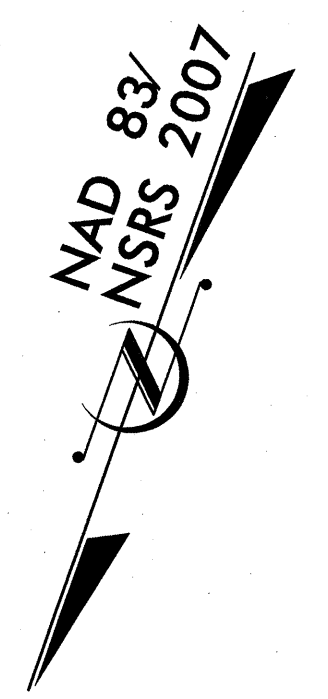
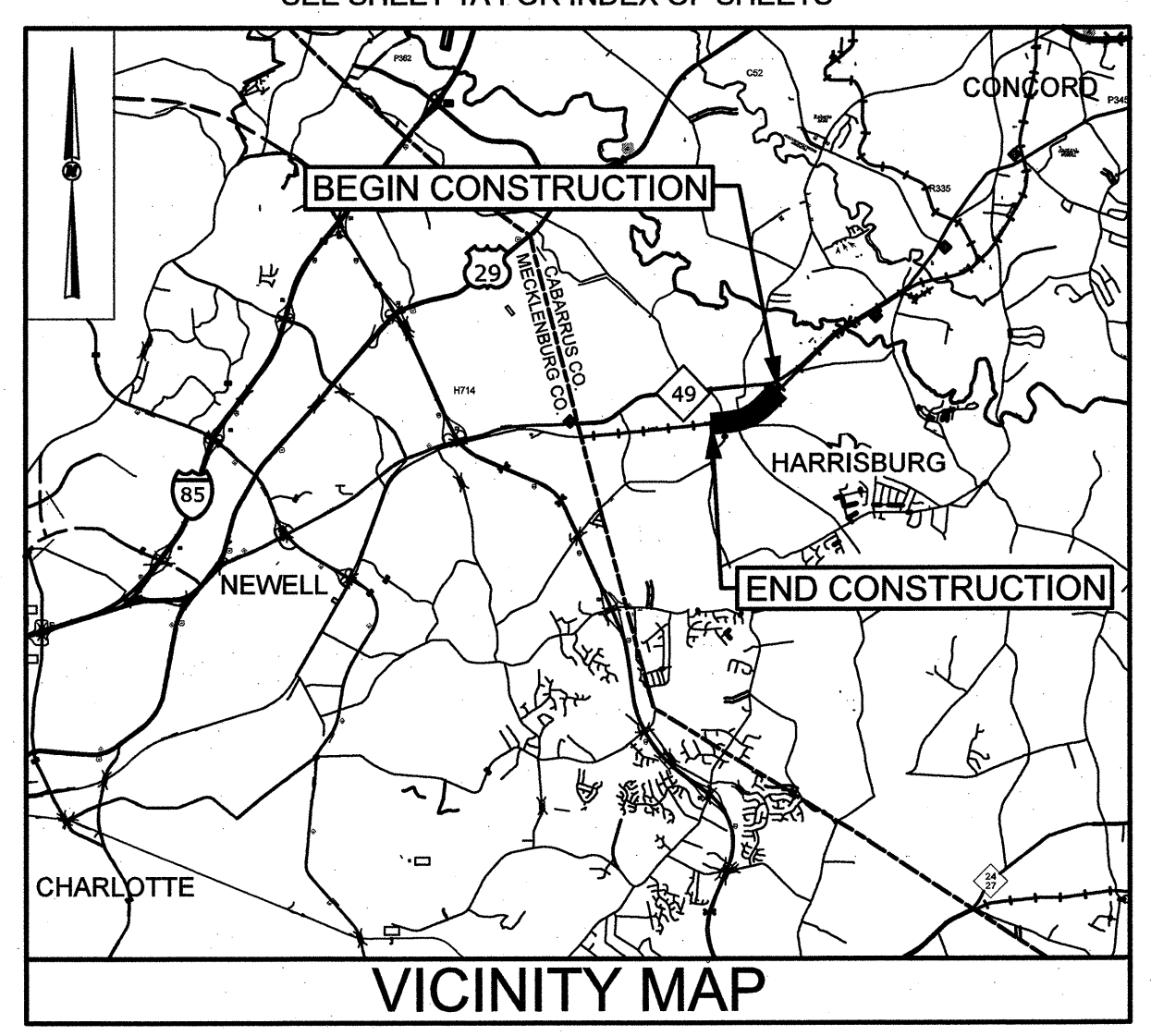


0077DEL\_P10a4

TIP PROJECT: P-5208D

CONTRACT: C203146

SEE SHEET 1A FOR INDEX OF SHEETS



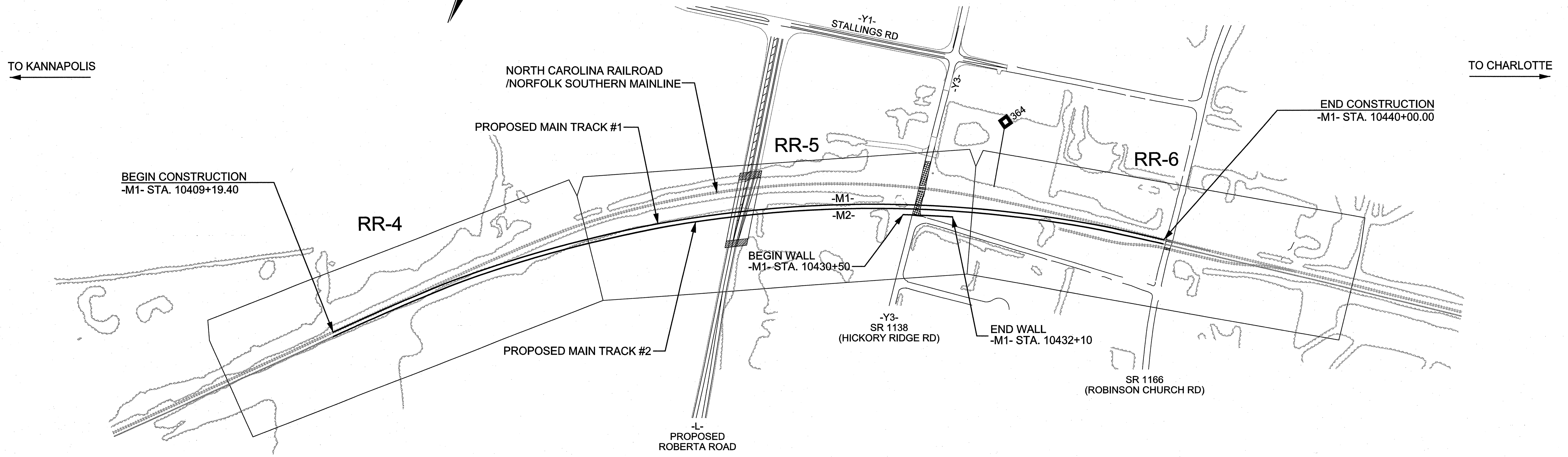
STATE OF NORTH CAROLINA  
 NCDOT RAIL DIVISION  
**CABARRUS COUNTY**



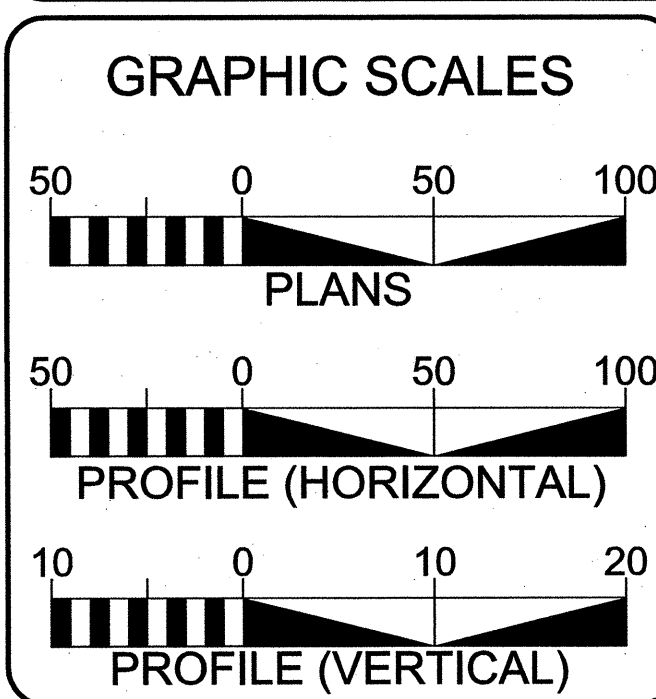
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-5208D	RR-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50000.1.STR09TIB		P.E./UTIL. P.E.	
50000.1.STR10T3		P.E./UTIL. P.E.	
43219.2.STR09P5208		R.O.W.	
50000.3.STR04T4E	FRA-FR-HSR-0006-10-01-00	UTIL. CONST.	

**PROJECT TITLE: ROBERTA RD (SR 1304) EXTENSION GRADE SEPARATION OVER NS/NCRR RAILROAD FROM STALLINGS ROAD (SR 1161) TO NC 49 IN HARRISBURG**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, SIGNALS, CURB AND GUTTER**



**RAILROAD ROADBED PLANS**  
**NCRR/NS MAINLINE MP 363.54 TO MP 364.12**



PROJECT LENGTH	
LENGTH OF RAIL TIP PROJECT	0.583 MILES
LENGTH OF STRUCTURES TIP PROJECT	0.000 MILES
TOTAL LENGTH OF RAIL TIP PROJECT	0.583 MILES
<b>NCDOT CONTACT:</b>	<b>SANDRA STEPNEY, P.E.</b> NCDOT PROJECT MANAGER

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

**HNTB**  
 2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
 APRIL 30, 2012

LETTING DATE:  
 APRIL 16, 2013

COREY VERNIER, P.E.  
 RAIL PROJECT ENGINEER

ENRICO ROQUE, P.E.  
 RAIL PROJECT DESIGN ENGINEER

DAVID HAWKINS, P.E.  
 STRUCTURE PROJECT ENGINEER

JAMES BYRD, P.E.  
 HYDRAULICS PROJECT ENGINEER

SANDRA STEPNEY, P.E.  
 NCDOT PROJECT MANAGER

RAIL ENGINEER

SIGNATURE: Corey P. Vernier P.E.

HYDRAULICS ENGINEER

SIGNATURE: James A. Byrd P.E.

ENGINEERING AND SAFETY BRANCH  
 CAPITAL YARD  
 1866 MAIL SERVICE CENTER  
 RALEIGH, NC 27699-1866

PCN

0077DEL\_P10a4

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

DATE: FEBRUARY 12, 2013

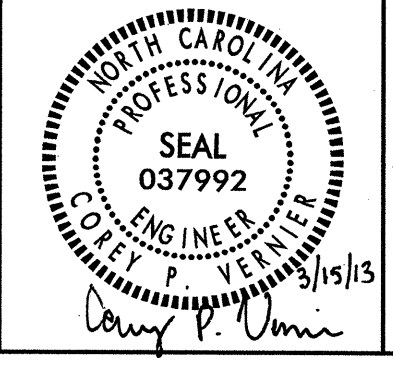
PROJECT REFERENCE NO. SHEET NO.

P-5208D RR-1A

R/W SHEET NO.

