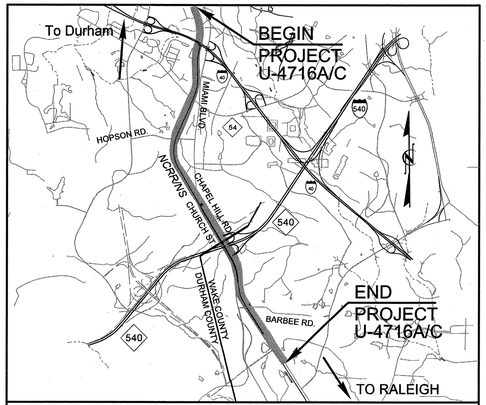
0371DEL_P17-18

TIP PROJECT: U-4716A/C

CONTRACT: C203128

SEE SHEET 1A FOR INDEX OF SHEETS



VICINITY MAP

NCDOT
RAIL DIVISION

DURHAM AND WAKE COUNTIES

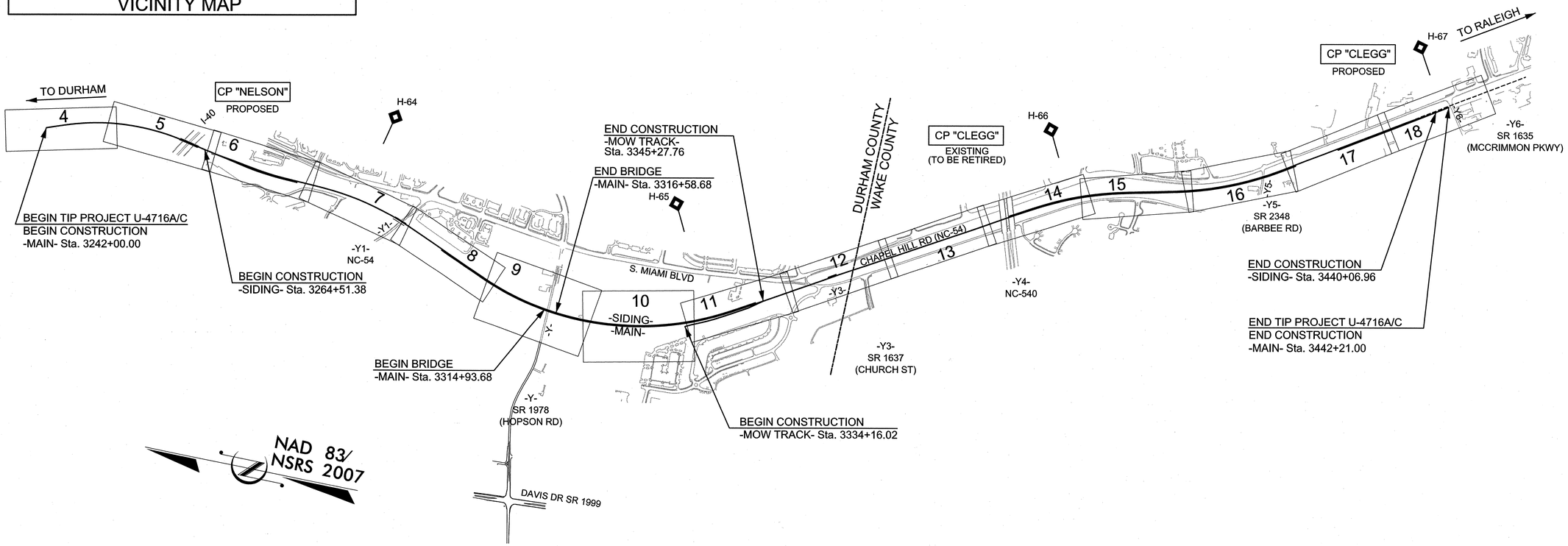
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4716A/C	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
54000.1		P.E.
54000.3.STR01T4A		UTL & CONST

PART 2 OF 2

LOCATION: CLEGG PASSING SIDING AND HOPSON ROAD GRADE SEPARATION FROM NS/NCRR MP H-63.2 TO MP H-67.0

TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE, TRACKBED



GRAPHIC SCALES

50 0 50 100
PLANS

50 0 50 100
PROFILE (HORIZONTAL)

5 0 5 10
PROFILE (VERTICAL)

PROJECT LENGTH

LENGTH OF RAIL TIP PROJECT	3.761 mi.
LENGTH OF STRUCTURES TIP PROJECT	0.031 mi.
TOTAL LENGTH OF TIP PROJECT	3.792 mi.

Prepared in the Office of:

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 14, 2012

LETTING DATE:
OCTOBER 16, 2012

ROBERT BURNETT, P.E.
RAIL PROJECT ENGINEER

COREY VERNIER, P.E.
RAIL PROJECT DESIGN ENGINEER

PHILLIP ROGERS, P.E.
ROADWAY PROJECT ENGINEER

JAMES BYRD, P.E.
HYDRAULICS PROJECT ENGINEER

JASON ORTHNER, P.E.
NCDOT PROJECT MANAGER

RAIL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT

7/31/12

SIGNATURE: P.E.

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

7-31-12

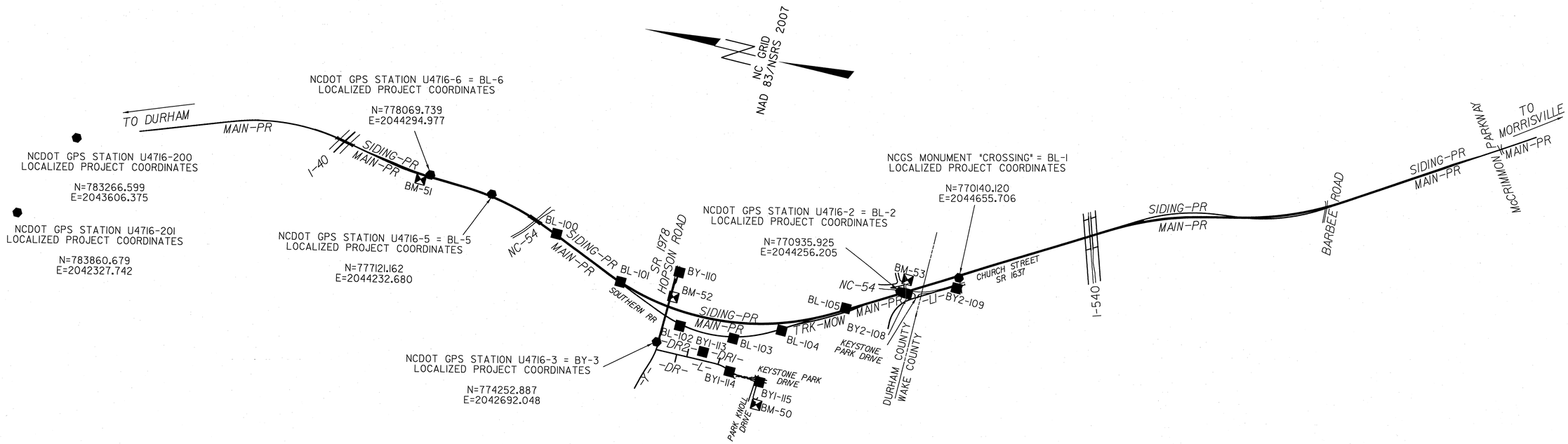
SIGNATURE: P.E.

NC DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

ENGINEERING AND SAFETY BRANCH
CAPITAL YARD
1666 MAIL SERVICE CENTER
RALEIGH, NC 27699-1666

PROJECT REFERENCE NO.	SHEET NO.
54000.1.STR07T1B	1C
Location and Surveys	

SURVEY CONTROL SHEET U-4716



CONTROL DATA

BASELINE

POINT	DESC.	NORTH	EAST	ELEVATION	MAIN-PR STATION	OFFSET
6	U4716-6-BL-6	778069.7390	2044294.9770	396.70	3275+24.02	38.28 LT
5	U4716-5-BL-5	777121.1620	2044232.6800	402.84	3284+71.04	40.99 LT
100	BL-100	776057.0970	2043888.9020	405.94	3295+84.25	22.33 LT
101	BL-101	774971.8160	2043427.2580	396.81	3307+64.92	15.75 LT
116	NOT SET	774219.1226	2043105.4246		3315+61.60	124.73 RT
102	BL-102	773974.9330	2043001.0150	389.17	3318+04.27	205.17 RT
103	BL-103	773166.8830	2043006.6690	388.80	3325+69.90	228.31 RT
104	BL-104	772500.8560	2043288.0730	384.42	3332+53.30	102.22 RT
105	BL 105	771659.6970	2043828.9870	389.85	3342+36.94	32.65 LT
2	U4716-2-BL-2	770935.9250	2044256.2060	394.83	3350+77.45	36.26 LT
1	NCGS CROSSING-BL-1	770140.1210	2044655.7060	393.17	3359+66.09	20.45 RT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
110	BY-110	774165.1669	2043766.0026	388.29	OUTSIDE PROJECT LIMITS	
116	NOT SET	774219.1226	2043105.4246		21+81.03	3.32 LT
3	U4716-3-BY-3	774252.8870	2042692.0480	396.07	17+66.91	26.27 LT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	U4716-3-BY-3	774252.8870	2042692.0480	396.07	OUTSIDE PROJECT LIMITS	
113	BY1-113	773553.2874	2042709.5792	390.22	19+65.39	125.64 RT
114	BY1-114	773105.9462	2042517.0848	383.36	15+06.61	7.12 LT
115	BY1-115	772641.9285	2042473.0981	374.08	10+41.57	25.28 LT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	L1 STATION	OFFSET
105	BL-105	771659.6970	2043828.9870	389.85	20+15.50	677.16 RT
108	BY2-108	770827.7100	2044251.5640	397.22	15+75.28	94.22 RT
109	BY2-109	770137.6450	2044499.2160	390.02	8+59.94	41.39 LT

BENCHMARK DATA

```
**********************************
BM 50       ELEVATION = 359.54
N 772609      E 2042136
L STATION 10+22.00 364 LEFT
X CUT IN C&G
**********************************
**********************************
BM 51       ELEVATION = 390.55
N 778193      E 2044196
MAIN-PR STATION 3274+07.00 68 RIGHT
R/R SPIKE SET IN 15" TWIN SWEET GUM
**********************************
```

```
**********************************
BM 52       ELEVATION = 379.87
N 774167      E 2043394
Y STATION 24+71.00 41 RIGHT
R/R SPIKE SET IN 20" PINE
**********************************
**********************************
BM 53       ELEVATION = 394.62
N 770868      E 2044451
MAIN-PR STATION 3352+34.00 170 LEFT
"X" SCRIBE TOP OF WEST FLANGE BOLT ON
FIRE HYDRANT
**********************************
```

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U4716-3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 774252.887(ft) EASTING: 2042692.048(ft)
ELEVATION: 396.07'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991814
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U4716-3" TO -MAIN-PR- STATION 3232+32.92 IS
N 09°03'26.9" E 8094.56'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

U4716_ls_control.txt

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

⬢ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION

9:20:54 AM
$$$$USERNAME$$$$

0371DEL_P17-18
0001ADD_P17-18 6/2/99

PROJECT REFERENCE NO.	SHEET NO.
54000.1.STRO7T1B	1D
Location and Surveys	

SURVEY CONTROL SHEET U-4716

Design Alignments

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	772601.4166	2042500.0440
PC	12+87.00	772888.1802	2042488.3969
PRC	15+39.42	773133.6570	2042536.4036
PT	17+72.47	773359.7745	2042584.8491
POT	26+46.22	774233.5079	2042580.7147

L1

TYPE	STATION	NORTH	EAST
POT	9+00.00	770193.1242	2044514.7077
PC	15+48.85	770753.1732	2044187.0550
PT	20+37.01	770983.3452	2043781.8147
POT	21+31.16	770982.5592	2043687.6626

Y

TYPE	STATION	NORTH	EAST
PC	10+00.00	774410.2700	2041950.0146
PT	11+85.93	774361.5087	2042129.3468
PC	14+60.93	774275.5229	2042390.5583
PT	17+44.06	774227.2180	2042668.5184
POT	27+31.78	774201.4200	2043655.9010

MAIN-PR

TYPE	STATION	NORTH	EAST
POT	3232+32.92	782246.5208	2043966.3397
TS	3242+89.14	781252.0125	2044322.0925
SC	3246+30.14	780928.8584	2044430.8066
CS	3259+14.58	779657.4918	2044522.0749
ST	3262+55.58	779322.1227	2044460.6341
TS	3267+46.26	778841.2406	2044363.0520
SC	3270+87.26	778506.1095	2044300.2225
CS	3273+57.08	778238.2902	2044267.8608
ST	3276+98.08	777897.8393	2044249.0576
TS	3279+22.85	777673.2461	2044240.0025
SC	3281+39.85	777456.5225	2044229.2085
CS	3291+83.51	776437.9301	2044017.0871
ST	3296+79.51	775978.3640	2043830.7466
TS	3302+49.40	775454.9927	2043605.2280
SC	3307+45.40	774995.4264	2043418.8877
CS	3338+24.09	772004.9001	2043601.7443
ST	3343+20.09	771571.4604	2043842.6880
TS	3381+24.35	768287.1868	2045762.5589
SC	3385+27.35	767936.1687	2045960.4567
CS	3394+43.26	767085.6960	2046295.7498
ST	3398+46.26	766694.0662	2046390.6359
TS	3401+16.26	766430.6967	2046450.1045
SC	3405+19.26	766039.0669	2046544.9905
CS	3415+82.17	765059.5379	2046950.6545
ST	3419+85.17	764715.4936	2047160.4419
POT	3441+98.33	762844.1585	2048342.0361
POT	3446+85.00	762433.2783	2048602.8574

SIDING-PR

TYPE	STATION	NORTH	EAST
POT	3264+51.38	779130.3482	2044421.7186
POT	3265+42.38	779041.1659	2044403.6214
TS	3270+11.67	778577.7616	2044329.5293
SC	3271+97.67	778393.8669	2044301.6557
CS	3274+59.05	778133.8323	2044275.5696
ST	3276+45.05	777948.0654	2044266.3598
TS	3278+65.43	777727.8820	2044257.2342
SC	3282+06.43	777387.4524	2044238.0478
CS	3291+83.79	776434.9593	2044031.0514
ST	3296+79.79	775975.3932	2043844.7109
TS	3302+45.40	775455.9500	2043620.8849
SC	3307+41.40	774996.3838	2043434.5447
CS	3338+20.09	772005.8575	2043617.4013
ST	3343+16.09	771572.4178	2043858.3450
TS	3381+17.09	768290.9539	2045776.5734
SC	3385+20.09	767939.9357	2045974.4712
CS	3394+35.98	767089.4630	2046309.7643
ST	3398+38.98	766697.8332	2046404.6503
TS	3401+08.57	766434.8686	2046464.0275
SC	3405+11.57	766043.2388	2046558.9136
CS	3415+74.46	765063.7098	2046964.5775
ST	3419+77.46	764719.6655	2047174.3649
PC	3434+60.48	763465.6929	2047966.1455
PT	3436+99.18	763261.2664	2048089.3446
POT	3439+15.96	763073.3027	2048197.3504
POT	3440+06.96	762996.3576	2048245.9349

TRK-MOW

TYPE	STATION	NORTH	EAST
TS	3312+66.62	774393.1529	2043164.9901
SC	3314+52.62	774220.2538	2043096.4742
CS	3329+32.01	772779.8233	2043164.4145
ST	3332+73.01	772480.4980	2043327.5132
PC	3334+16.02	772356.9316	2043399.5191
PT	3334+96.79	772285.2634	2043436.8026
PC	3335+98.68	772192.6665	2043479.3094
PT	3340+50.79	771791.7291	2043687.8760
PC	3342+64.57	771607.1752	2043795.7597
PT	3343+41.05	771543.1413	2043837.6259
POT	3345+27.76	771392.1729	2043947.4932
POT	3345+59.01	771365.1943	2043963.2640

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U4716-3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
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"U4716-3" TO -MAIN-PR- STATION 3232+32.92 IS
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ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

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   HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   U4716_ls_control.txt

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

● *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION

9:27:24 AM
$$$$USERNAME$$$$

0371DEL_P17-18
0001ADD_P17-18 6/2/99

PROJECT REFERENCE NO.	SHEET NO.
54000.1.STR07T1B	1E
Location and Surveys	

SURVEY CONTROL SHEET U-4716

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+60.00	-31.79	772759.9945	2042461.7835
L	11+60.00	31.00	772762.5428	2042524.5253
L	11+60.00	29.27	772762.4727	2042522.7973
L	12+87.00	-30.00	772886.9627	2042458.4216
L	12+87.00	31.00	772889.4382	2042519.3713
L	15+39.42	31.00	773120.8228	2042564.6221
L	15+39.42	-30.00	773146.0771	2042509.0953
L	17+72.47	31.00	773359.9212	2042615.8487
L	17+72.47	-30.00	773359.6325	2042554.8494
L	25+25.00	31.00	774112.4405	2042612.2880
L	25+85.00	-30.00	774172.1511	2042551.0047

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
L1	9+91.71	-30.00	770257.1314	2044442.5038
L1	14+45.39	-30.00	770648.7225	2044213.4061
L1	14+49.75	-36.97	770648.9656	2044205.1898

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
Y	15+50.00	29.54	774222.8047	2042469.6977
Y	16+00.00	30.00	774212.0973	2042520.1039
Y	17+40.00	80.00	774147.3693	2042662.0370
Y	20+41.95	80.00	774139.4648	2042964.2184

PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+87.00	75.00	772891.2238	2042563.3351
L	13+65.00	-30.00	772969.1833	2042461.0230
L	13+65.00	-67.58	772973.0790	2042423.6459
L	14+29.91	-83.13	773048.5406	2042420.3986
L	14+75.00	-99.07	773103.5593	2042418.8703
L	14+75.00	31.00	773064.1837	2042542.8360
L	14+75.00	65.00	773053.8909	2042575.2406
L	15+00.00	-30.00	773107.6069	2042493.2662
L	15+39.42	70.00	773104.6767	2042600.1228
L	16+60.00	31.00	773241.7931	2042604.0669
L	16+60.00	55.00	773236.9415	2042627.5714
L	17+30.00	31.00	773315.0491	2042614.2958
L	17+30.00	45.00	773314.0152	2042628.2576
L	17+72.47	45.00	773359.9874	2042629.8486
L	19+00.00	45.00	773487.5137	2042629.2452
L	19+00.00	31.00	773487.4475	2042615.2453
L	25+40.00	-45.00	774127.0807	2042536.2178
L	25+40.00	-30.00	774127.1517	2042551.2177
L	25+40.53	53.34	774128.0714	2042634.5511
L	26+04.58	-45.00	774191.6615	2042535.9123

PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L1	9+00.00	-35.00	770175.4502	2044484.4979
L1	9+00.00	-30.99	770177.4775	2044487.9632
L1	10+00.00	-45.00	770256.7140	2044425.3694
L1	14+63.93	-45.00	770657.1518	2044191.0962
L1	16+25.68	-40.09	770790.3290	2044112.1700
L1	16+45.00	-40.21	770803.5694	2044100.4990
L1	17+11.42	-35.00	770849.5082	2044060.0051
L1	17+40.00	-29.96	770869.7863	2044042.1305

PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
Y	14+56.41	-54.21	774328.4277	2042403.2163
Y	14+60.00	29.95	774247.3650	2042380.3115
Y	14+60.00	45.00	774233.0696	2042375.6058
Y	15+47.00	-55.00	774305.8314	2042485.8999
Y	15+52.00	-30.60	774280.9860	2042485.0739
Y	15+69.00	-55.00	774301.3445	2042506.1612
Y	15+70.00	50.00	774198.3622	2042485.6520
Y	15+73.00	-31.52	774277.5748	2042505.1335
Y	16+90.00	-55.00	774284.9506	2042619.0421
Y	18+20.00	-65.00	774290.2124	2042746.1313
Y	19+65.00	-55.00	774276.4286	2042890.8196
Y	20+36.66	100.00	774119.6099	2042958.4036
Y	20+81.82	-50.00	774268.3790	2043007.4733
Y	24+77.32	100.00	774108.1003	2043398.9166
Y	24+95.00	-55.00	774262.5856	2043420.6399
Y	24+95.00	-29.76	774237.3576	2043419.9807
Y	25+15.00	-29.70	774236.7716	2043439.9722
Y	25+15.00	-55.00	774262.0632	2043440.6330
Y	25+30.00	100.00	774106.7243	2043451.5795
Y	25+30.00	30.35	774176.3523	2043453.3987

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U4716-3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 774252.887(ft) EASTING: 2042692.048(ft)
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N 09°03'26.9" E 8094.56'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

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U4716_ls_control.txt

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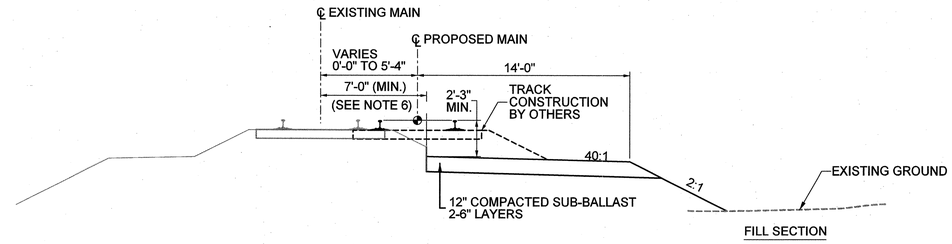
⬢ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION

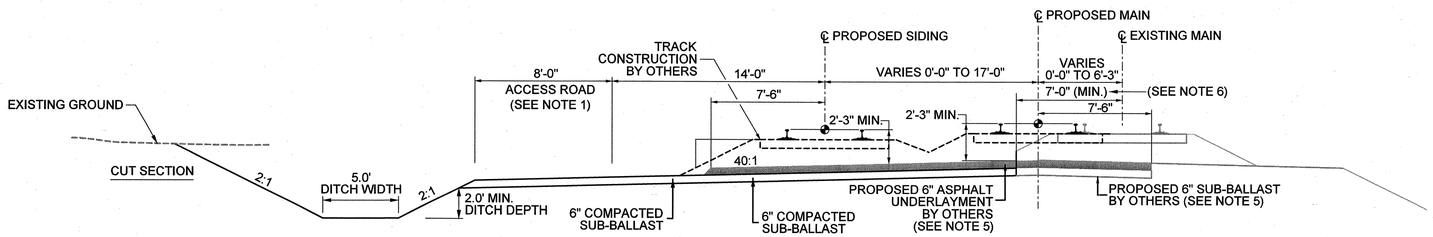
9:28:54 AM
10/17/2017
$$$$USERNAME$$$$

0371DEL_P17-18
0001ADD_P17-18



TYPICAL SECTION #1 - SHIFTED MAIN TRACK

MAIN STA. 3242+89 TO STA. 3260+32

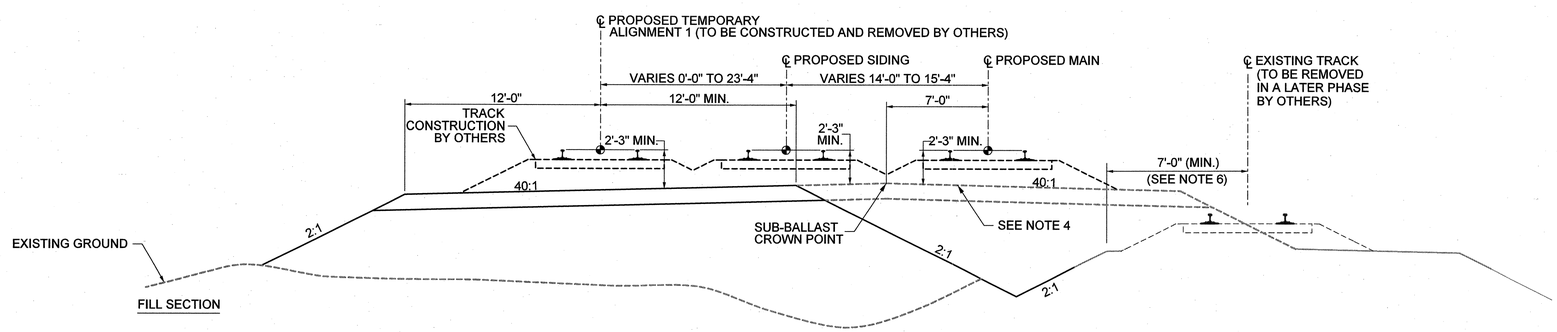


TYPICAL SECTION #2 - PROPOSED SIDING NEXT TO SHIFTED MAIN

MAIN STA. 3263+04 TO STA. 3276+98

NOTES

1. 8'-0" ACCESS ROAD LIMITS - STA. 3264+25 TO STA. 3275+00. ACCESS ROAD TO BE WIDER IN AREAS NOTED ON THE PLANS.
2. TOP OF SUB-GRADE IS TO BE CROWNED.
3. TRACK CONSTRUCTION, INCLUDING BALLAST, WILL BE DONE BY OTHERS.
4. REMAINDER OF TYPICAL ROADBED SECTION BETWEEN STA. 3300+50 AND 3311+00 TO BE CONSTRUCTED BY OTHERS AFTER TEMPORARY ALIGNMENT 1 IS IN SERVICE AND EXISTING TRACK HAS BEEN REMOVED.
5. PROPOSED 6" ASPHALT UNDERLAYMENT AND SUB-BALLAST LIMITS - STA. 3263+26 TO 3268+67. CONTRACTOR TO CONSTRUCT SUB-BALLAST GREATER THAN 7'-0" FROM CENTERLINE OF EXISTING TRACK. SUB-BALLAST WITHIN 7'-0" FROM CENTERLINE OF EXISTING MAIN TRACK AND ALL ASPHALT UNDERLAYMENT TO BE CONSTRUCTED BY OTHERS.
6. ACTUAL LOCATION OF EXCAVATION TO BE BASED ON FIELD CONDITIONS AS DETERMINED BY THE NORFOLK SOUTHERN REPRESENTATIVE.



TYPICAL SECTION #3 - PROPOSED TEMPORARY ALIGNMENT 1 NEXT TO EXISTING MAIN

MAIN STA. 3300+50 TO STA. 3314+48

NO.	BY	DATE	REVISION
1	CVL	11/9/2012	REVISED TYPICAL SECTION #2 SUB-BALLAST, REVISED TYPICAL #3 TO SHOW PROPOSED MAIN AND SIDING TRACKS

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037992 ENGINEER CORY P. VERNIER 11/9/12
SIGNATURE: P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	TYPICAL SECTIONS		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR	DRAWING	2
DWN BY VBB	VAL SEC V-24 /16-17	SHEET	OF
CHK BY RJB	DATE 11/09/2012 SCALE		

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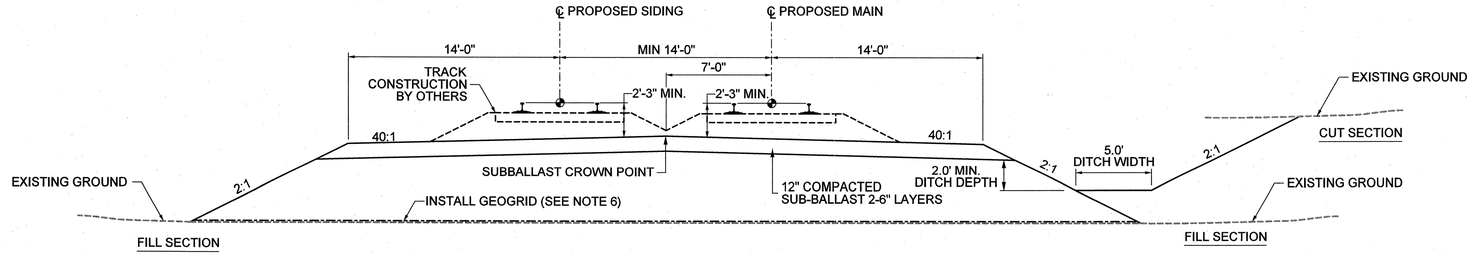
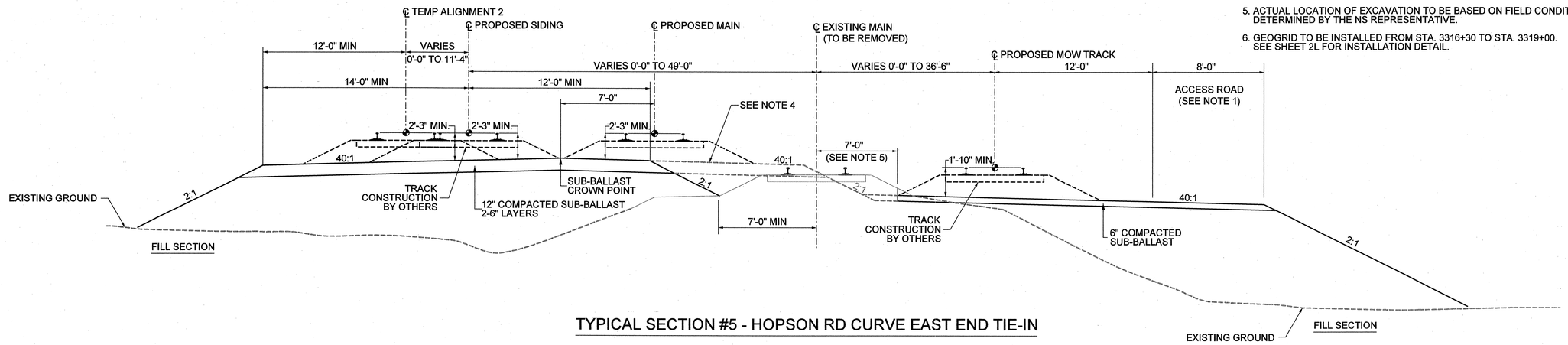


TYPICAL SECTION #4 - PROPOSED MAIN AND SIDING

MAIN STA. 3314+48 TO STA. 3314+93.68
MAIN STA. 3316+58.68 TO STA. 3333+75
MAIN STA. 3386+00 TO STA. 3403+50

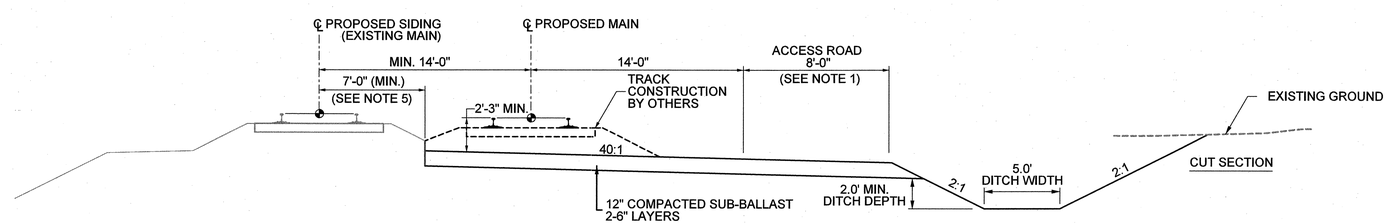
NOTES

1. 8'-0" ACCESS ROAD LIMITS - STA. 3333+75 TO STA. 3352+10. ACCESS ROAD TO BE WIDER IN AREAS NOTED ON THE PLANS.
2. TOP OF SUB-GRADE IS TO BE CROWNED.
3. TRACK CONSTRUCTION, INCLUDING BALLAST, WILL BE DONE BY OTHERS.
4. REMAINDER OF TYPICAL ROADBED SECTION BETWEEN STATION 3336+00 AND STA. 3340+00 TO BE CONSTRUCTED BY OTHERS AFTER PROPOSED TEMPORARY SIDING TRACK IS IN SERVICE AND EXISTING TRACK HAS BEEN REMOVED BY OTHERS.
5. ACTUAL LOCATION OF EXCAVATION TO BE BASED ON FIELD CONDITIONS AS DETERMINED BY THE NS REPRESENTATIVE.
6. GEOGRID TO BE INSTALLED FROM STA. 3316+30 TO STA. 3319+00. SEE SHEET 2L FOR INSTALLATION DETAIL.



