

COLORADO STATE HIGHWAY DEPARTMENT

PLAN AND PROFILE OF PROPOSED FEDERAL AID PROJECT NO. E-240-D STATE HIGHWAY NO. 4 EAGLE COUNTY

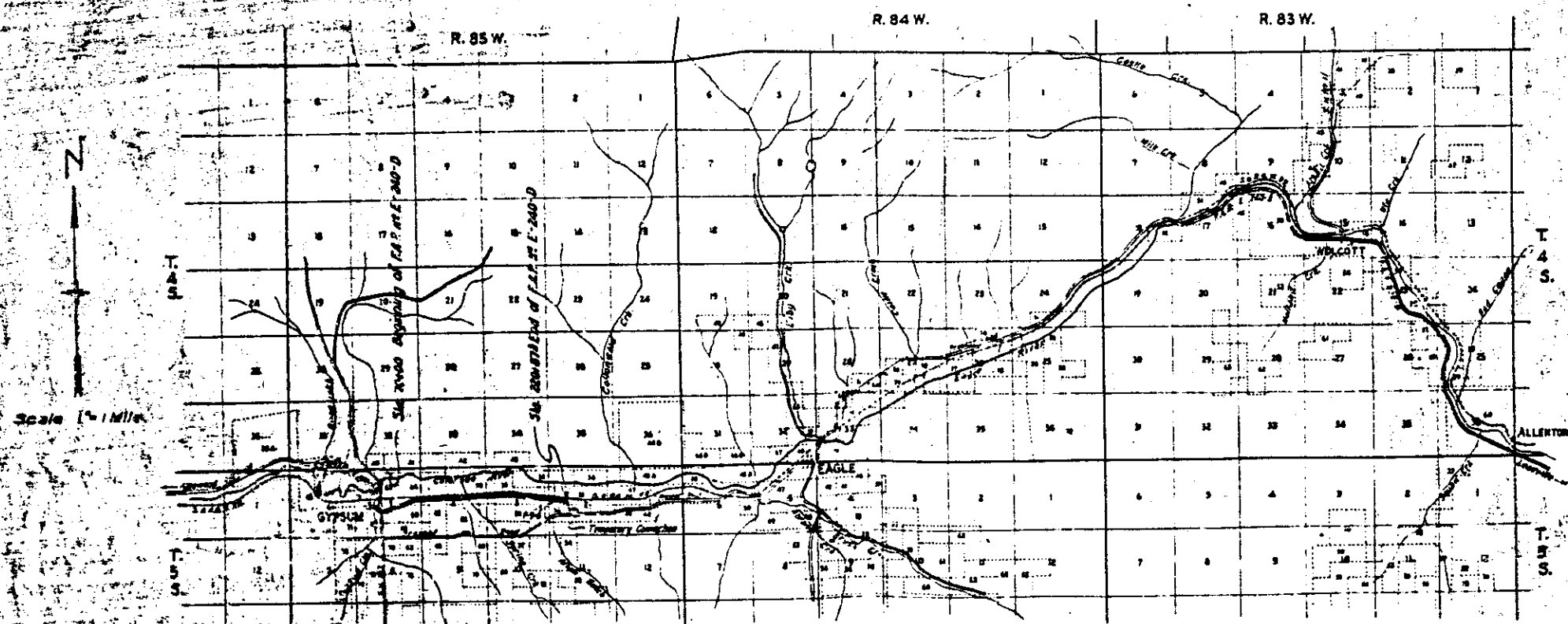
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CONVENTIONAL SIGNS

- Center Line of Improvement
- Right of Way Line
- Section of Tract Line
- Railroad Track
- Fence
- Pole Line

SCALES
 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 } 15705.3 FEET = 2.879 MILES.
 NET LENGTH OF PROJECT }



DESIGNED BY: *James H. ...*
 DRAWN BY: *Charles ...*
 CHECKED BY: *...*
 APPROVED BY: *...*

PER. SERV. START DATE	STATE	PER. SERV. END DATE	STATUS	TOTAL SERV.
1	OHIO	2-20-68	1	



GATES & RIGHT OF WAY MARKERS

SUMMARY OF APPROXIMATE QUANTITIES

LIST OF STRUCTURES

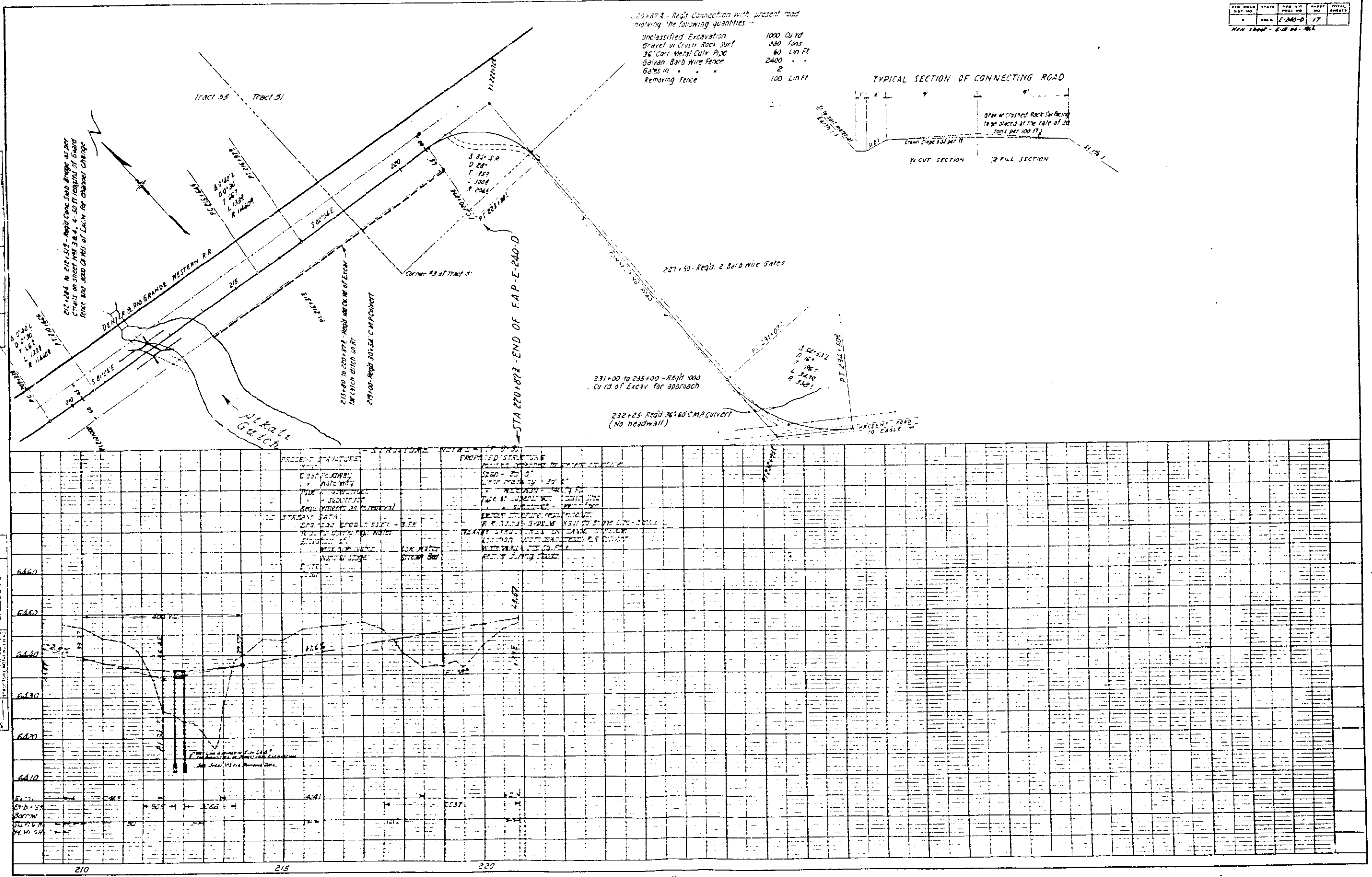
^a Structural Excavation is estimated to be 80% Common and 20% Rock, each of which is estimated to be 60% Dry and 40% Wet.

DESIGN NO.	STATE	APP. NO.	APP. DATE	APP. NAME
1	COLO.	E-440-D	17	

Next sheet - E-440-D-18

PLAN	DATE	BY	CHECKED
1	11/15/50	J. H. HARRIS	J. H. HARRIS

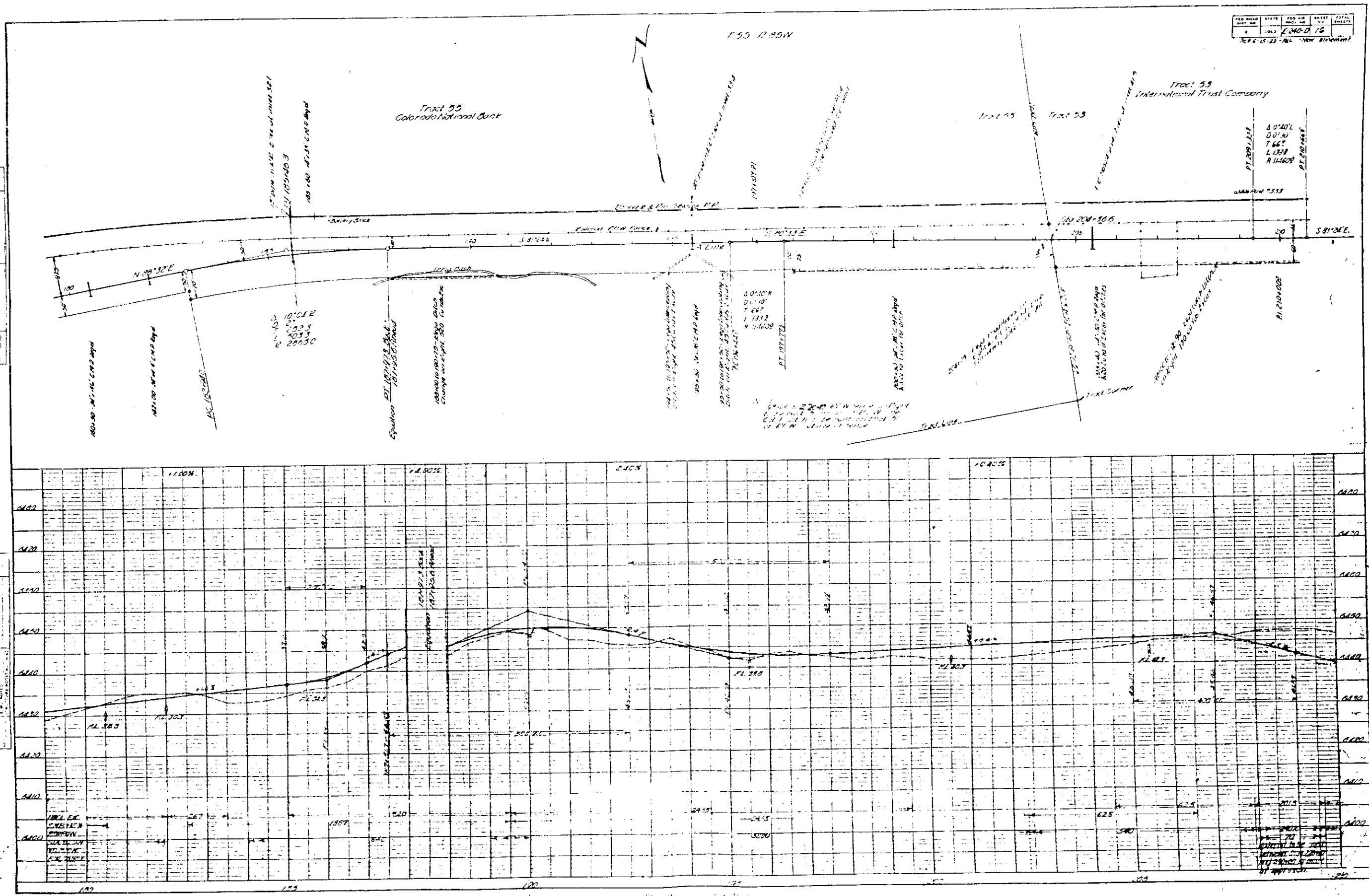
PROFILE	DATE	BY	CHECKED
1	11/15/50	J. H. HARRIS	J. H. HARRIS