RAILROAD DESIGN ENGINEER

HYDRAULICS ENGINEER



## INDEX OF DRAWINGS

DRAWING NO.	TITLE
RR-1	COVER SHEET
RR-1A	INDEX OF DRAWINGS AND GENERAL NOTES
RR-1B	CONVENTIONAL PLAN SHEET SYMBOLS
RR-1C	CONVENTIONAL PLAN SHEET SYMBOLS AND ABBREVIATIONS
RR-2 THRU RR-2A	TYPICAL SECTIONS
RR-2B THRU RR-2C	RAILROAD HORIZONTAL ALIGNMENT GEOMETRY
RR-2D	HICKORY RIDGE ROAD GRADE CROSSING CLOSURE DETAILS
RR-2E	DITCH DETAILS
RR-4 THRU RR-6	PLAN AND TRACK 1 PROFILE SHEETS (-M1-)
RR-7 THRU RR-8	TRACK 2 PROFILE SHEETS (-M2-)
EC-08	EROSION CONTROL TITLE SHEET
EC-9 THRU EC-9C	EROSION CONTROL DETAILS
EC-10	SOIL STABILIZATION SHEET
EC-10A	SOIL STABILIZATION SUMMARY SHEET
EC-11/CONST. RR-04 THRU EC-16/CONST. RR-06	EROSION CONTROL SHEETS
W-1 THRU W-2	CAST IN PLACE GRAVITY RETAINING WALL DETAILS
X-1	CROSS SECTION INDEX SHEET
X-1A	CROSS SECTION SUMMARY SHEET
X-54	PIPE PROFILES
X-55 THRU X-66	CROSS SECTIONS

## GENERAL NOTES

THIS CONTRACT INCLUDES ALL WORK REQUIRED TO CONSTRUCT THE RAILROAD ROADBED UP TO AND INCLUDING THE SUBBALLAST LAYER. CONSTRUCTION OF TRACK, INCLUDING BALLAST AND SIGNALS, WILL BE DONE BY OTHERS AND IS DEPICTED FOR REFERENCE ONLY.

THE PROPOSED GRADE LINES SHOWN DENOTE THE FINAL ELEVATION OF THE PROPOSED TOP OF LOW RAIL AT THE CENTERLINE OF TRACK AS SHOWN ON THE TYPICAL SECTIONS. WHERE NO PROPOSED GRADE LINES ARE SHOWN, THE PROFILES SHOWN DEPICT THE EXISTING TOP OF LOW RAIL.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

UTILITY OWNERS ON THIS PROJECT ARE: TOWN OF HARRISBURG, DUKE ENERGY, AND VERIZON.

## RAILROAD OPERATIONS

THE CONTRACTOR SHALL NOT ENTER ONTO RAILROAD RIGHT OF WAY WITHOUT PERMISSION FROM THE OWNER AND AN APPOINTED NORFOLK SOUTHERN FLAGMAN ON DUTY.

THE CONTRACTOR SHALL NOT INTERRUPT THE OPERATIONS OF THE RAILROAD WITHOUT PRIOR APPROVAL OF THE RAILROAD REPRESENTATIVE.

Note: Not To Scale

\*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA RAIL DIVISION

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

DATE: FEBRUARY 12, 2013

Table with Project Reference No. (P-5208D), Sheet No. (RR-1B), and Railroad Design Engineer/ Hydraulics Engineer information.

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

Table listing boundary symbols: State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin, Property Corner, Property Monument, Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary.

BUILDINGS AND OTHER CULTURE:

Table listing building and culture symbols: Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam.

HYDROLOGY:

Table listing hydrology symbols: Stream or Body of Water, Hydro, Pool or Reservoir, Jurisdictional Stream, Buffer Zone 1, Buffer Zone 2, Flow Arrow, Disappearing Stream, Spring, Wetland, Proposed Lateral, Tail, Head Ditch, False Sump.

RIGHT OF WAY:

Table listing right of way symbols: Baseline Control Point, Existing Right of Way Marker, Existing Right of Way Line, Proposed Right of Way Line, Proposed Right of Way Line with Iron Pin and Cap Marker, Proposed Right of Way Line with Concrete or Granite Marker, Existing Control of Access, Proposed Control of Access, Existing Easement Line, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Drainage / Utility Easement, Proposed Permanent Utility Easement, Proposed Temporary Utility Easement, Proposed Permanent Easement with Iron Pin and Cap Marker.

ROADS AND RELATED FEATURES:

Table listing road and related features symbols: Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Wheel Chair Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Pavement Removal.

VEGETATION:

Table listing vegetation symbols: Single Tree, Single Shrub, Hedge, Woods Line, Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing existing structures symbols: MAJOR: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall; MINOR: Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer.

UTILITIES:

Table listing utility symbols: POWER: Existing Power Pole, Proposed Power Pole, Existing Joint Use Pole, Proposed Joint Use Pole, Power Manhole, Power Line Tower, Power Transformer, U/G Power Cable Hand Hole, H-Frame Pole, Recorded U/G Power Line, Designated U/G Power Line (S.U.E.\*); TELEPHONE: Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Booth, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, Recorded U/G Telephone Cable, Designated U/G Telephone Cable (S.U.E.\*), Recorded U/G Telephone Conduit, Designated U/G Telephone Conduit (S.U.E.\*), Recorded U/G Fiber Optics Cable, Designated U/G Fiber Optics Cable (S.U.E.\*).

WATER:

Table listing water symbols: Water Manhole, Water Meter, Water Valve, Water Hydrant, Recorded U/G Water Line, Designated U/G Water Line (S.U.E.\*), Above Ground Water Line.

TV:

Table listing TV symbols: TV Satellite Dish, TV Pedestal, TV Tower, U/G TV Cable Hand Hole, Recorded U/G TV Cable, Designated U/G TV Cable (S.U.E.\*), Recorded U/G Fiber Optic Cable, Designated U/G Fiber Optic Cable (S.U.E.\*).

GAS:

Table listing gas symbols: Gas Valve, Gas Meter, Recorded U/G Gas Line, Designated U/G Gas Line (S.U.E.\*), Above Ground Gas Line.

SANITARY SEWER:

Table listing sanitary sewer symbols: Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, Recorded SS Forced Main Line, Designated SS Forced Main Line (S.U.E.\*).

MISCELLANEOUS:

Table listing miscellaneous symbols: Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line, U/G Tank; Water, Gas, Oil, A/G Tank; Water, Gas, Oil, U/G Test Hole (S.U.E.\*), Abandoned According to Utility Records, End of Information.

STATE OF NORTH CAROLINA  
RAIL DIVISION

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

DATE: FEBRUARY 12, 2013

PROJECT REFERENCE NO.	SHEET NO.
P-5208D	RR-1C
RW SHEET NO.	
RAILROAD DESIGN ENGINEER	HYDRAULICS ENGINEER

# CONVENTIONAL PLAN SHEET SYMBOLS AND ABBREVIATIONS

**RAILROADS:**

Existing Track to be Retained	
Existing Track to be Shifted	
Existing Track to be Removed	
Proposed Track	
Proposed Turnout	
Turnout Label	
Curve Label	
Curve Information	
Profile Grade Line	
Milepost	

**ABBREVIATIONS:**

TRACK ALIGNMENT - HORIZONTAL:

CD	Cant Deficiency
CS	Curve to Spiral
Dc	Degree of Curvature
Ea	Actual Superelevation (Inches)
Eu	Unbalance Elevation (Inches)
I	Curve Intersection Angle
L	Length of Curve
Ls	Length of Spiral
PI	Point of Intersection
PI/TO	Point of Intersection / Turnout
POL	Point on Line
PS	Point of Switch
PT	Point on Tangent
R	Radius
SC	Spiral to Curve
ST	Spiral to Tangent
TO	Turnout
TS	Tangent to Spiral
X	Spiral Tangent Length to Offset
Y	Spiral Tangent Offset

TRACK ALIGNMENT - VERTICAL:

EL	Elevation
L	Vertical Curve Length
R	Rate of Change
T/R	Top of Rail
VPC	Vertical Point of Curve
VPI	Vertical Point of Intersection
VPT	Vertical Point of Tangent

DRAINAGE:

CIP	Cast Iron Pipe
BCCMP	Bituminous Coated Corrugated Metal Pipe
INV	Invert
PSRM	Permanent Soil Reinforcement Matting
RCB	Reinforced Concrete Box Culvert
RCP	Reinforced Concrete Pipe
WSP	Welded Steel Pipe
STB	Stone Box Culvert
SYFF	Square Yards Filter Fabric

MISCELLANEOUS:

ABS	Absolute
AEI	Automatic Equipment Identification
AVE	Avenue
AH	Ahead
BK	Back
B	Baseline
BLDG	Building
BLVD	Boulevard
CB	Catch Basin
C	Centerline
CLR	Clear
CONC	Concrete
CP	Control Point
DWG	Drawing
E	East
EL	Elevation
ESMT	Easement
EXIST	Existing
EB	East Bound
FT	Feet
FND	Foundation
GRD	Ground
HW	Headwall
HORIZ	Horizontal
LT	Left
LH	Lefthand
MIN	Minimum
MP	Milepost
MPH	Miles Per Hour
N	North
N/A	Not Applicable
NB	North Bound
NO	Number
NCRR	North Carolina Railroad
NS	Norfolk Southern Railway
OTM	Other Track Material
PAV'T	Pavement
PGL	Profile Grade Line
PROP	Proposed
RD	Road
RT	Right
RR	Railroad
RH	Righthand
R/W	Right-of-Way
REQ'D	Required
S	South
SEG	Segment
STA	Station
SR	State Route
SHLDR	Shoulder
SHT	Sheet
SWM	Storm Water Management
TRK	Track
V	Velocity (MPH)
VERT	Vertical
W	West
W	With
WB	West Bound

0077DEL\_P10a4

10:33:57 AM  
C:\Users\jsternam\Documents\10-33-57 AM  
10-33-57 AM

0077DEL\_P10a4  
0001ADD\_P10a

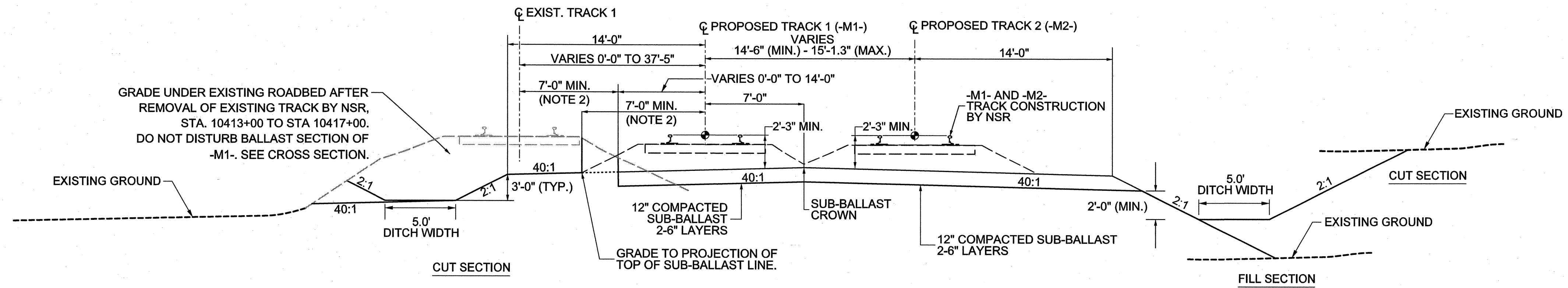
REVISIONS  
REVISION #1 (3/25/2013): DIMENSIONING FOR TYPICAL SECTION NO. 1 REVISED, AND CUT SECTION DITCH SLOPES AND DIMENSIONS REVISED.