TYPICAL SECTION #5 - HOPSON RD CURVE EAST END TIE-IN

MAIN STA. 3333+75 TO STA. 3345+59



TYPICAL SECTION #6 - PROPOSED MAIN NEXT TO PROPOSED SIDING (EXISTING MAIN)

MAIN STA. 3345+59 TO STA. 3386+00

NO.	BY	DATE	REVISION
1	CVL	11/09/12	REVISED TYPICAL #5 TO SHOW PROPOSED MAIN AND SIDING TRACKS

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037992 ENGINEER COREY V. VERNIER
11/9/12
SIGNATURE P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	TYPICAL SECTIONS		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR	DRAWING	2A
DWN BY VBB	VAL SEC V-24 /16-17	SHEET	OF
CHK BY RJB	DATE 11/06/2012 SCALE		

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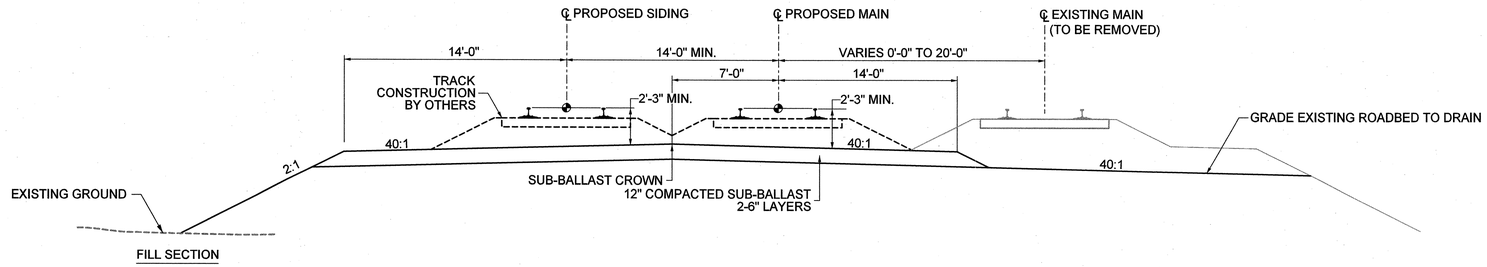
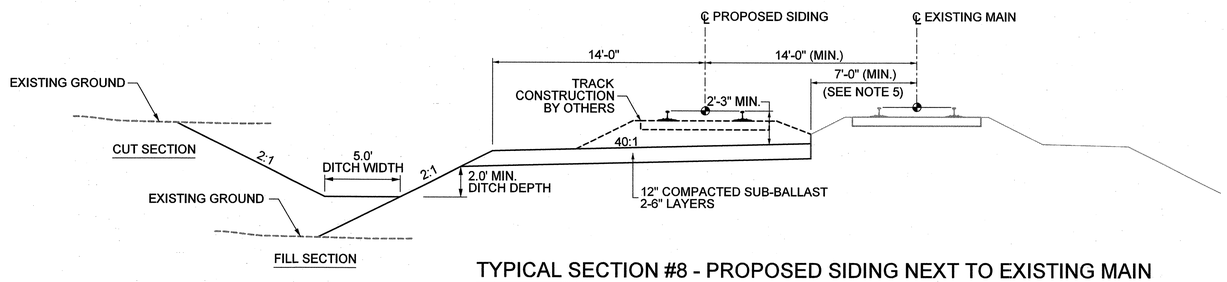


TYPICAL SECTION #7 - PROPOSED MAIN AND SIDING NEXT TO EXISTING MAIN

MAIN STA. 3403+50 TO STA. 3416+00

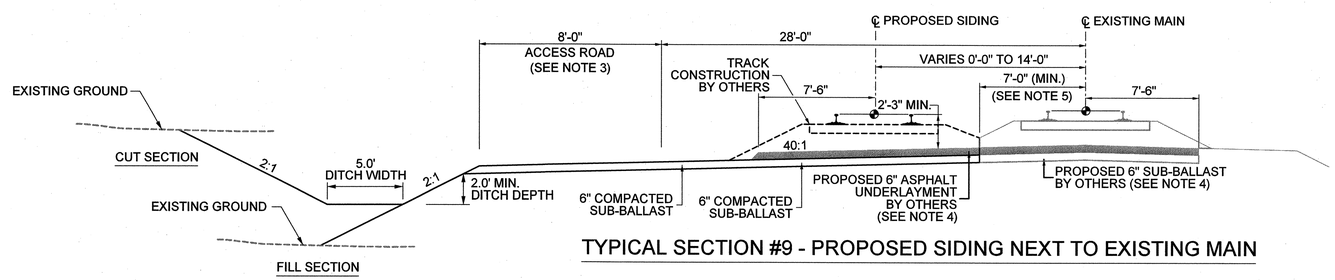


TYPICAL SECTION #8 - PROPOSED SIDING NEXT TO EXISTING MAIN

MAIN STA. 3416+00 TO STA. 3434+36

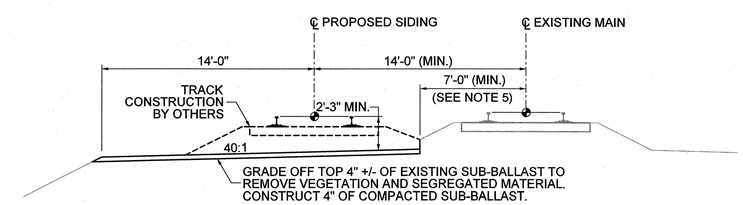
NOTES

1. TOP OF SUB-GRADE IS TO BE CROWNED.
2. TRACK CONSTRUCTION, INCLUDING BALLAST, WILL BE DONE BY OTHERS.
3. ACCESS ROAD TO BE WIDER IN AREAS NOTED ON THE PLANS.
4. PROPOSED 6" ASPHALT UNDERLAYMENT AND SUB-BALLAST LIMITS - STA. 3436+03 TO 3441+43. CONTRACTOR TO CONSTRUCT SUB-BALLAST GREATER THAN 7'-0" FROM CENTERLINE OF EXISTING TRACK. SUB-BALLAST WITHIN 7'-0" FROM CENTERLINE OF EXISTING MAIN TRACK AND ALL ASPHALT UNDERLAYMENT TO BE CONSTRUCTED BY OTHERS.
5. ACTUAL LOCATION OF EXCAVATION TO BE BASED ON FIELD CONDITIONS AS DETERMINED BY THE NS REPRESENTATIVE.



TYPICAL SECTION #9 - PROPOSED SIDING NEXT TO EXISTING MAIN

MAIN STA. 3434+36 TO STA. 3442+21



TYPICAL SECTION #10 - IMPROVE EXISTING ROADBED

MAIN STA. 3276+98 TO STA. 3291+17
MAIN STA. 3292+93 TO STA. 3300+50

NO.	BY	DATE	REVISION
1	CVL	11/9/2012	REVISED SUB-BALLAST SECTION IN TYPICAL SECTION #9

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037992 ENGINEER
CORY P. VERNER
11/9/12
SIGNATURE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	TYPICAL SECTIONS		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR	DRAWING	2B
DWN BY VBB	VAL SEC V-24 /16-17	SHEET	OF
CHK BY RJB	DATE 11/09/2012	SCALE	

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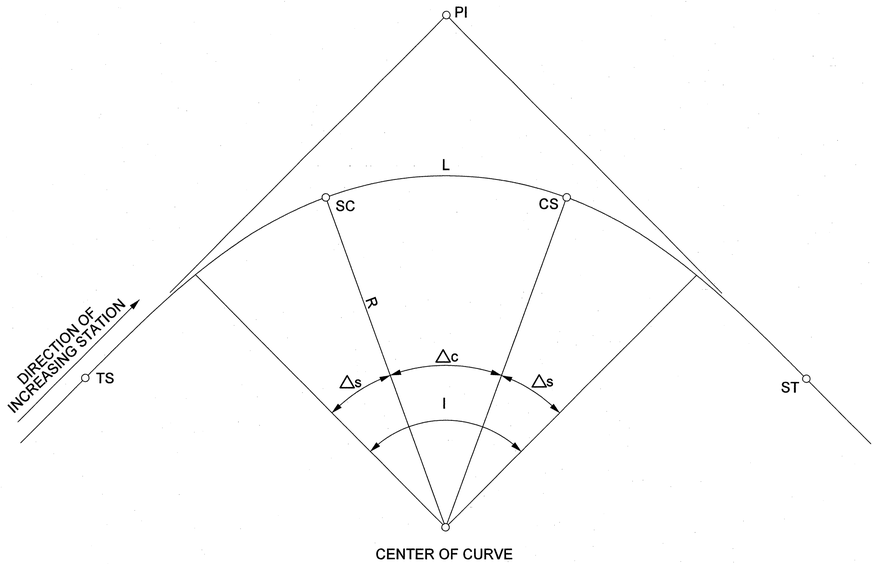

FIGURE A

CIRCULAR CURVES WITH SPIRAL TRANSITION

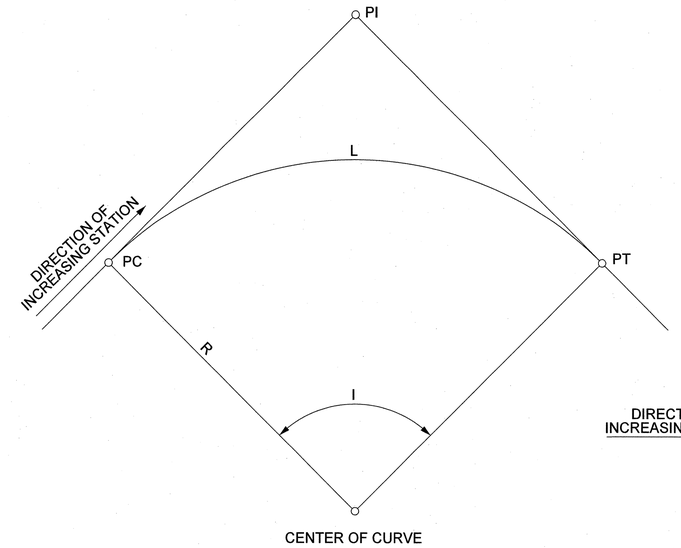

FIGURE B

SIMPLE CIRCULAR CURVE

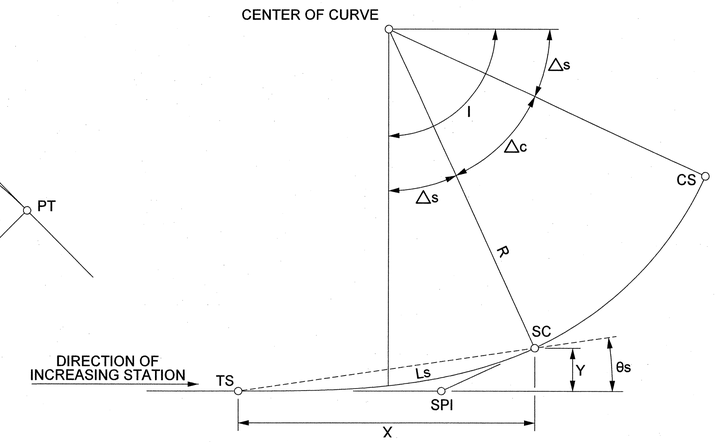

FIGURE C

SPIRAL TRANSITION CURVE

R	RADIUS OF CURVATURE	PI	POINT OF INTERSECTION (TOTAL ANGLE)
Dc	DEGREE OF CURVATURE (CHORD DEFINED)	SPI	POINT OF INTERSECTION (SPIRAL)
L	LENGTH OF CURVE	PC	TANGENT TO SIMPLE CURVE
I	TOTAL INTERSECTION ANGLE	PT	SIMPLE CURVE TO TANGENT
Δc	CURVE ANGLE	TS	TANGENT TO SPIRAL
Δs	SPIRAL ANGLE	SC	SPIRAL TO CURVE
θs	SPIRAL DEFLECTION	CS	CURVE TO SPIRAL
Ls	LENGTH OF SPIRAL	ST	SPIRAL TO TANGENT
X	SPIRAL TANGENT LENGTH TO OFFSET		
Y	SPIRAL TANGENT OFFSET		

NO.	BY	DATE	REVISION

RAIL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT

SIGNATURE 7/31/12 P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RAIL DIVISION

PREPARED BY:

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	RAILROAD HORIZONTAL ALIGNMENT GEOMETRY		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY	CPV	RAILROAD NS /NCRR	DRAWING 2C
DWN BY	VBB	VAL SEC V-24 /16-17	SHEET OF
CHK BY	RJB	DATE 07/31/12 SCALE	

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RAILROAD HORIZONTAL ALIGNMENT GEOMETRY
MAIN TRACK

FEATURE NO.	DESC.	STATION	NORTHING	EASTING	BEARING	DISTANCE	R (ft)	Dc (CHORD)	L (ft)	I	DELTA (CURVE)	DELTA (SPIRAL)	THETA	Ls* (ft)	X (ft)	Y (ft)
	POT	3242+00.00	781,335.9460	2,044,292.0740												
					S 19° 40' 58.80" E	89.1400										
	TS	3242+89.14	781,252.0125	2,044,322.0925												
												3° 16' 03.95" (RT)	1° 05' 21.21"	341.0000	340.8891	6.4813
	SC	3246+30.14	780,928.8585	2,044,430.8069												
100	PI	3252+93.46	780,306.3783	2,044,660.3623			2,989.4844	1° 55' 00.00"	1,284.4366	31° 09' 14.03" (RT)	24° 37' 06.13" (RT)					
	CS	3259+14.58	779,657.4918	2,044,522.0749												
												3° 16' 03.95" (RT)	1° 05' 21.21"	341.0000	340.8891	6.4813
	ST	3262+55.58	779,322.1227	2,044,460.6341												
					S 11° 28' 15.18" W	195.6800										
1	PS	3264+51.26	779,130.3482	2,044,421.7186												
					S 11° 28' 15.18" W	91.0000										
NO. 24 LH	PI/TO	3265+42.26	779,041.1659	2,044,403.6214												
					S 11° 28' 15.18" W	204.0000										
	TS	3267+46.26	778,841.2406	2,044,363.0520												
												2° 33' 26.74" (LT)	0° 51' 08.86"	341.0000	340.9321	5.0728
	SC	3270+87.26	778,506.1095	2,044,300.2223												
101	PI	3272+22.91	778,374.1068	2,044,268.2597			3,819.8277	1° 30' 00.00"	269.8157	9° 09' 43.52" (LT)	4° 02' 50.05" (LT)					
	CS	3273+57.08	778,238.2902	2,044,267.8608												
												2° 33' 26.74" (LT)	0° 51' 08.86"	341.0000	340.9321	5.0728
	ST	3276+98.08	777,897.8393	2,044,249.0576												
					S 2° 18' 31.7" W	19.2500										
	POT	3277+17.33	777,878.6049	2,044,248.2824	TIE TO EXISTING TRACK											
	POT	3298+97.00	775,778.6301	2,043,744.6821	TIE TO EXISTING TRACK											
					S 23° 18' 39.7" W	352.4000										
	TS	3302+49.40	775,454.9927	2,043,605.2280												
												3° 43' 11.62" (LT)	1° 14' 23.71"	496.0000	495.7910	10.7309
	SC	3307+45.40	774,995.4265	2,043,418.8875												
103	PI	3324+29.10	773,453.2256	2,042,742.6743			3,819.8277	1° 30' 00.00"	3,078.6859	53° 37' 12.28" (LT)	46° 10' 49.04" (LT)					
	CS	3338+24.09	772,004.9001	2,043,601.7443												
												3° 43' 11.62" (LT)	1° 14' 23.71"	496.0000	495.7910	10.7309
	ST	3343+20.09	771,571.4604	2,043,842.6880												
					S 30° 18' 32.60" E	207.6700										
2	PI/TO	3345+27.76	771,392.1729	2,043,947.4932												
					S 30° 18' 32.60" E	31.2500										
NO. 10 LH	PS	3345+59.01	771,365.1943	2,043,963.2640												
					S 30° 18' 32.60" E	3,565.3300										
	TS	3381+24.34	768,287.1868	2,045,762.5589												
												2° 41' 11.78" (RT)	0° 53' 43.87"	403.0000	402.9114	6.2979
	SC	3385+27.34	767,936.1687	2,045,960.4567												
104	PI	3389+90.75	767,539.2004	2,046,199.8055			4,297.2804	1° 20' 00.00"	915.9128	17° 35' 06.39" (RT)	12° 12' 42.82" (RT)					
	CS	3394+43.26	767,085.6960	2,046,295.7498												
												2° 41' 11.78" (RT)	0° 53' 43.87"	403.0000	402.9114	6.2979
	ST	3398+46.26	766,694.0662	2,046,390.6359												
					S 12° 43' 26.21" E	270.0000										
	TS	3401+16.26	766,430.6967	2,046,450.1045												
												2° 41' 11.78" (LT)	0° 53' 43.87"	403.0000	402.9114	6.2979
	SC	3405+19.26	766,039.0669	2,046,544.9905												
105	PI	3410+58.16	765,511.9221	2,046,657.5628			4,297.2804	1° 20' 00.00"	1,062.9151	19° 32' 42.34" (LT)	14° 10' 18.78" (LT)					
	CS	3415+82.17	765,059.5379	2,046,950.6545												
												2° 41' 11.78" (LT)	0° 53' 43.87"	403.0000	402.9114	6.2979
	ST	3419+85.17	764,715.4936	2,047,160.4419	TIE TO EXISTING TRACK											
	POT	3426+00.00	764,195.6240	2,047,488.6968	BEGIN SURFACING											
					S 32° 16' 08.55" E	1,327.3300										
3	PI/TO	3439+27.33	763,073.3027	2,048,197.3504												
					S 32° 16' 08.55" E	91.0000										
NO. 24 RH	PS	3440+18.33	762,996.3576	2,048,245.9349												
	POT	3441+98.33	762,844.1585	2,048,342.0361	S 32° 16' 08.55" E	180.0000										

* SPIRAL LENGTHS ARE BASED ON AREMA FORMULA (Ls=1.22EuV) FOR RIDE COMFORT AT MAXIMUM PROPOSED SPEED ROUNDED UP TO 31 FT INCREMENTS, WHERE GREATER THAN NS STANDARDS.

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037992 ENGINEER CORY P. VERNITZ
10/3/12
SIGNATURE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	RAILROAD HORIZONTAL ALIGNMENT GEOMETRY		
LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR		DRAWING 2D
DWN BY VBB	VAL SEC V-24 /16-17		SHEET OF
CHK BY RJB	DATE 10/03/12	SCALE	

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0371DEL_P17-18

DGN

RAILROAD HORIZONTAL ALIGNMENT GEOMETRY

SIDING TRACK

FEATURE NO.	DESC.	STATION	NORTHING	EASTING	BEARING	DISTANCE	R (ft)	Dc (CHORD)	L (ft)	I	DELTA (CURVE)	DELTA (SPIRAL)	THETA	Ls* (ft)	X (ft)	Y (ft)
1	PS	3264+51.38	779,130.3482	2,044,421.7186												
					S 11° 28' 15.18" W	91.0000										
NO. 24 LH	PI/TO	3265+42.38	779,041.1659	2,044,403.6214												
					S 9° 05' 02.18" W	469.2900										
	TS	3270+11.67	778,577.7616	2,044,329.5293												
												1° 23' 41.86" (LT)	0° 27' 53.94"	186.0000	185.9890	1.5094
	SC	3271+97.67	778,393.8669	2,044,301.6556												
201	PI	3273+28.64	778,264.7653	2,044,279.4854			3,819.8277	1° 30' 00.00"	261.3833	6° 42' 38.41" (LT)	3° 55' 14.70" (LT)					
	CS	3274+59.05	778,133.8323	2,044,275.5696												
												1° 23' 41.86" (LT)	0° 27' 53.94"	186.0000	185.9890	1.5094
	ST	3276+45.05	777,948.0654	2,044,266.3598												
					S 2° 22' 23.77" W	220.3800										
	TS	3278+65.43	777,727.8820	2,044,257.2342												
												2° 33' 26.74" (RT)	0° 51' 08.86"	341.0000	340.9321	5.0728
	SC	3282+06.43	777,387.4524	2,044,238.0479												
202	PI	3287+45.93	776,848.1378	2,044,220.7732			3,819.8277	1° 30' 00.00"	977.3621	20° 56' 15.91" (RT)	14° 39' 37.55" (RT)					
	CS	3291+83.79	776,434.9593	2,044,031.0514												
												3° 43' 11.62" (RT)	1° 14' 23.71"	496.0000	495.7910	10.7309
	ST	3296+79.79	775,975.3932	2,043,844.7109												
					S 23° 18' 39.68" W	565.6100										
	TS	3302+45.40	775,455.9500	2,043,620.8849												
												3° 43' 11.62" (LT)	1° 14' 23.71"	496.0000	495.7910	10.7309
	SC	3307+41.40	774,996.3839	2,043,434.5444												
203	PI	3324+25.10	773,454.1829	2,042,758.3312			3,819.8277	1° 30' 00.00"	3,078.6859	53° 37' 12.28" (LT)	46° 10' 49.04" (LT)					
	CS	3338+20.09	772,005.8575	2,043,617.4013												
												3° 43' 11.62" (LT)	1° 14' 23.71"	496.0000	495.7910	10.7309
	ST	3343+16.09	771,572.4178	2,043,858.3450												
					S 30° 17' 57.00" E	93.9300										
	POT	3344+10.02	771,492.0809	2,043,907.0446	TIE TO EXISTING TRACK											
	PS	3354+49.89	770,593.8252	2,044,430.9408												
EXIST.		REMOVE TURNOUT AND CONSTRUCT TRACK			S 30° 18' 32.60" E	111.0200										
NO. 10 RH	POT	3355+60.91	770,497.9819	2,044,486.9674												
	POT	3380+30.00	768,366.8949	2,045,733.9184	TIE TO EXISTING TRACK											
					S 30° 18' 32.60" E	87.0900										
	TS	3381+17.09	768,290.9539	2,045,776.5734												
												2° 41' 11.78" (RT)	0° 53' 43.87"	403.0000	402.9114	6.2979
	SC	3385+20.09	767,939.9357	2,045,974.4712												
204	PI	3389+83.50	767,542.9675	2,046,213.8199			4,297.2804	1° 20' 00.00"	915.8921	17° 35' 06.39" (RT)	12° 12' 42.82" (RT)					
	CS	3394+35.98	767,089.4630	2,046,309.7643												
												2° 41' 11.78" (RT)	0° 53' 43.87"	403.0000	402.9114	6.2979
	ST	3398+38.98	766,697.8332	2,046,404.6503												
					S 12° 43' 26.21" E	269.5849										
	TS	3401+08.57	766,434.8686	2,046,464.0275												
												2° 41' 11.78" (LT)	0° 53' 43.87"	403.0000	402.9114	6.2979
	SC	3405+11.57	766,043.2388	2,046,558.9136												
205	PI	3410+50.47	765,516.0940	2,046,671.4858			4,297.2804	1° 20' 00.00"	1,062.8911	19° 32' 42.34" (LT)	14° 10' 18.78" (LT)					
	CS	3415+74.46	765,063.7098	2,046,964.5775												
												2° 41' 11.78" (LT)	0° 53' 43.87"	403.0000	402.9114	6.2979
	ST	3419+77.46	764,719.6655	2,047,174.3649												
					S 32° 16' 08.55" E	1,483.0200										
	PC	3434+60.48	763,465.6929	2,047,966.1455												
206	PI	3435+79.85	763,364.7630	2,048,029.8744			5,729.6507	1° 00' 00.00"	238.6944	2° 23' 13.00" (RT)						
	PT	3436+99.18	763,261.2664	2,048,089.3446												
					S 29° 52' 55.55" E	216.7800										
3	PI/TO	3439+15.96	763,073.3027	2,048,197.3504												
					S 32° 16' 08.55" E	91.0000										
NO. 24 RH	PS	3440+06.96	762,996.3576	2,048,245.9349												

* SPIRAL LENGTHS ARE BASED ON AREMA FORMULA (Ls=1.22EuV) FOR RIDE COMFORT AT MAXIMUM PROPOSED SPEED ROUNDED UP TO 31 FT INCREMENTS, WHERE GREATER THAN NS STANDARDS.

NO.	BY	DATE	REVISION

RAIL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT

SIGNATURE 7/31/12 P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RAIL DIVISION

PREPARED BY:

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	RAILROAD HORIZONTAL ALIGNMENT GEOMETRY		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR	DRAWING	2E
DWN BY VBB	VAL SEC V-24 /16-17	SHEET	OF
CHK BY RJB	DATE 07/31/12 SCALE		

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DGN

RAILROAD HORIZONTAL ALIGNMENT GEOMETRY
MOW TRACK

FEATURE NO.	DESC.	STATION	NORTHING	EASTING	BEARING	DISTANCE	R (ft)	Dc (CHORD)	L (ft)	I	DELTA (CURVE)	DELTA (SPIRAL)	THETA	Ls (ft)	X (ft)	Y (ft)
301	PC	3334+16.02	772,356.9316	2,043,399.5191												
	PI	3334+56.46	772,322.0180	2,043,419.9303			819.0204	7° 00' 00.00"	80.7686	5° 39' 13.69" (RT)						
	PT	3334+96.79	772,285.2634	2,043,436.8026												
					S 24° 39' 27.40" E	101.8800										
302	PC	3335+98.67	772,192.6665	2,043,479.3094												
	PI	3338+24.92	771,987.0506	2,043,573.6979			4,583.7533	1° 15' 00.00"	452.1154	5° 39' 05.19" (LT)						
	PT	3340+50.79	771,791.7291	2,043,687.8760												
					S 30° 18' 32.60" E	213.7700										
303	PC	3342+64.56	771,607.1752	2,043,795.7597												
	PI	3343+02.86	771,574.1095	2,043,815.0888			764.4894	7° 30' 00.00"	76.4830	5° 44' 10.40" (LT)						
	PT	3343+41.04	771,543.1413	2,043,837.6259												
					S 36° 02' 43.00" E	186.7200										
2	PI/TO	3345+27.76	771,392.1729	2,043,947.4932												
					S 30° 18' 32.60" E	31.2500										
NO. 10 LH	PS	3345+59.01	771,365.1943	2,043,963.2640												

RAILROAD HORIZONTAL ALIGNMENT GEOMETRY
TEMPORARY ALIGNMENT 1

FEATURE NO.	DESC.	STATION	NORTHING	EASTING	BEARING	DISTANCE	R (ft)	Dc (CHORD)	L (ft)	I	DELTA (CURVE)	DELTA (SPIRAL)	THETA	Ls (ft)	X (ft)	Y (ft)
401	TS	3298+99.96	775,773.1937	2,043,757.5839												
												0° 27' 53.98" (LT)	0° 09' 17.99"	93.0000	92.9994	0.2516
	SC	3299+92.96	775,687.6862	2,043,721.0130												
	PI	3300+96.21	775,592.5397	2,043,680.9272			5,729.6507	1° 00' 00.00"	206.4671	2° 59' 40.78" (LT)	2° 03' 52.82" (LT)					
	CS	3301+99.43	775,496.0107	2,043,644.2952												
												0° 27' 53.98" (LT)	0° 09' 17.99"	93.0000	92.9994	0.2516
	ST	3302+92.43	775,408.8842	2,043,611.7695												
					S 20° 18' 58.91" W	506.3570										
402	TS	3307+98.44	774,934.3535	2,043,436.0812												
												4° 15' 43.78" (LT)	1° 25' 14.35"	341.0000	340.8113	8.4522
	SC	3311+39.44	774,611.8094	2,043,325.6767												
	PI	3312+24.02	774,530.5293	2,043,302.2867			2,292.0130	2° 30' 00.00"	169.0806	11° 35' 19.16" (LT)	4° 13' 36.05" (LT)					
	CS	3313+08.52	774,447.7463	2,043,284.9510												
												3° 05' 59.33" (LT)	1° 25' 14.71"	155.0000		
	SC	3314+63.52	774,295.1900	2,043,257.6434												

RAILROAD HORIZONTAL ALIGNMENT GEOMETRY
TEMPORARY ALIGNMENT 2

FEATURE NO.	DESC.	STATION	NORTHING	EASTING	BEARING	DISTANCE	R (ft)	Dc (CHORD)	L (ft)	I	DELTA (CURVE)	DELTA (SPIRAL)	THETA	Ls (ft)	X (ft)	Y (ft)
501	POC	3331+40.02	772,637.8560	2,043,368.5979												
	CS	3331+88.07	772,591.8264	2,043,382.4497												
												3° 47' 50.44" (LT)	1° 48' 29.73"	217.0000		
	SC	3334+05.07	772,386.5846	2,043,452.7883												
	PI	3335+21.80	772,277.5353	2,043,494.4437			2,864.9344	2° 00' 00.00"	233.3396	10° 38' 01.64" (LT)	4° 39' 59.60" (LT)					
	CS	3336+38.41	772,172.2365	2,043,544.8329												
												2° 10' 11.60" (LT)	0° 43' 23.84"	217.0000	216.9689	2.7391
	ST	3338+55.41	771,978.9337	2,043,643.4080												
					S 27° 44' 33.58" E	220.0000										
502	TS	3340+75.41	771,784.2233	2,043,745.8182												
												0° 20' 55.49" (LT)	0° 06' 58.50"	93.0000	92.9997	0.1887
	SC	3341+68.41	771,702.0021	2,043,789.2767												
	PI	3342+93.01	771,592.0757	2,043,847.9507			7,639.4918	0° 45' 00.00"	249.1883	2° 33' 59.02" (LT)	1° 52' 08.03" (LT)					
	CS	3344+17.60	771,484.1213	2,043,910.1785												
												0° 20' 55.49" (LT)	0° 06' 58.50"	93.0000	92.9997	0.1887
	ST	3345+10.60	771,403.7380	2,043,956.9492												

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT
SIGNATURE P.E. 8/10/12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	RAILROAD HORIZONTAL ALIGNMENT GEOMETRY		
LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR		DRAWING 2F
DWN BY VBB	VAL SEC V-24 /16-17		SHEET OF
CHK BY RJB	DATE 08/10/12	SCALE	

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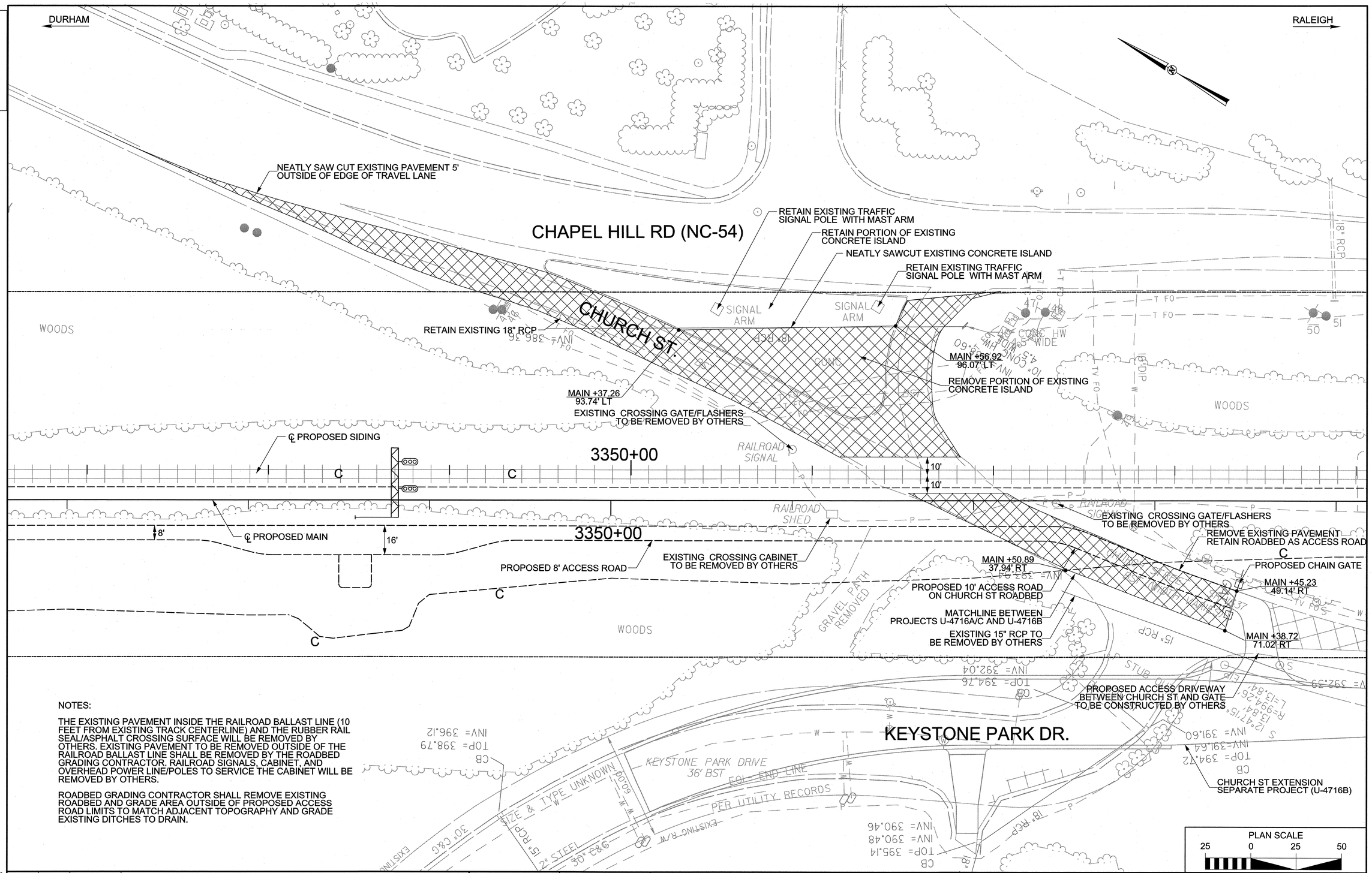
DGN



NOTES:

THE EXISTING PAVEMENT INSIDE THE RAILROAD BALLAST LINE (10 FEET FROM EXISTING TRACK CENTERLINE) AND THE RUBBER RAIL SEAL/ASPHALT CROSSING SURFACE WILL BE REMOVED BY OTHERS. EXISTING PAVEMENT TO BE REMOVED OUTSIDE OF THE RAILROAD BALLAST LINE SHALL BE REMOVED BY THE ROADBED GRADING CONTRACTOR. RAILROAD SIGNALS, CABINET, AND OVERHEAD POWER LINE/POLES TO SERVICE THE CABINET WILL BE REMOVED BY OTHERS.

