STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

DATE: February 3, 2025

TO:
Roadway Design Unit
Project Management Unit
Division Project Delivery Engineers
Contract Standards and Development Unit
Feasibility Studies Unit
Geotechnical Engineering Unit
Division Design Construction Engineers
Structures Management Unit
Signing and Delineation Unit
Environmental Analysis Unit
Division Construction Engineers
Hydraulics Unit
Alternate Delivery Unit
Construction Unit
Statewide Project Managers
Location and Surveys Unit
Utilities Unit
Rail Division
Traffic Management Unit
CADD Integration Team
Photogrammetry Unit

FROM: Matthew S. Lauffer, PE
State Hydraulic Engineer

DocuSigned by:
Matthew S. Lauffer
7A9B8D53FF5D47B...

Tatia L. White, PE, PLS, CPM
State Roadway Design Engineer

DocuSigned by:
Tatia L. White
539CECE8F5E1472...

SUBJECT: ProjectWise Structure and Ditch Grade Changes

A Hydraulics and Roadway Design Technical Advisor Group (TAG) was formed to identify opportunities to gain efficiencies in ORD workflows for project development and further define the product. This memo will cover the following changes:

ProjectWise Structure

A folder named ***Alignments*** will be created for projects in ProjectWise at the discipline level to contain the project's alignment files (ALGs). Hydraulics and Roadway Design users will have read and write access to files saved in this location minimizing duplication of efforts. Shared access to the ***Alignments*** folder will provide hydraulics users the ability to project ditch profiles to roadway design alignments allowing them to create profile drawing models. The roadway design user will then be able to reference these models to the final plans. The folder will be created and available on all projects by February 7, 2025. Additional guidance regarding the use of the ***Alignments*** folder will be forthcoming from the Roadway Design and Hydraulics Units as the TAG continues to coordinate.

Ditch Grades

The methodology used for V8i projects does not account for the difference between the radii at the ditch location and that of the roadway alignment it parallels. After further coordination with

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NC DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN UNIT
1582 MAIL SERVICE CENTER
RALEIGH, NC 27699-1582

Telephone: (919) 707-6200
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Customer Service: 1-877-368-4968

Website: ncdot.gov

Location:
1000 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

the Construction Unit, the following changes to profile sheets are being implemented for ORD projects only to provide a more accurate depiction of grade-controlled ditches in the 3D model:

- Only the station and elevation for the points of intersection of the grades are required.
- The grade between the points of intersection shall not be shown.
- The slopes for grade-controlled ditches will be labeled in the cross sections according to the skews encountered by the named boundaries (i.e. 2.125:1 instead 2:1).

Sample plan, profile and cross section sheets are attached. No revisions are needed to the Roadway Design Manual, Roadway Design or Hydraulics Quality Management Checklists or Contract Standards' Review List for Final Construction Plans. This change is effective with the July 2025.

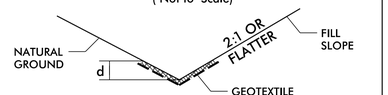
If there are any questions, please contact Brook Anderson, PE at (919) 707-6706 or beanderson1@ncdot.gov, Charles Smith, PE at (919) 707-6754 or crsmith1@ncdot.gov, Jordan Woodard, PE, at (919) 707-6208 or jawoodard4@ncdot.gov or David Clodgo, PE, PMP, at (919) 707-6200 or djclodgo1@ncdot.gov.

MSL/TLW

Attachment

5/26/20

DETAIL A
TOE PROTECTION
(Not to Scale)



d = 1 Ft.

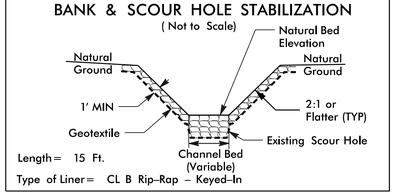
Type of Liner = CLASS B Rip–Rap

FROM –LPCA– STA. 10+40 LT TO –L– STA. 19+00 LT
EST. 100 TONS CLASS B RIP RAP
EST. 222 SY GEOTEXTILE

FROM –RPC– STA. 13+00 RT TO –RPC– STA. 13+60 RT
EST. 38.5 TONS CLASS B RIP RAP
EST. 86 SY GEOTEXTILE

FROM –RPB– STA. 14+00 LT TO –RPB– STA. 14+45 LT
EST. 40 TONS CLASS B RIP RAP
EST. 90 SY GEOTEXTILE

DETAIL C
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)

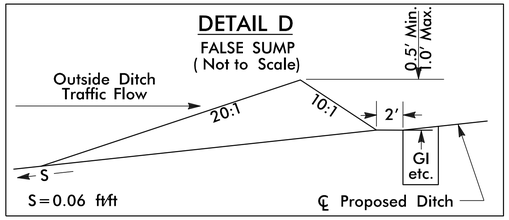


Length = 15 Ft.