1:08:09 PM  
3/25/2013  
USER:RNM

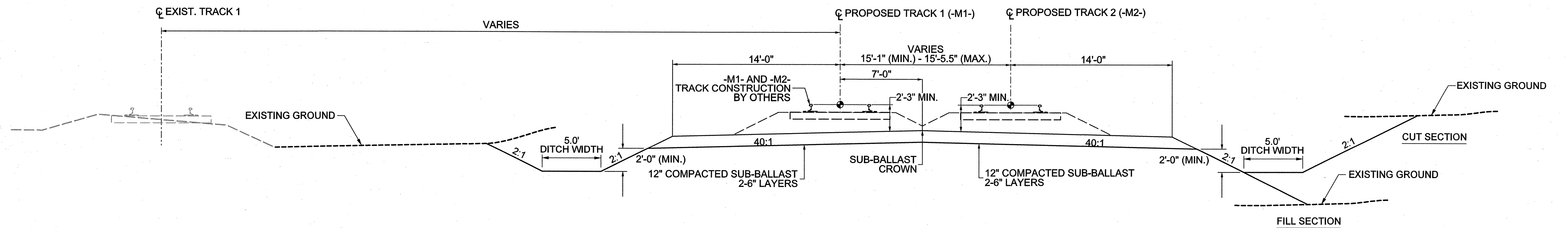
**HNTB** HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

DATE: FEBRUARY 12, 2013

PROJECT REFERENCE NO. P-5208D	SHEET NO. RR-2
RW SHEET NO.	
RAILROAD DESIGN ENGINEER	HYDRAULICS ENGINEER



**TYPICAL SECTION #1 - PROPOSED TRACKS #1 (-M1-) AND #2 (-M2-) WEST OF EXISTING TRACK #1**  
-M1- STA. 10409+19 TO STA. 10417+00



**TYPICAL SECTION #2 - PROPOSED TRACKS #1 (-M1-) AND #2 (-M2-) WEST OF EXISTING TRACK #1**  
-M1- STA. 10417+00 TO STA. 10430+00

**NOTES**

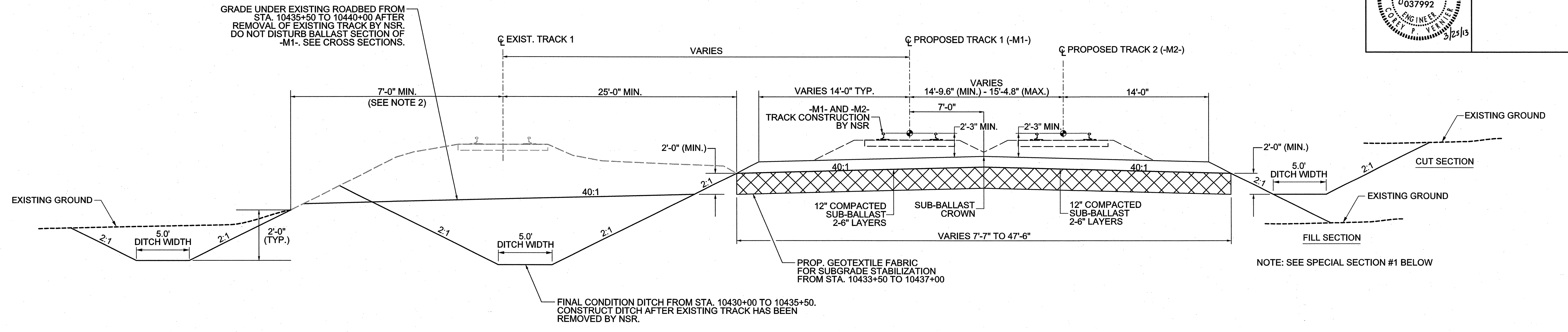
1. TRACK CONSTRUCTION, INCLUDING BALLAST, WILL BE DONE BY OTHERS.
2. ACTUAL LOCATION OF EXCAVATION TO BE BASED ON FIELD CONDITIONS AS DETERMINED BY THE NORFOLK SOUTHERN REPRESENTATIVE.

0077DEL\_P10a4  
0001ADD\_P10a

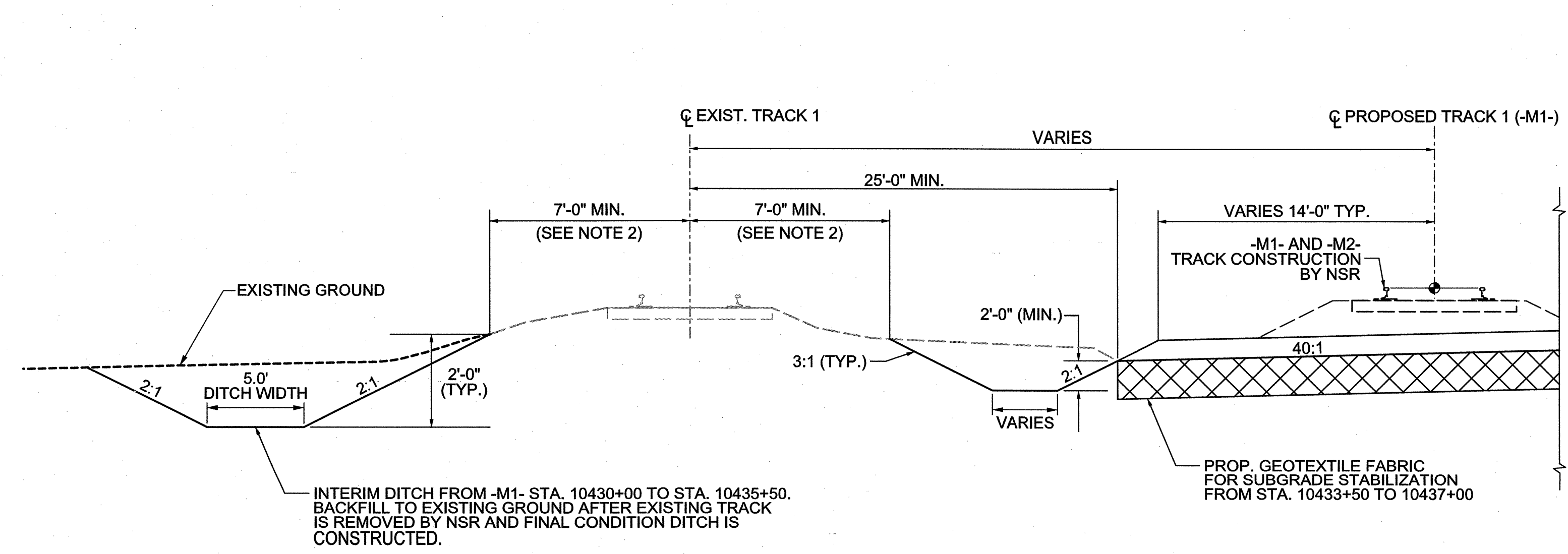
REVISIONS  
REVISION #1 (3/25/2013): INTERIM SECTION CREATED, TYPICAL SECTION NO. 3 DIMENSIONING & CUT SECTION DITCH REVISED. SPECIAL SECTION NO. 1 DITCH SLOPES REVISED.

1:08:16 PM  
3/25/2013  
C:\Users\jramm\Documents\RailRR-02A.dgn

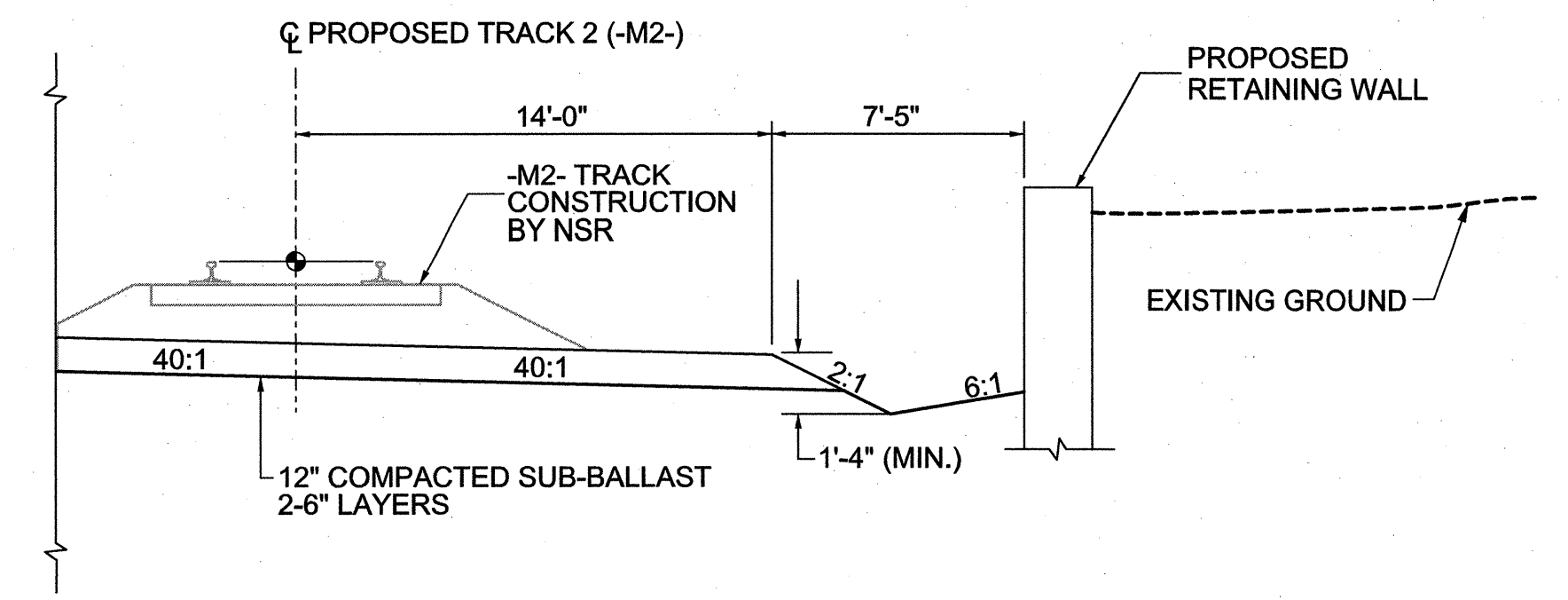
<b>HNTB</b> HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554	PROJECT REFERENCE NO. P-5208D	SHEET NO. RR-2A
	RW SHEET NO.	
DATE: FEBRUARY 12, 2013		
RAILROAD DESIGN ENGINEER 		



**TYPICAL SECTION #3 - PROPOSED TRACKS #1 (-M1-) AND #2 (-M2-) WEST OF EXISTING TRACK #1**  
-M1- STA. 10430+00 TO STA. 10440+00



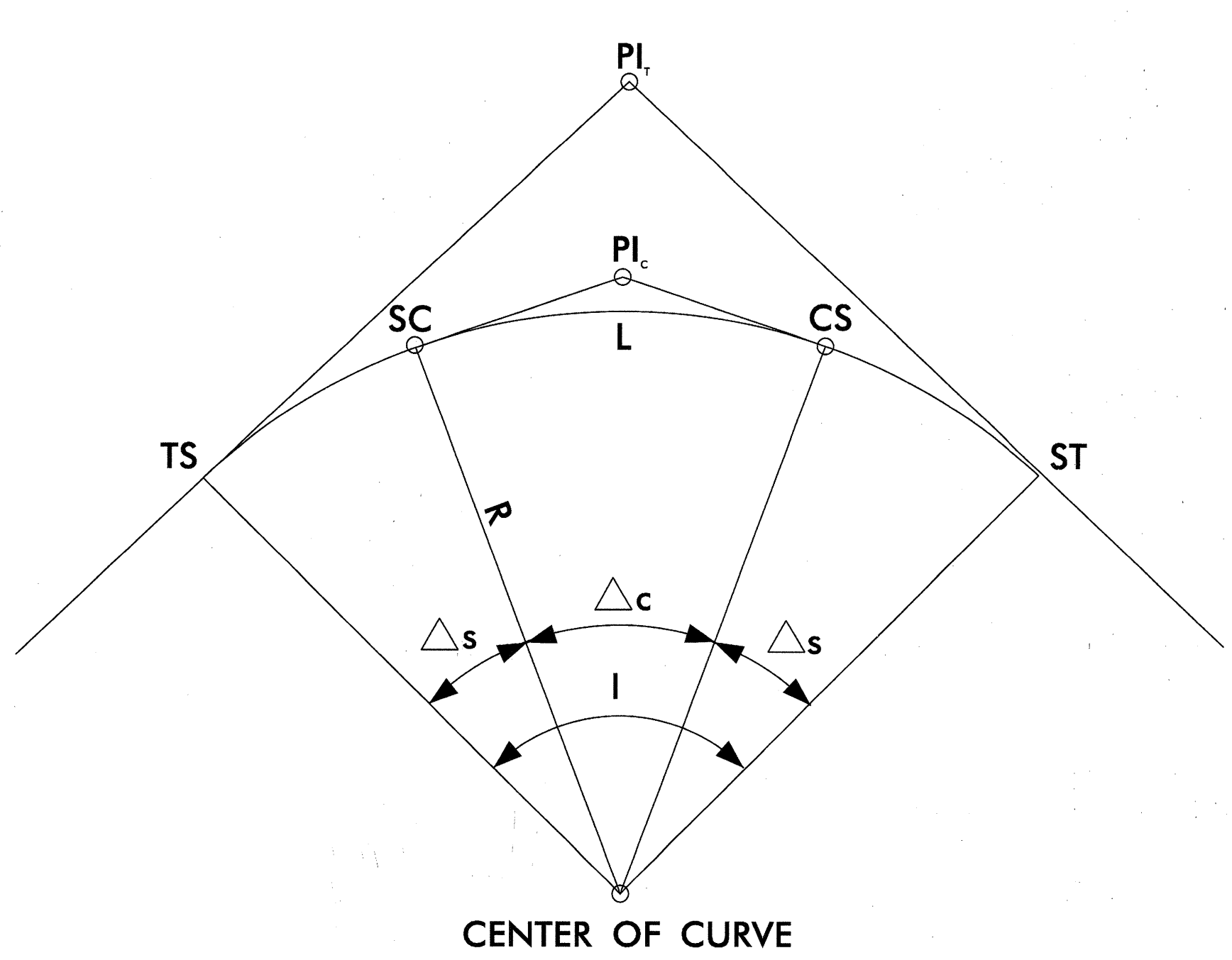
**INTERIM SECTION**  
-M1- STA. 10430+00 TO STA. 10435+50



