FEDERAL ROAD DIVISION NO	DISTRICT	PROJ NO	SHEET NO
9	COLORADO	S 0001(19)	1

COLORADO
DEPARTMENT OF HIGHWAYS

PLAN AND PROFILE OF PROPOSED

FEDERAL AID PROJECT NO. S 0001(19)

STATE HIGHWAY NO. 51 (385)

KIT CARSON COUNTY

INDEX OF SHEETS

SCALES OF ORIGINAL DRAWINGS

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 } 28,050 2 Ft = 5 313 Miles
NET LENGTH OF PROJECT }

CONVENTIONAL SIGNS

CENTER LINE — ⊙ PLAN SHEET — TITLE & SHEET
RIGHT OF WAY LINE — R O W MARKER

TOWNSHIP OR RANGE LINE
LAND LINES — SECTION LINE — 1/4 SECTION LINE — 1/13 SECTION LINE

BARBED WIRE FENCE
COMBINATION WIRE FENCE

TELEPHONE & TELEGRAPH LINES
POWER LINE
DETOUR
PRESENT ROAD (Plan Sheets)

TABULATION OF LENGTH AND DESIGN

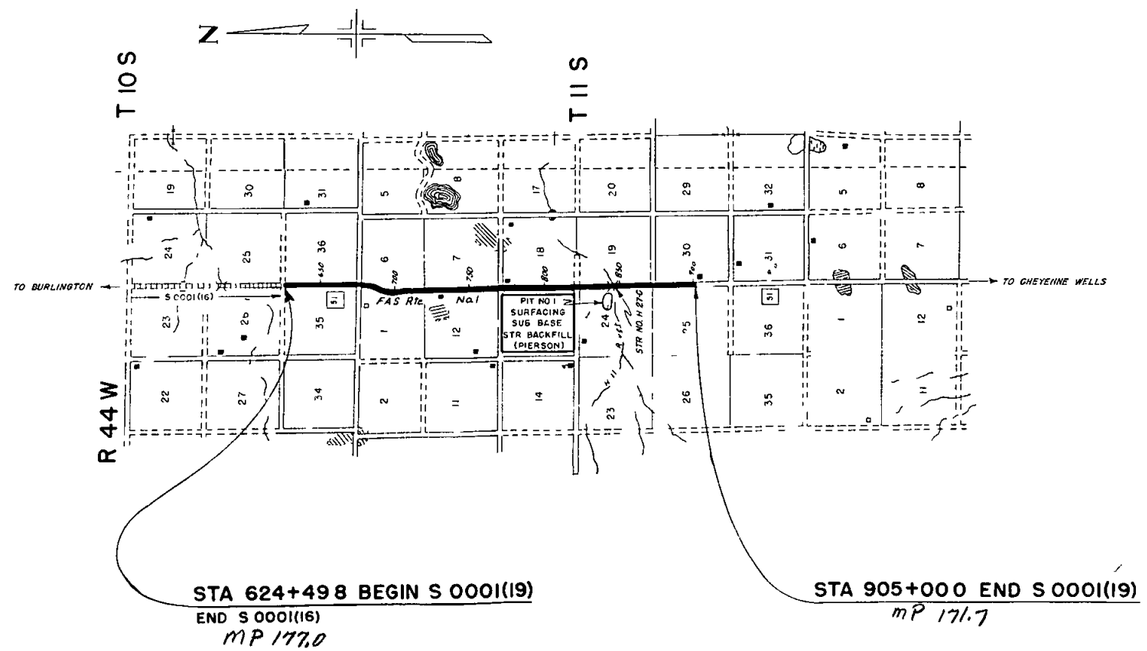
STATION	ROADWAY LIN FT	BRIDGE LIN FT	LOADING
624+498 Beg S 0001(19) = End of S 0001(16)	22,340		
847+898 No Fork of Smokey Hill River		1524	H-20
849+422			
905+000 End S 0001(19)	5,5578		
TOTALS	27,8978	1524	

SUMMARY

	LIN FT	MILES
Roadway	27,8978	5284
Bridge	1524	029
Net & Gross Length	28,0502	5313

DESIGN DATA

Maximum Degree of Curve	1°00
Maximum Grade	3 16 %
Minimum NPSD Horizontal	>1300
Minimum NPSD Vertical	600
Maximum Design Speed	50 mph



NOTICE TO BIDDERS

IT IS RECOMMENDED THAT BIDDERS ON THIS PR
OVER THE PLAN DETAILS WITH ONE OF THE FOLLOW
REPRESENTATIVES OF THIS DEPARTMENT

Glen McElhaney, Construction Engineer, Denv
TH Kilpatrick, Resident Engineer, Cheyenne We

