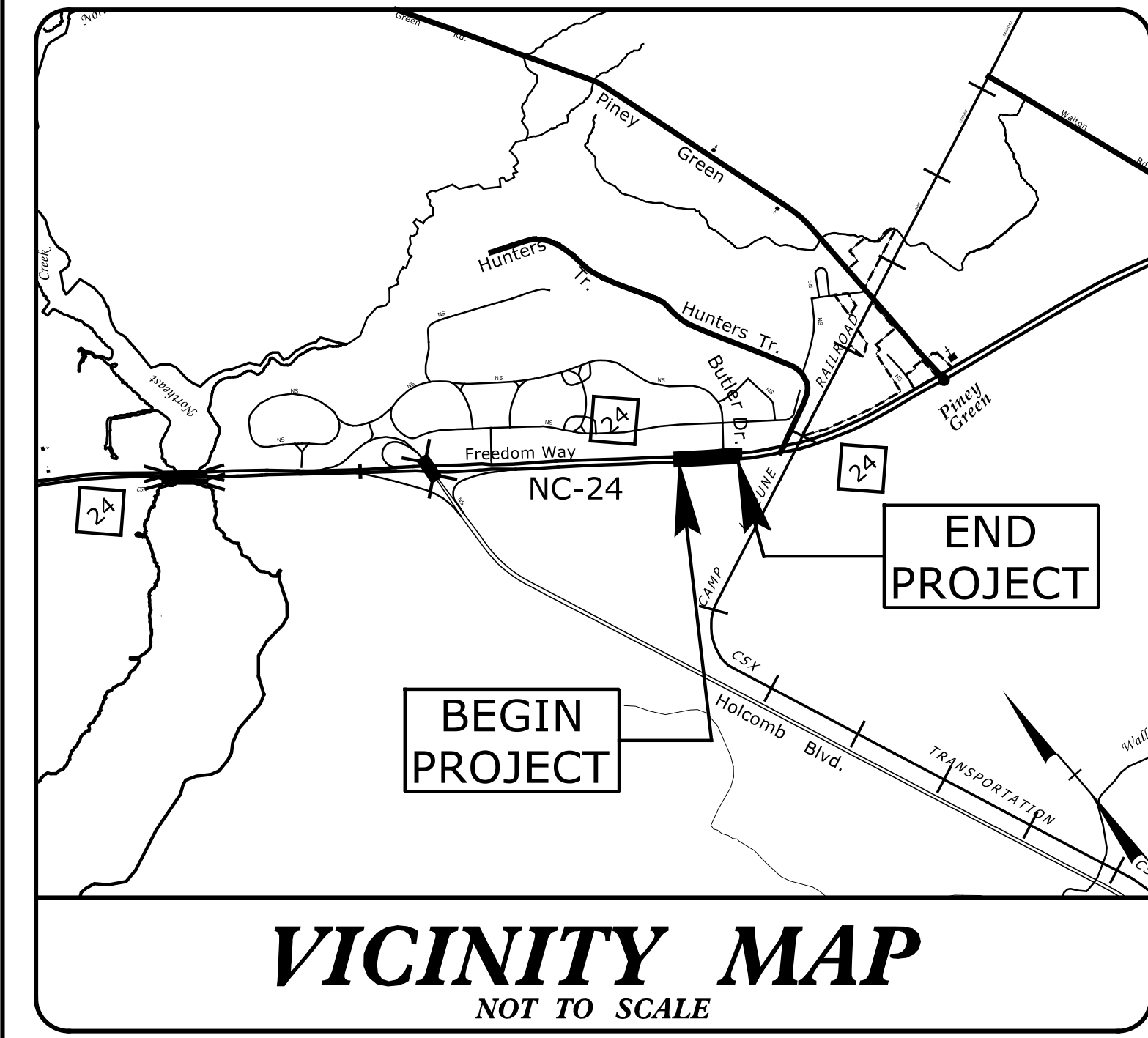


11/20/21

TIP PROJECT: W-5703D

WBS: 44849.1.4

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

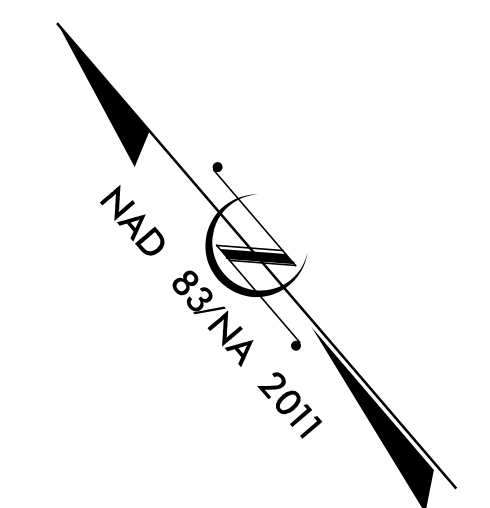
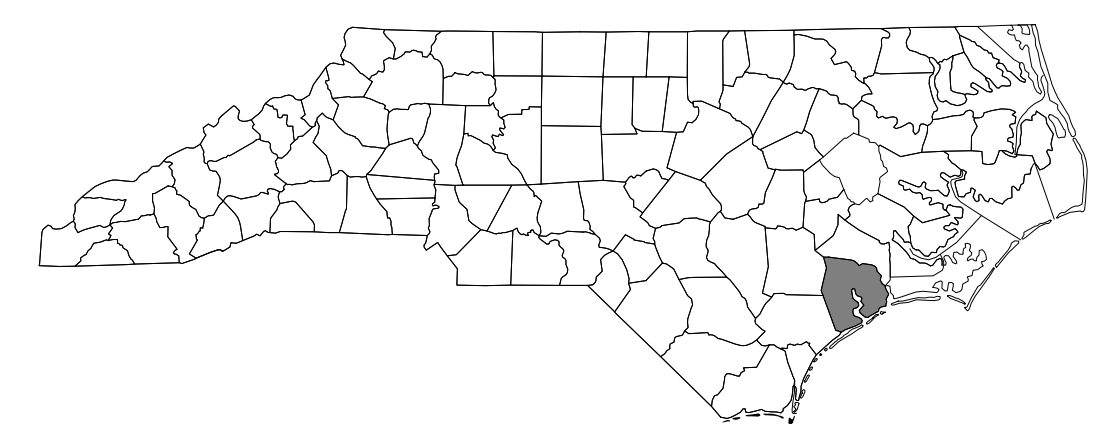


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ONSLOW COUNTY

**LOCATION: NC 24 (LEJEUNE BOULEVARD) AT THE INTERSECTION
OF BUTLER DRIVE
(SAFETY IMPROVEMENTS)**

TYPE OF WORK: GRADING, WIDENING, DRAINAGE & PAVING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5703D	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
44849.1.4	HSIP-0024(084)	P.E.	
44849.2.4	HSIP-0024(084)	RW, UTIL.	
44849.3.4	HSIP-0024(084)	CONST.	



BEGIN TIP PROJECT W-5703D
-L- POT STA. 17+50.00

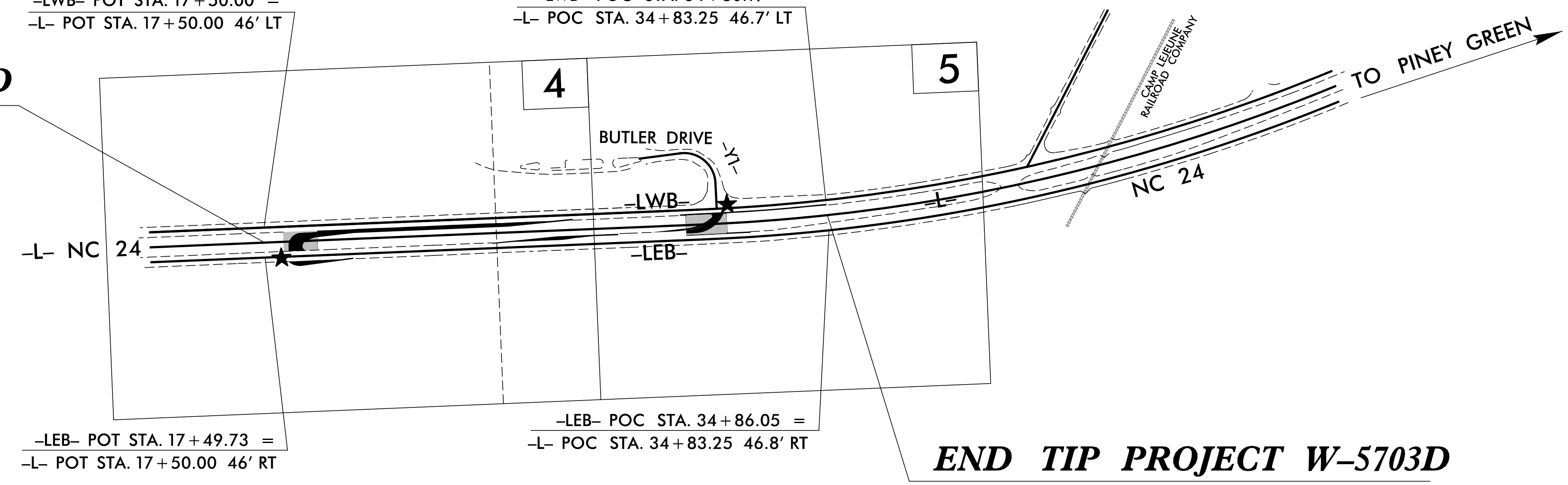
← TO JACKSONVILLE

-LWB- POT STA. 17+50.00 =
-L- POT STA. 17+50.00 46' LT

-LWB- POC STA. 34+80.19 =
-L- POC STA. 34+83.25 46.7' LT

-LEB- POT STA. 17+49.73 =
-L- POT STA. 17+50.00 46' RT

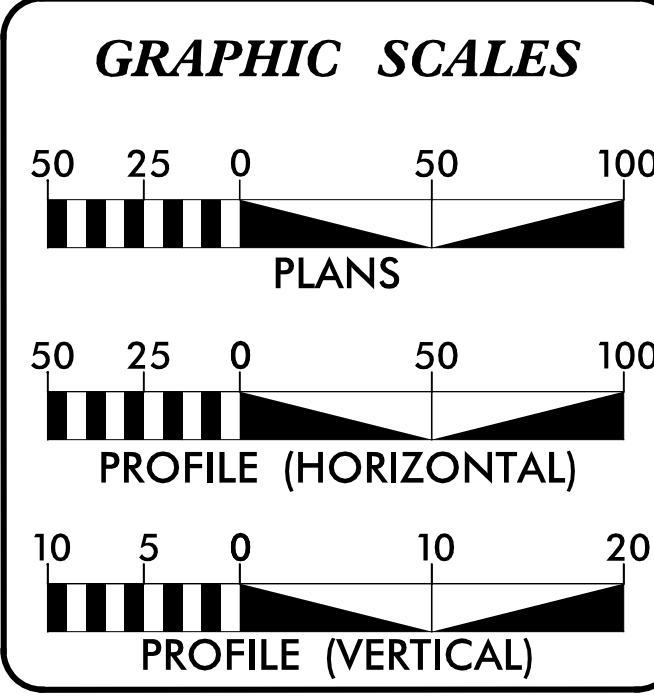
-LEB- POC STA. 34+86.05 =
-L- POC STA. 34+83.25 46.8' RT



END TIP PROJECT W-5703D
-L- POC STA. 34+83.25

★ PROPOSED TRAFFIC SIGNAL

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



DESIGN DATA

ADT 2017 =	36,200
ADT 2040 =	57,400
K =	9 %
D =	60 %
T =	5 %
V =	60 MPH
* TTST = 2% DUAL 3%	
FUNC CLASS = ARTERIAL REGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT W-5703D =	0.328 MI.
TOTAL LENGTH OF TIP PROJECT W-5703D =	0.328 MI.

Prepared for the North Carolina Department of Transportation
In the Office of:

940 Main Campus Drive, Suite 500
Raleigh, NC 27606
VHB Engineering, Inc., P.C. (C-3705)

SUNGATE DESIGN GROUP, P.A.
10000 W. HICKORY STREET
RICHMOND, VA 23234
REGISTERED PROFESSIONAL ENGINEERS
STATE OF NORTH CAROLINA

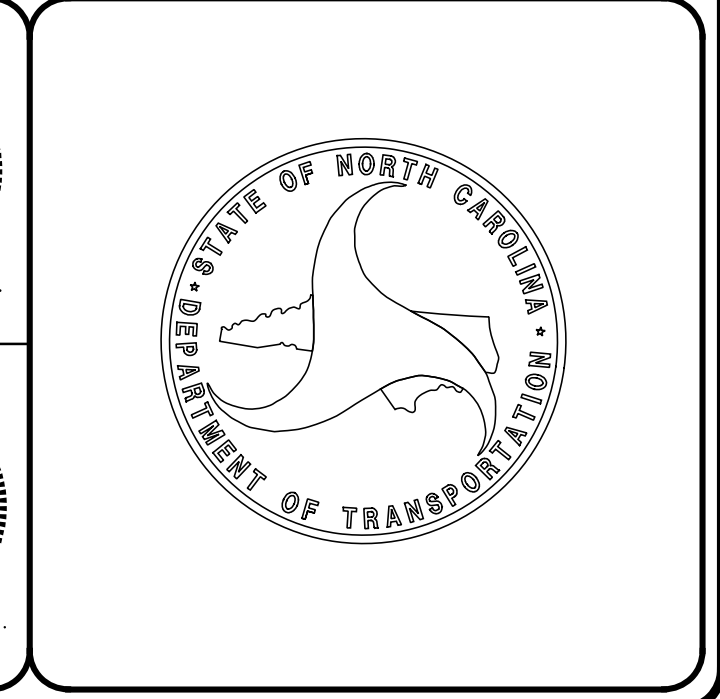
2018 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: JUNE 15, 2019	JAMES S GOODNIGHT, PE PROJECT ENGINEER
LETTING DATE: NOVEMBER 04, 2021	JERRY JAVELLANA, PE PROJECT DESIGN ENGINEER
NCDOT CONTACT	BRIAN J. HARDING, PE DESIGN ENGINEER - DIVISION 3

HYDRAULICS ENGINEER



DocuSigned by:
Joshua G. Dalton 9/15/2021
SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

DocuSigned by:
Jimmy Goodnight 9/15/2021
SIGNATURE: _____ P.E.



8/17/99

PROJECT REFERENCE NO. <i>W-5703D</i>	SHEET NO. <i>A</i>
 VHB Engineering NC, P.C. (C-3705) 940 Main Campus Drive, Suite 500 Raleigh, NC 27606	ROADWAY DESIGN ENGINEER  10/1/2021
	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS	
SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, STANDARD DRAWINGS, AND GENERAL NOTES
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	MEDIAN ISLAND DETAILS
3B-1	EARTHWORK SUMMARY, REMOVAL OF EXISTING ASPHALT PAVEMENT
3D-1	DRAINAGE SUMMARY
3G-1	SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION, SUMMARY OF SUBSURFACE DRAINAGE
4 THRU 6	PLAN AND PROFILE SHEETS
TMP-1 THRU TMP-9	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-9	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-5	SIGNING PLANS
SIG-1.0 THRU SIG-3.3	SIGNAL PLANS
SCP 1 THRU SCP 6	SIGNAL COMMUNICATION PLANS
X-1A	CROSS-SECTION INDEX AND SUMMARY SHEETS
X-1 THRU X-4	CROSS-SECTIONS

2018 ROADWAY ENGLISH STANDARD DRAWINGS EFF. 01-16-2018
REV.

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" HIGHWAY DESIGN BRANCH - N. C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N. C., DATED JANUARY, 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD.NO. TITLE

DIVISION 2 - EARTHWORK
200.03 METHOD OF CLEARING - METHOD III
225.01 GUIDE FOR GRADING SUBGRADE - INTERSTATE AND FREEWAY

DIVISION 3 - PIPE CULVERTS
300.01 METHOD OF PIPE INSTALLATION

DIVISION 5 - SUBGRADE, BASES AND SHOULDERS
560.01 METHOD OF SHOULDER CONSTRUCTION - HIGH SIDE OF SUPERELEVATED CURVE - METHOD I

DIVISION 6 - ASPHALT BASES AND PAVEMENTS
654.01 PAVEMENT REPAIRS

DIVISION 8 - INCIDENTALS
815.02 SUBSURFACE DRAIN
840.00 CONCRETE BASE PAD FOR DRAINAGE STRUCTURES
840.14 CONCRETE DROP INLET - 12" THRU 30" PIPE
840.15 BRICK DROP INLET - 12" THRU 30" PIPE
840.16 DROP INLET FRAME AND GRATES - FOR USE WITH STD. DWG 840.14 AND 840.15
840.18 CONCRETE GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE
840.19 CONCRETE GRATED DROP INLET TYPE 'D' - 12" THRU 36" PIPE
840.22 FRAMES AND WIDE SLOT SAG GRATES
840.27 BRICK GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE
840.28 BRICK GRATED DROP INLET TYPE 'D' - 12" THRU 36" PIPE
840.45 PRECAST DRAINAGE STRUCTURE
840.66 DRAINAGE STRUCTURES STEPS
852.01 CONCRETE ISLANDS
852.06 METHOD FOR PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS
876.02 GUIDE FOR RIP RAP AT PIPE OUTLETS

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:
THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

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

SHOULDER CONSTRUCTION:
ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SUBSURFACE PLANS:
NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE SEGRA/SPIRIT.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

8/17/99

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

11/09/2017

BOUNDARIES AND PROPERTY:

State Line	_____
County Line	_____
Township Line	_____
City Line	_____
Reservation Line	_____
Property Line	_____
Existing Iron Pin	○ EIP
Computed Property Corner	_____
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-
Existing Historic Property Boundary	-HPB-
Known Contamination Area: Soil	☠-S-☠
Potential Contamination Area: Soil	☠-S-☠
Known Contamination Area: Water	☠-W-☠
Potential Contamination Area: Water	☠-W-☠
Contaminated Site: Known or Potential	☠☠

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

Standard Gauge	_____
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	_____
RR Dismantled	_____

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	○
Single Shrub	○

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

Hedge	_____
Woods Line	_____
Orchard	_____
Vineyard	_____

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	_____
Bridge Wing Wall, Head Wall and End Wall	_____
MINOR:	
Head and End Wall	_____
Pipe Culvert	_____
Footbridge	_____
Drainage Box: Catch Basin, DI or JB	_____
Paved Ditch Gutter	_____
Storm Sewer Manhole	_____
Storm Sewer	_____

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊠
Power Transformer	⊠
U/G Power Cable Hand Hole	_____
H-Frame Pole	_____
U/G Power Line LOS B (S.U.E.*)	_____
U/G Power Line LOS C (S.U.E.*)	_____
U/G Power Line LOS D (S.U.E.*)	_____

TELEPHONE:

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

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	_____
U/G Water Line LOS C (S.U.E.*)	_____
U/G Water Line LOS D (S.U.E.*)	_____
Above Ground Water Line	_____

TV:

TV Pedestal	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	_____
U/G TV Cable LOS B (S.U.E.*)	_____
U/G TV Cable LOS C (S.U.E.*)	_____
U/G TV Cable LOS D (S.U.E.*)	_____
U/G Fiber Optic Cable LOS B (S.U.E.*)	_____
U/G Fiber Optic Cable LOS C (S.U.E.*)	_____
U/G Fiber Optic Cable LOS D (S.U.E.*)	_____

GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	_____
U/G Gas Line LOS C (S.U.E.*)	_____
U/G Gas Line LOS D (S.U.E.*)	_____
Above Ground Gas Line	_____

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	_____
Above Ground Sanitary Sewer	_____
SS Forced Main Line LOS B (S.U.E.*)	_____
SS Forced Main Line LOS C (S.U.E.*)	_____
SS Forced Main Line LOS D (S.U.E.*)	_____

MISCELLANEOUS:

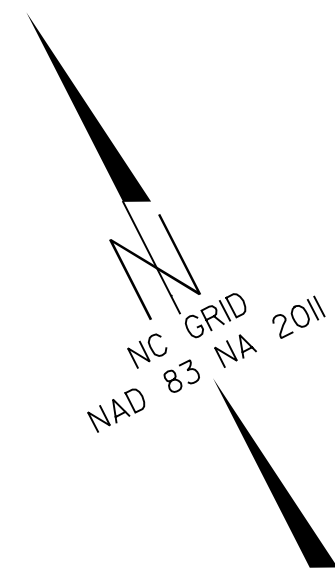
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	_____
U/G Tank; Water, Gas, Oil	_____
Underground Storage Tank, Approx. Loc.	_____
A/G Tank; Water, Gas, Oil	_____
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	_____
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
W-5703D	1C-1
Location and Surveys	

SURVEY CONTROL SHEET W-5703D

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



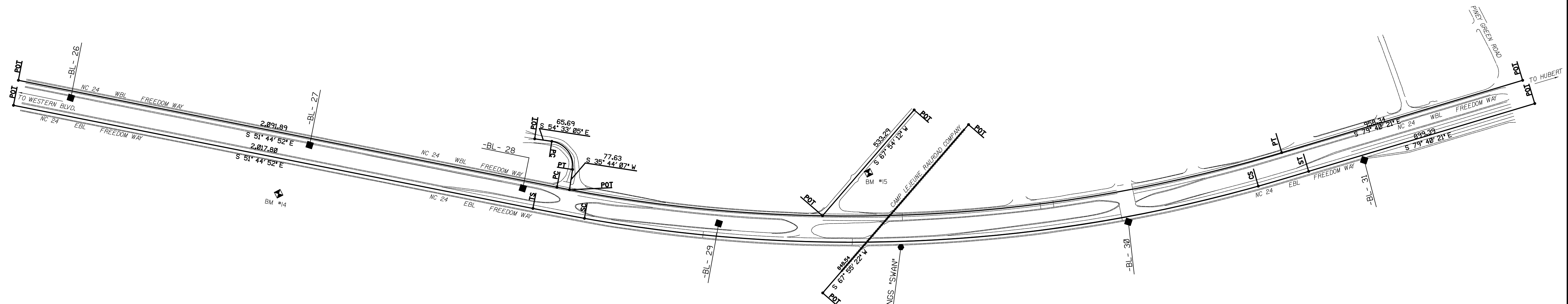
BASELINE

BL	POINT	DESC.	NORTH	EAST	ELEVATION
BL26	BL-26		358309.6210	2499756.3640	33.18
BL27	BL-27		357735.7560	2500485.2160	35.28
BL28	BL-28		357219.9680	2501133.7940	39.86
BL29	BL-29		356761.5180	2501738.0740	39.30
SWAN1	NGS-SWAN		356365.5630	2502315.2620	40.78
BL30	BL-30		356057.7010	2503131.2280	41.64
BL31	BL-31		355858.6490	2504038.1760	37.99

BENCHMARK

 BM14 ELEVATION = 34.30
 N 357624 E 2500296
 BENCH TIE SET IN 24" PINE

 BM15 ELEVATION = 42.47
 N 356674 E 2502334
 BENCH TIE SET IN 30" PINE



EXISTING CENTERLINE ALIGNMENTS

ELEB POINT	N	E	BEARING	DIST	DELTA	D	L	T	R	DELTA S	Ls	LT	ST
POT	358383.368	2499548.795											
LINE			S 51°44'52.1" E	2017.80									
TS	357134.098	2501133.362	S 52°04'52.1" E	200.00						01°00'00.0"(LT)	200.00	133.34	66.67
SC	357011.190	2501291.136											
CURVE			S 65°42'36.5" E	2570.41	25°55'28.9"(LT)	01°00'00.0"	2592.47	1318.81	5729.58				
CS	355953.844	2503634.006											
SPIRAL			S 79°20'21.0" E	200.00						01°00'00.0"(LT)	200.00	133.34	66.67
ST	355916.845	2503830.551											
LINE			S 79°40'21.0" E	899.39									
POT	355755.608	2504715.366											

ELWB POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	358459.706	2499608.641							
LINE			S 51°44'52.1" E	2091.89					
PC	357164.568	2501251.386	S 65°42'36.5" E	2764.92	27°55'28.9"(LT)	01°00'00.0"	2792.47	1424.55	5729.58
CURVE									
PT	356027.212	2503771.540							
LINE			S 79°40'21.0" E	958.34					
POT	355855.406	2504714.356							

EY1 POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	357367.260	2501259.922							
LINE			S 54°33'04.6" E	65.69					
PC	357329.159	2501313.438							
CURVE			S 09°24'28.6" E	133.49	90°17'11.9"(RT)	60°51'02.9"	148.37	94.63	94.16
PT	357197.463	2501335.259							
LINE			S 35°44'07.4" W	77.63					
POT	357134.452	2501289.922							

EY2 POINT	N	E	BEARING	DIST
POT	356808.398	2502597.805		
LINE			S 67°54'12.5" W	533.29
POT	356607.791	2502103.683		

EY3 POINT	N	E	BEARING	DIST
POT	356664.514	2502756.946		
LINE			S 67°55'21.8" W	848.54
POT	356345.586	2501970.627		

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5650-2" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 361849.640(FT) EASTING: 2495417.475(FT) ELEVATION: 13.60(FT)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999184699
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5650-2" TO -L- STATION 17+75.00 IS NORTHING: 357939.8350(FT) EASTING: 2500185.6682(FT) DISTANCE: 6166.2178(FT)
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

NOTES:

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

REVISIONS

6/19/2018 W5703D_1s_1c.dgn

5/14/99

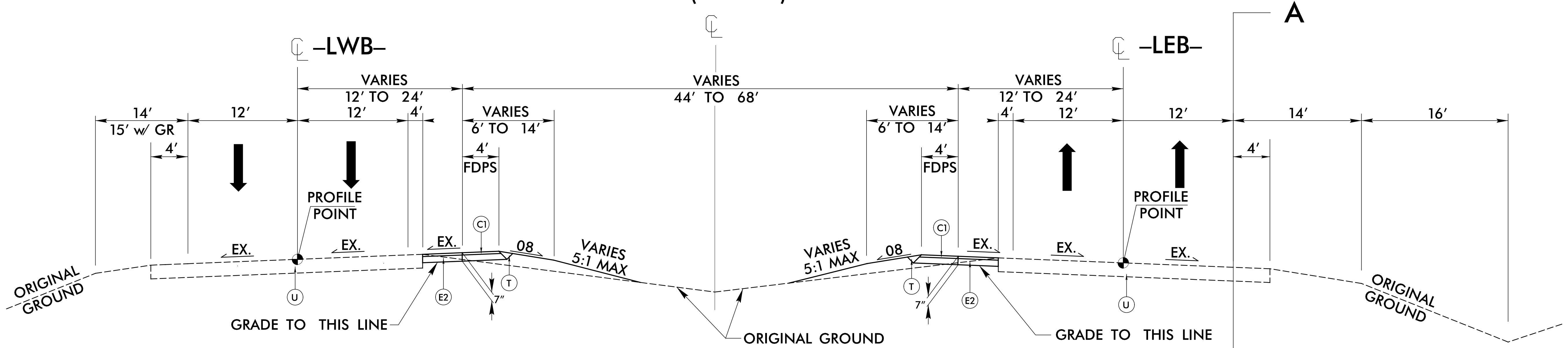
FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 168 LBS PER SQ. YD. IN EACH OF TWO LAYERS	E2	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. SQ. YD.	T	EARTH MATERIAL
E1	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	U	EXISTING PAVEMENT

PROJECT REFERENCE NO. W-5703D	SHEET NO. 2A-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p>Prepared by</p> <p>VHB Engineering NC, P.C. (C-3705) 940 Main Campus Drive, Suite 500 Raleigh, NC 27606</p>	

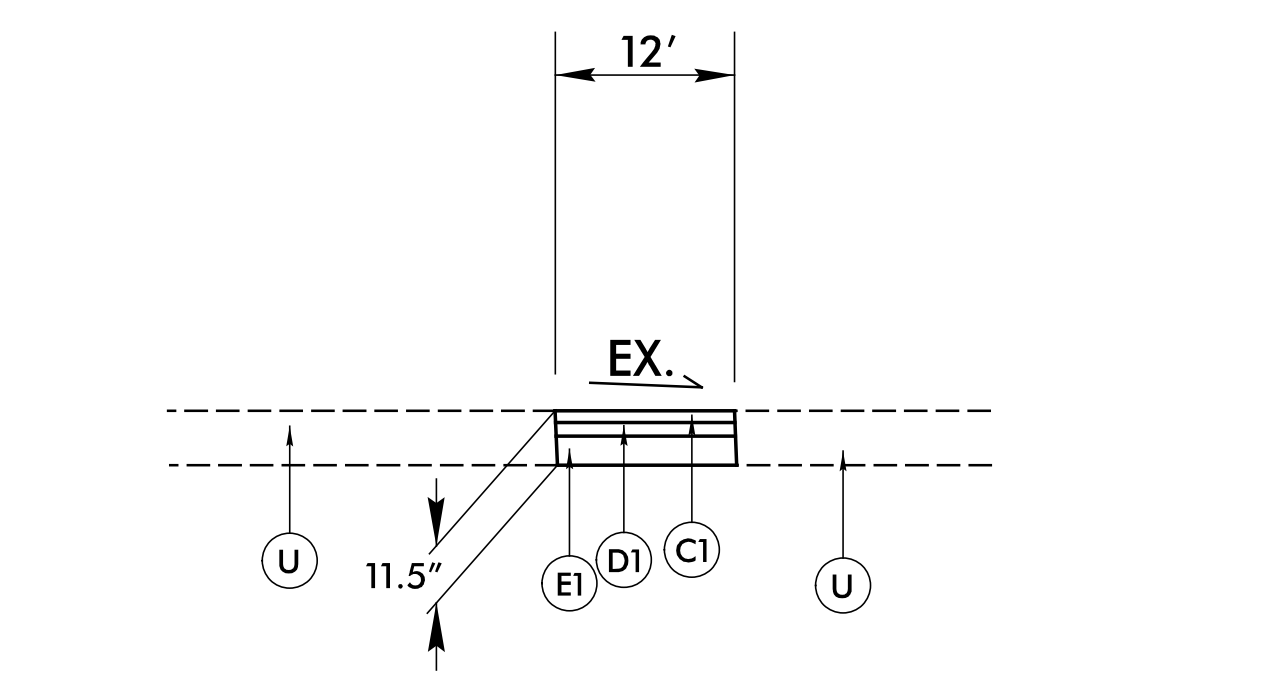
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

-L- (NC 24)



TYPICAL SECTION NO. 1

FROM -L- STA. 18+06.97 TO -L- STA. 34+83.25

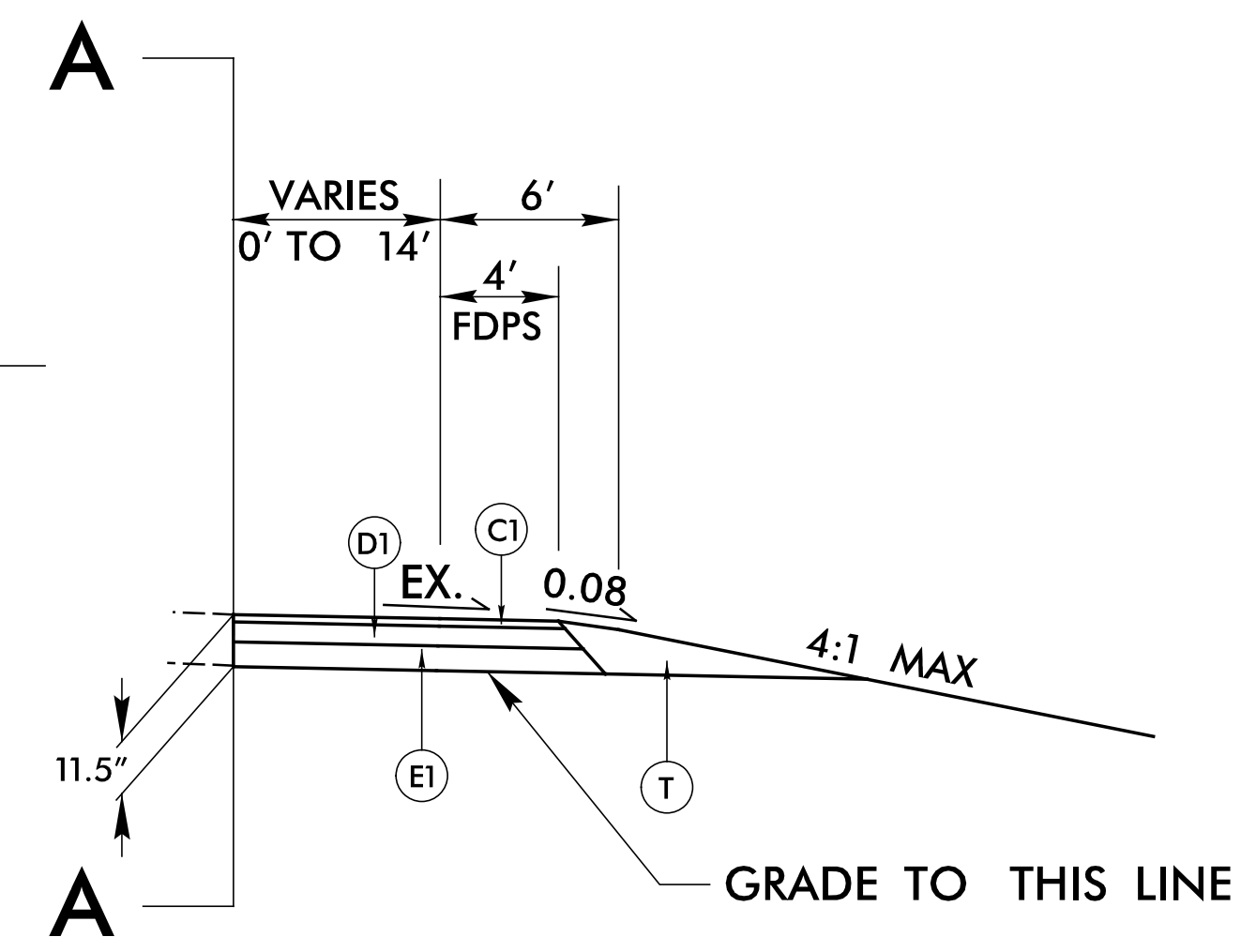


DETAIL OF SHOULDER PAVEMENT REPAIR

-L- STA. 24+33

DETAIL OF U-TURN BULB TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 1

-LEB- STA. 18+22.70 TO -LEB- STA. 20+21.26

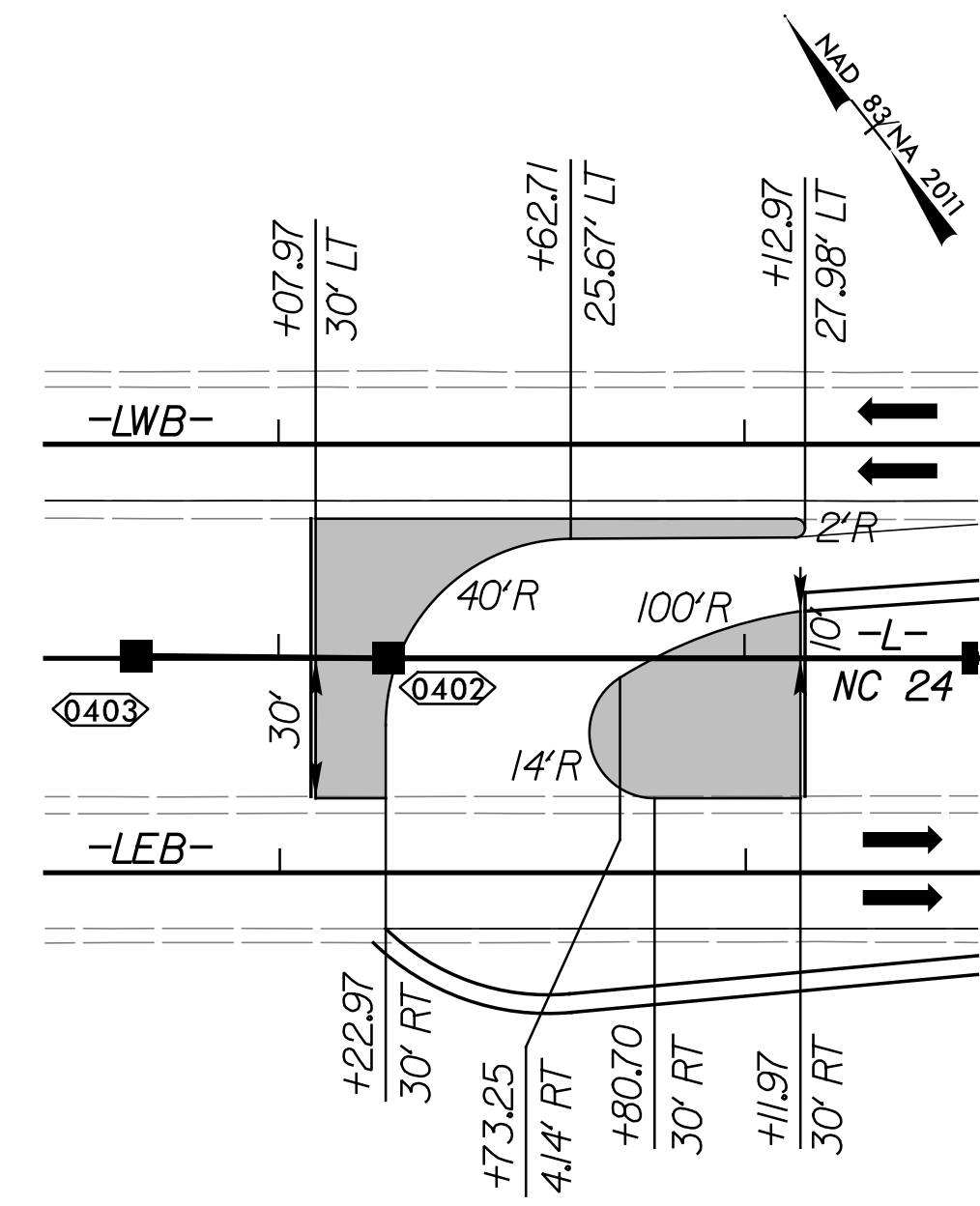


8/13/2009 10:30:00 AM RDY_TYP.dgn

8/17/19

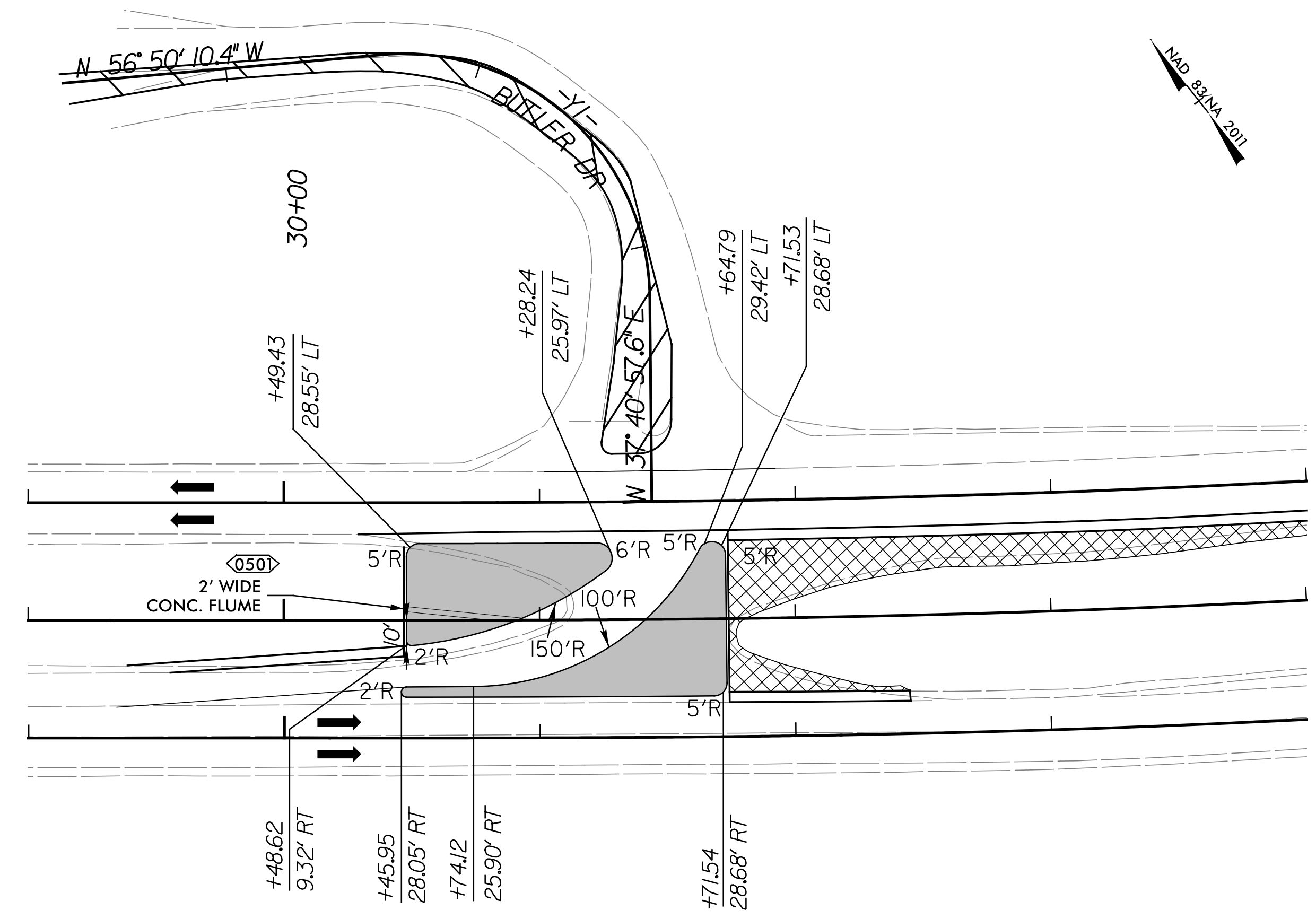
PROJECT REFERENCE NO. W-5703D	SHEET NO. 2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
Prepared by	
 VHB Engineering NC, P.C. (C-3705) 940 Main Campus Drive, Suite 500 Raleigh, NC 27606	

MEDIAN DETAIL A



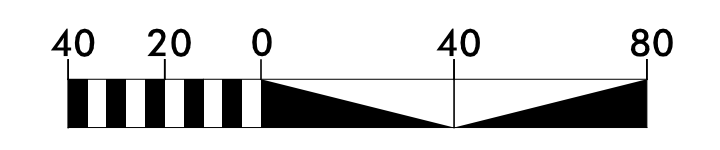
-L- STA. 17+50.00 TO 19+50.00

MEDIAN DETAIL B



-L- STA. 29+00.00 TO 34+00.00

NOTE: ALL DIMENSIONS ARE BASED OFF THE -L- ALIGNMENT UNLESS OTHERWISE NOTED



9/14/2021
W-5703D_RDY_DTL.dgn
j.ford

JOSHIF.NEW

COMPUTED BY: DWT DATE: 4/3/2020
CHECKED BY: JGD DATE: 4/3/2020

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO. SHEET NO.
W-5703D 3D-1

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

Table with columns: LINE & STATION, OFFSET, STRUCTURE NUMBER, TOP ELEVATION, INVERT ELEVATION, MINIMUM REQUIRED SLOPE, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C. S. PIPE, R. C. PIPE CLASS IV, ENDWALLS, REINFORCED ENDWALLS, DRAINAGE STRUCTURE, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES, AND HOOD, CONCRETE TRANSITIONAL SECTION, OPEN THROAT C.B., CONCRETE BRIDGE APPROACH D.I., D.I., D.I. FRAME AND GRATES, G.D.I. TYPE, G.D.I. (W.S. FLAT) FRAME WITH GRATE, G.D.I. (W.S. SAG) FRAME W/ GRATE, G.D.I. (N.S. SAG) FRAME W/ GRATE, G.D.I. (N.S. FLAT) FRAME W/ GRATE, DRIVEWAY D.I., FRAME W/ GRATE FOR DRIVEWAY, CONC. FLUME, M.H. FRAME AND COVER, PIPE REMOVAL, REMARKS.