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
100	COLO.	E-40-D	16	

PLAN	SECTION
100	100

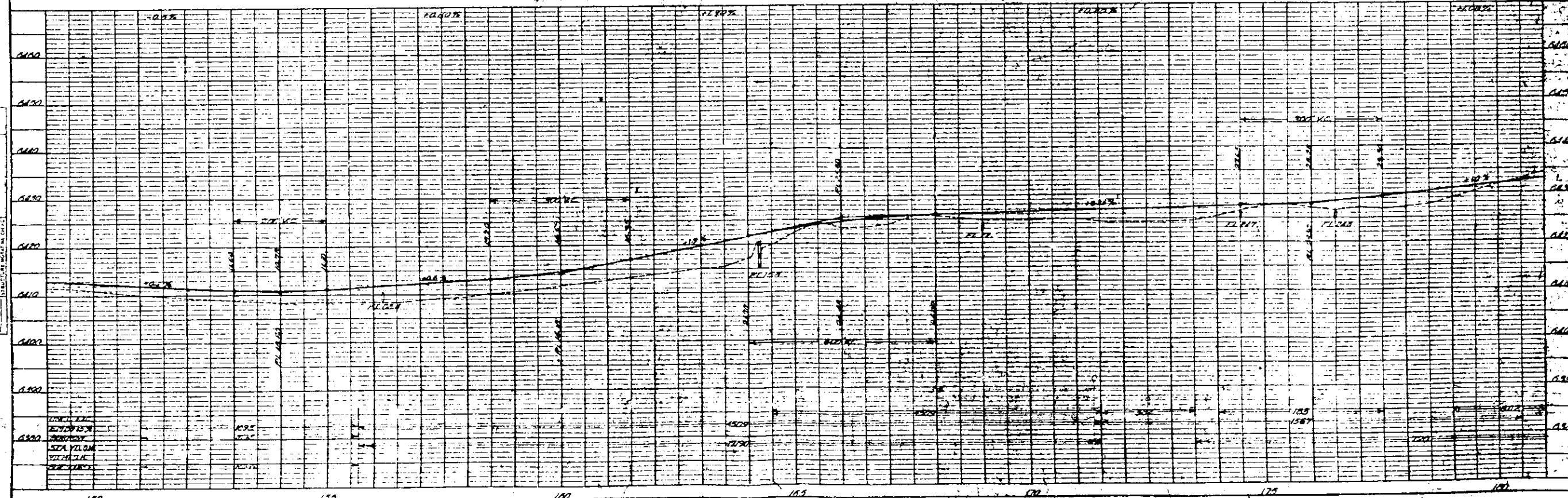
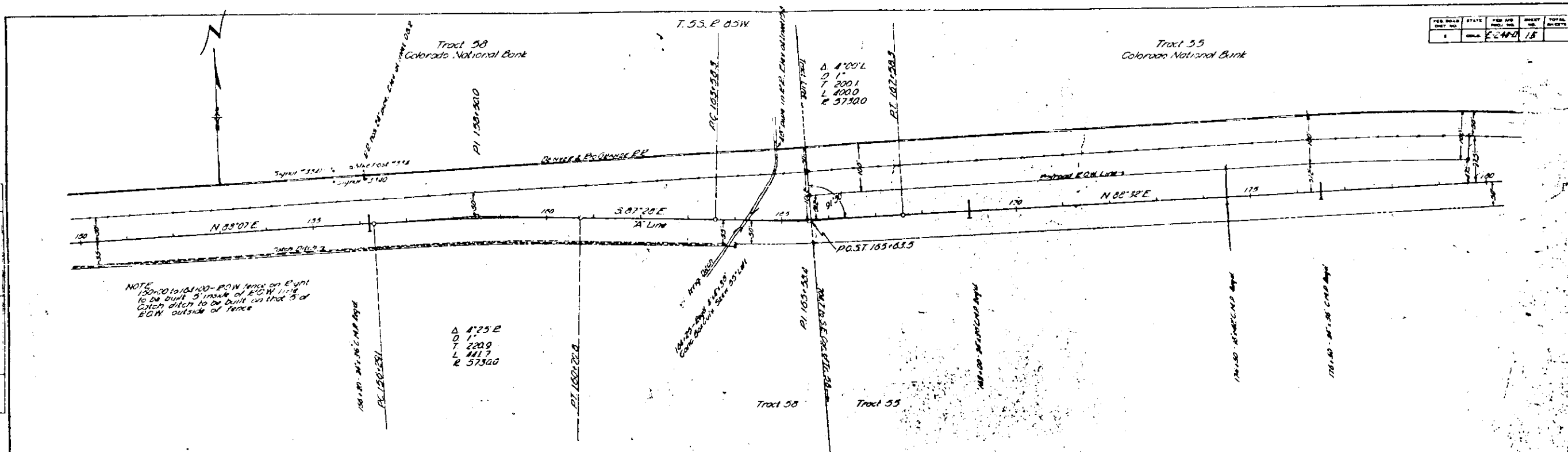
PROFILE	SECTION
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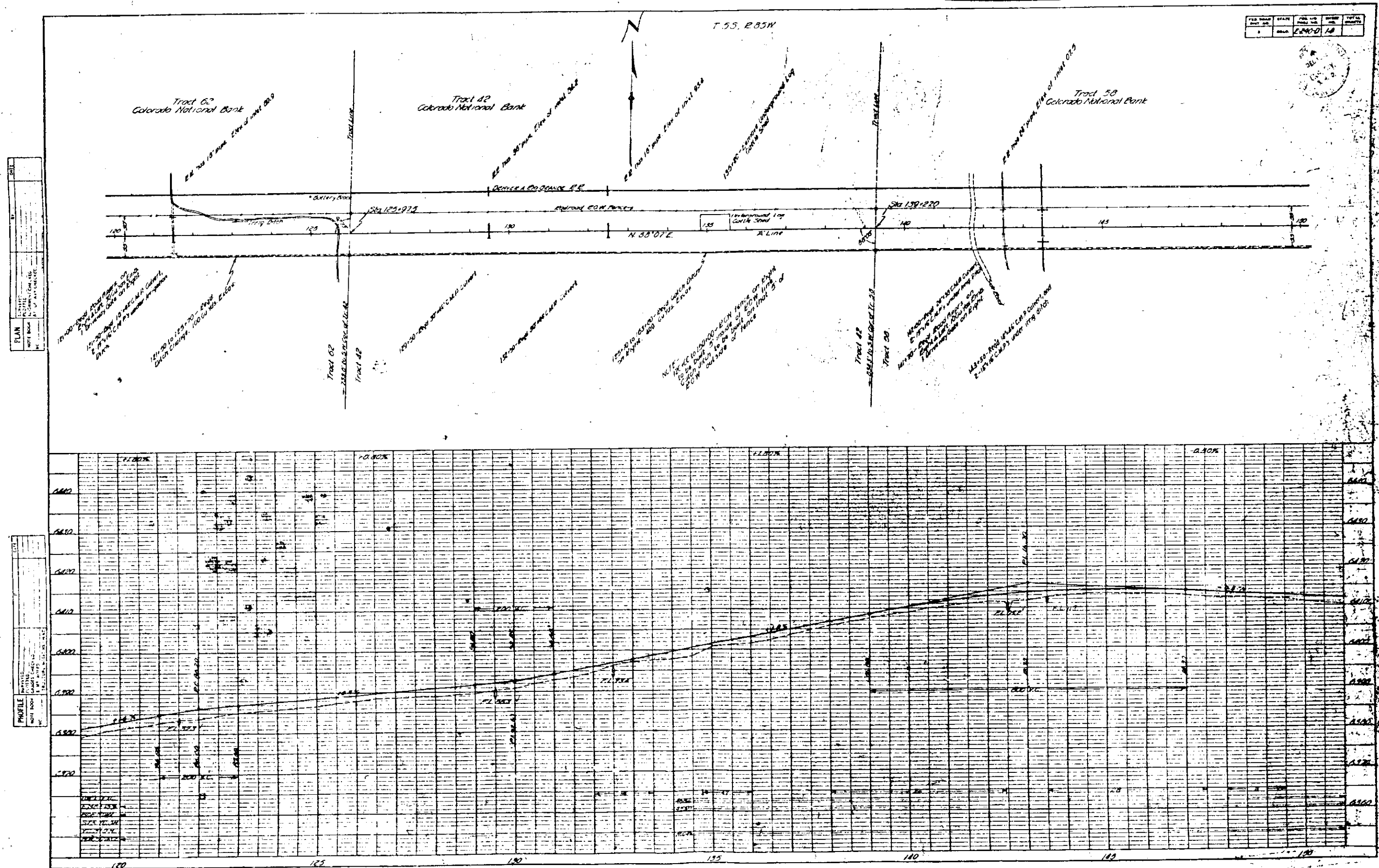


DATE	
BY	
CHECKED	
DATE	

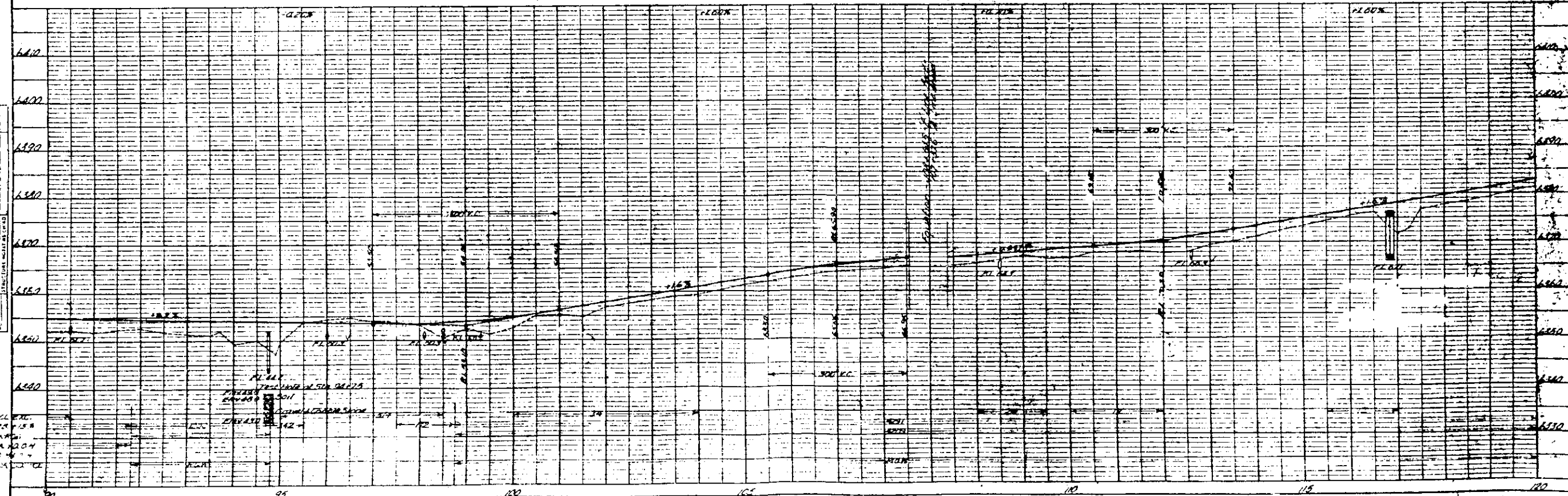
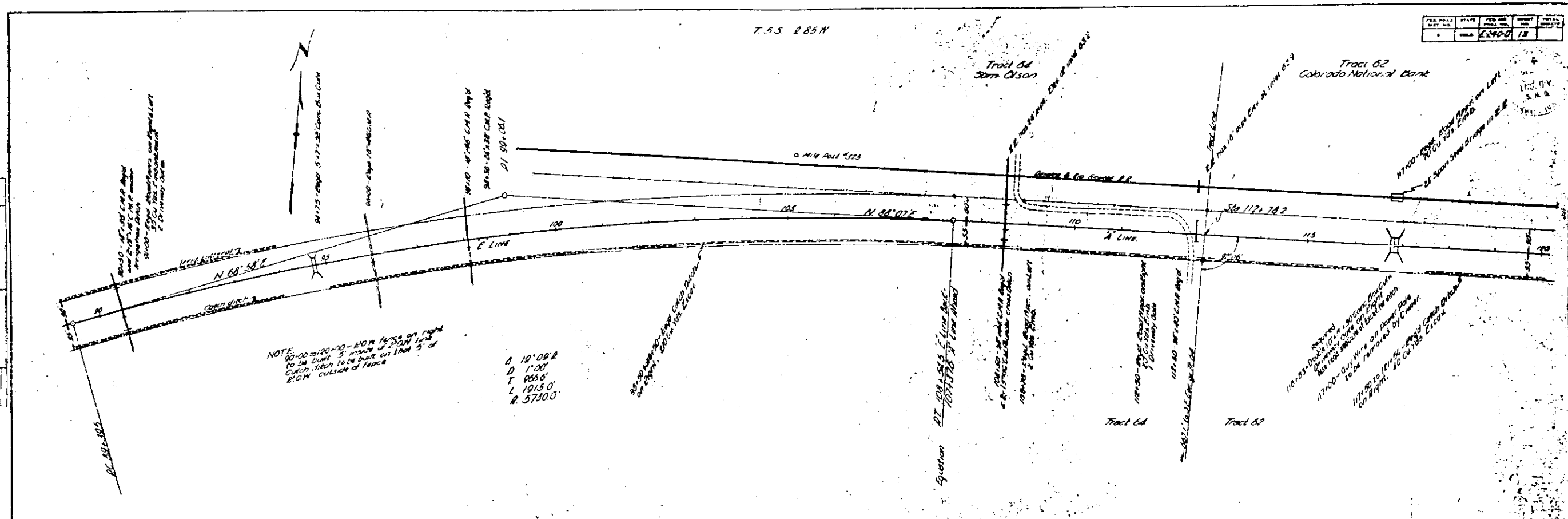
PROFILE	
DATE	
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DATE	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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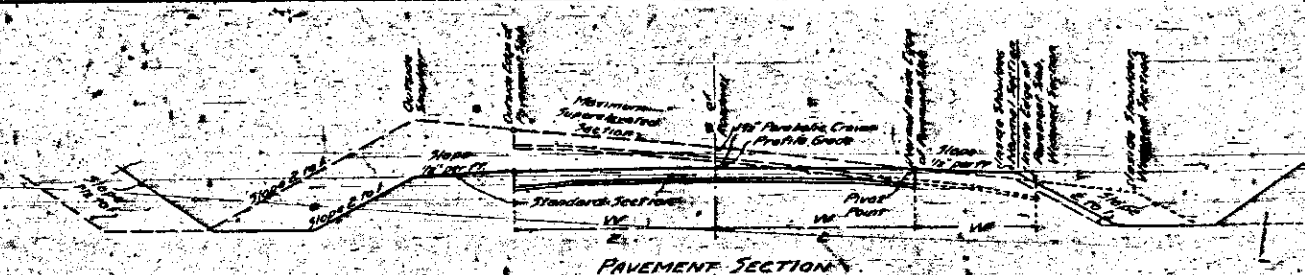




