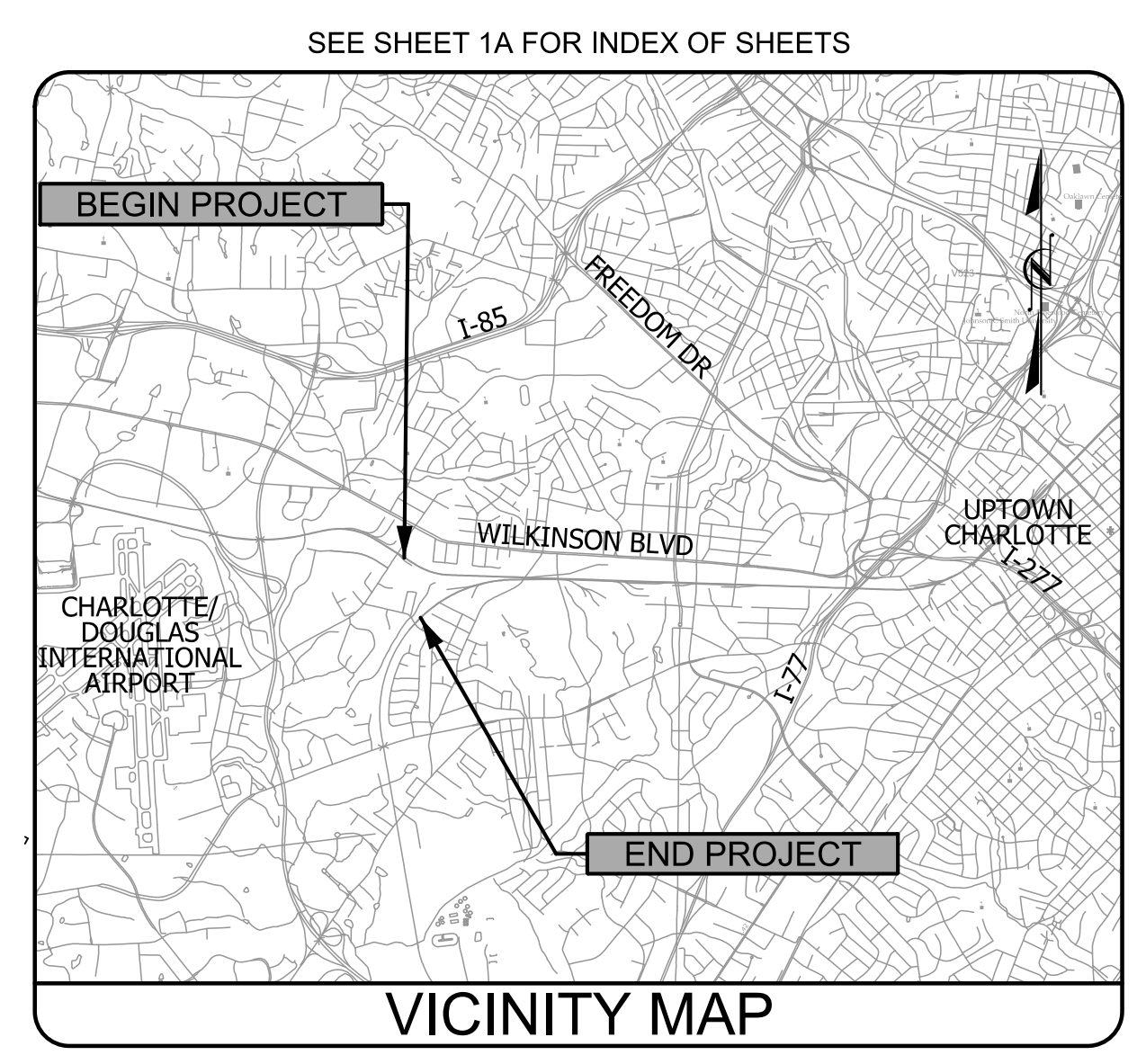


**TIP PROJECT: P-5705A**

**CONTRACT: C204176**



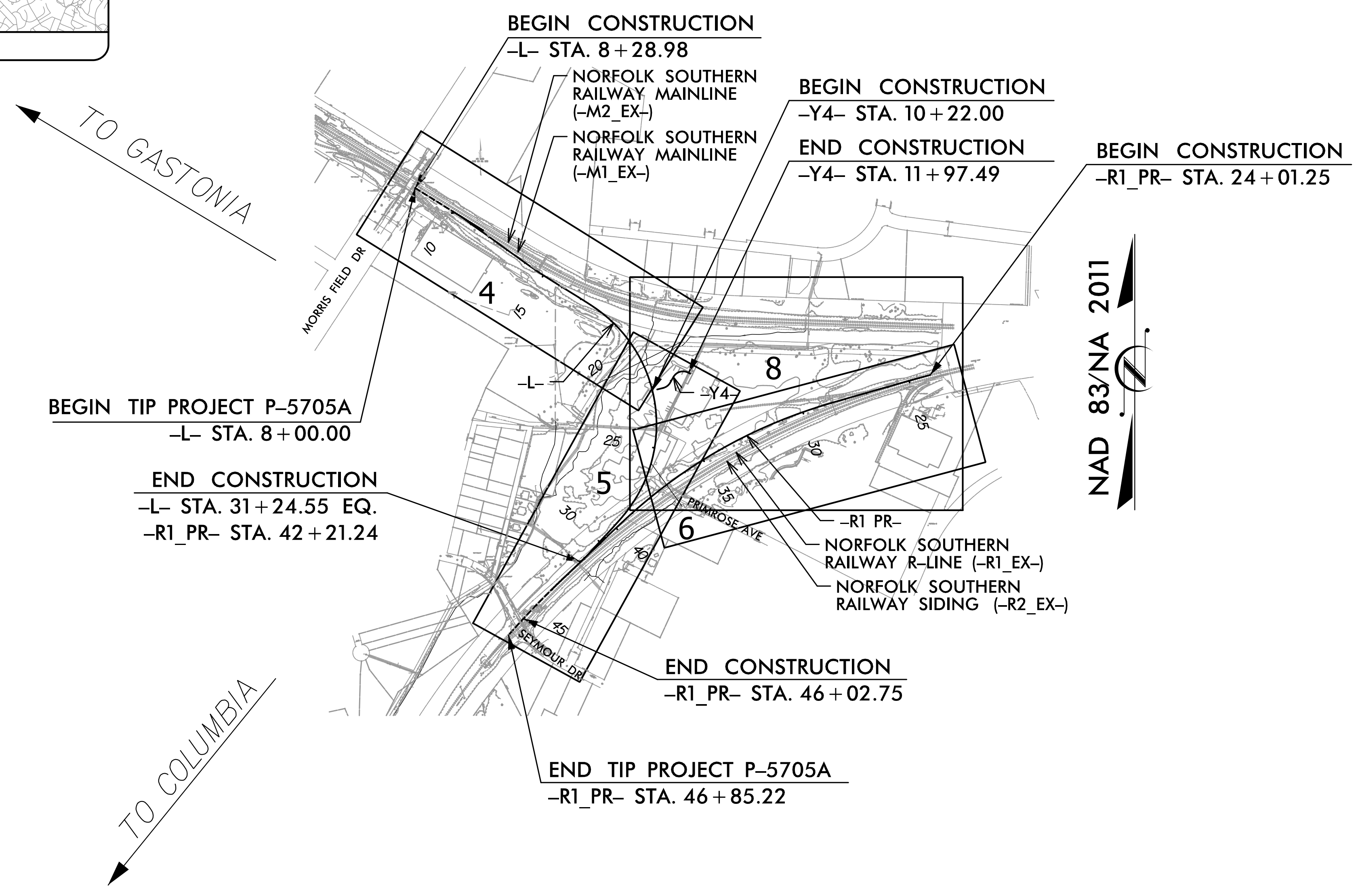
STATE OF NORTH CAROLINA  
RAIL DIVISION

**MECKLENBURG COUNTY**

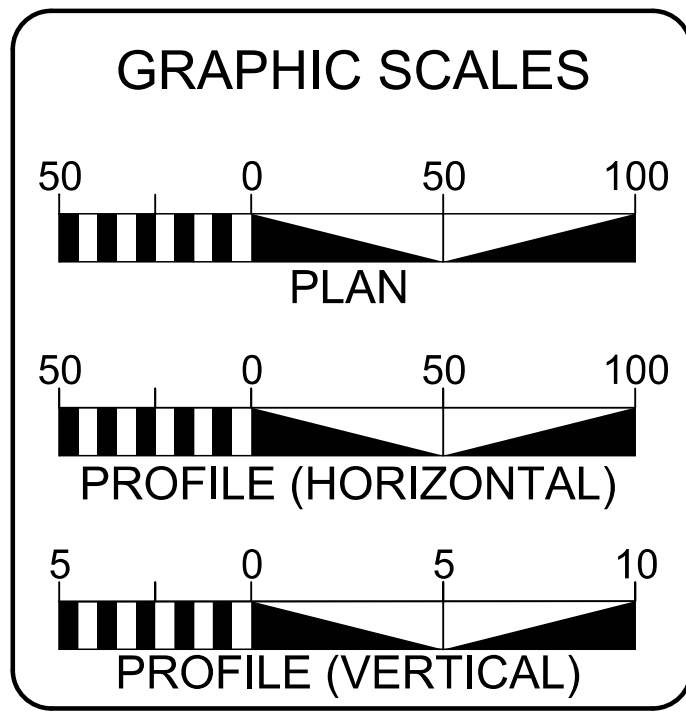
**LOCATION: CHARLOTTE GATEWAY STATION - RAIL (STI)  
WYE CONNECTION TRACK AT CHARLOTTE JUNCTION  
TYPE OF WORK: CULVERT, DRAINAGE, GRADING**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-5705A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
44475.1.1		P.E.	
44475.2.1		ROW / UTIL P.E.	
44475.3.1		CONST./UTIL CONST.	

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



TO CHARLOTTE



PROJECT LENGTH

LENGTH OF RAIL TIP PROJECT	0.873 MILES
LENGTH OF STRUCTURES TIP PROJECT	0.000 MILES
TOTAL LENGTH OF RAIL TIP PROJECT	0.873 MILES
LENGTH MEASURED ALONG -L- AND -R1_PR-	

NCDOT CONTACT: BRAD SMYTHE, P.E.  
NCDOT PROJECT MANAGER

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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
03/09/2018

LETTING DATE:  
07/18/2023

COREY VERNIER, P.E.  
RAIL PROJECT ENGINEER

DAVID HAWKINS, P.E.  
STRUCTURE PROJECT ENGINEER

PAUL CAMERON, P.E.  
HYDRAULICS PROJECT ENGINEER

BRAD SMYTHE, P.E.  
NCDOT PROJECT MANAGER

RAIL ENGINEER

HYDRAULICS ENGINEER

DocuSigned by:  
Corey P. Vernier P.E.  
SIGNATURE:

DocuSigned by:  
Paul H. Cameron P.E.  
SIGNATURE:

Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037992, COREY P. VERNIER, 4/12/2023

Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 40801, PAUL H. CAMERON, 4/12/2023

NC DEPARTMENT OF TRANSPORTATION  
**RAIL DIVISION**  
DESIGN AND CONSTRUCTION



PROJECT REFERENCE NO.	SHEET NO.
P-5705A	1A
RW SHEET NO.	
RAILROAD DESIGN ENGINEER	

DATE: NOVEMBER 4, 2022

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
1	COVER SHEET
1A	INDEX OF DRAWINGS, GENERAL NOTES AND STANDARDS
1B-1 THRU 1B-2	CONVENTIONAL PLAN SHEET SYMBOLS AND ABBREVIATIONS
1C-1 THRU 1C-16	SURVEY CONTROL SHEETS
1D-1	CENTERLINE COORDINATE LIST
1E-1	RIGHT OF WAY CONTROL SHEET
2A-1 THRU 2A-4	PROPOSED TRACK TYPICAL SECTIONS
2B-1 THRU 2B-3	TRACK HORIZONTAL ALIGNMENT GEOMETRY
2B-4	EXCAVATION ADJUSTMENT TO ACTIVE TRACK DETAIL & BENCHING DETAIL
2B-5	GATE DETAIL
2G-1 THRU 2G-3	GEOTECHNICAL DETAILS
3B-1	EARTHWORK SUMMARY
3D-1	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARY
3P-1	PARCEL INDEX
4 THRU 5	PROPOSED TRACK PLAN AND PROFILE SHEETS (-L-)
6	PROPOSED TRACK PLAN AND PROFILE SHEET (-R1_PR-)
7	PROPOSED TRACK AND ACCESS ROAD PROFILE SHEETS (-R1_PR- AND -Y4-)
8	PARCEL 2 CONTINUATION PLAN
EC-1 THRU EC-9	EROSION CONTROL PLANS
UC-1 THRU UC-5	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-4	UTILITIES BY OTHERS PLANS
X-0	CROSS SECTION INDEX
X-0A	CROSS SECTION SUMMARY
X-1 THRU X-29	CROSS SECTIONS
C1-1 THRU C1-6	CULVERT PLANS

GENERAL NOTES: 2018 SPECIFICATIONS  
EFFECTIVE: 01-16-2018  
REVISED:

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE Duke Energy, PNG, CenturyLink, AT&T

City of Charlotte

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

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

EFF. 01-16-2018  
REV.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
235.01	Embankment Monitoring
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

GENERAL NOTES FOR RAILROAD GRADING:

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 NORFOLK SOUTHERN RAILWAY 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.

RAILROAD SAFETY:

THE CONTRACTOR THAT WILL ENTER NORFOLK SOUTHERN RIGHT-OF-WAY SHALL OBTAIN A RIGHT-OF-ENTRY AGREEMENT FROM NORFOLK SOUTHERN RAILWAY IN ADVANCE.

INFORMATION AVAILABLE:  
<http://www.nscorp.com/content/nscorp/en/real-estate/norfolk-southern-services/access-norfolk-southern-property.html>

ALL CONTRACTOR AND SUBCONTRACTOR EMPLOYEES THAT WILL ENTER NORFOLK SOUTHERN RIGHT-OF-WAY, PERFORM WORK WITHIN 25' OF AN ACTIVE TRACK, OR OTHERWISE HAVE THE POTENTIAL TO FOUL AN ACTIVE TRACK SHALL OBTAIN THE FOLLOWING SAFETY CREDENTIALS IN ADVANCE.

1. NORFOLK SOUTHERN ROADWAY WORKER PROTECTION TRAINING (NS RWP)- INFORMATION AVAILABLE:  
[www.rtrainers.com](http://www.rtrainers.com)

2. E-RAILSAFE CERTIFICATION - INFORMATION AVAILABLE:  
[http://www.e-railsafe.com/index\\_narrow.html](http://www.e-railsafe.com/index_narrow.html)

ONLY AFTER RECEIPT OF A FULLY EXECUTED RIGHT-OF-ENTRY AGREEMENT FROM NORFOLK SOUTHERN RAILWAY CAN CONTRACTOR OR SUBCONTRACTOR EMPLOYEES ENTER NORFOLK SOUTHERN RAILWAY RIGHT-OF-WAY. EVERY EMPLOYEE SHALL DISPLAY BOTH NS RWP AND E-RAILSAFE BADGES AT ALL TIMES.

ALL CONSTRUCTION ACTIVITIES ON NORFOLK SOUTHERN RIGHT-OF-WAY, WITHIN 25' OF AN ACTIVE TRACK, OR OTHERWISE HAVE THE POTENTIAL TO FOUL AN ACTIVE TRACK SHALL BE COORDINATED WITH THE NORFOLK SOUTHERN FLAGMAN. SUCH ACTIVITIES ARE SUBJECT TO STOPPAGE TO ENSURE SAFETY OF PASSING TRAINS.

# STATE OF NORTH CAROLINA, RAIL DIVISION CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale \*S.U.E. = Subsurface Utility Engineering

**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.	SHEET NO.
P-5705A	1B-1
RW SHEET NO.	
RAILROAD DESIGN ENGINEER	HYDRAULICS ENGINEER

DATE: NOVEMBER 4, 2022

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	⑩②③
Existing Fence Line	-x-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	---WLB---
Proposed Wetland Boundary	WLB
Existing Endangered Animal Boundary	---EAB---
Existing Endangered Plant Boundary	---EPB---
Existing Historic Property Boundary	---HPB---
Known Contamination Area: Soil	☠-S-☠
Potential Contamination Area: Soil	☠-S-☠
Known Contamination Area: Water	☠-W-☠
Potential Contamination Area: Water	☠-W-☠
Contaminated Site: Known or Potential	☠ ?

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	⌘
Foundation	□
Area Outline	□
Cemetery	⊕
Building	□
School	□
Church	⊕
Dam	▬

### HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	---JS---
Buffer Zone 1	-----BZ 1-----
Buffer Zone 2	-----BZ 2-----
Flow Arrow	←
Disappearing Stream	----->
Spring	○
Wetland	⌘
Proposed Lateral, Tail, Head Ditch	-----
False Sump	▽

### RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◆
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Exist Permanent Easment Pin and Cap	◇
New Permanent Easment Pin and Cap	◆
Vertical Benchmark	⊕
Existing Right of Way Marker	△
Existing Right of Way Line	-----
New Right of Way Line	-----
New Right of Way Line with Pin and Cap	-----
New Right of Way Line with Concrete or Granite R/W Marker	-----
New Control of Access Line with Concrete C/A Marker	-----
Existing Control of Access	-----
New Control of Access	-----
Special Control of Access	-----
Existing Easement Line	-----
New Temporary Construction Easement	-----
New Temporary Drainage Easement	-----
New Permanent Drainage Easement	-----
New Permanent Drainage / Utility Easement	-----
New Permanent Utility Easement	-----
New Temporary Utility Easement	-----
New Aerial Utility Easement	-----

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----C-----
Proposed Slope Stakes Fill	-----F-----
Proposed Curb Ramp	-----CR-----
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	⊗

### VEGETATION:

Single Tree	☀
Single Shrub	☀
Hedge	-----
Woods Line	-----
Orchard	☀ ☀ ☀ ☀
Vineyard	-----Vineyard-----

### EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----CONC-----
Bridge Wing Wall, Head Wall and End Wall	-----CONC WW-----
MINOR:	
Head and End Wall	-----CONC HW-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	-----CB-----
Paved Ditch Gutter	-----
Storm Sewer Manhole	-----S-----
Storm Sewer	-----S-----

### UTILITIES:

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	●
U/G Power Line LOS B (S.U.E.*)	-----P-----
U/G Power Line LOS C (S.U.E.*)	-----P-----
U/G Power Line LOS D (S.U.E.*)	-----P-----

### TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	-----
U/G Telephone Cable LOS B (S.U.E.*)	-----T-----
U/G Telephone Cable LOS C (S.U.E.*)	-----T-----
U/G Telephone Cable LOS D (S.U.E.*)	-----T-----
U/G Telephone Conduit LOS B (S.U.E.*)	-----TC-----
U/G Telephone Conduit LOS C (S.U.E.*)	-----TC-----
U/G Telephone Conduit LOS D (S.U.E.*)	-----TC-----
U/G Fiber Optics Cable LOS B (S.U.E.*)	-----T FO-----
U/G Fiber Optics Cable LOS C (S.U.E.*)	-----T FO-----
U/G Fiber Optics Cable LOS D (S.U.E.*)	-----T FO-----

### WATER:

Water Manhole	⊕
Water Meter	○

Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	-----
U/G Water Line LOS C (S.U.E.*)	-----
U/G Water Line LOS D (S.U.E.*)	-----
Above Ground Water Line	-----A/G Water-----
TV:	
TV Pedestal	⊕
TV Tower	⊗
U/G TV Cable Hand Hole	-----
U/G TV Cable LOS B (S.U.E.*)	-----TV-----
U/G TV Cable LOS C (S.U.E.*)	-----TV-----
U/G TV Cable LOS D (S.U.E.*)	-----TV-----
U/G Fiber Optic Cable LOS B (S.U.E.*)	-----TV FO-----
U/G Fiber Optic Cable LOS C (S.U.E.*)	-----TV FO-----
U/G Fiber Optic Cable LOS D (S.U.E.*)	-----TV FO-----
GAS:	
Gas Valve	◇
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	-----G-----
U/G Gas Line LOS C (S.U.E.*)	-----G-----
U/G Gas Line LOS D (S.U.E.*)	-----G-----
Above Ground Gas Line	-----A/G Gas-----
SANITARY SEWER:	
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----SS-----
Above Ground Sanitary Sewer	-----A/G Sanitary Sewer-----
SS Forced Main Line LOS B (S.U.E.*)	-----FSS-----
SS Forced Main Line LOS C (S.U.E.*)	-----FSS-----
SS Forced Main Line LOS D (S.U.E.*)	-----FSS-----
MISCELLANEOUS:	
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line LOS B (S.U.E.*)	-----TUTL-----
U/G Tank; Water, Gas, Oil	-----
Underground Storage Tank, Approx. Loc.	-----UST-----
A/G Tank; Water, Gas, Oil	-----
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

# 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

PROJECT REFERENCE NO. P-5705A	SHEET NO. 1B-2
RW SHEET NO.	
RAILROAD DESIGN ENGINEER	HYDRAULICS ENGINEER

DATE: NOVEMBER 4, 2022

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

# CONVENTIONAL PLAN SHEET SYMBOLS AND ABBREVIATIONS

**RAILROADS:**

Curve Information .....	$D_c = \frac{x^2}{xx'}$ $E_a = x \cdot x'$ $L_s = xxx'$
Curve Label .....	○
Existing Track to be Removed .....	▤▤▤▤▤▤▤▤▤▤
Existing Track to be Retained .....	▤▤▤▤▤▤▤▤▤▤
Existing Track to be Shifted .....	- - - - -
Milepost .....	
Point of Inflection No Curve (PINC) .....	△
Proposed Track .....	▬
Proposed Power Operated Turnout .....	
Proposed Hand Throw Turnout .....	
Profile Grade Line .....	◐
Turnout Label .....	□

**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
CAAP .....	Corrugated Aluminumized Alloy Pipe
HDPE .....	High Density Polyethylene 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
SYGF .....	Square Yards Geotextile Fabric
NWSEL .....	Normal Water Surface Elevation
HPDE .....	High Density Polyethylene

**MISCELLANEOUS:**

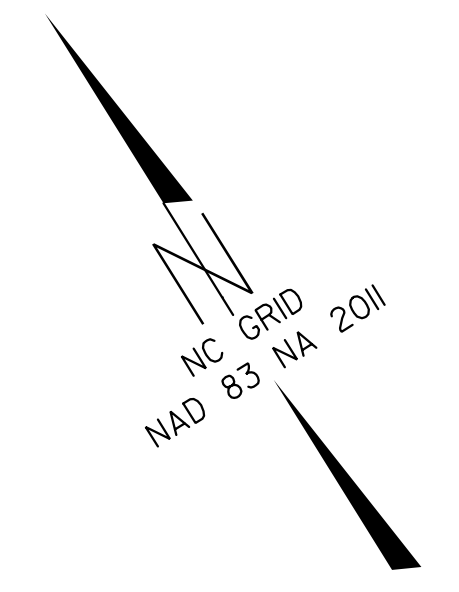
ABS .....	Absolute
AEI .....	Automatic Equipment Identification
AVE .....	Avenue
AH .....	Ahead
BK .....	Back
BLDG .....	Building
BLVD .....	Boulevard
CB .....	Catch Basin
CLR .....	Clear
CONC .....	Concrete
CONST. ....	Construction
DWG .....	Drawing
E .....	East
EL .....	Elevation
ESMT .....	Easement
EXIST. ....	Existing
EB .....	East Bound
FT .....	Feet
FND .....	Foundation
GRD .....	Ground
HW .....	Headwall
HORIZ. ....	Horizontal
HTTO .....	Hand Throw Turnout
LT .....	Left
LH .....	Left hand
MIN .....	Minimum
MP .....	Milepost
MPH .....	Miles Per Hour
N .....	North
N/A .....	Not Applicable
NB .....	North Bound
NO. ....	Number
NCDOT .....	North Carolina Department of Transportation
NCRR .....	North Carolina Railroad
NSR .....	Norfolk Southern Railway
OTM .....	Other Track Material
PAVT .....	Pavement
PGL .....	Profile Grade Line
POTO .....	Power Operated Turnout
PROP. ....	Proposed
RD .....	Road
RT .....	Right
RR .....	Railroad
RH .....	Right hand
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



PROJECT REFERENCE NO.	SHEET NO.
P-5705A	1C-1
Location and Surveys	

# SURVEY CONTROL SHEET

## W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



← TO GASTONIA

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "P5705B-2"

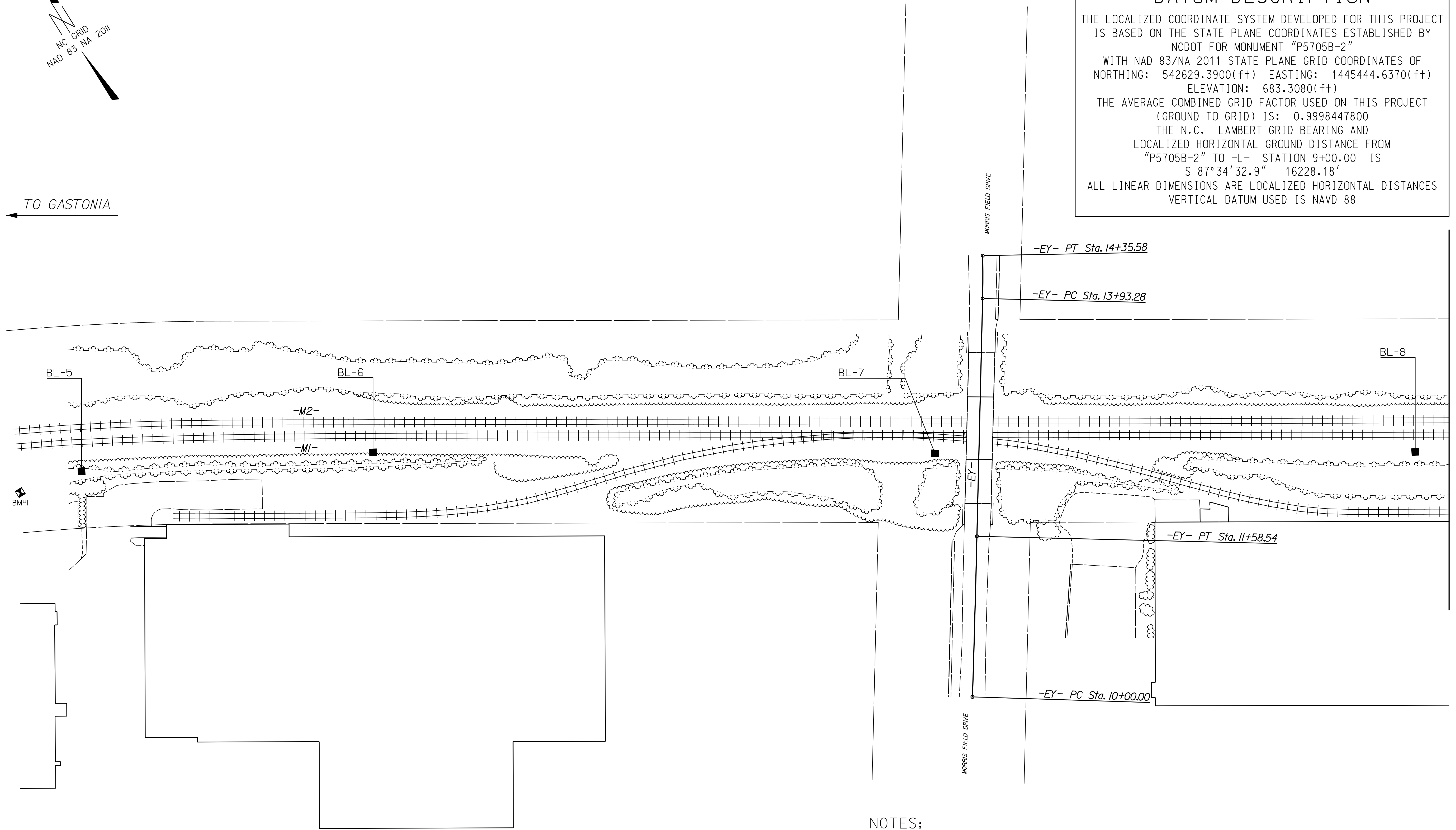
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF  
 NORTHING: 542629.3900(ft) EASTING: 1445444.6370(ft)  
 ELEVATION: 683.3080(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998447800

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "P5705B-2" TO -L- STATION 9+00.00 IS  
 S 87°34'32.9" 16228.18'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

