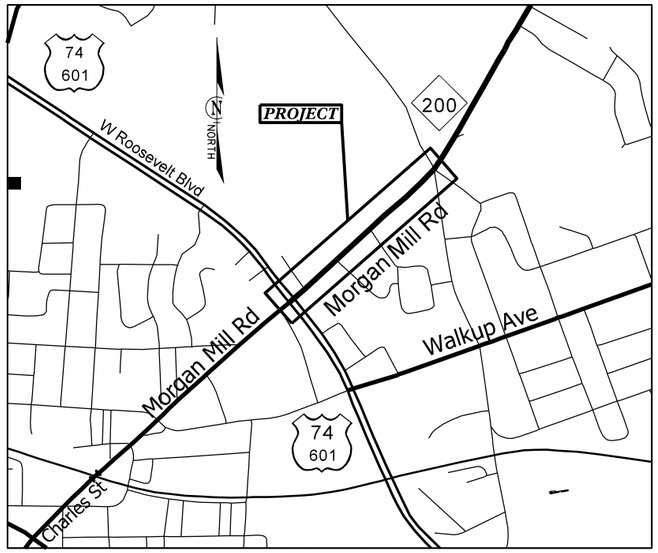
TIP: SM-5710G

PROJECT: 49920

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	49920	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
47907.1.1		P.E.
47907.2.1		R/W
49920		CONST.

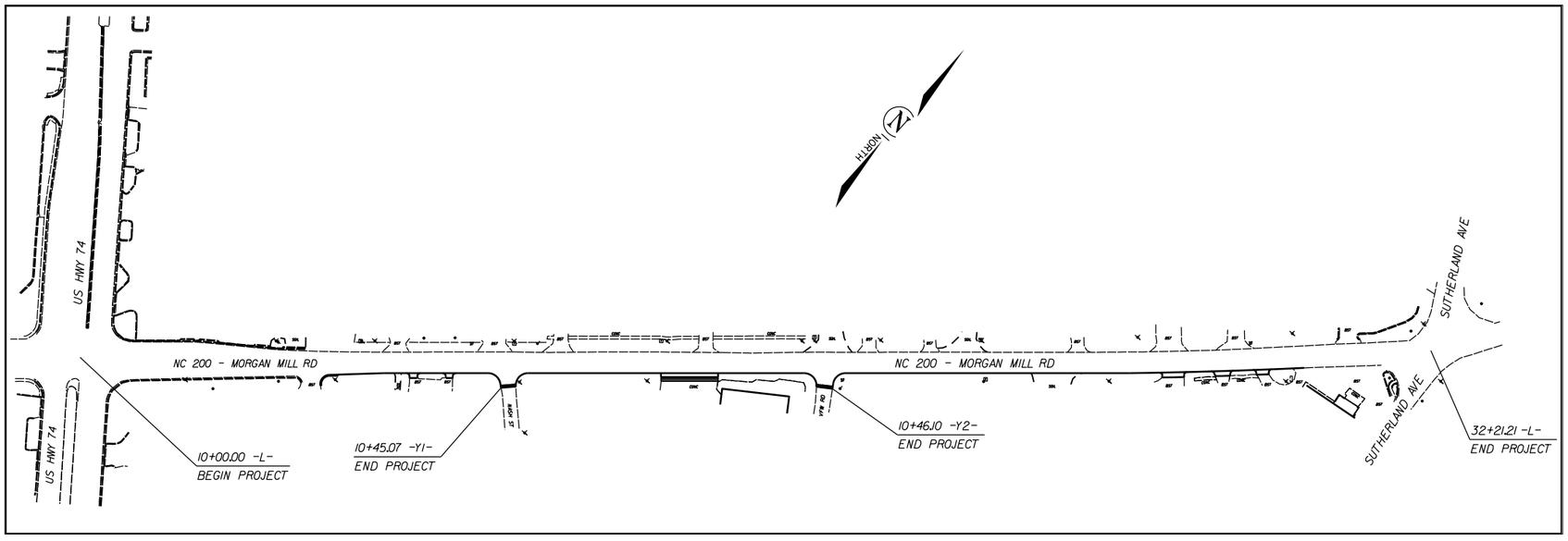
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
UNION COUNTY



VICINITY MAP NOT TO SCALE

LOCATION: *NC 200 (MORGAN MILL RD.) FROM US 74 TO SUTHERLAND AVE.*

TYPE OF WORK: *GRADING, PAVING, DRAINAGE, AND THERMOPLASTIC PAVEMENT MARKINGS, AND SIGNALS*



CLEARING ON THIS PROJECT SHALL BE TO THE LIMITS ESTABLISHED BY METHOD III AS DESCRIBED IN THE NCDOT STANDARD DRAWINGS

GRAPHIC SCALES

PLANS: 0 50 100

PROFILE (HORIZONTAL): 0 50 100

PROFILE (VERTICAL): 0 5 10

DESIGN DATA

ADT =

ADT =

DHV = %

D = %

T = %

V = MPH

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 47909.3.1 = 0.42 MILES

TOTAL LENGTH OF STATE PROJECT 47907.3.1 = 0.42 MILES

Prepared In the Office of:

DIVISION OF HIGHWAYS

DIVISION TEN

DIVISION DESIGN / CONSTRUCT UNIT

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 20, 2022

LETTING DATE:
SEPTEMBER 7, 2022

DONALD HARWARD
PROJECT ENGINEER

TRAVIS LOWDER
PROJECT DESIGN ENGINEER

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034357 ENGINEER MICHAEL EMERSON

DocuSigned by:

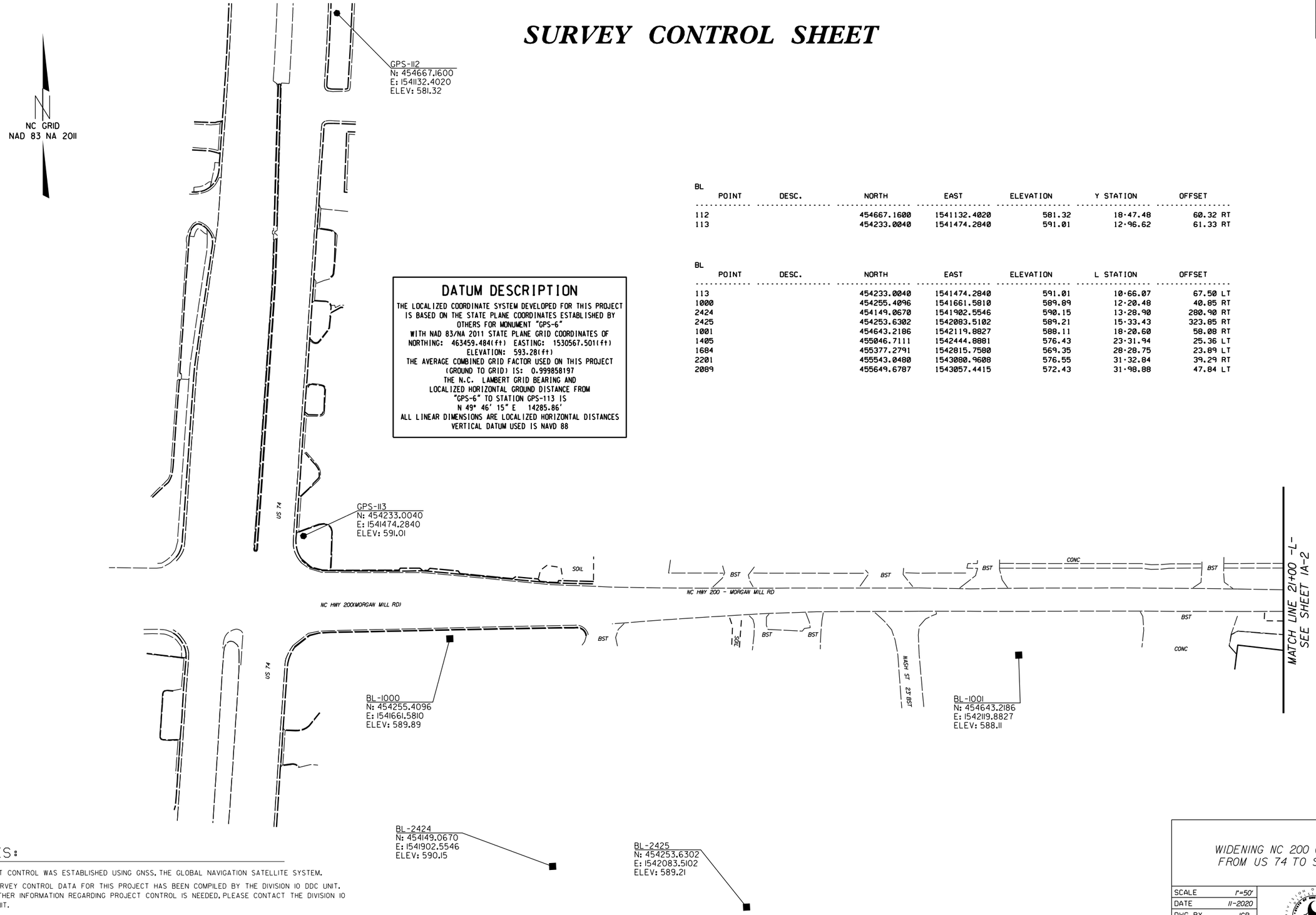
A92E75CC0FFB43B...

SIGNATURE

08-JUL-2022 09:52
S:\DOC\ROY\Union\SM-5710G US 74_NC 200\ts
$$$$USERNAME$$$$

PROJECT NO.	SHEET NO.
49920	IA-1
F.A. PROJECT NO.	

SURVEY CONTROL SHEET



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "GPS-6"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 463459.484(ft) EASTING: 1530567.501(ft)
ELEVATION: 593.28(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999858197
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-6" TO STATION GPS-113 IS
N 49° 46' 15" E 14285.86'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BL

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
112		454667.1600	1541132.4020	581.32	18+47.48	60.32 RT
113		454233.0040	1541474.2840	591.01	12+96.62	61.33 RT

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
113		454233.0040	1541474.2840	591.01	10+66.07	67.50 LT
1000		454255.4096	1541661.5810	589.89	12+20.48	40.85 RT
2424		454149.0670	1541902.5546	590.15	13+28.90	280.90 RT
2425		454253.6302	1542083.5102	589.21	15+33.43	323.85 RT
1001		454643.2186	1542119.8827	588.11	18+20.60	58.08 RT
1405		455046.7111	1542444.8881	576.43	23+31.94	25.36 LT
1684		455377.2791	1542815.7580	569.35	28+28.75	23.89 LT
2201		455543.0480	1543080.9608	576.55	31+32.84	39.29 RT
2089		455649.6787	1543057.4415	572.43	31+98.88	47.84 LT

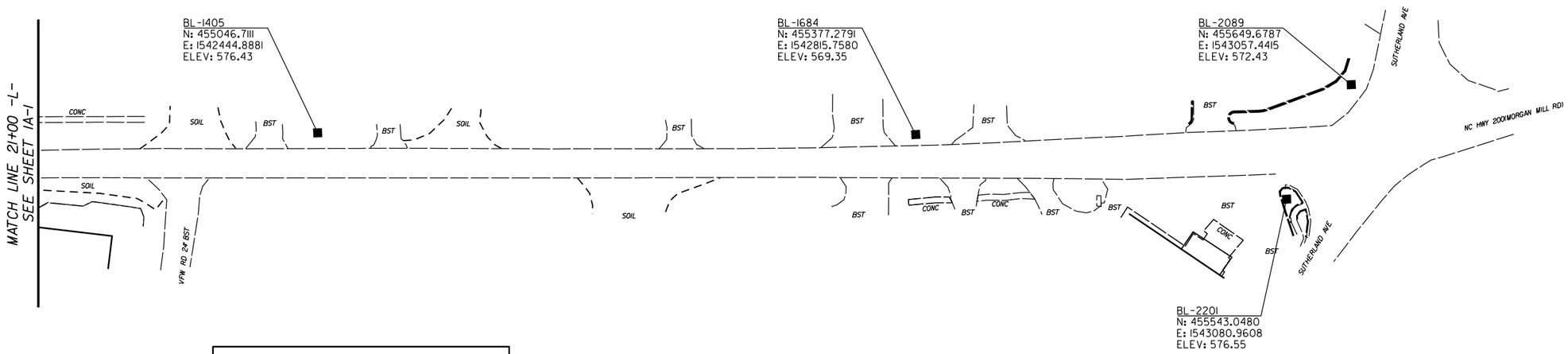
NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED BY THE DIVISION 10 DDC UNIT. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE DIVISION 10 DDC UNIT.

WIDENING NC 200 (MORGAN MILL RD.)
FROM US 74 TO SUTHERLAND AVE.

		REVISIONS	
SCALE	1"=50'		
DATE	11-2020		
DWG. BY	JCB		
DESIGN BY	TBL		
APPROVED	JDH		

PROJECT NO.	SHEET NO.
49920	IA-2
F.A. PROJECT NO.	



DATUM DESCRIPTION

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N 49° 46' 15" E 14285.86'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BL

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
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113		454233.0040	1541474.2840	591.01	12+96.62	61.33 RT

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
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1000		454255.4096	1541661.5810	589.89	12+20.48	40.85 RT
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2425		454253.6302	1542083.5102	589.21	15+33.43	323.85 RT
1001		454643.2186	1542119.8827	588.11	18+20.60	58.08 RT
1405		455046.7111	1542444.8881	576.43	23+31.94	25.36 LT
1684		455377.2791	1542815.7580	569.35	28+28.75	23.89 LT
2201		455543.0480	1543080.9608	576.55	31+32.84	39.29 RT
2089		455649.6787	1543057.4415	572.43	31+98.88	47.84 LT

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED BY THE DIVISION 10 DDC UNIT. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE DIVISION 10 DDC UNIT.

WIDENING NC 200 (MORGAN MILL RD.)
FROM US 74 TO SUTHERLAND AVE.

		REVISIONS	
SCALE	1"=50'		
DATE	11-2020		
DWG. BY	JCB		
DESIGN BY	TBL		
APPROVED	JDH		

PROJECT NO.	SHEET NO.
49920	1B
F.A. PROJECT NO.	

RIGHT OF WAY, EASEMENT AND PROPOSED ALIGNMENT SHEET

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	454138.6348	1541470.1555
PC	29+65.68	455450.9128	1542933.6592
PT	33+51.54	455742.4223	1543184.8319
POT	34+24.30	455803.1760	1543224.8609

Y

TYPE	STATION	NORTH	EAST
POT	10+00.00	453961.4645	1541608.4984
PC	17+63.32	454563.0977	1541138.7148
PT	27+00.16	455195.5898	1540453.2093
POT	34+63.21	455615.3855	1539816.0160

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	454605.7853	1541991.1400
POT	11+26.86	454518.4437	1542083.1475

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	454955.8305	1542381.5240
POT	11+02.43	454872.2478	1542440.7282

Y3

TYPE	STATION	NORTH	EAST
POT	10+00.00	455725.9397	1543056.7073
POT	11+03.05	455636.8402	1543108.4904
POT	12+14.16	455527.9067	1543130.3611

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	14+12.24	33.00	454389.2749	1541799.1104
L	15+40.00	30.00	454476.7994	1541892.2274
L	15+40.00	33.00	454474.5658	1541894.2302
L	16+32.00	35.00	454534.4954	1541964.0618
L	16+32.00	30.00	454538.2180	1541960.7238
L	16+75.00	35.00	454563.2019	1541996.0764
L	17+60.00	35.00	454619.9473	1542059.3611
L	21+70.00	35.00	454893.6606	1542364.6168
L	22+50.00	35.00	454947.0680	1542424.1789
L	29+65.68	35.00	455424.8512	1542957.0214
L	29+65.68	30.38	455428.2915	1542953.9366

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	10+50.00	-24.36	454589.0288	1542044.1742
Y1	10+50.00	14.60	454560.7753	1542017.3535

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	10+60.00	-15.00	454915.5392	1542428.4453
Y2	10+60.00	16.67	454897.2314	1542402.5989

PERMANENT DRAINAGE EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	16+15.00	30.00	454526.8720	1541948.0699
L	16+15.00	46.00	454514.9565	1541958.7542
L	16+24.00	46.00	454520.9665	1541965.4508
L	19+55.00	-30.00	454798.5225	1542161.1502
L	19+55.00	-55.00	454817.1357	1542144.4606
L	19+82.00	-30.00	454816.5475	1542181.2524
L	19+82.00	-55.00	454835.1606	1542164.5627
L	23+90.00	40.00	455036.8085	1542531.7505
L	23+94.00	35.00	455043.2015	1542531.3907
L	24+08.00	52.00	455039.8908	1542553.1631
L	24+18.00	35.00	455059.2237	1542549.2593

I, Barry D. Davis, a Professional Land Surveyor in the sate of North Carolina hereby certify to the best of my knowledge and belief that the following work item, R/W and Easement Staking, was performed under my responsible charge meeting NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures as of 2017. Those standards can be found at https://connect.ncdot.gov/resources/Location/Pages/.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from survey control established under my supervision; that the depicted property data shown herein were surveyed under my supervision; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (see deeds for final determination)

Witness my signature, registration number and seal this 13th day of JUNE 2022

Barry D. Davis, Professional Land Surveyor

DocuSigned by: Barry Davis 0E2AAE4F48174DC...

PLS# L-4384

NORTH CAROLINA PROFESSIONAL SEAL L-4384 LAND SURVEYOR BARRY D. DAVIS

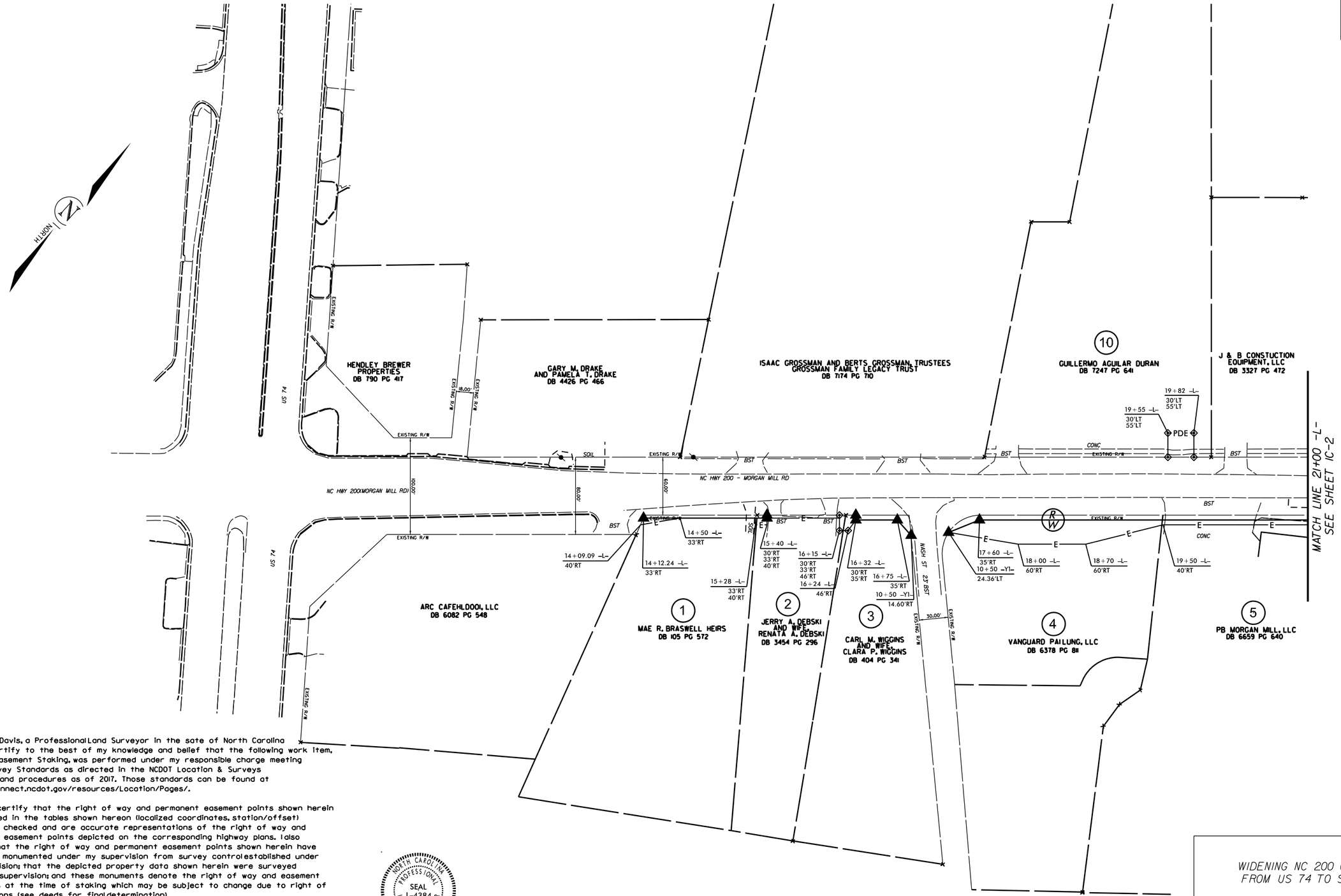
NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED BY THE DIVISION 10 DDC UNIT. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE DIVISION 10 DDC UNIT.

WIDENING NC 200 (MORGAN MILL RD.) FROM US 74 TO SUTHERLAND AVE.

			REVISIONS	
SCALE	N/A			
DATE	5-2022			
DWG. BY	JCB			
DESIGN BY	TBL			
APPROVED	JDH			

PROJECT NO.	SHEET NO.
49920	IC-1
F.A. PROJECT NO.	



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Witness my signature, registration number and seal this 13th day of JUNE 2022

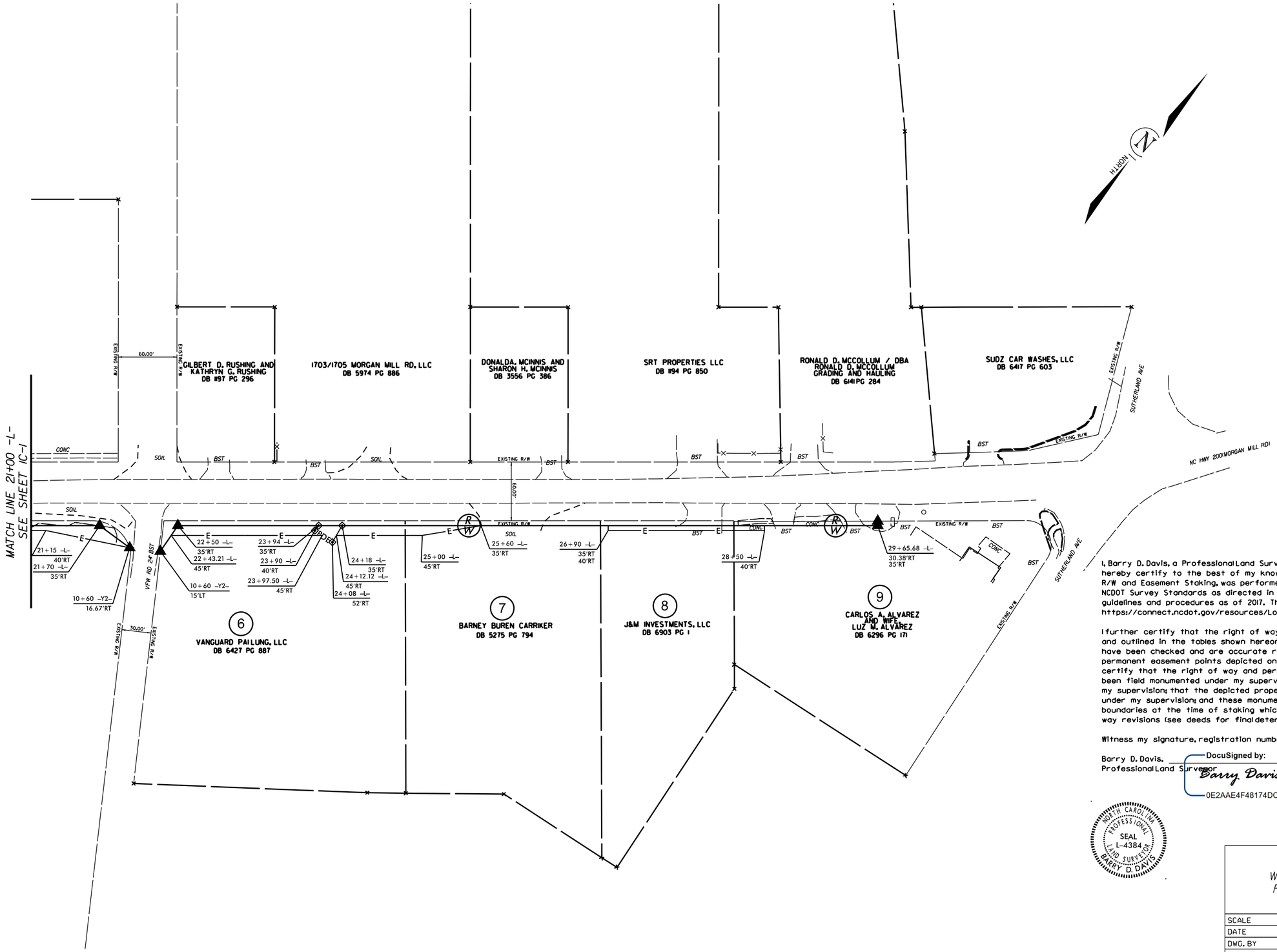
Barry D. Davis, Professional Land Surveyor DocuSigned by: Barry Davis 0E2AAE4F48174DC... PLS# L-4384

NORTH CAROLINA PROFESSIONAL SEAL L-4384 LAND SURVEYOR BARRY D. DAVIS

WIDENING NC 200 (MORGAN MILL RD.)
FROM US 74 TO SUTHERLAND AVE.

