

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5725	RW01	

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

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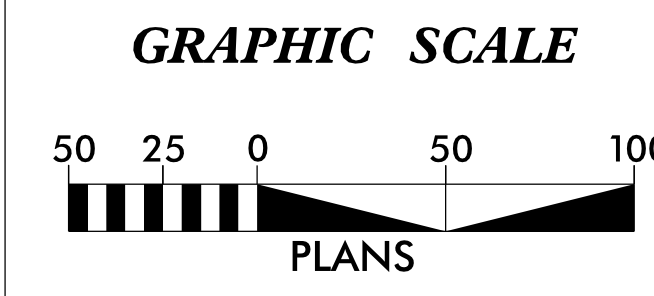
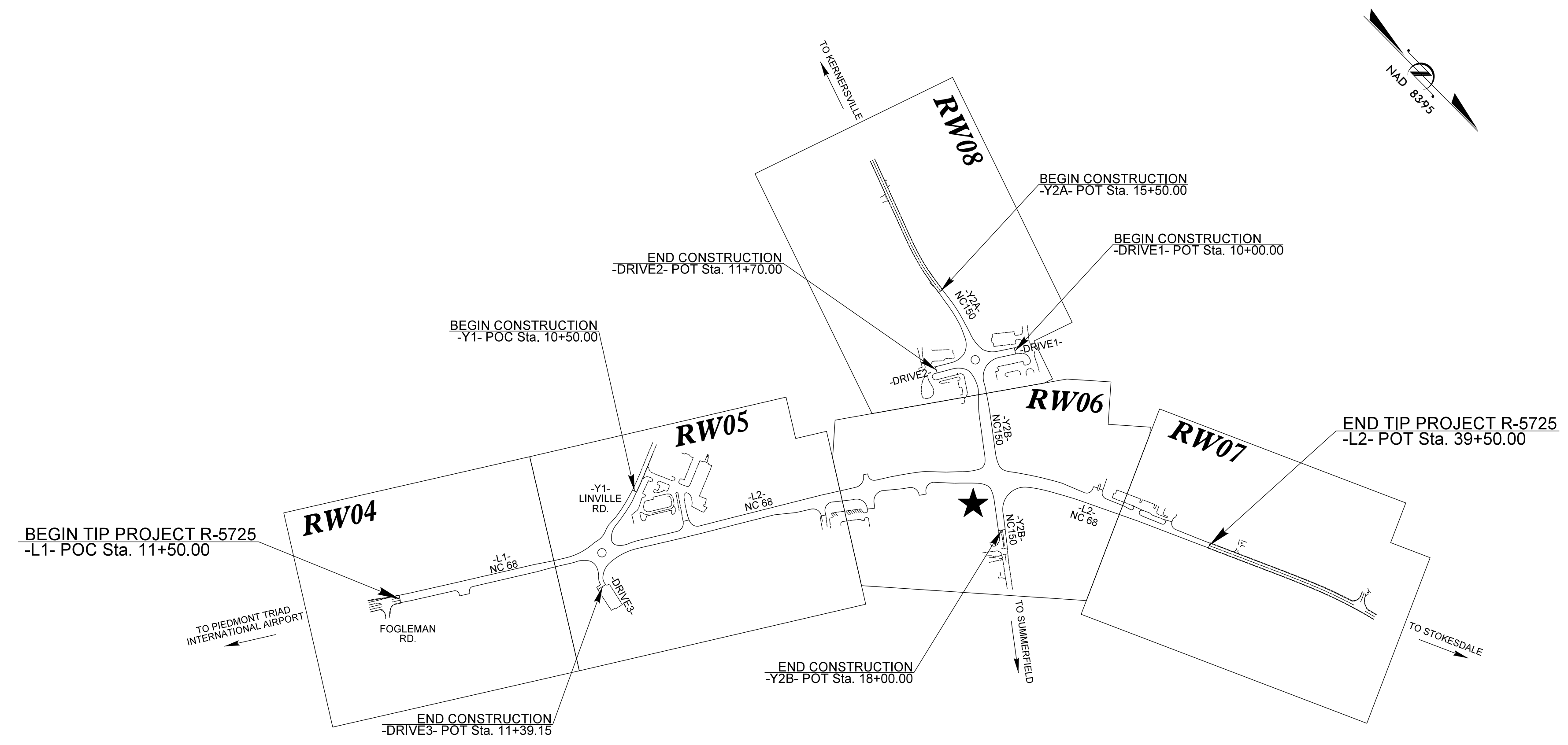
SURVEY CONTROL, EXISTING CENTERLINES,  
RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

