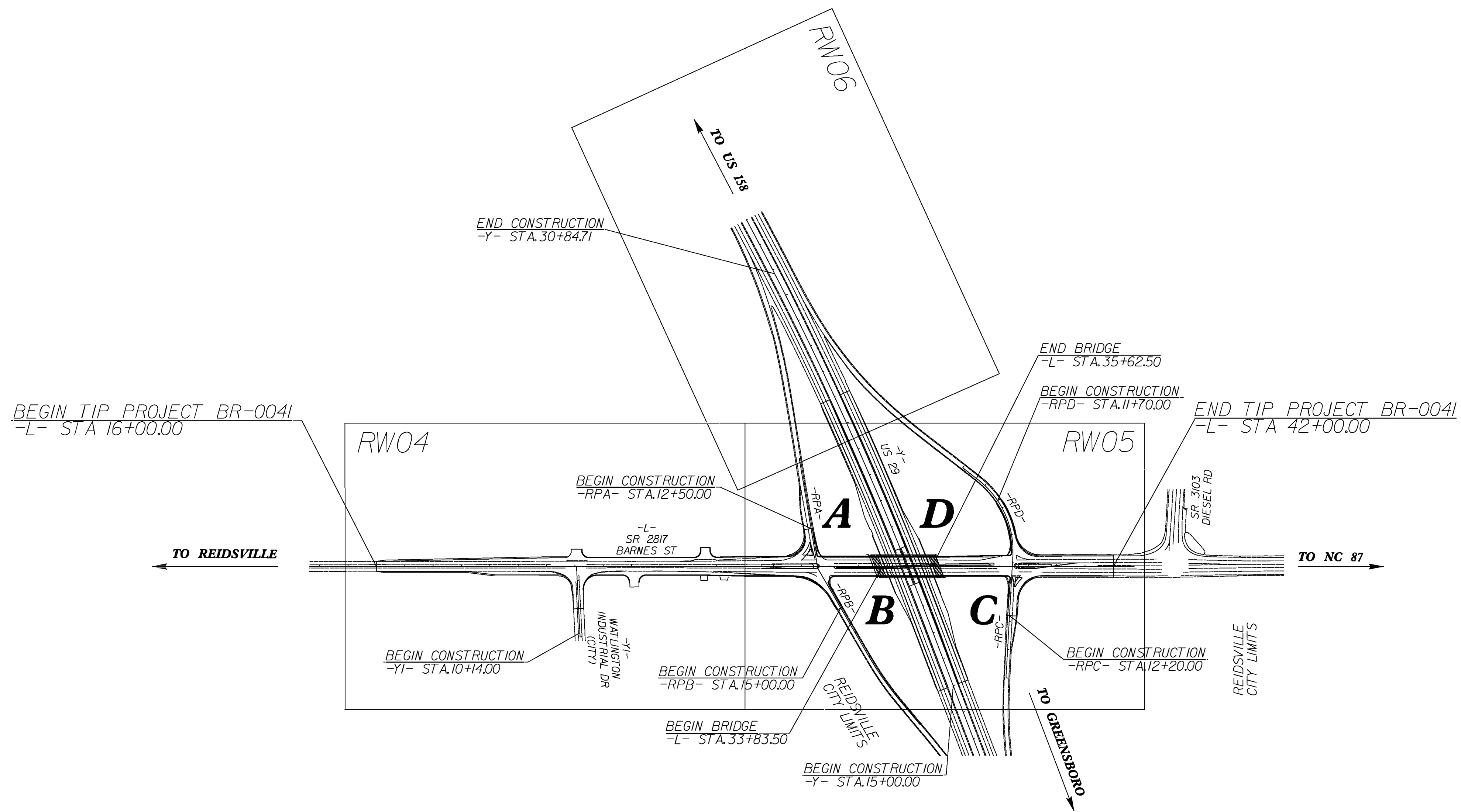


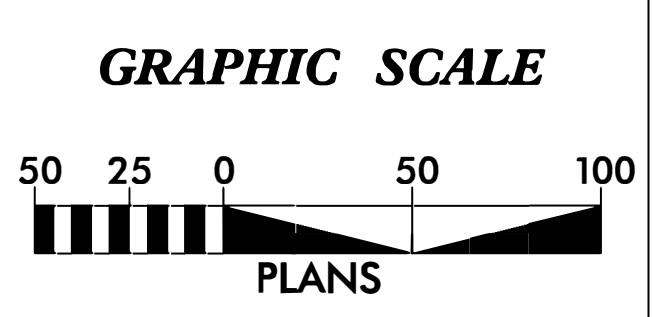
TIP PROJECT: BR-0041

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR0041	RW01	

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 SURVEY CONTROL, EXISTING CENTERLINES,
 RIGHT OF WAY, EASEMENTS AND PROPERTY TIES
ROCKINGHAM COUNTY



