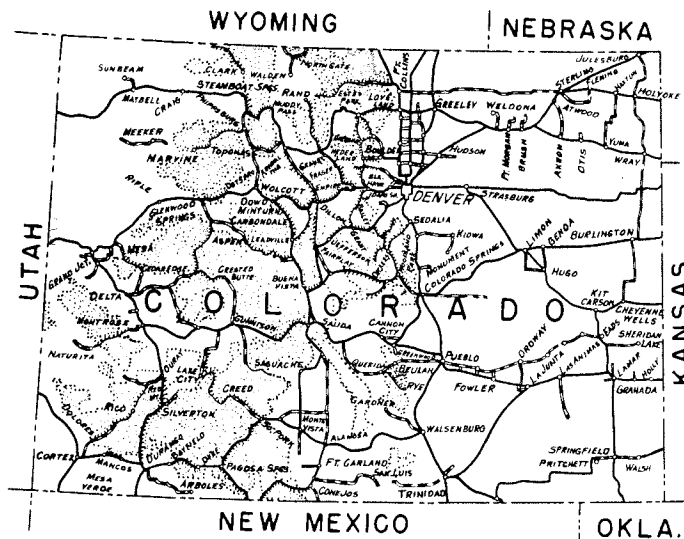




U.S. DEPARTMENT OF COMMERCE BUREAU OF PUBLIC ROADS

PLANS FOR PROPOSED COLORADO FOREST HIGHWAY PROJECT 1-2(2) DOLORES-RICO LENGTH 3.587 MILES CLASS 2

SAN JUAN NATIONAL FOREST
MONTEZUMA COUNTY

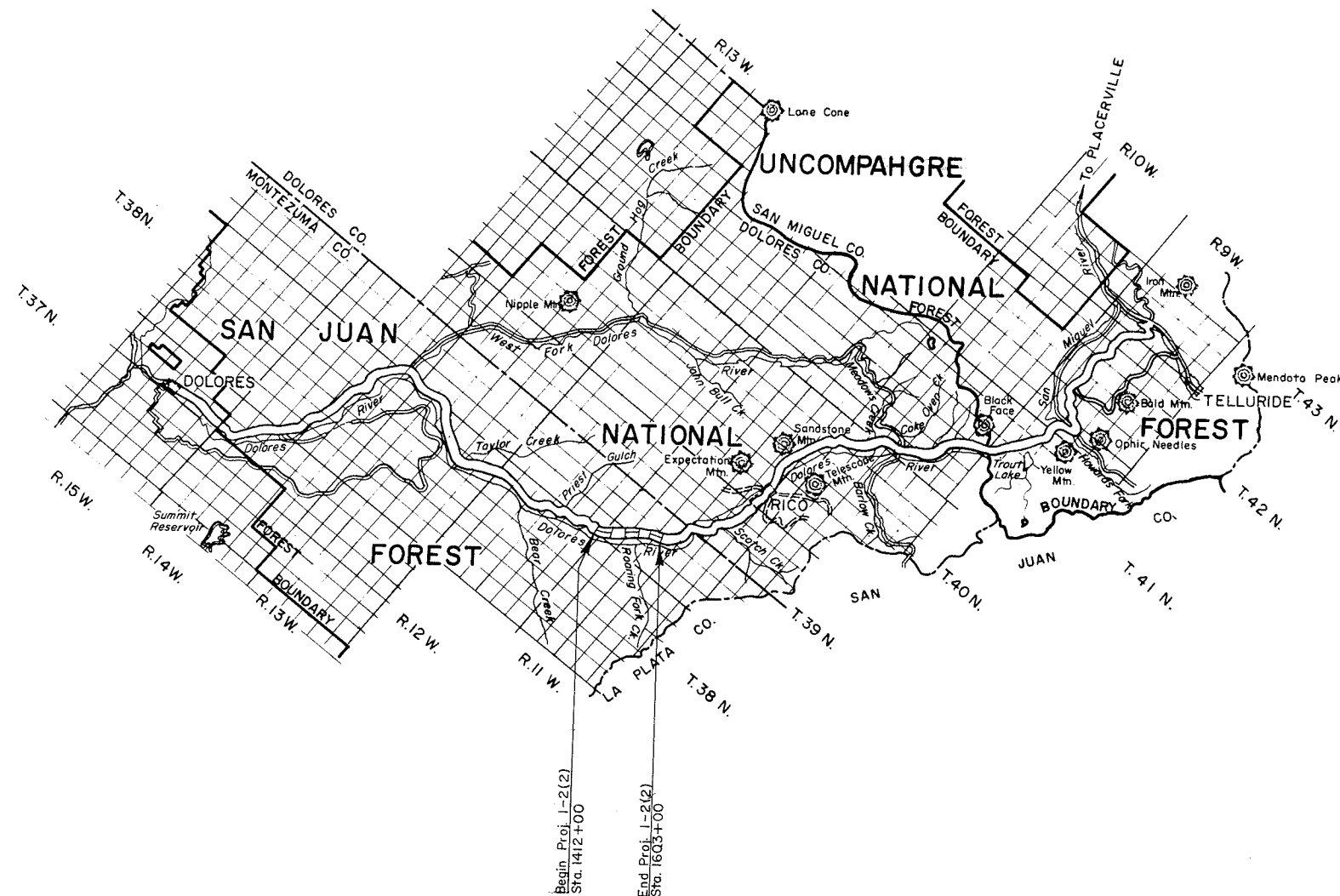
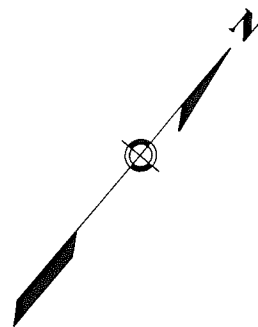
REGION 9 ST
PROJECT 1-2(2), Dolores-
SHEET 1 OF

INDEX TO	
SHEET NO	DESCRIPTION
1	Title Sheet
2	Typical Sections
3	Summary (2 Sheets)
51-57	Plan & Profile
Std. 113	Type A and B Concrete
Std. 118	Concrete and Metal End
Std. 119	Underdrain
Std. 131	Maintenance Posts and
Std. 136	Wire Fences with Steel F
Std. 143	Project Identification Sig
Std. 154	Rock and Wire Bank Prot