COLORADO
DEPARTMENT OF HIGHWAYS

APPROVED

CHIEF ENGINEER

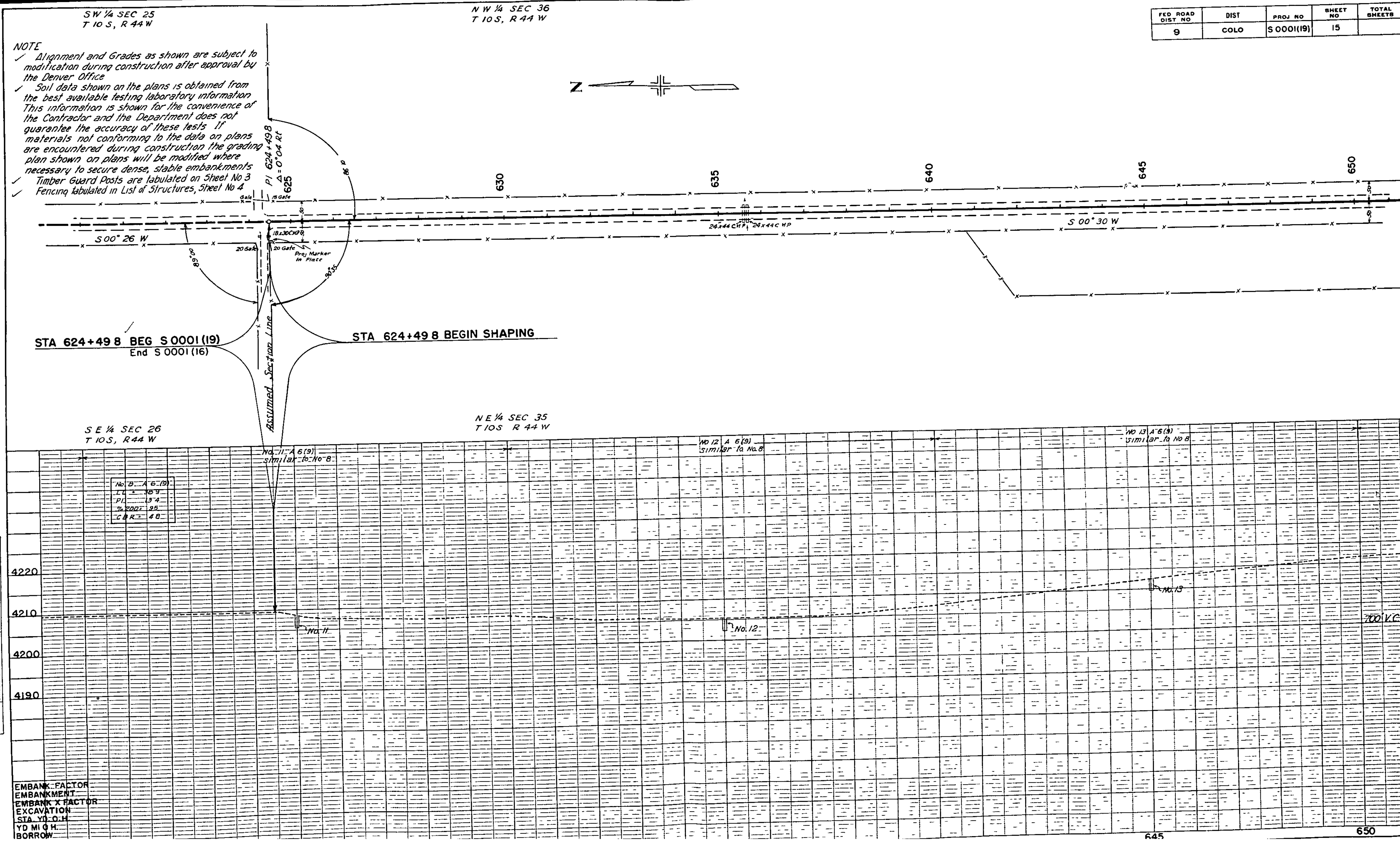
DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED

DISTRICT ENGINEER

FED ROAD DIST NO	DIST	PROJ NO	SHEET NO	TOTAL SHEETS
9	COLO	S 0001(19)	15	

NOTE
- ✓ Alignment and Grades as shown are subject to modification during construction after approval by the Denver Office
- ✓ Soil data shown on the plans is obtained from the 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 the grading plan shown on plans will be modified where necessary to secure dense, stable embankments
- ✓ Timber Guard Posts are tabulated on Sheet No 3
- ✓ Fencing tabulated in List of Structures, Sheet No 4



FED ROAD DIST NO	DIST	PROJ NO	SHEET NO	TOTAL SHEETS
9	COLO	S 0001(19)	16	

SW ¼ SEC 36
T 10S, R 44 W

N

650 655 660 665 670 675 680

P.I. 673+45.7

673+45 ℄ Reqd 18"x40 Side Drain Lt Road Approach Lt & Rt

S 00° 30 W

22 Gate

Wind Break

Corral

Wind Mill

PC 666+86.6

25 Gate

Hwy Sign

Stop Sign

Hwy Sign

20 Gate

STA 677+00 END SHAPING
BEGIN GRADING

Δ = 13°07 30" RT
D = 1°
T = 659 2
L = 1312 5
R = 5730
HSD > 1300

PT 679+99.1

County Road

12 Gate

18"x28

652+50 ℄ Reqd Road Appr Rt

SE ¼ SEC 35
T 10S, R 44 W

No 14 A 6(9)
Similar to No 8

No 15 A 6(9)
Similar to No 8

No 8	A 6(9)
LL	38 9
PI	13.4
% 200	95
C B R	4 8

No 16 A 6(10)
LL 38 7
PI 14 3
% 200 92 0
C B R 4 9

4220
4210
4200
4190

N.P.S.D. 810'

No 14

No 15

No 16

N.P.S.D. 950'