SHEET TOTALS
PROJECT TOTALS

COMPUTED BY: Tyler C. Bottoms DATE: 1/31/19
 CHECKED BY: _____ DATE: _____

(5-15-18)

PROJECT NO.	SHEET NO.
W-5703D	3G-1

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

SUMMARY OF SUBSURFACE DRAINAGE

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

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

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

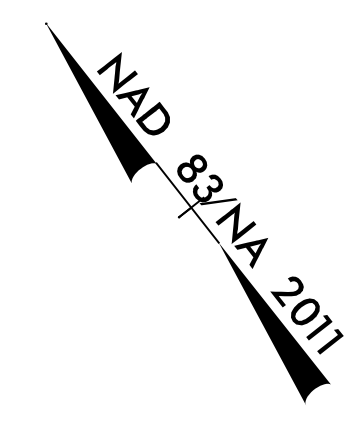
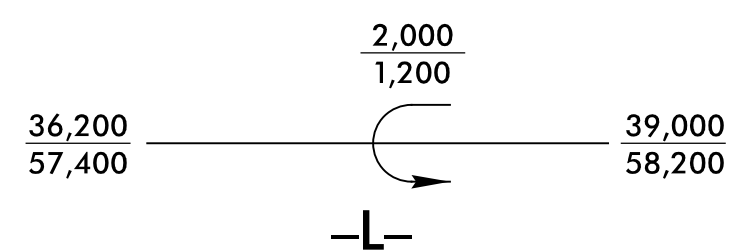
LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
			CONTINGENCY	ASU	12	100	190	300	
				TOTAL CY/TONS/SY:		100	190**	300**	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
 *AST = Aggregate Stabilization
 **Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

5/14/99

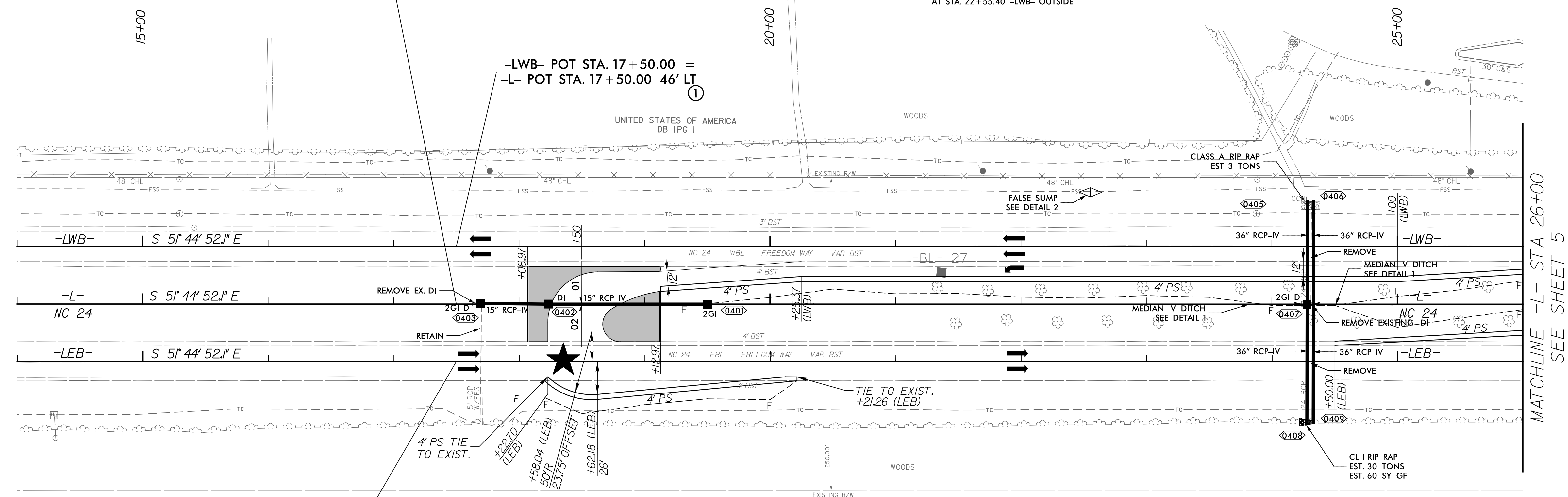
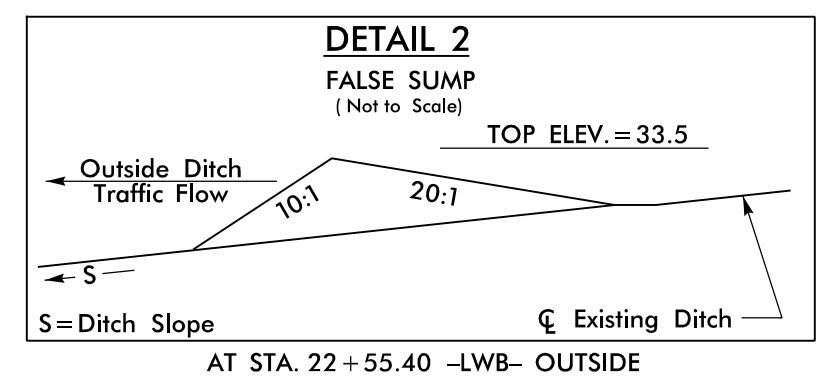
BUTLER DRIVE (-Y1-) U-TURN ON NC 24 (LEJEUNE BLVD) -L-

2017 ADT
2040 ADT

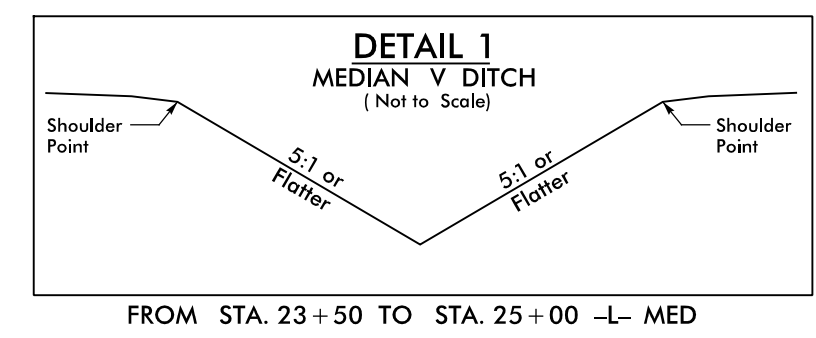


PROJECT REFERENCE NO. W-5703D	SHEET NO. 04
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
10/8/2021	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
Prepared by	
VHB Engineering NC, P.C. (C-3705) 940 Main Campus Drive, Suite 500 Raleigh, NC 27605	

BEGIN TIP PROJECT W-5703D -L- POT STA. 17 + 50.00



-LEB- POT STA. 17 + 49.73 =
-L- POT STA. 17 + 50.00 46' RT



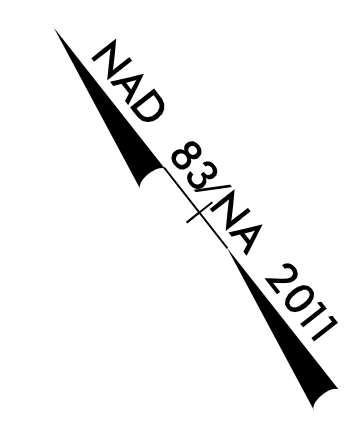
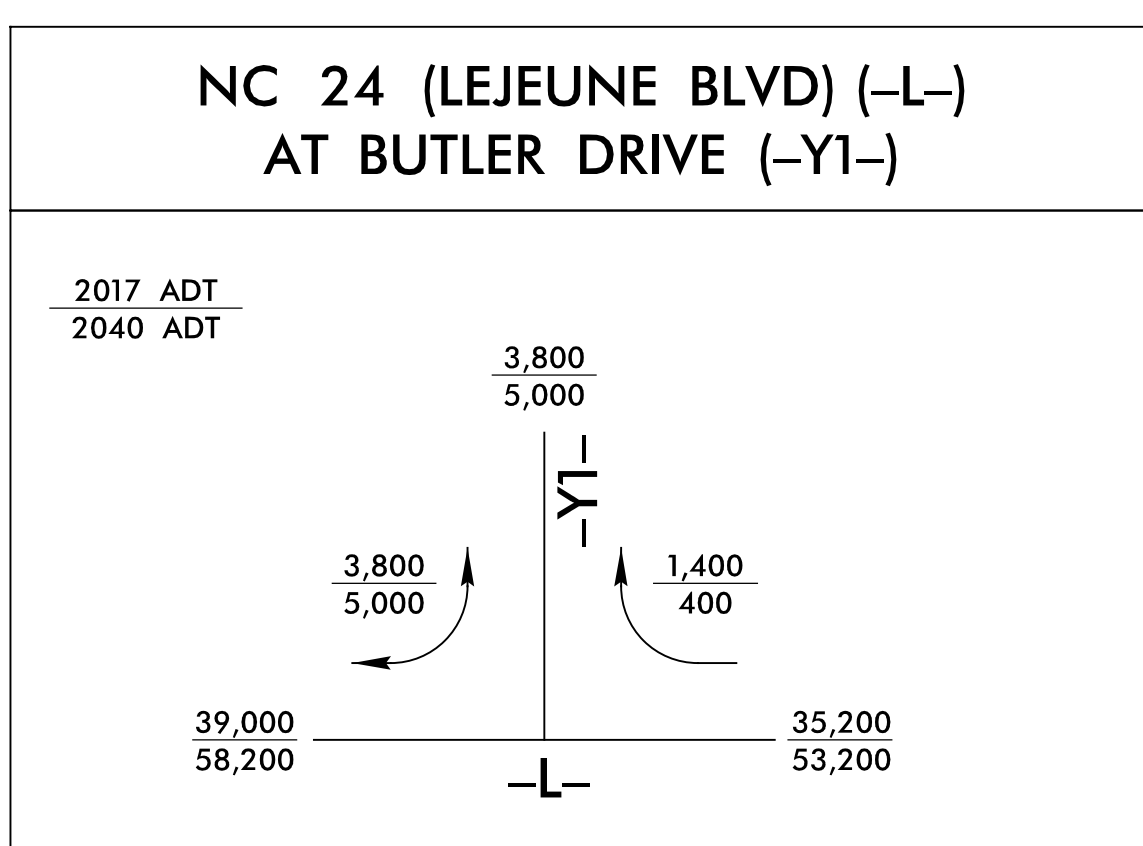
★ PROPOSED TRAFFIC SIGNAL

FOR ISLAND LAYOUT
SEE DETAIL A SHEET 2B-1
FOR -L- PROFILE SEE SHEET 6

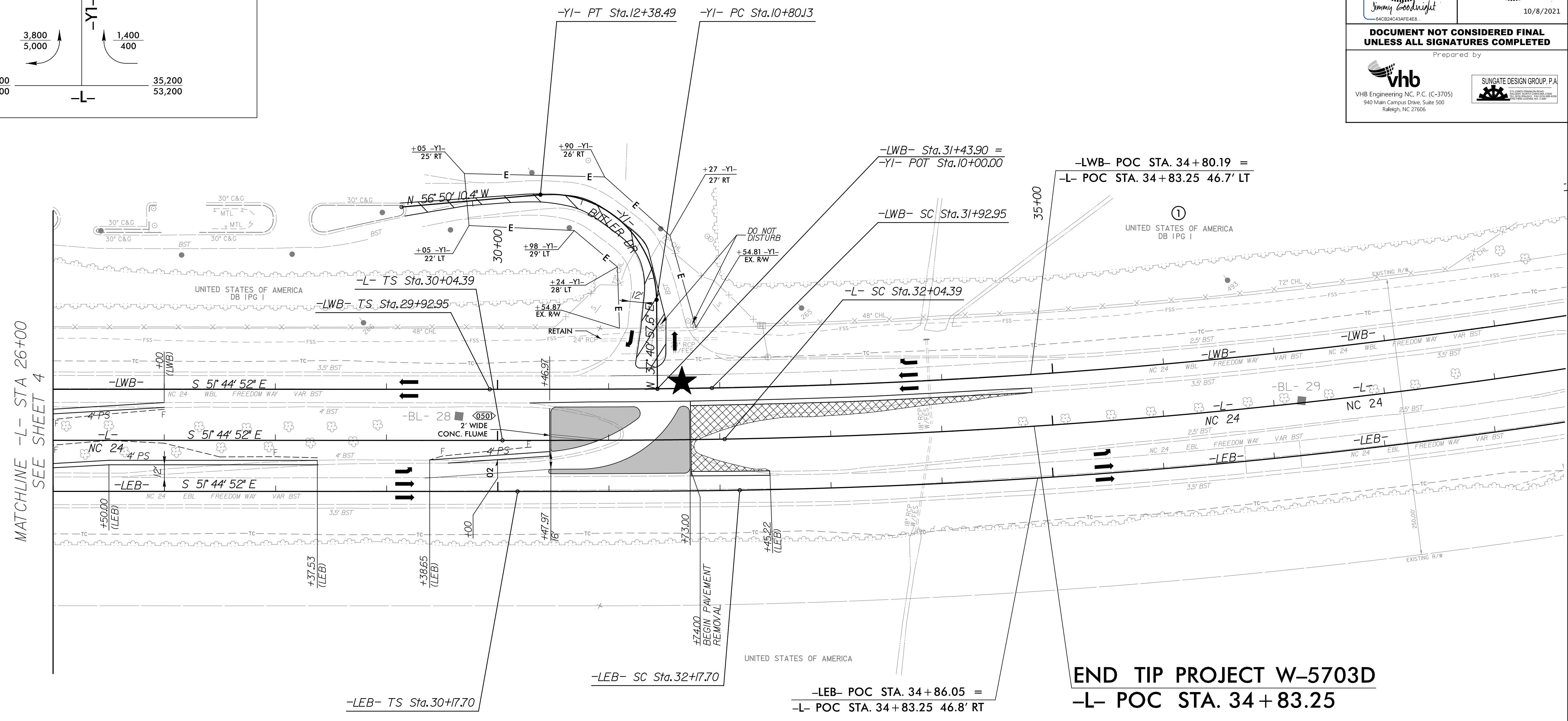
NOTE 1: ALL DIMENSIONS ARE BASED OFF THE -L- ALIGNMENT UNLESS OTHERWISE NOTED
NOTE 2: ALL ISLANDS ARE KEYED IN 5" MONOLITHIC CONCRETE ISLANDS UNLESS OTHERWISE NOTED

10/7/2021
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10/7/2021

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PROJECT REFERENCE NO. <i>W-5703D</i>	SHEET NO. <i>05</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
Prepared by 	
 VHB Engineering NC, P.C. (C-3705) 940 Main Campus Drive, Suite 500 Raleigh, NC 27605	



MATCHLINE -L- STA 26+00
SEE SHEET 4

END TIP PROJECT W-5703D
-L- POC STA. 34 + 83.25



-LWB- CURVE DATA		-L- CURVE DATA		-LEB- CURVE DATA	
<i>PIs Sta 31+26.29</i>	<i>PI Sta 45+11.87</i>	<i>PIs Sta 31+37.73</i>	<i>PI Sta 45+23.31</i>	<i>PIs Sta 31+51.03</i>	<i>PI Sta 45+36.62</i>
<i>Θs = 0° 59' 59.7"</i>	<i>Δ = 25° 55' 29.5" (LT)</i>	<i>Θs = 0° 59' 59.7"</i>	<i>Δ = 25° 55' 29.5" (LT)</i>	<i>Θs = 0° 59' 59.7"</i>	<i>Δ = 25° 55' 29.5" (LT)</i>
<i>Ls = 200.00'</i>	<i>D = 0° 59' 59.7"</i>	<i>Ls = 200.00'</i>	<i>D = 0° 59' 59.7"</i>	<i>Ls = 200.00'</i>	<i>D = 0° 59' 59.7"</i>
<i>LT = 133.34'</i>	<i>L = 2,592.68'</i>	<i>LT = 133.34'</i>	<i>L = 2,592.68'</i>	<i>LT = 133.34'</i>	<i>L = 2,592.68'</i>
<i>ST = 66.67'</i>	<i>T = 1,318.92'</i>	<i>ST = 66.67'</i>	<i>T = 1,318.92'</i>	<i>ST = 66.67'</i>	<i>T = 1,318.92'</i>
	<i>R = 5,730.00'</i>		<i>R = 5,730.00'</i>		<i>R = 5,730.00'</i>

★ PROPOSED TRAFFIC SIGNAL
FOR ISLAND LAYOUT
SEE DETAIL B SHEET 2B-1
FOR -L- PROFILE SEE SHEET 6

NOTE 1: ALL DIMENSIONS ARE BASED OFF THE -L- ALIGNMENT UNLESS OTHERWISE NOTED
NOTE 2: ALL ISLANDS ARE KEYED IN 5" MONOLITHIC CONCRETE ISLANDS UNLESS OTHERWISE NOTED

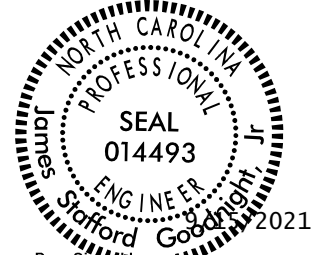
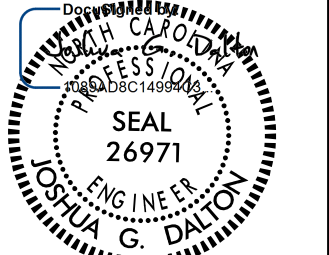
5/28/21

Prepared by

vhb
VHB Engineering, Inc. P.C. (C-3705)
940 Main Campus Drive, Suite 100
Raleigh, NC 27605

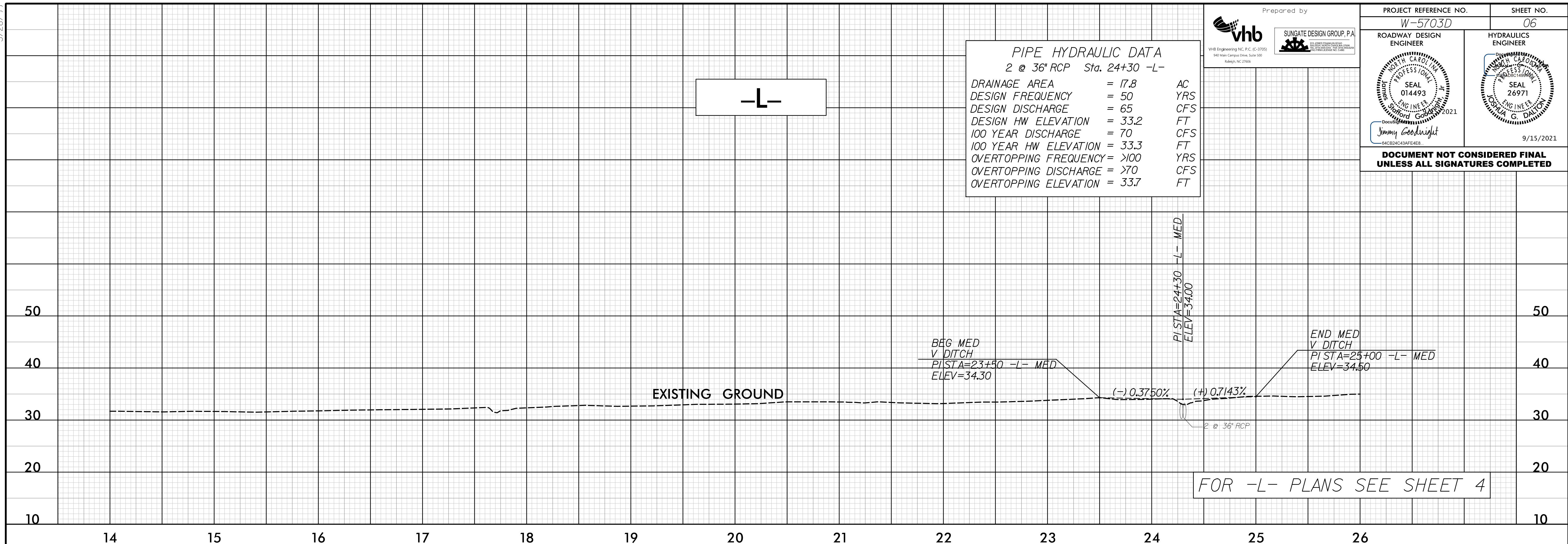
SUNGATE DESIGN GROUP, P.A.
Sungate Design Group, P.A. is a registered professional engineering firm in the State of North Carolina.
940 Main Campus Drive, Suite 100
Raleigh, NC 27605

PROJECT REFERENCE NO. <i>W-5703D</i>	SHEET NO. <i>06</i>
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
<p><i>Jimmy Cookright</i> 64C820434FAFE8E</p> <p>9/15/2021</p>	

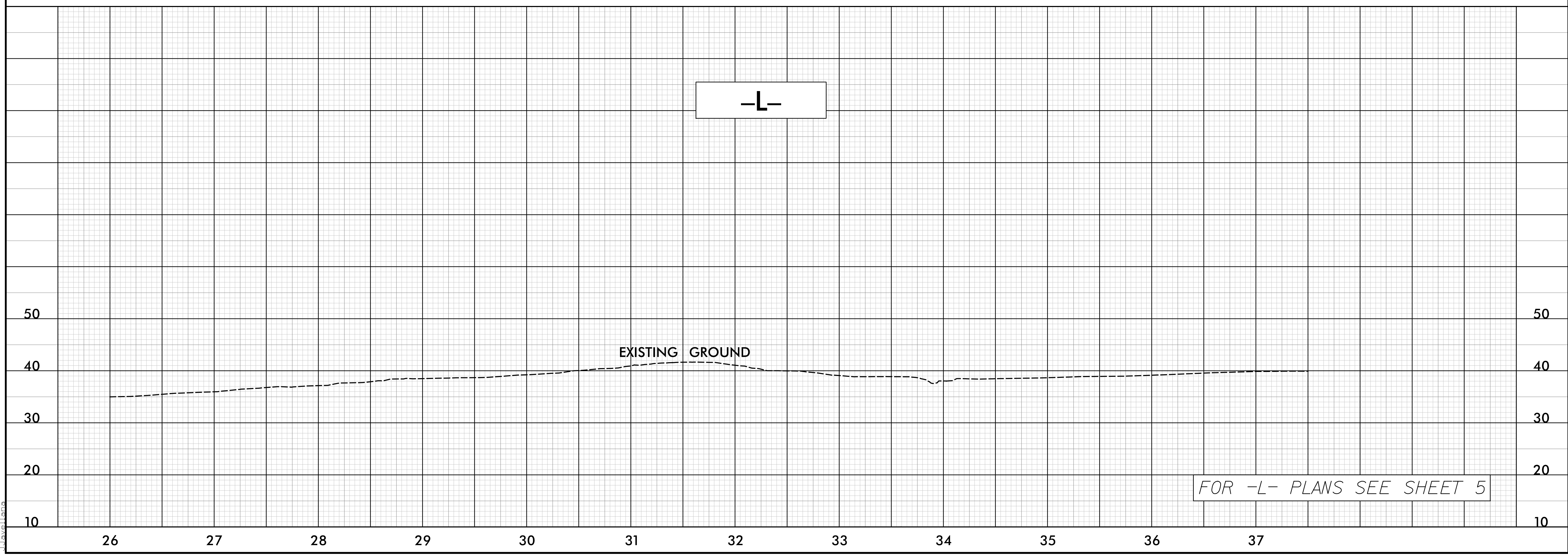
PIPE HYDRAULIC DATA
 2 @ 36" RCP Sta. 24+30 -L-

DRAINAGE AREA	= 17.8	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 65	CFS
DESIGN HW ELEVATION	= 33.2	FT
100 YEAR DISCHARGE	= 70	CFS
100 YEAR HW ELEVATION	= 33.3	FT
OVERTOPPING FREQUENCY	= >100	YRS
OVERTOPPING DISCHARGE	= >70	CFS
OVERTOPPING ELEVATION	= 33.7	FT

-L-



-L-

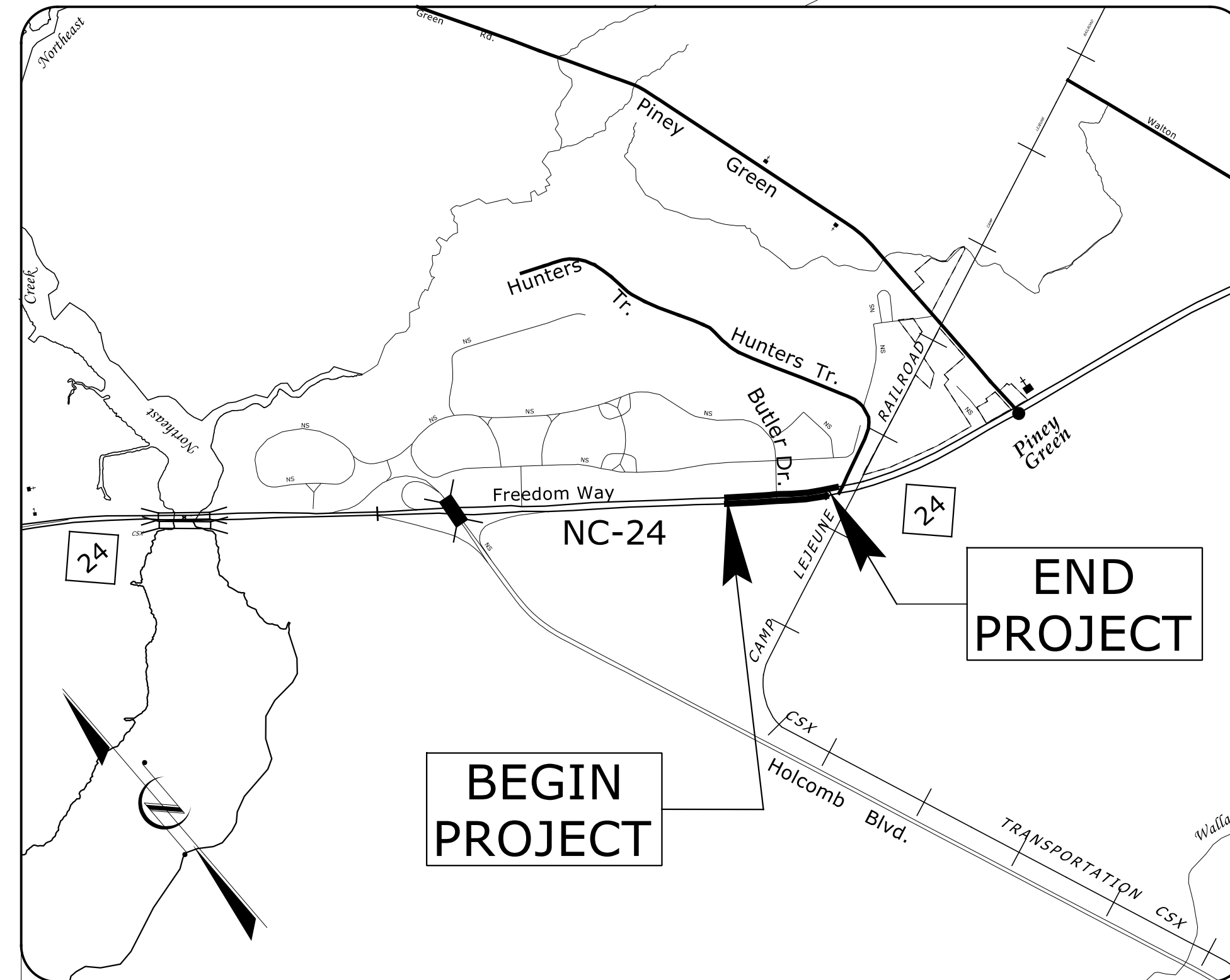
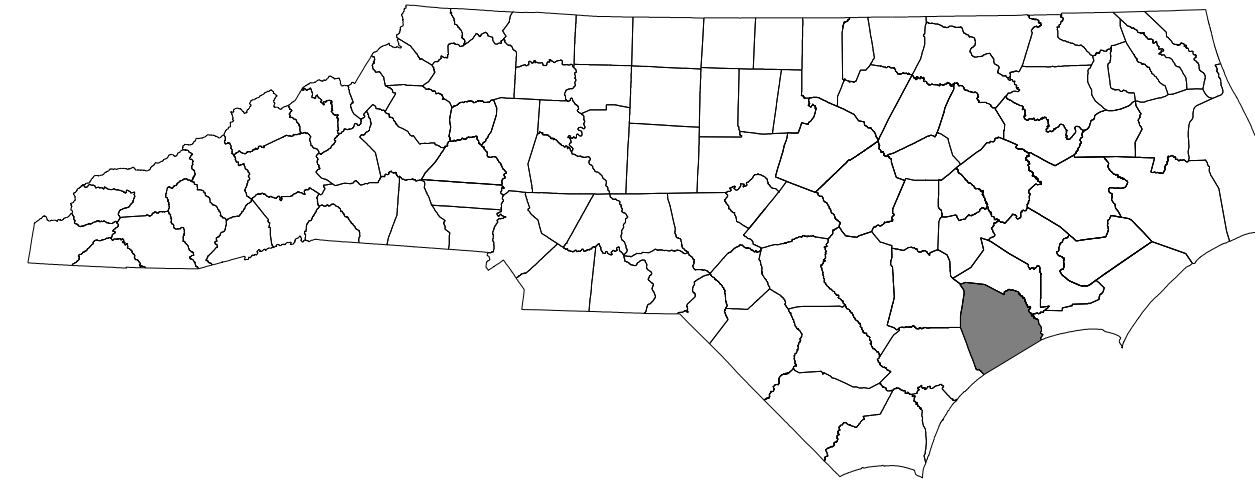


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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

ONSLOW COUNTY



INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B THRU TMP-1C	TRANSPORTATION OPERATIONS PLAN: GENERAL NOTES
TMP-3	PHASING
TMP-4 THRU TMP-6	PHASE I DETAIL
TMP-7 THRU TMP-9	PHASE II DETAIL

SHEET NO.

TMP-1

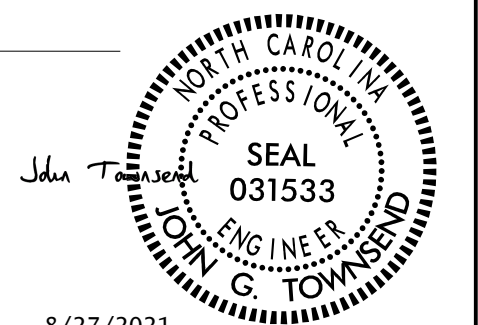
W-5703D

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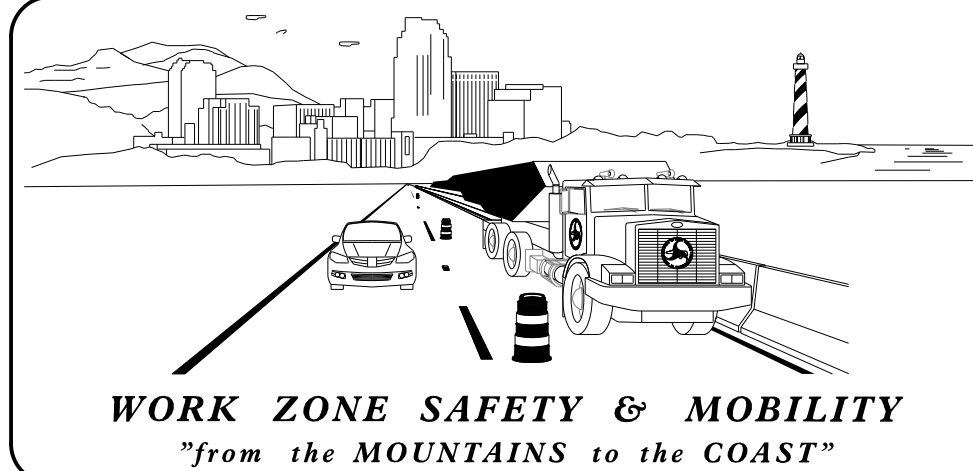
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UNLESS ALL SIGNATURES COMPLETED

APPROVED: _____

DATE: _____



8/27/2021



PLANS PREPARED BY:

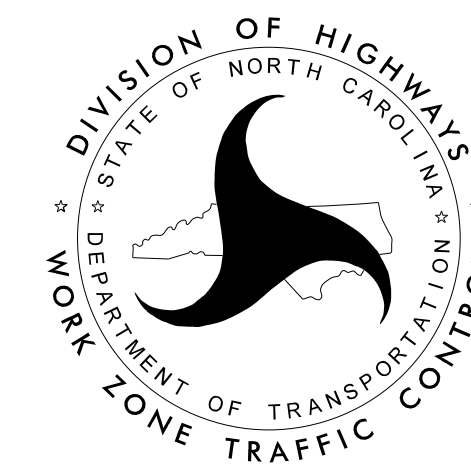
John G. Townsend, PE (VHB)

Morgan Stahl, EI (VHB)

NCDOT CONTACTS:

PROJECT ENGINEER

PROJECT DESIGN ENGINEER



8/27/2021
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User:jtowndse

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - 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
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1150.01	FLAGGERS
1160.01	TEMPORARY CRASH CUSHION
1165.01	TRUCK MOUNTED ATTENUATOR
1170.01	PORTABLE CONCRETE BARRIER
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.11	PAVEMENT MARKINGS - RAILROAD CROSSINGS
1205.15	PAVEMENT MARKINGS - SUPERSTREETS
1261.02	GUARDRAIL & BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- SKINNY DRUM
- TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

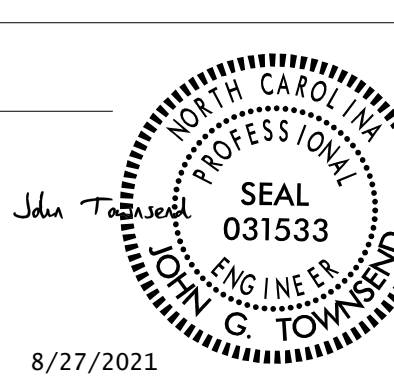
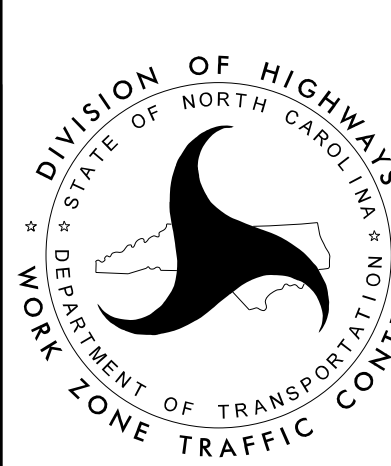
PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TEMPORARY PAVEMENT MARKING

Code	Description	Material	Quantity	Unit
P1	WHITE EDGELINE	PAINT (4")	8193	LF
P2	WHITE LANE LINE	PAINT (4")	1564	LF
P3	10 FT WHITE SKIP	PAINT (4")	2245	LF
P4	3FT-9FT/SP WHITE MINISKIP	PAINT (4")	321	LF
P5	2FT-6FT/SP WHITE MINISKIP	PAINT (4")	89	LF
P10	YELLOW EDGELINE	PAINT (4")	7984	LF
P70	LEFT TURN ARROW	PAINT	3	EA
P71	RIGHT TURN ARROW	PAINT	1	EA

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APPROVED: _____ DATE: _____  8/27/2021 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		ROADWAY STANDARD DRAWINGS & LEGEND
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GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
ALL ROADS	MONDAY THRU FRIDAY 6:00 A.M. TO 9:00 A.M. 3:00 P.M. TO 6:00 P.M.

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME
NC 24
BUTLER DRIVE

HOLIDAY

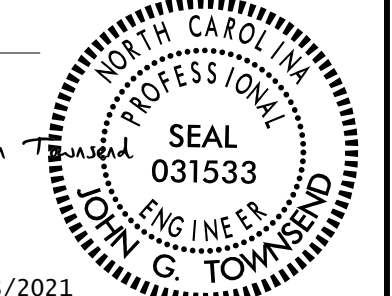
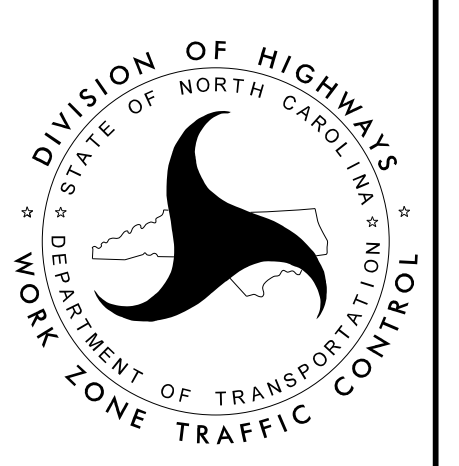
1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 7:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 P.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 7:00 P.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

C) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- D) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- G) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- H) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.
- I) DO NOT INSTALL MORE THAN ONE LANE CLOSURE IN ANY ONE DIRECTION ON NC 24.
- J) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURES FOR SURVEYING DONE BY THE DEPARTMENT.

