

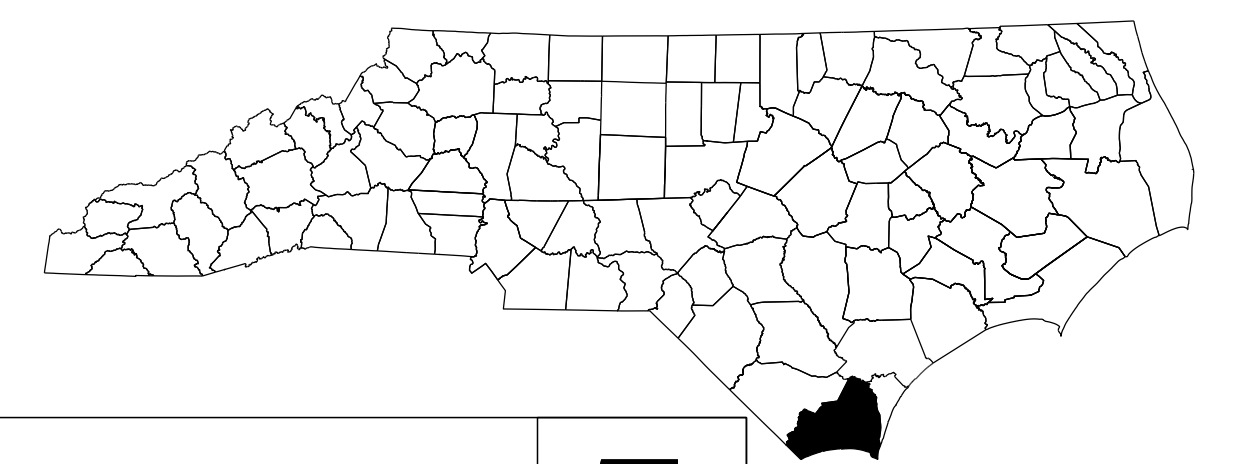
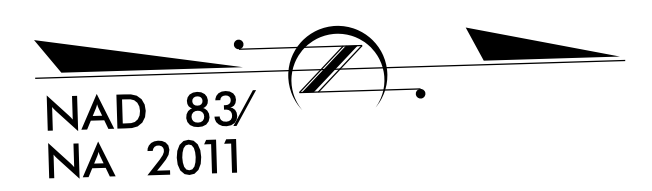
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0160	RW01	07

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

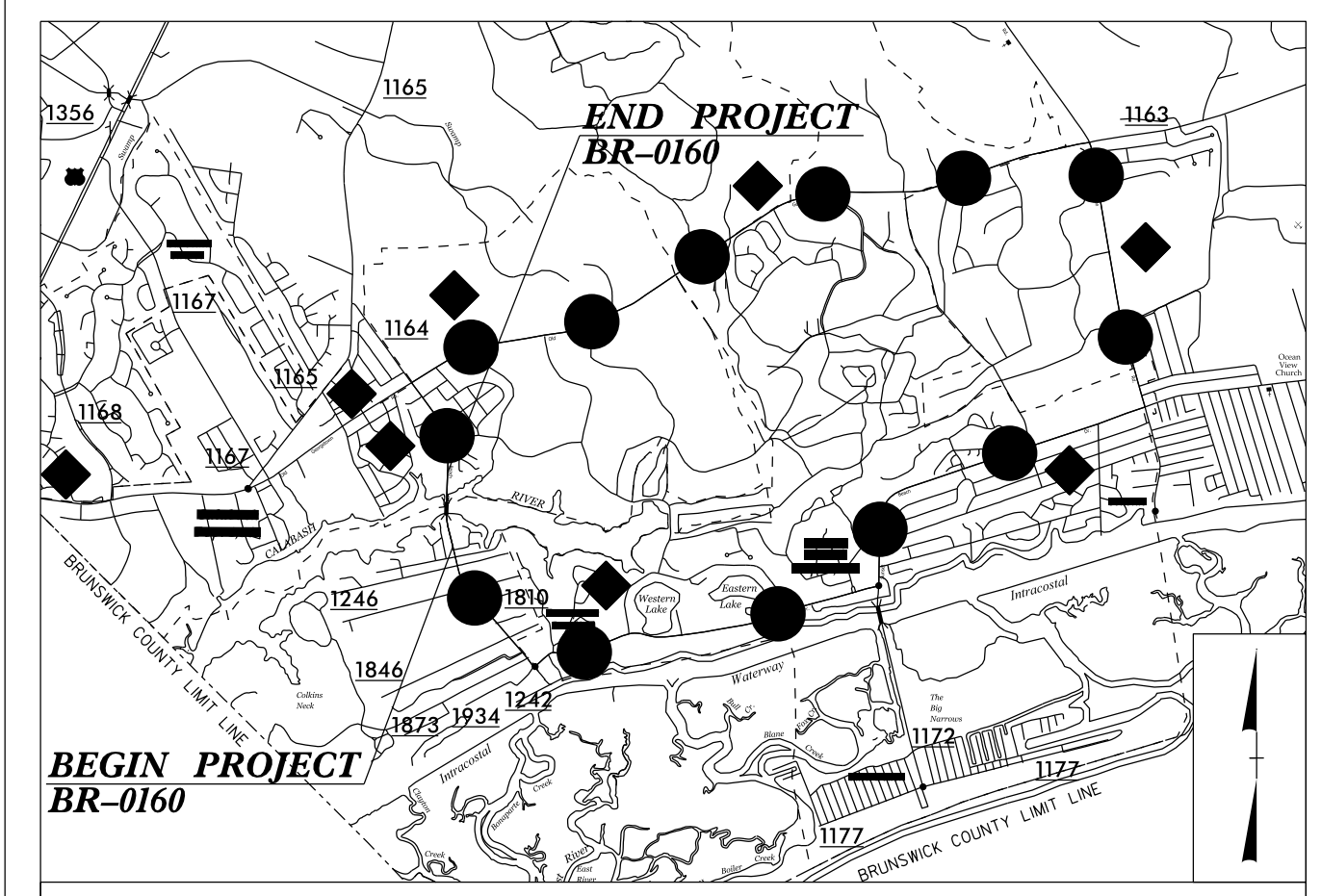
SURVEY CONTROL, EXISTING CENTERLINES,
RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