ROADBED GRADING CONTRACTOR SHALL REMOVE EXISTING ROADBED AND GRADE AREA OUTSIDE OF PROPOSED ACCESS ROAD LIMITS TO MATCH ADJACENT TOPOGRAPHY AND GRADE EXISTING DITCHES TO DRAIN.

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT
SIGNATURE 8/10/12 P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	CHURCH ST GRADE CROSSING CLOSURE DETAIL		
LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR		DRAWING 2G
DWN BY VBB	VAL SEC V-24/16-17		SHEET OF
CHK BY RJB	DATE 08/10/12	SCALE	

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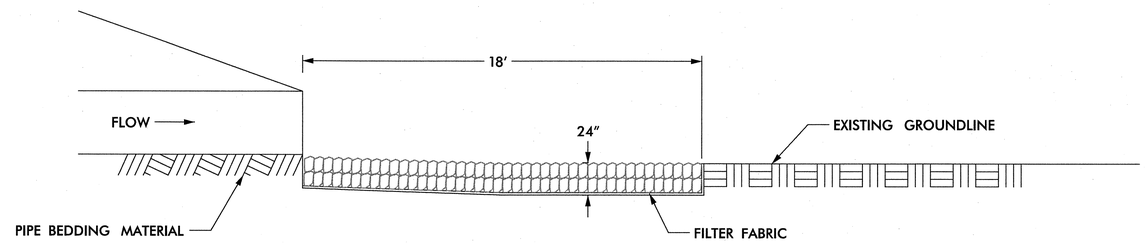
DGN

DETAIL J
RIP RAP DISSAPATOR PAD AT OUTFALL



CLASS II RIP RAP DISSAPATOR PAD TO BE INSTALLED FLUSH WITH EXISTING GROUNDLINE

NO.	BY	DATE	REVISION

RAIL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT

SIGNATURE: P.E. 7/31/12

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES M. BYRD

SIGNATURE: P.E. 7-31-12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RAIL DIVISION

PREPARED BY:

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	RIP RAP AT OUTFALL DETAIL		
LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR		DRAWING 2H
DWN BY VBB	VAL SEC V-24 /16-17		SHEET OF
CHK BY RJB	DATE 07/31/12	SCALE	

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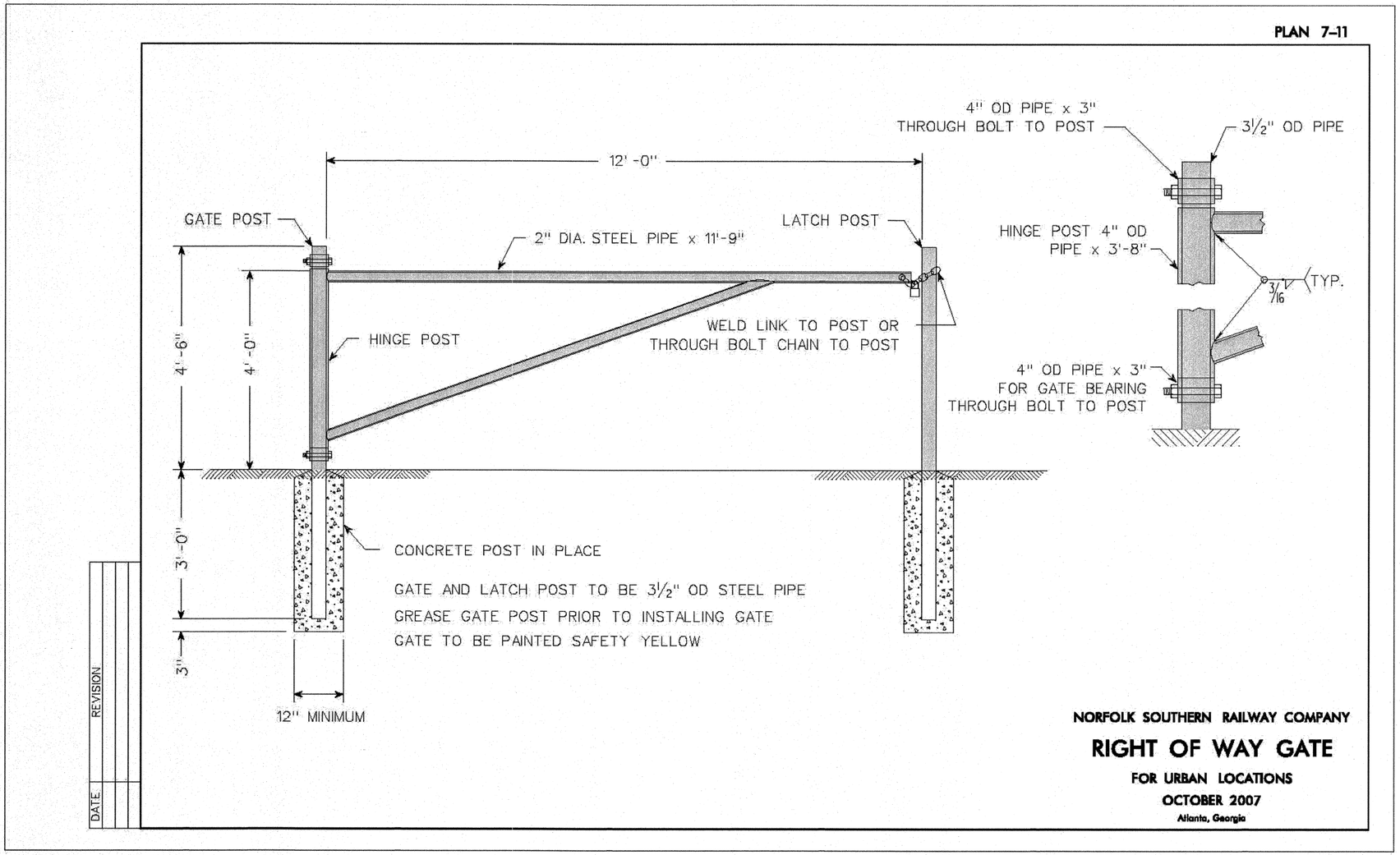
NS PLAN 7–11



NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT BURNETT
SIGNATURE: 7/31/12 P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U–4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	RIGHT OF WAY GATE DETAIL (NS PLAN 7–11)		
LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H–63.2 TO H–67.0
DGN BY CPV	RAILROAD NS /NCRR		DRAWING 21
DWN BY VBB	VAL SEC V–24 /16–17		
CHK BY RJB	DATE 07/31/12	SCALE	SHEET OF

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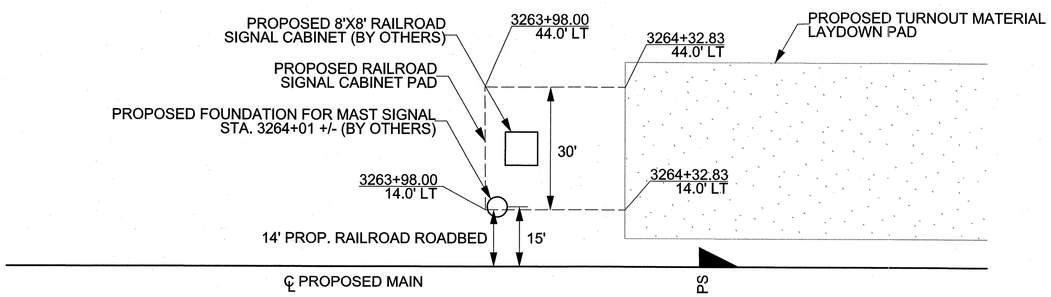
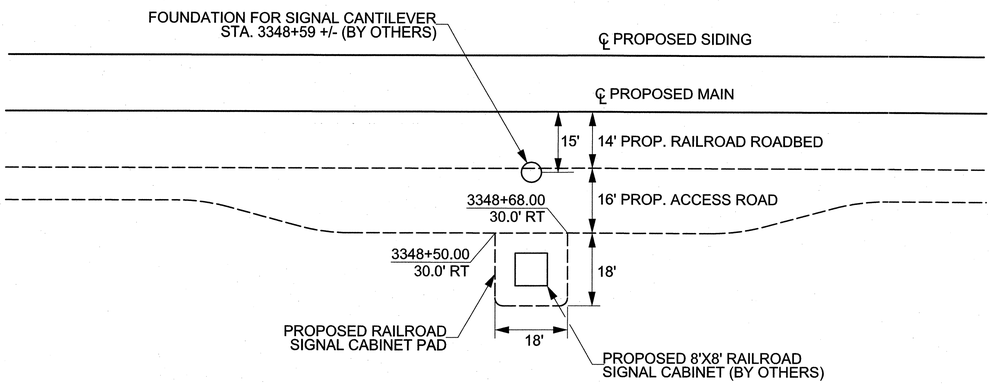
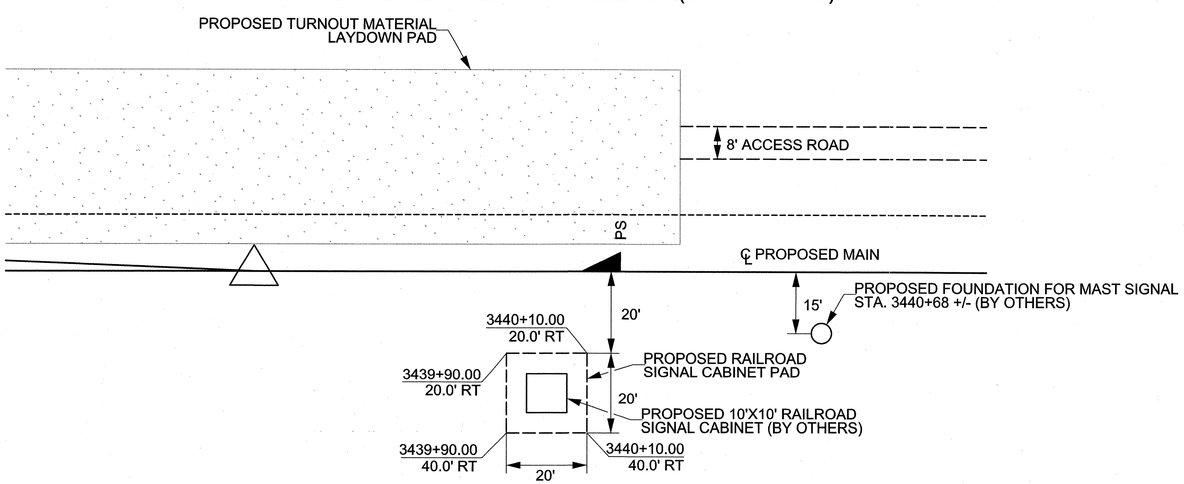
SIGNAL CABINET PAD AT CP "NELSON" (STA. 3264+00)

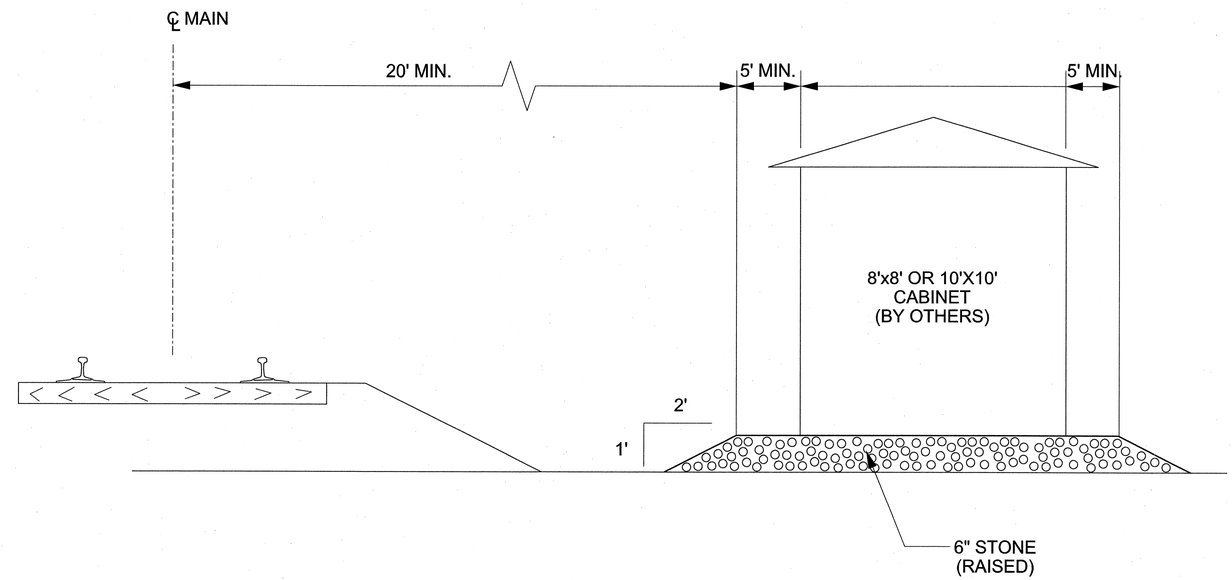


SIGNAL CABINET PAD AT INTERMEDIATE SIGNAL (STA. 3348+60)



SIGNAL CABINET PAD AT CP "CLEGG" (STA. 3440+00)





RAILROAD SIGNAL CABINET PAD SECTION

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT
SIGNATURE 7/31/12 P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	RAILROAD SIGNAL CABINET PAD DETAILS		
LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR		DRAWING 2J
DWN BY VBB	VAL SEC V-24 /16-17		SHEET OF
CHK BY RJB	DATE 07/31/12	SCALE	

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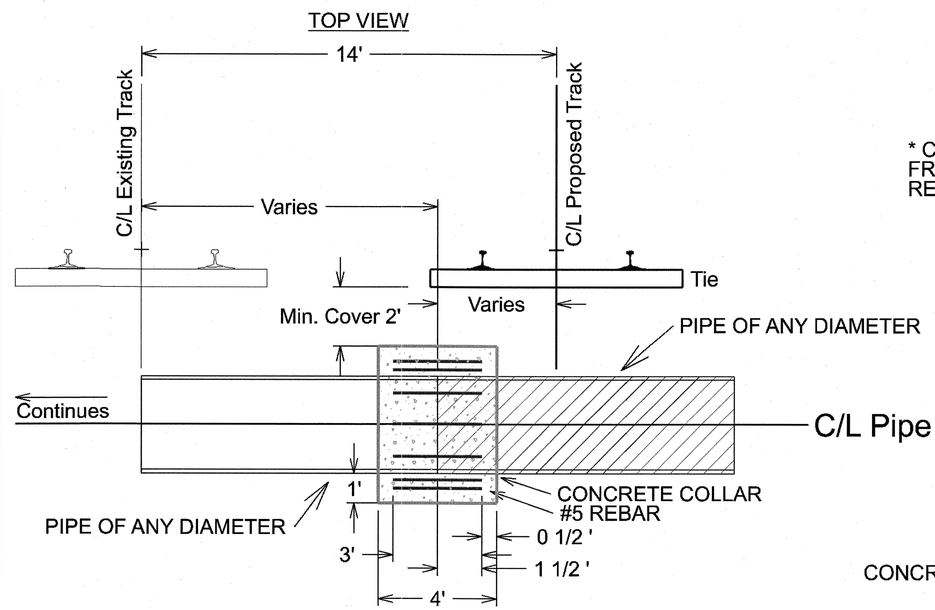
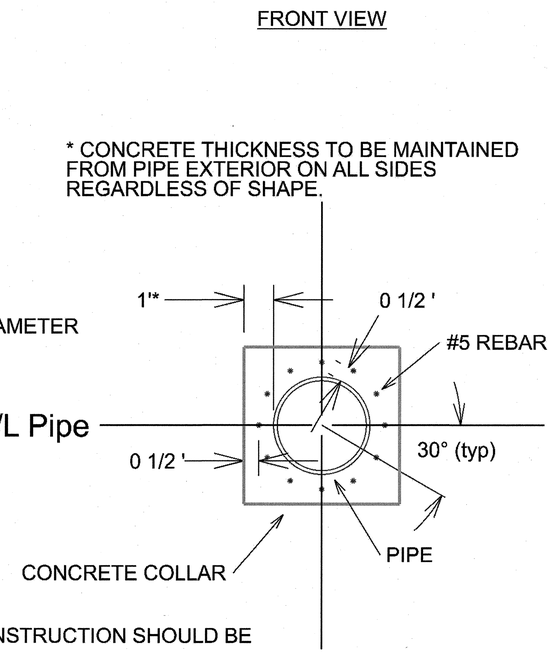
PIPE COLLAR DETAIL

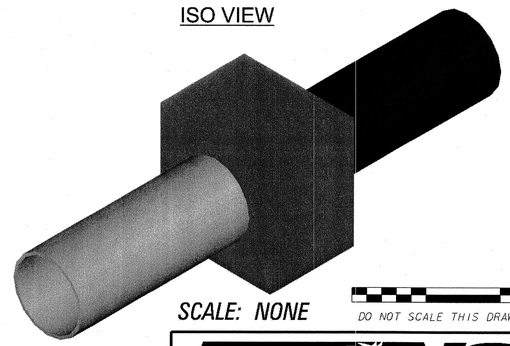




ALL MATERIALS AND CONSTRUCTION SHOULD BE IN ACCORDANCE WITH THE NS "STANDARD SPECIFICATIONS FOR MATERIALS AND CONSTRUCTION", LATEST EDITION, SECTION "DR - DRAINAGE".

INCREASE COLLAR WIDTH WHEN NECESSARY TO ACCOUNT FOR PIPE ELONGATION OR BELL-ENDED INLETS IN ORDER TO MAINTAIN 6 INCH SPACING FROM PIPE TO REBAR.

ISO VIEW



SCALE: NONE

DO NOT SCALE THIS DRAWING FOR DIMENSIONS NOT GIVEN

REV	BY	DATE	DESCRIPTION

NORFOLK SOUTHERN

NORFOLK SOUTHERN RAILWAY COMPANY
OWNING COMPANY

DESIGN & CONSTRUCTION
OPERATING DIVISION
OFFICE OF THE CHIEF ENGINEER - DESIGN AND CONSTRUCTION - ATLANTA, GA.

LOCATION: ATLANTA, GEORGIA

TITLE: CONCRETE COLLAR FOR JOINING PIPES OF DISSIMILAR MATERIALS WHEN JOINT WILL BE UNDER TIE

DGN	PID No.	VRN	MILE POST
DWN JRT	FILE No.		DRAWING NUMBER TA-2006-1
CHK	DATE FEBRUARY 14, 2006		

CADD FILE:

SHEET OF

NO.	BY	DATE	REVISION

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: PIPE COLLAR DETAIL

LOCATION	CP "NELSON" TO CP "CLEGG"			MILE POST	H-63.2 TO H-67.0
DGN BY	CPV	RAILROAD	NS /NCRR	DRAWING	2K
DWN BY	VBB	VAL SEC	V-24 /16-17		
CHK BY	RJB	DATE	08/10/12	SCALE	SHEET OF

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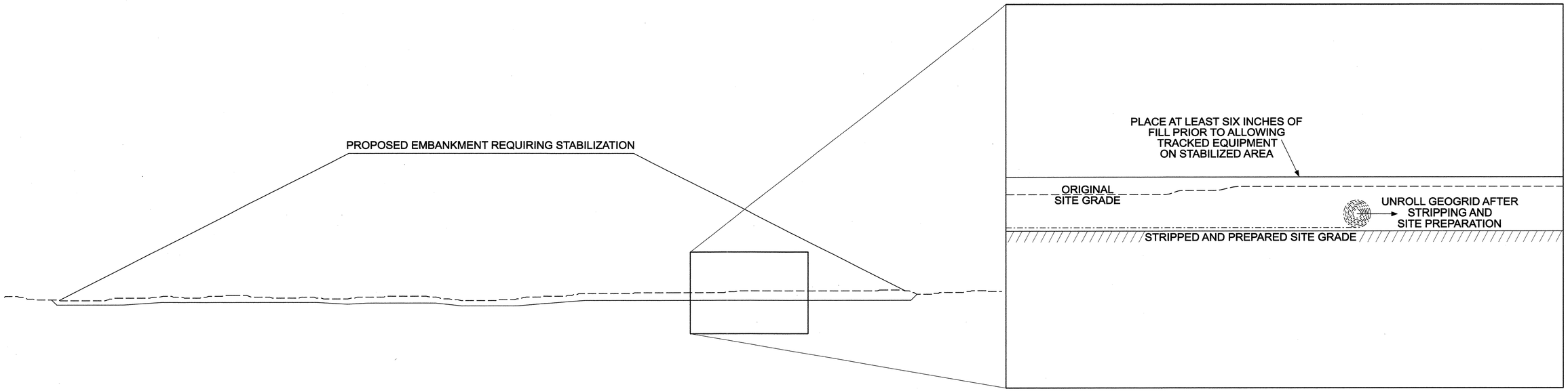

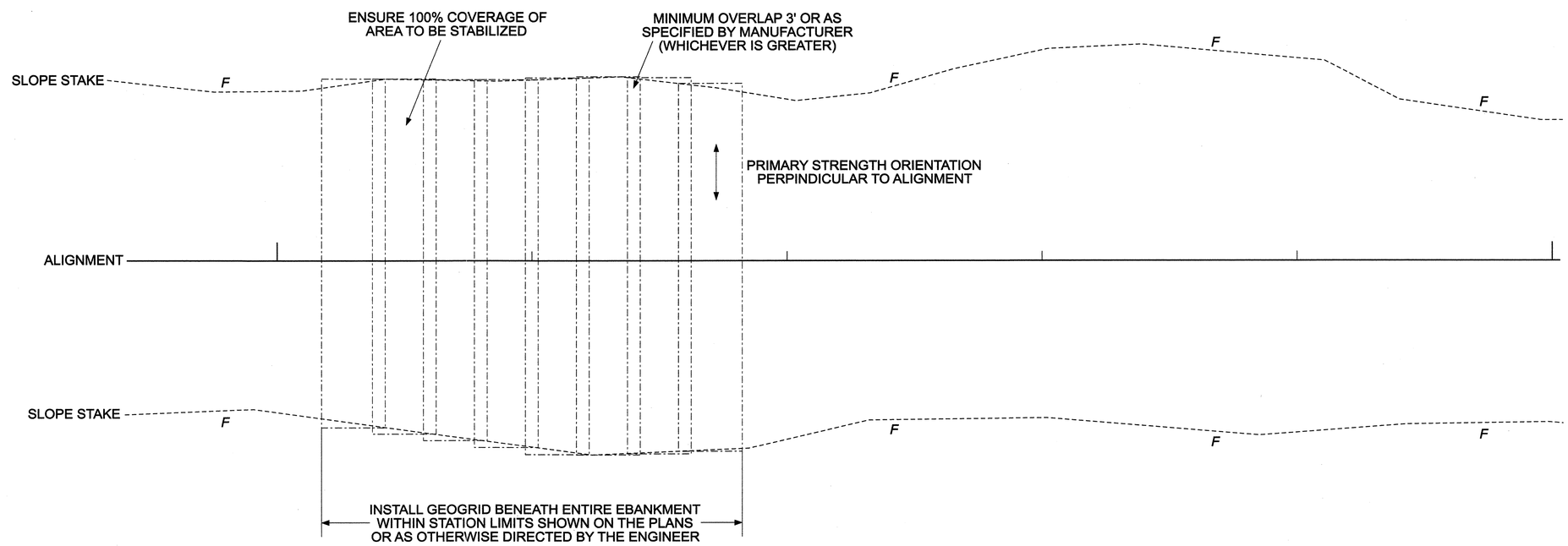

NOTES:

SEE PROJECT SPECIAL PROVISIONS FOR GEOGRID SPECIFICATIONS. FOLLOW ALL MANUFACTURER INSTRUCTIONS FOR OVERLAP, PINNING/SEWING, STORAGE, INSTALLATION, TRAFFICKING, AND ANY OTHER CONSIDERATION PROVIDED, UNLESS SPECIFIED OTHERWISE IN THE PROJECT SPECIAL PROVISION.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027331 8/9/12 CHRISTOPHER V. NORWILL

FALCON ENGINEERING

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607

PHONE: 919.871.0800
FAX: 919.871.0803

GOEGRID STABILIZATION DETAIL

PROPOSED RAIL ALIGNMENT
AT HOPSON ROAD GRADE CROSSING
DURHAM COUNTY, NORTH CAROLINA

JULY, 2012	PROJECT NO.: G10018.00	SHEET 2L

0371DEL_P17-18

DKCV

RAILDA17

COMPUTED BY:	RAC	DATE:	9/24/12
CHECKED BY:	PER	DATE:	9/24/12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-4716 A/C	3-A

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	B.C.C.M.P. 12	B.C.C.M.P. 15	B.C.C.M.P. 18	B.C.C.M.P. 24	B.C.C.M.P. 30	B.C.C.M.P. 36	B.C.C.M.P. 42	B.C.C.M.P. 48	B.C.C.M.P. 54	B.C.C.M.P. 60	B.C.C.M.P. 66	B.C.C.M.P. 72	B.C.C.M.P. 78	B.C.C.M.P. 84	WELDED STEEL PIPE UNDER RAILROAD 12	WELDED STEEL PIPE UNDER RAILROAD 15	WELDED STEEL PIPE UNDER RAILROAD 18	WELDED STEEL PIPE UNDER RAILROAD 24	WELDED STEEL PIPE UNDER RAILROAD 30	WELDED STEEL PIPE UNDER RAILROAD 36	WELDED STEEL PIPE UNDER RAILROAD 42	WELDED STEEL PIPE UNDER RAILROAD 48	R. C. PIPE CLASS III 12	R. C. PIPE CLASS III 15	R. C. PIPE CLASS III 18	R. C. PIPE CLASS III 24	R. C. PIPE CLASS III 30	R. C. PIPE CLASS III 36	R. C. PIPE CLASS III 42	R. C. PIPE CLASS III 48	R. C. PIPE CLASS III 54	R. C. PIPE CLASS III 60	R. C. PIPE CLASS III 66	R. C. PIPE CLASS III 72	R. C. PIPE CLASS III 78	R. C. PIPE CLASS III 84	ENDWALLS STD. 838.01, 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	PIPE CLEANOUT EA	FLOWABLE FILL CY	CONCRETE COLLARS NS STD TA-2005-1 EA	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
										.079			.109	.138																																													
3255+41	CL	501			370.61	365.00	8.5																					57															5.600						13.3				Remove Headwall (1)
3264+50	LT	502			381.44	379.18	2.5							38																													3.800					1		1.0000			
3311+59	CL	901			386.44	385.35	1.3						80																														2.800					1		1.0000			
3322+64	CL	1001			376.05	370.76	3.5						143																														5.600										
3330+47	CL	1002			373.00	371.38	1.3						118																														5.600										
3338+62	CL	1101			372.26	371.70	0.4								133																												9.800						9.8				Remove Headwalls (2)
3370+04	CL	1301			373.16	368.52	5.3																					73															5.600						10.4				Remove Headwalls (2)
3391+10	CL	1401			371.57	366.50	4.2																					112															5.600						10.1				Remove Headwalls (2)
3398+25	CL	1501			370.24	368.52	1.7			100																																													Temporary Pipe
3409+64	CL	1601			354.50	350.00	3.5																						118														7.600						8.0				Remove Headwalls (2)
SHEET TOTALS										100			341	38														242	118	133													52.000					2	52	2.0000			
PROJECT TOTALS										100			341	38														242	118	133													52.000					2	52	2.0000			

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINUM ALLOY
C.B.	CATCH BASIN
B.C.C.M.P	BITUMINOUS COATED CORRUGATED M
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT
W.S.P.	WELDED STEEL PIPE

NO.	BY	DATE	REVISION

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	SUMMARY OF QUANTITIES		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY	CPV	RAILROAD	NS /NCRR	DRAWING	3A
DWN BY	VBB	VAL SEC	V-24 /16-17	SHEET	OF
CHK BY	RJB	DATE	09/26/12	SCALE	

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DGN 0371DEL_P17-18

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COMPUTED BY: RAC DATE: 8/7/12

CHECKED BY: PER DATE: 8/9/12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-4716 A/C	3-B

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54 INCHES & LARGER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	B.C.C.M.P. 12	B.C.C.M.P. 15	B.C.C.M.P. 18	B.C.C.M.P. 24	B.C.C.M.P. 30	B.C.C.M.P. 36	B.C.C.M.P. 42	B.C.C.M.P. 48	B.C.C.M.P. 54	B.C.C.M.P. 60	B.C.C.M.P. 66	B.C.C.M.P. 72	B.C.C.M.P. 78	B.C.C.M.P. 84	WELDED STEEL PIPE UNDER RAILROAD 12	WELDED STEEL PIPE UNDER RAILROAD 15	WELDED STEEL PIPE UNDER RAILROAD 18	WELDED STEEL PIPE UNDER RAILROAD 24	WELDED STEEL PIPE UNDER RAILROAD 30	WELDED STEEL PIPE UNDER RAILROAD 36	WELDED STEEL PIPE UNDER RAILROAD 36	R. C. PIPE CLASS III 12	R. C. PIPE CLASS III 15	R. C. PIPE CLASS III 18	R. C. PIPE CLASS III 24	R. C. PIPE CLASS III 30	R. C. PIPE CLASS III 36	R. C. PIPE CLASS III 42	R. C. PIPE CLASS III 48	R. C. PIPE CLASS III 54	R. C. PIPE CLASS III 60	R. C. PIPE CLASS III 66	R. C. PIPE CLASS III 72	R. C. PIPE CLASS III 78	R. C. PIPE CLASS III 84	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	FLOWABLE FILL CY	CONCRETE COLLARS NS STD TA-2806-1 EA	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
3434+41	CL	1801			361.77	361.35	0.6																																61									10,000					6.0				Remove Headwalls (2)
SHEET TOTALS																																							61									10,000					6				
PROJECT TOTALS																																							61									10,000					6				

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINUM ALLOY
C.B.	CATCH BASIN
B.C.C.M.P	BITUMINOUS COATED CORRUGATED M
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT
W.S.P.	WELDED STEEL PIPE

NO.	BY	DATE	REVISION

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: SUMMARY OF QUANTITIES

LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR		DRAWING 3B
DWN BY VBB	VAL SEC V-24 /16-17		SHEET OF
CHK BY RJB	DATE 08/15/12	SCALE	

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REMOVAL OF PAVEMENT AND GUARDRAIL SUMMARIES

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

LOCATION	REMOVAL OF ASPHALT PAVEMENT	BREAKING OF ASPHALT PAVEMENT
-MAIN- STA. 3347+38 TO 3352+15 LT	1,448	
-MAIN- STA. 3351+64 TO 3353+45 RT	413	
-MAIN- STA. 3414+55 TO 3415+23 RT	239	
GRAND TOTAL	2,100	
SAY	2,100	

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS										IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	TES	EA	G	NG				
-MAIN-	3390+00	3392+00	RT	256.25			3387+31		6		50		1				1			1								X			6' FROM EOP ALONG CHURCH ST
-MAIN-	3414+53	3414+74	RT	25																				2							BARBEE ROAD CLOSURE
	LESS ANCHOR DEDUCTIONS																														
	CAT-1	1 @ 6.25'	=	6.25																											
	GRAU-350	1 @ 50.00'	=	50.00																											
TOTAL				225.00													1			1				2							
	(5 ADDITIONAL GUARDRAIL POST)																														

NO.	BY	DATE	REVISION

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	REMOVAL OF PAVEMENT AND GUARDRAIL SUMMARIES		
LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR		DRAWING 3C
DWN BY VBB	VAL SEC V-24 /16-17		SHEET OF
CHK BY RJB	DATE 07/31/12	SCALE	

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SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT +%	BORROW	WASTE
SUMMARY #1					
MAIN STA 3242+89.00 TO STA 3260+32.00	238		1,368	1,130	
#1 TOTAL	238		1,368	1,130	
SUMMARY #2					
MAIN STA 3263+04.00 TO STA 3291+18.00	7,169		3,091		4,078
#2 TOTAL	7,169		3,091		4,078
SUMMARY #3					
MAIN STA 3292+92 TO STA 3314+93.68	975		38,878	37,903	
#3 TOTAL	975		38,878	37,903	
SUMMARY #4					
MAIN STA 3316+58.68 TO STA 3346+00.00	5,341	1,333	151,348	146,007	1,333
#4 TOTAL	5,341	1,333	151,348	146,007	1,333
SUMMARY #5					
MAIN STA 3346+00.00 TO STA 3376+00.00	8,506		2,249		6,257
#5 TOTAL	8,506		2,249		6,257
SUMMARY #6					
MAIN STA 3376+00.00 TO STA 3406+00.00	6,817		12,080	5,263	
#6 TOTAL	6,817		12,080	5,263	
SUMMARY #7					
MAIN STA 3406+00.00 TO STA 3436+00.00	9,688		17,351	7,663	
#7 TOTAL	9,688		17,351	7,663	
SUMMARY #8					
MAIN STA 3436+00.00 TO STA 3442+21.00	1,415		2,171	756	
#8 TOTAL	1,415		2,171	756	
SUMMARIES 1-8 TOTAL	40,149	1,333	228,536	198,722	11,668
ADDITIONAL UNDERCUT		1,800	2,160	2,160	1,800
WASTE TO REPLACE BORROW				-10,335	-10,335
ESTIMATE 5% TO REPLACE TOPSOIL ON BORROW PIT				9,527	
GRAND TOTAL	40,149	3,133	230,696	200,075	3,133
SAY	40,200	3,140		200,100	

EST. DDE = 13870 CY

EST. 2450 CY OF SHALLOW UNDERCUT.