Plans prepared by: BPR
Date: July, 1963

Description of Project
Improvement: Grading
Roadbed Width: 34'
Type Code: QQII

Traffic Volume
ADT.(1961) 160
ADT.(1981) 500
DHV 75
D 65%
T 5%
V 50

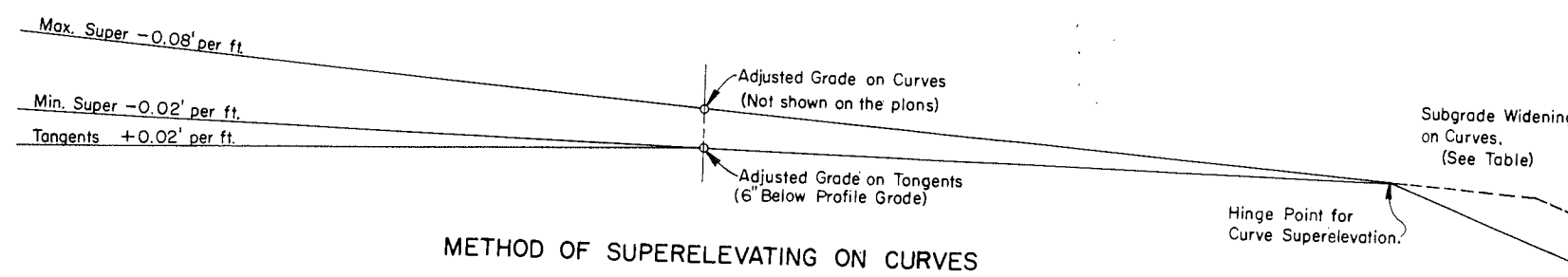
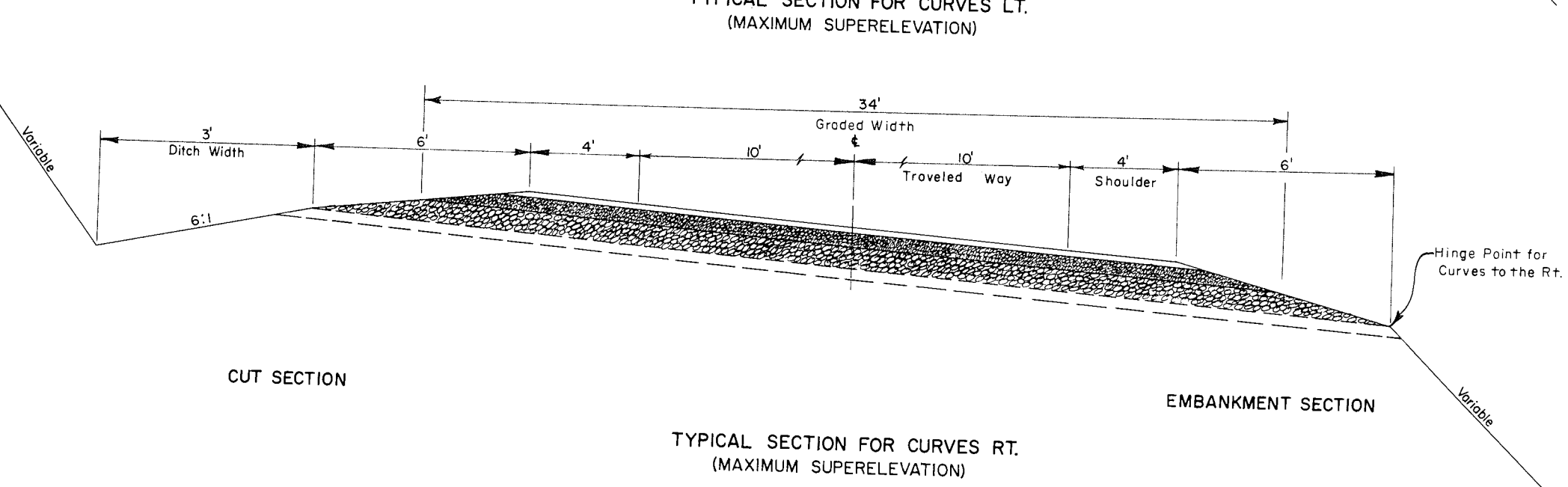
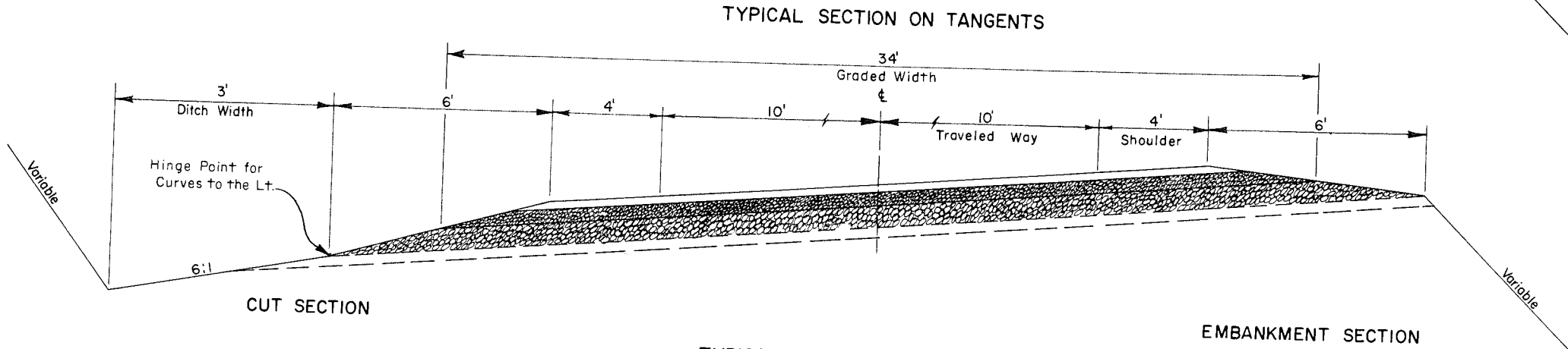
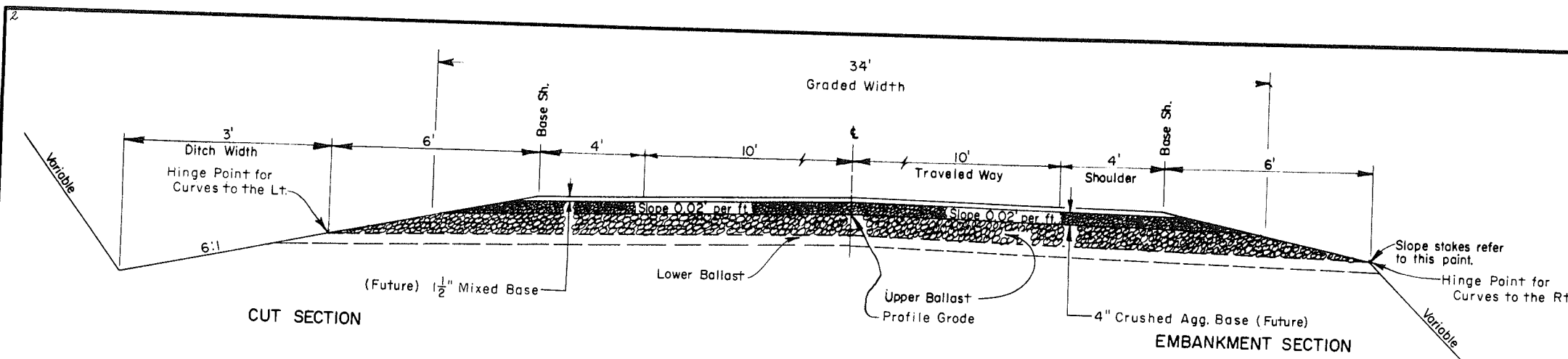


LEGEND

EXISTING ROAD	UNIMPROVED	GRADED	REINFORCED SUBGRADE	BASE COURSE	SURFACE TREATMENT	ROAD PLANT MIX BITUM.	CONCRETE
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U.S. DEPARTMENT OF
BUREAU OF PUBLIC
REGION NO. 9 DENVER

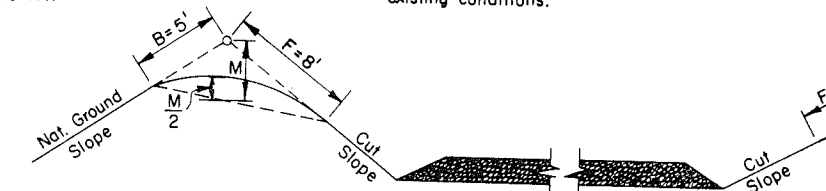
APPROVED: _____
REGIONAL ENGINEER



HEIGHT	EMBANKMENT SLOPE
0' to 3'	6:1
3' to 6'	4:1
6' to 12'	2:1
12' and up	2:1

HEIGHT	CUT SLOPE
0' to 5'	3:1
5' to 10'	2:1
10' and up	1 1/2:1

The above tables are to be used as a guide in the design and construction of the project. The designer or field engineer may vary from these to fit existing conditions.



CUT SLOPE ROUNDING
When the cut slope is less than 8', reduce B & F distance to the actual slope distance.
Slope Rounding shall be considered as a subsidiary part of the work required in dressing the cut slopes and no allowance will be made for materials moved.

Rounding, Worping, and Finishing slopes shall be as provided in Standard Specifications and/or Special Provisions.

BALLAST MATERIALS

STA. TO	STA.	UPPER BALLAST		LOWER BALLAST	
		Item	Depth	Item	Depth
1412 + 00	1603 + 00	104 (2)	6"	104 (2)	3

GENERAL NOTES

If the Plans require the placing of lower ballast, the roadway section shall be constructed to accommodate the required thickness of lower ballast below adjusted grade.
On Grades of 3% or less, where wet or unstable conditions exist, the engineer may increase the ditch width 3 feet or more.
Any subsurface data represented on these plans is limited to the specific locations shown and those locations alone.
The planned thickness of Ballast Materials is based on laboratory analysis of samples, taken at random along the proposed improvement. During construction, the engineer will adjust the thickness as necessary to insure adequate Structural Stability.

CURVE WIDENING*

Degree of Curve	Pavement Width		
	20'	22'	24'
5°-10°	2'	-	-
11°-21°	3'	2'	-
22° & Up	4'	3'	2'

* Widen Subgrade, Base and Surfacing.

U.S. DEPARTMENT OF CO
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REGION NO. 9 DENVER, C

TYPICAL CROSS

NATIONAL FOREST I

ROUTE: Dolores-Rico
PROJECT: 1-2(2)
NATIONAL FOREST: San Juan
COUNTY: Montezuma
STATE: Colorado

SUMMARY OF ESTIMATED QUANTITIES

The following is an approximate estimate of quantities and no responsibility for their accuracy is assumed. No allowance will be made for anticipated profit or loss incurred due to the increase, decrease or elimination of any of the quantities shown that may be found necessary during construction.

SUMMARY OF QUANTITIES

ITEM N ^o	106	102(1)		102(9)	104(2)	105(2)	108(1)	109(1)	310(4)	590(2)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
STATION TO STATION	Embankment Prism	Unclassified Excavation Prism		Stripping and Storing Topsoil	Overbreak and Slides	Furrow Ditches	Special Subbase, Grading B-1	Yard Mile Overhaul	Watering	Rolling	Asphalt, Grade MC-0, 1 or 2 Prime Coat	Placing Topsoil																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Project:
Stations: 1412+00 to 1603+00
Length: 3.587 miles
Width:
Grading: 34 feet
Special subbase, grading B-1, depth 9
Asphalt, grade MC-O, 1 or 2, prime coat
Type Code: 0011