BRUNSWICK COUNTY

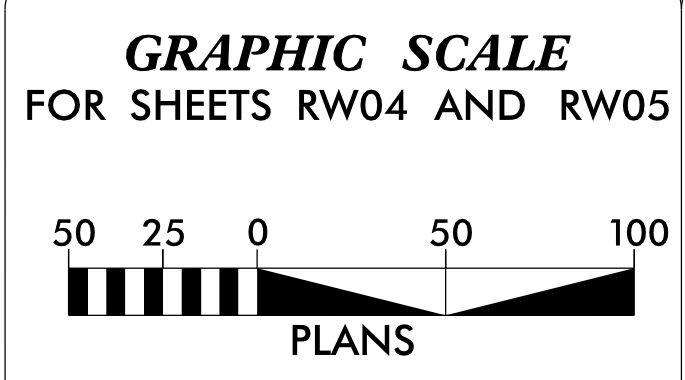
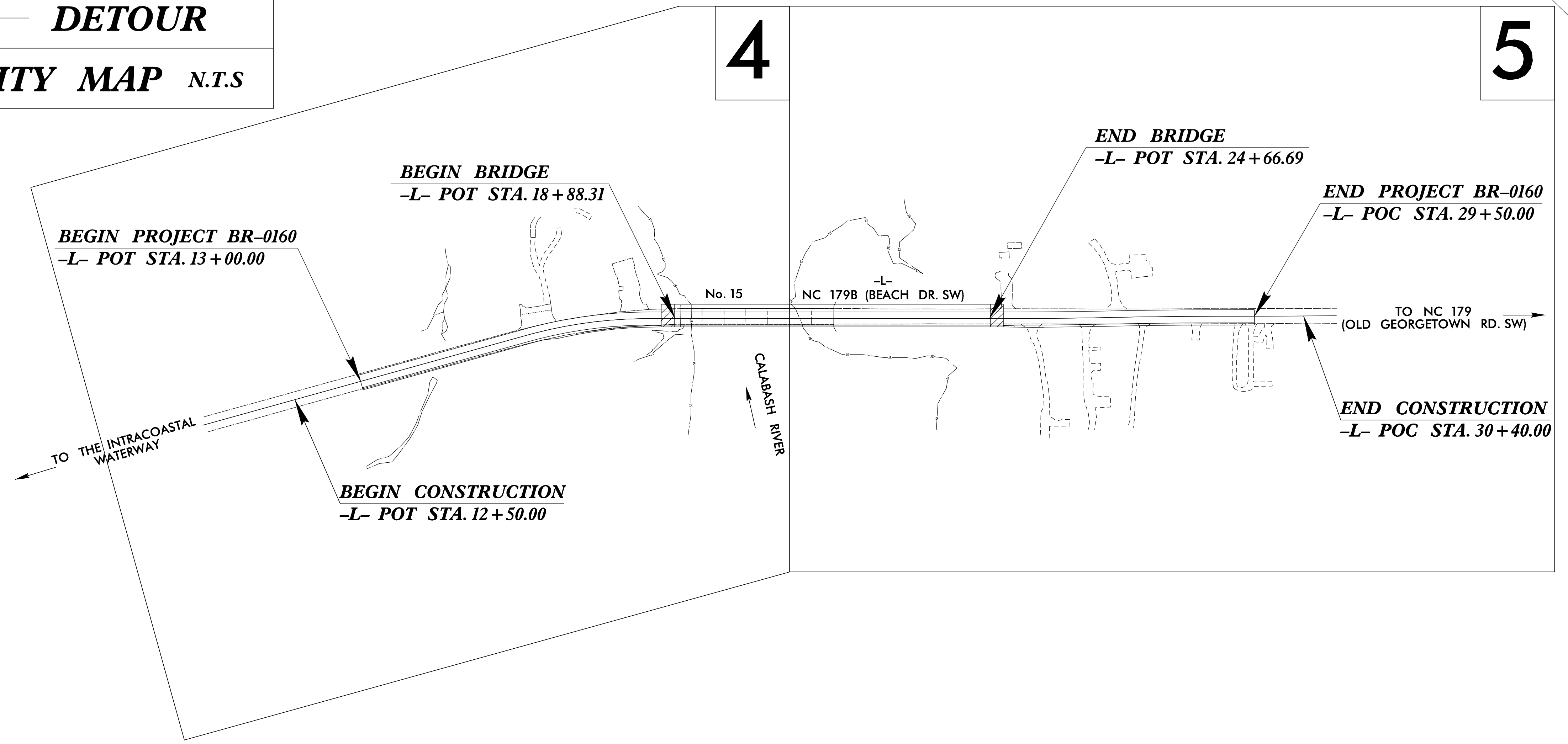
LOCATION: REPLACE BRIDGE 15 OVER CALABASH
RIVER ON NC 179B (BEACH DR. SW)