EST. 2000 CY OF SELECT GRANULAR MATERIAL.

NO.	BY	DATE	REVISION

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: SUMMARY OF EARTHWORK

LOCATION: CP "NELSON" TO CP "CLEGG"

MILE POST: H-63.2 TO H-67.0

DGN BY: CPV | RAILROAD: NS /NCRR | DRAWING: 3D

DWN BY: VBB | VAL SEC: V-24 /16-17

CHK BY: RJB | DATE: 08/10/12 | SCALE:

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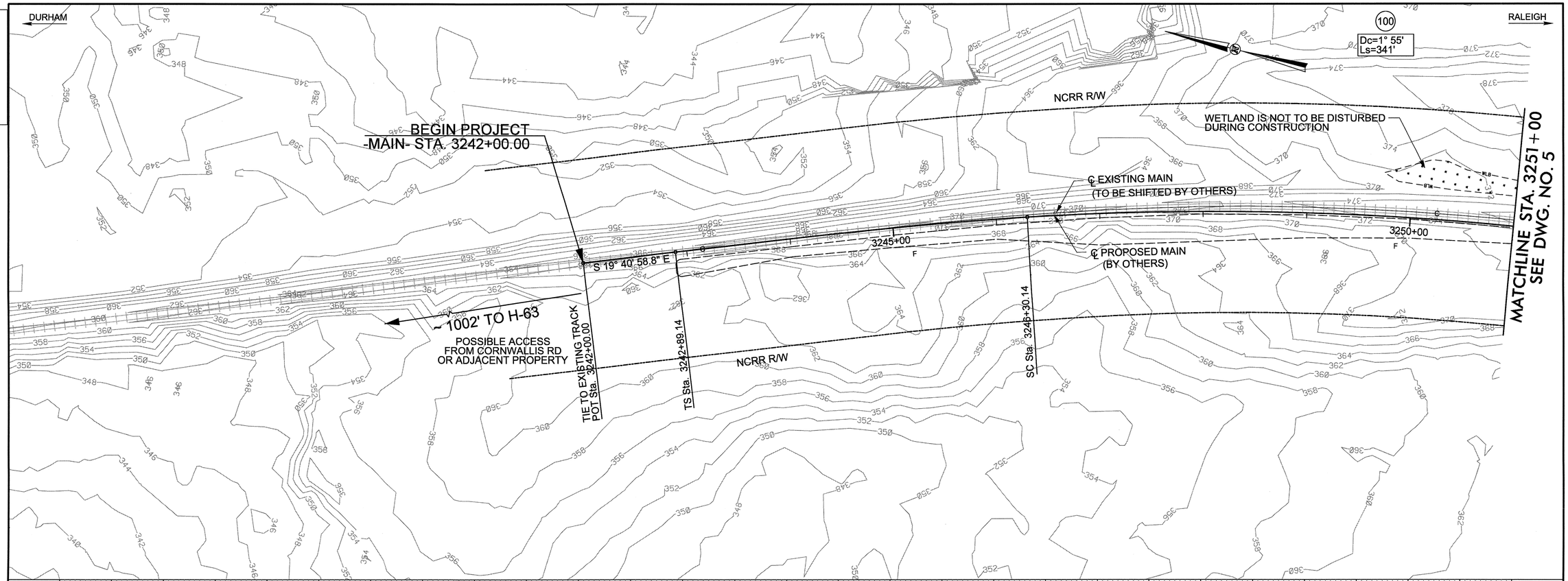

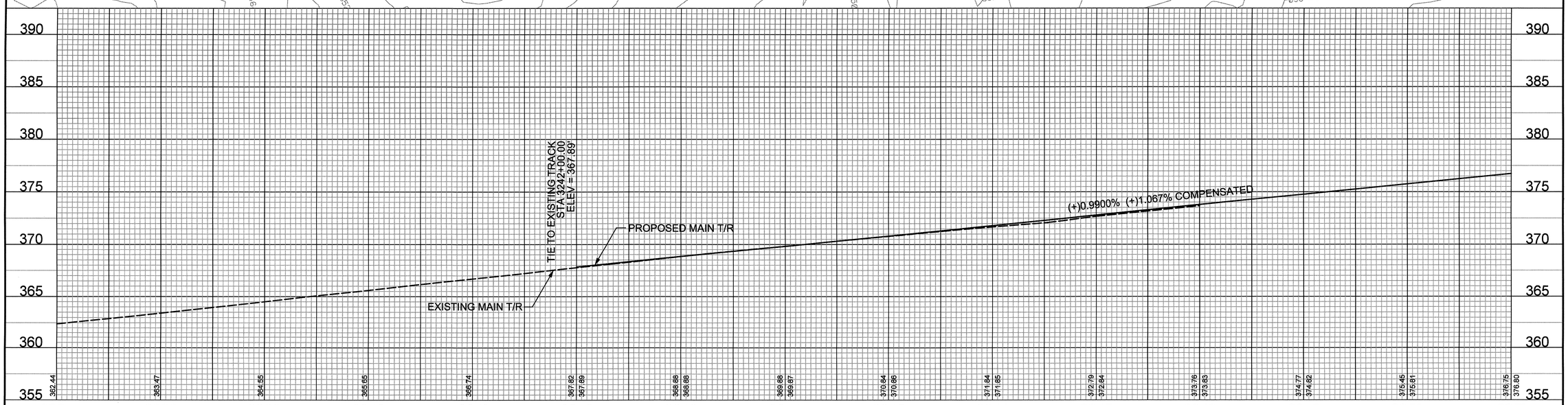

NO.	BY	DATE	REVISION

RAIL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT L. HURNEY III

SIGNATURE: 7/31/12 P.E.

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

SIGNATURE: 7/31/12 P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RAIL DIVISION

PREPARED BY:

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: GRADING AND DRAINAGE PLAN & PROFILE
MAIN STA 3242+00 TO 3251+00

LOCATION	CP "NELSON" TO CP "CLEGG"			MILE POST	H-63.2 TO H-67.0
DGN BY	CPV	RAILROAD	NS / NCRR	DRAWING	4
DWN BY	VBB	VAL SEC	V-24 / 16-17		
CHK BY	RJB	DATE	07/31/12	SCALE	SHEET OF

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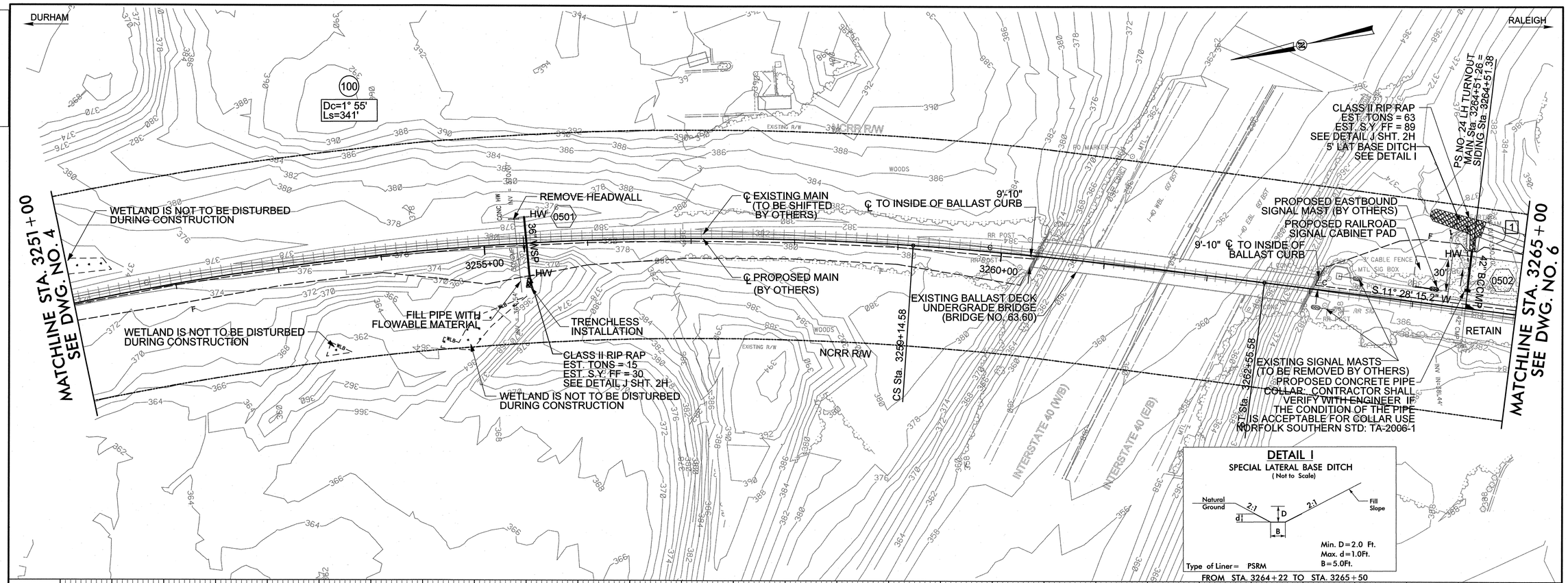

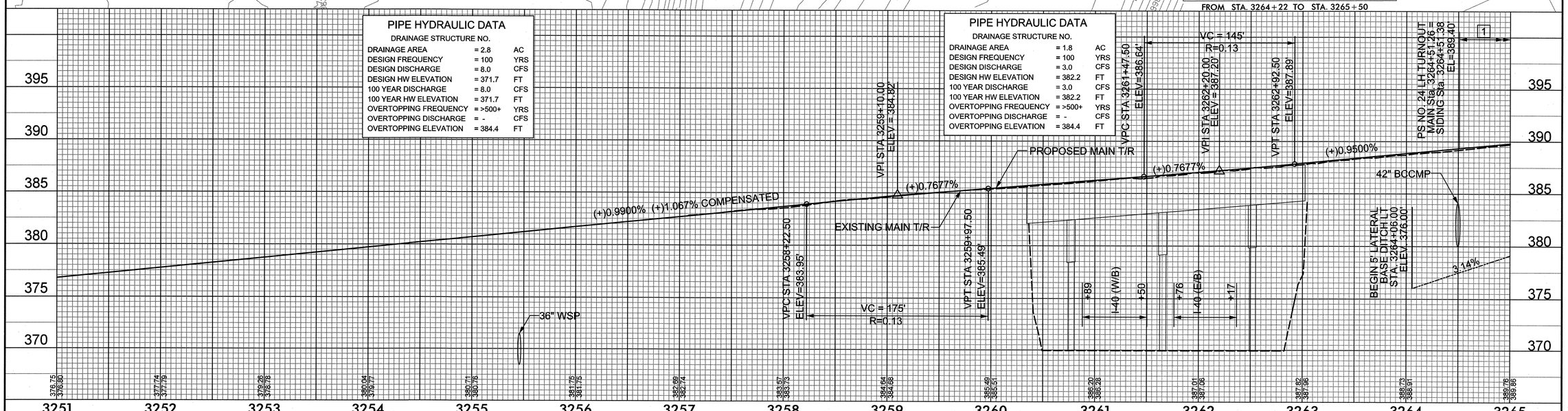

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT
SIGNATURE 8/10/12 P.E.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES R. BYRD
SIGNATURE 8/10/12 P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	GRADING AND DRAINAGE PLAN & PROFILE MAIN STA 3251+00 TO 3265+00		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR	DRAWING	5
DWN BY VBB	VAL SEC V-24 /16-17	SHEET	OF
CHK BY RJB	DATE 08/10/12 SCALE		

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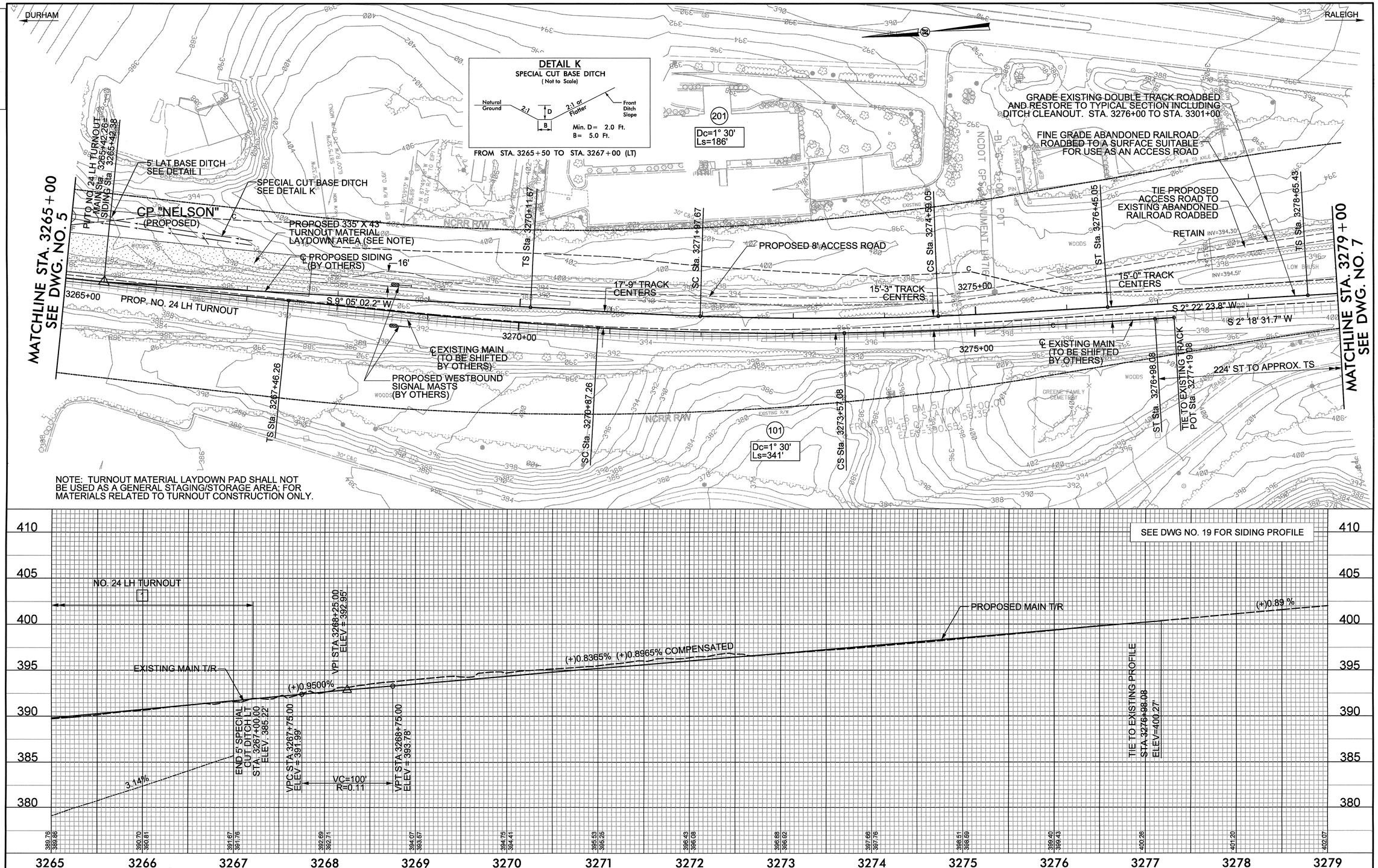

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT BURNETT
7/31/12
SIGNATURE: P.E.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES R. BYRD
7/31/12
SIGNATURE: P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	GRADING AND DRAINAGE PLAN & PROFILE MAIN STA 3265+00 TO 3279+00		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR	DRAWING	6
DWN BY VBB	VAL SEC V-24 / 16-17	SHEET	OF
CHK BY RJB	DATE 07/31/12 SCALE		

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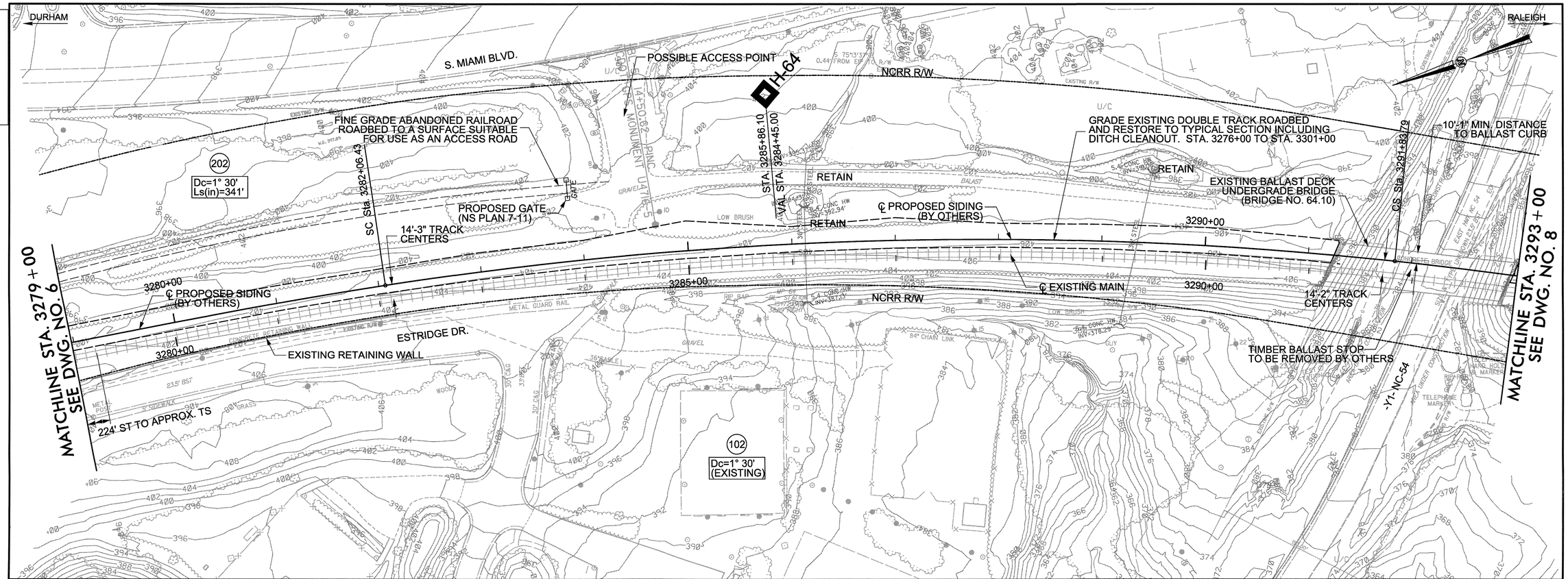

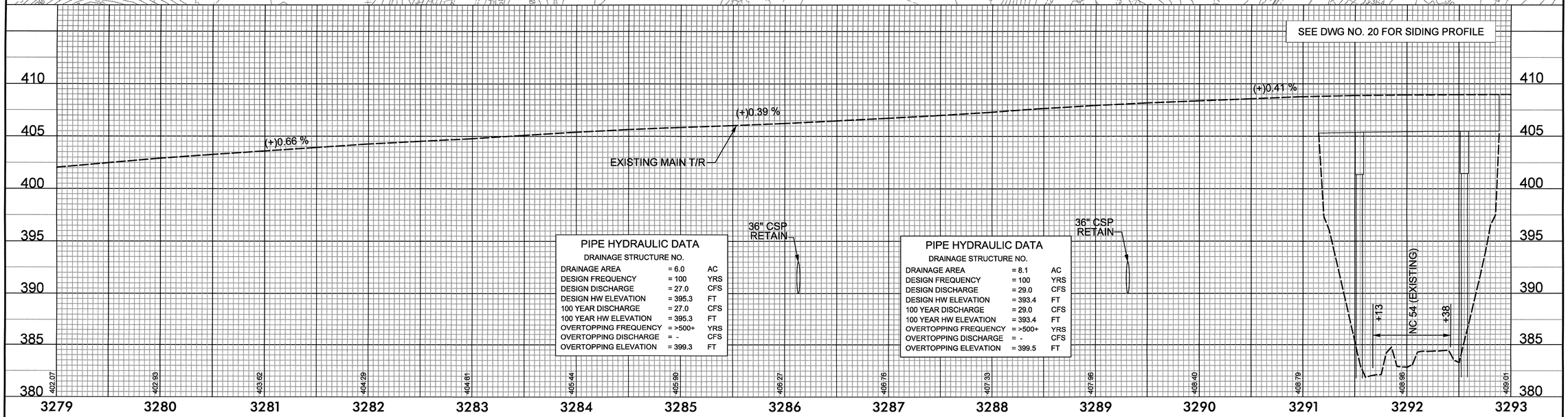

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 6.0	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 27.0	CFS
DESIGN HW ELEVATION	= 395.3	FT
100 YEAR DISCHARGE	= 27.0	CFS
100 YEAR HW ELEVATION	= 395.3	FT
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING ELEVATION	= 399.3	FT

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 8.1	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 29.0	CFS
DESIGN HW ELEVATION	= 393.4	FT
100 YEAR DISCHARGE	= 29.0	CFS
100 YEAR HW ELEVATION	= 393.4	FT
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING ELEVATION	= 399.5	FT

NO.	BY	DATE	REVISION

RAIL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT — SIGNATURE — P.E. — 7/31/12

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES R. BYRD — SIGNATURE — P.E. — 7/31/12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: GRADING AND DRAINAGE PLAN & PROFILE MAIN STA 3279+00 TO 3293+00

LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY	CPV	RAILROAD NS / NCRR	DRAWING 7
DWN BY	VBB	VAL SEC V-24 / 16-17	SHEET OF
CHK BY	RJB	DATE 07/31/12	SCALE

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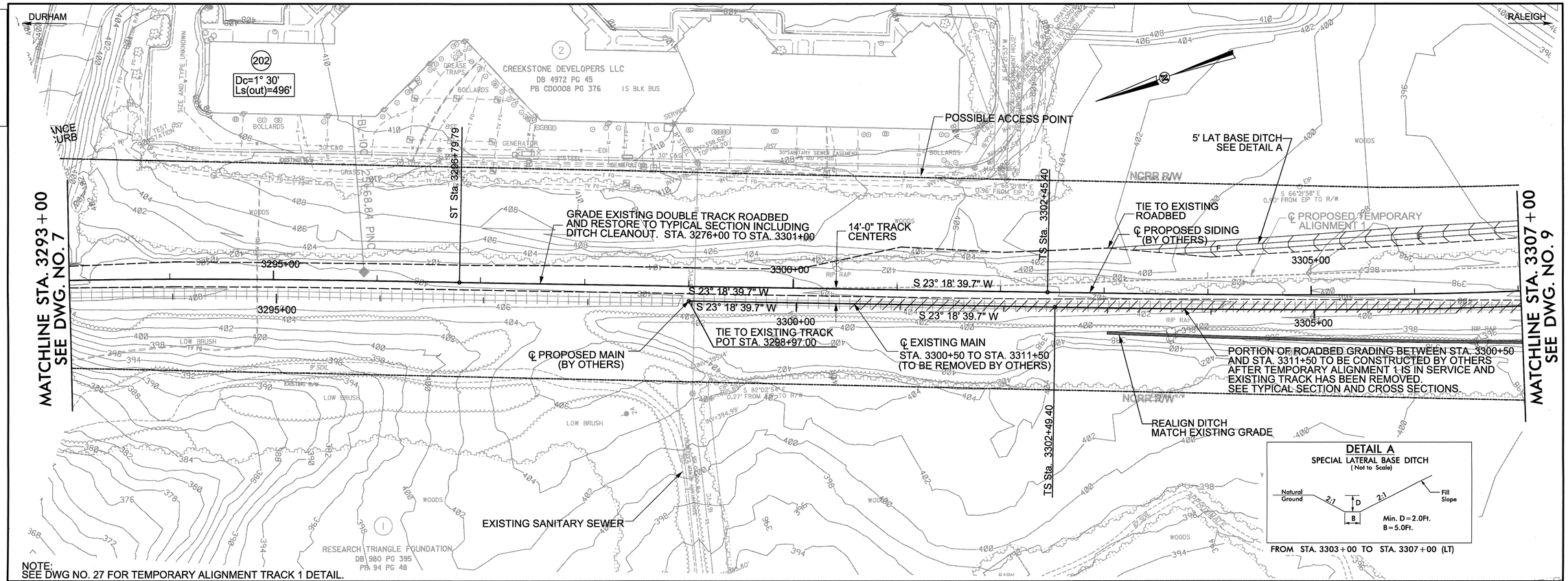

NOTE:
SEE DWG NO. 27 FOR TEMPORARY ALIGNMENT TRACK 1 DETAIL.

NO.	BY	DATE	REVISION

RAIL ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030220 — ROBERT NUNNELLY — 7/31/12 — SIGNATURE — P.E.

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15764 — JAMES R. BYRD — 7/31/12 — SIGNATURE — P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	GRADING AND DRAINAGE PLAN & PROFILE MAIN STA 3293+00 TO 3307+00		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR	DRAWING	8
DWN BY VBB	VAL SEC V-24 / 16-17	SHEET	OF
CHK BY RJB	DATE 07/31/12 SCALE		

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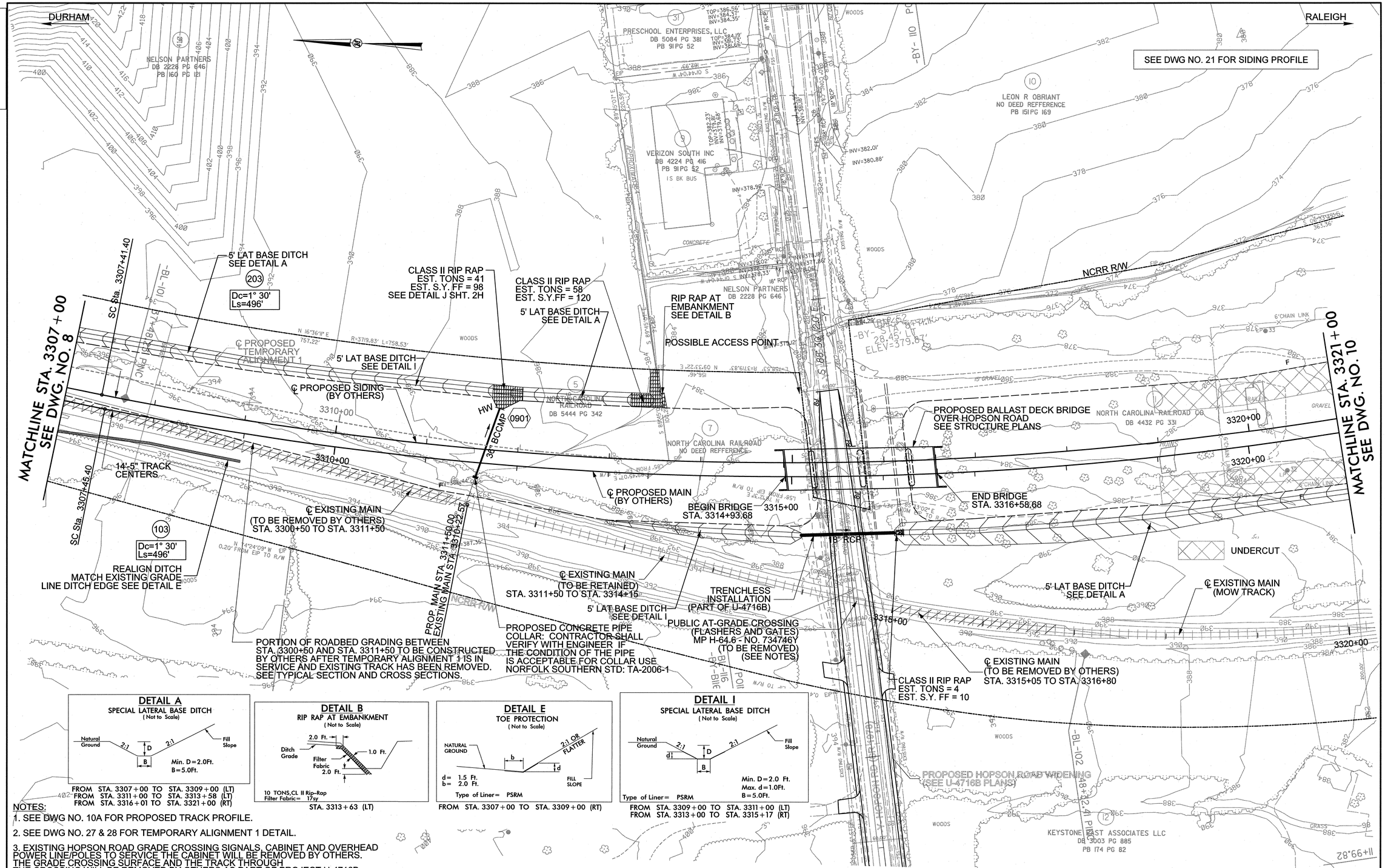
DGN



DETAIL A
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 3307+00 TO STA. 3309+00 (LT)
FROM STA. 3311+00 TO STA. 3313+58 (LT)
FROM STA. 3316+01 TO STA. 3321+00 (RT)

DETAIL B
RIP RAP AT EMBANKMENT
(Not to Scale)

STA. 3313+63 (LT)

DETAIL E
TOE PROTECTION
(Not to Scale)

FROM STA. 3307+00 TO STA. 3309+00 (RT)

DETAIL I
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 3309+00 TO STA. 3311+00 (LT)
FROM STA. 3313+00 TO STA. 3315+17 (RT)

NOTES:

1. SEE DWG NO. 10A FOR PROPOSED TRACK PROFILE.
2. SEE DWG NO. 27 & 28 FOR TEMPORARY ALIGNMENT 1 DETAIL.
3. EXISTING HOPSON ROAD GRADE CROSSING SIGNALS, CABINET AND OVERHEAD POWER LINE/POLES TO SERVICE THE CABINET WILL BE REMOVED BY OTHERS. THE GRADE CROSSING SURFACE AND THE TRACK THROUGH THE CROSSING WILL BE REMOVED BY OTHERS AS PART OF PROJECT U-4716B.