FILE NO.	DATE	BY	CHKD	APP'D
22400	12			



PROFILE		DATE	
NAME	SWANSON	DATE	11-11-61
ALIAS	ALICE	DATE	11-11-61
NOTE BOOK	CARDS CHECKED	DATE	11-11-61
NO	B-21 NOTED	DATE	11-11-61
	STRUCTURE NOTING CARD	DATE	11-11-61



SUPERELEVATION AND WIDENING NOTES FOR PAVEMENT SECTION

Curves on projects using the pavement section 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 0.05 ft. below the grade line, and the outside edge of the slab is to be superelevated at the rate per foot width of roadway given in the table or graph. The section is to be retained about the normal inside edge of the pavement.

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

The slope of the shoulder shall conform to the rate per foot width of roadway except that the inside shoulder shall maintain the standard slope of 0.04 ft. per foot width until the super-elevation rate exceeds the standard slope.

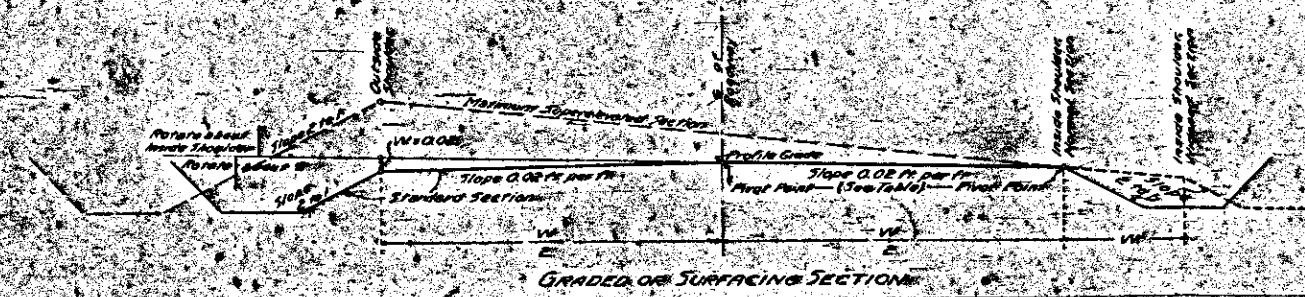
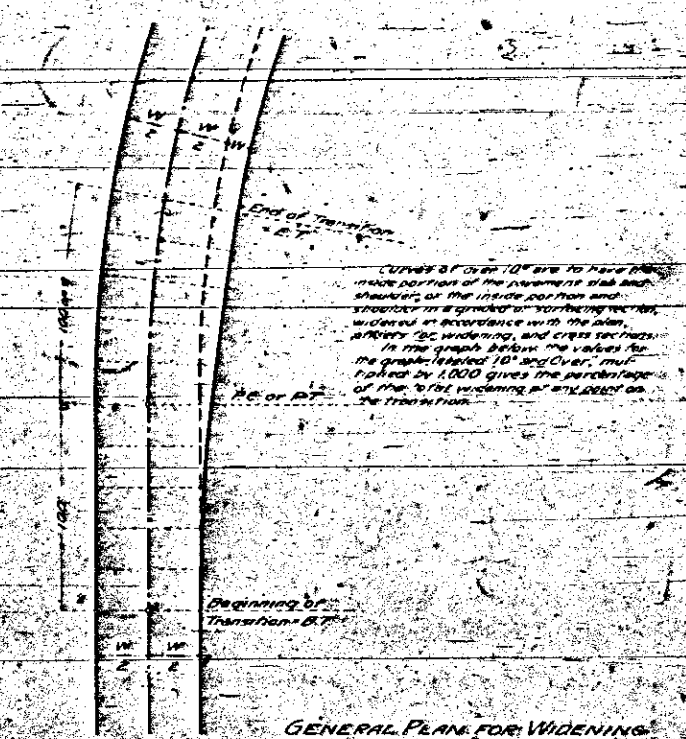
The outside ditch along a super-elevated section is to be modified from the standard where a deeper ditch is required to provide drainage.

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

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

SUPERELEVATION FACTORS AND OFFSETS FOR WIDENING FOR PAVEMENT SECTIONS

Distance from C.P.	20 FT.	40 FT.	60 FT.	80 FT.	100 FT.	120 FT.	140 FT.	160 FT.	180 FT.	200 FT.	On Curve
Factor	0.05	0.08	0.10	0.12	0.15	0.18	0.20	0.22	0.25	0.28	1.00
Degree of Curvature	Rate of Super-elevation (in Feet) per Foot Width of Roadway										
2° and Under	0.0000	0.0017	0.0033	0.0050	0.0067	0.0083	0.0100	0.0117	0.0133	0.0150	0.0210
3°	0.0000	0.0025	0.0050	0.0075	0.0100	0.0125	0.0150	0.0175	0.0200	0.0225	0.0315
4°	0.0000	0.0033	0.0067	0.0100	0.0133	0.0167	0.0200	0.0233	0.0267	0.0300	0.0420
5°	0.0000	0.0042	0.0083	0.0125	0.0167	0.0208	0.0250	0.0292	0.0333	0.0375	0.0525
6°	0.0000	0.0050	0.0100	0.0150	0.0200	0.0250	0.0300	0.0350	0.0400	0.0450	0.0630
7°	0.0000	0.0058	0.0117	0.0175	0.0233	0.0292	0.0350	0.0408	0.0467	0.0525	0.0735
8°	0.0000	0.0067	0.0133	0.0200	0.0267	0.0333	0.0400	0.0467	0.0533	0.0600	0.0840
9°	0.0000	0.0075	0.0150	0.0225	0.0300	0.0375	0.0450	0.0525	0.0600	0.0675	0.0945
10° and Over	0.0000	0.0083	0.0167	0.0250	0.0333	0.0417	0.0500	0.0583	0.0667	0.0750	0.1050
Offset for Widening (in Feet)											
Over 10° Under 15°	0.00	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	3.00
15° - 20°	0.00	0.30	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.50
Over 20°	0.00	0.40	0.80	1.20	1.60	2.00	2.40	2.80	3.20	3.60	4.50



SUPERELEVATION AND WIDENING NOTES FOR GRADED OR SURFACING SECTIONS

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

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

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

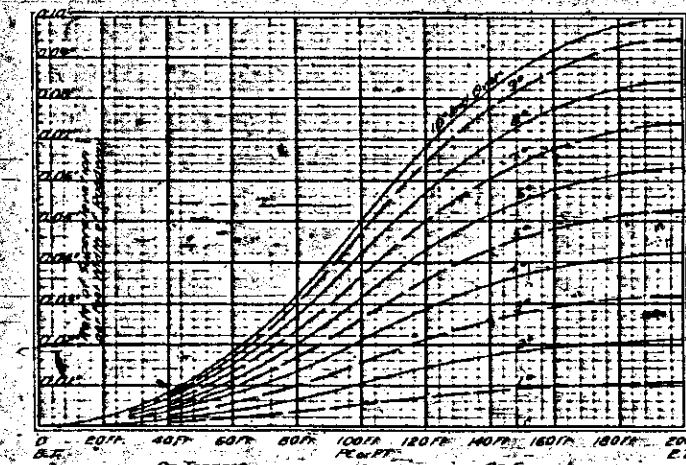
The center line point is to be used as long as the super-elevation does not exceed 0.04 ft. per foot width of roadway. The normal inside shoulder point is to be used for a super-elevation rate in excess of 0.04 ft. per foot width of roadway.

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

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

SUPERELEVATION FACTORS AND OFFSETS FOR WIDENING FOR GRADED OR SURFACING SECTIONS

Distance from C.P.	20 FT.	40 FT.	60 FT.	80 FT.	100 FT.	120 FT.	140 FT.	160 FT.	180 FT.	200 FT.	On Curve
Factor	0.05	0.08	0.10	0.12	0.15	0.18	0.20	0.22	0.25	0.28	1.00
Degree of Curvature	Rate of Super-elevation (in Feet) per Foot Width of Roadway										
2° and Under	0.0000	0.0017	0.0033	0.0050	0.0067	0.0083	0.0100	0.0117	0.0133	0.0150	0.0210
3°	0.0000	0.0025	0.0050	0.0075	0.0100	0.0125	0.0150	0.0175	0.0200	0.0225	0.0315
4°	0.0000	0.0033	0.0067	0.0100	0.0133	0.0167	0.0200	0.0233	0.0267	0.0300	0.0420
5°	0.0000	0.0042	0.0083	0.0125	0.0167	0.0208	0.0250	0.0292	0.0333	0.0375	0.0525
6°	0.0000	0.0050	0.0100	0.0150	0.0200	0.0250	0.0300	0.0350	0.0400	0.0450	0.0630
7°	0.0000	0.0058	0.0117	0.0175	0.0233	0.0292	0.0350	0.0408	0.0467	0.0525	0.0735
8°	0.0000	0.0067	0.0133	0.0200	0.0267	0.0333	0.0400	0.0467	0.0533	0.0600	0.0840
9°	0.0000	0.0075	0.0150	0.0225	0.0300	0.0375	0.0450	0.0525	0.0600	0.0675	0.0945
10° and Over	0.0000	0.0083	0.0167	0.0250	0.0333	0.0417	0.0500	0.0583	0.0667	0.0750	0.1050
Offset for Widening (in Feet)											
Over 10° Under 15°	0.00	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	3.00
15° - 20°	0.00	0.30	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.50
Over 20°	0.00	0.40	0.80	1.20	1.60	2.00	2.40	2.80	3.20	3.60	4.50



GRAPH OF SUPERELEVATION TRANSITION FACTORS

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

The full super-elevation per foot width of roadway rate for a given degree of curvature is 0.04 ft. per foot width of roadway.