Type of Liner = CL B Rip–Rap – Keyed–In

FROM –Y1– STA. 21+65 RT TO
–Y1– STA. 21+80 RT
EST. 100 TONS CLASS B RIP RAP
EST. 225 SY GEOTEXTILE

DETAIL D
FALSE SUMP
(Not to Scale)

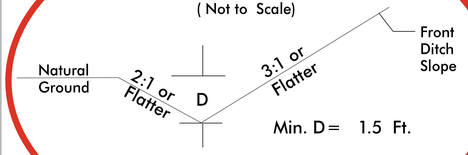


S = 0.06 ft/ft

℄ Proposed Ditch

FROM –LPB– STA. 9+35 RT TO –LPB– STA. 9+50 RT

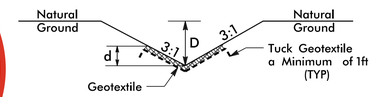
DETAIL E
SPECIAL 'V' CUT DITCH
(Not to Scale)



Min. D = 1.5 Ft.

FROM –RPB– STA. 13+50 LT TO
–RPB– STA. 14+10 LT

DETAIL F
STANDARD 'V' DITCH
(Not to Scale)



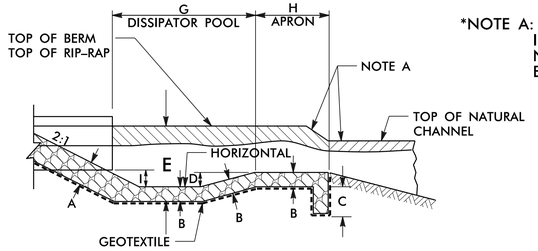
Type of Liner = CL B Rip–Rap, Keyed–In

Min. D = 1.5Ft.
d = 1.5Ft.

FROM –Y1– STA. 24+25 LT TO
–Y1– STA. 26+50 LT
EST. 102 TONS CLASS B RIP RAP
EST. 225 SY GEOTEXTILE

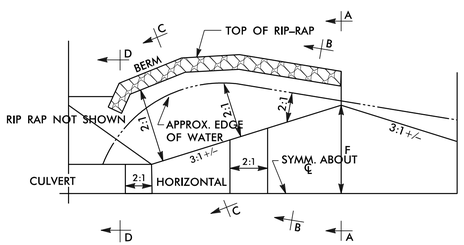
DETAIL B
RIP–RAPPED ENERGY DISSIPATOR BASIN

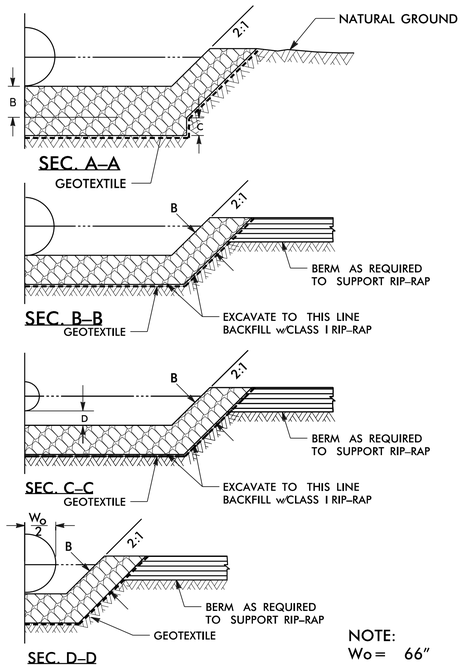
℄ SECTION



*NOTE A: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP–RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

HALF PLAN





DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	3.0'							
B	2.3'							
C	1.0'							
D	2.4'							
E	13.6'							
F	15.0'							
G	24.0'							
H	12.0'							
I	3.3'							

*ALL DIMENSIONS APPROXIMATE IN FT

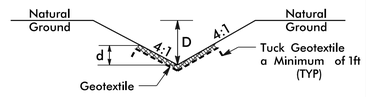
BASIN #	LOCATION (AT OUTLET)
1	10+87 -RPA-
2	
3	
4	
5	
6	
7	
8	

NOTE:
Wo = 66"

5/05

FROM –RPA– STA. 10+50 LT TO –RPA– STA. 10+90 LT

DETAIL G
STANDARD 'V' DITCH
(Not to Scale)



Type of Line = CL B Rip–Rap, Keyed–In

Min. D = 1.5Ft.
d = 1.5Ft.

FROM –Y1– STA. 25+00 RT TO
–Y1– STA. 28+25 RT
EST. 195 TONS CLASS B RIP RAP
EST. 434 SY GEOTEXTILE

RW | 2D-1

R/W SHEET NO.