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**GUILFORD COUNTY**

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**TIP PROJECT: R-5725**



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "ACADEMY" WITH NAD 83/1995 STATE PLANE GRID COORDINATES OF NORTHING: 883,550.156(ft) EASTING: 1,707,972.155(ft) ELEVATION: 940.22(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99996204

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "ACADEMY" TO -L2- STATION 28+84.08 IS N 89-20'21" E 67.08(ft)

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

Prepared in the Office of:



2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
10/13/2021

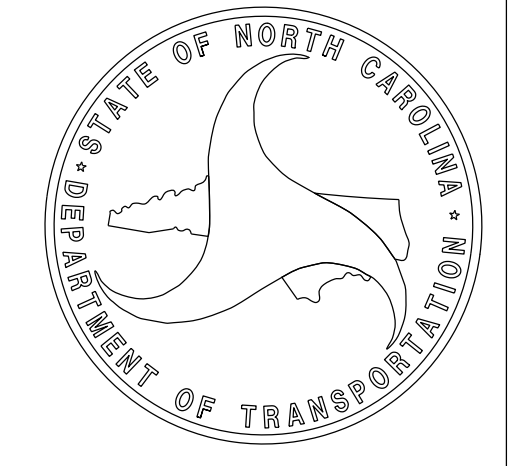
**LETTING DATE:**  
06/20/2023

**PROFESSIONAL LAND SURVEYOR**



DocuSigned by:  
**Robert H. Bengtson**  
SIGNATURE:

Date:  
3/9/2023



08-MAR-2023 14:25 P:\15042261\CAD\Survey\MICROSTATION\RW REVISIONS\RW SHEETS\R5725\LS.RW01\_230308.dgn D:\DWELL AT PF25GW9R

# SURVEY CONTROL SHEET

## W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



PROJECT REFERENCE NO. R5725	SHEET NO. RW2C-1
<b>Location and Surveys</b>	
 Dewberry Engineers Inc. 551 PINEY FOREST ROAD DANVILLE, VA 24540 PHONE: 434.797.4487 FAX: 434.797.4341 NCBELS #F-0829	
PROJECT SURVEYOR 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Robert H. Bengtson, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further 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.

Witness my original signature, registration number and seal this 3rd day of February, 2022.

DocuSigned by:  
**Robert H. Bengtson**  
 E478E7CA33B84F1  
 Professional Land Surveyor      L-3453      Seal  
 PLS #


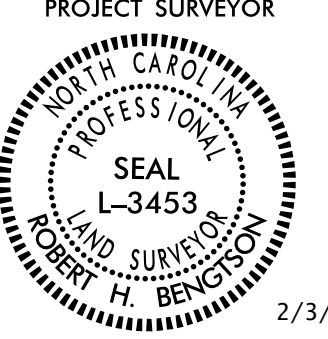
SEE SHEET RW02C-3  
 FOR FURTHER  
 ALIGNMENT DETAILS

- 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. R5725	SHEET NO. RW2C-2
Location and Surveys	
 Dewberry Engineers Inc. <small>551 PINEY FOREST ROAD DANVILLE, VA 24540 PHONE: 434.797.4497 FAX: 434.797.4341 NCBELS #F-0829</small>	
PROJECT SURVEYOR  SEAL L-3453 ROBERT H. BENGTSON 2/3/2022	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