APPROVED: _____ DATE: _____ <div style="text-align: center;">  10/8/2021 </div>		<h2 style="margin: 0;">TRANSPORTATION OPERATIONS PLANS</h2>
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GENERAL NOTES

TRAFFIC PATTERN ALTERATIONS

- K) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- L) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- M) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE LANES ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.
- N) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE LANES WHEN LANE CLOSURE IS NOT IN OPERATION.
- O) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

PAVEMENT MARKINGS AND MARKERS

- P) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
-L- (NC 24)	PAINT	N/A
-Y1- (BUTLER DR)	PAINT	N/A

- Q) TIE PROPOSED AND TEMPORARY PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- R) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.
- S) PASSING ZONE WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

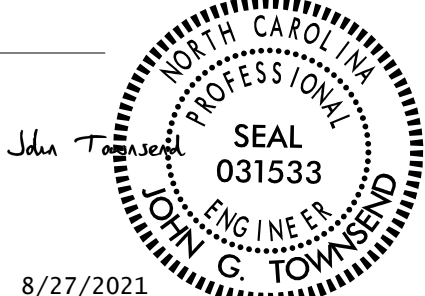
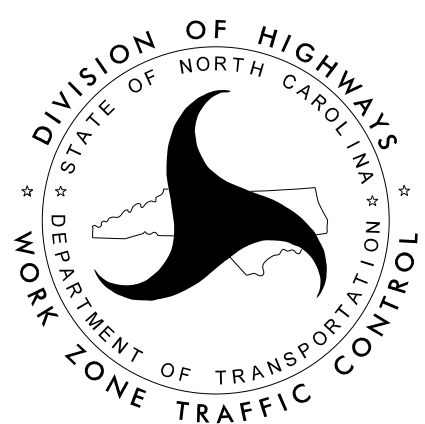
- T) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

- U) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

APPROVED: _____ DATE: _____ <div style="text-align: center;">  <small>8/27/2021</small> </div>		<h2>TRANSPORTATION OPERATIONS PLANS</h2>
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

PHASING NOTES

NOTES

REPLACE MARKINGS AND RETURN TRAFFIC TO THE CURRENT TRAFFIC PATTERN AT THE END OF EACH WORK PERIOD UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER.

COMPLETE ANY PROPOSED WIDENING IN SUCH A MANNER THAT PONDING OF WATER WILL NOT OCCUR IN THE TRAVEL LANE. THIS WILL REQUIRE A COMBINATION OF INSTALLATION OF PROPOSED PIPES, TEMPORARY PIPES, STEEL PLATES, AND TEMPORARY MEDIAN AND OUTSIDE DITCHES.

PAVE PROPOSED CONSTRUCTION UP TO BUT NOT INCLUDING THE FINAL LAYER OR SURFACE COURSE IN ALL PHASES UNTIL STATED TO INSTALL FINAL LAYER IN THE PHASING.

PHASE I

REFER TO TMP-4 THRU TMP-6 FOR PHASE I LAYOUT

STEP 1:
INSTALL WORK ZONE ADVANCE WARNING SIGNS ON ALL ROADWAYS WITHIN THE PROJECT LIMITS IN ACCORDANCE WITH RSD 1101.01 (SHEET 1 OF 3). INSTALL SPEED REDUCTION SIGNING TO REDUCE THE SPEED LIMIT TO 45 MPH THROUGH THE PROJECT.

STEP 2:
USING RSD 1101.02 (SHEET 4 OF 14), GRIND AND RESTRIPE TO SHIFT TRAFFIC RIGHT TO 1'-11'-11'-1' PATTERN.

STEP 3:
CONSTRUCT ASPHALT PAVEMENT AND DRAINAGE ON THE OUTSIDE OF -L-. SEE TMP-4 THRU TMP-6 FOR DETAIL.

COMPLETE THE REQUIREMENTS OF PHASE I, STEP 4 OVER ONE WEEKEND STARTING ON FRIDAY AT 8PM AND ENDING ON MONDAY AT 5AM. (SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES)

STEP 4:
USING RSD 1101.02 (SHEET 4 OF 14), CLOSE THE OUTSIDE LANE IN EACH DIRECTION, INSTALL WATER FILLED BARRIER TO PROTECT THE OPEN EXCAVATION, AND CONSTRUCT THE OUTSIDES OF THE CROSS PIPES.

PHASE II

REFER TO TMP-7 THRU TMP-9 FOR PHASE II LAYOUT

STEP 1:
USING RSD 1101.02 (SHEET 4 OF 14), GRIND AND RESTRIPE TO SHIFT TRAFFIC LEFT TO 1'-11'-11'-1' PATTERN.

STEP 2:
CONSTRUCT ASPHALT PAVEMENT, CONCRETE ISLANDS, AND DRAINAGE IN THE MEDIAN OF -L-. SEE TMP-7 THRU TMP-9 FOR DETAIL.

COMPLETE THE REQUIREMENTS OF PHASE II, STEP 3 OVER ONE WEEKEND STARTING ON FRIDAY AT 8PM AND ENDING ON MONDAY AT 5AM. (SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES)

STEP 3:
USING RSD 1101.02 (SHEET 4 OF 14), CLOSE THE INSIDE LANE IN EACH DIRECTION, INSTALL WATER FILLED BARRIER TO PROTECT THE OPEN EXCAVATION, AND CONSTRUCT THE INSIDES OF THE CROSS PIPES.

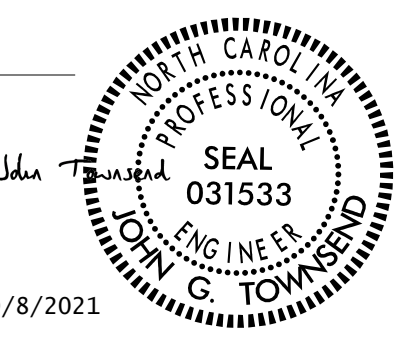
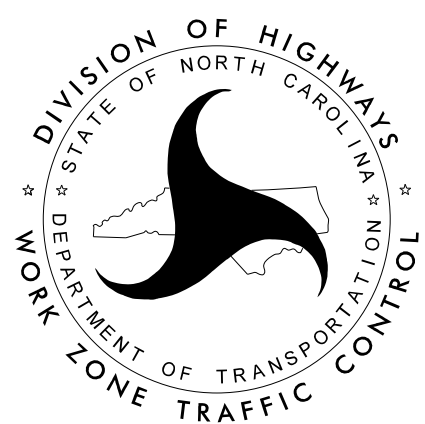
PHASE III

COMPLETE THE REQUIREMENTS OF PHASE III, STEP 1 OVER ONE WEEKEND STARTING ON FRIDAY AT 8PM AND ENDING ON MONDAY AT 5AM. (SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES)

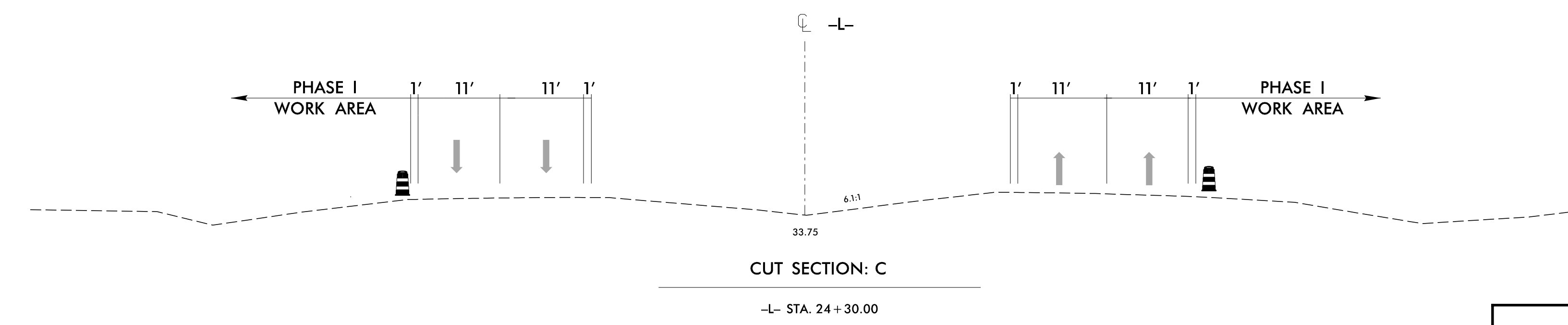
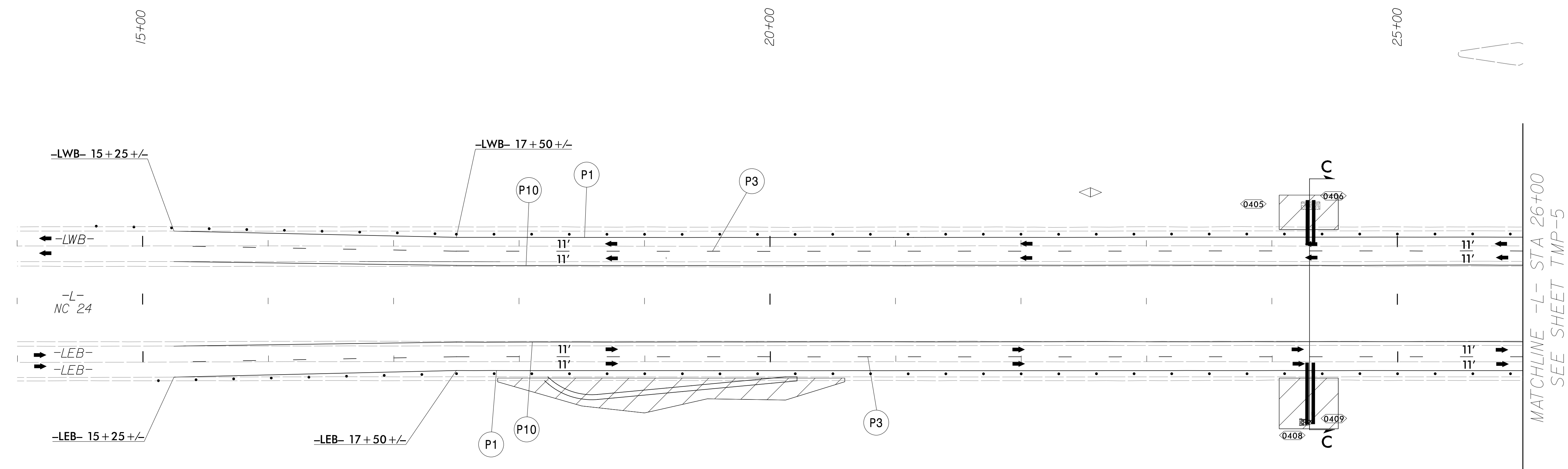
STEP 1:
CLOSE MEDIAN OPENING ON -L- AT -Y1- AND CONSTRUCT REMAINING ASPHALT PAVEMENT, CONCRETE ISLANDS, AND DRAINAGE.

STEP 2:
UPON PROJECT ACCEPTANCE BY THE ENGINEER, OPEN ALL ROADWAYS TO FINAL TRAFFIC PATTERN AND REMOVE ALL REMAINING TEMPORARY TRAFFIC CONTROL SIGNS AND DEVICES.

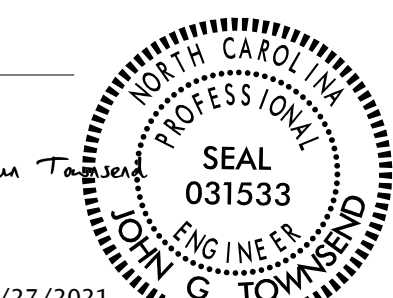

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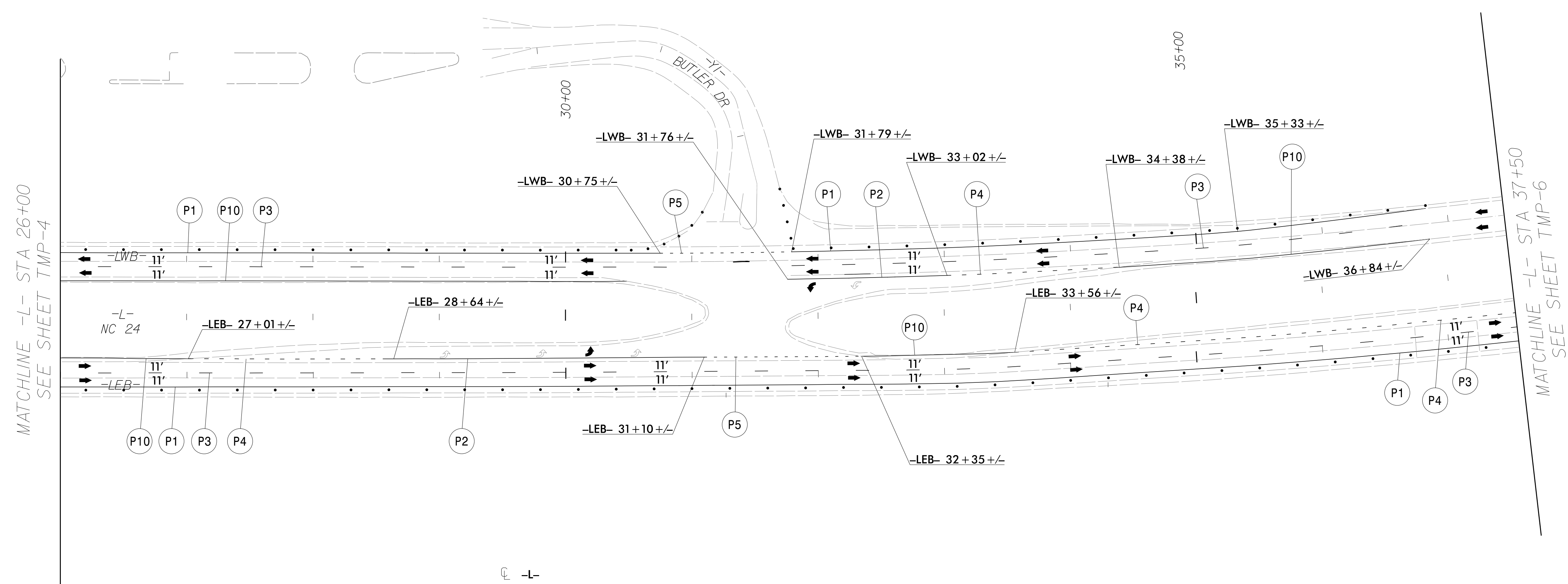
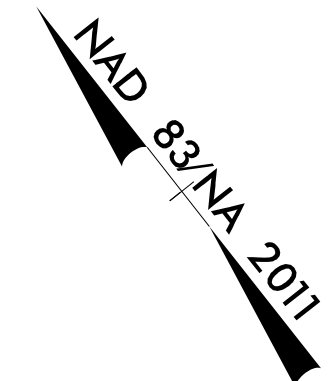
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

NAD 83/NA 2011



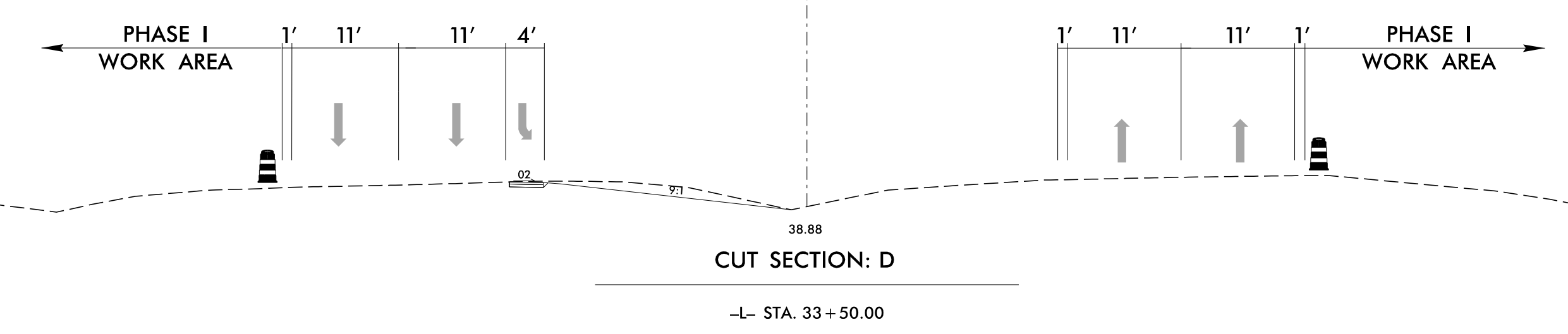
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<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>		

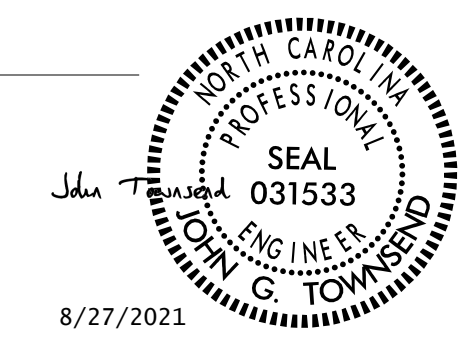
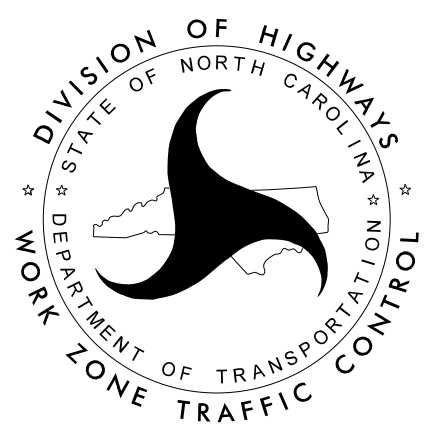


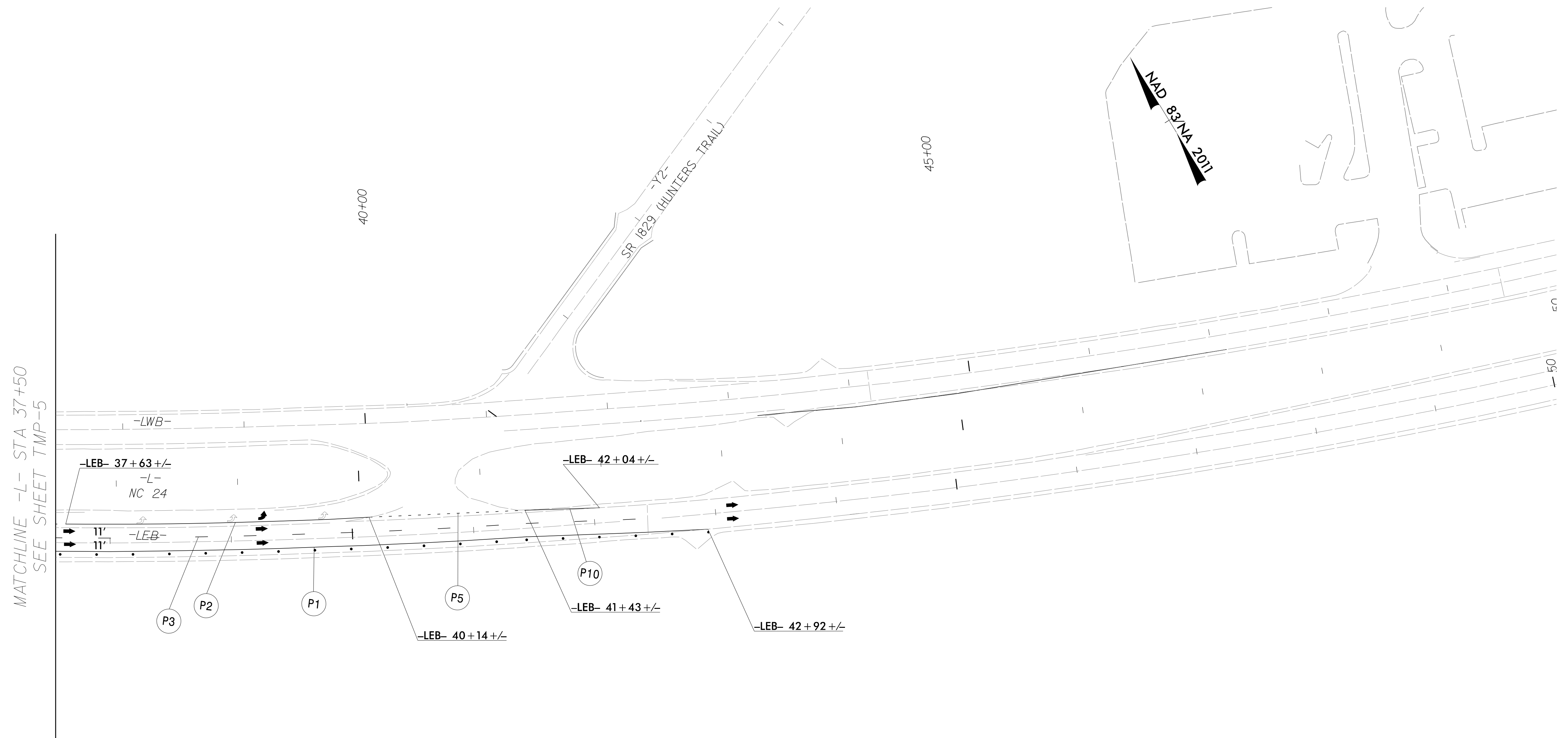
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SEE SHEET TMP-4

MATCHLINE -L- STA 37+50
SEE SHEET TMP-6

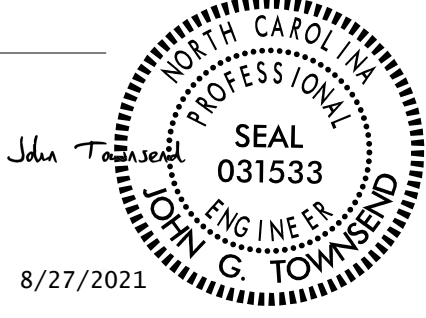



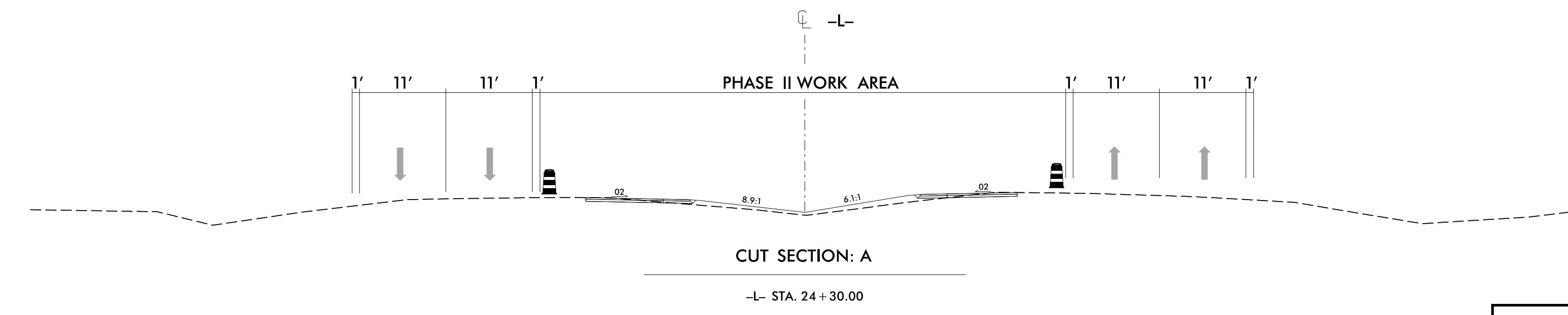
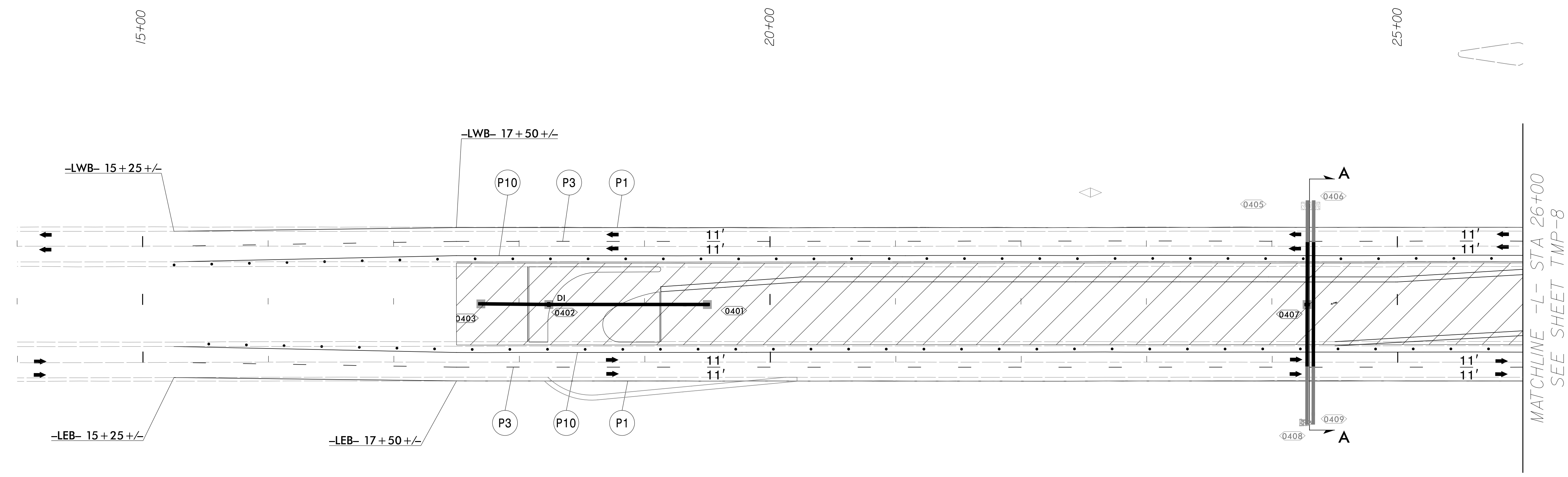
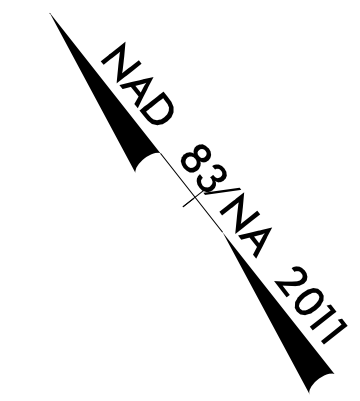
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<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>		

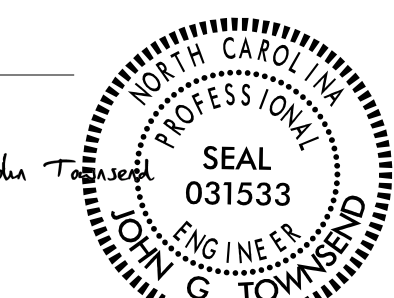
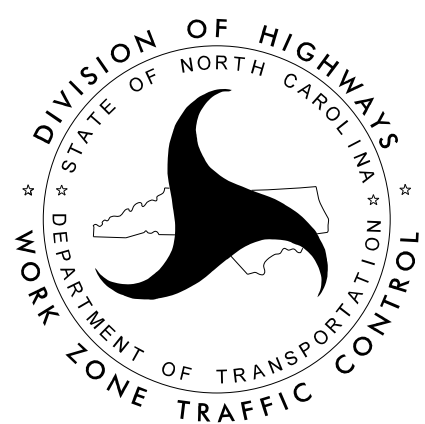


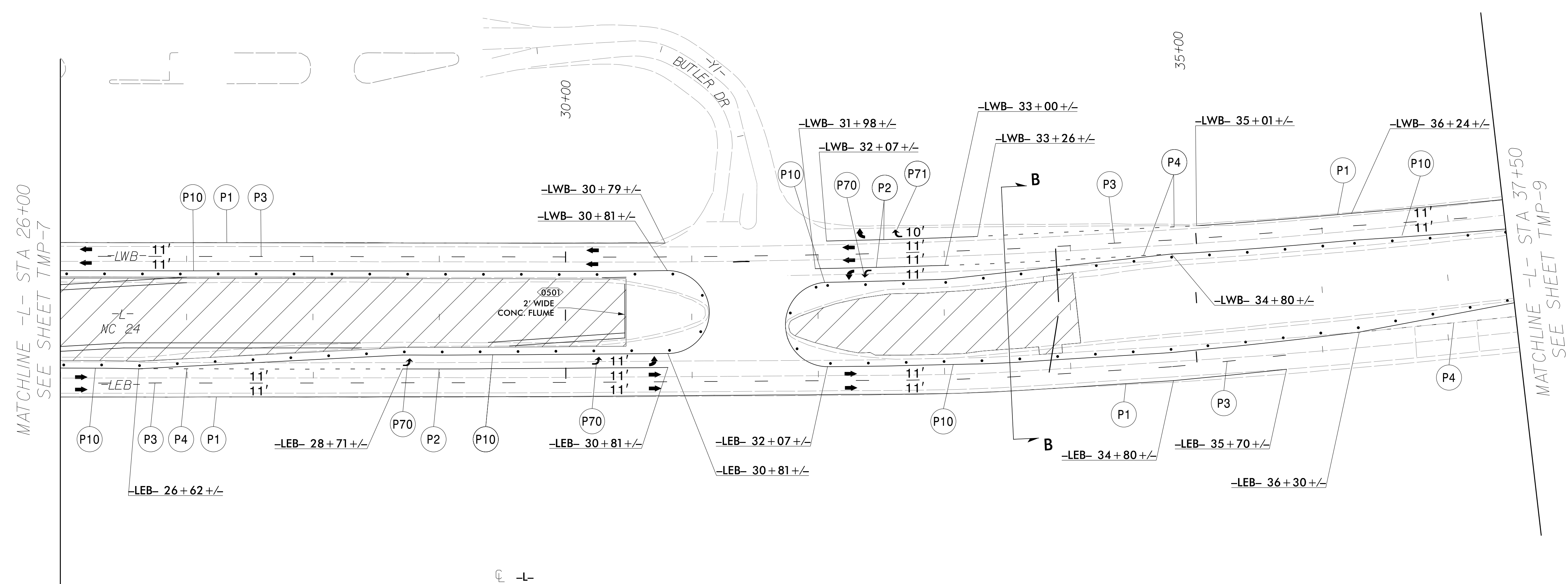
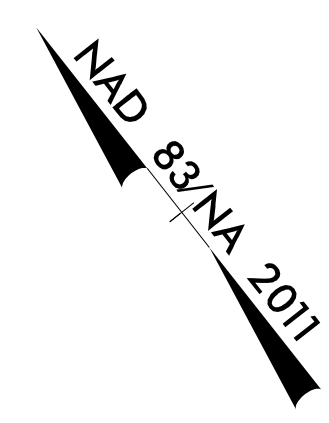
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<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>		



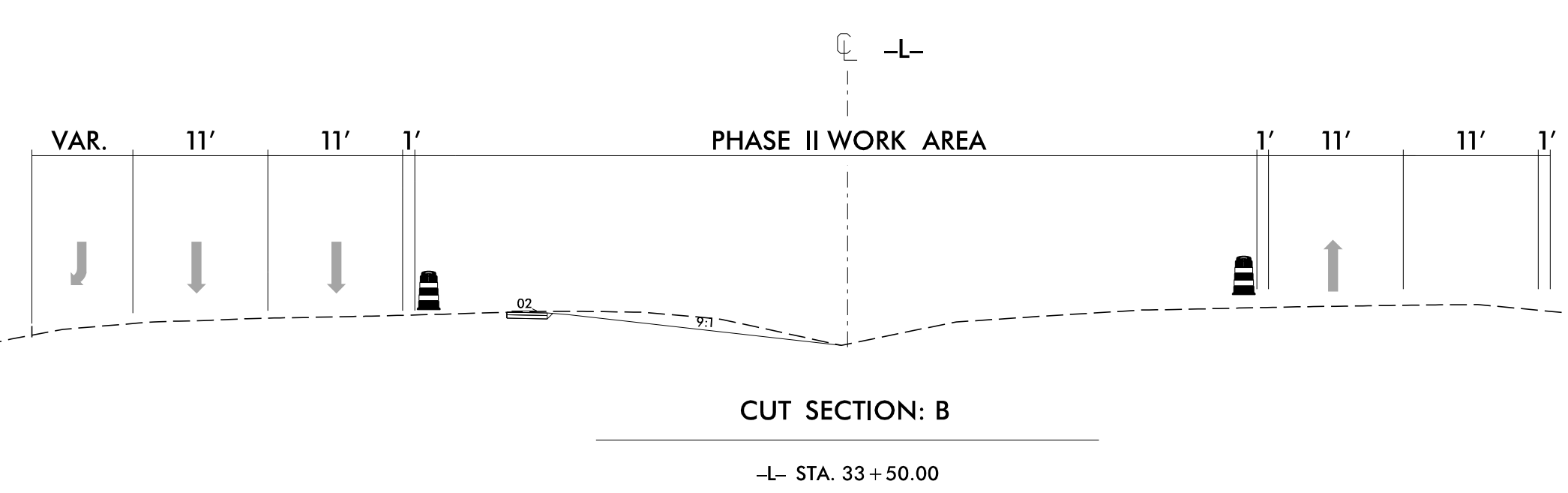
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<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>		



MATCHLINE -L- STA 26+00
SEE SHEET TMP-7

MATCHLINE -L- STA 37+50
SEE SHEET TMP-9



CUT SECTION: B

-L- STA. 33+50.00

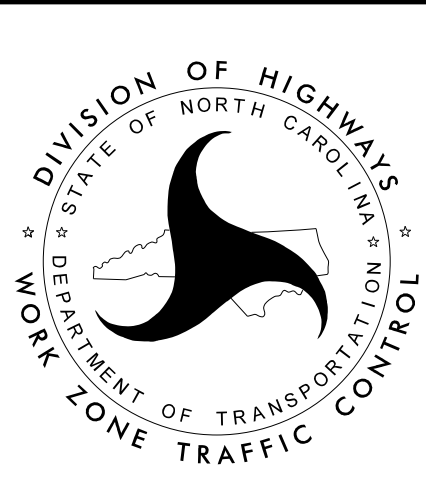
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DATE: _____

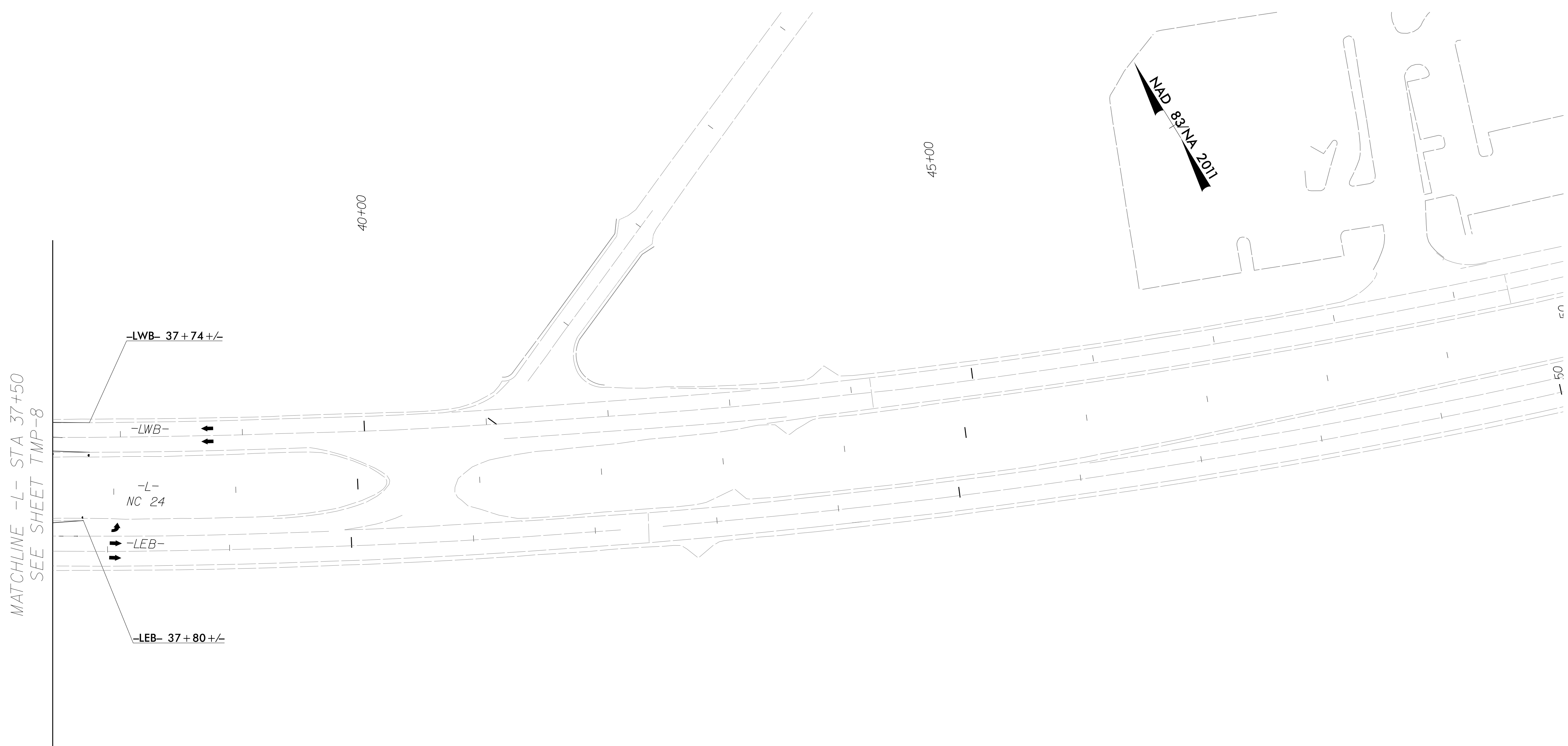
John Tawmsend
SEAL
031533
ENGINEER
JOHN G. TAWMSEND

8/27/2021

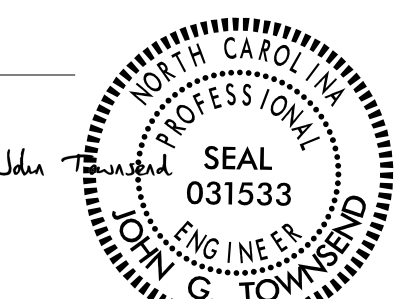
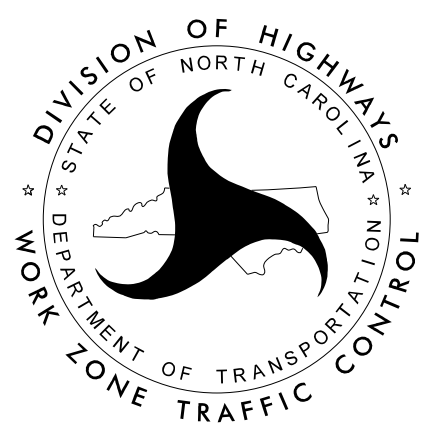
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



PHASE II DETAIL
SHEET 2 OF 3



8/27/2021
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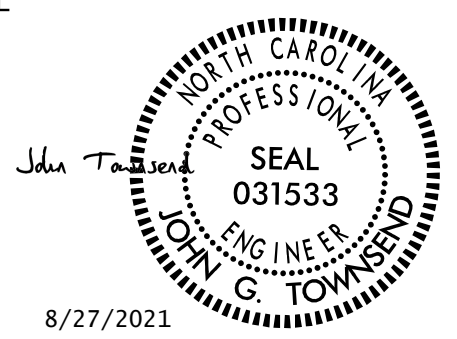
T.I.P.: W-5703D

WBS: 44849.1.4

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
ON SLOW COUNTY**

**LOCATION: NC 24 (LEJEUNE BOULEVARD) AT THE INTERSECTION
OF BUTLER DRIVE**

TIP NO. W-5703D	SHEET NO. PMP - 1
APPROVED: _____	
DATE: _____	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.15	PAVEMENT MARKINGS - SUPERSTREETS

GENERAL NOTES

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
- L - (NC 24)	THERMO	NA
- Y1 - (BUTLER DR)	THERMO	NA
- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- D) UNLESS OTHERWISE SPECIFIED, HEATED-IN-PLACE THERMOPLASTIC MAY BE USED IN LIEU OF EXTRUDED THERMOPLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS. IF HEATED-IN-PLACE IS USED, IT SHALL BE PAID FOR USING THE EXTRUDED THERMOPLASTIC PAY ITEM.