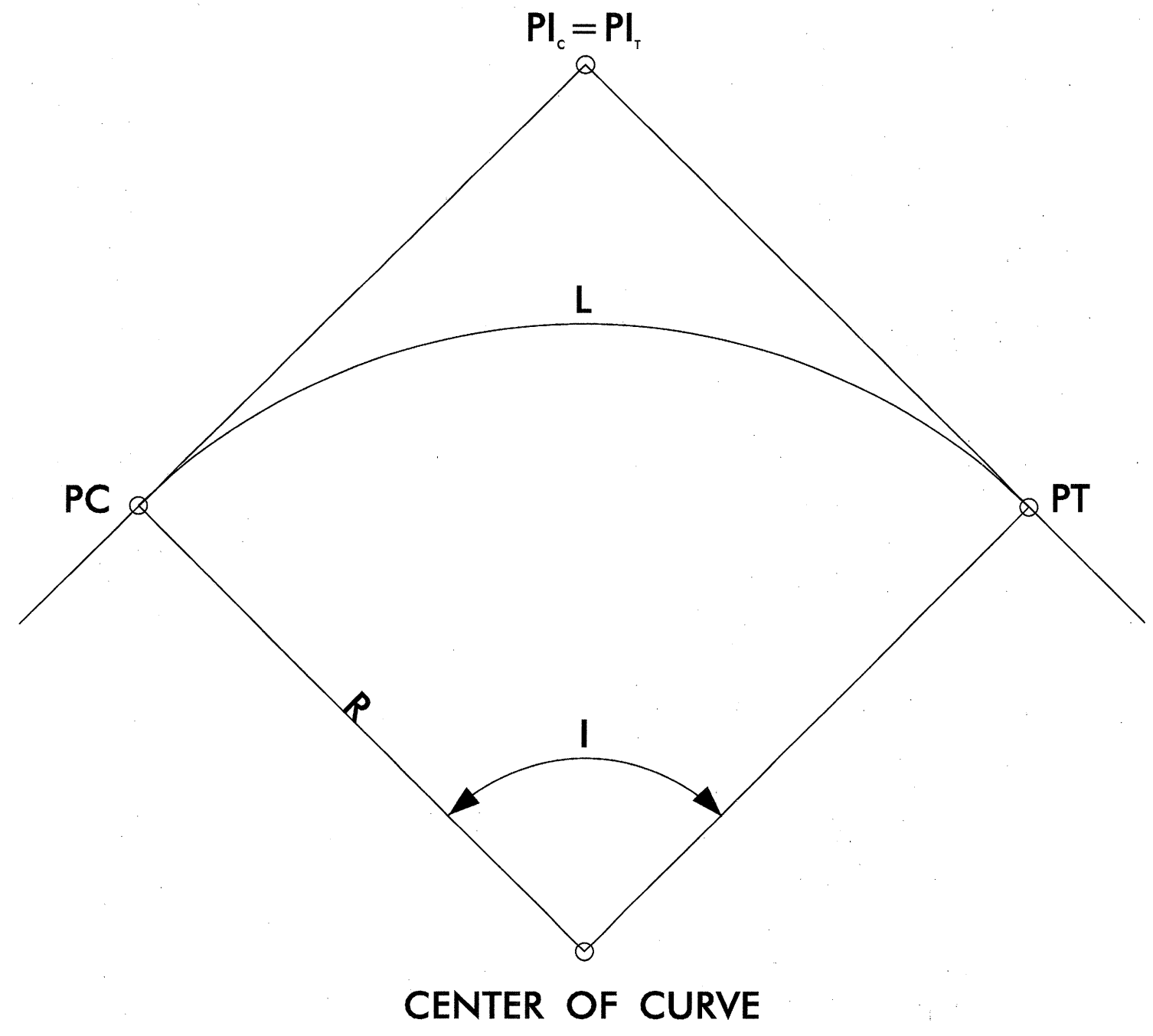
**SPECIAL SECTION #1 - RETAINING WALL**  
-M1- STA. 10430+50 TO STA. 10432+10

- NOTES**
1. TRACK CONSTRUCTION, INCLUDING BALLAST, WILL BE DONE BY OTHERS.
  2. ACTUAL LOCATION OF EXCAVATION TO BE BASED ON FIELD CONDITIONS AS DETERMINED BY THE NORFOLK SOUTHERN REPRESENTATIVE.

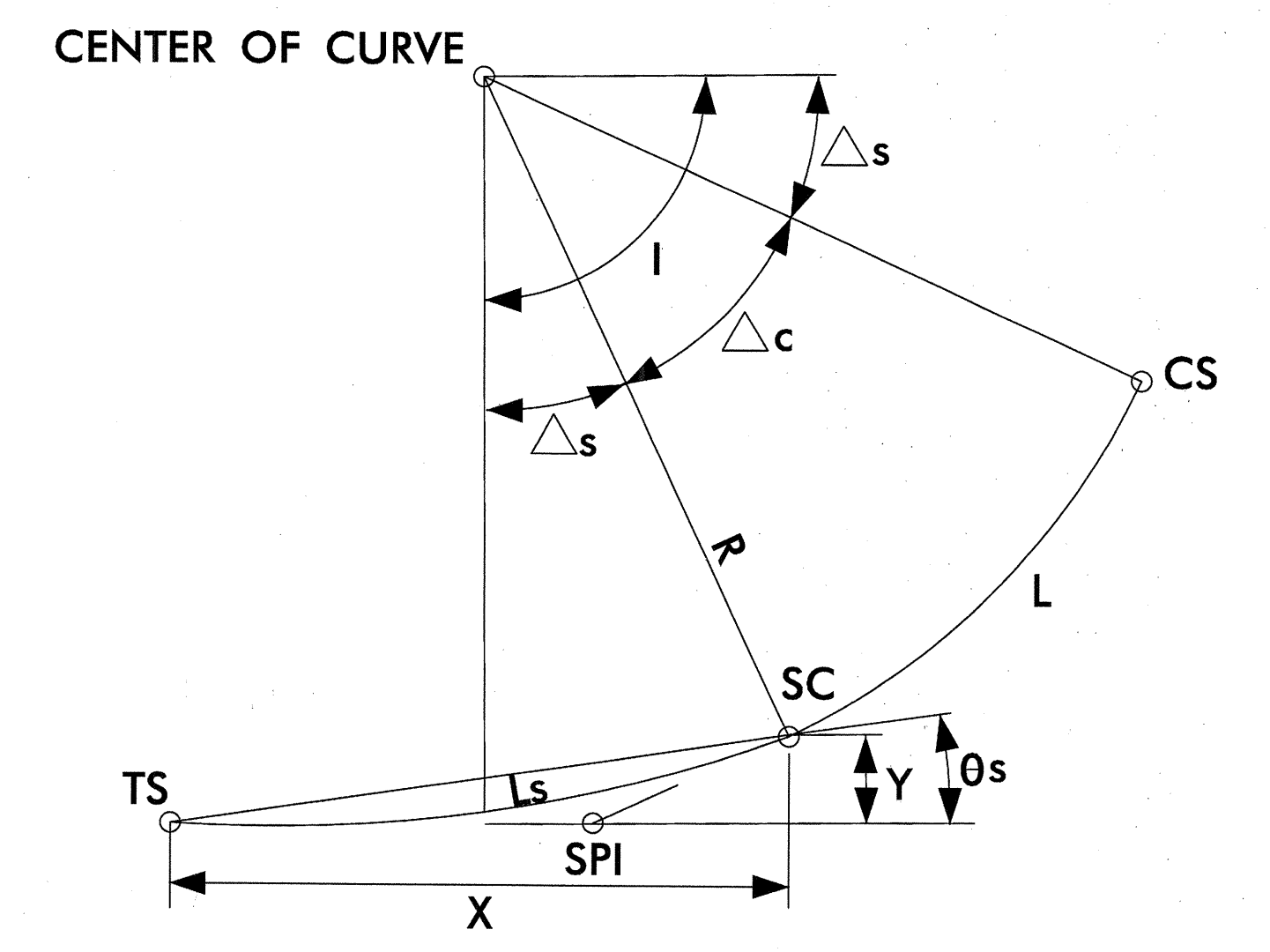
# RAILROAD HORIZONTAL ALIGNMENT GEOMETRY



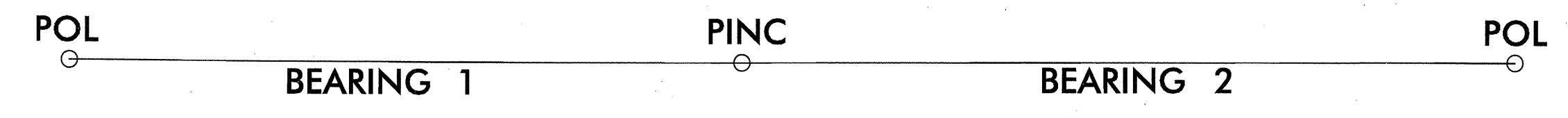
**FIGURE A**  
CIRCULAR CURVE WITH SPIRAL TRANSITION CURVES



**FIGURE B**  
SIMPLE CIRCULAR CURVE



**FIGURE C**  
SPIRAL TRANSITION CURVE



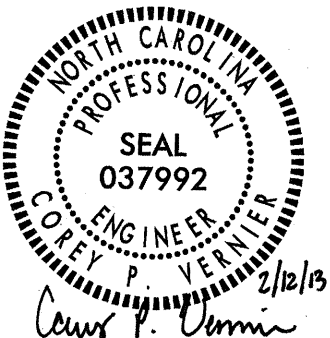
**FIGURE D**  
DEFLECTION BETWEEN TANGENTS

- |                |                                     |                 |  |
|----------------|-------------------------------------|-----------------|--|
| R              | RADIUS OF CURVATURE                 | PI <sub>c</sub> | POINT OF INTERSECTION (CIRCULAR CURVE) |
| D <sub>c</sub> | DEGREE OF CURVATURE (CHORD DEFINED) | PI <sub>t</sub> | POINT OF INTERSECTION (TANGENT)        |
| L              | LENGTH OF CURVE (CHORD DEFINED)     | SPI             | POINT OF INTERSECTION (SPIRAL)         |
| I              | TOTAL INTERSECTION ANGLE            | PC              | TANGENT TO CIRCULAR CURVE              |
| Δ <sub>c</sub> | CURVE ANGLE                         | PT              | CIRCULAR CURVE TO TANGENT              |
| Δ <sub>s</sub> | SPIRAL ANGLE                        | TS              | TANGENT TO SPIRAL                      |
| θ <sub>s</sub> | SPIRAL DEFLECTION                   | SC              | SPIRAL TO CIRCULAR CURVE               |
| L <sub>s</sub> | LENGTH OF SPIRAL                    | CS              | CIRCULAR CURVE TO SPIRAL               |
| X              | SPIRAL TANGENT LENGTH TO OFFSET     | ST              | SPIRAL TO TANGENT                      |
| Y              | SPIRAL TANGENT OFFSET               | PINC            | POINT OF INTERSECTION NO CURVE         |

0077DEL\_P10a4

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

DATE: FEBRUARY 12, 2013

PROJECT REFERENCE NO. P-5208D	SHEET NO. RR-2C
RW SHEET NO.	
RAILROAD DESIGN ENGINEER	HYDRAULICS ENGINEER
	

# RAILROAD HORIZONTAL ALIGNMENT GEOMETRY

TRACK GEOMETRY CURVE DATA																					
MAINLINE TRACK 1 (-M1-) CURVE DATA																					
FEATURE NO.	DESC.	STATION	NORTHING	EASTING	BEARING	DISTANCE (FT)	R (FT)	Dc (CHORD)	L (FT)	T	I	DELTA (CURVE)	DELTA (SPIRAL)	THETA	LS* (FT)	X (FT)	Y (FT)	Ea (in)			
M1C3639	TS	10409+19.40	575414.7330	1509741.0949															4.0"		
	SC	10413+22.40	575139.9644	1509446.3417									2° 41' 11.78" (RT)	0° 53' 43.87"	403.0000	402.9114	6.2979				
	PI	10425+79.63	574311.8558	1508500.3752			4297.2804	1° 20' 00.00"	2446.1293	1257.2257	37° 59' 17.77" (RT)	32° 36' 54.21" (RT)									
	CS	10437+68.53	574124.1996	1507257.2334																	
	ST	10441+71.53	574076.5357	1506857.1016										2° 41' 11.78" (RT)	0° 53' 43.87"	403.0000	402.9114	6.2979			

NOTE: 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.