## BASELINE CONTROL

BL POINT	DESC.	NORTH	EAST	ELEVATION
BL4		885426.3560	1708009.9430	888.43
3		884354.2851	1707961.5230	916.60
2	ACADEMY	883550.1554	1707972.1549	940.22
1		883055.1390	1708312.5990	927.96
BL6		881935.5070	1708924.4380	924.19
BL5		881108.9250	1709553.2390	926.23

BY POINT	DESC.	NORTH	EAST	ELEVATION
BY7		882263.9500	1706584.6080	951.19
BY8		882697.3340	1707046.9650	944.40
BY9		883263.3060	1707475.7550	942.65
2	ACADEMY	883550.1554	1707972.1549	940.22

BY1 POINT	DESC.	NORTH	EAST	ELEVATION
2	ACADEMY	883550.1554	1707972.1549	940.22
BY10		884001.5090	1708935.2300	940.04
BY11		884417.7440	1709517.7640	935.51
BY12		884844.9180	1710227.5480	943.50

## BENCHMARKS

.....  
 BM1 ELEVATION = 932.31  
 N 883168 E 1708257  
 BOLT ON NW CORNER OF SHELL SIGN  
 .....

.....  
 BM7 ELEVATION = 909.95  
 N 884478 E 1707947  
 CHISELED X ON 24" RCP  
 .....

.....  
 BM2 ELEVATION = 925.57  
 N 881025 E 1709618  
 CHISELED SQUARE ON 15" RCP  
 .....

.....  
 BM8 ELEVATION = 888.34  
 N 885403 E 1707952  
 CHISELED X ON 15" RCP  
 .....

.....  
 BM3 ELEVATION = 922.61  
 N 881660 E 1709130  
 CHISELED SQUARE ON 24" RCP  
 .....

.....  
 BM9 ELEVATION = 935.04  
 N 884258 E 1709334  
 CHISELED X IN HEADWALL  
 .....

.....  
 BM4 ELEVATION = 922.39  
 N 882460 E 1708685  
 CHISELED SQUARE ON 18" RCP  
 .....

.....  
 BM10 ELEVATION = 934.86  
 N 884454 E 1709634  
 CHISELED X ON 15" RCP  
 .....

.....  
 BM5 ELEVATION = 951.17  
 N 882487 E 1706781  
 CHISELED X IN CONC  
 .....

.....  
 BM11 ELEVATION = 943.37  
 N 884771 E 1710059  
 CHISELED X ON 12" RCP  
 .....

.....  
 BM6 ELEVATION = 949.36  
 N 882120 E 1706462  
 CHISELED X IN CONC  
 .....

I, Robert H. Bengtson, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further 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.

Witness my original signature, registration number and seal this 3rd day of February, 2022.

  
 Professional Land Surveyor      L-3453      Seal  
 PLS #

### 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.

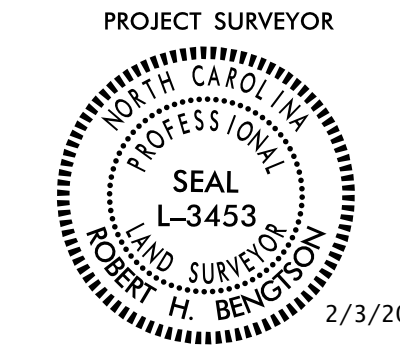
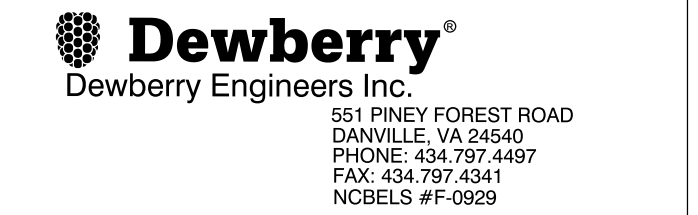
REVISIONS