SUMMARY OF QUANTITIES

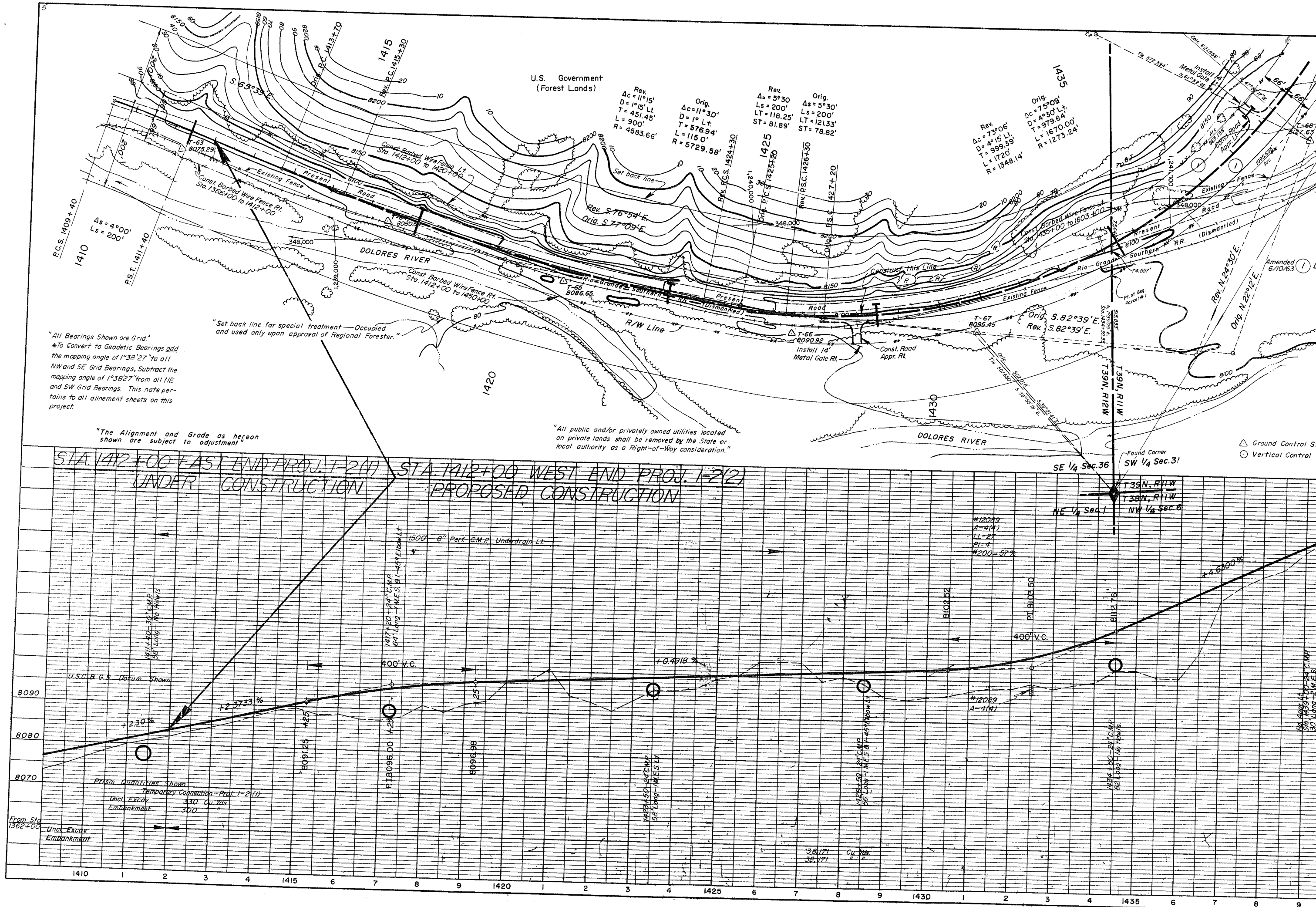
Dolores-Rico
PROJECT: 1-2(2)
STATE: Colorado COUN
NATIONAL: Forest: San Ju

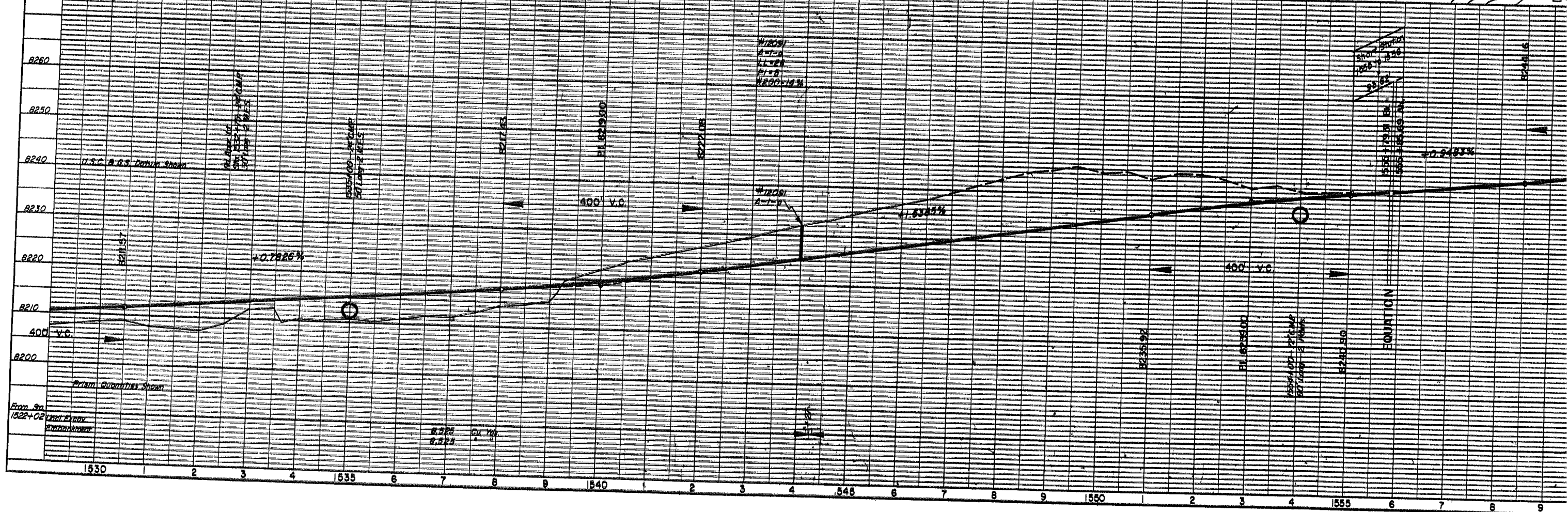
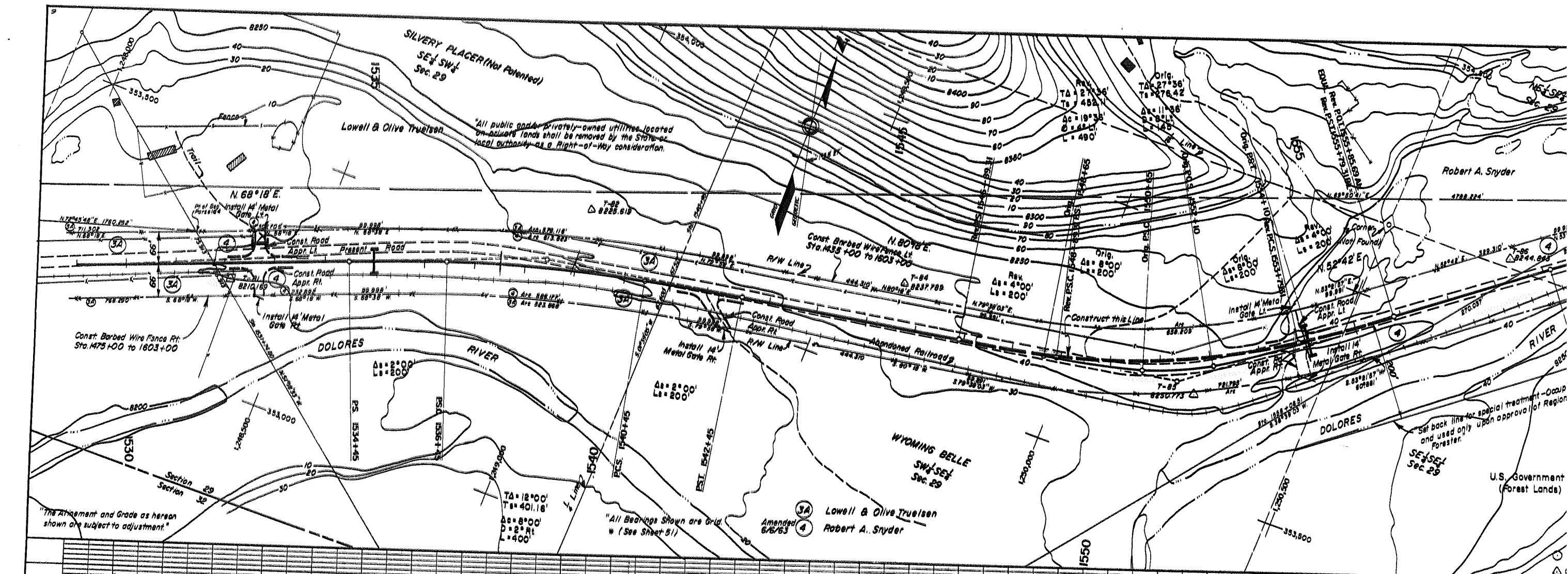
The following is an approximate estimate of quantities and no responsibility for their accuracy is assumed. No allowance will be made for anticipated profit or loss incurred due to the increase, decrease or elimination of any of the quantities shown that may be found necessary during construction.

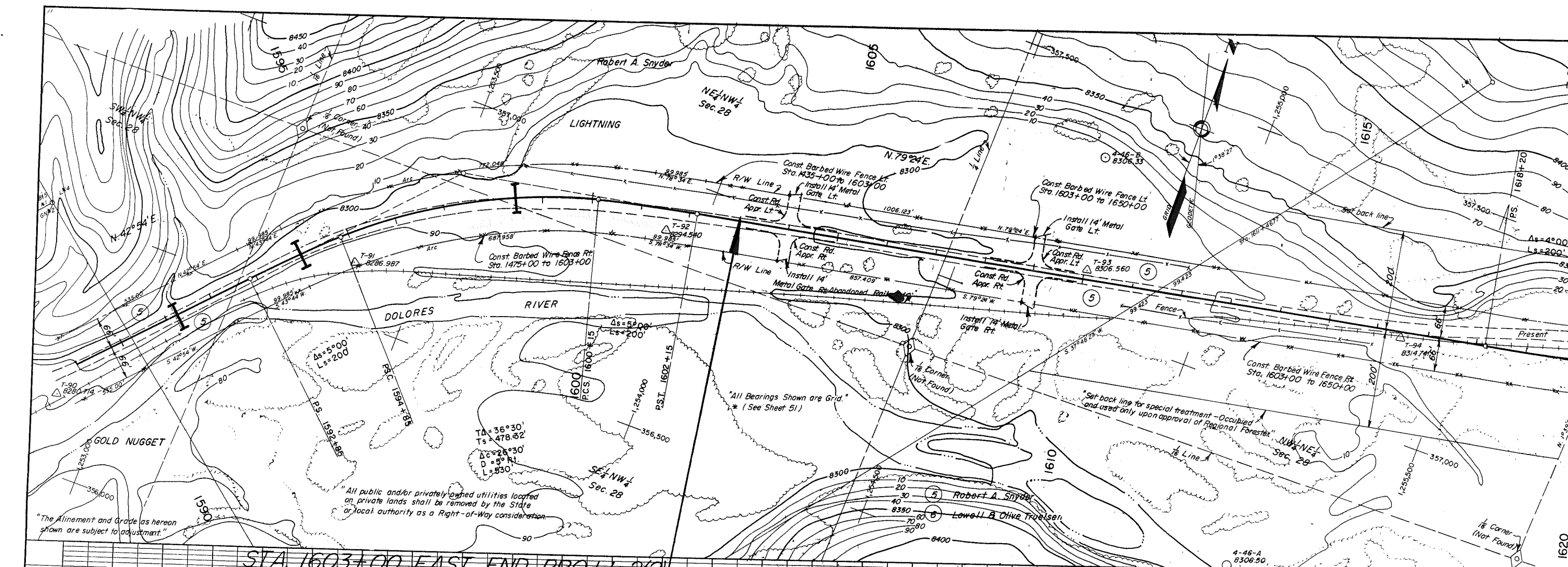
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ITEM#	NAME
10	Miscellaneous force account
102(1)	UNCLASSIFIED EXCAVATION
102(9)	Furrow ditches
103(1)	Excavation for structures
104(2)	Special subbase, grading B-1
105(2)	Yard mile overhaul
108(1)	Watering
109(1)	Rolling
310(4)	Asphalt, grade MC-90, 1, or 2, prime
406(1)	Class A concrete
453(1A)	24-inch, 14-gage, galv. corr. metal
453(1B)	30-inch, 14-gage, galv. corr. metal
453(1C)	36-inch, 12-gage, galv. corr. metal
453(1D)	72-inch, 10-gage, galv. corr. metal
453(6)	24-inch, C.M.P. elbows
460(2A)	Metal end sections for 24" pipe culverts
460(2B)	Metal end sections for 30" pipe culverts
460(2C)	Metal end sections for 36" pipe culverts
515(1)	Rock and wire bank protection
520(4)	8-inch perf. corr. metal pipe underdrains
520(7)	Porous backfill material
560(2)	Maintenance marker posts
561(1)	Barbed wire fence, type 3-A
561(2)	Gates, standard, 14-foot
590(2)	Placing tooltip

