



**COLORADO**  
Department of  
Transportation

# DOCUMENT SEPARATOR SHEET

## REGION 5 – JUNE 2017 CONVERSION

To be placed at the beginning of each separator sheet.



r500002131

**Description:**

ROW Plans 11X17

**Route # and Mile Points:**

US 550

**Originating Office:**

ROW/Survey

**File Name:**

P.W.A. 2003-B Unit 2\_ROW(.PDF)

**Box Location:**

33 of 38

# COLORADO STATE HIGHWAY DEPARTMENT

## PLAN AND PROFILE OF PROPOSED PWA. DOCKET COLO.804-D PROJECT NO. 2003B UNIT NO.2 STATE HIGHWAY NO.19 OURAY COUNTY

### INDEX OF SHEETS

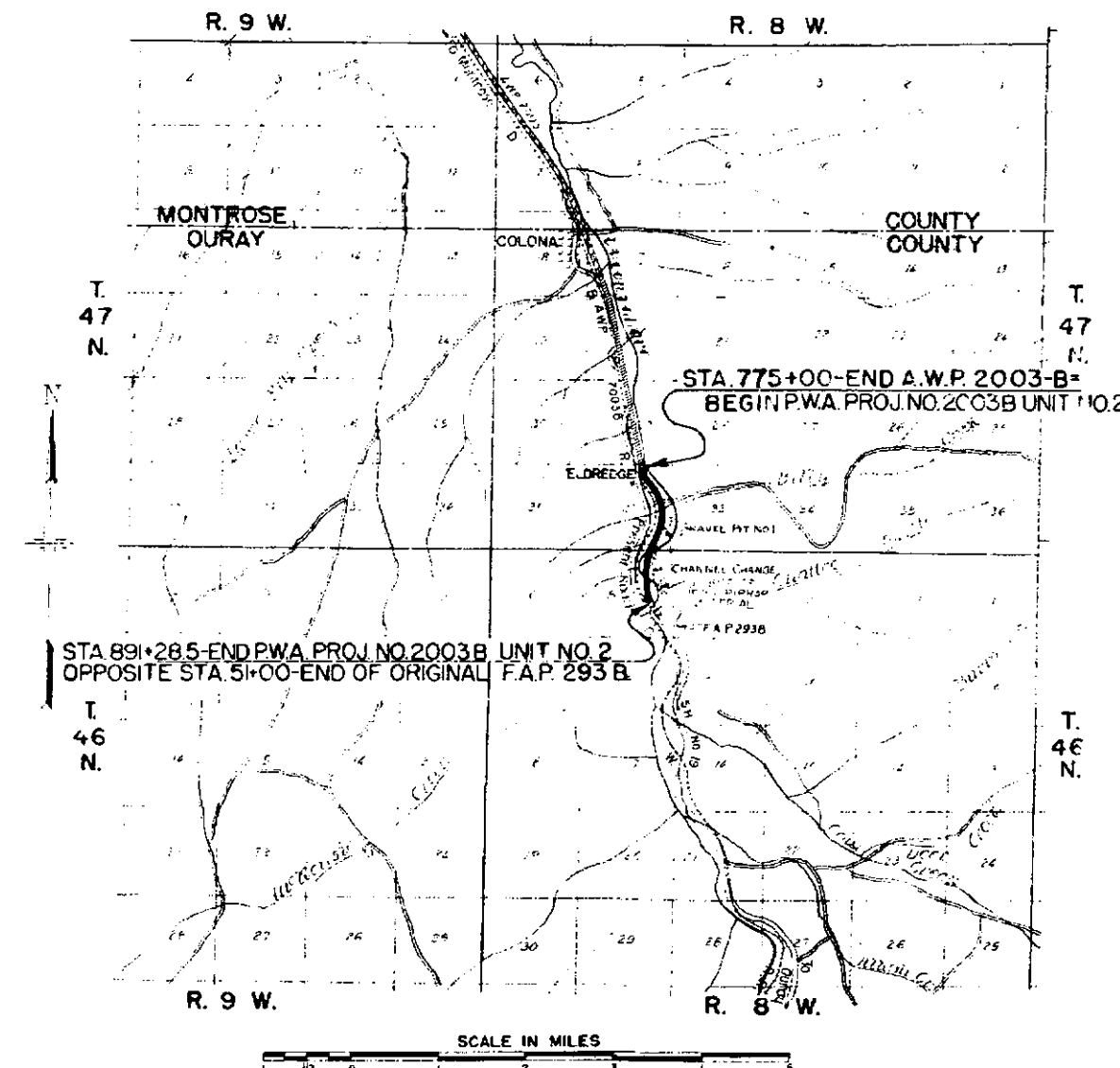
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| SHEET NO. | 1. SKETCH MAP AND TITLE                                        |       |
| 2         | TYPICAL SECTION AND SUMMARY OF APPROXIMATE QUANTITIES          |       |
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### SCALES ON ORIGINAL TRACINGS

ON PLAN 1 IN. = 100 FT.  
ON PROFILE 1 IN. = 100 FT. HORIZONTAL  
1 IN. = 10 FT. VERTICAL  
GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD  
GROSS LENGTH OF PROJECT 9,472.2 FEET = 1.793 MILES  
NET LENGTH OF PROJECT

### CONVENTIONAL SIGNS

2003.0202  
CENTER LINE OF SURVEY  
RIGHT OF WAY LINE  
SECTION LINE  
QUARTER SECTION LINE  
FENCE  
POLE LINE  
PRESENT ROAD



### NOTE

It is recommended that binders for this project go over the plan details with one of the following field representatives of this department:  
MR. J.J. KANDEMUER Division Engineer GRAND JUNCTION, COLORADO  
MR. J.A. KAVANAUGH Resident Engineer MONTROSE, COLORADO

RECOMMENDED FOR APPROVAL 3/25/21

Assistant Engineer

Chief Highway Engineer

RECOMMENDED FOR APPROVAL

DIST. ENG. BUREAU PUBLIC ROADS  
RECOMMENDED FOR APPROVAL

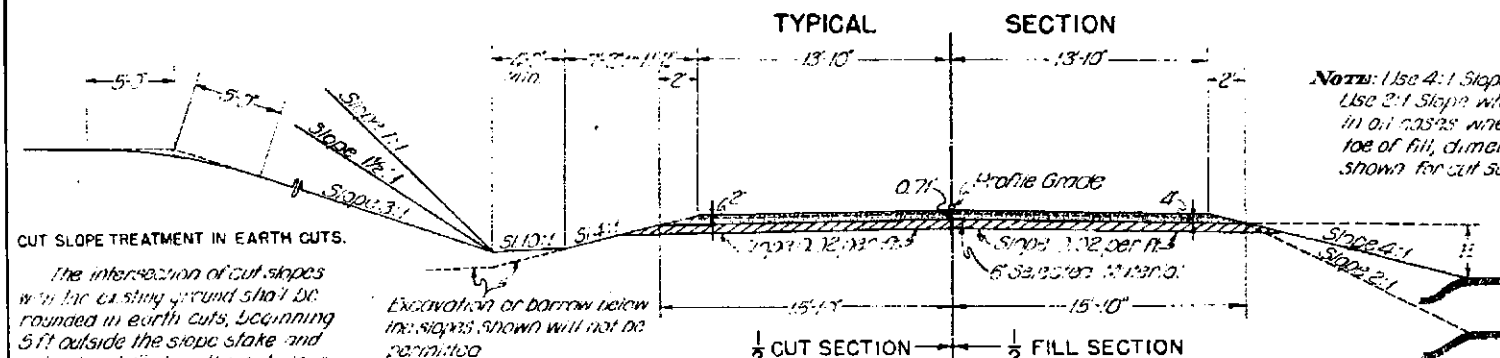
CHIEF ENG. BUREAU PUBLIC ROADS  
APPROVED

DIRECTOR BUREAU PUBLIC ROADS

# TYPICAL CROSS SECTION OF IMPROVEMENT AND SUMMARY OF QUANTITIES

| FED. ROAD DIST. NO. | STATE | P.W.A. PROJ. NO.  | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------------|-----------|--------------|
| 3                   | COLO. | 2003 B UNIT NO. 2 | 2         |              |

Rev. 4-16-37 h.b.m. Rev. of Cuts.  
Rev. 5-4-37 h.b.m. End of Proj.



**NOTE:** Use 4:1 Slope when "H" is 3'-0" or less.  
Use 2:1 Slope when "H" is over 3'-0".  
In all cases where borrow is obtained beyond toe of fill, dimensions and slope requirements shown for cut section shall apply.

## 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 widths of slope treatment to the actual slope distance. Quantities involved in slope treatment shall not be included in "Unclassified Excavation".

Excavation or borrow below the slopes shown will not be permitted.

6" Compacted Thickness of Base Course Surfacing to be placed in two courses approximately 2" thick for the top course and 4" thick for the bottom course.

The thickness of the base courses of surfacing is to be considered as approximately any. Surfacing material is to be placed at the rate of 25 tons per 100 lin. ft. of road for the top course and at the rate of 61 tons per 100 lin. ft. of road for the bottom course.

## GENERAL NOTES.

This project is to be constructed in conformity with the Standard Specifications of the Colorado State Highway Department, adopted August 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 as "Borrow" or on List of Structures as "Embankment", are to be classified and paid for as "Unclassified Excavation". These quantities are to be staked as part of the Original Excavation at locations indicated on the Plans. Slope stakes beyond the limits of the Typical Section are subject to change by the Engineer to fit Embankment requirements actually encountered on construction.

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

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

The entire project is to be cleared for the full width of the right of way 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 at the inlet and unless otherwise noted on the Plans.

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

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

During construction of this project, traffic will use the present traveled roadway. Between Sta. 890+ and end of project Sta. 891+ where the new work lies along the present traveled roadway, the Contractor shall at his own expense, prosecute construction in such a manner that traffic may readily pass over the road in safety. Also the Contractor shall at his own expense construct and maintain in safe condition, all temporary approaches to, and crossings of, intersecting roads.

All excavation necessary to construct Heavy Riprap to conform with details shown on plans is to be classified and paid for as "Unclassified Excavation".

## SUMMARY OF APPROXIMATE QUANTITIES

| ITEM NO. | DESCRIPTION                                        | UNIT     | PROJECT TOTAL |
|----------|----------------------------------------------------|----------|---------------|
| 10 a     | Clearing And Grubbing The Entire Project           | Lmp Sum  | •             |
| 11 b     | Removal of 2 Structures                            | Lmp Sum  | •             |
| 12 a     | Removing Fence                                     | Lin Ft   | 6500          |
| 13 c     | Unclassified Excavation                            | Cu. Yd   | 143000        |
| 13 d     | Cut Slope Treatment                                | Mi.      | 2             |
| 14 a     | Dry Rock Excavation (Structural)                   | Cu. Yd   | 40            |
| 14 b     | Dry Common Excavation (Structural)                 | Cu. Yd   | 700           |
| 14 c     | Wet Rock Excavation (Structural)                   | Cu. Yd   | 10            |
| 14 d     | Wet Common Excavation (Structural)                 | Cu. Yd   | 180           |
| 18 a     | Station Yard Overhaul                              | Sta Yd   | 372000        |
| 18 b     | Yard Mile Overhaul                                 | Yd. Mi.  | 8500          |
| 26 a     | Gravel Or Crushed Rock Surfacing                   | Ton      | 9000          |
| 26 c     | Overhaul Of Surfacing                              | Ton Mi.  | 100           |
| 44 b     | Miscellaneous Treated Timber                       | Mt. bm   | 0.3           |
| 46 a     | Glass "A" Concrete                                 | Cu. Yd   | 13            |
| 46 b     | Glass "B" Concrete                                 | Cu. Yd   | 39            |
| 47       | Reinforcing Steel                                  | Lb.      | 600           |
| 53 a     | 15" Corrugated Metal Culvert Pipe                  | Lin. Ft. | 142           |
| 53 b     | 18" Corrugated Metal Culvert Pipe                  | Lin. Ft. | 416           |
| 53 c     | 24" Corrugated Metal Culvert Pipe                  | Lin. Ft. | 54            |
| 53 d     | 30" Corrugated Metal Culvert Pipe                  | Lin. Ft. | 164           |
| 53 dx    | 30" C.M.P. (10 ga. Asphalt coated - Flayed Invert) | Lin. Ft. | 182           |
| 53 e     | 36" Corrugated Metal Culvert Pipe                  | Lin. Ft. | 486           |
| 53 g     | 48" Corrugated Metal Culvert Pipe                  | Lin. Ft. | 230           |
| 55 b     | 18" Corrugated Metal Siphon Pipe                   | Lin. Ft. | 237           |
| 63 b     | Heavy riprap                                       | Cu. Yd   | 11800         |
| 75 x     | Metal Plate Guard Fence                            | Lin. Ft. | 4278          |
| 76 b     | Barbed Wire Fence With Untreated Wooden Posts      | Lin. Ft. | 20500         |
| 76 g     | Barbed Wire Gates                                  | Each     | 11            |
| 76 h     | Driveway Gates                                     | Each     | 2             |
| 81 a     | Project Markers                                    | Each     | 1             |
| 81 b     | Right Of Way Markers                               | Each     | 36            |
| 85 b     | 18" Trash Guards                                   | Each     | 2             |
| 103 a    | 4" Cast Iron Valve & Valve Box                     | Each     | 1             |
| 103 b    | 4" Galvanized Metal Drain Pipe                     | Lin. Ft. | 140           |
| 110      | Rock Fill Dam                                      | Cu. Yd   | 100           |
| 126      | 30" No 12 Canal & Reservoir Gate (22 ft. frame)    | Each     | 1             |
| 127      | Trash Guard For Reservoir Gate                     | Each     | 1             |

## GRAVEL OR CRUSHED ROCK SURFACING

| STATION TO STATION | QUANTITY REQUIRED TONS | ESTIMATED OVERHAUL TON MILE | SOURCE                                                                                                                                                  |
|--------------------|------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 775+00 - 833+00    | 3340                   |                             | Pit No. 1 - Approximately 200 ft. left of Station 833+00. It is estimated that 10000 tons of acceptable surfacing material are available from this pit. |
| 833+00 - 891+28.9  | 5105                   | 80                          |                                                                                                                                                         |
| Road approaches    | 555                    | 10                          |                                                                                                                                                         |
| <b>TOTAL</b>       | <b>9000</b>            | <b>90</b>                   |                                                                                                                                                         |

## SOURCE OF EMBANKMENT MATERIAL

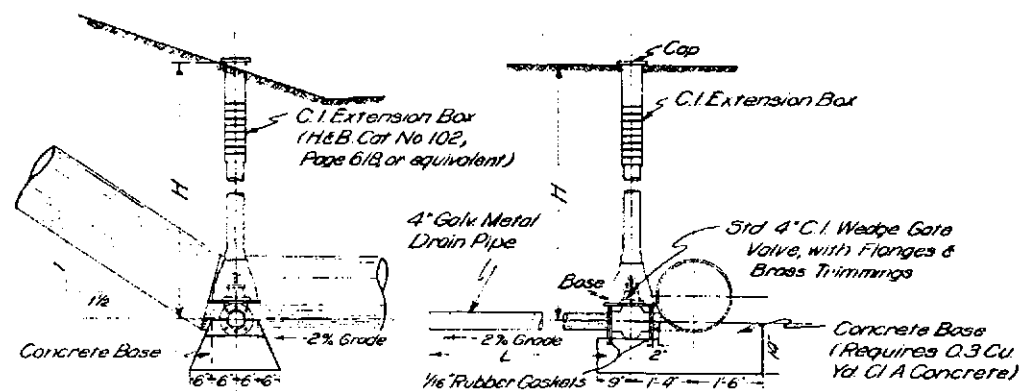
Embankment material is available on highway Right of way except those quantities indicated on Profile as "Borrow". This material, not on highway right of way, is estimated to be available from borrow pits as indicated in profile data and noted in tabulation below.