REVISIONS



MATCHLINE SEE SHEET 1C-2

### NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

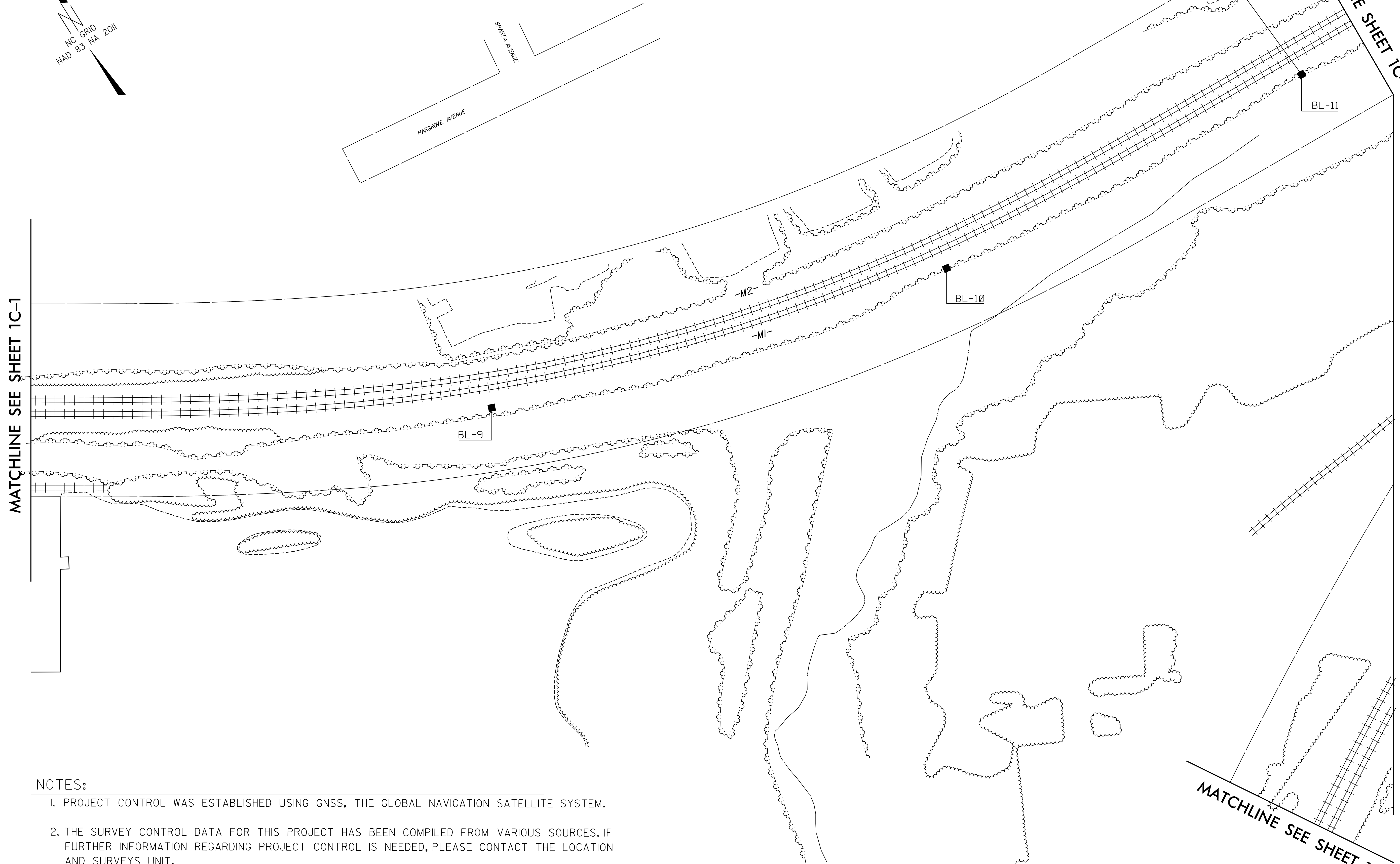
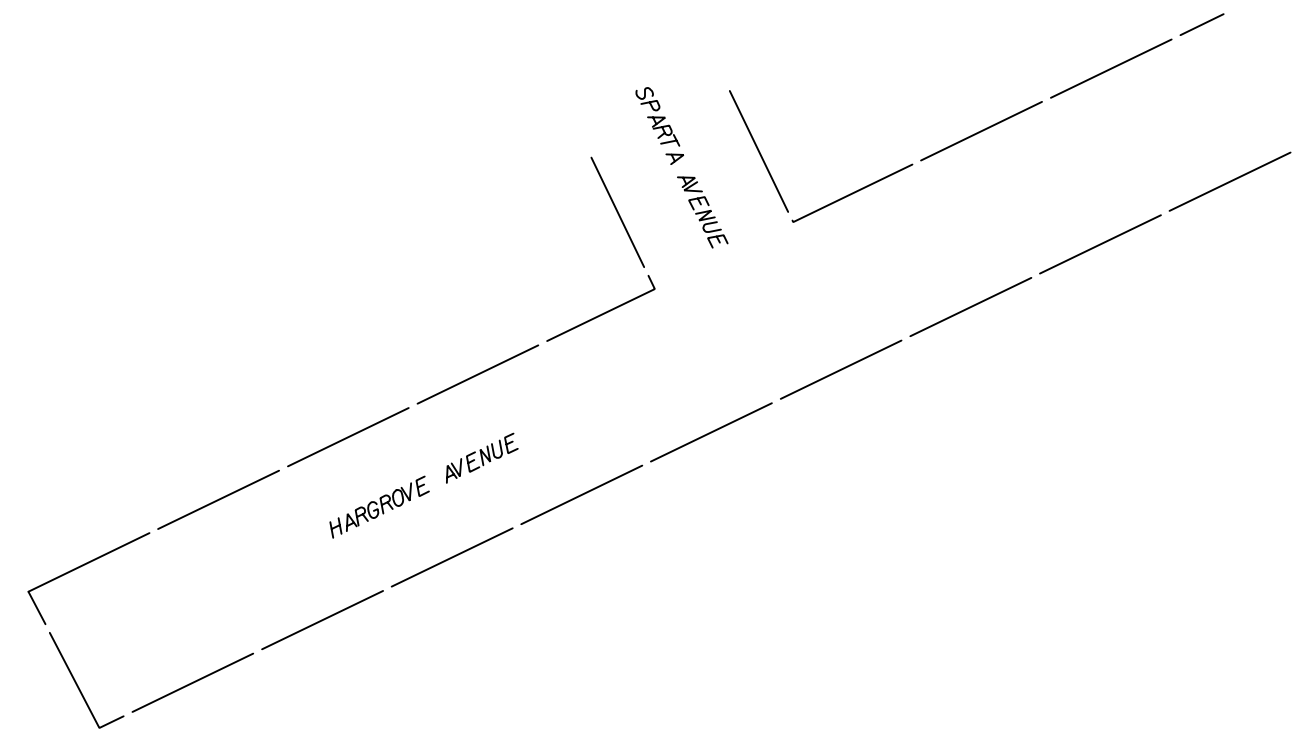
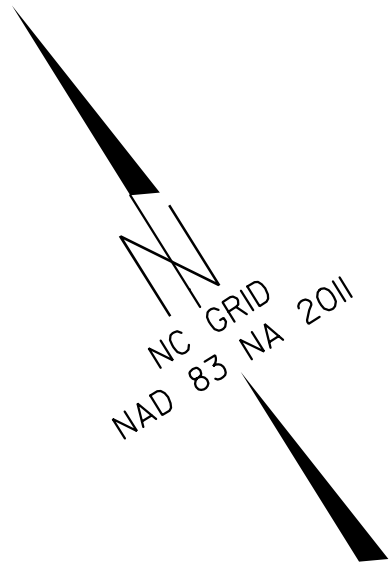
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11/2/2022  
15%  
HNTB

PROJECT REFERENCE NO.	SHEET NO.
P-5705-A	1C-2
Location and Surveys	

# SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



MATCHLINE SEE SHEET 1C-1

BL-11

BL-10

BL-9

-M2-

-M1-

MATCHLINE SHEET 1C-3

MATCHLINE SEE SHEET 1C-3

MATCHLINE SEE SHEET 1C-???

### NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS

6/2/99

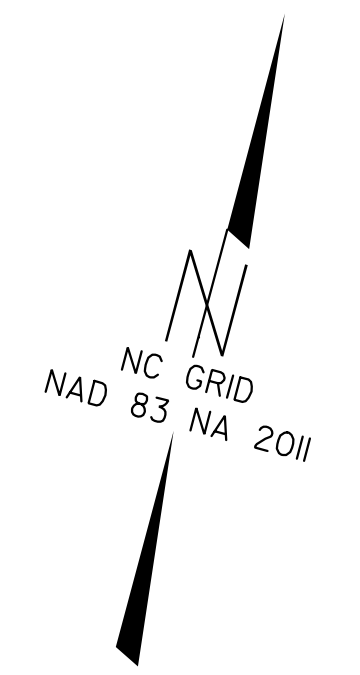
11/2/2022  
5%  
HNTB  
11/2/2022  
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HNTB  
11/2/2022  
5%  
HNTB



PROJECT REFERENCE NO.	SHEET NO.
P-5705A	1C-3
Location and Surveys	

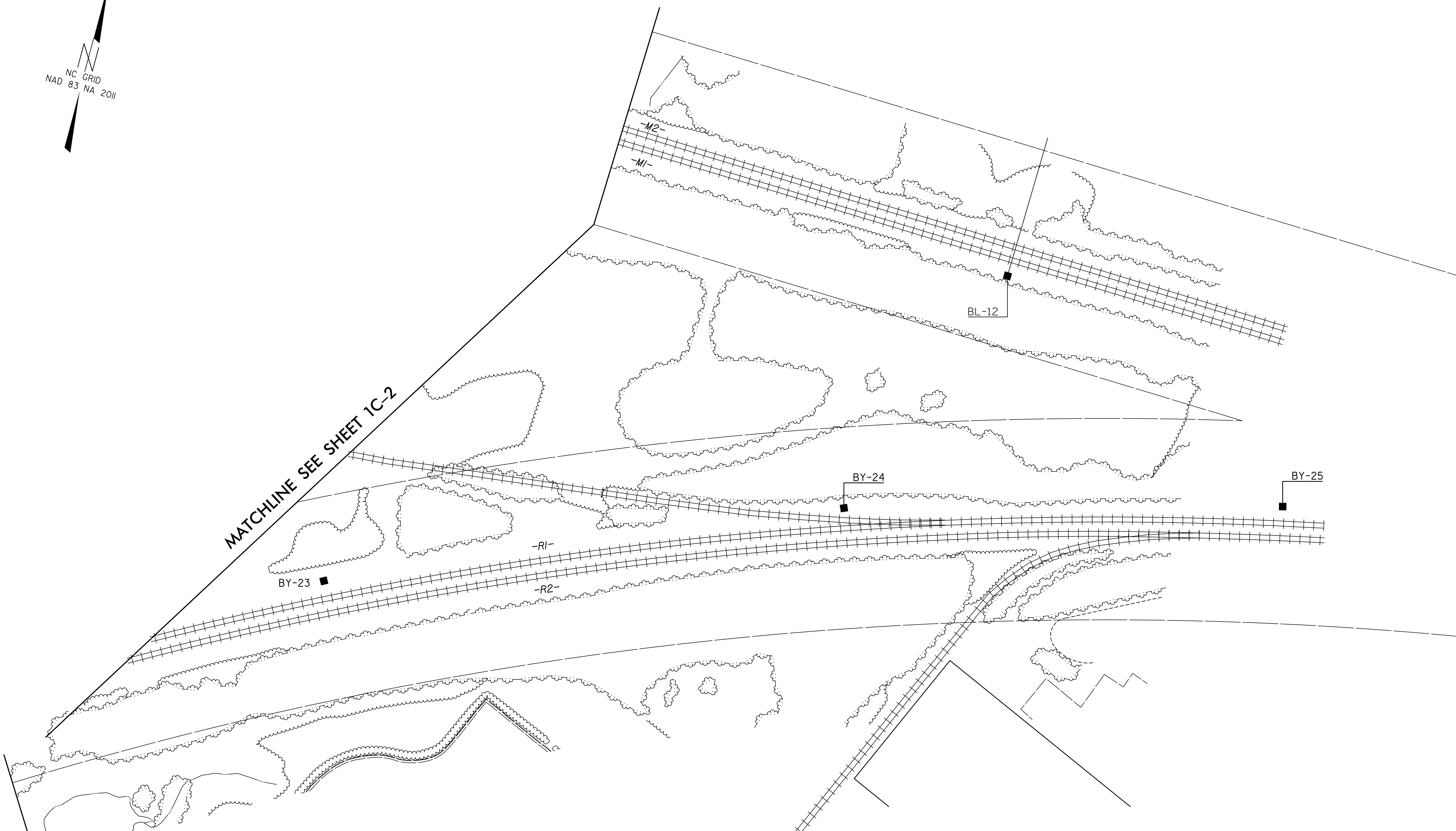
# SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



REVISIONS

MATCHLINE SEE SHEET 1C-4



**NOTES:**

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

11/2/2022  
15%  
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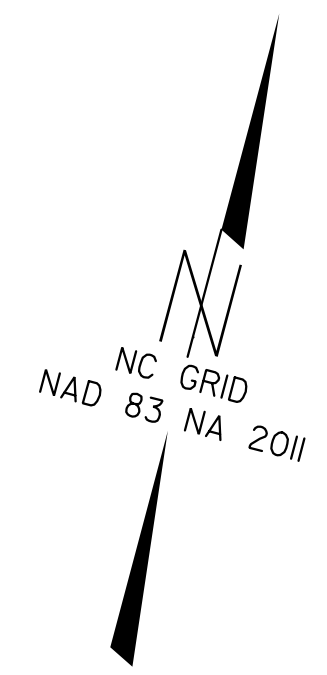
SEE SHEET 1C-6

PRIMROSE STREET

PROJECT REFERENCE NO.	SHEET NO.
P-5705A	1C-4
Location and Surveys	

# SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



REVISIONS
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MATCHLINE SEE SHEET 1C-3

TO CHARLOTTE →



BM#2

BY-26 ■

■ BL-14

■ BL-15

NOTES:

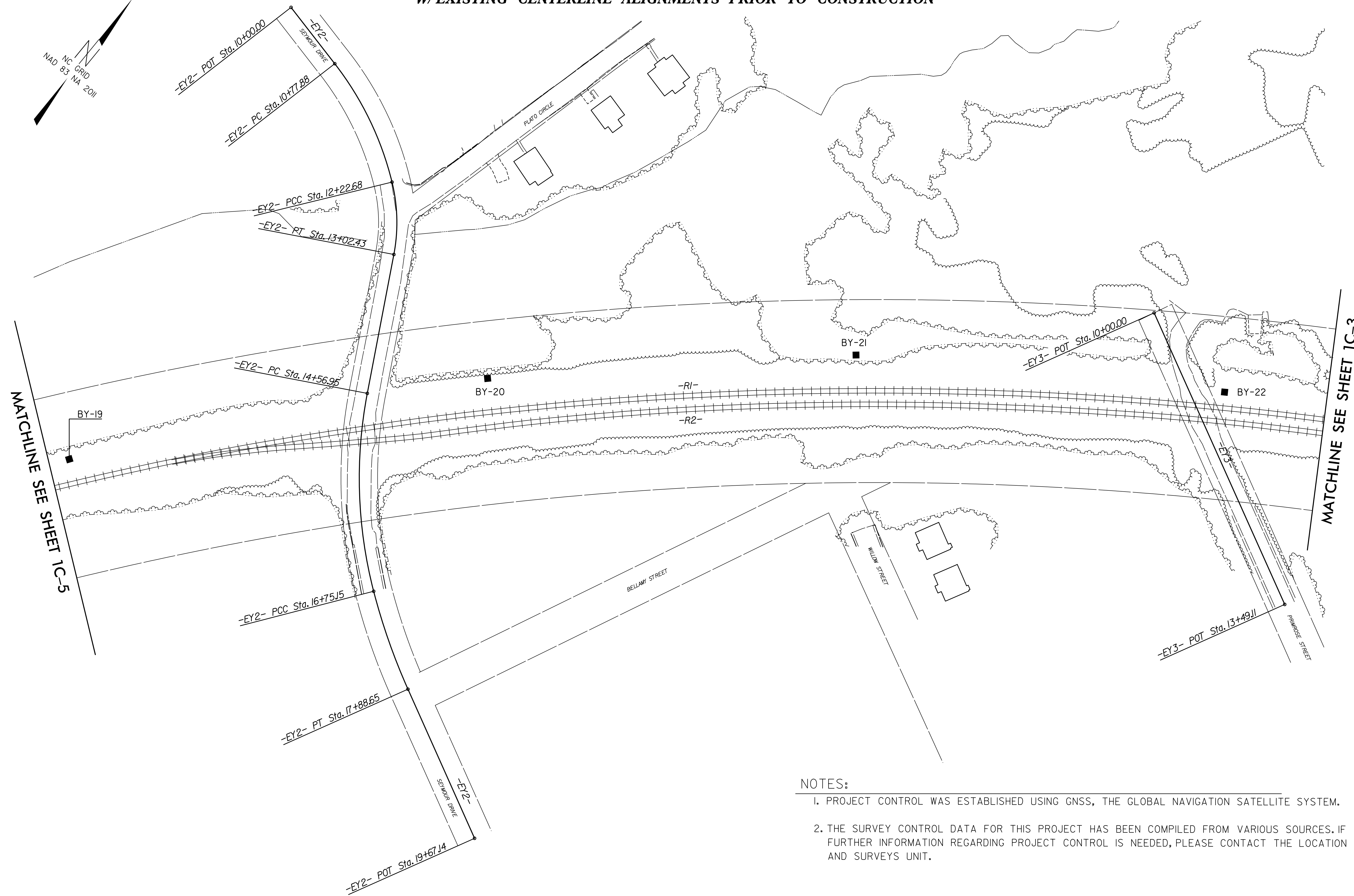
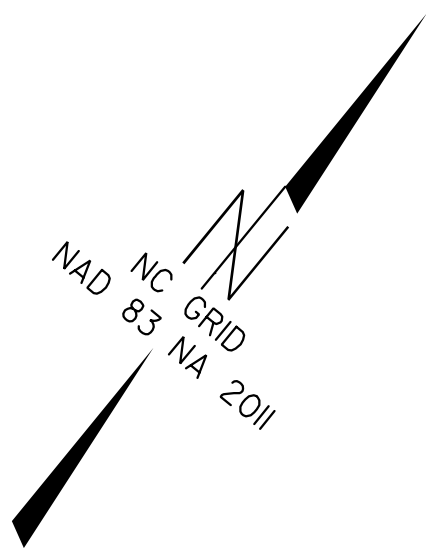
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.





# SURVEY CONTROL SHEET

## W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



REVISIONS

MATCHLINE SEE SHEET 1C-5

MATCHLINE SEE SHEET 1C-3

### NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.



# SURVEY CONTROL SHEET

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

AZIMUTH PAIRS				
POINT	DESC.	NORTH	EAST	ELEVATION
1	P5705A-1	542095.8810	1426705.3480	669.12
2	P5705A-2	542017.1190	1427859.9720	708.31
3	P5705A-3	540473.3200	1431460.8840	751.69
4	P5705A-4	539583.0230	1431079.3450	746.89

BL				
POINT	DESC.	NORTH	EAST	ELEVATION
BL5	BL-5	542449.5730	1428351.7170	721.05
BL6	BL-6	542313.0680	1428605.5570	719.14
BL7	BL-7	542018.5770	1429075.5110	726.63
BL8	BL-8	541768.9180	1429478.3230	728.27
BL9	BL-9	541518.9110	1429923.8560	731.40
BL10	BL-10	541392.1870	1430399.6260	730.96
BL11	BL-11	541367.8380	1430817.5480	733.42
BL12	BL-12	541356.4120	1431296.9940	740.12
BL13	BL-13	541337.8760	1431799.1130	746.02
BL14	BL-14	541326.0660	1432209.2380	749.18
BL15	BL-15	541297.3250	1432665.8090	747.18

BY				
POINT	DESC.	NORTH	EAST	ELEVATION
BY16	BY-16	538464.8780	1428737.5250	698.05
BY17	BY-17	538912.8120	1428890.4970	700.75
BY18	BY-18	539359.7620	1429107.0400	706.97
BY19	BY-19	539799.5630	1429384.7870	708.35
BY20	BY-20	540157.1360	1429682.9120	715.74
BY21	BY-21	540431.6630	1429978.5360	706.80
BY22	BY-22	540655.0640	1430316.0690	724.22
BY23	BY-23	540888.9400	1430719.3070	727.64
BY24	BY-24	541091.8680	1431199.5480	733.96
BY25	BY-25	541205.5280	1431620.0070	736.48
BY26	BY-26	541278.3350	1432116.9330	740.51
BL15	BL-15	541297.3250	1432665.8090	747.18

\*\*\*\*\*  
 BM1        ELEVATION = 725.17  
 N 542464        E 1428289  
 BENCH TIE IN 12" MIMOSA  
 \*\*\*\*\*

BM3        ELEVATION = 683.68  
 N 538414        E 1428701  
 CHISELED X IN HEADWALL  
 \*\*\*\*\*

\*\*\*\*\*  
 BM2        ELEVATION = 748.77  
 N 541315        E 1432050  
 BENCH TIE IN 12" GUM  
 \*\*\*\*\*

NOTES:

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- THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS

6/2/99

11/2/2022  
15%  
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# SURVEY CONTROL SHEET

*W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION*

EY

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	541795.180	1428979.652							
CURVE			N 33°33'41.7" E	158.54	00°26'21.5"(LT)	00°16'37.6"	158.54	79.27	20676.79
PT	541927.288	1429067.297							
LINE			N 33°20'31.0" E	234.74					
PC	542123.392	1429196.318							
CURVE			N 32°05'43.1" E	42.30	02°29'35.7"(LT)	05°53'36.8"	42.30	21.16	972.18
PT	542123.392	1429196.318							

EY2

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	540335.262	1429260.110							
LINE			S 77°05'23.3" E	77.88					
PC	540317.862	1429336.019							
CURVE			S 65°02'33.6" E	143.73	24°05'39.4"(RT)	16°38'23.2"	144.80	73.49	344.33
PCC	540257.214	1429466.332							
CURVE			S 40°42'39.7" E	79.14	24°34'08.5"(RT)	30°48'27.7"	79.75	40.50	185.98
PT	540197.225	1429517.951							
LINE			S 28°25'35.5" E	154.52					
PC	540061.336	1429591.507							
CURVE			S 41°05'32.1" E	216.43	25°19'53.2"(LT)	11°36'33.1"	218.20	110.91	493.54
PCC	539898.224	1429733.760							
CURVE			S 58°32'15.1" E	113.37	09°33'32.9"(LT)	08°25'18.8"	113.50	56.88	680.32
PT	539839.051	1429830.464							
LINE			S 63°19'01.5" E	178.49					
POT	539758.901	1429989.944							

EY3

POINT	N	E	BEARING	DIST
POT	540673.396	1430201.679		
LINE			S 63°22'42.6" E	349.11
POT	540516.960	1430513.782		

REVISIONS

# SURVEY CONTROL SHEET

**W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION**

A1				
POINT	N	E	BEARING	DIST
POT	542053.220	1429054.190		
LINE			S 56°21'10.4" E	18.50
POT	542042.970	1429069.590		
LINE			S 55°32'30.5" E	14.07
POT	542035.010	1429081.190		
LINE			S 54°18'15.3" E	25.28
POT	542020.260	1429101.720		
LINE			S 53°06'10.9" E	9.86
POT	542014.340	1429109.605		
LINE			S 52°34'56.7" E	25.83
POT	541998.646	1429130.119		
LINE			S 51°47'53.8" E	16.45
POT	541988.470	1429143.050		
LINE			S 49°58'22.5" E	22.19
POT	541974.200	1429160.040		
LINE			S 47°14'58.3" E	48.10
POT	541941.550	1429195.360		
LINE			S 44°09'56.8" E	48.08
POT	541907.060	1429228.860		
LINE			S 43°04'41.0" E	19.31
POT	541892.952	1429242.052		
LINE			S 42°30'08.4" E	42.20
POT	541861.843	1429270.560		
LINE			S 42°56'04.9" E	26.63
POT	541842.347	1429288.699		
LINE			S 43°10'22.9" E	11.66
POT	541833.847	1429296.674		
LINE			S 44°42'03.5" E	12.97
POT	541824.631	1429305.794		
LINE			S 44°42'03.5" E	12.97
POT	541815.415	1429314.914		
LINE			S 46°19'30.0" E	11.41
POT	541807.534	1429323.168		
LINE			S 46°26'04.2" E	11.53
POT	541799.584	1429331.526		
LINE			S 48°44'04.7" E	14.28
POT	541790.167	1429342.259		
LINE			S 48°48'06.5" E	14.40
POT	541780.682	1429353.095		
LINE			S 53°07'49.5" E	12.71
POT	541773.055	1429363.264		
LINE			S 53°07'49.5" E	12.71
POT	541765.428	1429373.434		
LINE			S 56°18'02.0" E	13.14
POT	541758.137	1429384.366		
LINE			S 56°18'02.0" E	13.14
POT	541750.846	1429395.299		
LINE			S 58°19'39.5" E	24.92
POT	541737.759	1429416.510		
LINE			S 58°11'40.5" E	26.34
POT	541723.877	1429438.895		
LINE			S 58°17'09.0" E	12.86
POT	541717.119	1429449.832		
LINE			S 58°17'09.0" E	12.86
POT	541710.360	1429460.770		
LINE			S 58°13'32.7" E	26.97
POT	541696.157	1429483.700		
LINE			S 58°04'57.7" E	47.76
POT	541670.907	1429524.238		
LINE			S 57°53'49.4" E	20.79
POT	541659.861	1429541.845		

A2				
POINT	N	E	BEARING	DIST
POT	541103.830	1431300.140		
LINE			S 74°46'36.0" W	22.13
POT	541098.020	1431278.790		
LINE			S 75°37'28.5" W	26.22
POT	541091.510	1431253.390		
LINE			S 76°58'47.4" W	23.52
POT	541086.210	1431230.470		
LINE			S 77°44'28.0" W	24.87
POT	541080.930	1431206.170		
LINE			S 78°59'22.6" W	25.13
POT	541076.130	1431181.500		
LINE			S 79°09'23.8" W	27.22
POT	541071.010	1431154.770		
LINE			S 79°47'51.3" W	43.53
POT	541063.300	1431111.930		
LINE			S 82°20'35.0" W	49.83
POT	541056.660	1431062.540		
LINE			S 82°34'47.0" W	39.95
POT	541051.500	1431022.920		
LINE			S 83°38'45.0" W	43.84
POT	541046.648	1430979.351		
LINE			S 83°36'26.6" W	13.45
POT	541045.151	1430965.986		
LINE			S 83°24'21.6" W	182.54
POT	541024.190	1430784.656		
LINE			S 83°00'05.9" W	33.22
POT	541020.142	1430751.686		
LINE			S 85°51'48.0" W	35.57
POT	541017.576	1430716.208		
LINE			S 82°10'13.4" W	53.07
POT	541010.347	1430663.634		
LINE			S 84°22'21.0" W	54.50
POT	541005.002	1430609.393		
LINE			S 82°36'14.5" W	56.74
POT	540997.699	1430553.127		
LINE			S 80°54'11.7" W	32.59
POT	540992.547	1430520.950		

REVISIONS

6/2/99

11/2/2022  
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# SURVEY CONTROL SHEET

## W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

A3

POINT	N	E	BEARING	DIST
POT	541156.550	1431547.790		
LINE			S 74°10'35.9" W	26.44
POT	541149.340	1431522.350		
LINE			S 71°44'39.2" W	25.28
POT	541141.420	1431498.340		
LINE			S 69°15'00.2" W	23.17
POT	541133.210	1431476.670		
LINE			S 67°39'19.3" W	27.22
POT	541122.860	1431451.490		
LINE			S 62°55'51.0" W	23.38
POT	541112.220	1431430.670		
LINE			S 58°20'25.1" W	23.02
POT	541100.140	1431411.080		
LINE			S 49°26'27.9" W	24.93
POT	541083.930	1431392.140		
LINE			S 40°16'19.2" W	26.42
POT	541063.770	1431375.060		
LINE			S 34°36'33.6" W	21.96
POT	541045.700	1431362.590		
LINE			S 24°49'00.4" W	25.95
POT	541022.150	1431351.700		
LINE			S 22°21'36.1" W	4.35
POT	541018.127	1431350.045		
LINE			S 24°07'49.9" W	25.83
POT	540994.558	1431339.487		
LINE			S 24°07'49.9" W	25.83
POT	540970.988	1431328.929		
LINE			S 24°25'05.4" W	25.19
POT	540948.052	1431318.516		
LINE			S 24°25'05.4" W	25.19
POT	540925.117	1431308.103		
LINE			S 23°51'26.8" W	26.81
POT	540900.602	1431297.261		
LINE			S 23°51'26.8" W	26.81
POT	540876.087	1431286.420		
LINE			S 24°09'18.1" W	25.04
POT	540853.241	1431276.174		
LINE			S 24°09'18.1" W	25.04
POT	540830.395	1431265.928		
LINE			S 24°06'35.5" W	26.34
POT	540806.353	1431255.168		
LINE			S 24°06'35.5" W	26.34
POT	540782.311	1431244.409		
LINE			S 23°45'49.3" W	13.72
POT	540769.753	1431238.880		
LINE			S 23°45'49.3" W	13.72
POT	540757.196	1431233.351		

M1\_EX

POINT	N	E	BEARING	DIST
POT	541363.470	1431578.510		
LINE			N 88°06'39.7" W	55.82
POT	541365.310	1431522.720		
LINE			N 88°02'34.1" W	50.07
POT	541367.020	1431472.680		
LINE			N 88°14'07.1" W	49.68
POT	541368.550	1431423.020		
LINE			N 88°06'27.6" W	49.97
POT	541370.200	1431373.080		
LINE			N 88°12'52.7" W	51.03
POT	541371.790	1431322.070		
LINE			N 88°06'23.5" W	49.94
POT	541373.440	1431272.160		
LINE			N 88°11'35.1" W	49.47
POT	541375.000	1431222.710		
LINE			N 88°05'08.3" W	51.19
POT	541376.710	1431171.550		
LINE			N 88°14'12.8" W	48.10
POT	541378.190	1431123.470		
LINE			N 88°07'08.7" W	49.36
POT	541379.810	1431074.140		
LINE			N 88°09'37.2" W	51.09
POT	541381.450	1431023.080		
LINE			N 88°10'58.0" W	49.83
POT	541383.030	1430973.280		
LINE			N 88°10'01.8" W	50.03
POT	541384.630	1430923.280		
LINE			N 88°05'00.7" W	49.64
POT	541386.290	1430873.670		
LINE			N 88°17'41.5" W	49.40
POT	541387.760	1430824.290		
LINE			N 88°06'38.1" W	51.26
POT	541389.450	1430773.060		
LINE			N 88°05'21.5" W	49.79
POT	541391.110	1430723.300		
LINE			N 87°55'05.8" W	49.55
POT	541392.910	1430673.780		
LINE			N 87°41'15.9" W	50.81
POT	541394.960	1430623.010		
LINE			N 87°17'07.9" W	48.35
POT	541397.250	1430574.710		
LINE			N 86°14'26.9" W	51.40
POT	541400.620	1430523.420		
LINE			N 85°21'58.0" W	49.14
POT	541404.590	1430474.440		
LINE			N 84°08'02.5" W	51.37
POT	541409.840	1430423.340		
LINE			N 82°30'34.2" W	50.17
POT	541416.380	1430373.600		
LINE			N 81°09'51.4" W	49.61
POT	541424.000	1430324.580		
LINE			N 79°28'49.3" W	48.91
POT	541432.930	1430276.490		
LINE			N 77°55'51.4" W	51.37
POT	541443.670	1430226.260		
LINE			N 76°13'54.9" W	48.19
POT	541455.140	1430179.450		
LINE			N 74°42'48.1" W	51.01
POT	541468.590	1430130.240		
LINE			N 72°59'45.8" W	49.89
POT	541483.180	1430082.530		
LINE			N 71°18'16.3" W	50.07
POT	541499.230	1430035.100		
LINE			N 70°16'47.2" W	49.34
POT	541515.880	1429988.650		
LINE			N 68°26'05.2" W	50.90
POT	541534.590	1429941.310		
LINE			N 66°54'49.8" W	50.19
POT	541554.270	1429895.140		
LINE			N 65°29'43.8" W	50.12
POT	541575.060	1429849.530		
LINE			N 63°54'00.6" W	50.12
POT	541597.110	1429804.520		
LINE			N 62°20'53.4" W	49.52
POT	541620.090	1429760.660		
LINE			N 61°08'43.9" W	51.16
POT	541644.780	1429715.850		

REVISIONS

# SURVEY CONTROL SHEET

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

M1\_EX (Continued)