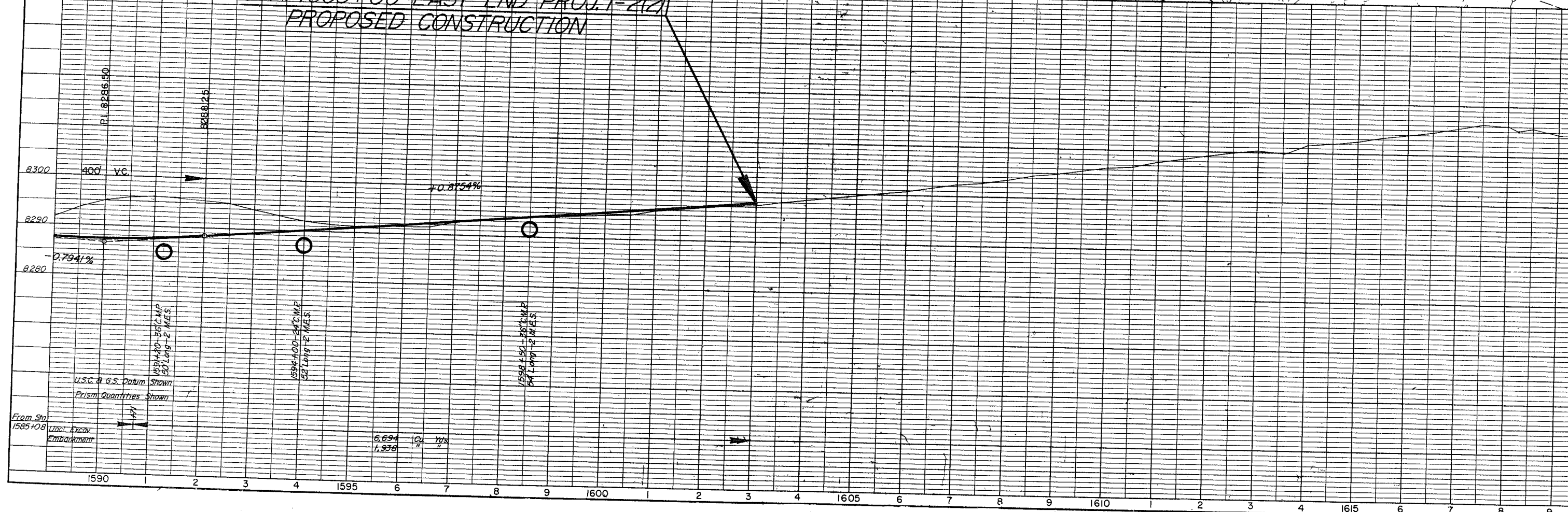
DoLors-Rice
PROJECT: 1-2(2)
STATE: Colorado COUNTY
NATIONAL: Forest: San Juan







STA 1603+00 EAST END PROJ. 1-2(2) PROPOSED CONSTRUCTION



SINGLE PIPE INSTALLATION

NOTE: For skews other than those shown multiply quantities and dimensions "A", "B", "S" & "L" for square pipes by the secant of the skew angle. The dimension "S" and the quantities for Slope Paving are computed for a 1 1/2 : 1 side slope. For a 2 : 1 side slope multiply the values shown by 1.24.

NOTE: Materials shall not be ordered until the Engineer has checked the length, skew angle, and slope bevel in the field.

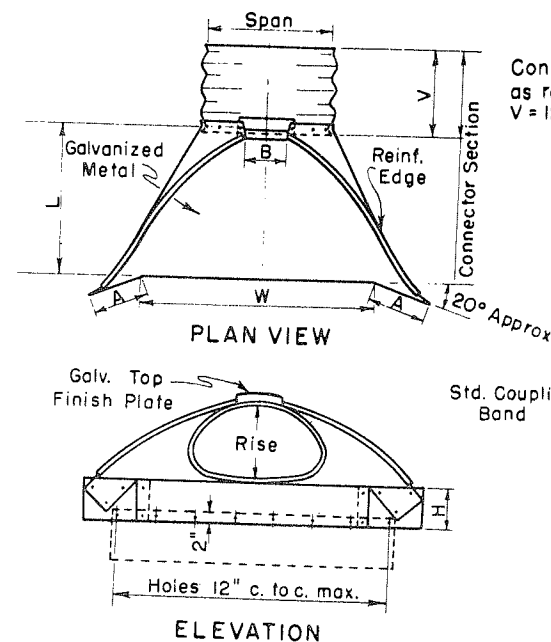
Specifications: Bureau of Public Roads, F.P. 61.

Concrete: All concrete shall be Class "A", using type II (low alkali) Portl Cement with an air-entraining admixture. Concrete shall be poured monolithically. On headwalls all exposed edges shall be chamfered $\frac{3}{4}$ inch and all exposed surfaces shall have a "Rubbed Finish".

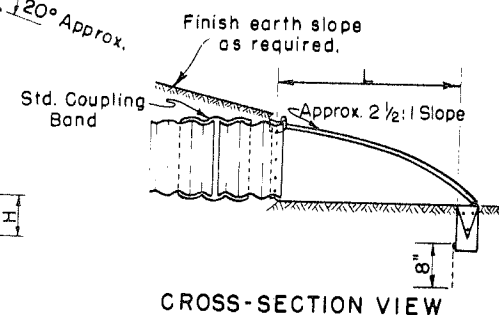
Slope paving shall conform, in general, to the Specifications, Section 330, Portland Cement Concrete Pavement, except that sur variations less than $\frac{3}{8}$ inch, when tested in accordance with Artic 330-3.13, will not require correction. Measurement and payment all concrete shall be in accordance with Section 406 of the Specifications, FP 61.

Reinforcement Steel: Bar reinforcement shall be deformed intermediate grade steel conforming to current A.S.T.M. Specifications A15. Well wire fabric shall conform to current A.S.T.M. Specifications A185. Reinforcement bors and wire fabric shall be included in the price paid for Class "A" concrete unless a specific quantity of reinforcement ste is shown for this structure on the summary sheet.

STANDARD
TYPE "A" AND TYPE "B"
CONCRETE HEADWALLS FOR
METAL PIPE CULVERTS



Connectors for pipes 18"x11" to 58"x36" shall be as recommended by the manufacturer.
V = 12" for 65"x40" and 72"x44"



METAL END SECTION FOR PIPE ARCH CULVERTS

Norm. Culv. Dia.	Arch Dimen. Span	Rise	Gage	DIMENSIONS					
				A	B	H	L	W	
15"	18"	11"	16	4 1/2"	9"	6"	19"	30"	
18"	22"	13"	16	5 1/4"	10"	6"	23"	36"	
24"	29"	18"	14	7"	14"	6"	31 1/2"	48"	
30"	36"	22"	14	8 3/4"	16"	6"	38 1/2"	60"	
36"	43"	27"	12	10 3/4"	17 1/2"	7 5/8"	47"	75"	
42"	50"	31"	12	12 1/4"	20"	9 1/8"	54"	85"	
48"	58"	36"	12	14"	26"	10 5/8"	63"	96"	
54"	65"	40"	12	15 3/4"	23"	10 5/8"	70"	112"	
60"	72"	44"	10	17 1/4"	24"	12 1/8"	77"	128"	

GENERAL NOTES FOR C.M.P. ARCH

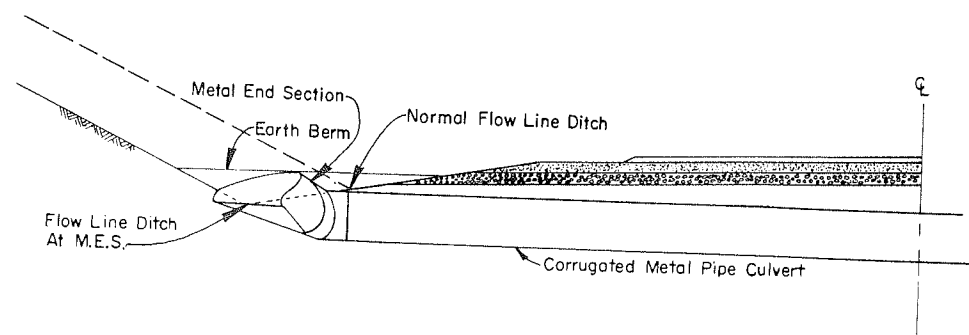
Toe plates shall be installed on end sections when directed by the Engineer. Toe plate shall be punched to match holes in skirt lip. 3/8" galv. bolts shall be furnished. Length of toe plate is W+10" for Pipe-Arches with Rise of 11" to 27" incl. and W+18" min. for Pipe-Arches with Rise of 31" to 44" incl.