The estimated quantities and overhaul for Embankment Material are tabulated below:

| MATERIAL TO BE PLACED STATION TO STATION | QUANTITY REQUIRED CU. YDS. | OVERHAUL STA. YDS. TO MILE | SOURCE                                                                                                                                                                                             |
|------------------------------------------|----------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 775+00 - 825+65                          | 32,000                     | 199,200 3,470              | Pit No. 2, approx. 200' Left Sta. 825+00 in SE 1/4 NE 1/4 Sec. 32, T. 47 N., R. 8 W., N.M.P.M., and Pit No. 3, approx. 200' Left Sta. 828+50 in NE 1/4 SE 1/4 Sec. 32, T. 47 N., R. 8 W., N.M.P.M. |
| 825+65 - 827+20                          | 5,000                      | -                          |                                                                                                                                                                                                    |
| <b>TOTAL</b>                             | <b>37,000</b>              | <b>199,200 3,470</b>       |                                                                                                                                                                                                    |

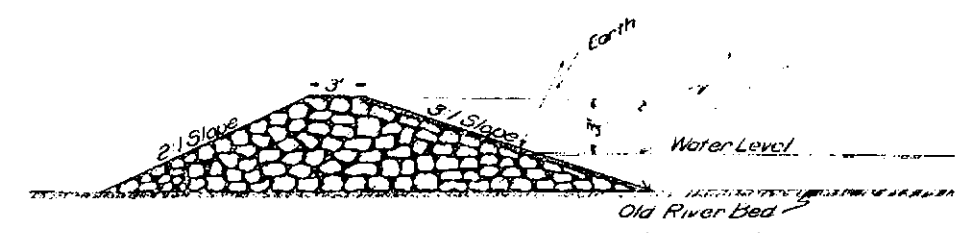
## FORCE ACCOUNT ITEMS:

|                                                              |         |   |
|--------------------------------------------------------------|---------|---|
| Remove & Rebuild 9'x12'x16" Flume Lt. Sta. 828+ Sta. 846+    | Lmp Sum | • |
| Move 2 Hay Stacks & Hay Stocker off R.O.W. Sta. 880+ to 881+ | Lmp Sum | • |



DETAILS OF STD. SIPHON DRAIN

Note: Item No 103a includes complete assembly of Valve, Flanges & Gaskets and Extension Box, Base & Cap.

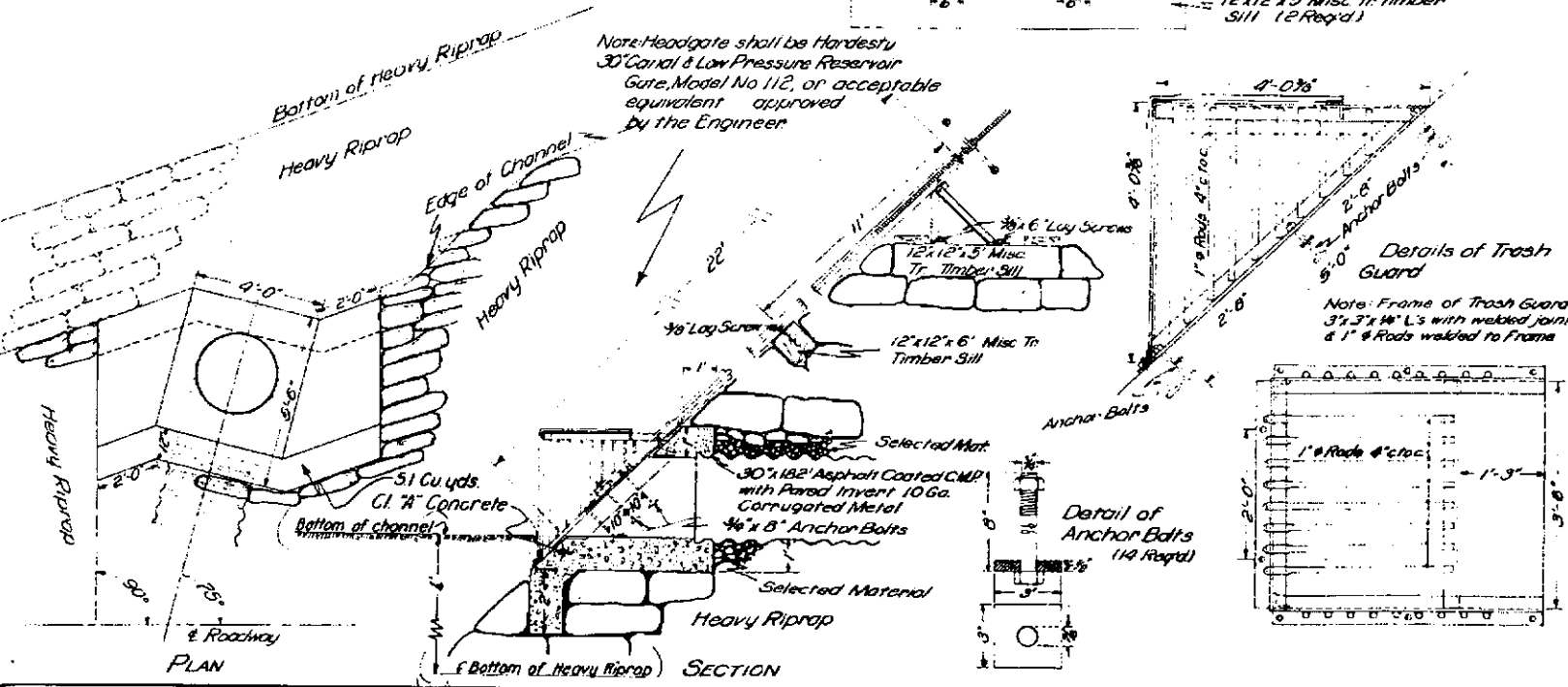
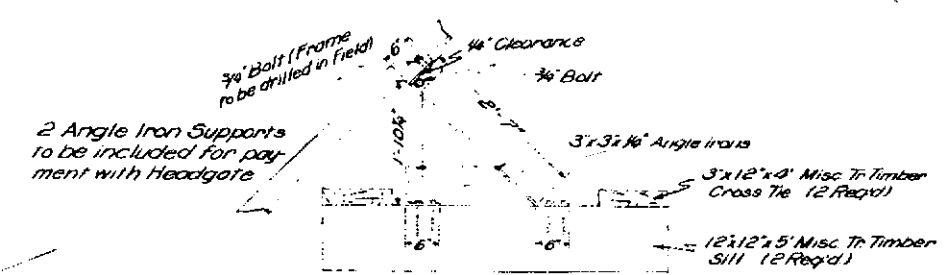


DETAILS OF ROCK FILLED DAM  
RT. STA. 864+50

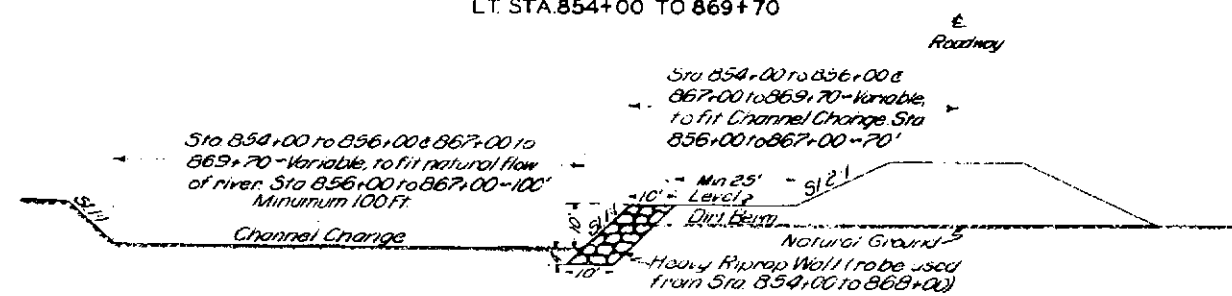
DETAILS OF HEADGATE, HEADWALL, & TRASH GUARD  
STA. 868+45

ITEM No 44B. MISC. TREATED TIMBER

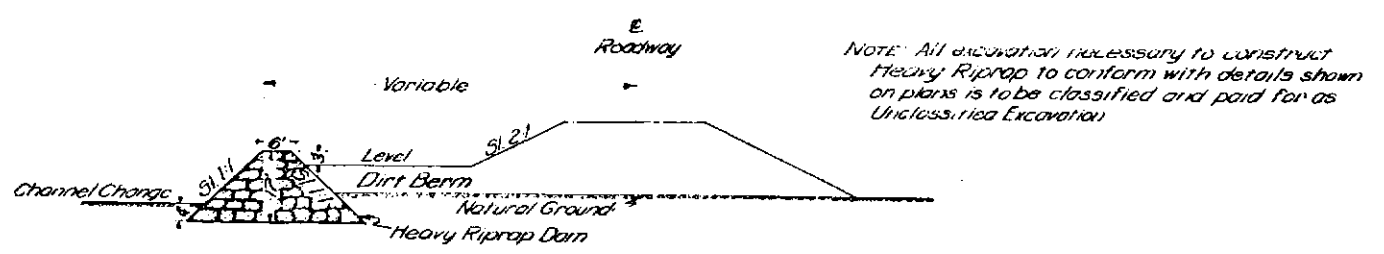
| Description | No. | Size    | Length | Mft. Lm |
|-------------|-----|---------|--------|---------|
| Sill        | 1   | 12"x12" | 6'-0"  | .072    |
| Sill        | 2   | 12"x12" | 5'-0"  | .120    |
| Tie         | 2   | 3"x12"  | 4'-0"  | .020    |
| Total       |     |         |        | .216    |



DETAILS OF CHANNEL CHANGE  
LT. STA. 854+00 TO 869+70

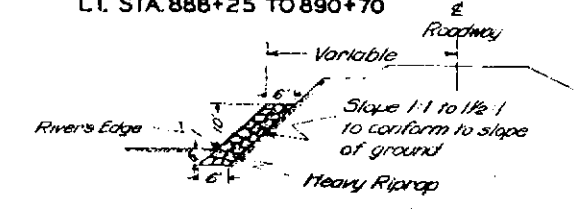


TYPICAL SECTION SHOWING CHANNEL CHANGE, RIPRAP WALL AND DIRT BERM



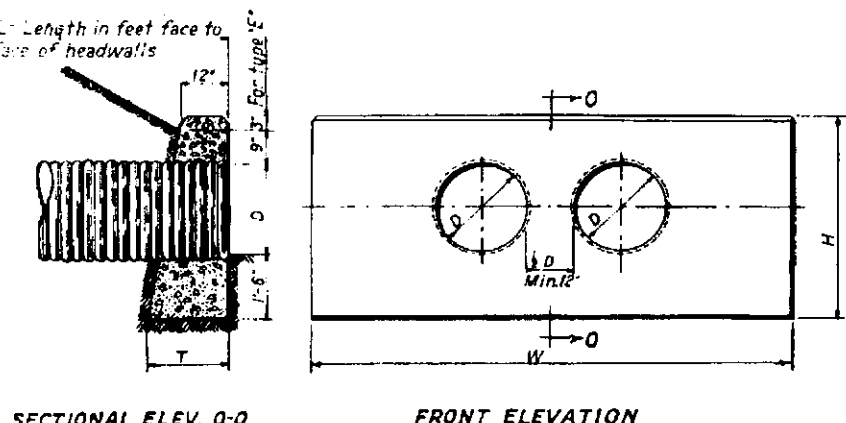
TYPICAL SECTION SHOWING RIPRAP DAM LT. STA. 868+00 TO 869+70

DETAILS OF RIPRAP WALL  
LT. STA. 888+25 TO 890+70



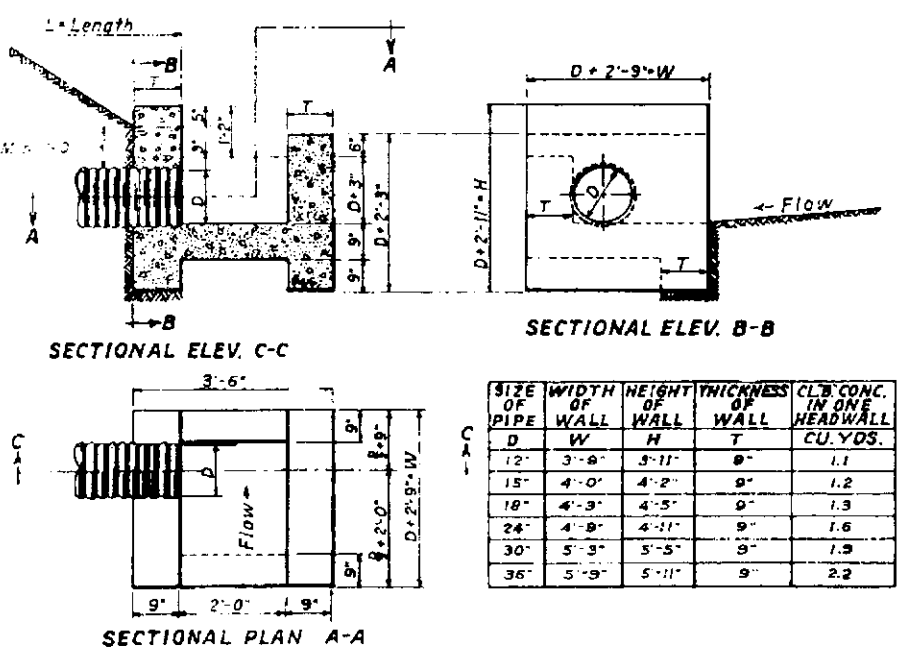
**COLORADO**  
STATE HIGHWAY DEPARTMENT

DETAILS OF CHANNEL CHANGE,  
HEAVY RIPRAP, ROCK FILL DAM,  
SIPHON DRAIN AND IRRIGATION  
HEADGATE AND TRASH GUARD

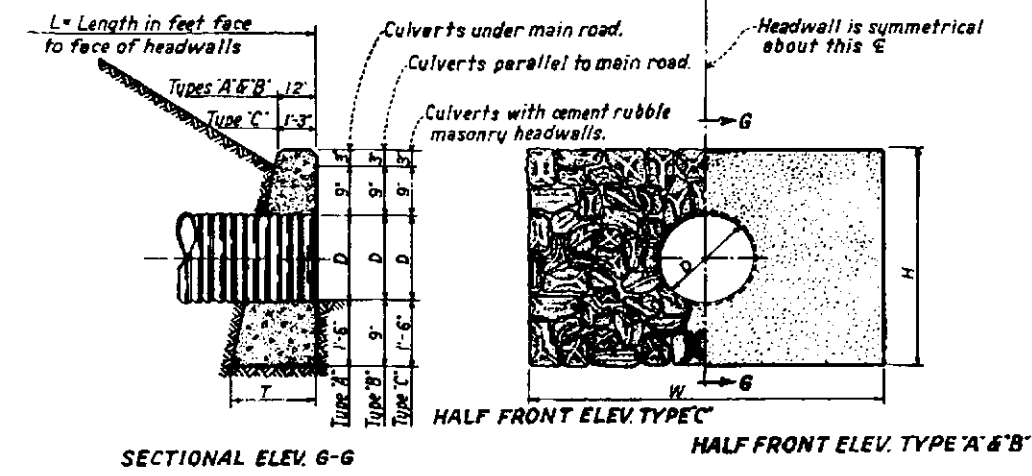


| TYPE     | D   | W      | H     | T      | CL. B' CONCRETE FOR 2 HEADWALLS | CORRUGATED METAL PIPE  | CEMENT RUBBLE MASONRY |
|----------|-----|--------|-------|--------|---------------------------------|------------------------|-----------------------|
| TYPE 'E' | 12" | 7'-6"  | 3'-9" | 1'-6"  | 2.4 CU. YDS.                    | 16 GAGE 2xL = LIN. FT. |                       |
| TYPE 'F' | 18" | 8'-6"  | 4'-0" | 1'-7"  | 3.0 DO                          | 16 DO 2xL = DO         |                       |
|          | 24" | 10'-6" | 4'-8" | 1'-10" | 4.4 DO                          | 14 DO 2xL = DO         |                       |
|          | 30" | 12'-6" | 5'-0" | 2'-0"  | 6.7 DO                          | 12 DO 2xL = DO         |                       |
|          | 36" | 14'-6" | 5'-6" | 2'-3"  | 10.0 DO                         | 10 DO 2xL = DO         |                       |
|          | 42" | 16'-6" | 6'-0" | 2'-5"  | 13.6 DO                         | 8 DO 2xL = DO          |                       |

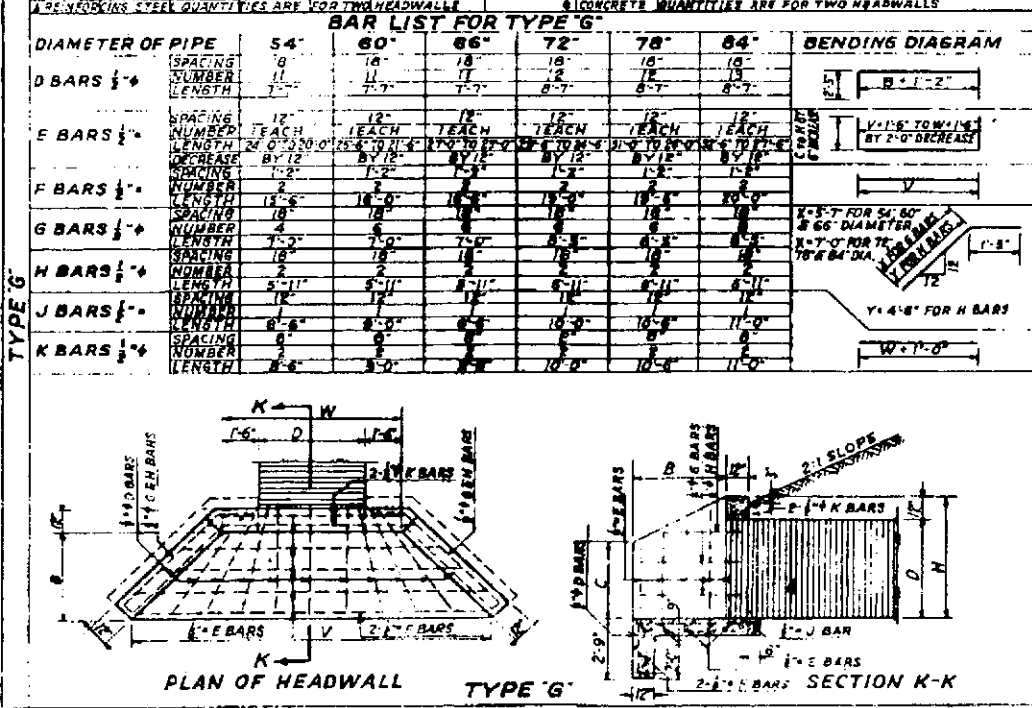
STD. HEADWALLS FOR DOUBLE CORR. METAL PIPE CULV'S.