		REVISIONS	
SCALE	1"=50'		
DATE	3-2020		
DWG. BY	TBL		
DESIGN BY	TBL		
APPROVED	JDH		

PROJECT NO.	SHEET NO.
49920	IC-2
F.A. PROJECT NO.	



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DocuSigned by: Barry Davis 0E2AAE4F48174DC...

PLS# L-4384

NORTH CAROLINA PROFESSIONAL SEAL L-4384 LAND SURVEYOR BARRY D. DAVIS

WIDENING NC 200 (MORGAN MILL RD.) FROM US 74 TO SUTHERLAND AVE.

			REVISIONS	
SCALE	1"=50'	DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
DATE	11-2020			
DWG. BY	JCB			
DESIGN BY	TBL			
APPROVED	JDH			

PROJECT NO.	SHEET NO.
49920	2
F.A. PROJECT NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034357 ENGINEER

DocuSigned by: HAEL

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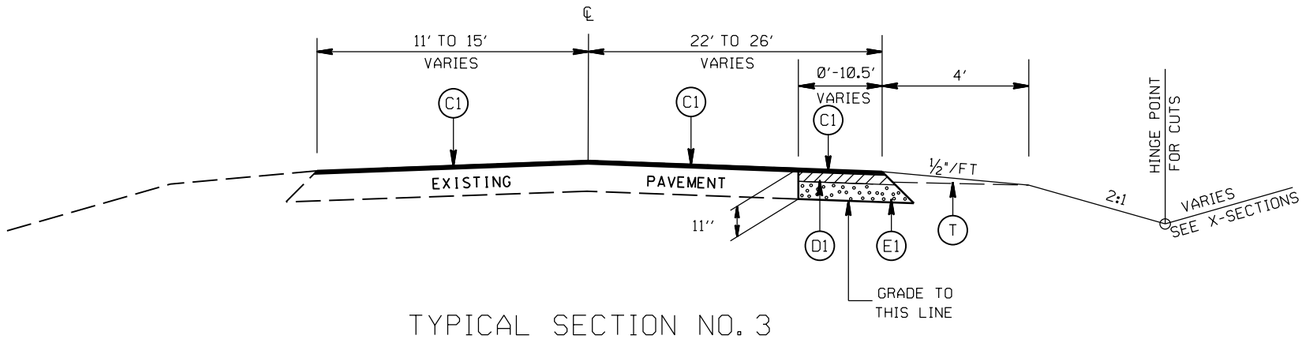
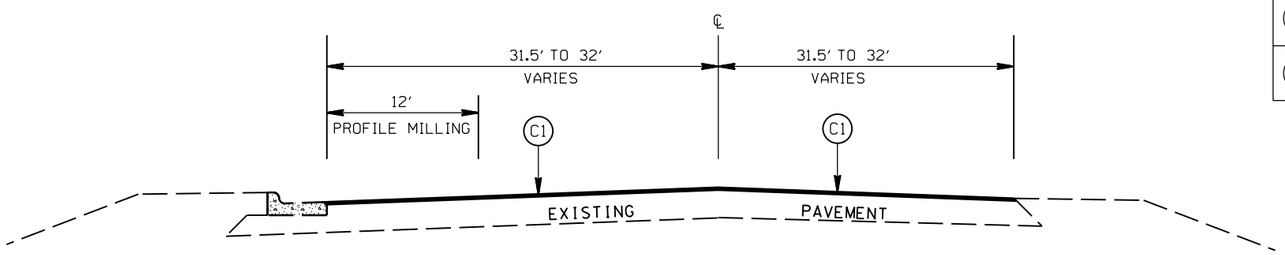
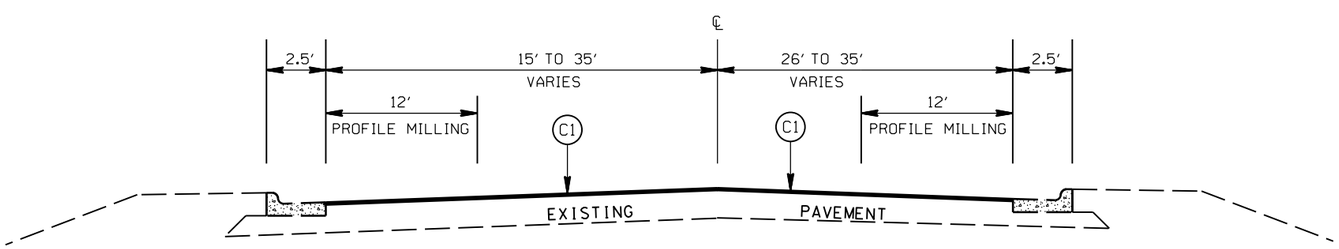


TYPICAL SECTION NO. 3
STA. 13+66.70 TO 30+04.86 -L-



TYPICAL SECTION NO. 2
STA. 13+53.00 TO 13+66.70 -L-



TYPICAL SECTION NO. 1
STA. 10+51.51 TO 13+53.00 -L-

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D1	PROP. APPROX. 4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 5½" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
T	EARTH MATERIAL

WIDENING NC 200 (MORGAN MILL RD.)
FROM US 74 TO SUTHERLAND AVE.

		REVISIONS	
SCALE	N/A		
DATE	6-2022		
DWG. BY	JCB		
DESIGN BY	TBL		
APPROVED	JDH		

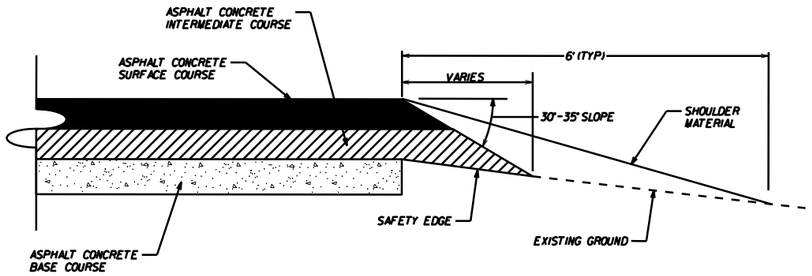
PROJECT NO.	SHEET NO.
49920	2A
F.A. PROJECT NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034357 ENGINEER

DocuSigned by: HAEL

A92E75CC0FFB43B...



SAFETY EDGE DETAIL

PAVEMENT SCHEDULE

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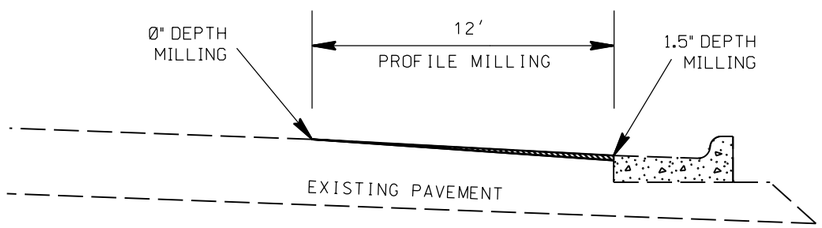
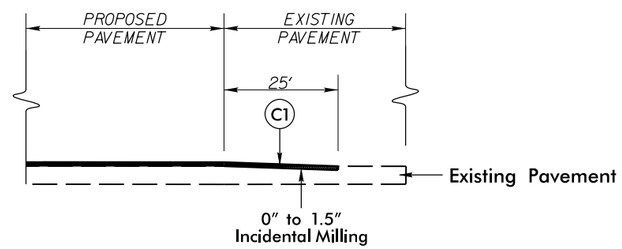
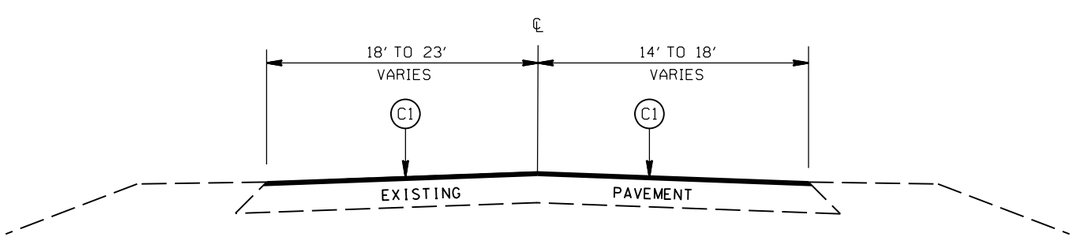
T	EARTH MATERIAL



PROFILE MILLING CURB AND GUTTER DETAIL



INCIDENTAL MILLING DETAIL
EXISTING ROAD TIE-IN
PROJECT TIE-INS



TYPICAL SECTION NO. 4
STA. 30+04.86 TO 31+57.50 -L-

WIDENING NC 200 (MORGAN MILL RD.)
FROM US 74 TO SUTHERLAND AVE.

		REVISIONS	
SCALE	N/A		
DATE	6-2022		
DWG. BY	JCB		
DESIGN BY	TBL		
APPROVED	JDH		

COMPUTED BY: TBL DATE: 1-2021
CHECKED BY: CEB DATE: 3-2021

PROJECT REFERENCE NO.	SHEET NO.
49920	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUB-REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

| STATION | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE THICKNESS OR GAUGE 12" .064 | 15" .064 | 18" .064 | 24" .064 | 36" .079 | 42" .109 | 48" .109 | R.C. PIPE (CLASS III) 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE (CLASS IV) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | *** R. C. PIPE (CLASS V) | *** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE | *** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL LF. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. PER EACH (0 THRU 5.0') | 5.0' THRU 10.0' A | 10.0' AND ABOVE B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION CATCH BASIN | DROP INLET | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME & COVER STD. 840.54 | T.B.D.I. FRAME WITH TWO GRATES STD. 840.35 | D.I. FRAME & GRATES STD. 840.29 | G.D.I. TYPE "A" STD. 840.17 | T.B.D.I. STD. 840.35 | | FLOWABLE FILL (C.Y.) | CONC. COLLARS CL. "B" C.Y. STD 840.72 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---

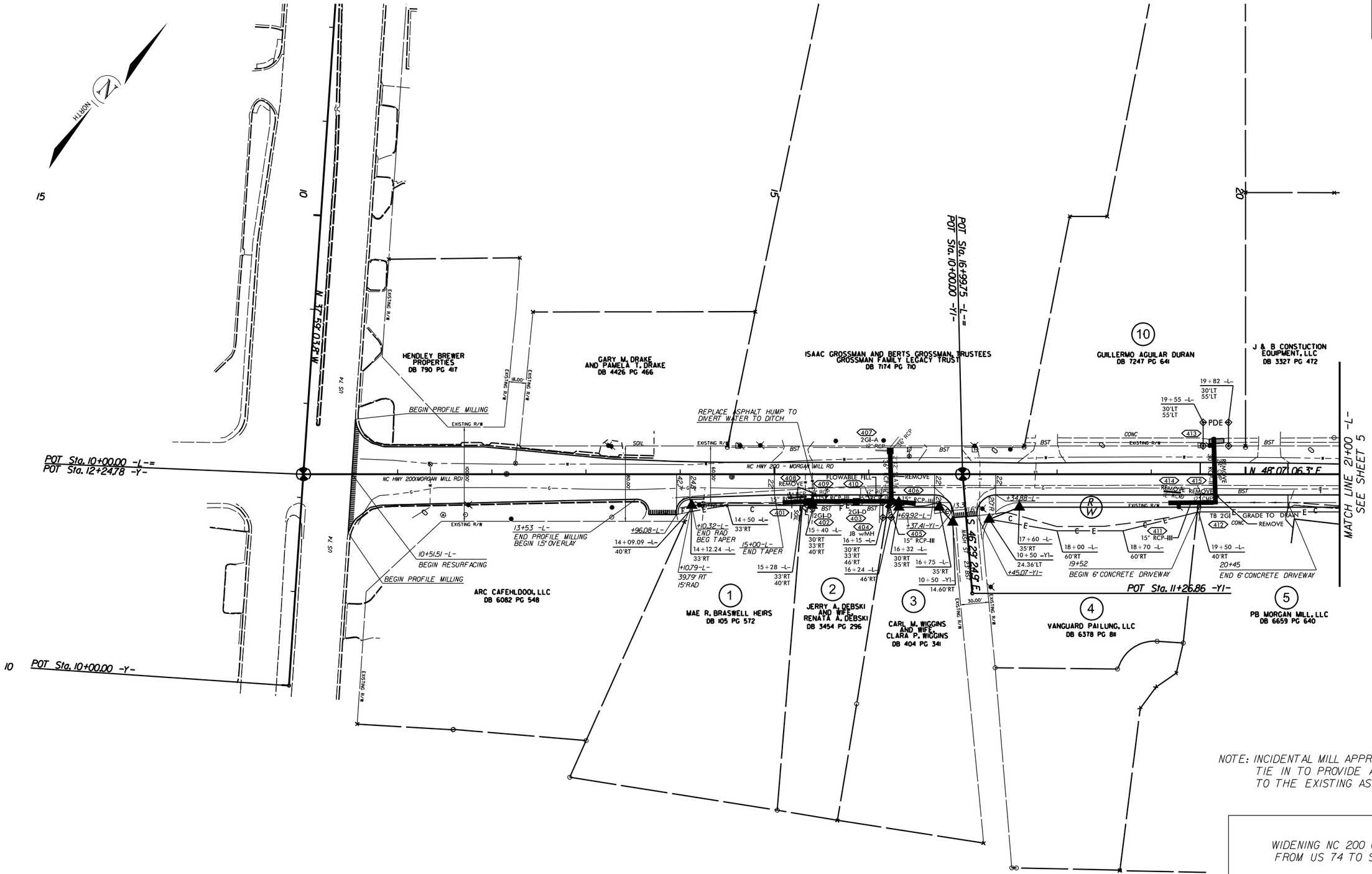
PROJECT NO.	SHEET NO.
49920	4
F.A. PROJECT NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034357 ENGINEER

DocuSigned by: MICHAEL R. SENN

A92E75CC0FFB43B...



NOTE: INCIDENTAL MILL APPROX. 25' AT EACH TIE IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING ASPHALT PAVEMENT.

WIDENING NC 200 (MORGAN MILL RD.) FROM US 74 TO SUTHERLAND AVE.

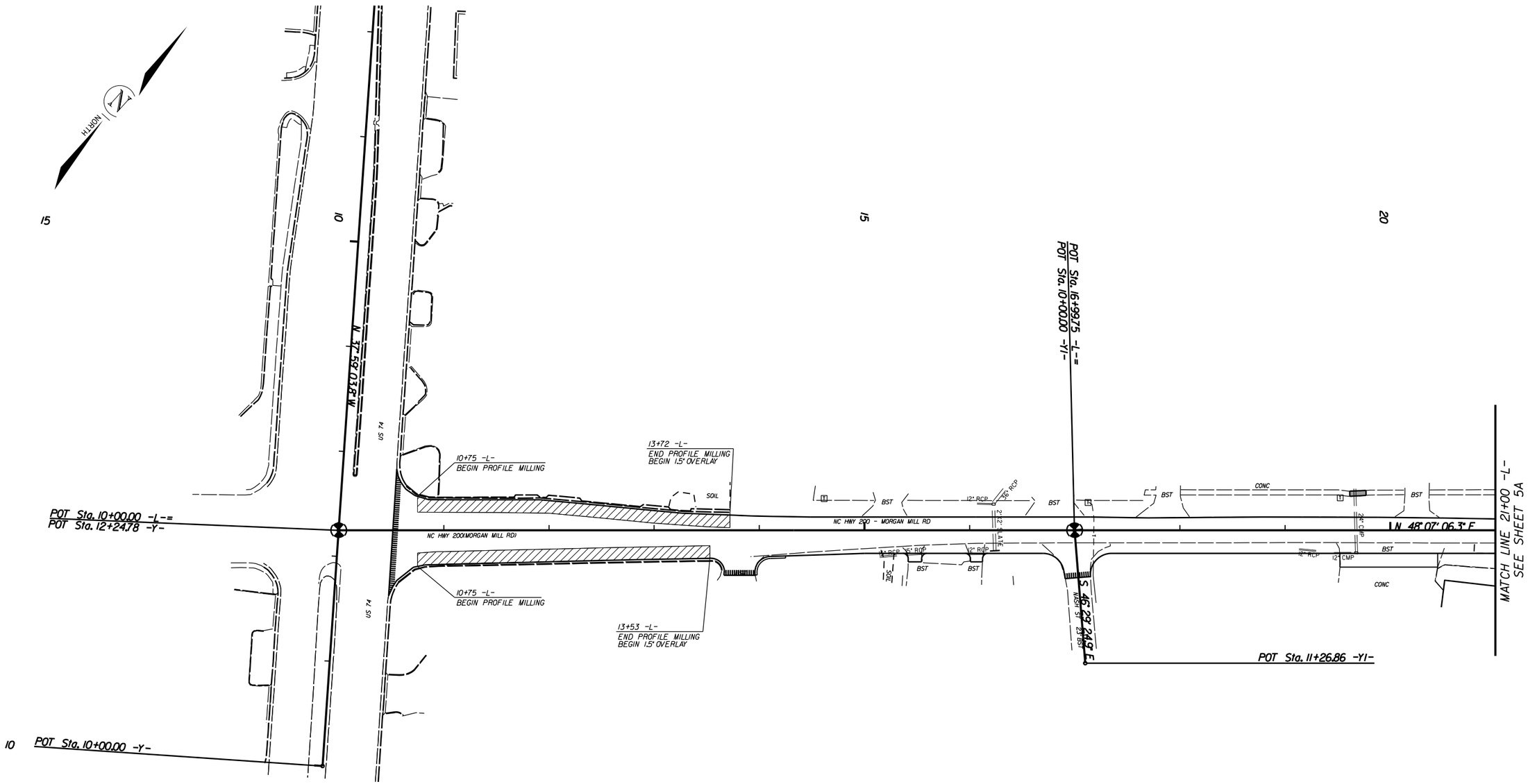
		REVISIONS	
SCALE	1"=50'		
DATE	2-2022		
DWG. BY	TBL		
DESIGN BY	TBL		
APPROVED	JDH		

PROJECT NO.	SHEET NO.
49920	4A
F.A. PROJECT NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034357 ENGINEER

DocuSigned by:
HAEL
A92E75CC0FFB43B...



WIDENING NC 200 (MORGAN MILL RD.)
FROM US 74 TO SUTHERLAND AVE.

			REVISIONS	
SCALE	1"=50'	DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA		
DATE	5-2022			
DWG. BY	JCB			
DESIGN BY	TBL			
APPROVED	JDH			

PROJECT NO.	SHEET NO.
49920	5
F.A. PROJECT NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034357 ENGINEER

DocuSigned by: HAEL

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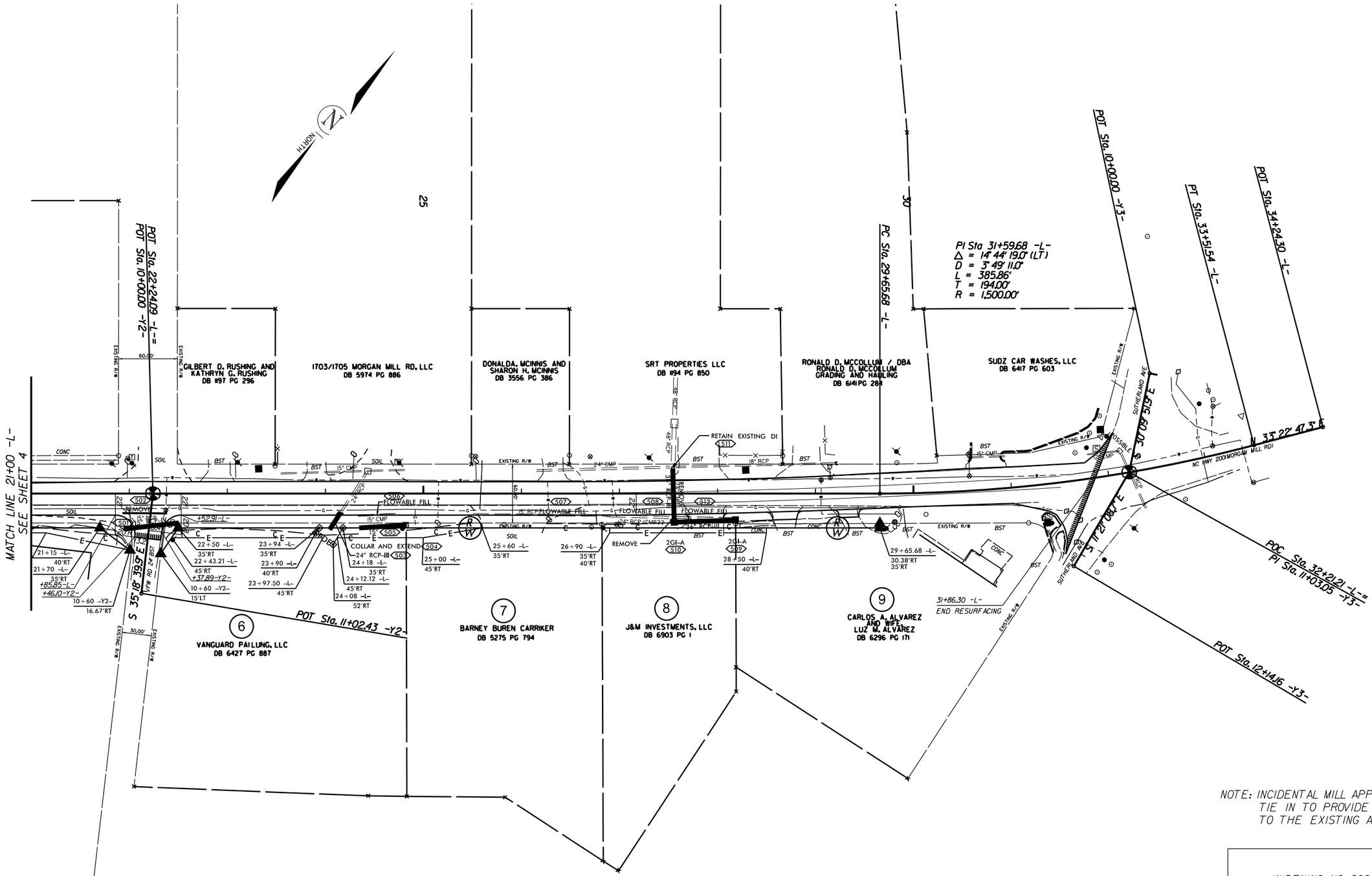

NOTE: INCIDENTAL MILL APPROX.25' AT EACH TIE IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING ASPHALT PAVEMENT.