600' V C

PI 679+29

EMBANK. FACTOR
EMBANKMENT
EMBANK. X FACTOR
EXCAVATION
STA. YD. O.H.
YD MI O.H.
BORROW
BORROW SOURCE

161
193
45

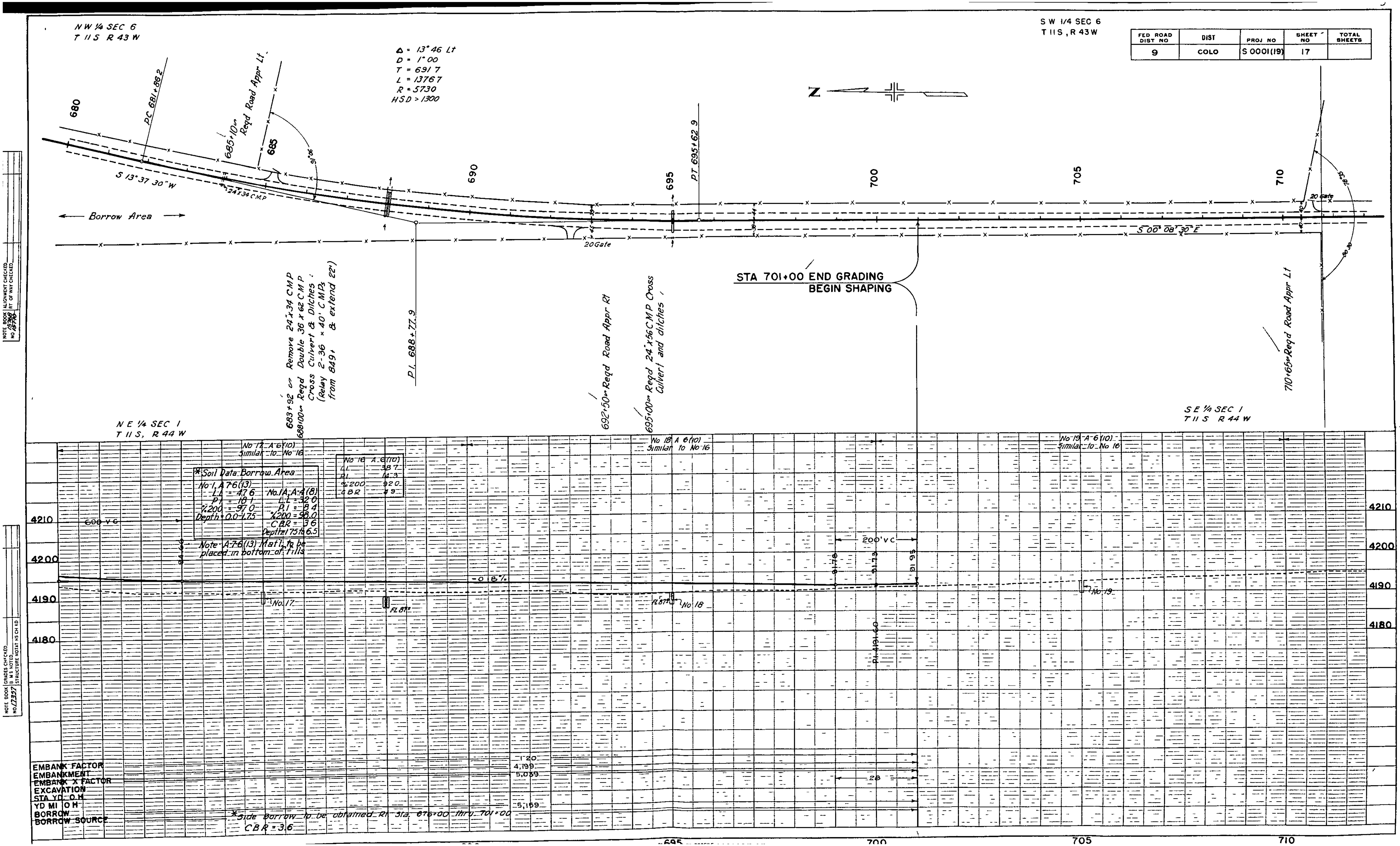
120

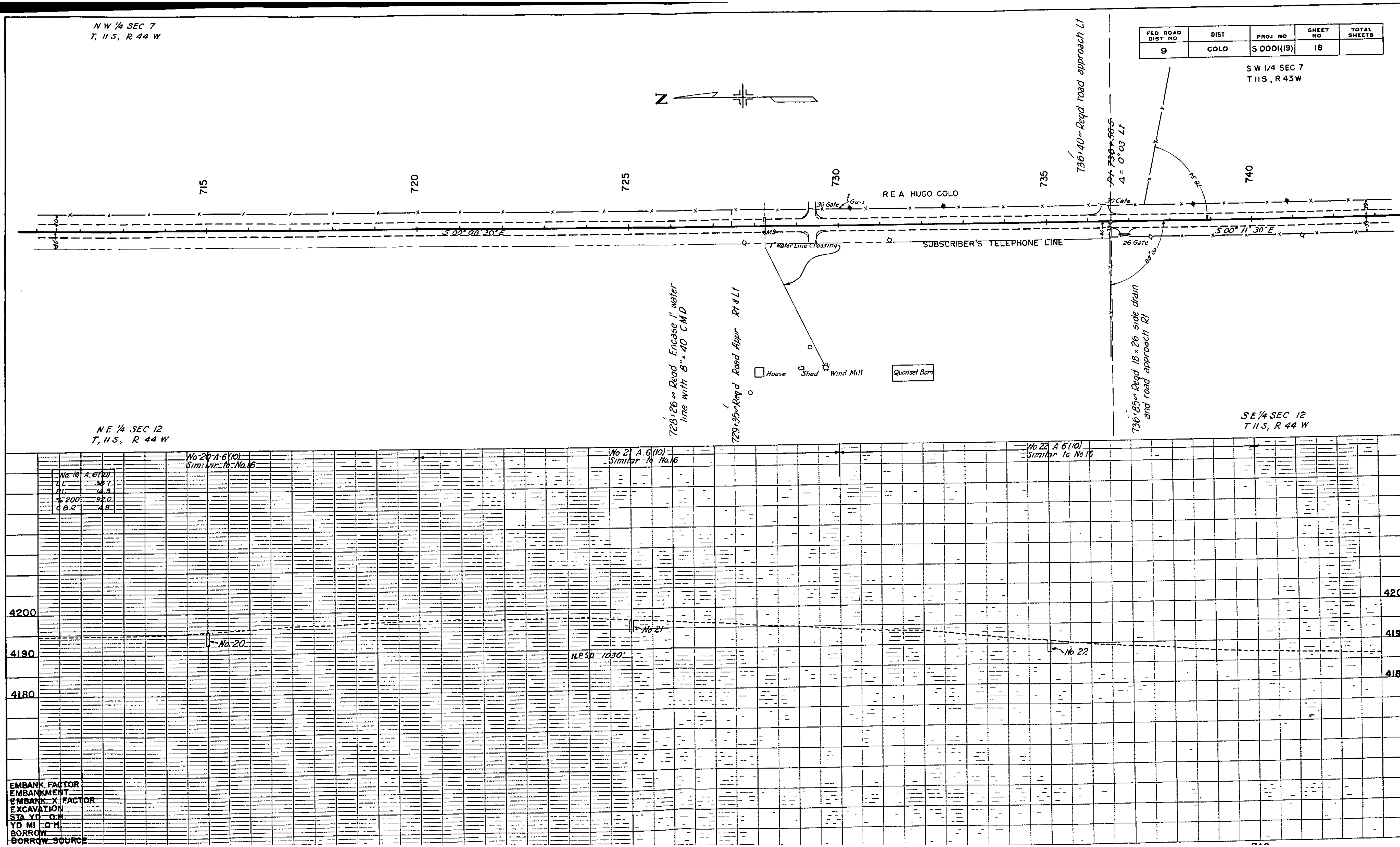