TRACK GEOMETRY CURVE DATA																					
MAINLINE TRACK 2 (-M2-) CURVE DATA																					
FEATURE NO.	DESC.	STATION	NORTHING	EASTING	BEARING	DISTANCE (FT)	R (FT)	Dc (CHORD)	L (FT)	T	I	DELTA (CURVE)	DELTA (SPIRAL)	THETA	LS* (FT)	X (FT)	Y (FT)	Ea (in)			
M2C3639	TS	10409+17.26	575428.8512	1509734.7927															4.0"		
	SC	10413+20.26	575154.0826	1509440.0395									2° 41' 11.78" (RT)	0° 53' 43.87"	403.0000	402.9114	6.2979				
	PI	10425+77.49	574325.9740	1508494.0730			4297.2804	1° 20' 00.00"	2446.1293	1257.2257	37° 59' 17.77" (RT)	32° 36' 54.21" (RT)									
	CS	10437+66.39	574138.3178	1507250.9312																	
	ST	10441+69.39	574090.6539	1506850.7994										2° 41' 11.78" (RT)	0° 53' 43.87"	403.0000	402.9114	6.2979			

NOTE: 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.

10:34:20 AM  
 ...\\P2205\crt\psrh-RR-02C.dgn  
 \$\$\$USERNAME\$\$\$



0077DEL\_P10a4  
0001ADD\_P10a

REVISIONS  
REVISION #1 (2/25/2013): TEMP. 36" PIPE & DITCH REVISED, GTD NOTE ADDED, NCRR ROW ACQUISITION REMOVED.

140825 BY  
140825 2:08 PM J.P.H. RR-02D.dgn  
USER:JPH

# HICKORY RIDGE ROAD GRADE CROSSING CLOSURE DETAIL

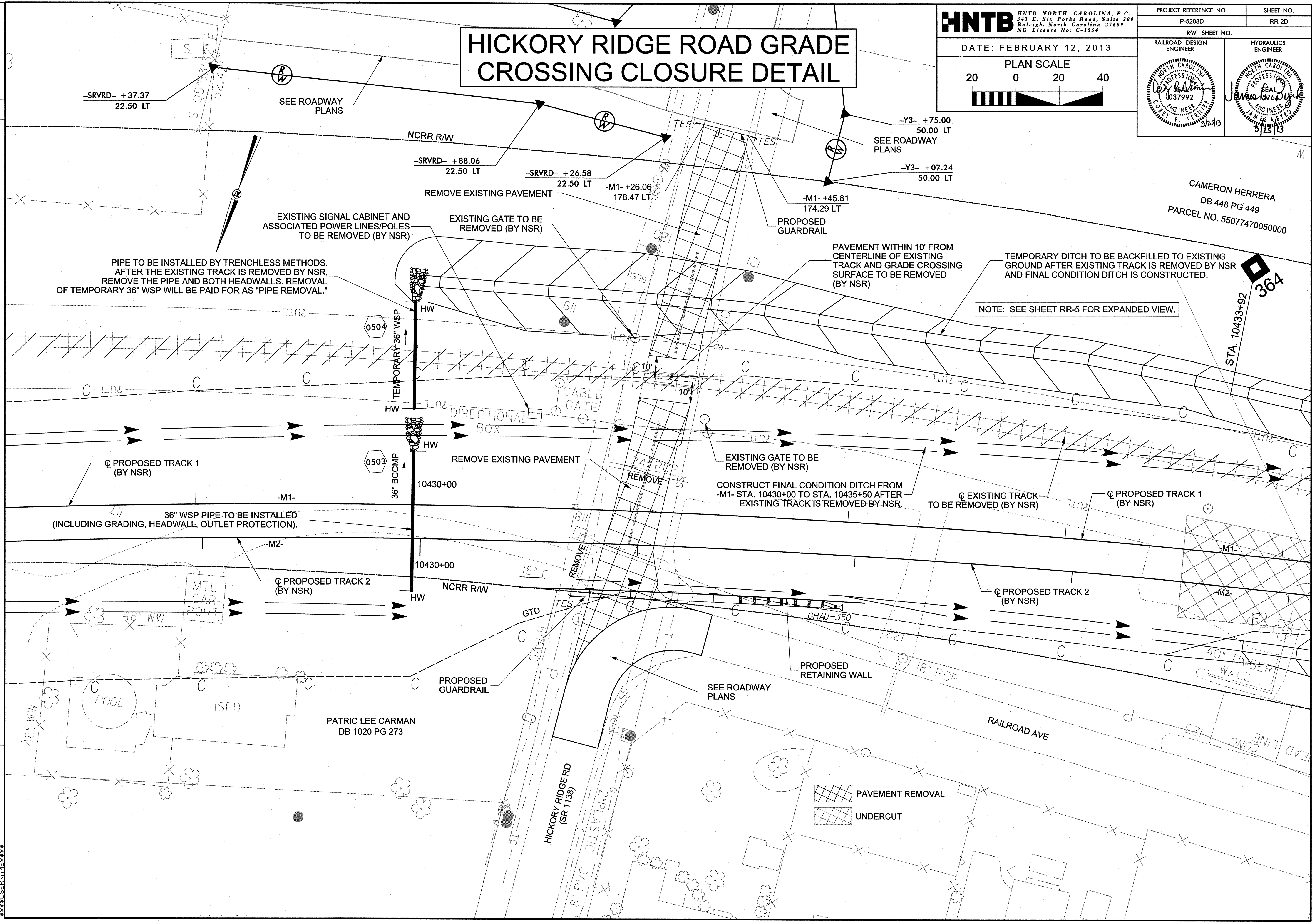
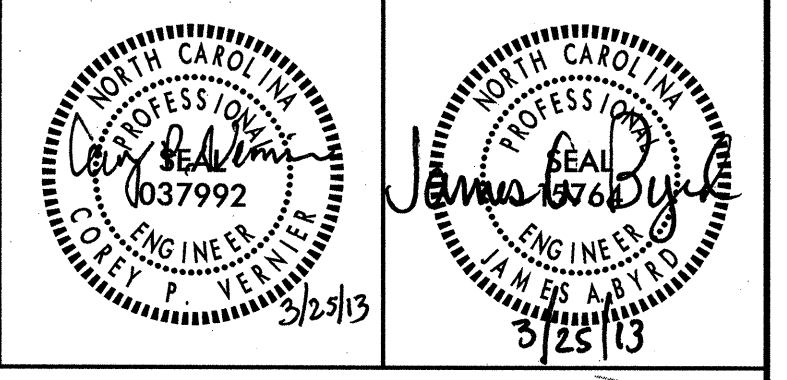
**HNTB** HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

PROJECT REFERENCE NO. P-5208D	SHEET NO. RR-2D
R/W SHEET NO.	HYDRAULICS ENGINEER
RAILROAD DESIGN ENGINEER	ENGINEER

DATE: FEBRUARY 12, 2013

PLAN SCALE  
20 0 20 40

CAMERON HERRERA  
DB 448 PG 449  
PARCEL NO. 5507747005000



PIPE TO BE INSTALLED BY TRENCHLESS METHODS. AFTER THE EXISTING TRACK IS REMOVED BY NSR, REMOVE THE PIPE AND BOTH HEADWALLS. REMOVAL OF TEMPORARY 36" WSP WILL BE PAID FOR AS "PIPE REMOVAL."

EXISTING SIGNAL CABINET AND ASSOCIATED POWER LINES/POLES TO BE REMOVED (BY NSR)

EXISTING GATE TO BE REMOVED (BY NSR)

PAVEMENT WITHIN 10' FROM CENTERLINE OF EXISTING TRACK AND GRADE CROSSING SURFACE TO BE REMOVED (BY NSR)

TEMPORARY DITCH TO BE BACKFILLED TO EXISTING GROUND AFTER EXISTING TRACK IS REMOVED BY NSR AND FINAL CONDITION DITCH IS CONSTRUCTED.

NOTE: SEE SHEET RR-5 FOR EXPANDED VIEW.

CONSTRUCT FINAL CONDITION DITCH FROM -M1- STA. 10430+00 TO STA. 10435+50 AFTER EXISTING TRACK IS REMOVED BY NSR.