WIDENING NC 200 (MORGAN MILL RD) FROM US 74 TO SUTHERLAND AVE.

		REVISIONS	
SCALE	1"=50'		
DATE	2-2022		
DWG. BY	TBL		
DESIGN BY	TBL		
APPROVED	JDH		

PROJECT NO.	SHEET NO.
49920	5A
F.A. PROJECT NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034357 ENGINEER

DocuSigned by:
MICHAEL
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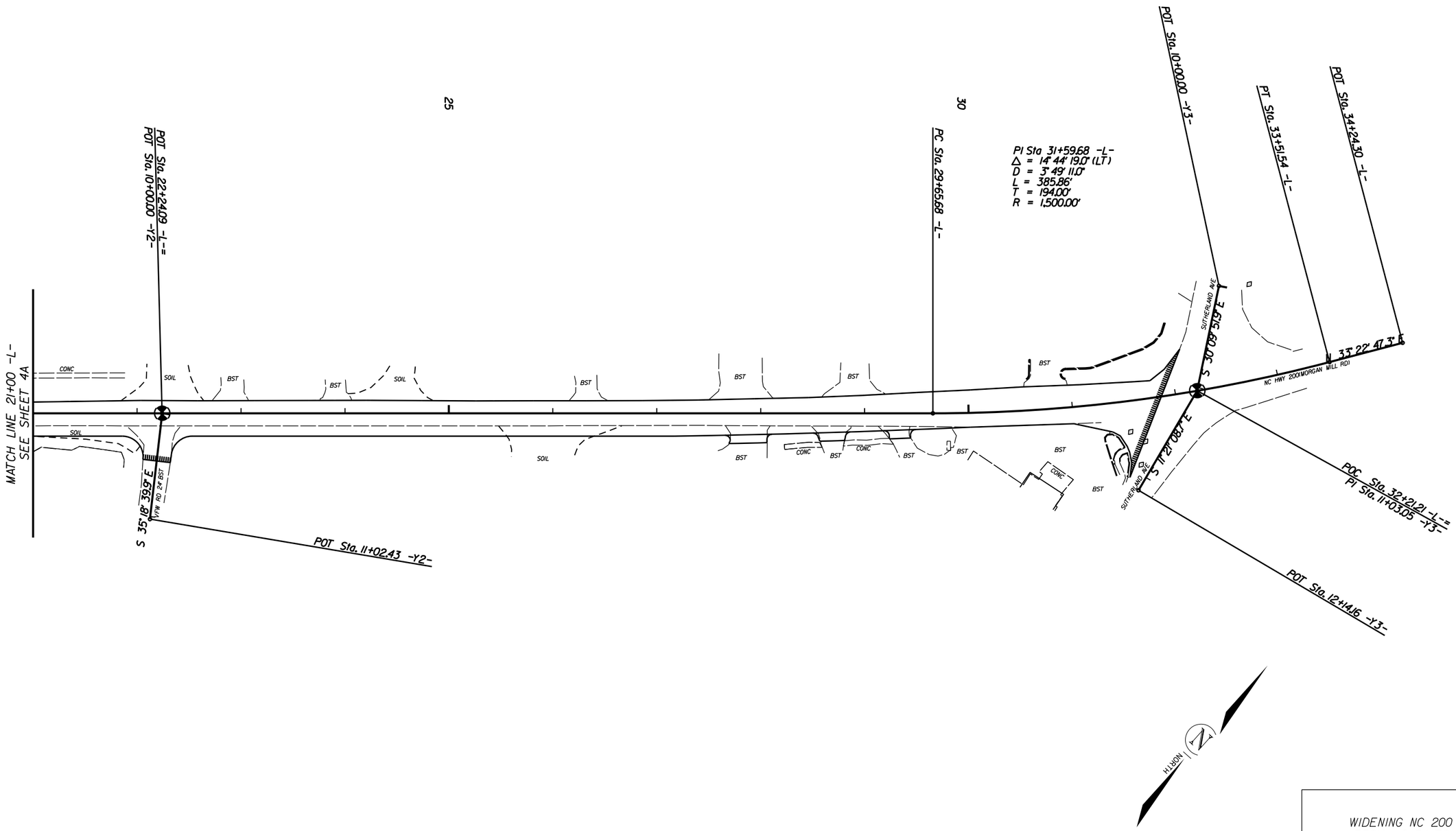


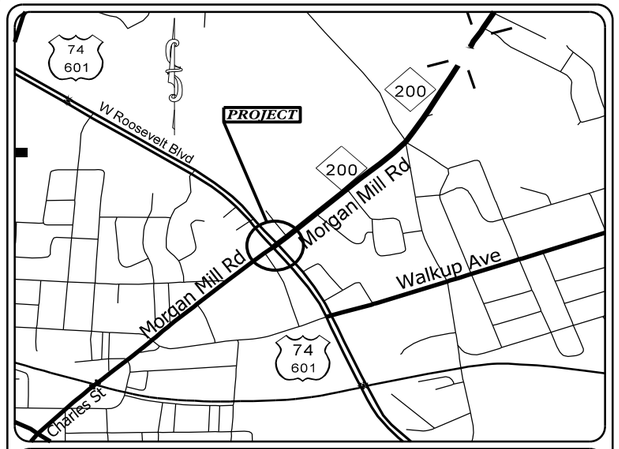
WIDENING NC 200 (MORGAN MILL RD.)
FROM US 74 TO SUTHERLAND AVE.

			REVISIONS	
SCALE	1"=50'	DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
DATE	2-2022			
DWG. BY	TBL			
DESIGN BY	TBL			
APPROVED	JDH			

TIP SM-5710G PROJECT: 49920

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	49920	EC-1	

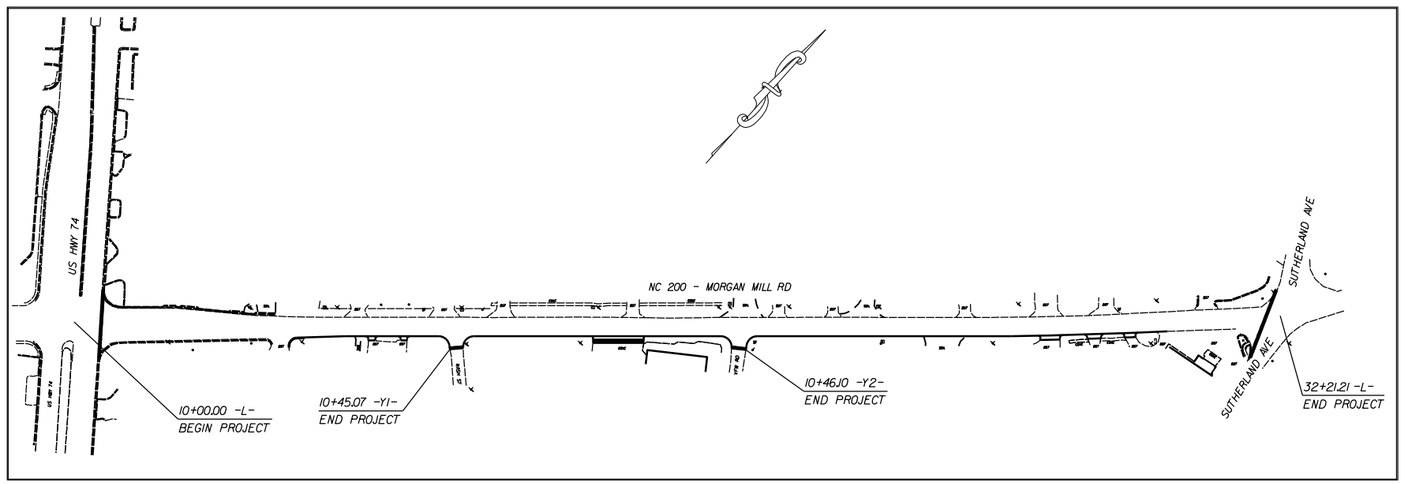
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
47907.1.1		P.E.
47907.2.1		R/W
49920		CONST.



VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	WW / CFW
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

HIGH QUALITY WATER(S) EXIST ON THIS PROJECT

High Quality Water Zone(s) Exist
From Sta. BEGIN PROJECT
to Sta. END PROJECT
Refer To E. C. Special Provisions for Special Considerations.

INSTALL PERIMETER EROSION CONTROL DEVICES DURING INITAL CLEARING PHASE

GRAPHIC SCALE

50 25 0 50 100
PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

DIVISION 10 DDC UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Prepared In the Office of:

DDC UNIT DIVISION 10
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

Designed by:

TRAVIS LOWDER — *NAME*
4395 — *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

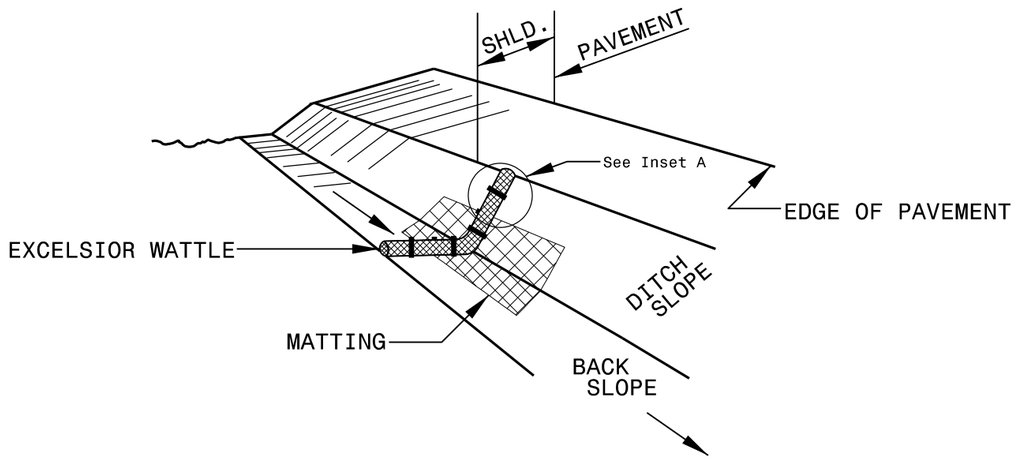
The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2018 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

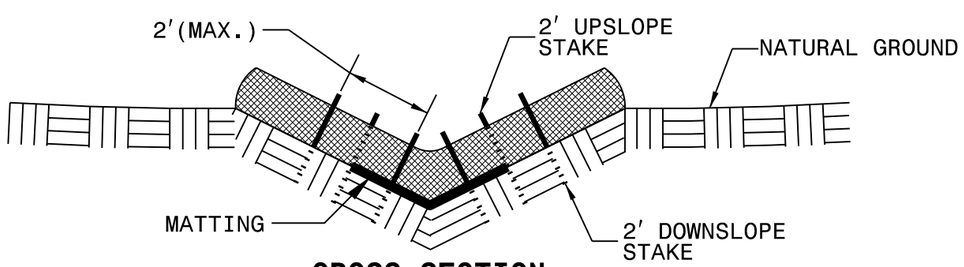
01-JUL-2022 13:
n\SM-5710G_EC_TSH.dgn
erosion\SM-5710G.US 74_NC 200.EC.TSH.dgn
USERNAME$$$$

PROJECT NO.	SHEET NO.
49920	EC-2
F.A. PROJECT NO.	

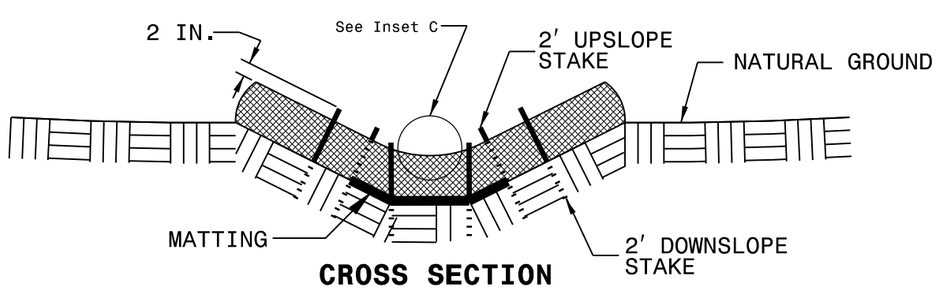
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

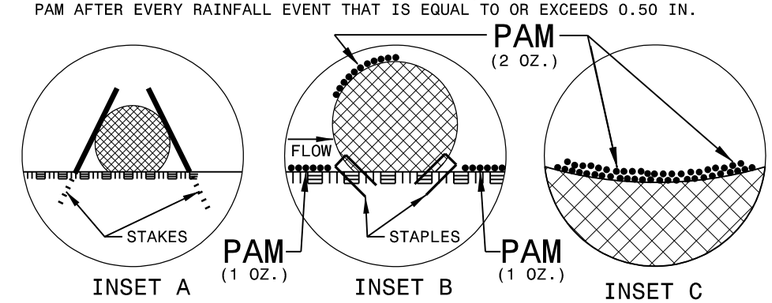
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

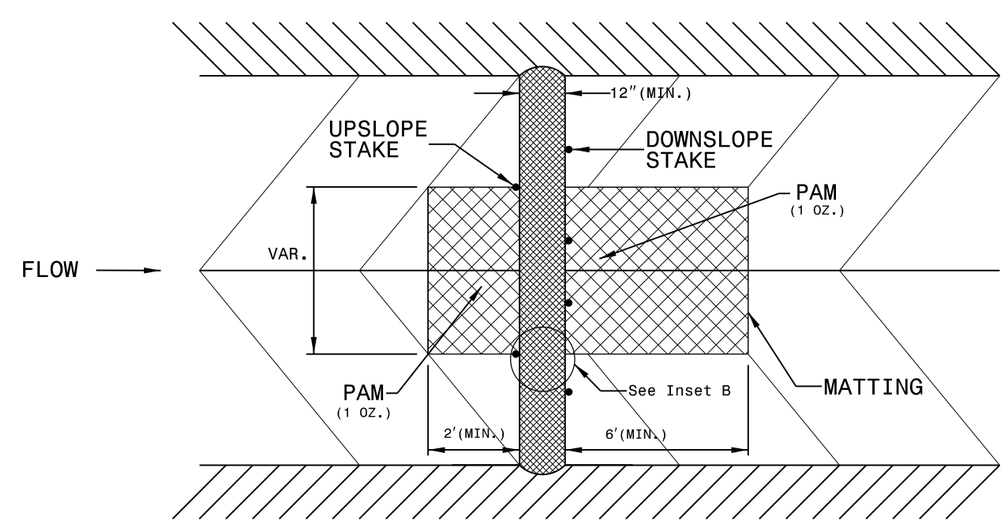
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.

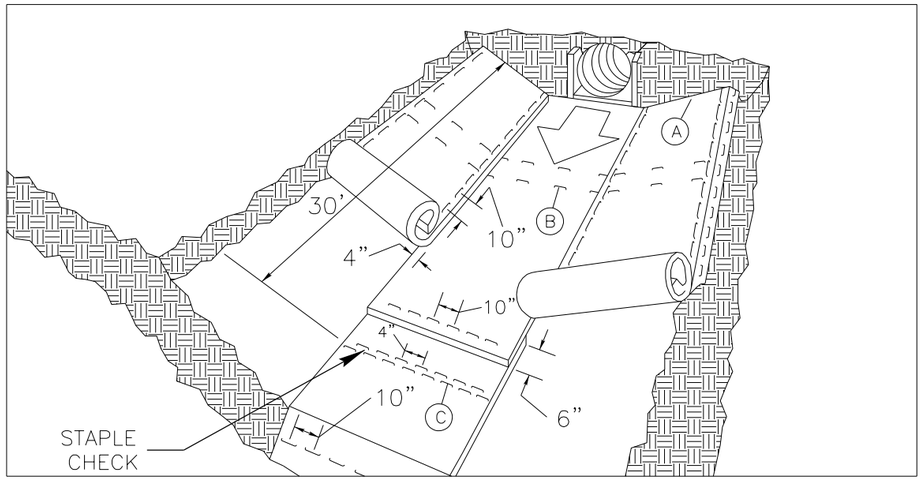




TOP VIEW

PROJECT NO.	SHEET NO.
49920	EC-3
F.A. PROJECT NO.	

MATTING INSTALLATION DETAIL



MATTING IN DITCHES

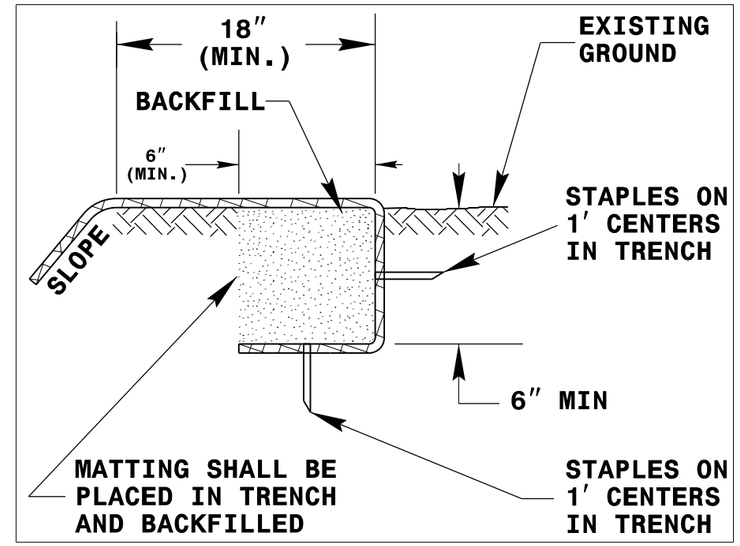
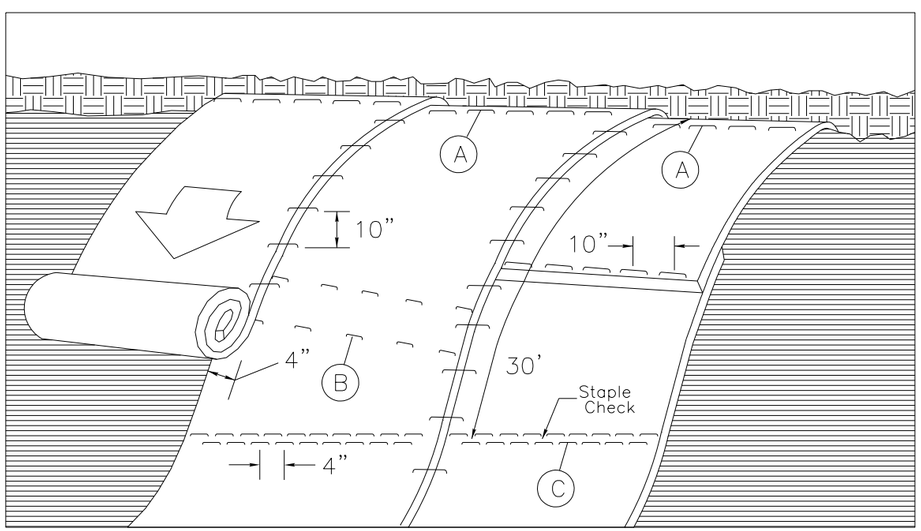


DIAGRAM (A)



MATTING ON SLOPES

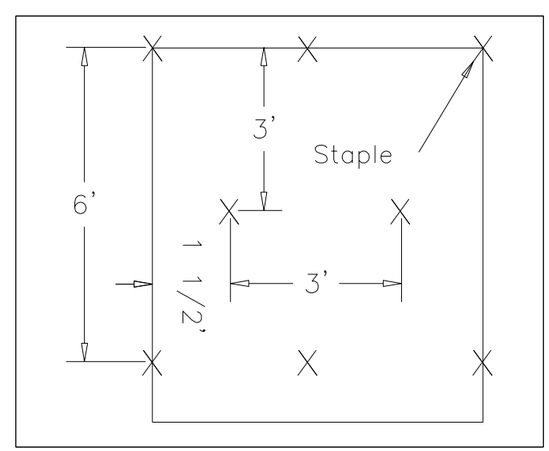


DIAGRAM (B)

Staple Check Pattern

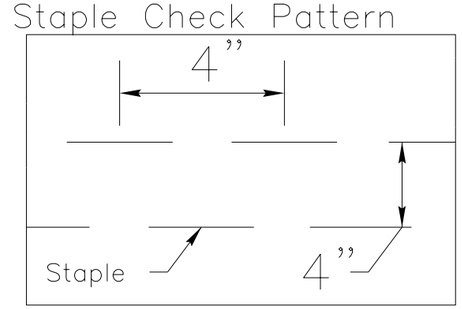


DIAGRAM (C)

NOTES:

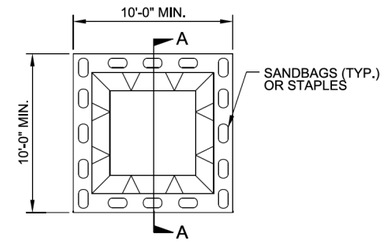
THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.

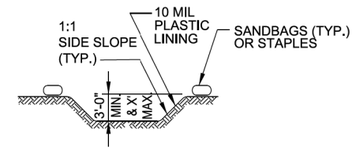
STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 6 INCHES IN LENGTH.

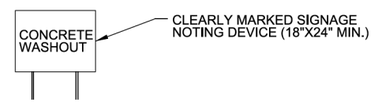
NOT TO SCALE

PROJECT NO.	SHEET NO.
49920	EC-3A
F.A. PROJECT NO.	

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER







SECTION A-A

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

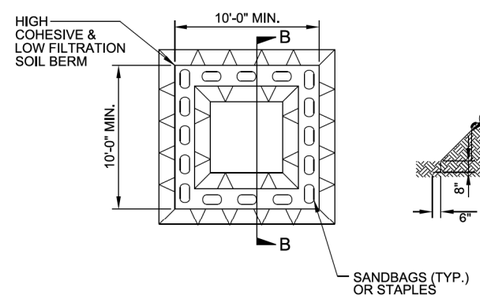
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.