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT BURNETT
SIGNATURE 8/14/12 P.E.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES S. BYRD
SIGNATURE 8/16/12 P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	GRADING AND DRAINAGE PLAN MAIN STA 3307+00 TO 3321+00		
LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR		DRAWING 9
DWN BY VBB	VAL SEC V-24/16-17		SHEET OF
CHK BY RJB	DATE 08/10/12	SCALE	

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DGN

DURHAM

RALEIGH

SEE DWG NO. 21 FOR SIDING PROFILE

DUKE ENERGY CORPORATION
DB 2337 PG 833
PB 100 PG 12

NORTH CAROLINA RAILROAD CO
DB 4432 PG 336
PB 186 PG 560

SHIRLEY HALL BRIGGS
DB 349 PG 240
PB 22 PG 26

NORTH CAROLINA RAILROAD CO
DB 4697 PG 131

ARE-NC REGION NO 7 LLC
DB 6645 PG 181
PB 174 PG 82

NCRR R/W

POSSIBLE ACCESS IN THIS AREA

EXISTING OVERHEAD HIGH VOLTAGE TRANSMISSION LINES

CLASS II RIP RAP
EST. TONS = 15
EST. S.Y. FF = 30
SEE DETAIL J SHT. 2H

MATCHLINE STA. 3321+00
SEE DWG. NO. 9

MATCHLINE STA. 3335+00
SEE DWG. NO. 11

203
Dc=1° 30'
Ls=496'

℄ PROPOSED SIDING (BY OTHERS)

5' LAT BASE DITCH SEE DETAIL I

36" BCCMP

HW

3325+00

3330+00

15'-8 1/4" MAX. TRACK CENTERS

℄ PROPOSED MAIN (BY OTHERS)

1001

CLASS II RIP RAP
EST. TONS = 22
EST. S.Y.FF = 40

CLASS II RIP RAP
EST. TONS = 24
EST. S.Y.FF = 41

5' LAT BASE DITCH SEE DETAIL I

5' LAT BASE DITCH SEE DETAIL A

103
Dc=1° 30'
Ls=496'

RETAIN

1002

CLASS II RIP RAP
EST. TONS = 63
EST. S.Y.FF = 104

S 30° 13' 50.3" E

30'

℄ EXISTING MAIN (MOW TRACK)

STD. 'V' DITCH SEE DETAIL C

CSSta. 3309+32.01

ST Sta. 3332+73.01

TIE TO EXISTING TRACK PC Sta. 3334+16.02

301
Dc=7° 00'
Ls=0'

5' LAT BASE DITCH SEE DETAIL A

EXISTING OVERHEAD HIGH VOLTAGE TRANSMISSION LINES

WOODS

DETAIL I
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, d, D, B, 2:1, Fill Slope

Min. D = 2.0 Ft.
Max. d = 1.0Ft.
B = 5.0Ft.

Type of Liner = PSRM

FROM STA. 3321+00 TO STA. 3322+32 (RT)
FROM STA. 3322+42 TO STA. 3324+00 (RT)
FROM STA. 3325+00 TO STA. 3326+00 (RT)
FROM STA. 3330+31 TO STA. 3333+00 (RT)

DETAIL A
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, B, 2:1, Fill Slope

Min. D = 2.0Ft.
B = 5.0Ft.

FROM STA. 3324+00 TO STA. 3325+00 (RT)
FROM STA. 3333+00 TO STA. 3334+00 (RT)

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

Natural Ground, 2:1, D, 2:1, Natural Ground

Min. D = VARIES

STA. 3330+55 (RT)

NOTE:
SEE DWG NO. 10A FOR PROPOSED TRACK PROFILE.

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT
7/31/12
SIGNATURE P.E.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES W. BYRD
7-31-12
SIGNATURE P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	GRADING AND DRAINAGE PLAN MAIN STA 3321+00 TO 3335+00		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR	DRAWING	10
DWN BY VBB	VAL SEC V-24/16-17		
CHK BY RJB	DATE 07/31/12	SCALE	SHEET OF

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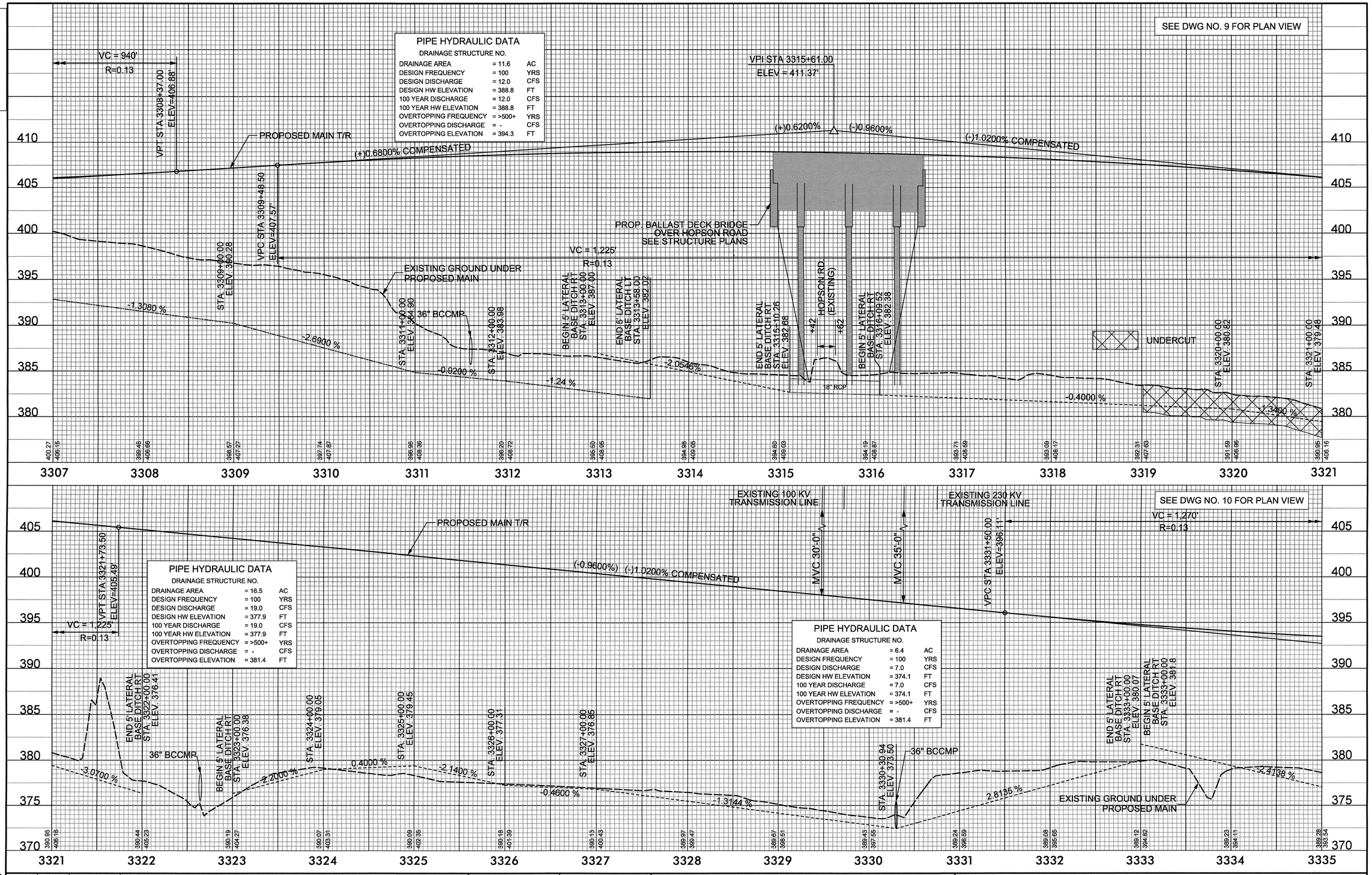
DGN



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 11.6	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 12.0	CFS
DESIGN HW ELEVATION	= 388.8	FT
100 YEAR DISCHARGE	= 12.0	CFS
100 YEAR HW ELEVATION	= 388.8	FT
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING ELEVATION	= 394.3	FT

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 16.5	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 19.0	CFS
DESIGN HW ELEVATION	= 377.9	FT
100 YEAR DISCHARGE	= 19.0	CFS
100 YEAR HW ELEVATION	= 377.9	FT
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING ELEVATION	= 381.4	FT

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 6.4	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 7.0	CFS
DESIGN HW ELEVATION	= 374.1	FT
100 YEAR DISCHARGE	= 7.0	CFS
100 YEAR HW ELEVATION	= 374.1	FT
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING ELEVATION	= 381.4	FT

NO.	BY	DATE	REVISION

RAIL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT — SIGNATURE — P.E. — 7/31/12

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD — SIGNATURE — P.E. — 7/31/12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	GRADING AND DRAINAGE PROFILE MAIN STA. 3307+00 TO 3335+00		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR	DRAWING	10A
DWN BY VBB	VAL SEC V-24 /16-17		
CHK BY RJB	DATE 07/31/12	SCALE	SHEET OF

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DURHAM

RALEIGH

DETAIL I
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, d, 3:1, Fill Slope, B

Min. D=2.0 Ft.
Max. d=1.0Ft.
B=5.0Ft.

Type of Liner= PSRM

FROM STA. 3336+00 TO STA. 3338+00 (RT)
FROM STA. 3339+00 TO STA. 3340+00 (RT)

DETAIL M
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, d, 3:1, Fill Slope, Geotextile, B

Min. D=2.0 Ft.
Max. d=1.0 Ft.
B=5.0 Ft.

Type of Liner= CL1 Rip-Rap

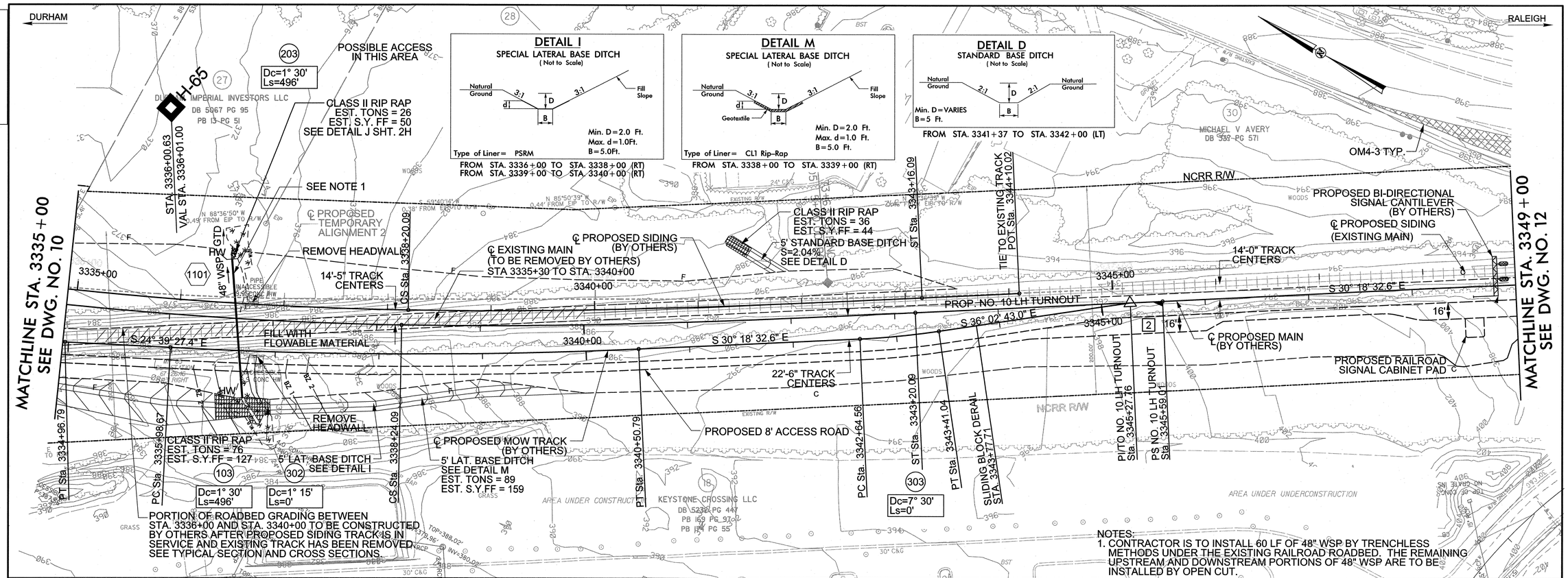
FROM STA. 3338+00 TO STA. 3339+00 (RT)

DETAIL D
STANDARD BASE DITCH
(Not to Scale)

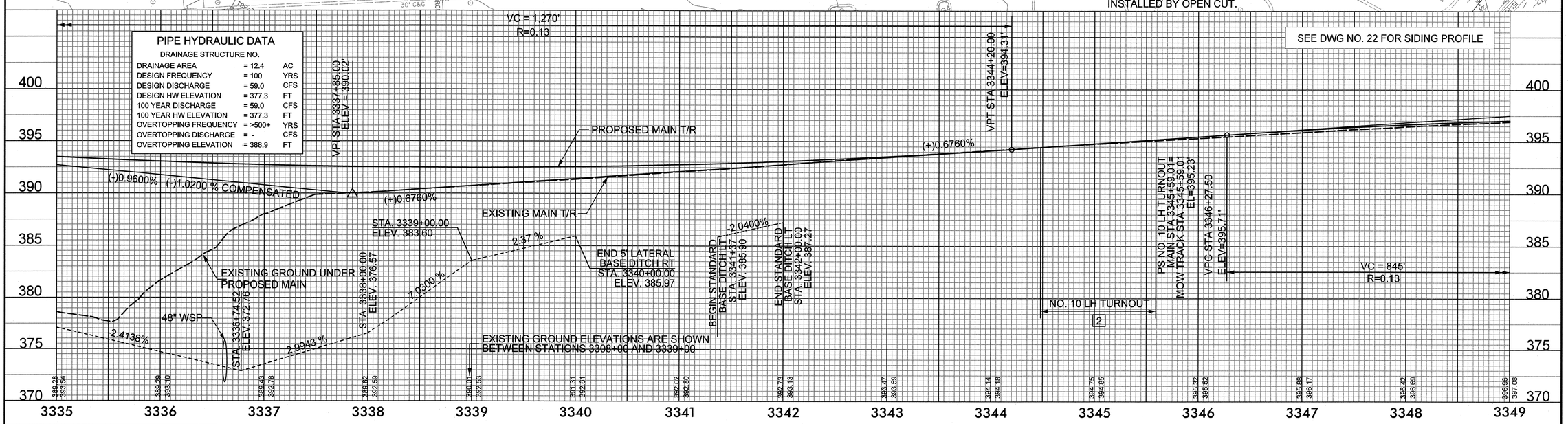
Natural Ground, 2:1, D, 2:1, Natural Ground, B

Min. D=VARIES
B=5 Ft.

FROM STA. 3341+37 TO STA. 3342+00 (LT)



NOTES:
1. CONTRACTOR IS TO INSTALL 60 LF OF 48" WSP BY TRENCHLESS METHODS UNDER THE EXISTING RAILROAD ROADBED. THE REMAINING UPSTREAM AND DOWNSTREAM PORTIONS OF 48" WSP ARE TO BE INSTALLED BY OPEN CUT.



NO.	BY	DATE	REVISION

RAIL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 037992 ENGINEER COREY VERNER — 10/8/12 — SIGNATURE — P.E.

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES M. BYRD — 10/8/12 — SIGNATURE — P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION
TITLE: GRADING AND DRAINAGE PLAN & PROFILE MAIN STA 3335+00 TO 3349+00
LOCATION: CP "NELSON" TO CP "CLEGG"
MILE POST: H-63.2 TO H-67.0
DGN BY: CPV
RAILROAD: NS / NCRR
DRAWING: 11
DWN BY: VBB
VAL SEC: V-24 / 16-17
CHK BY: RJB
DATE: 10/08/12
SCALE:
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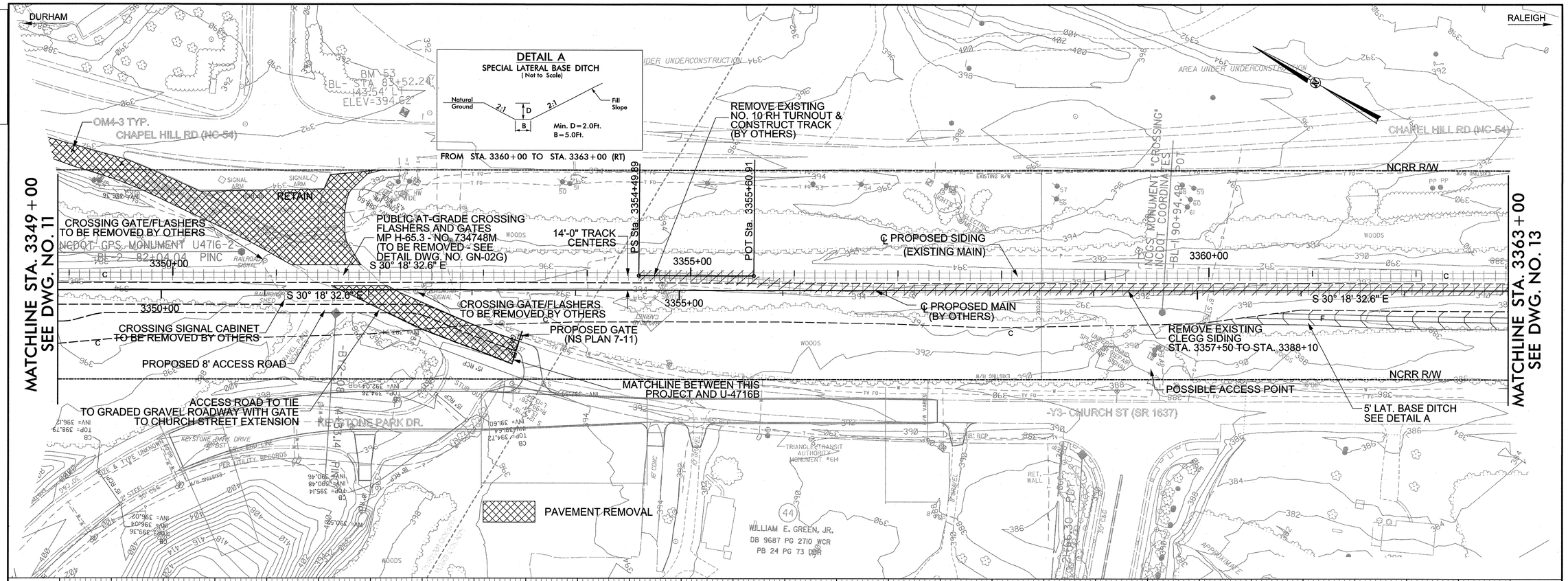
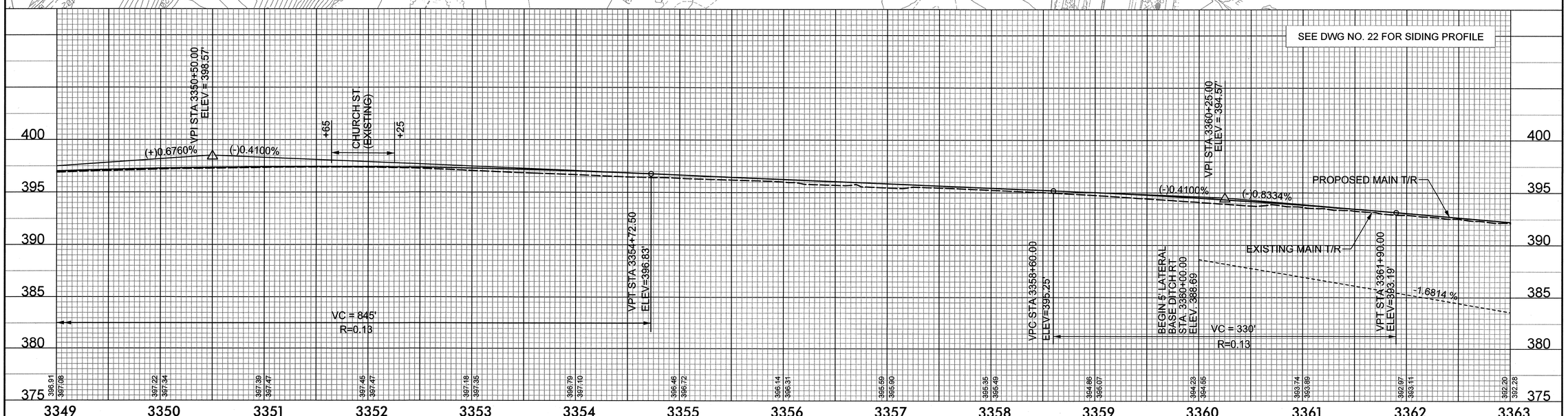
DGN





NO.	BY	DATE	REVISION

RAIL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 037992 ENGINEER COREY P. VERMILYE — 10/3/12 — SIGNATURE, P.E.

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES R. BYRD — 10/3/12 — SIGNATURE, P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION
TITLE	GRADING AND DRAINAGE PLAN & PROFILE MAIN STA 3349+00 TO 3363+00
LOCATION	CP "NELSON" TO CP "CLEGG"
MILE POST	H-63.2 TO H-67.0
DGN BY	CPV
RAILROAD	NS / NCRR
DRAWING	12
DWN BY	VBB
VAL SEC	V-24 / 16-17
CHK BY	RJB
DATE	10/03/12
SCALE	
SHEET	OF

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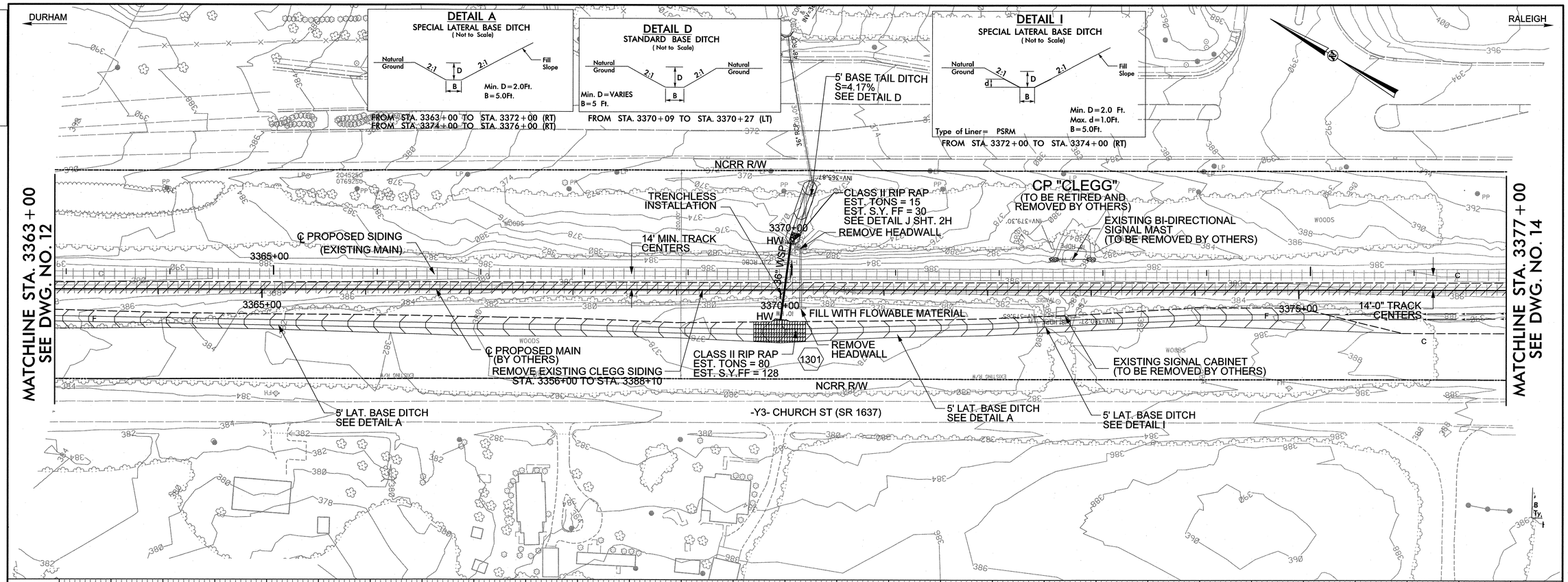

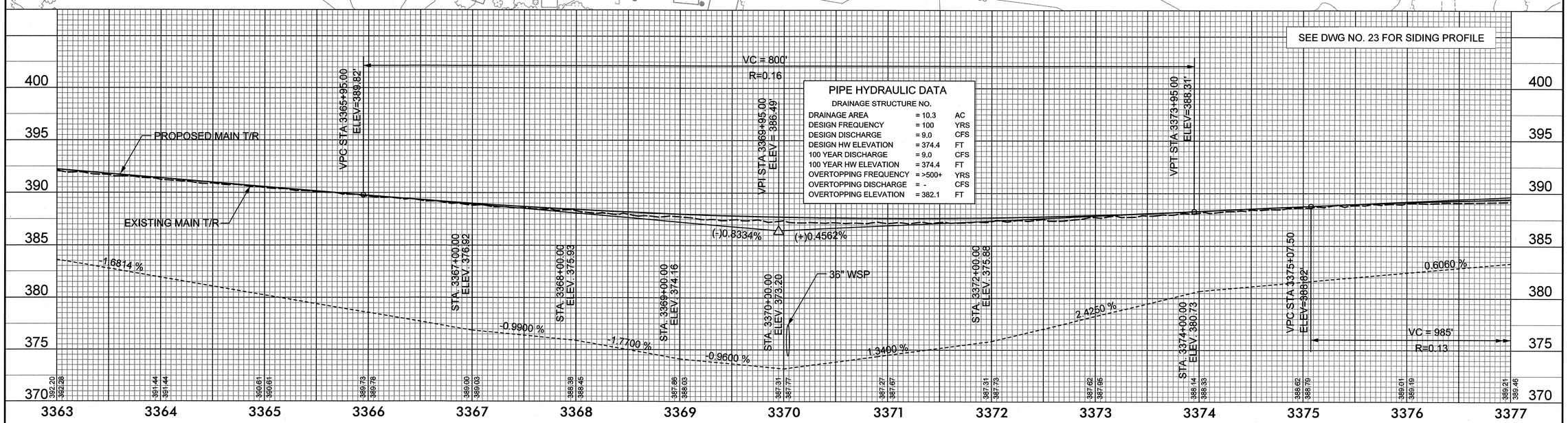

NO.	BY	DATE	REVISION

RAIL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT BURNETT

SIGNATURE P.E. 8/14/12

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES R. BYRD

SIGNATURE P.E. 8/10/12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RAIL DIVISION

PREPARED BY:

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	GRADING AND DRAINAGE PLAN & PROFILE MAIN STA 3363+00 TO 3377+00		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR	DRAWING	13
DWN BY VBB	VAL SEC V-24 / 16-17	SHEET	OF
CHK BY RJB	DATE 08/10/12	SCALE	

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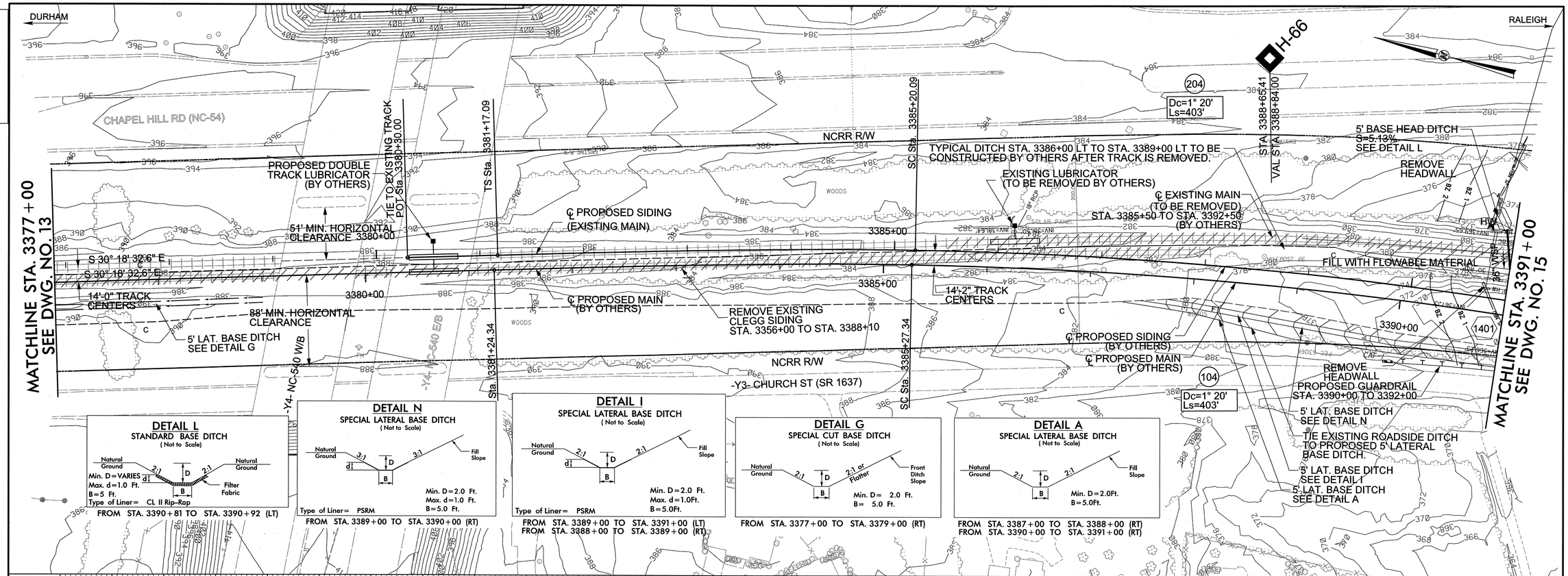

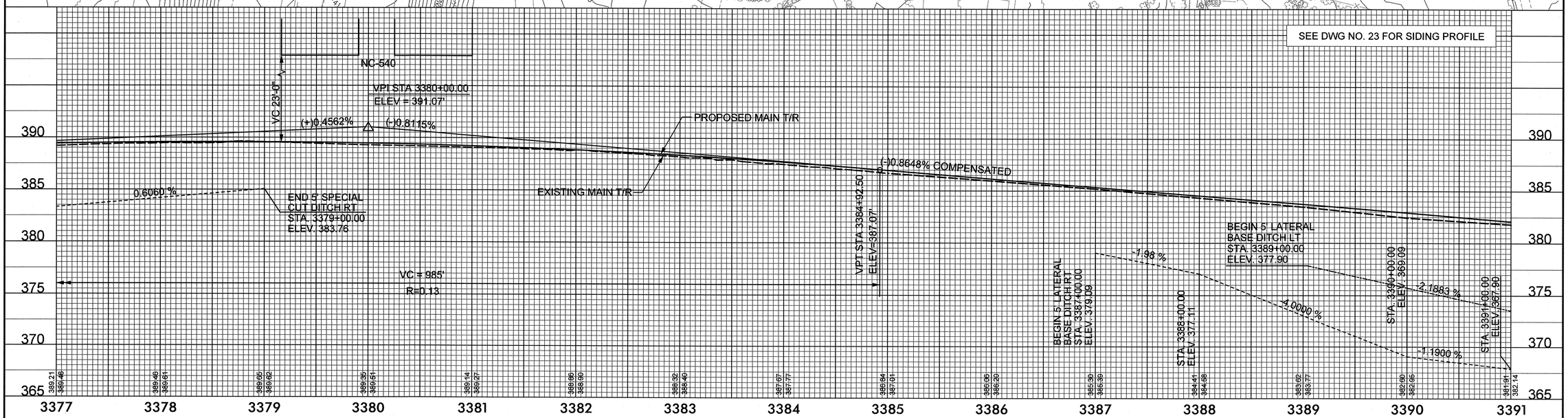

NO.	BY	DATE	REVISION
1	RC	11/09/2012	REVISED DETAIL N

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037992 ENGINEER CLIFFORD P. VERNER
11/9/12
SIGNATURE P.E.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
11/9/12
SIGNATURE P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	GRADING AND DRAINAGE PLAN & PROFILE MAIN STA 3377+00 TO 3391+00		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR	DRAWING	14
DWN BY VBB	VAL SEC V-24 / 16-17	SHEET	OF
CHK BY RJB	DATE 11/09/12	SCALE	

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DURHAM

RALEIGH

MATCHLINE STA. 3391+00
SEE DWG. NO. 14

MATCHLINE STA. 3405+00
SEE DWG. NO. 16

204

Dc=1° 20'
Ls=403'

℄ EXISTING MAIN
(TO BE REMOVED BY OTHERS)
STA. 3385+50 TO STA. 3392+50

SEE NOTE 1

5' LAT. BASE DITCH
SEE DETAIL I

CS Sta. 3394+35.98

℄ EXISTING MAIN
(TO BE RETAINED)
STA. 3392+50 TO STA. 3397+00

SPECIAL CUT BASE DITCH
SEE DETAIL K

ST Sta. 3398+38.98

TS Sta. 3401+08.57

CHAPEL HILL RD (NC-54)

NCRR R/W

POSSIBLE ACCESS POINT

205

Dc=1° 20'
Ls=403'

℄ PROPOSED SIDING
(BY OTHERS)

14'-6" TRACK
CENTERS

3395+00

14'-6" TRACK
CENTERS

TYPICAL DITCH STA. 3399+00 LT TO STA. 3402+00 LT
TO BE CONSTRUCTED BY OTHERS AFTER
EXISTING TRACK IS REMOVED.

