

FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	6-A(I)	1	

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COLORADO

STATE HIGHWAY DEPARTMENT

PLAN AND PROFILE OF PROPOSED

FEDERAL AID SECONDARY PROJECT NO. F.A.S. 6-A(I)

STATE HIGHWAY NO. 86

ELBERT COUNTY

CONVENTIONAL SIGNS

CENTER LINE OF SURVEY	
SECTION LINES	
ONE-QUARTER SECTION LINE	
RIGHT OF WAY LINES	
FENCE	
GUARD FENCE	
POLE LINES	
EASEMENT LINES	

SCALES OF ORIGINAL TRACINGS

ON PLAN, 1 IN. = 100 FT.

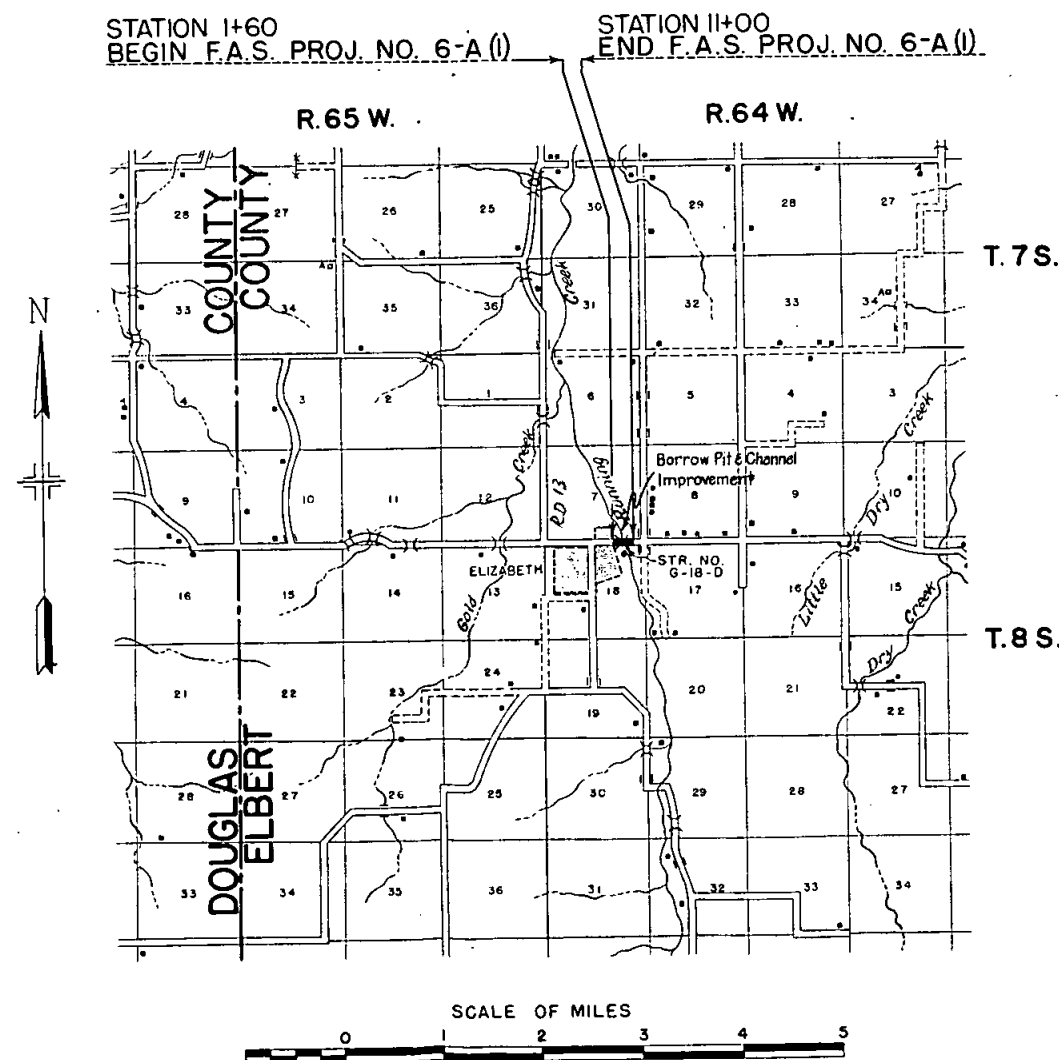
ON PROFILE 1 IN. = 100 FT. HORIZONTAL

1 IN. = 10 FT. VERTICAL

GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD

GROSS LENGTH OF PROJECT 940 FT. = 0.178 MI.

NET LENGTH OF PROJECT 940 FT. = 0.178 MI.



No ROW
PLANS IN
FILE.

NOTE

It is recommended that bidders on this Project go over the Plan Details with one of the following field representatives of this Department.

