exposed surfaces of the bronze tablet are to be ground to a smooth surface. All letters are to be depressed a minimum of 1/16 inch. Information on the bronze tablet indicated by pin lines is to be stamped in field by the engineering party after post is placed. 3/16 inch letters and figures to be used. Project designations on tablets shall be properly shown (i.e., I for Fed. Aid Interstate, F for Fed. Aid Primary, S for Fed. Aid Secondary, etc. & C for State Projects, see detail below.)



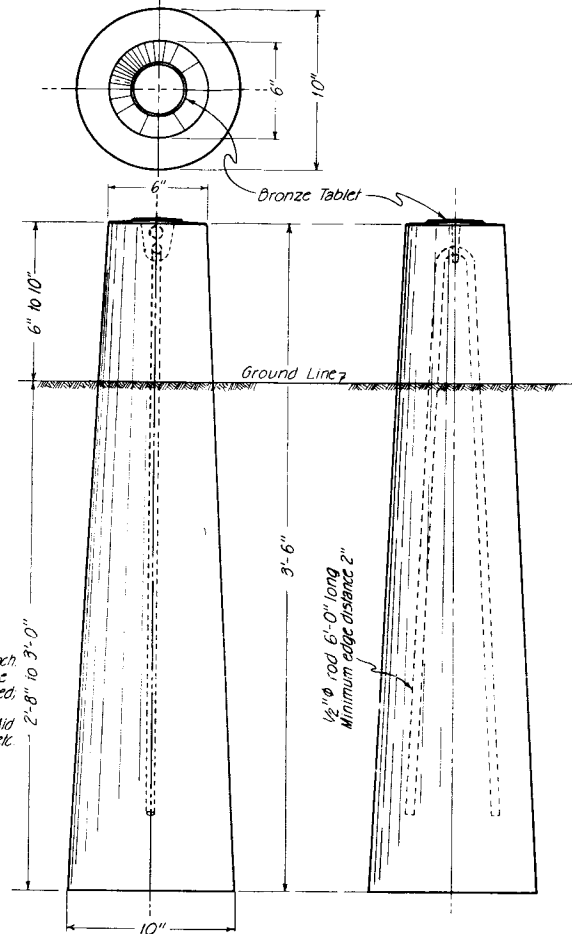
SECTION B-B



SECTION A-A

DETAIL OF BRONZE TABLET FOR RIGHT OF WAY MARKER POST AND BENCH MARK

RIGHT OF WAY MARKER POST



STANDARD M-7-C

FEDERAL ROAD DIVISION NO.	DISTRICT	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLORADO	C/2-0024-02	2.A	

Rev. 4-4-56, Added Bridge Bench Mark, J.C.R.

BENCH MARK

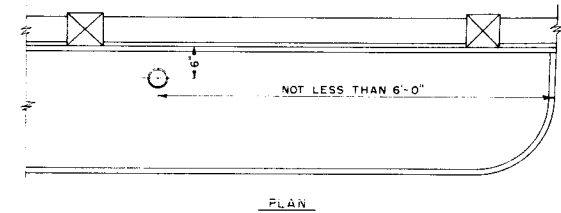
All work shall be done in accordance with Standard Specifications of the Colorado Department of Highways applicable to the project.

All exposed surfaces of the bronze tablet are to be ground to a smooth surface. All letters are to be depressed a minimum of 1/16 inch. Information on the bronze tablet indicated by pin lines is to be stamped in field by the engineering party after marker is placed. 3/16 inch letters and figures to be used. Project designation on tablets shall be properly shown (i.e., I for Fed. Aid Interstate, F for Fed. Aid Primary, S for Fed. Aid Secondary, etc. & C for State Projects. See details below.)

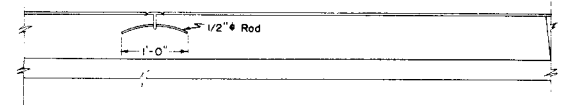
Bronze Bench Mark Tablets will be furnished by the Department at no expense to the Contractor.

Installation of Bronze Bench Mark Tablets will not be paid for directly, but shall be included in the price bid for Concrete.

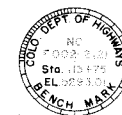
Note: Where 2'-0" safety curbs are not used place marker in center of curb.



PLAN



ELEVATION



One marker to be placed on Bridges as shown. The station shown on marker shall be the center-line stationing directly opposite the marker.

COLORADO DEPARTMENT OF HIGHWAYS STANDARD MARKER POSTS AND BENCH MARKS

Designed by R.E.L. Approved by J. Julian
Made by E.E.D. Checked by R.E.L. Date: Nov. 12, 1953

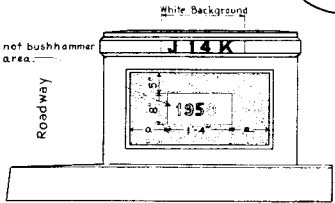
REVISIONS
 Rev 12-15-47 J.P.K.
 Rev 1-1-49 J.E.E.
 Rev 9-14-50 J.E.R.
 Rev 7-10-52 T.M.C.
 Rev 10-24-55 W.F.S.

STANDARD M-10-B.

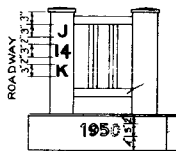
FED. ROAD DIST. NO.	STATE	CITY	SHEET NO.	TOTAL SHEETS
3	COLO.	0024-02	3	



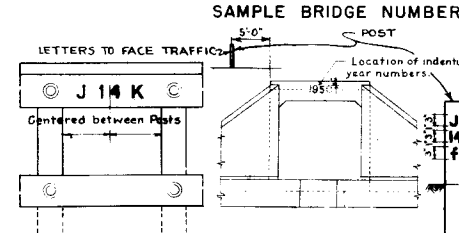
bcdefghijklmnopqrstuvwxyz



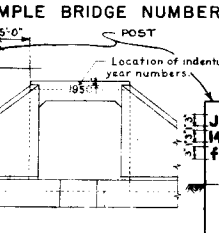
TYPICAL FOR CONCRETE ENDPOST



TYPICAL FOR STEEL HANDRAIL END POST



TYPICAL FOR TIMBER WING HANDRAIL



TYPICAL FOR LARGE BOX CULVERTS

GENERAL NOTES

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE COLORADO DEPARTMENT OF HIGHWAYS, APPLICABLE TO THE PROJECT.

COMPENSATION FOR THIS WORK SHALL BE INCLUDED IN THE ORIGINAL CONTRACT ITEMS AND WILL NOT BE PAID FOR AS A SEPARATE ITEM. THE SIZE, SHAPE AND SPACING OF THE LETTERS AND FIGURES SHALL BE IN ACCORDANCE WITH THE FULL SIZE SHOWN ON THIS SHEET. ADDITIONAL COPIES OF THIS FULL SIZE SHEET CAN BE OBTAINED FROM THE DEPARTMENT WITHOUT CHARGE.

THE YEAR NUMBERS ARE RECESSED IN CONCRETE $\frac{3}{16}$ " MINIMUM AS SHOWN INTO THE PANEL OF THE ENDPOST ON THE RIGHT HAND SIDE OF EACH BRIDGE END AND INTO THE FACE OF THE DOWNSTREAM HEADWALL OF CULVERTS AS SHOWN ON PLAN DETAILS. NUMBERS TO BE MADE OF WOOD, METAL OR OTHER SUITABLE MATERIAL, AND ATTACHED TO THE FORMS BEFORE CONCRETE IS POURED. THE YEAR NUMBER OF EACH STRUCTURE SHALL CORRESPOND WITH THE YEAR IN WHICH THE CONCRETE IS POURED.

THE STRUCTURE NUMBER SHALL BE STENCILED ON THE RIGHT HAND SIDE OF EACH BRIDGE END AS SHOWN ON THIS STANDARD AND AS SPECIFIED FOR MAJOR STRUCTURES OVER 20' CLEAR SPAN.

THE CORRECT NUMBER FOR EACH BRIDGE IS SHOWN IN THE LOWER RIGHT HAND CORNER OF THE DETAIL SHEETS FOR THAT BRIDGE. A PROPER WHITE BACKGROUND RECTANGULAR IN SHAPE AND EXTENDING THREE INCHES BEYOND THE LIMITS OF THE NUMBER SHALL BE PAINTED WITH TWO COATS OF ACCEPTABLE WHITE PAINT UNLESS AN APPROVED WHITE CONCRETE PAINT IS USED. BEFORE PAINTING THE SURFACE MUST BE THOROLY DRIED, CLEANED AND PROPERLY SIZED. ON TIMBER HANDRAILS THE WHITE PAINT USED ON THE BRIDGE WILL BE SATISFACTORY.

AFTER THE WHITE BACKGROUND HAS DRIED SUFFICIENTLY, THE CORRECT STRUCTURE NUMBER SHALL BE CAREFULLY STENCILED ON IT. WITH TWO COATS OF SECOND FIELD COAT DARK OR EXTERIOR BLACK PAINT (AS SPECIFIED UNDER ITEM 36 PAINTS AND PAINTING) THE BRACES OF THE STENCILED LETTERS AND FIGURES SHALL BE CAREFULLY FILLED IN BY HAND TO MAKE SOLID FIGURES.

SUFFICIENT TIME BETWEEN SUCCESSIVE COATS SHALL BE ALLOWED TO PERMIT THOROUGH DRYING.

MINOR STRUCTURES WITH CLEAR SPANS 15 TO 20 FEET INCLUSIVE SHALL BE STENCILED WITH STRUCTURE NUMBER THUS W-18-8 ON 4"x4"x6" TIMBER POST TO BE FURNISHED AND PLACED BY THE CONTRACTOR. POST SHALL BE PLACED 4 FT. 3" OUTSIDE THE ROADWAY SHOULDER. THIS SHALL BE CONSIDERED SUBSIDIARY WORK AND WILL NOT BE PAID FOR AS A SEPARATE ITEM.