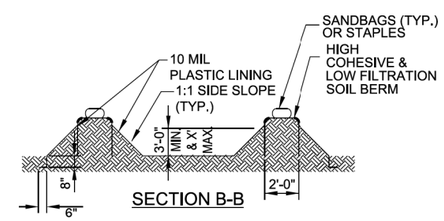
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

PLAN

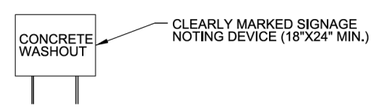
BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE





SECTION B-B



NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

PLAN

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

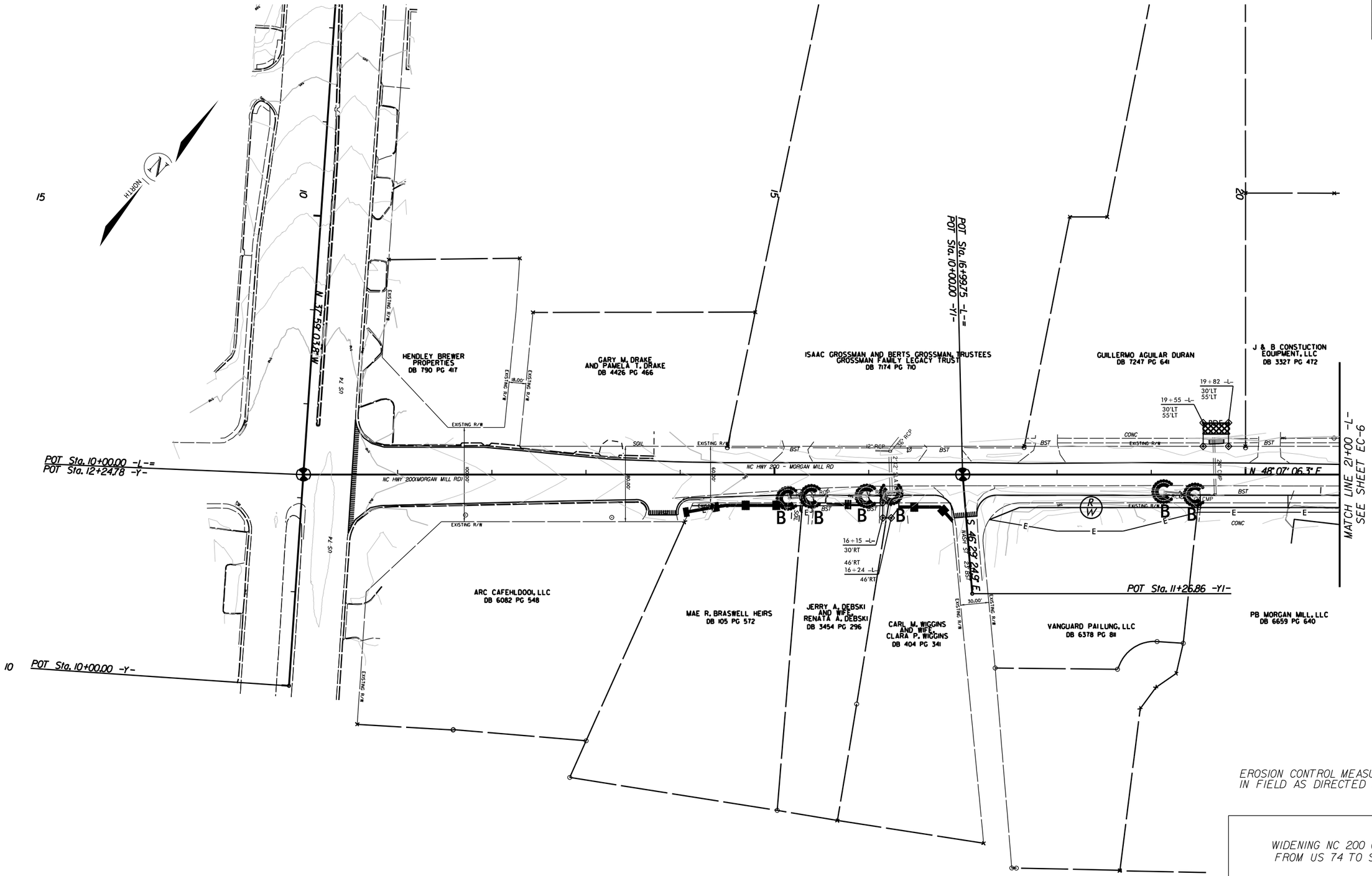
PROJECT NO.	SHEET NO.
49920	EC-4
F.A. PROJECT NO.	

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

PROJECT NO.	SHEET NO.
49920	EC-5
F.A. PROJECT NO.	

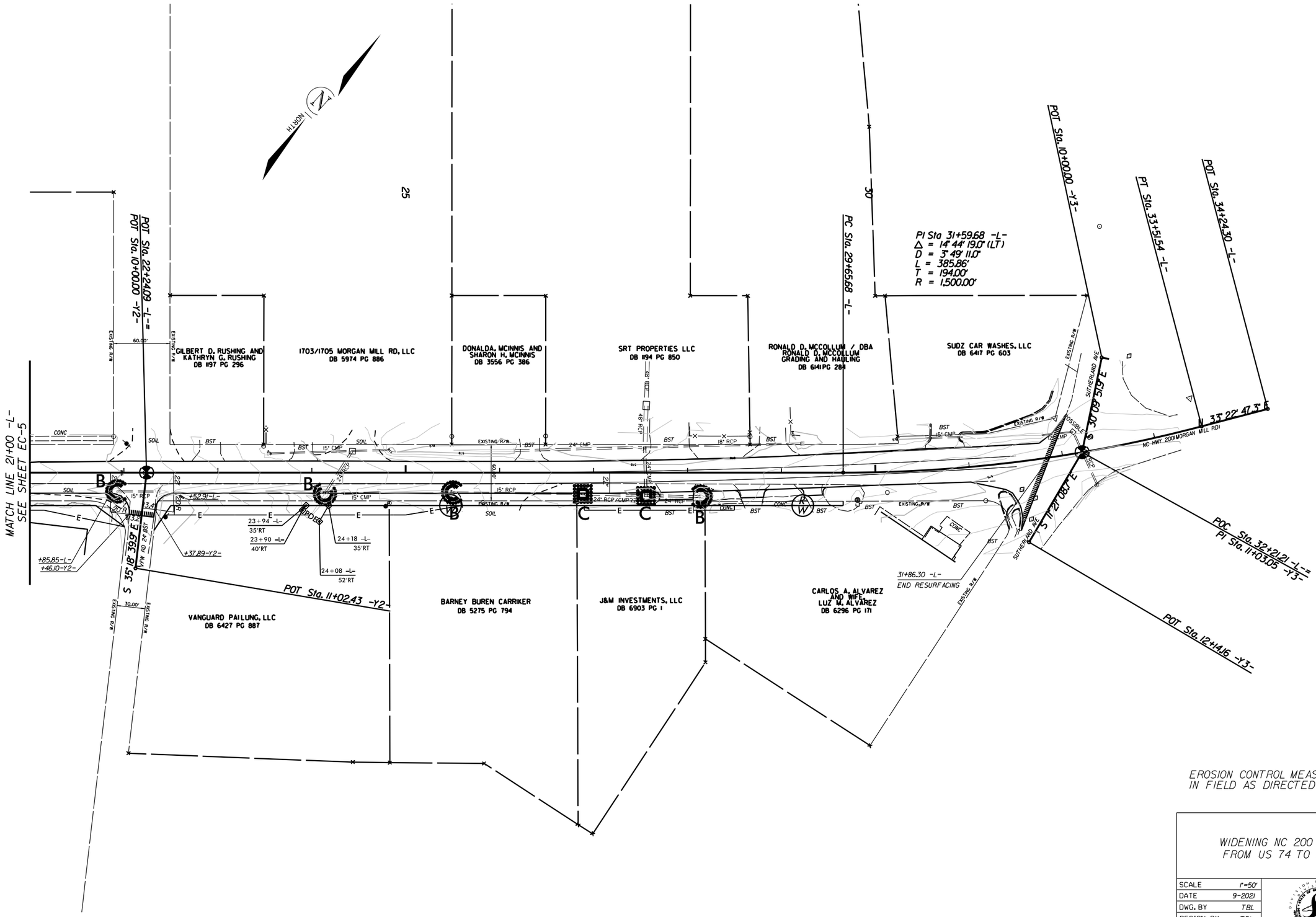


EROSION CONTROL MEASURES MAY BE CHANGED IN FIELD AS DIRECTED BY THE ENGINEER

WIDENING NC 200 (MORGAN MILL RD.) FROM US 74 TO SUTHERLAND AVE.

			REVISIONS	
SCALE	1"=50'	DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
DATE	9-2021			
DWG. BY	TBL			
DESIGN BY	TBL			
APPROVED	JDH			

PROJECT NO.	SHEET NO.
49920	EC-6
F.A. PROJECT NO.	

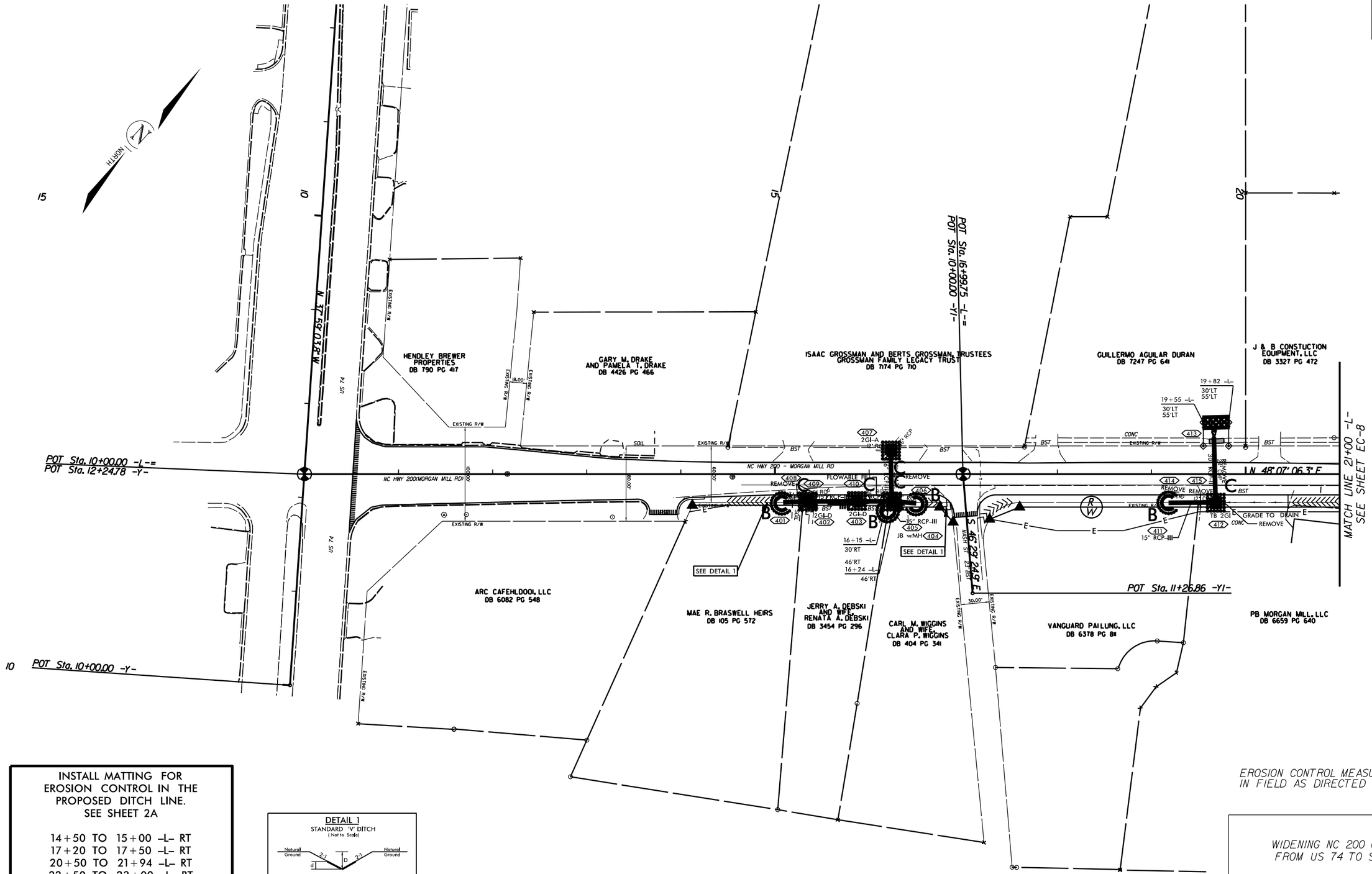


EROSION CONTROL MEASURES MAY BE CHANGED IN FIELD AS DIRECTED BY THE ENGINEER

WIDENING NC 200 (MORGAN MILL RD.) FROM US 74 TO SUTHERLAND AVE.

			REVISIONS	
SCALE	1"=50'	DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
DATE	9-2021			
DWG. BY	TBL			
DESIGN BY	TBL			
APPROVED	JDH			

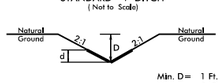
PROJECT NO.	SHEET NO.
49920	EC-7
F.A. PROJECT NO.	



INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE. SEE SHEET 2A

14+50 TO 15+00 -L- RT
17+20 TO 17+50 -L- RT
20+50 TO 21+94 -L- RT
22+50 TO 23+00 -L- RT
28+20 TO 28+50 -L- RT

DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)



Min. D= 1 Ft.
Max. d= 2 Ft.
Type of Liner= PSRM

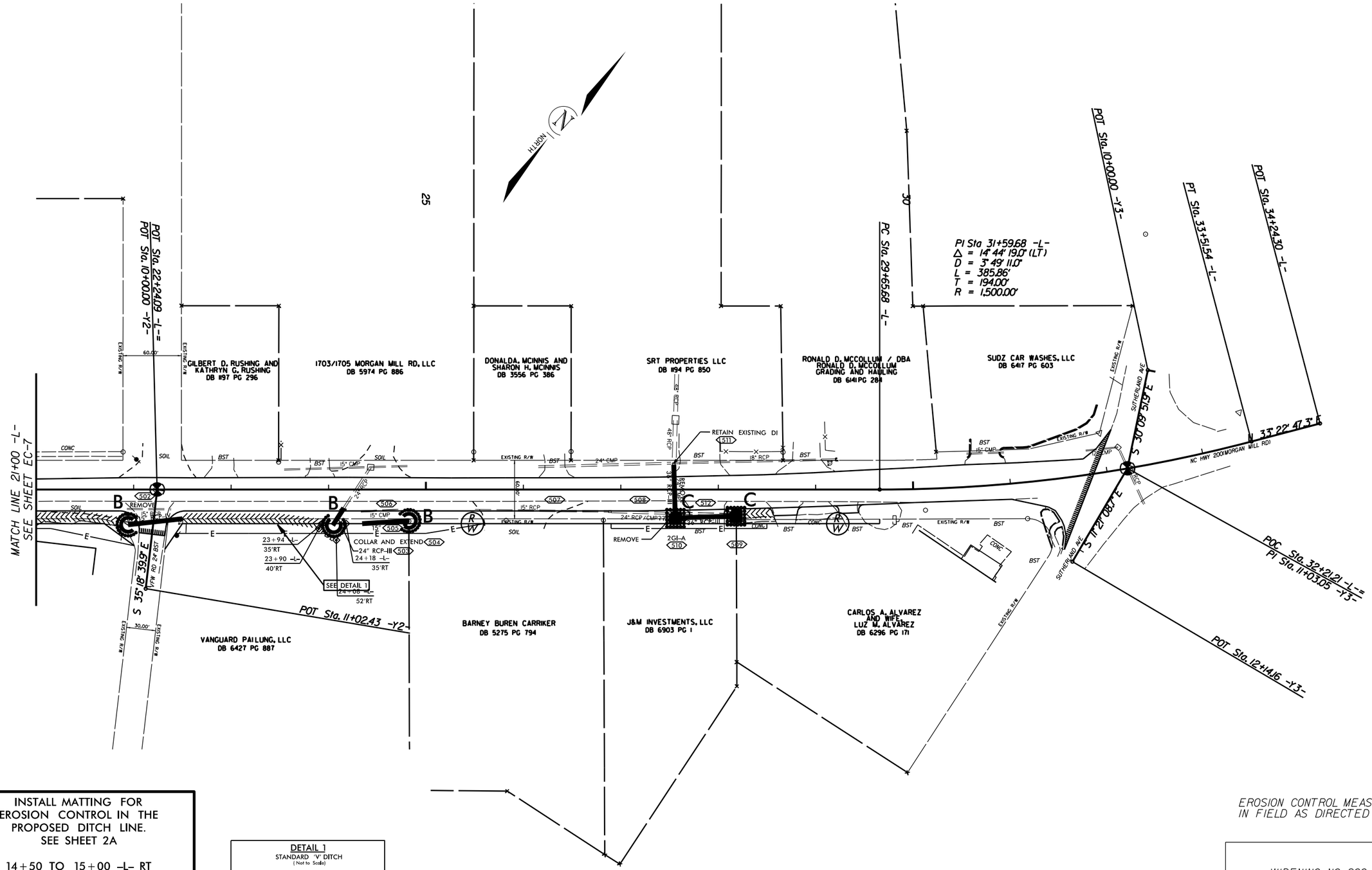
FROM STA. 15+00 TO STA. 15+09
FROM STA. 16+50 TO STA. 16+88
FROM STA. 23+00 TO STA. 24+05

EROSION CONTROL MEASURES MAY BE CHANGED IN FIELD AS DIRECTED BY THE ENGINEER

WIDENING NC 200 (MORGAN MILL RD.) FROM US 74 TO SUTHERLAND AVE.

			REVISIONS	
SCALE	1"=50'	DIVISION OF HIGHWAYS		
DATE	9-2021			
DWG. BY	TBL			
DESIGN BY	TBL			
APPROVED	JDH			

PROJECT NO.	SHEET NO.
49920	EC-8
F.A. PROJECT NO.	


NORTH
MATCH LINE 21+00 -L-
SEE SHEET EC-7
POT Sta. 22+24.09 -L-=
POT Sta. 10+00.00 -Y2-
GILBERT D. RUSHING AND KATHRYN G. RUSHING DB 1197 PG 296
1703/1705 MORGAN MILL RD. LLC DB 5974 PG 886
DONALD A. MCINNIS AND SHARON H. MCINNIS DB 3556 PG 386
SRT PROPERTIES LLC DB 1194 PG 850
RONALD D. MCCOLLUM / DBA RONALD D. MCCOLLUM GRADING AND HAULING DB 6141 PG 284
SUDZ CAR WASHES, LLC DB 6417 PG 603
PC Sta. 29+65.68 -L-
PI Sta 31+59.68 -L-
Δ = 14° 44' 19.0" (LT)
D = 3° 49' 11.0"
L = 385.86'
T = 194.00'
R = 1,500.00'
POT Sta. 10+00.00 -Y3-
PT Sta. 33+51.54 -L-
POT Sta. 34+24.30 -L-
S 30° 09' 51.5" E
N 33° 22' 47.3" E
NC HWY 200(MORGAN MILL RD)
SUTHERLAND AVE
S 11° 21' 08.1" E
POC Sta. 32+21.21 -L-=
PI Sta. 11+03.05 -Y3-
POT Sta. 12+14.16 -Y3-
S 35° 18' 39.9" E
VFW RD 24' BST
POT Sta. 11+02.43 -Y2-
VANGUARD PAILUNG, LLC DB 6427 PG 887
BARNEY BUREN CARRIKER DB 5275 PG 794
J&M INVESTMENTS, LLC DB 6903 PG 1
CARLOS A. ALVAREZ AND WIFE LUZ M. ALVAREZ DB 6296 PG 171
RETAIN EXISTING DI
REMOVE
COLLAR AND EXTEND
24" RCP-III
SEE DETAIL 1
EXISTING R/W
EXISTING R/W
EXISTING R/W

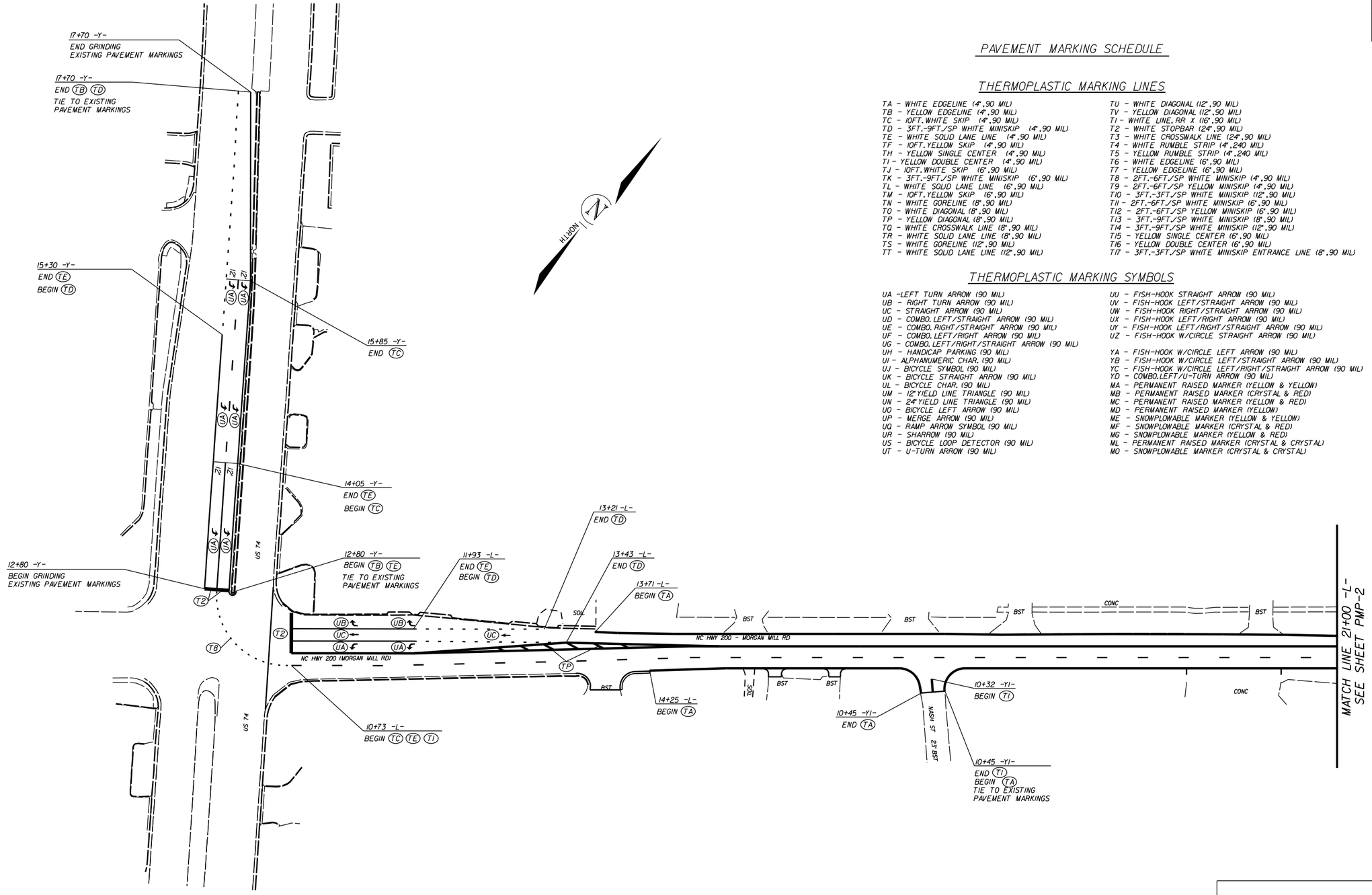
PROJECT NO.	SHEET NO.
49920	PMP-1
F.A. PROJECT NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034357 ENGINEER

DocuSigned by: MICHAEL SEAL

A92E75CC0FFB43E...