TIP PROJECT: BR-0160



● ● ● **DETOUR**
VICINITY MAP N.T.S



DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "BR01602" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 49,564,6362(ft) EASTING: 2,137,080.5314(ft) ELEVATION: 24.235(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0001574709
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BR01602" TO -L- STATION 10+00.00 IS S 15-51°00.76" E 550.21(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

LOCATION AND SURVEYS UNIT
DIVISION 3
5310 BARBADOS BLVD., SUITE 102
CASTLE HAYNE, N.C. 28429

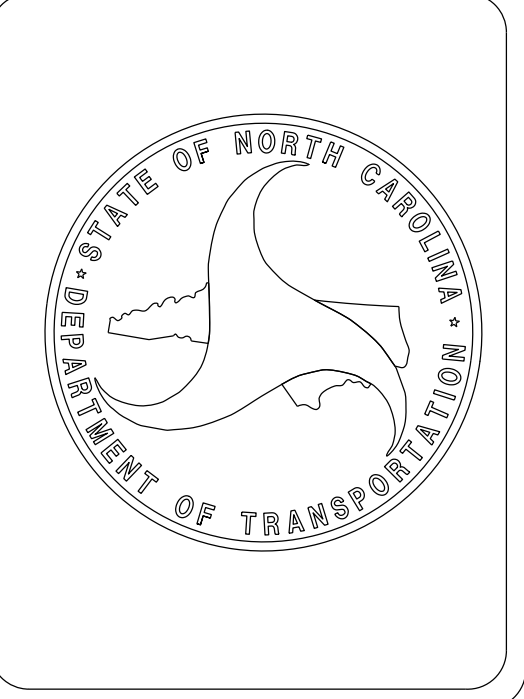
2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 17, 2022

LETTING DATE:
MAY 16, 2023

PROFESSIONAL LAND SURVEYOR

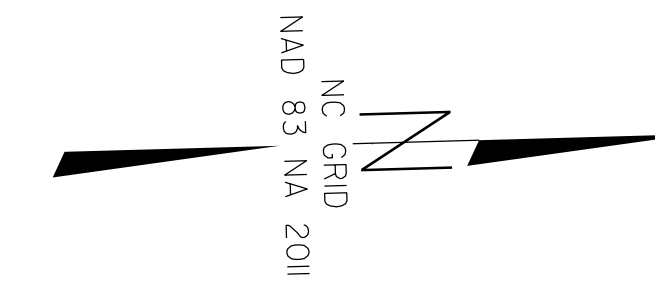
DocuSigned by:
Christopher J. Sumner 02/22/2023
SIGNATURE: _____ Date: _____