29-AUG-2022 11:48 P:\50154442\CAD_Survey\MICROSTATION\RW SHEETS\BR0041_L.S.\RW01_220902.dgn
Dowell AT PF256W9R



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2560DB-3" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 938460.113(ft) EASTING: 1810834.187(ft) ELEVATION: 809.49(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.00001470
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2560DB-3" TO -L- STATION 34+73.00 IS N 63-51'33" W 325.16(ft)
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD88/ GEOID G12NC

Prepared in the Office of:

Dewberry
 Dewberry Engineers Inc.
 551 PINEY FOREST ROAD
 DANVILLE, VA 24040
 PHONE: 434.797.4497
 FAX: 434.797.4341
 NCBELS #F-0929

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
06/15/2022

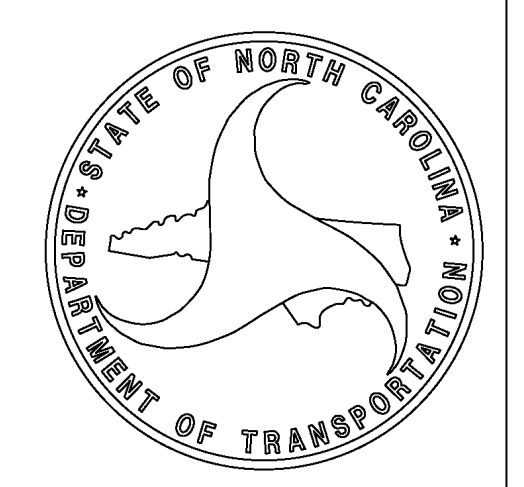
LETTING DATE:
04/18/2023

PROFESSIONAL LAND SURVEYOR

DocuSigned by:
Robert H. Bengtson
EA79E7CA33804F1...





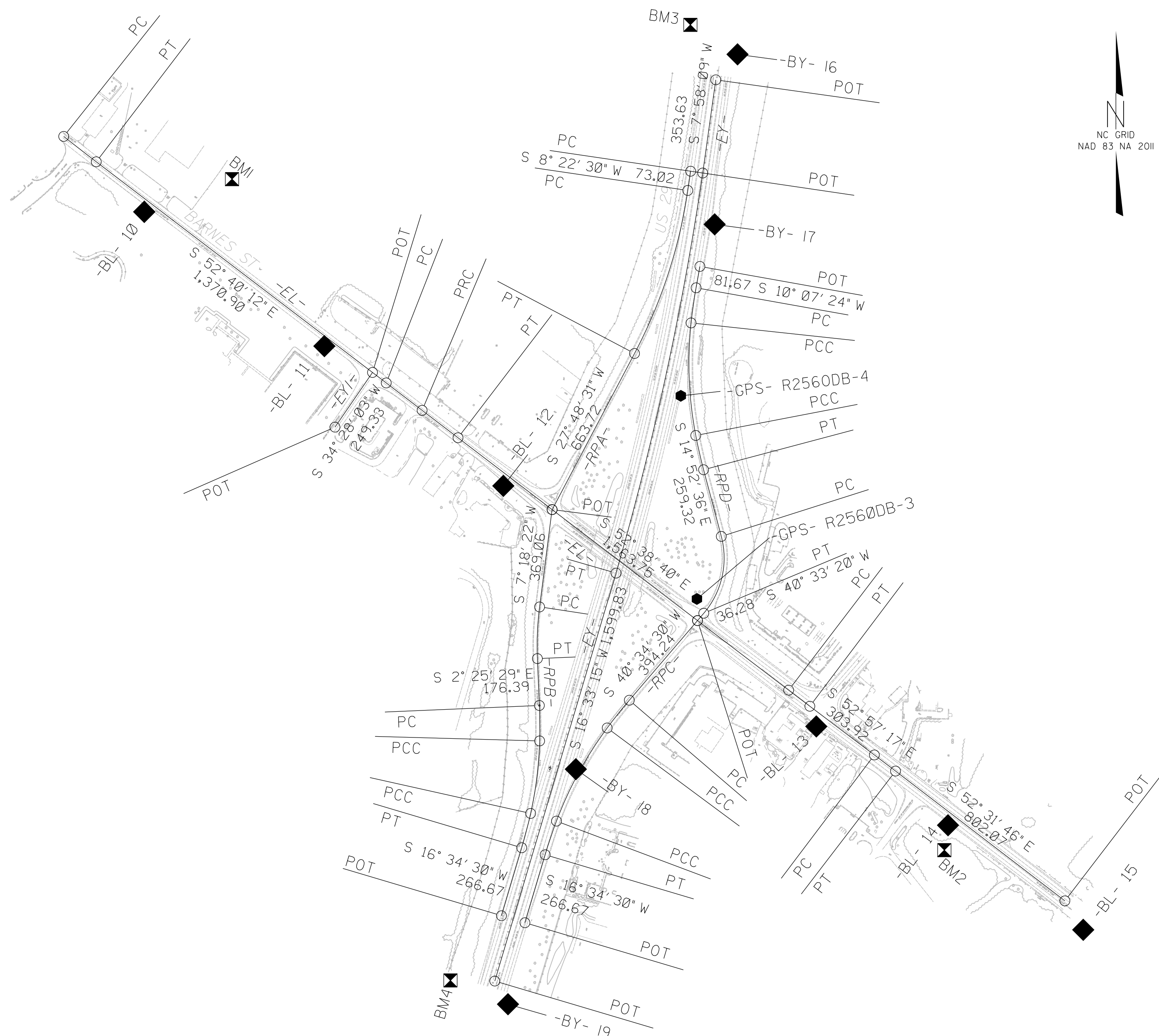
8/31/2022
Date:



SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. BR0041	SHEET NO. RW02C-1
Location and Surveys	
 Dewberry Engineers Inc. <small>551 PINEY FOREST ROAD DANVILLE, VA 24540 PHONE: 434.797.4497 FAX: 434.797.4341 NCBELS #F-0929</small>	
PROJECT SURVEYOR	
 <small>ROBERT H. BENGTSON 8/31/2022</small>	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



I, Robert H. Bengtson, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made by others and the following information was used to perform the survey:

Class of survey: **AA**
 Type of GPS field procedure: RTN
 Dates of survey: February 2018
 Datum/Epoch: NAD 83/2011
 Published/Fixed-control use: N/A
 Localized around: R2560DB-3
 Northing: 938460.113
 Easting: 1810834.187
 Combined grid factor: 1.00001470
 Geoid model: G12NC
 Units: US SURVEY FEET

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from 7/17/18 to 7/19/18, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 31st day of August, 2022.

DocuSigned by:

 Robert H. Bengtson
 Professional Land Surveyor L-3453



SEE SHEET RW02C-3
 FOR FURTHER
 ALIGNMENT DETAILS

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

PROJECT REFERENCE NO. BR0041	SHEET NO. RW02C-2
Location and Surveys	
 Dewberry Engineers Inc. 551 PINEY FOREST ROAD DANVILLE, VA 24540 PHONE: 434.797.4497 FAX: 434.797.4341 NCBELS #F-0829	
PROJECT SURVEYOR  8/31/2022	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

BL		BASELINE CONTROL			
POINT	DESC.	NORTH	EAST	ELEVATION	
10	BL - 10	939915.2157	1808756.3568	792.94	
11	BL - 11	939410.4395	1809433.4892	797.41	
12	BL - 12	938885.0275	1810106.1764	811.61	
3	R2560DB-3	938460.1130	1810834.1870	809.49	
13	BL - 13	937980.7944	1811282.7935	802.35	
14	BL - 14	937609.4124	1811777.8352	789.10	
15	BL - 15	937216.2823	1812286.2293	784.56	

BY		BASELINE CONTROL			
POINT	DESC.	NORTH	EAST	ELEVATION	
16	BY - 16	940507.2314	1810986.6242	729.62	
17	BY - 17	939868.2514	1810900.7152	752.46	
4	R2560DB-4	939223.7031	1810773.5994	777.29	
3	R2560DB-3	938460.1130	1810834.1870	809.49	
18	BY - 18	937820.2655	1810379.3141	791.39	
19	BY - 19	936936.7959	1810124.1648	778.14	

BENCHMARKS

BM1 ELEVATION = 794.99
N 940038 E 1809087
BL STATION 6+91.00 296 LEFT
RR SPIKE IN A 12"ASH

BM2 ELEVATION = 775.87
N 937516 E 1811764
BL STATION 43+63.00 82 RIGHT
RR SPIKE IN A 12" OAK

BM3 ELEVATION = 732.09
N 940618 E 1810810
BY STATION 5+00.00
N 57°55'18.6" W DIST 208.89
RR SPIKE IN A 15"HICKORY

BM4 ELEVATION = 783.23
N 937026 E 1809908
BY STATION 42+47.00 233 RIGHT
RR SPIKE IN A 10"MAPLE

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.

