FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S. 46(3)	1	

COLORADO
STATE HIGHWAY DEPARTMENT

PLAN AND PROFILE OF PROPOSED
FEDERAL AID SECONDARY PROJECT NO. S. 46 (3)
STATE HIGHWAY NO. 96
CROWLEY COUNTY

INDEX OF SHEETS

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 23,266.1 FEET = 4.406 MILES
NET LENGTH OF PROJECT 22,654.5 FEET = 4.290 MILES

CONVENTIONAL SIGNS

CENTER LINE OF IMPROVEMENT 100
RIGHT OF WAY LINES
COUNTY LINE
T.W.P. OR RANGE LINES
SECTION LINES
QUARTER SECTION LINES
CITY LIMITS
RAILROADS
BARBED WIRE FENCE
TELEPHONE & TELEGRAPH LINE
POWER LINES

It is recommended that bidders on this Project go over the plan details withone of the following field representatives of this Department.

GEORGE N. MILES DIVISION ENGINEER PUEBLO, COLO.
R.S. TILLSON RES. ENGINEER PUEBLO, COLO.

RECOMMENDED FOR APPROVAL

Jas. D. Bell.
ASSISTANT ENGINEER DATE 4-1-47

APPROVED

Mark C. Watkins
STATE HIGHWAY ENGINEER DATE 4-3-47

RECOMMENDED FOR APPROVAL DATE

DISTRICT ENGINEER
PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY

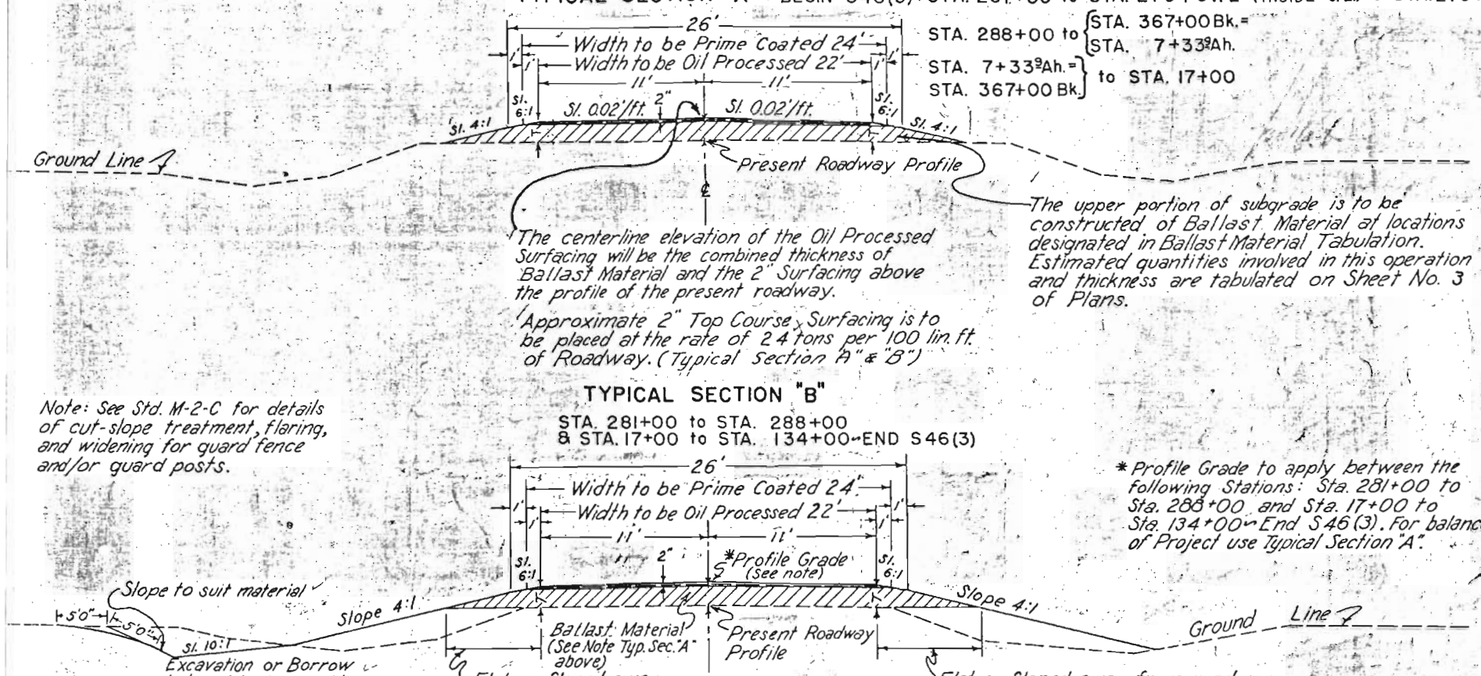
APPROVED DATE

DIVISION ENGINEER
PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY

FED. ROAD DIST. NO.	STATE	F. A. S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S 46 (3)	2	