Ernest Montgomery, Division Engineer, Colorado Springs

Glen McEldowney, Resident Engineer, Colorado Springs

RECOMMENDED FOR APPROVAL

ASSISTANT ENGINEER

APPROVED

STATE HIGHWAY ENGINEER

RECOMMENDED FOR APPROVAL

DIST. ENG. BUREAU PUBLIC ROADS

RECOMMENDED FOR APPROVAL

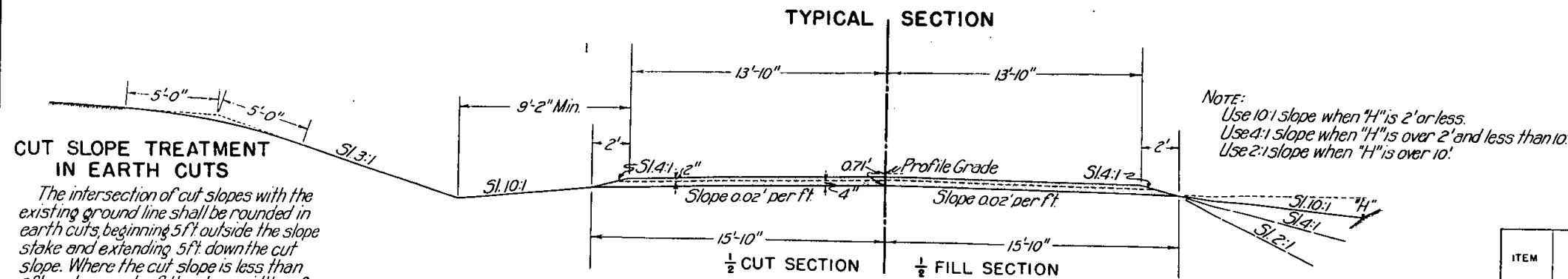
CHIEF ENG. BUREAU PUBLIC ROADS

APPROVED

DIRECTOR BUREAU PUBLIC ROADS

FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
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TYPICAL CROSS SECTION OF IMPROVEMENT AND SUMMARY OF QUANTITIES



CUT SLOPE TREATMENT IN EARTH CUTS

The intersection of cut slopes with the existing ground line shall be rounded in earth cuts beginning 5 ft outside the slope stake and extending 5 ft down the cut slope. Where the cut slope is less than 5 ft, reduce each of the above widths of slope treatment to the actual slope distance. Quantities involved in slope treatment shall be included in "Unclassified Excavation."

NOTE: Roadway embankments at bridge approaches shall be so constructed that the finish point of the gravel shoulder is 3 ft outside the curb line of the bridge. Where widening of the section is necessary to achieve this result it shall take place uniformly over a distance of 300 ft. This is done to accommodate guard fence and guard posts at bridge approaches.

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 approximate only. Surfacing material is to be placed at the rate of 29 tons per 100 lin. ft. of roadway for the top course, and at the rate of 62 tons per 100 lin. ft. for the bottom course.

SUMMARY OF APPROXIMATE QUANTITIES

ITEM	DESCRIPTION	UNIT	ROADWAY		BRIDGE STA. 4+	PROJECT TOTALS		
			IN ELIZABETH GRADING TOTALS	OUT ELIZABETH GRADING TOTALS				
10a	Clearing and Grubbing Entire Project.	Lump Sum	.	.	.	.	.	.
10c	Clearing and Grubbing Entire Project.	Lump Sum	.	.	.	.	.	.
11a	Removal of Old Bridge Foundations.	Lump Sum	.	.	.	.	.	.
11b	Removal of Disused Detour Bridge.	Lump Sum	.	.	.	.	.	.
11c	Removal of 3 Structures.	Lump Sum	(2)	(1)	.	.	.	.
11d	Remove Portion of Conc. Box Culv. and Cut Keyway Sta. 1+	Lump Sum	.	.	.	.	.	.
12a	Remove Fence.	Lin. Ft.	200	1,000	1,200	.	1,200	.
12c	Remove and Rebuild Rock Fence Sta. 2+	Lump Sum	.	.	.	.	.	.
13c	Unclassified Excavation	Cu. Yd.	1,600	(1,960)	(3,560)	.	(3,560)	.
14a	Dry Rock Excavation (Structural)	Cu. Yd.	10	.	10	.	20	.
14b	Dry Common Excavation (Structural)	Cu. Yd.	90	.	90	.	(880)	(970)
14c	Wet Rock Excavation (Structural)	Cu. Yd.	10	.	10	.	160	170
14d	Wet Common Excavation (Structural)	Cu. Yd.	10	.	10	.	1,230	1,240
18a	Station Yard Overhaul	Sta. Yd.	100	100	200	.	200	.
26a	Gravel or Crushed Rock Surfacing.	Ton	230	500	730	.	730	.
42a	Untreated Bridge Timber.	M Ft. bm.	62	.	62	.	0.3	0.3
46a	Class "A" Concrete.	Cu. Yd.	.	.	845	.	907	.
46r	Class "A" Concrete (Handrails.)	Cu. Yd.	.	.	17	.	17	.
47	Reinforcing Steel.	Lb.	5,600	.	5,600	.	91,800	97,400
48	Structural Steel.	Lb.	.	.	.	.	193,100	193,100
53b	18" Corrugated Metal Culvert Pipe.	Lin. Ft.	.	26	26	.	26	26
64	Grouted Rubble Slope and Ditch Paving (12" thick)	Sq. Yd.	320	150	470	.	470	.
74	Wire Cable Guard Fence	Lin. Ft.	311.4	356.6	668	.	668	.
76a	Barbed Wire Fence with Treated Wooden Posts.	Lin. Ft.	550	1,500	2,050	.	2,050	.
76h	Driveway Gates.	Each	.	1	1	.	1	1
80b	Bronze Name Plates.	Each	.	.	.	.	1	1
81a	Project Markers.	Each	.	.	.	.	1	1
81b	Right of Way Markers.	Each	5	4	9	.	9	9
89a	Drain Pipe (Concrete Floor) (3' x 4' x 0")	Each	.	.	.	.	36	36
44b	Miscellaneous Treated Timber)	M Ft. bm.	.	.	.	.	(0.3)	(0.3)
63a	Riprap	Cu. Yd.	.	20	20	.	(1014)	(1014)
60a	Treated Timber Piling)	Lin. Ft.	.	.	.	.	(136)	(136)
67	Riprap Enclosed in Wire Netting)	Cu. Yd.	.	.	.	.	.	.
FORCE ACCOUNT ITEMS (RECEIVING FEDERAL AID)								
Obliterating Old Road.								
Moving Telephone Poles Sta. 1+60 to 11+00 (WORK BY TELEPHONE CO. FORCES)								
Moving Power Pole Sta. 2+60 (WORK BY POWER CO. FORCES)								
Moving Rural Telephone Poles off R.O.W. Sta. 7+ to 10+ (WORK BY TELEPHONE CO. FORCES) (FORCE ACCOUNT)								
13c	Unclassified Excavation	Cu. Yd.	.	(40)	(40)	.	(40)	(40)
63a	Riprap	Cu. Yd.	.	(20)	(20)	.	(20)	(20)