POINT	N	E	BEARING	DIST
LINE			N 59°58'11.8" W	48.10
POT	541668.850	1429674.210		
LINE			N 59°11'32.7" W	47.82
POT	541693.340	1429633.140		
LINE			N 58°40'10.6" W	49.85
POT	541719.260	1429590.560		
LINE			N 58°07'36.9" W	50.03
POT	541745.680	1429548.070		
LINE			N 58°11'19.5" W	49.74
POT	541771.900	1429505.800		
LINE			N 58°10'53.1" W	50.31
POT	541798.423	1429463.053		
LINE			N 58°04'56.7" W	49.51
POT	541824.598	1429421.031		
LINE			N 58°04'56.7" W	50.59
POT	541851.346	1429378.087		
LINE			N 58°04'56.7" W	50.62
POT	541878.112	1429335.116		
LINE			N 58°04'56.7" W	48.50
POT	541903.755	1429293.947		
LINE			N 58°04'56.7" W	50.81
POT	541930.619	1429250.817		
LINE			N 58°04'56.7" W	50.57
POT	541957.357	1429207.890		
LINE			N 58°04'56.7" W	49.54
POT	541983.551	1429165.837		
LINE			N 58°00'44.5" W	38.14
POT	542003.756	1429133.486		
LINE			N 57°58'34.7" W	25.77
POT	542017.422	1429111.636		
LINE			N 58°05'01.3" W	35.29
POT	542036.080	1429081.680		
LINE			N 58°01'28.5" W	32.44
POT	542053.260	1429054.160		
LINE			N 57°54'02.1" W	18.08
POT	542062.870	1429038.840		
LINE			N 58°29'00.8" W	9.07
POT	542067.610	1429031.110		
LINE			N 58°00'50.8" W	21.82
POT	542079.170	1429012.600		
LINE			N 58°00'26.4" W	19.10
POT	542089.290	1428996.400		
LINE			N 58°03'59.5" W	48.13
POT	542114.750	1428955.550		
LINE			N 58°06'47.1" W	50.24
POT	542141.290	1428912.890		
LINE			N 58°05'53.3" W	49.86
POT	542167.640	1428870.560		
LINE			N 58°09'00.2" W	50.01
POT	542194.030	1428828.080		
LINE			N 58°08'47.4" W	49.59
POT	542220.200	1428785.960		
LINE			N 58°06'57.5" W	49.55
POT	542246.370	1428743.890		
LINE			N 58°08'53.8" W	49.80
POT	542272.650	1428701.590		
LINE			N 58°08'19.0" W	51.45
POT	542299.810	1428657.890		
LINE			N 58°11'37.1" W	50.96
POT	542326.670	1428614.580		
LINE			N 58°23'08.2" W	49.08
POT	542352.400	1428572.780		
LINE			N 58°30'59.9" W	50.49
POT	542378.770	1428529.720		
LINE			N 58°55'06.4" W	50.89
POT	542405.040	1428486.140		
LINE			N 59°21'48.7" W	50.14
POT	542430.590	1428443.000		
LINE			N 59°49'47.7" W	50.14
POT	542455.790	1428399.650		
LINE			N 60°38'36.6" W	50.14
POT	542480.370	1428355.950		
LINE			N 62°18'24.8" W	51.79
POT	542504.440	1428310.090		

M2\_EX

POINT	N	E	BEARING	DIST
POT	541376.660	1431578.650		
LINE			N 88°07'49.5" W	55.48
POT	541378.470	1431523.200		
LINE			N 88°05'10.9" W	50.91
POT	541380.170	1431472.320		
LINE			N 88°03'55.4" W	49.47
POT	541381.840	1431422.880		
LINE			N 88°05'09.2" W	50.00
POT	541383.510	1431372.910		
LINE			N 88°13'02.2" W	49.82
POT	541385.060	1431323.110		
LINE			N 88°02'12.7" W	50.21
POT	541386.780	1431272.930		
LINE			N 88°01'36.0" W	49.37
POT	541388.480	1431223.590		
LINE			N 88°09'45.0" W	51.15
POT	541390.120	1431172.470		
LINE			N 88°10'51.4" W	47.88
POT	541391.640	1431124.610		
LINE			N 87°57'35.1" W	51.40
POT	541393.470	1431073.240		
LINE			N 88°01'57.5" W	49.52
POT	541395.170	1431023.750		
LINE			N 88°10'30.4" W	49.62
POT	541396.750	1430974.160		
LINE			N 87°57'47.6" W	49.80
POT	541398.520	1430924.390		
LINE			N 88°01'35.9" W	49.95
POT	541400.240	1430874.470		
LINE			N 88°04'33.2" W	49.74
POT	541401.910	1430824.760		
LINE			N 88°05'25.7" W	51.02
POT	541403.610	1430773.770		
LINE			N 87°59'15.5" W	50.12
POT	541405.370	1430723.680		
LINE			N 87°54'36.0" W	50.45
POT	541407.210	1430673.260		
LINE			N 87°46'11.1" W	48.57
POT	541409.100	1430624.730		
LINE			N 87°21'50.4" W	49.79
POT	541411.390	1430574.990		
LINE			N 86°31'14.2" W	51.24
POT	541414.500	1430523.840		
LINE			N 85°20'44.0" W	48.80
POT	541418.460	1430475.200		
LINE			N 84°11'00.0" W	50.52
POT	541423.580	1430424.940		
LINE			N 82°46'18.5" W	49.59
POT	541429.820	1430375.740		
LINE			N 80°59'34.9" W	49.44
POT	541437.560	1430326.910		
LINE			N 79°26'53.9" W	49.20
POT	541446.570	1430278.540		
LINE			N 77°55'11.2" W	49.60
POT	541456.950	1430230.040		
LINE			N 76°43'08.0" W	49.32
POT	541468.280	1430182.040		
LINE			N 74°54'50.9" W	50.18
POT	541481.340	1430133.590		
LINE			N 73°07'56.2" W	49.83
POT	541495.800	1430085.900		
LINE			N 71°42'23.7" W	49.92
POT	541511.470	1430038.500		
LINE			N 70°09'31.0" W	48.70
POT	541528.000	1429992.690		
LINE			N 68°16'39.2" W	49.85
POT	541546.450	1429946.380		
LINE			N 66°47'11.9" W	50.94
POT	541566.530	1429899.560		
LINE			N 64°59'43.1" W	48.29
POT	541586.940	1429855.800		
LINE			N 63°28'12.6" W	50.93
POT	541609.690	1429810.230		
LINE			N 61°58'36.0" W	48.68
POT	541632.560	1429767.260		
LINE			N 60°55'11.1" W	49.93
POT	541656.830	1429723.620		

REVISIONS

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# SURVEY CONTROL SHEET

**W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION**

M2\_EX (Continued)

POINT	N	E	BEARING	DIST
LINE			N 59°58'34.0" W	47.89
POT	541680.790	1429682.160		
LINE			N 59°07'39.7" W	48.35
POT	541705.600	1429640.660		
LINE			N 58°37'31.9" W	48.81
POT	541731.010	1429598.990		
LINE			N 58°20'17.9" W	51.25
POT	541757.910	1429555.370		
LINE			N 58°18'38.8" W	50.52
POT	541784.450	1429512.380		
LINE			N 58°14'36.0" W	49.32
POT	541810.410	1429470.440		
LINE			N 58°16'28.6" W	49.67
POT	541836.530	1429428.190		
LINE			N 58°07'31.3" W	50.16
POT	541863.020	1429385.590		
LINE			N 58°11'52.7" W	50.17
POT	541889.460	1429342.950		
LINE			N 58°13'33.4" W	49.36
POT	541915.450	1429300.990		
LINE			N 58°14'29.2" W	50.44
POT	541942.000	1429258.100		
LINE			N 58°11'35.9" W	50.13
POT	541968.420	1429215.500		
LINE			N 58°04'26.6" W	50.45
POT	541995.100	1429172.680		
LINE			N 58°03'08.5" W	37.50
POT	542014.945	1429140.857		
LINE			N 58°02'26.8" W	25.77
POT	542028.584	1429118.995		
LINE			N 58°01'50.9" W	36.50
POT	542047.910	1429088.030		
LINE			N 58°03'24.3" W	49.86
POT	542074.290	1429045.720		
LINE			N 58°04'57.0" W	49.76
POT	542100.600	1429003.480		
LINE			N 58°03'23.2" W	48.14
POT	542126.070	1428962.630		
LINE			N 58°04'56.2" W	50.58
POT	542152.810	1428919.700		
LINE			N 58°08'43.6" W	48.32
POT	542178.310	1428878.660		
LINE			N 58°03'53.6" W	50.99
POT	542205.280	1428835.390		
LINE			N 58°05'01.0" W	49.82
POT	542231.620	1428793.100		
LINE			N 58°12'51.9" W	48.90
POT	542257.380	1428751.530		
LINE			N 58°04'04.9" W	49.63
POT	542283.630	1428709.410		
LINE			N 58°08'06.1" W	52.34
POT	542311.260	1428664.960		
LINE			N 58°09'17.0" W	50.83
POT	542338.080	1428621.780		
LINE			N 58°05'33.5" W	49.57
POT	542364.280	1428579.700		
LINE			N 58°10'06.9" W	50.62
POT	542390.980	1428536.690		
LINE			N 58°23'01.0" W	50.74
POT	542417.580	1428493.480		
LINE			N 58°48'30.7" W	49.62
POT	542443.280	1428451.030		
LINE			N 59°45'31.9" W	51.27
POT	542469.100	1428406.740		
LINE			N 61°04'00.4" W	50.44
POT	542493.500	1428362.600		
LINE			N 62°26'21.0" W	52.24
POT	542517.670	1428316.290		

R1\_EX

POINT	N	E	BEARING	DIST
POT	541197.790	1431664.610		
LINE			S 77°46'16.2" W	25.07
POT	541192.480	1431640.110		
LINE			S 78°05'40.7" W	24.72
POT	541187.380	1431615.920		
LINE			S 77°16'50.9" W	24.48
POT	541181.990	1431592.040		
LINE			S 77°01'02.1" W	25.33
POT	541176.300	1431567.360		
LINE			S 76°34'25.0" W	25.07
POT	541170.480	1431542.980		
LINE			S 76°22'47.4" W	24.72
POT	541164.660	1431518.960		
LINE			S 75°55'48.1" W	24.72
POT	541158.650	1431494.980		
LINE			S 75°28'57.8" W	25.13
POT	541152.350	1431470.650		
LINE			S 75°10'03.2" W	24.61
POT	541146.050	1431446.860		
LINE			S 74°53'17.7" W	25.58
POT	541139.380	1431422.160		
LINE			S 74°22'24.1" W	25.43
POT	541132.530	1431397.670		
LINE			S 73°55'42.0" W	24.31
POT	541125.800	1431374.310		
LINE			S 73°39'27.4" W	25.38
POT	541118.660	1431349.960		
LINE			S 73°23'50.5" W	24.43
POT	541111.680	1431326.550		
LINE			S 72°45'38.9" W	25.00
POT	541104.270	1431302.670		
LINE			S 72°37'54.5" W	24.12
POT	541097.070	1431279.650		
LINE			S 72°03'21.4" W	25.84
POT	541089.110	1431255.070		
LINE			S 71°45'44.2" W	25.72
POT	541081.060	1431230.640		
LINE			S 71°24'23.6" W	22.86
POT	541073.770	1431208.970		
LINE			S 71°16'18.0" W	25.32
POT	541065.640	1431184.990		
LINE			S 70°40'19.9" W	25.77
POT	541057.110	1431160.670		
LINE			S 70°32'43.8" W	24.17
POT	541049.060	1431137.880		
LINE			S 70°02'43.9" W	25.64
POT	541040.310	1431113.780		
LINE			S 69°40'04.2" W	24.26
POT	541031.880	1431091.030		
LINE			S 69°20'14.1" W	25.14
POT	541023.010	1431067.510		
LINE			S 68°46'47.3" W	25.45
POT	541013.800	1431043.790		
LINE			S 68°32'17.6" W	24.43
POT	541004.860	1431021.050		
LINE			S 68°00'03.1" W	24.21
POT	540995.790	1430998.600		
LINE			S 67°42'27.4" W	25.57
POT	540986.090	1430974.940		
LINE			S 67°15'37.5" W	23.93
POT	540976.840	1430952.870		
LINE			S 66°59'33.2" W	25.59
POT	540966.840	1430929.320		
LINE			S 66°36'10.9" W	25.41
POT	540956.750	1430906.000		
LINE			S 66°12'19.2" W	24.61
POT	540946.820	1430883.480		
LINE			S 65°50'14.4" W	25.29
POT	540936.470	1430860.410		
LINE			S 65°30'59.6" W	24.01
POT	540926.520	1430838.560		
LINE			S 65°03'59.1" W	25.76
POT	540915.660	1430815.200		
LINE			S 64°41'55.0" W	23.73
POT	540905.520	1430793.750		
LINE			S 64°18'39.0" W	25.74
POT	540894.360	1430770.550		

REVISIONS

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# SURVEY CONTROL SHEET

## W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

R1\_EX (Continued)

POINT	N	E	BEARING	DIST
LINE			S 63°48'32.0" W	25.35
POT	540883.170	1430747.800		
LINE			S 63°35'03.3" W	24.03
POT	540872.480	1430726.280		
LINE			S 63°17'21.4" W	24.63
POT	540861.410	1430704.280		
LINE			S 62°41'16.2" W	26.07
POT	540849.450	1430681.120		
LINE			S 62°29'56.1" W	25.19
POT	540837.820	1430658.780		
LINE			S 62°00'37.7" W	23.57
POT	540826.760	1430637.970		
LINE			S 61°44'11.1" W	25.05
POT	540814.900	1430615.910		
LINE			S 61°18'29.1" W	24.70
POT	540803.040	1430594.240		
LINE			S 61°09'21.3" W	25.64
POT	540790.670	1430571.780		
LINE			S 60°27'40.4" W	24.83
POT	540778.430	1430550.180		
LINE			S 60°26'19.4" W	24.38
POT	540766.400	1430528.970		
LINE			S 59°53'02.1" W	25.27
POT	540753.720	1430507.110		
LINE			S 59°27'25.2" W	24.75
POT	540741.140	1430485.790		
LINE			S 59°18'35.6" W	24.06
POT	540728.860	1430465.100		
LINE			S 58°29'13.4" W	25.41
POT	540715.580	1430443.440		
LINE			S 58°22'08.6" W	25.63
POT	540702.140	1430421.620		
LINE			S 57°51'58.0" W	24.10
POT	540689.320	1430401.210		
LINE			S 57°40'42.3" W	24.97
POT	540675.970	1430380.110		
LINE			S 57°09'04.9" W	25.50
POT	540662.140	1430358.690		
LINE			S 56°45'48.9" W	24.52
POT	540648.700	1430338.180		
LINE			S 56°25'58.0" W	24.58
POT	540635.110	1430317.700		
LINE			S 56°06'37.9" W	25.50
POT	540620.890	1430296.530		
LINE			S 55°47'25.8" W	24.47
POT	540607.130	1430276.290		
LINE			S 55°17'18.7" W	24.43
POT	540593.220	1430256.210		
LINE			S 55°05'23.9" W	24.62
POT	540579.130	1430236.020		
LINE			S 54°34'51.2" W	25.28
POT	540564.480	1430215.420		
LINE			S 54°14'11.3" W	25.07
POT	540549.830	1430195.080		
LINE			S 53°56'19.2" W	24.80
POT	540535.230	1430175.030		
LINE			S 53°30'49.7" W	24.79
POT	540520.490	1430155.100		
LINE			S 53°03'46.7" W	25.61
POT	540505.100	1430134.630		
LINE			S 52°44'15.5" W	24.53
POT	540490.250	1430115.110		
LINE			S 52°18'53.5" W	24.88
POT	540475.040	1430095.420		
LINE			S 52°04'35.0" W	24.80
POT	540459.800	1430075.860		
LINE			S 51°39'08.1" W	24.66
POT	540444.500	1430056.520		
LINE			S 51°16'03.6" W	25.91
POT	540428.290	1430036.310		
LINE			S 50°52'08.3" W	23.93
POT	540413.190	1430017.750		
LINE			S 50°30'51.6" W	23.62
POT	540398.170	1429999.520		
LINE			S 50°16'10.2" W	25.41
POT	540381.930	1429979.980		
LINE			S 49°51'52.3" W	25.35
POT	540365.590	1429960.600		

R1\_EX (Continued)

POINT	N	E	BEARING	DIST
LINE			S 49°15'26.7" W	24.19
POT	540349.800	1429942.270		
LINE			S 49°12'04.2" W	25.48
POT	540333.150	1429922.980		
LINE			S 48°32'04.9" W	24.89
POT	540316.670	1429904.330		
LINE			S 48°23'07.7" W	25.03
POT	540300.050	1429885.620		
LINE			S 47°56'27.9" W	24.94
POT	540283.340	1429867.100		
LINE			S 47°38'36.8" W	24.68
POT	540266.710	1429848.860		
LINE			S 47°02'02.0" W	25.10
POT	540249.600	1429830.490		
LINE			S 46°46'10.0" W	24.73
POT	540232.660	1429812.470		
LINE			S 46°15'44.1" W	25.04
POT	540215.350	1429794.380		
LINE			S 46°02'59.5" W	25.09
POT	540197.940	1429776.320		
LINE			S 45°49'35.3" W	24.51
POT	540180.860	1429758.740		
LINE			S 45°12'26.7" W	25.39
POT	540162.970	1429740.720		
LINE			S 45°00'00.0" W	24.20
POT	540145.860	1429723.610		
LINE			S 44°36'58.0" W	25.33
POT	540127.830	1429705.820		
LINE			S 44°21'16.0" W	25.10
POT	540109.880	1429688.270		
LINE			S 43°43'08.2" W	24.67
POT	540092.050	1429671.220		
LINE			S 43°23'40.5" W	25.24
POT	540073.710	1429653.880		
LINE			S 42°53'59.0" W	24.50
POT	540055.760	1429637.200		
LINE			S 42°25'45.8" W	24.75
POT	540037.490	1429620.500		
LINE			S 42°36'48.2" W	24.96
POT	540019.120	1429603.600		
LINE			S 42°13'00.3" W	25.05
POT	540000.570	1429586.770		
LINE			S 41°56'05.8" W	25.26
POT	539981.780	1429569.890		
LINE			S 41°31'06.6" W	23.99
POT	539963.820	1429553.990		
LINE			S 41°17'22.8" W	25.46
POT	539944.690	1429537.190		
LINE			S 40°42'36.1" W	24.58
POT	539926.060	1429521.160		
LINE			S 40°14'01.5" W	25.70
POT	539906.440	1429504.560		
LINE			S 39°34'14.5" W	24.36
POT	539887.660	1429489.040		
LINE			S 39°29'17.7" W	24.74
POT	539868.570	1429473.310		
LINE			S 39°01'52.1" W	24.82
POT	539849.290	1429457.680		
LINE			S 38°21'24.9" W	24.82
POT	539829.830	1429442.280		
LINE			S 38°09'26.0" W	25.46
POT	539809.810	1429426.550		
LINE			S 37°42'12.4" W	24.61
POT	539790.340	1429411.500		
LINE			S 37°21'36.7" W	24.31
POT	539771.020	1429396.750		
LINE			S 36°58'15.3" W	24.96
POT	539751.080	1429381.740		
LINE			S 36°29'46.3" W	24.53
POT	539731.360	1429367.150		
LINE			S 36°13'28.3" W	25.21
POT	539711.020	1429352.250		
LINE			S 35°42'51.0" W	25.29
POT	539690.490	1429337.490		
LINE			S 35°17'46.1" W	24.54
POT	539670.460	1429323.310		
LINE			S 34°59'38.1" W	24.87
POT	539650.090	1429309.050		

REVISIONS

6/2/99

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# SURVEY CONTROL SHEET

## W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

R1\_EX (Continued)

POINT	N	E	BEARING	DIST
LINE			S 34°45'10.5" W	25.72
POT	539628.960	1429294.390		
LINE			S 34°16'56.7" W	24.14
POT	539609.010	1429280.790		
LINE			S 34°04'08.0" W	25.17
POT	539588.160	1429266.690		
LINE			S 33°32'13.8" W	24.94
POT	539567.370	1429252.910		
LINE			S 33°07'26.4" W	24.70
POT	539546.680	1429239.410		
LINE			S 32°45'18.7" W	24.14
POT	539526.380	1429226.350		
LINE			S 32°42'28.6" W	25.24
POT	539505.140	1429212.710		
LINE			S 31°51'51.9" W	25.42
POT	539483.550	1429199.290		
LINE			S 31°39'10.4" W	24.81
POT	539462.430	1429186.270		
LINE			S 31°18'42.3" W	25.13
POT	539440.960	1429173.210		
LINE			S 31°05'23.6" W	24.15
POT	539420.280	1429160.740		
LINE			S 30°28'00.1" W	25.30
POT	539398.470	1429147.910		
LINE			S 30°05'27.6" W	24.43
POT	539377.330	1429135.660		
LINE			S 29°55'08.5" W	25.30
POT	539355.400	1429123.040		
LINE			S 29°24'47.8" W	25.29
POT	539333.370	1429110.620		
LINE			S 29°15'40.3" W	24.24
POT	539312.220	1429098.770		
LINE			S 28°52'14.7" W	25.12
POT	539290.220	1429086.640		
LINE			S 28°26'00.7" W	24.55
POT	539268.630	1429074.950		
LINE			S 28°15'05.5" W	25.22
POT	539246.410	1429063.010		
LINE			S 27°40'56.7" W	24.54
POT	539224.680	1429051.610		
LINE			S 27°22'09.8" W	25.17
POT	539202.330	1429040.040		
LINE			S 26°58'08.0" W	25.38
POT	539179.710	1429028.530		
LINE			S 26°33'16.3" W	24.34
POT	539157.940	1429017.650		
LINE			S 26°21'47.3" W	25.38
POT	539135.200	1429006.380		
LINE			S 25°45'42.8" W	23.93
POT	539113.650	1428995.980		
LINE			S 25°32'00.1" W	25.33
POT	539090.790	1428985.060		
LINE			S 24°59'16.9" W	25.19
POT	539067.960	1428974.420		
LINE			S 24°44'45.3" W	24.65
POT	539045.570	1428964.100		
LINE			S 24°18'26.2" W	24.63
POT	539023.120	1428953.960		
LINE			S 24°10'05.6" W	25.45
POT	538999.900	1428943.540		
LINE			S 23°08'47.8" W	24.60
POT	538977.280	1428933.870		
LINE			S 23°21'59.5" W	25.09
POT	538954.250	1428923.920		
LINE			S 22°57'48.2" W	23.99
POT	538932.160	1428914.560		
LINE			S 22°35'56.4" W	25.35
POT	538908.760	1428904.820		
LINE			S 22°10'29.2" W	25.65
POT	538885.010	1428895.140		
LINE			S 22°02'12.3" W	23.96
POT	538862.800	1428886.150		
LINE			S 21°11'24.5" W	25.06
POT	538839.430	1428877.090		
LINE			S 21°18'25.6" W	24.11
POT	538816.970	1428868.330		
LINE			S 20°40'50.5" W	25.82
POT	538792.810	1428859.210		

R1\_EX (Continued)

POINT	N	E	BEARING	DIST
LINE			S 20°20'37.0" W	25.26
POT	538769.130	1428850.430		
LINE			S 19°45'47.5" W	25.37
POT	538745.250	1428841.850		
LINE			S 19°29'36.5" W	23.79
POT	538722.820	1428833.910		
LINE			S 19°06'04.1" W	24.48
POT	538699.690	1428825.900		
LINE			S 18°44'47.0" W	25.02
POT	538676.000	1428817.860		
LINE			S 18°47'00.9" W	25.47
POT	538651.890	1428809.660		
LINE			S 17°41'25.1" W	24.09
POT	538628.940	1428802.340		
LINE			S 17°36'40.4" W	25.52
POT	538604.620	1428794.620		
LINE			S 17°15'37.6" W	24.84
POT	538580.900	1428787.250		
LINE			S 16°42'29.7" W	24.35
POT	538557.580	1428780.250		
LINE			S 16°45'52.8" W	25.17
POT	538533.480	1428772.990		
LINE			S 16°22'13.5" W	25.37
POT	538509.140	1428765.840		
LINE			S 15°44'53.6" W	23.95
POT	538486.090	1428759.340		
LINE			S 15°25'30.6" W	25.42
POT	538461.590	1428752.580		

REVISIONS

# SURVEY CONTROL SHEET

## W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

R2_EX POINT	N	E	BEARING	DIST
POT	541183.750	1431668.600		
LINE			S 77°54'50.8" W	27.08
POT	541178.080	1431642.120		
LINE			S 77°36'54.8" W	23.73
POT	541172.990	1431618.940		
LINE			S 77°13'52.3" W	24.34
POT	541167.610	1431595.200		
LINE			S 76°48'57.7" W	24.95
POT	541161.920	1431570.910		
LINE			S 76°53'02.6" W	22.65
POT	541156.780	1431548.850		
LINE			S 76°23'51.0" W	27.55
POT	541150.300	1431522.070		
LINE			S 76°08'24.4" W	25.21
POT	541144.260	1431497.590		
LINE			S 76°05'44.3" W	23.18
POT	541138.690	1431475.090		
LINE			S 75°29'31.2" W	25.63
POT	541132.270	1431450.280		
LINE			S 74°51'31.5" W	25.15
POT	541125.700	1431426.000		
LINE			S 74°26'57.3" W	25.33
POT	541118.910	1431401.600		
LINE			S 74°00'03.3" W	24.93
POT	541112.040	1431377.640		
LINE			S 73°31'13.8" W	23.72
POT	541105.310	1431354.890		
LINE			S 73°00'13.6" W	25.32
POT	541097.910	1431330.680		
LINE			S 72°40'33.3" W	25.12
POT	541090.430	1431306.700		
LINE			S 72°21'44.9" W	23.63
POT	541083.270	1431284.180		
LINE			S 71°57'26.1" W	25.41
POT	541075.400	1431260.020		
LINE			S 71°48'13.7" W	25.04
POT	541067.580	1431236.230		
LINE			S 71°25'38.2" W	23.67
POT	541060.040	1431213.790		
LINE			S 71°02'15.7" W	25.08
POT	541051.890	1431190.070		
LINE			S 70°44'44.8" W	25.66
POT	541043.430	1431165.850		
LINE			S 70°19'17.1" W	24.92
POT	541035.040	1431142.390		
LINE			S 69°50'55.8" W	25.34
POT	541026.310	1431118.600		
LINE			S 69°34'21.5" W	25.01
POT	541017.580	1431095.160		
LINE			S 69°02'55.0" W	23.41
POT	541009.210	1431073.300		
LINE			S 68°56'22.5" W	25.13
POT	541000.180	1431049.850		
LINE			S 68°23'08.2" W	25.03
POT	540990.960	1431026.580		
LINE			S 68°10'02.3" W	23.80
POT	540982.110	1431004.490		
LINE			S 67°46'08.2" W	25.51
POT	540972.460	1430980.880		
LINE			S 67°17'54.5" W	24.82
POT	540962.880	1430957.980		
LINE			S 66°59'48.5" W	25.41
POT	540952.950	1430934.590		
LINE			S 66°35'26.3" W	23.56
POT	540943.590	1430912.970		
LINE			S 66°09'11.5" W	25.65
POT	540933.220	1430889.510		
LINE			S 65°53'08.2" W	24.89
POT	540923.050	1430866.790		
LINE			S 65°24'52.0" W	25.12
POT	540912.600	1430843.950		
LINE			S 65°06'01.5" W	25.08
POT	540902.040	1430821.200		
LINE			S 64°38'04.1" W	23.93
POT	540891.790	1430799.580		
LINE			S 64°15'00.1" W	24.84
POT	540881.000	1430777.210		
LINE			S 63°58'11.8" W	25.38

R2_EX (Continued) POINT	N	E	BEARING	DIST
POT	540869.860	1430754.400		
LINE			S 63°29'21.7" W	23.55
POT	540859.350	1430733.330		
LINE			S 63°17'35.8" W	25.32
POT	540847.970	1430710.710		
LINE			S 62°52'13.4" W	25.42
POT	540836.380	1430688.090		
LINE			S 62°28'31.2" W	25.10
POT	540824.780	1430665.830		
LINE			S 62°09'08.7" W	23.38
POT	540813.860	1430645.160		
LINE			S 61°46'02.7" W	25.05
POT	540802.010	1430623.090		
LINE			S 61°21'11.9" W	25.24
POT	540789.910	1430600.940		
LINE			S 60°52'43.7" W	25.07
POT	540777.710	1430579.040		
LINE			S 60°23'47.4" W	24.13
POT	540765.790	1430558.060		
LINE			S 60°16'51.0" W	24.87
POT	540753.460	1430536.460		
LINE			S 59°43'54.8" W	24.72
POT	540741.000	1430515.110		
LINE			S 59°24'29.7" W	25.09
POT	540728.230	1430493.510		
LINE			S 59°00'57.2" W	24.15
POT	540715.800	1430472.810		
LINE			S 58°23'59.8" W	25.17
POT	540702.610	1430451.370		
LINE			S 58°19'50.8" W	24.93
POT	540689.520	1430430.150		
LINE			S 58°07'18.6" W	24.82
POT	540676.410	1430409.070		
LINE			S 57°37'14.9" W	23.88
POT	540663.620	1430388.900		
LINE			S 57°28'21.9" W	26.65
POT	540649.290	1430366.430		
LINE			S 57°00'35.1" W	24.30
POT	540636.060	1430346.050		
LINE			S 56°21'43.8" W	24.33
POT	540622.580	1430325.790		
LINE			S 56°18'13.2" W	25.36
POT	540608.510	1430304.690		
LINE			S 55°27'29.2" W	23.88
POT	540594.970	1430285.020		
LINE			S 55°07'18.5" W	24.74
POT	540580.820	1430264.720		
LINE			S 54°41'02.8" W	24.93
POT	540566.410	1430244.380		
LINE			S 54°31'15.7" W	24.97
POT	540551.920	1430224.050		
LINE			S 54°12'17.3" W	24.31
POT	540537.700	1430204.330		
LINE			S 53°53'38.6" W	25.20
POT	540522.850	1430183.970		
LINE			S 53°32'36.1" W	23.85
POT	540508.680	1430164.790		
LINE			S 53°12'16.4" W	26.16
POT	540493.010	1430143.840		
LINE			S 52°56'29.4" W	23.70
POT	540478.730	1430124.930		
LINE			S 52°34'09.4" W	25.34
POT	540463.330	1430104.810		
LINE			S 52°15'28.4" W	24.96
POT	540448.050	1430085.070		
LINE			S 51°43'14.1" W	24.23
POT	540433.040	1430066.050		
LINE			S 51°24'27.4" W	25.22
POT	540417.310	1430046.340		
LINE			S 51°05'32.7" W	24.92
POT	540401.660	1430026.950		
LINE			S 50°32'37.8" W	23.93
POT	540386.450	1430008.470		
LINE			S 50°08'11.0" W	24.01
POT	540371.060	1429990.040		
LINE			S 49°44'20.9" W	26.10
POT	540354.190	1429970.120		
LINE			S 49°30'25.0" W	24.12

REVISIONS

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# SURVEY CONTROL SHEET

*W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION*

R2\_EX (Continued)

POINT	N	E	BEARING	DIST
POT	540338.530	1429951.780		
LINE			S 49°07'25.0" W	25.08
POT	540322.120	1429932.820		
LINE			S 48°34'20.4" W	25.19
POT	540305.450	1429913.930		
LINE			S 48°15'09.7" W	24.68
POT	540289.020	1429895.520		
LINE			S 47°44'41.4" W	24.95
POT	540272.240	1429877.050		
LINE			S 47°28'36.8" W	25.03
POT	540255.320	1429858.600		
LINE			S 46°50'16.5" W	24.25
POT	540238.730	1429840.910		
LINE			S 46°27'52.7" W	24.90
POT	540221.580	1429822.860		
LINE			S 46°04'38.0" W	24.82
POT	540204.360	1429804.980		
LINE			S 45°42'06.5" W	25.40
POT	540186.620	1429786.800		
LINE			S 45°23'56.5" W	24.37
POT	540169.510	1429769.450		
LINE			S 44°54'10.2" W	25.02
POT	540151.790	1429751.790		
LINE			S 44°15'30.6" W	24.59
POT	540134.180	1429734.630		
LINE			S 43°42'49.6" W	24.57
POT	540116.420	1429717.650		
LINE			S 43°38'13.9" W	8.62
POT	540110.180	1429711.700		
LINE			S 43°26'52.7" W	16.97
POT	540097.860	1429700.030		
LINE			S 43°11'17.4" W	24.82
POT	540079.760	1429683.040		
LINE			S 43°23'16.3" W	24.63
POT	540061.860	1429666.120		
LINE			S 45°00'59.8" W	24.40
POT	540044.610	1429648.860		
LINE			S 45°40'36.1" W	25.15
POT	540027.040	1429630.870		
LINE			S 45°47'57.4" W	25.35
POT	540009.370	1429612.700		
LINE			S 46°12'52.7" W	24.35
POT	539992.520	1429595.120		
LINE			S 46°26'48.5" W	25.49
POT	539974.960	1429576.650		
LINE			S 46°54'57.1" W	24.11
POT	539958.490	1429559.040		
LINE			S 45°37'20.0" W	25.39
POT	539940.730	1429540.890		
LINE			S 44°25'17.8" W	23.82
POT	539923.720	1429524.220		
LINE			S 43°52'58.3" W	25.75
POT	539905.160	1429506.370		
LINE			S 42°00'04.1" W	24.46
POT	539886.980	1429490.000		
LINE			S 40°47'11.4" W	24.83
POT	539868.180	1429473.780		

REVISIONS

# PROPOSED ALIGNMENT CONTROL SHEET

L			
TYPE	STATION	NORTH	EAST
POT	8+00.00	541995.8476	1429146.0949
POT	10+00.00	541890.1078	1429315.8568
POT	10+39.98	541868.9704	1429349.7921
TS	13+72.14	541674.9699	1429619.4155
SC	14+34.14	541639.0137	1429669.9236
CS	15+09.69	541596.9748	1429732.6960
ST	15+71.69	541563.9605	1429785.1743
TS	16+86.56	541503.2840	1429882.7128
SC	18+10.56	541434.4319	1429985.7780
CS	28+04.82	540545.5633	1430107.5277
ST	29+28.82	540451.5362	1430026.7690
POT	30+84.57	540336.7381	1429921.5139
POT	31+24.55	540309.1344	1429892.5927

R1_PR			
TYPE	STATION	NORTH	EAST
PC	24+01.25	541152.3500	1431470.6500
CS	24+54.31	541138.5942	1431419.4013
ST	25+16.31	541121.7829	1431359.7242
TS	27+84.14	541048.4622	1431102.1204
SC	29+39.14	541004.3551	1430953.5367
CS	38+95.24	540532.9415	1430129.6114
ST	40+50.24	540427.1994	1430016.2926
POT	41+81.26	540336.7381	1429921.5139
POT	42+21.24	540309.1344	1429892.5927
TS	43+21.24	540240.0905	1429820.2536
SC	43+83.24	540197.1623	1429775.5195
PT	46+85.22	539978.5514	1429567.3001

REVISIONS

11/2/2022  
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# RIGHT OF WAY CONTROL SHEET

## ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+24.80	66.73	541648.4569	1429542.0166
L	13+39.60	65.72	541640.6288	1429554.6125
L	15+63.66	48.55	541526.9900	1429752.7017
L	18+10.56	100.00	541355.0597	1429924.9500
L	20+34.95	-147.25	541348.3172	1430260.9852
L	21+64.63	-441.29	541309.3754	1430607.2997
L	22+82.26	-1354.54	541277.4675	1431559.2166
L	28+04.82	100.00	540605.6647	1430027.6039
L	29+95.88	85.86	540460.1333	1429918.1666

## PERMANENT DRAINAGE EASEMENT IRON PIN & CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	20+92.31	100.00	541174.0252	1430076.1242
L	21+30.55	176.50	541114.0870	1430019.9734
L	21+74.87	218.10	541070.2392	1429992.7006
L	22+31.28	100.00	541064.6981	1430117.9378


REVISIONS

6/2/99

11/2/2022  
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11/2/2022  
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PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. PLACED IN TWO LAYERS.
P1	PRIME COAT AT A RATE OF .35 GAL PER SQ. YARD.