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midval AT LS-328725L

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

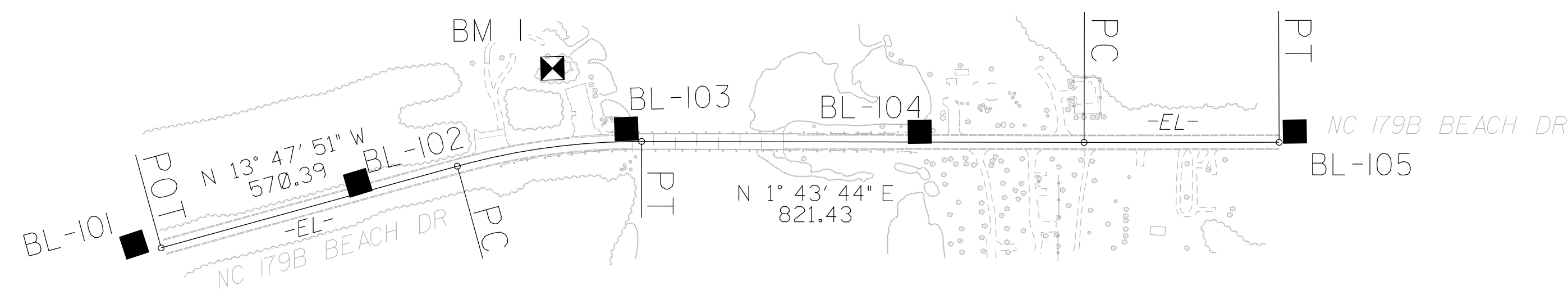


PROJECT REFERENCE NO. BR-0160	SHEET NO. RW02C-1
Location and Surveys	
LOCATION AND SURVEYS DIVISION 3 5310 BARBADOS BLVD., SUITE 102 CASTLE HAYNE, N.C., 28429	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

BR0160-1



BR0160-2

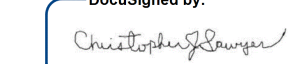


I, CHRISTOPHER J. SAWYER, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
 Type of GPS field procedure: RTN
 Dates of survey: MARCH 15, 2019
 Datum/Epoch: NAD 83/NA 2011
 Published/Fixed-control use: N/A to RTN
 Localized around: BR0160-2
 Northing: 49564.6362
 Easting: 2137080.5314
 Combined grid factor: 1.0001574709
 Geoid model: G12BNC
 Units: US SURVEY FEET

I also certify that the Baseline Control for this project was verified 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 February 23, 2022, 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 17th day of February, 2023.


 CHRISTOPHER J. SAWYER
 Professional Land Surveyor L-4526

BL	POINT	DESC.	NORTH	EAST	ELEVATION
	BR0160-1	GPS CAP AND REBAR	49348.6672	2135906.3343	23.13
	BR0160-2	GPS CAP AND REBAR	49564.6362	2137080.5314	24.23
	BL-101	TRV CAP AND REBAR	50044.0640	2136922.5370	22.97
	BL-102	TRV CAP AND REBAR	50462.2180	2136819.6790	17.58
	BL-103	TRV CAP AND REBAR	50963.1850	2136733.9180	7.40
	BL-104	TRV CAP AND REBAR	51507.5110	2136754.3640	8.86
	BL-105	TRV CAP AND REBAR	52203.9090	2136773.5670	20.38


 BM1 ELEVATION = 11.88
 N 50829 E 2136618
 BL STATION 30+25.00 137 LEFT
 RRS IN 21" OAK

EL	POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
	POT	50093.926	2136930.257							
	LINE			N 13°47'51.3" W	570.39					
	PC	50647.852	2136794.224							
	CURVE			N 06°02'03.9" W	345.18	15°31'34.9"(RT)	04°29'03.5"	346.24	174.19	1277.69
	PT	50991.118	2136757.937							
	LINE			N 01°43'43.6" E	821.43					
	PC	51812.176	2136782.718							
	CURVE			N 01°33'09.4" E	362.07	00°21'08.4"(LT)	00°05'50.3"	362.08	181.04	58879.33
	PT	52174.118	2136792.528							

NOTES:

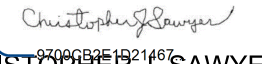
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. BR-0160	SHEET NO. RW02D-1
Location and Surveys	
LOCATION AND SURVEYS UNIT DIVISION 3 5310 BARBADOS BLVD., SUITE 102 CASTLE HAYNE, N.C., 28429	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, CHRISTOPHER J. SAWYER, 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 17th day of Februar, 2023.