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# SURVEY CONTROL SHEET

## W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

### Location and Surveys



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

EL		N	E	BEARING	DIST	DELTA	D	L	T	R
PC	POINT	880971.910	1709610.715							
CURVE				N 32°40'33.2" W	622.84	00°29'23.8"(LT)	00°04'43.2"	622.85	311.43	72838.42
PT		881496.183	1709274.450							
LINE				N 32°55'15.1" W	825.21					
PC	POINT	882188.879	1708825.967							
CURVE				N 33°41'28.5" W	232.10	01°32'26.8"(LT)	00°39'49.7"	232.11	116.06	8631.32
PCC		882381.998	1708697.215							
CURVE				N 33°32'56.2" W	75.86	01°49'31.3"(RT)	02°24'22.1"	75.86	37.93	2381.22
PT		882445.220	1708655.291							
LINE				N 32°38'10.6" W	755.86					
PC	POINT	883081.736	1708247.654							
CURVE				N 15°48'32.5" W	984.25	33°39'16.0"(RT)	03°22'13.2"	998.55	514.14	1700.00
PT		884028.762	1707979.512							
LINE				N 01°01'05.5" E	1034.04					
PC	POINT	885062.639	1707997.886							
CURVE				N 07°18'01.2" E	469.63	12°33'51.4"(RT)	02°40'12.0"	470.57	236.23	2145.91
PT		885528.462	1708057.562							

EY4		N	E	BEARING	DIST
POT	POINT	881047.528	1709562.604		
LINE				N 69°35'16.0" E	100.00
POT		881082.405	1709656.325		

EY5		N	E	BEARING	DIST
POT	POINT	882297.205	1706643.876		
LINE				N 69°31'29.1" W	100.00
POT		882332.185	1706550.194		

EY6		N	E	BEARING	DIST
POT	POINT	882297.205	1706643.876		
LINE				S 69°31'29.1" E	100.00
POT		882262.225	1706737.558		

EY7		N	E	BEARING	DIST
POT	POINT	884835.937	1710185.921		
LINE				N 22°39'41.8" W	100.00
POT		884928.217	1710147.392		

EY		N	E	BEARING	DIST	DELTA	D	L	T	R
POT	POINT	882228.427	1706589.109							
LINE				N 38°22'58.8" E	46.45					
PC	POINT	882264.834	1706617.948							
CURVE				N 39°24'48.7" E	137.40	02°03'39.8"(RT)	01°30'00.0"	137.40	68.71	3819.72
PT		882370.985	1706705.183							
LINE				N 40°26'38.7" E	15.17					
PC	POINT	882382.530	1706715.024							
CURVE				N 42°58'42.0" E	147.18	05°04'06.7"(RT)	03°26'33.1"	147.23	73.66	1664.35
PT		882490.212	1706815.362							
LINE				N 45°30'45.4" E	432.26					
PC	POINT	882793.120	1707123.740							
CURVE				N 39°26'23.4" E	201.00	12°08'44.0"(LT)	06°01'52.1"	201.38	101.07	950.00
PT		882948.354	1707251.432							
LINE				N 33°22'01.4" E	135.85					
PC	POINT	883061.809	1707326.148							
CURVE				N 43°36'57.5" E	249.10	20°29'52.3"(RT)	08°11'06.4"	250.43	126.57	700.00
PCC		883242.149	1707497.979							
CURVE				N 57°59'32.9" E	259.12	08°15'18.5"(RT)	03°10'59.2"	259.34	129.90	1800.00
PT		883379.490	1707717.706							
LINE				N 62°07'12.2" E	364.11					
POT		883549.755	1708039.554							