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FORSYTH COUNTY

ROADWAY DESIGN UNIT

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

5/26/20

END CONSTRUCTION
-Y1- STA. 31+30.00

-Y1- PCC 30+70.52

BEGIN CONSTRUCTION/OVERLAY
-LPB- STA 10+00.00

-RPB- POC 10+00.00

BEGIN CONSTRUCTION
-RPB- STA 13+00.00

-RPB- PRC 13+42.34

-RPB- PT 14+68.96

-RPB- S77°59'16.9"E

-RPB- POT 15+11.52
-L- STA. 27+69.88

-L- PCC 30+04.76

-L-POE 33+24.02

END TIP
-L- STA 30+25.00

-Y3- POC 10+00.00
-L- STA. 27+77.23

-Y3- S75°50'31.9"E

-Y3- PC 10+84.24

-Y3- PCC 11+33.53

END CONSTRUCTION
-Y3- STA 11+35.00

-Y3- PCC 12+30.92

-L- PC 26+44.92

-RPA- PC 12+04.20

BEGIN CONSTRUCTION
-RPA- STA 12+50.00

-LPB- PT 13+11.26

-LPB- S76°10'18.3"E

-LPB- POT 14+68.87
-L- STA. 27+16.11

-RPA- POT 15+14.97

END C&G
-RPB- +70.00

END C&G
-LPB- +78.00

END C&G
-RPA- 13+35.00

END C&G
-Y3- 11+35.00

MATCHLINE -L- STA 23+00.00 SEE SHEET 4

CONSTRUCTION NOTE:
RESTORE DITCH TO EXISTING DIMENSIONS AND STABILIZE AFTER STORM SEWER INSTALLATION

SPECIAL "V" CUT DITCH
SEE DETAIL E

SEE DETAIL A & E

SEE DETAIL D

CLASS I RIP RAP
EST. 40 TONS
75 S.Y. GEOTEXTILE

EST. 21 TONS
45 S.Y. GEOTEXTILE
BACKFILL CHANNEL
W/ CLASS B RIP RAP

CLASS B RIP RAP
EST. 1 TON
5 S.Y. GEOTEXTILE

CLASS B RIP RAP
ESTIMATE 2 TONS
Y S.Y. GEOTEXTILE

CLASS B RIP RAP
EST. 1 TON
5 S.Y. GEOTEXTILE

FILL TO ELEV. 816.4'

FILL TO ELEV. 827.0'

PLUG & FILL W/ FLOWABLE FILL

42" INC.

75' TAPER

175' TRANSITION

+50.00

+17.00

+25.00

+58.92

+62.73

+73.37

MIN DEPTH CB (0517)

MIN DEPTH CB (0506)

GREU TL-3

JAY AMBE KRUPA LLC
DB 3672 PG 1980

GEORGE VLAHOS FAMILY LIMITED PARTNERSHIP
DB 1958 PG 3540

SML SOCAL PROPERTIES
DB 3538 PG 6427

EL PANTANO II
DB 2452 PG 2023

SUMMIT POINT PROPERTIES
DB 3325 PG 207
PB 37 PG 82

LOWE'S HOME CENTERS
DB 1878 PG 3581
PB 38 PG 161

SUSO 4 WINSTON
DB 3190 PG 4299

US-STABLE-P2 4690 NORTH PATERSON AVENUE WINSTON SALEM
DB 3738 PG 1941
PB 41 PG 2

NC STEAK BURGERS II

-L-		-LPB-	-RPA-
CUR DATA -L- PIc 28+26.53 Δc = 19°05'24.6" (LT) D = 05°18'18.6" Lc = 359.84 Tc = 181.60 R = 1,080 SE = 0.040	CUR DATA -L- PIc 31+65.14 Δc = 13°32'59.3" (LT) D = 04°14'38.9" Lc = 319.26 Tc = 160.38 R = 1,350 SE = 0.000	CUR DATA -LPB- PIc 11+97.13 Δc = 89°10'13.6" (RT) D = 28°38'52.4" Lc = 311.26 Tc = 197.13 R = 200 SE = SEE PLANS	CUR DATA -RPA- PIc 13+70.67 Δc = 50°52'26.9" (RT) D = 16°22'12.8" Lc = 310.77 Tc = 166.47 R = 350 SE = SEE PLANS

-RPB-		-Y3-	
CUR DATA -RPB- PIc 11+79.34 Δc = 42°10'53.7" (LT) D = 12°19'18.0" Lc = 342.34 Tc = 179.34 R = 465 SE = SEE PLANS	CUR DATA -RPB- PIc 14+05.66 Δc = 01°48'49.7" (RT) D = 01°25'56.6" Lc = 126.63 Tc = 63.32 R = 4,000 SE = SEE PLANS	CUR DATA -Y3- PIc 11+08.94 Δc = 09°24'43.8" (RT) D = 19°05'54.9" Lc = 49.28 Tc = 24.70 R = 300 SE = SEE PLANS	CUR DATA -Y3- PIc 11+82.31 Δc = 08°35'04.7" (RT) D = 08°48'53.0" Lc = 97.39 Tc = 48.79 R = 650 SE = SEE PLANS

-Y1-	
CUR DATA -Y1- PIc 29+72.73 Δc = 06°24'35.1" (RT) D = 03°16'26.6" Lc = 195.77 Tc = 97.99 R = 1,750 SE= EXIST	CUR DATA -Y1- PIc 32+49.93 Δc = 10°15'06.7" (RT) D = 02°51'53.2" Lc = 357.86 Tc = 179.41 R = 2,000 SE= EXIST