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

The above graph has been prepared from the rates of super-elevation shown in the tables.

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

Designed by J.E. Made by S.B.L. Checked by J.E. Date: Aug. 17, 1932.

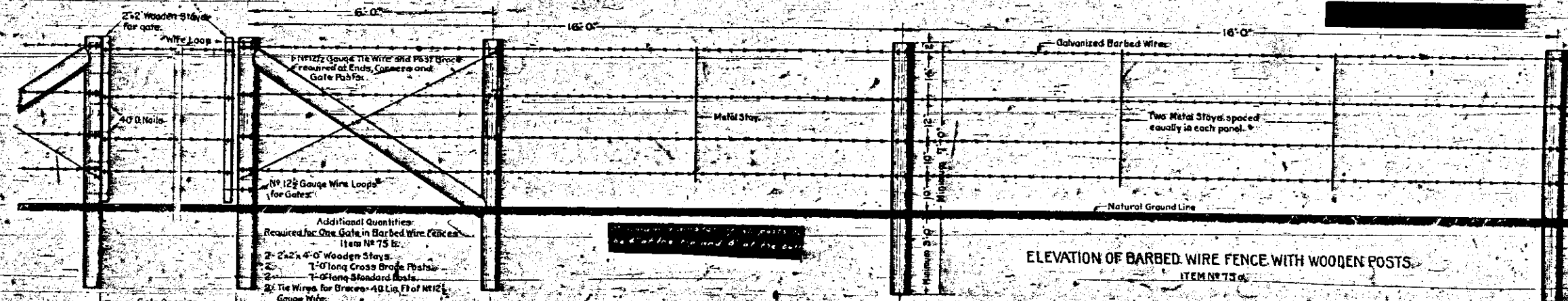
STANDARD M-24-F

U.S. ROAD DIST. NO.	STATE	ADD. NO.	DATE	TOTAL SHEETS
3	COLO.	2400	10	

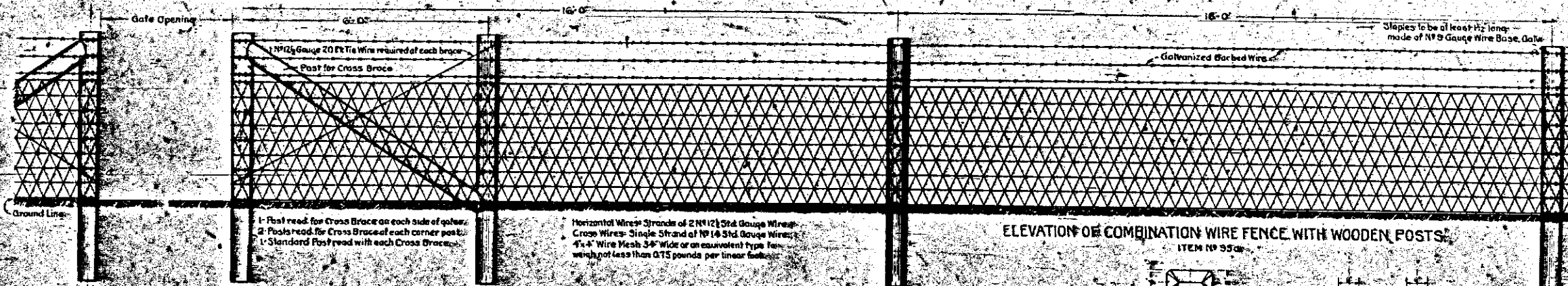
Revised Aug. 8, 1932, A.G.E. Added note for intersecting fences.
Revised Oct. 18, 1937, A.G.E. Changed Staples to be 17" long and to be galvanized.

Revised 11-14-37, A.G.E. Galvanized Gate Frames.
Revised 3-23-37, A.G.E. Changed Staples to 17" length.
Revised 7-24-35, A.G.E. New 8 1/2" Mesh.

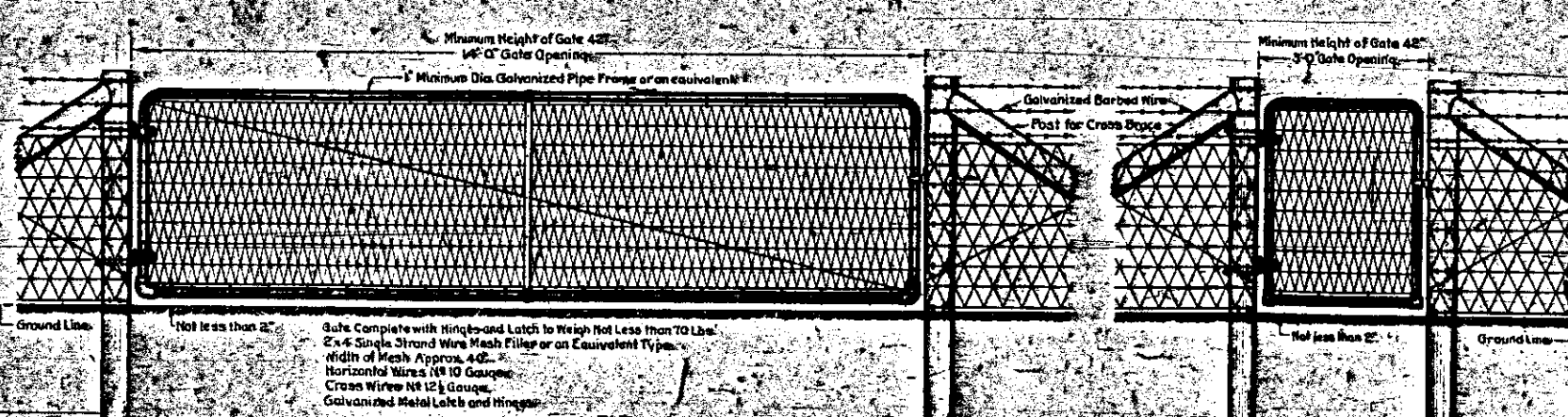
Staples to be at least 17" long, made of No. 9 Gauge Wire Base Gals.



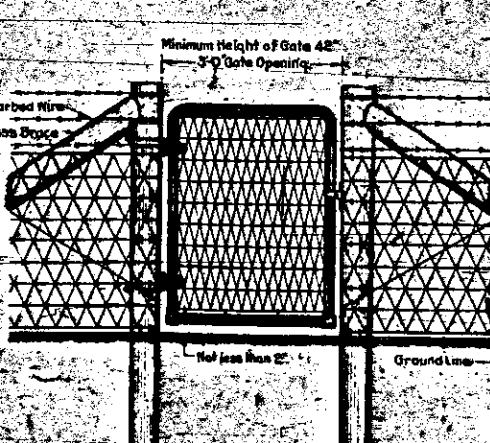
ELEVATION OF BARBED WIRE FENCE WITH WOODEN POSTS
ITEM NO. 75a



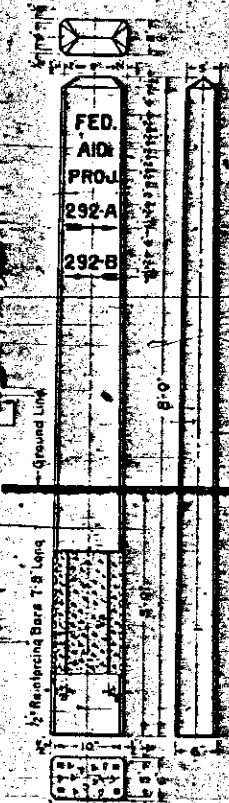
ELEVATION OF COMBINATION WIRE FENCE WITH WOODEN POSTS
ITEM NO. 55a



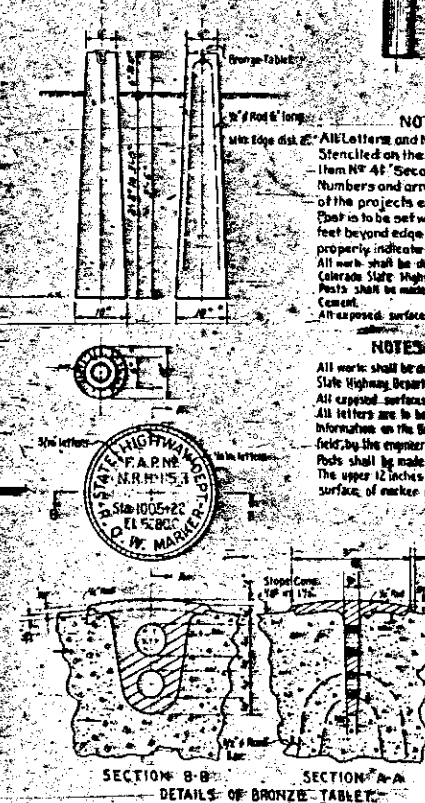
ELEVATION OF DRIVEWAY GATE
ITEM NO. 55b



ELEVATION OF WALK GATE
ITEM NO. 55c



PROJECT MARKER POST
ITEM NO. 78



RIGHT OF WAY MARKER POST
ITEM NO. 79

NOTES FOR PROJECT MARKER POSTS

All letters and numbers shall be 2" plain upright black painted and stenciled on the concrete with a good quality of black paint. Item No. 41 "Second Field Coat" Dork. Numbers and arrows shall show the proper numbers and directions of the project each way from where the post is placed. Post is to be set with sign facing the road at the end of the project. Five feet beyond edge of shoulder in such a position that the sign will properly indicate the project to which it refers. All work shall be done in accordance with Standard Specifications of the Colorado State Highway Department, adopted on Jan. 1, 1930. Posts shall be made of Class "C" Concrete (Comp. No. 7) Largest size. Made Portland Cement. All exposed surfaces shall be rubbed free of form marks.

NOTES FOR R.O.W. MARKER POSTS

All work shall be done in accordance with Standard Specifications of the Colorado State Highway Department, adopted on Jan. 1, 1930. All exposed surfaces of the Bronze Tablet are to be ground to a smooth surface. All letters are to be depressed a minimum of 1/8 inch. Information on the Bronze Tablet indicated by put lines is to be stamped on the side by the engineering party, after seal is placed. The letters & figures to be stamped. Posts shall be made of Class "C" Concrete. The upper 12 inches of marker shall be rubbed free of form marks, and the top surface of marker must be constructed to drain thoroughly.

GENERAL NOTES FOR WIRE FENCES

All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department, adopted Jan. 1, 1930. Barbed Wire shall be of Standard Make, not lighter than No. 12 1/2 Gauge, Galvanized and with Two Point Barbs spaced not more than 5" apart. Wire Mesh must be galvanized and not lighter than shown and relied on the plan. Wire Mesh used in Driveway Gates shall be painted with an approved water proof asphalt or mineral paint. Staples shall be of least 17" long, made of No. 9 Gauge Wire Base Gals, 8 Staples read 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.

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

COLORADO STATE HIGHWAY DEPARTMENT STANDARD WIRE FENCES AND MARKER POSTS

Designed by A.G.E. Approved by J.B.L.
Made by A.G.E. Bridge Engineer
Checked by G.M.D. Dated Feb. 1, 1932.