PAVEMENT MARKING SCHEDULE

THERMOPLASTIC MARKING LINES

TA - WHITE EDGELINE (4",90 MIL)
TB - YELLOW EDGELINE (4",90 MIL)
TC - 10FT.WHITE SKIP (4",90 MIL)
TD - 3FT.-9FT./SP WHITE MINISKIP (4",90 MIL)
TE - WHITE SOLID LANE LINE (4",90 MIL)
TF - 10FT.YELLOW SKIP (4",90 MIL)
TH - YELLOW SINGLE CENTER (4",90 MIL)
TI - YELLOW DOUBLE CENTER (4",90 MIL)
TJ - 10FT.WHITE SKIP (6",90 MIL)
TK - 3FT.-9FT./SP WHITE MINISKIP (6",90 MIL)
TL - WHITE SOLID LANE LINE (6",90 MIL)
TM - 10FT.YELLOW SKIP (6",90 MIL)
TN - WHITE GORELINE (8",90 MIL)
TO - WHITE DIAGONAL (8",90 MIL)
TP - YELLOW DIAGONAL (8",90 MIL)
TQ - WHITE CROSSWALK LINE (8",90 MIL)
TR - WHITE SOLID LANE LINE (8",90 MIL)
TS - WHITE GORELINE (12",90 MIL)
TT - WHITE SOLID LANE LINE (12",90 MIL)
TU - WHITE DIAGONAL (12",90 MIL)
TV - YELLOW DIAGONAL (12",90 MIL)
TW - WHITE LINE.RR X (16",90 MIL)
T2 - WHITE STOPBAR (24",90 MIL)
T3 - WHITE CROSSWALK LINE (24",90 MIL)
T4 - WHITE RUMBLE STRIP (4",240 MIL)
T5 - YELLOW RUMBLE STRIP (4",240 MIL)
T6 - WHITE EDGELINE (6",90 MIL)
T7 - YELLOW EDGELINE (6",90 MIL)
T8 - 2FT.-6FT./SP WHITE MINISKIP (4",90 MIL)
T9 - 2FT.-6FT./SP YELLOW MINISKIP (4",90 MIL)
T10 - 3FT.-3FT./SP WHITE MINISKIP (12",90 MIL)
T11 - 2FT.-6FT./SP WHITE MINISKIP (6",90 MIL)
T12 - 2FT.-6FT./SP YELLOW MINISKIP (6",90 MIL)
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T14 - 3FT.-9FT./SP WHITE MINISKIP (12",90 MIL)
T15 - YELLOW SINGLE CENTER (6",90 MIL)
T16 - YELLOW DOUBLE CENTER (6",90 MIL)
T17 - 3FT.-3FT./SP WHITE MINISKIP ENTRANCE LINE (8",90 MIL)

THERMOPLASTIC MARKING SYMBOLS

UA -LEFT TURN ARROW (90 MIL)
UB - RIGHT TURN ARROW (90 MIL)
UC - STRAIGHT ARROW (90 MIL)
UD - COMBO.LEFT/STRAIGHT ARROW (90 MIL)
UE - COMBO.RIGHT/STRAIGHT ARROW (90 MIL)
UF - COMBO.LEFT/RIGHT ARROW (90 MIL)
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UH - HANDICAP PARKING (90 MIL)
UI - ALPHANUMERIC CHAR. (90 MIL)
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UO - BICYCLE LEFT ARROW (90 MIL)
UP - MERGE ARROW (90 MIL)
UQ - RAMP ARROW SYMBOL (90 MIL)
UR - SHARROW (90 MIL)
US - BICYCLE LOOP DETECTOR (90 MIL)
UT - U-TURN ARROW (90 MIL)
UU - FISH-HOOK STRAIGHT ARROW (90 MIL)
UV - FISH-HOOK LEFT/STRAIGHT ARROW (90 MIL)
UW - FISH-HOOK RIGHT/STRAIGHT ARROW (90 MIL)
UX - FISH-HOOK LEFT/RIGHT ARROW (90 MIL)
UY - FISH-HOOK LEFT/RIGHT/STRAIGHT ARROW (90 MIL)
UZ - FISH-HOOK W/CIRCLE STRAIGHT ARROW (90 MIL)

YA - FISH-HOOK W/CIRCLE LEFT ARROW (90 MIL)
YB - FISH-HOOK W/CIRCLE LEFT/STRAIGHT ARROW (90 MIL)
YC - FISH-HOOK W/CIRCLE LEFT/RIGHT/STRAIGHT ARROW (90 MIL)
YD - COMBO.LEFT/U-TURN ARROW (90 MIL)
MA - PERMANENT RAISED MARKER (YELLOW & YELLOW)
MB - PERMANENT RAISED MARKER (CRYSTAL & RED)
MC - PERMANENT RAISED MARKER (YELLOW & RED)
MD - PERMANENT RAISED MARKER (YELLOW)
ME - SNOWPLOWABLE MARKER (YELLOW & YELLOW)
MF - SNOWPLOWABLE MARKER (CRYSTAL & RED)
MG - SNOWPLOWABLE MARKER (YELLOW & RED)
ML - PERMANENT RAISED MARKER (CRYSTAL & CRYSTAL)
MO - SNOWPLOWABLE MARKER (CRYSTAL & CRYSTAL)

WIDENING NC 200 (MORGAN MILL RD.)
FROM US 74 TO SUTHERLAND AVE.

		REVISIONS	
SCALE	1"=50'		
DATE	4-2021		
DWG. BY	TBL		
DESIGN BY	TBL		
APPROVED	JDH		

PROJECT NO.	SHEET NO.
49920	PMP-2
F.A. PROJECT NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034357 ENGINEER

DocuSigned by: MICHAEL R. JOHNSON

A92E75CC0FFB43B...

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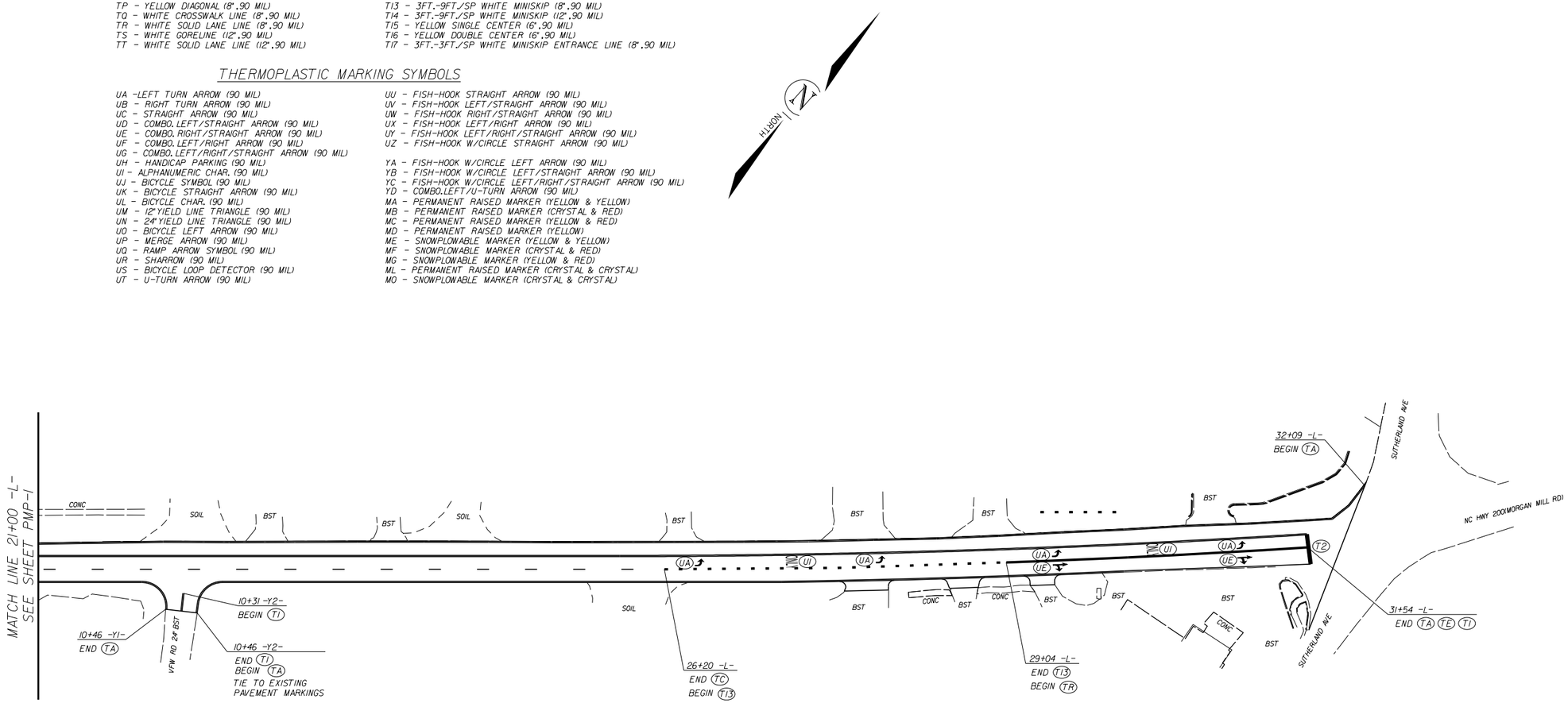


WIDENING NC 200 (MORGAN MILL RD.)
FROM US 74 TO SUTHERLAND AVE.

			REVISIONS	
SCALE	1"=50'	DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
DATE	4-2021			
DWG. BY	TBL			
DESIGN BY	TBL			
APPROVED	JDH			

T.I.P.: SM-5710G

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
SM-5710G	SIGN-1

APPROVED: DocuSigned by: Ashley K. Matthews 4017AA1BCB5MCD...

DATE: 7/25/2022 | 1:27 PM EDT

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 048105 ENGINEER ASHLEY K. MATTHEWS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIGNING PLAN
UNION COUNTY

LOCATION: NC 200 (Morgan Mill Rd.) between US 74 and Sutherlan Ave.

GENERAL NOTES

. SIGNS FURNISHED BY STATE
. CONFIRM IN WRITING AT LEAST 4 MONTHS IN ADVANCE, THE ACTUAL DATE THE DEPARTMENT FURNISHED SIGNS WILL BE REQUIRED.
. ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TWO U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.
. IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
. WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
. ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
. WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
. THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
901.50	ARROWS AND SHIELDS
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	285	L.F.
4096000000	904	SIGN ERECTION, TYPE D	1	EA.
4102000000	904	SIGN ERECTION, TYPE E	8	EA.
4108000000	904	SIGN ERECTION, TYPE F	4	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	14	EA.

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2	E AND F SHEETS
SIGN-3	SIGN DESIGNS
SIGN-4-5	SIGNING PLAN SHEETS

PLAN PREPARED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

Ashley K. Matthews,PE SIGNING & DELINEATION PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

07/25/22
S:\S&DU\Western Region\Div 10\SM-5710G\Engseed.dgn
User:kmatthews

PROJECT REFERENCE NO.	SHEET NO.
SM-5710G	SIGN-2

APPROVED: DocuSigned by: Ashley K. Matthews 40171AA1BC834CD...

DATE: 7/25/2022 | 1:27 PM EDT

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 048105 ENGINEER ASHLEY K. MATTHEWS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

(401) QUANTITY REQ'D 2

30 X 36
R2-1

TWO "U" POSTS PER SIGN

(402) QUANTITY REQ'D 2

36 X 36
R1-1

ONE "U" POST PER SIGN

(403) QUANTITY REQ'D 2

36 X 36
R3-7

ONE "U" POST PER SIGN

(404) QUANTITY REQ'D 1

54 X 18
R6-1L

TWO "U" POSTS PER SIGN

(405) QUANTITY REQ'D 1

54 X 18
R6-1R

TWO "U" POSTS PER SIGN

(501)

1- 24 X 12

1- 24 X 24

ONE "U" POST PER SIGN

(502)

1- 21 X 15

1- 24 X 24

1- 24 X 24

ONE "U" POST PER SIGN

(503)

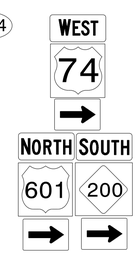
1- 24 X 12

1- 24 X 24

1- 21 X 15

ONE "U" POST PER SIGN

(504)



1- 24 X 12

1- 24 X 24

1- 21 X 15

2- 24 X 12

2- 24 X 24

2- 21 X 15

TWO "U" POSTS PER SIGN

TYPE "E" & "F" SIGNS

07/25/22
S:\S&DU\Western Region\Div 10\SM-5710G\Engseed.dgn
User:kmatthews

PROJECT REFERENCE NO.	SHEET NO.
SM-5710G	SIGN-3

APPROVED: DocuSigned by: Ashley K. Matthews — 4017 1AA18C834CD...

DATE: 7/25/2022 | 1:27 PM EDT

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 048105 ENGINEER ASHLEY K MATTHEWS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIGN NUMBER: 301
TYPE: D
QUANTITY: 1

SIGN WIDTH: 6'-6"
HEIGHT: 3'-0"
TOTAL AREA: 19.5 Sq.Ft.

BORDER TYPE: FLUSH
RECESS: 0"
WIDTH: 1.5"
RADII: 5"

NO. Z BARS:
LENGTH:

BACKG COLOR: Green
COPY COLOR: White

SYMBOL	X	Y	WID	HT

MAT'L: 0.125" (3.2 mm) ALUMINUM

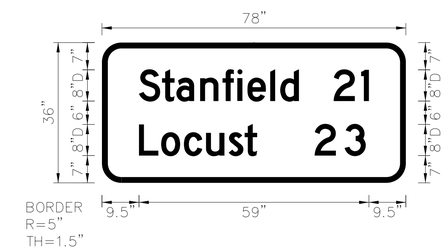
DESIGN BY: AKM
PROJECT ID: SM-5710G

CHECKED BY: KLJ
LOCATION: NC 200 (Union County)

Jun 09, 2022
DIV: 10

USE NOTES:

1. Legend and border(except those that are colored black) shall be direct applied Grade C sheeting.
2. Background shall be Grade C reflective sheeting.



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter locations are panel edge to lower left corner

																											Series/Size Text Length
	S	t	a	n	f	i	e	l	d																		D 2000
	9.5	15.4	19.1	25.2	30.9	34.8	37.3	43.2	45.7																		41
	2	1																									D 2000
	59.5	66.5																									9
	L	o	c	u	s	t																					D 2000
	9.5	15.2	21	26.7	32.5	36.6																					30.3
	2	3																									D 2000
	54.6	62.3																									13.1

Engseed

NORTH CAROLINA D.O.T. SIGN DETAIL

07/25/22
S:\SDD\Western Region\Div 10\SM-5710G\Engseed.dgn
jsprokmatthews

SIGN DESIGNS

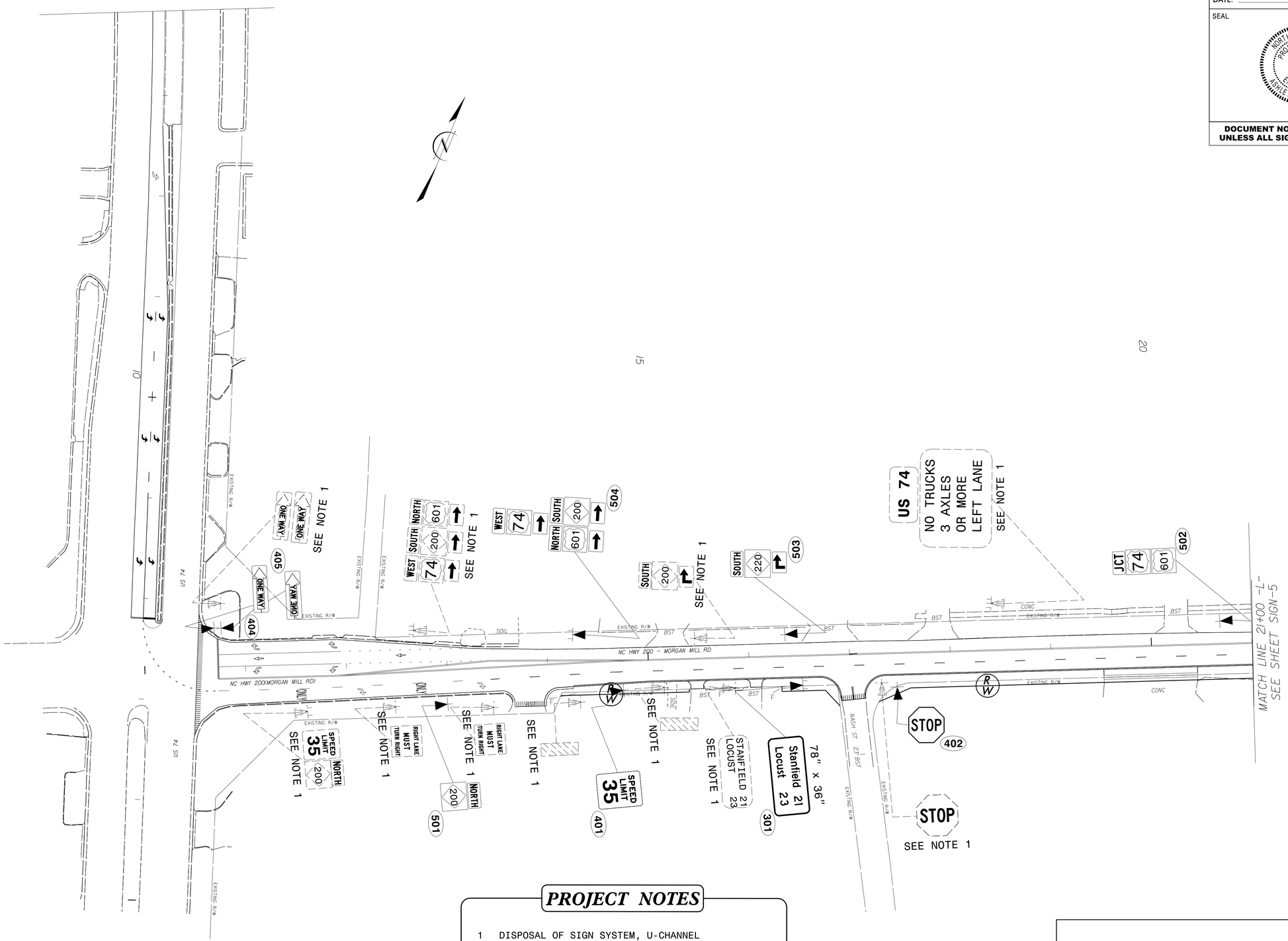
PROJECT REFERENCE NO.	SHEET NO.
SM-5710G	SIGN-4

APPROVED: DocuSigned by: Ashley K. Matthews 4017 7AA1BCB34CD...

DATE: 7/25/2022 | 1:27 PM EDT

SEAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PROJECT NOTES

1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL

SIGN PLAN SHEET

07/25/22
S:\S&ODR\Western Region\Div 10\SM-5710G\Engseed.dgn
jsernakmathews

PROJECT REFERENCE NO.	SHEET NO.
SM-5710G	SIGN-5

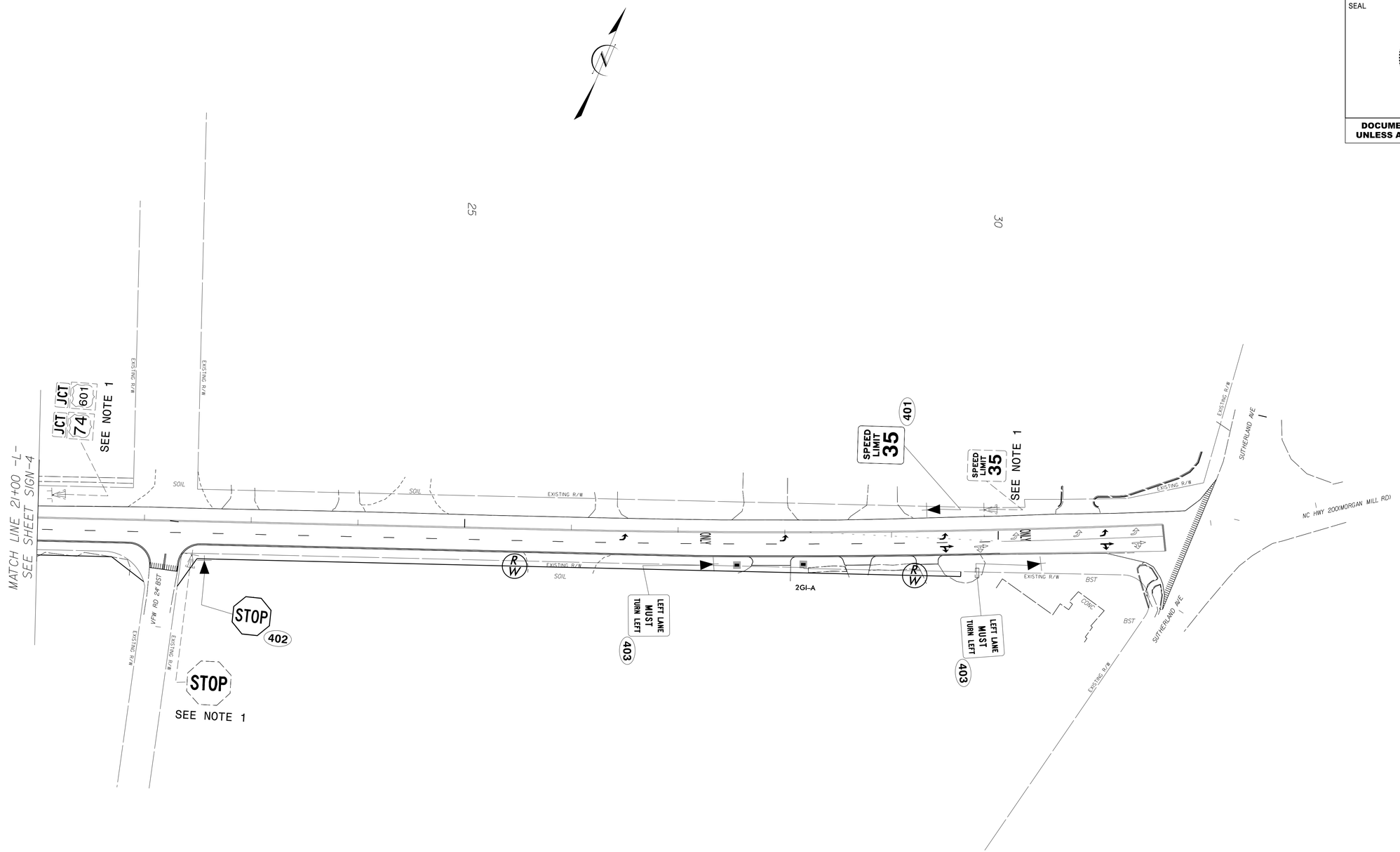
APPROVED: DocuSigned by: Ashley K. Matthews 401711A41BC834CD...

DATE: 7/25/2022 | 1:27 PM EDT

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 048105 ENGINEER ASHLEY K. MATTHEWS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PROJECT NOTES

1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL

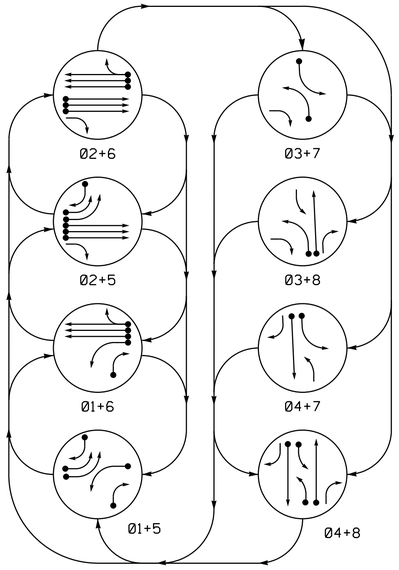
SIGN PLAN SHEET

07/25/22
S:\S&DU\Western Region\Div 10\SM-5710G\Engseed.dgn
User:kmatthews

PROJECT REFERENCE NO.	SHEET NO.
SM-5710G	Sig. 1.0

8 Phase
Fully Actuated
Signal System #D10-39_Monroe
US 74-601 (Roosevelt Blvd)-East System

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	—	—	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	R	R	Y
23	R	R	G	G	R/—	R/—	R	R	Y
31	~~R~~	~~R~~	~~R~~	~~R~~	—	—	F/Y	F/Y	~~R~~
41,43	R	R	R	R	R	R	G	G	R
42	R/—	R	R/—	R	R	R	G	G	R
51,52	—	~~R~~	—	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61,62,63	R	G	R	G	R	R	R	R	Y
71	~~R~~	~~R~~	~~R~~	~~R~~	—	F/Y	—	F/Y	~~R~~
81,83	R	R	R	R	R	G	R	G	R
82	R/—	R/—	R	R	R	G	R	G	R

SIGNAL FACE I.D.