Skirt Section for Pipe-Arches with Rise of 11" to 22" incl. shall be made in one piece.

Skirt Section for Pipe-Arches with Rise of 27" to 36" incl. may be made from two sheets joined by riveting or bolting on center line.

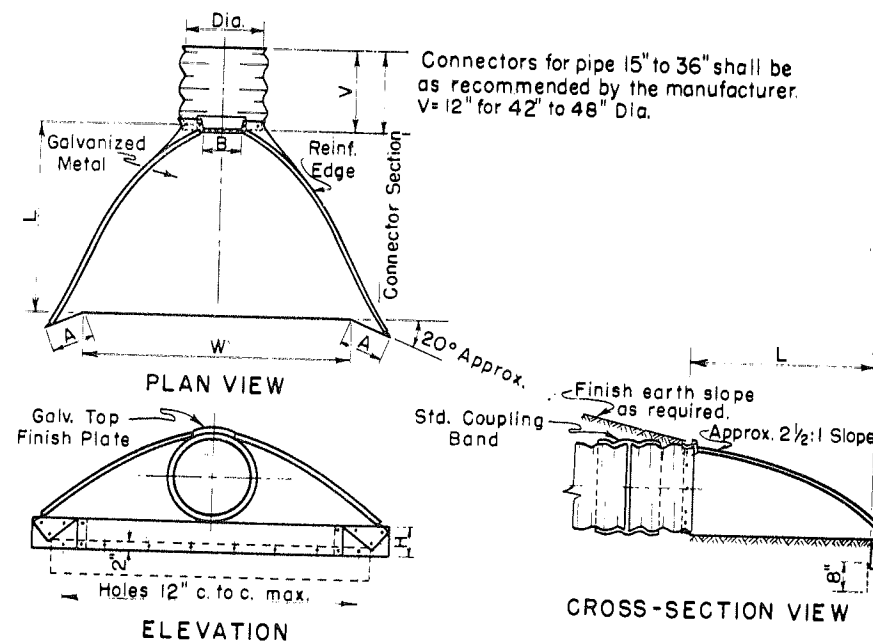
Skirt Section for Pipe-Arches with Rise of 40" to 44" incl. may be made from three sheets joined by riveting or bolting at equal distances from center line.

Connector Section, Corner Plate and Toe Plate shall be same gage as Skirt and shall be galvanized.



SECTION AA

TYPICAL METAL END SECTION INSTALLATION IN CUT SECTIONS



Connectors for pipe 15" to 36" shall be as recommended by the manufacturer.
V = 12" for 42" to 48" Dia.

METAL END SECTION FOR PIPE CULVERTS

Pipe Diam.	Gage	DIMENSIONS					
		A	B	H	L	W	
12"	16	4 3/4"	6"	6"	21"	24"	
15"	16	6"	8"	6"	26"	30"	
18"	16	7"	9"	6"	31"	36"	
24"	14	9 1/2"	12"	6"	42"	48"	
30"	14	12"	15"	7 1/2"	52 1/2"	60"	
36"	12	14"	18"	9"	63"	72"	
42"	12	16"	21"	10 1/2"	73 1/2"	84"	
48"	12	18"	27"	12"	84"	90"	

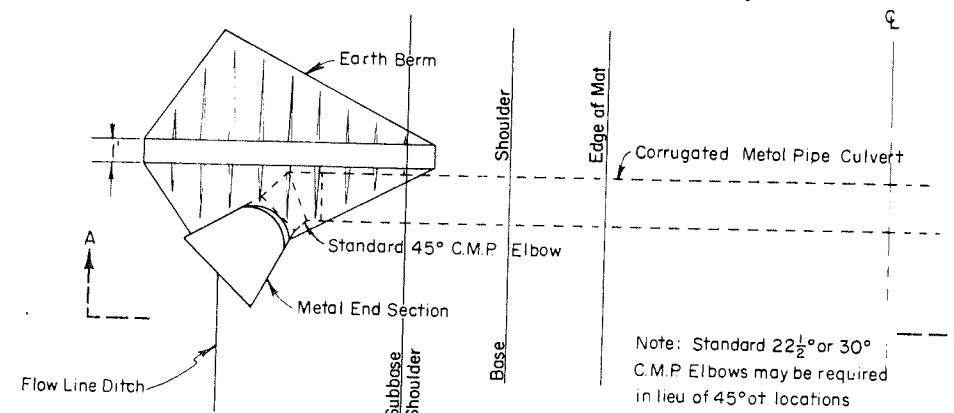
GENERAL NOTES FOR C.M.P.

Toe plates shall be installed on end sections when directed by the Engineer. Toe plate shall be punched to match holes in skirt lip. 3/8" galvanized bolts shall be furnished. Length of toe plate is W+10" for 12" to 30" dia. pipe incl. and W+22" for 36" to 48" dia. pipe incl.

Skirt Section for 12" to 24" dia. pipe incl. shall be made in one piece.

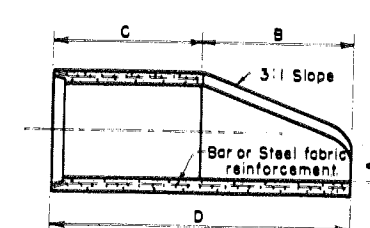
Skirt Section for 30" to 48" dia. pipe incl. may be made from two sheets joined by riveting or bolting on center line.

Connector Section, Corner Plate and Toe Plate shall be same gage as skirt and shall be galvanized.

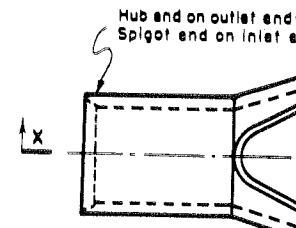


Note: Standard 22 1/2° or 30° C.M.P. Elbows may be required in lieu of 45° at locations where pipe is skewed.

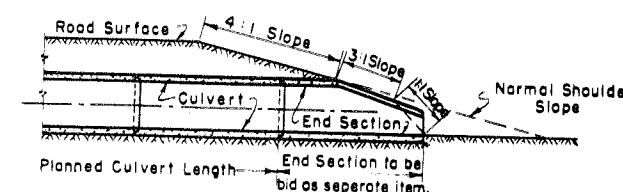
PLAN



SECTION X-X



PLAN



SLOPE DETAIL

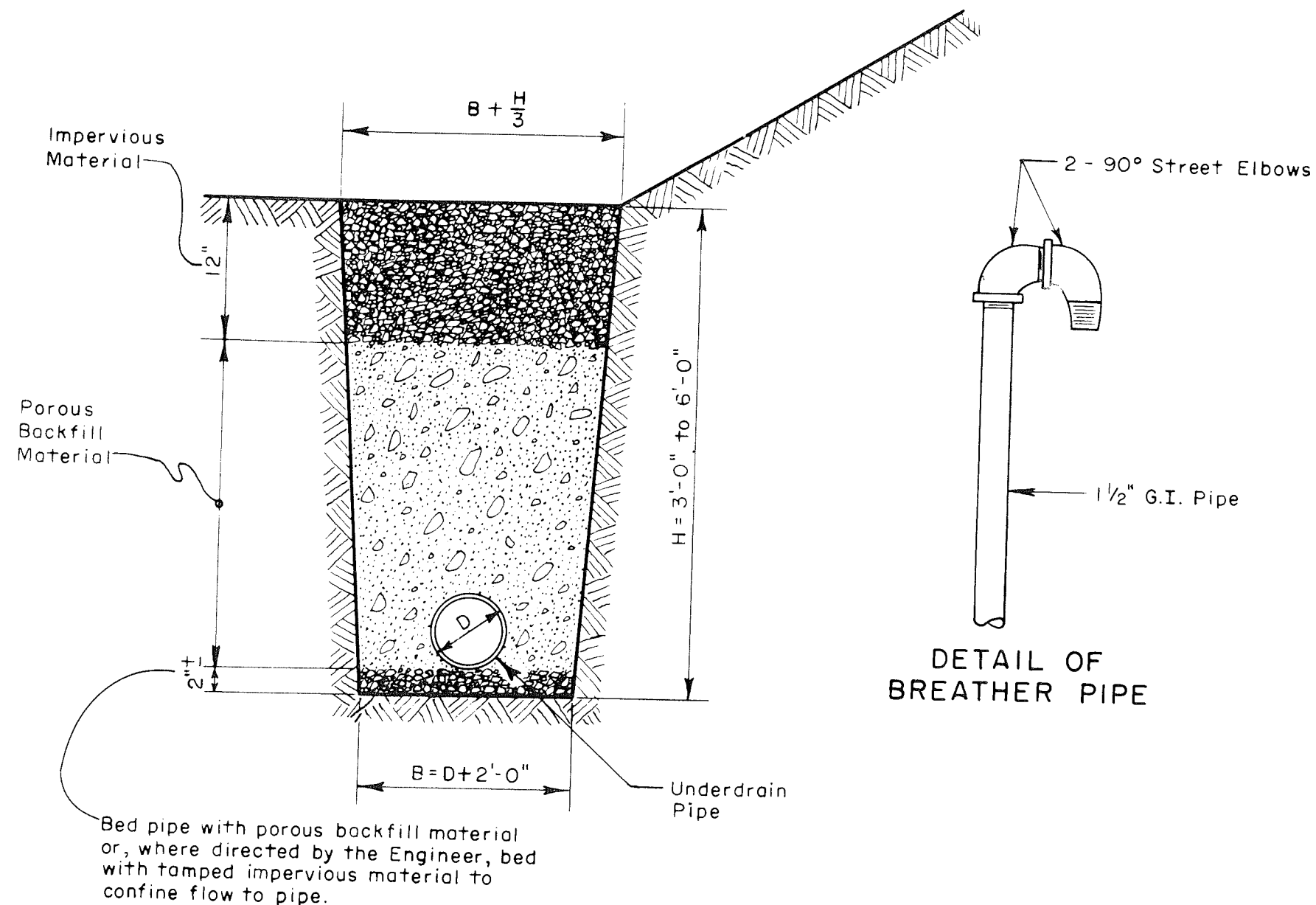
END-SECTION DIMENSIONS					
DIAM.	A	B	C	D	E
12"	4"	2'-0"	4'-0 7/8"	6'-0 7/8"	2'-0"
15"	6"	2'-3"	3'-10"	6'-1"	2'-6"
18"	9"	2'-3"	3'-10"	6'-1"	3'-0"
24"	9 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"
30"	1'-0"	4'-6"	1'-7 1/2"	6'-1 1/2"	5'-0"
36"	1'-3"	5'-3"	2'-10 3/4"	8'-1 1/4"	6'-0"
42"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"
48"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"