PAVEMENT MARKING SCHEDULE

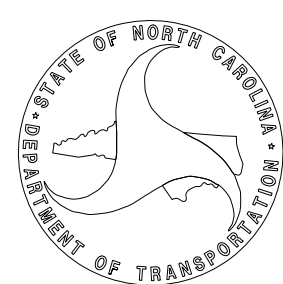
SYMBOL	ITEM DESCRIPTION	TOTAL QUANTITY
	<u>THERMOPLASTIC (4", 90 MILS.)</u>	
T1	WHITE EDGELINE	464 FT
T4	3 FT. - 9 FT./SP WHITE MINISKIP	167 FT
T5	2 FT. - 6 FT./SP WHITE MINISKIP	47 FT
T10	YELLOW EDGELINE	3,212 FT
T13	YELLOW DOUBLE CENTER	1,398 FT
T14	2 FT. - 6 FT./SP YELLOW MINISKIP	25 FT
	<u>THERMOPLASTIC (8", 90 MILS.)</u>	
T40	WHITE GORELINE	896 FT
T42	YELLOW DIAGONAL	225 FT
	<u>THERMOPLASTIC (12", 90 MILS.)</u>	
T51	WHITE DIAGONAL	55 FT
	<u>THERMOPLASTIC (24", 90 MILS.)</u>	
T61	WHITE STOPBAR	86 FT
	<u>THERMOPLASTIC PAVEMENT MARKING SYMBOLS (90 MILS.)</u>	
T70	LEFT TURN ARROW	3 EA
T77	U-TURN ARROW	3 EA

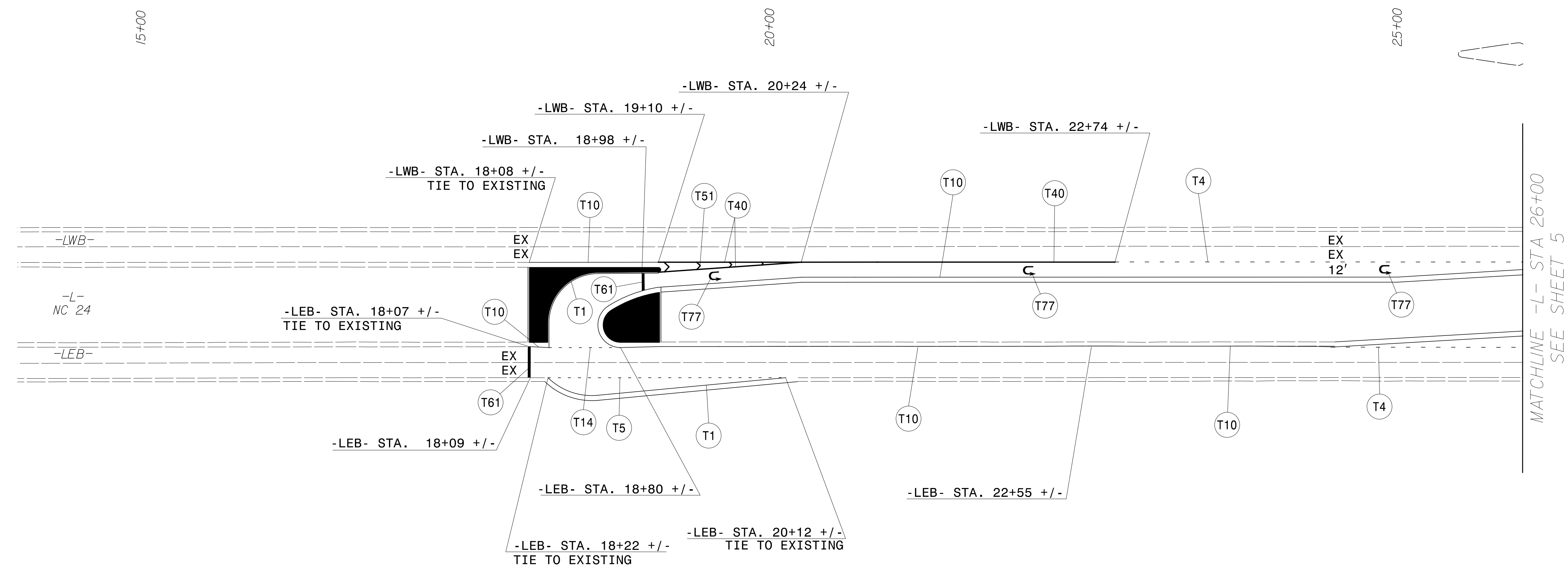
INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE
PMP-2 THRU PMP-3	PAVEMENT MARKING DETAIL

PLAN PREPARED BY: **VHB Engineering NC, P.C.**

John G. Townsend, PE PROJECT ENGINEER
Morgan A. Stahl, EI PROJECT DESIGN ENGINEER



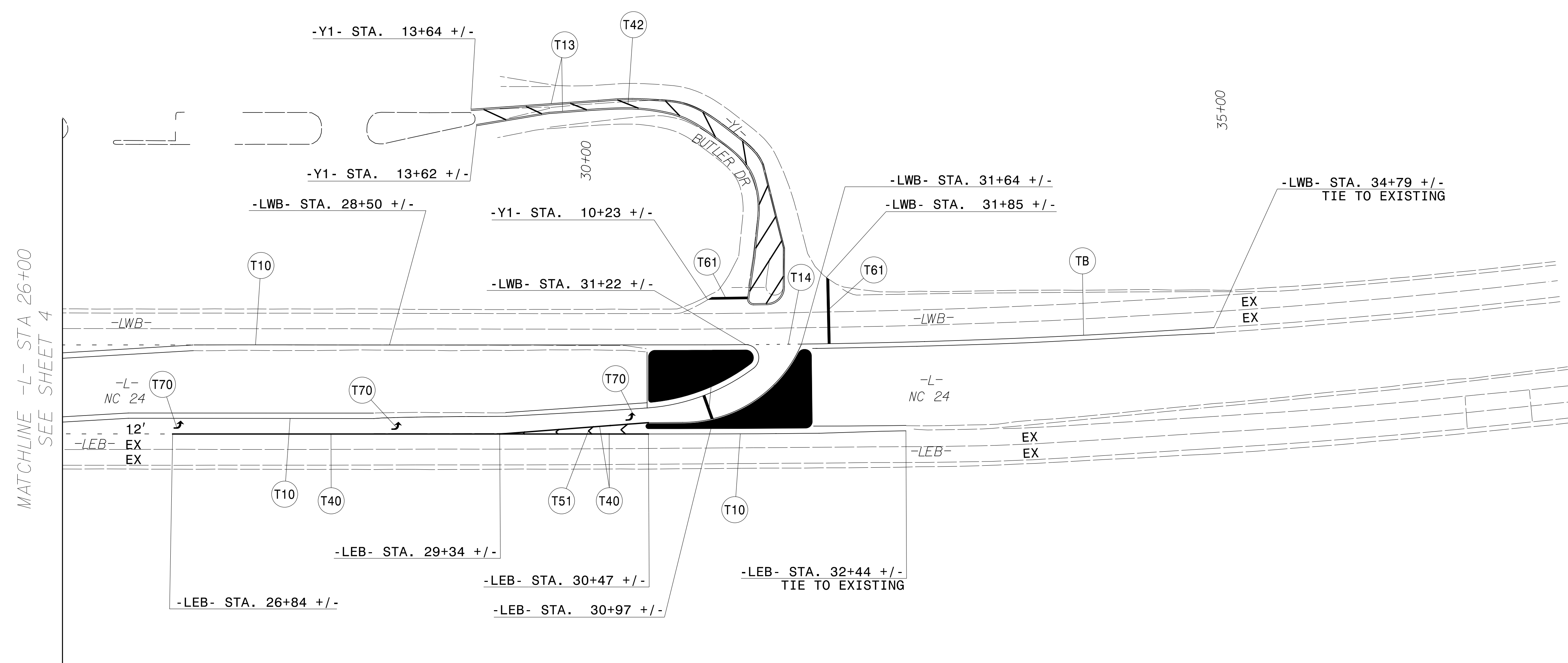
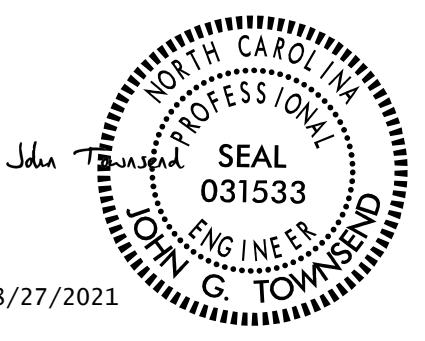


**PAVEMENT
MARKING SCHEDULE**

SYMBOL	DESCRIPTION
T1	WHITE EDGELINE (4", 90 MIL)
T4	3FT.-9FT./SP WHITE MINISKIP (4", 90 MIL)
T5	2FT.-6FT./SP WHITE MINISKIP (4", 90 MIL)
T10	YELLOW EDGELINE (4", 90 MIL)
T13	YELLOW DOUBLE CENTER (4", 90 MIL)
T14	2FT.-6FT./SP YELLOW MINISKIP (4", 90 MIL)
T40	WHITE GORELINE (8" 90 MIL)
T42	YELLOW DIAGONAL (8", 90 MIL)
T51	WHITE DIAGONAL (12", 90 MIL)
T61	WHITE STOPBAR (24", 90 MIL)
T70	LEFT TURN ARROW (90 MIL)
T77	U TURN ARROW (90 MIL)

PAVEMENT MARKING DETAIL

8/27/2021
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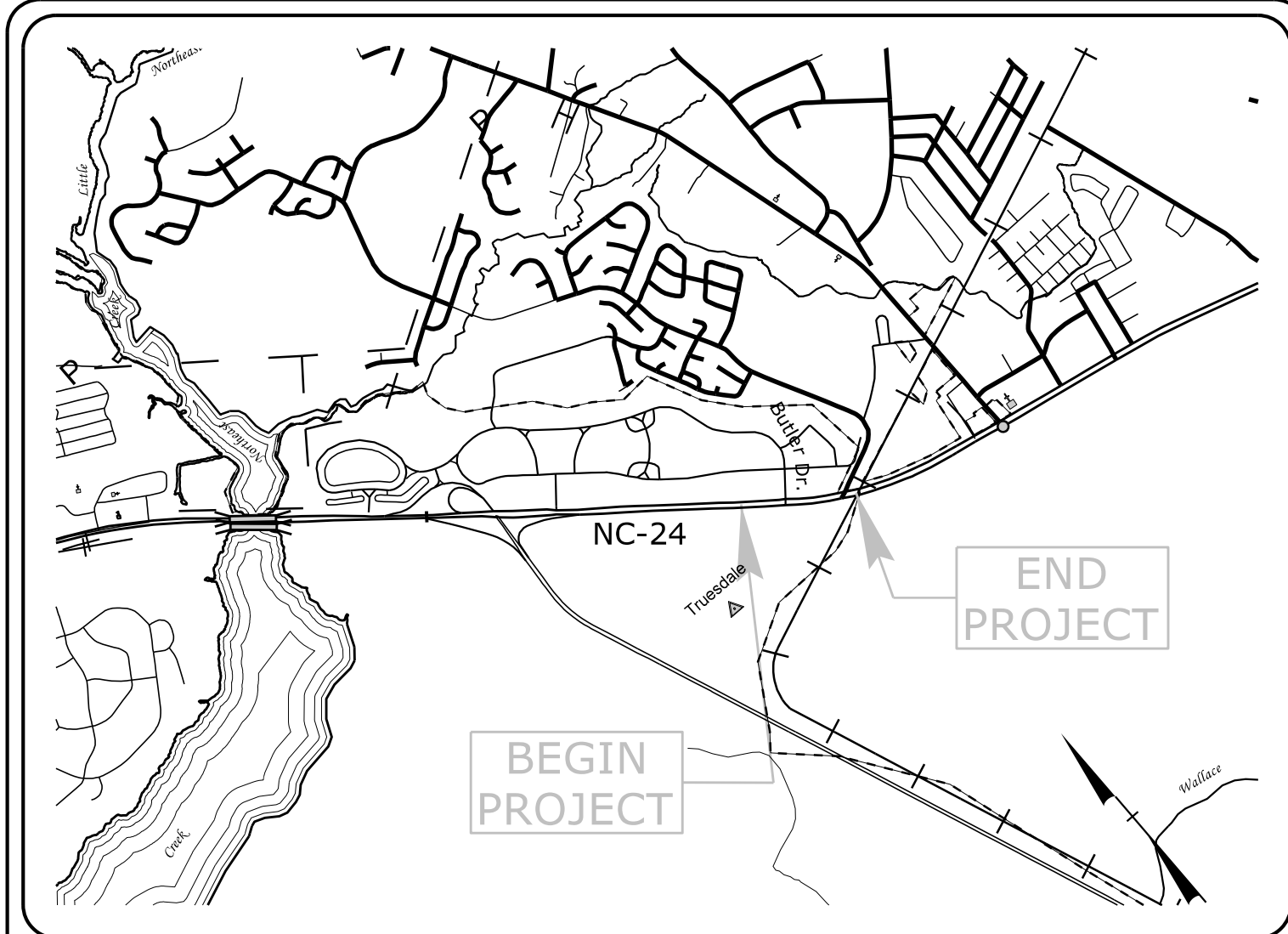


PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
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T4	3FT.-9FT./SP WHITE MINISKIP (4", 90 MIL)
T5	2FT.-6FT./SP WHITE MINISKIP (4", 90 MIL)
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T14	2FT.-6FT./SP YELLOW MINISKIP (4", 90 MIL)
T40	WHITE GORELINE (8" 90 MIL)
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T51	WHITE DIAGONAL (12", 90 MIL)
T61	WHITE STOPBAR (24", 90 MIL)
T70	LEFT TURN ARROW (90 MIL)
T77	U TURN ARROW (90 MIL)

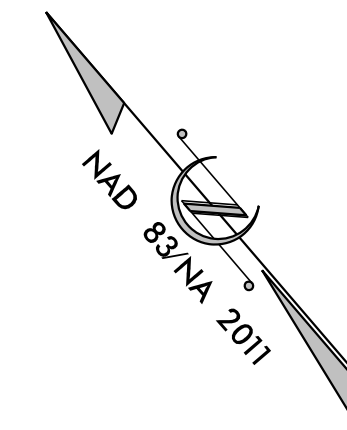
PAVEMENT MARKING DETAIL

TIP PROJECT: W-5703D

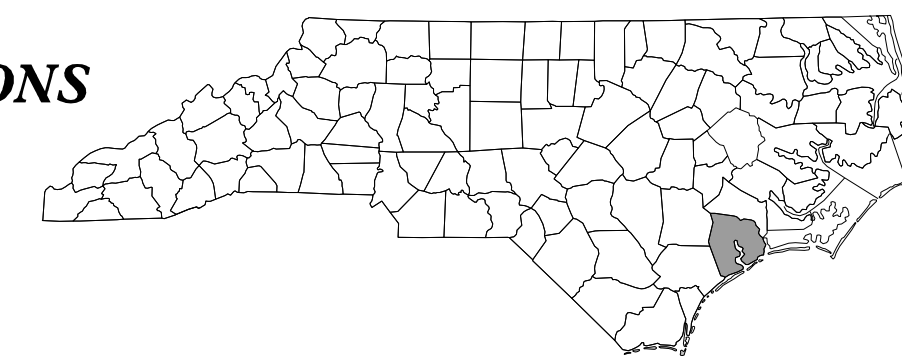


VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL
ON SLOW COUNTY



**LOCATION: NC 24 (LEJEUNE BOULEVARD) AT THE INTERSECTIONS
OF SR 1829 (HUNTERS TRAIL) AND BUTLER DRIVE
(SAFETY IMPROVEMENTS)**



TYPE OF WORK: GRADING, WIDENING, DRAINAGE & PAVING

BEGIN TIP PROJECT W-5703D

-L- POT STA. 17+50.00

TO JACKSONVILLE

THE OUTSIDE BUFFER, WETLAND, OR
WATER BOUNDARY SHALL BE CLEARLY
MARKED BY HIGHLY VISIBLE FENCING
(ORANGE SAFETY FENCE).

-LWB- POT STA. 17+50.00 =
-L- POT STA. 17+50.00 46' LT

-LWB- POC STA. 34+80.19 =
-L- POC STA. 34+83.25 46.7' LT

-LEB- POT STA. 17+49.73 =
-L- POT STA. 17+50.00 46' RT

-LEB- POC STA. 34+86.05 =
-L- POC STA. 34+83.25 46.8' RT

END CONSTRUCTION
-L- POC STA. 42+00.00

END TIP PROJECT W-5703D

-L- POC STA. 34+83.25

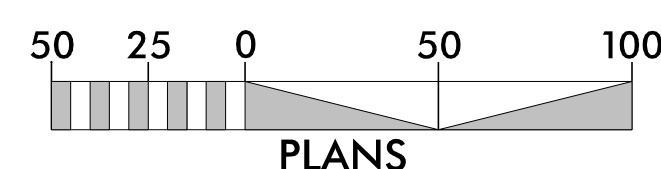
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5703D	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
44849.1.4	HSIP-0024(084)	P.E.	

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	no
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	III III III
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	W
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	W
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 CONTAINS
EROSION CONTROL PLANS
FOR CLEARING AND
GRUBBING PHASE OF
CONSTRUCTION.

GRAPHIC SCALE



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.

Prepared in the Office of:

SUNGATE DESIGN GROUP, P.A.



905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

Designed by:

MATTHEW C. EDWARDS, PE 3992

NAME

LEVEL III CERTIFICATION NO.

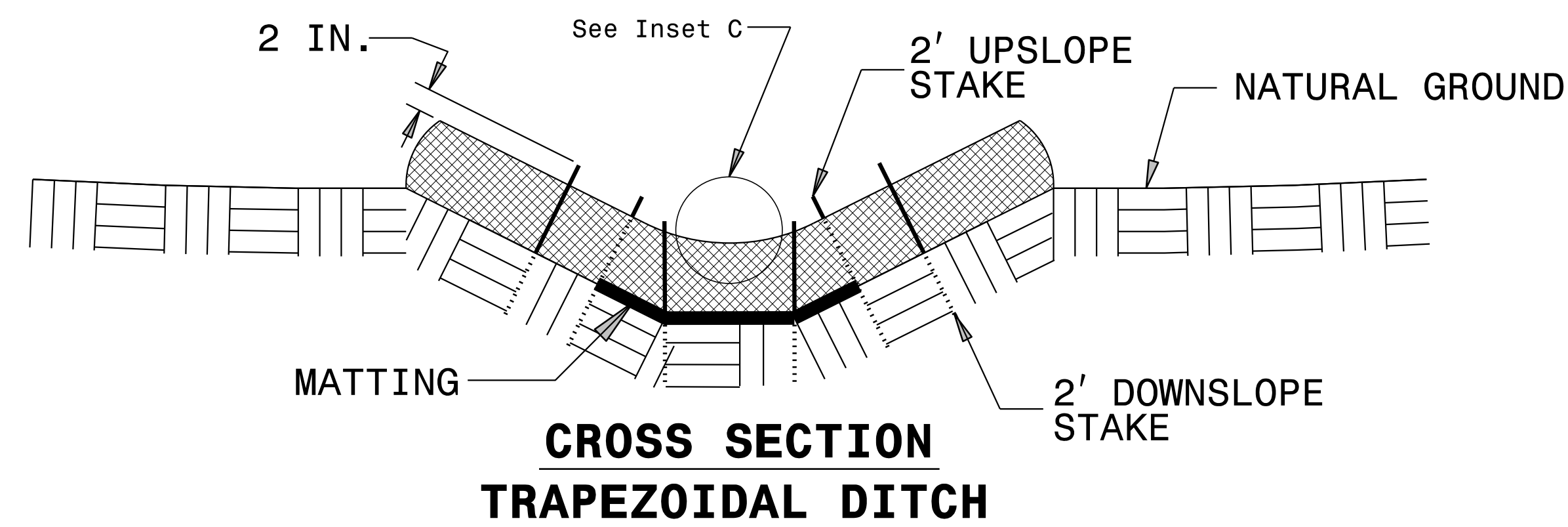
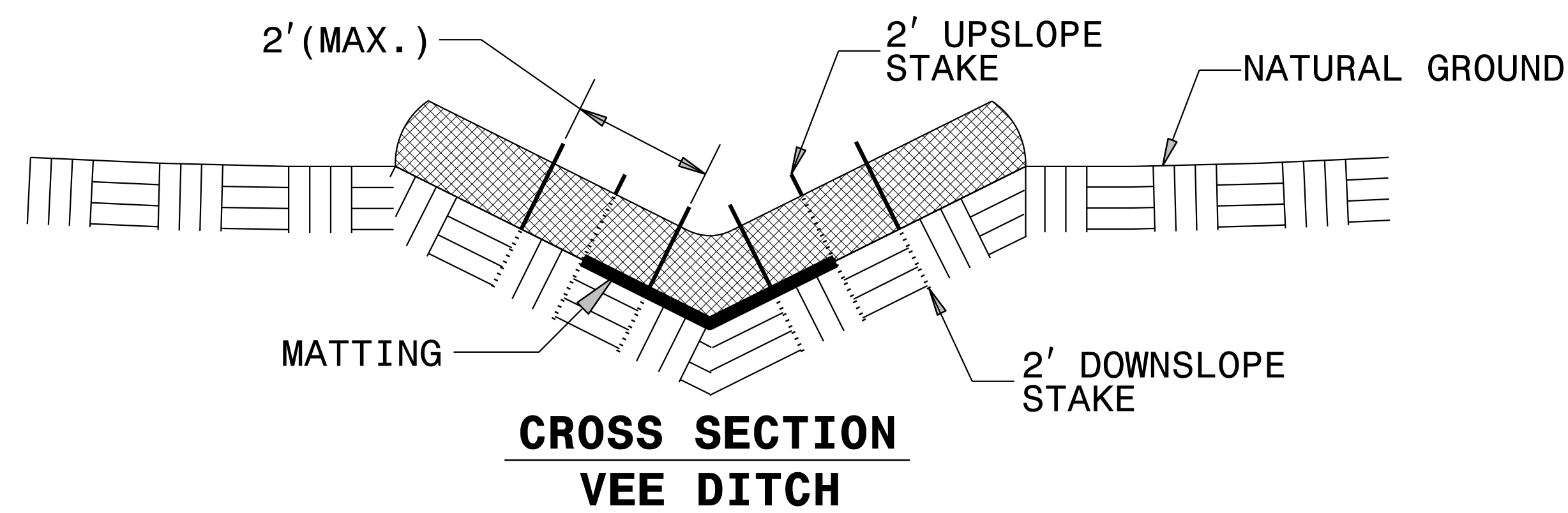
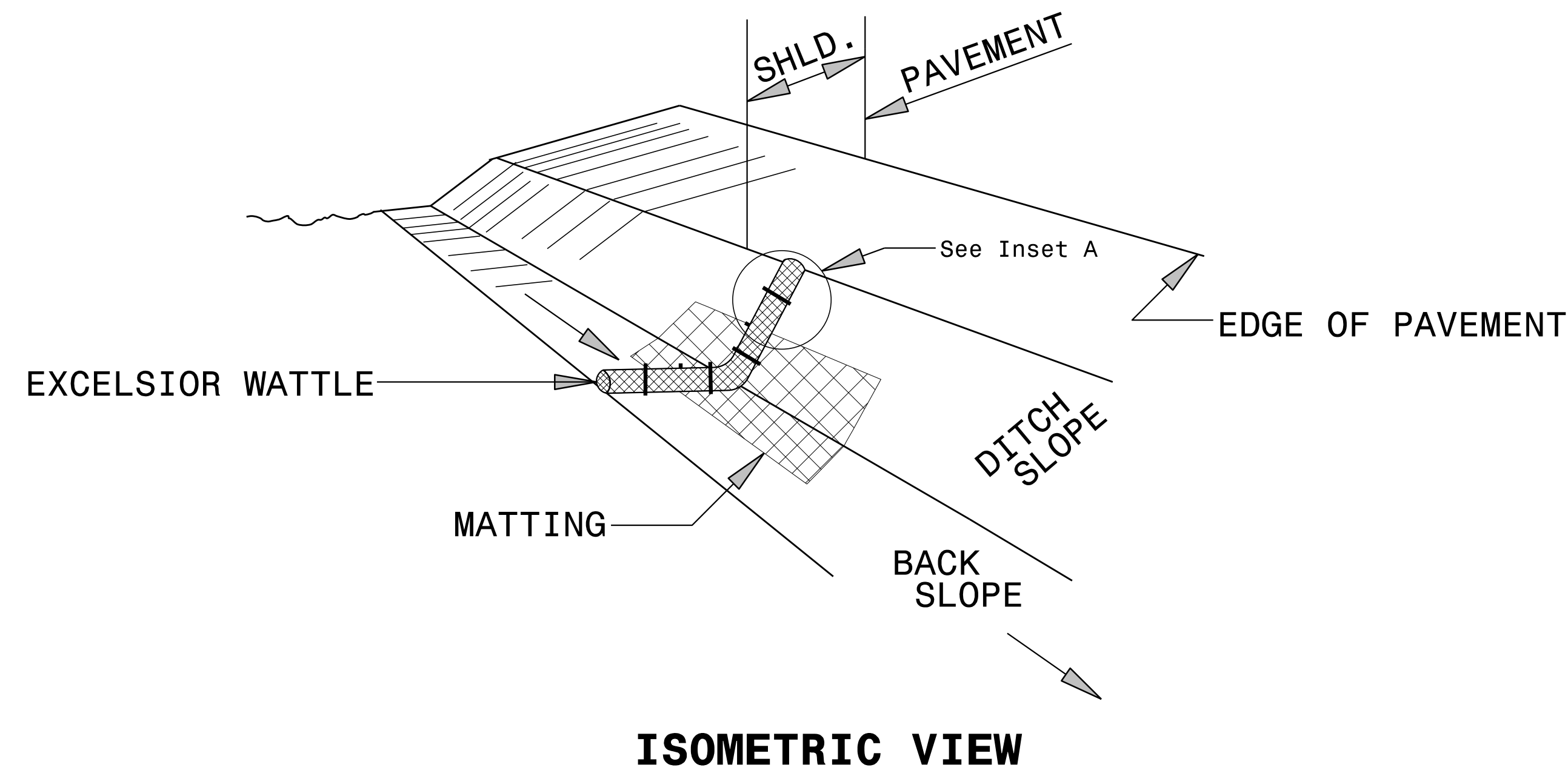
Roadway Standard Drawings

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 revision 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		

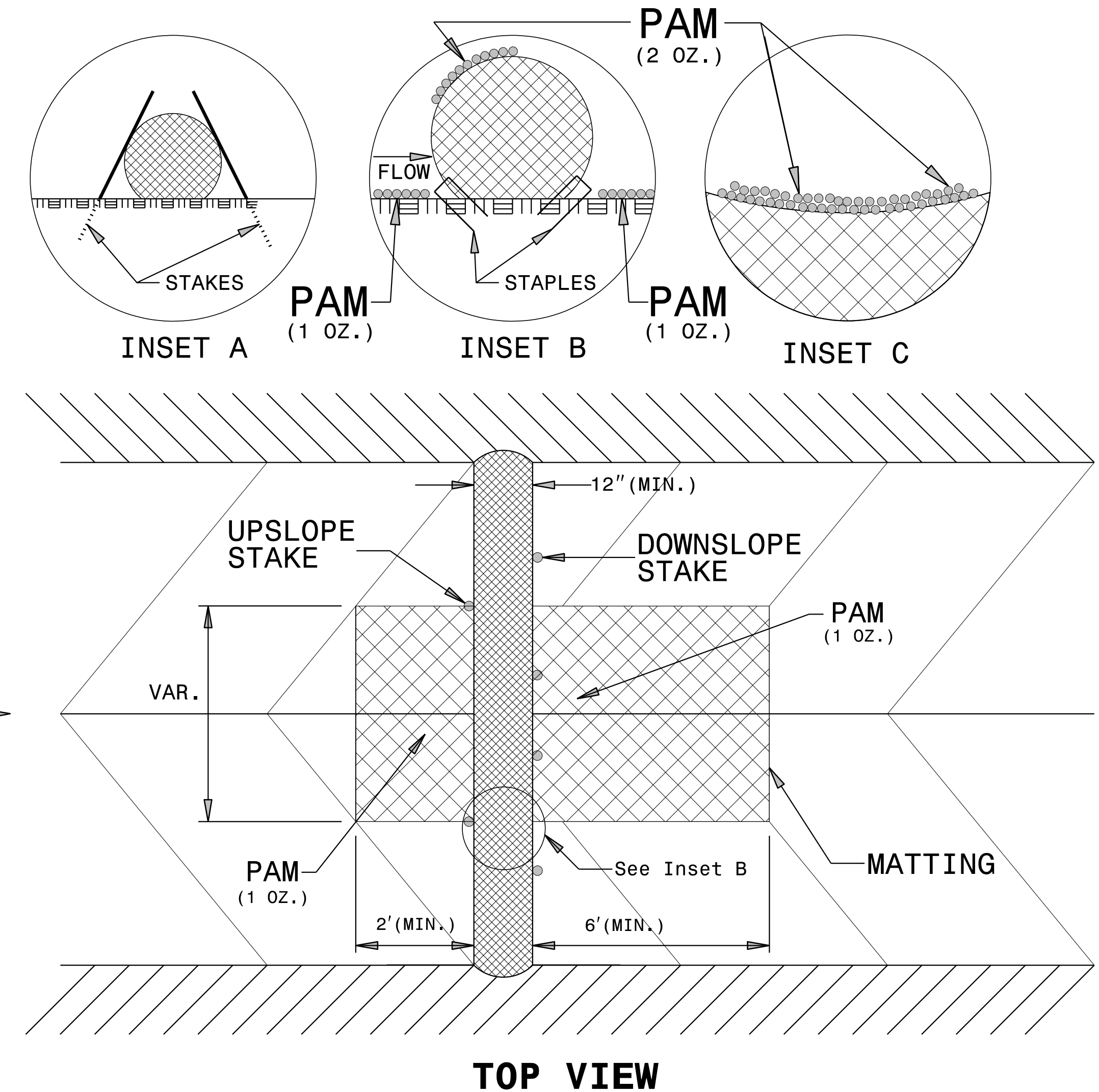
PROJECT REFERENCE NO. W-5703D	SHEET NO. EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



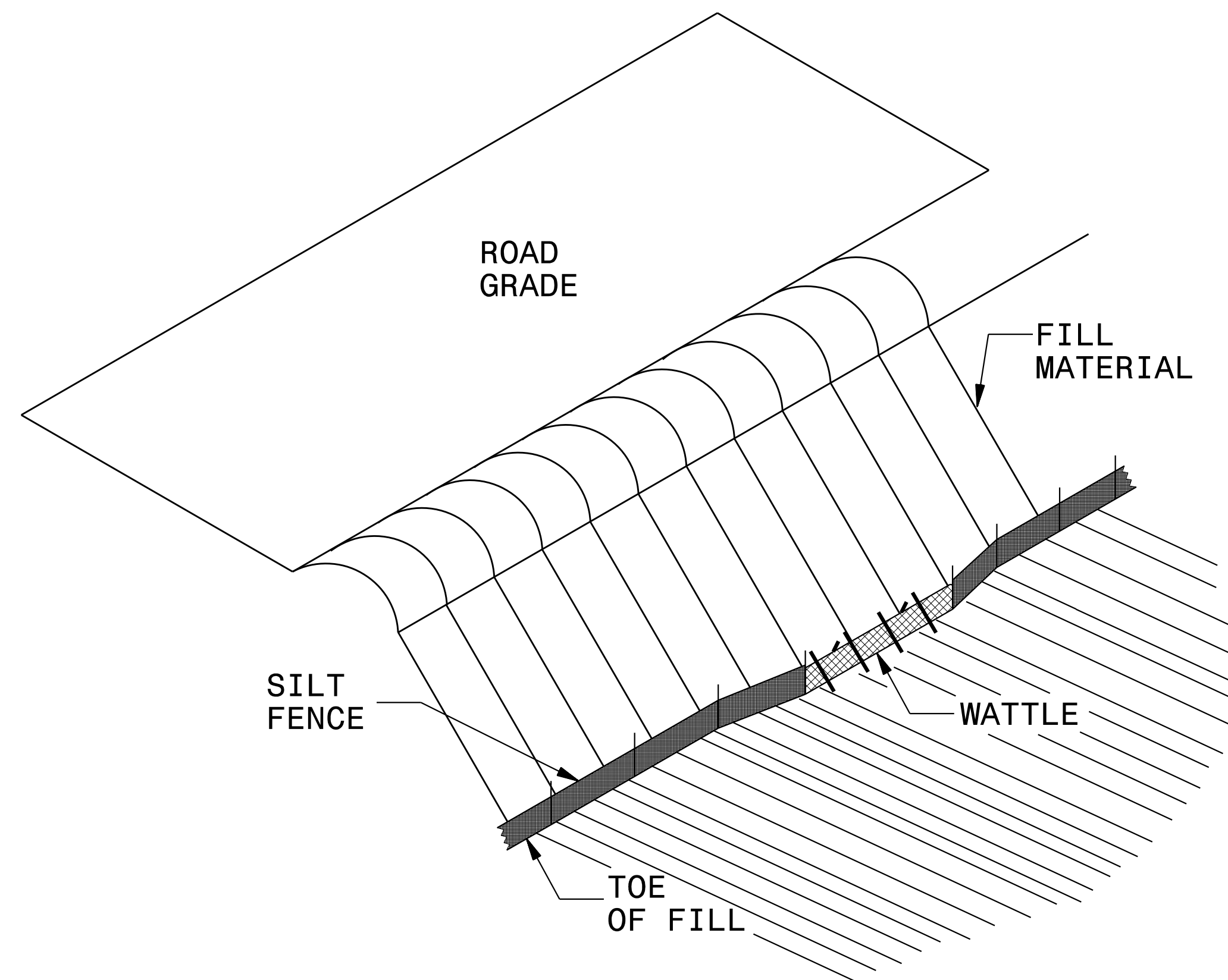
NOTES:

- 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 EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.

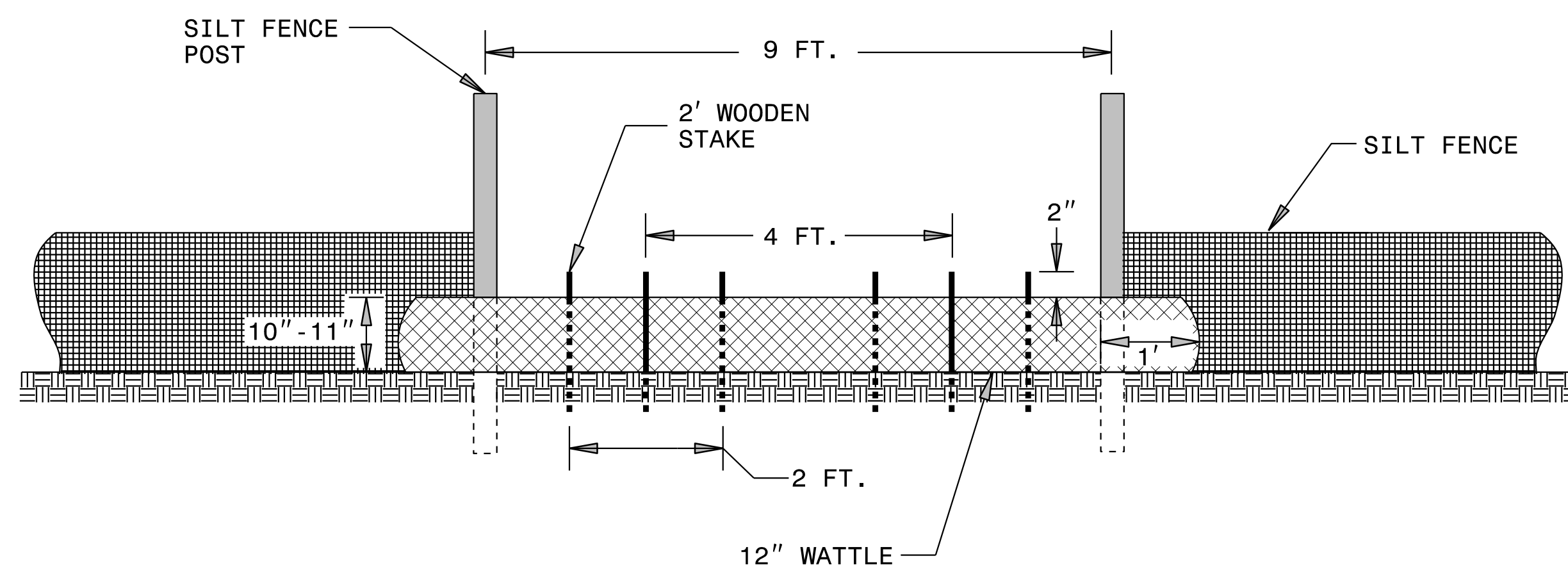


PROJECT REFERENCE NO. <i>W-5703D</i>	SHEET NO. <i>EC-2A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT FENCE WATTLE BREAK DETAIL