COLORADO
 DEPARTMENT OF HIGHWAYS
 STANDARD
 LETTERS AND FIGURES
 FOR
 YEAR NUMBERS AND
 STRUCTURE NUMBERS

Designed by GHD
 Made by WPM
 Checked by

Approved by *[Signature]*
 Bridge Engineer
 Date: June 3, 1948

STANDARD M-19-D SPECIFICATIONS (Work By Contractor)

FED. ROAD DISTRICT NO.	DISTRICT	SHEET NO.	TOTAL SHEETS
9	COLO.	4	

Rev. 5-13-53, Specifications, J.C.R.
Rev. 12-4-53, Date Nails Deleted, D.L.V.
Rev. 2-11-54, Delineation by State Forces, J.C.R.

POSTS - Lodgepole Pine, Southern Yellow Pine or West Coast Douglas Fir, not less than six (6) inches in diameter, after being peeled and shaved in accordance with specifications.
PAINTING - Posts shall be painted with aluminum paint and a black band placed around each post as per details on this sheet. Number of coats and type of paint applied shall be in accordance with specifications.

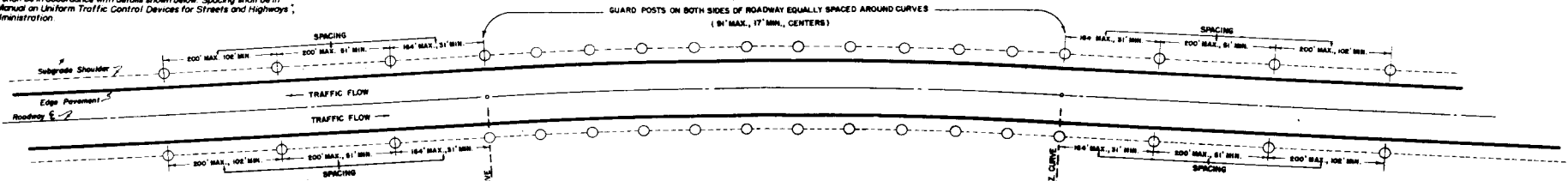
(Work By State Forces)

REFLECTIVE SHEETING - In accordance with the details hereon, State Forces will furnish and place the required 2" x 6" smooth surfaced reflective delineators fabricated from 3s - H14 aluminum alloy, minimum thickness 0.025", reflectorized with reflective sheeting strips or other approved reflective materials. Strips shall be suitable for placement around a curved surface.

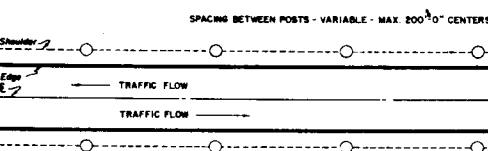
STANDARD TIMBER GUARD POSTS

Typical Installation on Curves

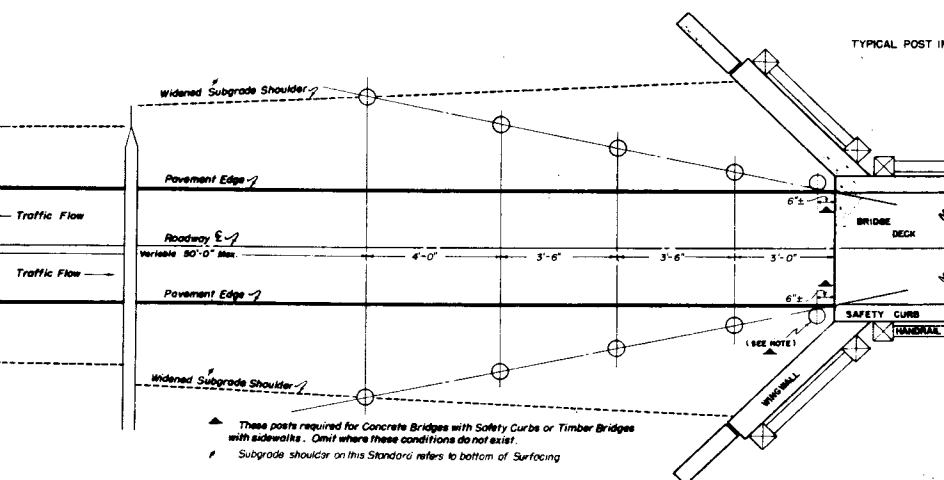
100' of guard posts on curves shall be in accordance with details shown below. Spacing shall be in accordance with Section 157, Table 1 of "Manual on Uniform Traffic Control Devices for Streets and Highways", 1948 by the Public Roads Administration.



Method of Placement on Tangents

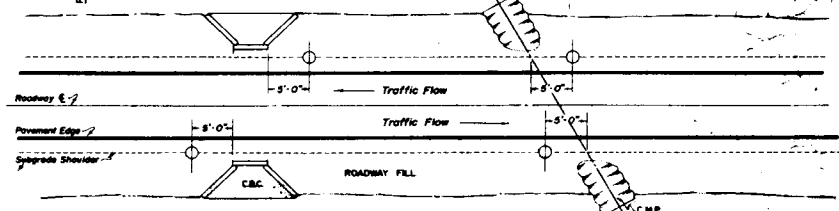


Typical Installation at Bridge Approaches

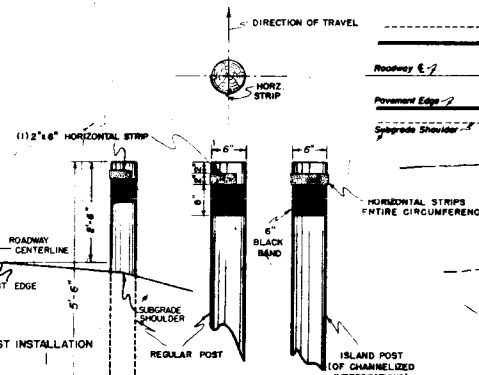
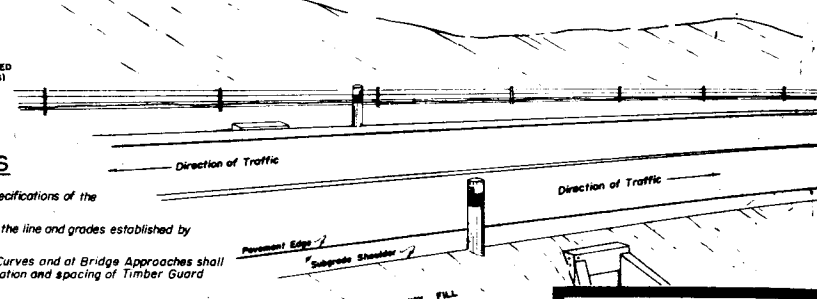


These posts required for Concrete Bridges with Safety Curbs or Timber Bridges with sidewalks. Omit where these conditions do not exist.
Subgrade shoulder on this Standard refers to bottom of Surfacing

Plan View Showing Placement at Isolated Minor Structures



Pictorial View Showing Location at Isolated Minor Structures



(Work By State Forces)
INSTALLATION DETAILS OF REFLECTORIZED STRIPS

GENERAL NOTES (Work By Contractor)

All work shall be done in accordance with the Standard Specifications of the Colorado Department of Highways applicable to the project.
All posts shall be set and tamped in, plumb and firm, to the line and grades established by the Engineer.
INSTALLATION of Timber Guard Posts on Tangents, Curves and at Bridge Approaches shall be in conformity with details on this sheet. The number, location and spacing of Timber Guard Posts is shown on plans.

(Work By State Forces)

Reflective delineators shall be furnished and installed by State Forces after the Contractor has finished his operations.
Installation of reflective delineators shall be in accordance with the following: Wrap Around Reflective Sheeting Strips shall be installed horizontally one (1) sheet on all posts. Island posts shall have Wrap Around Reflective Sheeting Strips placed horizontally to cover entire circumference of post.
On Divided Highways and Islands, Reflective Sheeting Strips shall be placed in a manner to obtain maximum visibility for the primary direction of travel. In all instances tests shall be made to insure the maximum effectiveness of reflective delineators.
All Traffic Islands shall be marked with Island Posts as indicated hereon.

**COLORADO
DEPARTMENT OF HIGHWAYS**

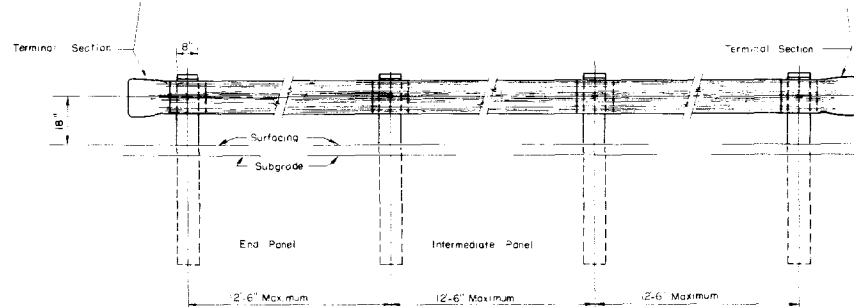
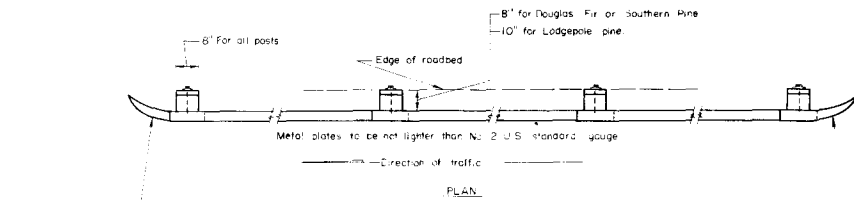
**STANDARD
TIMBER GUARD POSTS**