 CHRISTOPHER J. SAWYER
 Professional Land Surveyor L-4526

REVISIONS

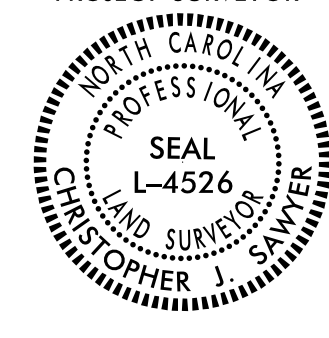
22\FEB-2023\0372\Projects\BRIDGE\BR-unswick\BR-0160_0015\Working\Control Sheets\BR0160.LS.RW02D-1.230215.dgn
 m.jduval

TYPE	STATION	NORTH	EAST
POT	10+00.00	50093.9256	2136930.2565
PC	16+16.07	50692.2152	2136783.3292
PT	18+41.80	50916.0095	2136759.6716
PC	24+96.83	51570.7385	2136779.4325
PRC	26+90.22	51764.0935	2136783.1896
PRC	28+64.35	51938.1871	2136786.3859
PT	31+00.36	52174.1180	2136792.5280

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. BR-0160	SHEET NO. RW03E-1
Location and Surveys	
LOCATION AND SURVEYS UNIT DIVISION 3 5310 BARBADOS BLVD., SUITE 102 CASTLE NAYNE, N.C., 28429	
PROJECT SURVEYOR 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+50.00	-50.00	50324.7870	2136822.0762
L	12+50.00	-30.00	50329.5569	2136841.4990
L	13+00.00	47.00	50396.4780	2136904.3525
L	13+00.00	30.00	50392.4236	2136887.8431
L	16+16.07	-50.00	50680.2906	2136734.7720
L	16+16.07	47.00	50703.4243	2136828.9730
L	18+41.80	47.00	50914.5936	2136806.6503
L	18+41.80	55.00	50914.3523	2136814.6466
L	18+41.80	-50.00	50917.5199	2136709.6944
L	18+41.80	-65.00	50917.9725	2136694.7012
L	19+15.00	55.00	50987.5190	2136816.8549
L	19+15.00	26.00	50988.3939	2136787.8681
L	19+15.00	-34.00	50990.2039	2136727.8954
L	19+15.00	-65.00	50991.1392	2136696.9095
L	24+30.00	55.00	51502.2846	2136832.3915
L	24+30.00	25.66	51503.1696	2136803.0675
L	24+35.00	-34.22	51509.9739	2136743.3621
L	24+35.00	-65.00	51510.9025	2136712.5969
L	24+70.00	-65.00	51545.8865	2136713.6528
L	24+96.83	55.00	51569.0793	2136834.4075
L	24+96.83	50.00	51569.2301	2136829.4097
L	25+50.00	41.00	51622.8989	2136821.8676
L	26+00.00	-47.00	51674.7613	2136734.9621
L	26+90.00	-47.00	51764.2824	2136736.1895
L	26+90.22	41.00	51763.7374	2136824.1880
L	28+64.35	41.00	51937.0379	2136827.3698
L	28+64.35	-47.00	51939.5044	2136739.4044
L	29+50.00	41.00	52022.7197	2136829.7099
L	29+50.00	29.75	52023.0186	2136818.4652
L	29+50.00	-47.00	52025.0589	2136741.7410
L	29+50.00	-30.25	52024.6130	2136758.4864

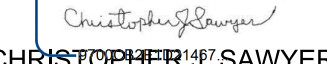
DRILLED HOLE IN CONCRETE

PK IN BULKHEAD
 NOT SET UNDERWATER
 NOT SET UNDERWATER
 NOT SET UNDERWATER

BRIDGE SPIKE IN GRAVEL DRIVE

BRIDGE SPIKE IN GRAVEL DRIVE

I, CHRISTOPHER J. SAWYER, 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 February 24, 2022, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This is the 17th day of February, 2023.

CHRISTOPHER J. SAWYER
 Professional Land Surveyor L-4526

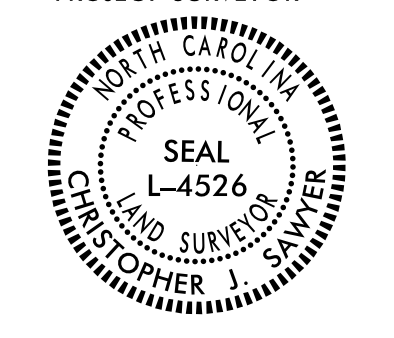
REVISIONS

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 m.jduval

NOTES:

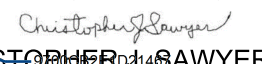
1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED FEBRUARY 24, 2022.