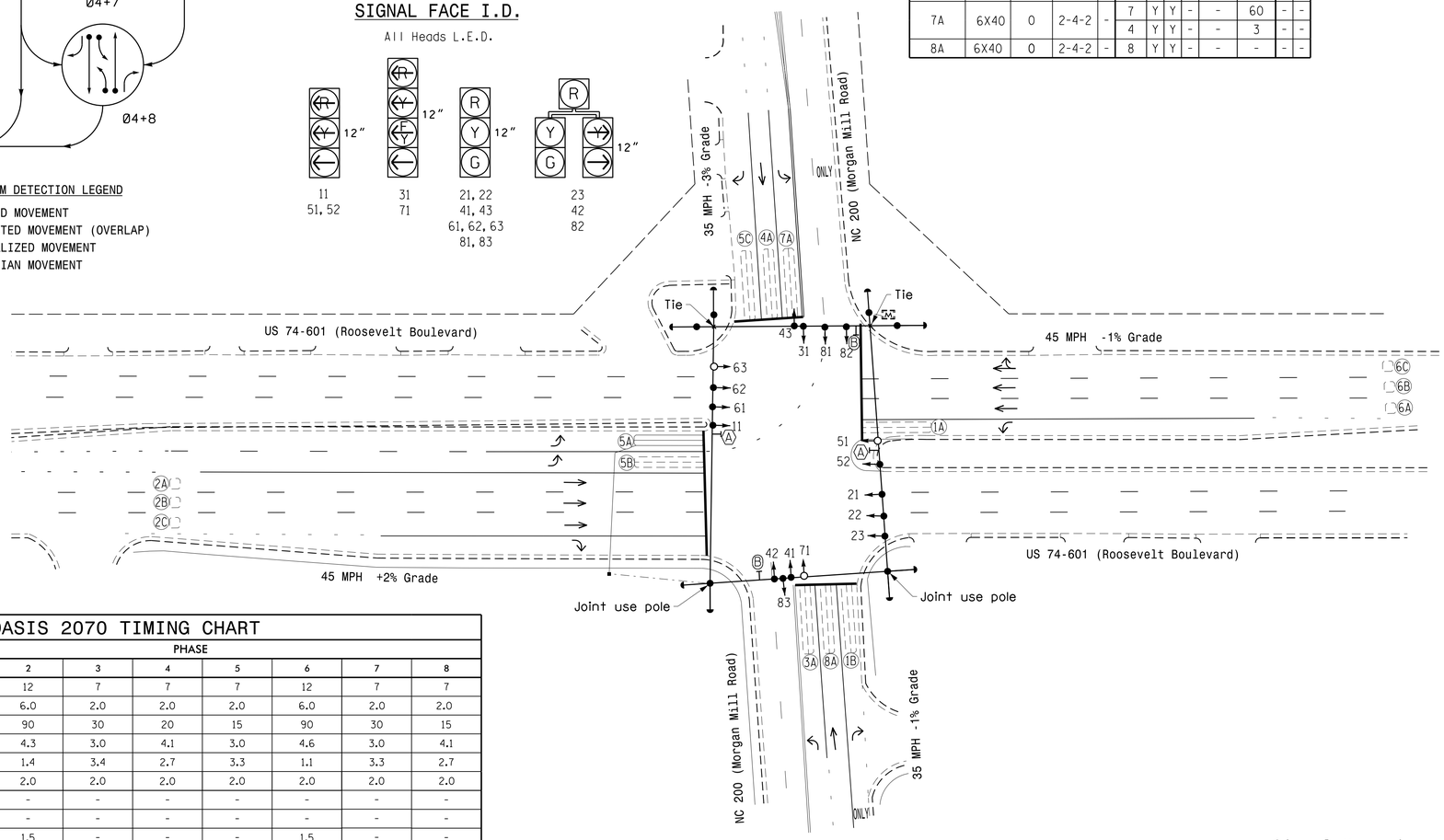
All Heads L.E.D.

OASIS 2070 LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	-	1	Y	Y	-	-	-	-	-
1B	6X40	0	2-4-2	-	1	Y	Y	-	-	15	-	-
2A	6X6	300	5	-	2	Y	Y	-	-	-	-	-
2B	6X6	300	5	-	2	Y	Y	-	-	-	-	-
2C	6X6	300	5	-	2	Y	Y	-	-	-	-	-
3A	6X40	0	2-4-2	-	3	Y	Y	-	-	15	-	-
					8	Y	Y	-	-	3	-	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	-	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-	Y
5B	6X40	0	2-4-2	-	5	Y	Y	-	-	-	-	-
5C	6X40	0	2-4-2	-	5	Y	Y	-	-	15	-	-
6A	6X6	300	5	-	6	Y	Y	-	-	-	-	-
6B	6X6	300	5	-	6	Y	Y	-	-	-	-	-
6C	6X6	300	5	-	6	Y	Y	-	-	-	-	-
7A	6X40	0	2-4-2	-	7	Y	Y	-	-	60	-	-
					4	Y	Y	-	-	3	-	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	-	-	-

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Reposition existing heads 61 & 62.
6. Renumber existing heads 51, 42,43, & 44 to 52,41,42, and 43 respectively.
7. Renumbered existing loops 4A, 4B,5A, & 5B to 7A, 4A, 5B, & 5C respectively.
8. Set all detector units to presence mode.
9. Pavement markings are existing.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



OASIS 2070 TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	7	12	7	7
Extension 1 *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	15	90	30	20	15	90	30	15
Yellow Clearance	3.0	4.3	3.0	4.1	3.0	4.6	3.0	4.1
Red Clearance	3.1	1.4	3.4	2.7	3.3	1.1	3.3	2.7
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
M	Master Controller & Cabinet	M
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
A	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	A
B	Right Arrow "ONLY" Sign (R3-5R)	B

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade

Prepared In the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

US 74-601(Roosevelt Boulevard)
at
NC 200 (Morgan Mill Road)

Division 10 Union County Monroe

PLAN DATE:	July 2021	REVIEWED BY:	TJ Williams
PREPARED BY:	EM Minshew	REVIEWED BY:	

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

DocuSigned by: T. J. Williams 8/6/2021
DATE

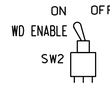
SIG. INVENTORY NO. 10-0516

05-AUG-2021 1:14
w:\pwworking\ecs\ecs01\#groups-TEC\#ITS&SU\#ITS Signals\Signal Design Sections\Western Region\D10\SM-5710G\10051610051 6.sig.dsn.2021mmds.dgn
eminshew

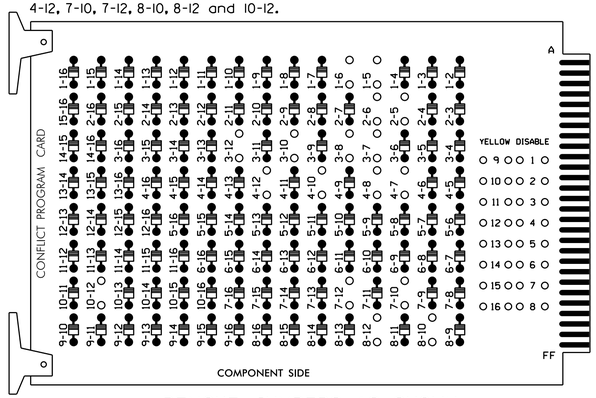
PROJECT REFERENCE NO.	SHEET NO.
SM-5710G	Sig. 1.1

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

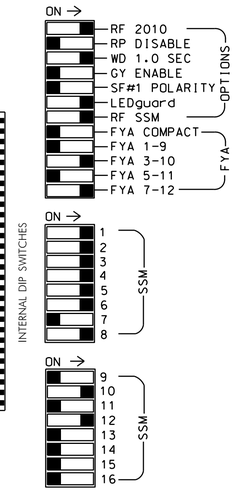
(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-5, 1-6, 2-5, 2-6, 3-7, 3-8, 3-10, 3-12, 4-7, 4-8, 4-10, 4-12, 7-10, 7-12, 8-10, 8-12 and 10-12.



REMOVE JUMPERS AS SHOWN



NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 7,9, 11,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 4 and 8 for Dual Entry.
4. Enable Simultaneous Gap-Out for all phases.
5. Program phases 2 and 6 for Variable Initial and Gap Reduction.
6. Program phases 2 and 6 for Start Up In Green.
7. Program phases 2 and 6 for Yellow Flash, and overlap 2 as Wag Overlaps.
8. The cabinet and controller are part of the US 74-601 (Roosevelt Blvd.) CLS East System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1		S2	S2P	S3		S4	S4P	S5		S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
PHASE	1		2	2 PED	3		4	4 PED	5		6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	82	21,22 23	NU	23	31★	41,42 42	NU	42	51,52	61,62 63	NU	71★	81,82 83	NU	NU	31★	NU	NU	71★	NU
RED			128		✳		101				134			107							
YELLOW			129				102				135		✳	108							
GREEN			130				103				136			109							
RED ARROW	125									131							A124			A101	
YELLOW ARROW	126	126			117				132	132							A125			A102	
FLASHING YELLOW ARROW																	A126			A103	
GREEN ARROW	127	127			118	118			133	133			124								

NU = Not Used

✳ Denotes install load resistor. See load resistor installation detail this sheet.

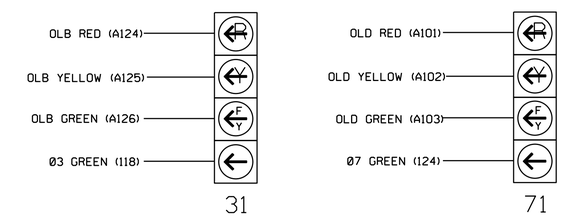
★ See pictorial of head wiring in detail below.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332 /W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S10,S13
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAP "A".....NOT USED
OVERLAP "B".....3+4
OVERLAP "C".....NOT USED
OVERLAP "D".....7+8

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

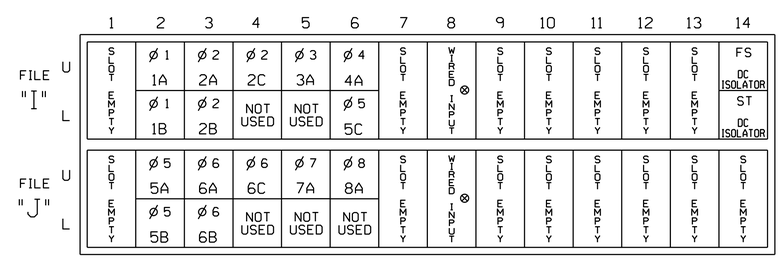


NOTE

1. The sequence display for signal heads 31 & 71 requires special logic programming. See sheet 2 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-5,6	I2U	39	1	2	1	Y	Y			
1B	TB2-7,8	I2L	43	5	12	1	Y	Y			15
2A	TB2-9,10	I3U	63	25	32	2	Y	Y			
2B	TB2-11,12	I3L	76	38	42	2	Y	Y			
2C	TB4-1,2	I4U	47	9	22	2	Y	Y			
3A[1]	TB4-5,6	I5U	58	20	3	3	Y	Y			15
	-	J8U	50	12	28	8	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
5A	TB3-5,6	J2U	40	2	6	5	Y	Y			
5B	TB3-7,8	J2L	44	6	16	5	Y	Y			
5C	TB4-11,12	I6L	45	7	14	5	Y	Y			15
6A	TB3-9,10	J3U	64	26	36	6	Y	Y			
6B	TB3-11,12	J3L	77	39	46	6	Y	Y			
6C	TB5-1,2	J4U	48	10	26	6	Y	Y			
7A[2]	TB5-5,6	J5U	57	19	7	7	Y	Y			60
	-	I8U	49	11	24	4	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			

[1] Add jumper from I5-W to J8-W, on rear of input file.

[2] Add jumper from J5-W to I8-W, on rear of input file.

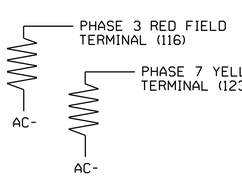
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

ACCEPTABLE VALUES

VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-0516
DESIGNED: July 2021
SEALED: 8/6/2021
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 74-601 (Roosevelt Boulevard) at NC 200 (Morgan Mill Road)

Division 10 Union County Monroe

PLAN DATE: July 2021 REVIEWED BY:
PREPARED BY: Zarrar Zafar REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 8/11/2021
DATE

SIG. INVENTORY NO. 10-0516

10-AUG-2021 08:31
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zzafar

PROJECT REFERENCE NO.	SHEET NO.
SM-5710G	Sig. 1.2

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.

2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE        #3  IS ON
AND RED CLEAR ON PHASE  #3  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #47 ON
SET OUTPUT  ASSIGNMENT #48 OFF
```

NOTE: LOGIC FOR PHASE 3 RED CLEAR WHEN TRANSITIONING FROM PHASE 3 TO PHASE 4 (HEAD 31).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE        #3  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #49 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 3 (HEAD 31).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE     #3  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #48 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 3 (HEAD 31).

PRESS '+'

```
LOGICAL I/O COMMAND #4  (+/-COMMAND#)
IF  ACTIVE PHASE        #7  IS ON
AND RED CLEAR ON PHASE  #7  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #39 ON
SET OUTPUT  ASSIGNMENT #40 OFF
```

NOTE: LOGIC FOR PHASE 7 RED CLEAR WHEN TRANSITIONING FROM PHASE 7 TO PHASE 8 (HEAD 71).

PRESS '+'

```
LOGICAL I/O COMMAND #5  (+/-COMMAND#)
IF  ACTIVE PHASE        #7  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #41 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW OFF DURING PHASE 7 (HEAD 71).

PRESS '+'

```
LOGICAL I/O COMMAND #6  (+/-COMMAND#)
IF  YELLOW ON PHASE     #7  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #40 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 7 (HEAD 71).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

OUTPUT 39 = Overlap D Red
OUTPUT 40 = Overlap D Yellow
OUTPUT 41 = Overlap D Green
OUTPUT 47 = Overlap B Red
OUTPUT 48 = Overlap B Yellow
OUTPUT 49 = Overlap B Green

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-0516
DESIGNED: July 2021
SEALED: 8/6/2021
REVISED: N/A

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PRESS '+' ONCE

```
PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE:              |123456789101112131415 16
VEH OVL PARENTS:    |  XX
VEH OVL NOT VEH:    |
VEH OVL NOT PED:    |
VEH OVL GRN EXT:    |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

← NOTICE GREEN FLASH

PRESS '+' TWICE

```
PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
PHASE:              |123456789101112131415 16
VEH OVL PARENTS:    |      XX
VEH OVL NOT VEH:    |
VEH OVL NOT PED:    |
VEH OVL GRN EXT:    |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 74-601 (Roosevelt Boulevard)
at
NC 200 (Morgan Mill Road)

Division 10 Union County Monroe

PLAN DATE: July 2021 REVIEWED BY:
PREPARED BY: Zarrar Zafar REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Traffic Engineering Bureau of North Carolina Department of Transportation Mobility and Safety Division
Bureau of Transportation Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

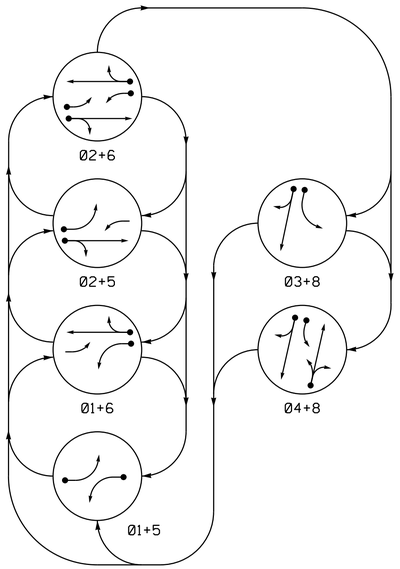
DocuSigned by: D. Todd Joyce 8/11/2021
A90CADE0BD8A4D... DATE

SIG. INVENTORY NO. 10-0516

10-MUC-2021 08:31
10-0516_ele_dtls_2021mdd.dgn
zzafar

PROJECT REFERENCE NO.	SHEET NO.
SM-5710G	Sig. 2.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+8	04+8	FLASH
11	←	←	F Y	F Y	~~R~~	~~R~~	~~Y~~
21,22	R	R	G	G	R	R	Y
31	~~R~~	~~R~~	~~R~~	~~R~~	←	F Y	~~R~~
41,42	R	R	R	R	R	G	R
51	←	F Y	←	F Y	~~R~~	~~R~~	~~Y~~
61,62	R	G	R	G	R	R	Y
81,82	R	R	R	R	G	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

11
31
51

21, 22
41, 42
61, 62
81, 82

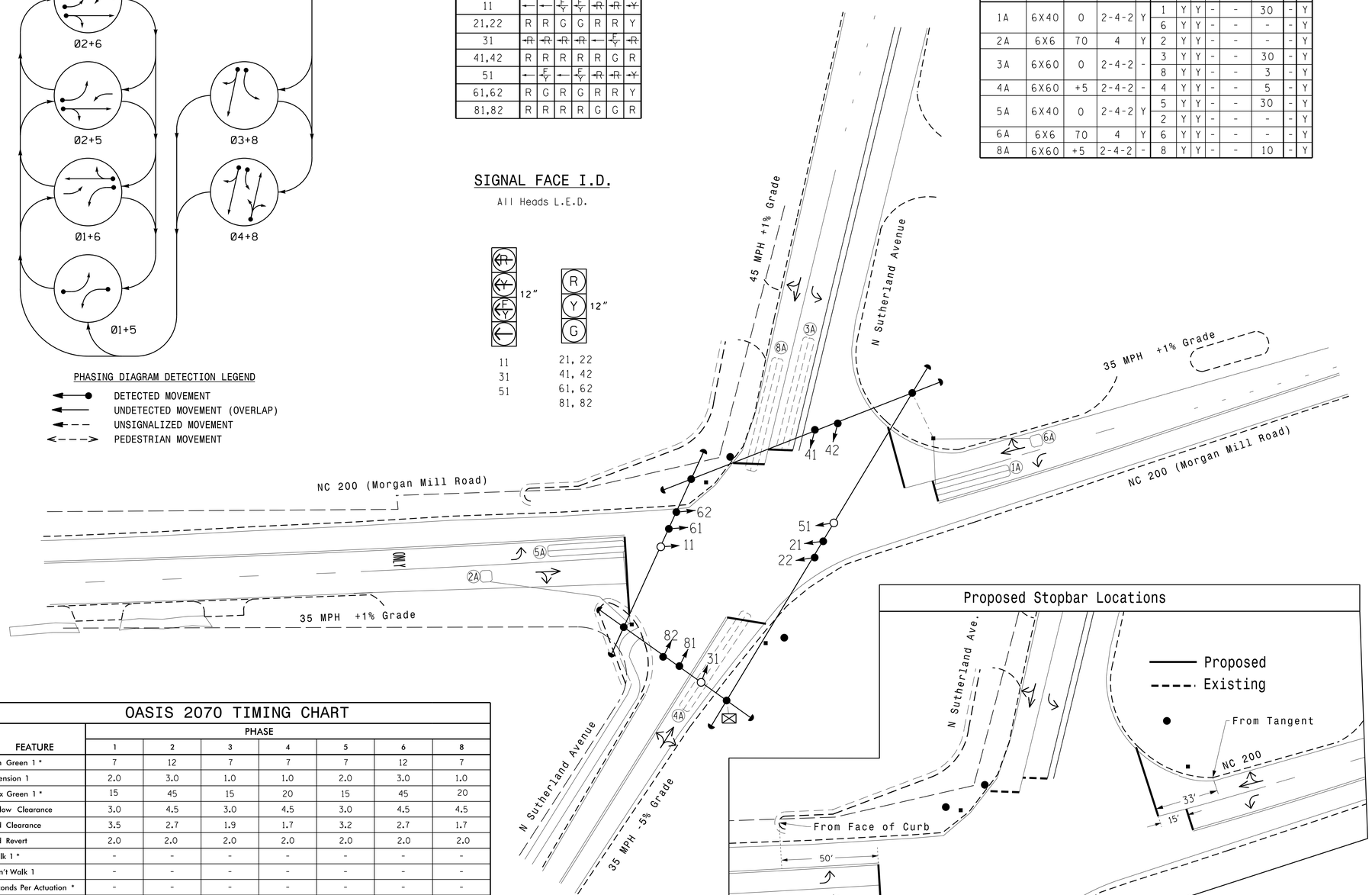
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

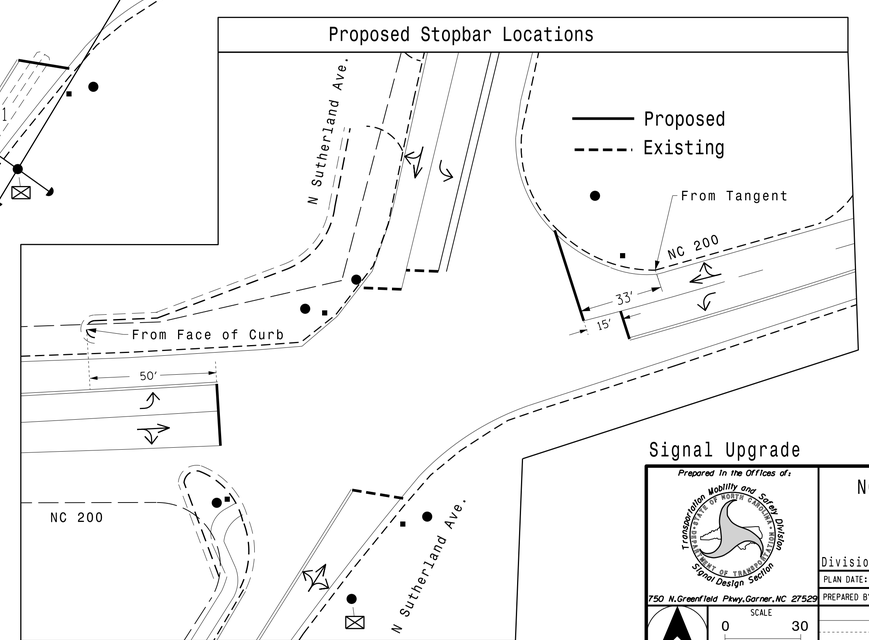
INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	30	-	Y
					6	Y	Y	-	-	-	-	Y
2A	6X6	70	4	Y	2	Y	Y	-	-	-	-	Y
3A	6X60	0	2-4-2	-	3	Y	Y	-	-	30	-	Y
					8	Y	Y	-	-	3	-	Y
4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	5	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	30	-	Y
					2	Y	Y	-	-	-	-	Y
6A	6X6	70	4	Y	6	Y	Y	-	-	-	-	Y
8A	6X60	+5	2-4-2	-	8	Y	Y	-	-	10	-	Y

6 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Reposition existing signal heads numbered 21, 22, 61, 62, 81 & 82.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Renumber existing loops 8A and 8B to 3A and 8A respectivley.
8. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
9. Pavement markings are existing.





LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	

OASIS 2070 TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	8
Min Green 1 *	7	12	7	7	7	12	7
Extension 1	2.0	3.0	1.0	1.0	2.0	3.0	1.0
Max Green 1 *	15	45	15	20	15	45	20
Yellow Clearance	3.0	4.5	3.0	4.5	3.0	4.5	4.5
Red Clearance	3.5	2.7	1.9	1.7	3.2	2.7	1.7
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-
Dual Entry	-	-	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared In the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

NC 200 (Morgan Mill Road) at N Sutherland Ave

Division 10 Union County Monroe

PLAN DATE:	July 2021	REVIEWED BY:	T.J. Williams
PREPARED BY:	EM Minshew	REVIEWED BY:	

SCALE 0 30 1"=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

DocuSigned by: T. J. Williams 8/12/2021
-97A0792EFE904CA

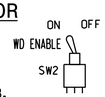
SIG. INVENTORY NO. 10-1504

12-AUG-2021 15:06
s:\ITS\Sig\Sig_dsn\2021mmdx.dgn
emminshew

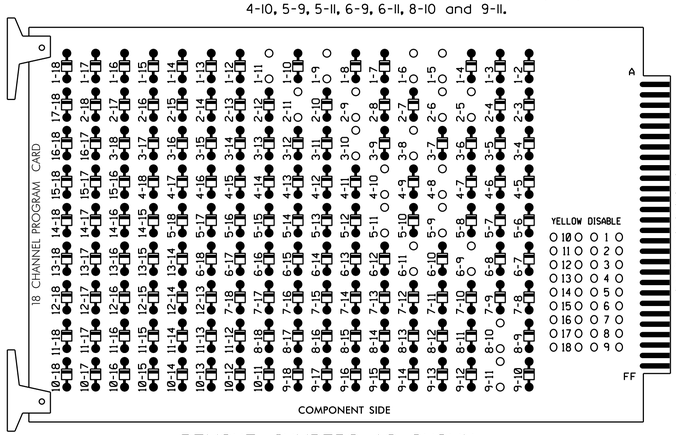
PROJECT REFERENCE NO.	SHEET NO.
SM 5710G	Sig. 2.1

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

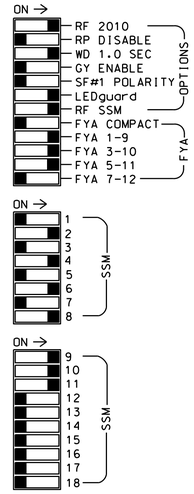
(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 2-5, 2-6, 2-9, 2-11, 3-8, 3-10, 4-8, 4-10, 5-9, 5-11, 6-9, 6-11, 8-10 and 9-11.



REMOVE JUMPERS AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Enable Simultaneous Gap-Out for all Phases.
4. Program phases 2 and 6 for Startup In Green.
5. Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
6. If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	21,22	NU	31★	41,42	NU	51★	61,62	NU	NU	81,82	NU	11★	31★	NU	51★	NU	NU
RED		128			101			134			107							
YELLOW	✳	129		✳	102		✳	135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114		
YELLOW ARROW													A122	A125		A115		
FLASHING YELLOW ARROW													A123	A126		A116		
GREEN ARROW	127			118			133											

NU = Not Used

✳ Denotes install load resistor. See load resistor installation detail this sheet.

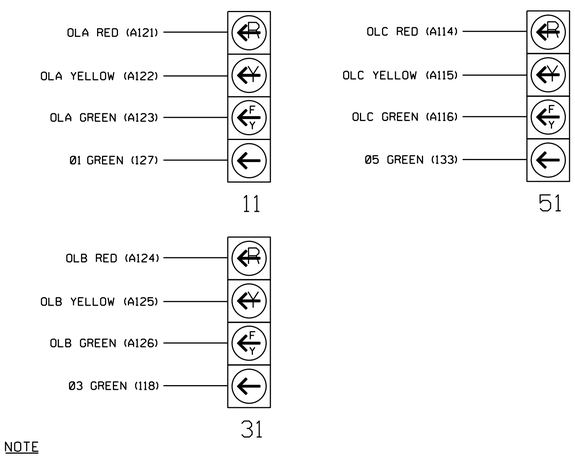
★ See pictorial of head wiring in detail this sheet.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332 W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8,S11,AUX S1, AUX S2,AUX S4
PHASES USED.....1,2,3,4,5,6,8
OVERLAP "A".....1+2
OVERLAP "B".....3+4
OVERLAP "C".....5+6
OVERLAP "D".....NONE

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

The sequence display for signal heads 11, 31 and 51 requires special logic programming. See sheet 2 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø2 2A	SLOT EMPTY	WIRED INPUT ⊗	Ø3 3A	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED			NOT USED	NOT USED								ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6 6A	SLOT EMPTY	WIRED INPUT ⊗	SLOT EMPTY	Ø8 8A	SLOT EMPTY	WIRED INPUT ⊗	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED				NOT USED								

EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A[1]	TB2-1,2	I1U	56	18	1	1	Y	Y			30
	-	J4U	48	10	26	6	Y	Y			
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
3A[2]	TB4-5,6	I5U	58	20	3	3	Y	Y			30
	-	J8U	50	12	28	8	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			5
5A[3]	TB3-1,2	J1U	55	17	5	5	Y	Y			30
	-	I4U	47	9	22	2	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10

[1] Add jumper from I1-W to J4-W, on rear of input file.
[2] Add jumper from I5-W to J8-W, on rear of input file.
[3] Add jumper from J1-W to I4-W, on rear of input file.

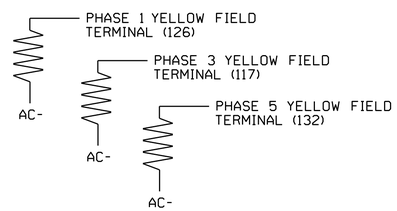
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

ACCEPTABLE VALUES

VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1504
DESIGNED: July 2021
SEALED: 8/6/2021
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC 200 (Morgan Mill Road) at N Sutherland Ave

Division 10 Union County Monroe

PLAN DATE: August 2021 REVIEWED BY:
PREPARED BY: Zarrar Zafar REVIEWED BY:

REVISIONS INIT. DATE

Prepared in the Offices of:
Transportation Mobility and Safety Division of North Carolina
Traffic Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 8/11/2021
DATE

SIG. INVENTORY NO. 10-1504

10-AUG-2021 09:09
S:*TIS\SIGNALS\Workgroups\Sig Man\Zafar\Plans\101504\101504_sm_ela_2021mod1.dgn
zzafar

PROJECT REFERENCE NO.	SHEET NO.
SM 5710G	Sig. 2.2

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5, 6, 7, 8 AND 9.

2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE       #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE       #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE    #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #4  (+/-COMMAND#)
IF  ACTIVE PHASE       #5  IS ON
AND RED CLEAR ON PHASE #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
```