EY1		N	E	BEARING	DIST	DELTA	D	L	T	R
POT	POINT	883550.929	1708039.233							
LINE				N 62°17'02.6" E	920.74					
PC	POINT	883979.155	1708854.333							
CURVE				N 59°26'40.0" E	355.22	05°40'45.2"(LT)	01°35'53.2"	355.37	177.83	3585.20
PT		884159.742	1709160.229							
LINE				N 56°36'17.4" E	1290.65					
PC	POINT	884870.130	1710237.787							
CURVE				N 56°23'18.3" E	22.86	00°25'58.3"(LT)	01°53'36.4"	22.86	11.43	3026.00
PT		884882.785	1710256.825							

EY2		N	E	BEARING	DIST	DELTA	D	L	T	R
POT	POINT	885371.061	1708025.716							
LINE				N 80°42'22.7" W	4.54					
PC	POINT	885371.795	1708021.233							
CURVE				N 88°59'34.5" W	95.12	16°34'23.6"(LT)	17°21'43.0"	95.46	48.06	330.01
PT		885373.466	1707926.123							

EY3		N	E	BEARING	DIST	DELTA	D	L	T	R
PC	POINT	881922.039	1708998.731							
CURVE				S 83°49'57.9" W	98.39	35°44'35.5"(RT)	35°44'35.4"	100.00	51.69	160.30
PT		881911.469	1708900.914							

I, Robert H. Bengtson, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

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Witness my original signature, registration number and seal this 3rd day of February, 2022.

DocuSigned by:  
**Robert H. Bengtson**  
EA79E7CA33804F1L

Professional Land Surveyor

L-3453  
PLS #


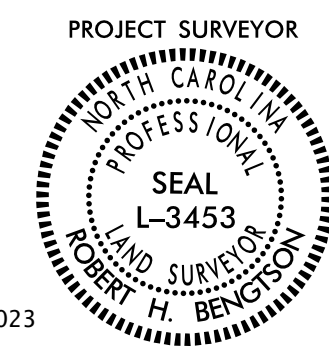
Seal

### NOTES:

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REVISIONS

# PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. R5725	SHEET NO. RW2D-1
<b>Location and Surveys</b>	
 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  3/9/2023	
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 9th day of March, 2023.

DocuSigned by:  
  
 Robert H. Bengtson  
EAT0ETCA33894F1  
 Professional Land Surveyor L-3453

REVISIONS

L1

TYPE	STATION	NORTH	EAST
PC	10+00.00	880971.9104	1709610.7151
PT	16+22.85	881496.1826	1709274.4498
PC	19+70.17	881787.7314	1709085.6877
PT	21+17.15	881887.0564	1708979.3345

RABT1

TYPE	STATION	NORTH	EAST
PC	10+00.00	881922.0390	1708958.7309
PT	12+51.33	881922.0393	1708958.7309

L2

TYPE	STATION	NORTH	EAST
PC	10+00.00	881957.0215	1709018.1274
PT	11+46.99	882056.3465	1708911.7741
PC	13+04.87	882188.8788	1708825.9666
PRC	15+36.98	882381.9976	1708697.2150
PT	16+12.85	882445.2200	1708655.2913
PC	23+68.70	883081.7362	1708247.6542
PT	33+67.25	884028.7615	1707979.5117
PC	44+01.29	885062.6392	1707997.8864
PT	48+71.86	885528.4623	1708057.5624

RABT2

TYPE	STATION	NORTH	EAST
PC	10+00.00	883271.7567	1707499.6156
PT	12+51.33	883271.7569	1707499.6156

DRIVE1

TYPE	STATION	NORTH	EAST
POT	9+90.00	883442.4431	1707430.8839
PC	10+91.59	883356.0129	1707484.2687
PT	11+71.94	883310.8443	1707548.1106

Y1

TYPE	STATION	NORTH	EAST
PC	10+00.00	881972.1913	1708622.2507
PT	12+39.33	881925.9235	1708856.1320
PC	12+46.10	881923.6219	1708862.5020
PT	13+62.65	881949.3624	1708969.5174