ISOMETRIC VIEW

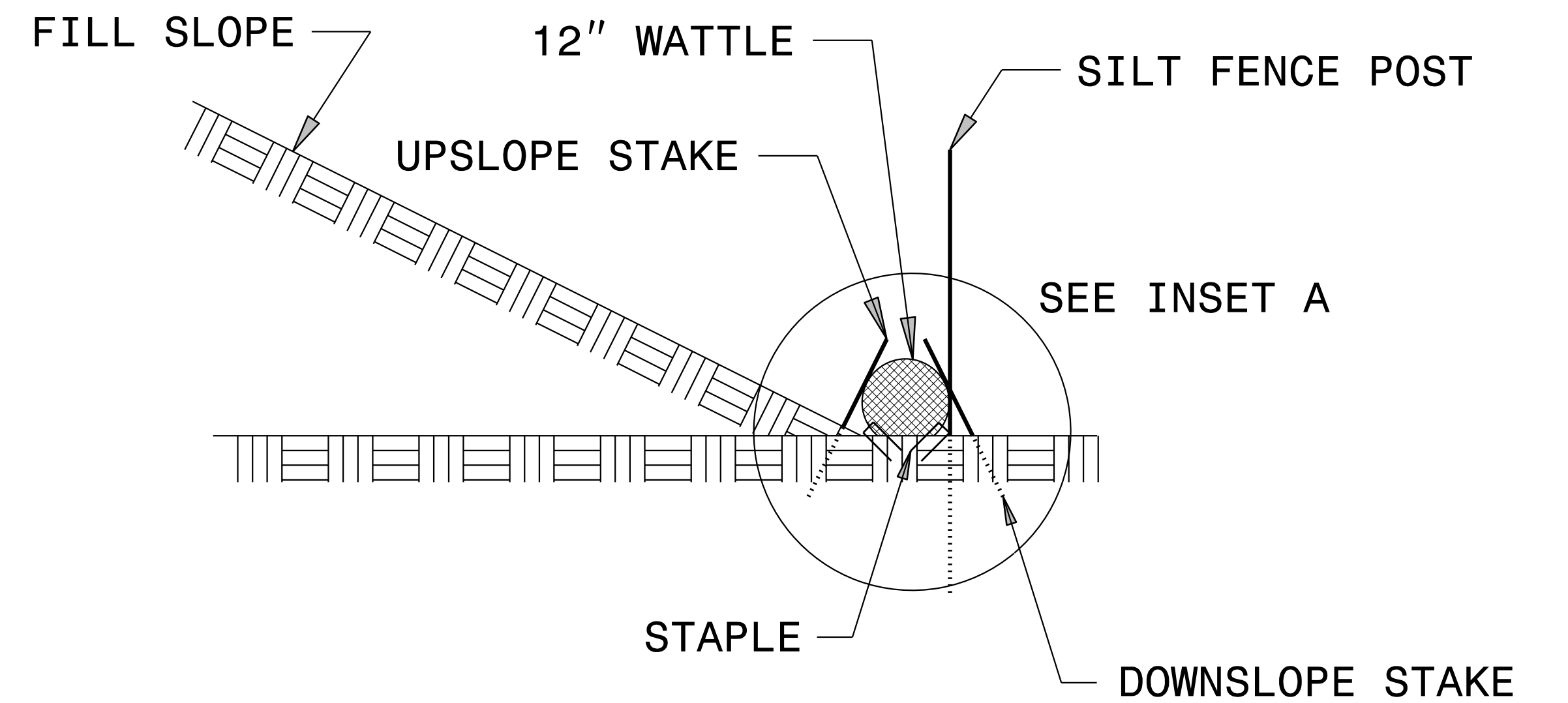
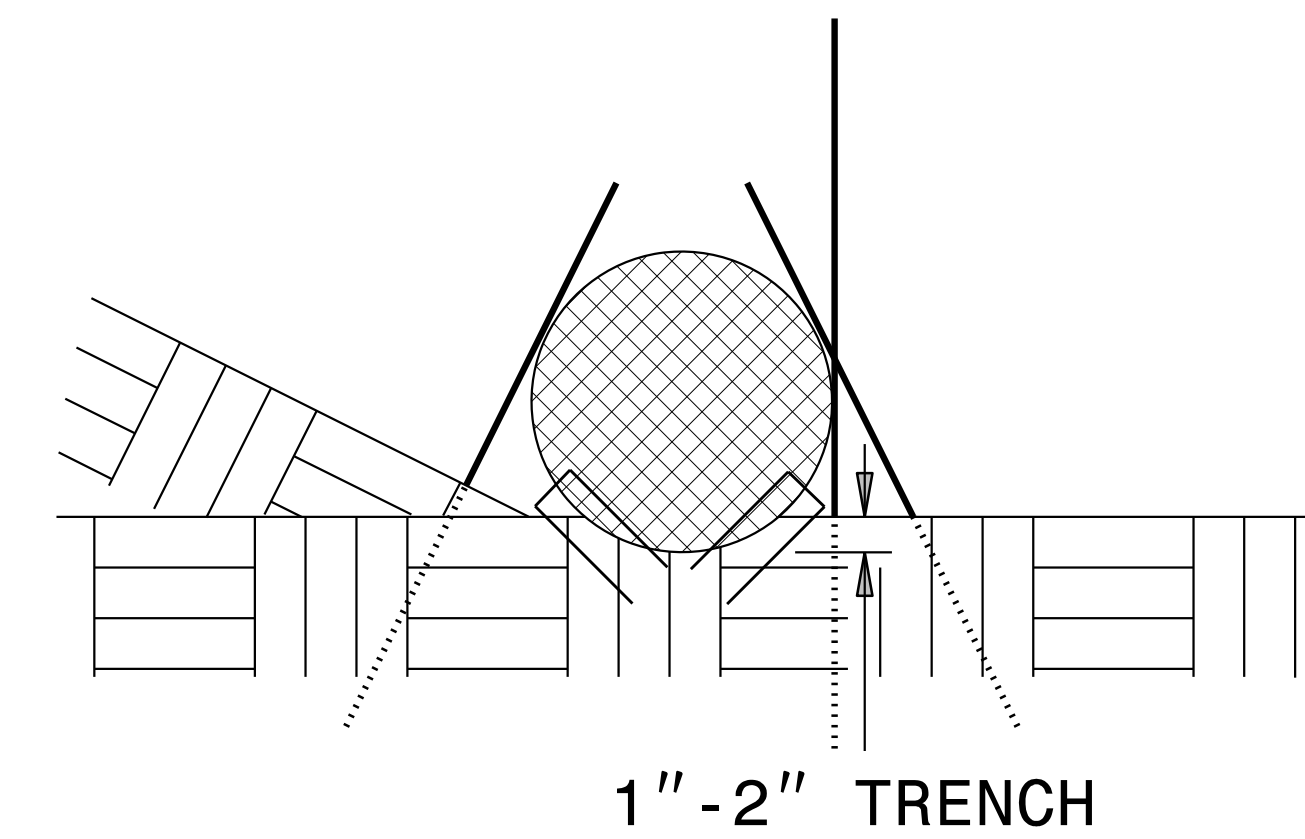


VIEW FROM SLOPE

NOTES:

- USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLE ON TOE OF SLOPE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.
- 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.
- WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.
- INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A



SIDE VIEW

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>W-5703D</i>	SHEET NO. <i>EC-3A</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

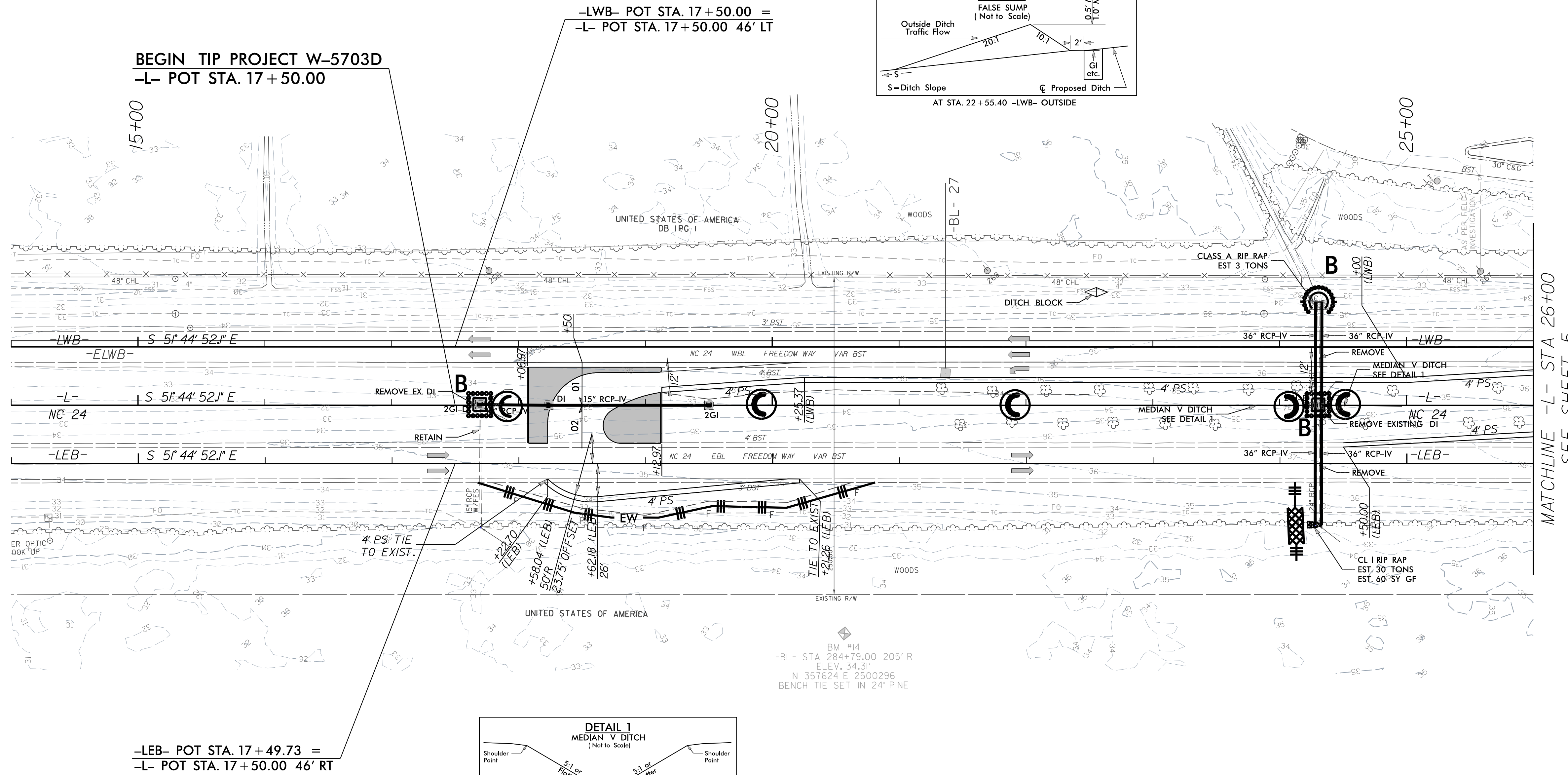
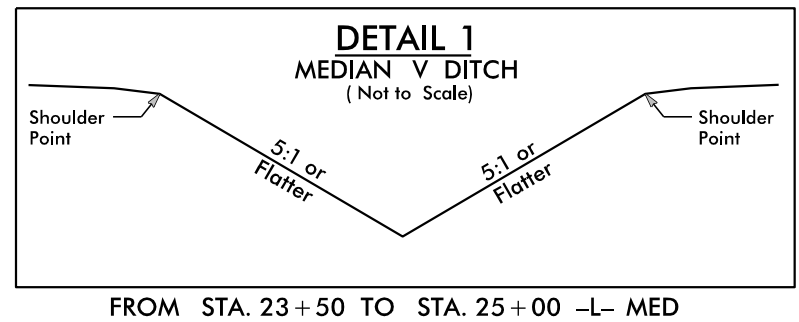
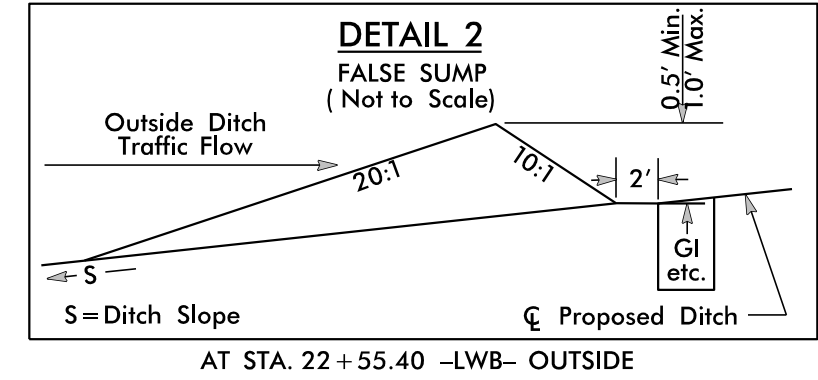
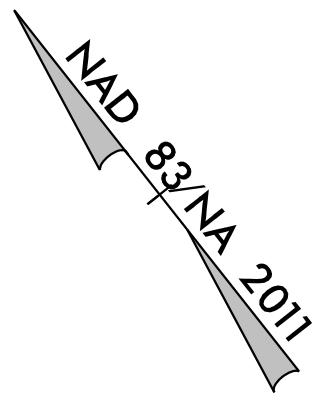
SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
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 REFERENCE NO.	SHEET NO.
W-5703D	EC-04/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.



MATCHLINE -L- STA 26+00
SEE SHEET 5

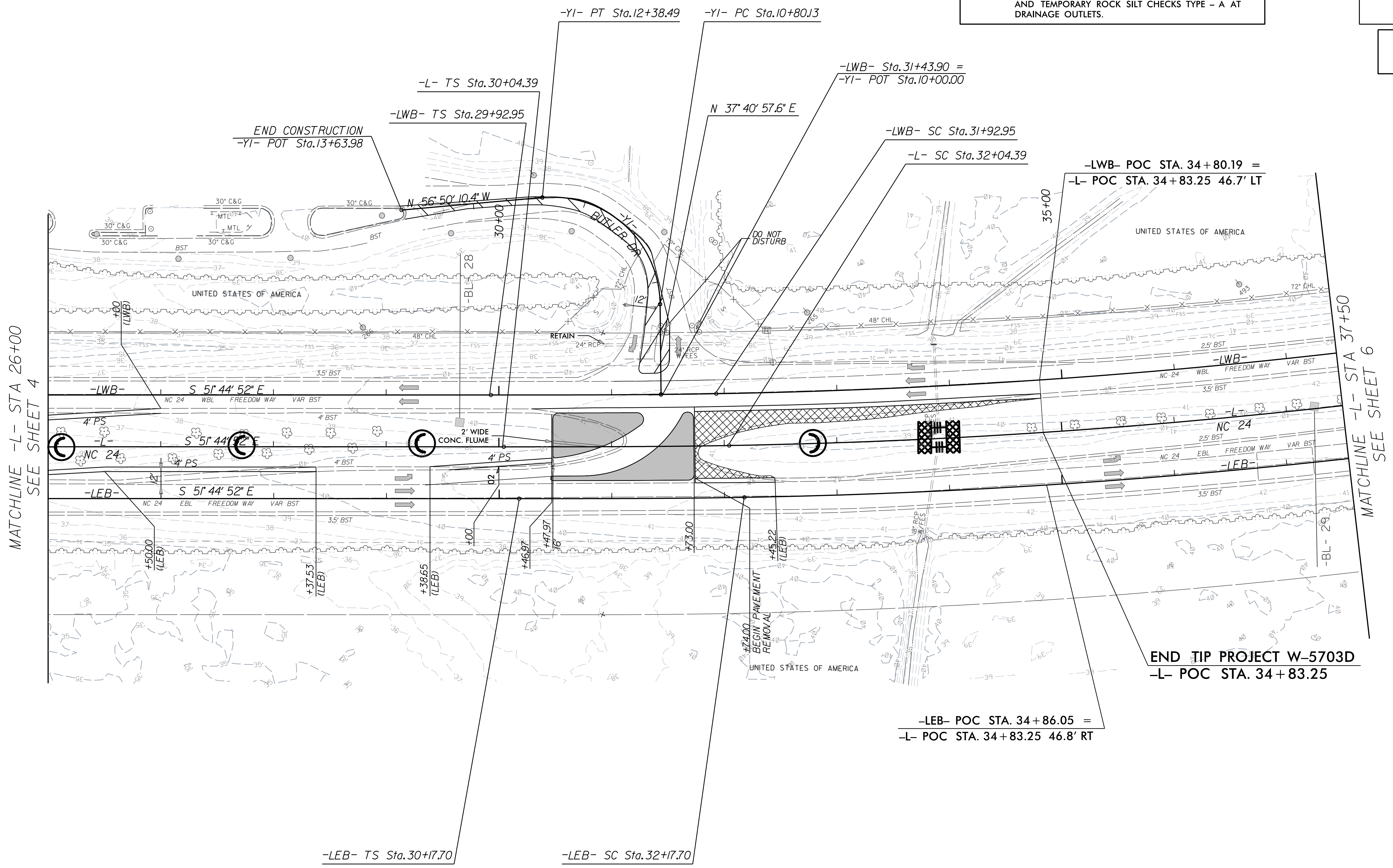
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PROJECT REFERENCE NO.	SHEET NO.
W-5703D	EC-05/CONST.05
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 05

NAD 83/NA 2011

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.



-LEB- POC STA. 34+86.05 =
-L- POC STA. 34+83.25 46.8' RT

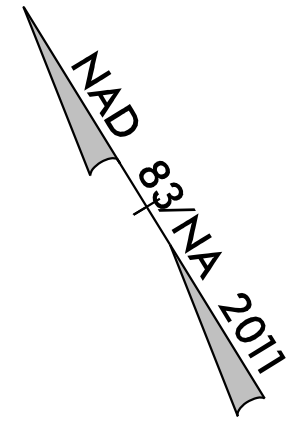
-LEB- TS Sta. 30+17.70 -LEB- SC Sta. 32+17.70

6/25/2010 10:40:30 EC_dsm_psh_05_cq.dgn

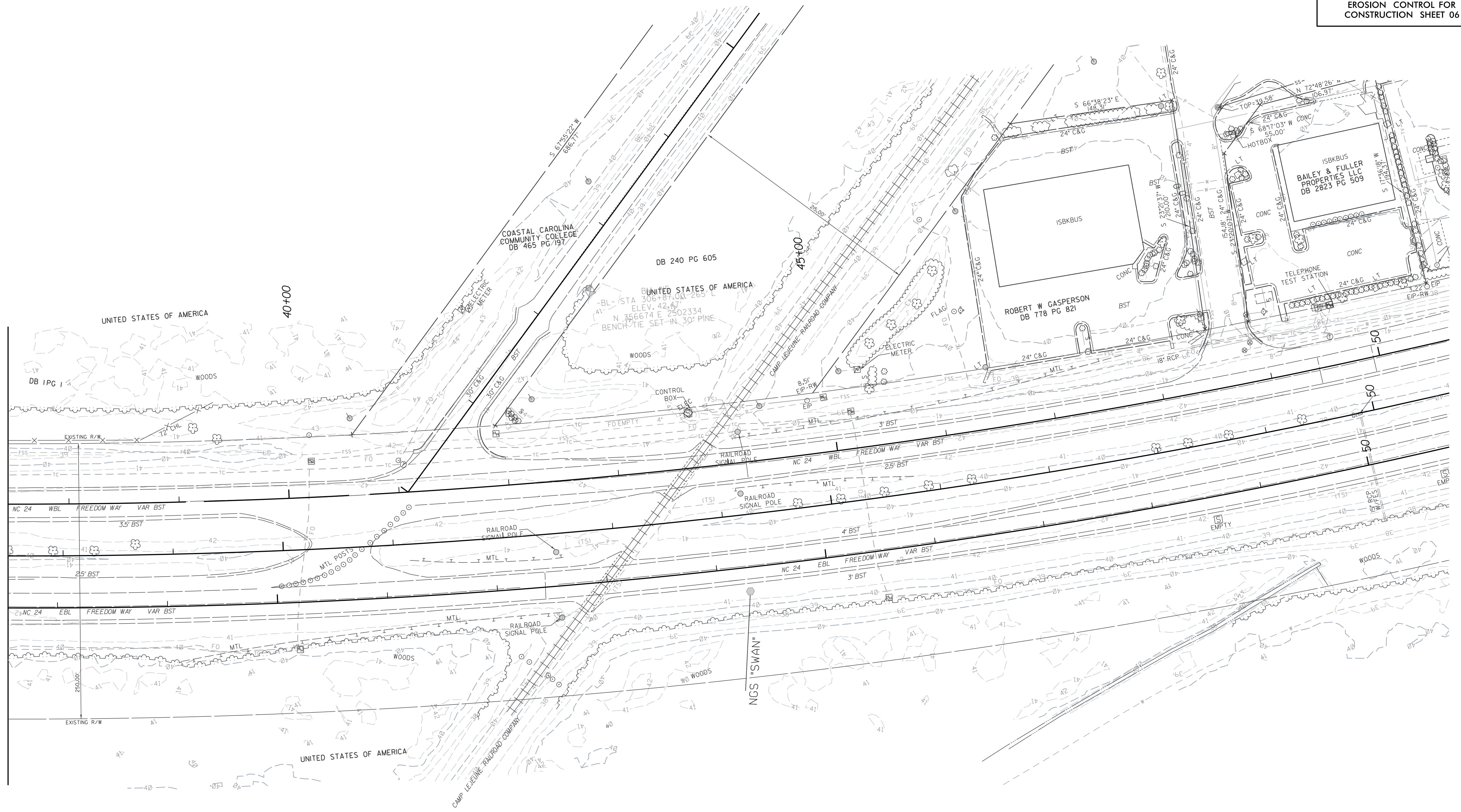
PROJECT REFERENCE NO.	SHEET NO.
W-5703D	EC-06/CONST.06
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 06

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

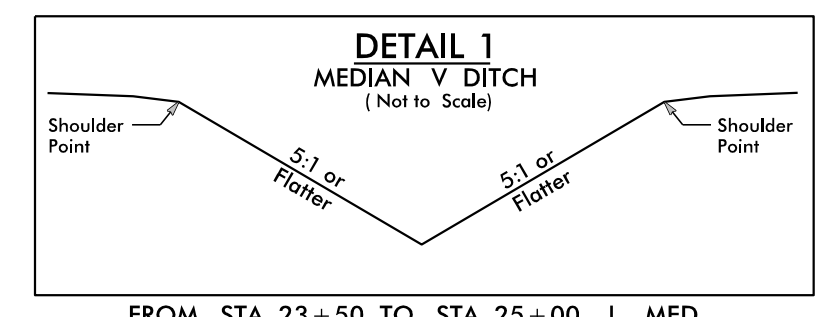
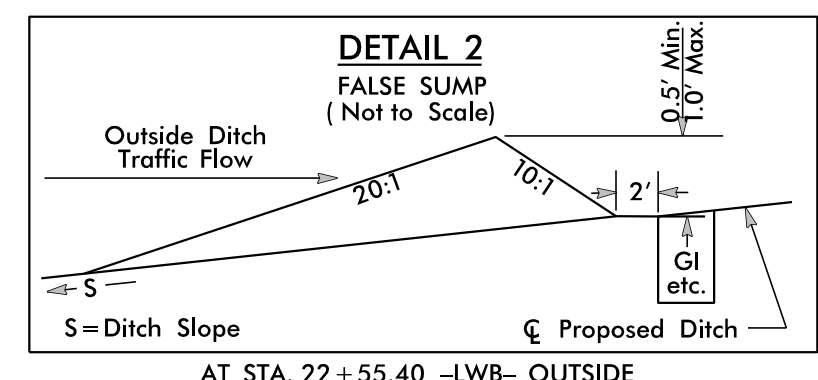
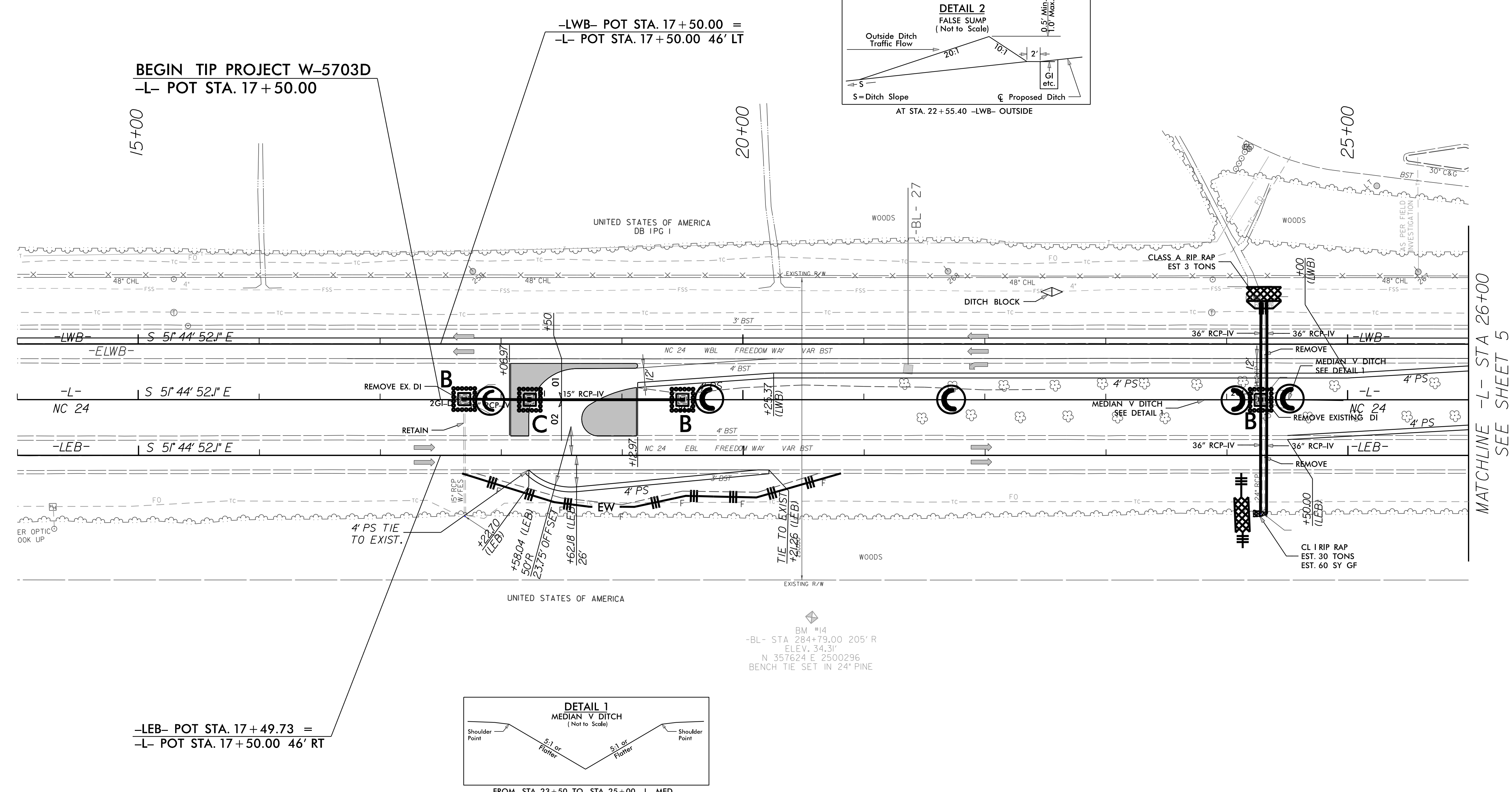
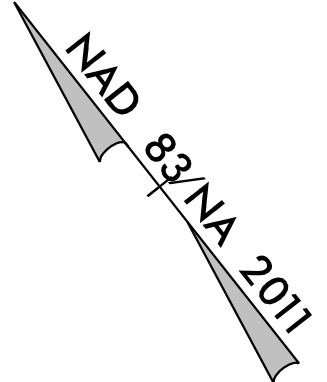


MATCHLINE -L- STA 37+50
SEE SHEET 5



PROJECT REFERENCE NO.	SHEET NO.
W-5703D	EC-07/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04



BM #14
-BL- STA 284+79.00 205' R
ELEV. 34.31'
N 357624 E 2500296
BENCH TIE SET IN 24\"/>

BEGIN TIP PROJECT W-5703D
-L- POT STA. 17+50.00

-LWB- POT STA. 17+50.00 =
-L- POT STA. 17+50.00 46' LT

-LEB- POT STA. 17+49.73 =
-L- POT STA. 17+50.00 46' RT

MATCHLINE -L- STA 26+00
SEE SHEET 5

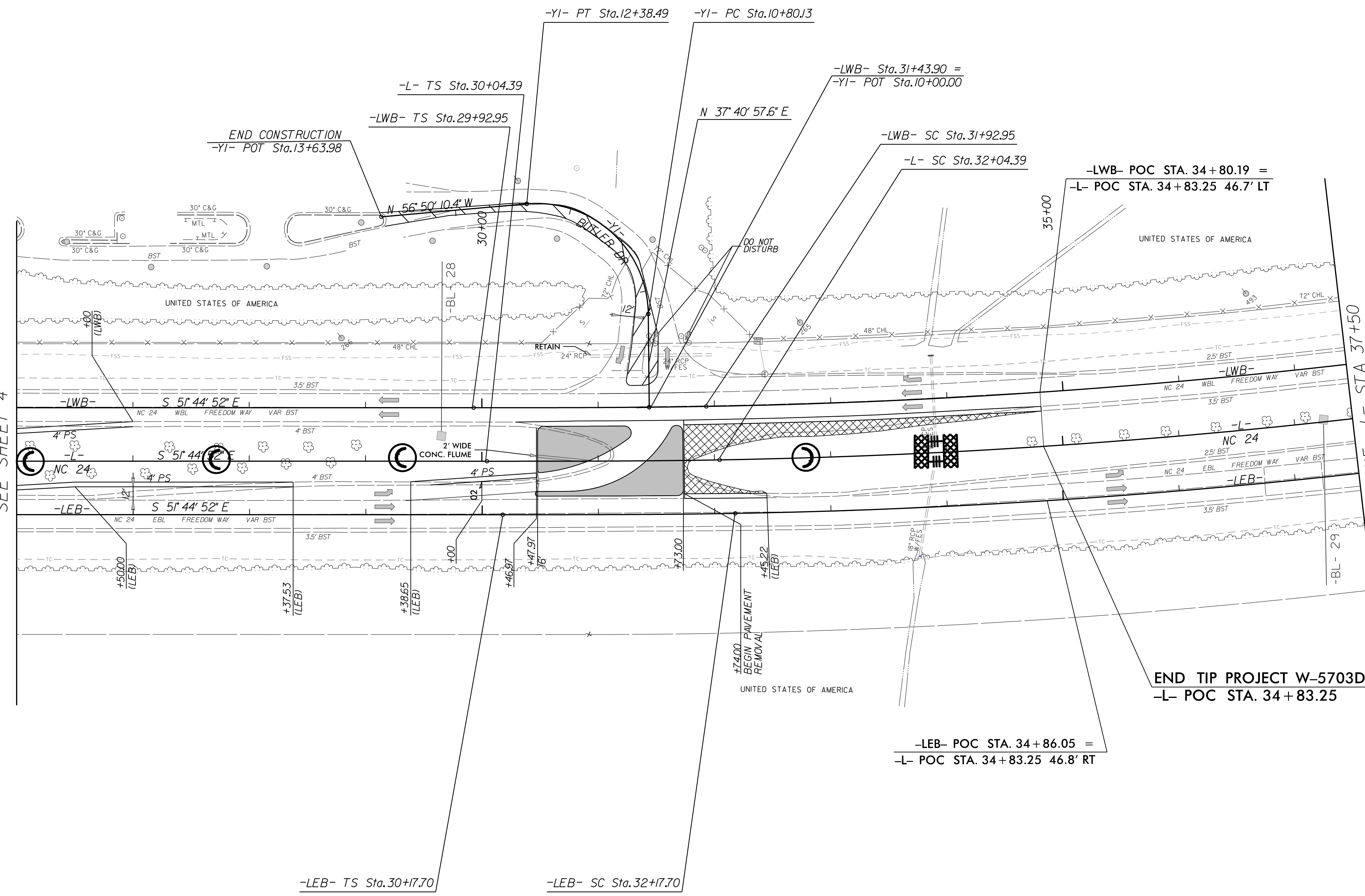
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PROJECT REFERENCE NO. W-5703D	SHEET NO. EC-07/CONST.05
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 05

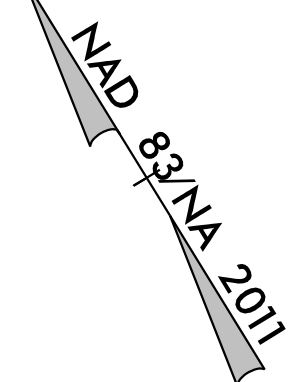
MATCHLINE -L- STA 26+00
SEE SHEET 4

MATCHLINE -L- STA 37+50
SEE SHEET 6



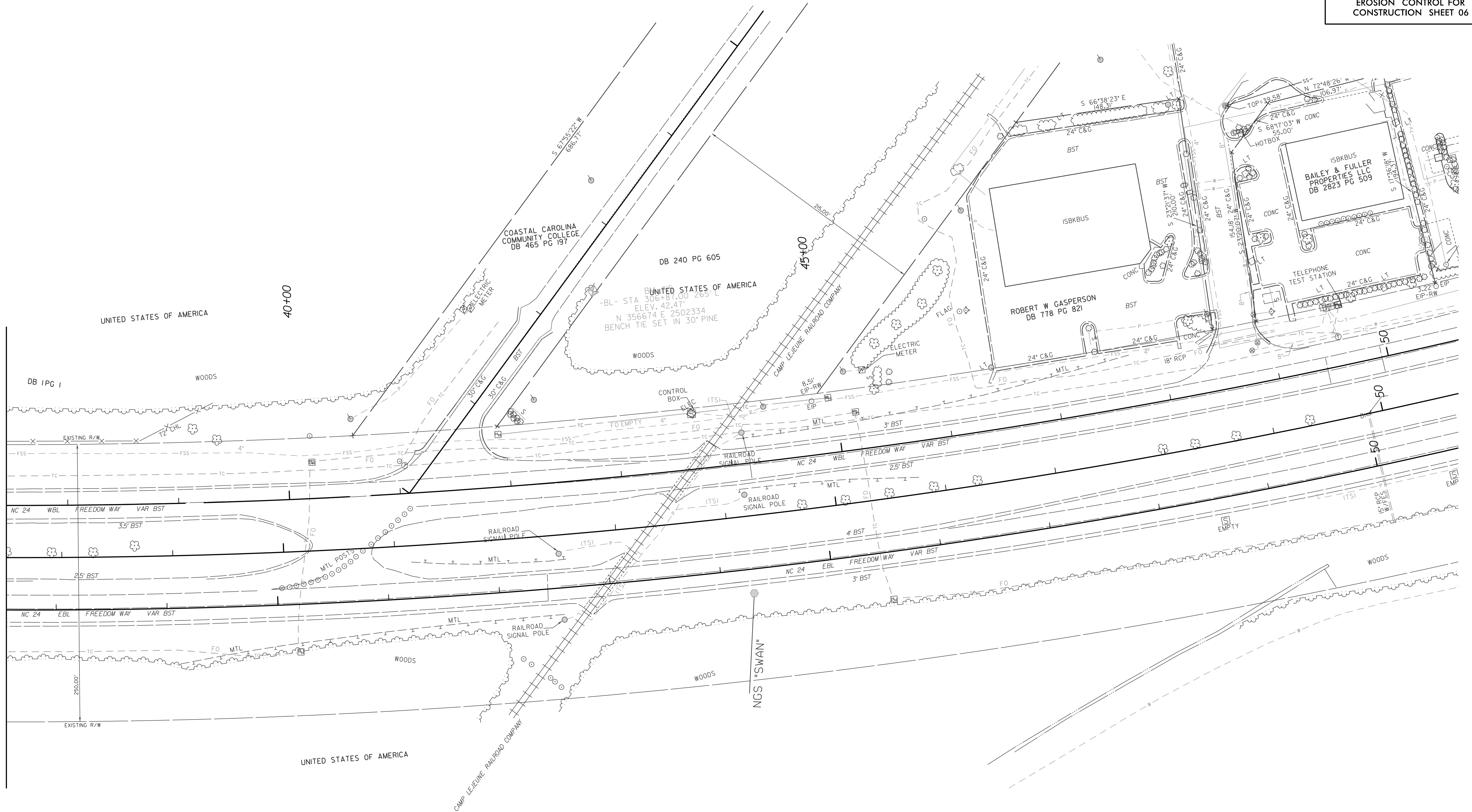
NAD 83/NA 2011

6/25/2010 10:40 AM
C:\den-psh_08_fg.dgn
M:\work



FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 06


MATCHLINE -L- STA 37+50
SEE SHEET 5



**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**SIGNING PLAN
ON SLOW COUNTY**

**LOCATION: NC 24 (LEJEUNE BOULEVARD) AT THE INTERSECTION
OF BUTLER DRIVE**

<small>PROJECT REFERENCE NO.</small> W-5703D	<small>SHEET NO.</small> SIGN-1
<small>APPROVED:</small> _____	
<small>DATE:</small> _____	
	
<small>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</small>	

T.I.P.: W-5703D

WBS: 44849.1.4

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 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

<u>STD. NO.</u>	<u>TITLE</u>
901.50	ARROWS AND SHIELDS
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.20	SECONDARY SIGN MOUNTING
904.30	SUPPLEMENTAL SIGN MOUNTING
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS
910.30	SIGNING UNSIGNALIZED SUPERSTREET

PROJECT NOTES

- DISPOSAL OF SIGN SYSTEM, U CHANNEL

GENERAL NOTES

- . SIGNS FURNISHED BY STATE
- . 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.
- . ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TWO U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	219	L.F.
4102000000	904	SIGN ERECTION, TYPE D, E, & F	8	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	9	EA.

INDEX

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
SIGN-1	TITLE SHEET
SIGN-2	E AND F SHEETS
SIGN-2A	KWIK KURB BULLNOSE MARKER
SIGN-4-5	SIGN DETAILS

PLAN PREPARED BY: VHB Engineering NC, P.C.