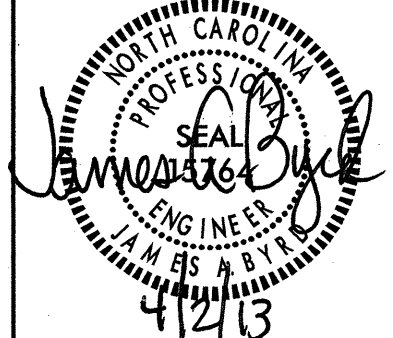
PATRIC LEE CARMAN  
DB 1020 PG 273

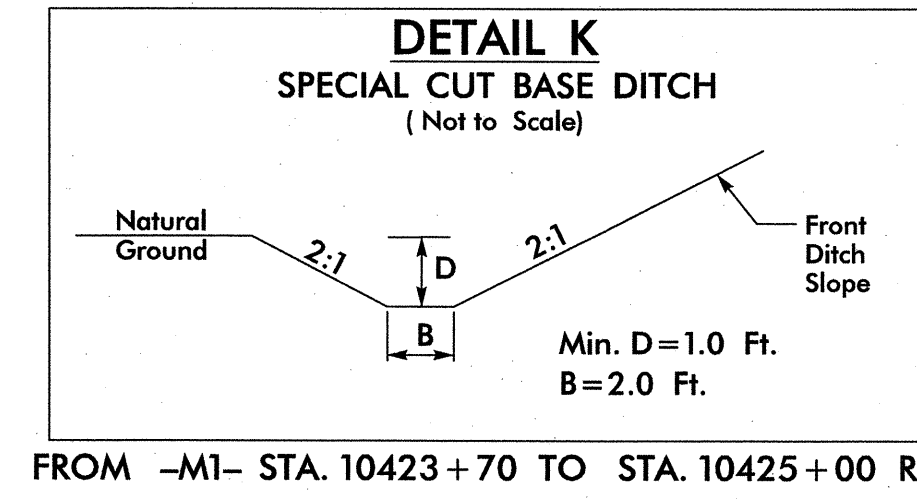
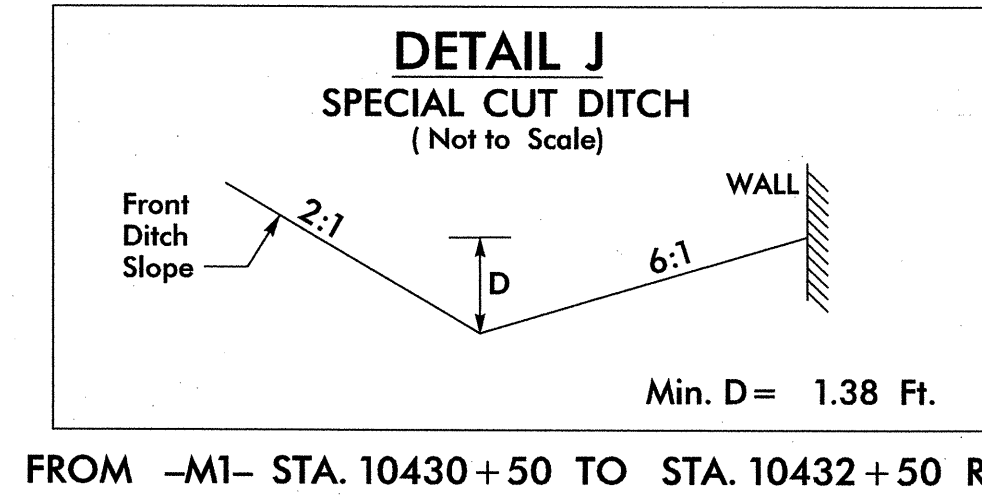
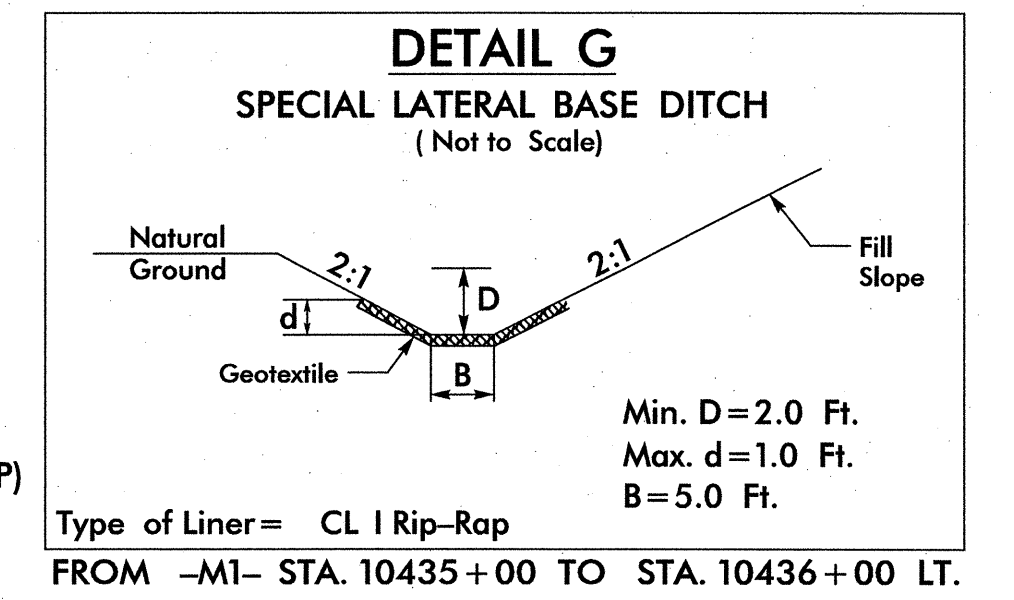
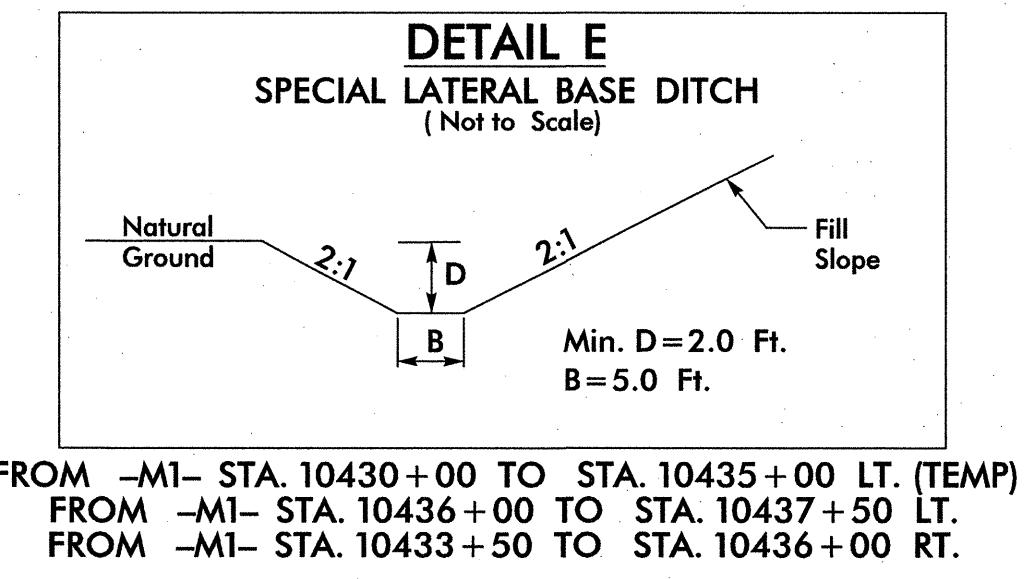
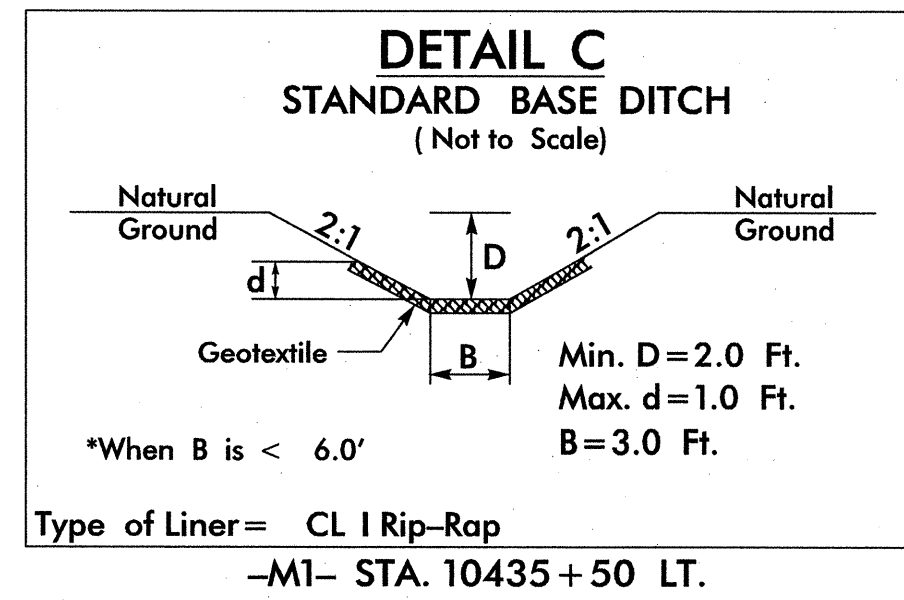
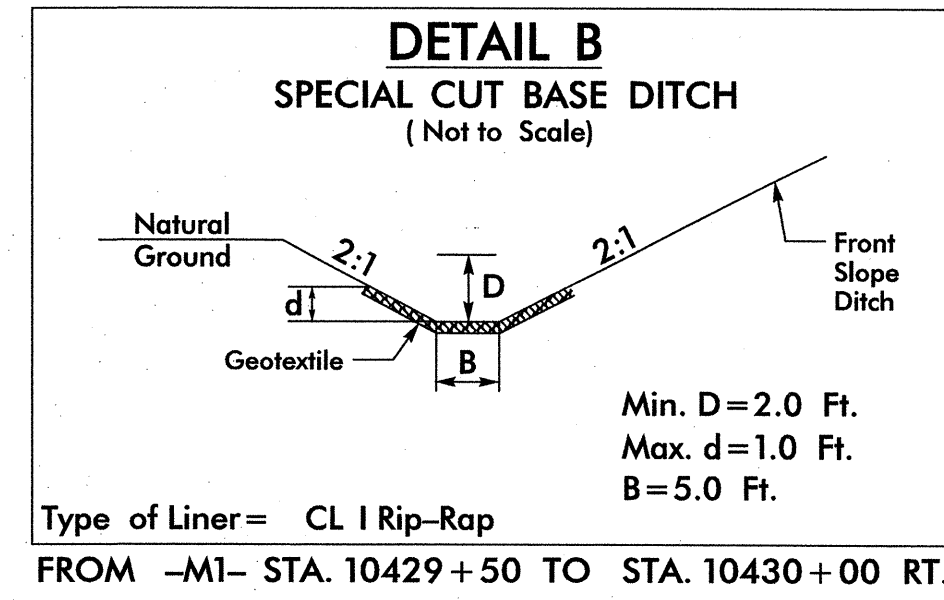
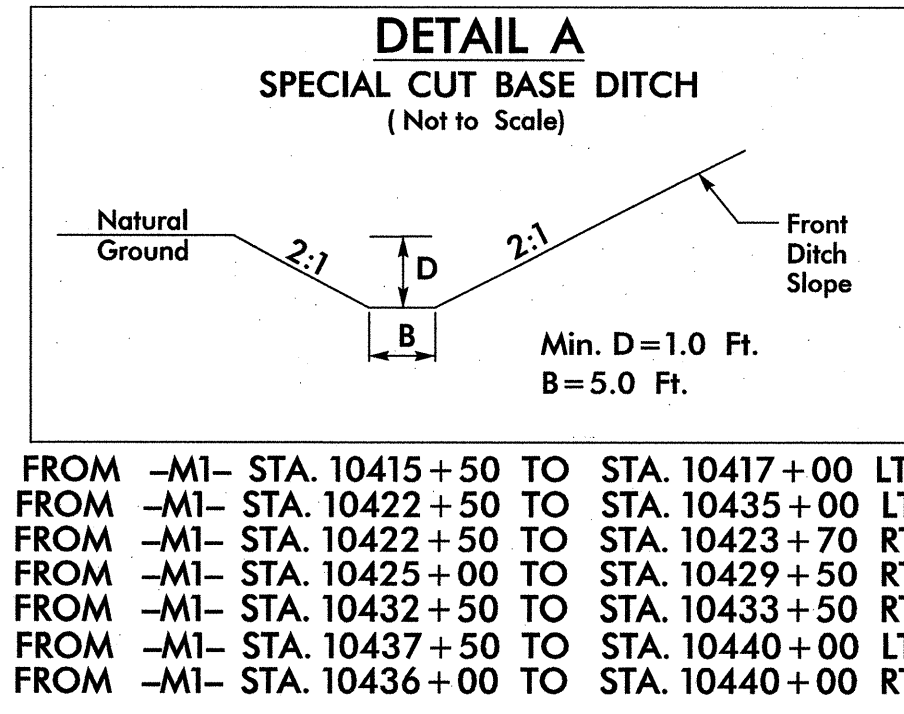
PAVEMENT REMOVAL  
UNDERCUT

0077DEL\_P10a4  
0001ADD\_P10a  
0002ADD\_P10a

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

DATE: FEBRUARY 12, 2013

PROJECT REFERENCE NO. P-5208D	SHEET NO. RR-2E
RW SHEET NO.	
HYDRAULICS ENGINEER	
	



REVISIONS

REVISION #1 (3/25/2013): DETAIL J REVISED, NEW DETAIL K ADDED  
REVISION #2 (4/2/2013): STATION RANGES REVISED ON DETAIL A