TYPICAL CROSS SECTION OF IMPROVEMENT AND SUMMARY OF QUANTITIES

TYPICAL SECTION "A" - BEGIN S46(3) STA. 261+00 to STA. 279+67.2 (INSIDE C.L.) & STA. 279+67.2 TO STA. 281+00



STA. 288+00 to {STA. 367+00 Bk. = STA. 7+33 Ah.}

STA. 7+33 Ah. = STA. 367+00 Bk. } to STA. 17+00

The centerline elevation of the Oil Processed Surfacing will be the combined thickness of Ballast Material and the 2" Surfacing above the profile of the present roadway.

Approximate 2" Top Course Surfacing is to be placed at the rate of 24 tons per 100 lin. ft. of Roadway. (Typical Section "A" & "B")

The upper portion of subgrade is to be constructed of Ballast Material at locations designated in Ballast Material Tabulation. Estimated quantities involved in this operation and thickness are tabulated on Sheet No. 3 of Plans.

TYPICAL SECTION "B"

STA. 281+00 to STA. 288+00
& STA. 17+00 to STA. 134+00-END S46(3)

Note: See Std. M-2-C for details of cut-slope treatment, flaring, and widening for guard fence and/or guard posts.

* Profile Grade to apply between the following Stations: Sta. 281+00 to Sta. 288+00 and Sta. 17+00 to Sta. 134+00-End S46(3). For balance of Project use Typical Section "A".

The depth and width of the side ditch shall be varied where necessary in order that sufficient depth may be acquired to provide entrance to drainage structures and to provide the required drainage for the roadway.

All side approach roads to the project shall be Oil Processed approximately to the right of way line.

At Bridge Approaches the Oil Processing shall be widened to meet the curbed width of the Bridge and shall take place gradually over a distance of 300 Lin. ft. each way from the Bridge ends.

Asphaltic Road Material, MC-0, is to be placed over a 24 ft. width of roadway previous to placing of Oil Processed Material.

GENERAL NOTES

This project is to be constructed in conformity with the Standard Specifications of the Colorado State Highway Department adopted June 1, 1940.

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 as shown, are subject to change by the Engineer to fit conditions actually met in construction.

All corrugated Metal Pipe Cross Culverts shall be laid with Metal Aprons on inlet end unless otherwise noted on the plans.

Except as otherwise noted on the plans, payment for overhaul will be based on measurement along the centerline of the Project.

All curves are to be superelevated and widened as provided for by the Standard Superelevation Sheet included with the plans, except as noted on the plans for modification.

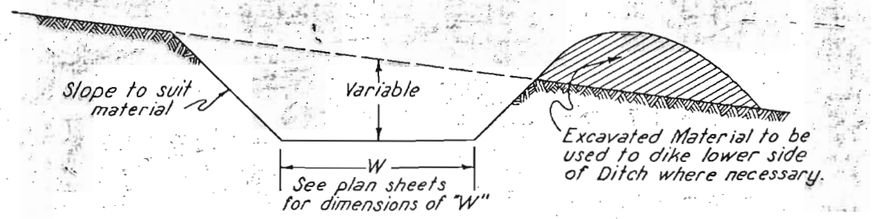
The Detour for this Project lies along the present traveled road. At all places on the Project where the new work lies along the present traveled road, the Contractor shall, at his own expense, prosecute construction in such manner that traffic may readily pass over the road. Also, the Contractor shall maintain in safe condition and at his own expense, all temporary approaches to and crossings of intersecting roads.

Approximately 6 inches of embankment material will be used to cover culverts in such a manner that a minimum of pipe shall be exposed in the completed work. This shall be accomplished by warping embankment slopes around and adjacent to the culvert.