DRIVE2

TYPE	STATION	NORTH	EAST
PC	10+00.00	883232.5393	1707531.7420
PT	10+76.95	883191.2184	1707594.4140
POT	11+95.53	883093.5617	1707661.6749

Y2A

TYPE	STATION	NORTH	EAST
POT	10+00.00	882597.9510	1706925.0470
PC	12+78.51	882793.1203	1707123.7402
PT	14+79.89	882948.3542	1707251.4316
PC	16+15.74	883061.8092	1707326.1477
PRC	17+98.57	883199.7103	1707445.3876
PT	19+01.64	883284.6491	1707501.7502

DRIVE3

TYPE	STATION	NORTH	EAST
PC	10+00.00	881903.3104	1709034.0755
PRC	10+90.14	881954.8359	1709104.3297
PT	11+26.95	881973.6472	1709135.0018
POT	11+39.15	881983.3358	1709142.4068

Y2B

TYPE	STATION	NORTH	EAST
PC	10+00.00	883255.6732	1707576.2397
PCC	11+24.31	883347.2659	1707657.3183
PT	12+27.70	883397.6923	1707747.5575
POT	20+00.00	883756.8805	1708431.2479

**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.

























### Location and Surveys

**Dewberry**  
Dewberry Engineers Inc.  
551 PINEY FOREST ROAD  
DANVILLE, VA 24540  
PHONE: 434.797.4487  
FAX: 434.797.4341  
NCBELS #F-0929