Designed by
Checked by

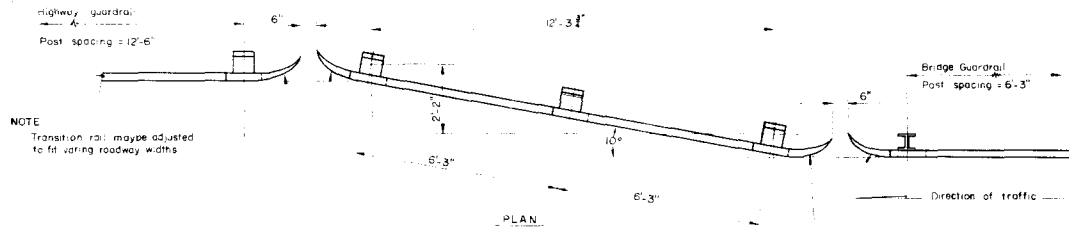
Approved by
Date: 11-25-1956

STANDARD M-21-C

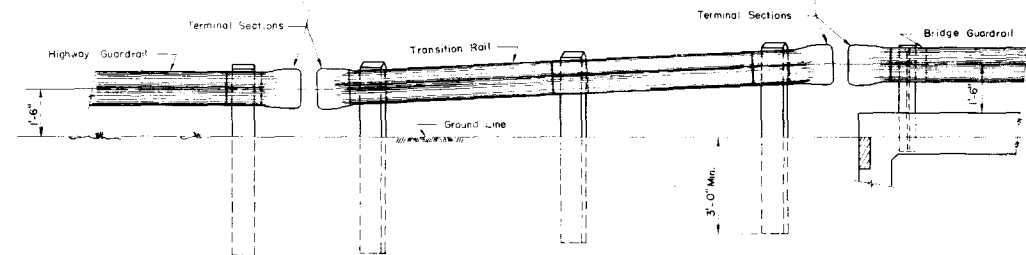
FED. ROAD DIST. NO.	DISTRICT	PROJECT NO.	SHEET NO.	TOTAL SHEETS
9	COLO.	C12-0023-02	5	



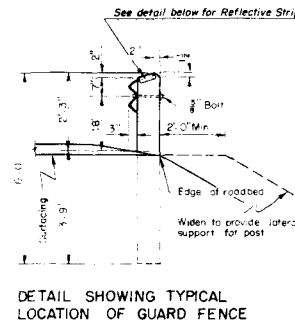
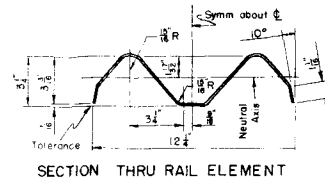
TYPICAL METAL PLATE GUARD RAIL



NOTE
Transition rail may be adjusted to fit varying roadway widths



TRANSITION RAIL AT BRIDGES ONLY



INSTALLATION DETAILS OF REFLECTORIZED STRIP (Work by State Forces)

GENERAL NOTES

All work shall be done according to the Standard Specifications of the Colorado Department of Highways, applicable to the project.

All wood posts shall be close grained Douglas Fir of the Coast Region, Dense Longleaf or Shortleaf Southern Pine or Lodgepole Pine.

All wood posts shall be square edged, full sawn, with tops beveled as shown. All bolt holes are to be drilled 1/8 inch larger than diameter of bolt before treatment is applied. All wood posts shall be pressure treated for the full length of the posts as provided for in the specifications.

Timber posts fabricated from Douglas Fir or Southern Pine shall be 8"x8" square. Timber posts fabricated from Lodgepole Pine shall be 8"x10" and shall be installed with the 8" face parallel to the center line of the roadway.

All wood posts shall be set and tamped in plumb and firm to the line and grades as directed by the engineer.

Metal plates shall not be galvanized, but shall be painted as provided for in the specifications.

Metal plates shall not be lighter than No. 12 U.S. standard gauge.

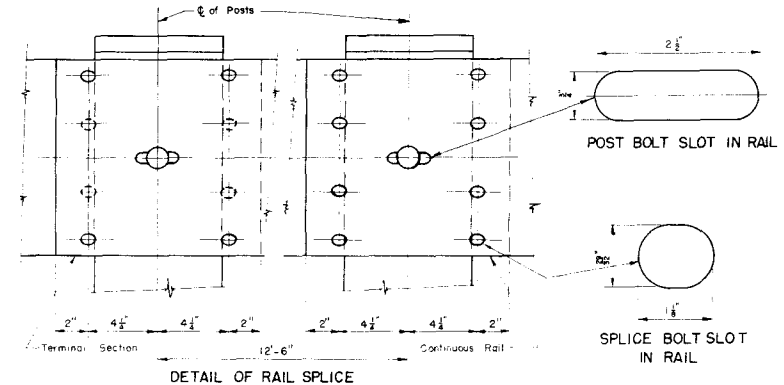
Standard galvanized cast iron O.G. or galvanized malleable cast washers shall be used under all bolt heads and nuts coming in contact with wood posts.

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

Where guard fences are constructed on the approaches to bridges, the fence at bridge shall be placed in line with the face of the curbing on the bridge.

(Work by State Forces)

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



DETAIL OF TERMINAL SECTION

GENERAL NOTES

All work shall be done according to the Standard Specifications of the Colorado Department of Highways, applicable to the project.

All wood posts shall be close grained Douglas Fir of the Coast Region, Dense Longleaf or Shortleaf Southern Pine or Lodgepole Pine.

All wood posts shall be square edged, full sawn, with tops beveled as shown. All bolt holes are to be drilled 1/8 inch larger than diameter of bolt before treatment is applied. All wood posts shall be pressure treated for the full length of the posts as provided for in the specifications.

Timber posts fabricated from Douglas Fir or Southern Pine shall be 8"x8" square. Timber posts fabricated from Lodgepole Pine shall be 8"x10" and shall be installed with the 8" face parallel to the center line of the roadway.

All wood posts shall be set and tamped in plumb and firm to the line and grades as directed by the engineer.

Metal plates shall not be galvanized, but shall be painted as provided for in the specifications.

Metal plates shall not be lighter than No. 12 U.S. standard gauge.

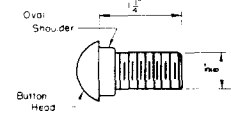
Standard galvanized cast iron O.G. or galvanized malleable cast washers shall be used under all bolt heads and nuts coming in contact with wood posts.

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

Where guard fences are constructed on the approaches to bridges, the fence at bridge shall be placed in line with the face of the curbing on the bridge.

(Work by State Forces)

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



DETAIL OF TERMINAL SECTION

GENERAL NOTES

All work shall be done according to the Standard Specifications of the Colorado Department of Highways, applicable to the project.

All wood posts shall be close grained Douglas Fir of the Coast Region, Dense Longleaf or Shortleaf Southern Pine or Lodgepole Pine.

All wood posts shall be square edged, full sawn, with tops beveled as shown. All bolt holes are to be drilled 1/8 inch larger than diameter of bolt before treatment is applied. All wood posts shall be pressure treated for the full length of the posts as provided for in the specifications.

Timber posts fabricated from Douglas Fir or Southern Pine shall be 8"x8" square. Timber posts fabricated from Lodgepole Pine shall be 8"x10" and shall be installed with the 8" face parallel to the center line of the roadway.

All wood posts shall be set and tamped in plumb and firm to the line and grades as directed by the engineer.

Metal plates shall not be galvanized, but shall be painted as provided for in the specifications.

Metal plates shall not be lighter than No. 12 U.S. standard gauge.

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.

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

Where guard fences are constructed on the approaches to bridges, the fence at bridge shall be placed in line with the face of the curbing on the bridge.

(Work by State Forces)

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

COLORADO
DEPARTMENT OF HIGHWAYS
STANDARD
METAL PLATE GUARD FENCE
(BEAM TYPE)

Designed by: *W. H. Newcomb*
Checked by: *W. H. Newcomb*
Approved by: *W. H. Newcomb*
Bridge Engineer
Date: *May 15, 1956*

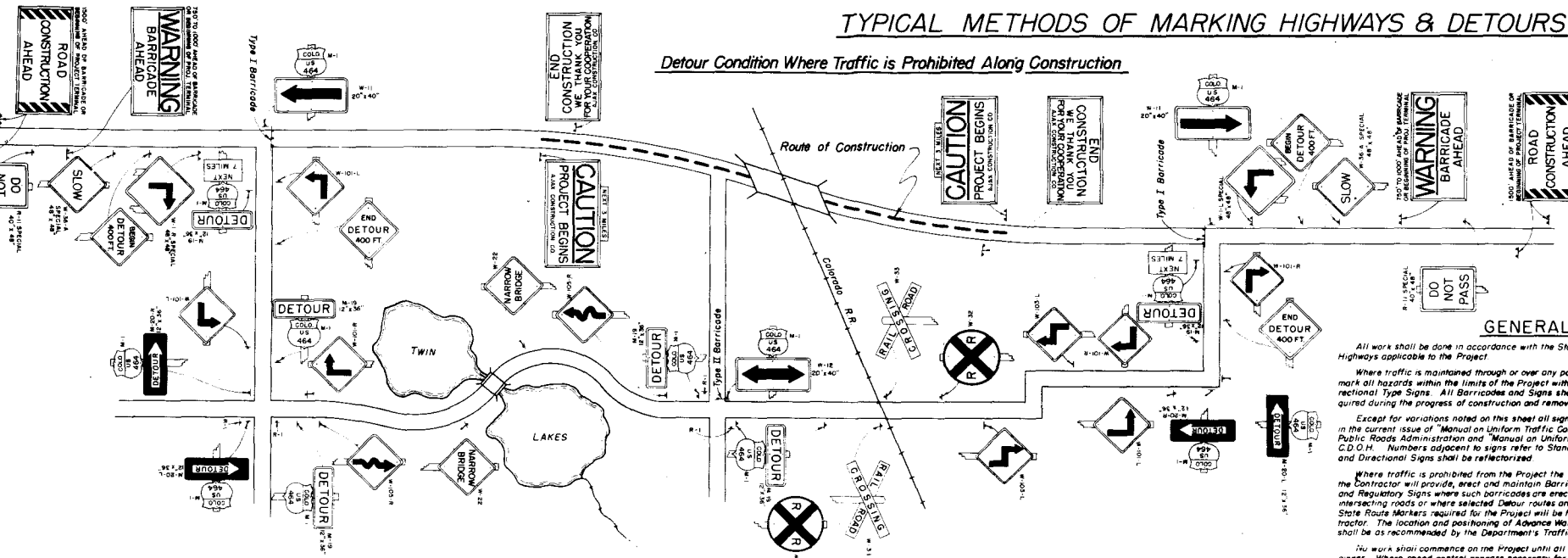
STANDARD ROADWAY CONSTRUCTION TRAFFIC SIGNS

STANDARD M-29-B
(SHEET 1 OF 2 SHEETS)

FED. ROAD DISTRICT	COLOR.	SHEET NO.	TOTAL SHEETS
8	0024-02	6	

TYPICAL METHODS OF MARKING HIGHWAYS & DETOURS

Detour Condition Where Traffic is Prohibited Along Construction



GENERAL NOTES

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

Where traffic is maintained through or over any part of the Project, the Contractor will be required to mark all hazards within the limits of the Project with well maintained Barricades, Warning Signs and Directional Type Signs. All Barricades and Signs shall be moved, added to, changed or removed as required during the progress of construction and removed entirely when project is completed.