I, Robert H. Bengtson, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made by others and the following information was used to perform the survey:

Class of survey: **AA**
Type of GPS field procedure: RTN
Dates of survey: February 2018
Datum/Epoch: NAD 83/2011
Published/Fixed-control use: N/A
Localized around: R2560DB-3
Northing: 938460.113
Easting: 1810834.187
Combined grid factor: 1.00001470
Geoid model: G12NC
Units: US SURVEY FEET



I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from 7/17/18 to 7/19/18, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 31st day of August, 2022.

DocuSigned by:

Professional Land Surveyor L-3453

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. BR0041	SHEET NO. RW02D-1
Location and Surveys	
 Dewberry Engineers Inc. 551 PINEY FOREST ROAD DANVILLE, VA 24540 PHONE: 434.797.4497 FAX: 434.797.4341 NCBELS #F-0929	
PROJECT SURVEYOR  SEAL L-3453 ROBERT H. BENGTSON 8/31/2022	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Robert H. Bengtson, PLS, certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

This 31st day of August, 2022.


 Robert H. Bengtson
 Professional Land Surveyor L-3453

L			
TYPE	STATION	NORTH	EAST
POT	10+00.00	940103.4808	1808576.2167
PC	20+98.30	939437.4649	1809449.5377
PT	22+00.25	939375.6232	1809530.5911
POT	42+74.12	938117.2879	1811179.0818

RPB			
TYPE	STATION	NORTH	EAST
POT	10+00.00	938131.1657	1810238.8795
PC	11+12.10	938243.1619	1810234.1370
PT	13+15.90	938446.5332	1810242.8051
POT	16+69.85	938797.6133	1810287.8168

Y			
TYPE	STATION	NORTH	EAST
POT	10+00.00	937691.3669	1810272.8001
TS	16+67.73	938331.4239	1810463.0520
SC	18+67.73	938523.2911	1810519.5034
CS	34+65.75	940083.7011	1810858.6356
ST	36+65.75	940281.6912	1810886.9140
POT	37+96.85	940411.5207	1810905.0893

RPC			
TYPE	STATION	NORTH	EAST
POT	10+00.00	938079.3962	1810579.9992
POT	13+94.24	938378.8431	1810836.4296

Y1			
TYPE	STATION	NORTH	EAST
POT	10+00.00	939106.0023	1809473.5299
POT	12+49.26	939311.5015	1809614.5941

RPD			
TYPE	STATION	NORTH	EAST
POT	10+00.00	938761.2573	1810908.3274
PC	10+68.27	938695.2718	1810925.8559
PT	13+76.42	938406.4077	1810860.0183
POT	14+12.70	938378.8430	1810836.4296


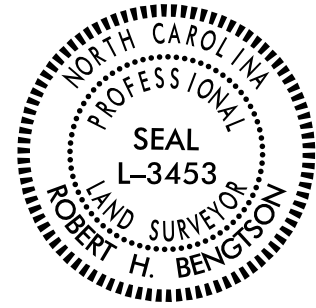
RPA			
TYPE	STATION	NORTH	EAST
POT	10+00.00	939136.6752	1810469.8185
POT	13+85.28	938795.8888	1810290.0760

REVISIONS

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT 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.

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO. BR0041	SHEET NO. RW03E-1
Location and Surveys	
 Dewberry Engineers Inc. <small>551 PINEY FOREST ROAD DANVILLE, VA 24040 PHONE: 434.797.4497 FAX: 434.797.4341 NCBELS #F-0929</small>	
PROJECT SURVEYOR  SEAL L-3453 ROBERT H. BENGTSON 8/31/2022	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Robert H. Bengtson, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 8/8/22 to 8/16/22, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 31st day of August, 2022.