650 655 660 665 670 675 680

PLOTTED
ALIGNMENT CHECKED
PT OF WAY CHECKED
NOTE BOOK
NO 2769
NO 2770

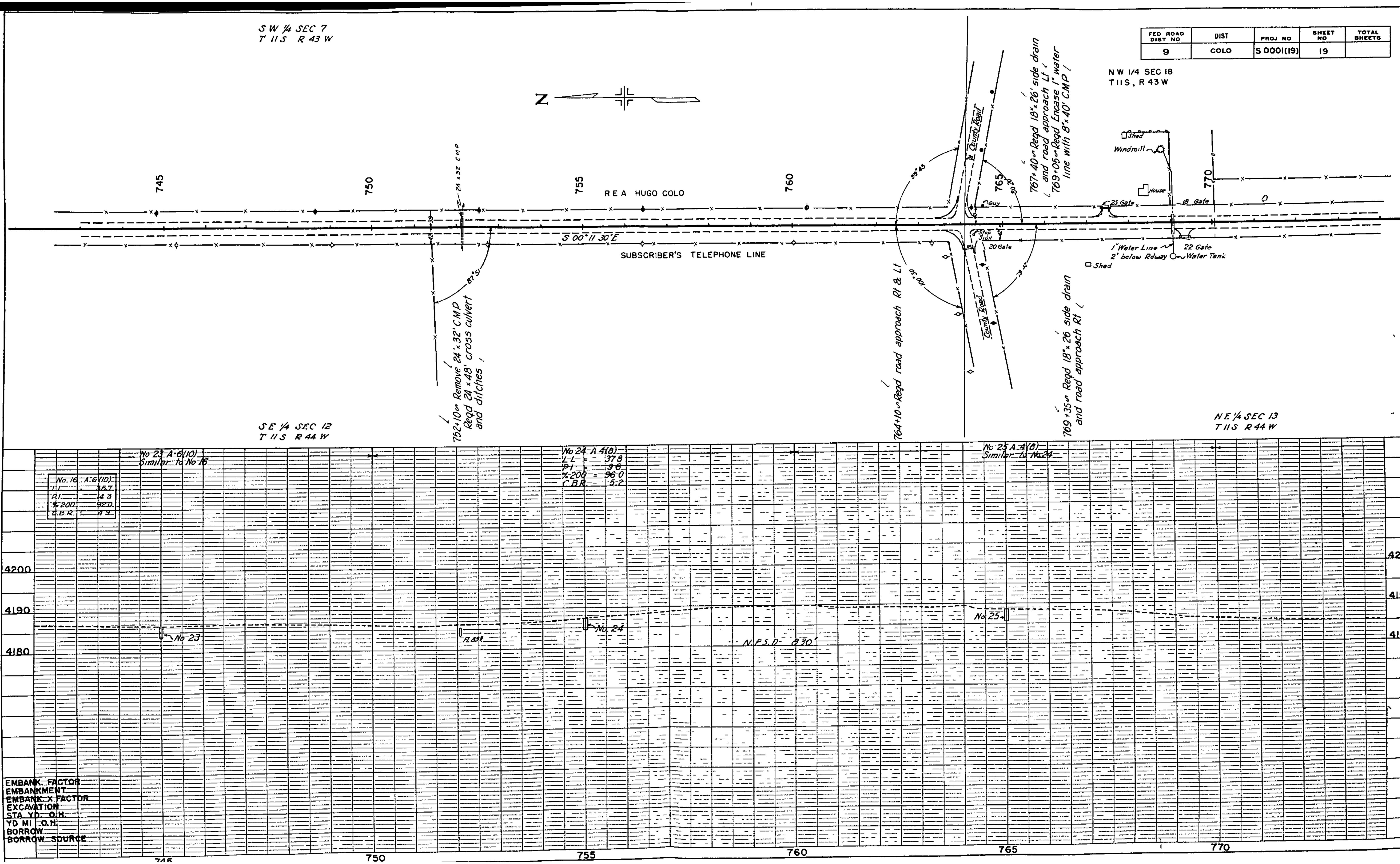
NOTE BOOK GRADES CHECKED
NO 2332 & W.S NOTED
STRUCTURE NOTAT NS CH KD