11:53:30 AM  
C:\Users\jwagner\Documents\Projects\RR-02E.dgn

0077DEL\_P10a4  
0001ADD\_P10a

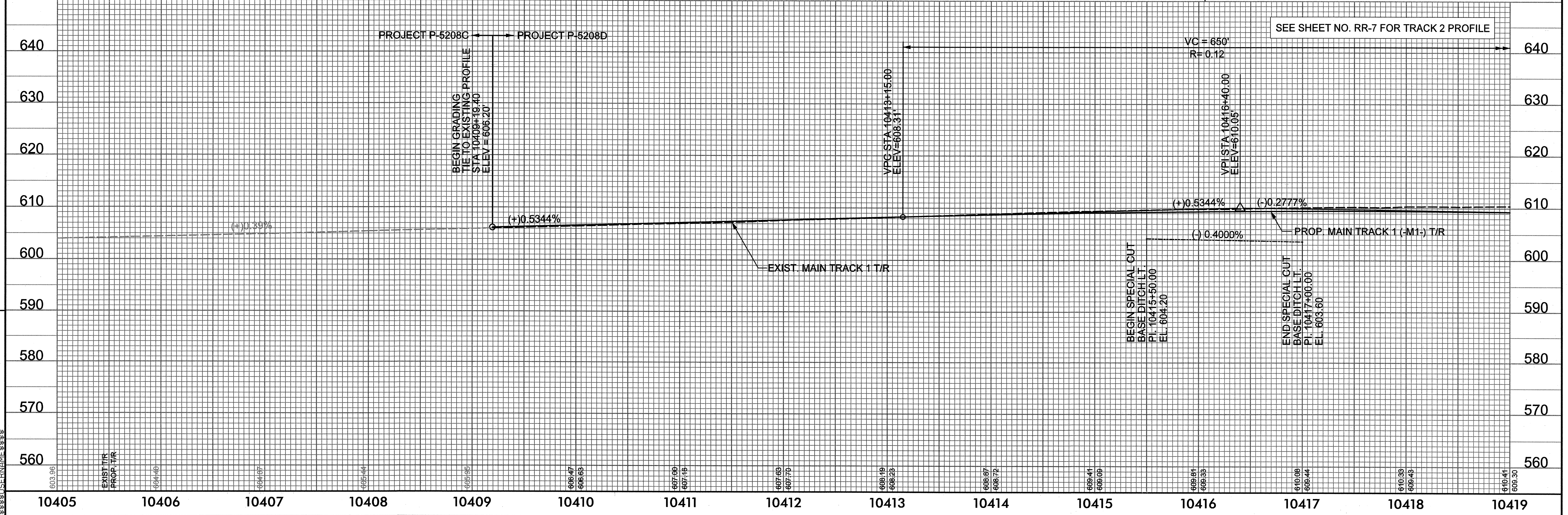
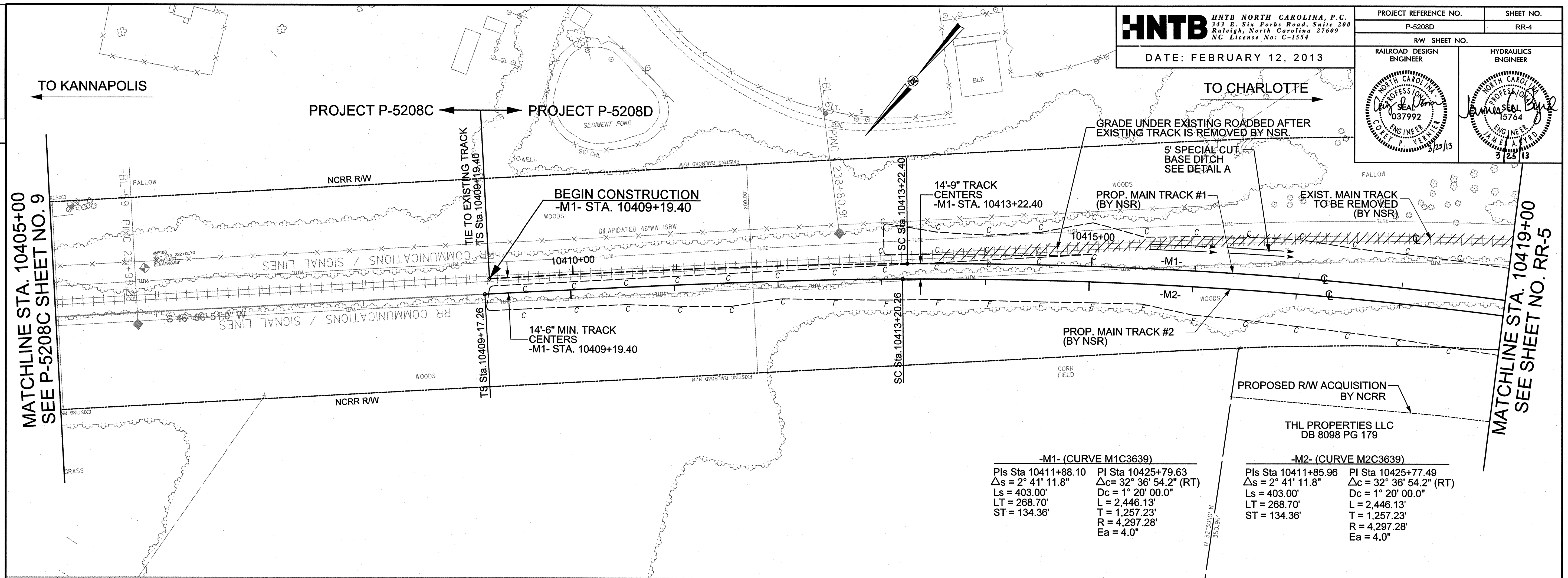
REVISIONS  
REVISION #1 (3/25/2013): NCRR ROW ACQUISITION REVISED, SLOPE STAKES REVISED, MIN. TRACK CENTER NOTES ADDED.

100844.PM  
C:\Users\jrd\OneDrive\Documents\RR-4.dgn  
3/25/2013 10:58:58 AM

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

DATE: FEBRUARY 12, 2013

PROJECT REFERENCE NO. P-5208D	SHEET NO. RR-4
RW SHEET NO.	
RAILROAD DESIGN ENGINEER 	HYDRAULICS ENGINEER 



0077DEL\_P10a4  
0001ADD\_P10a

REVISIONS  
REVISION #1 (3/25/2013): NCCR ROW ACQUISITION, CONSTRUCTION LIMITS, TEMP. 36" PIPE, & DITCH. REVISED. MINIMUM TRACK CENTER NOTES, & GTD. NOTE ADDED.

2/15/13 BY  
0001ADD\_P10a4.dwg  
0001ADD\_P10a4.dwg

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

PROJECT REFERENCE NO. P-520BD  
SHEET NO. RR-5

RW SHEET NO. RAILROAD DESIGN ENGINEER  
HYDRAULICS ENGINEER

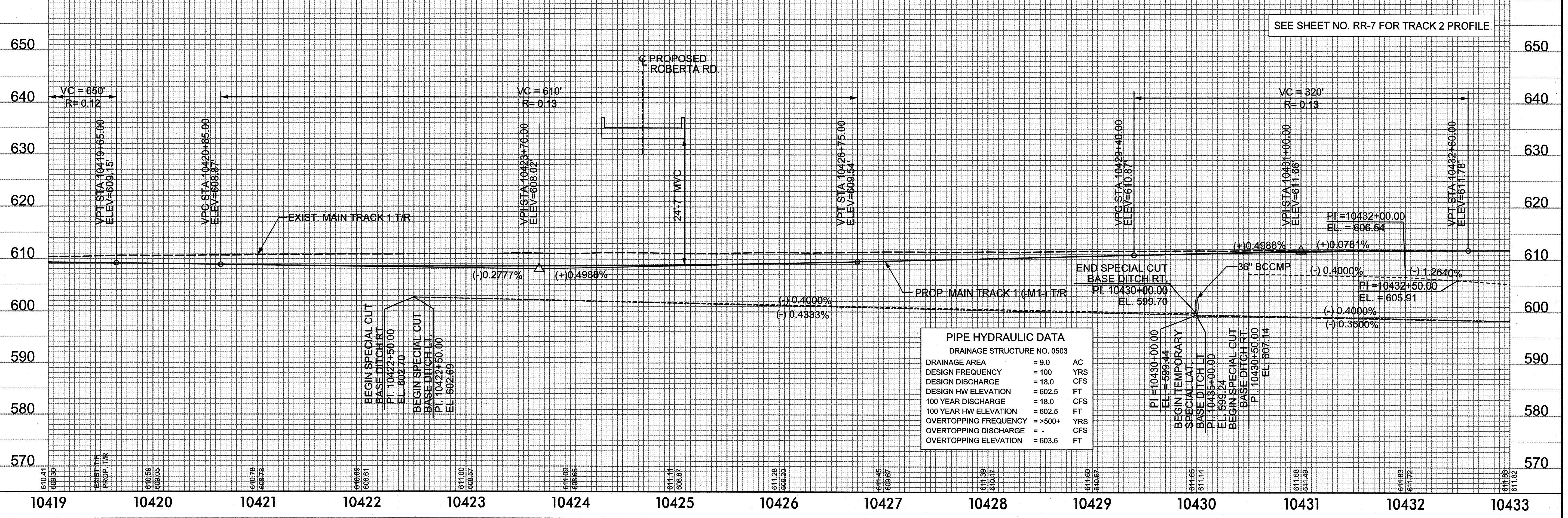
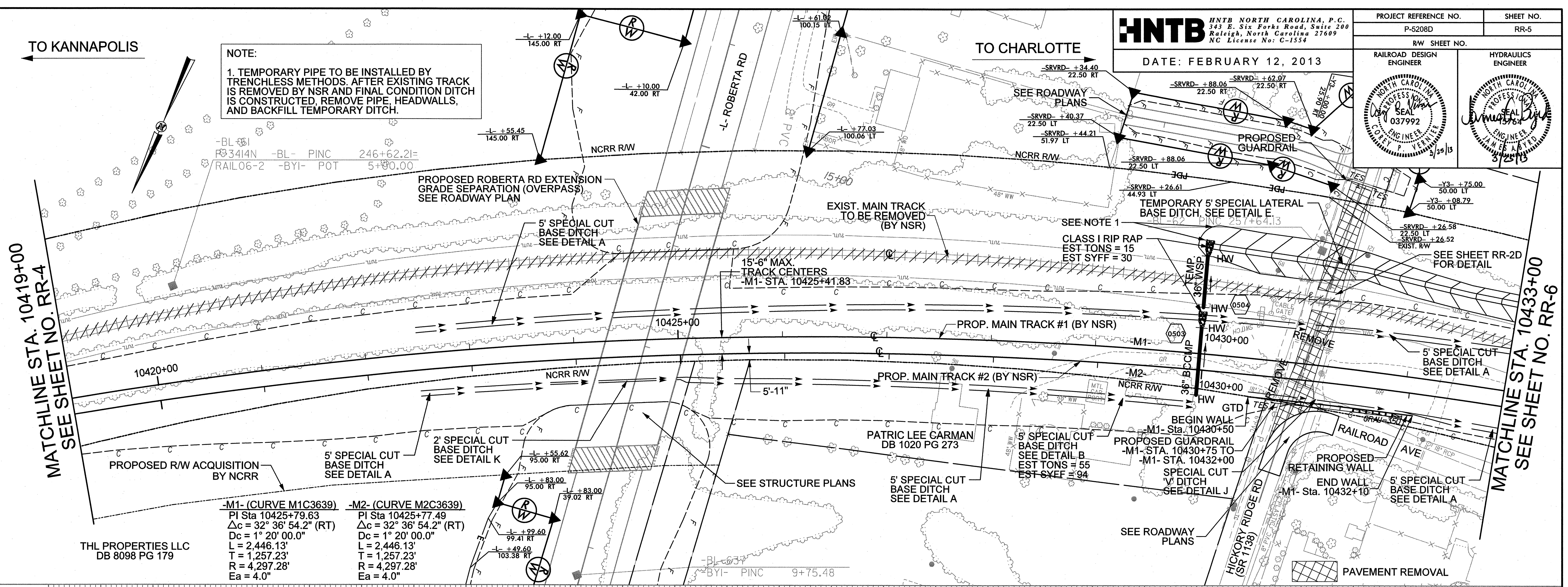
DATE: FEBRUARY 12, 2013

Professional Engineer Seal: 037992, 2/25/13

TO KANNAPOLIS

TO CHARLOTTE

NOTE:  
1. TEMPORARY PIPE TO BE INSTALLED BY TRENCHLESS METHODS. AFTER EXISTING TRACK IS REMOVED BY NSR AND FINAL CONDITION DITCH IS CONSTRUCTED, REMOVE PIPE HEADWALLS, AND BACKFILL TEMPORARY DITCH.



**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO. 0503

DRAINAGE AREA	= 9.0	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 18.0	CFS
DESIGN HW ELEVATION	= 602.5	FT
100 YEAR DISCHARGE	= 18.0	CFS
100 YEAR HW ELEVATION	= 602.5	FT
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING DISCHARGE	= .	CFS
OVERTOPPING ELEVATION	= 603.6	FT

SEE SHEET NO. RR-7 FOR TRACK 2 PROFILE

610.41  
609.99  
610.69  
609.05  
610.78  
608.78  
610.89  
608.61  
611.00  
608.57  
611.11  
608.87  
611.28  
609.20  
611.45  
608.97  
611.39  
610.17  
611.60  
610.97  
611.65  
611.14  
611.68  
611.49  
611.83  
611.72  
611.83  
611.82

0077DEL\_P10a4  
0001ADD\_P10a  
0002ADD\_P10a

REVISIONS  
REVISION #1 (3/25/2013): SPUR TRACK NOTE AND CONSTRUCTION LIMITS REVISED, MIN. TRACK CENTER NOTES ADDED, & GRADING UNDER EXISTING TRACK REVISED.  
REVISION #2 (4/4/2013): SPECIAL CUT DITCHES ADDED, REVISED STATIONING PER TRACK REMOVAL NOTE.