PERMANENT EASEMENT CONTROL SHEET

PROJECT REFERENCE NO. BR-0160	SHEET NO. RW03E-2
Location and Surveys	
LOCATION AND SURVEYS UNIT DIVISION 3 5310 BARBADOS BLVD., SUITE 102 CASTLE HAYNE, N.C. 28429	
PROJECT SURVEYOR	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, CHRISTOPHER J. SAWYER, 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 February 24, 2022, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 17th day of February, 2023.


CHRISTOPHER J. SAWYER
 Professional Land Surveyor L-4526

ROW MARKER PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	10+11.00	40.00	50114.1479	2136966.4787
L	10+11.00	30.00	50111.7629	2136956.7674
L	12+40.00	55.00	50340.1173	2136926.4312
L	16+16.07	55.00	50705.3323	2136836.7422
L	17+68.00	-50.00	50839.3237	2136710.7988
L	17+68.00	-65.00	50838.4479	2136695.8244
L	27+80.00	-60.00	51854.9839	2136724.4275
L	27+80.00	-47.00	51854.7414	2136737.4252
L	28+15.00	63.00	51887.4365	2136848.1221
L	28+15.00	41.00	51887.9325	2136826.1277
L	28+64.35	-60.00	51939.8687	2136726.4095
L	30+25.00	-60.00	52100.3020	2136730.6889
L	30+25.00	-30.22	52099.5486	2136760.4567


X ON TOP OF TRANSFORMER

REVISIONS

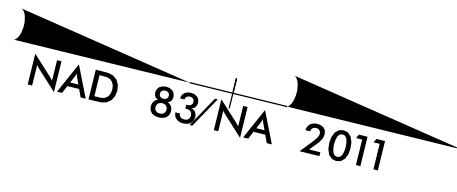
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 m.jduval

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 FEBRUARY 24, 2022.

PROJECT REFERENCE NO.	SHEET NO.
BR-0160	RW04
Location and Surveys	
LOCATION AND SURVEYS UNIT DIVISION 3 5310 BARBADOS BLVD., SUITE 102 CASTLE HAYNE, N.C., 28429	
PROJECT SURVEYOR 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

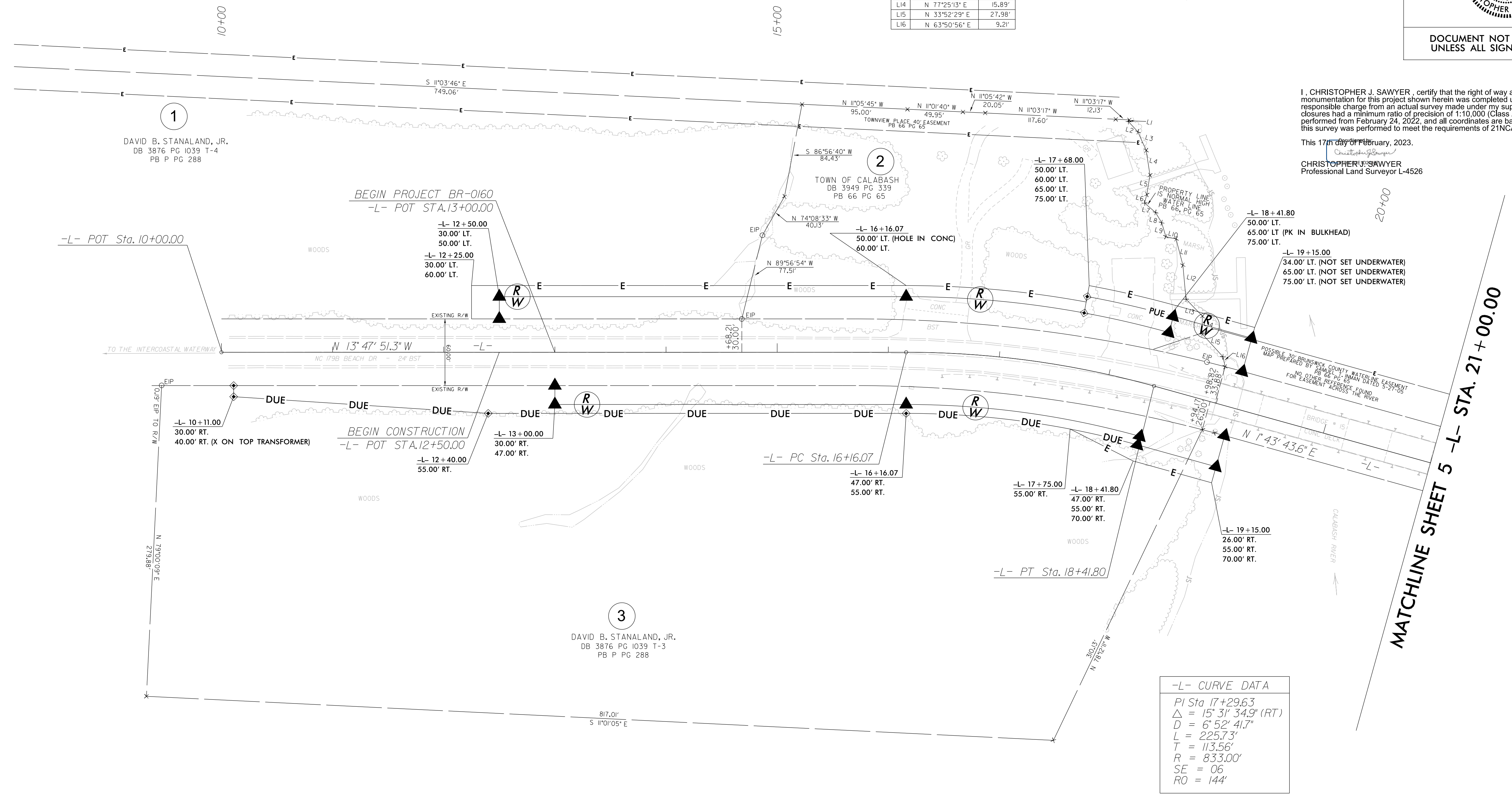
L1	S 79°37'22" E	1.67'
L2	N 33°34'11" E	12.49'
L3	N 52°08'50" E	18.35'
L4	N 67°27'50" E	22.46'
L5	N 85°30'22" E	17.69'
L6	S 89°16'53" E	7.93'
L7	N 26°59'09" E	12.92'
L8	N 44°46'25" E	10.75'
L9	N 59°41'04" E	13.15'
L10	S 01°04'47" E	9.40'
L11	N 61°32'28" E	24.38'
L12	N 71°01'20" E	30.69'
L13	N 32°07'20" E	21.21'
L14	N 77°25'13" E	15.89'
L15	N 33°52'29" E	27.98'
L16	N 63°50'56" E	9.21'