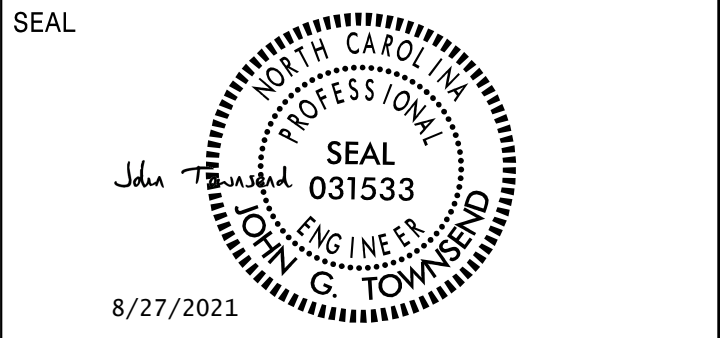
John G. Townsend, PE PROJECT ENGINEER
Morgan A. Stahl, EI PROJECT DESIGN ENGINEER



940 Main Campus Drive, Suite 500 Raleigh, NC 27606
NC License No. C-3705

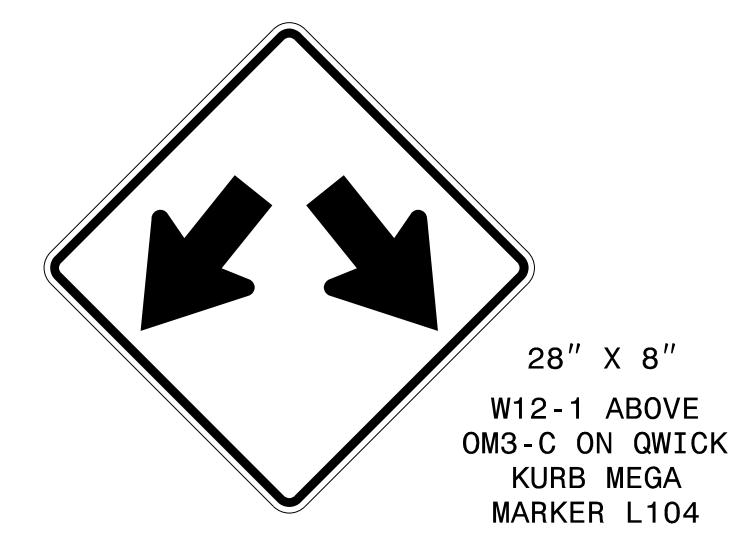
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DATE: _____



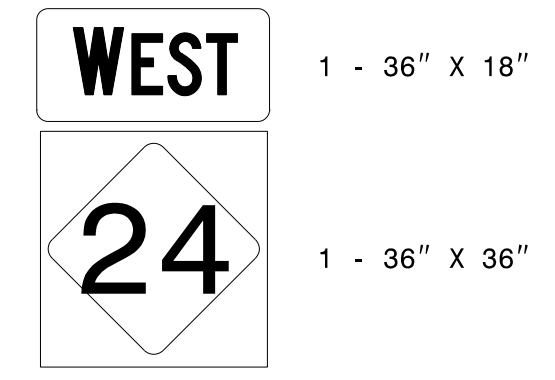
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

401 QUANTITY REQ'D 2



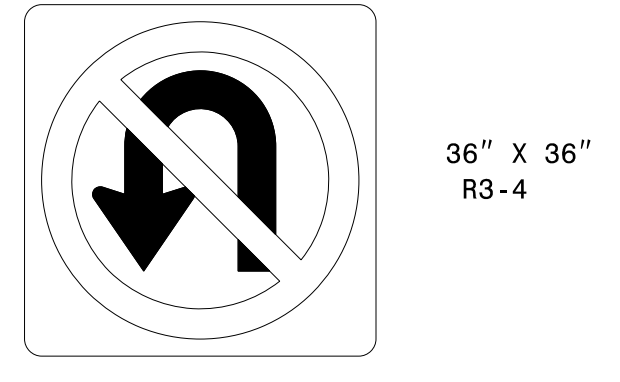
ONE QWICK KURB BULLNOSE BASE L50 PER SIGN
** SEE SIGN-2A FOR DETAIL **

501 QUANTITY REQ'D 1



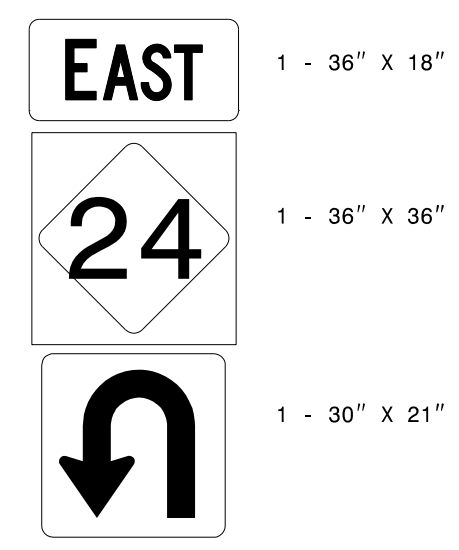
ONE "U" POST PER SIGN

402 QUANTITY REQ'D 2



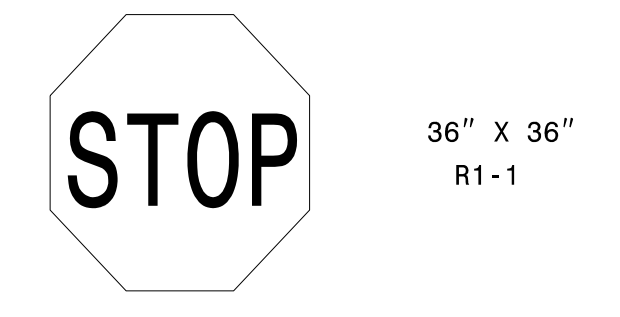
ONE "U" POST PER SIGN

502 QUANTITY REQ'D 1



ONE "U" POST PER SIGN

403 QUANTITY REQ'D 1



ONE "U" POST PER SIGN

404 QUANTITY REQ'D 1



TWO "U" POSTS PER SIGN

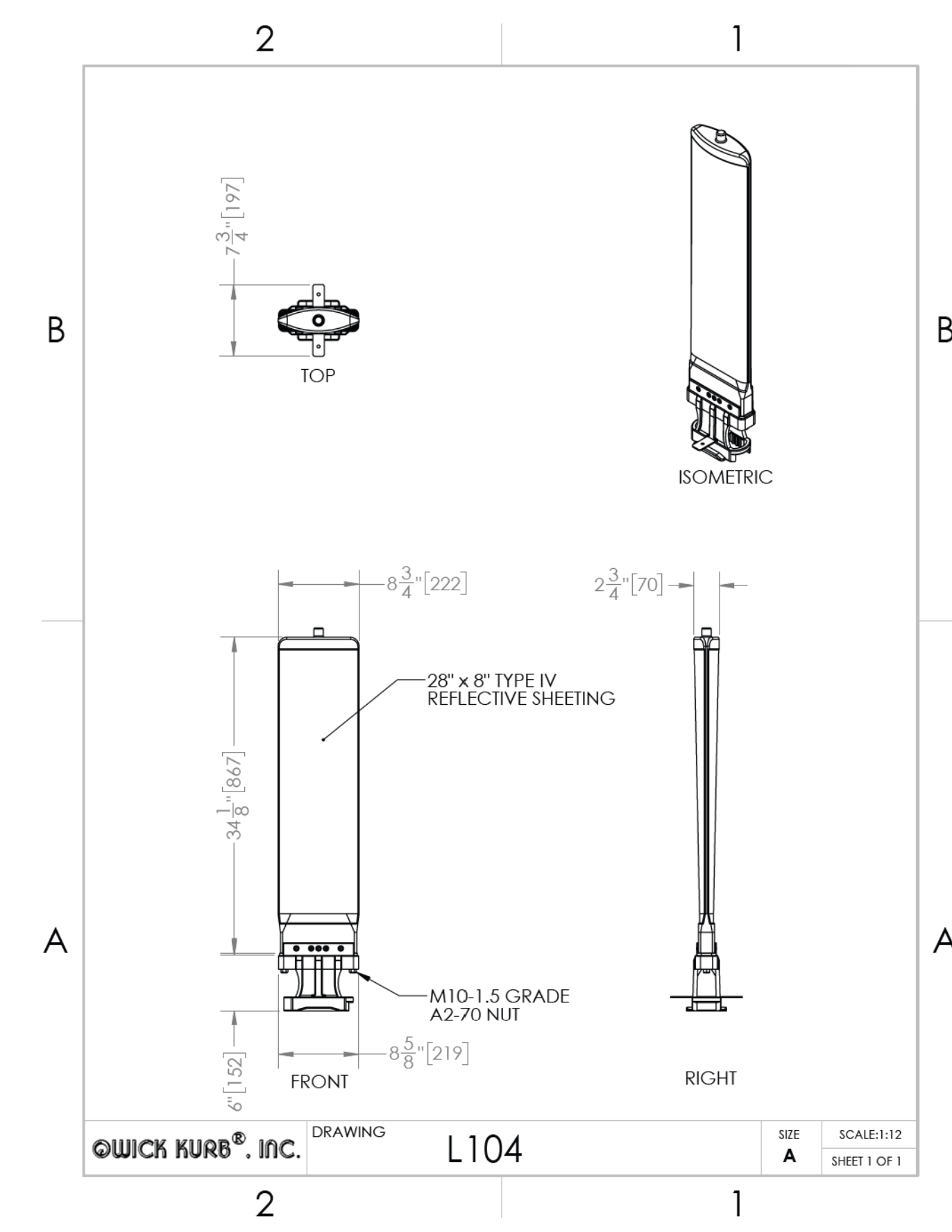
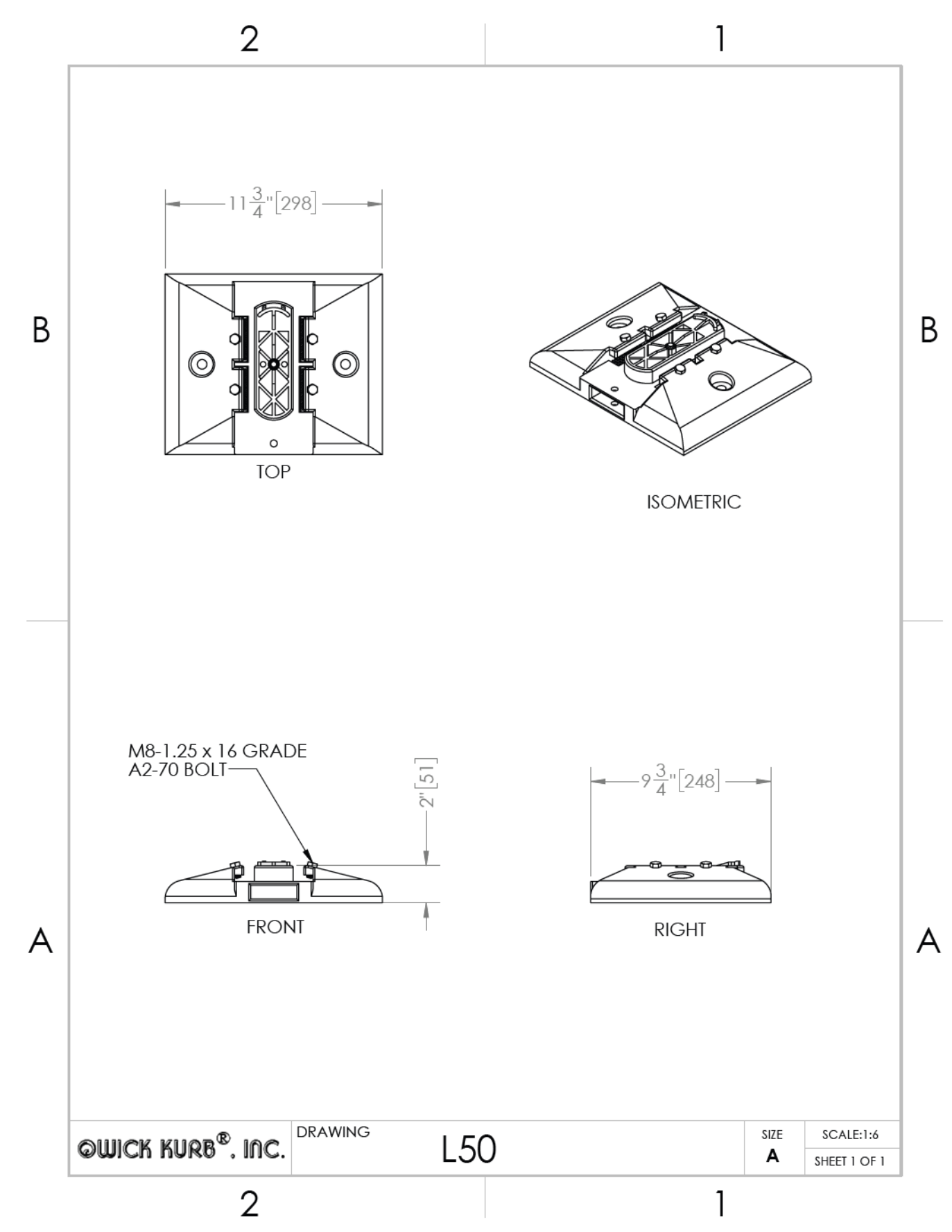
TYPE "E" & "F" SIGNS

R:\21\2021\Projects\Signing\CADD\Signing\Layout\Plans\W-5703D_SIGN_PSHI-2.dgn
John G. Townsend

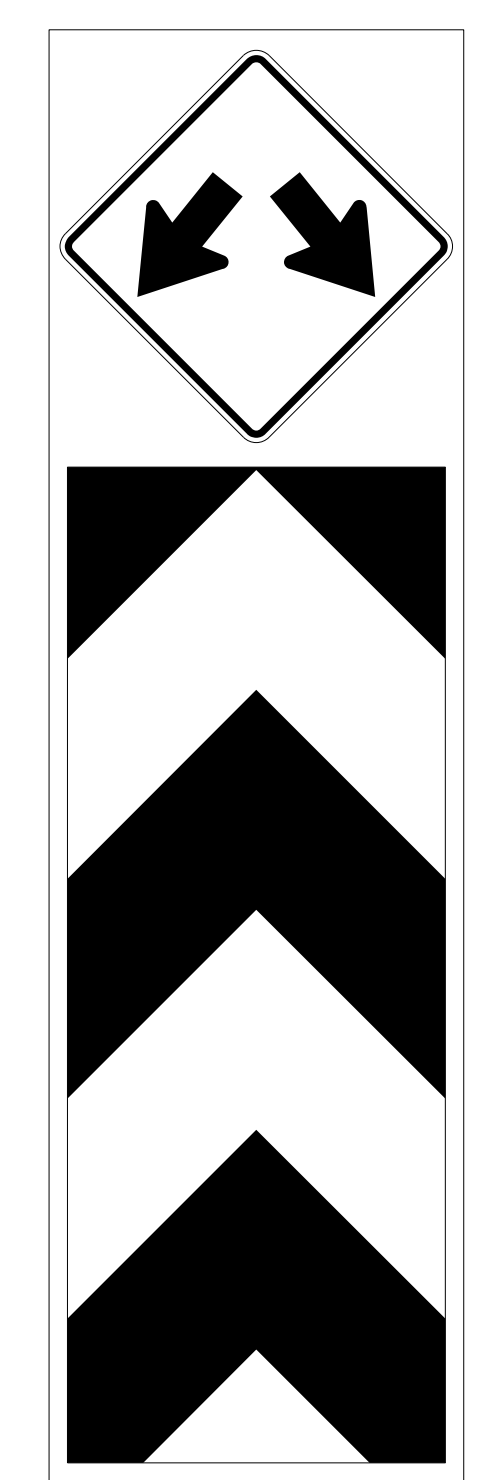


VHB Engineering NC, P.C. (C-3705)
 940 Main Campus Drive, Suite 500
 Raleigh, NC 27606

TIP NO. W-5703D	SHEET NO. SIGN-2A
APPROVED: _____	
DATE: _____	
SEAL	
8/27/2021	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

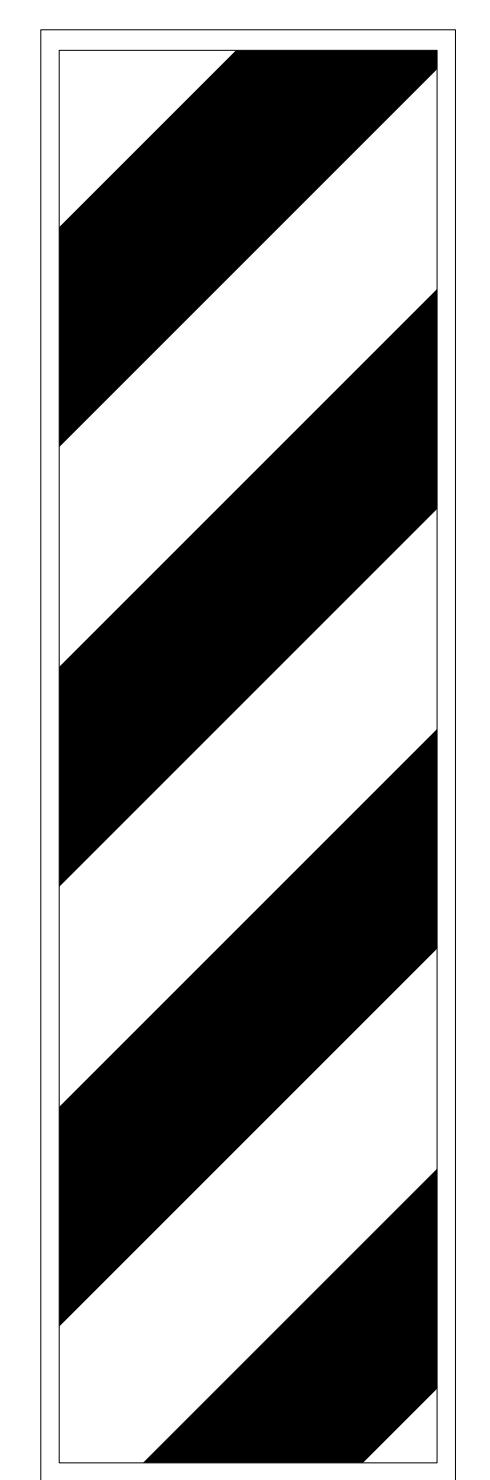


FRONT



**28" X 8" SHEETING
W12-1 ABOVE OM3-C**

BACK

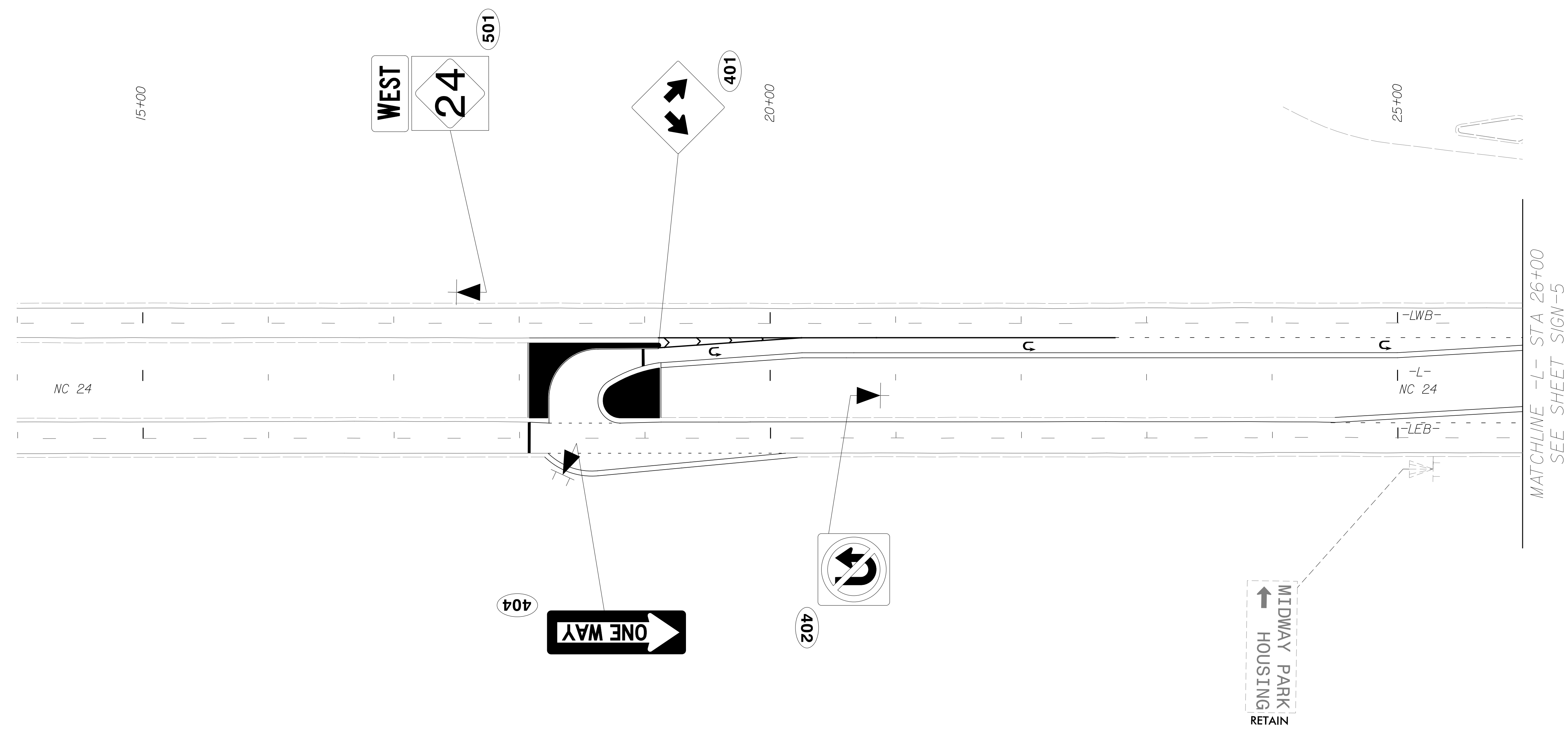
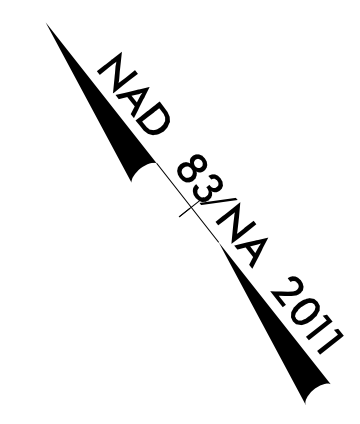


**28" X 8" SHEETING
OM3-R**

**KWICK KURB
BULLNOSE MARKER**

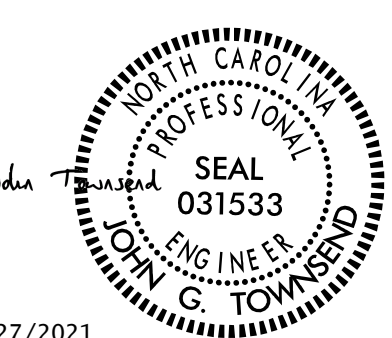
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TIP NO.	SHEET NO.
W-5703D	SIGN-4
APPROVED: _____	
DATE: _____	
SEAL	
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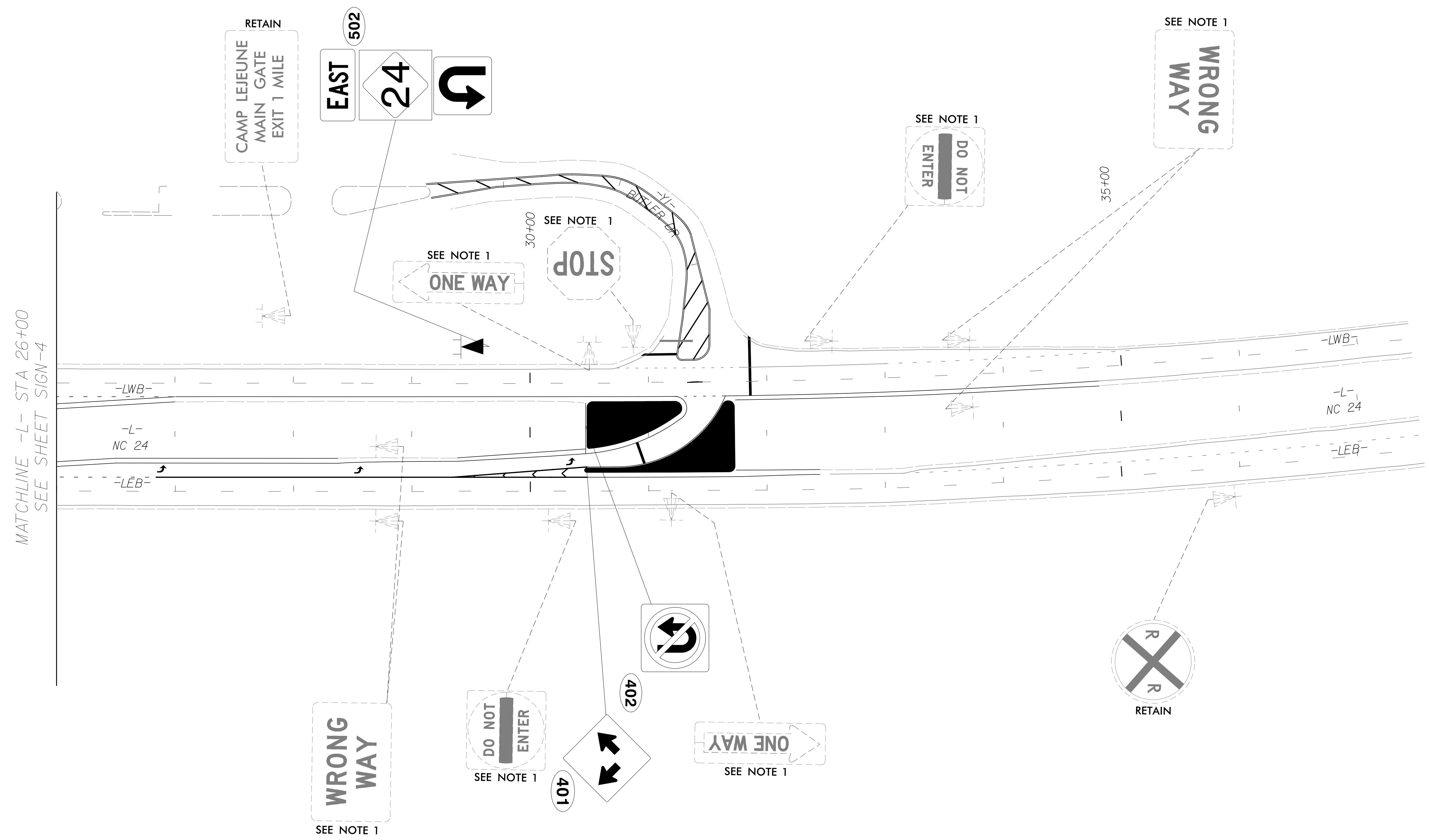


SIGN DETAIL

8/27/2021
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TIP NO.	SHEET NO.
W-5703D	SIGN-5
APPROVED:	_____
DATE:	_____
SEAL	
	8/27/2021
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NAD 83/NA 2011



SIGN DETAIL

TIP PROJECT: W-5703D

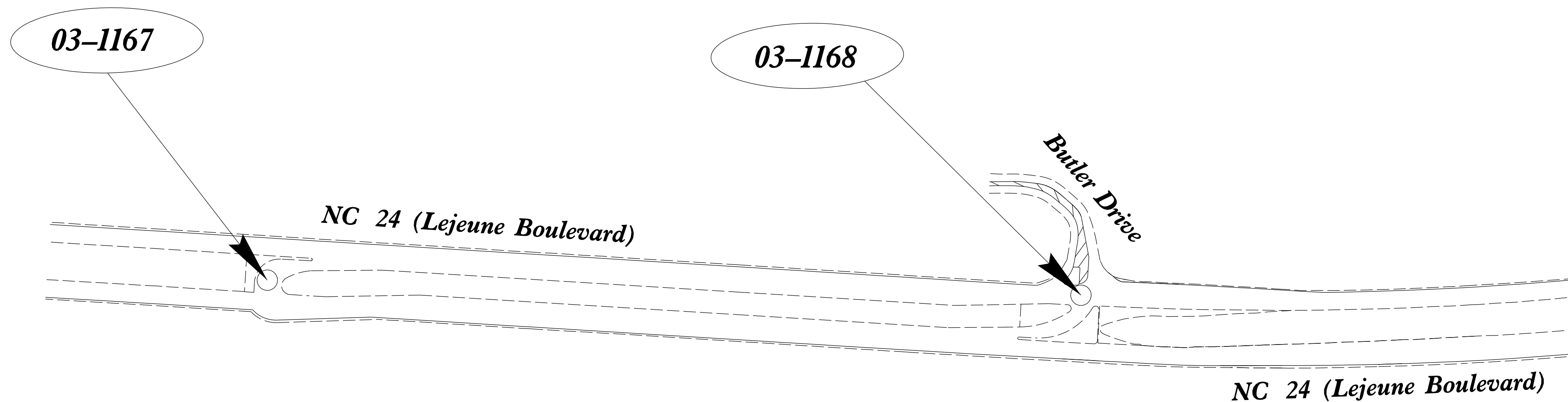
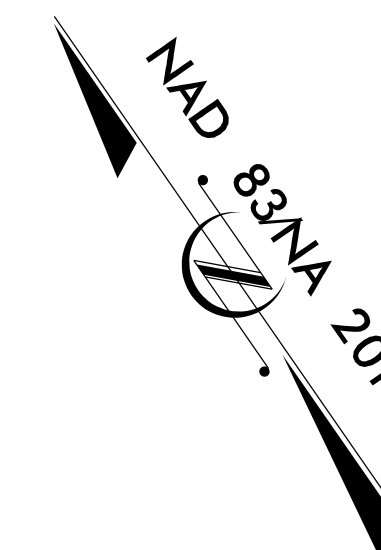
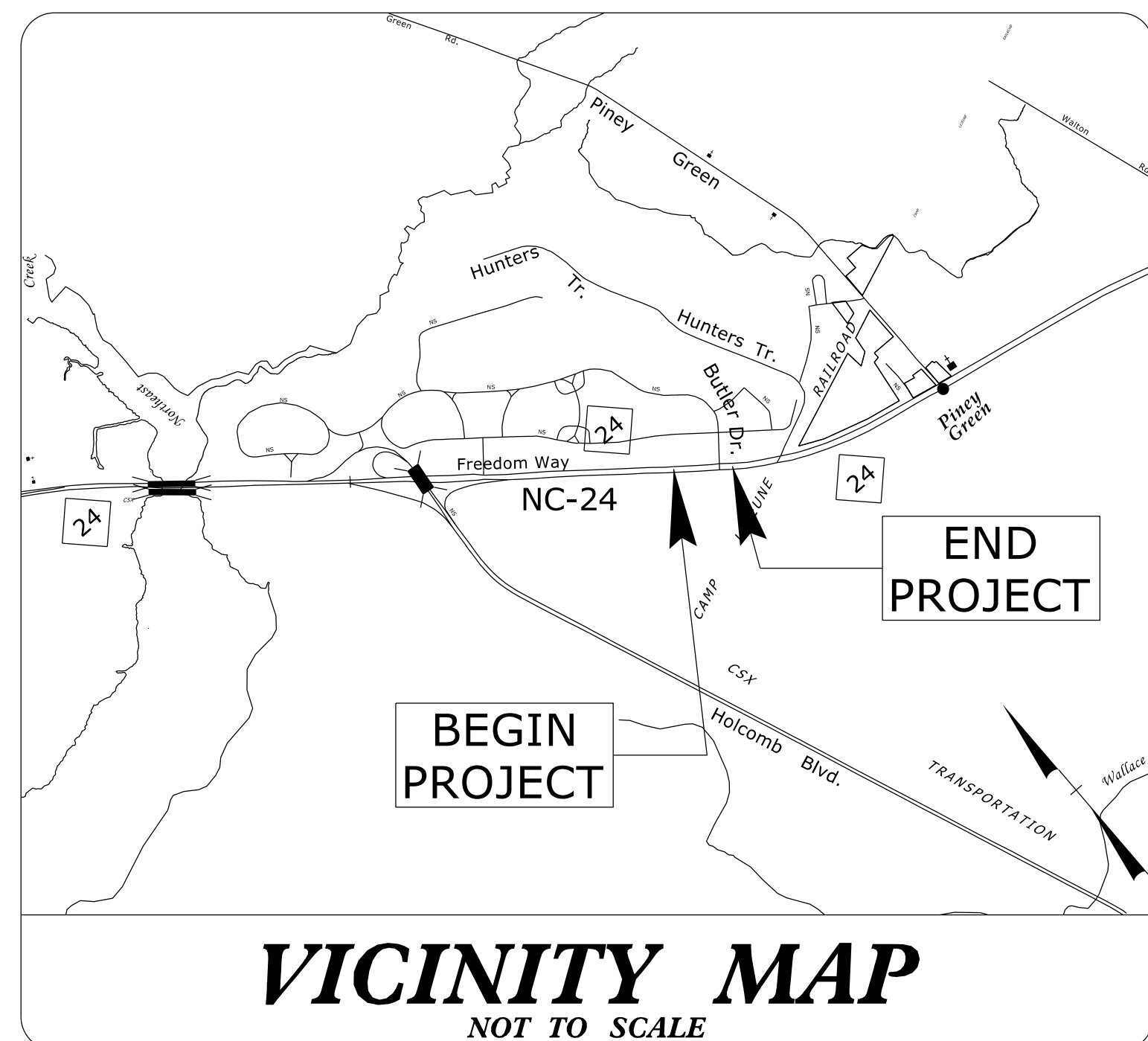
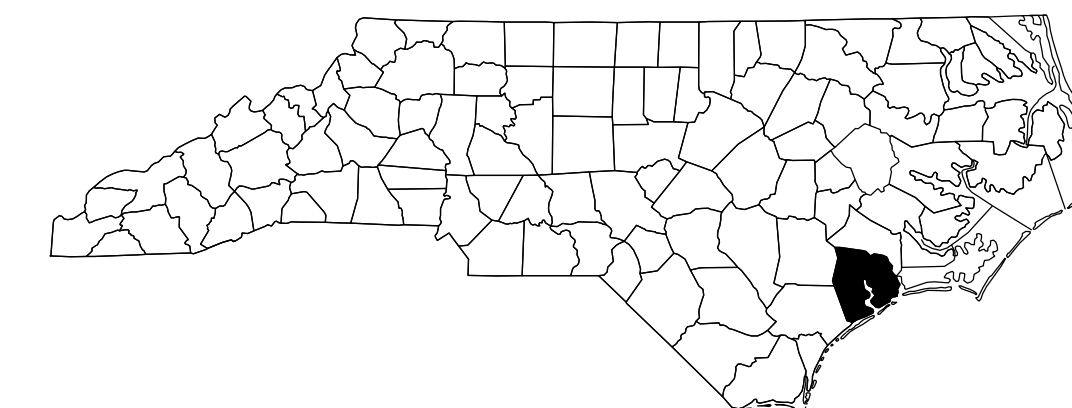
CONTRACT:

Project No. W-5703D	Sheet No. Sig. 1.0
-------------------------------	------------------------------

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ONSLOW COUNTY

**LOCATION: NC 24 (LEJEUNE BOULEVARD)
AT THE INTERSECTION OF BUTLER DRIVE
SAFETY IMPROVEMENTS
TYPE OF WORK: TRAFFIC SIGNAL AND SIGNAL COMMUNICATION**



INDEX OF PLANS		
Sheet #	Reference #	Location /Description
Sig. 1.0	-----	Title Sheet
Sig. 2.0-2.3	03-1167	NC 24 (Lejeune Boulevard) at U-Turn West of Butler Drive
Sig. 3.0-3.3	03-1168	NC 24 (Lejeune Boulevard) at Butler Drive
SCP 1-6	-----	Signal Communication Plan

LEGEND


- #### SIGNAL INVENTORY NUMBER

INTELLIGENT TRANSPORTATION AND SIGNALS UNIT

Contacts:

Zachary Little, PE – Eastern Region Signals Engineer
Todd Joyce, PE – Signal Equipment Design Engineer
Gregg A. Green– Signal Communications Project Engineer

Prepared for the North Carolina Department of Transportation
In the Office of:



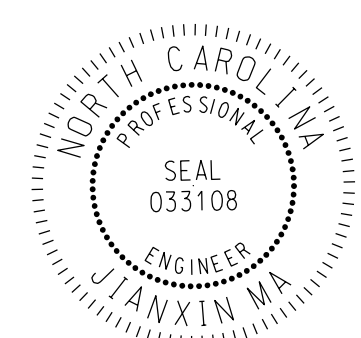
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606
919.829.0329

Refer to Roadway Standard Drawings NCDOT” dated January 2018 and Standard Specifications for Roads and Structures” dated January 2018.

James S Goodnight, PE
PROJECT ENGINEER

Jianxin(Justine) Ma, PE PTOE
Matt L. Stygles, PE
PROJECT DESIGN ENGINEER

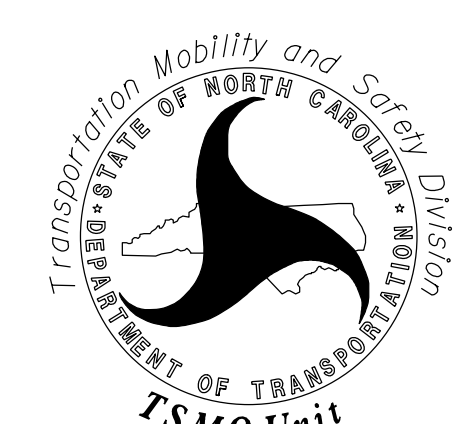
SEAL



DocuSigned by:
Jianxin Ma
827E1953081444F...
SIGNATURE

10/1/2021
DATE

DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY
AND SAFETY DIVISION

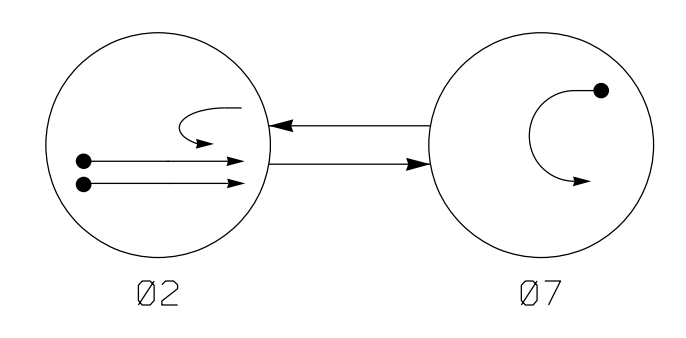


TSMO Unit

750 N. Greenfield Parkway, Garner, NC 27529

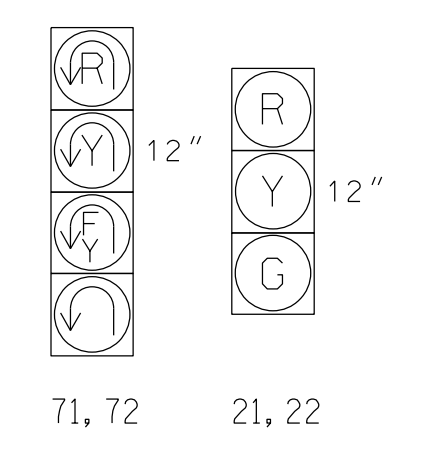
2 Phase Fully Actuated (Jacksonville City Signal System)

DEFAULT PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION			
SIGNAL FACE	PHASE		
	02	07	FLASH
21, 22	G	R	Y
71, 72	(R)	(R)	(R)

SIGNAL FACE I.D.

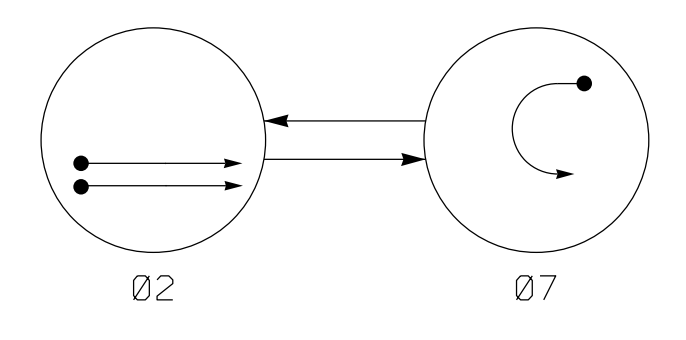


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS						DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
7A	*	0	*	Y	7	Y	Y	-	-	15#	-	*
S03	*	250	*	Y	-	-	-	-	-	-	Y	*

* Multizone Microwave Detection Zones
Disable delay during alternate phasing.