NAD 83/95

–LPB– AND –RPB–

–L– UNIVERSITY PRKWY		–L– UNIVERSITY PRKWY
330/315	70/60	290/280
45/40	55/50	35/35
30/35	10/5	
	70/75	
–RPA–	–Y3– N PATTERSON AVE	2026 ADT / 2046 ADT

☆ REVISED SIGNAL

FOR DRAINAGE DETAILS, SEE SHEET 2D–1.
FOR –L– PROFILE, SEE SHEET 6.
FOR –Y1– PROFILE, SEE SHEET 7.
FOR –RPA–, –LPB–, –RPB–, –Y3– PROFILES, SEE SHEET 8.
FOR INTERSECTION DETAILS, SEE SHEET 2B–1.

RW 5

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FORSYTH COUNTY

ROADWAY DESIGN UNIT

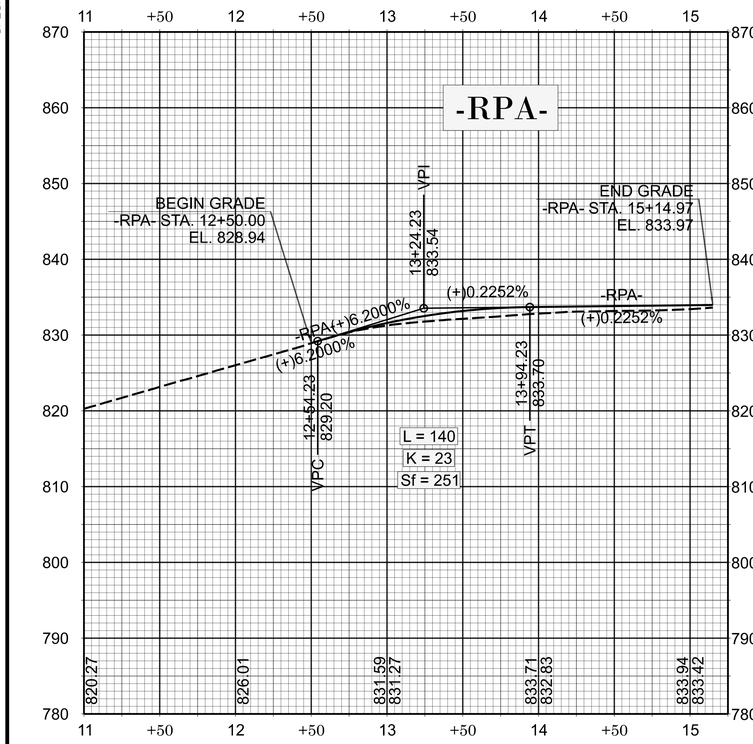
ROADWAY DESIGN ENGINEER

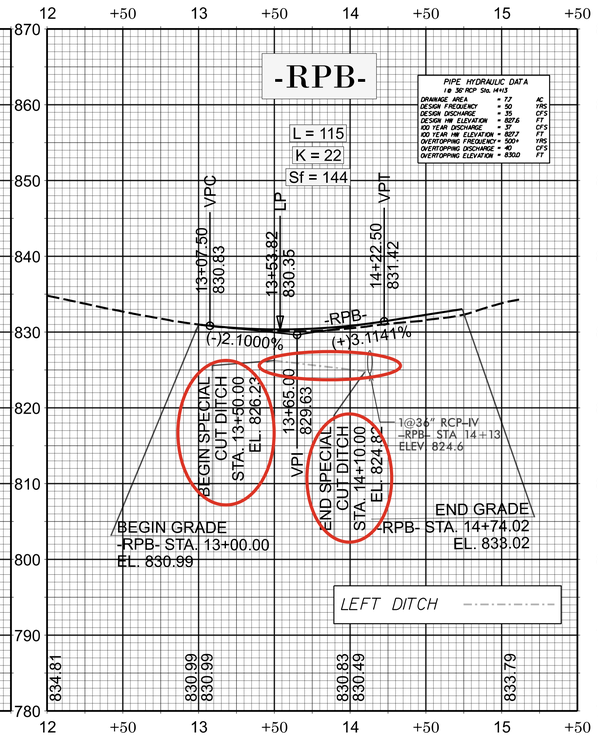
HYDRAULICS ENGINEER

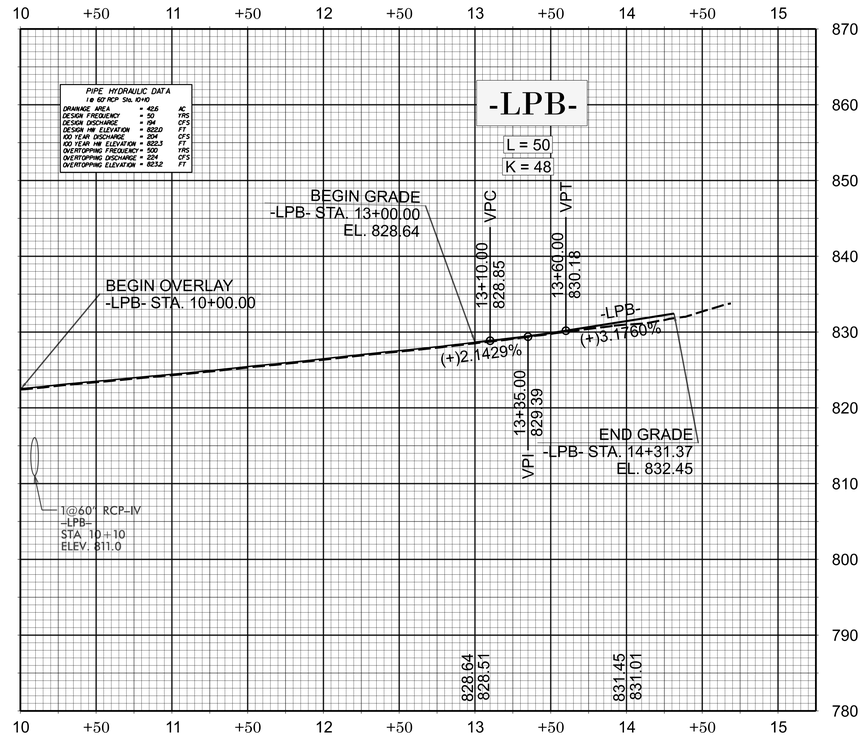
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