PROJECT SURVEYOR

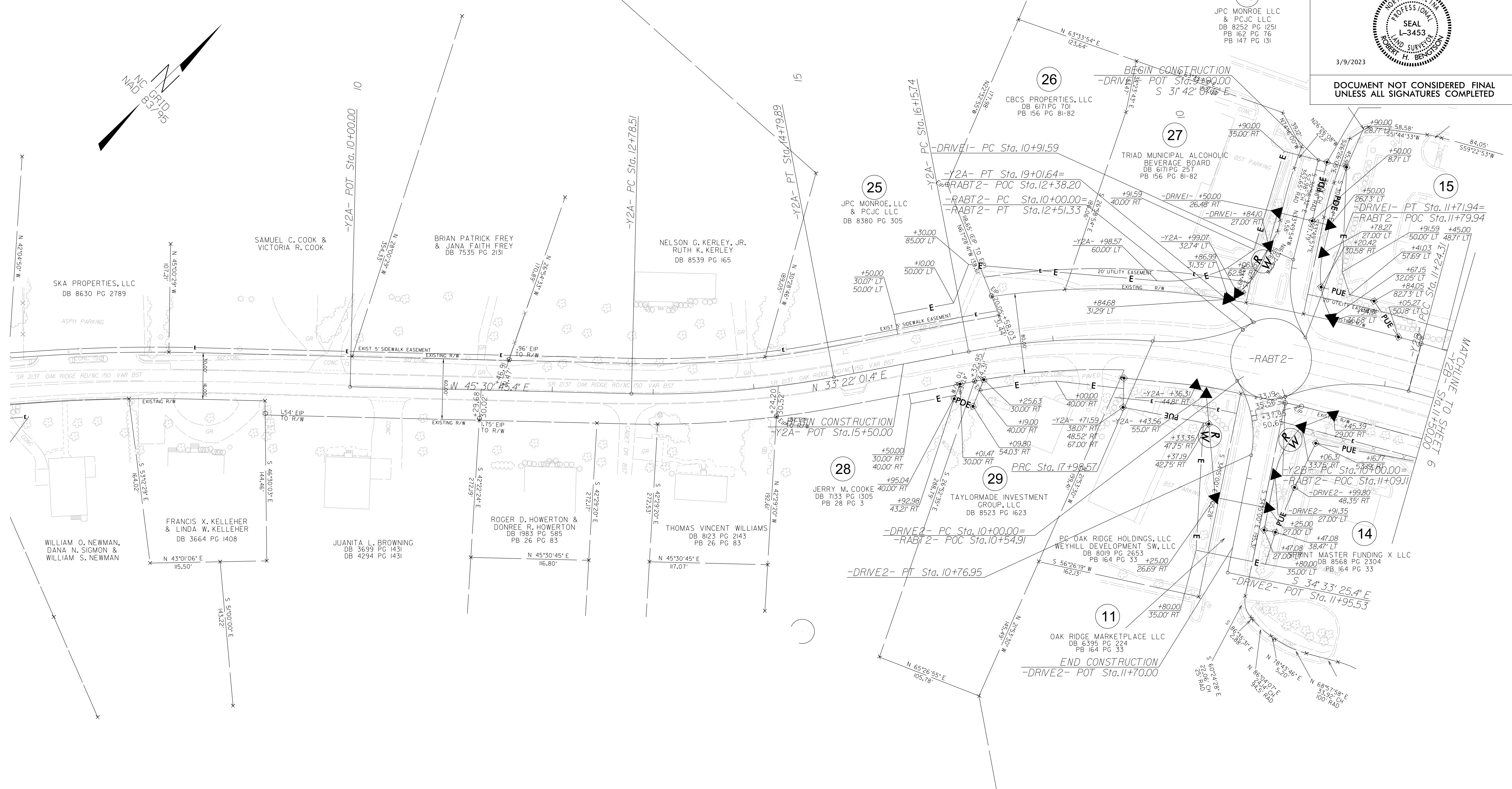
3/9/2023

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 Dec 2021 to Jan 2022 (Revised Feb 2023), and all coordinates are based on NAD83/1995. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 9th day of March, 2023.  
 (Signature)  
**Robert H. Bengtson**  
 Professional Land Surveyor L-3453

-Y2A-	-Y2A-	-Y2A-	-RABT2-	-DRIVE1-	-DRIVE2-	-Y2B-
PI Sta 13+79.58	PI Sta 17+07.68	PI Sta 18+51.28	PI Sta 10+00.00	PI Sta 11+34.07	PI Sta 10+40.49	PI Sta 10+64.24
$\Delta = 12^{\circ}08'44.0''$ (LT)	$\Delta = 14^{\circ}57'51.5''$ (RT)	$\Delta = 29^{\circ}31'43.6''$ (LT)	$\Delta = 360^{\circ}00'00.0''$ (LT)	$\Delta = 46^{\circ}02'11.1''$ (LT)	$\Delta = 44^{\circ}05'26.3''$ (RT)	$\Delta = 35^{\circ}36'48.8''$ (RT)
D = 6' 01" 52.1"	D = 8' 11" 06.4"	D = 28' 38" 52.4"	D = 143' 14" 22.0"	D = 57' 17" 44.8"	D = 57' 17" 44.8"	D = 28' 38" 52.4"
L = 201.38'	L = 182.82'	L = 103.07'	L = 251.33'	L = 80.35'	L = 76.95'	L = 124.31'
T = 101.07'	T = 91.93'	T = 52.71'	T = 0.00'	T = 42.49'	T = 40.49'	T = 64.24'
R = 950.00'	R = 700.00'	R = 200.00'	R = 40.00'	R = 100.00'	R = 100.00'	R = 200.00'
S <sub>e</sub> = Exist.	V <sub>D</sub> = 30 MPH	V <sub>D</sub> = 25 MPH		V <sub>D</sub> = 20 MPH	V <sub>D</sub> = 20 MPH	V <sub>D</sub> = 25 MPH
	S <sub>e</sub> = 3%	Runoff = 60'				



### 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 DEC 2021 TO JAN 2022. REVISED FEB 2023.

REVISIONS

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