* ITEMS NOT RECEIVING FEDERAL AID

GENERAL NOTES

This Project is to be constructed in conformity with the Standard Specifications of the Colorado State Highway Department, adopted June 1, 1937.

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

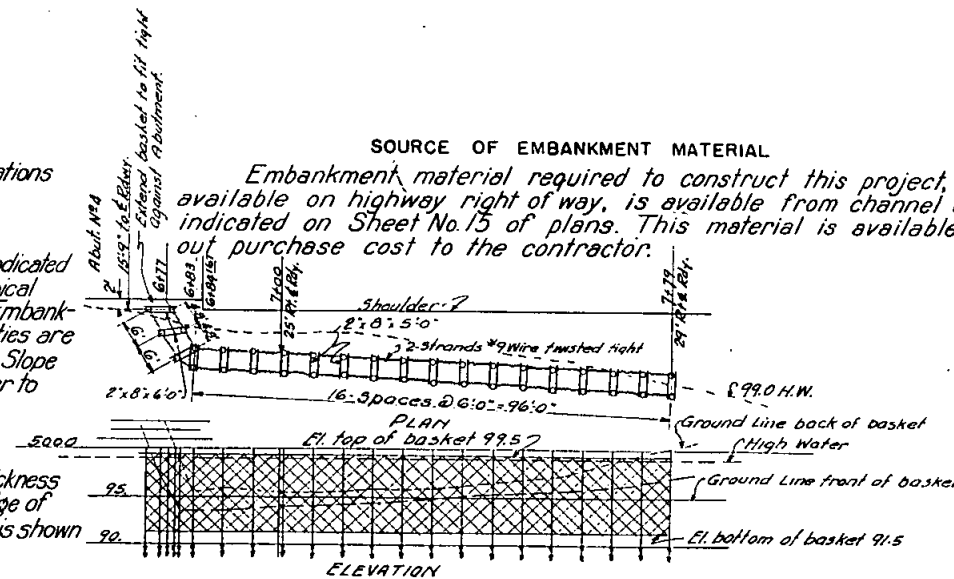
All side approach roads to this Project shall be gravel surfaced with a 4" thickness of "Gravel or Crushed Rock Surfacing" extending approximately 30 ft from the edge of the Highway. Estimated tonnage of surfacing material required in this operation is shown in the "List of Structures."