SUMMARY OF APPROXIMATE QUANTITIES

ITEM NO.	ITEM	UNIT	ROADWAY INSIDE CITY LIMITS	ROADWAY OUTSIDE CITY LIMITS	PROJECT TOTALS
11a	Removal of 5 Structures	Lump Sum		•	•
11b	Removing Project Markers	Each	1		1
12x	Removing and Rebuilding Guard fence	Lin. Ft.		380	380
13c	Unclassified Excavation	Cu. Yd.	100	14,900	15,000
13d	Unclassified Ditch Excavation	Cu. Yd.	20	1,980	2,000
14a	Dry Rock Excavation (Structural)	Cu. Yd.		20	20
14b	Dry Common Excavation (Structural)	Cu. Yd.		70	70
14c	Wet Rock Excavation (Structural)	Cu. Yd.		10	10
14d	Wet Common Excavation (Structural)	Cu. Yd.		20	20
14e	Mechanical Tamping	Hour		30	30
15a	Rolling Embankments and Cuts	Unit Hr.	20	330	350
15b	Furnishing Roller	Roller-Unit	1	3	4
15c	Wetting Embankments and Cuts	M. Gal.	70	1300	1370
15d	Rolling with Finishing Roller	Hour	40	240	280
18a	Station Yard Overhaul	Sta. Yd.	29,000	152,000	181,000
18b	Yard Mile Overhaul	Yd. Mi.	3,000	16,000	19,000
23	Ballast	Cu. Yd.	2,600	11,600	14,200
26a	Gravel or Crushed Rock Surfacing	Ton	500	5,400	5,900
26c	Overhaul of Surfacing	Ton Mi	4,500	38,200	42,700
30d	Asphaltic Road Material RC-3	Gal.	1,300	13,800	15,100
30g	Asphaltic Road Material MC-0	Gal.	1,600	16,000	17,600
30p	Asphaltic Road Material SC-3	Gal.	7,000	76,900	83,900
31c	Rolling Surfacing	Hour	10	60	70
31d	Furnishing Rubber Tired Roller	Lump Sum	• Prorated	• Prorated	•
31x	Road Mix Oil Processing	Sq. Yd.	5,000	54,900	59,900
32b	Stone Screenings	Ton	60	550	610
53b	18" Corrugated Metal Culvert Pipe	Lin. Ft.		168	168
53c	24" Corrugated Metal Culvert Pipe	Lin. Ft.		188	188
81a	Project Markers	Each	1	1	2
81b	Right of Way Markers	Each		10	10
95c	Metal Aprons for 24" C.M.P. Culverts	Each		5	5
119	Shaping Roadbed	Mile	0.4	4.0	4.4

TYPICAL SECTION OF DITCHES



FED. ROAD DIST. NO.	STATE	F. A. S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S.46 (3)	3	

LIST OF STRUCTURES

STATION	DESCRIPTION	REMOVE STRUCTURE NO.	REMOVE STRUCTURE KIND	EXCAVATION CU. YDS. EXCAV.	EMBANK.	UNCL. DITCH	STRUCTURAL EXCAVATION CU. YDS.	GRAVEL OR CR. ROCK SURFACING TON	MECH. TAMPING HOUR	CORR. METAL CULVERT PIPE LIN. FT. 18"	24"	MET. APRONS FOR C.M.P. CULVERTS 24"	MISCELLANEOUS
261+00	Rem. Proj. Marker; Proj. Marker												Remove Proj. Marker
264+68	Road Approach, Rt.				20			10					1-Proj. Marker
270+18	Road Approaches, Lt & Rt.				40			20					
276+00-279+60	Drain Ditch Lt. (W=1)					15							
279+75	Road Appr's. & Side Drains, Lt & Rt.				50		40	90		(64' Lt (54' Rt			
280+25 - 323+25	Drain Ditch, Lt (W=1)					1950							
284+95	Road Approach, Rt.				20			10					
287+70	Remove Concrete Headwall	1	Hdwl										
	Extend 24"x 52' C.M.P. Cross Culv. Lt. & Rt. & Ditches (W=2)					5	10		5	*(6+1.8 (28+1.L		1	
293+50	Remove Concrete Headwall	1	Hdwl										
	Extend 24"x 52' C.M.P. Cross Culv. Lt.						10		5	*30+1		1	
293+68	Road Approach, Rt.				10			10					
300+25	Remove Concrete Headwall	1	Hdwl										
	Extend 24"x 52' CMP Cross Culv. Lt.						10		5	*28+1		1	
306+95	Road Appr. & Side Drain, Rt.				10		15	20		50			
307+30	Remove Concrete Headwall	1	Hdwl										
	Extend 24"x 50' CMP Cross Culv. Lt.						10		5	*30+1		1	
320+12	Road Approach, Rt.				10			10					
320+43	Remove Concrete Headwall	1	Hdwl										
	Extend 24"x 50' CMP Cross Culv. Lt.						10		5	*30+1		1	
338+00 - 340+75.9	Approach to Bridge, Rem. & Reb. Wire Cable Guard Fence, Lt & Rt.			50									Rem. & Reb. 190 Lin. Ft. Wire Cable Guard Fence.
346+54.5 - 348+	Approach to Bridge. Rem. & Reb. Wire Cable Guard Fence, Lt. & Rt.			50									Rem. & Reb 190 Lin. Ft. Wire Cable Guard Fence.
356+00	Road Approach Rt.				10			15					
357+00	Road Approach, Rt.				10			15					
360+48	Double Road Approach, Rt.				20			30					
360+55	Road Approach, Lt. Lt				10			15					
75+00	Road Appr. & Side Drain, Rt.				45			10			30		
134+00	Approach to Project				25			85					
	Project Marker												1-Project Marker
	SUB TOTALS INSIDE CITY LIMITS	0		0	60	15	0	30	0	0	0	0	
	SUB TOTALS OUTSIDE CITY LIMITS	5		100	220	1955	105	310	25	168	188	5	
	PROJECT TOTALS	5		100	280	1970	105	340	25	168	188	5	