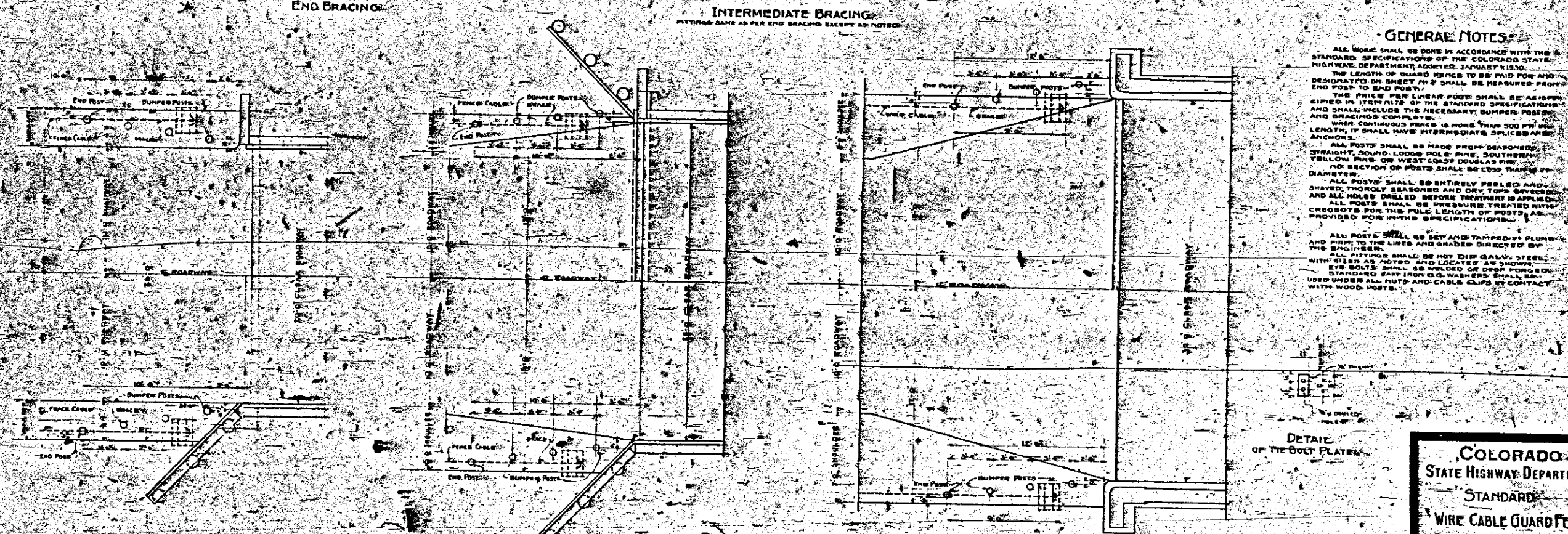
STRUCTURE NO.

FED ROAD DIST NO	STATE	FED AID PROJ NO	SHEET NO	TOTAL SHEETS
3 -	COLORADO	2422	9	

Revised 4-1-55 by HWH note added in C Douglas Fir.
 Revised 7-20-55 by GHD: OMITTING ALUMINUM FILL

STANDARD WIRE CABLE GUARD FENCE WITH TIMBER POSTS.

ITEM N°72



ALL WIRE SHALL BE DONE UP ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE U. S. ARMY HIGHWAY DEPARTMENT, DATED JANUARY 1930.

THE LENGTH OF GUARD FENCE TO BE PAID FOR AND DELIVERED SHALL BE MEASURED FROM END POST TO END POST.

THE PRICE PER LINEAR FOOT SHALL BE AS FOLLOWS: EIP, 1/2 IN. IT SHALL INCLUDE SPECIFICATIONS AND BRACINGS COMPLETE.

FOR THE CONTRACTOR TO BE AWARE THAT FOR THE LENGTH, IT SHALL HAVE BEEN INTERMEDIATE, NOT LESS THAN 300 FT. AND ANCHORS.

ALL POSTS SHALL BE MADE FROM SEASONED, STRAIGHT, SOUND LOGS OF POLAR BOLL OF YELLOW PINE OR WEST COAST DOUGLAS FIR.

THE SECTION OF POSTS SHALL BE LESS THAN 10 DIAMETER.

ALL POSTS SHALL BE ENTIRELY PEELED AND SAVED, THOROUGHLY SEASONED AND DRY, TOPS CUT OFF, AND ALL HOLES AND CRACKS TO BE REPAIRED.

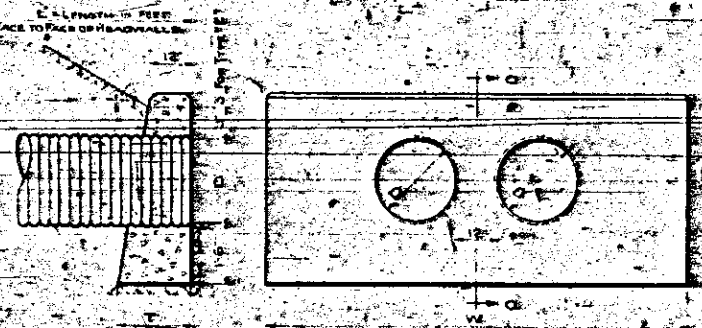
ALL POSTS SHALL BE PRESERVED TREATED WITH CREOSOTE FOR THE FULL LENGTH OF POSTS AS PROVIDED FOR IN THE SPECIFICATIONS.

ALL POSTS SHALL BE SET AND TAMPED IN PLUMB AND FIRM TO THE LINES AND GRADED DIRECTED BY THE SUPERVISOR.

ALL FITTINGS SHALL NOT BE OF GALV. STEEL, WITH THE EXCEPT AS LOCATED AS SHOWN.

THE EYE BOLTS SHALL BE MADE OF STEEL OR OF STANDARD RAIL IRON OR GALV. WASHERS SHALL BE USED UNDER ALL TIES AND CABLE CLIPS IN CONTACT WITH WOOD POSTS.

TYPICAL DETAILS OF GUARD RAIL AT BRIDGE

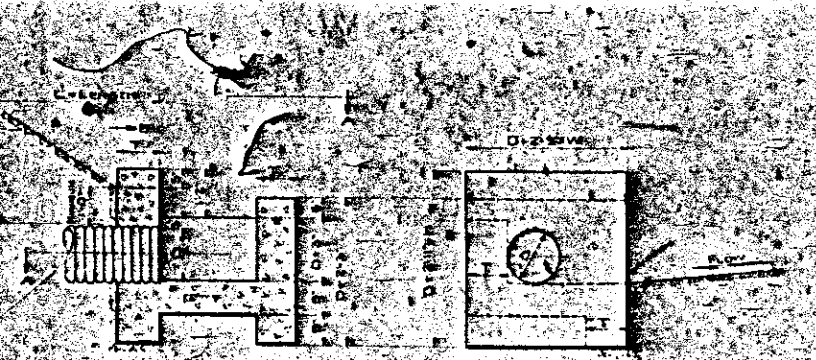


SECTIONAL ELEVATION C-C FRONT ELEVATION

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

DIAMETER OF PIPE	WIDTH OF HEADWALL	HEIGHT OF HEADWALL	LENGTH OF HEADWALL	QUANTITY OF CORRUGATED METAL PIPE	QUANTITY OF CEMENT RUBBLE MASONRY
12"	4'-0"	4'-0"	10'-0"	1.00	1.00
15"	4'-6"	4'-6"	10'-0"	1.00	1.00
18"	5'-0"	5'-0"	10'-0"	1.00	1.00
21"	5'-6"	5'-6"	10'-0"	1.00	1.00
24"	6'-0"	6'-0"	10'-0"	1.00	1.00
27"	6'-6"	6'-6"	10'-0"	1.00	1.00
30"	7'-0"	7'-0"	10'-0"	1.00	1.00
36"	8'-0"	8'-0"	10'-0"	1.00	1.00
42"	9'-0"	9'-0"	10'-0"	1.00	1.00
48"	10'-0"	10'-0"	10'-0"	1.00	1.00

STD. HEADWALLS FOR DOUBLE CORRUGATED METAL PIPE CULVERTS



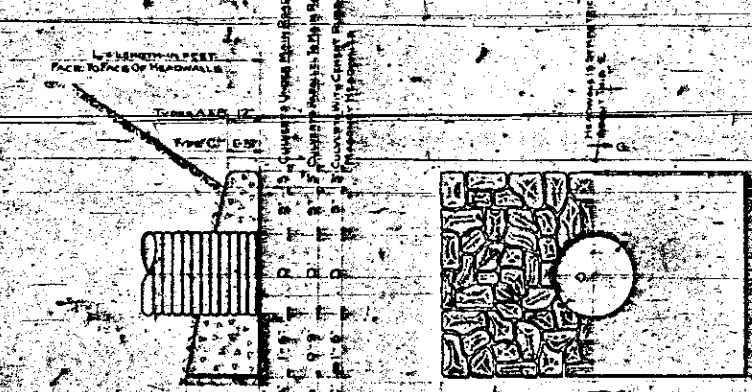
SECTIONAL ELEVATION C-C FRONT ELEVATION

TABLE OF DIMENSIONS & QUANTITIES FOR INTERCEPTING HEADWALLS

DIAMETER OF PIPE	WIDTH OF HEADWALL	HEIGHT OF HEADWALL	LENGTH OF HEADWALL	QUANTITY OF CORRUGATED METAL PIPE	QUANTITY OF CEMENT RUBBLE MASONRY
12"	4'-0"	4'-0"	10'-0"	1.00	1.00
15"	4'-6"	4'-6"	10'-0"	1.00	1.00
18"	5'-0"	5'-0"	10'-0"	1.00	1.00
21"	5'-6"	5'-6"	10'-0"	1.00	1.00
24"	6'-0"	6'-0"	10'-0"	1.00	1.00
27"	6'-6"	6'-6"	10'-0"	1.00	1.00
30"	7'-0"	7'-0"	10'-0"	1.00	1.00
36"	8'-0"	8'-0"	10'-0"	1.00	1.00
42"	9'-0"	9'-0"	10'-0"	1.00	1.00
48"	10'-0"	10'-0"	10'-0"	1.00	1.00

SECTIONAL PLAN A-A

INTERCEPTING HEADWALLS



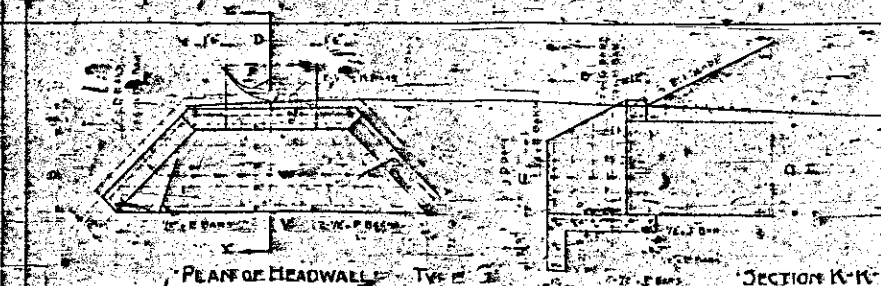
SECTIONAL ELEVATION G-G HALF FRONT ELEVATION TYPE C HALF FRONT ELEVATION TYPES A & B

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

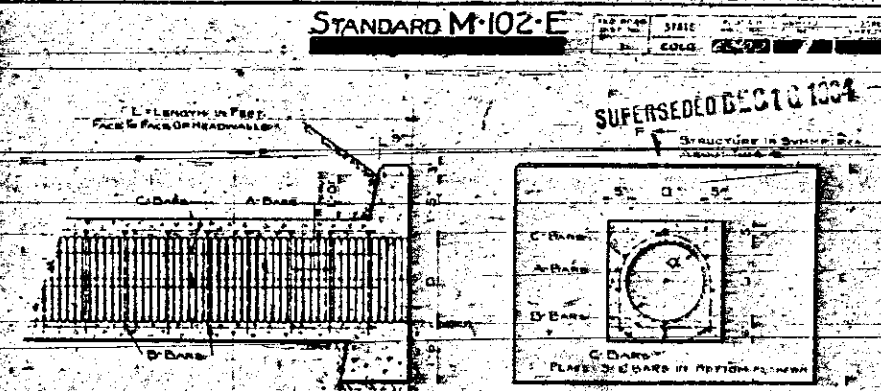
DIAMETER OF PIPE	WIDTH OF HEADWALL	HEIGHT OF HEADWALL	LENGTH OF HEADWALL	QUANTITY OF CORRUGATED METAL PIPE	QUANTITY OF CEMENT RUBBLE MASONRY
12"	4'-0"	4'-0"	10'-0"	1.00	1.00
15"	4'-6"	4'-6"	10'-0"	1.00	1.00
18"	5'-0"	5'-0"	10'-0"	1.00	1.00
21"	5'-6"	5'-6"	10'-0"	1.00	1.00
24"	6'-0"	6'-0"	10'-0"	1.00	1.00
27"	6'-6"	6'-6"	10'-0"	1.00	1.00
30"	7'-0"	7'-0"	10'-0"	1.00	1.00
36"	8'-0"	8'-0"	10'-0"	1.00	1.00
42"	9'-0"	9'-0"	10'-0"	1.00	1.00
48"	10'-0"	10'-0"	10'-0"	1.00	1.00