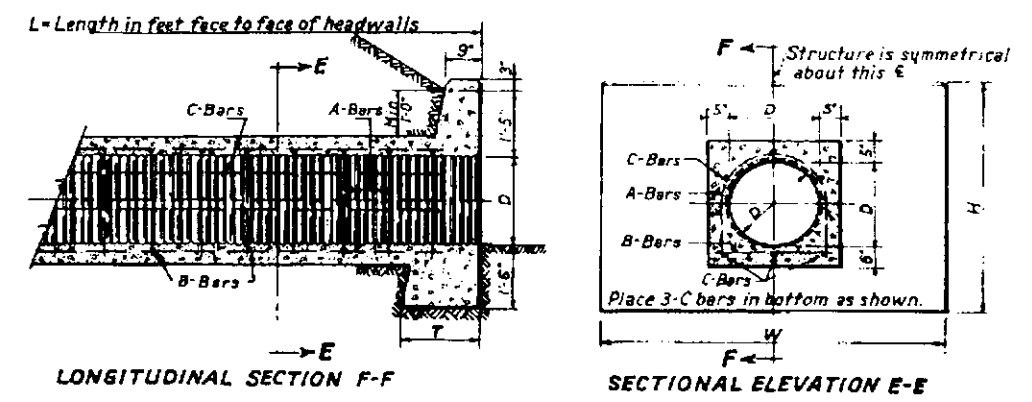
INTERCEPTING HEADWALLS



| TYPE     | D   | W     | H     | T      | CL. B' CONCRETE FOR 2 HEADWALLS | CORRUGATED METAL PIPE | CEMENT RUBBLE MASONRY |
|----------|-----|-------|-------|--------|---------------------------------|-----------------------|-----------------------|
| TYPE 'A' | 12" | 4'-6" | 3'-6" | 1'-5"  | 1.4 CU. YDS.                    | 16 GAGE L = LIN. FT.  |                       |
| TYPE 'B' | 18" | 5'-6" | 4'-0" | 1'-7"  | 2.4 DO                          | 16 DO L = DO          |                       |
| TYPE 'C' | 24" | 6'-6" | 4'-8" | 1'-10" | 4.4 DO                          | 14 DO L = DO          |                       |
| TYPE 'D' | 30" | 7'-6" | 5'-0" | 2'-0"  | 6.7 DO                          | 12 DO L = DO          |                       |
| TYPE 'E' | 36" | 8'-6" | 5'-6" | 2'-3"  | 10.0 DO                         | 10 DO L = DO          |                       |
| TYPE 'F' | 42" | 9'-6" | 6'-0" | 2'-5"  | 13.6 DO                         | 8 DO L = DO           |                       |

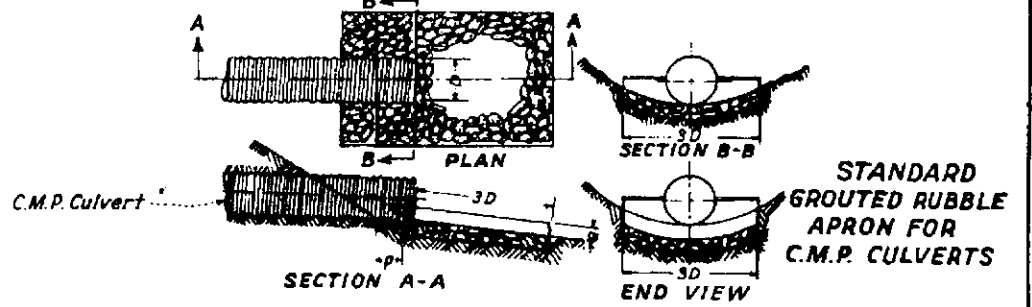


STD. HEADWALLS FOR CORRUGATED METAL PIPE CULVERTS



| ITEM | DESCRIPTION            | UNIT     | 12"          | 15"          | 18"          | 24"         | 30"         |
|------|------------------------|----------|--------------|--------------|--------------|-------------|-------------|
| 46   | Concrete Class 'A'     | Cu. Yds. | 1.4-0.101L   | 1.6-0.122L   | 2.2-0.143L   | 3.2-0.191L  | 4.5-0.239L  |
| 47   | Reinforcing Steel      | Lbs.     | 8.96L-16.28L | 10.19L-17.2L | 13.61L-21.7L | 19.1L-30.8L | 25.9L-41.7L |
| 53   | Galv. Corr. Metal Pipe | Lin. Ft. | L            | L            | L            | L           | L           |

Concrete quantities shown above include two headwalls.  
When L = 40 feet or more add 10.6 Lbs. for lap in C-bars.  
When L = 40 feet or more add 14.17 Lbs. for lap in C-bars.  
SPECIAL NOTES  
All reinforcing bars shall be 1/2".  
Minimum distance of bar to surface of concrete shall be 2".  
Pipe shall be thoroughly cleaned before incasing with concrete.



| PILE | 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 54"  | 60"  | 66"  | 72"  | 78"  | 84"  |
|------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| 1    | 1.4 | 1.6 | 2.2 | 3.2 | 4.5 | 5.9 | 7.3 | 8.7 | 10.1 | 11.5 | 12.9 | 14.3 | 15.7 | 17.1 |
| 2    | 1.4 | 1.6 | 2.2 | 3.2 | 4.5 | 5.9 | 7.3 | 8.7 | 10.1 | 11.5 | 12.9 | 14.3 | 15.7 | 17.1 |
| 3    | 1.4 | 1.6 | 2.2 | 3.2 | 4.5 | 5.9 | 7.3 | 8.7 | 10.1 | 11.5 | 12.9 | 14.3 | 15.7 | 17.1 |
| 4    | 1.4 | 1.6 | 2.2 | 3.2 | 4.5 | 5.9 | 7.3 | 8.7 | 10.1 | 11.5 | 12.9 | 14.3 | 15.7 | 17.1 |
| 5    | 1.4 | 1.6 | 2.2 | 3.2 | 4.5 | 5.9 | 7.3 | 8.7 | 10.1 | 11.5 | 12.9 | 14.3 | 15.7 | 17.1 |

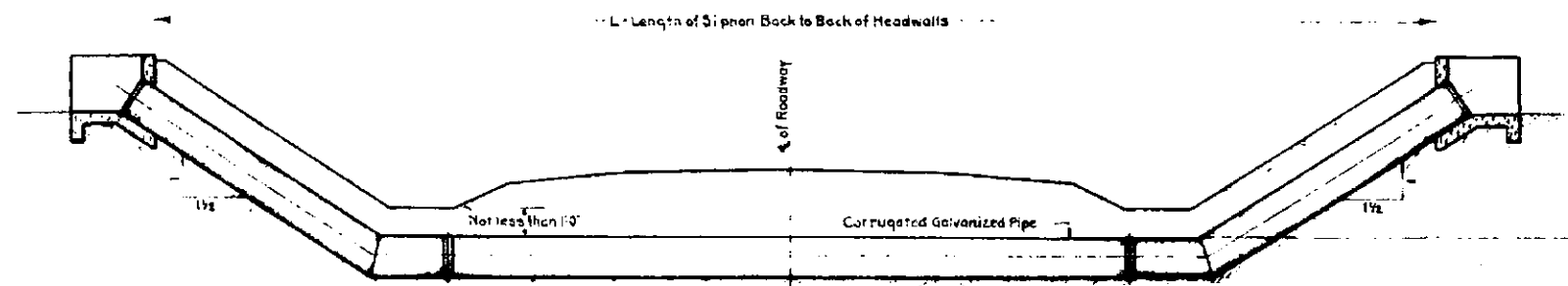
GENERAL NOTES FOR ALL STRUCTURES  
All work shall be done according to the standard specifications of the Colorado State Highway Department, adopted August 1, 1935.  
All concrete shall be class 'A' except types A & B, which shall be class 'B'.  
All exposed surfaces shall be rubbed free of form marks.  
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 & letter designation.  
Secondary bars when applied shall be given a lap of 50 diameters.  
Main bars shall not be applied.  
Minimum fill over top of culverts shall be 1'-0".  
When culvert is skewed, headwalls shall be placed parallel to centerline 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 and Drawn by L.E. Auer  
Made by L.E. Auer  
Checked and Approved by L.E. Auer  
Date April 27, 1935

# STANDARD M-123-A

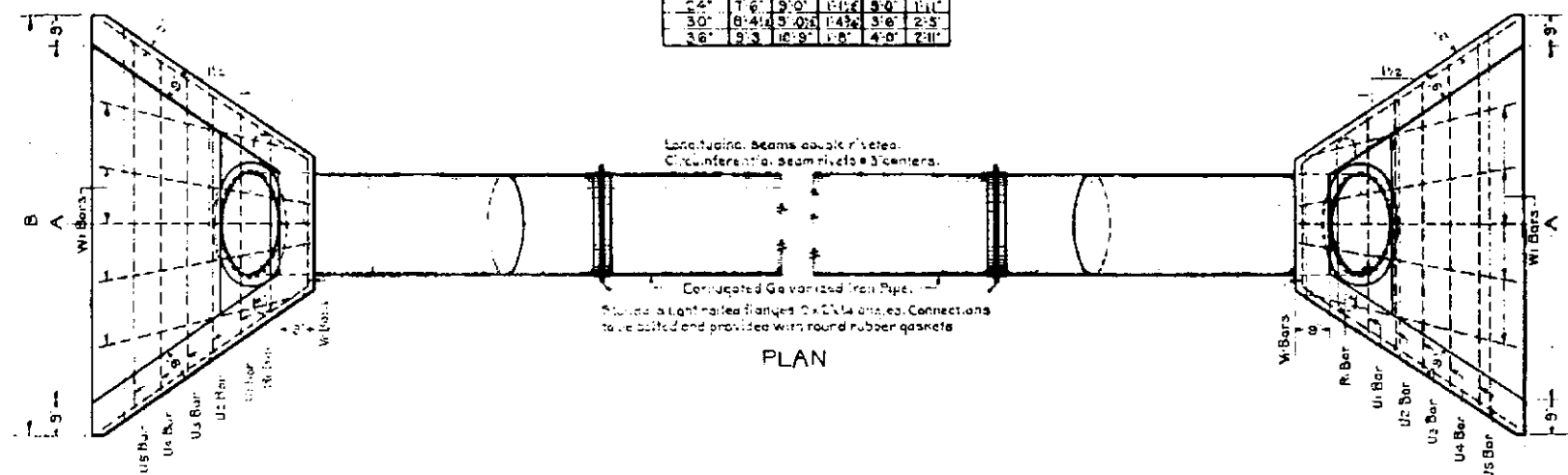
| FED. ROAD DIST. NO. | STATE | DIST. NO. | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------|-----------|--------------|
| 3                   | COLO. | 20018-2   | 6         |              |

REVISED 3-18-58 BY D. DEPOSED DARS  
Revised 3-18-58 BY D. DEPOSED DARS

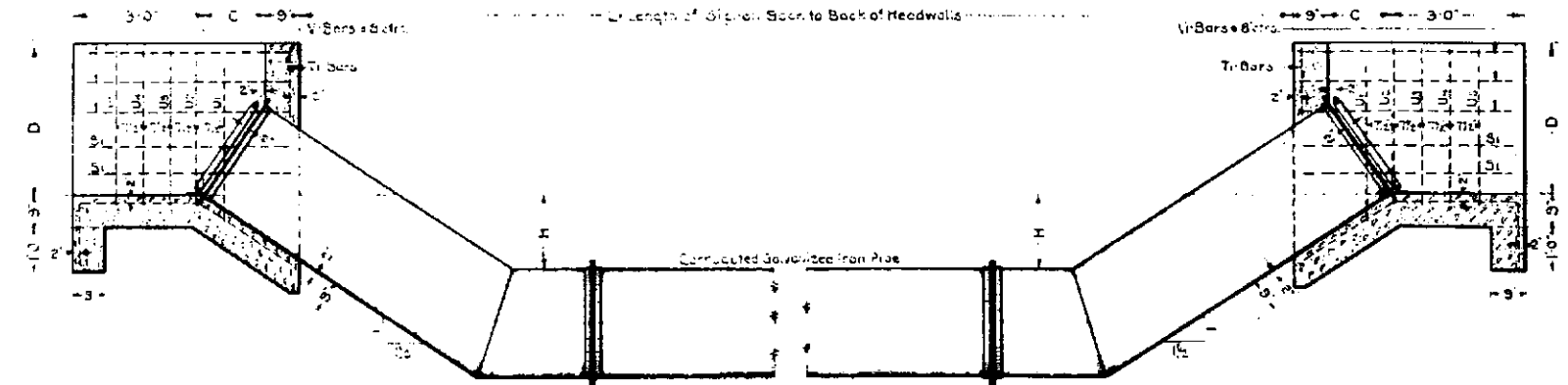


SECTIONAL ELEVATION OF SIPHON

| SIZE | A         | B         | C      | D     | E      |
|------|-----------|-----------|--------|-------|--------|
| 18"  | 6'-7 1/2" | 5'-1 1/2" | 9'-10" | 7'-6" | 1'-5"  |
| 24"  | 7'-6"     | 6'-0"     | 10'-4" | 8'-0" | 1'-11" |
| 30"  | 8'-4 1/2" | 6'-8"     | 11'-0" | 8'-6" | 2'-3"  |
| 36"  | 9'-3"     | 7'-6"     | 11'-8" | 9'-4" | 2'-11" |



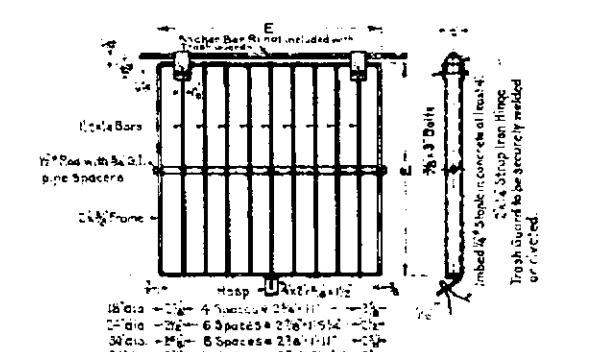
PLAN



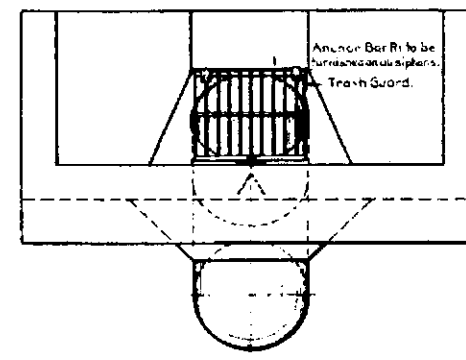
SECTIONAL ELEVATION

| DIAMETER<br>18" AND 24"                      |        |                                       | BAR LIST FOR ONE SIPHON |                                 | DIAMETER<br>30" AND 36" |                                              |  |
|----------------------------------------------|--------|---------------------------------------|-------------------------|---------------------------------|-------------------------|----------------------------------------------|--|
| MARK                                         | NUMBER | LENGTH                                | BENDING DIAGRAM         | LENGTH                          | NUMBER                  | MARK                                         |  |
| 18"<br>R <sub>1</sub>                        | 2      | 4'-11"                                |                         | 5'-11"                          | 2                       | 30"<br>R <sub>1</sub>                        |  |
| 24"<br>R <sub>1</sub>                        | 2      | 5'-5"                                 |                         | 6'-5"                           | 2                       | 36"<br>R <sub>1</sub>                        |  |
| 18"<br>S <sub>1</sub>                        | 8      | 4'-2"                                 |                         | 4'-5"                           | 8                       | 30"<br>S <sub>1</sub>                        |  |
| 24"<br>S <sub>1</sub>                        | 8      | 4'-5"                                 |                         | 5'-0"                           | 8                       | 36"<br>S <sub>1</sub>                        |  |
| 18"<br>T <sub>1</sub>                        | 4      | 4'-0"                                 |                         | 5'-4"                           | 4                       | 30"<br>T <sub>1</sub>                        |  |
| 24"<br>T <sub>1</sub>                        | 4      | 4'-6"                                 |                         | 5'-10"                          | 4                       | 36"<br>T <sub>1</sub>                        |  |
| 18" & 24"<br>W <sub>1</sub> U <sub>1</sub> S | 2 Each | 8'-6" to 14'-0"<br>Increase<br>by 10" |                         | 24" & 36"<br>Increase<br>by 10" | 2 Each                  | 30" & 36"<br>W <sub>1</sub> U <sub>1</sub> S |  |
| 18"<br>V <sub>1</sub>                        | 6      | 12'-0"                                |                         | 14'-0"                          | 6                       | 30"<br>V <sub>1</sub>                        |  |
| 24"<br>V <sub>1</sub>                        | 6      | 13'-0"                                |                         | 15'-0"                          | 6                       | 36"<br>V <sub>1</sub>                        |  |
| 18" & 24"<br>W <sub>1</sub>                  | 10     | 5'-6"                                 |                         | 6'-0"                           | 10                      | 30" & 36"<br>W <sub>1</sub>                  |  |

| QUANTITIES FOR ONE SIPHON |           |               |           |
|---------------------------|-----------|---------------|-----------|
| SIPHON SIZE               | ITEM # 86 | ITEM # 46     | ITEM # 47 |
| 18" Diameter              | 16        | 3.50 Cu. Yds. | 255 Lbs.  |
| 24" Diameter              | 14        | 4.25 Cu. Yds. | 260 Lbs.  |
| 30" Diameter              | 14        | 5.25 Cu. Yds. | 310 Lbs.  |
| 36" Diameter              | 12        | 6.25 Cu. Yds. | 320 Lbs.  |