Except for variations noted on this sheet all signs will be in conformity with the specification outlined in the current issue of "Manual on Uniform Traffic Control Devices for Streets & Highways" by the U.S. Public Roads Administration and "Manual on Uniform Traffic Control Devices for Streets and Highways," C.D.O.H. Numbers adjacent to signs refer to Standards in the manual. Standard Warning, Regulatory and Directional Signs shall be reflectorized.

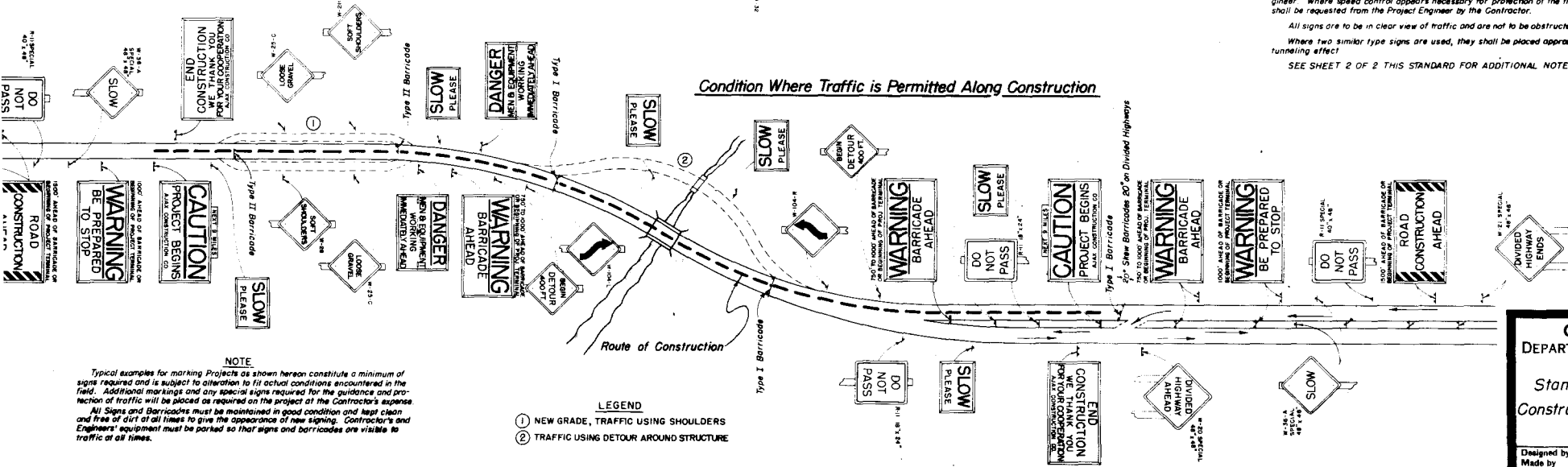
Where traffic is prohibited from the Project the Detour will be marked by the Department except that the Contractor will provide, erect and maintain Barricades complete with approved Directional Arrows and Regulatory Signs where such barricades are erected and maintained at the ends of the Project and intersecting roads or where selected Detour routes are in advance of the actual project terminal. U.S. or State Route Markers required for the Project will be furnished by the Department and installed by the Contractor. The location and positioning of Advance Warning Signs, Barricades and Speed Control Signs shall be as recommended by the Department's Traffic Operations Section.

No work shall commence on the Project until all Warning Signs are in place and approved by the Engineer. Where speed control appears necessary for protection of the travelling public, such speed control shall be requested from the Project Engineer by the Contractor.

All signs are to be in clear view of traffic and are not to be obstructed by equipment, weeds or otherwise. Where two similar type signs are used, they shall be placed approximately 75 feet apart to avoid a tunneling effect.

SEE SHEET 2 OF 2 THIS STANDARD FOR ADDITIONAL NOTES AND DETAILS.

Condition Where Traffic is Permitted Along Construction



NOTE

Typical examples for marking Projects as shown hereon constitute a minimum of signs required and is subject to alteration to fit actual conditions encountered in the field. Additional markings and any special signs required for the guidance and protection of traffic will be placed as required on the project at the Contractor's expense. All Signs and Barricades must be maintained in good condition and kept clean and free of dirt at all times to give the appearance of new signing. Contractor's and Engineer's equipment must be parked so that signs and barricades are visible to traffic at all times.

LEGEND

- NEW GRADE, TRAFFIC USING SHOULDERS
- TRAFFIC USING DETOUR AROUND STRUCTURE

COLORADO
DEPARTMENT OF HIGHWAYS

Standard Roadway
Construction Traffic Signs

Designed by JCR Approved by J. J. Johnson
Made by JCR Engineer, South Platte
Checked by Date: July 22, 1953

shall be placed 3 feet to 5 feet ahead of the object to be illuminated. Particular care shall be taken to protect all signs and barricades from smoke and smudge arising from the use thereof.

Flashers used on Type I Barricade shall be of the Battery or Electrical Type. The illuminating element in a flashing amber beacon or signal shall be flashed continuously at a rate between one flash per minute which will be clearly distinguishable to traffic.

The duration in which Flashers will be left in operation will be governed by field conditions and subject to approval by the Engineer.

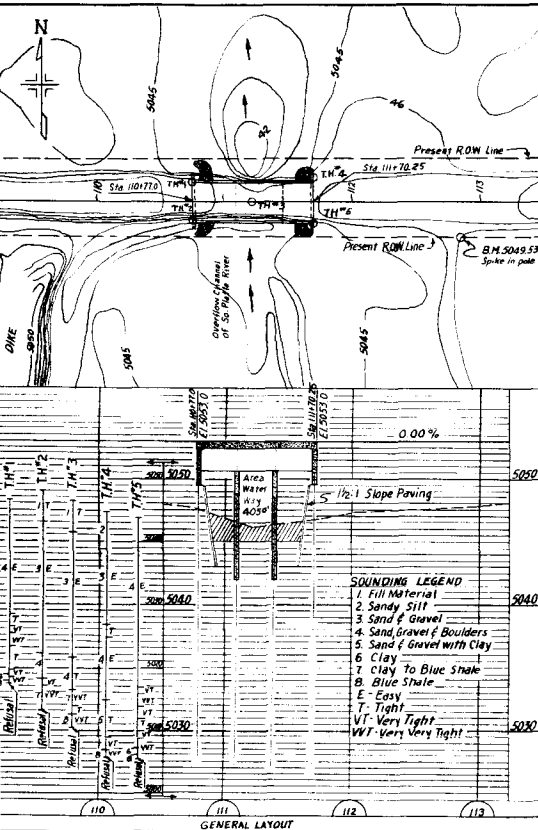
Flashing lights or other devices or symbols or the substitution of pressure sensitive symbols or other reflecting elements for pointed symbols will be permitted only after approval of such methods or materials by the Department.

The Department shall furnish and install the following as required outside the limits of the Project:

1. ROAD CONSTRUCTION AHEAD.....	Minimum 4
2. WARNING BE PREPARED TO STOP	Minimum 2
3. WARNING BARRICADE AHEAD.....	As Required
4. Standard Warning & Directional Signs.....	As Required

The Contractor shall furnish and install the following as required within the limits of the Project:

1. All Barricades.....	As Required
2. "CAUTION PROJECT BEGINS".....	Minimum 4
3. "DANGER MEN & EQUIPMENT WORKING IMMEDIATELY AHEAD".....	As Required
4. "END CONSTRUCTION WE THANK YOU FOR YOUR COOPERATION".....	Minimum 2
5. SLOW PLACARDS.....	As Required
6. Standard Warning & Directional Signs.....	As Required
7. Approved Directional Arrows & Regulatory Signs for Barricades.....	Minimum 4
8. Torches and Flares as follows: Type I Barricade.....	Minimum 3 Type II Barricade.....
9. Flashers - Type I Barricade.....	2 Required



BAR LIST ABUTMENT NO. 1 (ABUTMENT NO. 4 SIMILAR)

Mark	Size	Reqd.	Length	Type	Dimensions
405	1/2"	26	10'-0"	Str.	19' m
406	1/2"	8	4'-0"	Str.	
407	1/2"	4	3'-8"	Str.	
408	1/2"	4	3'-2"	Str.	
409	1/2"	8	3'-4"	Str.	
410	1/2"	2	3'-8"	Str.	
411	1/2"	2	3'-8"	Str.	
503	5/8"	1	33'-6"	Str.	
504	3/8"	1	3'-8"	Str.	
703	7/8"	1	33'-6"	Str.	
704	7/8"	1	3'-8"	Str.	