* Allowance of 1' for connecting Band.

• Structural Excavation is estimated to be 80% Common and 20% Rock, each of which is estimated to be 20% Wet and 80% Dry.

SURFACING PLAN

It is estimated that material for Gravel Surfacing for the project is available in the vicinity of the pit indicated in the following tabulation. Estimated quantities involved in this operation are shown below.

Alteration of the Surfacing Plan as here outlined will be allowed only on written permission from the Department.

MATERIAL TO BE PLACED	SOURCE	QUANTITY AVAILABLE	QUANTITY TOP COURSE TONS USED INSIDE CITY LIMITS	QUANTITY TOP COURSE TONS USED OUTSIDE CITY LIMITS	OVERHAUL TON MILES INSIDE CITY LIMITS	OVERHAUL TON MILES OUTSIDE CITY LIMITS
261+00 - 279+67.2 279+67.2 - 340+75.9 346+54.5 - 367+008K 7+33.9Ah - 93+72.0	S.E. 1/4 Sec. 26 T 20 S. R 55 W - 1.75 miles to Sta. 365+00	Ample	448	1,466 491 2,073	4178	12,564 3,775 13,841
94+05 - 134+00 Estimated Road Appr's Widening for Bridges			30	959 310 37	281	5,250 2,421 255
TOTALS			478	5,336	4,459	38,106

R.O.W. MARKERS

STATION	SIDE	NO.
(OUTSIDE CITY LIMITS)		
28+60	Lt & Rt.	2
55+75	Lt & Rt.	2
82+90	Lt. & Rt.	2
110+10	Lt & Rt.	2
134+00	Lt & Rt.	2
TOTAL		10

TABULATION OF LENGTH & DESIGN DATA

STATION	ROADWAY INSIDE CITY LIMITS	ROADWAY OUTSIDE CITY LIMITS	BRIDGES (NO WORK) LIN. FT.	BRIDGES (NO WORK) LOADING
261+00 Begin S46(3) Equals Begin. S.P.527 H Unit 1 (Original Project)	1867.2			
279+67.2 City Limits				
340+75.9 Bridge End		6108.7		
Horse Creek			578.6	H=15
346+54.5 Bridge End				
367+00 Bk.-7+33.9 Ah. Equa.		2045.5		
Equals End S.P.527 H. Unit 1 (Original. Project)		8638.1		
93+72.0 Bridge End				
Canal			33.0	
94+05 Bridge End				
134+00 End S46(3)		3995.0		
TOTALS	1867.2	20787.3	611.6	

SUMMARY		LIN. FT.	MILES
S46(3)	Inside City Limits	1867.2	0.353
	Outside City Limits	20787.3	3.937
S46(3) Bridges (No Work)		611.6	0.116
Gross Total S46(3)		23266.1	4.406
Net Total S46(3)		22654.5	4.290

DESIGN DATA	INSIDE CITY LIMITS	OUTSIDE CITY LIMITS
MAXIMUM DEGREE OF CURVE	4° 00'	2° 00'
MAXIMUM GRADE	± 2 %	1.925 %
MINIMUM N.P.S.D. HORIZONTAL	> 1300'	> 1300'
MINIMUM N.P.S.D. VERTICAL	> 1300'	697 ft.
MAXIMUM DESIGN SPEED	50 M.P.H.	50 M.P.H.

BALLAST MATERIAL TABULATION

It is estimated that Ballast Material for the project is available in the vicinity of the pit indicated in the following tabulation. Estimated quantities involved in this operation are shown below.

Alteration of the Ballast Material plan as here outlined will be allowed only on written permisson from the Department.