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

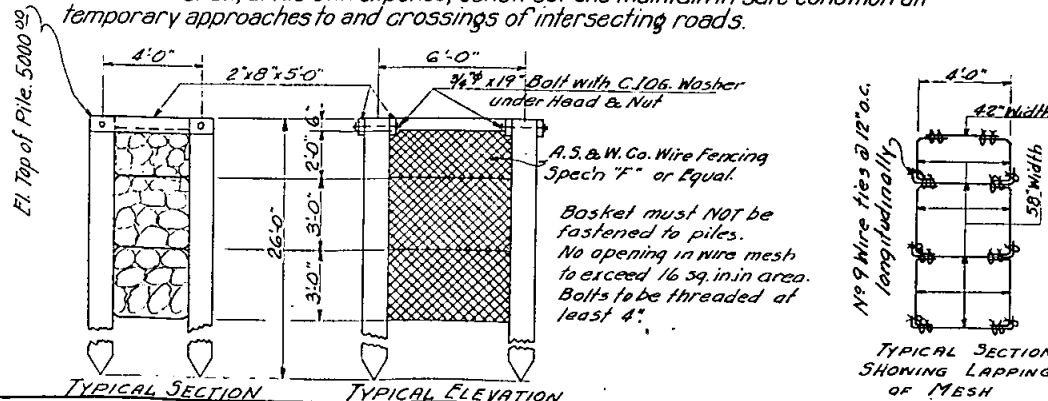
During construction of this Project, traffic will use the present traveled roadway and bridge. At all places where the new construction encroaches on the present traveled roadway traffic shall be adequately provided for at the contractor's expense. Also the contractor shall, at his own expense, construct and maintain in safe condition all temporary approaches to and crossings of intersecting roads.

SOURCE OF EMBANKMENT MATERIAL

Embankment material required to construct this project, not available on highway right of way, is available from channel change indicated on Sheet No. 15 of plans. This material is available without purchase cost to the contractor.



MATERIAL LIST FOR WIRE BASKET - S.J.B.	
Treated Timber	
4-2' x 8' x 6' 0"	32 bd. ft.
36-2' x 8' x 5' 0"	240 " "
Total	272 " "
Treated Timber Piling	
39-Piles @ 26' 0" Each	1014 Lin. Ft.
Bolts & Washers	
40-3/4" x 19" @ 2.72' Each	109 lb.
80-3/4" C.I.O.G. Washers @ 1.25' Each	100 "
Total	209 "
Riprap in Wire Net	
136 Cu. Yds	136 Cu. Yds.
Wire Mesh	
42" Width	120 Lin. ft.
58" "	1050 " "
Wire	
199 Galv. Wire	150 lb.
Structural Excavation	
Dry Common	140 Cu. Yd.



LIST OF STRUCTURES

STATION	DESCRIPTION	REMOVE STRUCT. NO.	EXCAVATION CU. YDS.		STRUCTURAL EXCAVATION CU. YDS.		CONCRETE CU. YDS.		REINF. STEEL LBS.	GR. OR CR. ROCK SURFACING TONS	GUARD FENCE LIN. FT.	CORR. MET. CULVERT PIPE LIN. FT.		GR. SL. PAV. SQ. YDS.	MISCELLANEOUS
			UNCL. EX.	EMB.	CU. YDS.	*	CL. "A"					18"			
1+60 1+60 1+60 - 2+65	Approach to Project & Project Marker Remove Structure Remove Portion of Present 3'x3' C.B.C. & Cut Keyway Rt. & Extend Present 3'x3' C.B.C. 120' Rt. Conc. Collar at Connection. (Detail Sheet No. 3) 1 Headwall.	1		50			100	588 { 2.4	5572						1 Project Marker Remove Portion of Present 3'x3' C.B.C. & Cut Keyway Rt.
1+70 2+ - 3+ 2+54 1/2 - 4+10 2+65 - 4+10	Remove Structure Remove & Rebuild Rock Fence, Lt. Guard Fence Rt. & Lt. Grouted Rubble Paved Drain Ditch, Rt.	1									1557 155.7			316	Remove & Rebuild Rock Fence
4+10 - 4+75 4+10 - 4+13 1/2 4+15 1/2 - 6+84 1/2	Grouted Rubble Paved Drain Ditch, Rt. Guard Fence, Rt. & Lt. 1 Span @ 100' Steel Low Truss & 2 Spans @ 50' Concrete & I-Beam Bridge & Channel Imp- rovement (Detail Sheet No. 3) & Remove Old Bridge Foundation.			170			(2684 1/2)				3.3 3.3			144	
4+75 4+ - 5+ 6+86 1/2 - 8+61 1/2 6+90 - 8+50 9+50	Riprap on Creek Bank Rt. at Ditch Outlet. Remove Disused Detour Bridge. Guard Fence Rt. & Lt. Fill Portion of Channel Rt. Road Approach & Side Drain Rt. & Remove Structure.			(400) 30							175 175				20 Cu. Yds. Riprap
11+00 (4+)	Approach to Project. Dike Rt.	1		50			(No Fed. Aid)			15		26			(20 cu. yds. Riprap)
TOTALS IN ELIZABETH		2	370	50			100	61.2	5572		311.4			316	
TOTALS OUTSIDE ELIZABETH		1	220	(430)						15	356.4	26		144	
PROJECT TOTALS		3	590	(480)			100	61.2	5572	15	668.0	26		460	

Channel Improvement Excavation shall be used in Roadway Embankment, Road Approaches, and for filling Portion of Channel Lt. Sta. 6+90 to 8+50, and is shown for payment in profile data as Borrow and in list of structures as Embankment.