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #5  (+/-COMMAND#)
IF  ACTIVE PHASE       #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #6  (+/-COMMAND#)
IF  YELLOW ON PHASE    #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #43 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #7  (+/-COMMAND#)
IF  ACTIVE PHASE       #3  IS ON
AND RED CLEAR ON PHASE #3  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #47 ON
SET OUTPUT  ASSIGNMENT #48 OFF
```

NOTE: LOGIC FOR PHASE 3 RED CLEAR WHEN TRANSITIONING FROM PHASE 3 TO PHASE 4 (HEAD 31).

PRESS '+'

```
LOGICAL I/O COMMAND #8  (+/-COMMAND#)
IF  ACTIVE PHASE       #3  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #49 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 3 (HEAD 31).

PRESS '+'

```
LOGICAL I/O COMMAND #9  (+/-COMMAND#)
IF  YELLOW ON PHASE    #3  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #48 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 3 (HEAD 31).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 47 = Overlap B Red
OUTPUT 48 = Overlap B Yellow
OUTPUT 49 = Overlap B Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:          ;1234567891011121314151 6
VEH OVL PARENTS:;XX
VEH OVL NOT VEH:;
VEH OVL NOT PED:;
VEH OVL GRN EXT:;
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE:          ;1234567891011121314151 6
VEH OVL PARENTS:;  XX
VEH OVL NOT VEH:;
VEH OVL NOT PED:;
VEH OVL GRN EXT:;
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

PRESS '+'

```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE:          ;1234567891011121314151 6
VEH OVL PARENTS:;    XX
VEH OVL NOT VEH:;
VEH OVL NOT PED:;
VEH OVL GRN EXT:;
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1504
DESIGNED: July 2021
SEALED: 8/6/2021
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering Branch, Traffic Management Unit, Transportation Mobility and Safety Division, State of North Carolina, Department of Transportation, Signals Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

NC 200 (Morgan Mill Road)
at
N Sutherland Ave

Division 10 Union County Monroe

PLAN DATE:	August 2021	REVIEWED BY:	
PREPARED BY:	Zarrar Zafar	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL

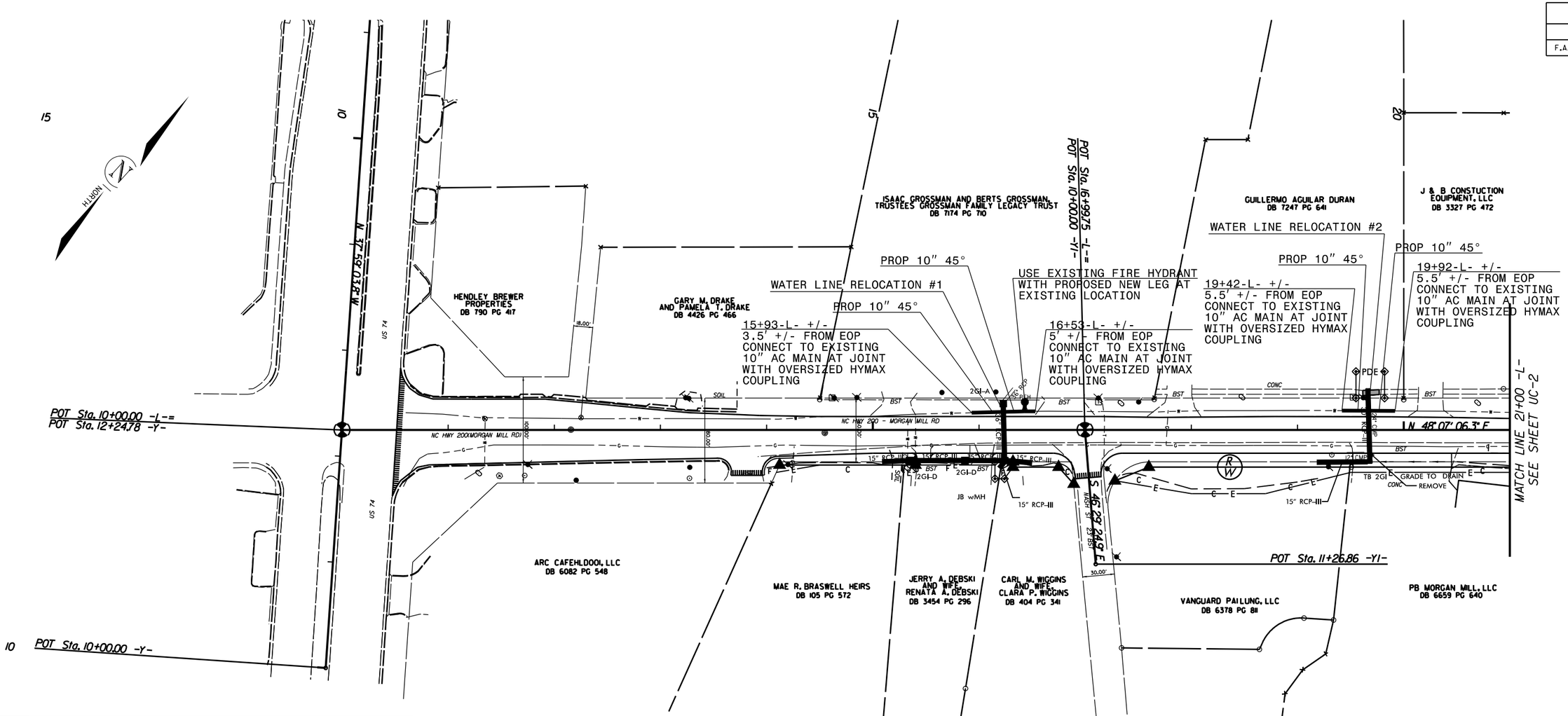
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 8/11/2021
DATE

SIG. INVENTORY NO. 10-1504

10-AUG-2021 09:10
S:*TMS\SIGNALS\Workgroups\Sig Mgmt\Zafar\Plans\101504\101504_sm_ele_2021mmdd.dgn
ZZAFAR

PROJECT NO.	SHEET NO.
49920	UC-1
F.A. PROJECT NO.	



GENERAL NOTES:

CONTACT RICHARD RISER OF CITY OF MONROE 72 HOURS PRIOR TO BEGINNING WORK ON THIS PROPOSED WATER MAIN AT (704) 282-4646.

WATER VALVES ARE TO BE OPERATED BY CITY OF MONROE STAFF.

ENTIRE LENGTH OF RELOCATED WATER MAIN MUST BE RESTRAINED JOINT.

CONTRACTOR IS TO USE TEMP. PLUGS AND BLOW OFFS FOR TESTING & DISINFECTION.

CONTRACTOR IS TO PROVIDE TWO TIE-IN CREWS WORKING CONCURRENTLY, ONE AT EACH END, TO MINIMIZE SHUT DOWN TIME.

SHUT DOWN WILL BE LIMITED TO A MAXIMUM OF FOUR HOURS. PROVIDE 96 HOURS ADVANCE NOTICE TO CITY OF MONROE PRIOR TO SHUT-DOWN OF WATER MAIN.

CONTRACTOR SHALL PROVIDE A PLAN FOR BLOCKING AT ALL TIE-IN LOCATIONS. PLAN MUST BE APPROVED BY CITY OF MONROE REPRESENTATIVE PRIOR TO PERFORMING WORK.

ALL SLEEVES MUST BE OF THE RESTRAINED JOINT TYPE.

THE NEW WATER MAIN MUST BE AT LEAST 3 FEET BELOW THE PROPOSED EDGE OF PAVEMENT AND PROVIDE A MINIMUM 3 FEET OF COVER AT ALL TIMES.

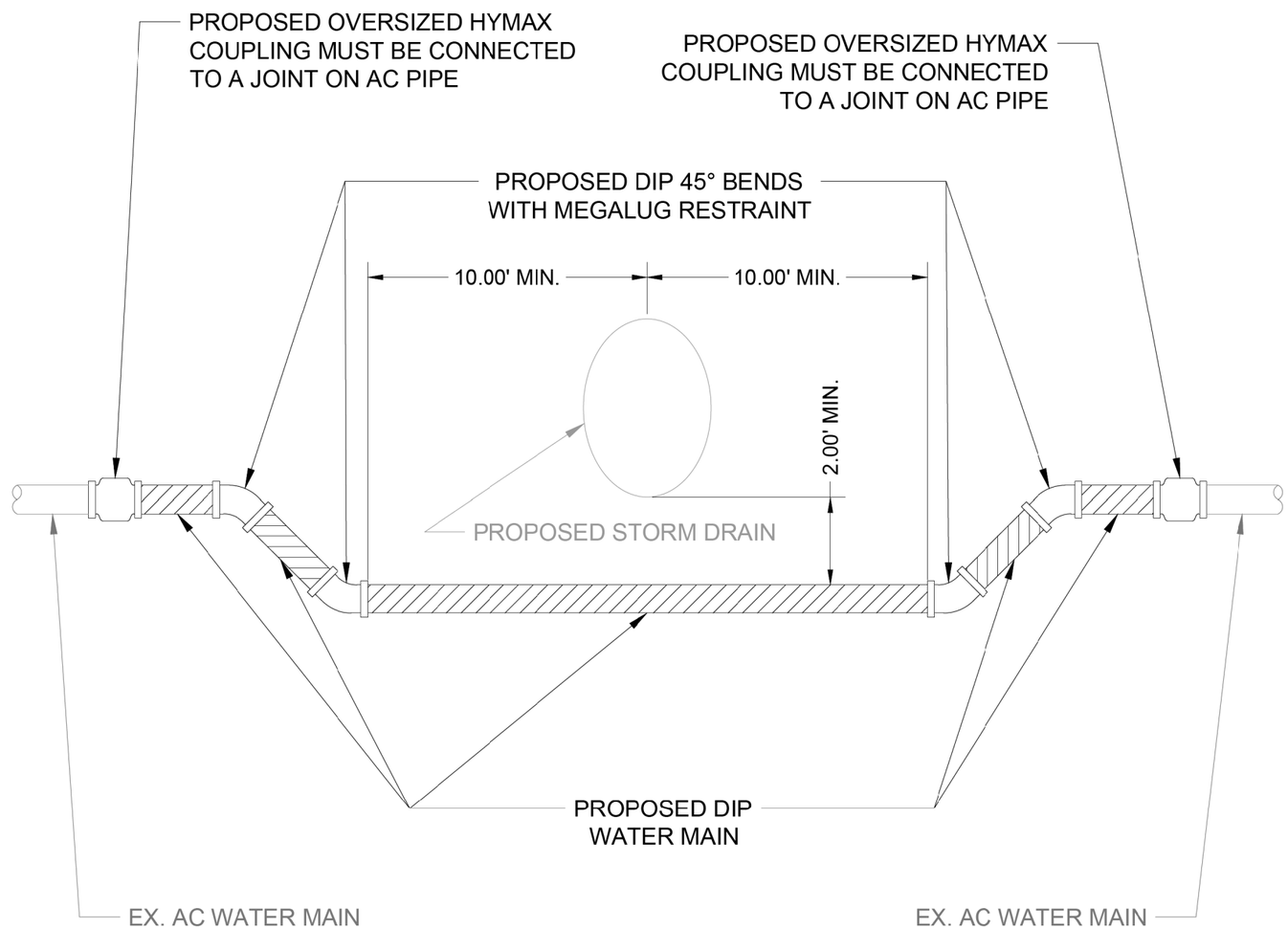
DUE TO OPERATING HOURS OF LOCAL BUSINESSES, TIE-INS TO THE EXISTING WATER MAIN MAY REQUIRE NIGHT WORK

SEE SHEET UC-2 FOR DETAIL.

WIDENING NC 200 (MORGAN MILL RD.) FROM US 74 TO SUTHERLAND AVE.

		REVISIONS	
SCALE	1"=50'		
DATE	2-2022		
DWG. BY	TBL		
DESIGN BY	TBL		
APPROVED	JDH		

PROJECT NO.	SHEET NO.
49920	UC-2
F.A. PROJECT NO.	



REV NO.	DESCRIPTIONS	
0	PLANS	4/23/21

REVISIONS

P.E.

DATE

DESIGNED -
DRAWN RY
CHECKED RER
PROJ. MGR. RER

North Carolina ONE-CALL CENTER 811 Call Before You Dig! 1-800-632-4949

All utility companies have been contacted and requested to identify their lines in the area of proposed construction. All existing utilities, as marked by the individual locators, have been shown on these drawings to the best of our abilities. Contractor shall contact N.C. One Call prior to excavation to confirm that all utilities have been properly identified.

CITY OF MONROE
WATER RESOURCES DEPARTMENT
ENGINEERING DIVISION

WATER MAIN IMPROVEMENTS

SCALE: NTS

SHEET NO. 1 OF: 1

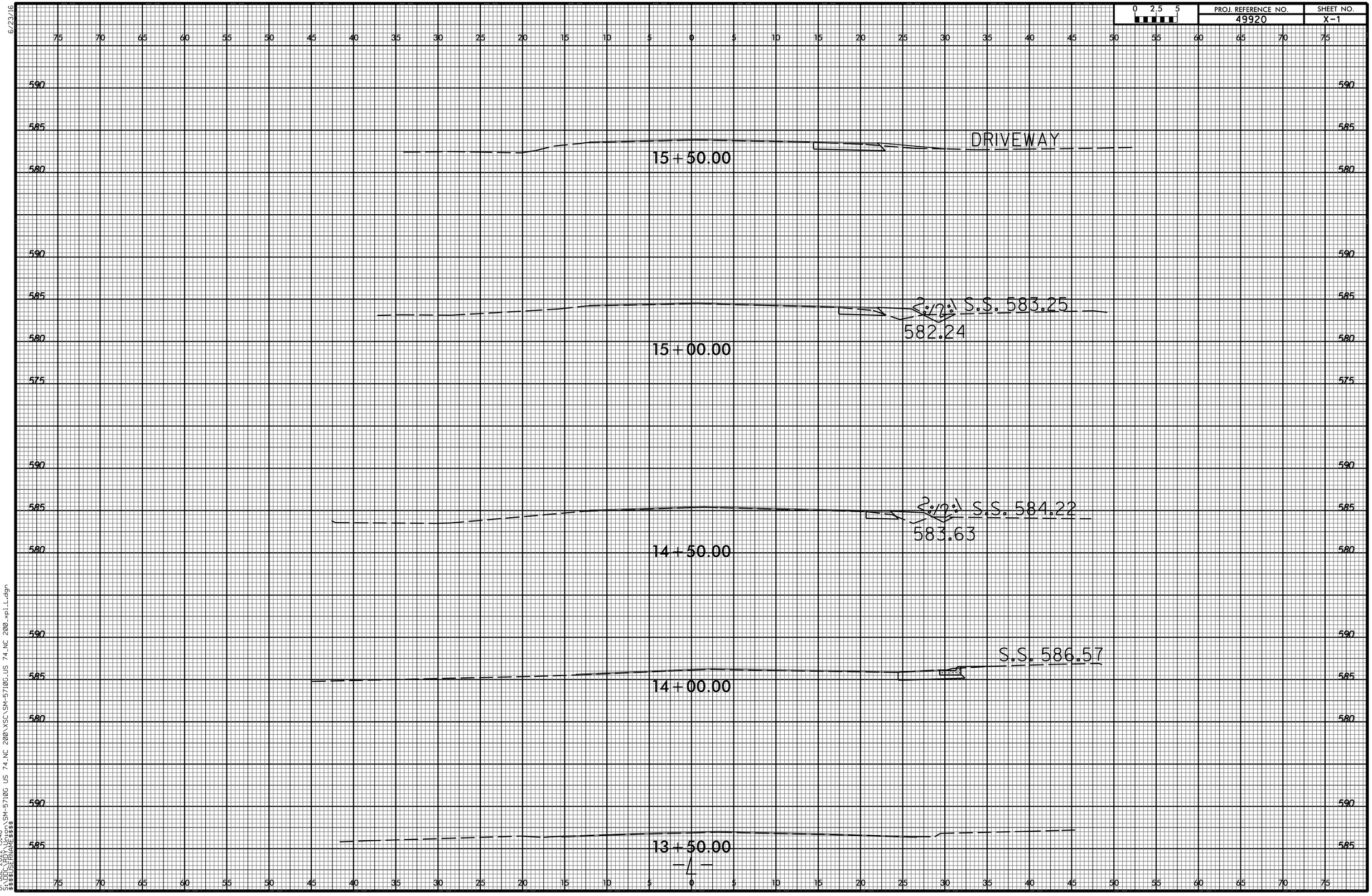
WIDENING NC 200 (MORGAN MILL RD.) FROM US 74 TO SUTHERLAND AVE.