Note: Design of end-section shall conform to Standard Reinforced Sectional Concrete Culvert Pipe.

CONCRETE END SECTION FOR PIPE CULVERTS

U.S. DEPARTMENT OF CC
BUREAU OF PUBLIC E
REGION NO. 9 DENVER, C

STANDARD CONCRETE METAL END SI FOR PIPE CUL



PIPE UNDERDRAIN

GENERAL NOTES

SPECIFICATIONS: Current B.P.R. Standard Specifications

MATERIAL: Porous granular backfill shall be clean, sand and shall conform to the following gradation requirements:

Passing 3" Sieve 100 %

Passing #4 Sieve 50 % Min.

All porous material passing the #4 sieve shall conform to the following:

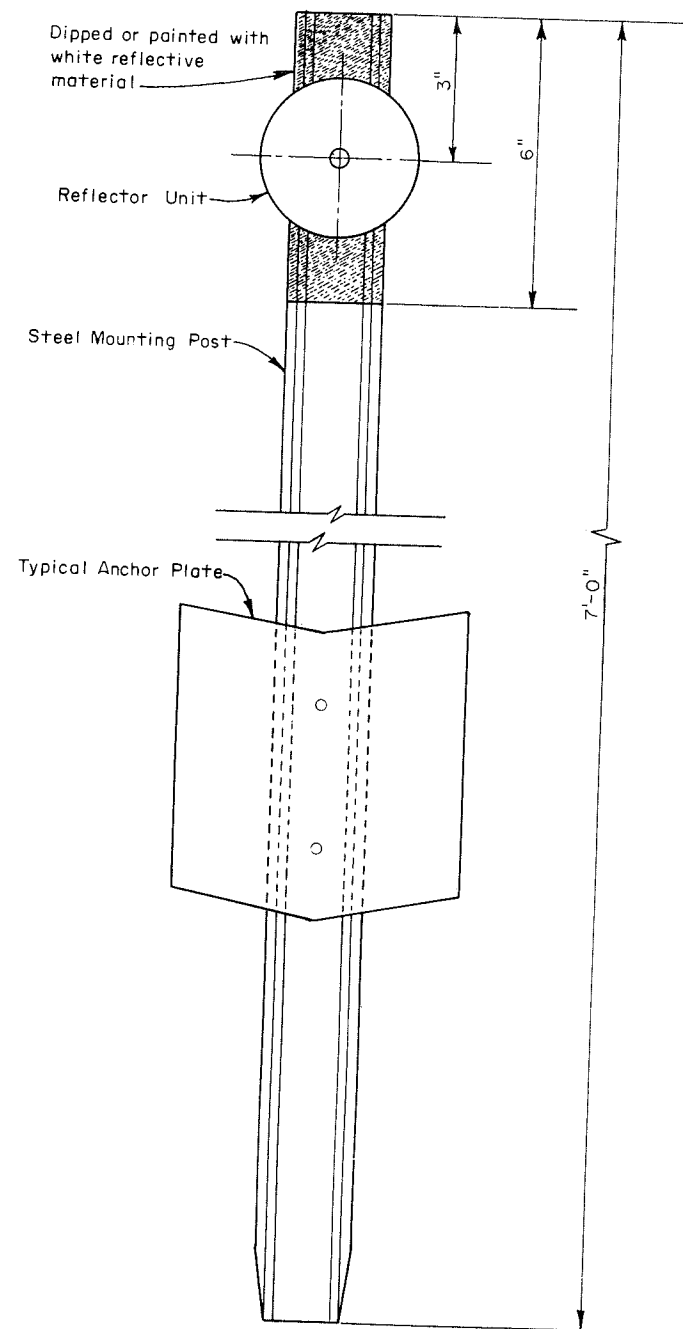
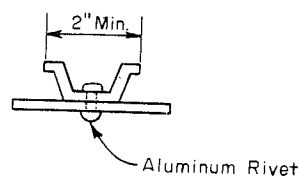
Passing #50 Sieve 10 - 30 %

Passing #100 Sieve 0 - 10 %

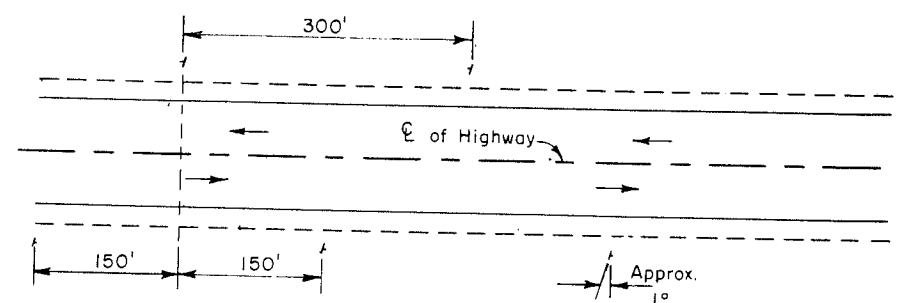
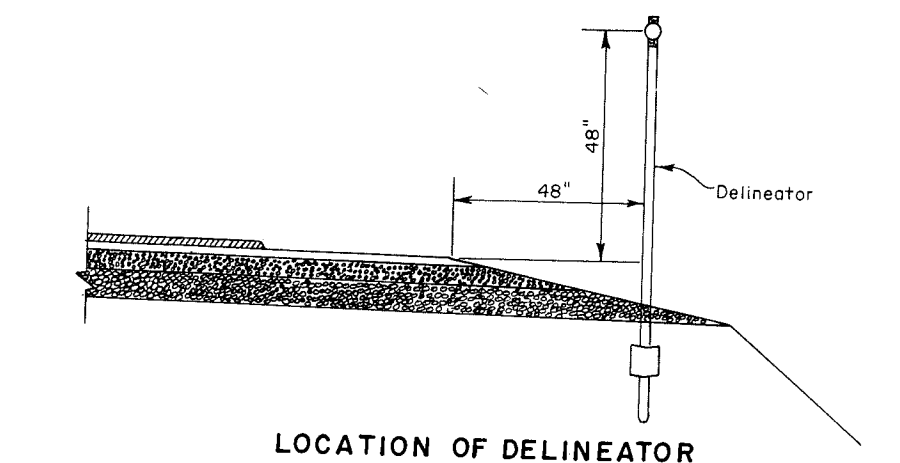
Passing #200 Sieve 0 - 2 %

Impervious material shall contain sufficient grout material to be stable when wet and compacted in place.

CONSTRUCTION: When trench is under the roadbed, pipe or other structure, the porous material shall be placed in the trench and the porous material shall be tamped into place. The material shall be dampened prior to placing if necessary to prevent segregation. If mucky trench bottoms are encountered they shall be stabilized prior to placing bedding material by placing granular material into the trench bottom.



DELINEATOR

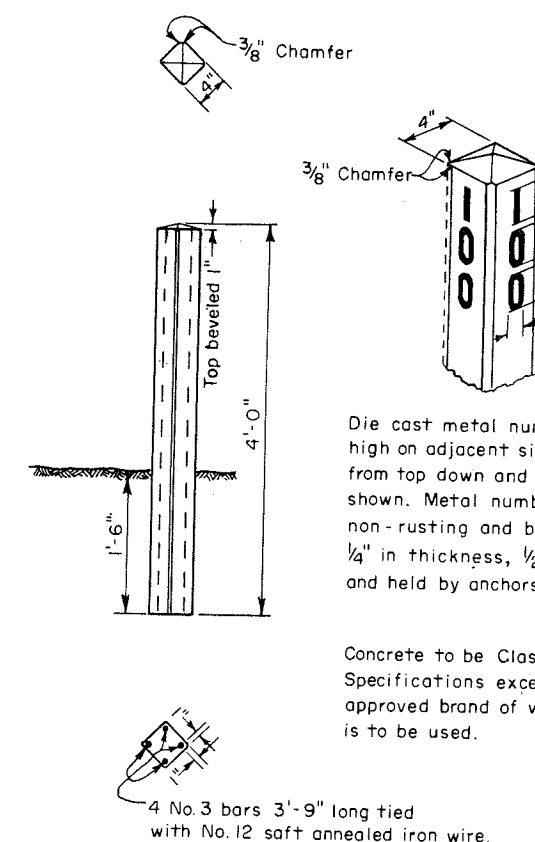


DELINEATOR INTERVAL ON HORIZONTAL CURVES

DEGREE OF CURVE	SPACING ON CURVE	SPACING ON EACH END OF CURVE		
		FIRST SPACE	SECOND SPACE	THIRD SPACE
1	152	200	200	200
2	106	191	200	200
3	86	155	200	200
4	74	133	200	200
5	66	119	198	200
7	55	99	165	200
9	48	86	144	200
12	41	74	123	200
15	36	65	108	200
18	33	59	99	198
21	30	54	90	180
25	28	50	84	168
30	24	43	72	144