The two lengths of Guard Fence as shown shall be constructed as a continuous length Lt. & Rt.

Structural Excavation is estimated to be 90% Common and 10% Rock, each of which is estimated to be 90% Dry and 10% Wet.

(Quantities not included in List of Structures totals.)

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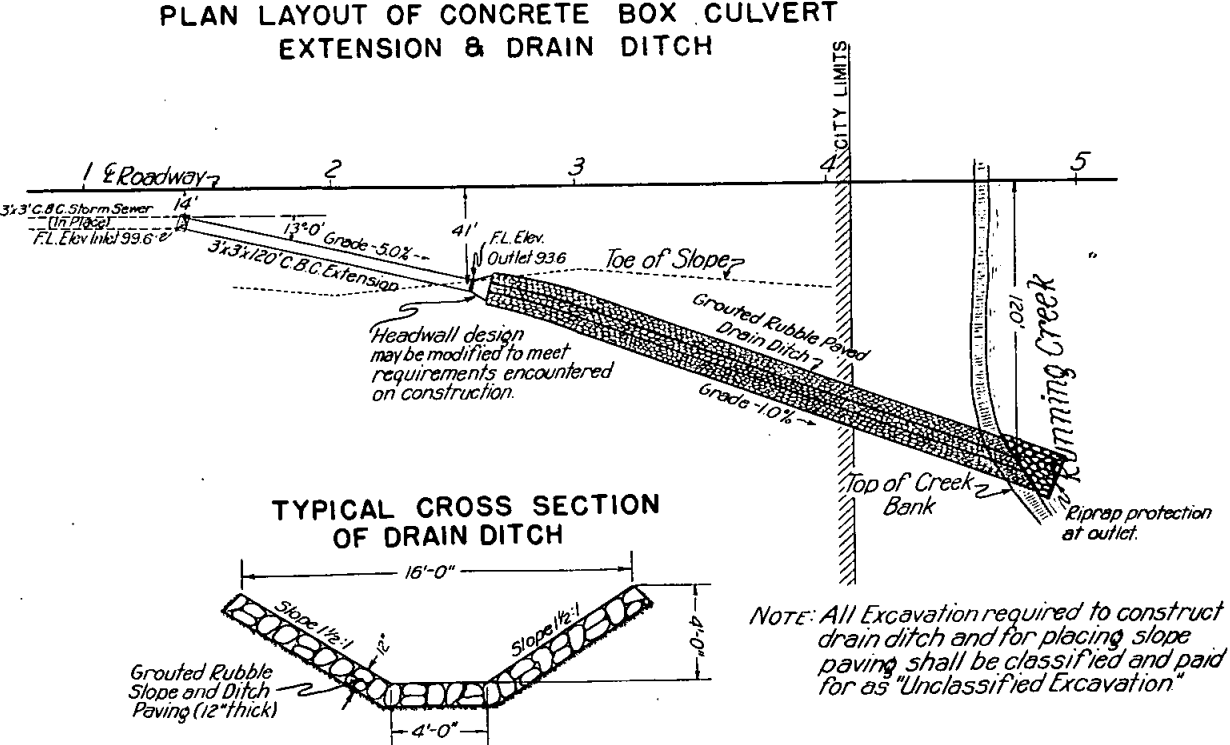
Rev. 7-11-38 g.l. List of Structures.

FENCING REQUIREMENTS

STATION TO STATION	SIDE	REMOVE FENCE LIN. FT.	BUILD B.W. FENCE LIN. FT.	DRIVEWAY GATES NO.
IN ELIZABETH				
3+00 - 4+10	Lt.	130		
2+75 - 3+10	Rt.	60		
1+60 - 4+10	Lt.		260	
1+60 - 4+10	Rt.		270	
OUTSIDE ELIZABETH				
4+10 - 11+00	Lt.	710		
8+10 - 11+00	Rt.	290		
4+10 - 11+00	Lt.		690	
4+10 - 11+00	Rt.		790	
9+50	Rt.			1
TOTAL IN ELIZABETH		190	530	
TOTAL OUTSIDE ELIZABETH		1000	1480	1
PROJECT TOTALS		1190	2010	1

R.O.W. MARKERS

STATION	SIDE	NO.
IN ELIZABETH		
1+60	Rt. & Lt.	2
2+75	Rt. & Lt.	2
3+25	Lt.	1
OUTSIDE ELIZABETH		
4+50	Rt.	1
8+20	Rt.	1
11+00	Rt. & Lt.	2
TOTAL IN ELIZABETH		5
TOTAL OUTSIDE ELIZABETH		4
PROJECT TOTAL		9



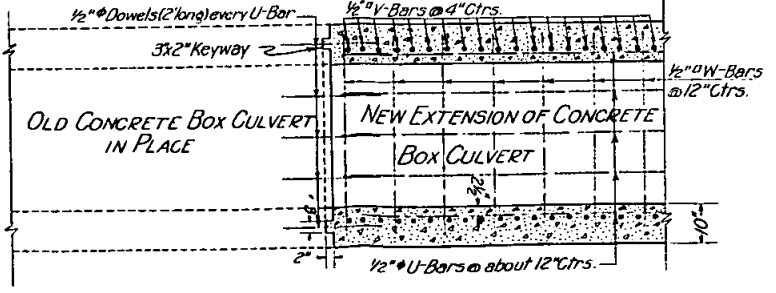
NOTE: Place one dowel to each U-bar shown on Standard Concrete Box Culvert Sheet.