SUMMARY ABUTMENT NO. 1 (ABUTMENT NO. 4 SIMILAR)

499 Lin. ft. 1/2" @ 0.668 Lb./Lin. ft. = 333 Lb.
 72 Lin. ft. 5/8" @ 1.043 Lb./Lin. ft. = 75 Lb.
 72 Lin. ft. 7/8" @ 2.044 Lb./Lin. ft. = 147 Lb.
 Plus 1% for overrun = 5 Lb.
 Total = 560 Lb.

BAR LIST PIER NO. 2 (PIER NO. 3 SIMILAR)

Mark	Size	Reqd.	Length	Type	Dimensions
412	1/2"	33	9'-2"	Str.	19' m
413	1/2"	32	8'-10"	Str.	
414	1/2"	10	22'-9"	Str.	
505	5/8"	2	29'-9"	Str.	
802	1"	2	29'-9"	Str.	
803	1"	10	7'-0"	Str.	

SUMMARY PIER NO. 2 (PIER NO. 3 SIMILAR)

749 Lin. ft. 1/2" @ 0.668 Lb./Lin. ft. = 500 Lb.
 60 Lin. ft. 5/8" @ 1.043 Lb./Lin. ft. = 63 Lb.
 130 Lin. ft. 1" @ 2.670 Lb./Lin. ft. = 347 Lb.
 Plus 1% for overrun = 10 Lb.
 Total = 920 Lb.

BAR LIST SUPERSTRUCTURE

Mark	Size	Reqd.	Length	Type	Dimensions
401	1/2"	148	30'-8"	Str.	19' m
402	1/2"	73	30'-6"	Str.	
403	1/2"	188	4'-0"	Str.	
404	1/2"	596	6'-5"	Str.	
415	1/2"	120	5'-1"	Str.	
501	3/4"	162	33'-9"	Str.	
502	3/4"	79	34'-9"	Str.	
701	7/8"	8	33'-9"	Str.	
702	7/8"	8	27'-11"	Str.	
801	1"	32	5'-0"	Str.	
1001	1 1/4"	32	31'-0"	Str.	
1002	1 1/4"	16	30'-9"	Str.	
1003	1 1/4"	24	28'-0"	Str.	
1004	1 1/4"	24	28'-0"	Str.	
1005	1 1/4"	24	20'-0"	Str.	
1006	1 1/4"	16	8'-0"	Str.	

SUMMARY SUPERSTRUCTURE

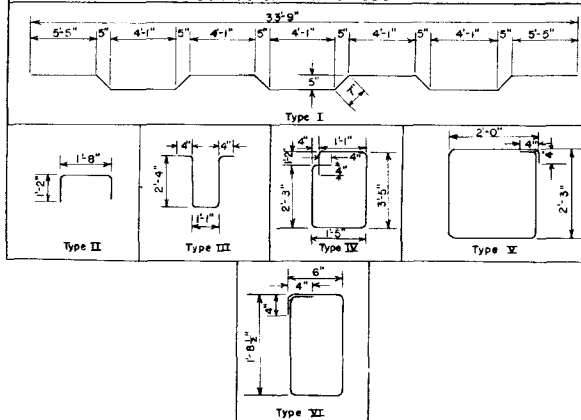
493 Lin. ft. 7/8" @ 2.044 Lb./Lin. ft. = 1008 Lb.
 1890 Lin. ft. 1/2" @ 0.668 Lb./Lin. ft. = 7943 Lb.
 8212 Lin. ft. 5/8" @ 1.043 Lb./Lin. ft. = 8566 Lb.
 160 Lin. ft. 1" @ 2.670 Lb./Lin. ft. = 427 Lb.
 3364 Lin. ft. 1 1/4" @ 3.400 Lb./Lin. ft. = 11438 Lb.
 Plus 1% for overrun = 293 Lb.
 Total = 29675 Lb.

SUMMARY OF QUANTITIES

em	Description	Unit	Super structure	Abut. No. 1	Pier No. 2	Pier No. 3	Abut. No. 4	Total
1c	Unclassified Excavation	Cu. Yd.						430
1a	Common Excavation (Slr.)	Cu. Yd.		19	12	12	20	63
1a	Structure Backfill (Class I)	Cu. Yd.			7	7		14
1a	Mechanical Tamping	Hrs.		4	1	1	4	10
2b	Treated Bridge Timber	Mft. bm		0.120			0.120	0.240
6a	Class "A" Concrete	Cu. Yd.	124	7.7	15.8	15.8	7.7	171.0
7	Reinforcing Steel (Inc. 1% for overrun)	Lb.	29675	560	920	920	560	32,655
8	Structural Steel (Inc. 1/2% for paint)	Lb.	2315		175	175		2,665
1a	Steel Piling (12" BP @ 53 Lb.)	Lin. ft.		132	128	132	152	544
6m	Concrete Slope & Ditch Paving	Cu. Yd.		23			21	44
5c	Metal Plate Guard Fence (Beam Type)	Lin. Ft.		25			25	50
6a	Metal Plate Guard Rail (Beam Type)	Lin. Ft.		175				175
6a	Drain Pipe 4"x1'6" (Concrete Floor)	Each		6				6
1	Removal of 1 Structure	Lump Sum						•
2	Timber Guard Posts	Each						24

BENDING DIAGRAMS

Dimensions are out to out of bars



GENERAL NOTES

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

ALL CONCRETE SHALL BE CLASS "A" AND AS EXTRACTED AS SPECIFIED.

ALL CONCRETE SURFACES EXPOSED TO WEATHER SHALL BE FINISHED BY POWER TROWELING TO A FINISH WHICH INCLUDES THE 1" INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

CONCRETE GUIDES, FLOOD SLABS, AND CURBS SHALL BE FINISHED MONOLITHICALLY.

FORMS FOR CONCRETE SURFACES EXPOSED IN THE FINISHED WORK SHALL BE CONSTRUCTED OF SPLIT-PLATE OR TONGUE AND GROOVE LUMBER 3" X 12" UNLESS FACED WITH PANEL BOARD.

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

FOUNDATIONS AND DEPTHS OF FOOTINGS SHOWN ARE IN ACCORDANCE WITH THE BEST AVAILABLE DATA AND WHEN DIFFERENT CONDITIONS ARE ENCOUNTERED THE BRIDGE ENGINEER WILL IN JUDICE AND DETERMINE IF REVISION IS NECESSARY.

ALL REINFORCING STEEL SHALL CONFORM TO ASTM SPECIFICATION A 305 SET ON THE LATEST EDITION THEREOF AND SHALL BE HYDROTESTED GRADE STEEL OF A DEFORMED TYPE. EACH BAR SHALL BE TAGGED WITH THE NUMBER, DESIGNATION AND THE STATION NUMBER OF THE PROJECT. REBAR SHALL NOT BE SPICED AND SECONDARY BARS WHEN SPICED SHALL LAP BE TO THE CENTER LINE OF THE BAR. FOR REINFORCING STEEL NOT SHOWN AS CLEAR SHALL BE TO THE CENTER LINE OF THE BAR.

ALL STRUCTURAL STEEL SHALL BE PAINTED ONE SHOP COAT OF ZINC CHROMATE AND TWO FIELD COATS OF ALUMINUM UNLESS OTHERWISE NOTED. EXCEPT THE UNPAINTED PORTION OF STEEL PILING NEED NOT BE PAINTED.

HANDRAIL BOLTS SHALL HAVE HEX HEADS, NUTS AND LOCK WASHERS UNLESS OTHERWISE SPECIFIED AND ALL BOLTS EXCEPT AS NOTED ARE 1/2" DIA. AND SHALL BE POWER DRIVEN.

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

WHEN EXCAVATING FOR FOOTINGS THE FINAL ONE FOOT IN DEPTH SHALL BE DONE BY HAND LAY METHOD.

IF A PERMIT OF THE ENGINEER FOR ANY REASON ANY SPICES THEY SHALL LAP 24 INCHES IN THE MIDDLE NEAR TOP OF BEAMS AND BUREN SHOWN NOTING THAT 12 INCHES OF CONCRETE UNDER THE BEAM AND 20 INCHES FOR TOP BARS FROM BOTTOM OF MEMBERS.

LOADING DATA

LIVE LOAD: AASHTO HS 20 (100-20-44)
 DEAD LOAD: ASSUMES 15 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE 1" INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

DESIGNING DATA

AASHTO 1951 UNIT STRESSES EXCEPT AS NOTED
 Reinforcing Steel f_s 20000 lbs. per sq. in.
 Structural Steel f_t 18000 lbs. per sq. in.
 $n = 10$