Robert H. Bengtson

Professional Land Surveyor L-3453

REVISIONS

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	22+23.00	-63.00	939411.8991	1809586.8982
L	22+23.00	-50.03	939401.5915	1809579.0302
L	22+71.00	-63.00	939382.7747	1809625.0527
L	23+37.00	-52.00	939333.9850	1809670.8409
L	23+37.00	-71.00	939349.0878	1809682.3693
L	23+57.00	63.00	939230.4378	1809616.9616
L	23+69.00	-71.00	939329.6716	1809707.8057
L	23+69.00	-50.10	939313.0563	1809695.1229
L	23+77.00	49.90	939228.7163	1809640.8083
L	26+51.00	49.99	939062.3912	1809858.5512
L	26+51.00	65.00	939050.4613	1809849.4448
L	26+54.00	-50.01	939140.0590	1809921.6111
L	26+54.00	-62.00	939149.5917	1809928.8877
L	26+85.00	-50.00	939121.2447	1809946.2490
L	26+85.00	-62.00	939130.7822	1809953.5292
L	26+89.00	50.00	939039.3287	1809888.7525
L	26+89.00	65.00	939027.4045	1809879.6505

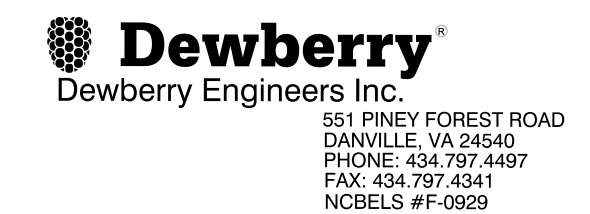
ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	11+49.00	32.47	939210.4671	1809584.6271
Y1	11+49.00	39.00	939206.7733	1809590.0082

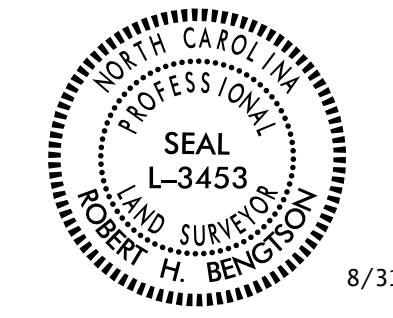
NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 8/8/22 TO 8/16/22 .