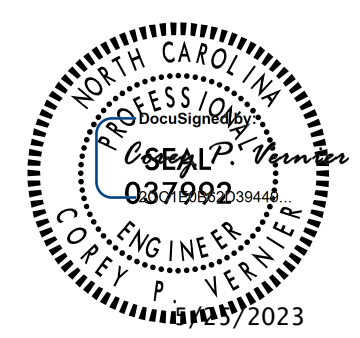


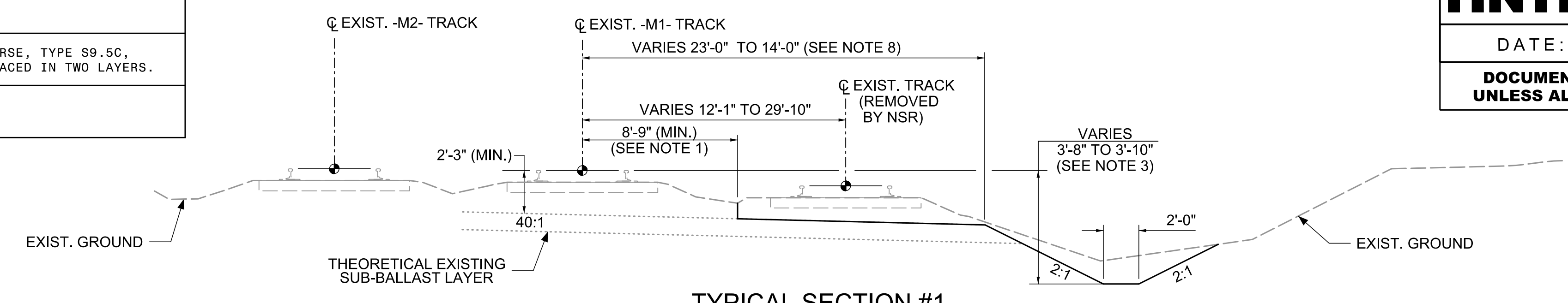
**HNTB** NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
P-5705A	2A-1
RW SHEET NO.	

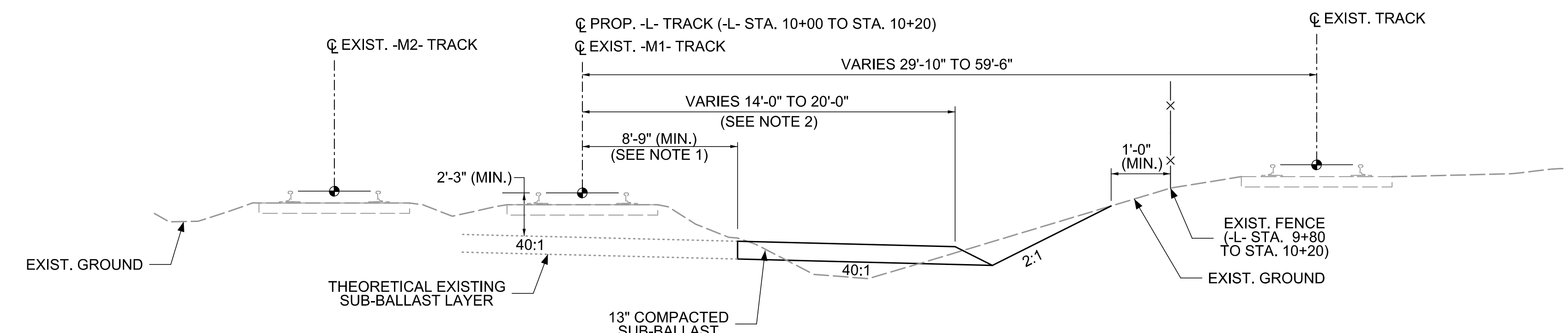
DATE: NOVEMBER 4, 2022

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

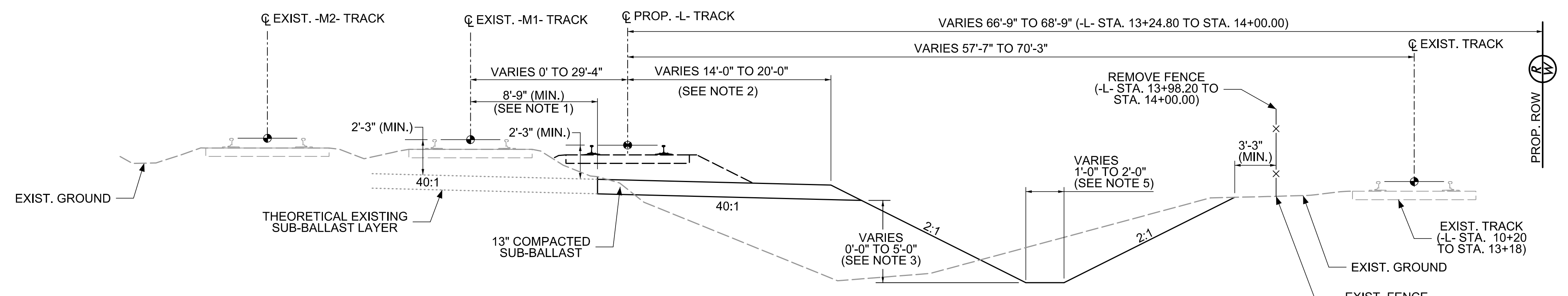




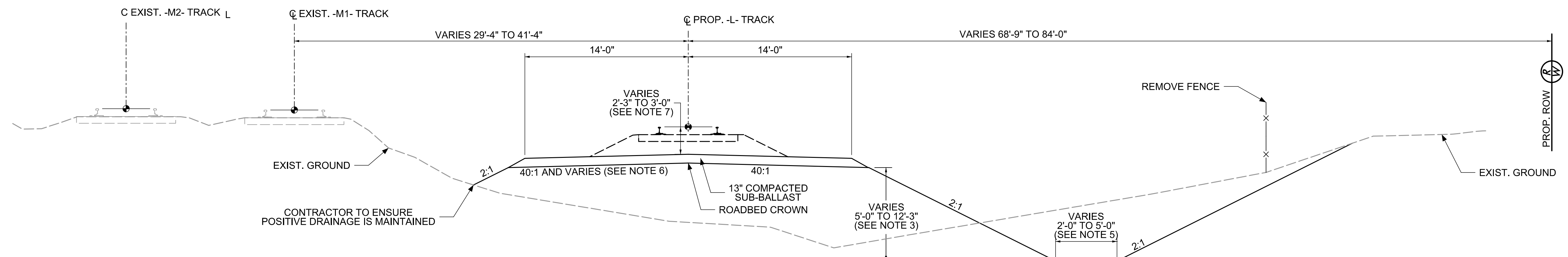
**TYPICAL SECTION #1**  
-L- STA. 8+28.98 TO STA. 9+10



**TYPICAL SECTION #1A**  
-L- STA. 9+10 TO STA. 10+20



**TYPICAL SECTION #2**  
-L- STA. 10+20 TO STA. 14+00



**TYPICAL SECTION #3**  
-L- STA. 14+00 TO STA. 16+00

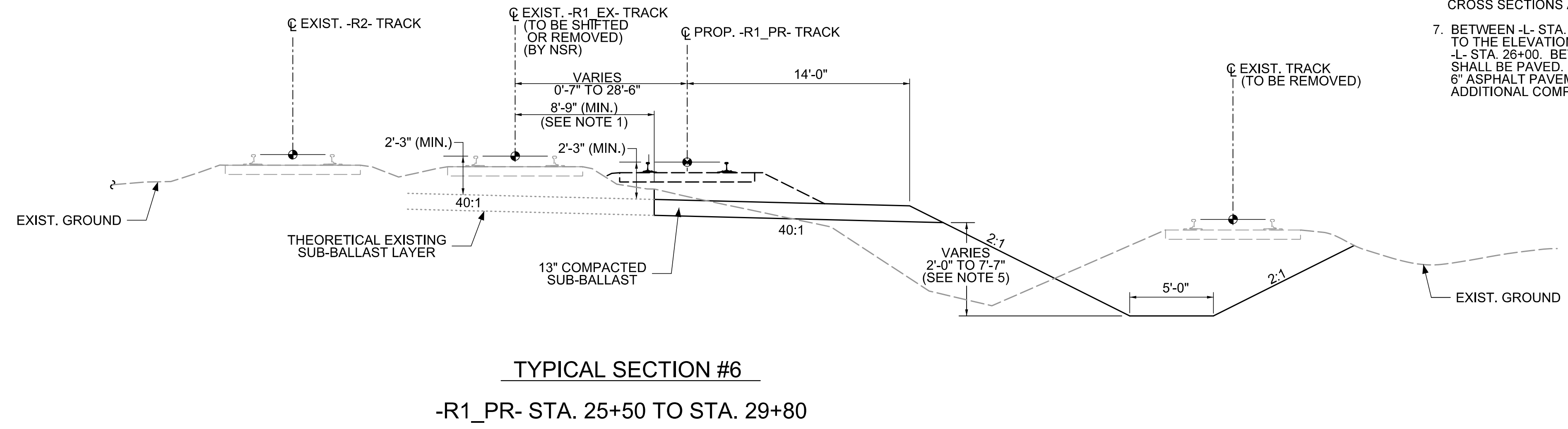
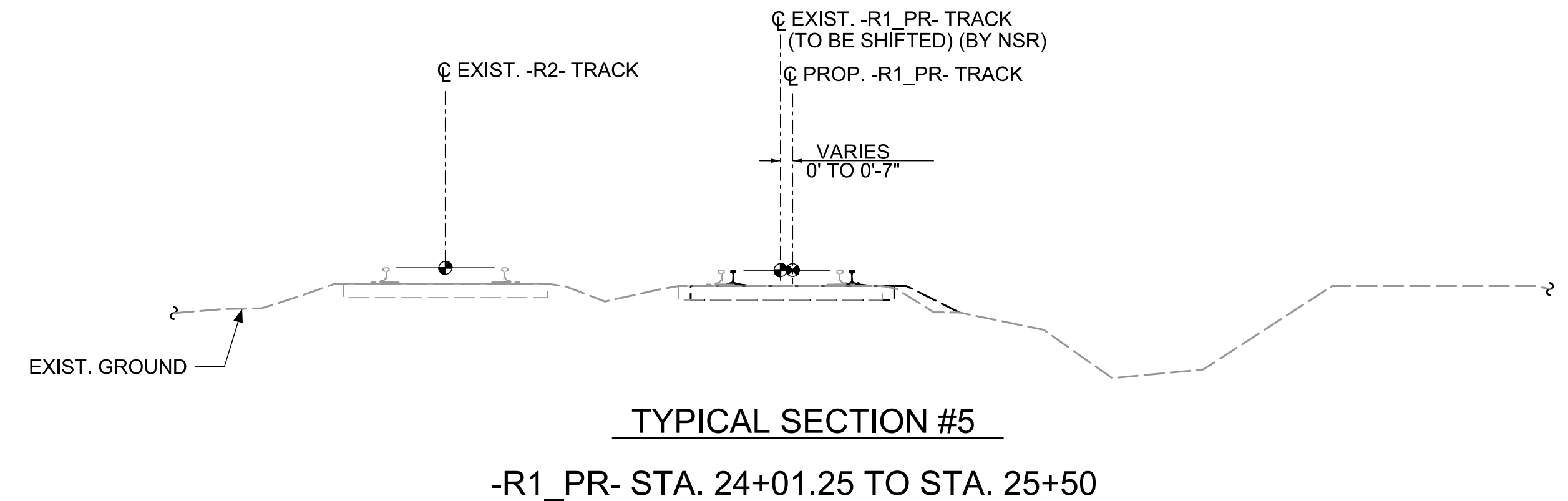
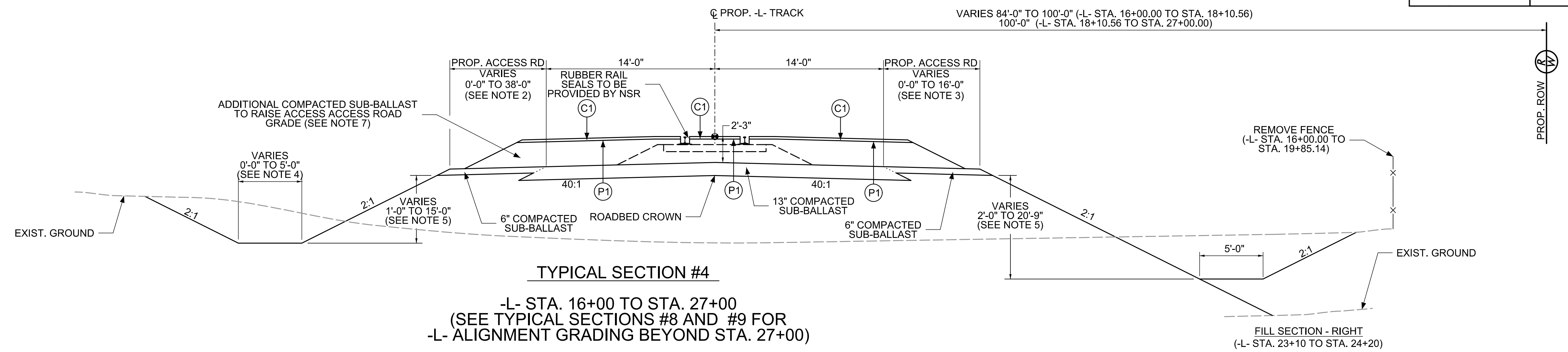
- NOTES:
1. DIMENSION SHOWN IS FOR BIDDING PURPOSES ONLY AND MUST BE COORDINATED WITH THE NORFOLK SOUTHERN REPRESENTATIVE PRIOR TO CONSTRUCTION. SEE 'EXCAVATION ADJACENT TO ACTIVE TRACK DETAIL' FOR REQUIREMENTS.
  2. THE PROPOSED RIGHT SHOULDER WIDTH VARIES ACCORDING TO THE FOLLOWING:  
STA. 9+10.00 TO STA. 9+33.42: 14'-0" TO 16'-0"  
STA. 9+33.42 TO STA. 9+43.42: 16'-0" TO 20'-0"  
STA. 9+43.42 TO STA. 10+39.98: 20'-0"  
STA. 10+39.98 TO STA. 11+30.55: 20'-0" TO 14'-0"  
STA. 11+30.55 TO STA. 14+00.00: 14'-0"
  3. DITCH ELEVATIONS ARE CONTROLLED BY SPECIAL DITCH GRADES SHOWN ON THE PROFILES.
  4. THE TYPICAL SECTIONS TAKE PRECEDENCE OVER THE CROSS SECTIONS. CROSS SECTIONS ARE PROVIDED FOR REFERENCE ONLY.
  5. RIGHT DITCH BASE WIDTH VARIES AS FOLLOWS:  
STA. 10+20.00 TO STA. 10+97.00: 1'-0"  
STA. 10+97.00 TO STA. 11+07.00: 1'-0" TO 2'-0"  
STA. 11+07.00 TO STA. 14+00.00: 2'-0"  
STA. 14+00.00 TO STA. 14+50.00: 2'-0" TO 5'-0"  
STA. 14+50.00 TO STA. 16+00.00: 5'-0"
  6. THE SUB-BALLAST CROSS SLOPE SHALL TRANSITION FROM 40:1 AWAY FROM THE EXISTING MAINLINE TRACKS AT -L- STA. 14+00 TO 40:1 WITH CROWN CENTERED UNDER THE -L- ALIGNMENT AT -L- STA. 14+50. NORMAL SUB-BALLAST CROWN SHALL BE UTILIZED FROM -L- STA. 14+50 AND STA. 16+00.
  7. THE VERTICAL DISTANCE FROM PROP. TOP OF RAIL ELEV. AND THE TOP OF SUB-BALLAST AT THE -L- ALIGNMENT CENTERLINE SHALL TRANSITION FROM 3'-0" AT -L- STA. 14+00 TO 2'-3" AT -L- STA. 14+50. THE VERTICAL DISTANCE SHALL BE 2'-3" FROM -L- STA. 14+50 TO STA. 16+00.
  8. THE REMAINING BALLAST UNDER THE REMOVED INDUSTRY TRACK SHALL BE STRIPPED DOWN TO THE EXISTING SUB-BALLAST. THE SHOULDER WIDTH SHALL BE 23'-0" AT -L- STA. 8+28.98 AND TRANSITION TO 14'-0" AT STA. 9+10.00.

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DATE: NOVEMBER 4, 2022

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. PLACED IN TWO LAYERS.
P1	PRIME COAT AT A RATE OF .35 GAL PER SQ. YARD.



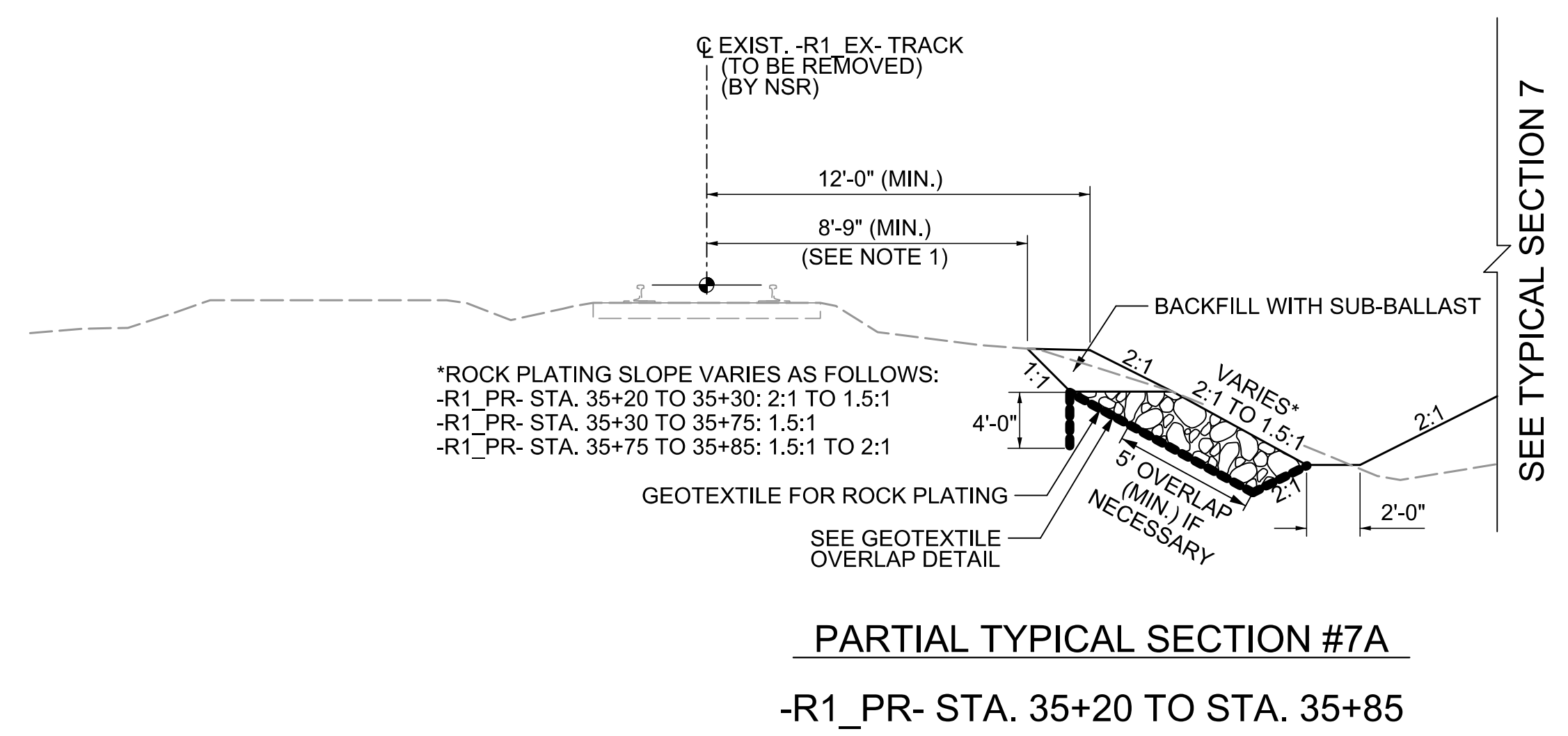
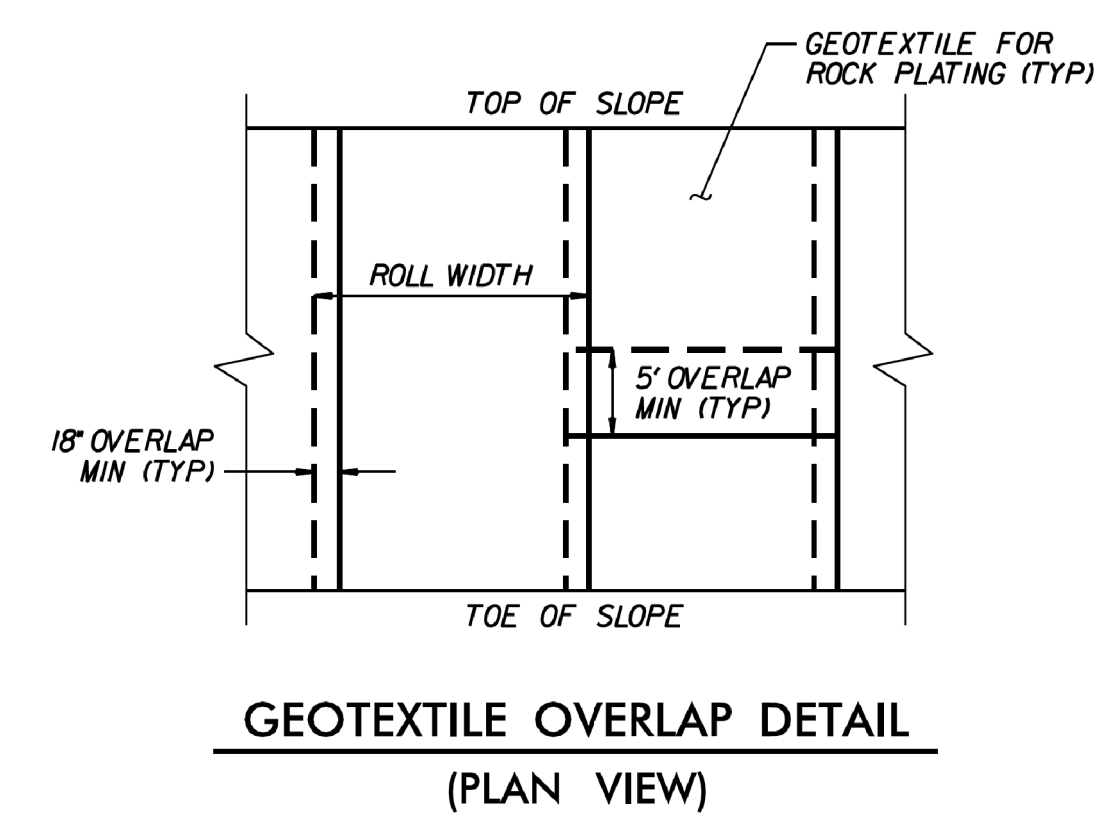
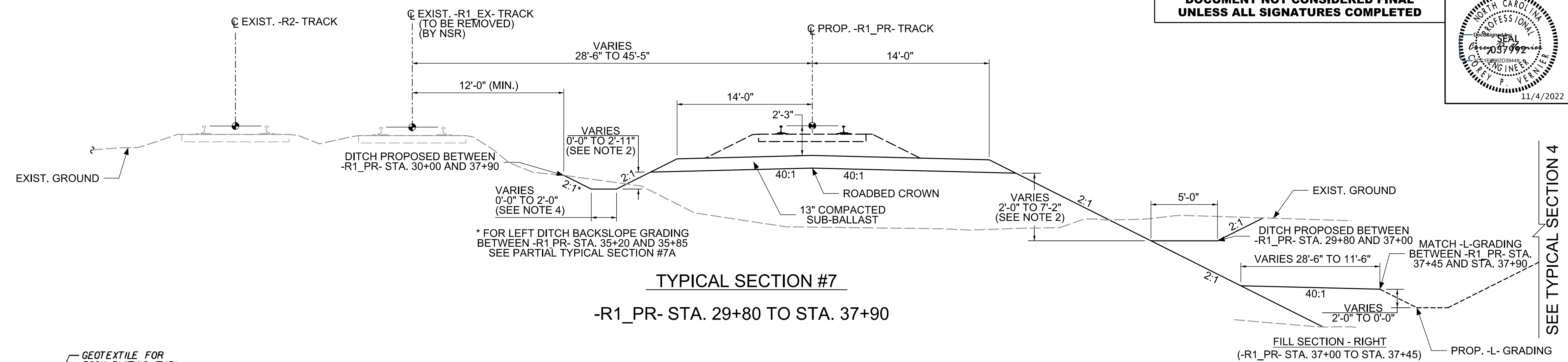
- NOTES:**
- DIMENSION SHOWN IS FOR BIDDING PURPOSES ONLY AND MUST BE COORDINATED WITH THE NORFOLK SOUTHERN REPRESENTATIVE PRIOR TO CONSTRUCTION. SEE 'EXCAVATION ADJACENT TO ACTIVE TRACK DETAIL' FOR REQUIREMENTS.
  - THE PROPOSED ACCESS ROAD LEFT WIDTH VARIES ACCORDING TO THE FOLLOWING:  
 STA. 16+00.00 TO STA. 16+08.48: 0'-0"  
 STA. 16+08.48 TO STA. 16+33.48: 0'-0" TO 8'-0"  
 STA. 16+33.48 TO STA. 18+00.00: 8'-0"  
 STA. 18+00.00 TO STA. 18+30.00: 8'-0" TO 38'-0"  
 STA. 18+30.00 TO STA. 18+60.00: 38'-0"  
 STA. 18+60.00 TO STA. 18+90.00: 38'-0" TO 8'-0"  
 STA. 18+90.00 TO STA. 24+52.90: 8'-0"  
 STA. 24+52.90 TO STA. 26+00.00: 8'-0" TO 26'-0"  
 STA. 26+00.00 TO STA. 26+50.00: 26'-0" TO 0'-0"  
 STA. 26+50.00 TO STA. 27+00.00: 0'-0"
  - THE PROPOSED ACCESS ROAD RIGHT WIDTH VARIES ACCORDING TO THE FOLLOWING:  
 STA. 16+00.00 TO STA. 25+50.00: 0'-0"  
 STA. 25+50.00 TO STA. 26+00.00: 0'-0" TO 16'-0"  
 STA. 26+00.00 TO STA. 27+00.00: 16'-0" TO 14'-6"
  - LEFT DITCH BASE WIDTH VARIES AS FOLLOWS:  
 STA. 16+00.00 TO STA. 17+00.00: 0'-0" (V-DITCH)  
 STA. 17+00.00 TO STA. 17+50.00: 0'-0" TO 2'-0"  
 STA. 17+50.00 TO STA. 18+60.00: 2'-0"  
 STA. 18+60.00 TO STA. 18+90.00: 2'-0" TO 5'-0"  
 STA. 18+90.00 TO STA. 27+00.00: 5'-0"
  - DITCH ELEVATIONS ARE CONTROLLED BY SPECIAL DITCH GRADES SHOWN ON THE PROFILES.
  - THE TYPICAL SECTIONS TAKE PRECEDENCE OVER THE CROSS SECTIONS. CROSS SECTIONS ARE PROVIDED FOR REFERENCE ONLY.
  - BETWEEN -L- STA. 25+00 AND STA. 27+00 THE ACCESS ROAD SHALL BE RAISED TO THE ELEVATION OF THE TOP OF RAIL AT THE PROPOSED CROSSING AT -L- STA. 26+00. BETWEEN -L- STA. 25+25 AND STA. 26+75 THE ACCESS ROAD SHALL BE PAVED. THE APPROACH AND CROSSING PAVEMENT SHALL BE 6" ASPHALT PAVEMENT AND THE PAVEMENT SHALL BE RAISED USING ADDITIONAL COMPACTED ABC.