I, CHRISTOPHER J. SAWYER, 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 February 24, 2022, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 17th day of February, 2023.

Christopher J. Sawyer
 CHRISTOPHER J. SAWYER
 Professional Land Surveyor L-4526



-L- CURVE DATA

PI Sta.	17+29.63
Δ	15° 31' 34.9" (RT)
D	6' 52" 41.7"
L	225.73'
T	113.56'
R	833.00'
SE	= 06
RO	= 144'

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 FEBRUARY 24, 2022.

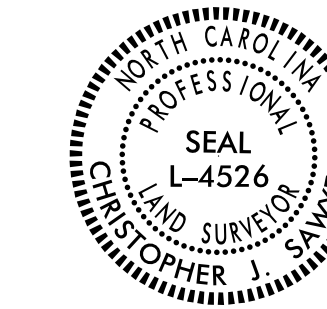
REVISIONS

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 m.jduval

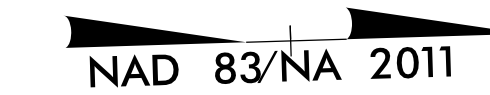
Location and Surveys

LOCATION AND SURVEYS UNIT
DIVISION 3
5310 BARBADOS BLVD., SUITE 102
CASTLE HAYNE, N.C. 28429

PROJECT SURVEYOR



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



L17	N 89° 24' 55" E	23.27'
L18	S 65° 21' 19" E	12.58'
L19	S 64° 26' 18" E	27.08'