Location and Surveys



PROJECT SURVEYOR

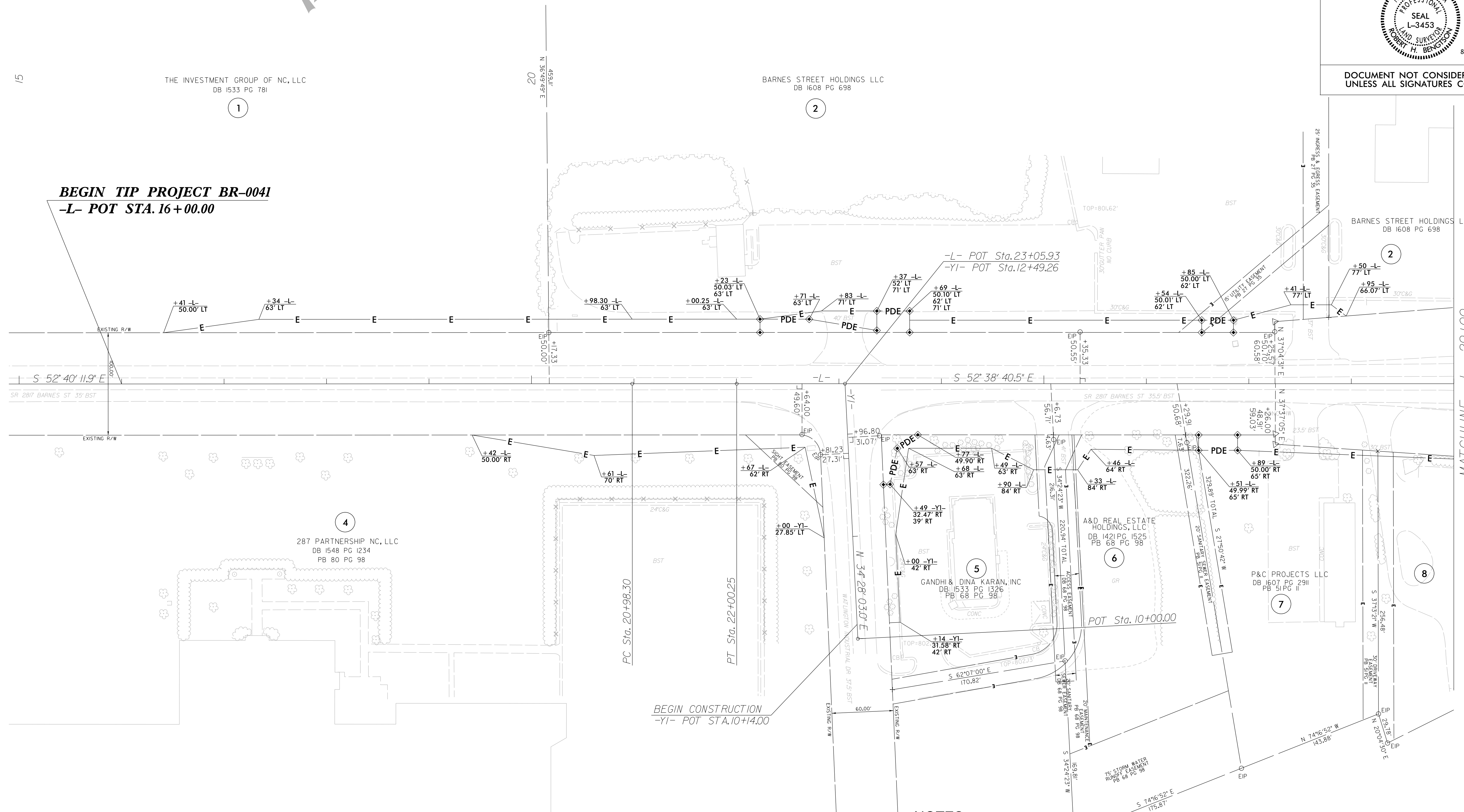


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Robert H. Bengtson, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 8/8/22 to 8/16/22, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 31st day of August, 2022.

DocuSigned by:
Robert H. Bengtson
 Professional Land Surveyor L-3453



BEGIN TIP PROJECT BR-0041
-L- POT STA. 16+00.00

BEGIN CONSTRUCTION
-YI- POT STA. 10+14.00

-L-
 PI Sta. 21+49.28
 $\Delta = 0^{\circ} 01' 31.4''$ (RT)
 $D = 0^{\circ} 01' 29.7''$
 $L = 101.95'$
 $T = 50.98'$
 $R = 230,000.00'$

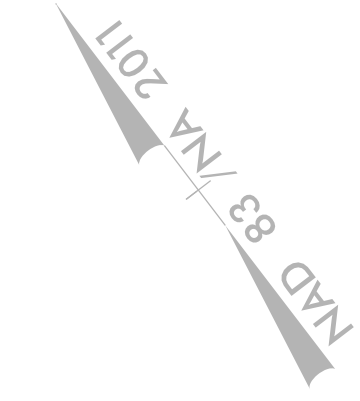
NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 8/8/22 TO 8/16/22 .