DETAIL OF TRASH GUARD  
2 Required per Siphon



FRONT ELEVATION

| TABLE OF PIPE LENGTHS IN FEET MEASURED ON 1/2 OF SIPHON |                                                                                                                                                                 |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18" DIAMETER                                            |                                                                                                                                                                 |
| Length                                                  | 22 25 28 31 34 37 40 43 46 49 52 55 58 61 64 67 70 73 76 79 82 85                                                                                               |
| Feet                                                    | 0 25 50 75 100 125 150 175 200 225 250 275 300 325 350 375 400 425 450 475 500 525 550 575 600 625 650 675 700 725 750 775 800 825 850 875 900 925 950 975 1000 |

| 24" DIAMETER |                                                                                                                                                                 |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Length       | 22 25 28 31 34 37 40 43 46 49 52 55 58 61 64 67 70 73 76 79 82 85                                                                                               |
| Feet         | 0 25 50 75 100 125 150 175 200 225 250 275 300 325 350 375 400 425 450 475 500 525 550 575 600 625 650 675 700 725 750 775 800 825 850 875 900 925 950 975 1000 |

| 30" DIAMETER |                                                                                                                                                                 |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Length       | 22 25 28 31 34 37 40 43 46 49 52 55 58 61 64 67 70 73 76 79 82 85                                                                                               |
| Feet         | 0 25 50 75 100 125 150 175 200 225 250 275 300 325 350 375 400 425 450 475 500 525 550 575 600 625 650 675 700 725 750 775 800 825 850 875 900 925 950 975 1000 |

| 36" DIAMETER |                                                                                                                                                                 |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Length       | 22 25 28 31 34 37 40 43 46 49 52 55 58 61 64 67 70 73 76 79 82 85                                                                                               |
| Feet         | 0 25 50 75 100 125 150 175 200 225 250 275 300 325 350 375 400 425 450 475 500 525 550 575 600 625 650 675 700 725 750 775 800 825 850 875 900 925 950 975 1000 |

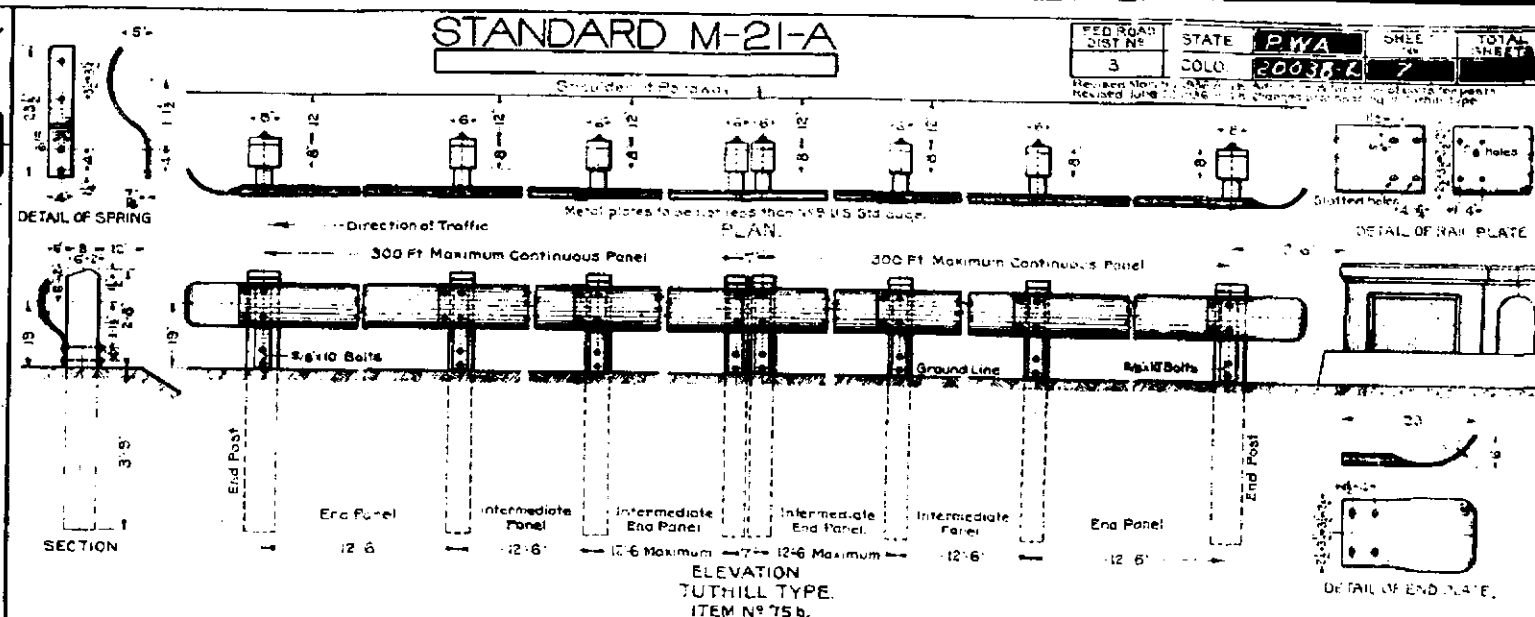
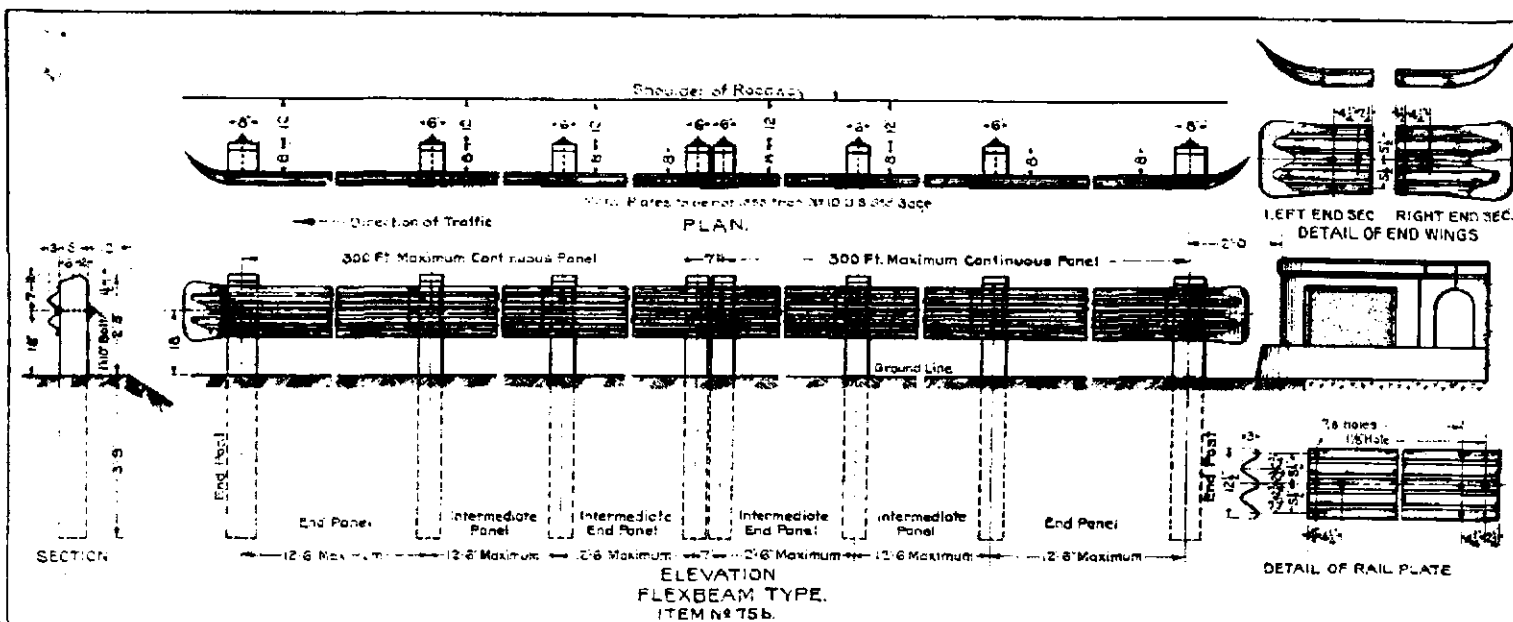
## GENERAL NOTES.

- All work shall be done according to the Standard Specifications of the Colorado State Highway Department, dated August 1955.
- All concrete shall be Class A.
- All reinforcement bars shall be furnished on siphon.
- All reinforcement bars shall be furnished on siphon.
- All reinforcement bars shall be furnished on siphon.
- All reinforcement bars shall be furnished on siphon.
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**COLORADO**  
STATE HIGHWAY DEPARTMENT  
STANDARD SIPHON  
CORRUGATED GALVANIZED IRON PIPE  
WITH CONCRETE INLET & OUTLET BOXES  
SIZES 18"-24"-30"-36"

Designed by A.G.K. Approved by *[Signature]*  
Made by A.G.K. Bridge Engineer  
Checked by W.M.K. Date: Dec. 1952





#### GENERAL NOTES

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

Only one type of metal plate guard fence may be used on a project.

Only the type of metal plate guard fence types shown on this drawing, other equivalent types of semi-rigid plate guard fence approved by the Department and complying with the specifications may be used.

When continuous guard fence is more than 300 ft. in length it shall be separated by double posts with metal plates lapped without any connection to forward panel.

All wood posts shall be made from seasoned, straight, sound Dense Southern Yellow Pine or Douglas Fir of the Coast Region.

All wood posts shall be pressure treated with creosote for the full length of posts and all holes drilled and ends beveled before treatment is applied as provided for in the specifications. All post holes to be at least 1/4" larger than dia. of bolt or rod.

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

All metal connecting devices, hardware and supports shall be hot dip galvanized.

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

Metal plates shall not be lighter than that shown on this sheet for each type and in no case to be less than No. 12 gauge.

The length of guard fence to be paid for and designated on plans shall be measured from center to center of end posts.

Standard galvanized cast iron 0.8 or galvanized malleable cast washers shall be used under all bolt heads and nuts coming in contact with wood posts.

COLORADO  
STATE HIGHWAY DEPARTMENT

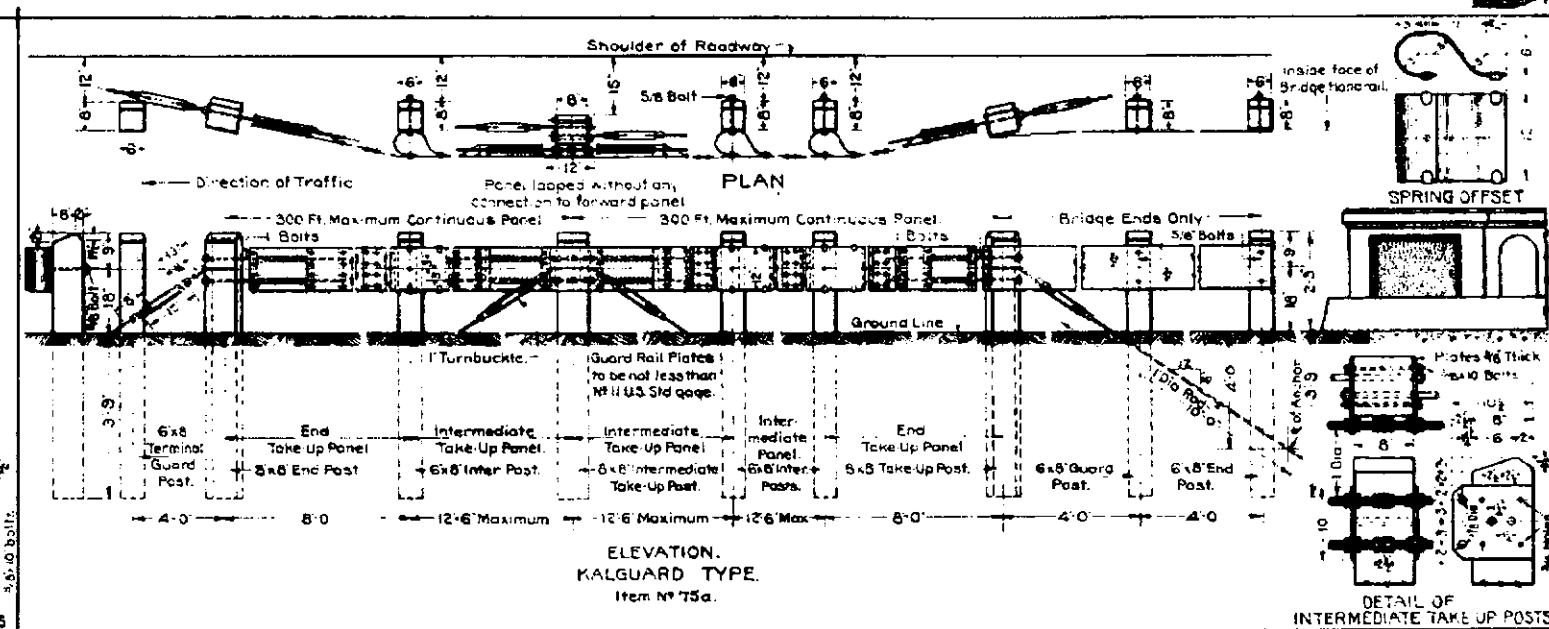
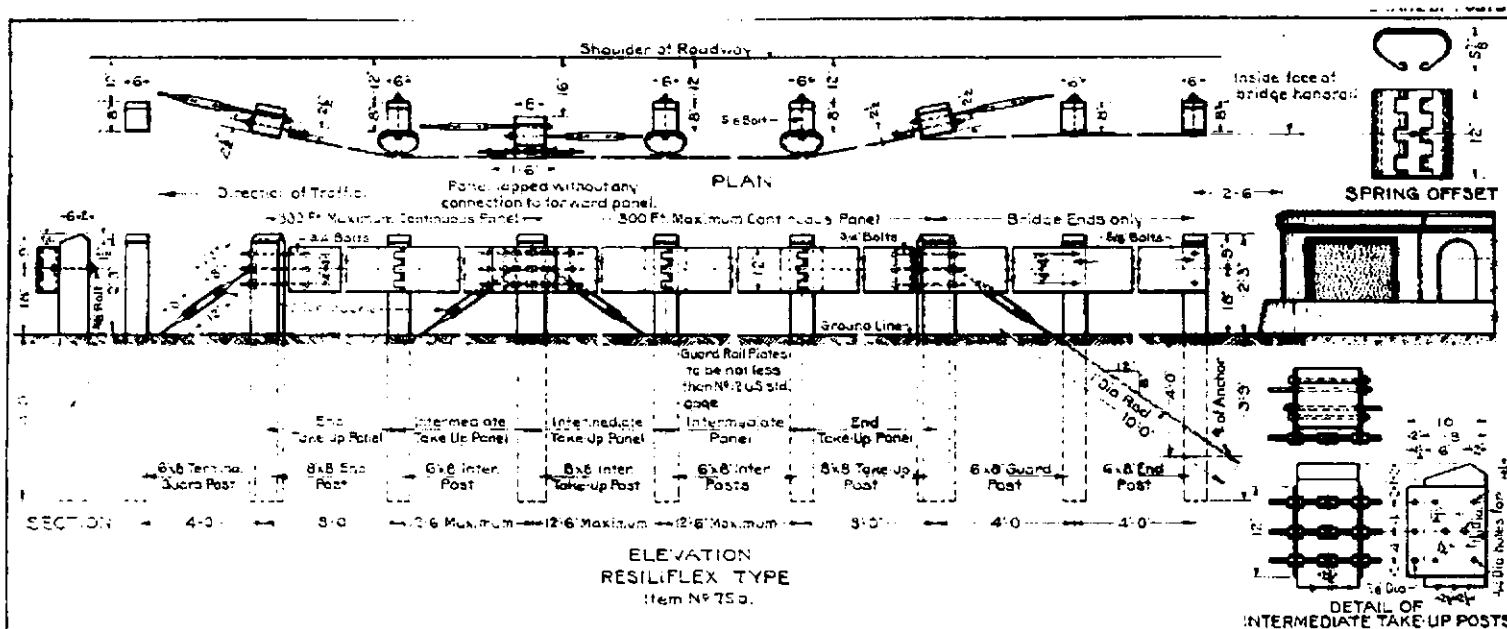
STANDARD  
SEMI-RIGID METAL PLATE  
GUARD FENCE

Designed by AGH  
Made by AGH  
Check Design  
Check Detail

Approved by *Ed Bailey*  
Bridge Engineer  
Date: Nov 1st, 1935

## STANDARD M-22-A

| FED. ROAD DIST. NO. | STATE | PWA    | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------|-----------|--------------|
| 3                   | COLO. | 3003B2 | 8         | 16           |



## GENERAL NOTES

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

Only one type of metal plate guard fence may be used on a project. In lieu of the metal plate guard fence types as shown on this drawing, other equivalent types of flexible metal plate guard fence approved by the department and complying with the specifications may be used.