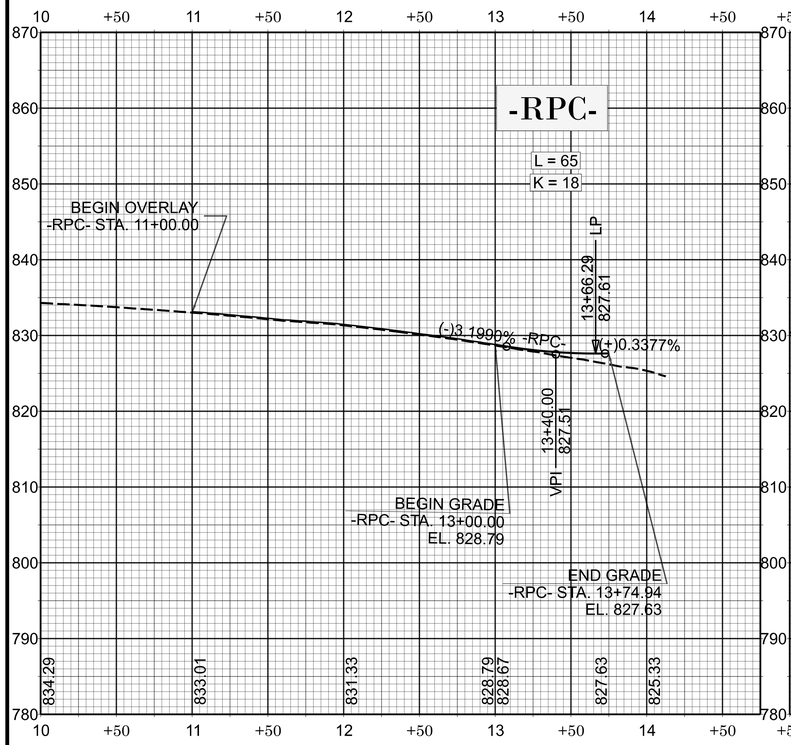
REVISIONS

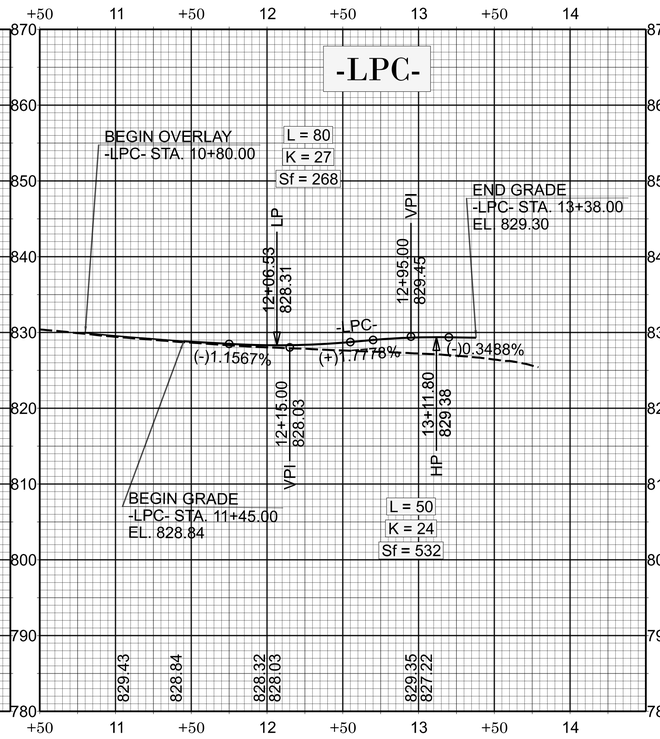
5/26/20

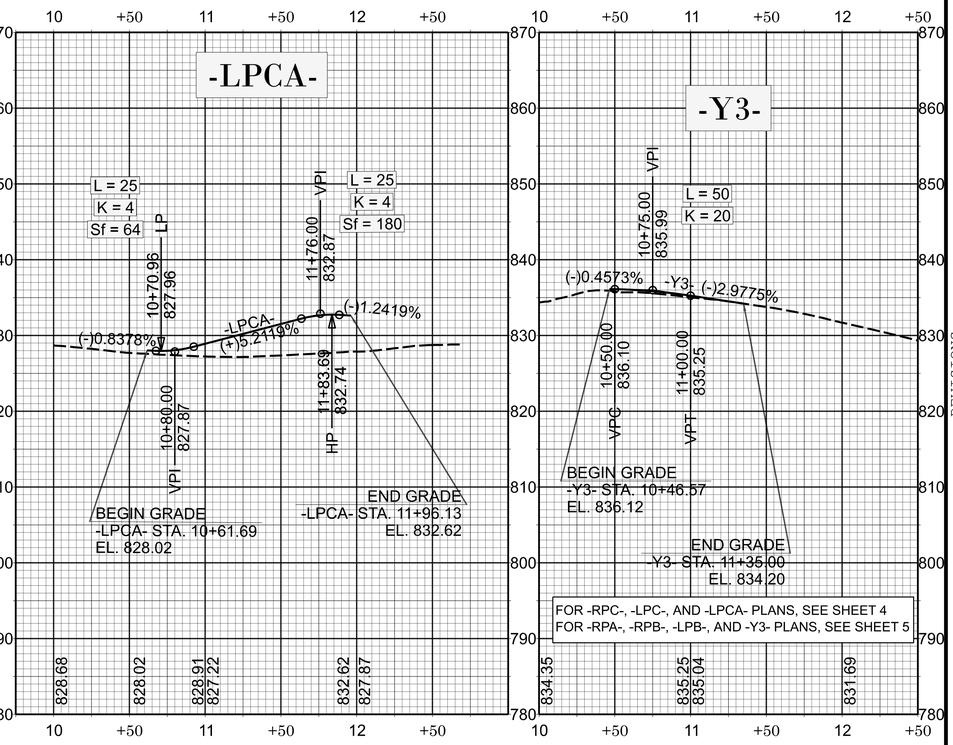












FOR -RPC-, -LPC-, AND -LPCA- PLANS, SEE SHEET 4
FOR -RPA-, -RPB-, -LPB-, AND -Y3- PLANS, SEE SHEET 5

REVISIONS

RW | 8

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FORSYTH COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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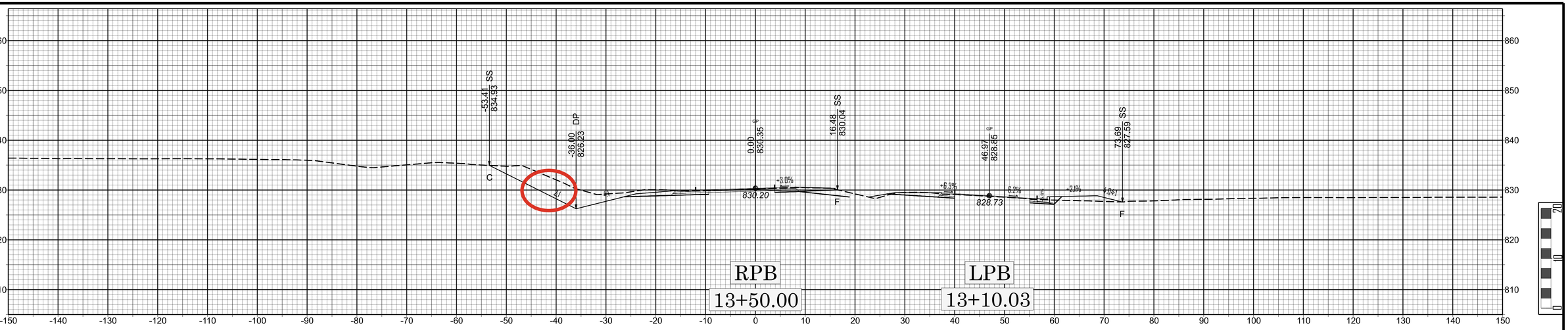
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834.93
SS
-36.00
826.23
DP
0.00
830.35
℄
16.48
830.04
SS
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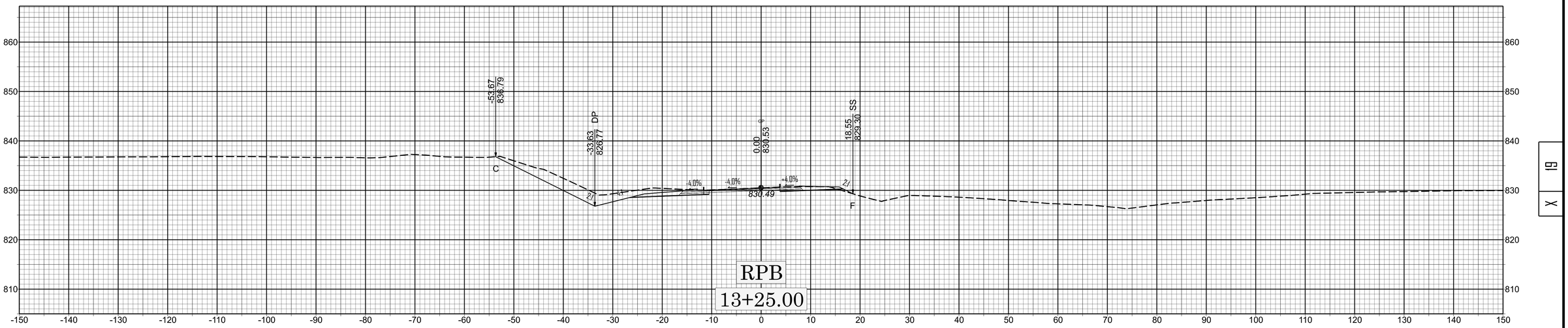
828.65
GP
73.69
827.59
SS
C
F
+3.0%
-4.0%
+6.3%
-6.2%
-2.1%
+4.0%
830.20
828.73
RPB