11/17/12 AM  
3:33:51 PM  
C:\Users\jg3361\Documents\RR-6.dgn

**HNTB** HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1534

PROJECT REFERENCE NO. P-5208D SHEET NO. RR-6  
RW SHEET NO.  
RAILROAD DESIGN ENGINEER  
HYDRAULICS ENGINEER

DATE: FEBRUARY 12, 2013

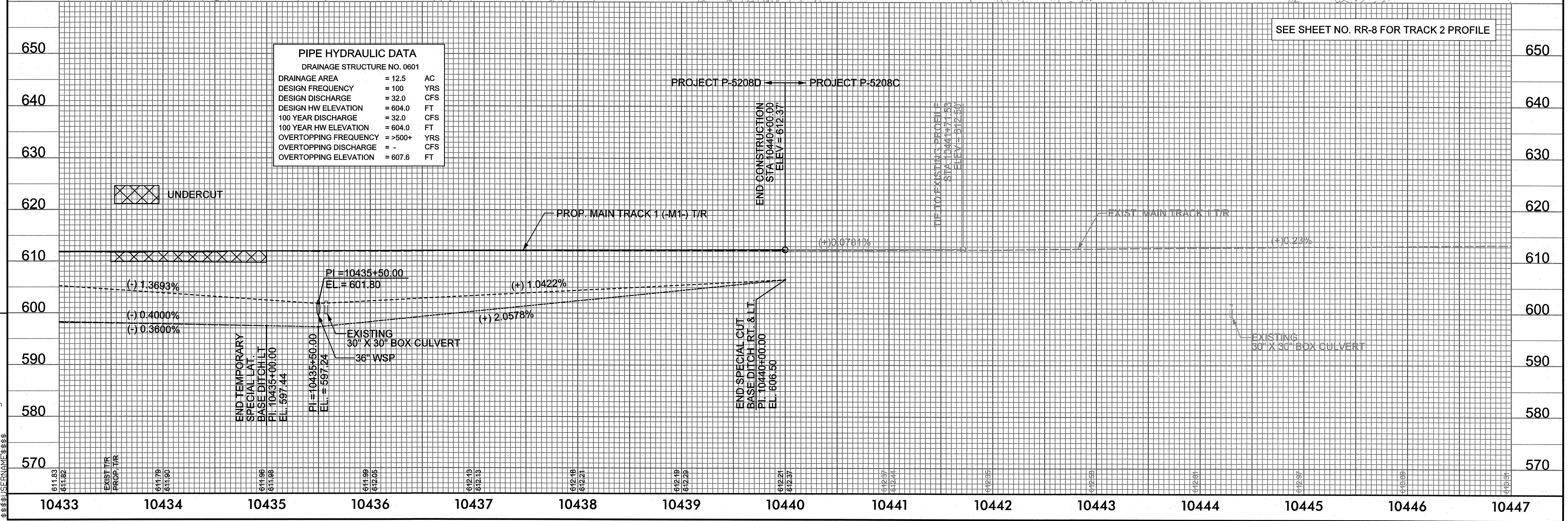
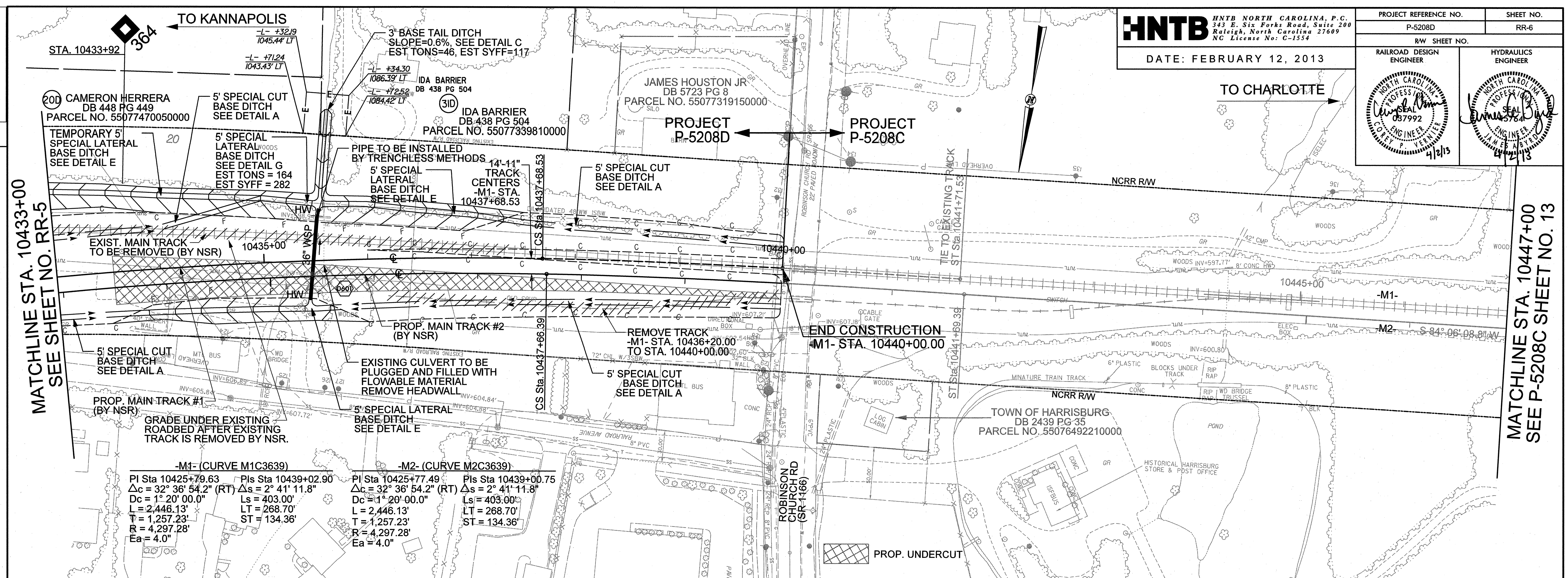
TO KANNAPOLIS  
TO CHARLOTTE

PROJECT P-5208D  
PROJECT P-5208C

PROF. SEAL  
4/2/13

MATCHLINE STA. 10433+00  
SEE SHEET NO. RR-5

MATCHLINE STA. 10447+00  
SEE P-5208C SHEET NO. 13



**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO. 0601

DRAINAGE AREA	= 12.5	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 32.0	CFS
DESIGN HW ELEVATION	= 604.0	FT
100 YEAR DISCHARGE	= 32.0	CFS
100 YEAR HW ELEVATION	= 604.0	FT
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING ELEVATION	= 607.6	FT

10433 10434 10435 10436 10437 10438 10439 10440 10441 10442 10443 10444 10445 10446 10447

0077DEL\_P10a4

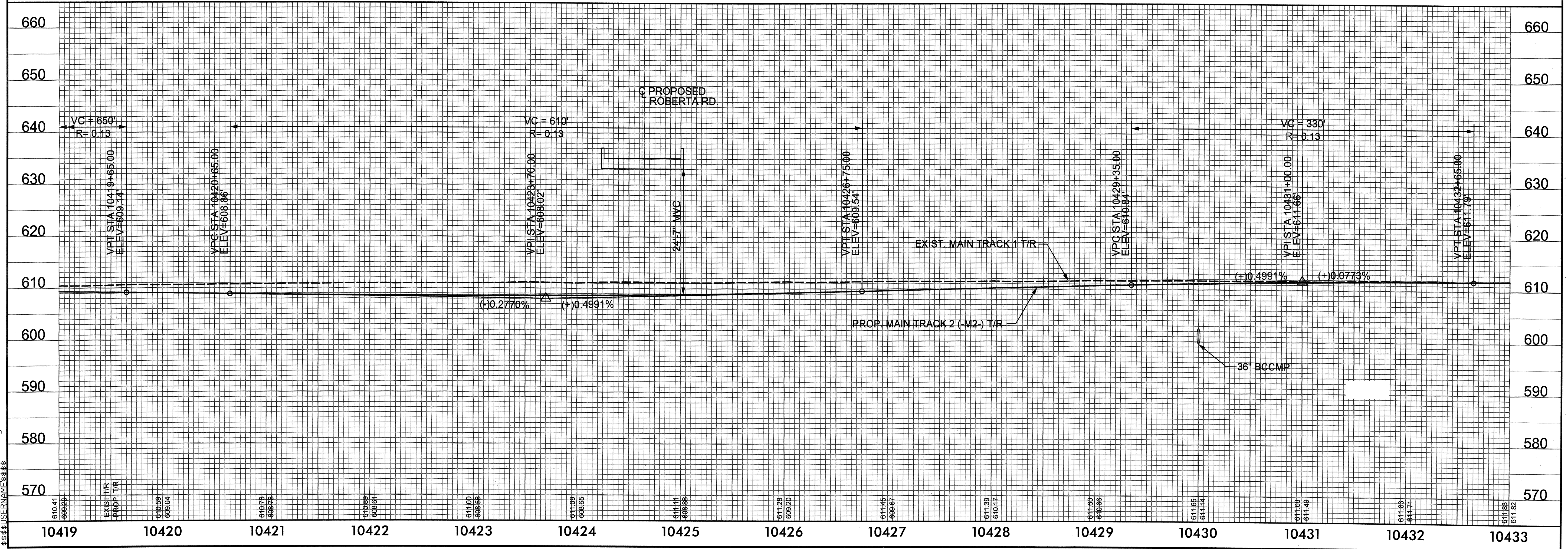
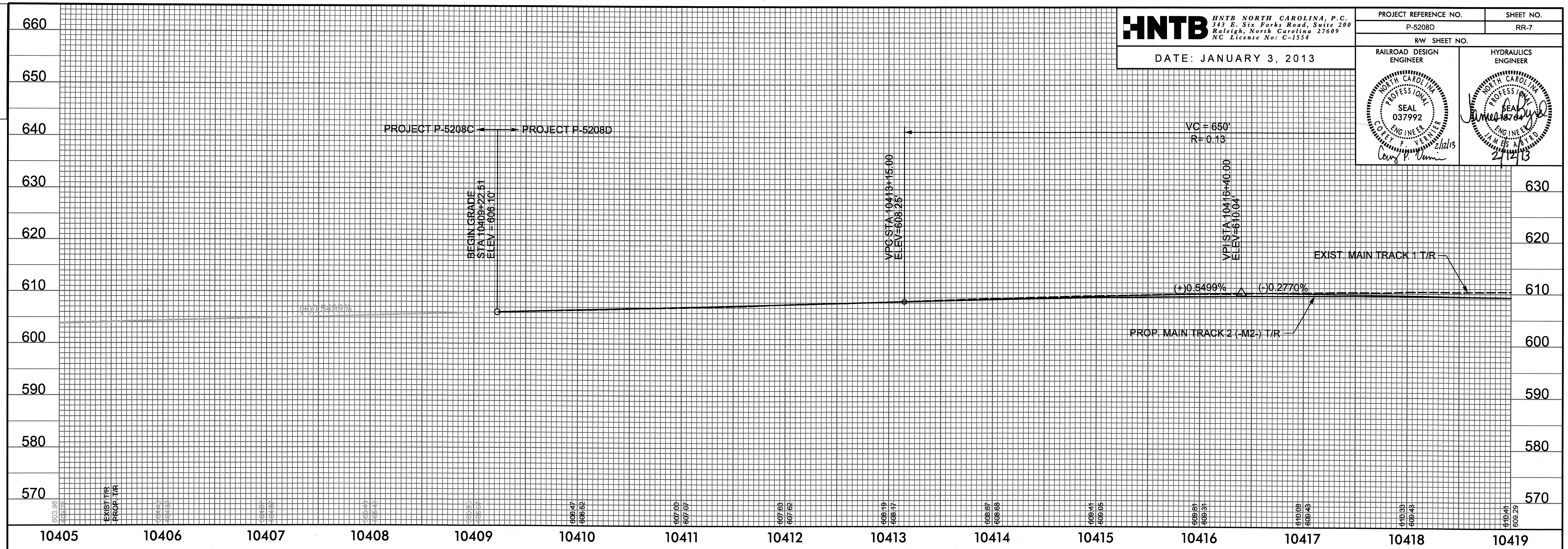
PCN

10:36:07 AM  
3/23/13  
C:\PROJECTS\RR-7.dgn  
3/23/13 10:36:07 AM  
3/23/13 10:36:07 AM

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

DATE: JANUARY 3, 2013

PROJECT REFERENCE NO. P-5208D	SHEET NO. RR-7
RW SHEET NO.	
RAILROAD DESIGN ENGINEER 	HYDRAULICS ENGINEER 



0077DEL\_P10a4

PCN

10:35:12 AM  
2/12/13  
C:\Users\RAMI\Documents\103512 AM  
RR\_Pah\_RR-8.dgn

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

DATE: JANUARY 3, 2013

PROJECT REFERENCE NO. P-5208D	SHEET NO. RR-8
RW SHEET NO.	
RAILROAD DESIGN ENGINEER	HYDRAULICS ENGINEER