S 12° 43' 26.2" E

3400+00

TEMP 18" BCCMP

TO BE FILLED WITH
FLOWABLE MATERIAL
BY OTHERS

S 12° 43' 26.2" E

3400+00

3395+00

℄ PROPOSED MAIN
(BY OTHERS)

31'-1" MIN.

CS Sta. 3394+43.26

ST Sta. 3398+46.26

TS Sta. 3401+16.26

-Y3- CHURCH ST (SR 1637)

CLASS B RIP RAP
EST. TONS = 3
EST. S.Y. FF = 10
TO BE REMOVED BY OTHERS

℄ EXISTING MAIN
(TO BE REMOVED BY OTHERS)
STA. 3397+00 TO STA. 3415+00

NCRR R/W

36" WSP

HW

CLASS II RIP RAP
EST. TONS = 10
EST. S.Y. FF = 23
SEE DETAIL J SHT. 2H

104

Dc=1° 20'
Ls=403'

PROPOSED
GUARDRAIL
STA. 3390+00
TO 3392+00

105

Dc=1° 20'
Ls=403'

DETAIL A
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground — 2:1 — D — B — 2:1 — Fill Slope

Min. D = 2.0Ft.
B = 5.0Ft.

FROM STA. 3391+00 TO STA. 3391+14 (RT)
FROM STA. 3391+00 TO STA. 3395+00 (LT)

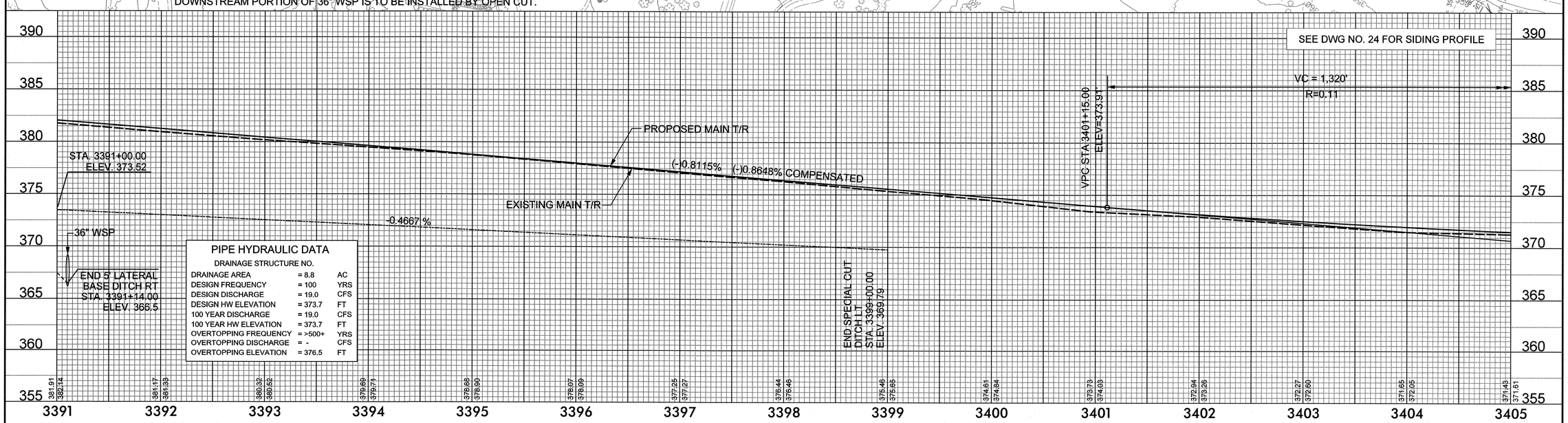
DETAIL K
SPECIAL CUT BASE DITCH
(Not to Scale)

Natural Ground — 2:1 — D — B — 2:1 or Flatter — Front Ditch Slope

Min. D = 2.0 Ft.
B = 5.0 Ft.

FROM STA. 3395+00 TO STA. 3399+00 (LT)

NOTES:
1. CONTRACTOR IS TO INSTALL 60 LF OF 36" WSP BY TRENCHLESS METHODS UNDER THE EXISTING RAILROAD ROADBED. THE REMAINING DOWNSTREAM PORTION OF 36" WSP IS TO BE INSTALLED BY OPEN CUT.



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 8.8	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 19.0	CFS
DESIGN HW ELEVATION	= 373.7	FT
100 YEAR DISCHARGE	= 19.0	CFS
100 YEAR HW ELEVATION	= 373.7	FT
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING ELEVATION	= 376.5	FT

NO.	BY	DATE	REVISION

RAIL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 037992 ENGINEER — COREY P. VERNON — 10/5/12 — SIGNATURE — P.E.

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER — JAMES A. BYRD — 10/3/12 — SIGNATURE — P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION
TITLE: GRADING AND DRAINAGE PLAN & PROFILE
MAIN STA 3391+00 TO 3405+00

LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR		DRAWING 15
DWN BY VBB	VAL SEC V-24 / 16-17		
CHK BY RJB	DATE 10/03/12	SCALE	SHEET OF

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DGN

DURHAM

RALEIGH

MATCHLINE STA. 3405 + 00
DWG. NO. 15

SC Sta. 3405+11.57

SC Sta. 3405+19.28

14'-6" TRACK CENTERS

CLASS II RIP RAP
EST. TONS = 20
EST. S.Y. FF = 39
SEE DETAIL J SHT. 2H

5' BASE TAIL DITCH
S=0.67%
SEE DETAIL D

TOE PROTECTION
SEE DETAIL E
EST 39 SY PSRM

TOE PROTECTION
SEE DETAIL E
EST 155 SY PSRM

CHAPEL HILL RD (NC-54)

℄ PROPOSED SIDING
(BY OTHERS)

℄ PROPOSED MAIN
(BY OTHERS)

REMOVE HEADWALL

HW

42" WSP

3410+00

℄ EXISTING MAIN
(TO BE REMOVED BY OTHERS)
STA. 3398+50 TO STA. 3415+00
FILL WITH FLOWABLE MATERIAL

1601 HW

REMOVE HEADWALL

TRENCHLESS INSTALLATION

NCRR R/W

105

Dc=1° 20'
Ls=403'

205

Dc=1° 20'
Ls=403'

CS Sta. 3415+74.46

CS Sta. 3415+82.17

14'-2" TRACK CENTERS

3415+00

PAVEMENT REMOVAL

RELOCATE EXISTING OM4-3 SIGNS

PROPOSED GUARDRAIL

-Y5- BARBEE RD. (SR 2348)

PAVEMENT REMOVAL

MATCHLINE STA. 3419 + 00
DWG. NO. 17

DETAIL E
TOE PROTECTION
(Not to Scale)

NATURAL GROUND

b

d

2:1 OR FLATTER

FILL SLOPE

d= 1.5 Ft.
b= 2.0 Ft.

Type of Liner= PSRM

FROM STA. 3410+00 TO STA. 3411+00 (LT)
FROM STA. 3412+00 TO STA. 3416+00 (LT)

DETAIL D
STANDARD BASE DITCH
(Not to Scale)

Natural Ground | 2:1 | D | 2:1 | Natural Ground

B

Min. D=VARIES
B=5 Ft.

STA. 3409+45

VC = 1320'
R=0.11

VC = 100'
R=0.12

VPT STA 3414+35.00
ELEV=372.91'

VPC STA 3416+50.00
ELEV=374.33'

VPT STA 3417+50.00
ELEV=374.93'

PROPOSED MAIN T/R

EXISTING MAIN T/R

(-)0.8115%

(+)0.6600%

(+)0.7133% COMPENSATED

42" WSP

VPI STA 3407+75.00
ELEV = 368.55'

(+)0.6600%

(+)0.5400%

VPI STA 3417+00.00
ELEV = 374.66'

SEE DWG NO. 24 FOR SIDING PROFILE

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 26.5	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 69.0	CFS
DESIGN HW ELEVATION	= 361.5	FT
100 YEAR DISCHARGE	= 69.0	CFS
100 YEAR HW ELEVATION	= 361.5	FT
OVERTOPPING FREQUENCY	= 500+/-	YRS
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING ELEVATION	= 362.9	FT

3405 3406 3407 3408 3409 3410 3411 3412 3413 3414 3415 3416 3417 3418 3419

NO.	BY	DATE	REVISION

RAIL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT — SIGNATURE — DATE 8/10/12 — P.E.

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES S. BYRD — SIGNATURE — DATE 8/10/12 — P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License Nº: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: GRADING AND DRAINAGE PLAN & PROFILE
MAIN STA 3405+00 TO 3419+00

LOCATION: CP "NELSON" TO CP "CLEGG"

MILE POST: H-63.2 TO H-67.0

DGN BY: CPV | RAILROAD: NS / NCRR

DRAWING: 16

DWN BY: VBB | VAL SEC: V-24 / 16-17

CHK BY: RJB | DATE: 08/10/12 | SCALE:

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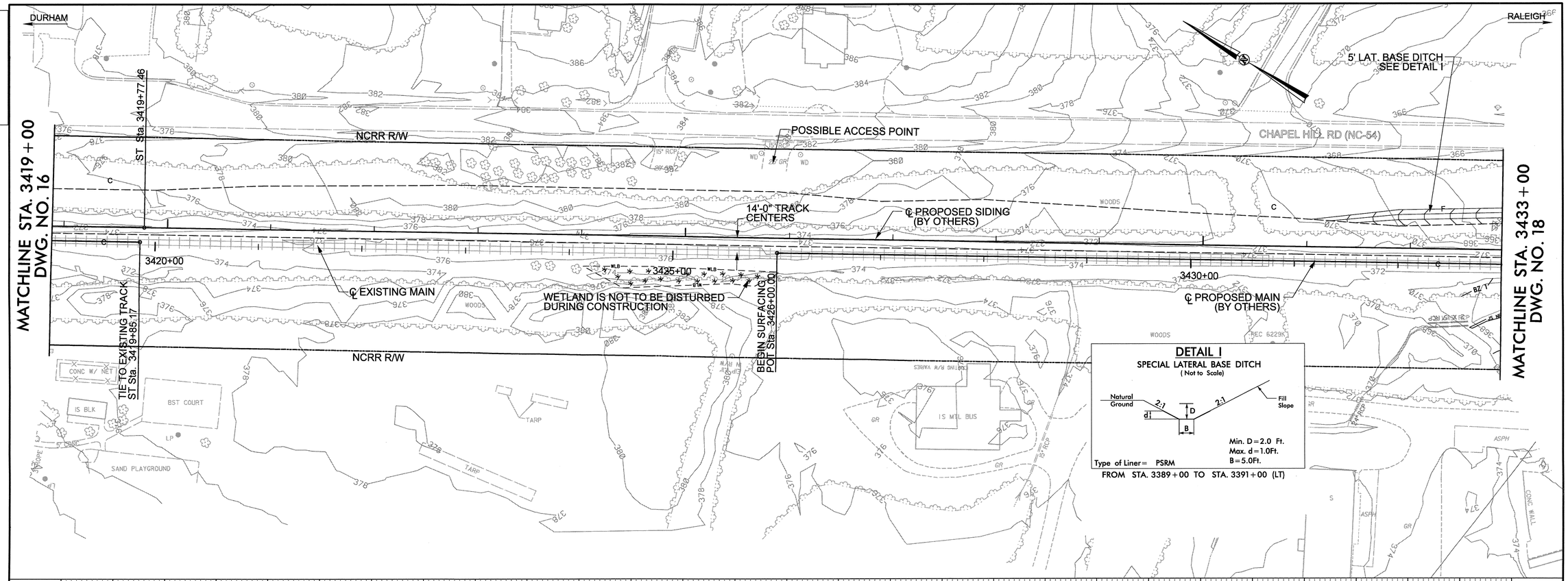


DETAIL I

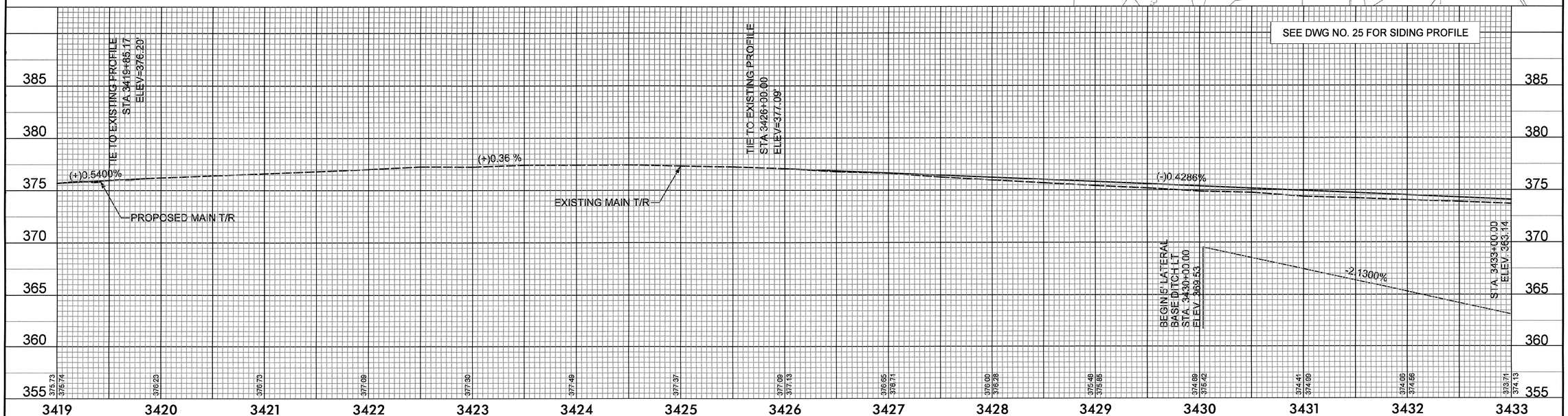
SPECIAL LATERAL BASE DITCH

(Not to Scale)

Min. D = 2.0 Ft.
Max. d = 1.0Ft.
B = 5.0Ft.

Type of Liner = PSRM

FROM STA. 3389+00 TO STA. 3391+00 (LT)



NO.	BY	DATE	REVISION

RAIL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT — SIGNATURE — 7/31/12 — P.E.

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD — SIGNATURE — 7-31-12 — P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	GRADING AND DRAINAGE PLAN & PROFILE MAIN STA 3419+00 TO 3433+00		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR	DRAWING	17
DWN BY VBB	VAL SEC V-24 / 16-17	SHEET	OF
CHK BY RJB	DATE 07/31/12 SCALE		

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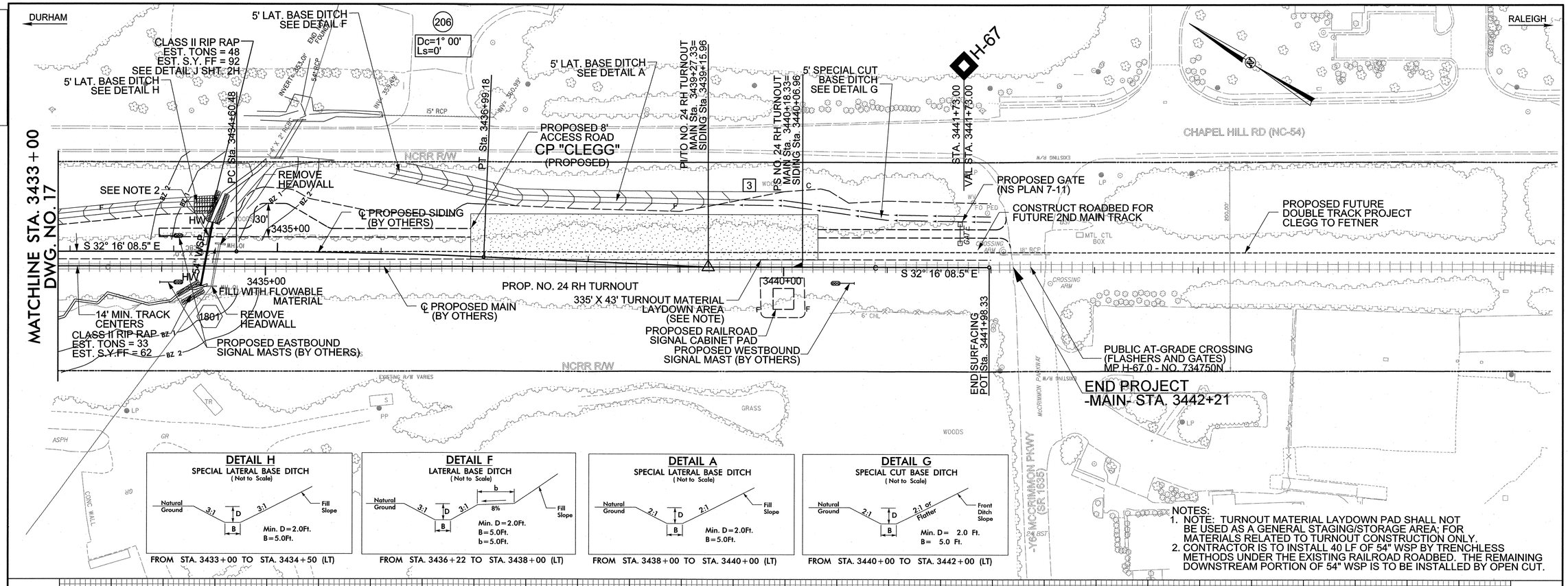
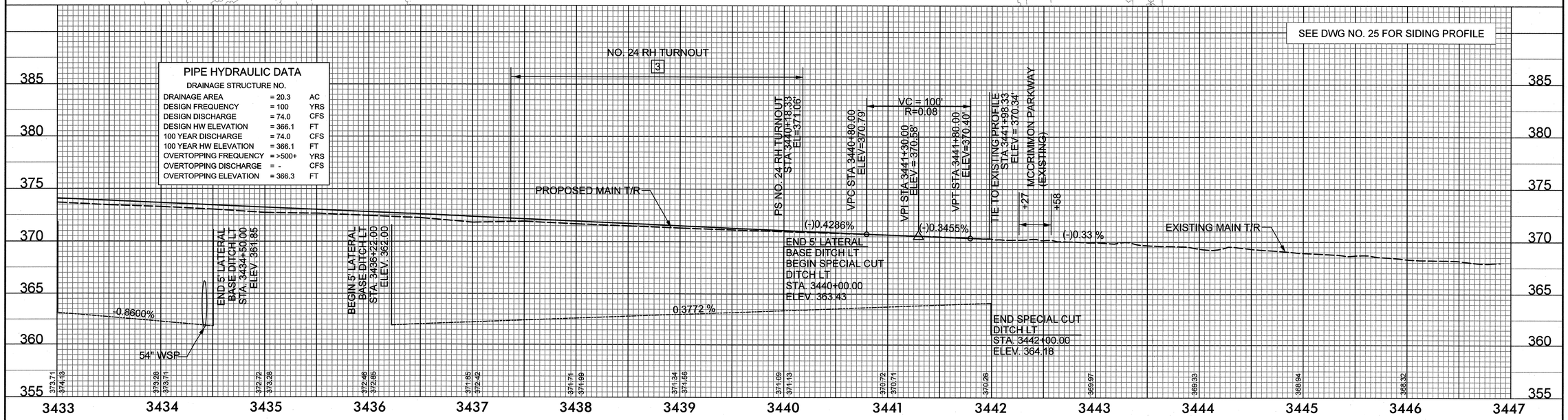


NOTES:
1. NOTE: TURNOUT MATERIAL LAYDOWN PAD SHALL NOT BE USED AS A GENERAL STAGING/STORAGE AREA; FOR MATERIALS RELATED TO TURNOUT CONSTRUCTION ONLY.
2. CONTRACTOR IS TO INSTALL 40 LF OF 54" WSP BY TRENCHLESS METHODS UNDER THE EXISTING RAILROAD ROADBED. THE REMAINING DOWNSTREAM PORTION OF 54" WSP IS TO BE INSTALLED BY OPEN CUT.



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 20.3	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 74.0	CFS
DESIGN HW ELEVATION	= 366.1	FT
100 YEAR DISCHARGE	= 74.0	CFS
100 YEAR HW ELEVATION	= 366.1	FT
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING ELEVATION	= 366.3	FT

NO.	BY	DATE	REVISION

RAIL ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 037992 ENGINEER COREY VENNER — SIGNATURE — 10/3/12 — P.E.

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD — SIGNATURE — 10/3/12 — P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	GRADING AND DRAINAGE PLAN & PROFILE MAIN STA 3433+00 TO 3441+98.33		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR	DRAWING	18
DWN BY VBB	VAL SEC V-24 / 16-17	SHEET	OF
CHK BY RJB	DATE 10/03/12 SCALE		

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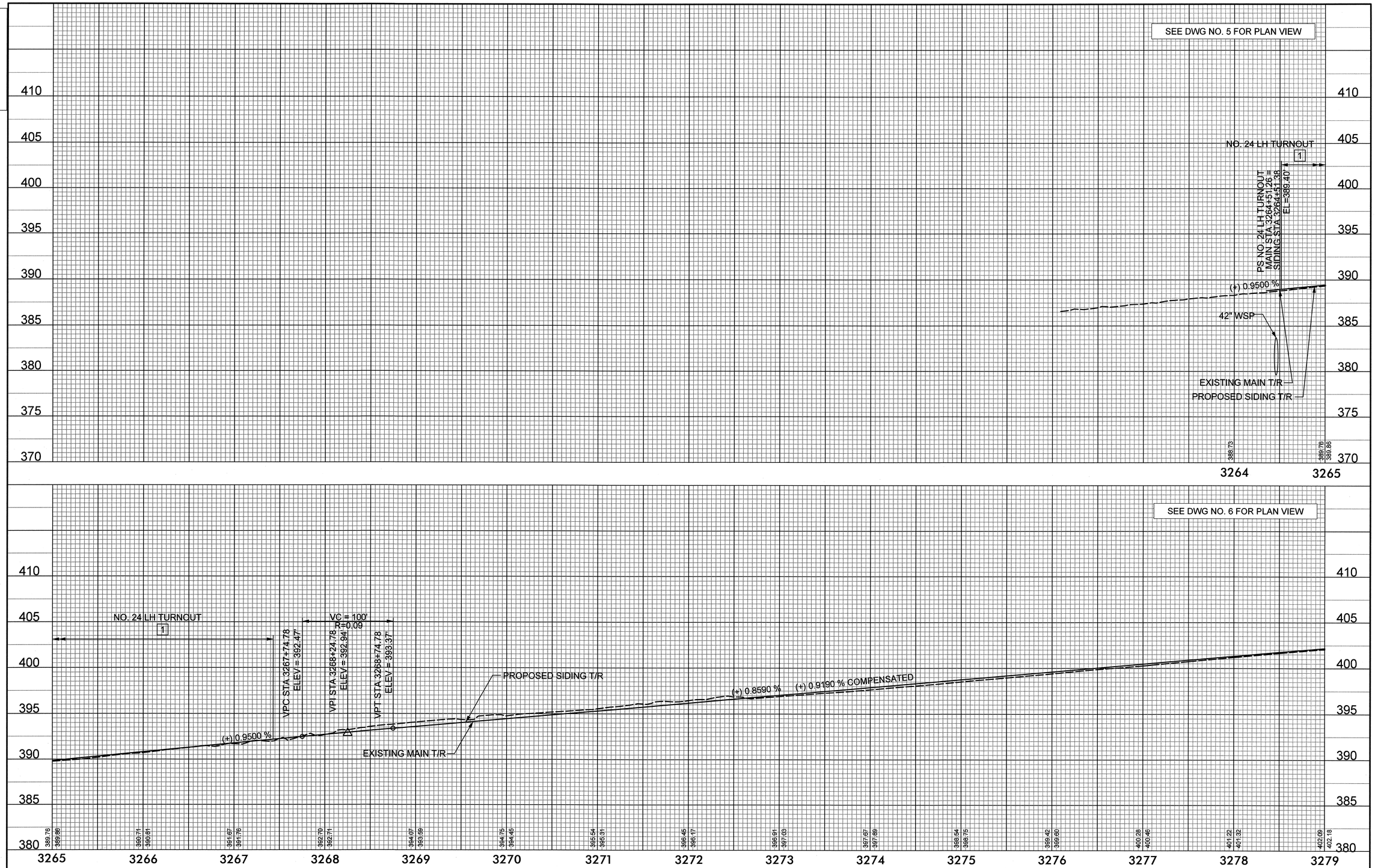

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT
SIGNATURE: 8/10/12 P.E.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES K. BYRD
SIGNATURE: 8/10/12 P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: GRADING AND DRAINAGE PLAN PROFILE
SIDING STA 3264+00 TO 3279+00

LOCATION: CP "NELSON" TO CP "CLEGG"
MILE POST: H-63.2 TO H-67.0

DGN BY: CPV
RAILROAD: NS / NCRR
DRAWING: 19

DWN BY: VBB
VAL SEC: V-24 / 16-17

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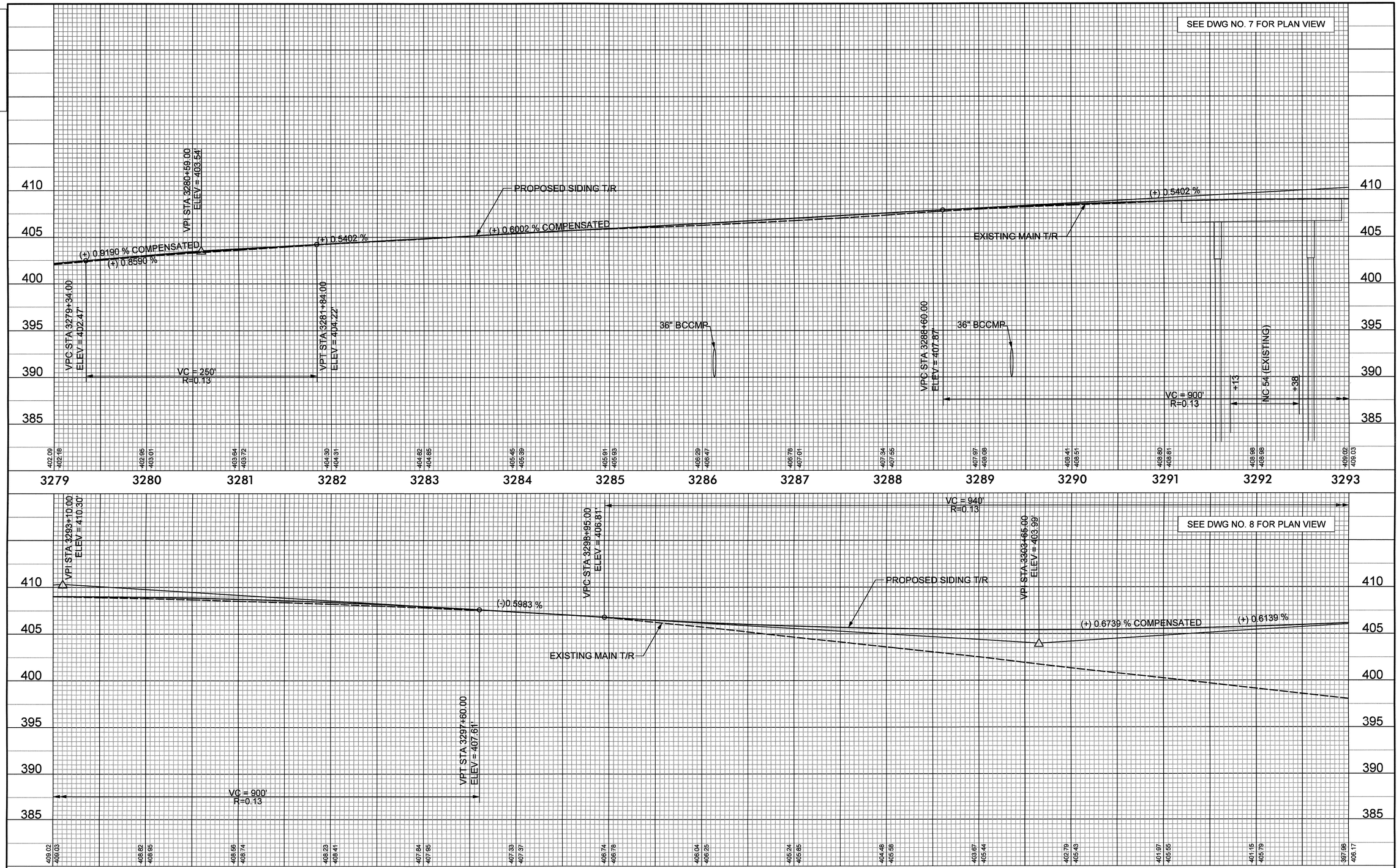

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT L. BURNETT
SIGNATURE: 7/31/12 P.E.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
SIGNATURE: 7-31-12 P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
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PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: GRADING AND DRAINAGE PLAN & PROFILE
SIDING STA. 3279+00 TO STA. 3307+00

LOCATION	CP "NELSON" TO CP "CLEGG"			MILE POST	H-63.2 TO H-67.0
DGN BY	CPV	RAILROAD	NS / NCRR	DRAWING	20
DWN BY	VBB	VAL SEC	V-24 /16-17	SHEET	OF
CHK BY	RJB	DATE	07/31/12	SCALE	