13+50.00
LPB
13+10.03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-33.63
826.777
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0.00
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℄
18.55
829.30
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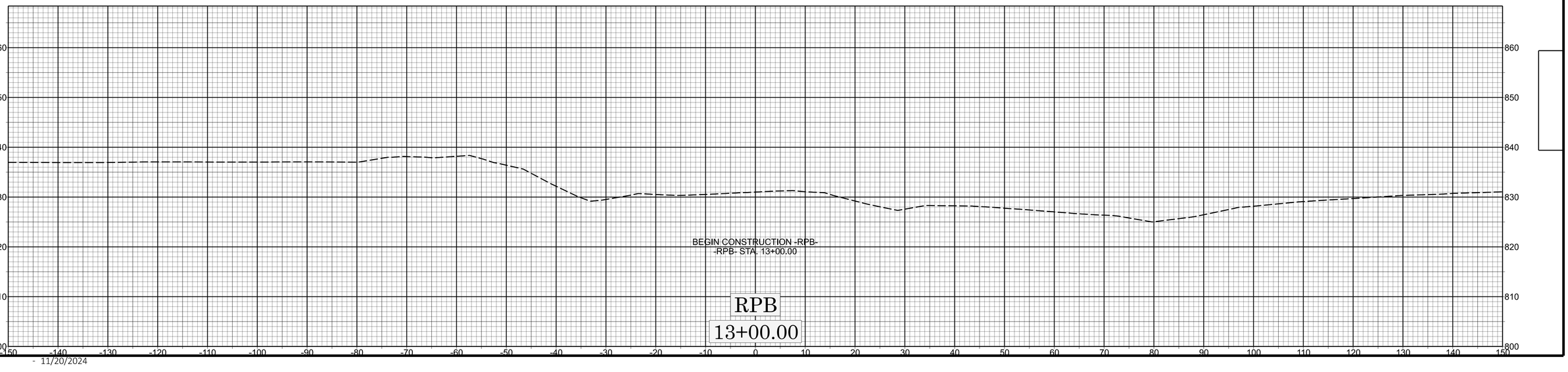
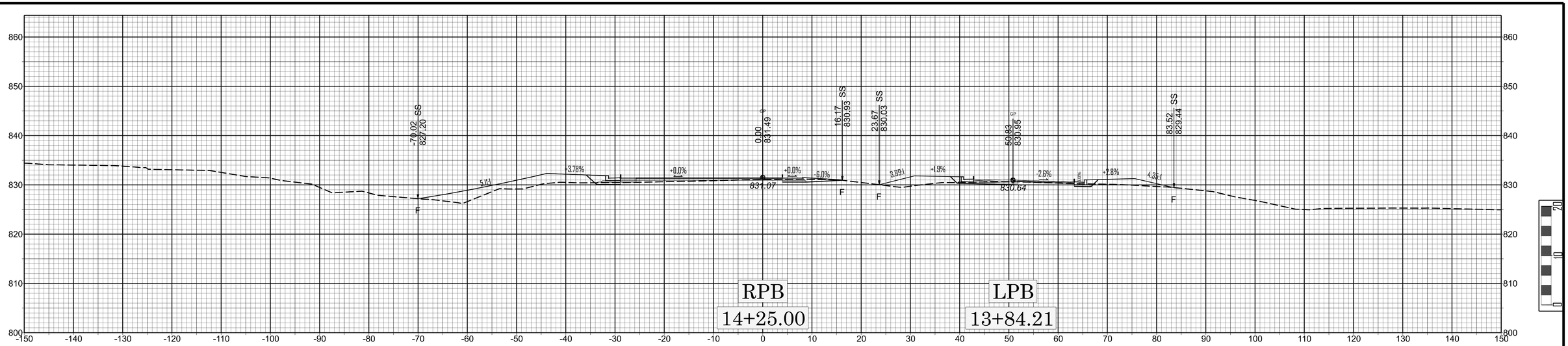
C
F
-4.0%
+4.0%
830.49
RPB
13+25.00