MATERIAL TO BE PLACED	SOURCE	QUANTITY AVAILABLE	QUANTITY THICKNESS INCHES T	QUANTITY CU. YDS USED INSIDE CITY LIMITS	QUANTITY CU. YDS USED OUTSIDE CITY LIMITS	OVERHAUL STA. YD. INSIDE CITY LIMITS	OVERHAUL STA. YD. OUTSIDE CITY LIMITS	OVERHAUL YD. MI. INSIDE CITY LIMITS	OVERHAUL YD. MI. OUTSIDE CITY LIMITS
261+00 - 279+67.2	S.W. 1/4 Sect. 12 T 21 S R 58 W. 0.15 Miles So. S/L	Ample	15"	2558		28,138		2794	
279+67.2 - 288+00	336±		15"		1141		12,551		954
288+00 - 328+00			4"		1280		14,080		485
328+00 - 336+00			4"		256		1792		- -
336+00 - 340+75.9			4"		132		818		- -
346+54.5 - 367+008K			4"		655		7205		158
7+33.9Ah - 33+00			6"		1257		13,827		853
33+00 - 93+72			8"		4088		44,748		6089
94+05 - 134+00			8"		2077		29,447		6575
340+ Widening for Bridge			4"		22		234		- -
93+ Widening for Bridge			8"		43		473		89
TOTALS				2558	11591	28138	125,175	2794	15203

NOTE:

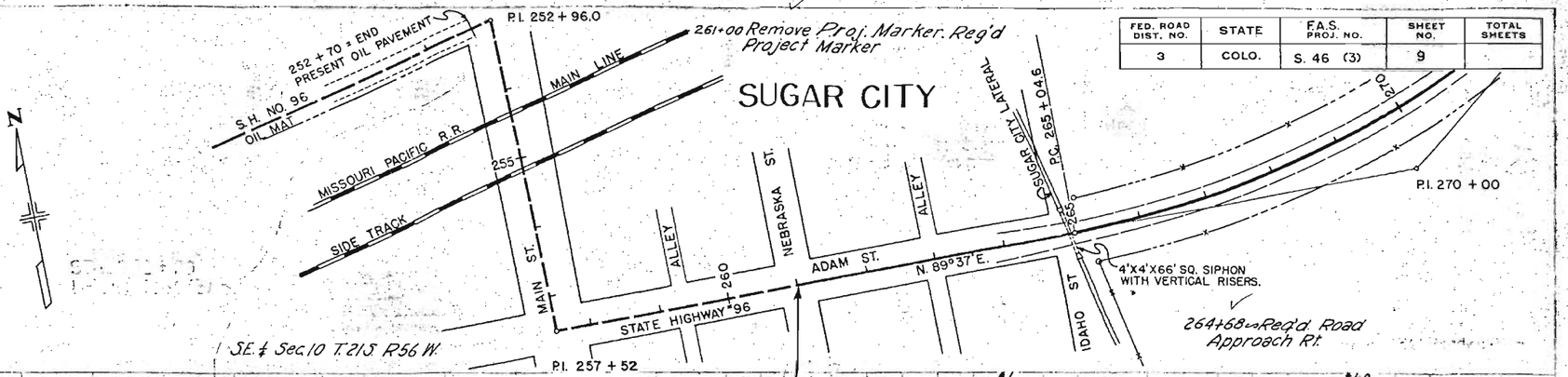
Alignment and Grades as shown are subject to modification during construction after approval by the Denver Office.