When continuous guard fence is more than 300 ft. in length it shall be separated with a panel lapped without any connection to forward panel as shown on this drawing, other equivalent types of separations approved by the department and complying with the specifications may be used.

All wood posts shall be made from seasoned, straight, sound Dense Southern yellow Pine or Douglas Fir of the Coast Region.

All wood posts shall be pressure treated with creosote for the full length of posts and all holes drilled and tops beveled before treatment is applied as provided for in the specifications. All post holes to be 1/2" larger than dia. of bolt or rod.

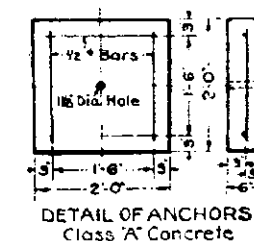
All wood posts shall be set and tamped in, plumb and firm, to the lines and grades as directed by the engineer.

All metal connecting devices, hardware and supports shall be hot dip galvanized. Metal plates shall not be galvanized, but shall be painted as provided for in the specifications.

Metal plates shall not be lighter than that shown on this sheet for each type and in no case to be less than No. 12 gage.

The length of guard fence to be paid for and designated on plans shall be measured from center to center of end posts.

Standard galvanized cast iron 0 G or galvanized malleable cast washers shall be used under all bolt heads and nuts coming in contact with wood posts.



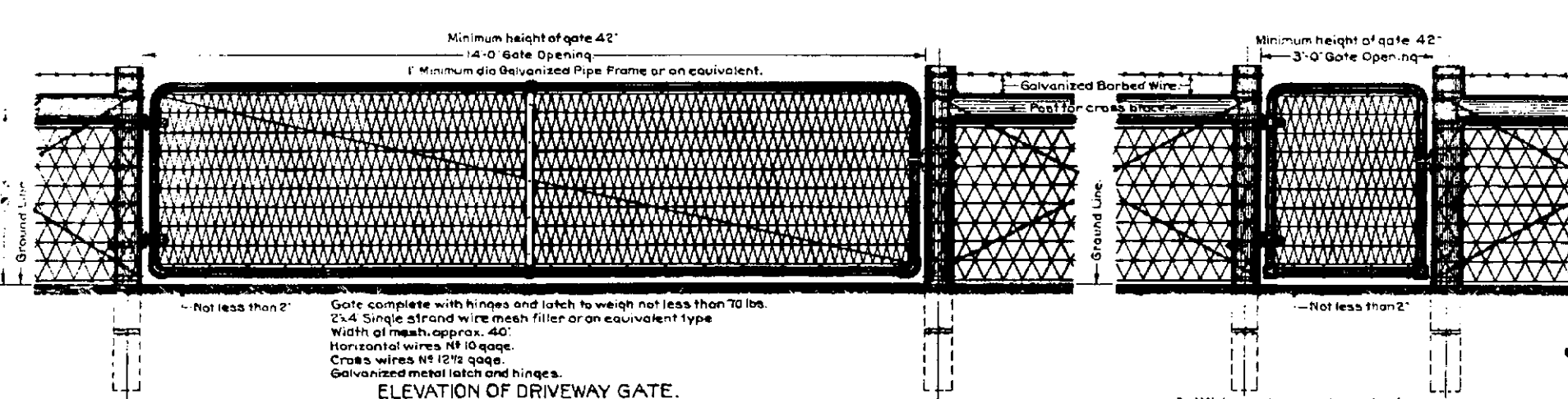
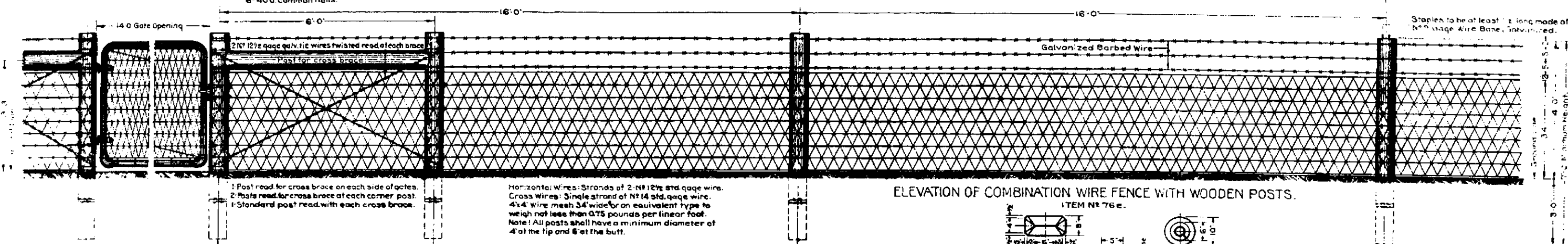
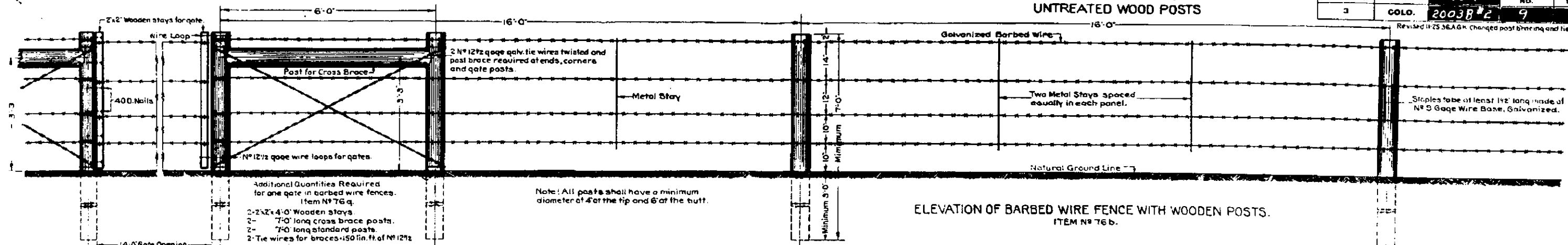
**COLORADO**  
STATE HIGHWAY DEPARTMENT  
STANDARD  
FLEXIBLE METAL PLATE  
GUARD FENCE

Designed by A.B.B. Made by A.B.B. Approved by R.L. Bailey  
Checked by A.B.B. Bridge Engineer  
Checked by A.B.B. Date: Jan 20th, 1935

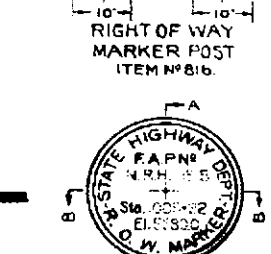
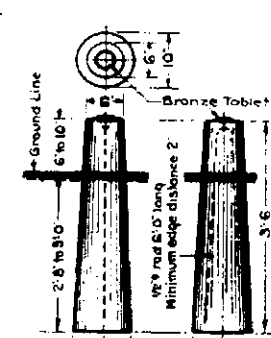
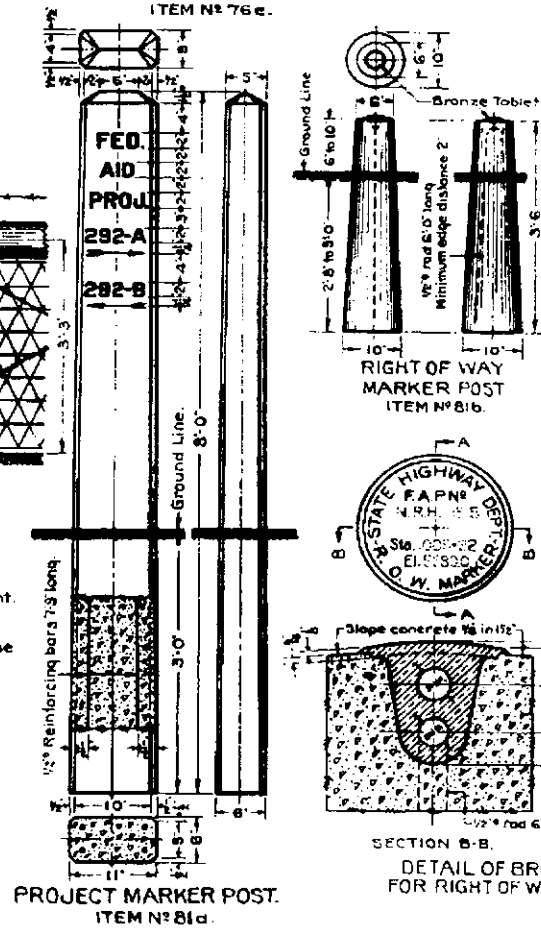
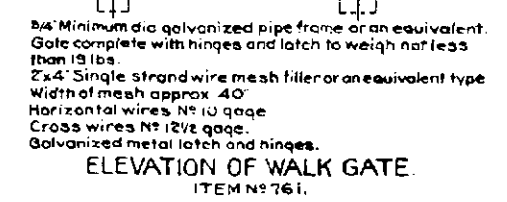


# STANDARD M-24-FX. UNTREATED WOOD POSTS

| FED. ROAD DIST. NO. | STATE    | PWA     | SHEET NO. | TOTAL SHEETS |
|---------------------|----------|---------|-----------|--------------|
| 3                   | COLORADO | 2003B#2 | 9         |              |



**GENERAL NOTES FOR WIRE FENCES.**  
All 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 N° 12 1/2 gage, galvanized, and with two point barbs spaced not more than five inches apart.  
Wire mesh must be galvanized and not lighter than shown and noted on this plan.  
Wire mesh used in driveway gates shall be painted with an approved waterproof asphalt or mineral paint.  
Staples shall be at least 1 1/2" long, made of N° 9 gage wire base galvanized, 8 staples per post for barbed wire fence and 14 staples per post for combination wire fence.  
All wooden posts shall be made from seasoned, straight, sound Native Cedar, peeled.  
Cross braces, brace posts and tie wires are to be used at all places where intersecting fences are encountered.  
Four corner posts with brace and supplemental posts and four end posts shall be used at each structure over 4 ft. x 4 ft. in size and fence turned in and ended at wings.  
Cross braces to be securely nailed with 4-40d. nails at each post.



**NOTES FOR PROJECT MARKER POSTS.**  
All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department, Adopted August 1-1935.  
Posts shall be made of 6" x 6" x 6" Concrete or metal use above the standard frame.  
All exposed surfaces shall be rubbed free of form marks.  
All letters and numbers shall be 2" high and 1/2" wide and shall be painted on the concrete with a good quality of black paint. The letters shall be in block letters and shall show the project numbers and the name of the project.  
Post to be set with the face of the post facing the road at the end of the project two feet inside the R.O.W. line and at a point fully protected from traffic in such a position that the sign will indicate properly the project 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 State Highway Department, Adopted August 1-1935.  
Posts shall be made of 6" x 6" x 6" 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 shall be rubbed free of form marks and the letters and numbers shall be 2" high and 1/2" wide and shall be painted on the concrete with a good quality of black paint. The letters shall be in block letters and shall show the project numbers and the name of the project.  
Information on the bronze tablet is located by putting the post in the field by the engineering party after post is placed. The letters and numbers shall be used.

**COLORADO STATE HIGHWAY DEPARTMENT**  
STANDARD WIRE FENCES  
UNTREATED WOOD POSTS  
AND  
MARKER POSTS

Designed by AGK  
Made by AGK  
Check Design  
Check Detail PDW

Approved by O. D. Bailey  
Bridge Engineer  
Date: April 24, 1936

## STANDARD M-1-B

| PROJECT NO. | STATE | PWA   | SHEET NO. | TOTAL SHEETS |
|-------------|-------|-------|-----------|--------------|
| 3           | COLO  | 20038 | 10        |              |

## GENERAL NOTES

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

The normal inside edge of the Pavement slab is to remain at the standard elevation of 0.125 ft below the profile grade, and the outside edge of the slab is to be superelevated at the rate per foot width of roadway given in the table. The Section is to be rotated about the normal inside edge of the Pavement, with a  $1\frac{1}{2}$ " parabolic crown for curves of 10° and under, and a flat crown for widened Sections.

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

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

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

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

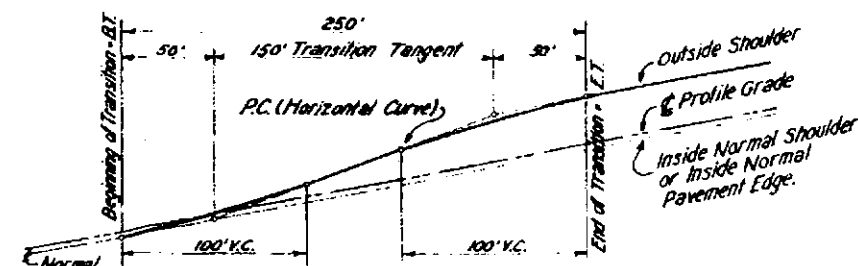
The rate of super-elevation per foot width of roadway to be applied at the outside shoulder of the roadway is computed as follows:

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.

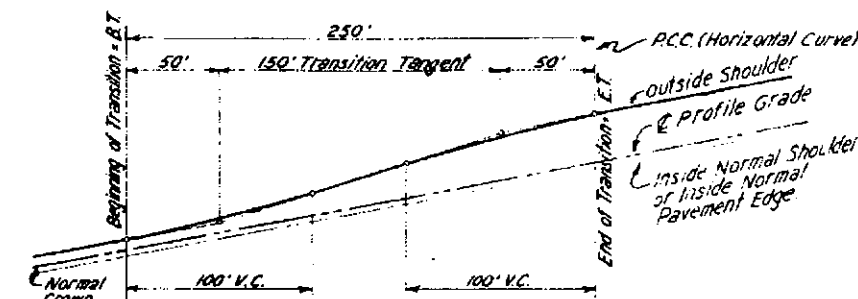
Special transition problems not covered by this standard sheet shall be covered by appropriate notes included with curve data on plans.



CASE I: SIMPLE CURVE WITH UNLIMITED TANGENT APPROACH

NOTE: CASE I

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



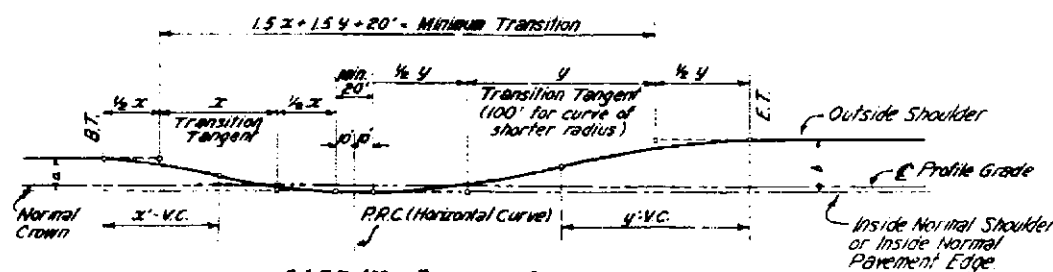
CASE II: COMPOUND CURVE

NOTE: CASE II

Super-elevation transitions at the outside ends of compound curves shall be constructed in accordance with rules given under CASE I.

Super-elevation transition between the arcs of different radii shall be made as in CASE I, except that the entire transition shall lie within the limits of the curve of the longer radius.

In cases where curves in the same direction have a tangent distance of less than 300 ft. between points of curve, the intervening tangent shall be super-elevated an amount equal to that of the curve of greater radius and the transition shall be made as in the case of a true compound curve.



CASE III: REVERSE CURVES

NOTE: CASE III

Transitions between true reverse curves shall be accomplished as shown on the above diagram.