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

DIAMETER OF PIPE	WIDTH OF HEADWALL	HEIGHT OF HEADWALL	LENGTH OF HEADWALL	QUANTITY OF CORRUGATED METAL PIPE	QUANTITY OF CEMENT RUBBLE MASONRY
12"	4'-0"	4'-0"	10'-0"	1.00	1.00
15"	4'-6"	4'-6"	10'-0"	1.00	1.00
18"	5'-0"	5'-0"	10'-0"	1.00	1.00
21"	5'-6"	5'-6"	10'-0"	1.00	1.00
24"	6'-0"	6'-0"	10'-0"	1.00	1.00
27"	6'-6"	6'-6"	10'-0"	1.00	1.00
30"	7'-0"	7'-0"	10'-0"	1.00	1.00
36"	8'-0"	8'-0"	10'-0"	1.00	1.00
42"	9'-0"	9'-0"	10'-0"	1.00	1.00
48"	10'-0"	10'-0"	10'-0"	1.00	1.00



STANDARD HEADWALLS FOR CORRUGATED METAL PIPE CULVERTS



LONGITUDINAL SECTION F-F SECTIONAL ELEVATION E-E

TABLE OF DIMENSIONS & QUANTITIES FOR INCASED PIPE CULVERT

DIAMETER OF PIPE	WIDTH OF HEADWALL	HEIGHT OF HEADWALL	LENGTH OF HEADWALL	QUANTITY OF CORRUGATED METAL PIPE	QUANTITY OF CEMENT RUBBLE MASONRY
12"	4'-0"	4'-0"	10'-0"	1.00	1.00
15"	4'-6"	4'-6"	10'-0"	1.00	1.00
18"	5'-0"	5'-0"	10'-0"	1.00	1.00
21"	5'-6"	5'-6"	10'-0"	1.00	1.00
24"	6'-0"	6'-0"	10'-0"	1.00	1.00
27"	6'-6"	6'-6"	10'-0"	1.00	1.00
30"	7'-0"	7'-0"	10'-0"	1.00	1.00
36"	8'-0"	8'-0"	10'-0"	1.00	1.00
42"	9'-0"	9'-0"	10'-0"	1.00	1.00
48"	10'-0"	10'-0"	10'-0"	1.00	1.00

SPECIAL NOTES:
 ALL REINFORCING BARS SHALL BE 3/8" DIA. STEEL.
 ALL REINFORCING BARS SHALL BE PLACED IN SQUARE, AS SHOWN ON DRAWING.
 ALL REINFORCING BARS SHALL BE PLACED WITH THE STRAIGHT PORTION OF THE BAR OUTWARD.
 ALL REINFORCING BARS SHALL BE PLACED WITH THE STRAIGHT PORTION OF THE BAR OUTWARD.
 ALL REINFORCING BARS SHALL BE PLACED WITH THE STRAIGHT PORTION OF THE BAR OUTWARD.

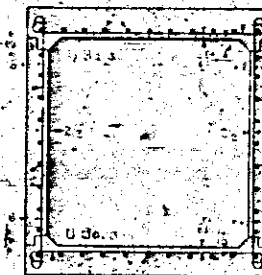
GENERAL NOTES FOR ALL STRUCTURES:
 ALL STRUCTURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR BRIDGE CONSTRUCTION.
 ALL STRUCTURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR BRIDGE CONSTRUCTION.
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COLORADO STATE HIGHWAY DEPARTMENT
 STANDARD HEADWALLS
 INTERCEPTING HEADWALLS
 INCASED METAL PIPE CULVERT WITH HEADWALLS
 CORRUGATED METAL PIPE CULVERTS
 DESIGNED BY: [Name]
 CHECKED BY: [Name]
 DATE: [Date]

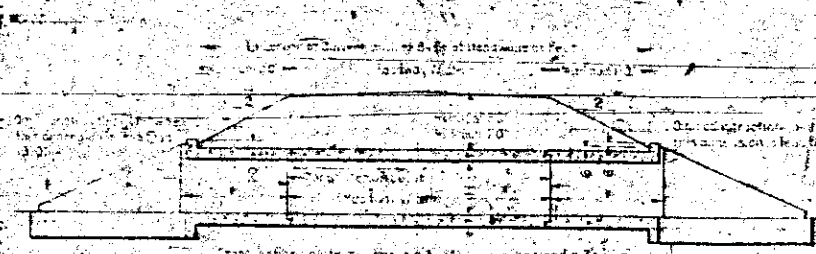
STANDARD M-H4-D

SUPERSEDED

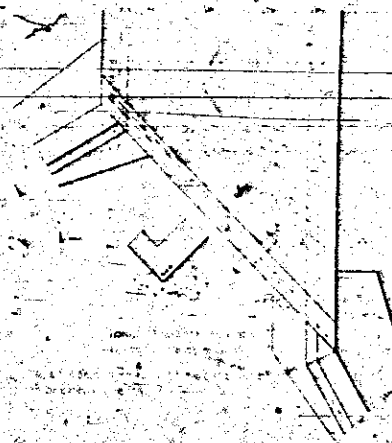
REINFORCED



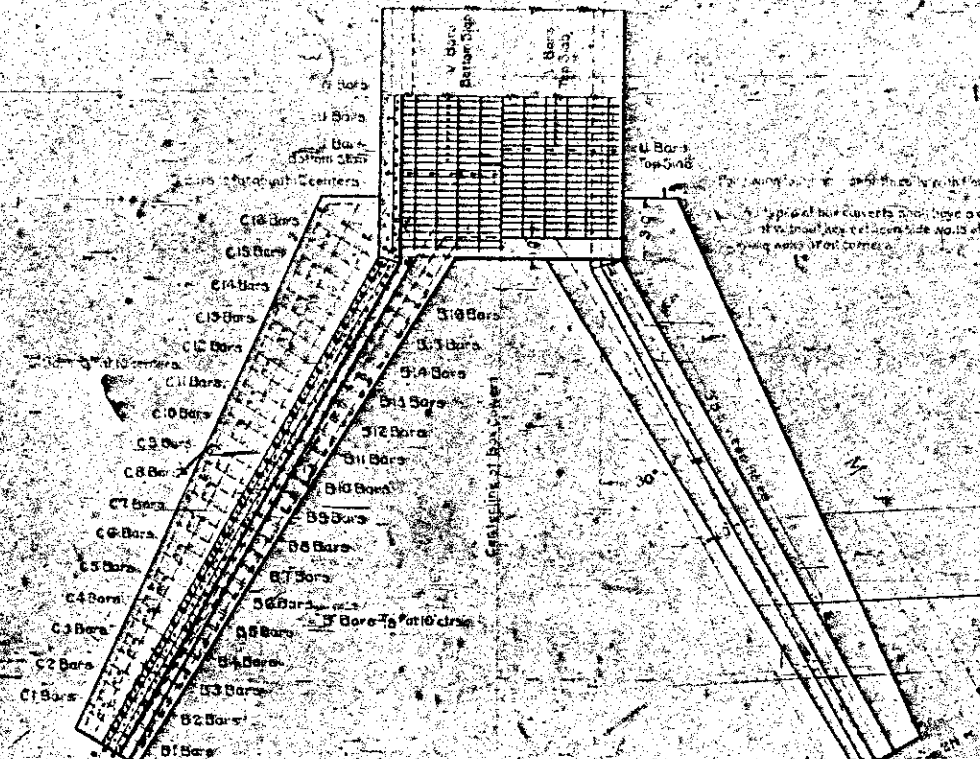
TYPICAL SECTION THRU BOX



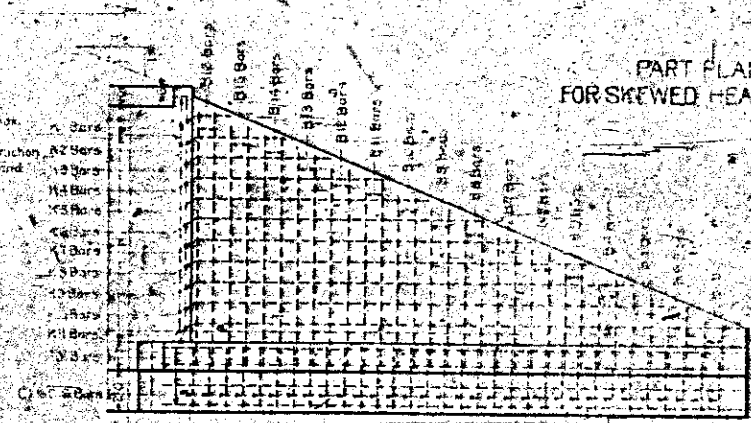
TYPICAL SECTION SHOWING RELATION OF CULVERT TO ROADWAY



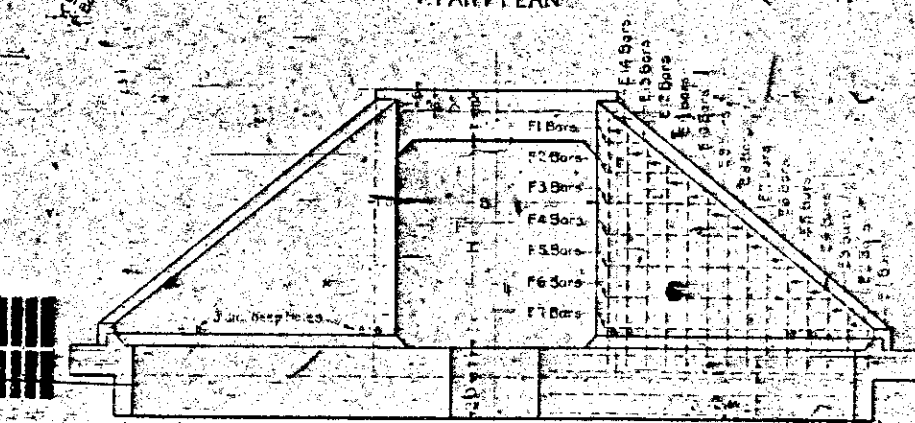
PART PLAN FOR SKEWED HEADWALLS



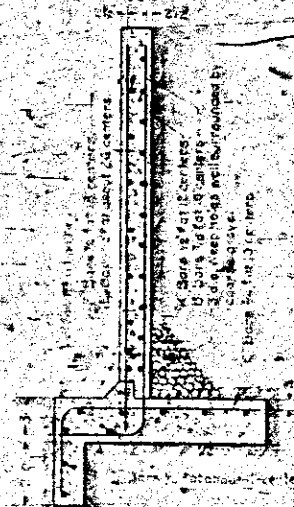
PART PLAN



TRUE SIDE ELEVATION OF WINGWALL

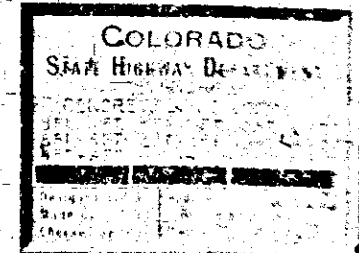


END VIEW



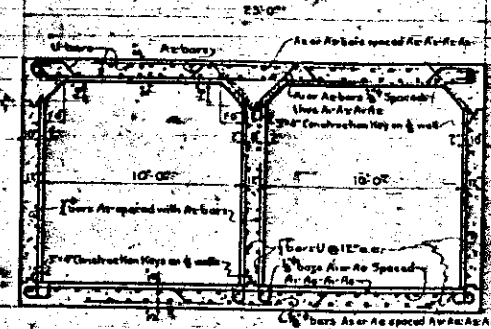
TYPICAL SECTION THRU WINGWALL

TABLE OF DIMENSIONS AND QUANTITIES									
STANDARD M-H4-D									
REINFORCED CONCRETE									
HEADWALLS, PLUS QUANTITY FOR OVERRUN									
HEIGHT OF BOX	WIDTH OF BOX	LENGTH OF BOX	LENGTH OF HEADWALL	LENGTH OF WINGWALL	QUANTITY FOR TWO HEADWALLS	QUANTITY FOR TWO WINGWALLS	QUANTITY FOR TWO BOXES	QUANTITY FOR TWO HEADWALLS	QUANTITY FOR TWO WINGWALLS
FEET	FEET	FEET	FEET	FEET	CONCRETE	STEEL	CONCRETE	STEEL	CONCRETE
11-0	8-0	8-0	8-0	8-0	100	100	100	100	100
10-0	8-0	8-0	8-0	8-0	90	90	90	90	90
9-0	8-0	8-0	8-0	8-0	80	80	80	80	80
8-0	8-0	8-0	8-0	8-0	70	70	70	70	70
7-0	8-0	8-0	8-0	8-0	60	60	60	60	60
6-0	8-0	8-0	8-0	8-0	50	50	50	50	50
5-0	8-0	8-0	8-0	8-0	40	40	40	40	40
4-0	8-0	8-0	8-0	8-0	30	30	30	30	30
3-0	8-0	8-0	8-0	8-0	20	20	20	20	20
2-0	8-0	8-0	8-0	8-0	10	10	10	10	10
1-0	8-0	8-0	8-0	8-0	0	0	0	0	0