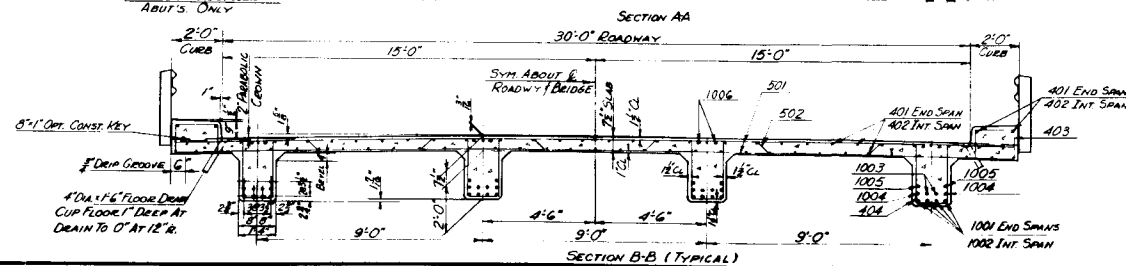
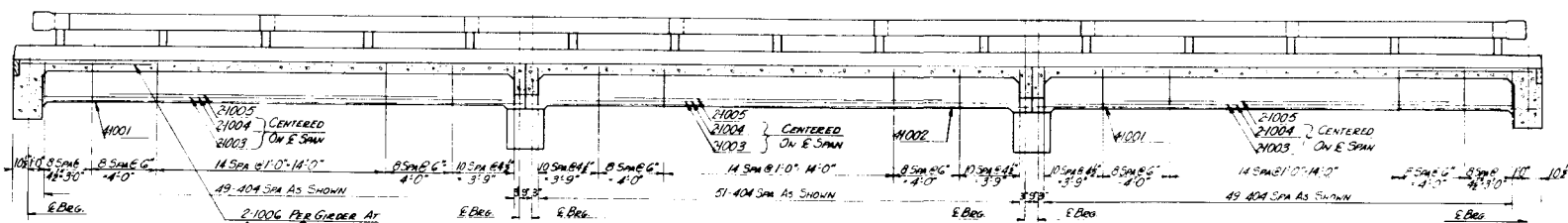
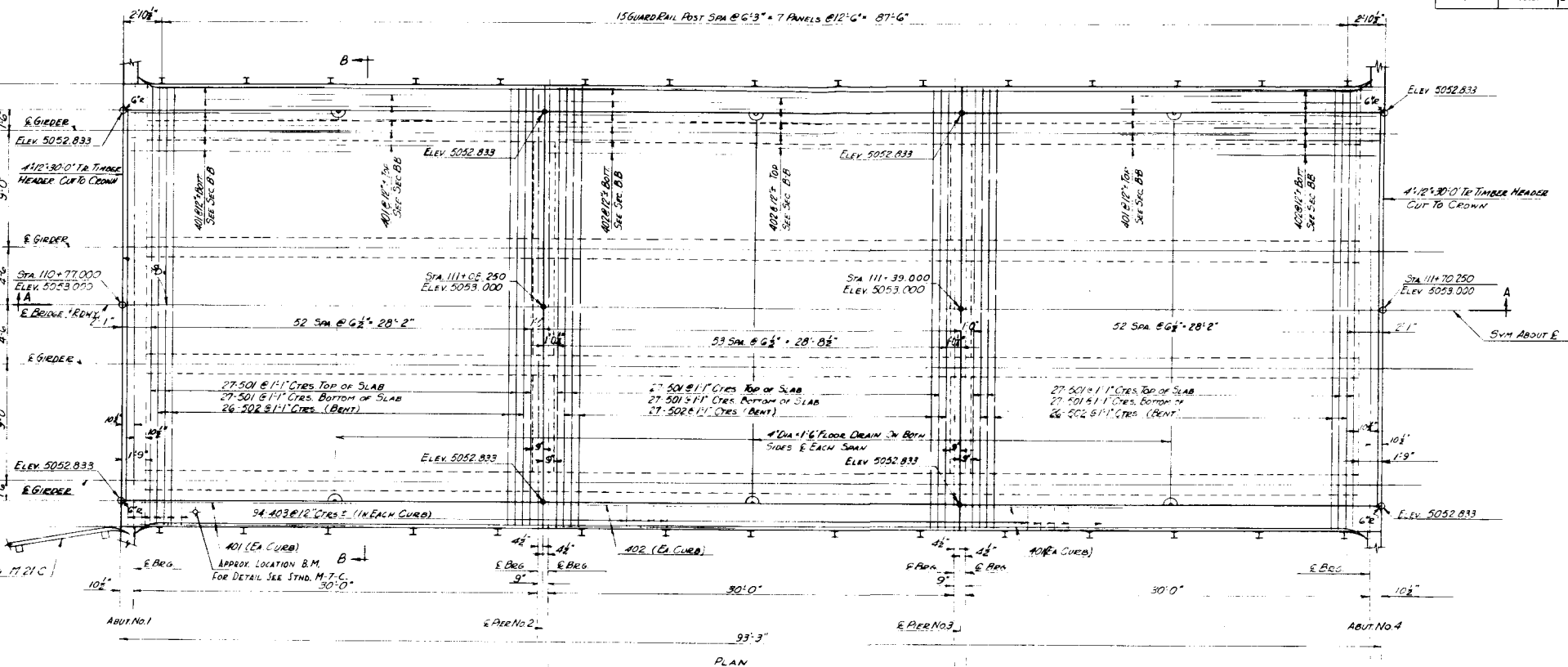
COLORADO DEPARTMENT OF HIGHWAYS

CONCRETE SLAB AND GIRDER BRIDGE
 3 SPANS @ 30' 0" - 50' SKIRM
 30' 0" ROADWAY - 2' 0" CURBS
 GENERAL LAYOUT, BAR LIST
 QUANTITIES, & GENERAL NOTES

Across Overflow Channel of So Platte River
 Sta. 110+77.0 to Sta. 111+70.25
 Near Henderson Sec. @ T. 2 S. R. 67 W.
 Designed by E.F.S. Approved by J.B. Bridge Engineer
 Checked by Date: Aug 13, 1957

STRUCTURE NO. E-17-B2

D

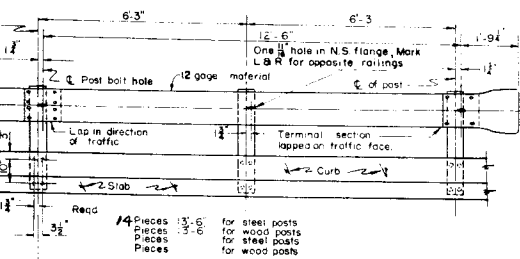
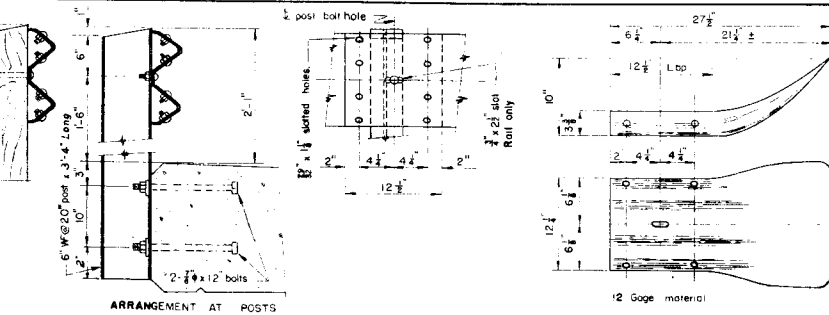


**COLORADO
DEPARTMENT OF HIGHWAYS**

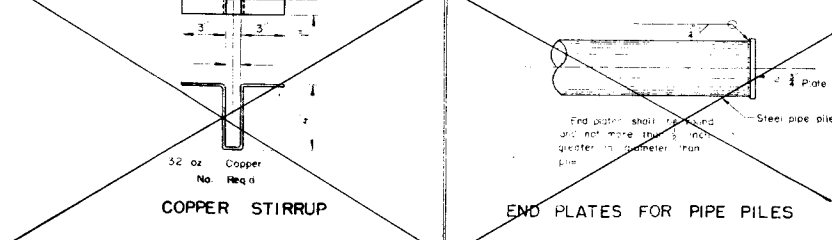
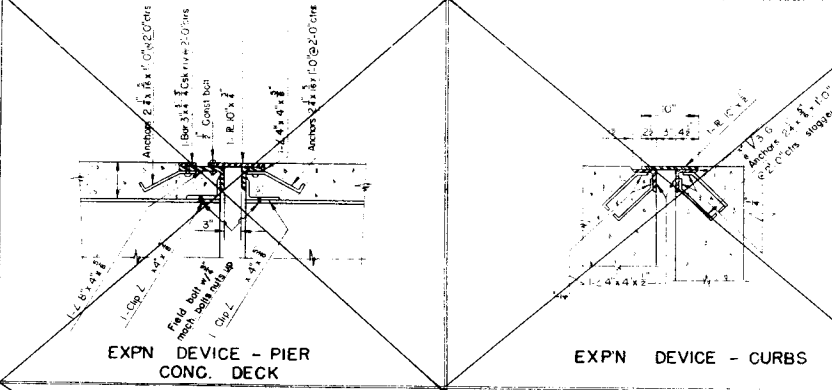
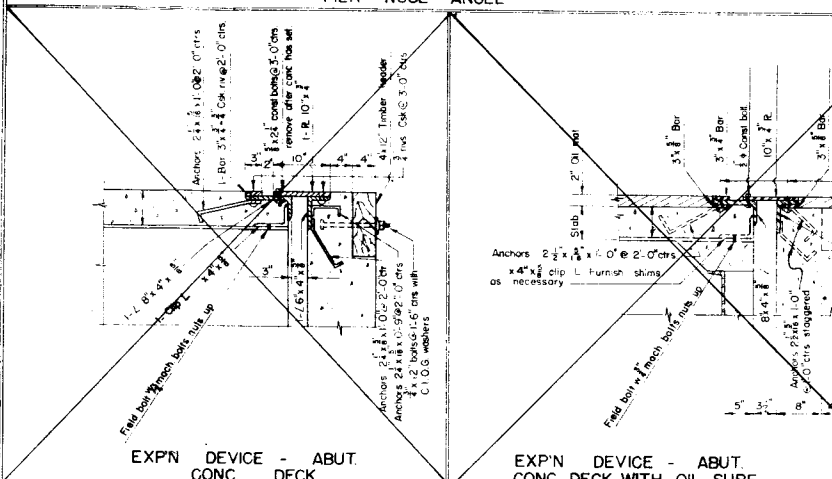
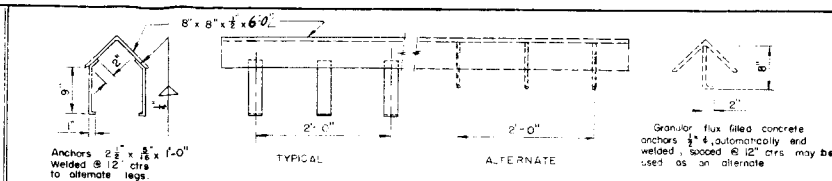
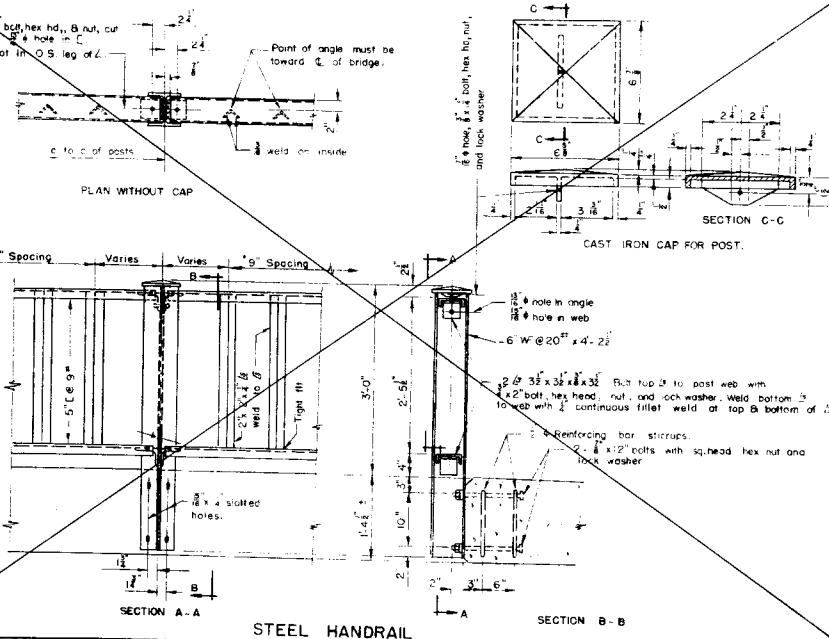
DETAILS OF SUPERSTRUCTURE