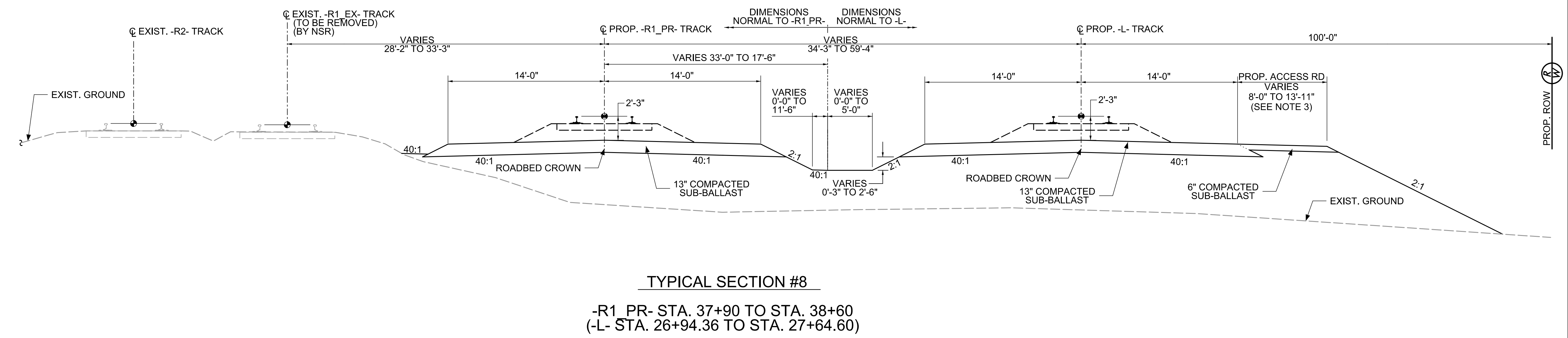
PROJECT REFERENCE NO.	SHEET NO.
P-5705A	2A-3
RW SHEET NO.	
RAILROAD DESIGN ENGINEER	

DATE: NOVEMBER 4, 2022

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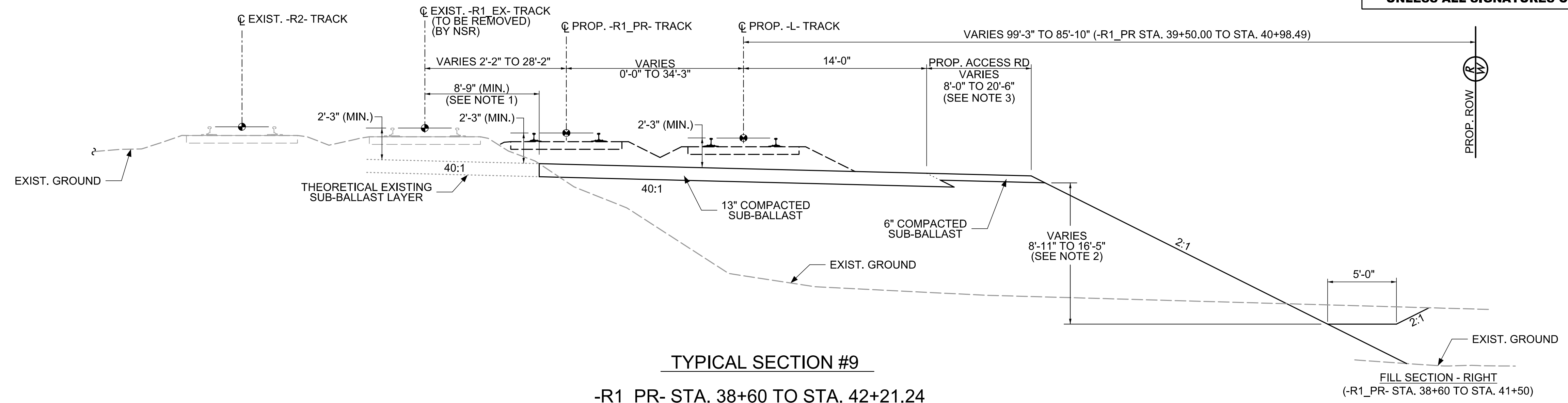
- NOTES
- DIMENSION SHOWN IS FOR BIDDING PURPOSES ONLY AND MUST BE COORDINATED WITH THE NORFOLK SOUTHERN REPRESENTATIVE PRIOR TO CONSTRUCTION. SEE 'EXCAVATION ADJACENT TO ACTIVE TRACK DETAIL' FOR REQUIREMENTS.
  - DITCH ELEVATIONS ARE CONTROLLED BY SPECIAL DITCH GRADES SHOWN ON THE PROFILES.
  - THE PROPOSED ACCESS ROAD RIGHT WIDTH VARIES ACCORDING TO THE FOLLOWING:  
-R1\_PR- STA. 37+90.00 TO STA. 38+45.27: 13'-11" TO 8'-0"  
-R1\_PR- STA. 38+45.27 TO STA. 38+60.00: 8'-0"
  - LEFT DITCH WIDTH VARIES BASED ON TRACK CENTERS AND DITCH DEPTH. THE LEFT DITCH WIDTHS VARY ACCORDING TO THE FOLLOWING:  
-R1\_PR- STA. 30+00.00 TO STA. 30+60.00: 0'-0"  
-R1\_PR- STA. 30+60.00 TO STA. 31+10.00: 0'-0" TO 2'-0"  
-R1\_PR- STA. 31+10.00 TO STA. 36+40.00: 2'-0"  
-R1\_PR- STA. 36+40.00 TO STA. 37+00.00: 2'-0" TO 0'-0"  
-R1\_PR- STA. 37+00.00 TO STA. 37+90.00: 0'-0"
  - THE TYPICAL SECTIONS TAKE PRECEDENCE OVER THE CROSS SECTIONS. CROSS SECTIONS ARE PROVIDED FOR REFERENCE ONLY.



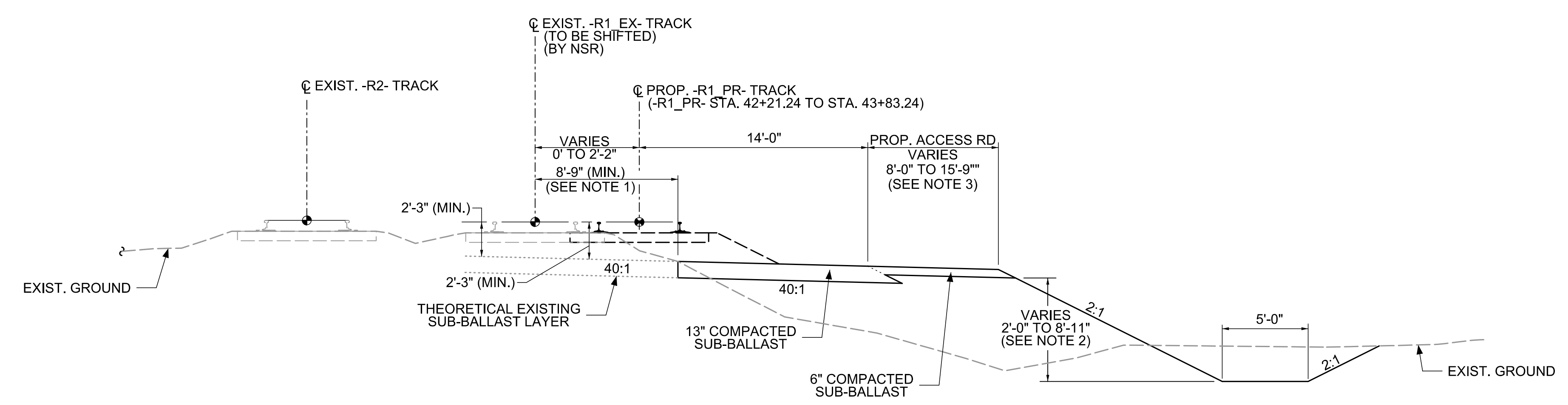
PROJECT REFERENCE NO.	SHEET NO.
P-5705A	2A-4
RW SHEET NO.	
RAILROAD DESIGN ENGINEER	

DATE: NOVEMBER 4, 2022

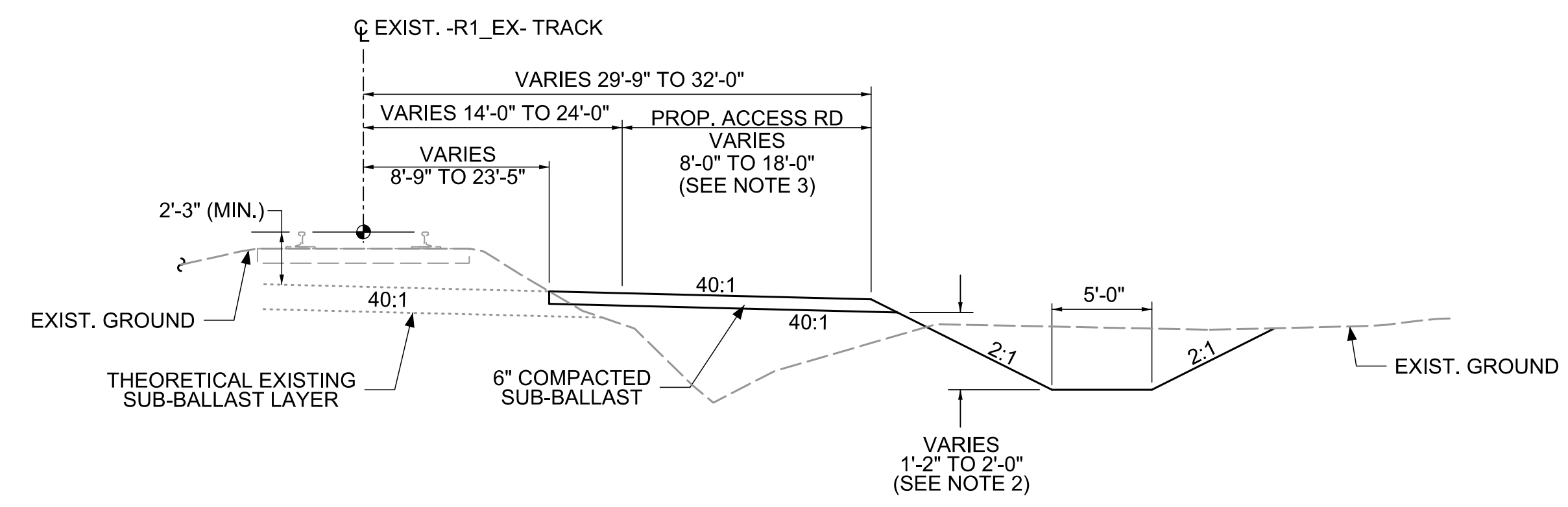
**DOCUMENT NOT CONSIDERED FINAL  
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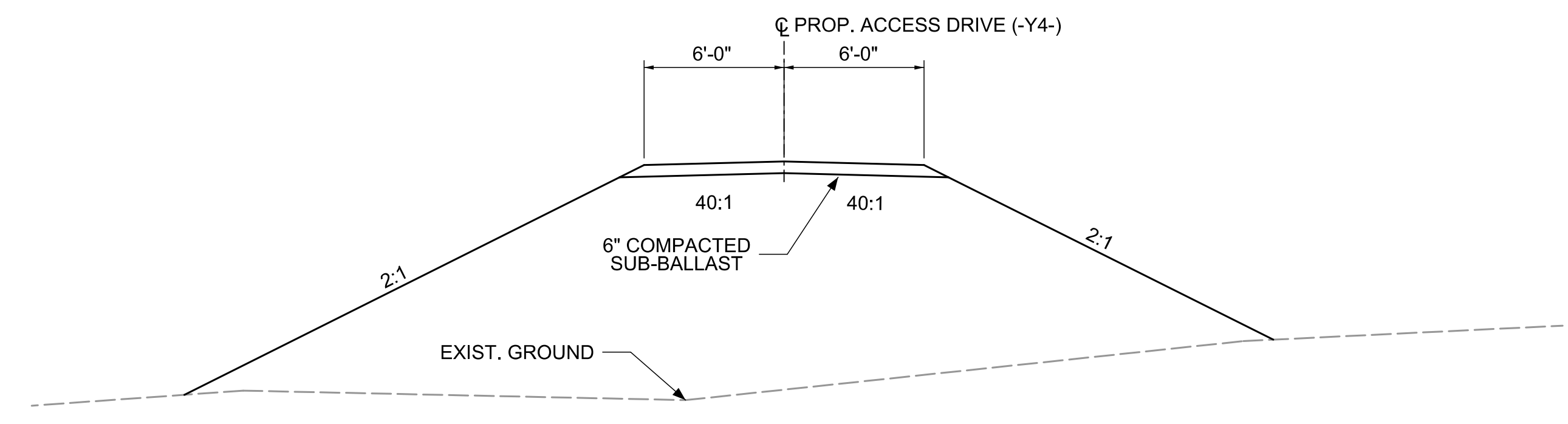
**TYPICAL SECTION #9**  
-R1 PR- STA. 38+60 TO STA. 42+21.24  
(-L- STA. 27+64.60 TO STA. 31+24.55)



**TYPICAL SECTION #10**  
-R1\_PR- STA. 42+21.24 TO STA. 45+30



**TYPICAL SECTION #11**  
-R1\_PR- STA. 45+30 TO STA. 46+02.75



**TYPICAL SECTION #12**  
-Y4- STA. 10+22 TO STA. 11+97.49

**NOTES**

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- DITCH ELEVATIONS ARE CONTROLLED BY SPECIAL DITCH GRADES SHOWN ON THE PROFILES.
- THE PROPOSED ACCESS ROAD RIGHT WIDTH VARIES ACCORDING TO THE FOLLOWING:  
-R1\_PR- STA. 38+60.00 TO STA. 40+48.46: 8'-0"  
-R1\_PR- STA. 40+48.46 TO STA. 40+74.23: 8'-0" TO 20'-6"  
-R1\_PR- STA. 40+74.23 TO STA. 41+34.10: 20'-8"  
-R1\_PR- STA. 41+34.10 TO STA. 41+58.51: 20'-8" TO 12'-5"  
-R1\_PR- STA. 41+58.51 TO STA. 41+81.73: 12'-5" TO 14'-0"  
-R1\_PR- STA. 41+81.73 TO STA. 42+21.24: 14'-0"  
-R1\_PR- STA. 42+21.24 TO STA. 43+11.24: 14'-0" TO 8'-0"  
-R1\_PR- STA. 43+11.24 TO STA. 44+40.00: 8'-0"  
-R1\_PR- STA. 44+40.00 TO STA. 45+40.00: 8'-0" TO 18'-0"  
-R1\_PR- STA. 45+40.00 TO STA. 45+45.00: 18'-0"  
-R1\_PR- STA. 45+45.00 TO STA. 45+48.67: 18'-0" TO 8'-0"  
-R1\_PR- STA. 45+48.67 TO STA. 45+85.00: 8'-0"
- THE TYPICAL SECTIONS TAKE PRECEDENCE OVER THE CROSS SECTIONS. CROSS SECTIONS ARE PROVIDED FOR REFERENCE ONLY.

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HNTB



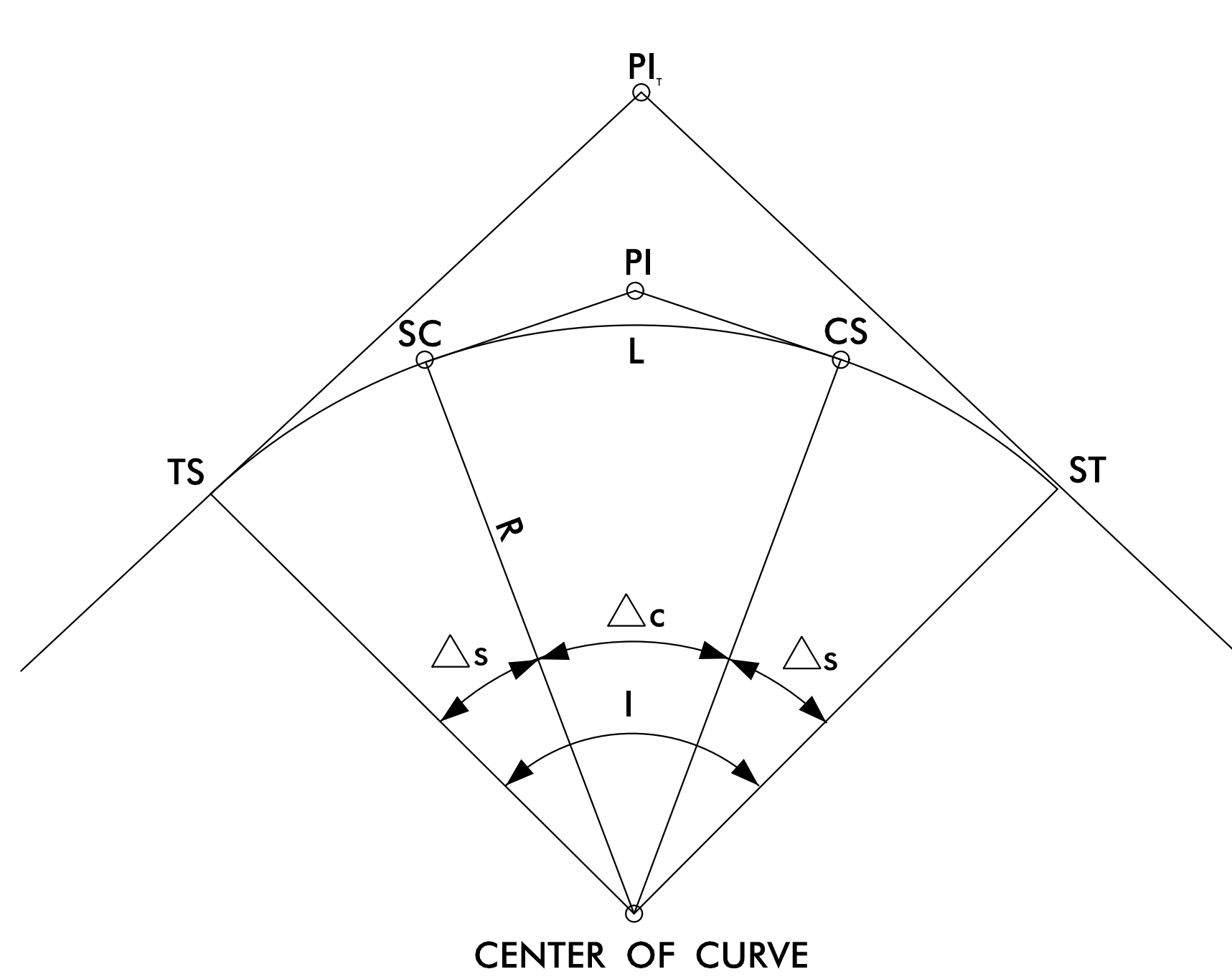
# HORIZONTAL CURVE GEOMETRY SHEET

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

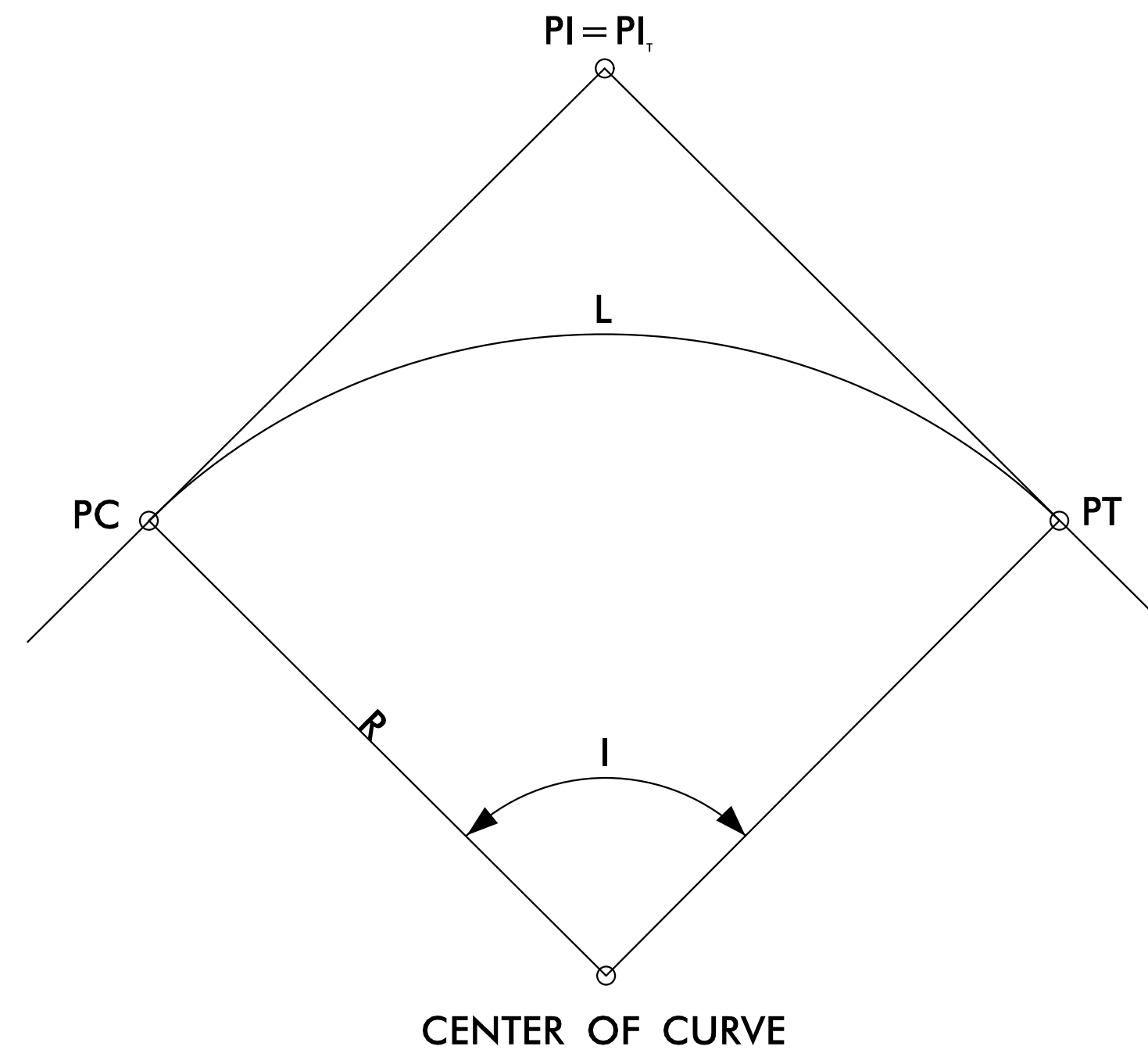
PROJECT REFERENCE NO.	SHEET NO.
P-5705A	2B-1
RW SHEET NO.	
RAILROAD DESIGN ENGINEER	

DATE: NOVEMBER 4, 2022

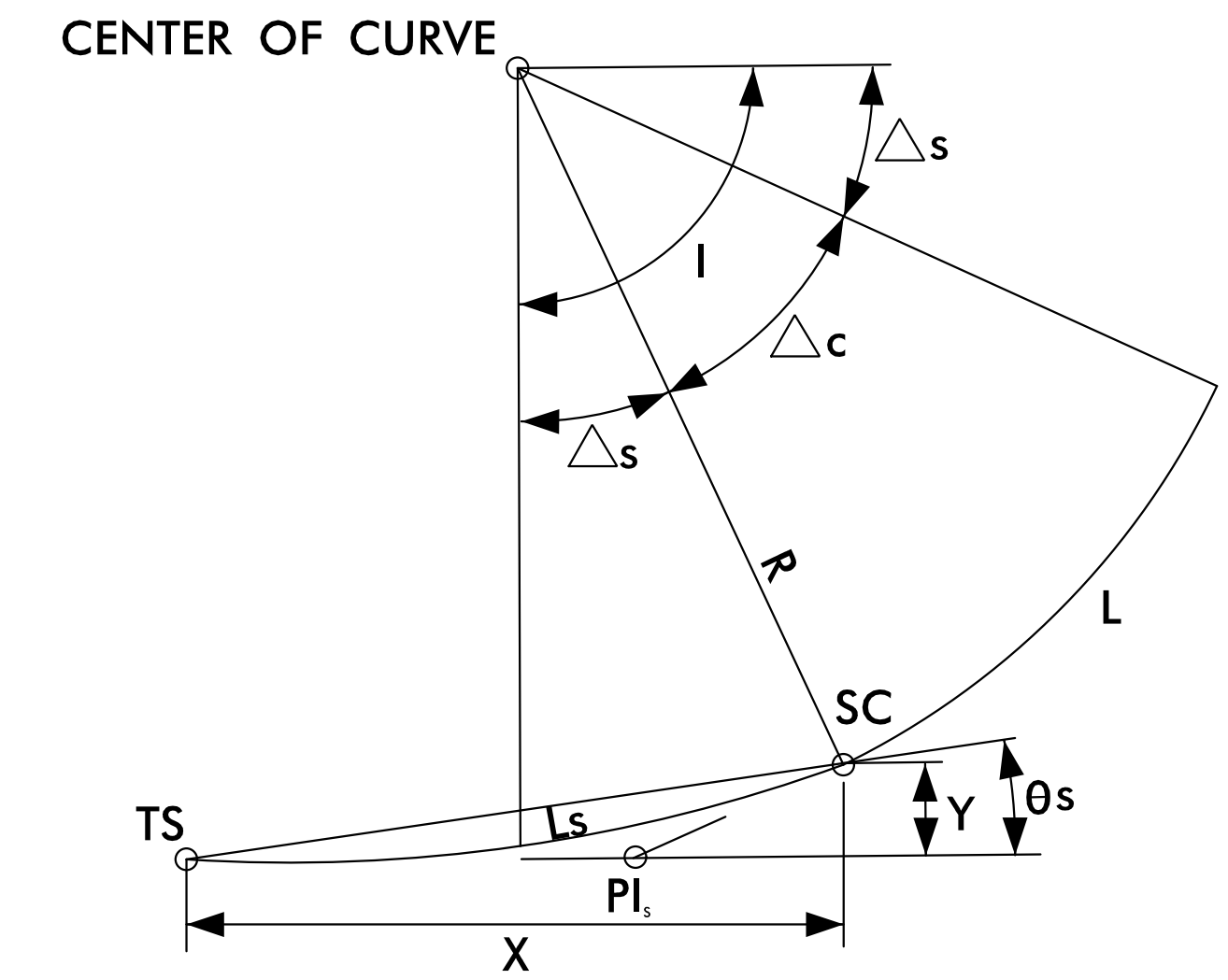
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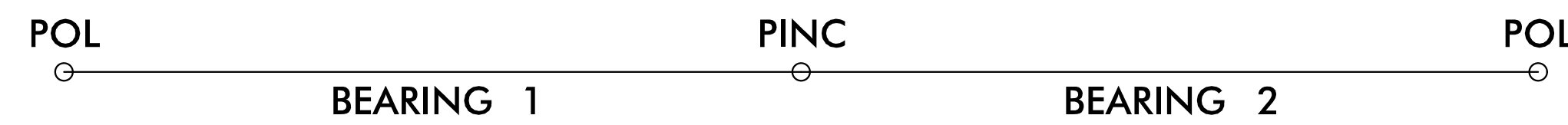
**FIGURE A**  
CIRCULAR CURVE WITH  
SPIRAL TRANSITION CURVES



**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)	PI <sub>s</sub>	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

DATE: NOVEMBER 4, 2022

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**PROPOSED -L- TRACK ALIGNMENT**

Point 9700  
N 541,995.8476 E 1,429,146.0949 Sta 8+00.00

Course from 9700 to 9701  
S 58° 04' 56.65" E Dist 200.0000

Point 9701 (PS # 15 RHTO)  
N 541,890.1078 E 1,429,315.8568 Sta 10+00.00

Course from 9701 to 9702  
S 58° 04' 56.65" E Dist 39.9800

Point 9702 (PI # 15 RHTO)  
N 541,868.9704 E 1,429,349.7921 Sta 10+39.98

Course from 9702 to TS CUR\_L-101B  
S 54° 15' 50.65" E Dist 332.1640

Curve 101 Ea = 1.00", V = 25 mph

PISCS CUR\_L-101 N 541,616.6788 E 1,429,700.4288 STA 14+71.95

Total Tangent = 99.8049  
Total Length = 199.5457  
Total Delta = 3° 51' 03.98" (LT)  
Back Tangent = S 54° 15' 50.65" E  
Ahead Tangent = S 58° 06' 54.63" E

Spiral CUR\_L-101B

Chord Definition

Angle	0° 52' 04.49" (LT)	P	0.0783
LS	62.0000	K	30.9998
R	2,046.4815	LT	41.3338
YS	0.3131	ST	20.6671
XS	61.9986	LC	61.9994
BK	S 54° 15' 50.65" E		
AH	S 55° 07' 55.14" E		
CB	S 54° 33' 12.15" E		
Defl	0° 17' 21.49"		
Deg	2° 48' 00.00"		

Spiral Coordinates

Point	North	East	Station
TS	541,674.9699	1,429,619.4155	13+72.14
PI	541,650.8289	1,429,652.9669	14+13.48
SC	541,639.0137	1,429,669.9236	14+34.14
CC	543,318.0927	1,430,839.8725	

Curve CUR\_L-101

Chord Definition

P.I. Station	14+71.92	N	541,617.4148	E	1,429,700.9218
Delta =	2° 06' 55.00" (LT)				
Degree =	2° 48' 00.00"				
Tangent =	37.7809				
Length =	75.5457				
Radius =	2,046.4815				
External =	0.3487				
Long Chord =	75.5489				
Mid. Ord. =	0.3487				
P.C. Station	14+34.14	N	541,639.0137	E	1,429,669.9236
P.T. Station	15+09.69	N	541,596.9748	E	1,429,732.6960
C.C.		N	543,318.0927	E	1,430,839.8725
Back	S 55° 07' 55.14" E				
Ahead	S 57° 14' 50.14" E				
Chord Bear	S 56° 11' 22.64" E				