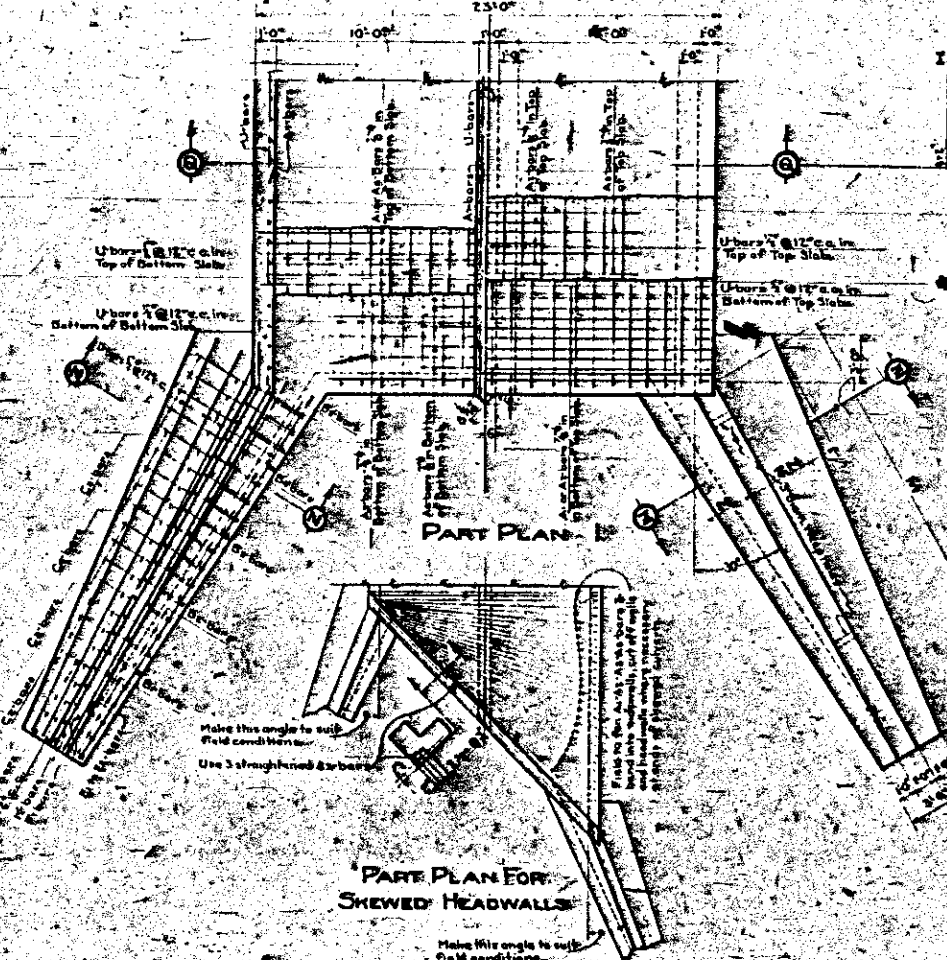




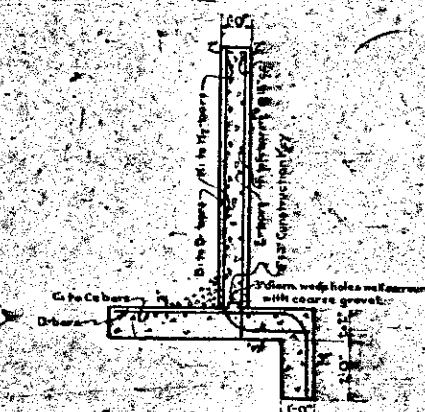
TYPICAL SECTION SHOWING RELATION OF
CULVERT TO ROADWAY



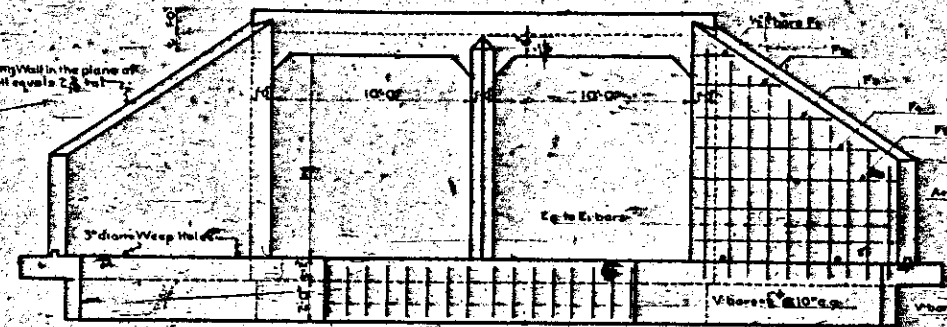
TYPICAL SECTION THRU CULVERT
A-A or Q-Q



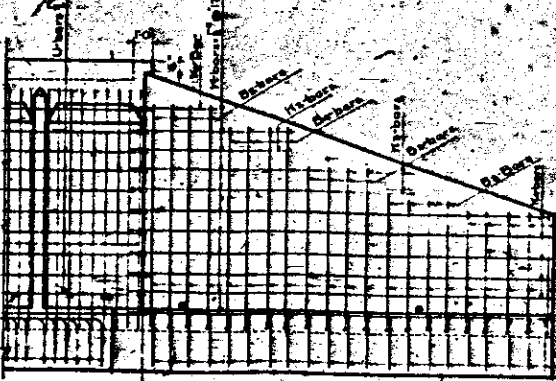
PART PLAN FOR
SKEWED HEADWALLS



TYPICAL SECTION THRU WINGWALL
A-A or Z-Z



END ELEVATION



TRUE ELEVATION OF WINGWALL

STANDARD M-110-A

Revised June 28, 1930 by E.E.
SUPERSEDED BY M-110-A

BAR LIST									
USE BARS FOR	MARK	SIZE	NUMBER	SPACING	TOTAL LENGTH	BENDING DIAGRAM	All dimensions are in feet and inches		
All Sizes	A	1/2"	20	12"	15'-0"				
H-5'-0" Or More	D	3/4"	10	12"	15'-0"				
H-6'-0" Or More	E	1"	10	12"	15'-0"				
H-8'-0" Or More	F	1 1/4"	10	12"	15'-0"				
H-10'-0"	G	1 1/2"	10	12"	15'-0"				
All Sizes	H	1/2"	20	12"	15'-0"				
H-5'-0" Or More	I	3/4"	10	12"	15'-0"				
H-6'-0" Or More	J	1"	10	12"	15'-0"				
H-8'-0" Or More	K	1 1/4"	10	12"	15'-0"				
H-10'-0"	L	1 1/2"	10	12"	15'-0"				
All Sizes	M	1/2"	20	12"	15'-0"				
H-5'-0" Or More	N	3/4"	10	12"	15'-0"				
H-6'-0" Or More	O	1"	10	12"	15'-0"				
H-8'-0" Or More	P	1 1/4"	10	12"	15'-0"				
H-10'-0"	Q	1 1/2"	10	12"	15'-0"				
All Sizes	R	1/2"	20	12"	15'-0"				
H-5'-0" Or More	S	3/4"	10	12"	15'-0"				
H-6'-0" Or More	T	1"	10	12"	15'-0"				
H-8'-0" Or More	U	1 1/4"	10	12"	15'-0"				
H-10'-0"	V	1 1/2"	10	12"	15'-0"				

See Table of dimensions and quantities. For Dimension L, see Sheet M-110-B.

TABLE OF DIMENSIONS AND QUANTITIES									
STEEL QUANTITIES GIVEN BELOW INCLUDE ALLOWANCE FOR OVER RUN OF 1%									
HEIGHT OF FILL ALLOWED	TYPE	INSIDE SPAN EACH BOX	SLAB THICKNESS	SPACING OF BARS	NUMBER OF BARS	LENGTH OF BARS	QUANTITIES FOR ONE LINEAL FOOT OF BOX	QUANTITIES FOR TWO HEADWALLS	QUANTITIES FOR TWO HEADWALLS
							CONCRETE CU. YDS.	STEEL LBS.	STEEL LBS.
4'-0"	10-A	10'-0"	5'-0"	12"	10	12'-0"	2.62	317	2500
			6'-0"	12"	10	12'-0"	2.12	338	2870
			8'-0"	12"	10	12'-0"	2.38	391	3370
			10'-0"	12"	10	12'-0"	3.17	348	4930
10'-0"	10-B	10'-0"	5'-0"	12"	10	12'-0"	3.01	401	2800
			6'-0"	12"	10	12'-0"	3.23	436	3100
			8'-0"	12"	10	12'-0"	3.46	483	3160
			10'-0"	12"	10	12'-0"	3.92	416	3550
15'-0"	10-C	10'-0"	5'-0"	12"	10	12'-0"	3.46	484	4200
			6'-0"	12"	10	12'-0"	3.66	508	4200
			8'-0"	12"	10	12'-0"	3.88	527	4200

GENERAL NOTES

ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE COLORADO STATE HIGHWAY DEPARTMENT ADOPTED JANUARY, 1930.
ALL CONCRETE SHALL BE CLASS "A".
ALL EXPOSED SURFACES SHALL BE PLASTERED FREE OF FORM MARKS.
ALL EXPOSED CORNERS, EDGES AND JOINTS SHALL BE BEVELLED TO A 1" FACE.
FLOOR SLABS AND CURBS SHALL BE POURED MONOLITHICALLY.
ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED BEFORE FRESH CONCRETE IS PLACED.
FOOTINGS IN EARTH SHALL BE PILED OUT TO THE ROCK AND NOT FORMED.
ALL REINFORCING BARS SHALL BE ROUND OR SQUARE: AN OR DEFORMED AS SHOWN ON THIS PLAN.
ALL REINFORCING BARS SHALL BE TIED WITH THE STANDARD NUMBER AND LETTER DESIGNATION.
SECONDARY BARS WHEN USED SHALL BE GIVEN A LAP OF 6 DIAMETERS.
UNIFORMITY AND DEPTH OF FOOTINGS SHOWN ARE ACCORDING TO THE BEST AVAILABLE: IF EXISTING DIFFERENT CONDITIONS ARE ENCOUNTERED THE ENGINEER WILL INSPECT AND DETERMINE IF REVISION IS NECESSARY.
MINIMUM DISTANCE CENTER LINE OF BARS TO EDGE OF CONCRETE SHALL BE 2".
FOOTINGS NOT TO BE USED WHEN HEIGHT OF FILL OVER BOX EXCEEDS THAT TABULATED AS ALLOWABLE.
ALL BACKFILLING IN APPROACHES TO AND OVER CULVERTS SHALL BE PLACED IN LAYERS NOT EXCEEDING 6 INCHES IN DEPTH AND EACH LAYER SHALL BE ROLLED, OR COMPACTED, PRIOR TO ACCESSIBLE TO WHEELS, AND NOTIFIED WHEN NECESSARY TO MAKE COMPACTNESS SUPPORTING SOILS FOR CULVERTS MUST BE COMPACTED TO 90% OF THEORETICAL DENSITY.