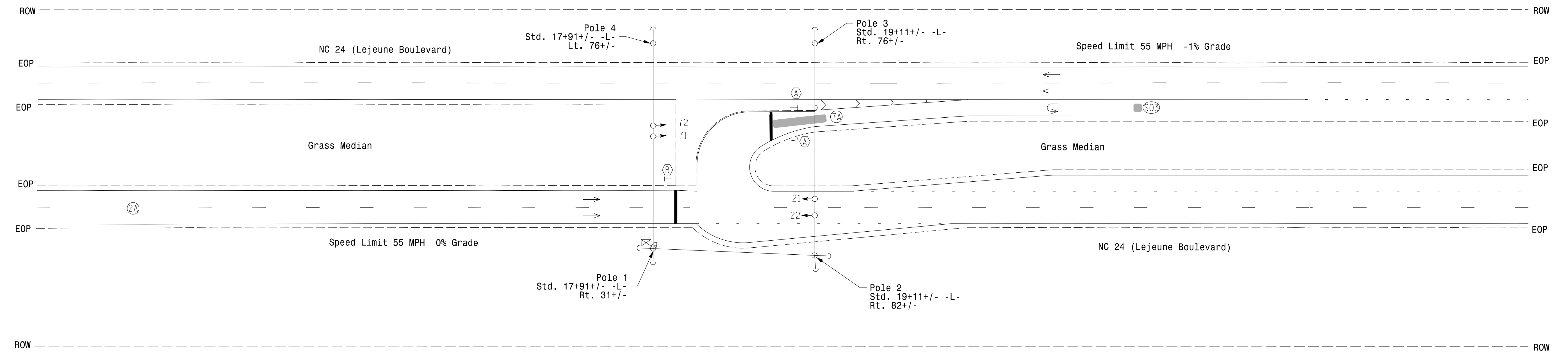
RADAR DETECTION SYSTEM	
FUNCTION	Sensor 1 (2A)
Channel	1
Phase	2
Direction of Travel	EB
Detection Zone (ft)	100-500
Enable Speed	Y
Speed Range (mph)	35-100
Enable Estimated Time of Arrival	Y
Estimate Time of Arrival (sec)	2.5-6.5

ALTERNATE PHASING DIAGRAM



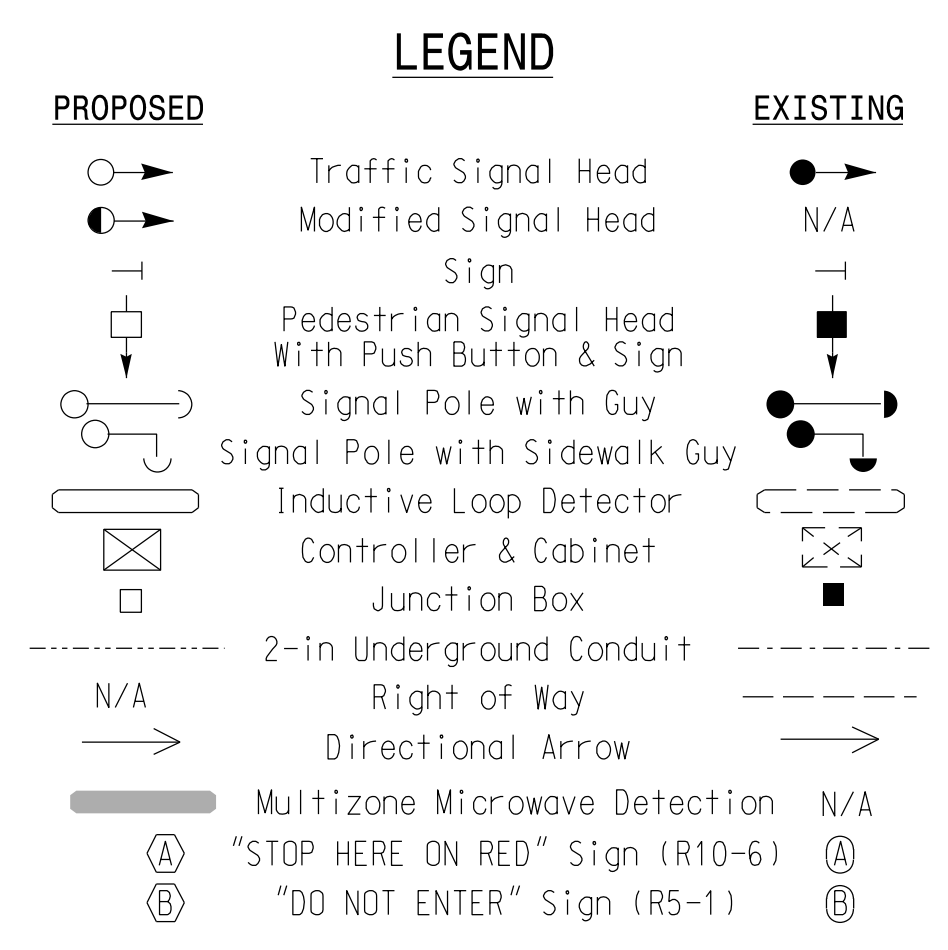
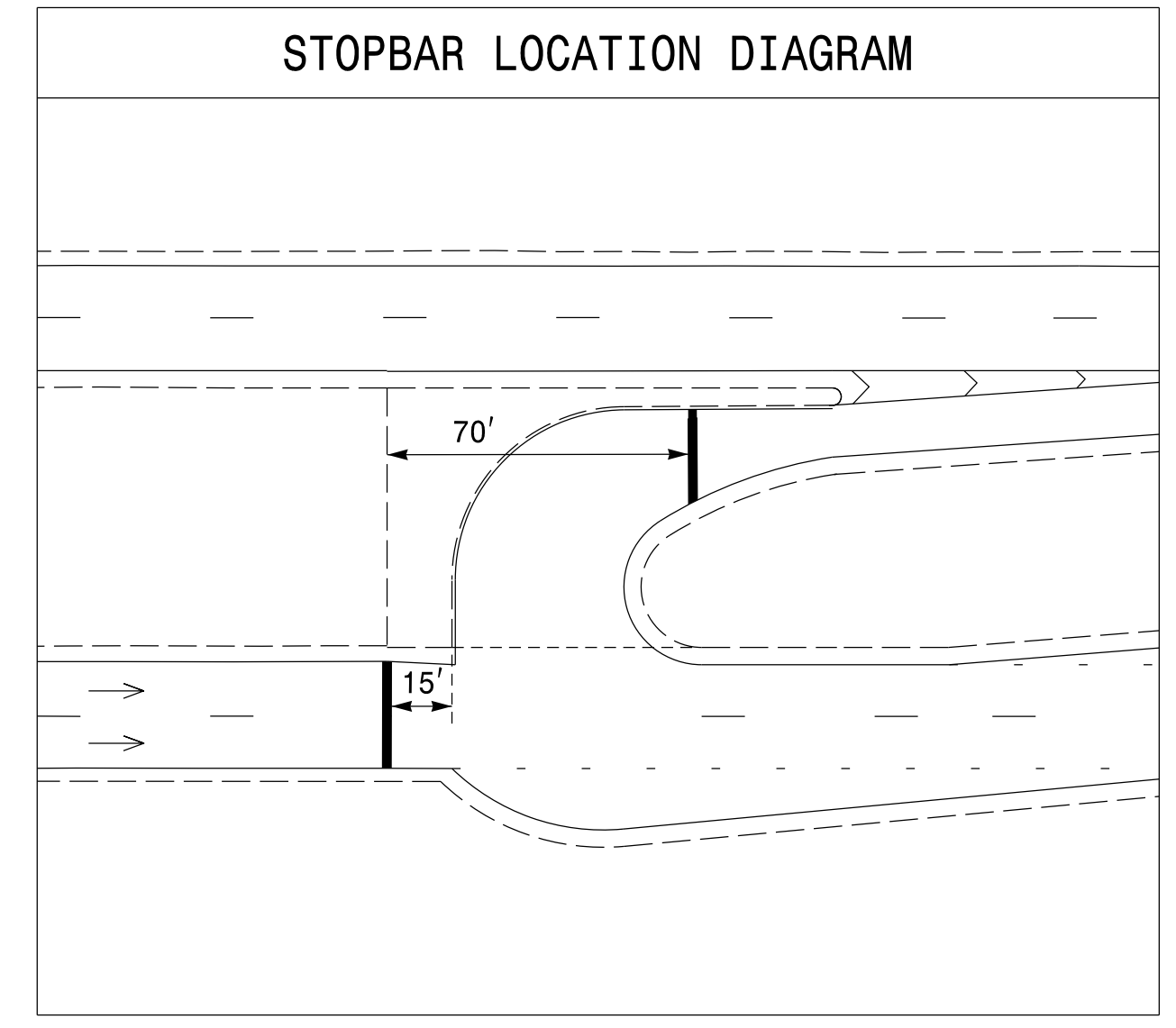
ALTERNATE PHASING TABLE OF OPERATION			
SIGNAL FACE	PHASE		
	02	07	FLASH
21, 22	G	R	Y
71, 72	(R)	(R)	(R)

PHASING DIAGRAM DETECTION LEGEND

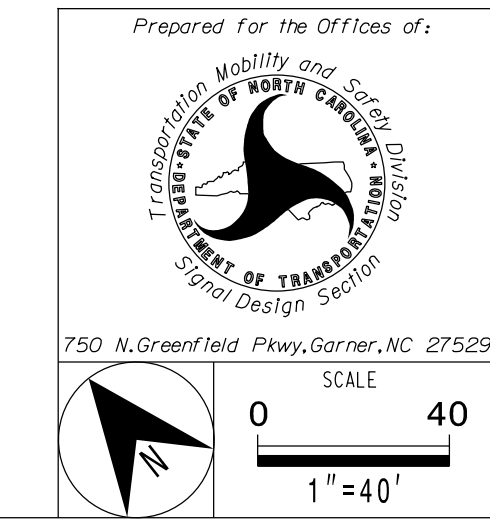


OASIS 2070 TIMING CHART		
FEATURE	PHASE	
	2	7
Min Green 1 *	14	7
Extension 1 *	2.0	2.0
Max Green 1 *	90	20
Yellow Clearance	5.2	3.0
Red Clearance	1.0	3.8
Red Revert	2.0	2.0
Walk 1 *	-	-
Don't Walk 1	-	-
Seconds Per Actuation *	-	-
Max Variable Initial *	-	-
Time Before Reduction *	-	-
Time To Reduce *	-	-
Minimum Gap	-	-
Recall Mode	MIN RECALL	-
Vehicle Call Memory	YELLOW	-
Dual Entry	-	-
Simultaneous Gap	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.



New Installation



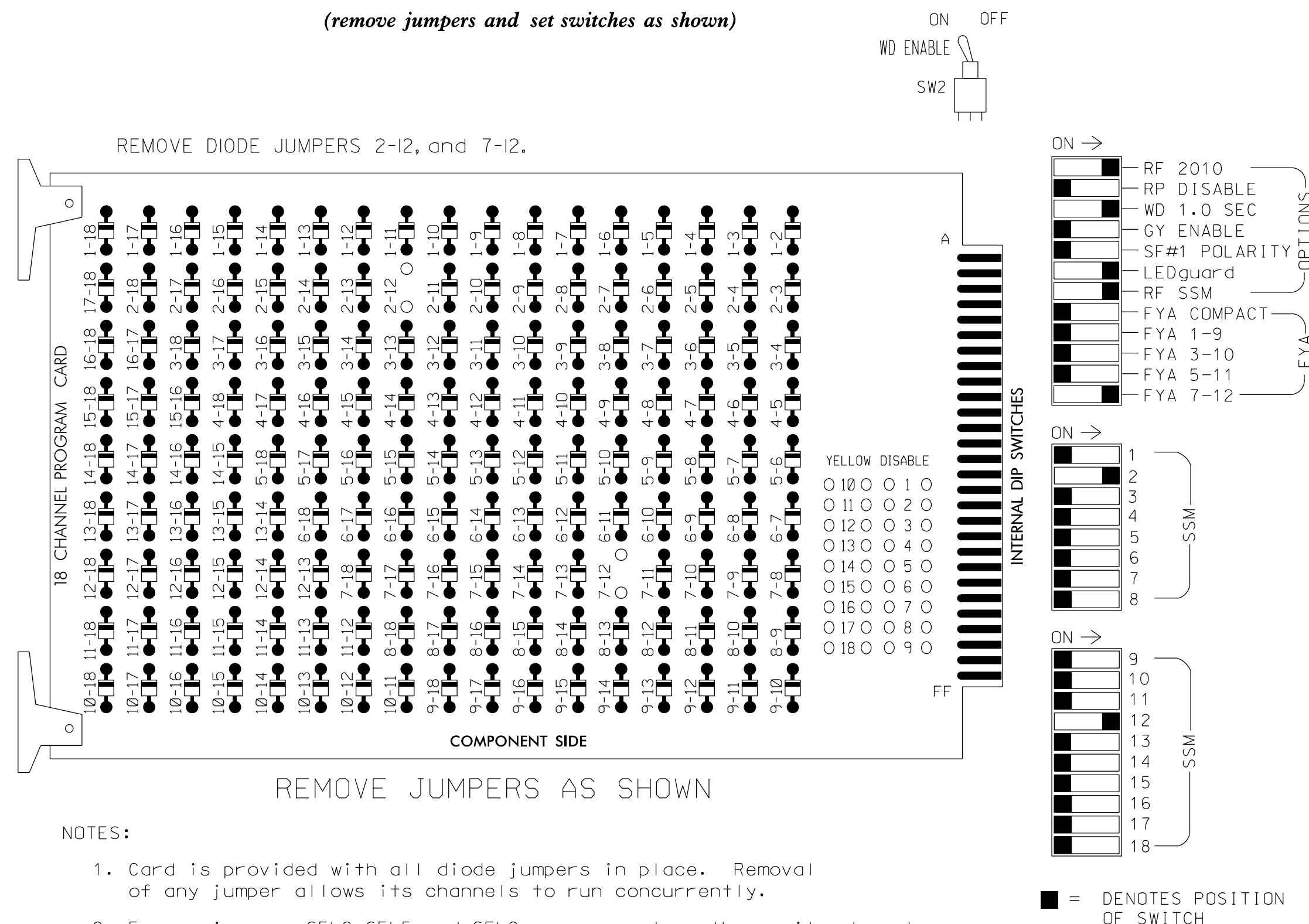
Prepared For the Offices of:		NC 24 (Lejeune Boulevard)	
at		U-Turn West of Butler Drive	
Division 3	Onslow County	Jacksonville	
PLAN DATE: October 2021	REVIEWED BY: M.L. Stygles		
PREPARED BY: J. Ma	REVIEWED BY: J.L. Lewis		
REVISIONS	INIT.	DATE	



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
SEAL	DATE
	10/1/2021
SIG. INVENTORY NO.	03-1167

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

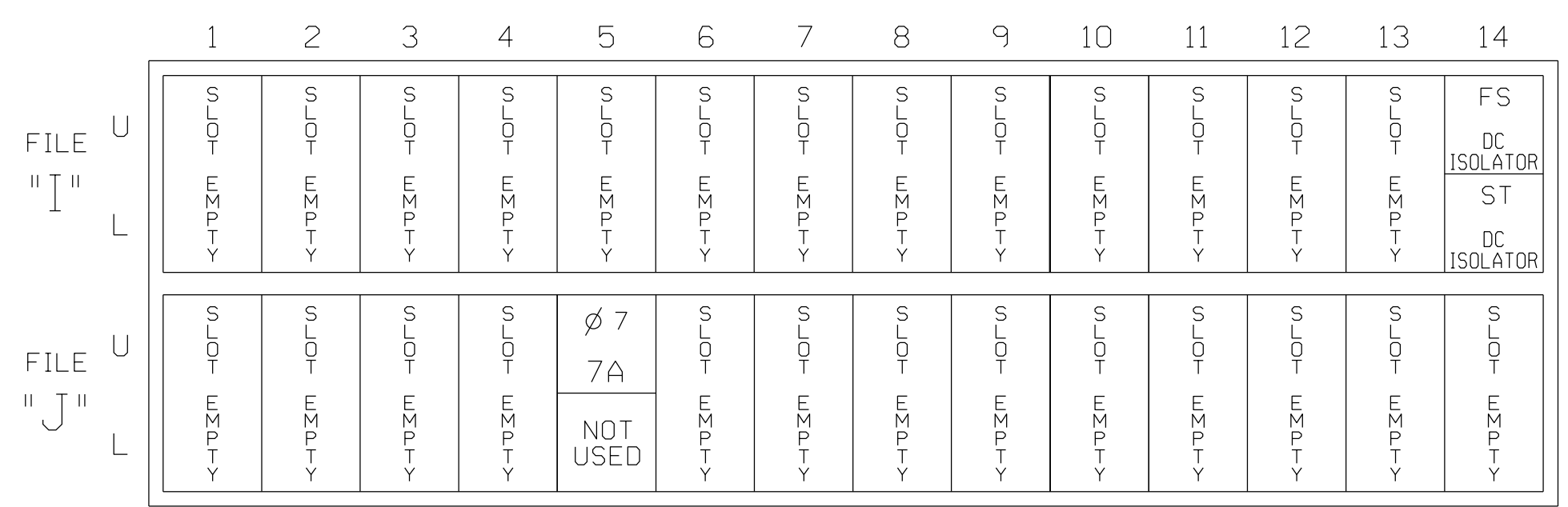


NOTES:

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

INPUT FILE POSITION LAYOUT

(front view)



SPECIAL DETECTOR NOTE

Install a multizone microve detection zone for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

For Detection Zone 7A, the equipment and slots reserved for wired inputs are typical for a NCDOT installation.

NOTES

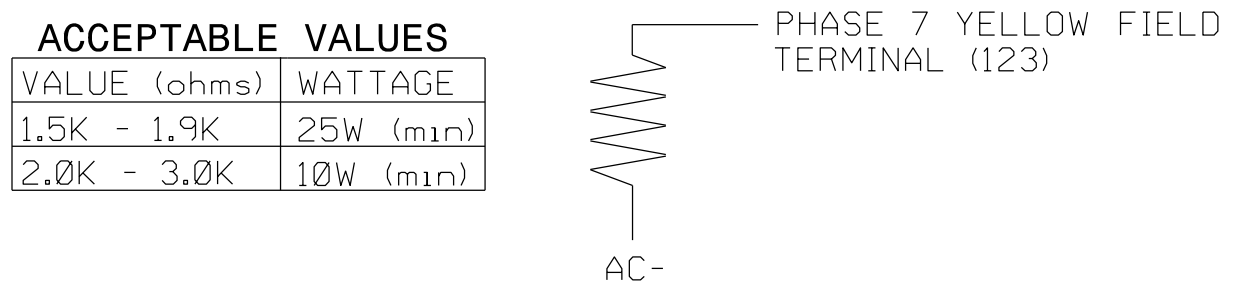
- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 2 for Startup In Green.
- Program phase 2 for Yellow Flash.
- The cabinet and controller are part of the Jacksonville City Signal System.

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.....S2,S10,AUX S5
 PHASES USED.....2,7
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....2+7

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)



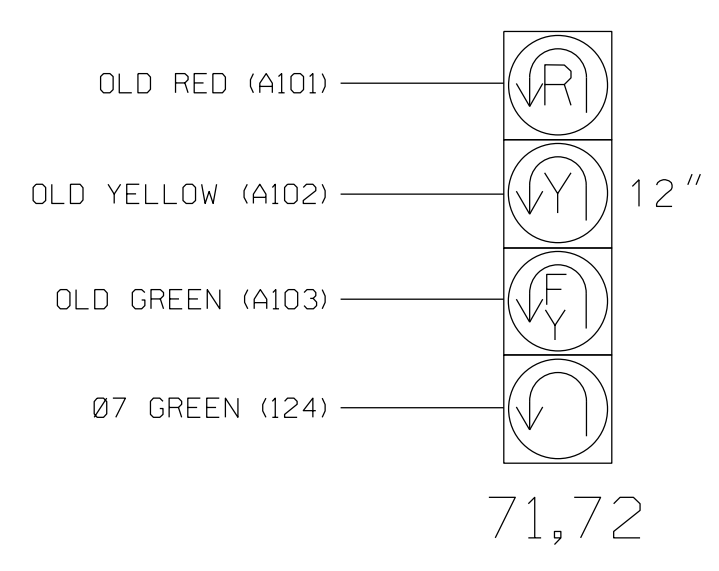
SIGNAL HEAD HOOK-UP CHART

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.	NU	21,22	NU	NU	NU	NU	NU	NU	NU	71,72	★	NU	NU	NU	NU	NU	71,72	★	NU
RED		128																	
YELLOW		129								*									
GREEN		130																	
RED ARROW																			A101
YELLOW ARROW																			A102
FLASHING YELLOW ARROW																			A103
GREEN ARROW										124									

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ★ See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

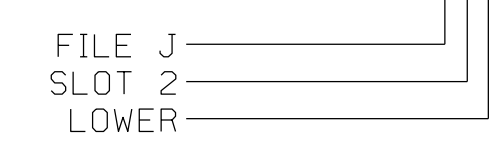
The sequence display for signal heads 71 and 72 requires special logic programming. See sheet 2 for programming instructions.

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
7A	T85-5,6	J5U	57	19	7	7	Y	Y			15
	-	J5U	57	19★	57	7	Y	Y			

★ See Input Page Assignment programming details on sheet 3.

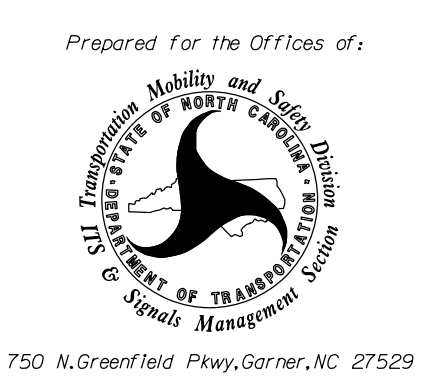
INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1167
 DESIGNED: October 2021
 SEALED: 10/01/2021
 REVISED: N/A

Electrical Detail - Sheet 1 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

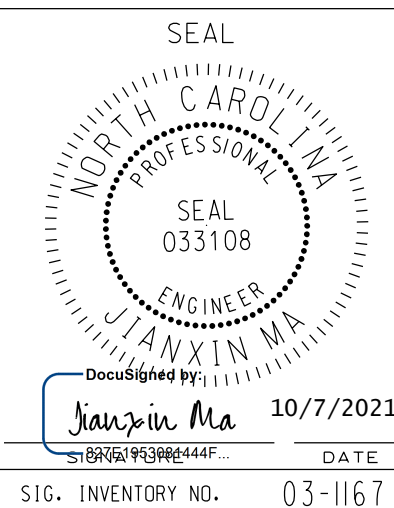


NC 24 (Lejeune Boulevard)
 at
 U-Turn West of
 Butler Drive

Division 3	Onslow County	Jacksonville
PLAN DATE: October 2021	REVIEWED BY: M.L. Stygles	
PREPARED BY: J. Ma	REVIEWED BY: J.L. Lewis	
REVISIONS	INIT.	DATE



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

(program controller as shown below)

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

LOGICAL I/O COMMAND #1 (+/-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

PRESS '+'

NOTE: LOGIC FOR PHASE 7 RED CLEAR WHEN TRANSITIONING FROM PHASE 7 TO PHASE 2 (HEADS 71 AND 72).

LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF ACTIVE PHASE #7 IS ON

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #41 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 7 (HEADS 71 AND 72).

LOGICAL I/O COMMAND #3 (+/-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 (HEADS 71 AND 72).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 39 = Overlap D Red
OUTPUT 40 = Overlap D Yellow
OUTPUT 41 = Overlap D Green

**DEFAULT PHASING
OVERLAP PROGRAMMING DETAIL**

(program controller as shown below)

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

PRESS '+' 3 TIMES

PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
PHASE: |12345678910111213141516
VEH OVL PARENTS: | X X
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

OVERLAP PROGRAMMING COMPLETE

NOTICE PAGE 2

NOTICE GREEN FLASH

**ALTERNATE PHASING
OVERLAP PROGRAMMING DETAIL**

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS). PRESS 'NEXT' TO ADVANCE TO PAGE 2.

PRESS '+' 3 TIMES

PAGE 2: VEHICLE OVERLAP 'D' SETTINGS
PHASE: |12345678910111213141516
VEH OVL PARENTS: | X
VEH OVL NOT VEH: |
VEH OVL NOT PED: |
VEH OVL GRN EXT: |
STARTUP COLOR: | _ RED _ YELLOW _ GREEN
FLASH COLORS: | _ RED _ YELLOW _ 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

OVERLAP PROGRAMMING COMPLETE

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

PHASING	INPUTS PAGE	OVERLAPS PAGE
ACTIVE PAGES REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	1
ACTIVE PAGES REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	2

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY PAGE CHANGE EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN PAGE CHANGE EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING PAGE CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAPS PAGE 2: Modifies overlap parent phases for heads 71 and 72 to run protected turns only.

INPUTS PAGE 2: Reduces delay time for phase 7 call on zone 7A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1167
DESIGNED: October 2021
SEALED: 10/01/2021
REVISED: N/A

Electrical Detail - Sheet 2 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC 24 (Lejeune Boulevard)

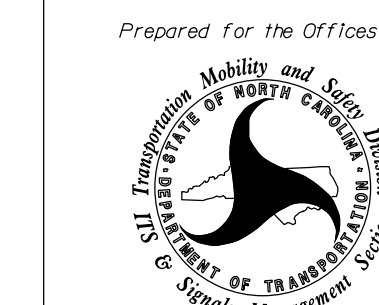
at
U-Turn West of
Butler Drive

Division 3 Onslow County Jacksonville

PLAN DATE: October 2021 REVIEWED BY: M.L. Stygles

PREPARED BY: J. Ma REVIEWED BY: J.L. Lewis

REVISIONS INIT. DATE

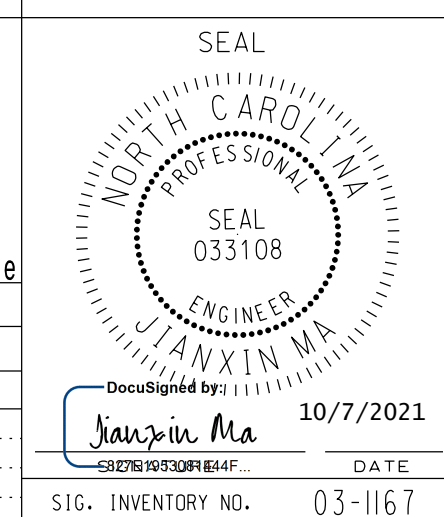


750 N. Greenfield Pkwy, Garner, NC 27529



VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606
919.829.0328

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10/7/2021
DATE
SIG. INVENTORY NO. 03-1167

INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - ZONE 7A

(program controller as shown below)

- NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.
2. THIS PROGRAMMING REASSIGNS DETECTOR 57 TO INPUT #19 SO THAT THE DELAY ON ZONE 7A CAN BE REDUCED FROM 15 SECONDS TO 0 SECONDS.

FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 19 IS REACHED.

```

PAGE: 2 C1 PIN:57 VEHICLE DETECTOR
INPUT ASSIGNMENT #.....19
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....7
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....
PLAN (65=FLSH,66=FREE).. OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)....
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)....
CHANGE INPUT PAGE (1-4).....
CHANGE OUTPUT PAGE (1-4).....
OVERRIDE PHASE CONTROL FUNCTION (Y)..
    
```

ENTER '5' TO REASSIGN
THE VEHICLE DETECTOR
FOR THIS INPUT

(ZONE 7A - PHASE 7)

```

PAGE: 2 C1 PIN:57 VEHICLE DETECTOR
INPUT ASSIGNMENT #.....19
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....57
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....
PLAN (65=FLSH,66=FREE).. OFFSET#..
CHANGE PHASE SEQUENCE PAGE (1-12)....
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)....
CHANGE INPUT PAGE (1-4).....
CHANGE OUTPUT PAGE (1-4).....
OVERRIDE PHASE CONTROL FUNCTION (Y)..
    
```

PROGRAMMING COMPLETE

SPECIAL DETECTOR PROGRAMMING DETAIL - ZONE 7A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #57.

```

VEHICLE DETECTOR #57 SETTINGS (+,-,1-64)
SETTING: (Y/N)
ENABLE DETECTOR.....N
ENABLE LOGGING.....N
ENABLE DIAGNOSTICS.....N
SPEED TRAP.....N
CALL DETECTOR.....Y
EXTENSION DETECTOR.....Y
MODE 2 STOP BAR.....N
SWITCHING DETECTOR.....N
DUPLICATING DETECTOR.....N
ENABLE FULL TIME DELAY.....N
IF FAILED, SET MIN RECALL?.....N
IF FAILED, SET MAX1 RECALL?.....N
IF FAILED, SET MAX2 RECALL?.....N
PHASE#      |12345678910111213141516
PHASES ASSIGNED |
SWITCH/DUPLICATE|
LOOP SIZE (0-255 FT).....6
SPEED TRAP DISTANCE (0-255 FT).....0
STOP BAR TIME (0-255 SEC).....0
STRETCH (0-25.5 SEC).....0.0
DELAY (0-255 SEC).....0.0
MAX CALLS/MIN (0-255).....255
MIN CALLS/DIAGNOSTIC PERIOD (0-255)..0
MAX OCCUPANCY (0-100%).....100
EXTENSION DISABLE TIME (0-255 SEC)..0
QUEUE MAX OCCUPANCY TIME (0-255)....0
QUEUE GAP RESET TIME (0-25.5).....0.0
PREEMPTION INDEX FOR QUEUE (0-10)....0
    
```

ENTER 'Y' FOR ENABLE DETECTOR

ENTER '7' FOR PHASES ASSIGNED

ENSURE DELAY IS '0'

```

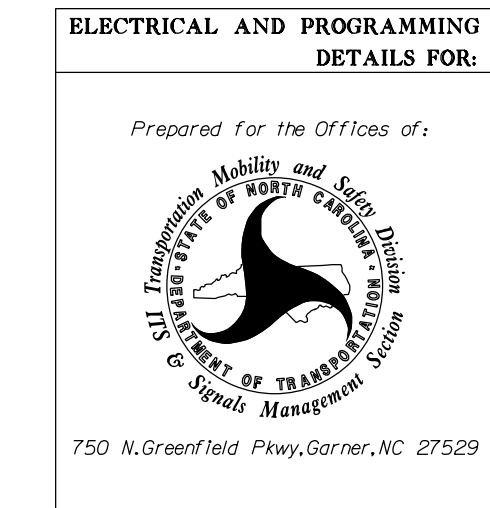
VEHICLE DETECTOR #57 SETTINGS (+,-,1-64)
SETTING: (Y/N)
ENABLE DETECTOR.....Y
ENABLE LOGGING.....N
ENABLE DIAGNOSTICS.....N
SPEED TRAP.....N
CALL DETECTOR.....Y
EXTENSION DETECTOR.....Y
MODE 2 STOP BAR.....N
SWITCHING DETECTOR.....N
DUPLICATING DETECTOR.....N
ENABLE FULL TIME DELAY.....N
IF FAILED, SET MIN RECALL?.....N
IF FAILED, SET MAX1 RECALL?.....N
IF FAILED, SET MAX2 RECALL?.....N
PHASE#      |12345678910111213141516
PHASES ASSIGNED |      X
SWITCH/DUPLICATE|
LOOP SIZE (0-255 FT).....6
SPEED TRAP DISTANCE (0-255 FT).....0
STOP BAR TIME (0-255 SEC).....0
STRETCH (0-25.5 SEC).....0.0
DELAY (0-255 SEC).....0.0
MAX CALLS/MIN (0-255).....255
MIN CALLS/DIAGNOSTIC PERIOD (0-255)..0
MAX OCCUPANCY (0-100%).....100
EXTENSION DISABLE TIME (0-255 SEC)..0
QUEUE MAX OCCUPANCY TIME (0-255)....0
QUEUE GAP RESET TIME (0-25.5).....0.0
PREEMPTION INDEX FOR QUEUE (0-10)....0
    
```

DETECTOR PROGRAMMING COMPLETE

NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1167
DESIGNED: October 2021
SEALED: 10/01/2021
REVISED: N/A

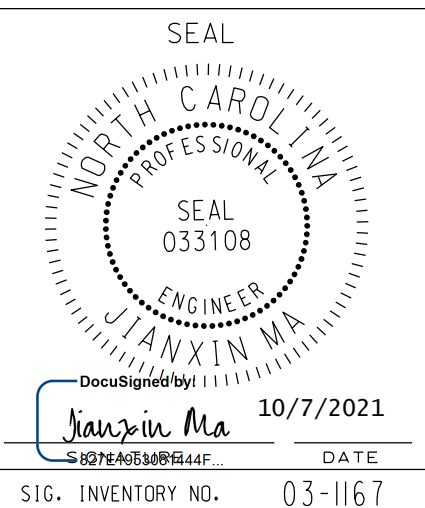
Electrical Detail -Sheet 3 of 3



NC 24 (Lejeune Boulevard)	
at U-Turn West of Butler Drive	
Division 3	Onslow County Jacksonville
PLAN DATE: October 2021	REVIEWED BY: M.L. Stygles
PREPARED BY: J. Ma	REVIEWED BY: J.L. Lewis
REVISIONS	INIT. DATE



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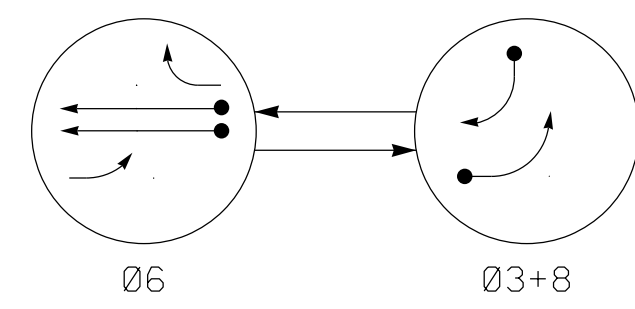
10/7/2021
DATE
SIG. INVENTORY NO. 03-1167

2 Phase Fully Actuated (Jacksonville City Signal System)

NOTES

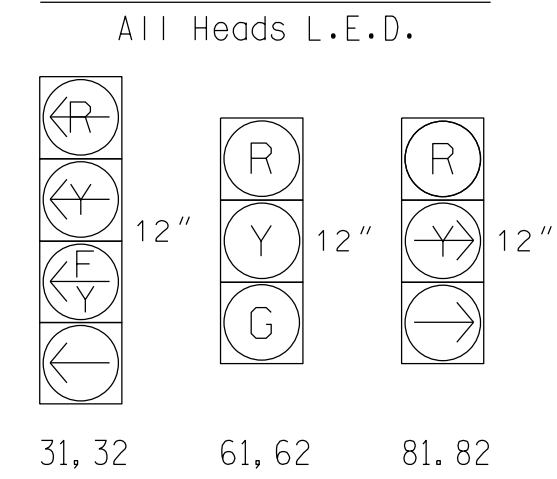
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of the vehicles turning right on red.
- For signal heads 81 and 82, the maximum mounting height to the top of the signal housing shall be as shown in MUTCD Figure 4D-5.
- The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
- This intersection features a multizone microwave detection system. Install detectors according to manufacturer's specifications to ensure optimum detection zone coverage.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #: 1168.

DEFAULT PHASING DIAGRAM



SIGNAL FACE	PHASE		
	03+8	06	15/16/17
31, 32	←	←	←
61, 62	→	→	→
81, 82	→	→	→

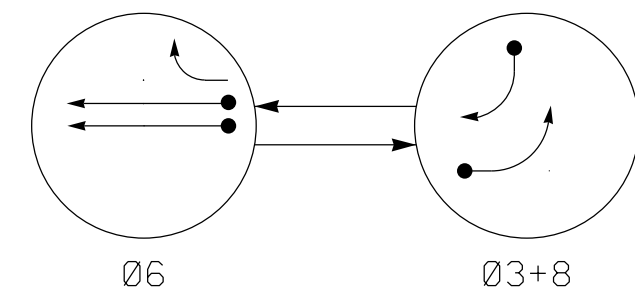
SIGNAL FACE I.D.



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
3A	*	+20	*	Y	3	Y	Y	-	-	15#	-	*
8A	*	0	*	Y	3	Y	Y	-	-	15	-	*
S04	*	250	*	Y	-	-	-	-	-	-	Y	*

* Multizone Microwave Detection Zones
Disable delay during alternate phasing.

ALTERNATE PHASING DIAGRAM

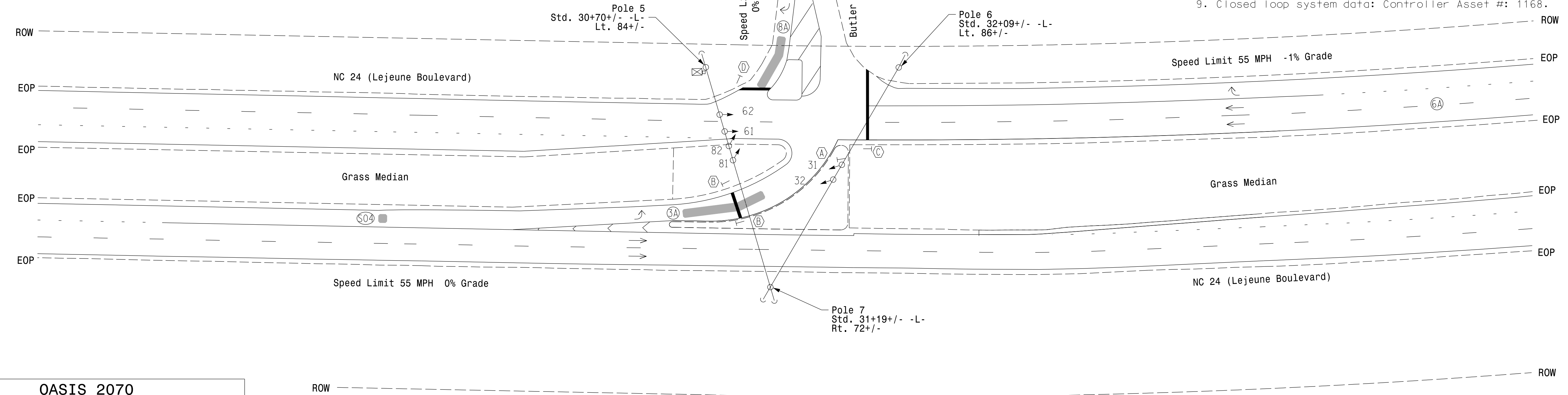


SIGNAL FACE	PHASE		
	03+8	06	15/16/17
31, 32	←	←	←
61, 62	→	→	→
81, 82	→	→	→

PHASING DIAGRAM DETECTION LEGEND

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

RADAR DETECTION SYSTEM	
FUNCTION	Sensor 1 (A)
Channel	1
Phase	6
Direction of Travel	WB
Detection Zone (ft)	100-500
Enable Speed	Y
Speed Range (mph)	35-100
Enable Estimated Time of Arrival	Y
Estimate Time of Arrival (sec)	2.5-6.5

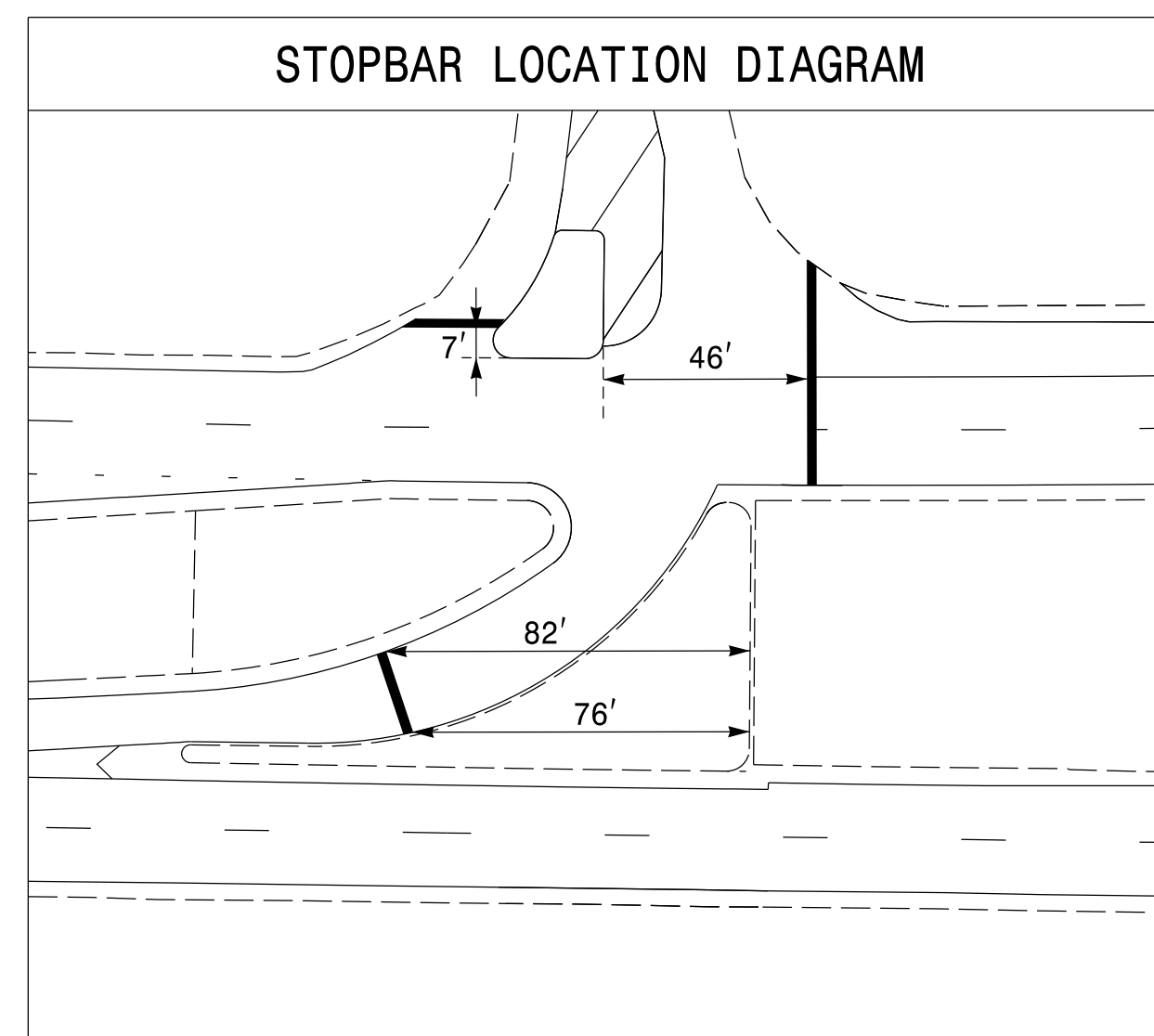


OASIS 2070 TIMING CHART

FEATURE	PHASE		
	3	6	8
Min Green 1 *	7	14	7
Extension 1 *	2.0	2.0	2.0
Max Green 1 *	20	90	20
Yellow Clearance	3.0	5.3	3.2
Red Clearance	3.7	1.2	1.0
Red Revert	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	-
Vehicle Call Memory	-	YELLOW	-
Dual Entry	ON	-	ON
Simultaneous Gap	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.