Spiral CUR\_L-101A

Chord Definition

Angle	0° 52' 04.49" (LT)	P	0.0783
LS	62.0000	K	30.9998
R	2,046.4815	LT	41.3338
YS	0.3131	ST	20.6671
XS	61.9986	LC	61.9994
BK	S 57° 14' 50.14" E		
AH	S 58° 06' 54.63" E		
CB	S 57° 49' 33.14" E		
Defl	0° 17' 21.49"		
Deg	2° 48' 00.00"		

Spiral Coordinates

Point	North	East	Station
CS	541,596.9748	1,429,732.6960	15+09.69
PI	541,585.7936	1,429,750.0773	15+30.36
ST	541,563.9605	1,429,785.1743	15+71.69
CC	543,318.0927	1,430,839.8725	

Course from ST CUR\_L-101A to TS CUR\_L-102B  
S 58° 06' 54.63" E Dist 114.8712

Curve 102 Ea = 2.0", V = 25 mph

PISCS CUR\_L-102 N 541,064.2176 E 1,430,588.5191 STA 25+17.79

Total Tangent = 831.2290  
Total Length = 1,242.2607  
Total Delta = 100° 37' 55.19" (RT)  
Back Tangent = S 58° 06' 54.63" E  
Ahead Tangent = S 42° 31' 00.55" W

Spiral CUR\_L-102B

Chord Definition

Angle	5° 34' 27.35" (RT)	P	1.0050
LS	124.0000	K	61.9804
R	637.2747	LT	82.7077
YS	4.0186	ST	41.3706
XS	123.8827	LC	123.9478
BK	S 58° 06' 54.63" E		
AH	S 52° 32' 27.28" E		
CB	S 56° 15' 26.05" E		
Defl	1° 51' 28.58"		
Deg	9° 00' 00.00"		

Spiral Coordinates

Point	North	East	Station
TS	541,503.2840	1,429,882.7128	16+86.56
PI	541,459.5967	1,429,952.9409	17+69.27
SC	541,434.4353	1,429,985.7804	18+10.56
CC	540,928.5744	1,429,598.1932	

Curve CUR\_L-102

Chord Definition

P.I. Station	24+42.12	N	541,050.3266	E	1,430,487.1013
Delta =	89° 29' 00.48" (RT)				
Degree =	9° 00' 00.00"				
Tangent =	631.5553				
Length =	994.2607				
Radius =	637.2747				
External =	259.9327				
Long Chord =	897.1710				
Mid. Ord. =	184.6268				
P.C. Station	18+10.56	N	541,434.4353	E	1,429,985.7804
P.T. Station	28+04.82	N	540,545.5633	E	1,430,107.5277
C.C.		N	540,928.5744	E	1,429,598.1932
Back	S 52° 32' 27.28" E				
Ahead	S 36° 56' 33.20" W				
Chord Bear	S 7° 47' 57.04" E				

Spiral CUR\_L-102A

Chord Definition

Angle	5° 34' 27.35" (RT)	P	1.0050
LS	124.0000	K	61.9804
R	637.2747	LT	82.7077
YS	4.0186	ST	41.3706
XS	123.8827	LC	123.9478
BK	S 36° 56' 33.20" W		
AH	S 42° 31' 00.55" W		
CB	S 40° 39' 31.97" W		
Defl	1° 51' 28.58"		
Deg	9° 00' 00.00"		

Spiral Coordinates

Point	North	East	Station
CS	540,545.5633	1,430,107.5277	28+04.82
PI	540,512.4983	1,430,082.6634	28+46.19
ST	540,451.5362	1,430,026.7690	29+28.82
CC	540,928.5744	1,429,598.1932	

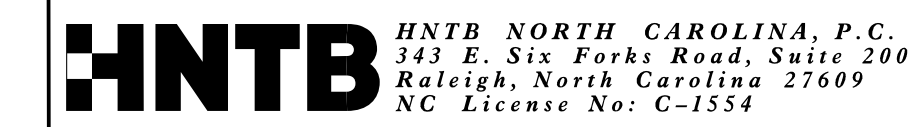
Course from ST CUR\_L-102A to 9703  
S 42° 31' 00.55" W Dist 155.7473


Point 9703 (PI # 15 LHOT)  
N 540,336.7381 E 1,429,921.5139 Sta 30+84.57

Course from 9703 to 9704  
S 46° 20' 06.55" W Dist 39.9800

Point 9704 (PS # 15 LHOT)  
N 540,309.1344 E 1,429,892.5927 Sta 31+24.55





PROJECT REFERENCE NO.		SHEET NO.
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RW SHEET NO.		
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DATE: NOVEMBER 4, 2022  
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**PROPOSED -R1\_ PR- TRACK ALIGNMENT**

**Curve 201** Ea = 1.0", V = 50 mph (Passenger), 50 mph (Freight)

**Curve CUR\_R1\_PR-201**  
 Chord Definition  
 P.I. Station 24+27.78 N 541,145.6501 E 1,431,444.9779  
 Delta = 0° 47' 45.33" (LT)  
 Degree = 1° 30' 00.00"  
 Tangent = 26.5320  
 Length = 53.0617  
 Radius = 3,819.8277  
 External = 0.0921  
 Long Chord = 53.0627  
 Mid. Ord. = 0.0921  
 P.C. Station 24+01.25 N 541,152.3500 E 1,431,470.6500  
 P.T. Station 24+54.31 N 541,138.5942 E 1,431,419.4013  
 C.C. N 537,456.3187 E 1,432,435.2414  
 Back S 75° 22' 23.46" W  
 Ahead S 74° 34' 38.13" W  
 Chord Bear S 74° 58' 30.80" W

**Spiral CUR\_R1\_PR-201A**

**Chord Definition**  
 Angle 0° 27' 53.95" (LT) P 0.0419  
 LS 62.0000 K 30.9999  
 R 3,819.8277 LT 41.3335  
 YS 0.1677 ST 20.6668  
 XS 61.9996 LC 61.9998  
 BK S 74° 34' 38.13" W  
 AH S 74° 06' 44.18" W  
 CB S 74° 16' 02.17" W  
 Defl 0° 09' 17.98"  
 Deg 1° 30' 00.00"

**Spiral Coordinates**

Point	North	East	Station
CS	541,138.5942	1,431,419.4013	24+54.31
PI	541,133.0981	1,431,399.4787	24+74.98
ST	541,121.7829	1,431,359.7242	25+16.31
CC	537,456.3187	1,432,435.2414	

Course from ST CUR\_R1\_PR-201A to TS CUR\_R1\_PR-202B  
 S 74° 06' 44.18" W Dist 267.8350

**Curve 202** Ea = 2.5", V = 50 mph (Passenger), 50 mph (Freight)

**PISCS CUR\_R1\_PR-202** N 540,872.0734 E 1,430,482.3988 STA 34+28.48  
 Total Tangent = 644.3352  
 Total Length = 1,266.0971  
 Total Delta = 27° 46' 37.63" (LT)  
 Back Tangent = S 74° 06' 44.18" W  
 Ahead Tangent = S 46° 20' 06.55" W

**Spiral CUR\_R1\_PR-202B**

**Chord Definition**  
 Angle 1° 56' 14.45" (LT) P 0.4367  
 LS 155.0000 K 77.4970  
 R 2,292.0130 LT 103.3395  
 YS 1.7469 ST 51.6723  
 XS 154.9823 LC 154.9921  
 BK S 74° 06' 44.18" W  
 AH S 72° 10' 29.74" W  
 CB S 73° 27' 59.39" W  
 Defl 0° 38' 44.79"  
 Deg 2° 30' 00.00"

**Spiral Coordinates**

Point	North	East	Station
TS	541,048.4622	1,431,102.1204	27+84.14
PI	541,020.1727	1,431,002.7285	28+87.48
SC	541,004.3552	1,430,953.5367	29+39.14
CC	538,822.3691	1,431,655.1492	

**Curve CUR\_R1\_PR-202**

**Chord Definition**  
 P.I. Station 34+24.29 N 540,855.8471 E 1,430,491.6828  
 Delta = 23° 54' 08.74" (LT)  
 Degree = 2° 30' 00.00"  
 Tangent = 485.1430  
 Length = 956.0971  
 Radius = 2,292.0130  
 External = 50.7818  
 Long Chord = 949.2543  
 Mid. Ord. = 49.6810  
 P.C. Station 29+39.14 N 541,004.3552 E 1,430,953.5367  
 P.T. Station 38+95.24 N 540,532.9415 E 1,430,129.6114  
 C.C. N 538,822.3691 E 1,431,655.1492  
 Back S 72° 10' 29.74" W  
 Ahead S 48° 16' 21.00" W  
 Chord Bear S 60° 13' 25.37" W

**Spiral CUR\_R1\_PR-202A**

**Chord Definition**  
 Angle 1° 56' 14.45" (LT) P 0.4367  
 LS 155.0000 K 77.4970  
 R 2,292.0130 LT 103.3395  
 YS 1.7469 ST 51.6723  
 XS 154.9823 LC 154.9921  
 BK S 48° 16' 21.00" W  
 AH S 46° 20' 06.55" W  
 CB S 46° 58' 51.35" W  
 Defl 0° 38' 44.79"  
 Deg 2° 30' 00.00"

**Spiral Coordinates**

Point	North	East	Station
CS	540,532.9415	1,430,129.6114	38+95.24
PI	540,498.5490	1,430,091.0474	39+46.91
ST	540,427.1994	1,430,016.2926	40+50.24
CC	538,822.3691	1,431,655.1492	

Course from ST CUR\_R1\_PR-202A to 99906  
 S 46° 20' 06.55" W Dist 131.0200

Point 99906 (PI # 15 LHTO)  
 N 540,336.7381 E 1,429,921.5139 Sta 41+81.26

Course from 99906 to 99907  
 S 46° 20' 06.55" W Dist 39.9800

Point 99907 (PS # 15 LHTO)  
 N 540,309.1344 E 1,429,892.5927 Sta 42+21.24

Course from 99907 to TS CUR\_R1\_PR-203B  
 S 46° 20' 06.55" W Dist 100.0000

**Curve 203** Ea = 1.0", V = 50 mph (Passenger), 50 mph (Freight)

**Spiral CUR\_R1\_PR-203B**

**Chord Definition**  
 Angle 0° 27' 53.95" (LT) P 0.0419  
 LS 62.0000 K 30.9999  
 R 3,819.8277 LT 41.3335  
 YS 0.1677 ST 20.6668  
 XS 61.9996 LC 61.9998  
 BK S 46° 20' 06.55" W  
 AH S 45° 52' 12.60" W  
 CB S 46° 10' 48.57" W  
 Defl 0° 09' 17.98"  
 Deg 1° 30' 00.00"

**Spiral Coordinates**

Point	North	East	Station
TS	540,240.0905	1,429,820.2536	43+21.24
PI	540,211.5523	1,429,790.3534	43+62.57
SC	540,197.1623	1,429,775.5195	43+83.24
CC	537,455.4280	1,432,435.2144	

**Curve CUR\_R1\_PR-203**

**Chord Definition**  
 P.I. Station 45+34.31 N 540,091.9742 E 1,429,667.0869  
 Delta = 4° 31' 46.60" (LT)  
 Degree = 1° 30' 00.00"  
 Tangent = 151.0700  
 Length = 301.9740  
 Radius = 3,819.8277  
 External = 2.9862  
 Long Chord = 301.9040  
 Mid. Ord. = 2.9838  
 P.C. Station 43+83.24 N 540,197.1623 E 1,429,775.5195  
 P.T. Station 46+85.22 N 539,978.5514 E 1,429,567.3001  
 C.C. N 537,455.4280 E 1,432,435.2144  
 Back S 45° 52' 12.60" W  
 Ahead S 41° 20' 26.01" W  
 Chord Bear S 43° 36' 19.30" W

**PROPOSED -Y4- ACCESS DRIVE ALIGNMENT**

Point 98401  
 N 541,086.8545 E 1,430,238.1859 Sta 10+22.00

Course from 98401 to PC Y4-1  
 N 76° 06' 30.99" E Dist 28.0000

**Curve Y4-1**

**Curve CUR\_Y4-1**

P.I. Station 10+71.41 N 541,098.7162 E 1,430,286.1479  
 Delta = 46° 21' 19.76" (LT)  
 Degree = 114° 35' 29.61"  
 Tangent = 21.4070  
 Length = 40.4528  
 Radius = 50.0000  
 External = 4.3899  
 Long Chord = 39.3585  
 Mid. Ord. = 4.0356  
 P.C. Station 10+50.00 N 541,093.5768 E 1,430,265.3669  
 P.T. Station 10+90.45 N 541,117.3012 E 1,430,296.7714  
 C.C. N 541,142.1144 E 1,430,253.3628  
 Back N 76° 06' 30.99" E  
 Ahead N 29° 45' 11.22" E  
 Chord Bear N 52° 55' 51.10" E

Course from PT Y4-1 to PC Y4-2  
 N 29° 45' 11.22" E Dist 30.0000

**Curve Y4-2**

**Curve CUR\_Y4-2**

P.I. Station 11+67.89 N 541,184.5268 E 1,430,335.1988  
 Delta = 86° 58' 55.71" (RT)  
 Degree = 114° 35' 29.61"  
 Tangent = 47.4334  
 Length = 75.9062  
 Radius = 50.0000  
 External = 18.9197  
 Long Chord = 68.8242  
 Mid. Ord. = 13.7259  
 P.C. Station 11+20.45 N 541,143.3464 E 1,430,311.6593  
 P.T. Station 11+96.36 N 541,163.1879 E 1,430,377.5613  
 C.C. N 541,118.5332 E 1,430,355.0679  
 Back N 29° 45' 11.22" E  
 Ahead S 63° 15' 53.07" E  
 Chord Bear N 73° 14' 39.07" E

Course from PT Y4-2 to 98402  
 S 63° 15' 53.07" E Dist 11.1358

Point 98402  
 N 541,158.1783 E 1,430,387.5067 Sta 12+07.49

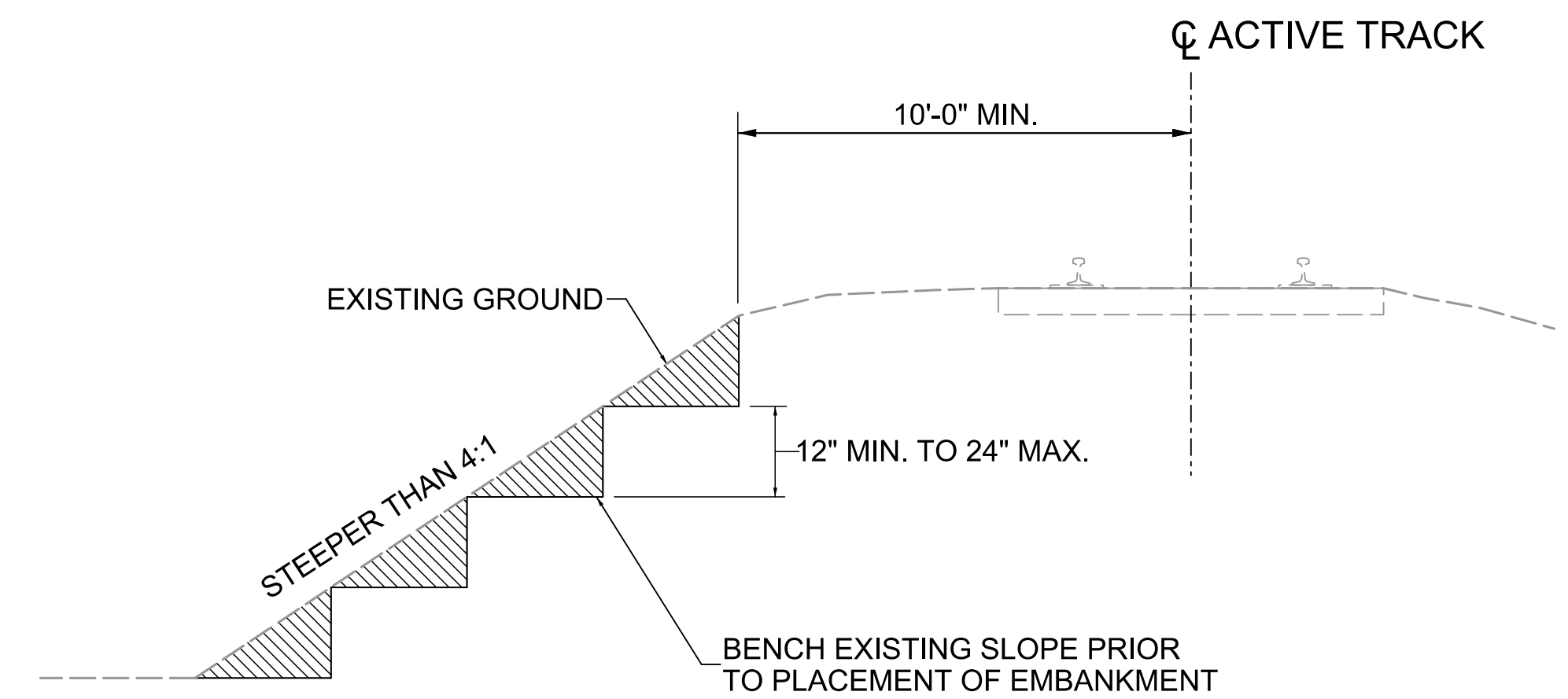
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PROJECT REFERENCE NO.	SHEET NO.
P-5705A	2B-4
RW SHEET NO.	
RAILROAD DESIGN ENGINEER	

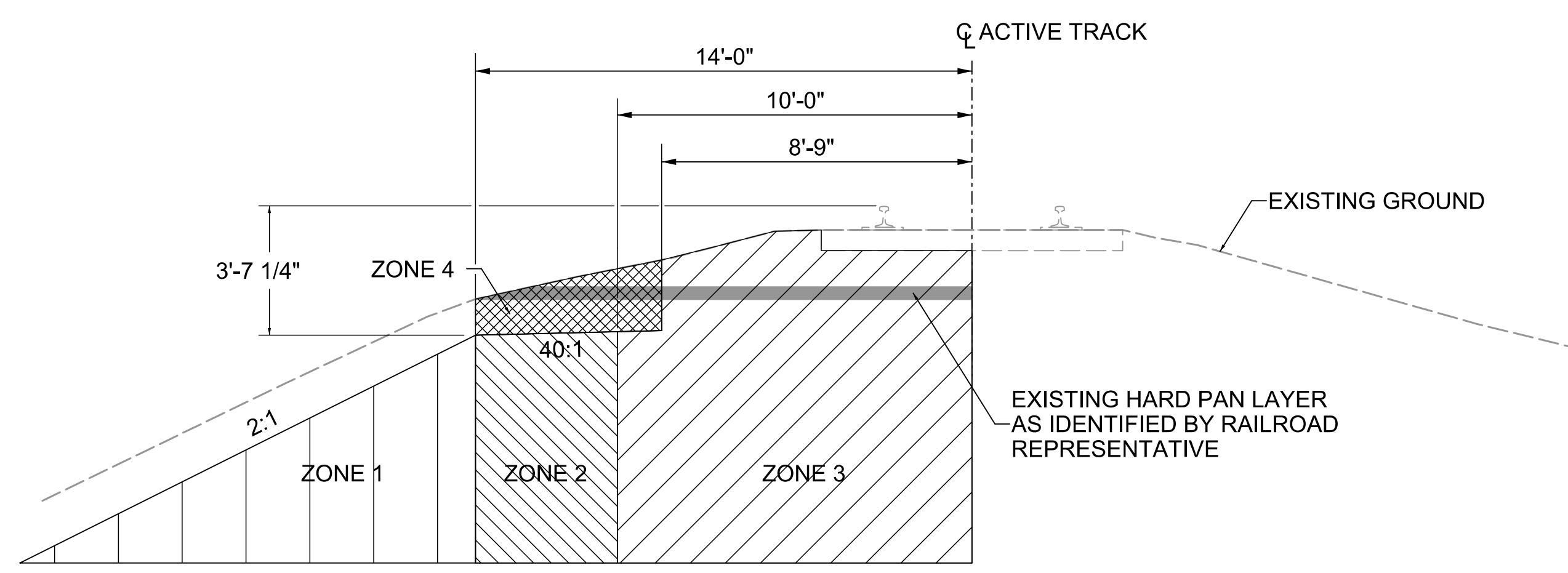
DATE: NOVEMBER 4, 2022

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UNLESS ALL SIGNATURES COMPLETED**

# PARTIAL SECTION BENCHING DETAIL



# EXCAVATION ADJACENT TO ACTIVE TRACK

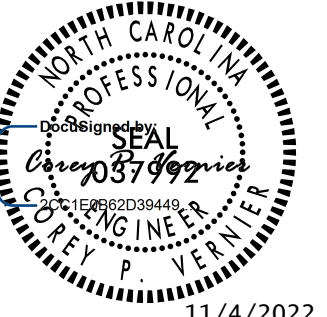


## EXCAVATION AND SHORING REQUIREMENTS

ALL EXCAVATION ADJACENT TO ACTIVE TRACK MUST BE COORDINATED WITH THE RAILROAD REPRESENTATIVE PRIOR TO EXCAVATION. IF THE CONTRACTOR PROPOSES TO INSTALL SHORING WITHIN ZONE 1 OR ZONE 2 AS NOTED BELOW THAT IS NOT DETAILED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL SUBMIT THE PROPOSED SHORING SYSTEM TO THE RAILROAD FOR APPROVAL PRIOR TO INSTALLATION.

- ZONE 1 - EXCAVATION WITHIN ZONE 1 WILL REQUIRE SHORING FOR THE PROTECTION OF THE RAILROAD EXCEPT WHEN LIMITS OF EXCAVATION COMPLY WITH THE SPECIAL PROVISIONS OR WHEN BENCHING AN EXISTING SLOPE THAT FALLS WITHIN ZONE 1.
- ZONE 2 - EXCAVATION WITHIN ZONE 2 WILL REQUIRE SHORING FOR THE PROTECTION OF THE RAILROAD EXCEPT WHEN LIMITS OF EXCAVATION COMPLY WITH THE SPECIAL PROVISIONS OR BENCHING AN EXISTING SLOPE THAT FALLS WITHIN ZONE 2. CONTRACTOR DESIGNED SHORING SHALL CONSIST OF INTERLOCKING SHEETING.
- ZONE 3 - NO EXCAVATIONS WILL BE ALLOWED IN ZONE 3 EXCEPT FOR WHERE SPECIFICALLY DETAILED IN THE PLANS.
- ZONE 4 - EXCAVATION WITHIN ZONE 4 ABOVE THE HARD PAN LAYER IS PERMITTED. EXCAVATION THROUGH AND BELOW THE HARD PAN LAYER IS PERMITTED ONLY AFTER THE RAILROAD REPRESENTATIVE DETERMINES IT NECESSARY TO PENETRATE THE HARD PAN LAYER. EXCAVATION THROUGH AND BELOW THE HARD PAN LAYER SHALL BE PERFORMED PER SPECIAL PROVISION.



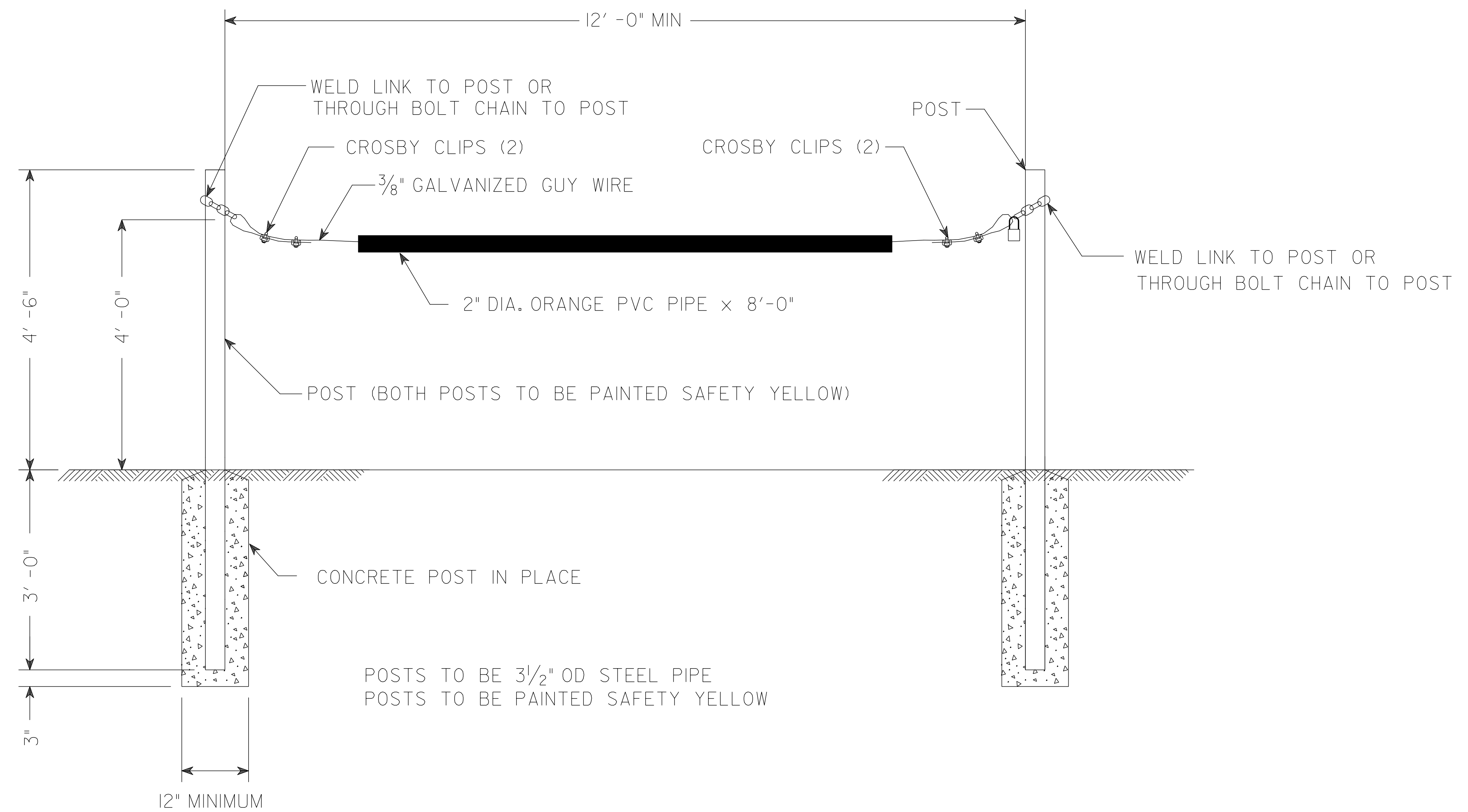
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P-5705A	2B-5
RW SHEET NO.	
RAILROAD DESIGN ENGINEER	
	
11/4/2022	

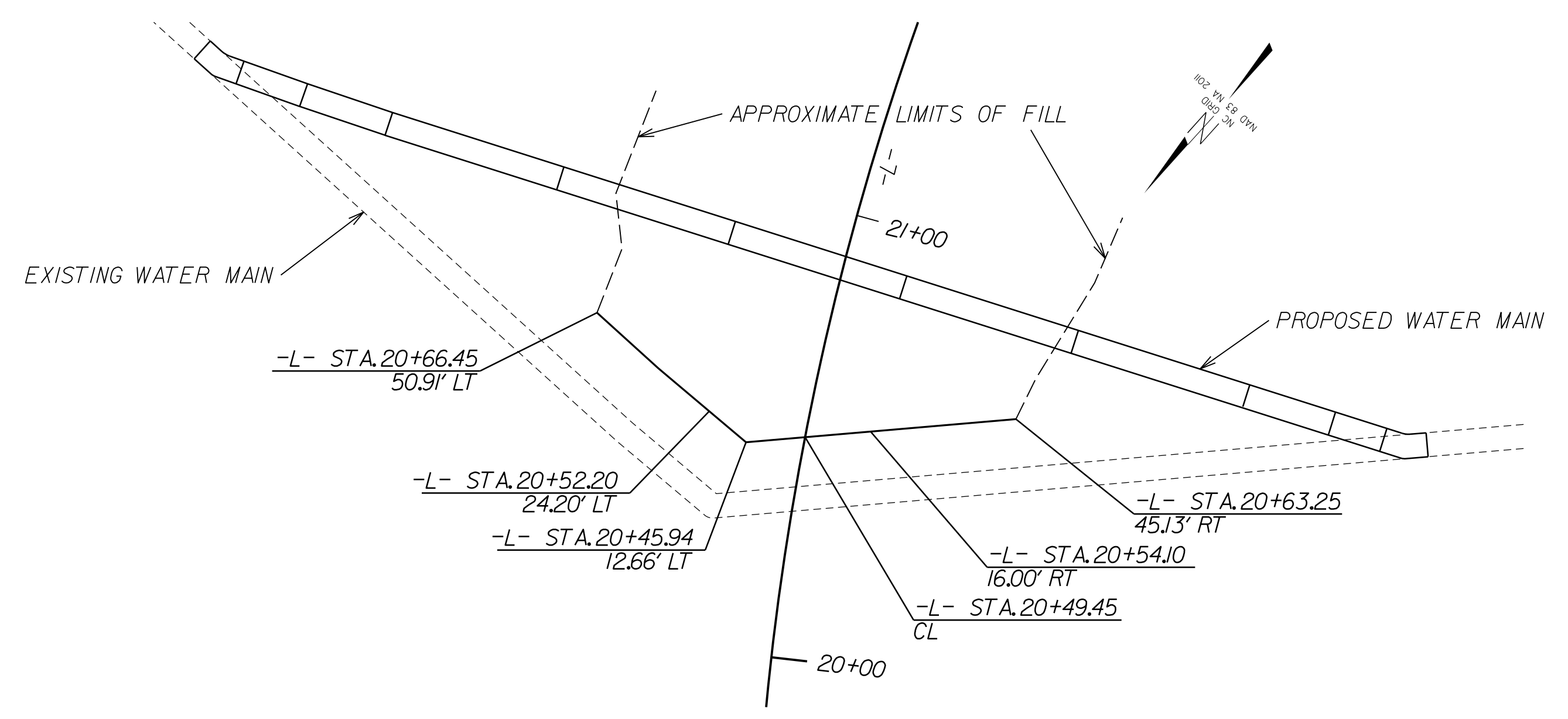
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UNLESS ALL SIGNATURES COMPLETED**

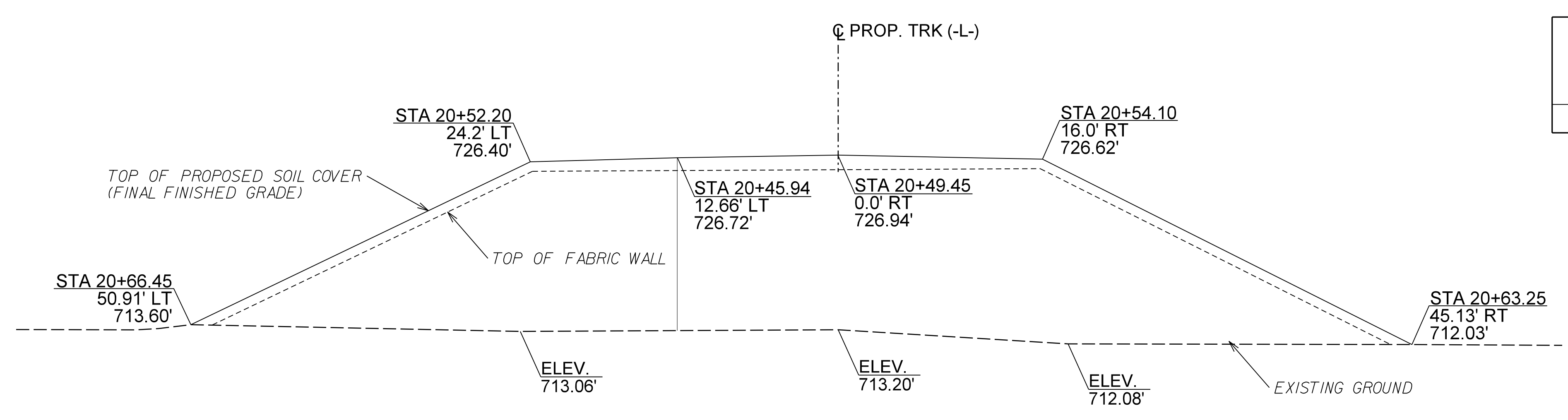
# GATE DETAIL

N.T.S.