GENERAL NOTES

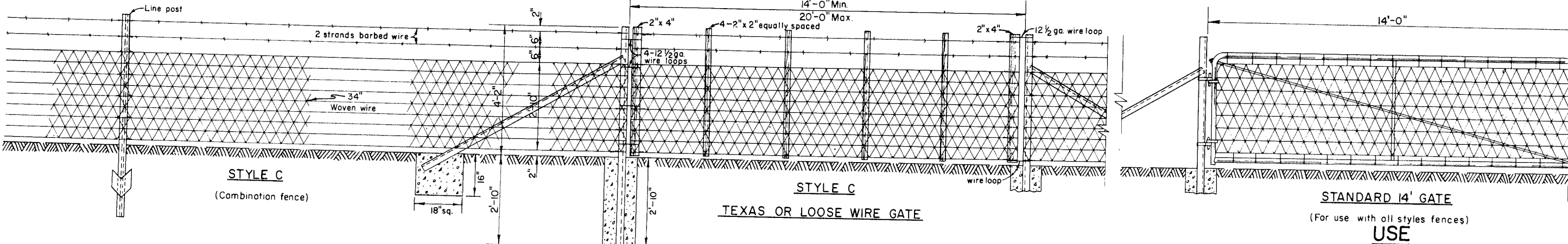
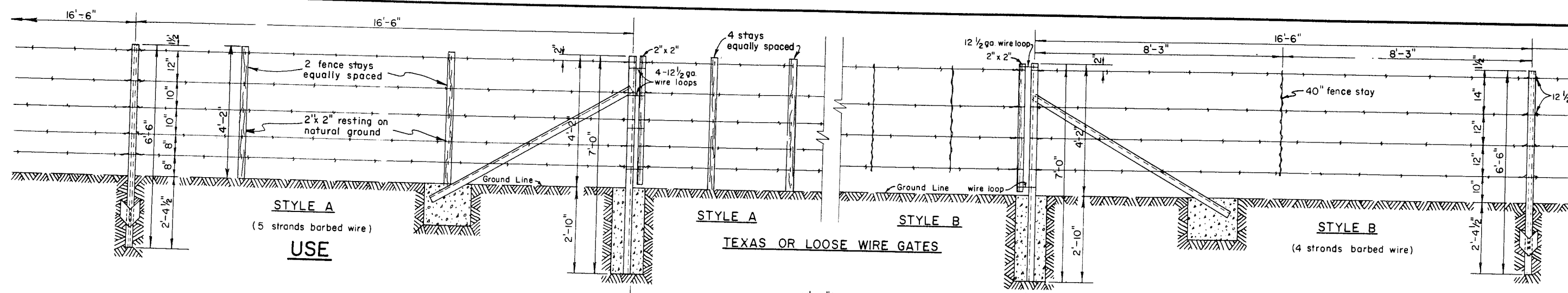
MATERIALS: The steel mounting posts shall weigh at least one pound per foot and shall have a black baked enamel finish which is resistant to the shock of driving operations. The top portion of the mounting post shall be either surfaced with white paint containing white reflective glass beads or painted with white paint and covered with white reflective glass beads while the paint is wet. The delineator reflector unit shall be a sealed acrylic plastic prismatic reflex lens having a minimum of six and one-half square inches of smooth reflective area. The lens shall be housed in an aluminum frame and provided with a single grommetted mounting hole. Mounting posts shall be driven to the depth shown and shall be vertical and in accurate alignment. They shall be driven by the use of a regular post driver or protected by a driving cap if any means other than a post driver is used. The reflector unit shall be securely fastened to the steel mounting post with an approved type aluminum rivet.



CONCRETE MAINTENANCE MARKER POST USE

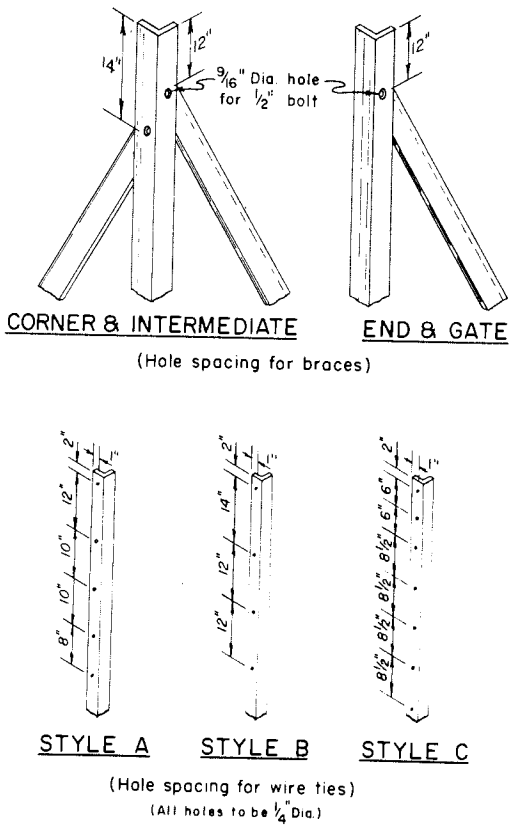
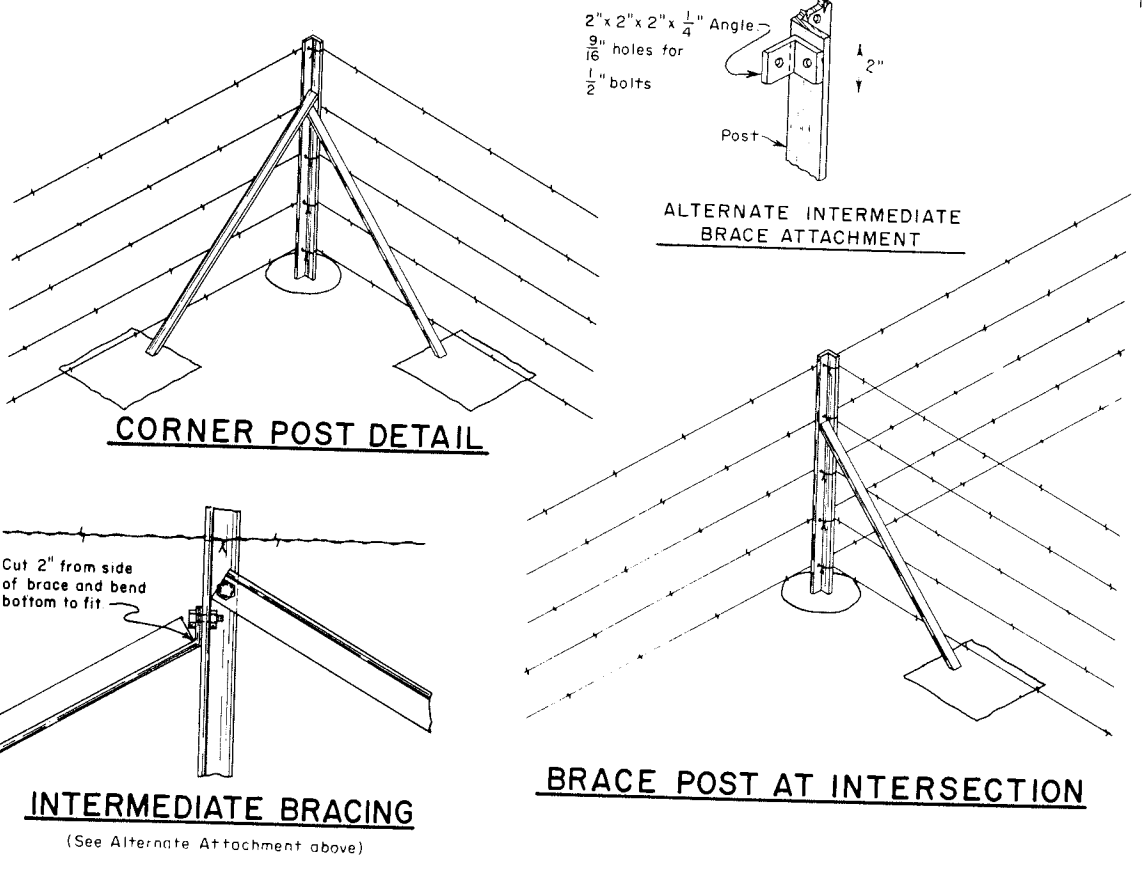
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REGION NO. 9 DENVER, C