Dowel bars are to be grouted in place with a cement grout composed of one part of cement and two parts of clean, well graded sand.

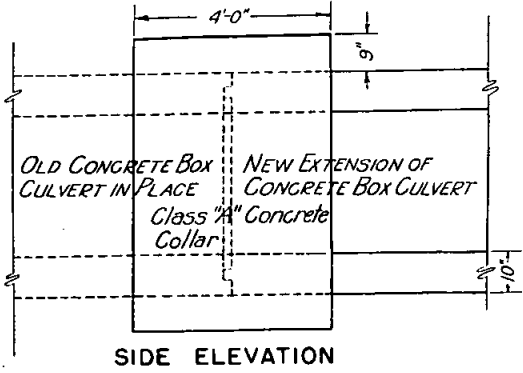
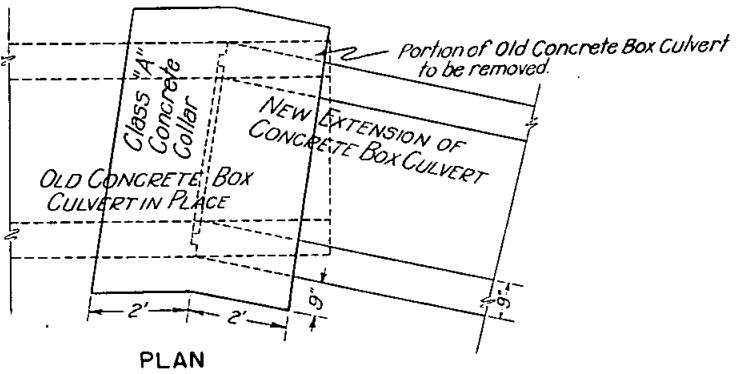
The cost of placing and grouting dowels to be included in payment for Reinforcing Steel.

The cost of "Remove Portion of Concrete Box Culvert and Cut Keyway" to be paid for at Contract Lump Sum Price.

DETAIL OF JOINT FOR CONCRETE BOX CULVERT EXTENSION



DETAILS OF CONCRETE COLLAR



Req'd. 2.4 cu yds. Class "A" Concrete for collar.

PLAN

15'-8"

6'-9"

8'-11"

3"

1 5/16"

7/16"

7/16"

1 5/16"

11"

6"

6"

6"

0'-10" @ 1'-6"

11-1/2" Bars @ 1'-0"

11-1/2" Bars @ 1'-0"

W1-3/4" @ 1'-0"

W2-3/4" @ 1'-0"

W4 bars 1/2" @ 1'-0"

W3-1/2" x 34'-0"

W4 bars 1/2" @ 1'-0"

1'-10"

6'-4"

1'-10"

10'-0"

7'-3"

Symm. about C

0'-21-1/4" x 8' x 8' 7 1/2"

FL 4973.00

Technical drawing showing the elevation and cross-section of a beam with a nose angle reinforcement detail.

ELEVATION

Dimensions: 1'-0" (left), 3 SPB. @ 3'-4" (center), 1'-0" (right). Total width: 12". Total height: 8".

NOSE ANGLE
Z-REQUIRED

Cross-section details:

- C1 bars 1/2" #
- L1 bars 1/2" #
- L2 bars 1/2" #

Detail View (Left): Shows a cross-section of the beam with a weld and reinforcement bars. Label: 4 pcs. 2" x 1/4" strap iron for each Nose Angle.

Detail View (Right): Shows a cross-section of the beam with a nose angle reinforcement.

Technical drawing of a pier cross-section. The drawing shows a vertical pier with a base and a top section. The base is labeled "4' x 1'-2' Construction Key". The pier is reinforced with "W1 Bars 3/4\"