TEMPORARY MSE WALL PLAN



TEMPORARY MSE WALL ELEVATION

ESTIMATED TEMPORARY MSE WALL QUANTITIES (SQUARE FEET)	
TEMPORARY SHORING	1230 SF

GEOTECHNICAL ENGINEER

ENGINEER

DocuSigned by:  
 Signature: Jeremy R Hamm      DATE: 9/17/2021

4622023048BC46A      SIGNATURE      DATE      SIGNATURE      DATE

**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

PROJECT NO.: P-5705A  
 MECKLENBURG COUNTY  
 STATION: -L- 20+49.45  
 SHEET 1 OF 3

PREPARED BY: S. C. CROCKETT      DATE: 9/16/21  
 REVIEWED BY: J. R. HAMM      DATE: 9/16/21

FALCON ENGINEERING, INC.  
 1210 TRINITY ROAD, SUITE 110  
 CARY, NC 27513  
 PHONE: 919.871.0800  
 www.falconengineers.com

NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS

**GEOTECHNICAL ENGINEERING UNIT**

**TEMPORARY MSE WALL PLAN AND ENVELOPE**

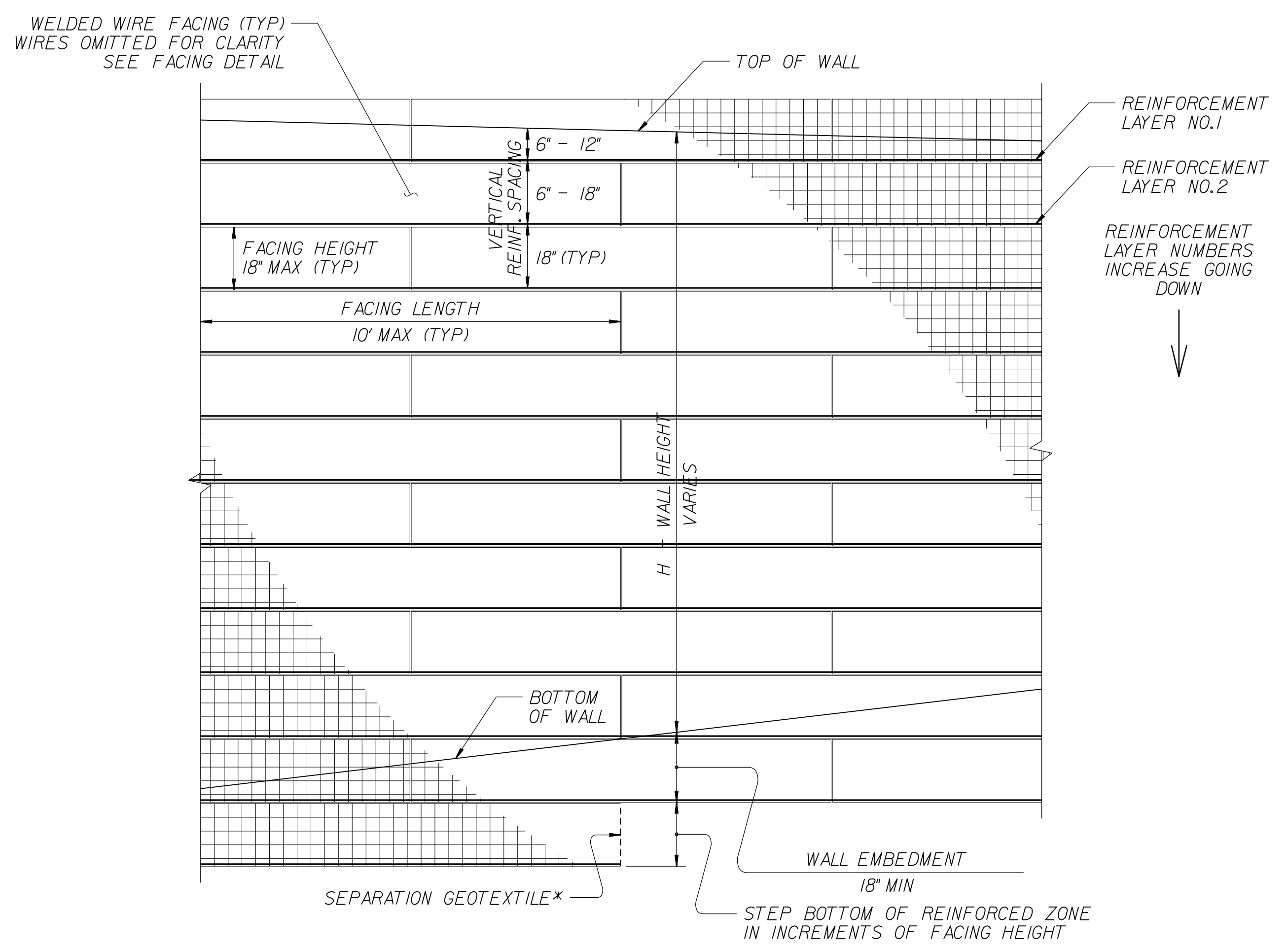
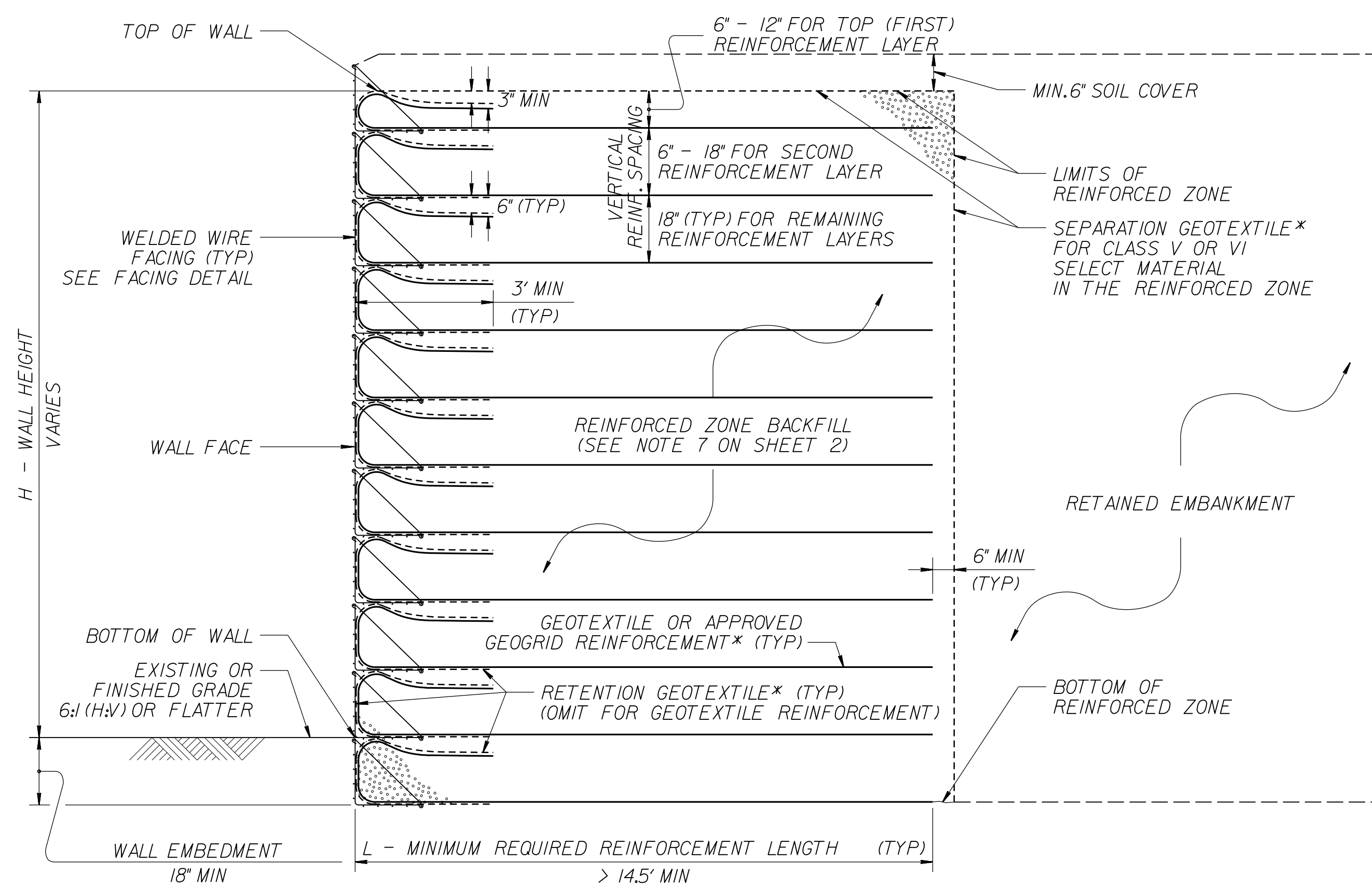
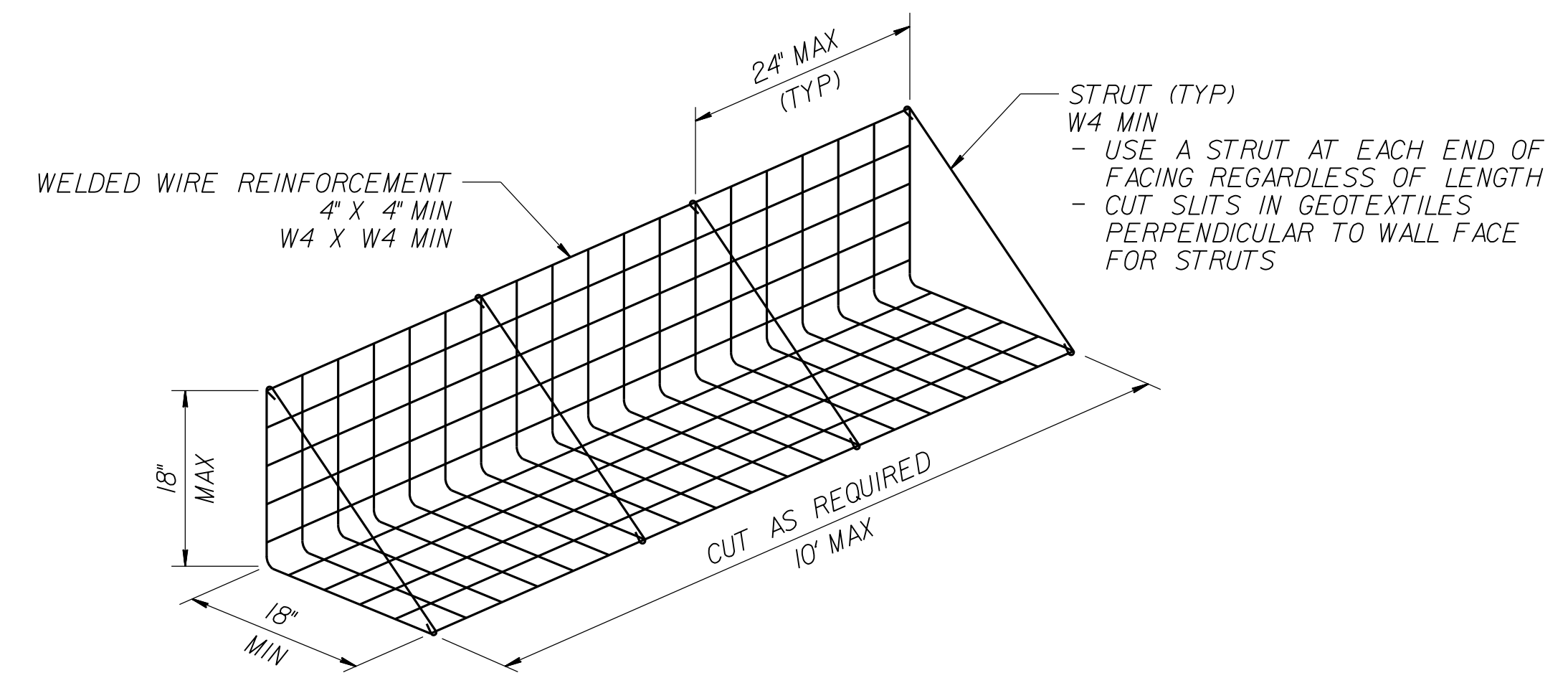
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			2G-1
2			4			

GEOTECHNICAL ENGINEER

ENGINEER

DocuSigned by:  
**Jeremy R Hamm** 9/17/2021  
4622023048BC46A

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UNLESS ALL SIGNATURES COMPLETED**



PREPARED BY: S. C. CROCKETT      DATE: 9/16/21  
 REVIEWED BY: J. R. HAMM      DATE: 9/16/21

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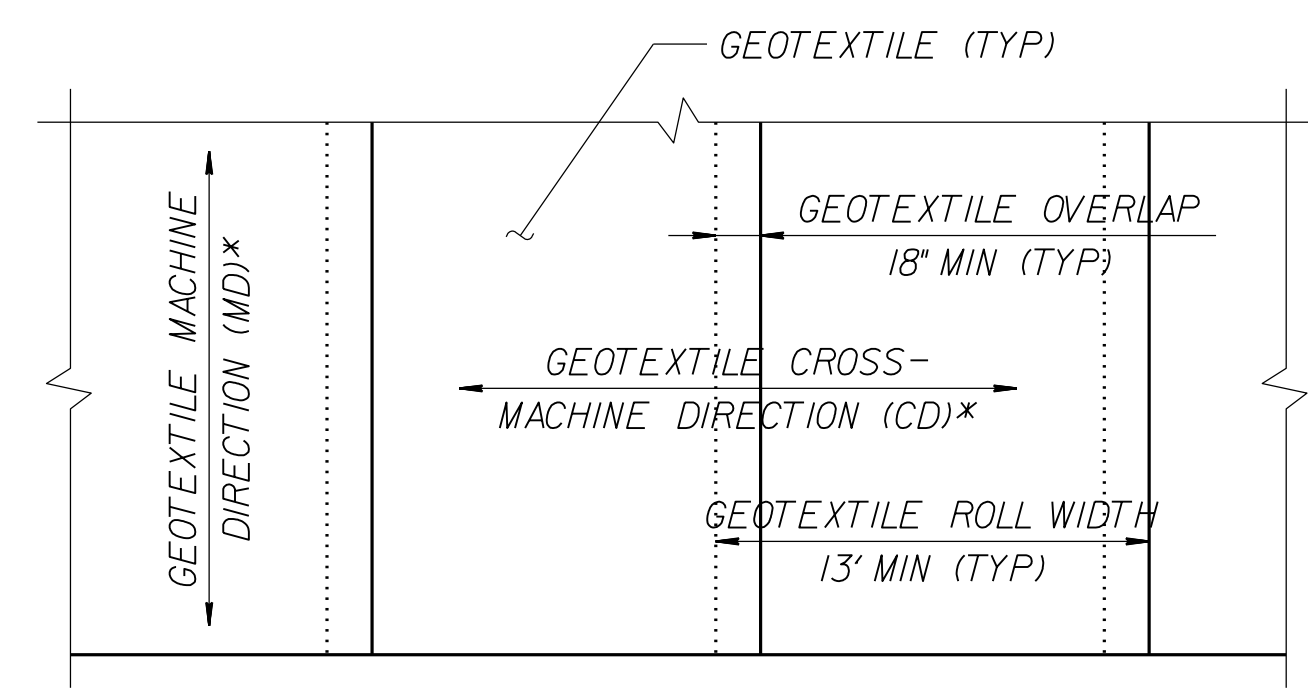
**GEOTECHNICAL  
 ENGINEERING UNIT**

PROJECT NO.: P-5705A  
 MECKLENBURG COUNTY  
 STATION: -L- 20+49.45  
 SHEET 2 OF 3

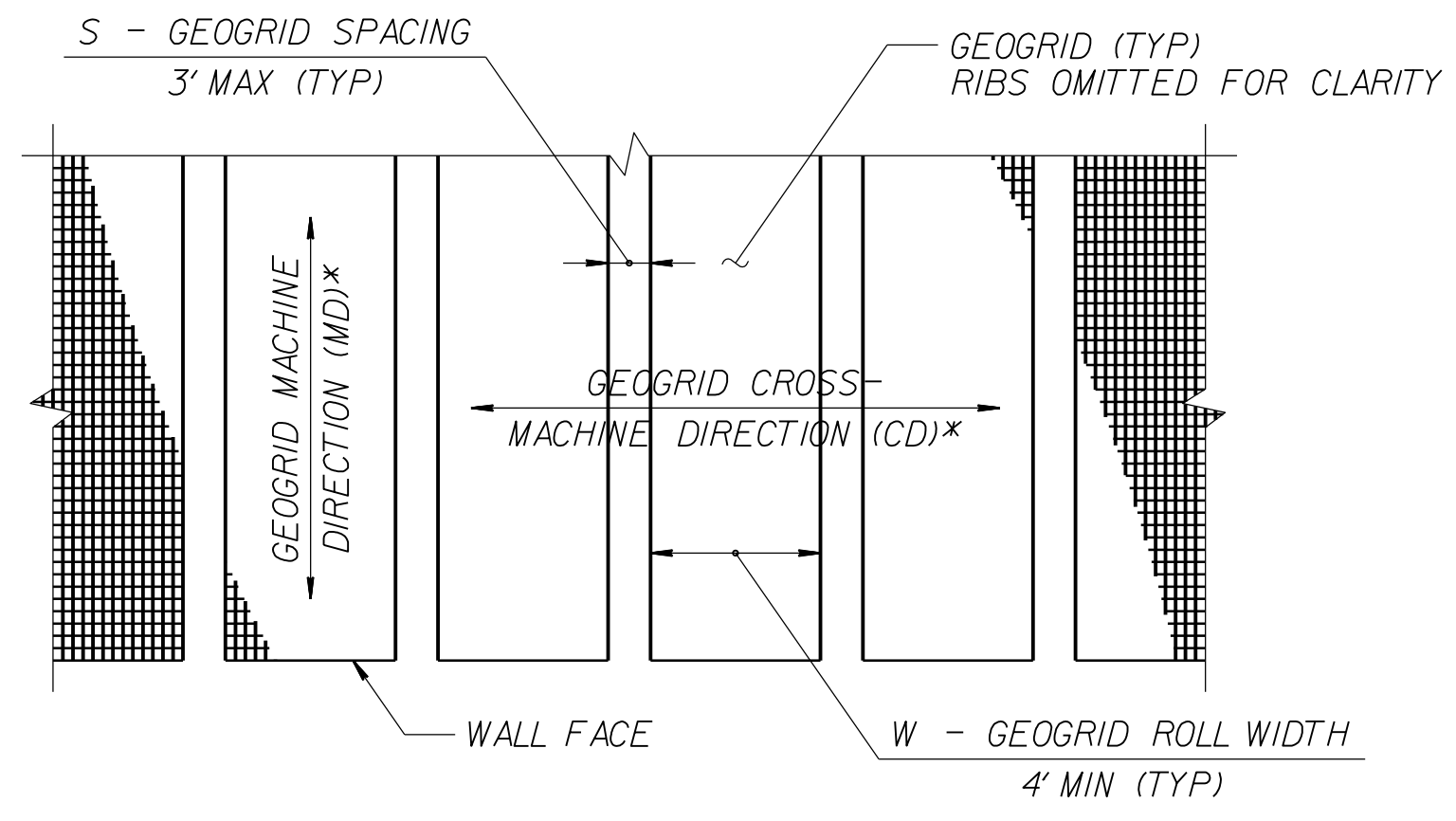
**TEMPORARY MSE WALL  
TYPICAL DETAILS**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			2G-2
2			4			



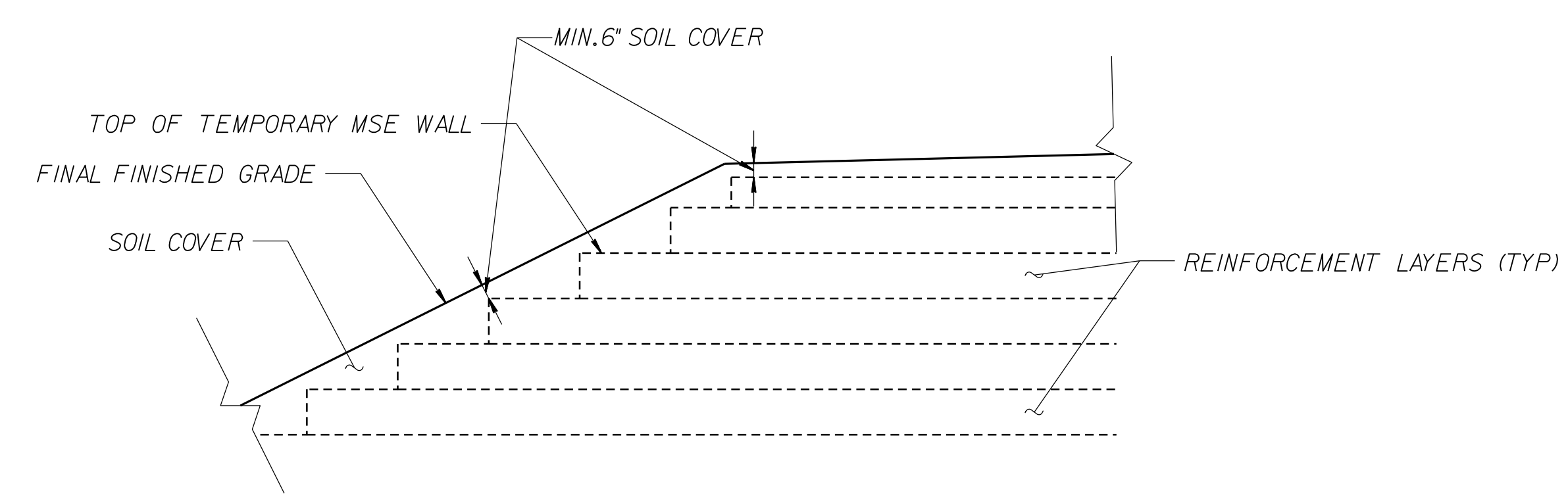


**GEOTEXTILE PLACEMENT**  
**(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)**



**GEOGRID PLACEMENT**  
**(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT -**  
 $\frac{W}{W+S} \times 100 \geq 80\%$   
**SEE NOTE 8)**

**GEOSYNTHETIC PLACEMENT DETAILS**  
**(PLAN VIEW)**  
**\*SEE NOTE 9.**



**PERMANENT SOIL COVER DETAILS**

GEOTECHNICAL ENGINEER  DocuSigned by: Jeremy R Hamm 4622023488C4E4 SIGNATURE	ENGINEER 9/17/2021 DATE SIGNATURE
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

**NOTES:**

- FOR TEMPORARY MSE WALL, SEE TEMPORARY SHORING PROVISION.
- TEMPORARY MSE WALL IS REQUIRED FROM -L- STATION 20+66.45, 50.91 FT LT TO -L- STATION 20+63.25, 45.13 FT RT FOR SURCHARGING THE PROPOSED WATER MAIN.
- BEFORE BEGINNING TEMPORARY MSE WALL DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF WALL LOCATION TO DETERMINE ACTUAL WALL HEIGHT.
- DESIGN TEMPORARY MSE WALL FROM -L- STATION 20+66.45, 50.91 FT LT, TO STATION 20+63.25, 45.13 FT LT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:
  - 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
  - 2) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 3,200 PSF
  - 3) MINIMUM REINFORCEMENT LENGTH = 14.5 FEET
  - 4) MINIMUM EMBEDMENT DEPTH = 2 FEET
  - 5) ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ) DEGREES	COHESION (c) PSF
RETAINED	120	30	0
FOUNDATION	110	26	0

- DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF MSE FABRIC WALL WITH GEOTEXTILE REINFORCEMENT.
- GEOGRIDS FOR GEOGRID REINFORCEMENT ARE APPROVED FOR SHORT TERM DESIGN STRENGTHS (3-YEAR DESIGN LIFE) IN THE MD AND CD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: [connect.ncdot.gov/resources/Geological/Pages/Products.aspx](http://connect.ncdot.gov/resources/Geological/Pages/Products.aspx) DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

- FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
- AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
  - W (REINFORCEMENT ROLL WIDTH) ≥ (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
  - REINFORCEMENT STRENGTH IN CD ≥ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
- DO NOT PLACE REINFORCED ZONE BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
- DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
- CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
- PLACE 96 INCH CASING PIPE BEFORE CONSTRUCTING TEMPORARY MSE WALL AND PLACING RETAINED EMBANKMENT.
- OBSERVE A 3 MONTH WAITING PERIOD AFTER CONSTRUCTING TEMPORARY MSE WALL AND RETAINED EMBANKMENT TO WITHIN 6 INCHES OF RAIL SUBGRADE BEFORE PLACING CARRIER PIPE WITHIN CASING.
- DO NOT PLACE EMBANKMENT FILL OVER EXISTING WATER MAIN UNTIL IT IS REMOVED.
- FOLLOWING REMOVAL OF EXISTING WATER MAIN AND PLACEMENT OF EMBANKMENT UP TO RAIL SUBGRADE, OBSERVE AN ADDITIONAL 3 MONTH WAITING PERIOD BEFORE PLACING BALLAST AND RAIL.

PROJECT NO.: P-5705A  
 MECKLENBURG COUNTY  
 STATION: -L- 20+49.45  
 SHEET 3 OF 3

PREPARED BY: S. C. CROCKETT DATE: 9/16/21  
 REVIEWED BY: J. R. HAMM DATE: 9/16/21

FALCON ENGINEERING, INC.  
 1210 TRINITY ROAD, SUITE 110  
 CARY, NC 27513  
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**NORTH CAROLINA**  
**DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
**GEOTECHNICAL**  
**ENGINEERING UNIT**

**TEMPORARY MSE WALL**  
**TYPICAL DETAILS AND NOTES**

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO.  
2G-3



DATE: NOVEMBER 4, 2022

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 UNLESS ALL SIGNATURES COMPLETED**

**SUMMARY OF EARTHWORK  
 (IN CUBIC YARDS)**

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
<b>SUMMARY #1</b>					
-L- STA 8+29 TO STA 27+00	9,430	0	21,751	14,928	0
<b>#1 TOTAL</b>	9,430	0	21,751	14,928	0
<b>SUMMARY #2</b>					
-R1_PR- STA 25+50 TO STA 45+85	4,228	0	13,993	10,822	0
<b>#2 TOTAL</b>	4,228	0	13,993	10,822	0
<b>SUMMARIES 1-2 TOTAL</b>	13,658	0	35,744	25,750	0
<b>LOSS DUE TO CLEARING AND GRUBBING</b>	-400			400	
<b>ADDITIONAL UNDERCUT</b>					
<b>WASTE IN LIEU OF BORROW</b>					
<b>PROJECT TOTAL</b>	13,258	0	35,744	26,150	0
<b>ESTIMATE 5% FOR TOPSOIL ON BORROW PITS</b>				1,308	
<b>GRAND TOTAL</b>	13,258	0		27,458	
<b>SAY</b>	13,300	0		27,500	

THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

EST. DDE = 110 CY

REMOVAL OF CONCRETE SLABS IS CONSIDERED INCIDENTAL TO COMPREHENSIVE GRADING. REMOVAL INCLUDES AN ESTIMATED 1,570 SY OUTSIDE OF THE SLOPE STAKES AS SHOWN ON THE PLAN SHEETS.

EST. 80 CY CHANNEL IMPROVEMENT EXCAVATION

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING AND REMOVAL OF EXISTING PAVEMENT WIL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

EST. 2,750 CY OF ESTIMATED UNDERCUT PER GEOTECH REPORT

**PAVEMENT REMOVAL SUMMARY  
 (IN SQUARE YARDS)**

LOCATION	REMOVAL OF ASPHALT PAVEMENT	BREAKING OF ASPHALT PAVEMENT	REMOVAL OF CONCRETE SLABS	BREAKING OF CONCRETE PAVEMENT
-L- STA. 21+64 TO 26+80 LT/RT			4,937	
-L- STA. 24+33 TO 26+65 LT/RT	1,764			
-R1_PR- STA. 34+19 TO 35+15 RT			242	
-R1_PR- STA. 36+35 TO 37+06 LT	210			
<b>GRAND TOTAL</b>	1,974		5,179	
<b>SAY</b>	1,980		5,180	



COMPUTED BY: Hunsberger, W. S. DATE: 5/20/21  
 CHECKED BY: Hamm, J. R. DATE: 9/16/21

(12-17-19)

PROJECT NO.	SHEET NO.
P-5705A	3G-1

**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**SUMMARY OF SUBSURFACE DRAINAGE**

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				BD	500
				<b>TOTAL LF:</b>	500

\*UD = Underdrain  
 \*BD = Blind Drain  
 \*SD = Subsurface Drain

**SUMMARY OF ROCK PLATING**

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY	
-R1 PR-	2:1	35+20	1.5:1	35+30	LT	N/A**		10	
-R1 PR-	1.5:1	35+30	1.5:1	35+75	LT	N/A**		33	
-R1 PR-	1.5:1	35+75	2:1	35+85	LT	N/A**		8	
CONTINGENCY								200	
								<b>TOTAL SY:</b>	251

\*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.  
 \*\*See project specific Rock Plating Details on Sheet 2A-3

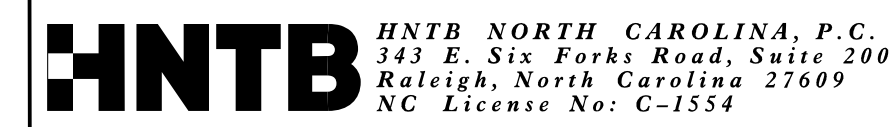
**SUMMARY OF SETTLEMENT GAUGES**

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
1	15+00, -L-	10	RT
2	20+25, -L-	20	LT
3	21+50, -L-	10	RT
4	38+50, R1 PR-	15	RT
5	39+50, -R1 PR-	20	RT
<b>TOTAL GAUGES (EACH):</b>			5

**SUMMARY OF EMBANKMENT  
 WAITING PERIODS**

LINE	Station	Station	MONTHS
-L-	14+00	16+00	3
-L-	20+00	20+50*	3***
-L-	20+50*	27+00	3**
-R1 PR-	35+00	41+50	3

\*Approximate station, actual limits are location of temporary MSE wall.  
 \*\*Fill placement cannot begin until 96-inch casing is installed.  
 \*\*\*Fill placement cannot begin until new water main is in service and existing water main is removed.