Address: OVERFLOW CHANNEL OF SO PLATTE RIVER
Sta. 110+71.000 To 111+70.250
 Name: HENDERSON Sec. 8 T.25 N. 67N
 Designed by: EFS Approved by: L. H. Kunkel
 Made by: JRE Bridge Engineer
 Checked by: Date: Aug. 13, 1957

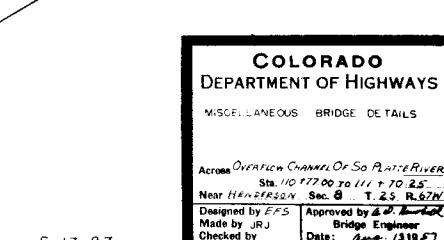
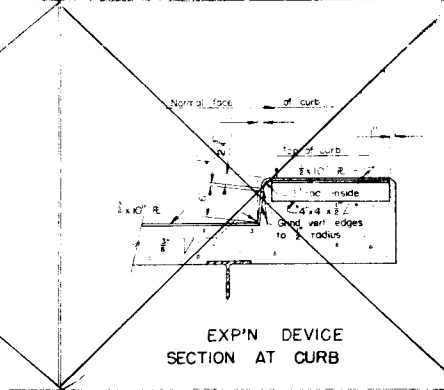
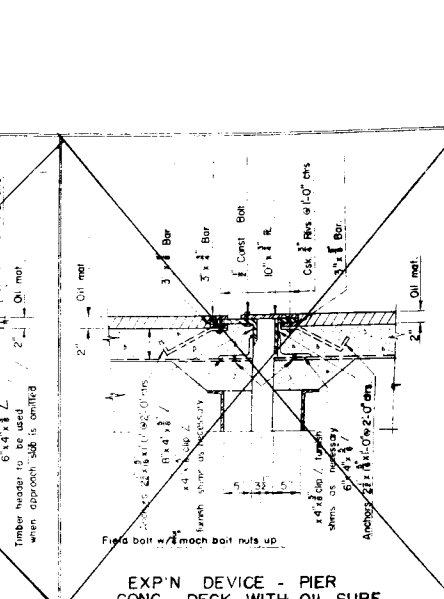
STRUCTURE NO. E-17-BZ



METAL PLATE GUARD RAIL



FED. ROAD DIV. NO.	DISTRICT	PROJECT NO.	SHEET NO.	TOTAL SHEETS
8	COLO.	C 12-0024-02	11	



COLORADO
DEPARTMENT OF HIGHWAYS

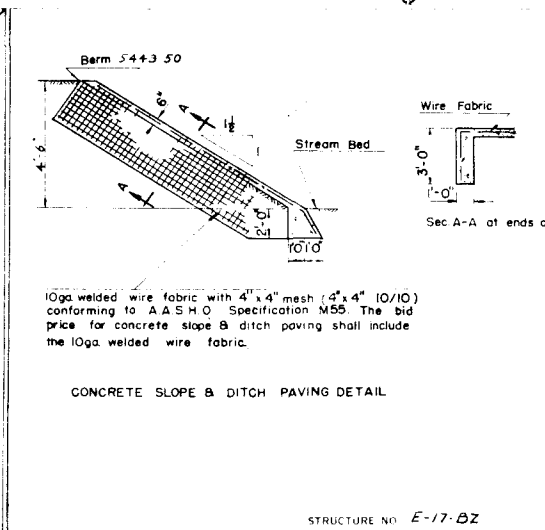
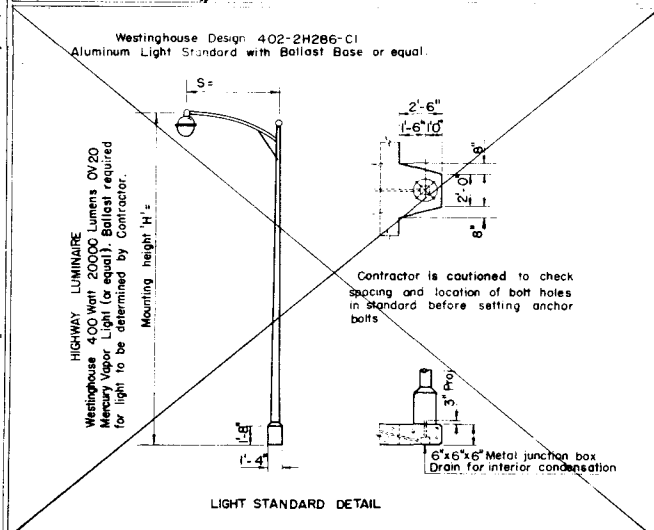
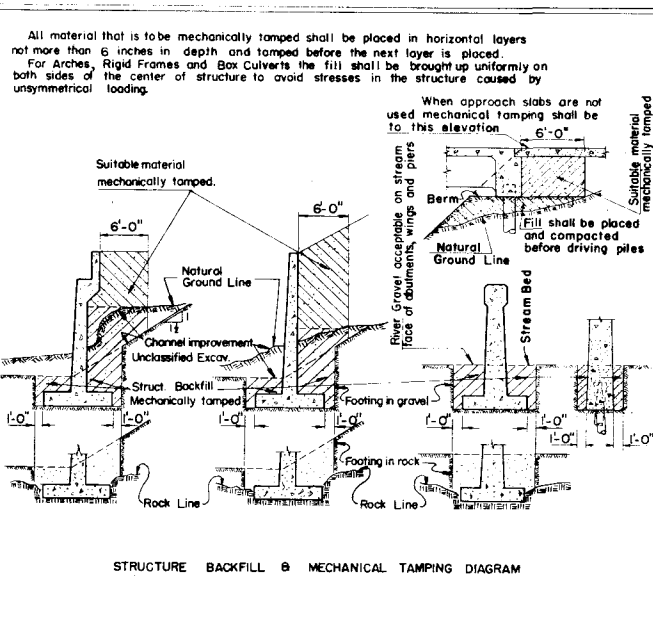
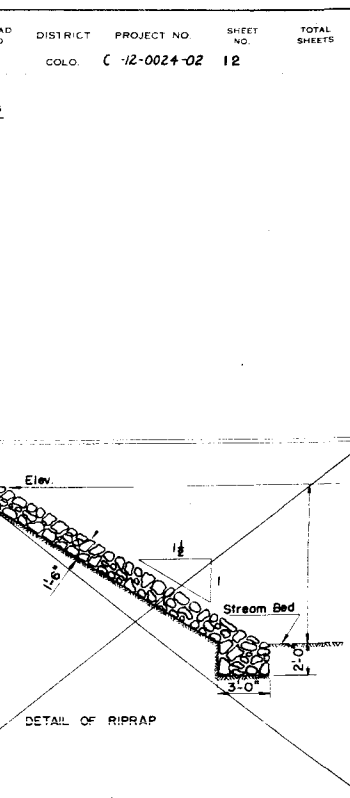
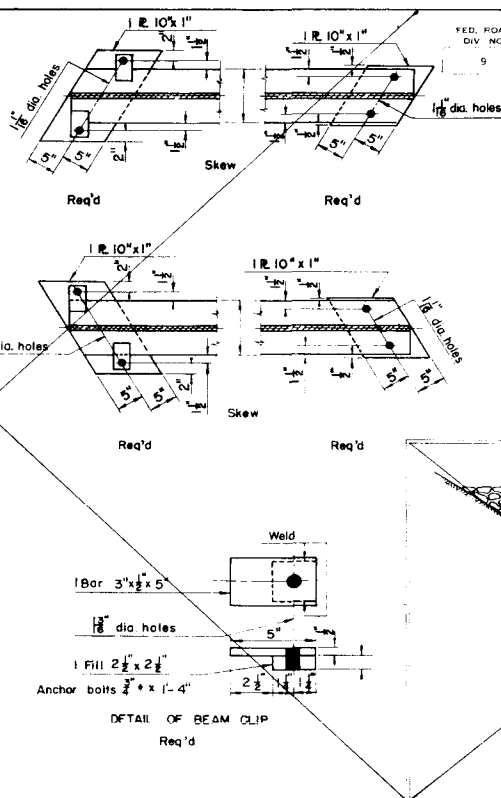
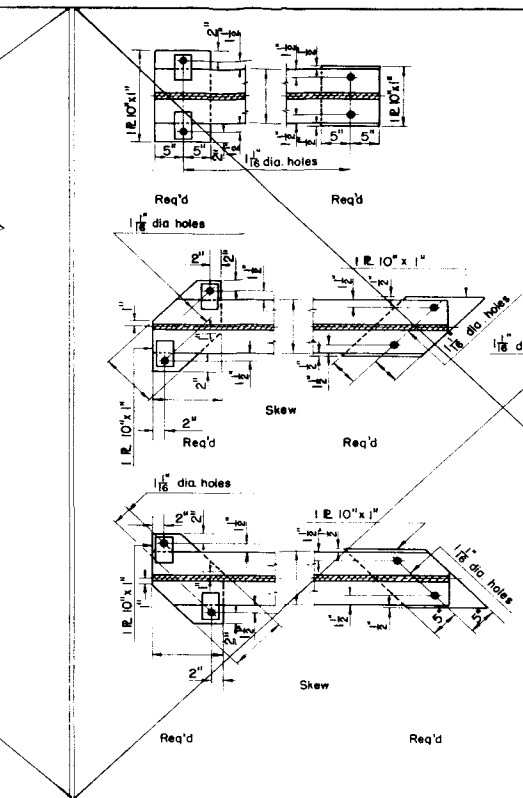
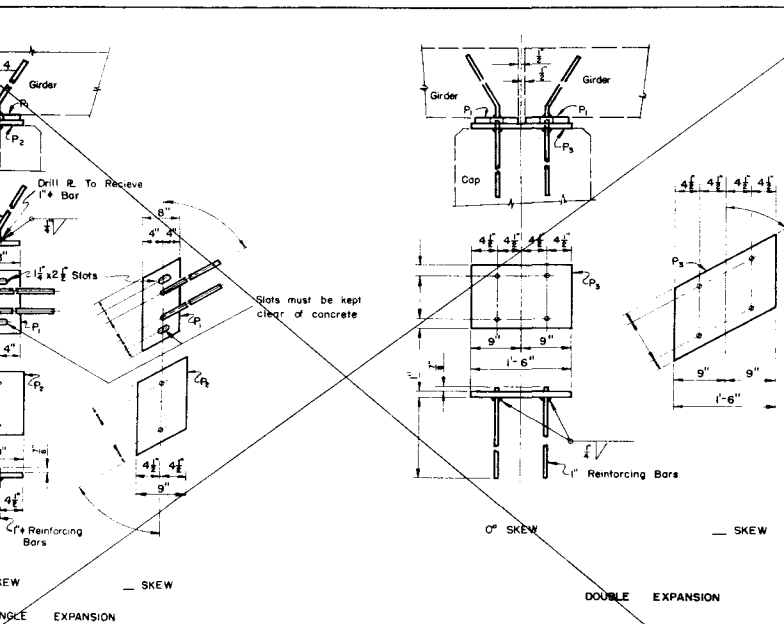
MISCELLANEOUS BRIDGE DETAILS