REVISIONS

MATCHLINE -L- 29+00
SEE SHEET 5



3-AUG-2022 08:01 Surveys\MICROSTATION\RW SHEET\BR0041.LS.RW04_220831.dgn
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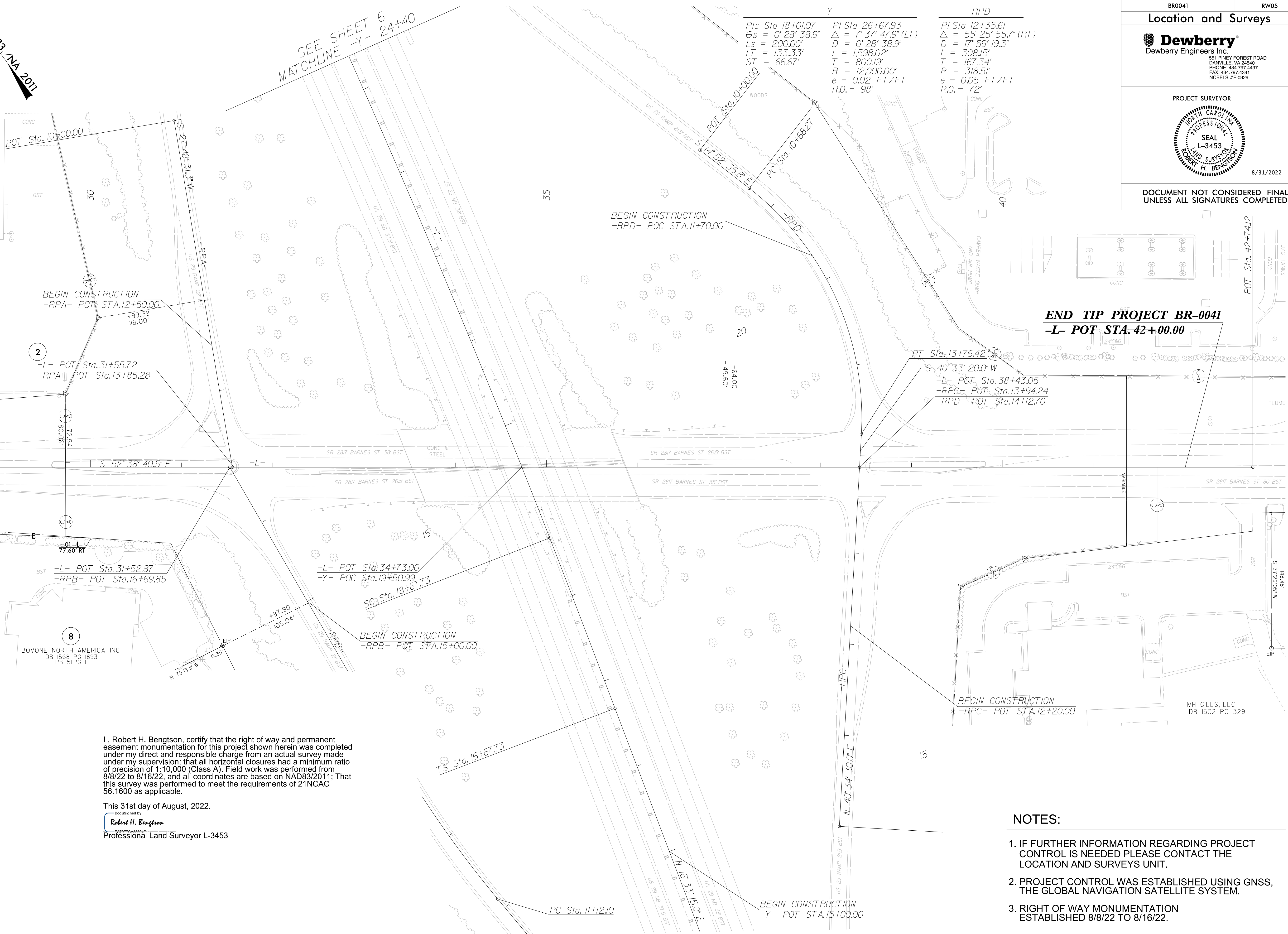


NAD 83 / N.A. 2011

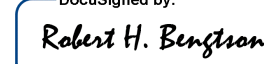
SEE SHEET 6
MATCHLINE -Y- 24+40

SEE SHEET 4
MATCHLINE -L- 29+00

PROJECT REFERENCE NO. BR0041	SHEET NO. RW05
Location and Surveys	
 Dewberry Dewberry Engineers Inc. <small>551 PINEY FOREST ROAD DANVILLE, VA 24540 PHONE: 434.797.4487 FAX: 434.797.4341 NCBELS #F-0929</small>	
PROJECT SURVEYOR  <small>8/31/2022</small>	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



I, Robert H. Bengtson, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 8/8/22 to 8/16/22, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 31st day of August, 2022.
 Documented by:

 Robert H. Bengtson
 Professional Land Surveyor L-3453

- NOTES:**
1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
 2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
 3. RIGHT OF WAY MONUMENTATION ESTABLISHED 8/8/22 TO 8/16/22.

REVISIONS

3: AUG 2022 08:03
 P:\50152422\0803\Survey\MICROSTATION\RW SHEET\5\BR0041.L.S.RW05.220831.dgn
 boovewj AT 16:25:09

Location and Surveys

Dewberry
Dewberry Engineers Inc.
551 PINEY FOREST ROAD
DANVILLE, VA 24540
PHONE: 434.797.4407
FAX: 434.797.4341
NCBELS #F-0929