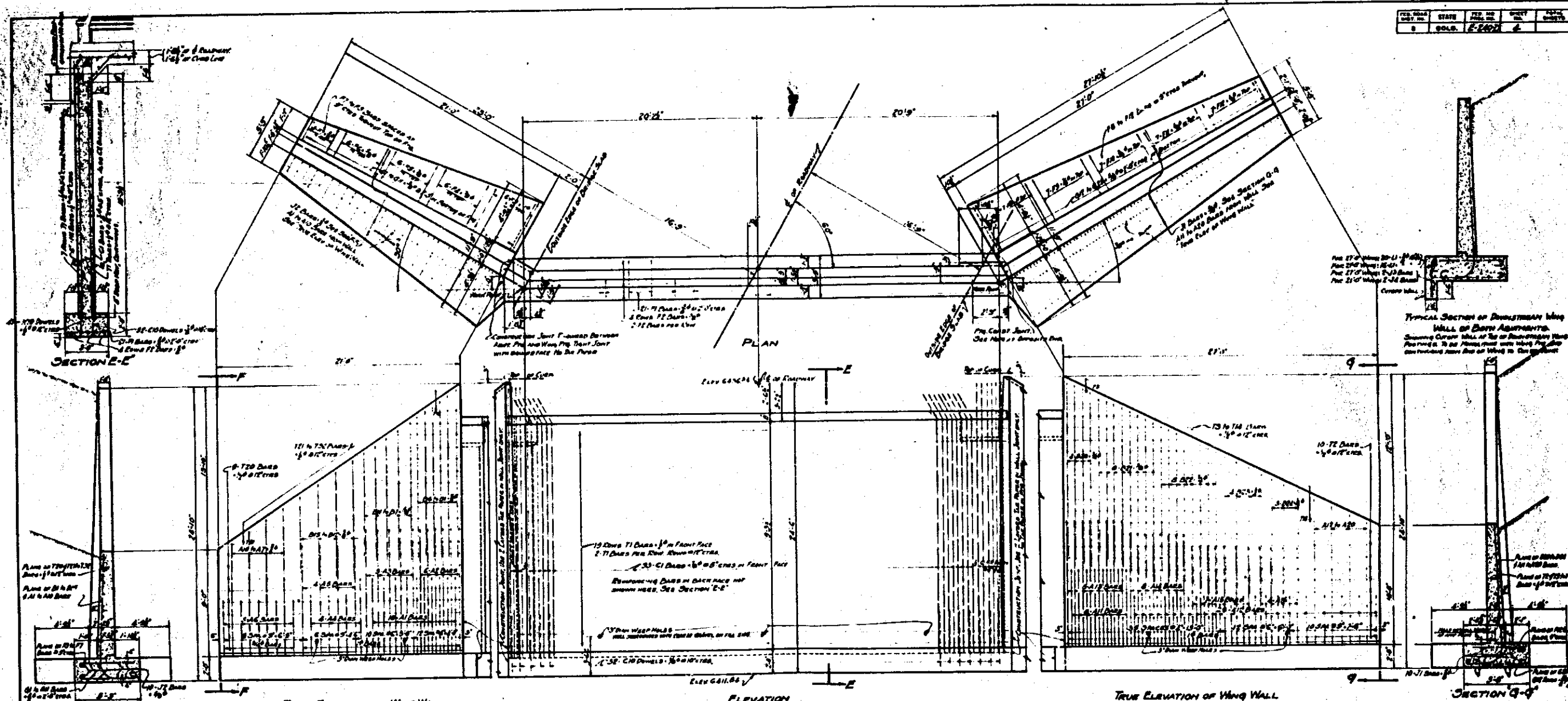
LOADING DATA
LL-A.A.3.H.Q. H-15

COLORADO
STATE HIGHWAY DEPARTMENT
STANDARD DOUBLE
CONCRETE BOX
CULVERT

10' X 8'
DESIGNED BY R.W.J. APPROVED BY C.E. B. B. B.
MADE BY E.E.C. BRIDGE ENGINEER
CHECKED BY M.O. DATE: Aug. 5, 1937

STRUCTURE NO.

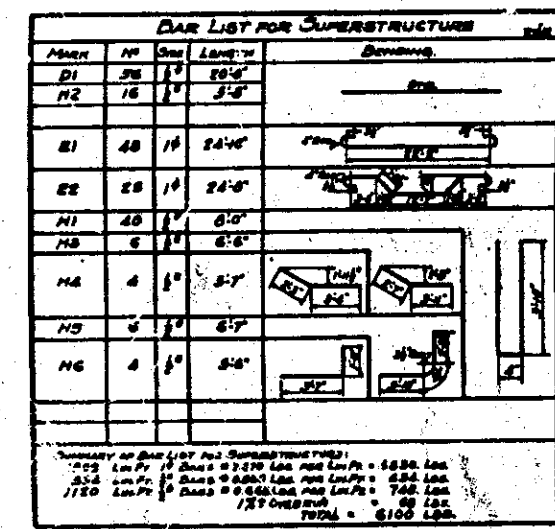
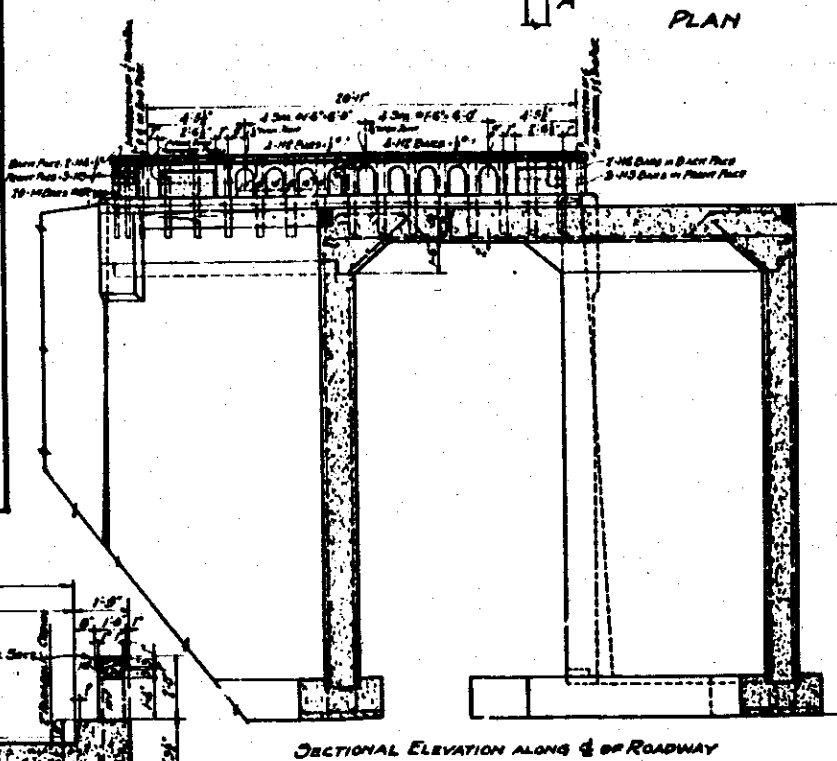
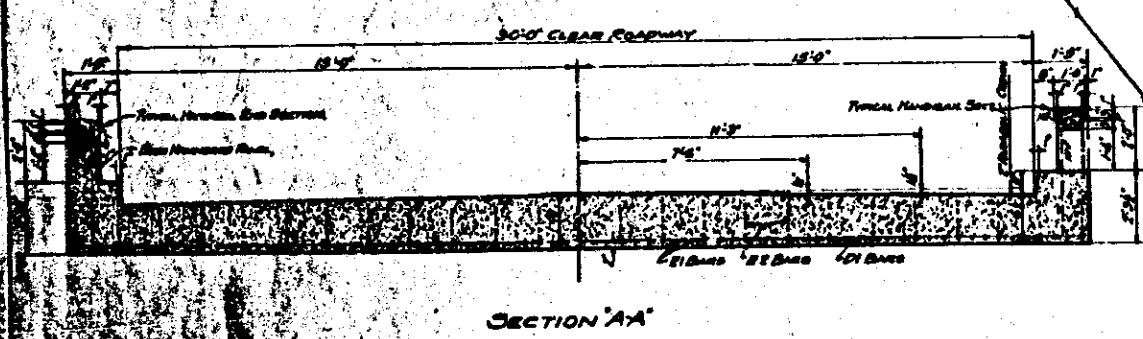
FILE NO.	STATE	FILE NO.	DATE	SCALE
100-100	COLO.	100-100	1-24-34	1"=10'



ALL DETAILS OF BOTH ABUTMENTS ARE SIMILAR.
Note: Curved Wall shown in 'Typical Section of Downstream Wing Wall'.

BAR LIST FOR TWO ABUTMENTS									
MARK	NO	SIZE	LENGTH	I	P	S	BENDING		
A 20	20	1/2"	12'-0"	6'-0"	2'-0"				
A 12	12	1/2"	12'-0"	11'-0"	2'-0"				
A 10	10	1/2"	12'-0"	11'-0"	3'-0"				
A 8	8	1/2"	12'-0"	3'-0"	1'-5"				
A 6	6	1/2"	12'-0"	9'-0"	2'-4"				
A 10	10	1/2"	9'-0"	3'-0"	1'-11"				
A 7	8	1/2"	12'-0"	12'-0"	2'-0"				
A 16	16	1/2"	12'-0"	6'-0"	2'-0"				
A 16	16	1/2"	12'-0"	11'-0"	2'-0"				
A 16	16	1/2"	12'-0"	9'-0"	3'-0"				
A 16	16	1/2"	12'-0"	6'-0"	2'-0"				
A 16	16	1/2"	12'-0"	11'-0"	2'-0"				
A 16	16	1/2"	12'-0"	9'-0"	3'-0"				
A 16	16	1/2"	12'-0"	6'-0"	2'-0"				
A 17	16	1/2"	12'-0"	11'-0"	2'-0"				
A 10	10	1/2"	12'-0"	11'-0"	3'-0"				
Summary of Bar List for Two Abutments									
2000	107	18	Bars @ 2.070 Lbs per ft.					7525	100
2000	100	18	Bars @ 2.044					11750	
2000	100	18	Bars @ 1.508					1524	
2000	100	18	Bars @ 1.043					2940	
2000	100	18	Bars @ .500					1004	
2000	100	18	Bars @ .000					2500	
								254	
TOTAL								27000	LBS

BAR LIST FOR TWO ABUTMENTS									
MARK	NO	SIZE	LENGTH	I	P	S	BENDING		
A 20	20	1/2"	12'-0"	6'-0"	2'-0"				
A 12	12	1/2"	12'-0"	11'-0"	2'-0"				
A 10	10	1/2"	12'-0"	11'-0"	3'-0"				
A 8	8	1/2"	12'-0"	3'-0"	1'-5"				
A 6	6	1/2"	12'-0"	9'-0"	2'-4"				
A 10	10	1/2"	9'-0"	3'-0"	1'-11"				
A 7	8	1/2"	12'-0"	12'-0"	2'-0"				
A 16	16	1/2"	12'-0"	6'-0"	2'-0"				
A 16	16	1/2"	12'-0"	11'-0"	2'-0"				
A 16	16	1/2"	12'-0"	9'-0"	3'-0"				
A 16	16	1/2"	12'-0"	6'-0"	2'-0"				
A 16	16	1/2"	12'-0"	11'-0"	2'-0"				
A 16	16	1/2"	12'-0"	9'-0"	3'-0"				
A 16	16	1/2"	12'-0"	6'-0"	2'-0"				
A 17	16	1/2"	12'-0"	11'-0"	2'-0"				
A 10	10	1/2"	12'-0"	11'-0"	3'-0"				
Summary of Bar List for Two Abutments									
2000	107	18	Bars @ 2.070 Lbs per ft.					7525	100
2000	100	18	Bars @ 2.044					11750	
2000	100	18	Bars @ 1.508					1524	
2000	100	18	Bars @ 1.043					2940	
2000	100	18	Bars @ .500					1004	
2000	100	18	Bars @ .000					2500	
								254	
TOTAL								27000	LBS



* WET LINE ASSUMED AT ELEV. 6214'

[illegible]

COLORADO
STATE HIGHWAY DEPARTMENT
 CONCRETE GRASS BRICKS
 JOYRIDE RENTALS TRUCKS TRAILERS
 SUBSISTENCE HOUSES LIGHTS PLANTS
 MOWERS ALUMINUM
 Steel Driveways to Steel Gates
 Snow Grading Snow Plows
 Designed by ALICE Constructed by ALICE
 Made by ALICE Sales Engineer
 Checked by KAY Sales Agent