FED ROAD DIST NO	DIST	PROJ NO	SHEET NO	TOTAL SHEETS
9	COLO	S 0001(19)	17	




FED ROAD DIST NO 9
DIST COLO
PROJ NO S 0001(19)
SHEET NO 18
TOTAL SHEETS
N W 1/4 SEC 7
T, 11 S, R 44 W
S W 1/4 SEC 7
T 11 S, R 43 W
N E 1/4 SEC 12
T, 11 S, R 44 W
S E 1/4 SEC 12
T 11 S, R 44 W
Z
715
720
725
730
735
740
R E A HUGO COLO
SUBSCRIBER'S TELEPHONE LINE
S 00° 08' 30" E
S 00° 11' 30" E
30 Gate
Guys
30 Gate
26 Gate
1" Water Line Crossing
House
Shed
Wind Mill
Quonset Barn
736+40 Req'd road approach Lt
P.I. 736+56.5
Δ = 0° 03' Lt
728+26 Req'd Encase 1" water line with 8" x 40 CMP
729+35 Req'd Road Appr Rt & Lt
736+85 Req'd 18 x 26 side drain and road approach Rt
No 20 A-6(10) Similar to No. 16
No 21 A-6(10) Similar to No. 16
No 22 A-6(10) Similar to No 16
No. 16 A-6(10)
L.L. 38.7
P.I. 14.3
% 200 92.0
C.B.R. 4.9
No 20
No 21
No 22
N.P.S.D. 1030'
4200
4190
4180
EMBANK. FACTOR
EMBANKMENT
EMBANK. X FACTOR
EXCAVATION
STA. YD. O.H.
YD. MI. O.H.
BORROW
BORROW SOURCE

FED ROAD DIST NO	DIST	PROJ NO	SHEET NO	TOTAL SHEETS
9	COLO	S 0001(19)	19	



FED ROAD DIST NO	DIST	PROJ NO	SHEET NO	TOTAL SHEETS
9	COLO	S 0001(19)	20	

NW 1/4 SEC 18
T 11S, R 43 W

SW 1/4 SEC 18
T 11S, R 43 W

N

775 780 785 790 795 800 805

S 00°11 30 E

STA 790+00 END SHAPING
BEGIN GRADING

NE 1/4 SEC 13
T 11S, R 44 W

SE 1/4 SEC 13
T 11S, R 44 W

No. 26 A 4(8)
Similar to No. 24

No. 24 A 4 (8)
LL - 37.8
PI - 9.6
% 200 - 96.0
C.B.R. - 5.2

No. 27 A-6(10)
Similar to No. 16

No. 28 A 6(10)
Similar to No. 16

No 16 A 6(10)
LL - 38.7
PI - 14.3
% 200 - 92.0
C.B.R. - 4.9

No. 26

No. 27

No. 28

0.39%

2.46%

0.63%

600' V.C.

500' V.C.
N.P.S.D. = 600'