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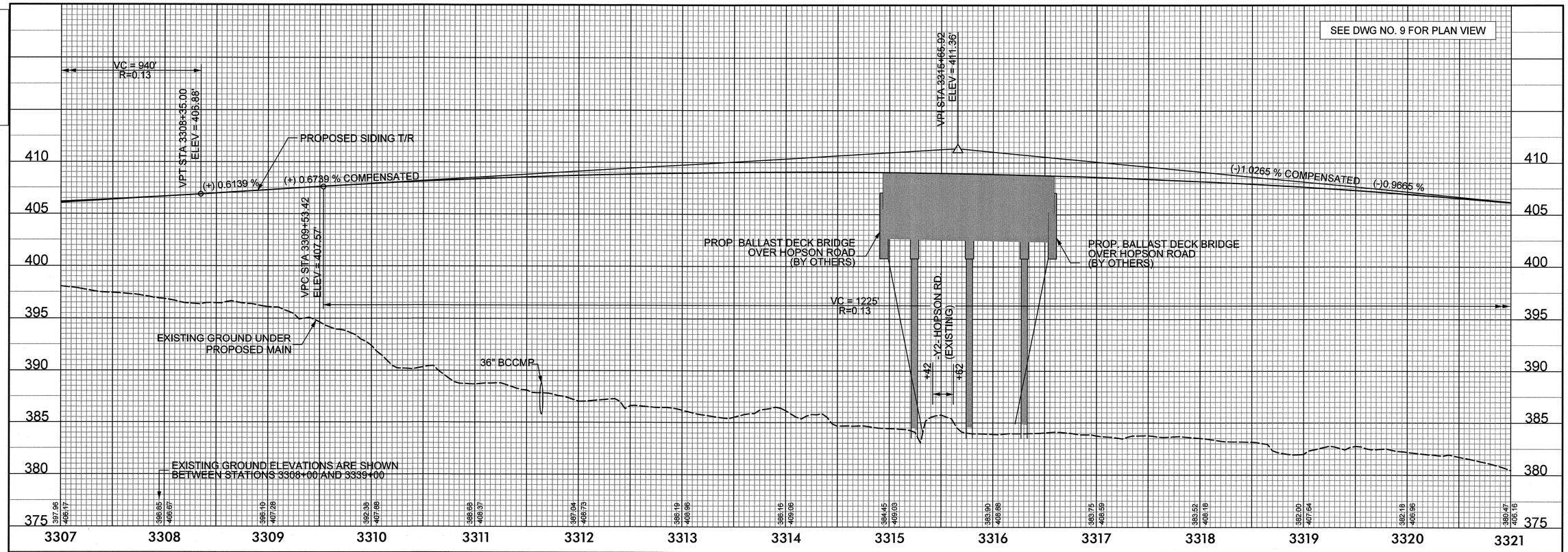

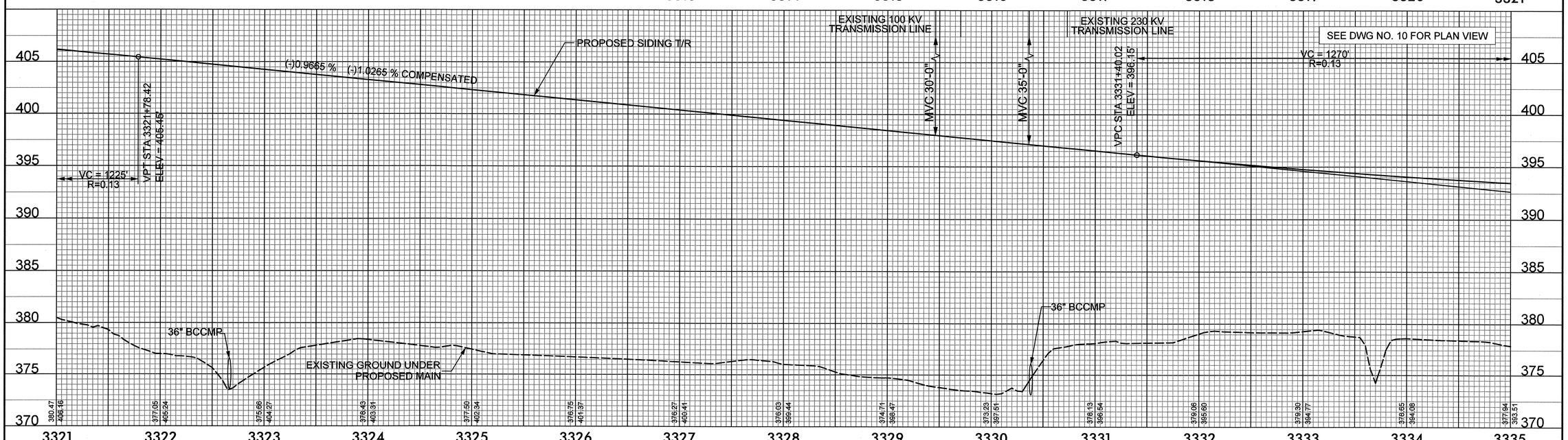

NO.	BY	DATE	REVISION

RAIL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT — SIGNATURE: P.E. 8/14/12

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD — SIGNATURE: P.E. 8/10/12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: GRADING AND DRAINAGE PROFILE
SIDING STA. 3307+00 TO STA. 3335+00

LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR		DRAWING 21
DWN BY VBB	VAL SEC V-24 / 16-17		SHEET OF
CHK BY RJB	DATE 08/10/12	SCALE	

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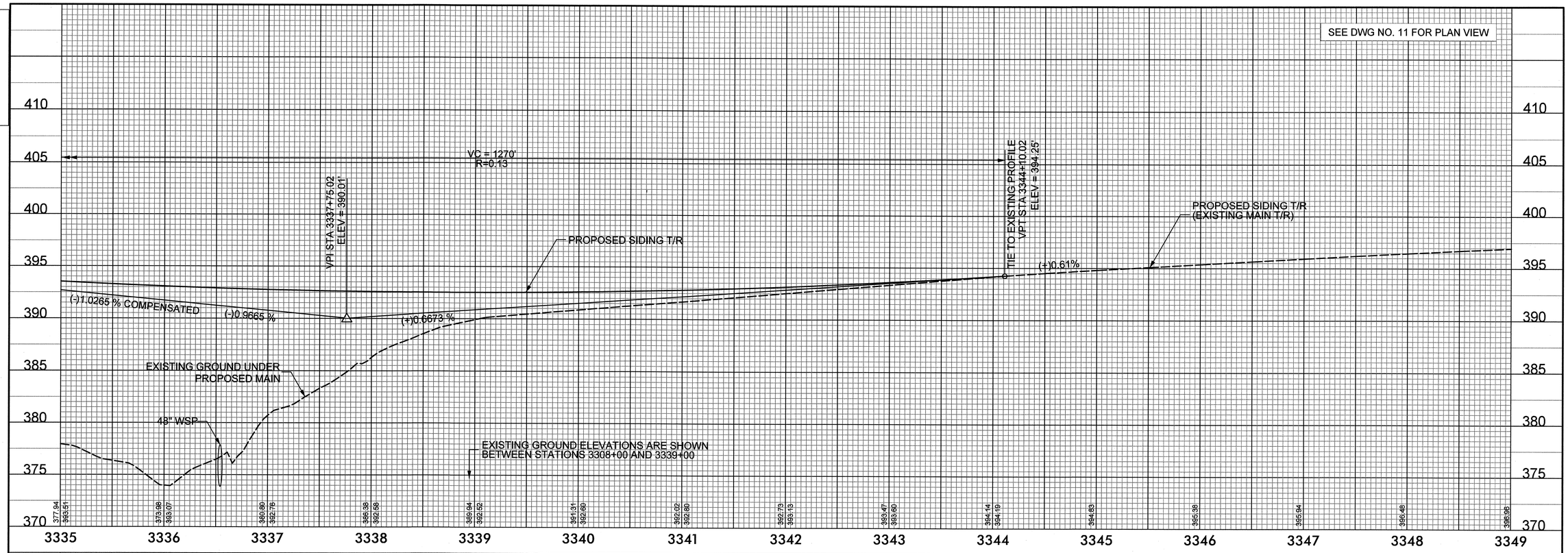

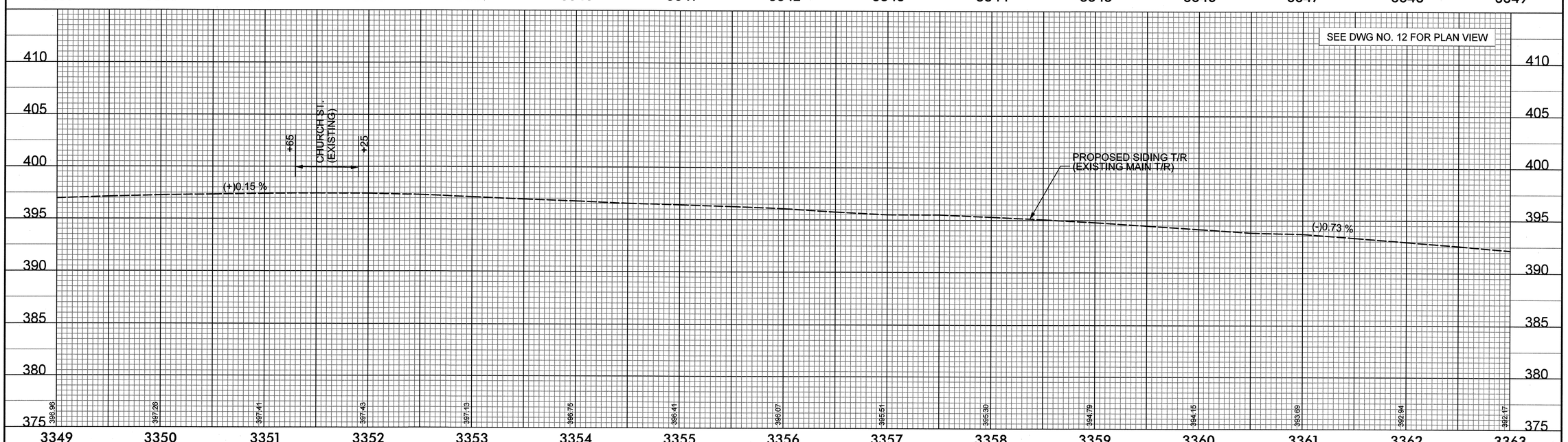

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT BURNETT
SIGNATURE: P.E.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES R. BYRD
SIGNATURE: P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: GRADING AND DRAINAGE PROFILE
SIDING STA. 3335+00 TO STA. 3363+00

LOCATION: CP "NELSON" TO CP "CLEGG"

MILE POST: H-63.2 TO H-67.0

DGN BY	CPV	RAILROAD	NS / NCRR
DWN BY	VBB	VAL SEC	V-24 /16-17
CHK BY	RJB	DATE	08/10/12
SCALE			

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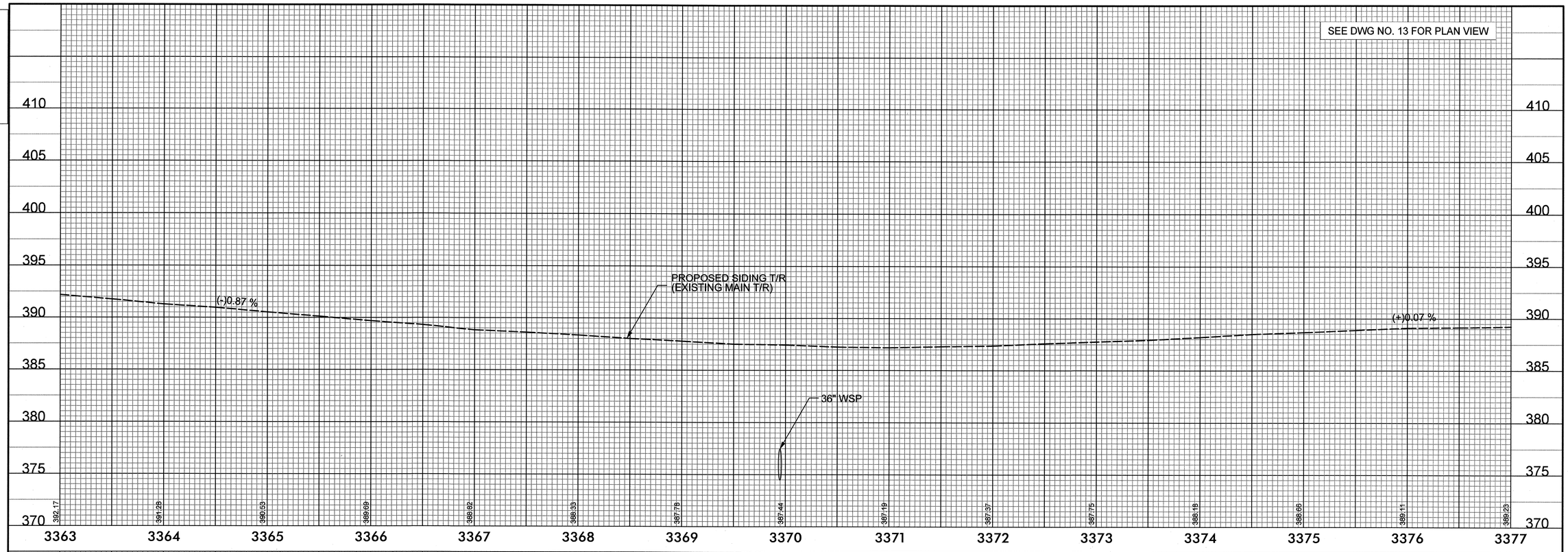

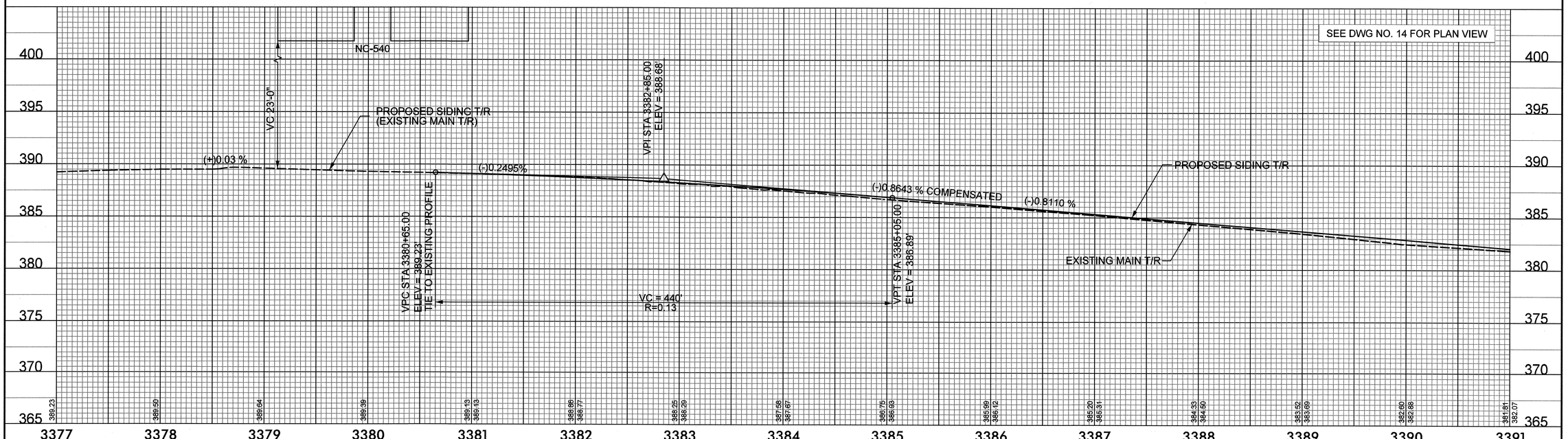

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT
SIGNATURE 8/10/12 P.E.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
SIGNATURE 8/10/12 P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: GRADING AND DRAINAGE PROFILE
SIDING STA. 3363+00 TO STA. 3391+00

LOCATION: CP "NELSON" TO CP "CLEGG"
MILE POST: H-63.2 TO H-67.0

DGN BY: CPV
RAILROAD: NS / NCRR
DRAWING: 23

DWN BY: VBB
VAL SEC: V-24 / 16-17

CHK BY: RJB
DATE: 08/10/12
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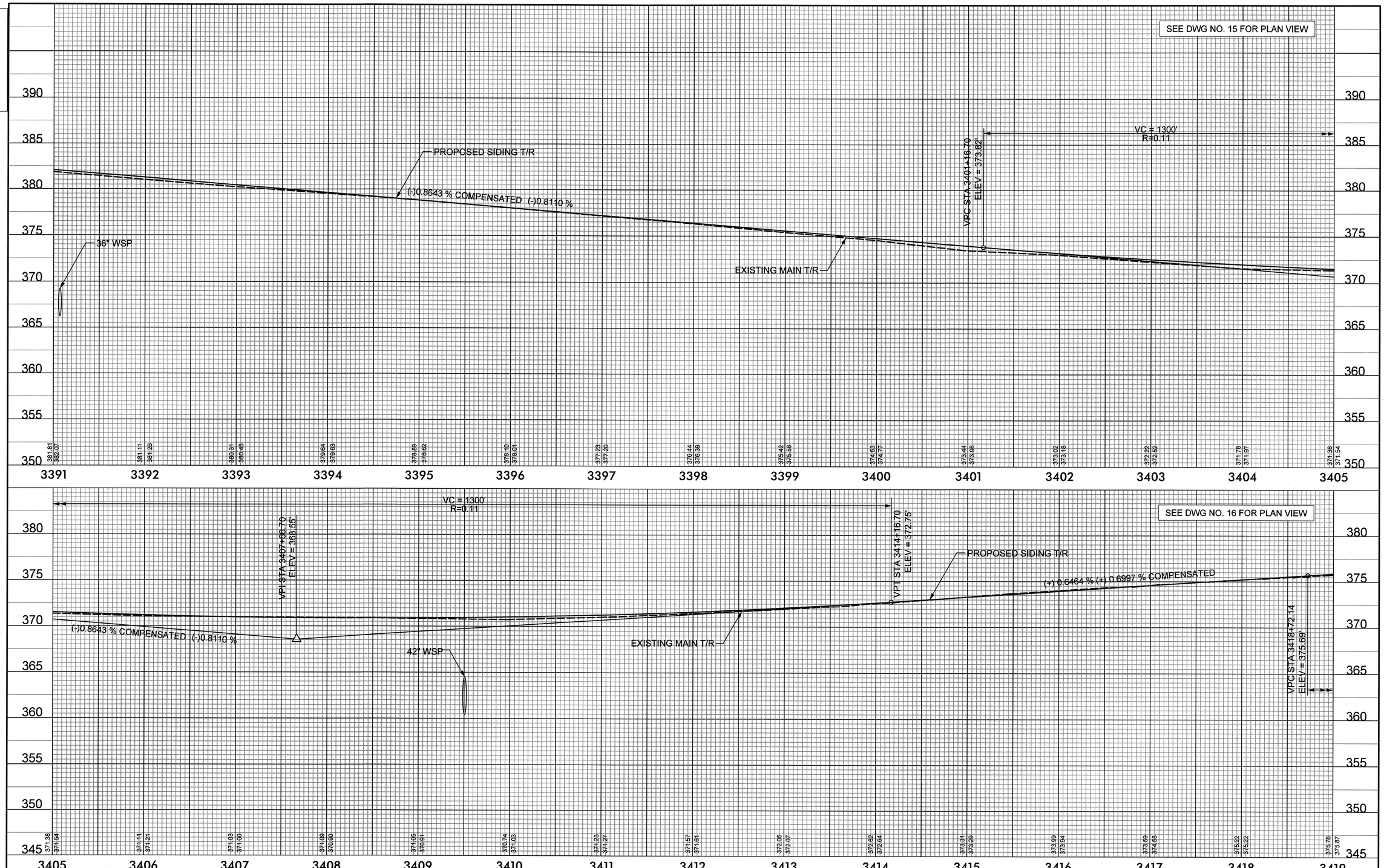

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT
SIGNATURE 8/10/12 P.E.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES W. CLYDE
SIGNATURE 8/10/12 P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
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HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: GRADING AND DRAINAGE PROFILE
SIDING STA. 3391+00 TO STA. 3419+00

LOCATION: CP "NELSON" TO CP "CLEGG"
MILE POST: H-63.2 TO H-67.0

DGN BY: CPV | RAILROAD: NS / NCRR | DRAWING: 24

DWN BY: VBB | VAL SEC: V-24 /16-17

CHK BY: RJB | DATE: 08/10/12 | SCALE:

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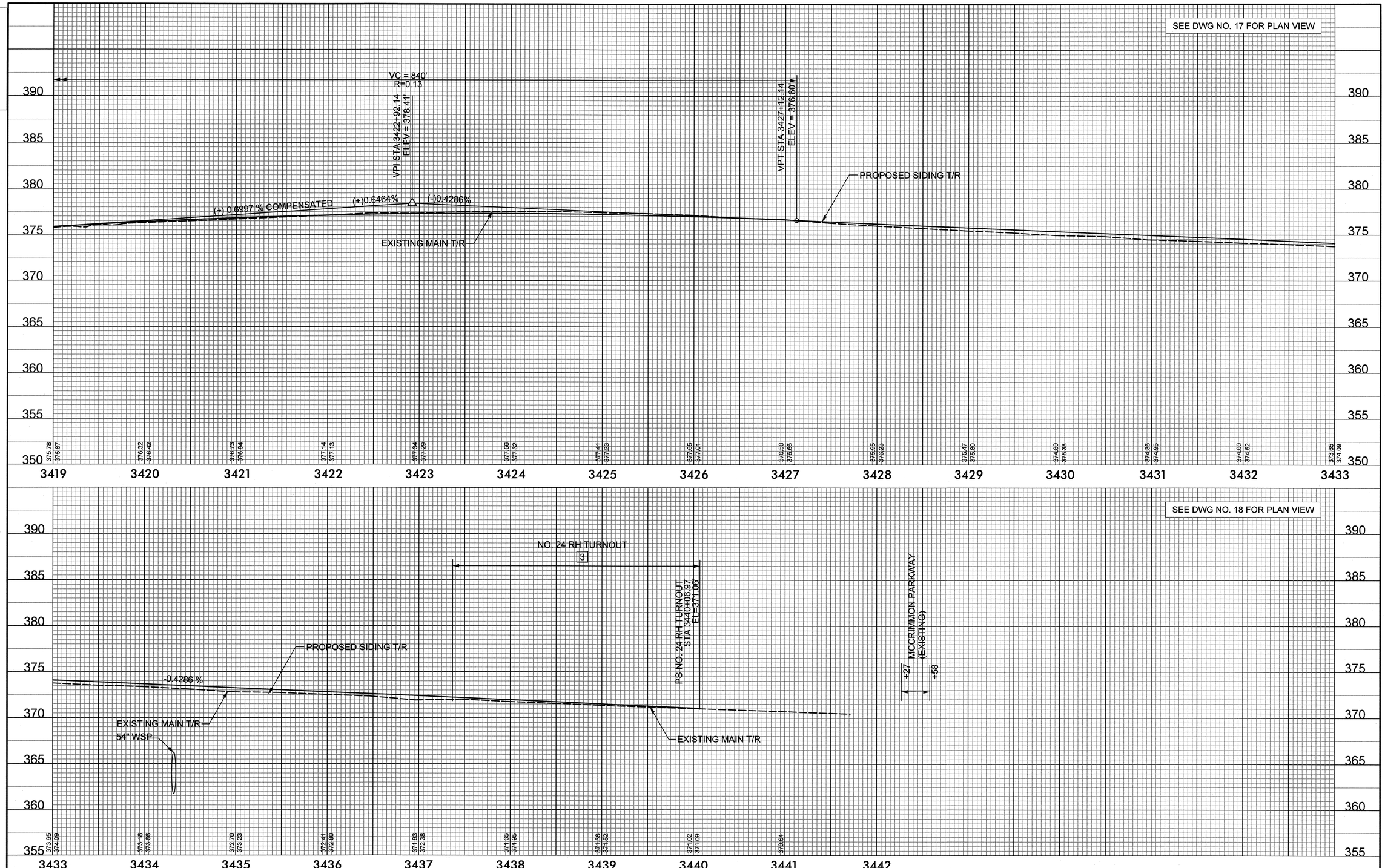

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT
SIGNATURE: P.E. 8/10/12

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES R. BYRD
SIGNATURE: P.E. 8/10/12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: GRADING AND DRAINAGE PROFILE
SIDING STA. 3419+00 TO STA. 3442+00

LOCATION	CP "NELSON" TO CP "CLEGG"			MILE POST	H-63.2 TO H-67.0
DGN BY	CPV	RAILROAD	NS / NCRR	DRAWING	25
DWN BY	VBB	VAL SEC	V-24 / 16-17		
CHK BY	RJB	DATE	08/10/12	SCALE	SHEET OF

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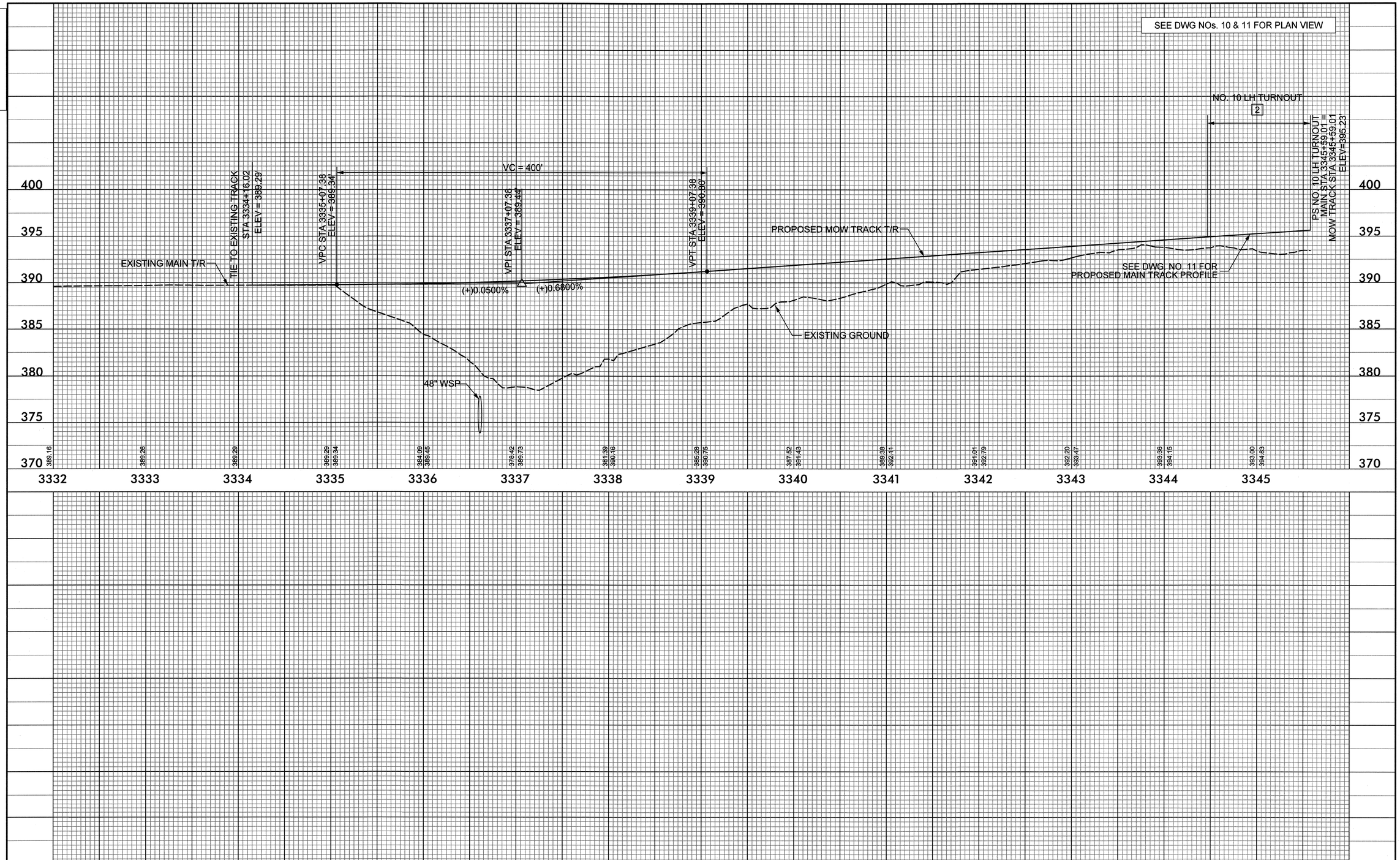
DGN



NO.	BY	DATE	REVISION

RAIL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT

8/10/12

SIGNATURE P.E.