Transition tangents shall be directly proportional to the amount of super-elevation of the respective curves.

EXAMPLE: Let  $a$  represent the amount of super-elevation on 1st curve;

$b$  : : transition tangent on 1st

$x$  : : transition tangent on 2nd

$y$  : : transition tangent on 2nd

then,  $a:b = x:y$

The transition tangent of the curve having the shorter radius shall be set at 100 ft.

A normal crowned section 20 ft. long, 10 ft. on each side of the P.R.C. shall be used. In cases where curves in opposite directions are in such proximity that a standard transition cannot be had, the practice outlined for true reversing curves shall be used. The total distance between the P.T. of the first curve and the P.C. of the succeeding curve shall be prorated into the transition distance of the respective curves until a maximum of 150 ft. of transition tangent for each curve is achieved.

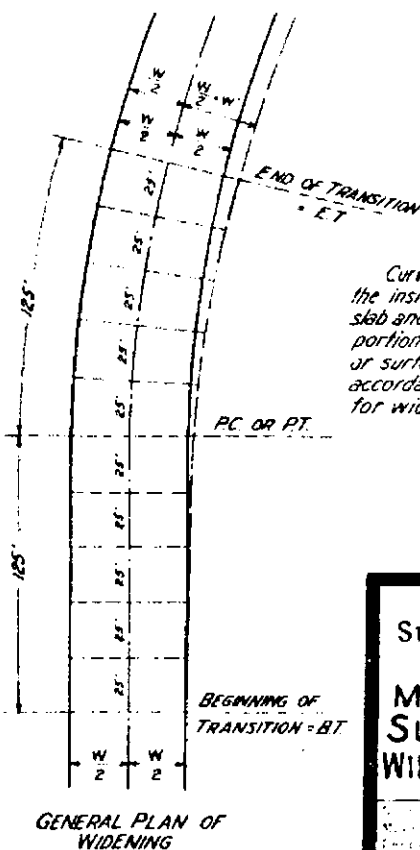
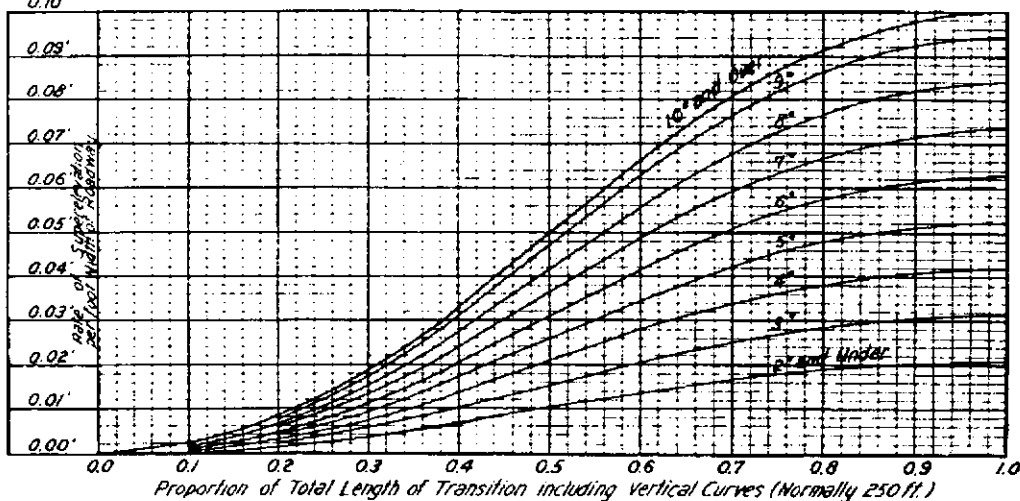
PAVEMENT SECTION

GRADED OR SURFACED SECTION

SUPERELEVATION AND WIDENING TABLES

| DISTANCE FROM B.T. (FEET)             | 0.1                                                        | 0.2     | 0.3     | 0.4     | 0.5     | 0.6     | 0.7     | 0.8     | 0.9     | MAX. 1.0 |
|---------------------------------------|------------------------------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| Degree of Curvature                   | RATE OF SUPERELEVATION (IN FEET) PER FOOT WIDTH OF ROADWAY |         |         |         |         |         |         |         |         |          |
| 2° and Under                          | 0.00044                                                    | 0.00175 | 0.00394 | 0.00700 | 0.01050 | 0.01400 | 0.01706 | 0.01925 | 0.02056 | 0.02100  |
| 3°                                    | 0.00066                                                    | 0.00263 | 0.00591 | 0.01050 | 0.01575 | 0.02100 | 0.02559 | 0.02888 | 0.03084 | 0.03150  |
| 4°                                    | 0.00088                                                    | 0.00350 | 0.00788 | 0.01400 | 0.02100 | 0.02800 | 0.03413 | 0.03850 | 0.04113 | 0.04200  |
| 5°                                    | 0.00109                                                    | 0.00438 | 0.00984 | 0.01750 | 0.02625 | 0.03500 | 0.04266 | 0.04813 | 0.05141 | 0.05250  |
| 6°                                    | 0.00131                                                    | 0.00525 | 0.01181 | 0.02100 | 0.03150 | 0.04200 | 0.05119 | 0.05775 | 0.06169 | 0.06300  |
| 7°                                    | 0.00153                                                    | 0.00613 | 0.01378 | 0.02450 | 0.03675 | 0.04900 | 0.05972 | 0.06738 | 0.07197 | 0.07350  |
| 8°                                    | 0.00175                                                    | 0.00700 | 0.01575 | 0.02800 | 0.04200 | 0.05600 | 0.06825 | 0.07700 | 0.08225 | 0.08400  |
| 9°                                    | 0.00197                                                    | 0.00788 | 0.01772 | 0.03150 | 0.04725 | 0.06300 | 0.07678 | 0.08663 | 0.09253 | 0.09450  |
| 10° and Over                          | 0.00208                                                    | 0.00833 | 0.01875 | 0.03333 | 0.05000 | 0.06667 | 0.08125 | 0.09186 | 0.09792 | 0.10000  |
| OFFSETS FOR WIDENING - W' - (IN FEET) |                                                            |         |         |         |         |         |         |         |         |          |
| Over 10° - Under 12°                  | 0.03                                                       | 0.12    | 0.27    | 0.48    | 0.75    | 1.08    | 1.47    | 1.92    | 2.43    | 3.00     |
| " 12° - " 15°                         | 0.04                                                       | 0.16    | 0.36    | 0.64    | 1.00    | 1.44    | 1.96    | 2.56    | 3.24    | 4.00     |
| " 15° - " 20°                         | 0.05                                                       | 0.20    | 0.45    | 0.80    | 1.25    | 1.80    | 2.45    | 3.20    | 4.05    | 5.00     |
| " 20°                                 | 0.06                                                       | 0.24    | 0.54    | 0.96    | 1.50    | 2.16    | 2.94    | 3.84    | 4.86    | 6.00     |

GRAPH OF SUPERELEVATION TRANSITION FIGURES

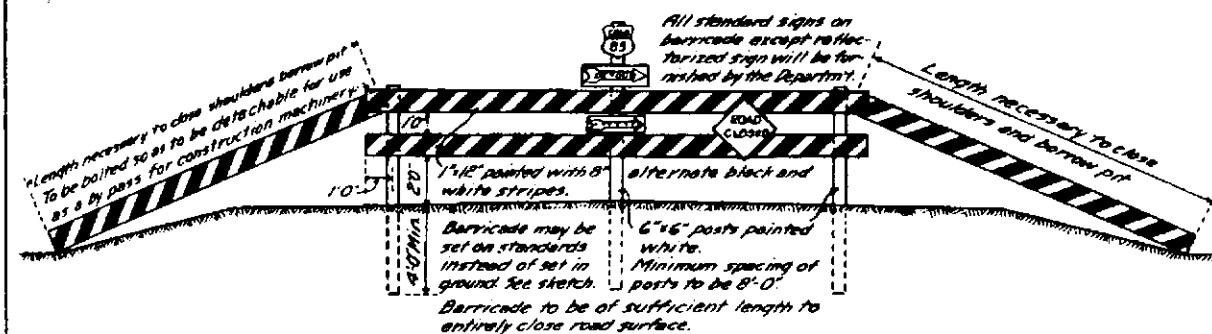


GENERAL PLAN OF WIDENING

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

REL. P.B.B. S. Marshall  
FEB 23RD 1937

# DETAILS OF PERMANENT BARRICADE



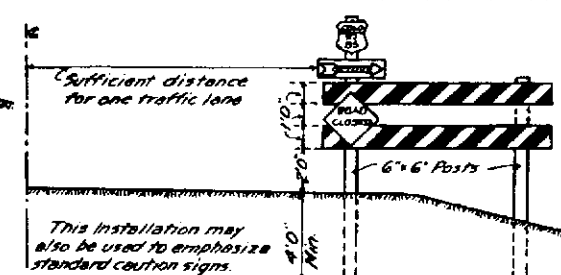
## POSITION OF SIGNS RELATIVE ROAD BED

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.

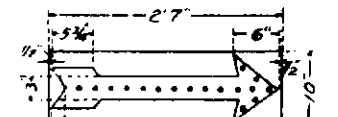
Exact location is to be stated by the Engineer, but in no case shall it be more than 8 feet from the travelled zone.

Barricades to be placed as construction conditions require.

## DETAILS OF PARTIAL BARRICADE

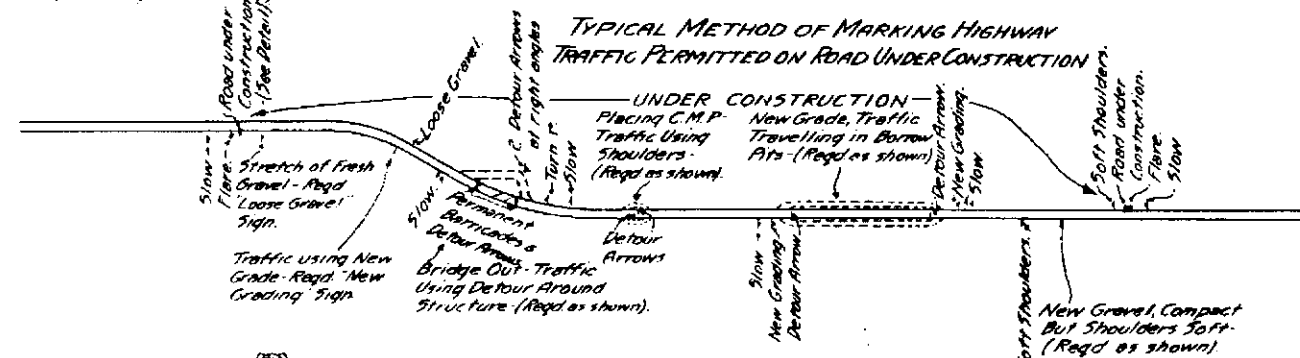


## SUGGESTED DETAIL OF REFLECTORIZED ARROW

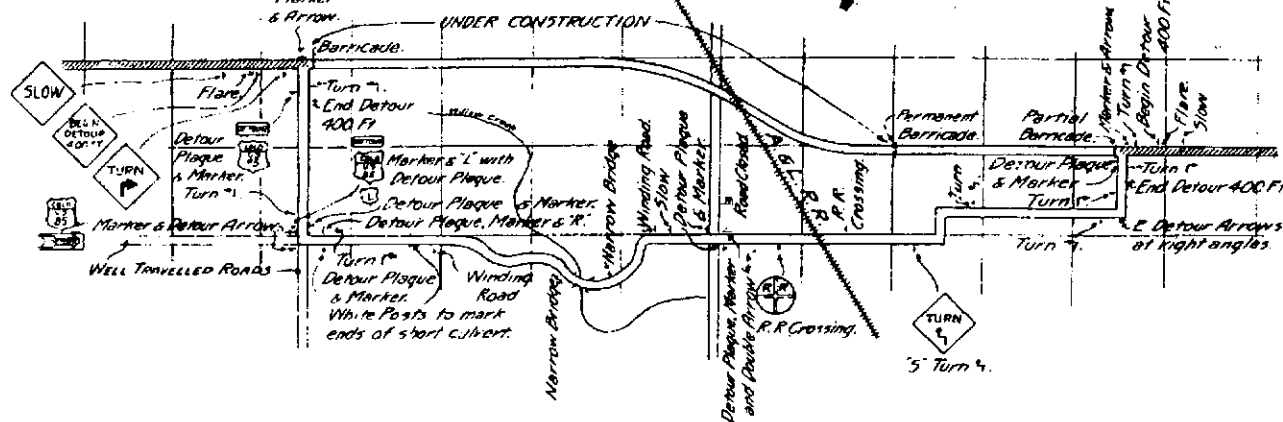


Contractor shall be required to have at least two such arrows for use on barricades at the ends of each project.

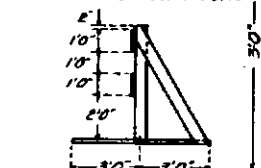
ReflectORIZED buttons shall be of a type and size, and the sign shall be subject to Department approval.



## TYPICAL METHOD OF MARKING DETOUR TRAFFIC PROHIBITED ON ROAD UNDER CONSTRUCTION



## END VIEW OF PORTABLE BARRICADE



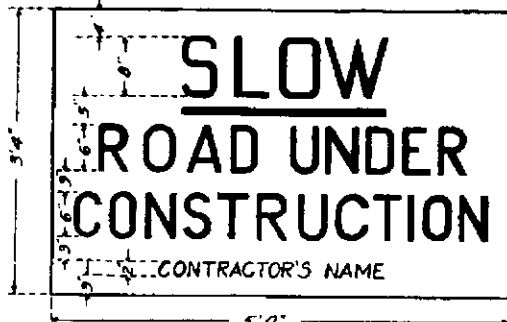
Posts to be 6x6" painted white. Base and brace to be 2x6" painted white, and nailed with 12d nails. Base to be weighted if necessary for stability.

P. W. A.  
FEDERAL EMERGENCY  
ADMINISTRATION OF PUBLIC WORKS  
(Description of Project)  
PROJECT NO.

## SIGN REQUIRED ON ALL P.W.A. PROJECTS

Sign to be made on 1" material with at least three cleats on back. Background to be white, letters to be black. Sign to be placed on two 4x4x10" posts set 4 ft in the ground. One sign is required to be located at each end of each unit of construction.

## DETAILS OF ROAD UNDER CONSTRUCTION SIGN



Sign to be made on 1" material with at least three cleats on the back. Background to be white, SLOW and underline to be red, and other lettering to be black. Sign to be set on 2x6x6" posts 4 ft in the ground.

## 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 to 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.

## 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 appropriately mark 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.

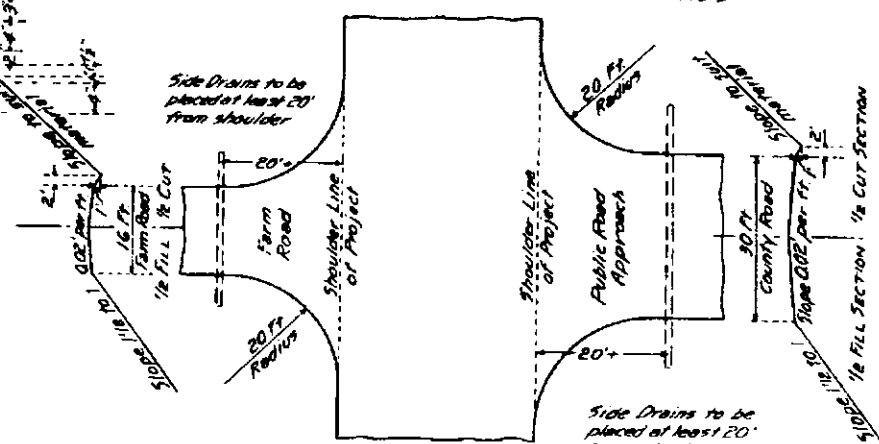
The Highway Department will furnish all standard signs not required to be furnished by the Contractor.