Across OVERFLOW CHANNEL OF SO PLATTER RIVER
Sta. 110+77.00 TO 111+70.25
Near HENDERSON Sec. 8 T. 25 R. 67N

Designed by EFS
Made by J.R.J.
Checked by J.R.J.

Approved by EFS
Bridge Engineer
Date: Aug 13/1957

STRUCTURE NO. E-17-BZ



COLORADO
DEPARTMENT OF HIGHWAYS

DETAILS OF : BEARINGS, SLOPE
PAVING, RIPRAP LIGHT STANDARD
TAMPING DIAGRAMS,

Across OVERFLOW CHANNEL OF SO PLATER RIVER
Sta. 110+77.000/6.111 +70.250
Near HENDERSON Sec. B 1.25 R. 67W

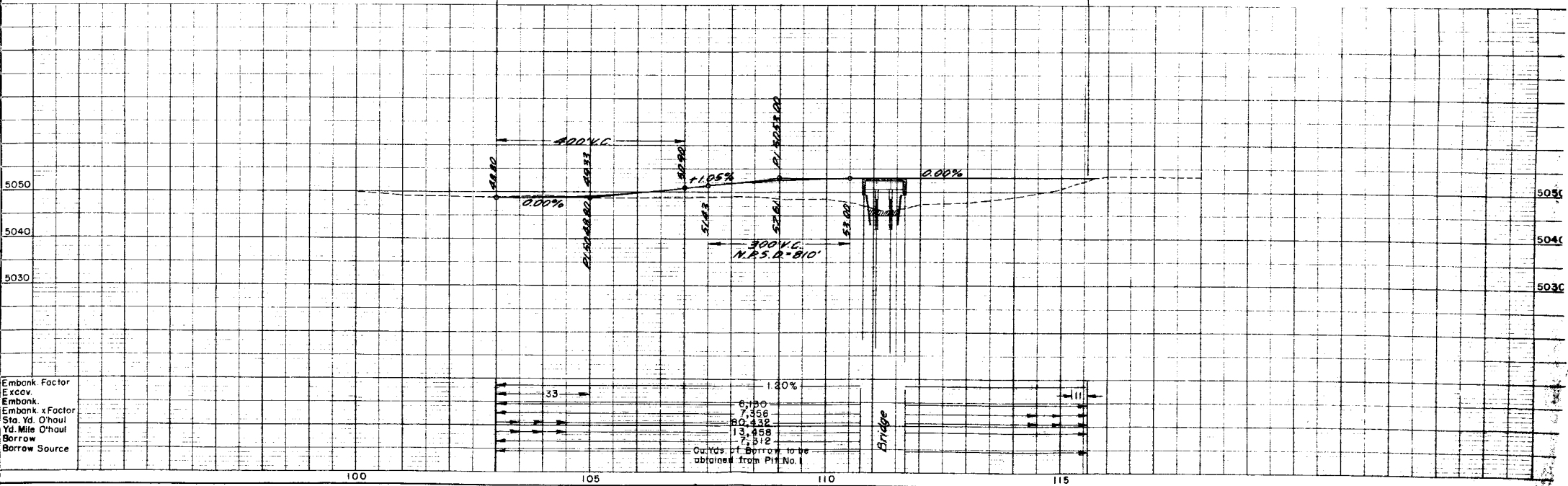
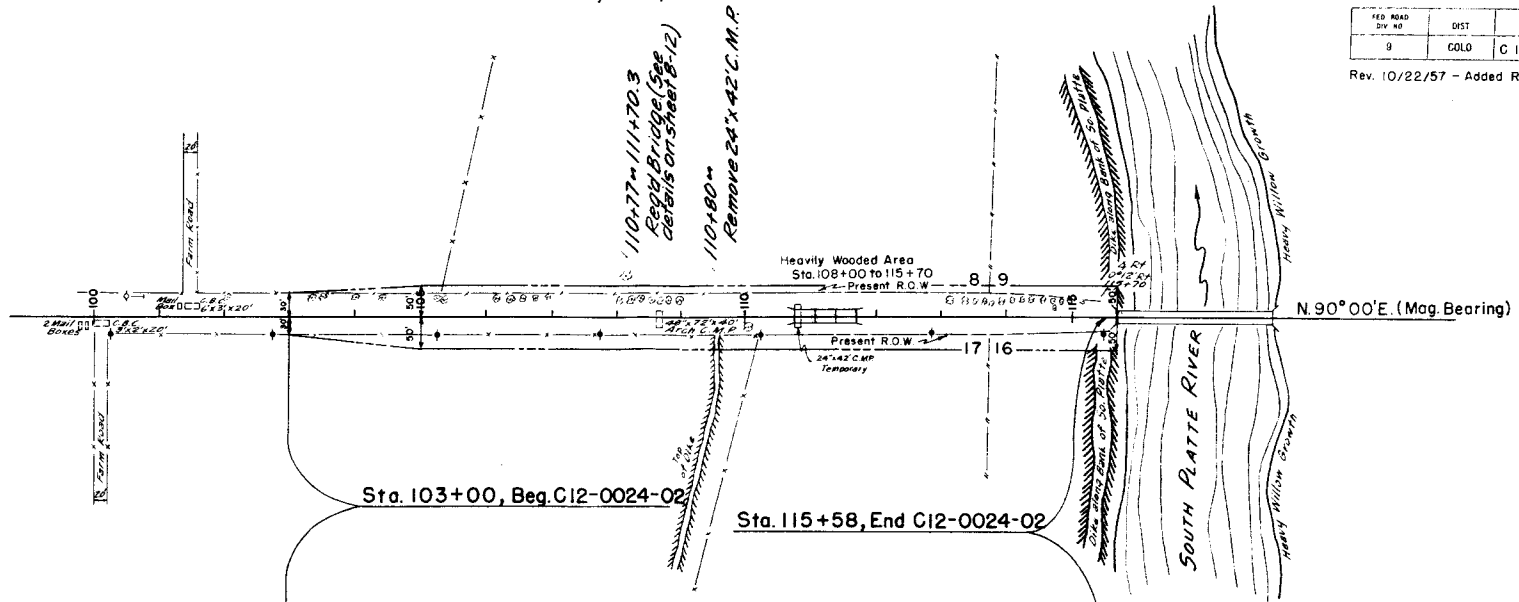
Designed by EFS
Made by EAB
Checked by

Approved by Bridge Engineer
Date: 13, 1957

Sec. 8, T.2S., 8 R. 67 W.

FED. ROAD DIST.	PROJ. NO.	SHEET NO.	TOTAL SHEETS
9	COLO	C 12-0024-02	13

Rev. 10/22/57 - Added R.O.W. - G.S.



Embank. Factor
Excav.
Embank.
Sta. Yd. Factor
Yd. Mile O'Haul
Borrow

Cut-Gravel Borrow to be obtained from Pit No. 1

110+77=111+70.3
Reg'd Bridge (See
Details on Sheet B-12)
E-17-BZ
110+80= Remove 24"x42" C.M.