EMBANK. FACTOR
EMBANKMENT
EMBANK. X FACTOR
EXCAVATION
STA. YD. O.H.
YD MI. O.H.
BORROW
BORROW SOURCE

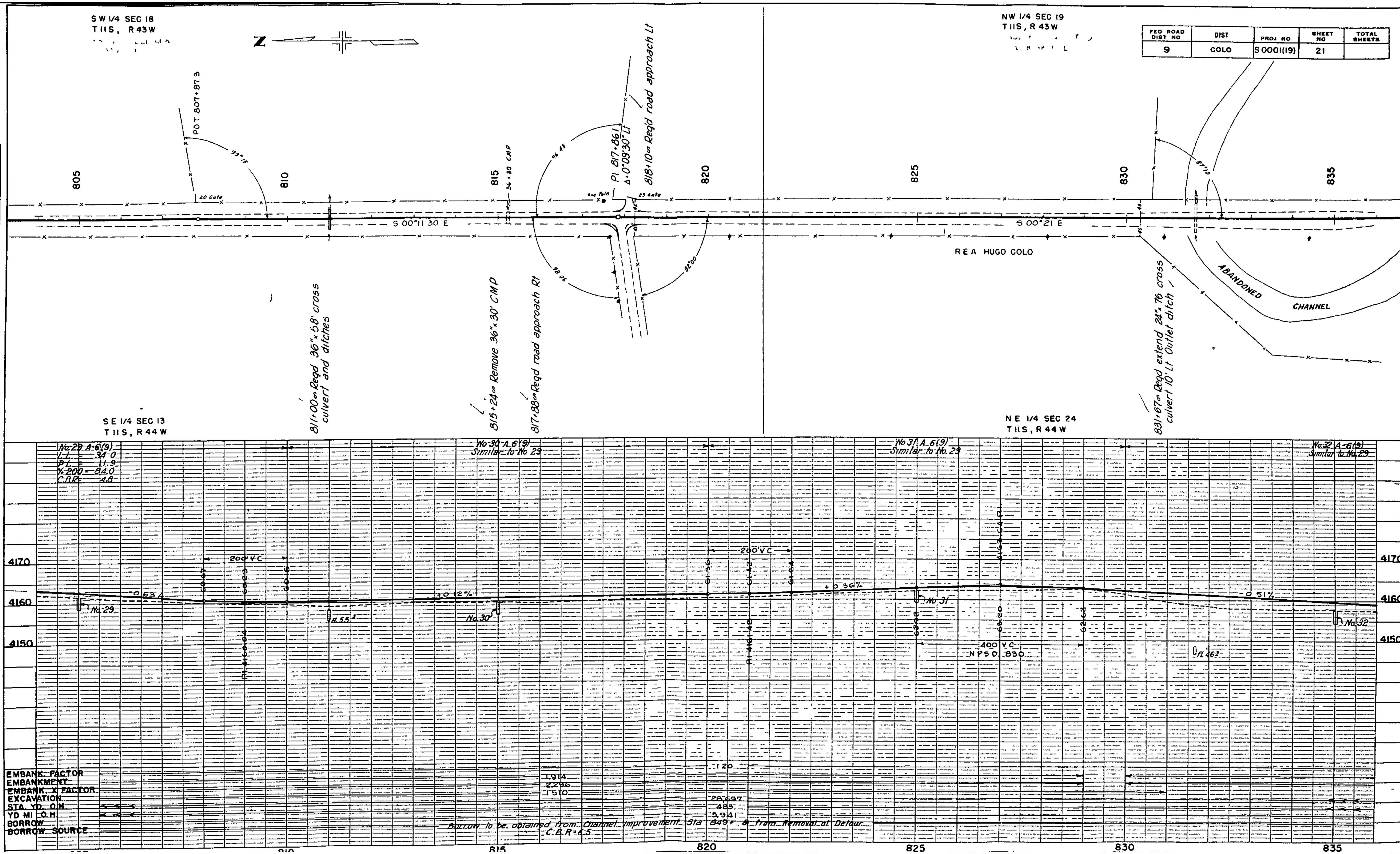
109
131
29
120

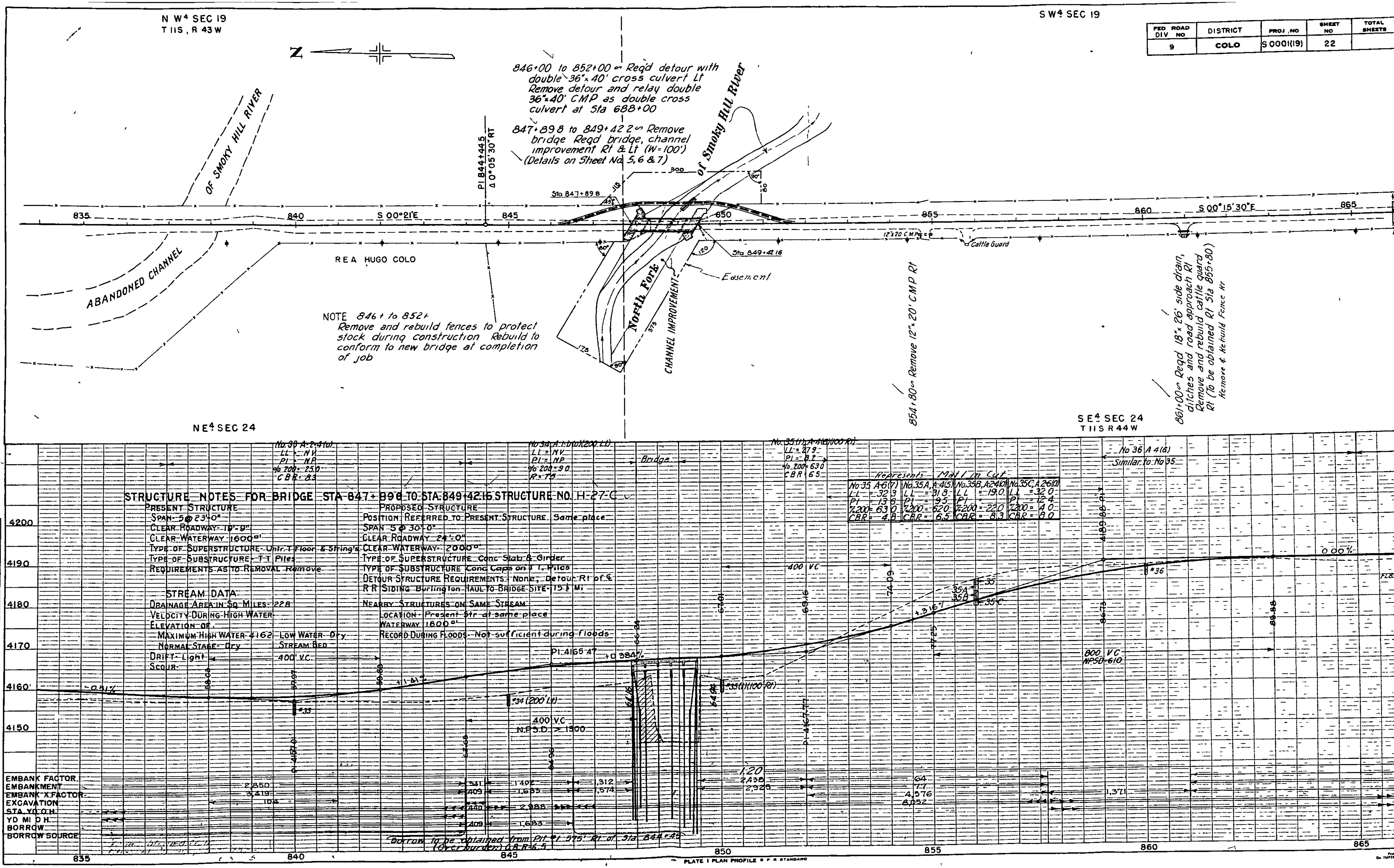
4190
4180
4170
4160

775 780 785 790 795 800 805

PLOTTED
NOTE BOOK ALIGNMENT CHECKED
NO. RT OF WAY CHECKED

NOTE BOOK GRADES CHECKED
NO. STRUCTURE NOTAT NS CH NO


FED ROAD DIST NO 9
DIST COLO
PROJ NO S0001(19)
SHEET NO 21
TOTAL SHEETS
SW 1/4 SEC 18
T11S, R43W
NW 1/4 SEC 19
T11S, R43W
SE 1/4 SEC 13
T11S, R44W
NE 1/4 SEC 24
T11S, R44W
POT 807+873
20 Gate
25 Gate
S 00°11 30 E
S 00°21 E
REA HUGO COLO
ABANDONED CHANNEL
PI 817+86.1
Δ=0°09'30" Lt
818+10 Reqd road approach Lt
811+00 Reqd 36"x58' cross culvert and ditches
815+24 Remove 36"x30' CMP
817+88 Reqd road approach Rt
831+67 Reqd extend 24"x76 cross culvert 10' Lt Outlet ditch
805
810
815
820
825
830
835
No 29 A-6(9)
L.L. = 34.0
P.I. = 11.9
%-200 = 84.0
C.B.R. = 4.8
No 30 A-6(9) Similar to No 29
No 31 A-6(9) Similar to No 29
No 32 A-6(9) Similar to No 29
4170
4160
4150
200' V C
400' V C
NPSD 830
-0.63%
+0.12%
+0.36%
-0.51%
No 29
No 30
No 31
No 32
EMBANK. FACTOR
EMBANKMENT
EMBANK. X FACTOR
EXCAVATION
STA. YD. O.H.
YD MI O.H.
BORROW
BORROW SOURCE
1.914
2.296
1.510
1.20
26,697
483
5,941
Borrow to be obtained from Channel Improvement Sta 849+ & from Removal of Detour
C.B.R. 6.5



FED ROAD DIV NO 9
DISTRICT COLO
PROJ NO S 0001(19)
SHEET NO 22
TOTAL SHEETS
N W¼ SEC 19
T 11S, R 43 W
S W¼ SEC 19
846+00 to 852+00 ∽ Req'd detour with double 36"x 40' cross culvert Lt Remove detour and relay double 36"x40' CMP as double cross culvert at Sta 688+00
847+89.8 to 849+42.2 ∽ Remove bridge Req'd bridge, channel improvement Rt & Lt (W=100') (Details on Sheet No 5,6 & 7)
of Smoky Hill River
OF SMOKY HILL RIVER
PI 844+44.5
Δ 0°05'30" RT
Sta 847+89.8
Sta 849+42.16
S 00°21'E
S 00°15'30"E
12"x20' CMP
Cattle Guard
REA HUGO COLO
ABANDONED CHANNEL
Easement
North Fork
CHANNEL IMPROVEMENT
NOTE 846+ to 852+ Remove and rebuild fences to protect stock during construction Rebuild to conform to new bridge at completion of job