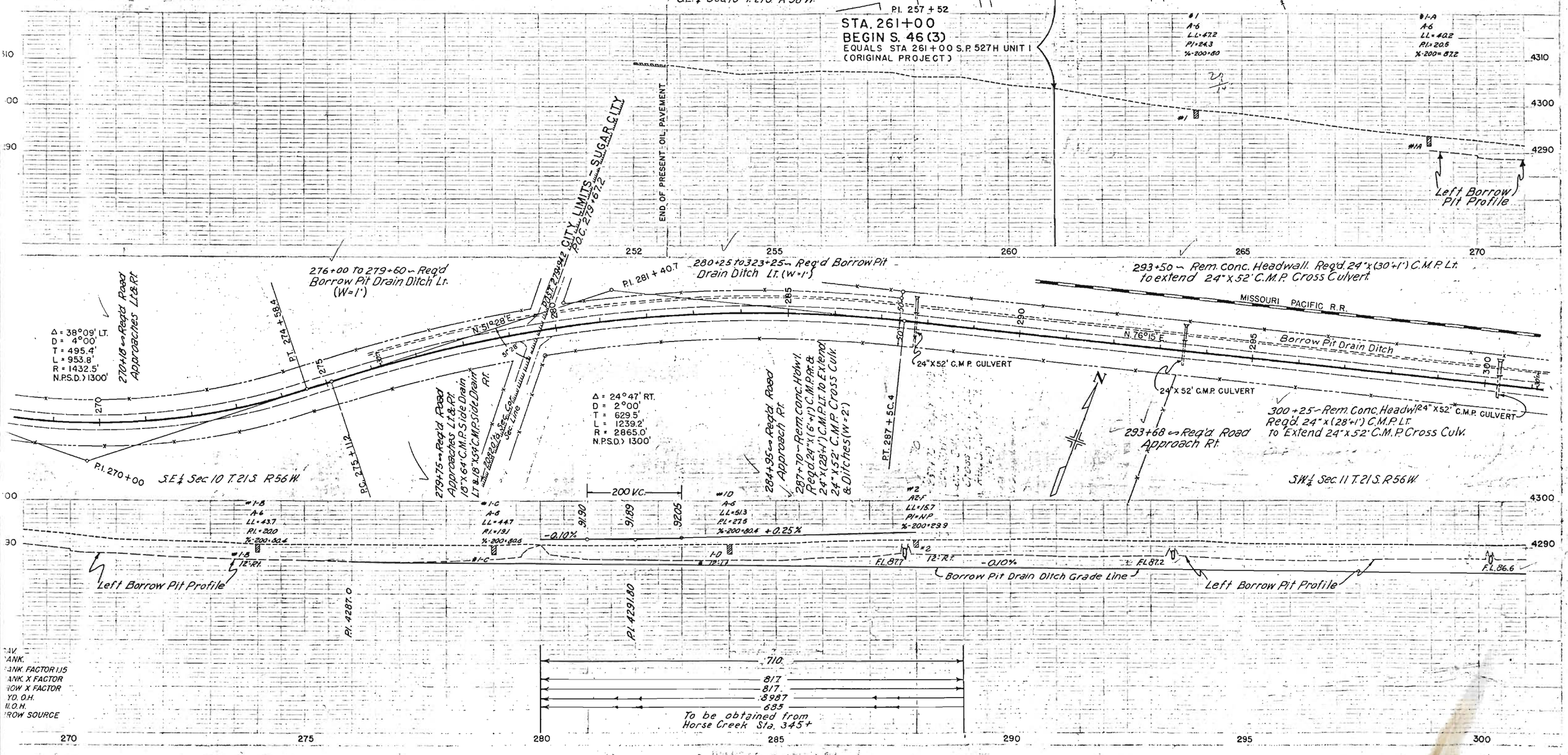
The soil data shown on the plans is obtained from best available testing laboratory information. This information is shown for the convenience of the Contractor and the Department does not guarantee the accuracy of these tests. If materials not conforming to the data on plans are encountered during construction, necessary modifications of the grading plan shown on plans will be made to secure dense, stable embankments.

Ballast Material and Surfacing Requirements are Shown on ✓ Sheet No. 3.

R.O.W. Markers are tabulated on Sheet No. 3 ✓

FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S. 46 (3)	9	





AV.
ANK.
ANK. FACTOR 1.15
ANK. X FACTOR
ROW X FACTOR
YD. O.H.
L.O.H.
ROW SOURCE

FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S. 46(3)	10	

N.W.¼ Sec.11 T.21S. R.56W.

N.E.¼ Sec11 T.21S. R.56W.

307+30 – Remove Conc. Headwall. Reqd. 24"x(30'+1') C.M.P.Lt. to Extend 24"x50' C.M.P. Cross Culvert.

320+43 – Remove Conc. Headwall Reqd. 24"x(30'+1') C.M.P. Lt to Extend 24"x50' C.M.P. Cross Culvert.

MISSOURI PACIFIC R.R

¼ Sec. Line

24"x32' C.M.P. Culvert

24"x50' C.M.P. Culvert

N. 76° 15' E.

Borrow Pit Drain Ditch

306+95 – Req'd. Road Approach & 18"x50' C.M.P. Side Drain Rt.

320+12 – Req'd Road Approach Rt.

P.I. 320+50 Δ = 0° 18' Lt.

400'

Double 24"x50' C.M.P. Culvert

N. 75° 57' E.

SW.¼ Sec11 T.21S. R.56W.