PIERN ^a 3 BAR LIST STA. 6+00.625									
Mark	Size	N ^a Reqd.	Length	Type	DIMENSIONS				
					ℓ	m	r	t	
L1	1/2" #	66	23'-3"	Str.					
L2	1/2" #	64	22'-0"	Str.					
L3	1/2" #	28	15'-0"	VII					
C1	1/2" #	4	19'-2"	VI					
W1	3/4" #	32	13'-3"	V	6'-0"	4'-2"	3"	2 1/2"	
W2	3/4" #	30	11'-9"	V	6'-0"	2'-8"	3"	2 1/2"	
W3	1/2" #	5	34'-0"	Str.					
W4	1/2" #	4	9'-6"	Str.					
PIER N ^a 2 BAR LIST STA. 4+99.375									
P1	1/2" #	66	22'-0"	Str.					
L2	1/2" #	64	22'-0"	Str.					
L3	1/2" #	28	15'-0"	VII					
C1	1/2" #	4	19'-2"	VI					
W1	3/4" #	32	13'-3"	V	6'-0"	4'-2"	3"	2 1/2"	
W2	3/4" #	30	11'-9"	V	6'-0"	2'-8"	3"	2 1/2"	
W3	1/2" #	5	34'-0"	Str.					
W4	1/2" #	4	9'-6"	Str.					
Bar Summary—Two Piers 7212 Lbs. 1/2" # bars @ .668 #/ft. = 4818 Lbs. 1553 " 3/4" " @ 1.502 #/ft. = 2333 # +1% ± for overrun = 69 # Total = 7220 Lbs.									

BENDING DIAGRAMS

VII

VI

V

LOADING DATA.
LIVE LOAD=A. A. S. H. O. 1935 CLASS A. (H-16)
DEAD LOAD=ASSUMES 15 LBS. PER SQ. FT. ADDITIONAL WEARING SURFACE WHICH INCLUDES THE 1/4 INCH CONCRETE MONOLITHIC WEARING SURFACE SHOWN.

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

COLORADO
STATE HIGHWAY DEPARTMENT
1-100' SPAN STEEL LOW TRUSS
2-50' CONC. & I-BEAM APPR. SPANS
DETAILS OF PIERS #2 & #3
& GENERAL LAYOUT
Across Running Creek
Sta. 4+15.833 to 6+84.167
Near Elizabeth Sec. 7/18 T.2 S. R.64W
Designed by E.D.W. Approved by P.D. Bailey
Made by L.N.L. Bridge Engineer
Checked by D.A.P. Date: March 12, 1938

SW 1/4 SEC. 7
T. 8 S. R. 64 W.

NW 1/4 SEC. 18
T. 8 S. R. 64 W.

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

Fencing requirements, gates, and right of way markers are tabulated on Sheet No. 3

The widening of the roadway embankment at the West approach to the bridge shall take place uniformly over a distance of 255.6 ft. instead of 300 ft.

Sta. 1+60 ~ Req'd. 50 cu yds. Embank. for approach to project & 1-Project Marker.

Sta. 1+60 ~ Req'd. remove 3x3x26 Concrete Lined Ditch Rt.

Sta. 1+60 ~ 2+65 ~ Req'd. remove portion of present 3x3 C.B.C. & cut keyway Rt. & extend present 3x3 C.B.C. 120 ft. Also req'd. Concrete Collar at connection. (Details Sheet No. 3) (1-Headwall)

Sta. 4+10 ~ 4+75 ~ Req'd. 170 cu yds. Uncl. Excav. & 144 sq. yds. Grouted Rubble Slope & Ditch Paving (12"th) for drain ditch Rt. (Details Sheet No. 3)

Sta. 9+50 ~ Req'd. 30 cu yds. Embank. & 18'x26' C.M.P. side drain Rt. & remove present plank crossing Rt.