## STANDARD M-2-BX

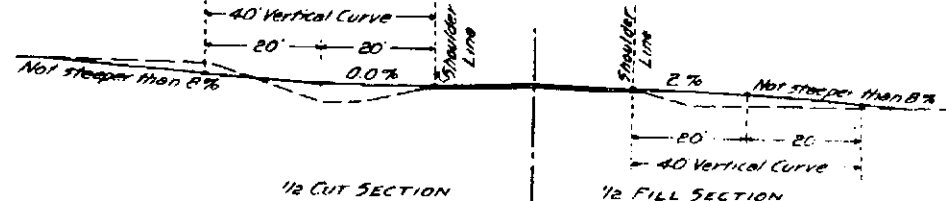
| FED. ROAD DIST. NO. | STATE | P.W.A. PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------------|-----------|--------------|
| 3                   | COLO. | 20038-2          | 11        |              |

Rev. 5-3-37-5 B.L.-W.P.A. Signs

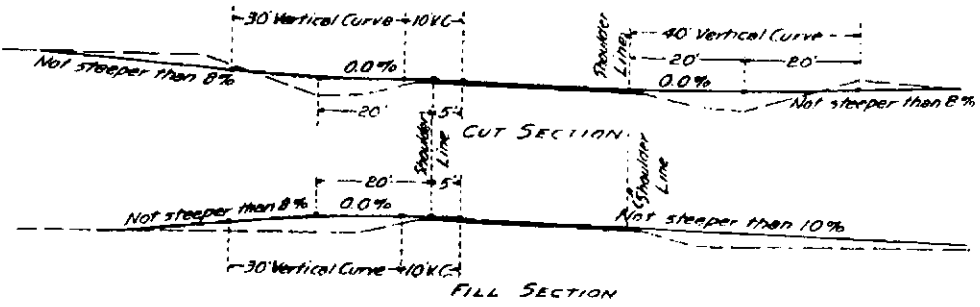
## TYPICAL PLAN FOR SIDE APPROACH ROADS



## STANDARD CROWNED SECTION



## SUPERELEVATED SECTION



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

Designed by E.A.N.  
Made by S.B.L.  
Check J.S.M.  
Check K.A.N.

Approved by  
J.E. Marshall  
Date Aug. 20, 1935

# COLORADO STATE HIGHWAY DEPARTMENT

## PLAN AND PROFILE OF PROPOSED PWA DOCKET COLO. 804-D PROJECT NO. 2003B UNIT NO. 2 STATE HIGHWAY NO. 19 OURAY COUNTY

### INDEX OF SHEETS

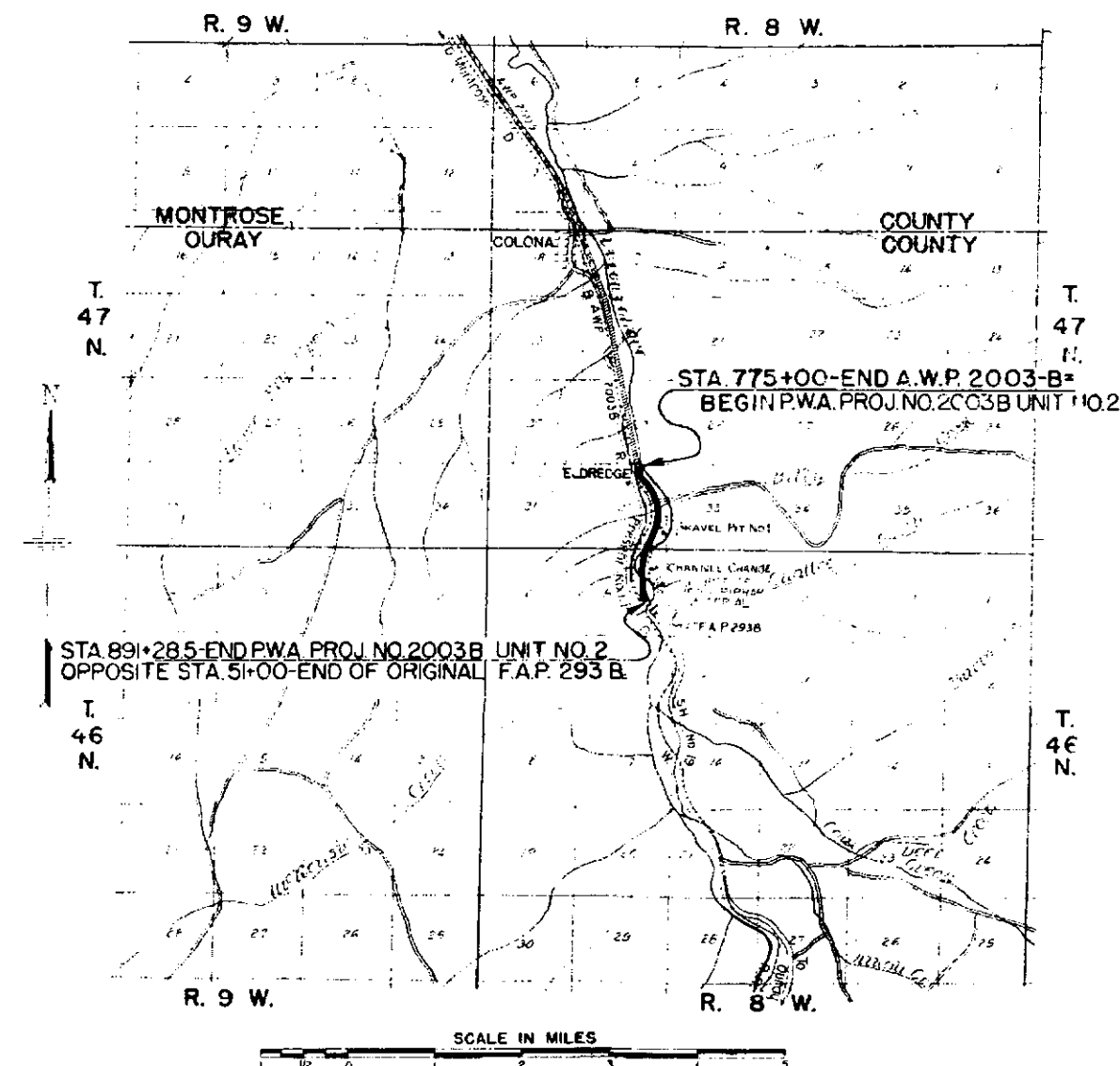
|           |                                                                    |       |
|-----------|--------------------------------------------------------------------|-------|
| SHEET NO. | 1. SKETCH MAP AND TITLE                                            |       |
|           | 2. TYPICAL SECTION AND SUMMARY OF APPROXIMATE QUANTITIES           |       |
|           | 3. LIST OF STRUCTURES                                              |       |
|           | 4. DETAILS CHANNEL CHANGE, HEAVY RIBBON AND MISCELLANEOUS ITEMS    |       |
|           | 5. STANDARD HEADWALLS FOR C.M.P. GULVERTS                          | M102E |
|           | 6. STANDARD SIPHON CORRUGATED GALVANIZED IRON                      | M123A |
|           | 7. STANDARD SEMI-RIGID METAL PLATE GUARD FENCE                     | M21A  |
|           | 8. STANDARD FLEXIBLE METAL PLATE GUARD FENCE                       | M22A  |
|           | 9. STANDARD WIRE FENCES (UNTREATED WOODEN POSTS) & MARKER POSTS    | M24FX |
|           | 10. STANDARD METHODS FOR SUPERELEVATION & WIDENING OF CURVES       | M1B   |
|           | 11. TYPICAL SIDE APPROACH ROADS/ROADWAY CONSTRUCTION TRAFFIC SIGNS | M-28X |
| 12 TO 15. | PLAN AND PROFILE                                                   |       |
| 16 TO 71. | CROSS SECTIONS                                                     |       |

### SCALES ON ORIGINAL TRACINGS

ON PLAN 1 IN. = 100 FT.  
ON PROFILE 1 IN. = 100 FT. HORIZONTAL  
1 IN. = 10 FT. VERTICAL  
GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD  
GROSS LENGTH OF PROJECT 9,472.2 FEET = 1.793 MILES  
NET LENGTH OF PROJECT

### CONVENTIONAL SIGNS

CENTER LINE OF SURVEY  
RIGHT OF WAY LINE  
SECTION LINE  
ONE QUARTER SECTION LINE  
FENCE  
POLE LINE  
PRESENT ROAD



### NOTE

It is recommended that bidders confer over the plan details with one of the following field representatives of this department:  
Mr. J. J. Vandemuer Division Engineer, Grand Junction, Colorado  
Mr. J. A. Cavanaugh Resident Engineer, Montrose, Colorado

RECOMMENDED FOR APPROVAL 3/25/31

Assistant Engineer

Chas. O. Hall  
State Highway Engineer

RECOMMENDED FOR APPROVAL

DIST. ENG. BUREAU PUBLIC ROADS  
RECOMMENDED FOR APPROVAL

CHIEF ENG. BUREAU PUBLIC ROADS  
APPROVED

DIRECTOR BUREAU PUBLIC ROADS

# LIST OF STRUCTURES

| STATION                                                                            | DESCRIPTION                                                                                                                                                                                   | REMOVE<br>STRUCT.<br>NO. | EXCAV.<br>CU. YD.                    | STRUT. EXCAV.<br>CU. YD. | ★                                                       | GRAVEL<br>OR<br>CH. RK.<br>SUBE-<br>TON | CONCRETE<br>CU. YD. | REINFE.<br>STEEL<br>LBS. | CORR. METAL PIPE CULVERTS<br>LIN. FT. |     |     |     |          |     | GUARD<br>FENCE<br>LIN. FT. | 18" C.M.<br>SIPHON<br>PIPE<br>LIN. FT. | HEAVY<br>RIPRAP<br>CU. YD. | MISCELLANEOUS                                                                                |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------------------|--------------------------|---------------------------------------------------------|-----------------------------------------|---------------------|--------------------------|---------------------------------------|-----|-----|-----|----------|-----|----------------------------|----------------------------------------|----------------------------|----------------------------------------------------------------------------------------------|
|                                                                                    |                                                                                                                                                                                               |                          |                                      |                          |                                                         |                                         |                     |                          | 15"                                   | 18" | 24" | 30" | 36"      | 48" |                            |                                        |                            |                                                                                              |
| 775+00<br>775+80<br>777+00-779+00<br>782+35<br>784+50                              | Cross culvert & inlet ditch<br>Road approach Lt.<br>Road app. & side dr. Lt.<br>Gr. Culvert & ch. change Lt.<br>Gr. Culv. & ditch change L. & R.                                              |                          | 15<br>50<br>500<br>1000<br>250       |                          | 10<br>30<br>100                                         | 15<br>50<br>3.00<br>3.00                |                     |                          | 62<br>30                              |     |     |     | 98<br>52 |     |                            |                                        |                            |                                                                                              |
| 807+ - 811+<br>810+40<br>816+ - 819+<br>817+50 - 824+00                            | Connection to present road<br>Rt. & side drain Rt.<br>Road app. & side dr. Lt.<br>Side road change Lt.<br>Intercepting ditch Rt.                                                              |                          | 1000<br>200<br>500<br>150            |                          | 100<br>50<br>100                                        |                                         |                     |                          | 56<br>40                              |     |     |     |          |     |                            |                                        |                            |                                                                                              |
| 818+50<br>819+70<br>820+80 - 822+30                                                | Gr. culv. & ditches; & 18"x50"<br>C.M.P. culv. under irrig. ditch Lt.<br>& ditches.<br>Rd. app. & side drain Lt.<br>Side road change Lt.                                                      |                          | 50<br>200<br>400                     |                          | 20<br>15<br>50                                          | 1.10<br>32                              |                     |                          | 50<br>50                              |     |     |     |          |     |                            |                                        |                            |                                                                                              |
| 821+00 - 827+00<br>821+60 - 827+10<br>821+50<br>822+40 - 827+40<br>825+00 - 828+80 | Guard fence Lt.<br>Guard fence Rt.<br>Gr. culv. (Sh. 45") & ditches<br>Irrigation ditch Lt.<br>Drain ditch Rt.                                                                                |                          | 350<br>200<br>70                     |                          | 200                                                     | 3.00                                    |                     |                          |                                       |     | 100 |     |          |     | 600<br>350                 |                                        |                            |                                                                                              |
| 827+25<br>827+50 - 834+25<br>828+00 - 831+00<br>828+80                             | Rd. app. & side dr. in irrig.<br>ditch Lt.<br>Ditch change Lt.<br>Drain ditch Lt.<br>Cross culvert & ditches                                                                                  |                          | 600<br>150<br>400<br>100<br>40<br>40 |                          |                                                         | 30                                      |                     |                          | 46                                    |     |     |     | 66       |     |                            |                                        |                            |                                                                                              |
| 828+80 - 831+00<br>828+80 - 835+00<br>829+00<br>833+00                             | Drain ditch inside R.O.W. Lt.<br>Ditch change Rt.<br>Rem. & reb. 3"x12"x16" flume<br>Lt. of Sta. 828+80<br>Rd. app. & side dr. Lt. & 15"x                                                     |                          | 100<br>200                           |                          | (FORGE ACCOUNT)                                         |                                         |                     |                          |                                       |     |     |     |          |     |                            |                                        |                            |                                                                                              |
| 839+00<br>835+00 - 840+00<br>835+00 - 841+50                                       | 20" C.M.P. culv. in irrigation<br>ditch Lt.<br>Cross culvert & ditches<br>Drain ditch Rt.<br>Drain ditch Lt.                                                                                  |                          | 50<br>10<br>100<br>100               |                          | 10                                                      | 1.10                                    |                     |                          | 20<br>50                              | 24  |     |     |          |     |                            |                                        |                            |                                                                                              |
| 835+75<br>840+80 - 843+00<br>843+00<br>843+00 - 846+50                             | Rd. app. & side dr. Lt. & 15"x<br>20" C.M.P. culv. in irrig. ditch Lt.<br>Ditch change Rt.<br>Cross culvert<br>Ditch change Lt.                                                               |                          | 100<br>350<br>500                    |                          | (Excavation Included For Payment In Roadway Quantities) | 15<br>3.00                              |                     |                          | 20                                    |     |     |     | 60       |     |                            |                                        |                            |                                                                                              |
| 843+50<br>846+ - 850+<br>847+50<br>849+60                                          | Road app. & side drain Rt.<br>Move callon 2 sheds, barn &<br>cattle shed off R.O.W.<br>Road approach Lt.<br>Road approach Lt.                                                                 |                          | 300<br>300<br>250                    |                          | (FORGE ACCOUNT)                                         | 25<br>15<br>15                          |                     |                          | 30                                    |     |     |     |          |     |                            |                                        |                            |                                                                                              |
| 852+50<br>852+70<br>854+00 - 863+70                                                | Cross culvert & inlet ditch<br>Road approach Rt.<br>Channel change Lt. (Details<br>on Sheet No. 4)                                                                                            |                          | 20<br>100                            |                          | 10                                                      | 1.65                                    |                     |                          | 54                                    |     |     |     |          |     |                            |                                        |                            |                                                                                              |
| 854+00 - 868+00<br>854+30<br>855+00 - 870+00                                       | Heavy riprap for wall along<br>right bank of channel<br>change (Details on Sh. 4)<br>Cross culvert & ditches<br>Guard fence Rt. & Lt.                                                         |                          | 30                                   |                          | 20                                                      | 3.00                                    |                     |                          |                                       |     |     | 52  |          |     | 1500<br>1500               |                                        | 7500                       |                                                                                              |
| 856+55<br>857+55<br>862+00 - 866+00<br>864+50                                      | Gr. culv. (Sh. 45") & ditches<br>Cross culvert (Sh. 60")<br>Remove 8 stop bars & nat. br.<br>Rock fill dam in old river<br>channel (Details on Sh. 4) Rt.                                     | 2                        | 50<br>75                             |                          | 20<br>100                                               | 3.00<br>5.00                            |                     |                          |                                       |     |     | 124 | 150      |     |                            |                                        |                            | 100 cu. yds. rock fill dam.                                                                  |
| 868+00 - 869+70<br>868+45                                                          | Heavy riprap for dam along<br>rt. bank ch. chge. (Det. Sh. 4)<br>Spec. 30"x18"x12" C.M.P. asphalt<br>coated paved invert (10 ga.) (Sh.<br>75" with 30" No. 12 Canal & Res.                    |                          | 75                                   |                          | 30                                                      | 5.10                                    |                     |                          |                                       |     |     |     |          |     | 3500                       |                                        |                            | (Special 30"x18"x12" C.M.P. as-<br>phalt coated paved invert<br>(10 ga.) with 30" No. 12     |
| 870+00 - 872+50<br>870+00 - 882+70<br>880+ - 881+                                  | gatelee frame & tr. ga. & ditches<br>Ditch ch. Rt. (2.5' bottom) 1.50 deep<br>Ditch change Lt.<br>Move 2 hay stacks & hay stack-<br>er off R.O.W.                                             |                          | 60<br>300                            |                          | (FORGE ACCOUNT)                                         |                                         |                     |                          |                                       |     |     |     |          |     |                            |                                        |                            | Canal & Reservoir gate<br>(22' frame) and trash<br>guard                                     |
| 882+77<br>882+90<br>883+50<br>883+30 - 889+70                                      | 18"x122" Siphon (H. 4") & 4" gate<br>valve & 4"x60" gate pipe<br>Rd. app. & side dr. Rt. & Lt.<br>Cross culvert<br>Intercepting ditch Rt.                                                     |                          | 20<br>200<br>100                     |                          | 120<br>20                                               | 3.50<br>5.00                            | 0.30<br>2.55        |                          | 24<br>24                              |     |     |     |          | 80  |                            | 1276                                   |                            | 12-18" trash guards; 1-4" gate<br>valve; 4"x60" gate pipe with<br>flanges (Details on Sh. 4) |
| 885+50 -<br>888+00 - 891+28<br>888+25 - 890+70<br>888+70<br>891+28.5               | 18"x102" Siphon (H. 7") & 4" gate<br>valve & 4"x60" gate pipe<br>Guard fence Lt.<br>Riprap wall along river bank<br>Lt. (Details on Sheet No. 4)<br>Cross culvert & ditches<br>Project marker |                          | 20<br>20<br>20                       |                          | 100<br>20                                               | 3.50<br>2.25                            | 0.30<br>2.55        |                          |                                       |     |     |     |          |     | 328                        | 1094                                   | 800                        |                                                                                              |
| TOTAL                                                                              |                                                                                                                                                                                               |                          | 2 3900 5715                          |                          | 910 520                                                 | 12 10 38 05 510                         | 142 416             | 54 164 486 230 4478      | 237 011 800                           |     |     |     |          |     |                            |                                        |                            |                                                                                              |

\* Structural excavation is estimated to be 5% Rock and 95% Common. Each Of Which is estimated to be 80% Dry & 20% Wet.