854+80∽ Remove 12"x20' CMP Rt
861+00∽ Req'd 18"x 26' side drain, ditches and road approach Rt Remove and rebuild cattle guard Rt (To be obtained Rt Sta 855+80)
Remove & Rebuild Fence Rt
NE¼ SEC 24
SE¼ SEC 24
T 11S R 44 W
STRUCTURE NOTES FOR BRIDGE STA 847+89.8 TO STA 849+42.16 STRUCTURE NO. H-27-C
PRESENT STRUCTURE
SPAN 5 @ 23'-0"
CLEAR ROADWAY 19'-9"
CLEAR WATERWAY 1600□'
TYPE OF SUPERSTRUCTURE Untr. T Floor & String's
TYPE OF SUBSTRUCTURE T.T. Piles
REQUIREMENTS AS TO REMOVAL Remove
PROPOSED STRUCTURE
POSITION REFERRED TO PRESENT STRUCTURE Same place
SPAN 5 @ 30'-0"
CLEAR ROADWAY 24'-0"
CLEAR WATERWAY 2000□'
TYPE OF SUPERSTRUCTURE Conc Slab & Girder
TYPE OF SUBSTRUCTURE Conc Caps on T.T. Piles
DETOUR STRUCTURE REQUIREMENTS None; Detour Rt of ℄
R R SIDING Burlington HAUL TO BRIDGE SITE 15 Mi
STREAM DATA
DRAINAGE AREA IN SQ MILES 228
VELOCITY DURING HIGH WATER
ELEVATION OF
MAXIMUM HIGH WATER 4162 LOW WATER Dry
NORMAL STAGE Dry STREAM BED
DRIFT Light
SCOUR
NEARBY STRUCTURES ON SAME STREAM
LOCATION Present Str at same place
WATERWAY 1600□'
RECORD DURING FLOODS Not sufficient during floods
Represents Mat'l in Cut
No 35 A-6(7) LL = 32.3 PI = 13.6 %200 = 63.0 CBR = 4.8
No 35A A-4(5) LL = 31.8 PI = 9.5 %200 = 62.0 CBR = 6.5
No 35B A-2-4(0) LL = 19.0 PI = %200 = 22.0 CBR = 8.3
No 35C A-2-6(0) LL = 32.0 PI = 12.4 %200 = 4.0 CBR = 8.0
No 33 A-2-4(0) LL = NV PI = NP %200 = 25.0 CBR = 83
No 34 A-1-b(0)(200' Lt) LL = NV PI = NP %200 = 9.0 R = 75
No 35(1) A-4(0)(100' Rt) LL = 27.9 PI = 8.2 %200 = 63.0 CBR = 6.5
No 36 A-4(6) Similar to No 35
Bridge
PI 4165.47
-0.51%
+1.41%
+0.384%
+3.16%
0.00%
400' VC
400 VC N.P.S.D. > 1500
800 VC NPSD = 610
1:20
4200
4190
4180
4170
4160
4150
EMBANK FACTOR
EMBANKMENT
EMBANK X FACTOR
EXCAVATION
STA YD O H
YD MI O H
BORROW
BORROW SOURCE
Borrow to be obtained from Pit #1 575' Rt of Sta 844+45 (Over burden) CBR = 6.5
835
840
845
850
855
860
865
PLATE 1 PLAN PROFILE B P R STANDARD
NOTE BOOK No 15770 15768
NOTE BOOK No 17357