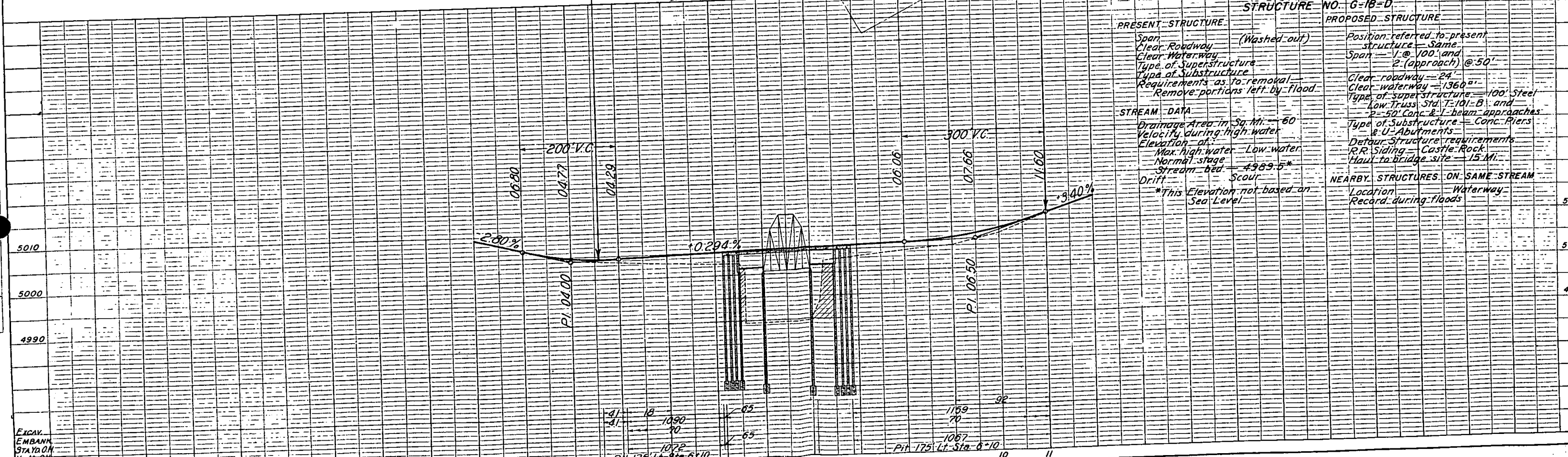
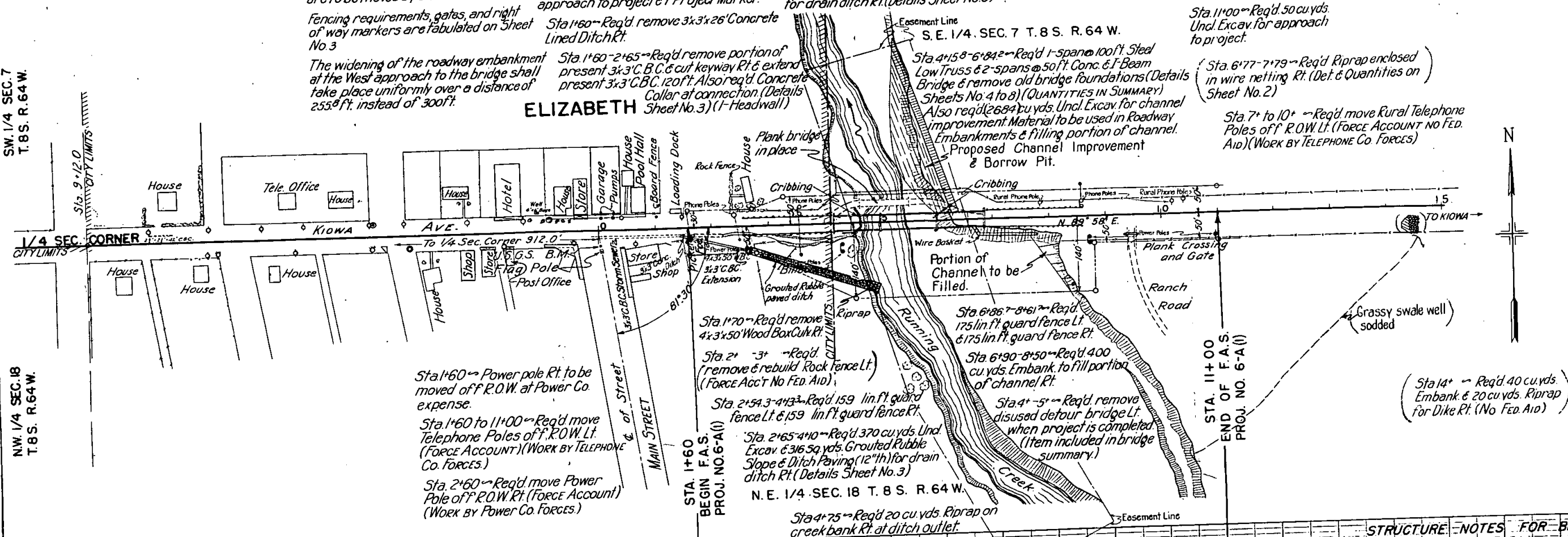
Sta. 11+00 ~ Req'd. 50 cu yds. Uncl. Excav. for approach to project.

Sta. 6+77 ~ 7+79 ~ Req'd. Riprap enclosed in wire netting Rt. (Det. & Quantities on Sheet No. 2)

Sta. 7+ to 10+ ~ Req'd. move Rural Telephone Poles off R.O.W. Lt. (Force Account No Fed. Aid) (Work by Telephone Co. Forces)

Rev. 7-7-38 A.D.M. Added wire basket Rev. 7-11-38 g.l. for Dike.

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STRUCTURE NOTES FOR BRIDGE STA. 4+15.8 TO 6+84.2	
STRUCTURE NO. G-18-D	
PRESENT STRUCTURE	PROPOSED STRUCTURE
Span (Washed out)	Position referred to present structure - Same
Clear Roadway	Span - 1 @ 100' and 2 (approach) @ 50'
Clear Waterway	Clear roadway - 24'
Type of Superstructure	Clear waterway - 1360 sq. ft.
Type of Substructure	Type of super structure - 100' Steel Low Truss Std. T-101-B and 2-50' Conc. & I-beam approaches
Requirements as to removal	Type of Substructure - Conc. Piers & U-Abutments
Remove portions left by flood	Detour Structure requirements R.R. Siding - Castle Rock Haul to bridge site - 15 Mi.
STREAM DATA	NEARBY STRUCTURES ON SAME STREAM
Drainage Area in Sq. Mi. - 60	Location Waterway
Velocity during high water	Record during floods
Elevation of:	
Max. high water	
Low water	
Normal stage	
Stream bed	
Drift	
Scour	
*This Elevation not based on Sea Level	