## FENCING REQUIREMENTS

| STATION                                                                   | SIDE                  | REMOVE<br>FENCE<br>LIN. FT. | BUILD BARR.<br>WIRE FENCE<br>LIN. FT. | GATES<br>BARR. WIRE<br>NO. | GATES<br>D'WAY<br>NO. | STATION                                                                  | SIDE                      | REMOVE<br>FENCE<br>LIN. FT. | BUILD BARR.<br>WIRE FENCE<br>LIN. FT. | GATES<br>BARR. WIRE<br>NO. | GATES<br>D'WAY<br>NO. |
|---------------------------------------------------------------------------|-----------------------|-----------------------------|---------------------------------------|----------------------------|-----------------------|--------------------------------------------------------------------------|---------------------------|-----------------------------|---------------------------------------|----------------------------|-----------------------|
|                                                                           |                       |                             |                                       |                            |                       |                                                                          |                           |                             |                                       |                            |                       |
| 775+00 - 808+50<br>775+00 - 784+50<br>775+00 - 824+00<br>775+80<br>779+00 | R<br>R<br>L<br>L<br>L | 1050                        | 1300<br>2950                          |                            |                       | 869+70<br>880+70 - 881+50<br>882+00 - 891+28.5 L & R<br>882+90<br>883+00 | X<br>L<br>L & R<br>X<br>X | 420<br>190                  | 2530                                  | 2                          |                       |
| 808+40<br>809+00 - 821+00<br>810+10<br>810+50<br>810+50 - 817+70          | X<br>R<br>X<br>L<br>R | 190<br>160                  | 1200                                  |                            |                       | 885+20<br>888+10                                                         | X<br>X                    | 130<br>130                  |                                       |                            |                       |
| 810+65<br>816+30<br>819+70<br>821+00 - 852+00<br>822+70                   | X<br>X<br>L<br>R<br>X | 90<br>80                    | 3200                                  |                            |                       |                                                                          |                           |                             |                                       |                            |                       |
| 824+00 - 852+00<br>827+25<br>828+20<br>831+00 - 834+30<br>833+00          | L<br>L<br>X<br>L<br>L | 420                         | 2900                                  |                            |                       |                                                                          |                           |                             |                                       |                            |                       |
| 834+80<br>835+75<br>840+35<br>843+50<br>845+10                            | X<br>L<br>X<br>R<br>X | 180<br>110<br>550           |                                       |                            |                       |                                                                          |                           |                             |                                       |                            |                       |
| 847+50<br>849+00<br>849+60<br>850+30 - 851+30                             | L<br>X<br>L<br>L      | 200                         |                                       |                            |                       |                                                                          |                           |                             |                                       |                            |                       |
| 852+00 - 882+00<br>852+30<br>852+70<br>864+00 - 869+00                    | L & R<br>X<br>R<br>L  | 260                         | 6360                                  |                            |                       | TOTAL                                                                    |                           | 6510                        | 20440                                 | 11                         | 2                     |

## R.O.W. MARKERS

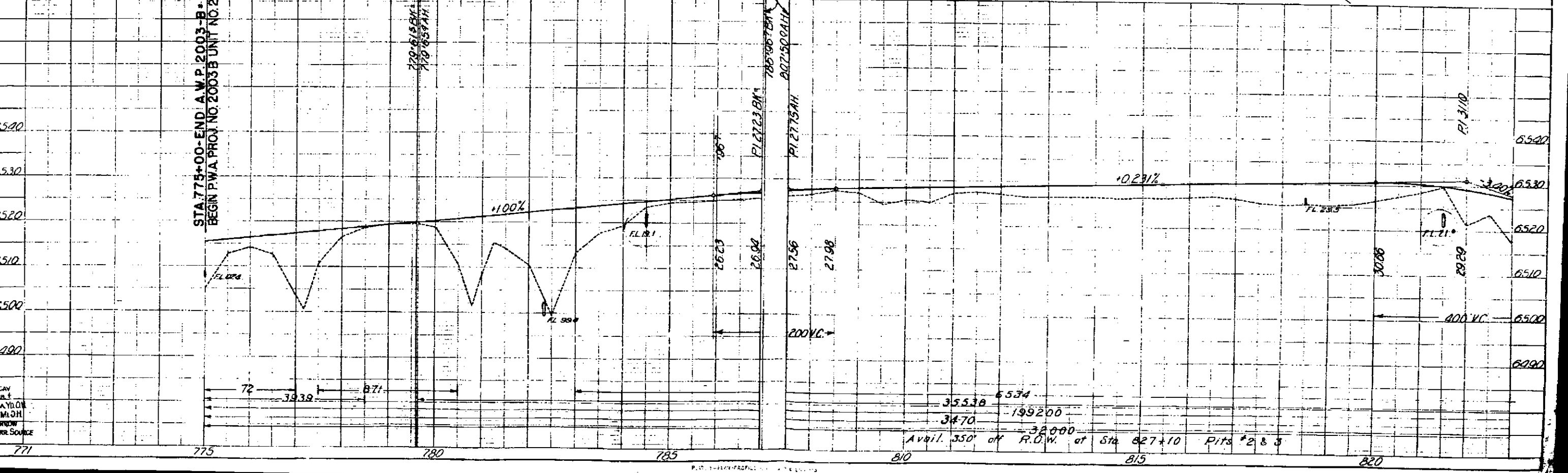
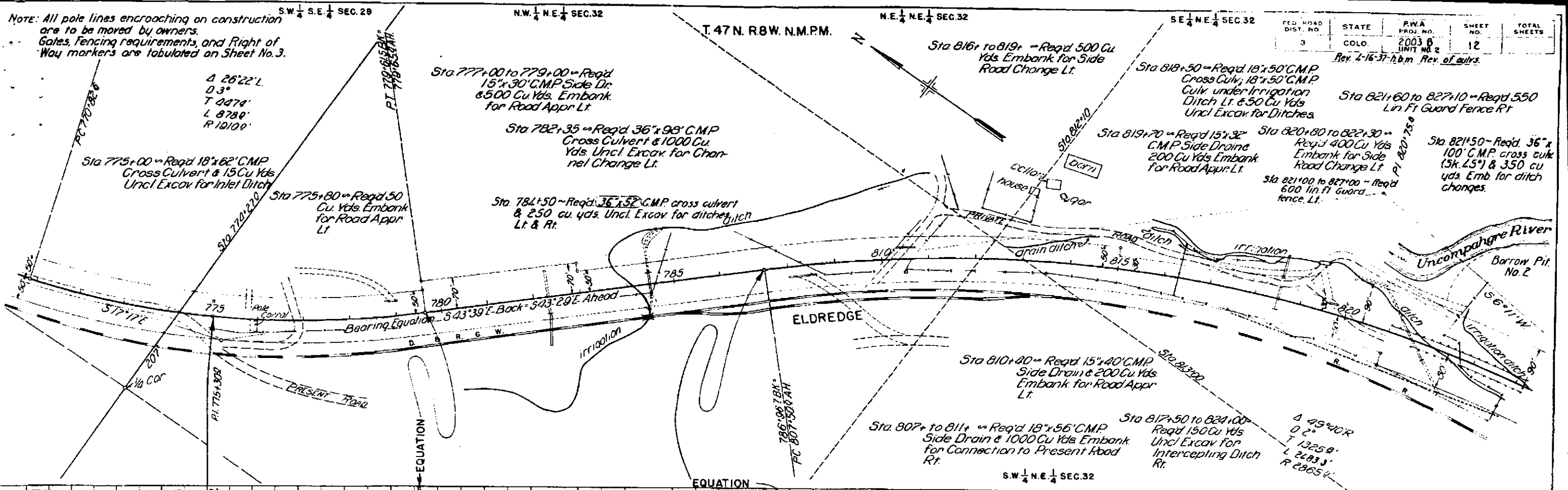
| STATION  | SIDE | NO. |
|----------|------|-----|
| 779+61.5 | L    | 2   |
| 783+00   | L    | 2   |
| 815+00   | L    | 2   |
| 820+00   | L    | 2   |
| 821+00   | R    | 2   |
| 825+00   | R    | 2   |
| 827+00   | L    | 2   |
| 840+50   | R    | 2   |
| 841+00   | L    | 2   |
| 844+00   | L    | 2   |
| 847+00   | L    | 2   |
| 853+27   | L    | 1   |
| 853+50   | L    | 1   |
| 853+65   | R    | 1   |
| 856+00   | R    | 2   |
| 860+00   | R    | 1   |
| 863+00   | R    | 1   |
| 865+00   | R    | 1   |
| 866+06.2 | L    | 1   |
| 868+80   | L    | 1   |
| 870+00   | R    | 1   |
| 870+50   | L    | 2   |
| 891+00   | L    | 1   |
| TOTAL    |      | 36  |

Rev. 4-16-77 h.d.m. Rev. of culverts  
Rev. 5-23-78 h.d.m. End of Proj.

FILE NO. 3  
STATE CO. 3  
PROJECT NO. 2003 B  
SHEET NO. 3  
TOTAL SHEETS



Note: All pole lines encroaching on construction are to be moved by owners. Gates, fencing requirements, and Right of Way markers are tabulated on Sheet No. 3.





Sta 852+50~Reqd. 24"x54" C.M.P. cross culvert & 20 cu yds. Uncl. Excav. for inlet ditch.

Sta. 852+70~Reqd. 100 cu yds. Uncl. for road approach Rt.

N.E. 1/4 Sec 5  
T. 46 N. R. 9 W.

N.M.P.M.

Sta. 854+00 to 869+70~Reqd. Channel change Lt. (Details on Sheet 4). Excav. included for payment in roadway quantities.

Sta. 854+00 to 868+00~Reqd. 7500 cu yds. Heavy riprap for wall along right bank of channel change (Details on Sheet No. 4).

Sta. 864+50~Reqd. 100 cu yds. rock fill dam in old river channel Rt. (Details on Sheet No. 4).

Sta. 868+00 to 869+70~Reqd. 3500 cu yds. Heavy riprap for dam along right bank of channel change (Details on Sheet No. 4).

Sta. 868+45~Reqd. special 30"x182" C.M.P. asphalt coated, paved invert (10 ga.) (Sk. 75") with 30" No. 112 Canal and reservoir gate (22' frame) & trash guard (Details on Sheet No. 4.) & 75 cu yds. Uncl. Excav. for ditches.

Sta. 857+35~Reqd. 48"x150" C.M.P. cross culvert (Sk. 60")  
Sta. 862+ to 866+~Reqd. remove 8 stop bars & wood bridge.

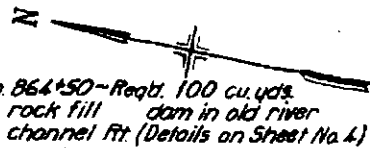
Proposed Channel Change  
Heavy Riprap

Uncompacted

Sta. 854+30~Reqd. 36"x52" C.M.P. cross culvert & 30 cu yds. Uncl. Excav. for ditches.

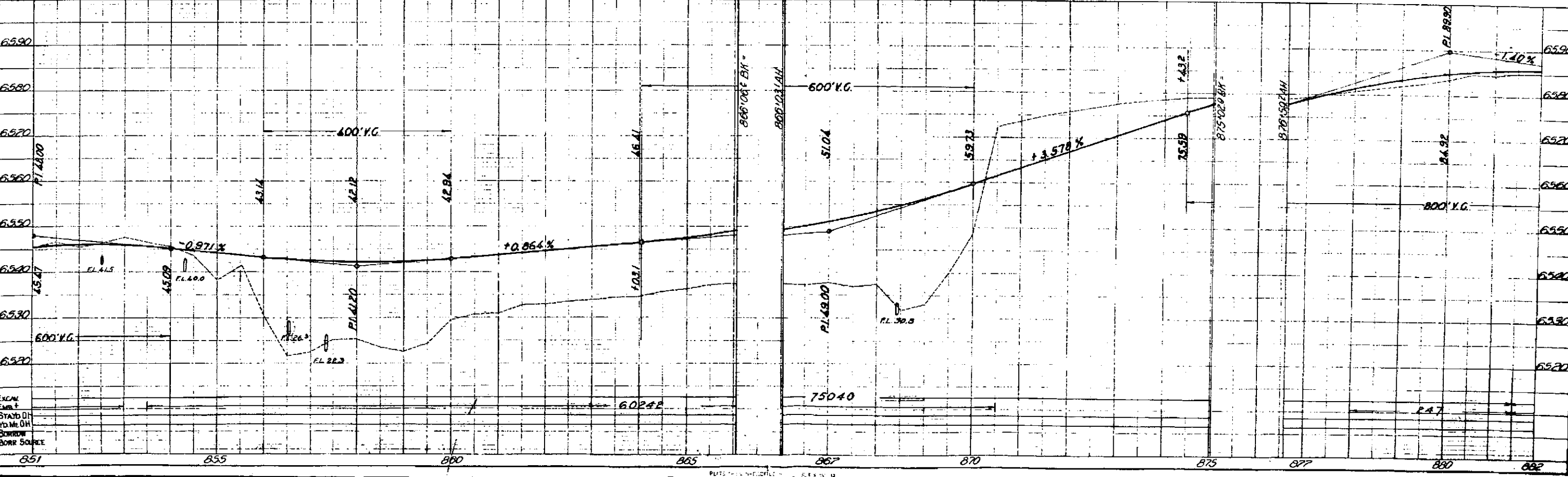
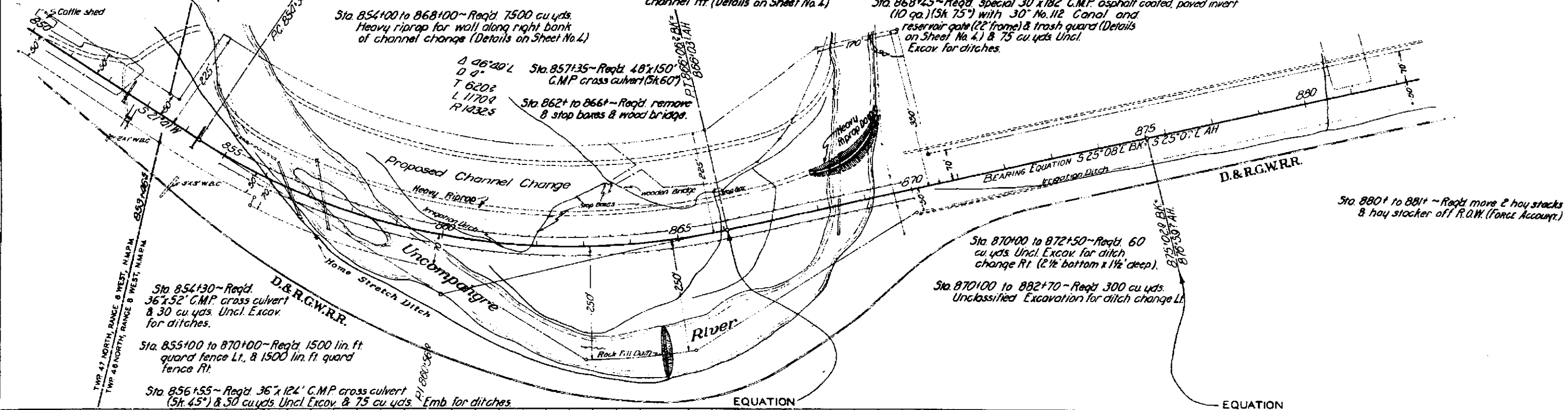
Sta. 855+00 to 870+00~Reqd. 1500 lin. ft. guard fence Lt. & 1500 lin. ft. guard fence Rt.

Sta. 856+55~Reqd. 36"x124" C.M.P. cross culvert (Sk. 45") & 50 cu yds. Uncl. Excav. & 75 cu yds. Emb. for ditches.



| FED. ROAD DIST. NO. | STATE | P.W.A. PROJ. NO.  | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------------|-----------|--------------|
| 3                   | COLO. | 2003-B UNIT NO. 2 | 14        |              |

Rev. 4-16-37 H.B.M. Rev. of culv.



EXC. & EMB. BY STATE OR Y.O. ME. OR BORROW SOURCE