FED ROAD DIST NO	DIST	PROJ NO	SHEET NO	TOTAL SHEETS
9	COLO	S 0001(19)	23	

SW 1/4 SEC 19
T11S, R43W

NW 1/4 SEC 30
T11S, R43W

865 870 875 880 885 890 895

871+25 ± Regd road approach Lt

85°32'

85°37'

84°41'

866+00 ± Regd 24 x 54' cross culvert and inlet ditch

S 00°15'30 E

REA HUGO COLO

STA 895+00 END GRADING
BEGIN SHAPING

SE 1/4 SEC 24
T11S, R44W

NE 1/4 SEC 25
T11S, R44W

No 37 A 6(9)
LL = 35.0
PI = 13.8
L200 = 74.0
CBR = 4.8

No 38 A 6(9)
Similar to No 37

No 39 A 6(9)
Similar to No 37

200' VC

200' VC

200' VC

400' VC
NPSD = 710

+0.39%

+0.60%

+1.43%

0.00%

-0.87%

No 37

No 38

No 39

PI 4196.00

PI 4196.10

PI 4196.75

4200

4190

4180

EMBANK FACTOR	
EMBANKMENT	120
EMBANK X FACTOR	1,552
EXCAVATION	1,862
STA YD O.H.	491
YD MI O.H.	11,181
BORROW	192
BORROW SOURCE	

890 895

STRUCTURE NOT AS CH NO

FED ROAD DIST NO	DIST	PROJ NO	SHEET NO	TOTAL SHEETS
9	COLO	S 0001(19)	24	

NW 1/4 SEC 30
T11S, R43W

SW 1/4 SEC 30
T11S, R43W

898+00 ← Reqd 24 x 52' cross culvert and ditches, Dike ℓ at inlet

903+40 ← Reqd road approach Lt

STATE FORCES
905+00 ← Reqd Project Marker

Wind Mill

Wind Break

S 0001(19)

895 900 905 910 915 920 925

30 Gate

20 Gate

S 00°15'30 E

18" x 40' CMP

P.I. 924+56.3
Δ = 0°08'30" Lt

91.07

82.16

81.94

15 Gate
Stop
Hwy Sign
Guy Pole
15 Gate
Guy Pole

REA HUGO COLO

STA 895+00 END GRADING
BEGIN SHAPING

STA. 905+00 END SHAPING
END S 0001(19)

905+00 ← Reqd Approach to Project

903+25 ← Reqd road approach Rt

NE 1/4 SEC 25
T11S, R44W

SE 1/4 SEC 25
T11S, R44W

No 40 A 6(9)
Similar to No 37

No 37 A 6(9)
LL = 35.0
PI = 13.9
%200 = 74.0
C.B.R. = 4.8

No 41 A 6(8)
LL = 33.0
PI = 10.8
%200 = 81.0
C.B.R. = 4.8

No 42 A 6(8)
Similar to No 41

No 43 A 6(9)
Similar to No 37

Future Construction

0.00%

+0.06%

FL 00.9

FL 03.9

FL 03.1

No 40

No 41

No 42

No 43

4210
4200
4190

925 928

EMBANK FACTOR
EMBANKMENT
EMBANK X FACTOR
EXCAVATION
STA YD O.H
YD MI O.H
BORROW
BORROW SOURCE

895 900 905 910 915 920 925

RT OF WAY CHECKED

IR M 3 NOTED
STRUCTURE NO AT KS CH RD

SKETCH MAP
PROJECT S 0001 (19)
Burlington — South

Showing Easements of Channel Improvement

Scale 1 Inch = 100 Feet

OWNER

SW 1/4 Sec 19, T11S, R 43W

N W 1/4 Sec 19 T11S, R 43 W

1/4 Sec Line

P.I. 844+44.5

Δ 0° 05' 30" RT

Smoky Hill River

Point of Beginning Easement No 2

160'

S 0° 15' 30" E

30'

S 30° 15' 30" E

230'

S 30° 15' 30" E

87° 42'

PROPOSED DETOUR

Easement No 2

115'

S 45° 15' 30 E

Sta 847+89.85

45'

847+15

3.85

850

851+00

N 89° 44' 30" E

90° 00'

45'

RANGE LINE

1/4 Cor 845

S 00° 15' 30" E Sec Line

To Burlington

847+45

200'

849+45

60°

120°

Sta. 849+42.16

Point of Beginning Easement No 1

275'

S 60° 15' 30" E

North Fork

Easement No 1

S 60° 15' 30" E

375'

S 29° 44' 30" W

173.20

90°

Sec Line

NE 1/4 Sec 24 T11S, R 44 W

1/4 Sec Line

SE 1/4 Sec 24, T11S, R 44W

JCS 9 APR '54