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES R. BYRD

8/10/12

SIGNATURE P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RAIL DIVISION

PREPARED BY:

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: GRADING AND DRAINAGE PROFILE
MOW TRACK STA 3332+00 TO STA. 3345+59

LOCATION: CP "NELSON" TO CP "CLEGG"			MILE POST: H-63.2 TO H-67.0
DGN BY: CPV	RAILROAD: NS / NCRR		DRAWING: 26
DWN BY: VBB	VAL SEC: V-24 / 16-17		
CHK BY: RJB	DATE: 08/10/12	SCALE:	SHEET OF

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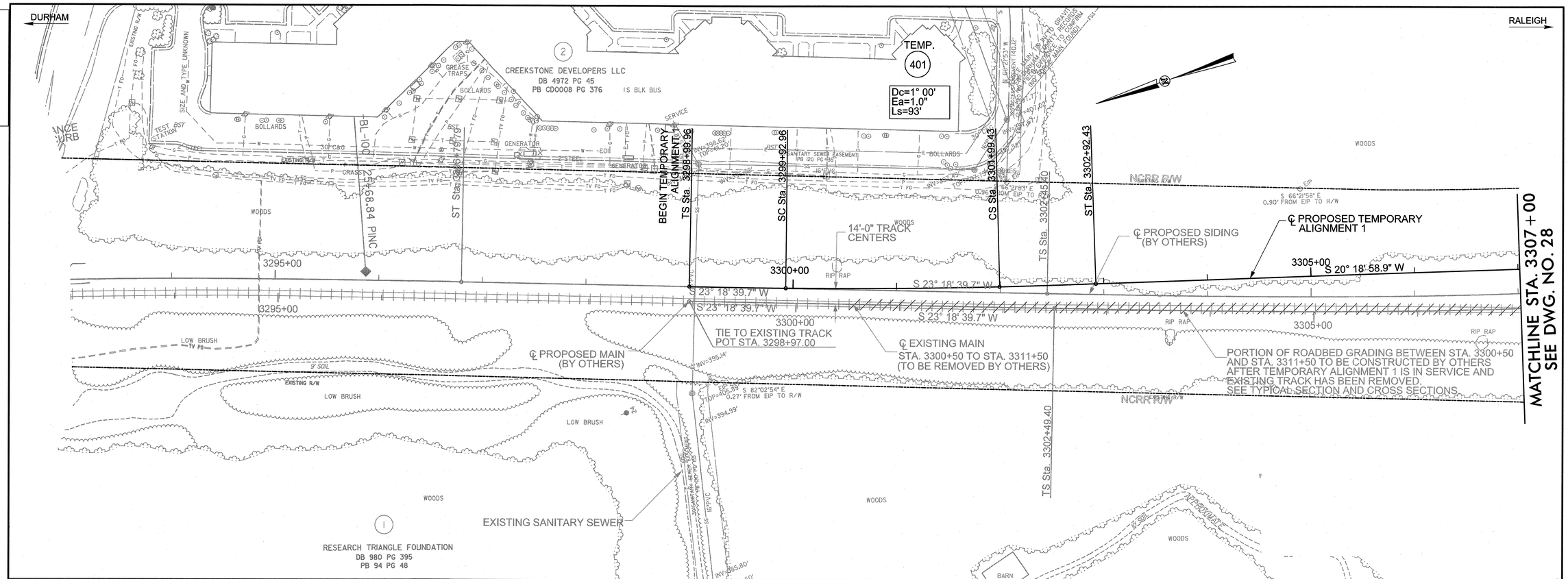
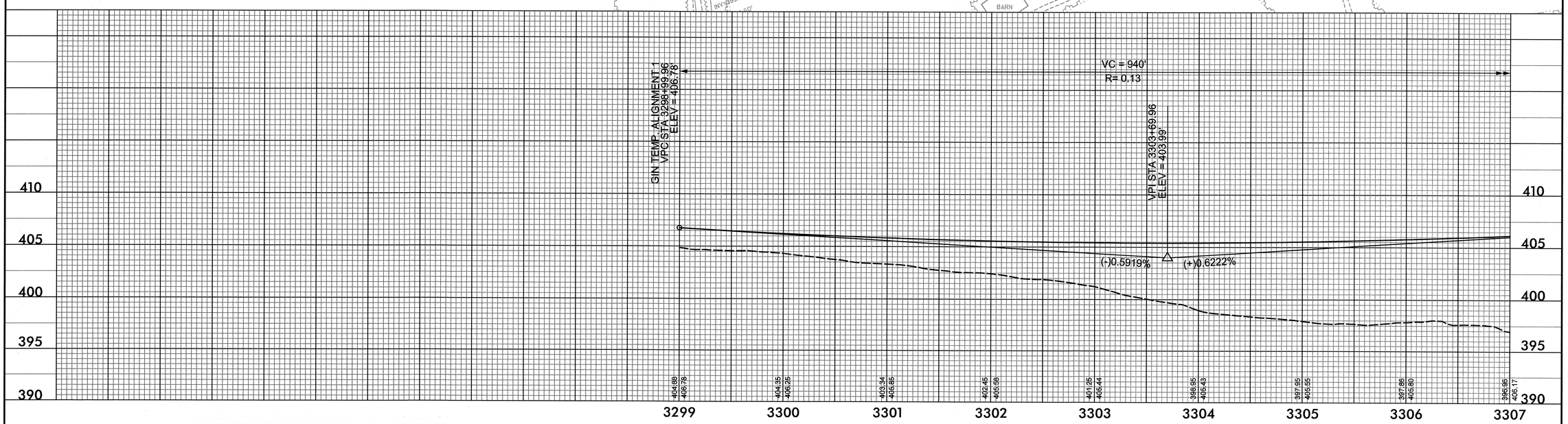
DGN





NO.	BY	DATE	REVISION

RAIL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT — SIGNATURE — 8/10/12

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD — SIGNATURE — 8/10/12 — P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	TEMP. ALIGNMENT 1 STA 3298+99.96 TO 3307+00 FOR REFERENCE ONLY		
LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR		DRAWING 27
DWN BY VBB	VAL SEC V-24 / 16-17		SHEET OF
CHK BY RJB	DATE 08/10/12	SCALE	

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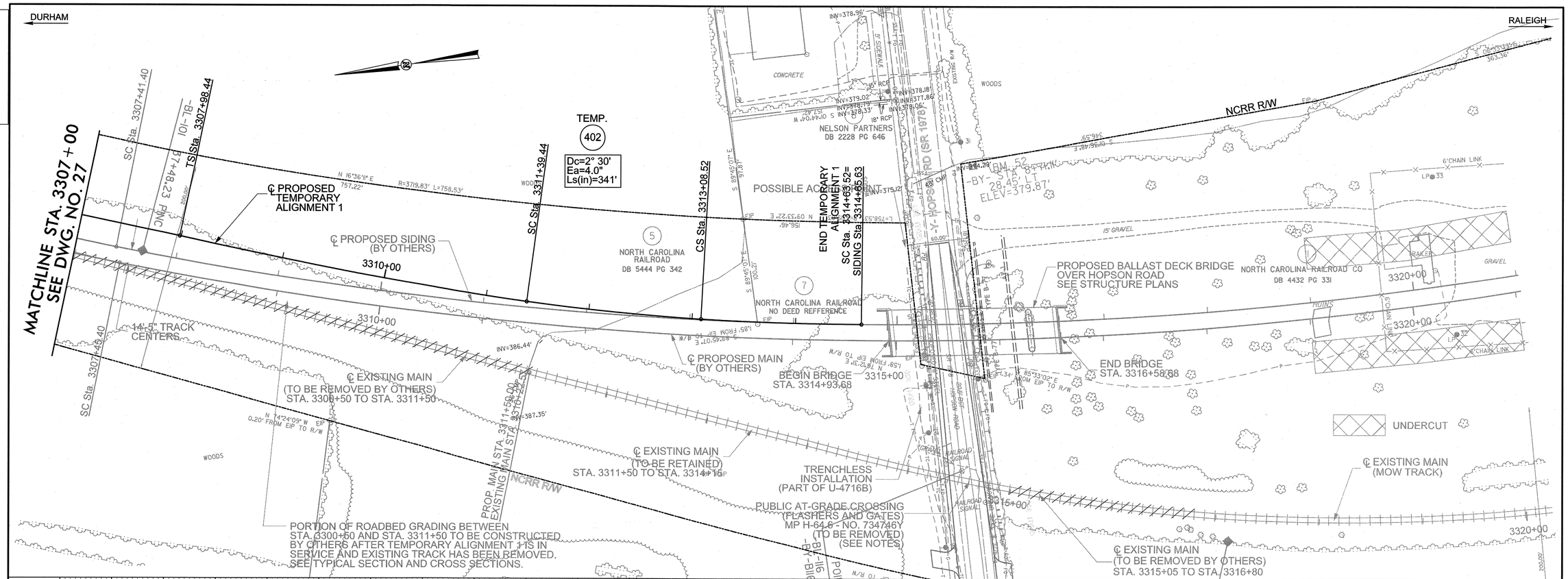

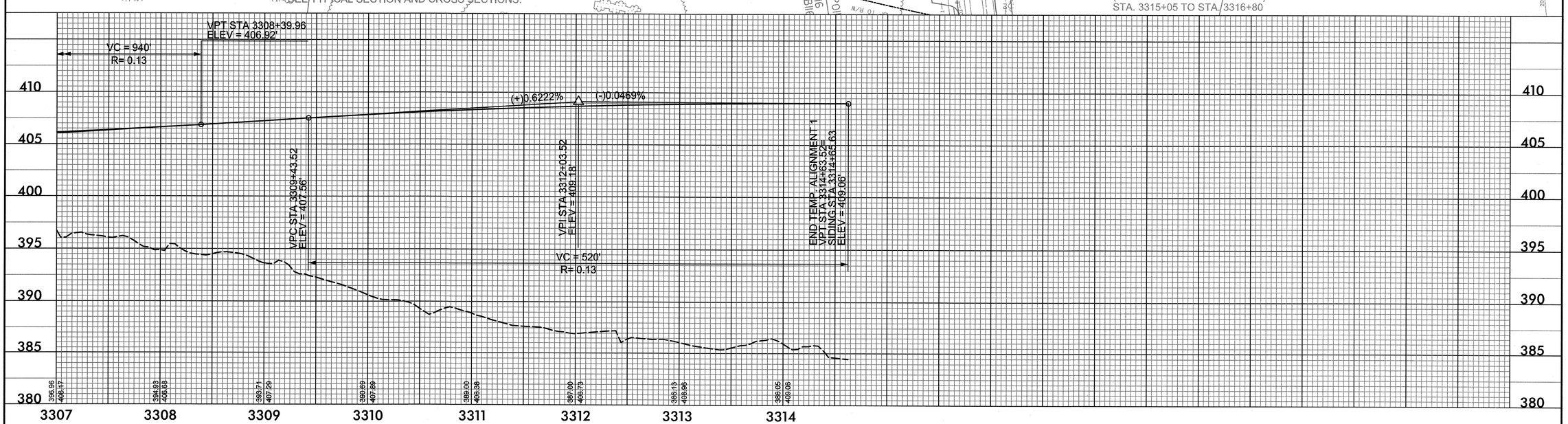

NO.	BY	DATE	REVISION

RAIL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT — SIGNATURE: P.E. 8/10/12

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD — SIGNATURE: P.E. 8/10/12

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	TEMP. ALIGNMENT 1 STA 3307+00 TO 3314+63.52 FOR REFERENCE ONLY		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR	DRAWING	28
DWN BY VBB	VAL SEC V-24 / 16-17		
CHK BY RJB	DATE 08/10/12 SCALE	SHEET	OF

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DGN

DURHAM

RALEIGH

℄ PROPOSED SIDING (BY OTHERS)

℄ PROPOSED MAIN (BY OTHERS)

3325+00

3330+00

3335+00

WOODS

POSSIBLE ACCESS IN THIS AREA

POSSIBLE ACCESS IN THIS AREA

SHIRLEY HALL BRIGGS
DB 349 PG 247
PB 22 PG 26

(17)

(16)

NORTH CAROLINA RAILROAD CO
DB 4697 PG 131

DURHAM IMPERIAL INVESTORS LLC
DB 5067 PG 95
PB 13 PG 51

(27)

I-65

TEMP.
(501)

Dc=2° 00'
Ls=217'
Ea=2.5'

BEGIN TEMP. ALIGNMENT 2
POC Sta. 3331+40.02

CS Sta. 3331+98.07

EXISTING OVERHEAD HIGH VOLTAGE TRANSMISSION LINES

NCRR R/W

SC Sta. 3334+05.07

STA. 3336+00.63
VAL STA. 3336+01.00

CS Sta. 3336+38.41

TRENCHLESS INSTALLATION

℄ PROPOSED TEMPORARY ALIGNMENT 2

14'-5" TRACK CENTERS

CS Sta. 3338+20.09

BL-103 56+40.48 PINC

63+63.52 PINC

S 30° 13' 50.3" E

S 24° 39' 27.4" E

30'

8.9 CONC HW
INV=376.70'

16" STEEL

INV=378.40'
8.9 CONC HW

℄ EXISTING MAIN (MOW TRACK)

EXISTING OVERHEAD HIGH VOLTAGE TRANSMISSION LINES

NCRR R/W

EXISTING R/W

DUKE POWER EASEMENT
PB 13 PG 49

PIPE INACCESSIBLE 9.9' CONC HW

PIPE INACCESSIBLE 9.9' CONC HW

4.0 CONC HW INV.

3329+32.01

3332+73.01

3333+96.79

3335+98.67

3338+20.09

MATCHLINE STA. 3338+00
SEE DWG. NO. 30

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT I. BURNETT
SIGNATURE 8/10/12 P.E.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES R. BYRD
SIGNATURE 8/10/12 P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY:
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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: TEMP. ALIGNMENT 2 STA 3331+40.02 TO 3338+00 FOR REFERENCE ONLY

LOCATION: CP "NELSON" TO CP "CLEGG"

MILE POST: H-63.2 TO H-67.0

DGN BY: CPV | RAILROAD: NS / NCRR | DRAWING: 29

DWN BY: VBB | VAL SEC: V-24 / 16-17

CHK BY: RJB | DATE: 08/10/12 | SCALE:

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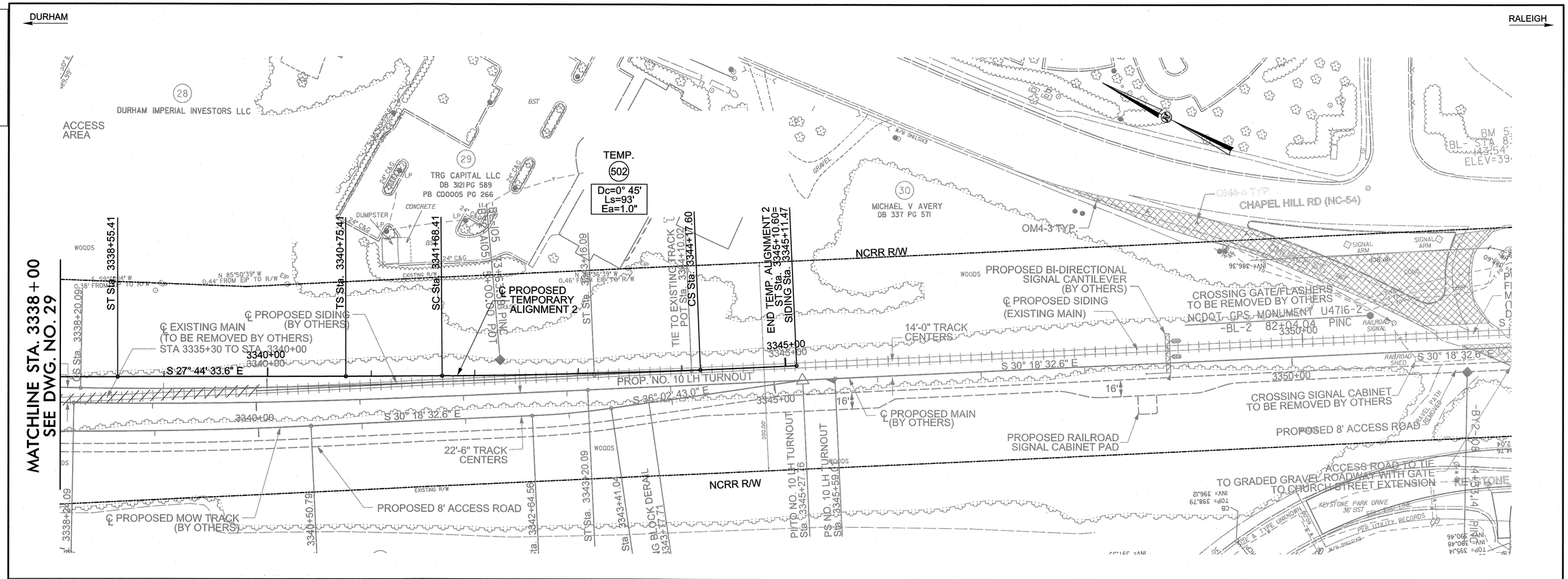

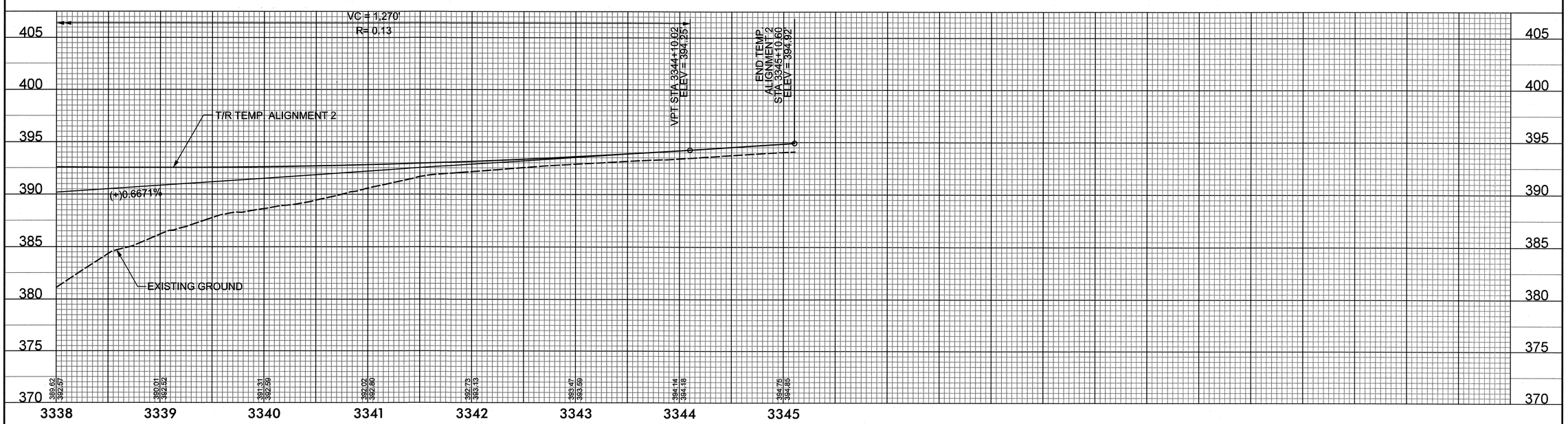

NO.	BY	DATE	REVISION

RAIL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030220 ENGINEER ROBERT J. BURNETT — 8/14/12 — P.E.

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES R. BYRD — 8/16/12 — P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT: U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION

TITLE: TEMP. ALIGNMENT 2 STA 3338+00 TO 3345+10.60 FOR REFERENCE ONLY

LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS / NCRR		DRAWING 30
DWN BY VBB	VAL SEC V-24 / 16-17		SHEET OF
CHK BY RJB	DATE 08/10/12	SCALE	

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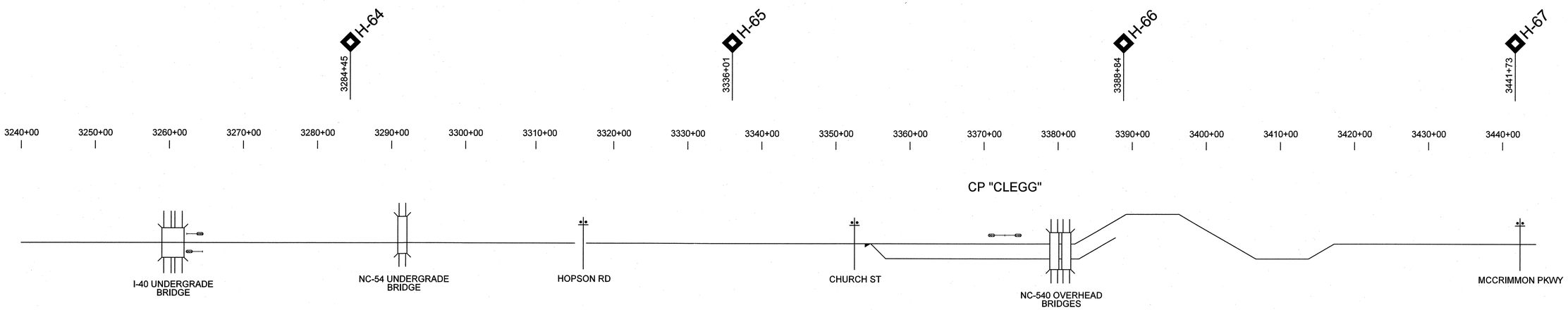
DCN

DURHAM ← → RALEIGH

NOT IN CONTRACT

THESE PLANS ARE PROVIDED TO THE NCDOT CONTRACTOR TO PROVIDE CONTEXT FOR COORDINATION WITH NORFOLK SOUTHERN AND ITS CONTRACTOR.



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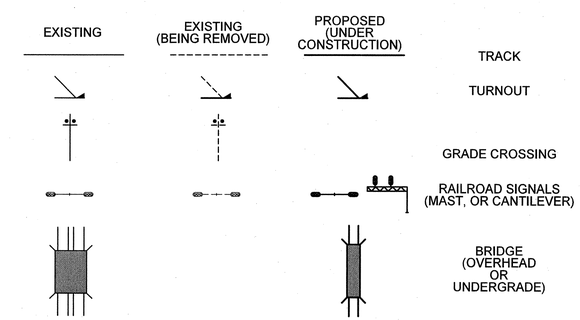

NO.	BY	DATE	REVISION

RAIL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037992 ENGINEER COREY P. VENNER 10/3/12

SIGNATURE: Corey P. Venner P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	TRACK CONSTRUCTION PHASING – EXISTING CONDITIONS FOR REFERENCE ONLY		
LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR		DRAWING CP-01
DWN BY VBB	VAL SEC V-24 /16-17		SHEET OF
CHK BY RJB	DATE 10/03/12	SCALE	

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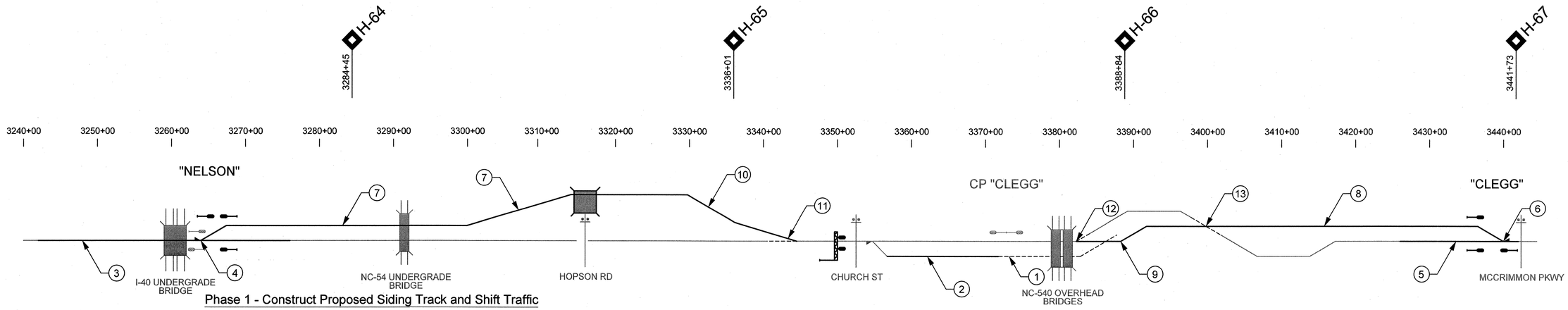

Phase 1 - Construct Proposed Siding Track and Shift Traffic

1. NS prepares existing Clegg Maintenance-of-Way track for removal by NCDOT contractor Sta. 3357+50 to 3388+10.

NCDOT contractor completes ICT 1.

2. Construct proposed main track Sta. 3357+50 to Sta. 3372+00 to use as an auxiliary track during construction.
3. Line and surface existing main track onto new alignment Sta. 3242+00 to Sta. 3276+98. Ballast pad to be constructed by track contractor prior to track shift.
4. Remove existing main track Sta. 3263+26 to Sta. 3268+67. Construct asphalt underlayment, concrete tie track, and concrete tie transition track from Sta. 3263+26 to Sta. 3268+67 including No. 24 LH turnout at PS Sta. 3264+51.
5. Surface existing main track 3426+00 to Sta. 3441+98.
6. Remove existing main track Sta. 3436+03 to Sta. 3441+43. Construct asphalt underlayment, concrete tie track, and concrete tie transition track from Sta. 3436+03 to Sta. 3441+43 including No. 24 RH turnout at PS Sta. 3440+18.

Proposed home signals at CP "Nelson", CP "Clegg" and intermediate signals west of Church St. to be installed by NS. Cut over to new signal system to occur prior to the following steps.

7. Construct proposed siding track on permanent and temporary alignment Sta. 3267+41 to Sta. 3311+00.
8. Construct proposed siding track Sta. 3403+00 to Sta. 3437+17.
9. Construct proposed siding track Sta. 3385+50 to Sta. 3401+00.

NCDOT contractor completes bridge over Hopson Rd and remaining roadbed work except for removal of erosion control devices. Steps 8 and 9 will require the NCDOT contractor to complete the railroad roadbed in those areas prior to track construction.

10. Construct proposed siding track on permanent and temporary alignment Sta. 3311+00 to Sta. 3341+00 (with 1.5" of superelevation temporarily).

The following steps are to occur in the same track outage.

11. Cut and throw existing main track into siding alignment Sta. 3341+00 to Sta. 3345+10.
12. Cut and throw existing main track into proposed siding track Sta. 3380+30 to Sta. 3385+50.
13. Remove existing main track Sta. 3401+00 to Sta. 3403+00 and construct proposed siding track Sta. 3401+00 to Sta. 3403+00.

At the end of this outage, trains will operate on the proposed siding track between CP "Nelson" and CP "Clegg" over the new Hopson Rd bridge.

The following steps may be started during this phase but do not need to be completed by the end of this phase:

Construct proposed main track Sta. 3372+00 to Sta. 3401+00.

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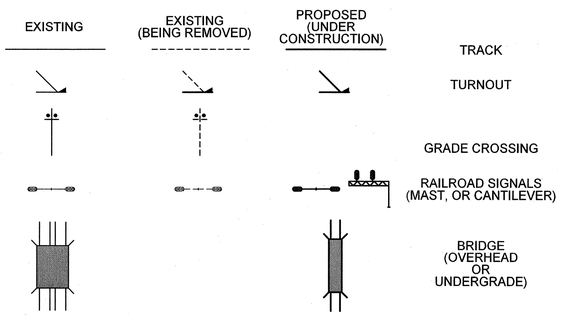

NO.	BY	DATE	REVISION

RAIL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 037992 ENGINEER COREY P. KENNITZ — 10/3/12 — SIGNATURE — P.E.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	TRACK CONSTRUCTION PHASING - PHASE 1 FOR REFERENCE ONLY		
LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR		DRAWING CP-02
DWN BY VBB	VAL SEC V-24 /16-17		SHEET OF
CHK BY RJB	DATE 10/03/12	SCALE	

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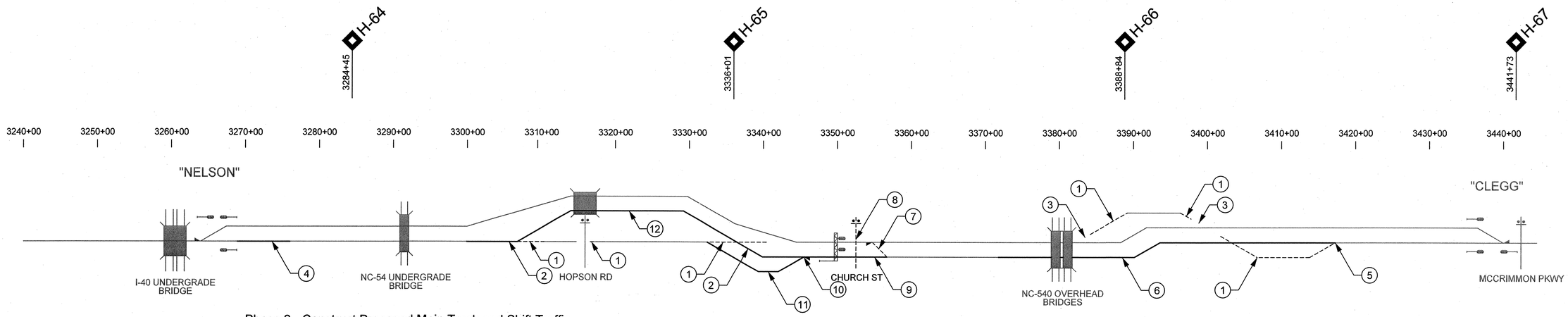
THESE PLANS ARE PROVIDED TO THE NCDOT CONTRACTOR TO PROVIDE CONTEXT FOR COORDINATION WITH NORFOLK SOUTHERN AND ITS CONTRACTOR.



Phase 2 - Construct Proposed Main Track and Shift Traffic

1. Remove existing main track:
   Sta. 3300+50 to Sta. 3311+50
   Sta. 3315+00 to Sta. 3316+80
   Sta. 3335+30 to Sta. 3340+00
   Sta. 3385+50 to Sta. 3392+50
   Sta. 3397+00 to Sta. 3401+00
   Sta. 3403+00 to Sta. 3415+30
2. Complete grading of railroad roadbed Sta. 3300+50 to Sta. 3311+50 and Sta. 3336+00 to Sta. 3340+00.
3. Cut typical ditches through the existing railroad roadbed Sta. 3386+00 LT to Sta. 3389+00 LT and Sta. 3399+00 LT to Sta. 3402+00 LT.
4. Replace existing wood ties with concrete ties and concrete transition ties Sta. 3268+67 to Sta. 3276+98.
5. Cut and throw existing main track into proposed main track Sta. 3415+30 to Sta. 3419+86.
6. Construct proposed main track Sta. 3372+00 to Sta. 3401+00.
7. Remove existing No. 10 RH turnout at PS Sta. 3354+49 and existing Clegg Maintenance of Way track from Sta. 3356+00 to Sta. 3357+50.

Hopson Rd grade crossing to be closed and removed during or prior to closure and removal of Church St. grade crossing to allow the proposed main track to be constructed (as shown in phase 2 of the U-4716B traffic management plans).

8. Cut typical ditch through the removed Church St grade crossing (LT).
9. Construct proposed main track Sta. 3345+59 to Sta. 3357+50. Complete construction of proposed main track Sta. 3357+50 to Sta. 3372+00.
10. Install proposed No. 10 LH turnout at main PS Sta. 3345+59.
11. Construct proposed maintenance-of-way (MOW) track Sta. 3334+16 to Sta. 3344+48.
12. Construct proposed main track Sta. 3298+97 to Sta. 3344+48.

At the end of this phase, trains will operate on the proposed main track between CP "Nelson" and CP "Clegg".

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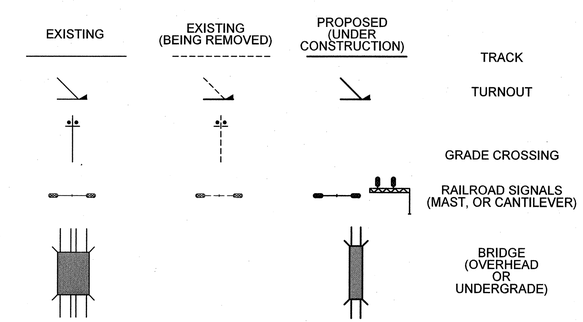

NO.	BY	DATE	REVISION

RAIL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037992 ENGINEER
10/3/12
SIGNATURE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RAIL DIVISION

PREPARED BY: HNTB
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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	TRACK CONSTRUCTION PHASING – PHASE 2 FOR REFERENCE ONLY		
LOCATION	CP "NELSON" TO CP "CLEGG"		MILE POST H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR		DRAWING CP-03
DWN BY VBB	VAL SEC V-24 /16-17		SHEET OF
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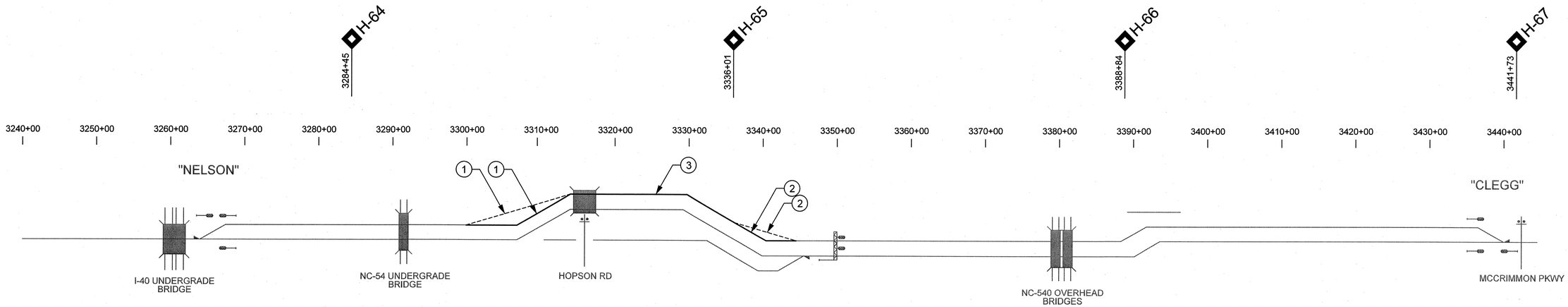

Phase 3 - Complete Proposed Siding Track

1. Line siding track into final proposed alignment Sta. 3299+00 to Sta. 3314+65.
2. Line siding track into final proposed alignment Sta. 3331+40 to Sta. 3345+11.
3. Surface proposed siding track to full superelevation Sta. 3302+45 to Sta. 3343+16.

At the end of this phase, track construction is complete and trains will operate on the proposed main and siding tracks between "Nelson" and "Clegg".

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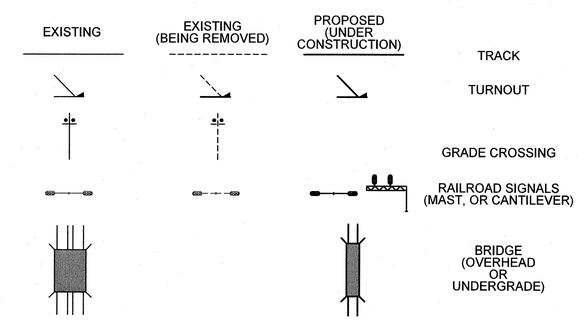

NO.	BY	DATE	REVISION

RAIL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037992 ENGINEER CORY P. VERNITZ 10/3/12

SIGNATURE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RAIL DIVISION

PREPARED BY: HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT	U-4716 A/C CLEGG PASSING SIDING & HOPSON RD. GRADE SEPARATION		
TITLE	TRACK CONSTRUCTION PHASING – PHASE 3 FOR REFERENCE ONLY		
LOCATION	CP "NELSON" TO CP "CLEGG"	MILE POST	H-63.2 TO H-67.0
DGN BY CPV	RAILROAD NS /NCRR	DRAWING	CP-04
DWN BY VBB	VAL SEC V-24 /16-17		
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