PROJECT REFERENCE NO.	SHEET NO.
P-5705A	3P-1
RW SHEET NO.	

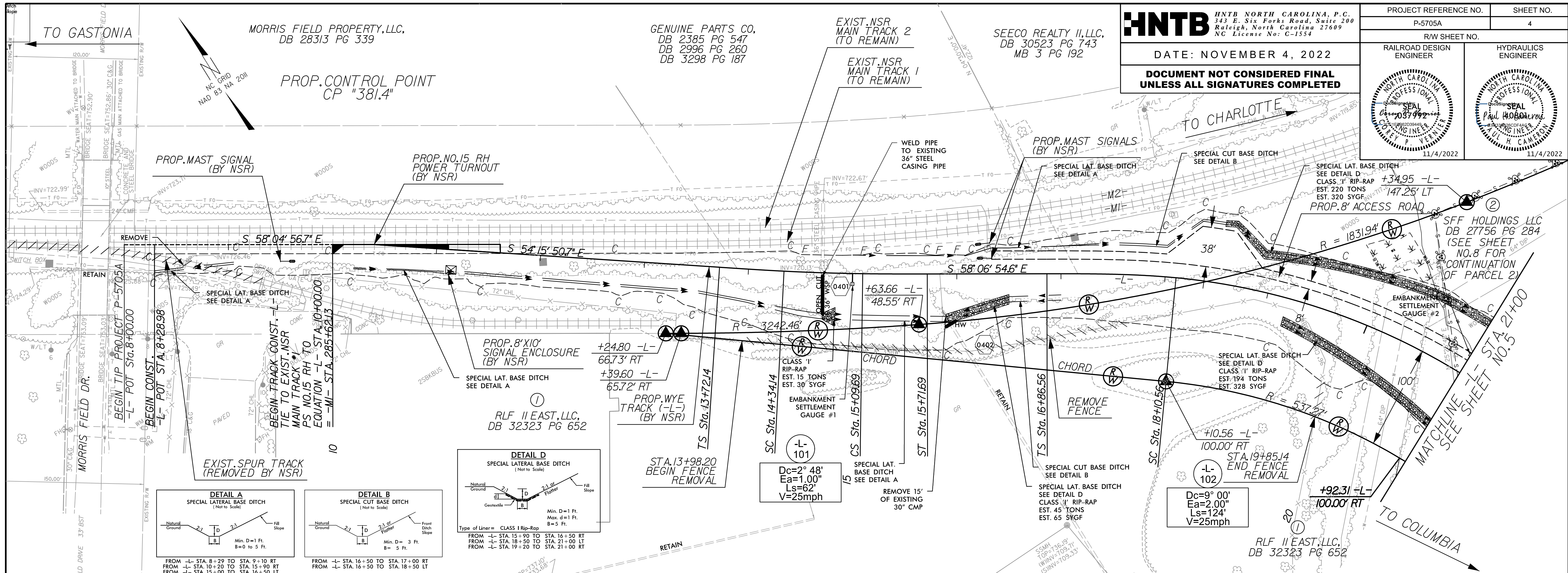
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## PARCEL INDEX

PARCEL NUMBER	PLAN SHEET NUMBER	PROPERTY OWNER NAME
1	4,5	RLF II EAST, LLC
2	4, 5, 6, 8	SFF HOLDINGS LLC



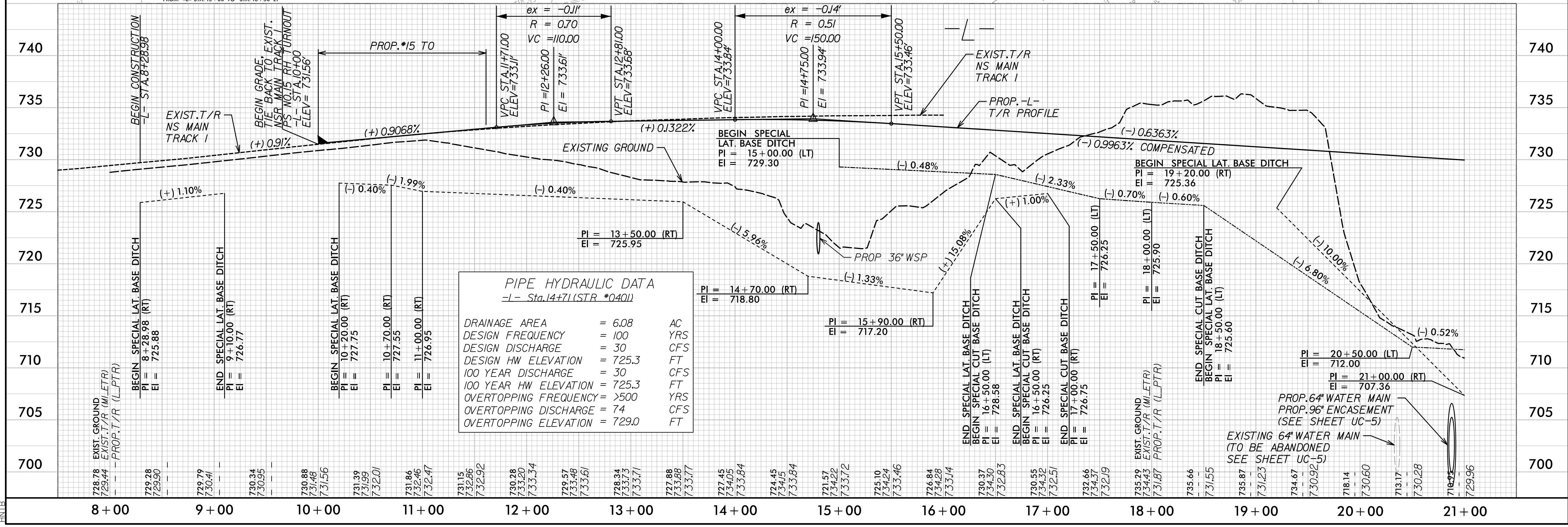
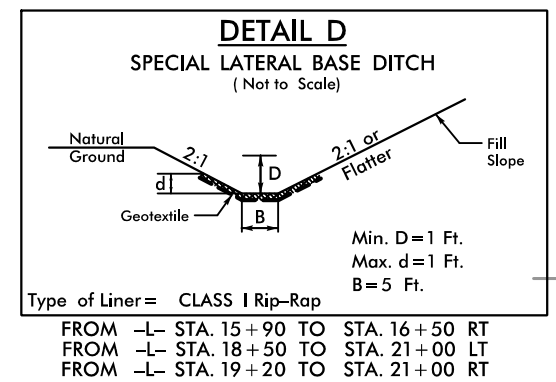
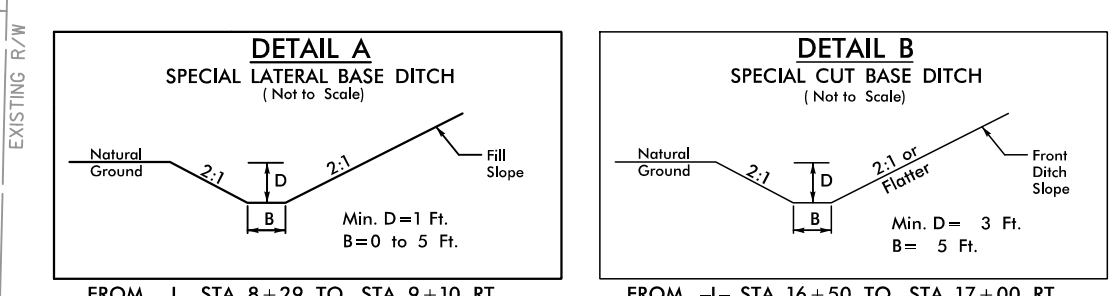


**HNTB** HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

PROJECT REFERENCE NO. P-5705A SHEET NO. 4  
RW SHEET NO.  
DATE: NOVEMBER 4, 2022  
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RAILROAD DESIGN ENGINEER  
HYDRAULICS ENGINEER

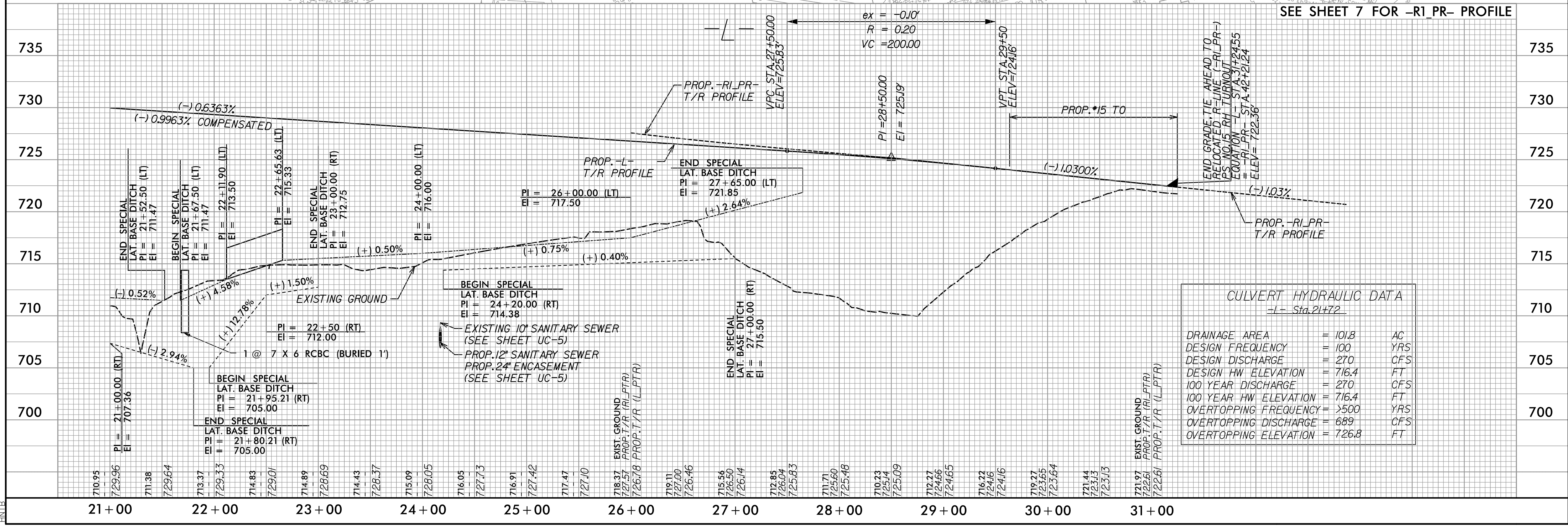
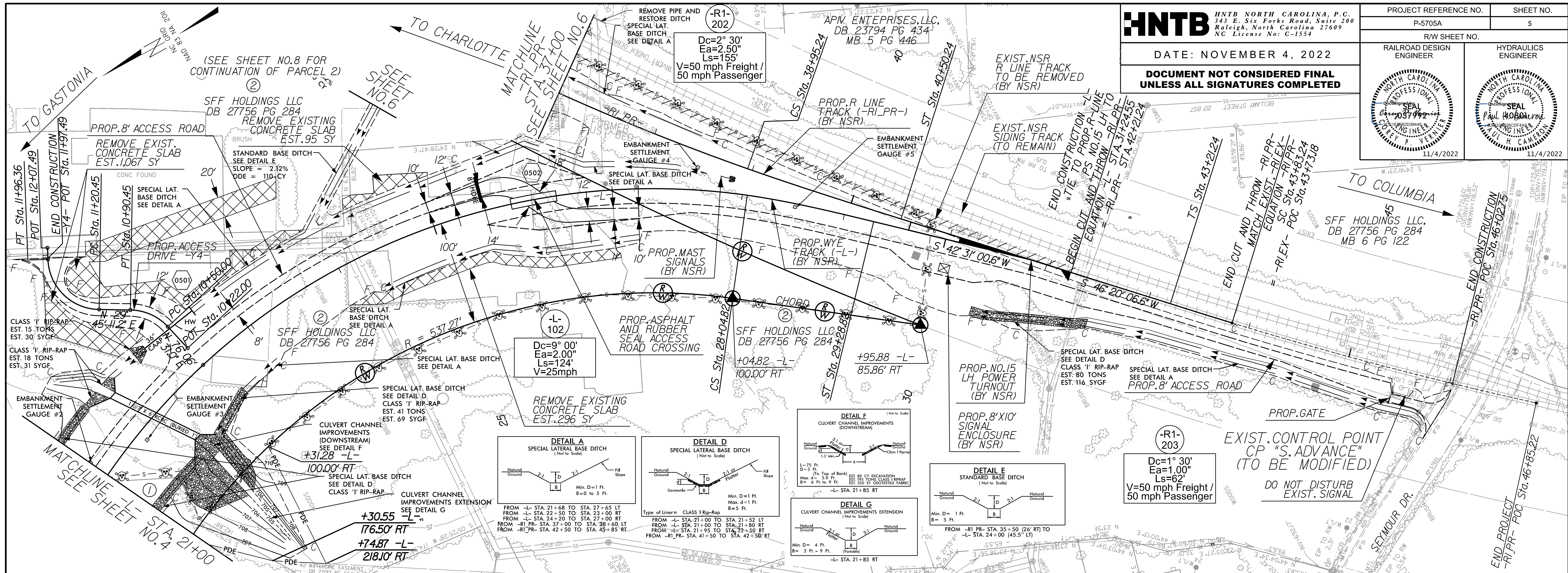
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RAILROAD DESIGN ENGINEER	HYDRAULICS ENGINEER
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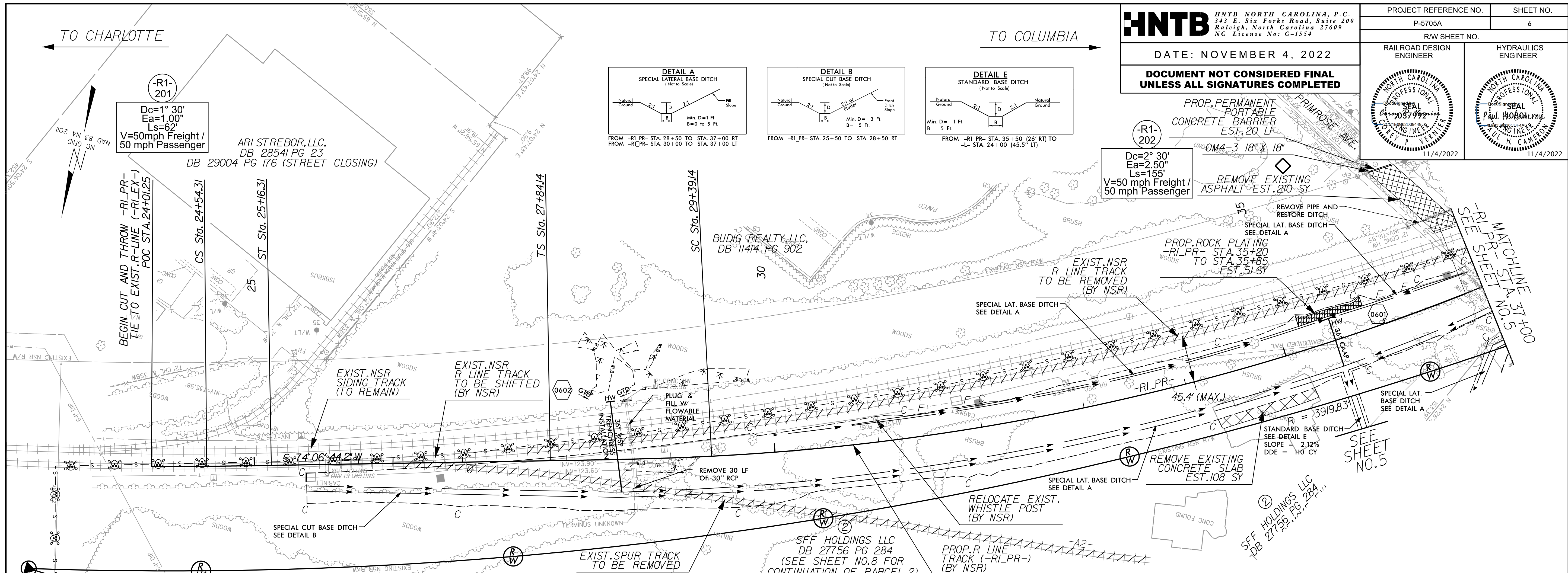


**CULVERT HYDRAULIC DATA**  
 -L- Sta. 21+72.2

DRAINAGE AREA	= 101.8	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 270	CFS
DESIGN HW ELEVATION	= 716.4	FT
100 YEAR DISCHARGE	= 270	CFS
100 YEAR HW ELEVATION	= 716.4	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 689	CFS
OVERTOPPING ELEVATION	= 726.8	FT

11/2/2022 5:06:58 pm - psh - 5.dgn  
 HNTB





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

DATE: NOVEMBER 4, 2022

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PROJECT REFERENCE NO.  
P-5705A

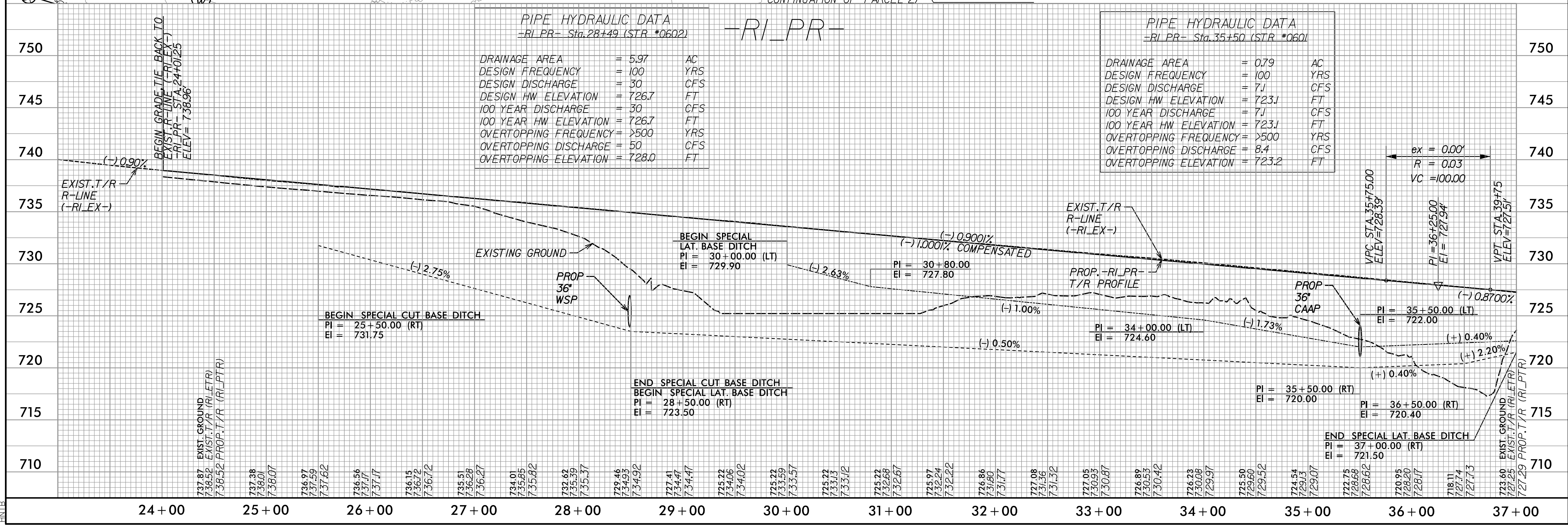
R/W SHEET NO.  
6

RAILROAD DESIGN ENGINEER

HYDRAULICS ENGINEER

SEAL  
037992  
NORTH CAROLINA  
PROFESSIONAL  
ENGINEER  
11/4/2022

SEAL  
4080ALVNS  
NORTH CAROLINA  
PROFESSIONAL  
ENGINEER  
11/4/2022

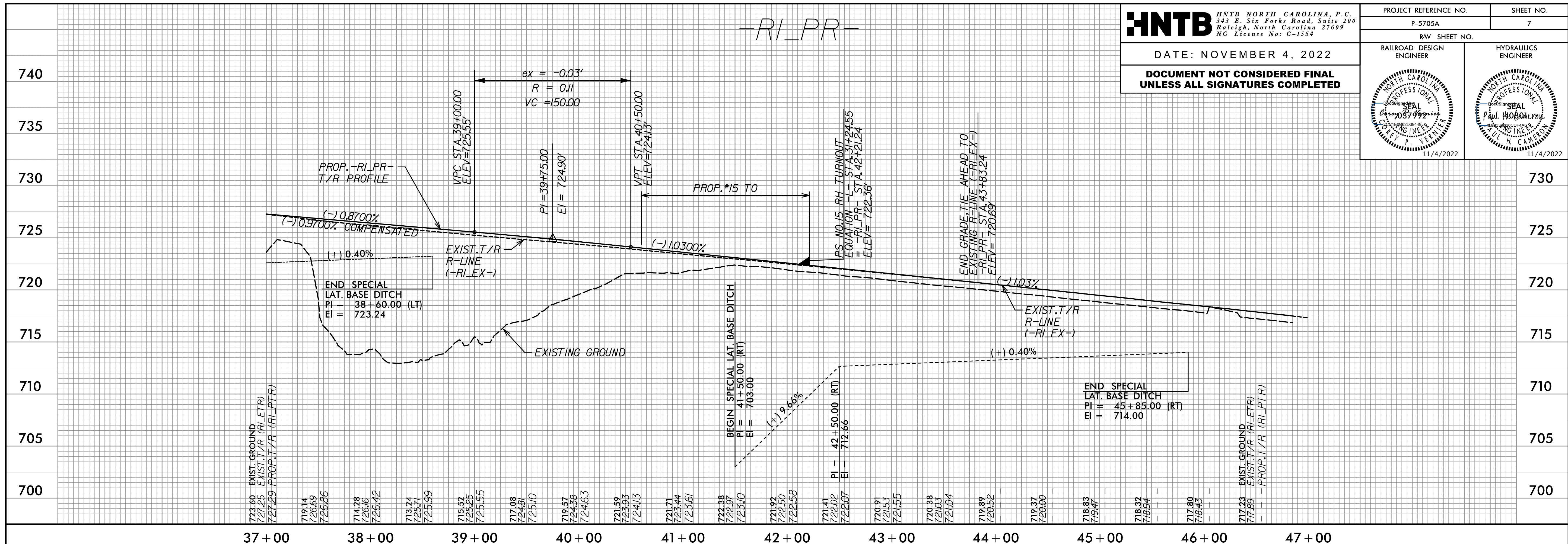


11/2/2022 6:56:06 am - psh - 6.dgn

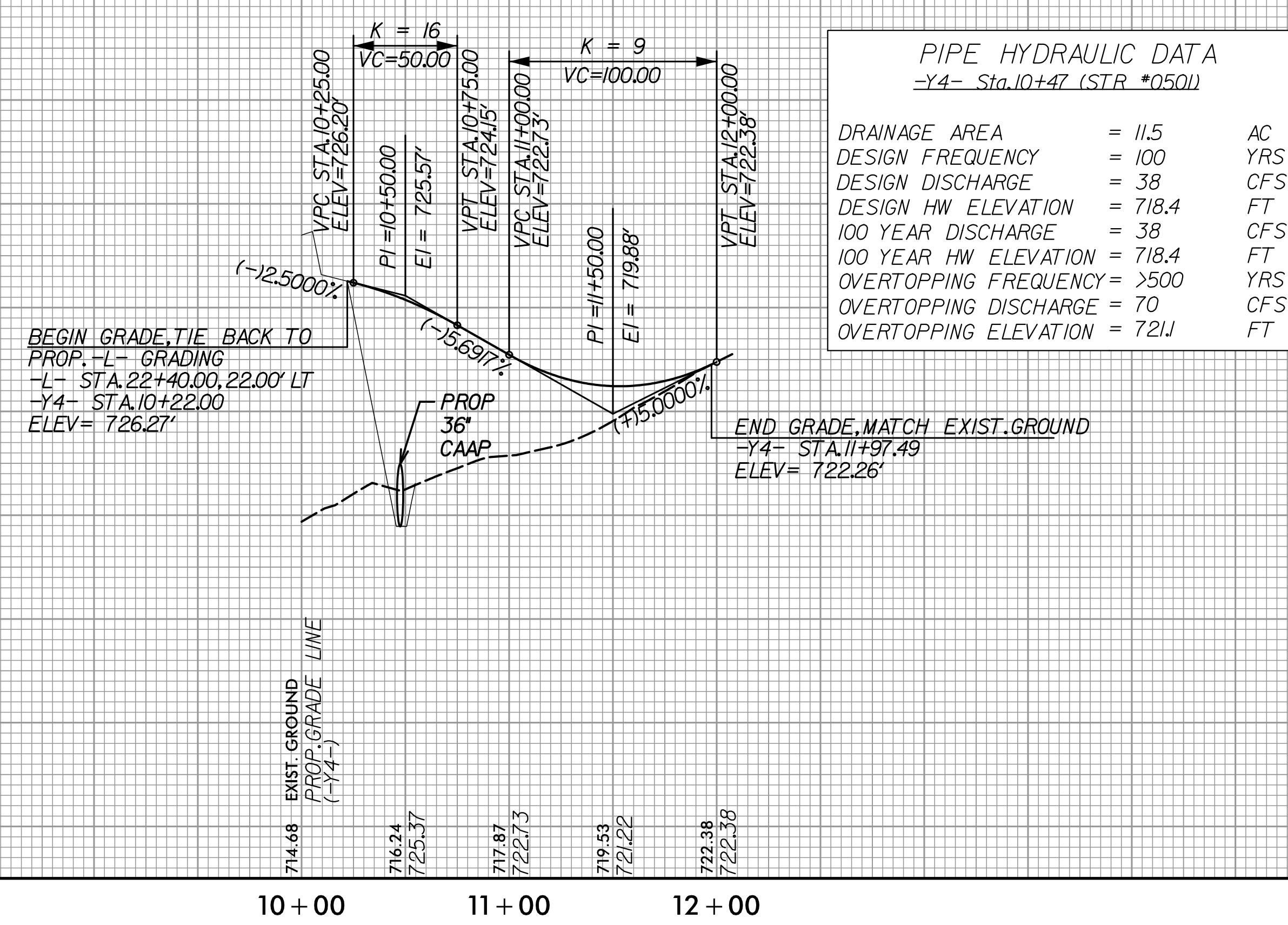


DATE: NOVEMBER 4, 2022

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**





**-Y4-**



PIPE HYDRAULIC DATA  
-Y4- Sta. 10+47 (STR #050)

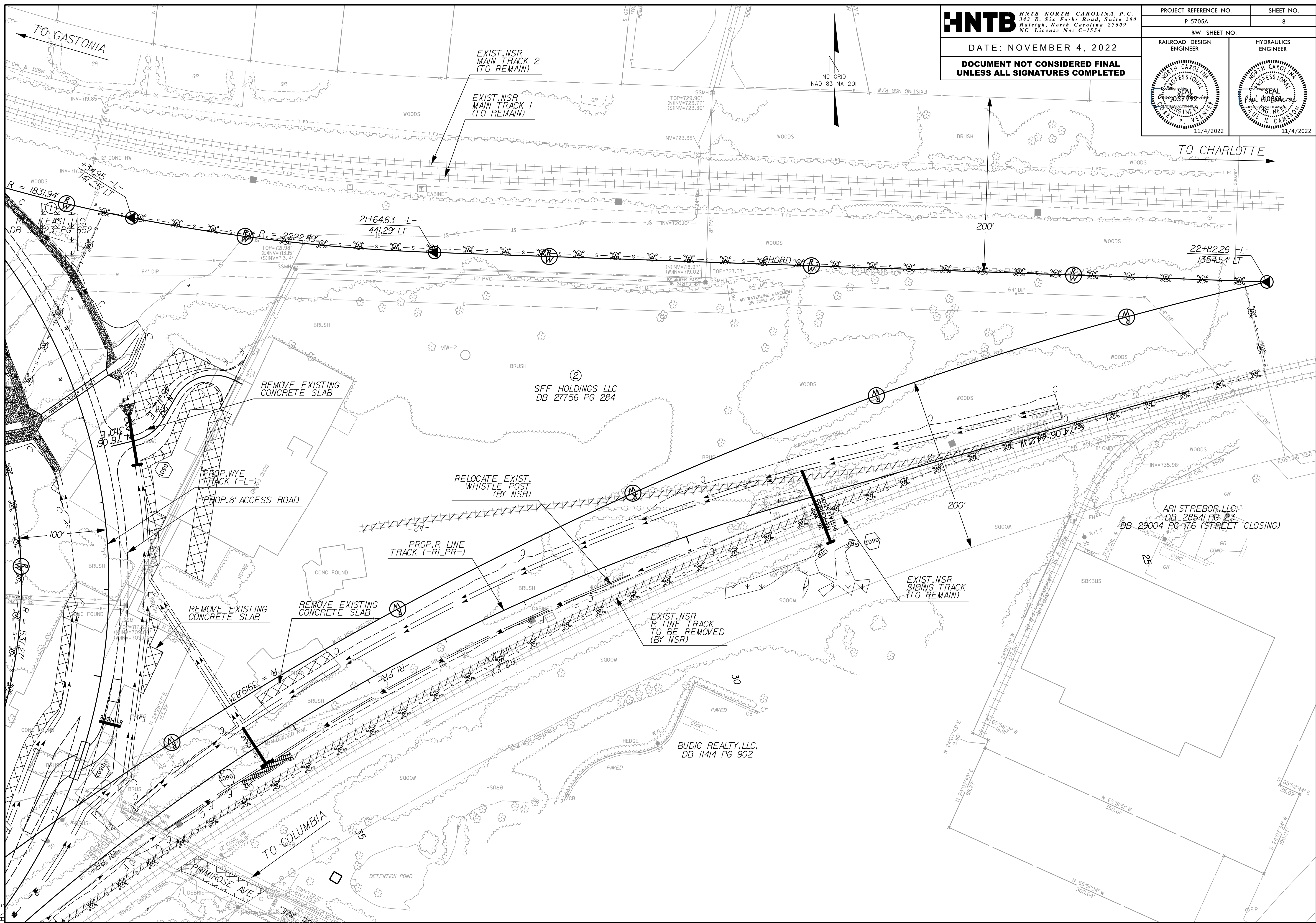
DRAINAGE AREA	= 11.5	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 38	CFS
DESIGN HW ELEVATION	= 718.4	FT
100 YEAR DISCHARGE	= 38	CFS
100 YEAR HW ELEVATION	= 718.4	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 70	CFS
OVERTOPPING ELEVATION	= 721.1	FT



PROJECT REFERENCE NO.	SHEET NO.
P-5705A	8
RW SHEET NO.	
RAILROAD DESIGN ENGINEER	HYDRAULICS ENGINEER
 11/4/2022	 11/4/2022

DATE: NOVEMBER 4, 2022

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



11/2/2022 10:56:08 am - ps-h...&.dgn