SCALE	N/A
DATE	2-2022
DWG. BY	TBL
DESIGN BY	TBL
APPROVED	JDH

DIVISION OF HIGHWAYS

REVISIONS

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	49920	X-1



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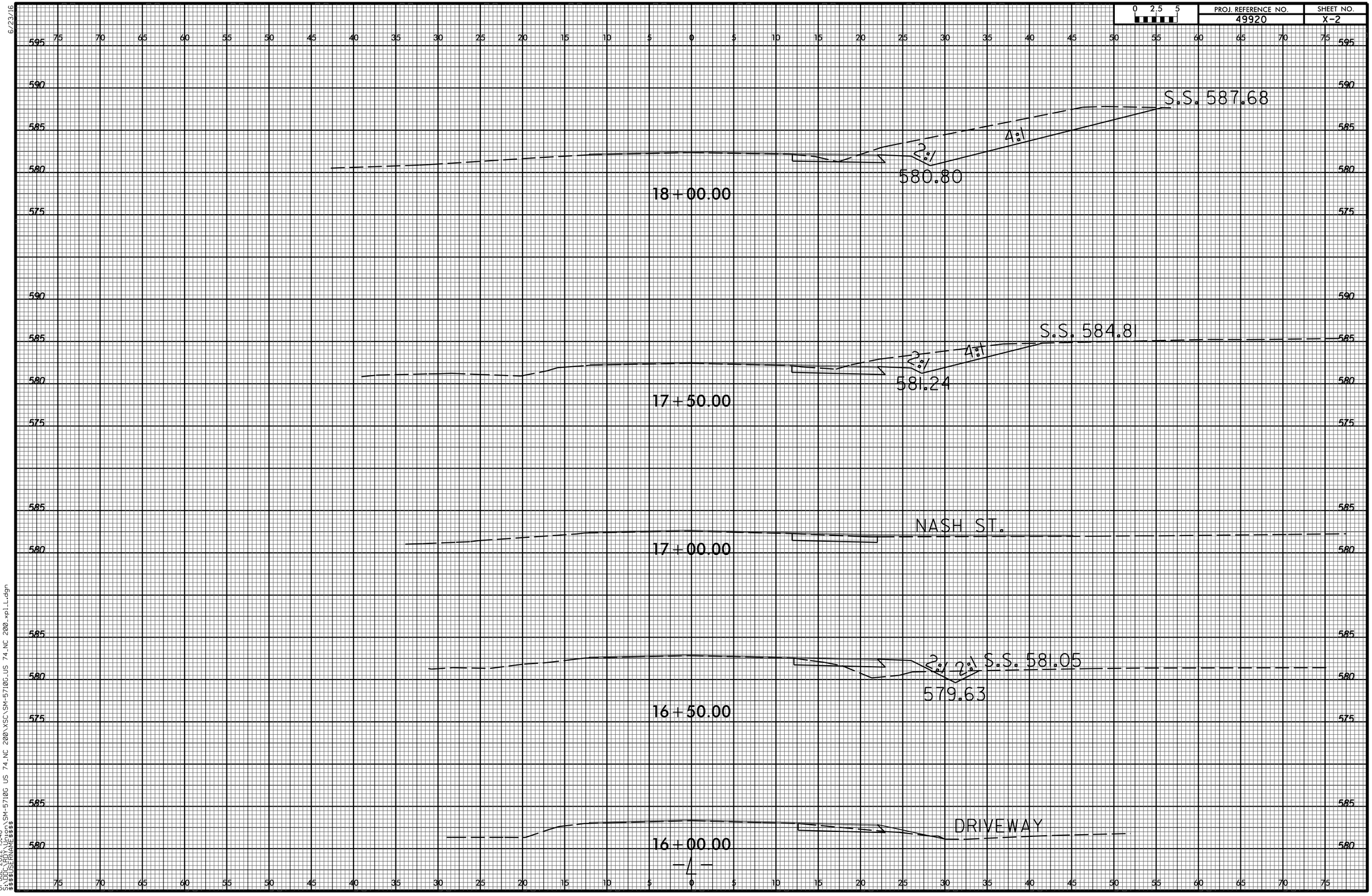
S:\DOC\RDY\Union\SM-5710G US 74_NC 200\XSC\SM-5710G_US 74_NC 200_xpl_L.dgn
$$$$USERNAME$$$$

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	49920	X-2



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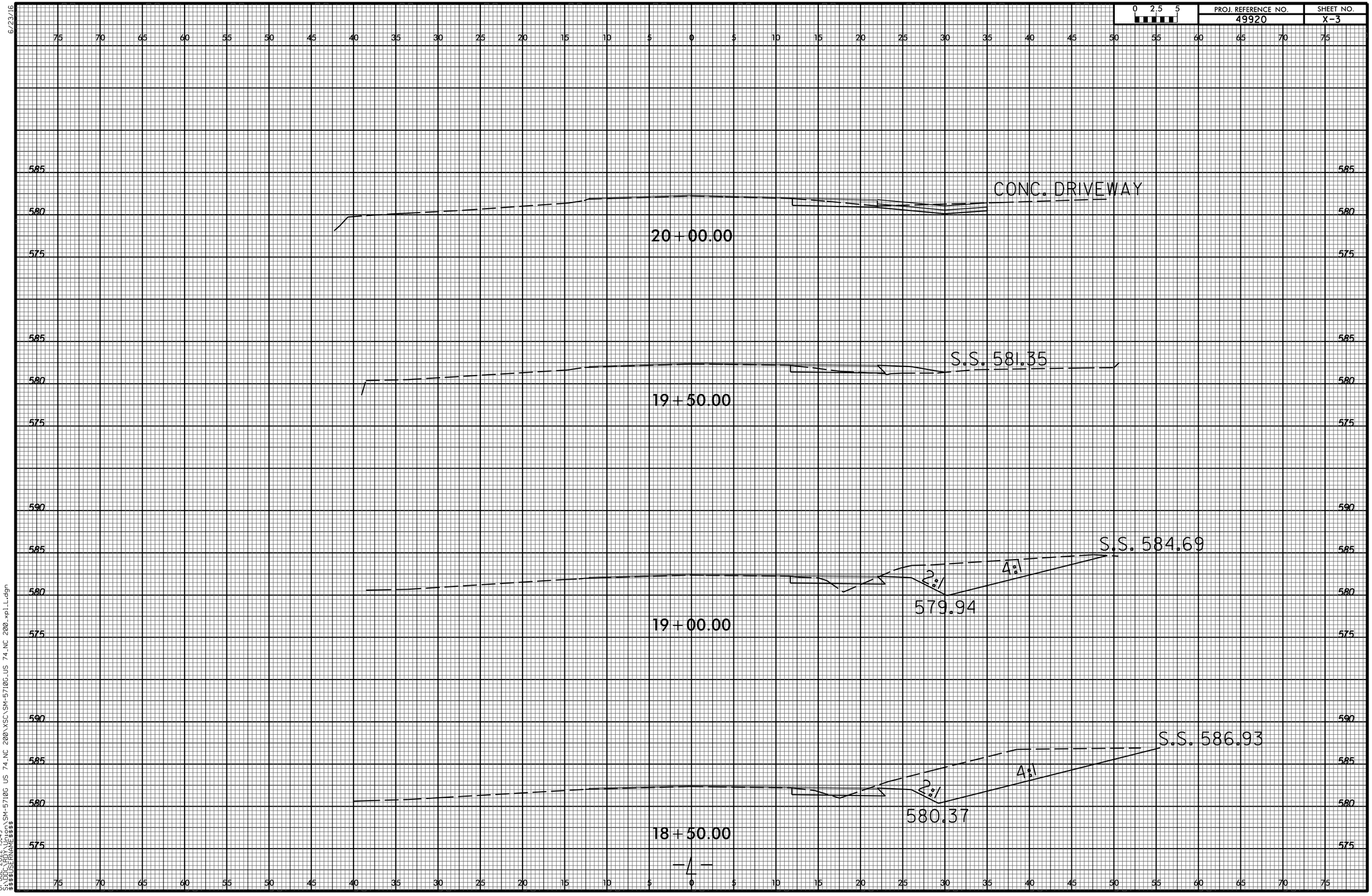

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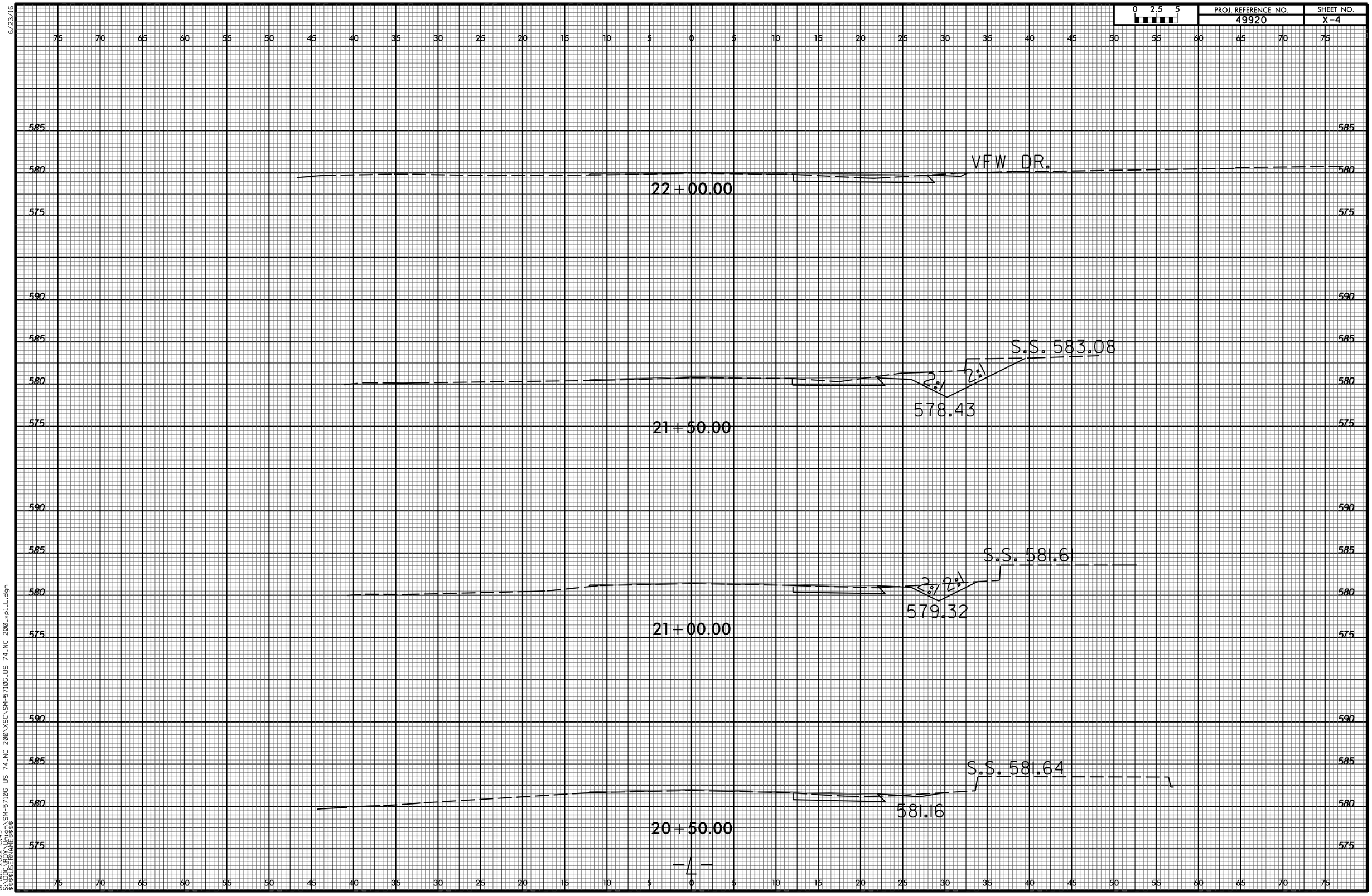

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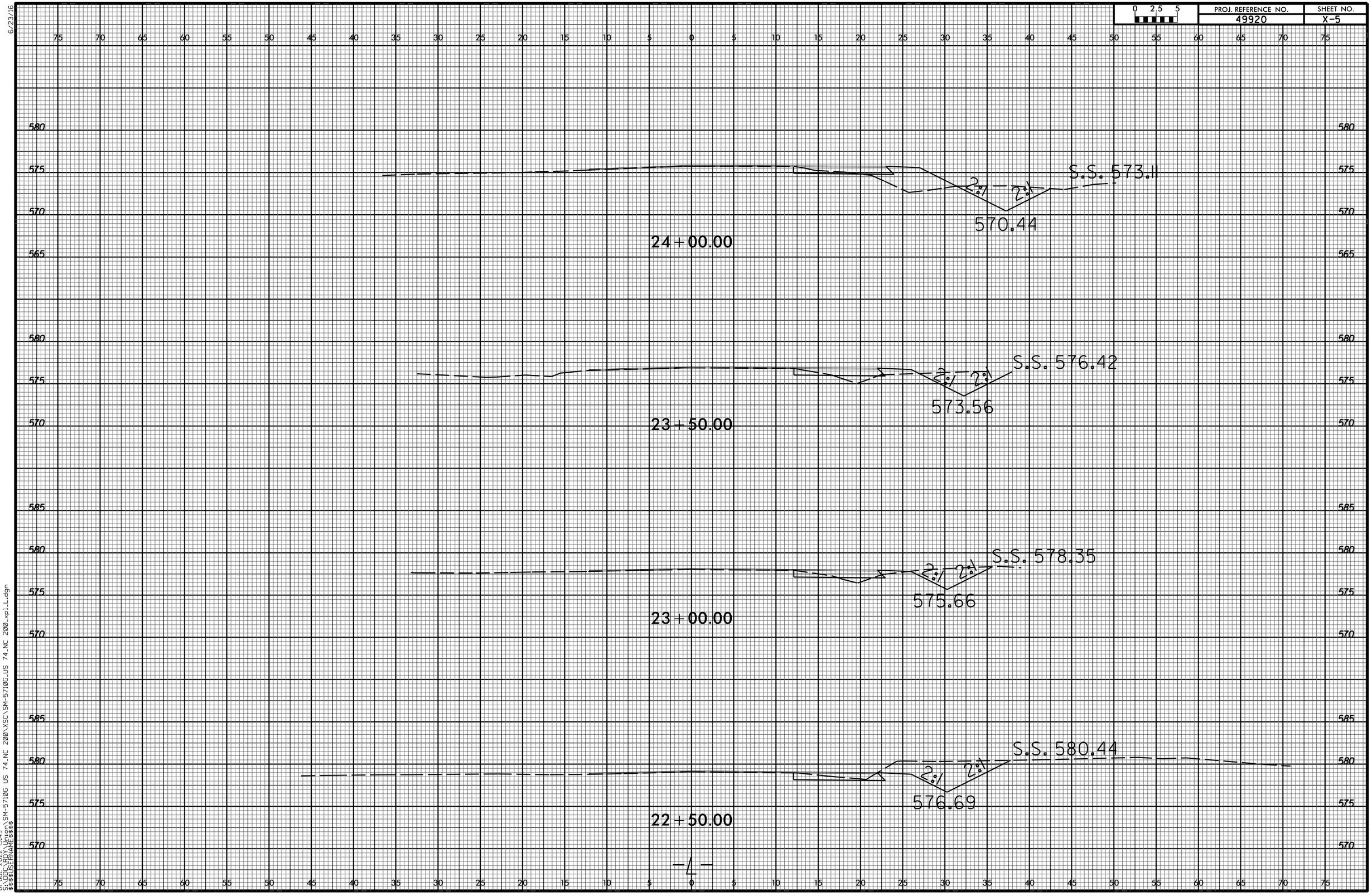

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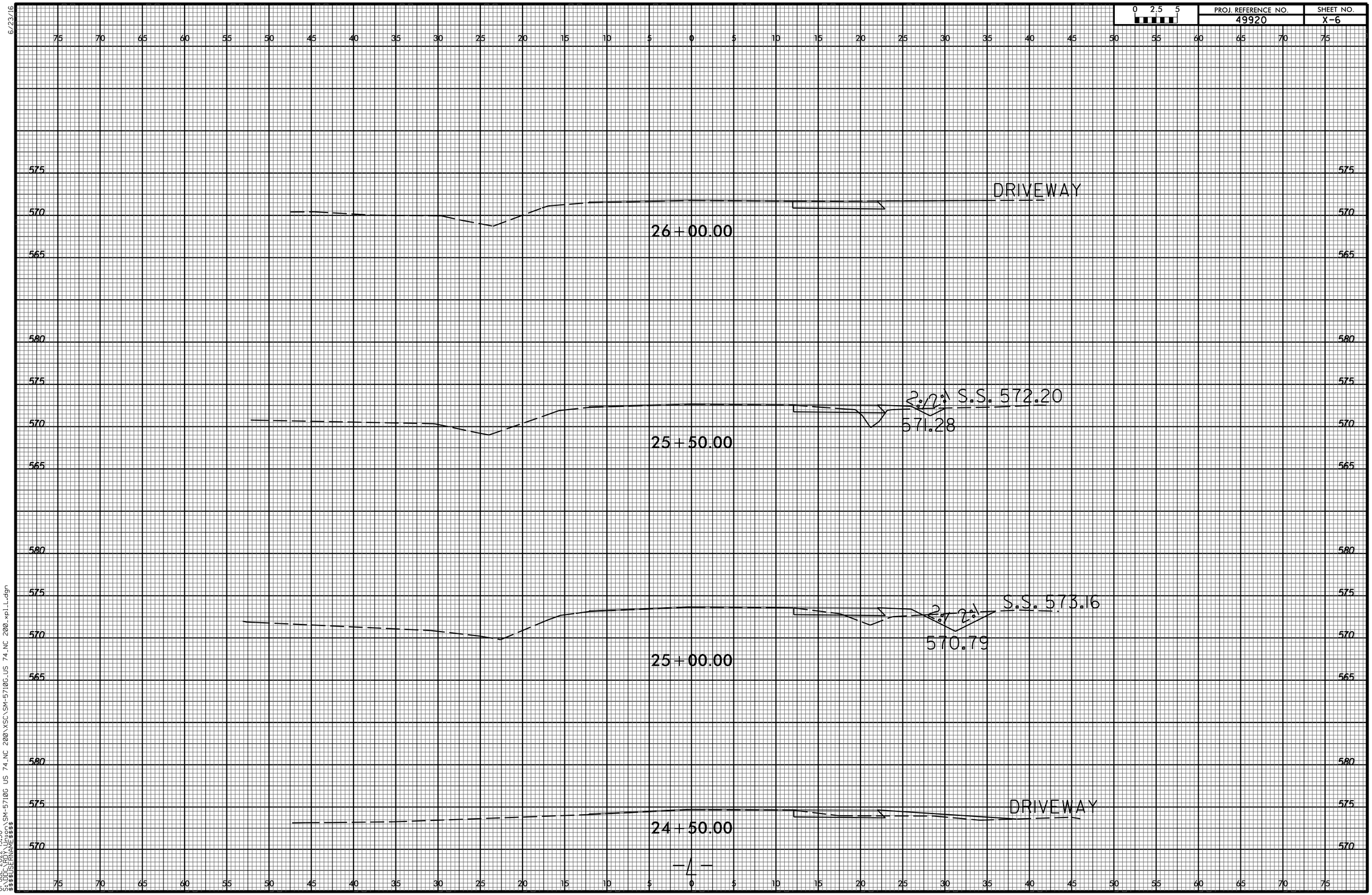

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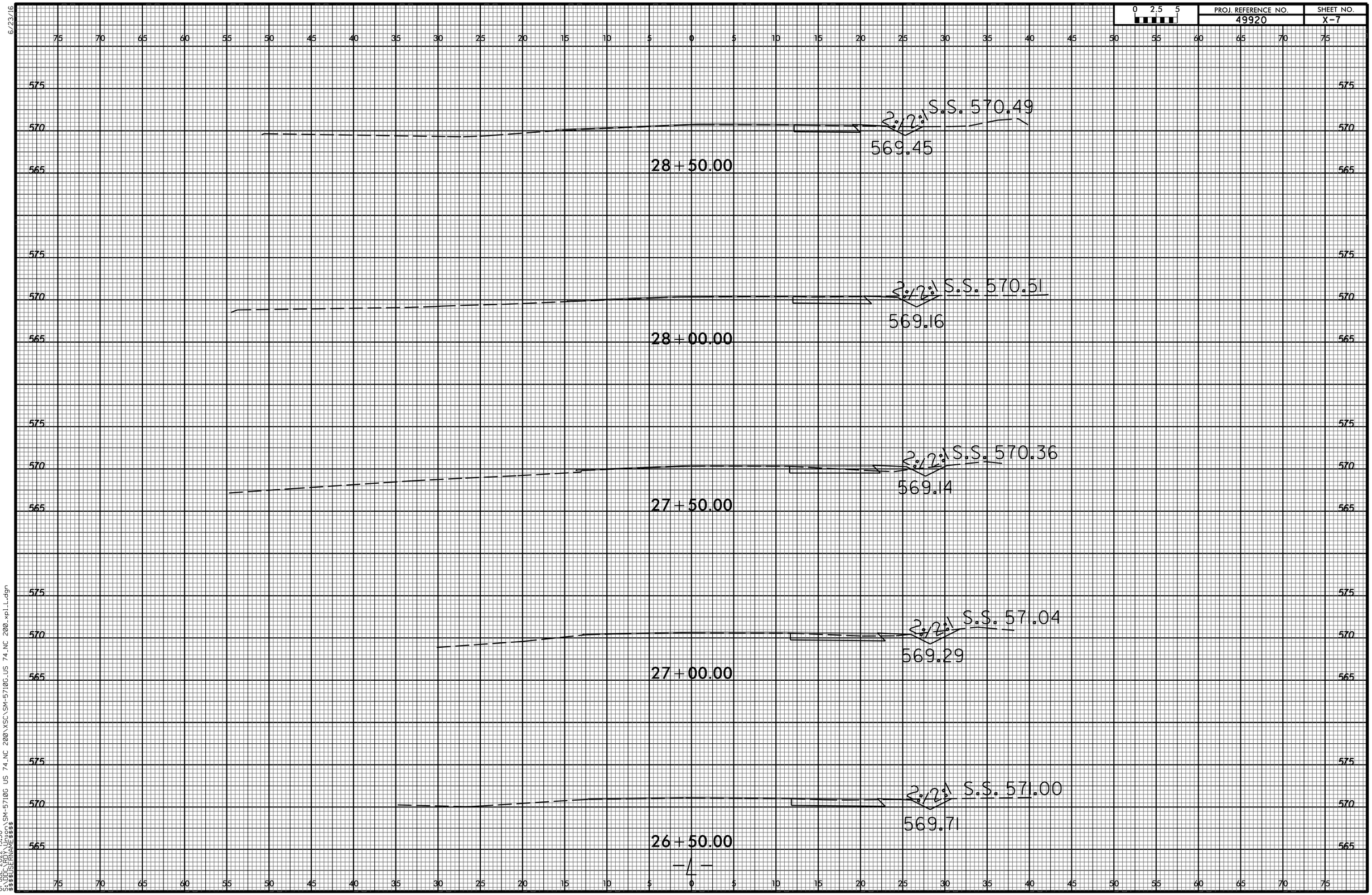

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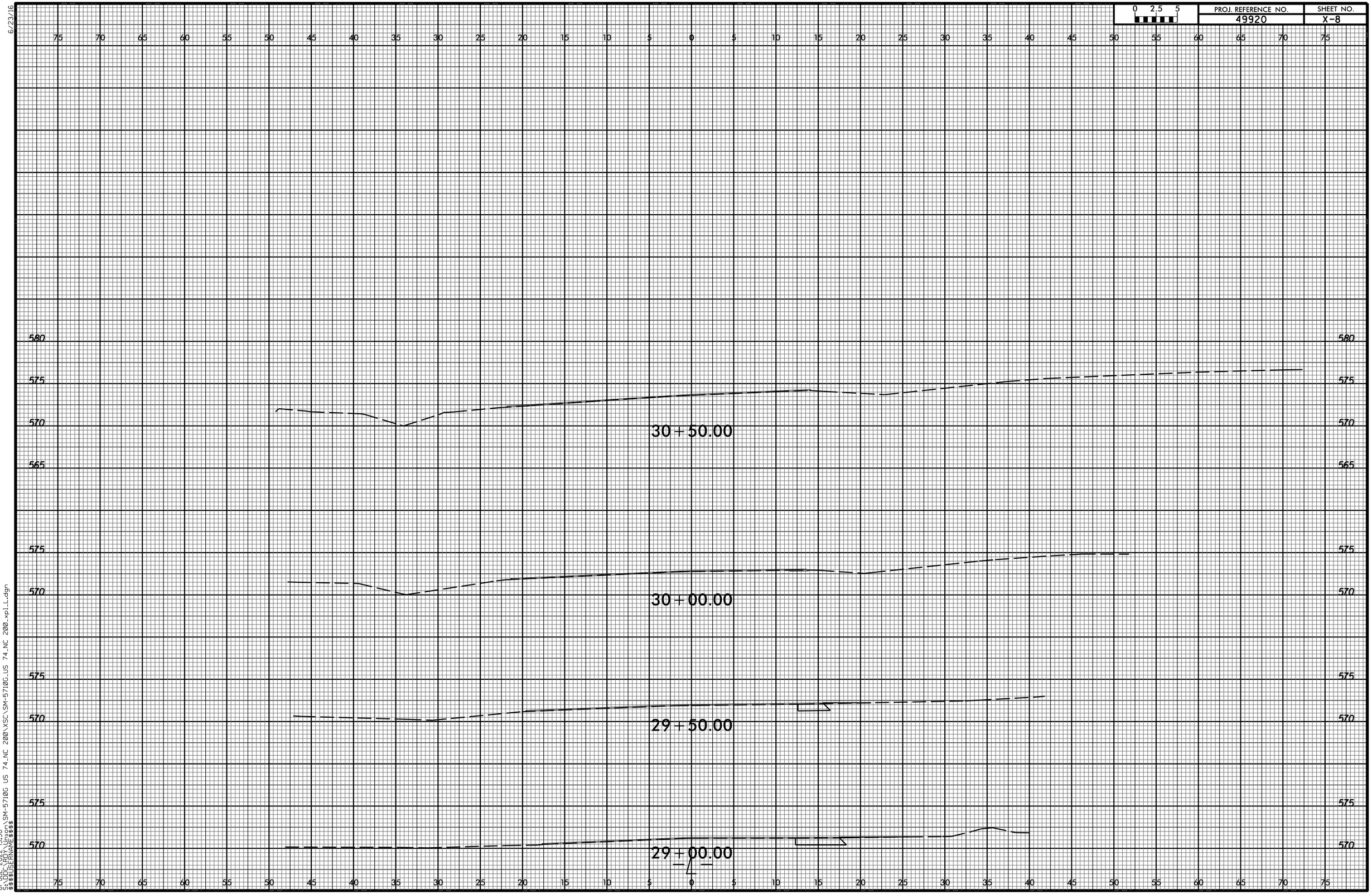

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