BEGIN CONSTRUCTION -RPB-
-RPB- STA. 13+00.00
RPB
13+00.00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GP
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830.03
SS
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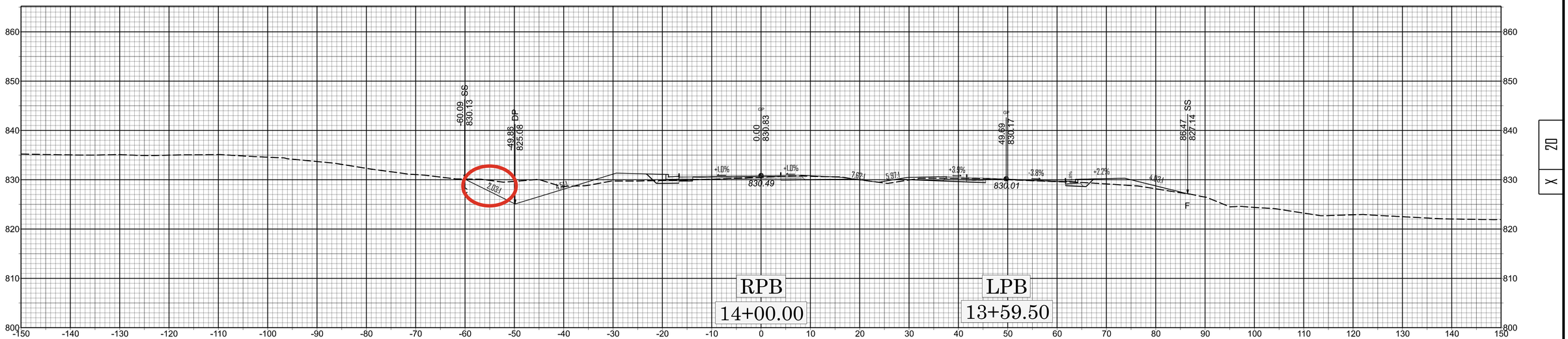
830.95
GP
83.52
829.44
SS
5.0%
3.78%
+0.0%
+0.0%
6.0%
3.99:1
+1.9%
-2.5%
+2.8%
4.35:1
831.07
830.64
RPB
14+25.00
LPB
13+84.21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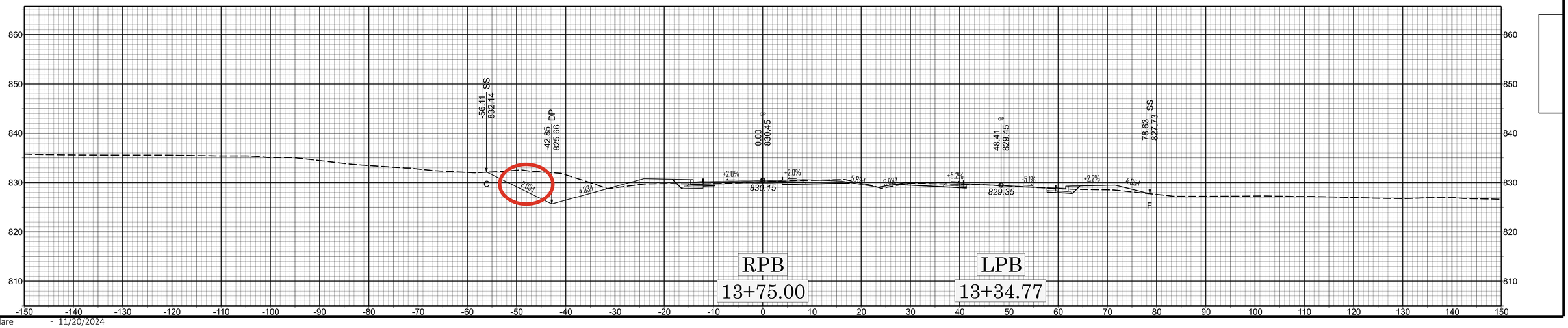
SS
+1.0%
+1.0%
7.67:1
5.97:1
+3.8%
-3.8%
+2.2%
4.02:1
830.49
830.01
RPB
14+00.00
LPB
13+59.50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SS
-42.85
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DP
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GP
48.41
829.45
GP
78.63
827.73
SS
+2.0%
+2.0%
5.88:1
5.96:1
+5.2%
-5.1%
+2.2%
4.05:1
4.03:1
2.05:1
830.15
829.35
RPB
13+75.00
LPB
13+34.77