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AND DELINE



GENERAL NOTES

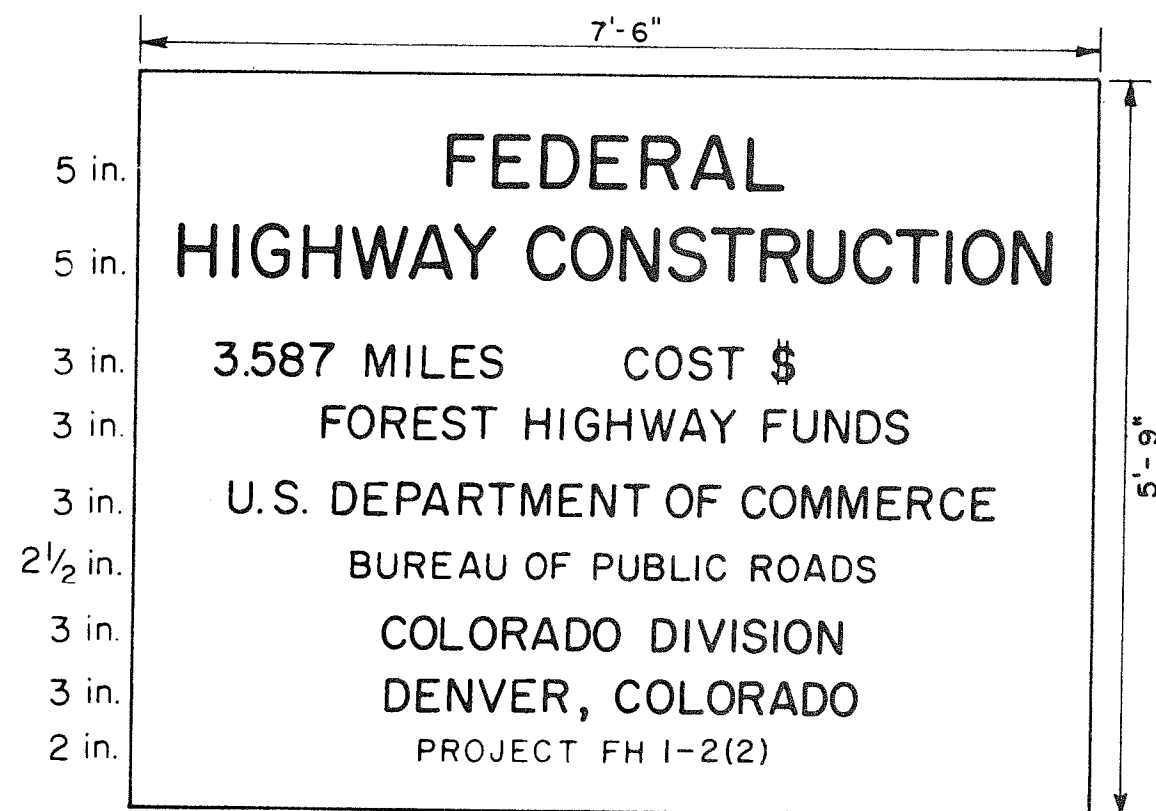
- 1. Posts and Braces:** All corner, end, gate and intermediate brace posts shall be 2 1/2" x 2 1/2" x 1/4" structural steel weighing not less than 4.1 lbs per lin. ft. Braces shall be 2" x 2" x 1/4" structural steel angles, 7'-0" long, weighing not less than 1.3 lbs per lin. ft. Line posts shall be structural steel "Teas", 6'-6" long, weighing not less than 1.3 lbs. All posts and braces shall be drilled as shown here in lieu of drilled posts.
- 2. Brace Panels:** All corner, end or gate posts shall be braced as detailed hereon. Corner posts, with braces, shall changes in alignment or grade in excess of 20 degrees. Where the distance between corners or ends is in intermediate brace panels shall be inserted at uniform intervals of not more than 1/4 mile.
- 3. Barbed Wire:** Barbed wire shall be 2 strands of 12 1/2 gauge galvanized wire, twisted, having 2 point, double round barbs, spaced not more than 4" apart. Minimum net weight shall be 78 pounds per 80-rod reel.
- 4. Woven Wire:** Woven wire shall be 34" V-mesh, consisting of 9 horizontal cables approximately 4" apart, woven wire apart, to form a one piece fabric. Horizontal cables shall be 2 strands of 12 1/2 gauge galvanized wire, twisted, wires shall be single strand 14 gauge galvanized wire. Minimum weight shall be 125 pounds per 10-rod reel.
- 5. Gates:** Standard 14' gate shall be 42" high, consisting of a 1 1/8" QD, galvanized steel tubular frame, with woven wire above, except that the cross wires may be either a 2" or 4" spacing. Gate shall have a diagonal adjustable brace and adjustable hinges. Latch shall be the self-engaging (pig-ear) type. All fittings shall be galvanized. Weight of gate shall be 70 pounds, exclusive of fittings.
- 6. Miscellaneous:** Fence stays shall be 2" x 2" x 4'-2" and stapled as shown. Fence ties shall be 12 1/2 gauge galv wire. Every strand of barbed wire, and every other strand of woven wire shall be tied to each post with standard practice. Bolts for attaching braces shall be 1/2" x 1" galvanized machine bolts.
- 7. Concrete:** Concrete shall be class A, and shall be allowed to set not less than seven days before wire may be



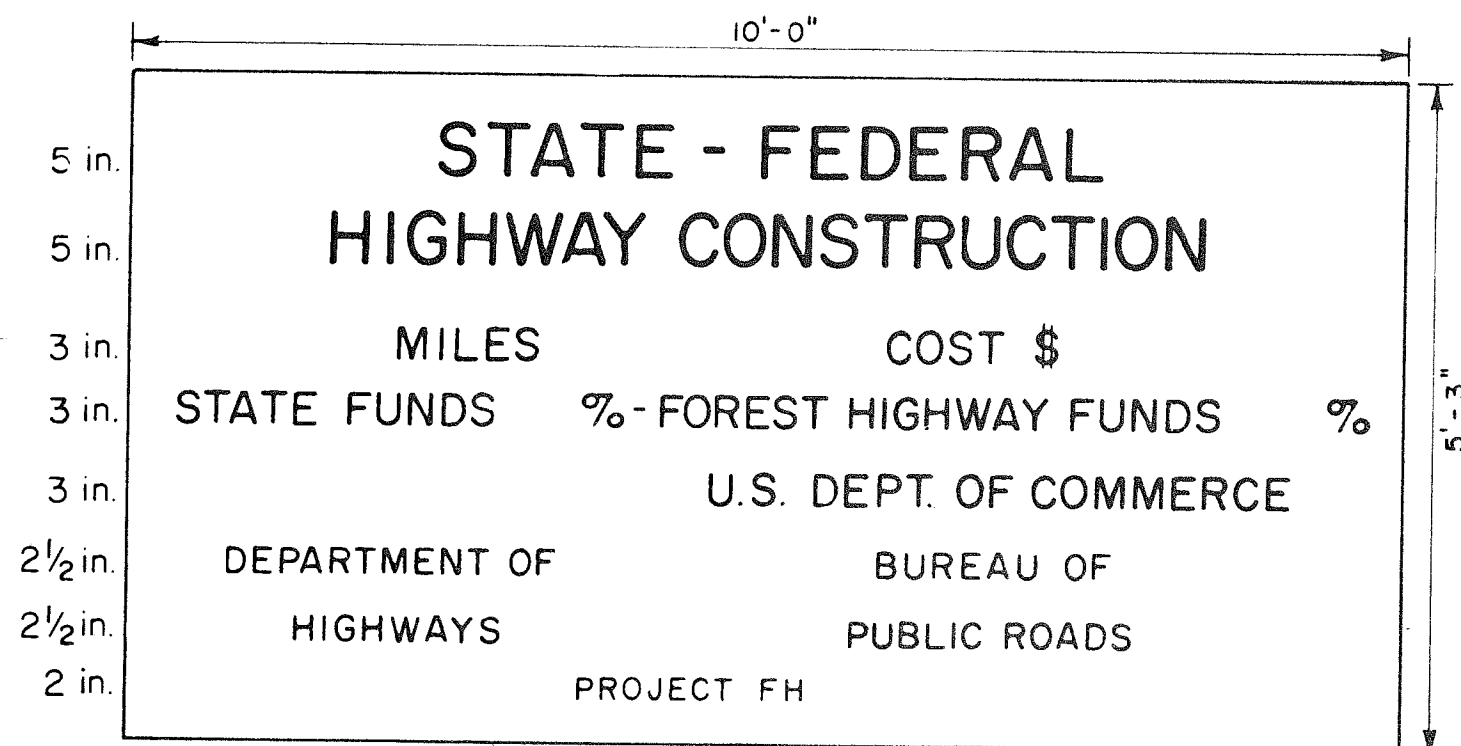
STYLE A STYLE B STYLE C
(Hole spacing for wire ties)
(All holes to be 1/4" Dia.)

U.S. DEPARTMENT OF CO
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REGION NO. 9 DENVER, C

**STANDARD
WIRE FENCE
WITH STEEL**



USE

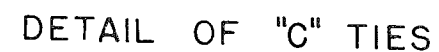
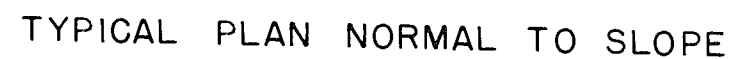


GENERAL NOTES

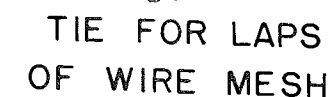
1. Two signs, of the type designated by the word "USE" at the left, shall be furnished and installed by the contractor. One sign shall be placed at each end of the project, at locations determined by the engineer, consistent with the location of other construction signs.
2. The signs shall be erected immediately upon beginning construction operations, and shall remain in place until final acceptance of the project.
3. The sign material may be either wood or metal, at the option of the contractor, but shall have sufficient stability to last throughout the estimated period of use.
4. The signs shall be painted with black letters on a white background. Lettering shall be Series "C", as specified in the B.P.R. publication "Standard Alphabets for Highway Signs", in connection with the A.A.S.H.O. "Manual on Uniform Traffic Control Devices".
5. The amount for insertion in the "Cost" space will be determined by the engineer.

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PROJECT IDENTIFICATION SIGN



Use four ties for each basket.



GENERAL NOTES

Woven wire to be galvanized triangular mesh fabric. 1 wire to be two-ply cable of No.12½ gage wires at 4" intervals. 2 wires to be No.14 gage spaced at 4" intervals. This wire similar to C.F. & I. specification F-1.

Adjacent baskets to be tied together where wires contact, using one tie for each square foot of contact.

Strips "A" and "B" to be wired together along the
of the four sides every 12 inches, and one tie for every
square foot of contact of the lapping faces. In addition
four "C" ties from top to bottom of basket as shown.

All ties to be made with No.9 Gauge galvanized



Approved: W. B. Livingston Date: 4/13/59
FEDERAL HIGHWAY PROJECTS ENGINEER

U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
DIVISION NQ9 DENVER, COLO.

STANDARD
ROCK AND WIRE
BANK PROTECTION