#3 A2-P LL=83.1 PI=8.0 %-800=53.6

#4 A2-F LL=16.2 PI=N.P. %-200=35.6

F.L. 86.6

F.L. 87.1

-0.10%

Left Borrow Pit Profile

Borrow Pit Drain Ditch Grade Line

-0.10%

F.L. 86.6

#4 12-Lt

P.I. 4282.3

4290

4280

300 305 310 315 320 325 330

MISSOURI PACIFIC R.R. BRIDGE NO. 477

Wire Cable Guard Fence

Wire Cable Guard Fence

U.S.G.S. BM.

N. 75° 57' E.

N. 76° 27' E.

330 335 340 345 350 355 360

338+10 to 340+75.9 – Reqd. 50 cu. yds. Excavation for Approach to Bridge.

Remove & Rebuild 190 Lin. ft. Wire Cable Guard Fence Lt. & Rt.

346+54.5 to 348+ Req'd. 50 cu. yd Excavation for Approaches to Bridge.

Remove & Rebuild 190 Lin. ft. Wire Cable Guard Fence Lt. & Rt.

356+00 – Req'd. Road Approach Rt.

357+00 – Req'd. Road Approach Rt.

P.I. 357+00 Δ = 0° 30' RT.

P.O.T. 333+81 Sec. Line

STA. 340+75.9 TO 346+54.5 CONC. I BEAM BRIDGE NO. L 22.8 (No Work)

HORSE CREEK

N.E.¼ Sec.11 T.21S. R.56W.

N.W.¼ Sec 12 T.21S. R.56W.

#5 A2-P LL=24.4 PI=8.6 %-200=37.9

#5

BRIDGE FLOOR

358 + 50' LT. ELEV. 4296.79 USGS. BM. W83

4290

4280

330 335 340 345 350 355 360

FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S. 46 (3)	11	

MISSOURI PACIFIC R.R.

N. 76° 27' E.

¼ Sec Line

360+48.4 Reqd. Double Road Approach Rt.

360+55.4 Reqd. Road Approach Lt.

N.E.¼ Sec 12 T.21S R.56W

EQUA.

ORIGINAL PROJECT UNIT I

367+00 BK. = END S.P. 527 H

= 7 + 33.9 AH. S.46(3)

PAT 361+123 3585.770 3 ¼ Cor. Sec. 12

#6 A2-P LL=26.9 PI=10.1 %-200=46.6

#6 12' Lt

#7 A2-P LL=26.3 PI=6.8 %-200=22.2

#7

P.I. 432.80

P.I. 431.90

+1.90 %

-1.427 %

1935 25.23 21.95 20.52 18.97

1100' V.C. N.P.S.D. 697'

200' V.C.

4320 4310 4300 4290

310 300 290

CAV.
BANK.
BANK. FACTOR 1.15
BANK. X FACTOR
ROW X FACTOR
L YD. O.H
MI. O.H.
RROW SOURCE

56 64 64

132 115 132

548 630 623

7

To be obtained Lt & Rt Stas. 19+ to 20+ inside present R.O.W. within F.H.

To be obtained Lt. & Rt. Sta. 21+ to Sta. 30+ inside present R.O.W. within Free Haul

360 365 10 15 20 25 30

SE 1/4 SEC. 6, T. 21S., R. 55 W.

MISSOURI PACIFIC R.R.

N. 76 27' E.

#8 PA2-7 LL=27.2 PI=8.1 %-200=51.9 -1.926 %

#8 12' Rt.

P.I. 431.90

P.I. 421.40

200' V.C. N.P.S.D.> 1300'

200 V.C.

20.52 18.97 17.18 13.33 11.69 10.65

-1.427 %

-0.75 %

-0.25 %

-0.60 %

-0.26 %

#9 A-8 LL=41.0 PI=16.7 %-200=70.6

#9 12' Lt.