PROJECT SURVEYOR

8/31/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

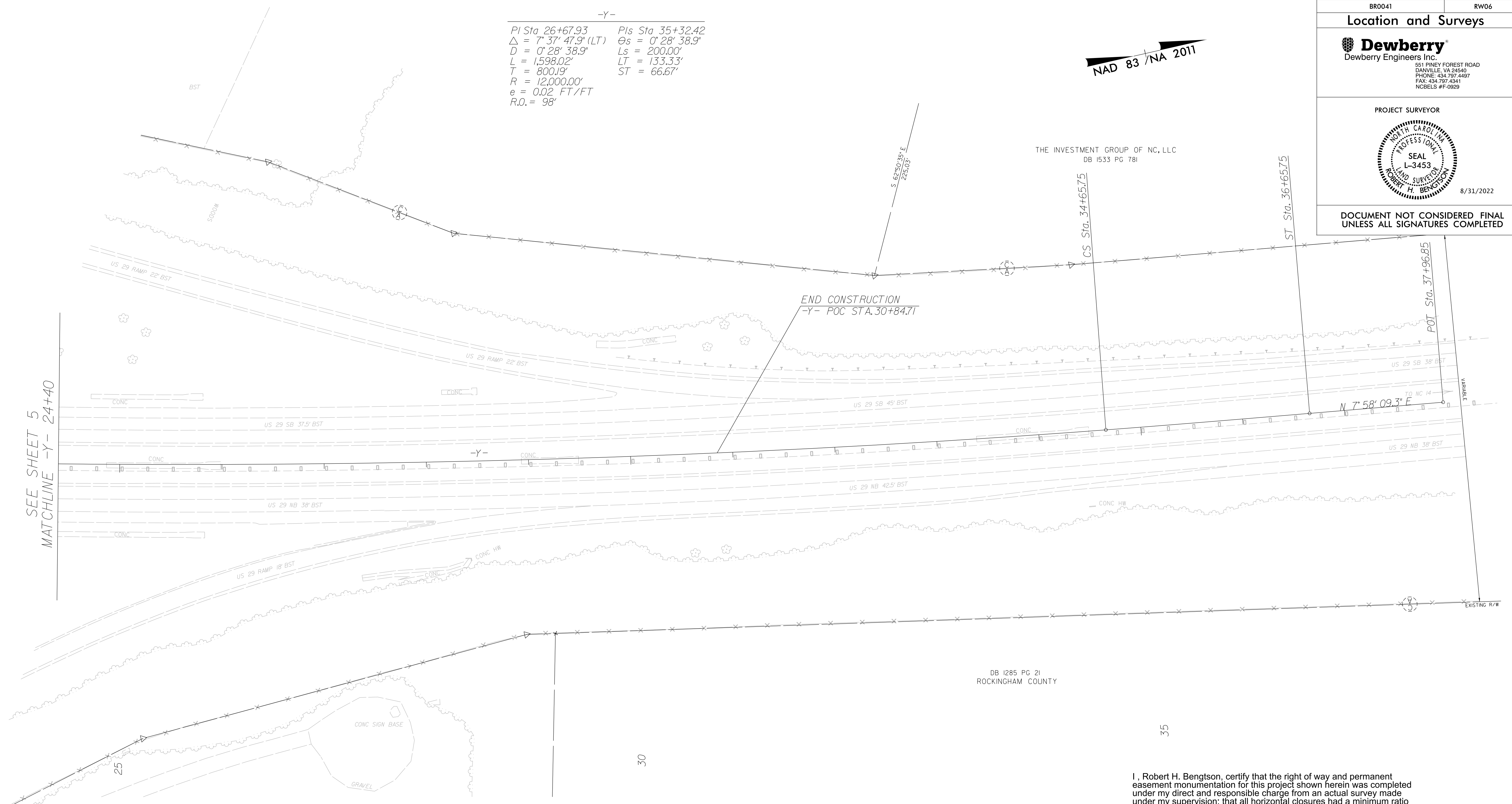
-Y-

PI Sta 26+67.93	PIs Sta 35+32.42
$\Delta = 7^{\circ} 37' 47.9''$ (LT)	$\Theta_s = 0^{\circ} 28' 38.9''$
$D = 0^{\circ} 28' 38.9''$	$L_s = 200.00'$
$L = 1,598.02'$	$LT = 133.33'$
$T = 800.19'$	$ST = 66.67'$
$R = 12,000.00'$	
$e = 0.02$ FT/FT	
$R.O. = 98'$	

NAD 83 / NA 2011

THE INVESTMENT GROUP OF NC, LLC
DB 1533 PG 781

DB 1285 PG 21
ROCKINGHAM COUNTY



SEE SHEET 5
MATCHLINE -Y- 24+40

REVISIONS

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 8/8/22 TO 8/16/22.

I, Robert H. Bengtson, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 8/8/22 to 8/16/22, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 31st day of August, 2022.

DocuSigned by:
Robert H. Bengtson
Professional Land Surveyor L-3453

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