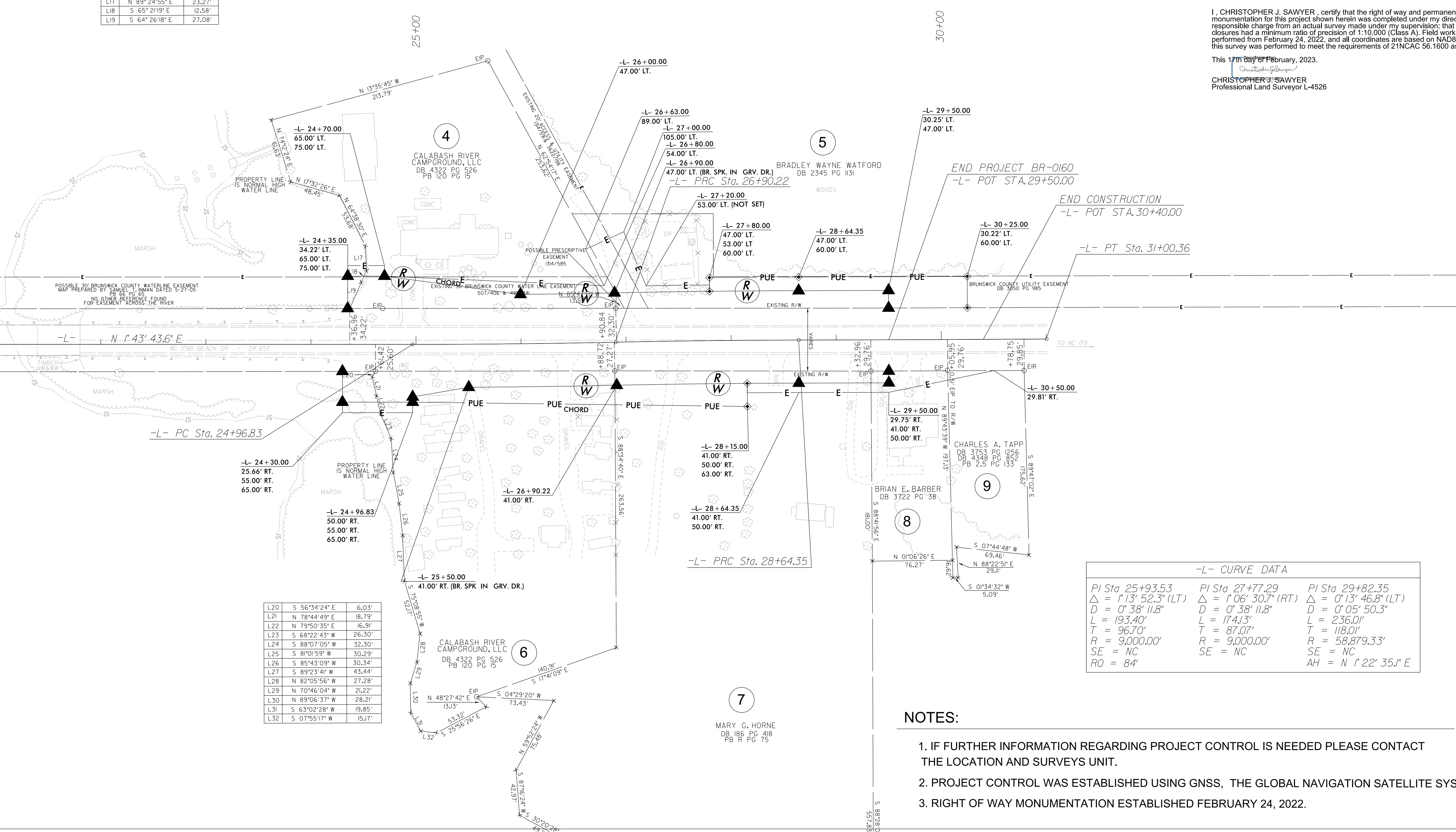
I, CHRISTOPHER J. SAWYER, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from February 24, 2022, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 17th day of February, 2023.

CHRISTOPHER J. SAWYER
Professional Land Surveyor L-4526

REVISIONS

MATCHLINE SHEET 4 -L- STA. 21+00.00



L20	S 56°34'24" E	6.03'
L21	N 78°44'49" E	18.79'
L22	N 79°50'35" E	16.91'
L23	S 68°22'43" W	26.30'
L24	S 88°07'05" W	32.30'
L25	S 81°01'59" W	30.29'
L26	S 85°43'09" W	30.34'
L27	S 89°23'41" W	43.44'
L28	S 82°05'56" W	27.28'
L29	N 70°46'04" W	21.22'
L30	N 89°06'37" W	28.21'
L31	S 63°02'28" W	19.85'
L32	S 07°55'17" W	15.17'

-L- CURVE DATA		
PI Sta 25+93.53	PI Sta 27+77.29	PI Sta 29+82.35
$\Delta = 1^{\circ}13'52.3"$ (LT)	$\Delta = 1^{\circ}06'30.7"$ (RT)	$\Delta = 0^{\circ}13'46.8"$ (LT)
$D = 0^{\circ}38'11.8"$	$D = 0^{\circ}38'11.8"$	$D = 0^{\circ}05'50.3"$
$L = 193.40'$	$L = 174.13'$	$L = 236.01'$
$T = 96.70'$	$T = 87.07'$	$T = 118.01'$
$R = 9,000.00'$	$R = 9,000.00'$	$R = 58,879.33'$
$SE = NC$	$SE = NC$	$SE = NC$
$RO = 84'$		$AH = N 1^{\circ}22'35.1" E$

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 FEBRUARY 24, 2022.

22-FEB-2023 10:40:00
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 m.jduval