P.I. 420.65

P.I. 420.30

P.I. 423.90

05.40 04.78 04.40 03.50 03.38 03.64 03.15 02.81 02.30

200 V.C. N.P.S.D.> 1300'

320 310 300 290

4310 4300 4290

CAV.
BANK.
BANK. FACTOR 1.15
BANK. X FACTOR
ROW X FACTOR
A. YD. O.H.
MI. O.H.
RROW SOURCE

21 19 21

13 915 1054

8 1012

21

61 53 61

375 431

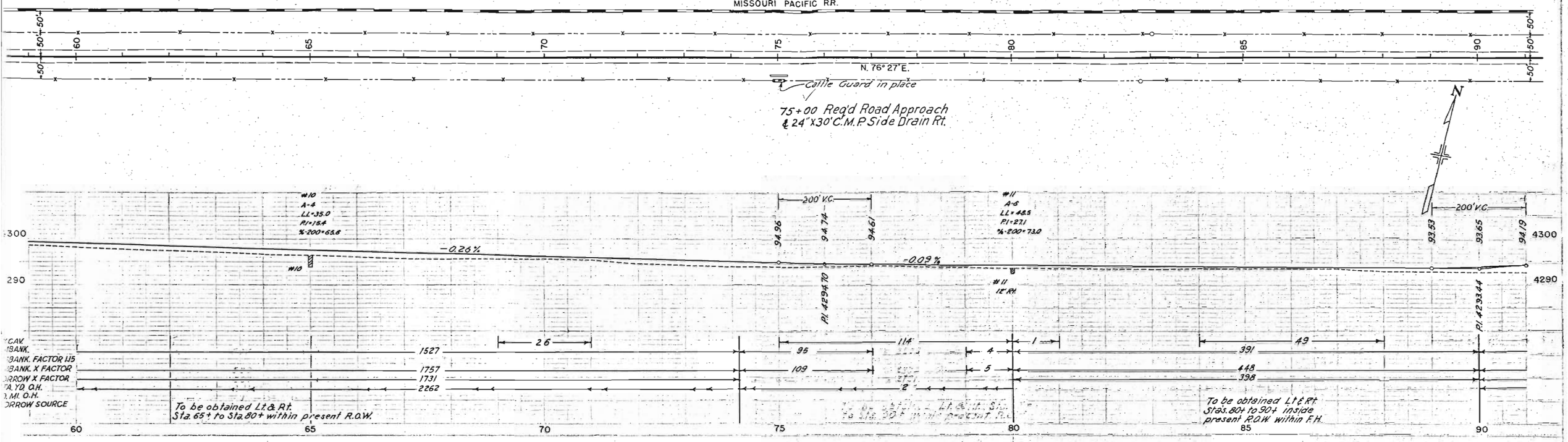
66 365

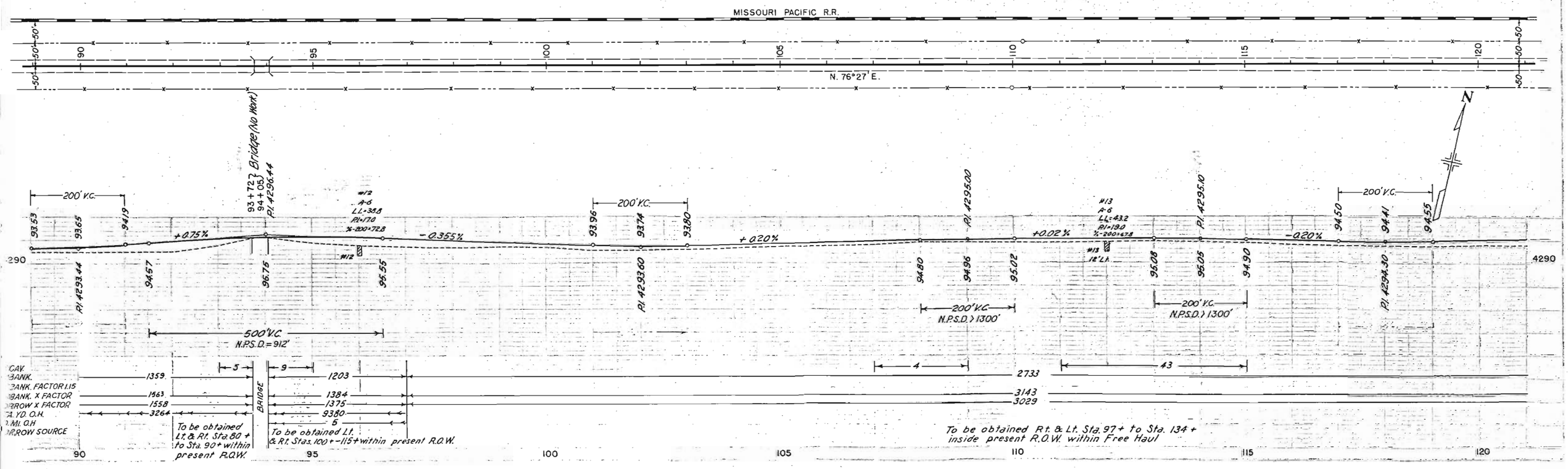
To be obtained Lt & Rt Stas. 31+ to 46+ inside present R.O.W. within F.H.

To be obtained Lt & Rt Stas. 50+ to 60+ inside present R.O.W. within F.H.

30 35 40 45 50 55 60

FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S. 46 (3)	12	





FED. ROAD DIST. NO.	STATE	F.A.S. PROJ. NO.	SHEET NO.	TOTAL SHEETS
3	COLO.	S. 46(3)	13