STOPBAR LOCATION DIAGRAM



LEGEND

- | PROPOSED | EXISTING |
|--|--|
| ○ → Traffic Signal Head | ● → N/A |
| ○ → Modified Signal Head | ○ → N/A |
| ○ → Pedestrian Signal Head With Push Button & Sign | ○ → N/A |
| ○ → Signal Pole with Guy | ○ → N/A |
| ○ → Signal Pole with Sidewalk Guy | ○ → N/A |
| □ → Inductive Loop Detector | □ → N/A |
| □ → Controller & Cabinet | □ → N/A |
| □ → Junction Box | □ → N/A |
| --- 2-in Underground Conduit | --- 2-in Underground Conduit |
| N/A → Right of Way | N/A → Right of Way |
| → Directional Arrow | → Directional Arrow |
| --- Multizone Microwave Detection | N/A |
| (A) "U-TURN YIELD TO RIGHT TURN" Sign (R10-16) | (A) "U-TURN YIELD TO RIGHT TURN" Sign (R10-16) |
| (B) "Stop Here on Red" Sign (R10-6) | (B) "Stop Here on Red" Sign (R10-6) |
| (C) "DO NOT ENTER" Sign (R5-1) | (C) "DO NOT ENTER" Sign (R5-1) |
| (D) Right Arrow "ONLY" Sign (R3-5R) | (D) Right Arrow "ONLY" Sign (R3-5R) |

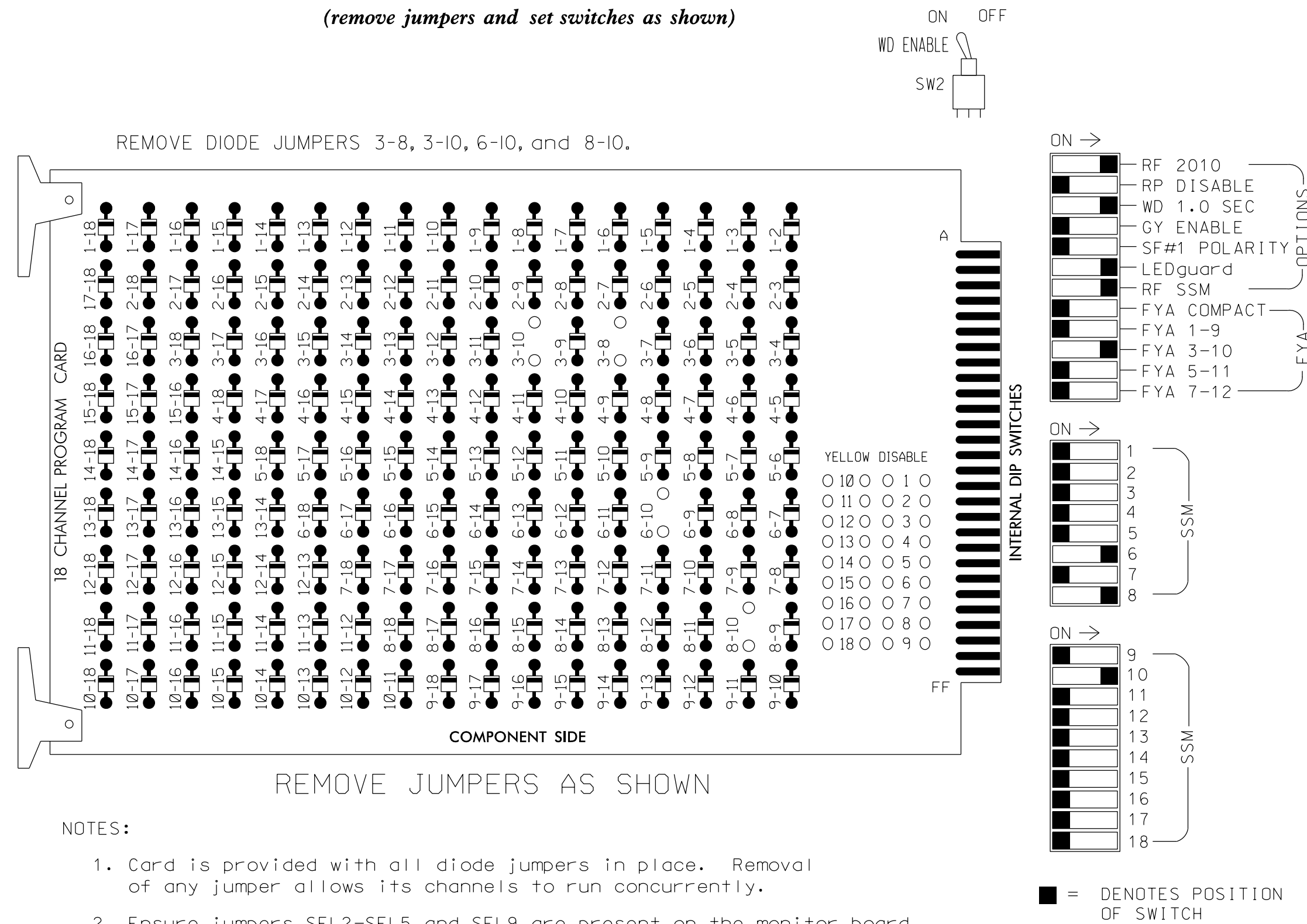
New Installation

Prepared for the Offices of:		NC 24 (Lejeune Boulevard) at Butler Drive	
Division 3	Onslow County	Jacksonville	
PLAN DATE: October 2021	REVIEWED BY: M.L. Stygles		
PREPARED BY: J. Ma	REVIEWED BY: J.L. Lewis		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

- 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.
- Program phases 3 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 6 for Startup In Green.
- Program phase 6 for Yellow Flash.
- The cabinet and controller are part of the Jacksonville City Signal System.

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.....S4,S8,S11,AUX S2
 PHASES USED.....3,6,8
 OVERLAP "A".....NOT USED
 OVERLAP "B".....3+6
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

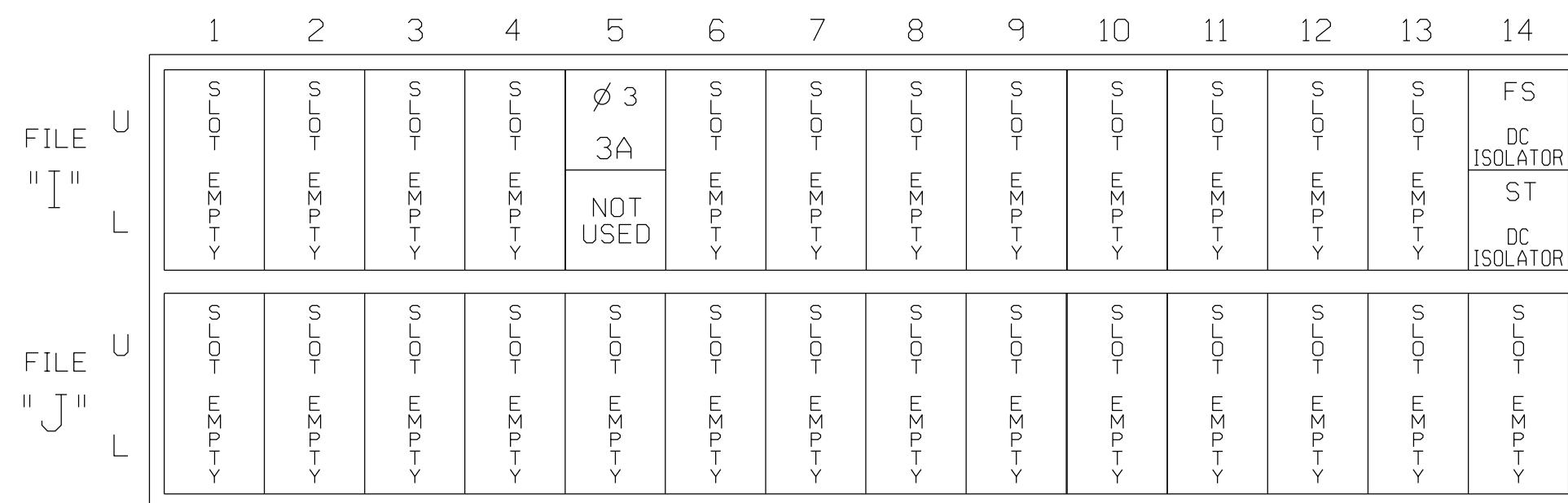
SIGNAL HEAD HOOK-UP CHART

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.	NU	NU	NU	31,32	NU	NU	NU	61,62	NU	NU	81,82	NU	NU	31,32	NU	NU	NU	NU	
RED								134			107								
YELLOW				*				135											
GREEN								136											
RED ARROW																		A124	
YELLOW ARROW											108								A125
FLASHING YELLOW ARROW																			A126
GREEN ARROW					118						109								

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

Install a multizone microve detection zone for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

For Detection Zone 3A, the equipment and slots reserved for wired inputs are typical for a NCDOT installation.

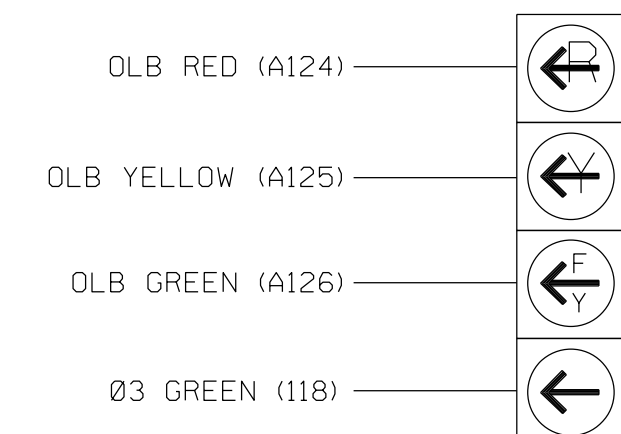
INPUT FILE CONNECTION & PROGRAMMING CHART

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
3A	TB4-5,6	15U	58	20	3	3	Y	Y			15
	-	15U	58	20★	53	3	Y	Y			

★See Input Page Assignment programming details on sheet 3.

FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



31,32

NOTE

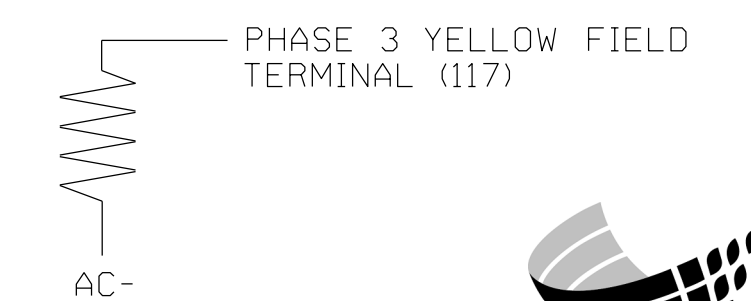
The sequence display for signal heads 31 and 32 requires special logic programming. See sheet 2 for programming instructions.

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

ACCEPTABLE VALUES

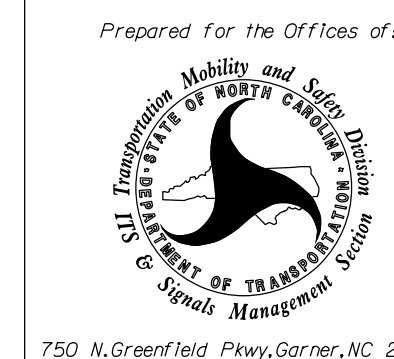
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1168
 DESIGNED: October 2021
 SEALED: 10/01/2021
 REVISED: N/A

Electrical Detail - Sheet 1 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:



NC 24 (Lejeune Boulevard) at Butler Drive

Division 3 Onslow County Jacksonville

PLAN DATE: October 2021 REVIEWED BY: M.L. Stygles

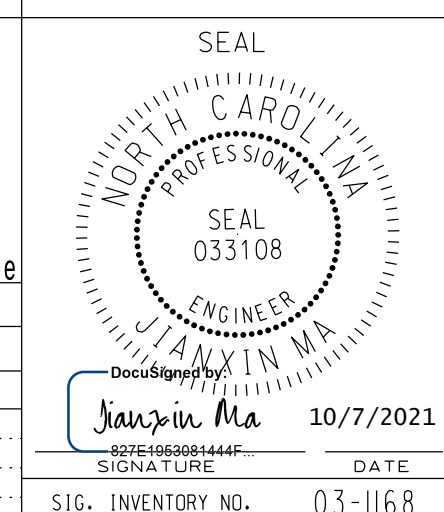
PREPARED BY: J. Ma REVIEWED BY: J.L. Lewis

REVISIONS INIT. DATE

SIGNATURE DATE



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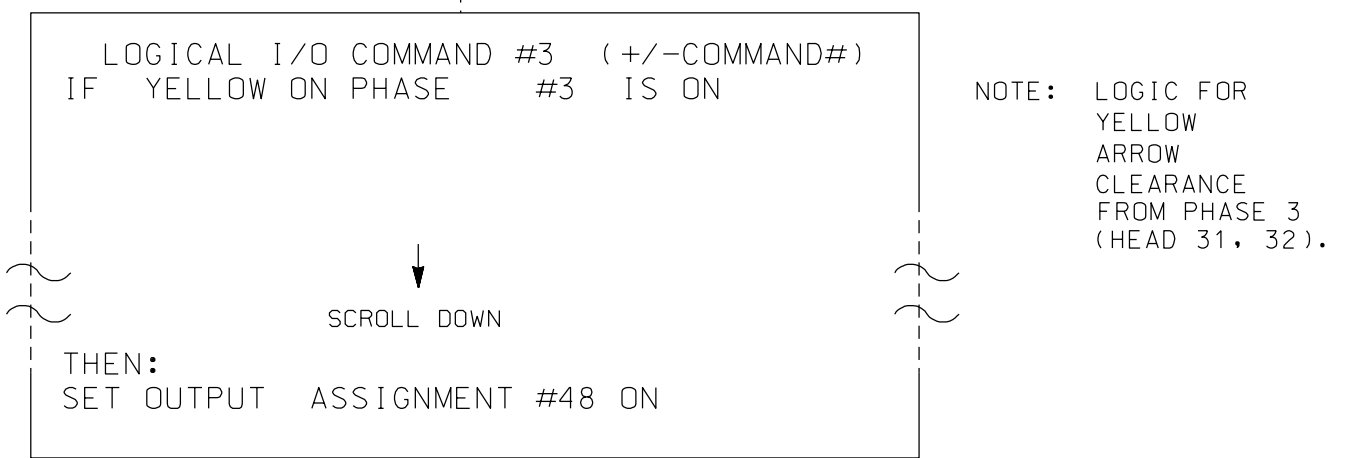
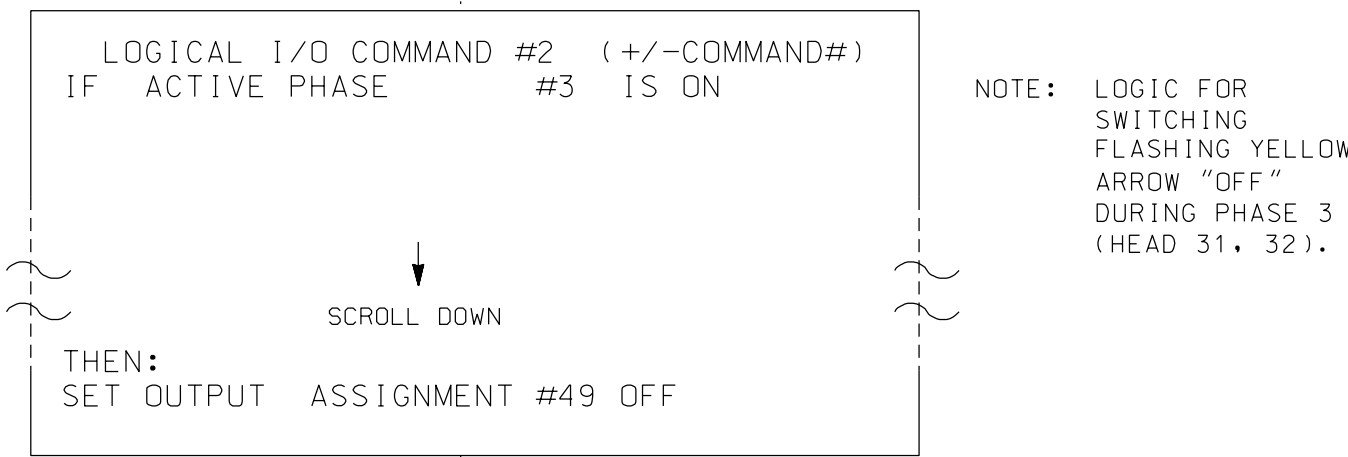
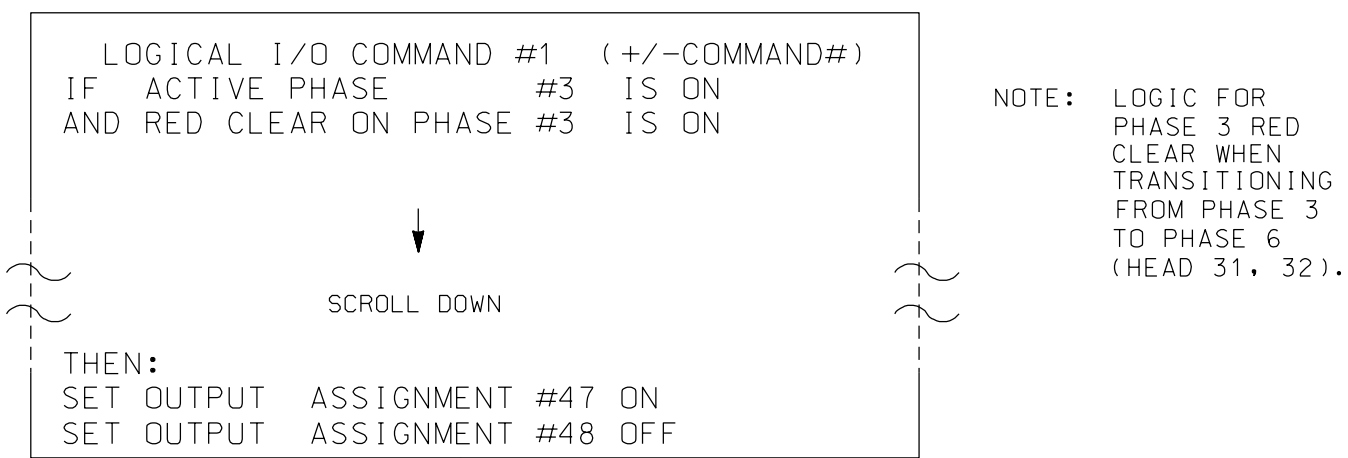


SIG. INVENTORY NO. 03-1168

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

(program controller as shown below)

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



LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE
USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 47 = Overlap B Red
OUTPUT 48 = Overlap B Yellow
OUTPUT 49 = Overlap B Green

**DEFAULT PHASING
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: :12345678910111213141516
VEH OVL PARENTS: : X X
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

OVERLAP PROGRAMMING COMPLETE

**ALTERNATE PHASING
OVERLAP PROGRAMMING DETAIL**
(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).
PRESS 'NEXT' TO ADVANCE TO PAGE 2.
PRESS '+' ONCE

PAGE 2: VEHICLE OVERLAP 'B' SETTINGS
PHASE: :12345678910111213141516
VEH OVL PARENTS: : X
VEH OVL NOT VEH: :
VEH OVL NOT PED: :
VEH OVL GRN EXT: :
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW - 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

OVERLAP PROGRAMMING COMPLETE

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

PHASING	INPUTS PAGE	OVERLAPS PAGE
ACTIVE PAGES REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	1
ACTIVE PAGES REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	2

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY PAGE CHANGE EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN PAGE CHANGE EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING PAGE CHANGE SUMMARY

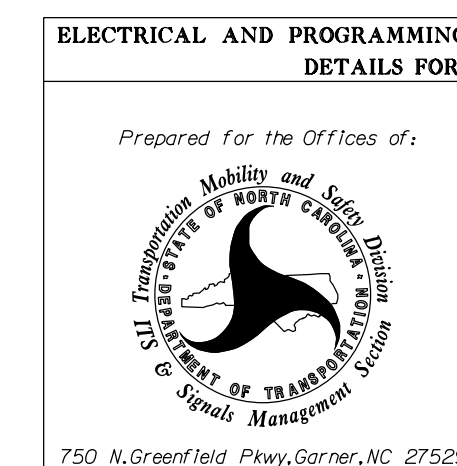
THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAPS PAGE 2: Modifies overlap parent phases for heads 31 and 32 to run protected turns only.

INPUTS PAGE 2: Reduces delay time for phase 3 call on zone 3A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1168
DESIGNED: October 2021
SEALED: 10/01/2021
REVISED: N/A

Electrical Detail - Sheet 2 of 3

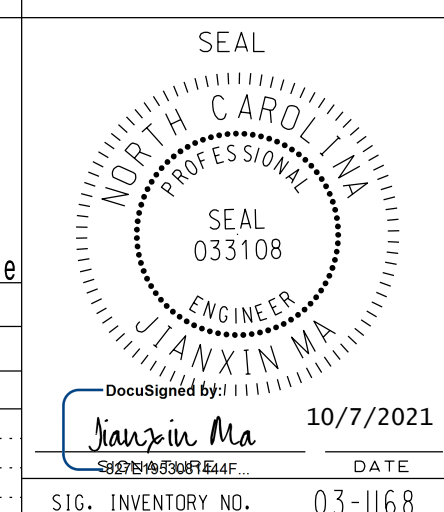


**NC 24 (Lejeune Boulevard)
at
Butler Drive**

Division 3	Onslow County	Jacksonville
PLAN DATE: October 2021	REVIEWED BY: M.L. Stygles	
PREPARED BY: J. Ma	REVIEWED BY: J.L. Lewis	
REVISIONS	INIT.	DATE



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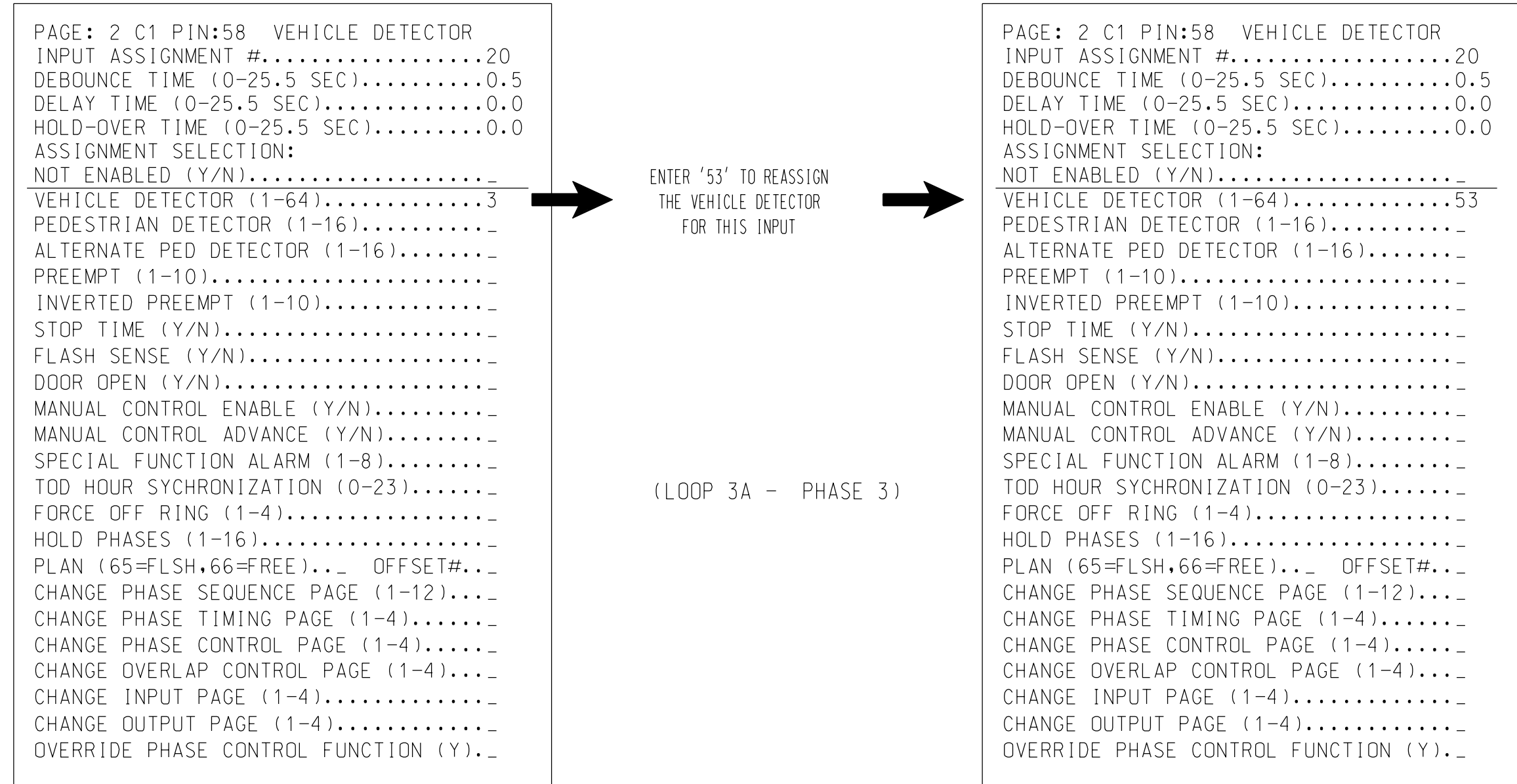
10/7/2021
DATE
SIG. INVENTORY NO. 03-1168

INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - ZONE 3A

(program controller as shown below)

- NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.
2. THIS PROGRAMMING REASSIGNS DETECTOR 53 TO INPUT #20 SO THAT THE DELAY ON LOOP 3A CAN BE REDUCED FROM 15 SECONDS TO 0 SECONDS.

FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 20 IS REACHED.

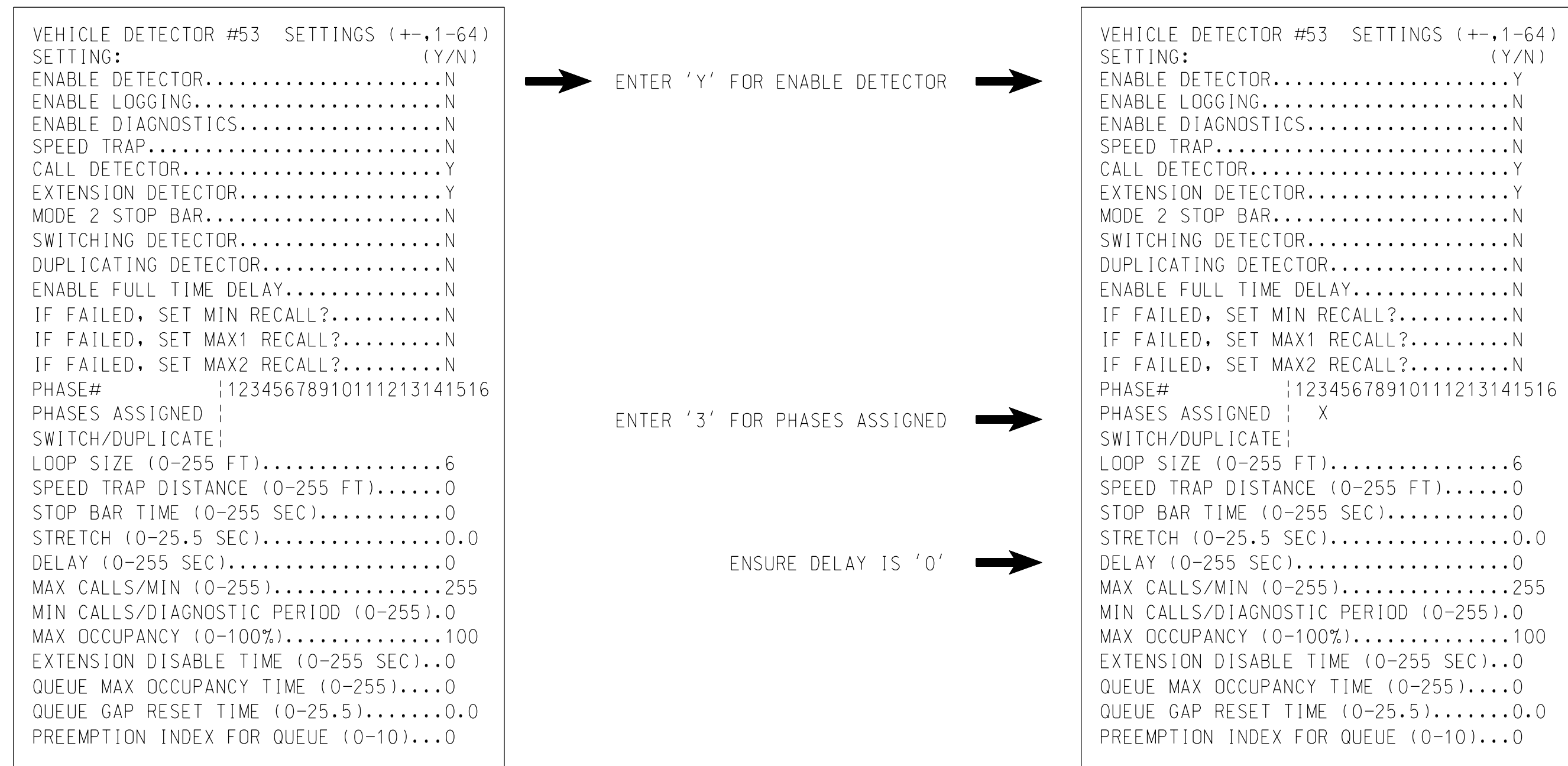


PROGRAMMING COMPLETE

SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 3A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #53.

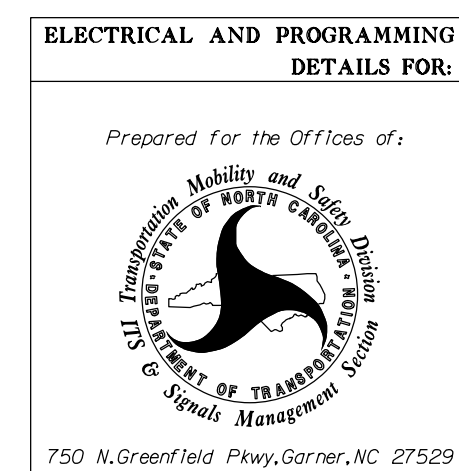


DETECTOR PROGRAMMING COMPLETE

NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1168
 DESIGNED: October 2021
 SEALED: 10/01/2021
 REVISED: N/A

Electrical Detail - Sheet 3 of 3



**NC 24 (Lejeune Boulevard)
 at
 Butler Drive**

Division 3 Onslow County Jacksonville

PLAN DATE: October 2021 REVIEWED BY: M.L. Stygles

PREPARED BY: J. Ma REVIEWED BY: J.L. Lewis

REVISIONS INIT. DATE

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10/7/2021

SIG. INVENTORY NO. 03-1168

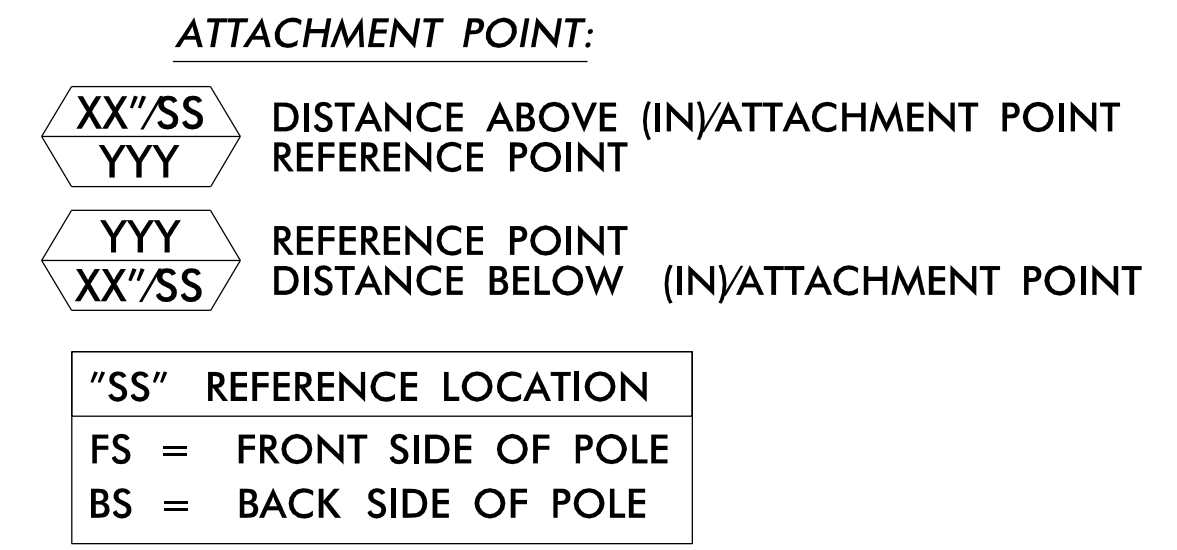


- 1 INSTALL COAX CABLE
2 INSTALL ETHERNET CABLE
3 EXISTING ETHERNET (OR COAX) CABLE
4 INSTALL SMFO CABLE
5 EXISTING SMFO CABLE
6 INSTALL FIBER OPTIC DROP CABLE
7 INSTALL TRACER WIRE
8 TRENCH
9 INSTALL PVC CONDUIT
10 INSTALL RIGID, GALVANIZED STEEL CONDUIT
11 INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD
12 INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL
13 INSTALL OUTER-DUCT POLYETHYLENE CONDUIT
14 INSTALL POLYETHYLENE CONDUIT
15 DIRECTIONAL DRILL CONDUIT
16 BORE AND JACK CONDUIT
17 INSTALL CABLE(S) IN EXISTING CONDUIT
18 INSTALL CABLE(S) IN NEW CONDUIT
19 INSTALL CABLE(S) IN EXISTING RISER
20 INSTALL CABLE(S) IN NEW RISER
21 INSTALL CABLE(S) IN EXISTING CONDUIT STUB-OUTS
22 INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
23 INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
24 INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET
25 INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
26 INSTALL NEW ETHERNET EDGE SWITCH
27 INSTALL NEW FIBER OPTIC TRANSCEIVER
28 INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS AND FUSION SPLICE CABLE IN CABINET
29 INSTALL UNDERGROUND SPLICE ENCLOSURE
30 INSTALL AERIAL SPLICE ENCLOSURE
31 MODIFY EXISTING INTERCONNECT CENTER /SPLICE ENCLOSURE
32 INSTALL POLE MOUNTED SPLICE CABINET
33 INSTALL BASE MOUNTED SPLICE CABINET

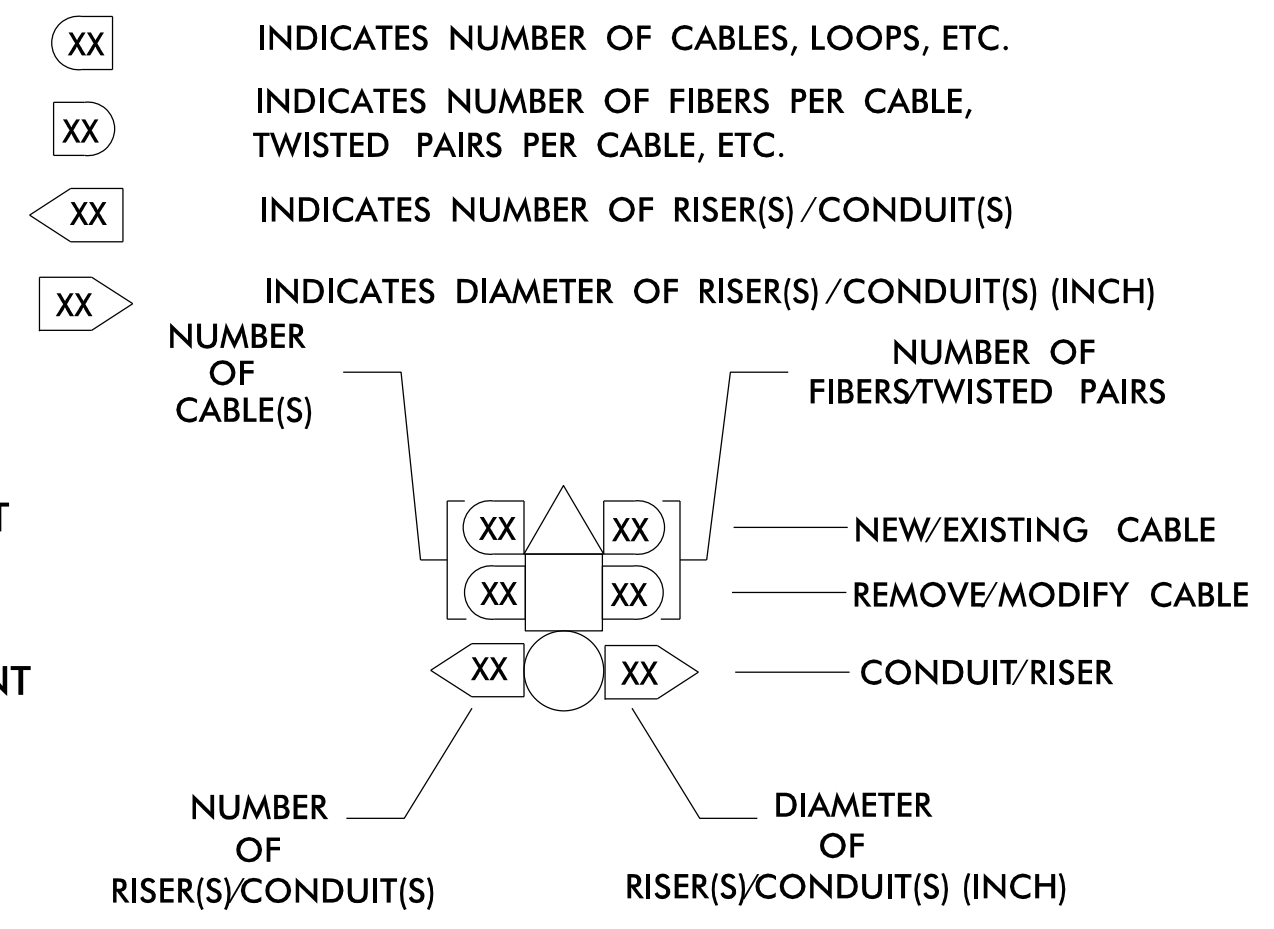
- 34 INSTALL CABINET FOUNDATION
35 INSTALL CCTV CAMERA POLE MOUNTED CABINET
36 INSTALL CCTV CAMERA ASSEMBLY
37 INSTALL CCTV CAMERA WOOD POLE
38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
39 INSTALL JUNCTION BOX
40A INSTALL OVERSIZED JUNCTION BOX
40B INSTALL SPECIAL OVERSIZED JUNCTION BOX (36" x 24" x 24")
41 REMOVE EXISTING JUNCTION BOX
42 INSTALL WOOD POLE
43 REMOVE EXISTING WOOD POLE
44 INSTALL AERIAL GUY ASSEMBLY
45 INSTALL STANDARD GUY ASSEMBLY
46 INSTALL SIDEWALK GUY ASSEMBLY
47 INSTALL MESSENGER CABLE
48A REMOVE EXISTING COMMUNICATIONS AND MESSENGER CABLE
48B REMOVE EXISTING COMMUNICATIONS CABLE
49 BACK PULL EXISTING COMMUNICATIONS CABLE
50 INSTALL CELL MODEM AND ANTENNA
51 INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
52A INSTALL DELINEATOR MARKER
52B INSTALL JUNCTION BOX MARKER
53A STORE 20 FEET OF COMMUNICATIONS CABLE
53B STORE 50 FEET OF EACH COMMUNICATIONS CABLE
54 LASH CABLE(S) TO EXISTING COMMUNICATIONS CABLE
55 LASH CABLE(S) TO EXISTING MESSENGER CABLE
56 LASH CABLE(S) TO NEW MESSENGER CABLE
57 MODIFY EXISTING ELECTRICAL SERVICE
58 INSTALL NEW ELECTRICAL SERVICE
59 INSTALL NEW EQUIPMENT CABINET DISCONNECT
60 BOND TRACER WIRE TO EQUIPMENT GROUND BUS
61 DO NOT BOND TRACER WIRE TO EQUIPMENT GROUND BUS
62 BOND RISER AND MESSENGER CABLE TO POLE GROUND
63 BOND RISER TO POLE GROUND
64 BOND MESSENGER CABLE TO POLE GROUND
65 INSTALL HEAT SHRINK TUBING RETROFIT KIT
66 INSTALL MOLDABLE DUCT SEAL
67 SLACK SPAN

LEGEND table with symbols for cable types (FO, EXI, REM, Aerial Guy Assembly, Conduit, Directional Drilled Conduit), enclosures, poles, antennas, and signal poles.

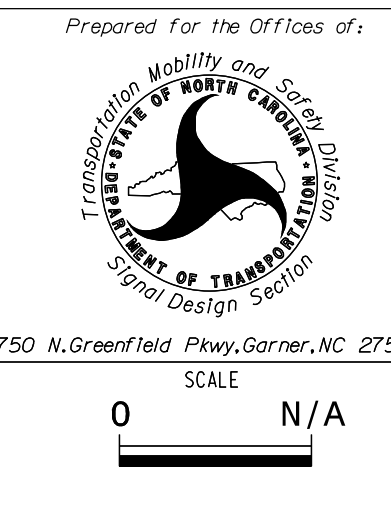
NEW vs EXISTING symbols table. NEW includes oversized junction boxes, wood poles, splice enclosures, metal poles, CCTV assemblies, guy assemblies, racks, cabinets, and antennas. EXISTING includes the same symbols with a shaded background.



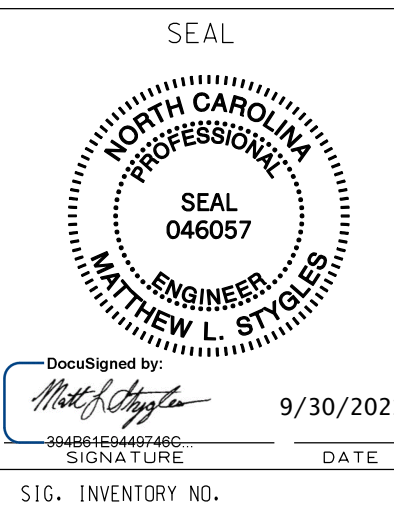
CONSTRUCTION NOTE SYMBOLOGY KEY



Vertical text on the left edge containing a long alphanumeric string.

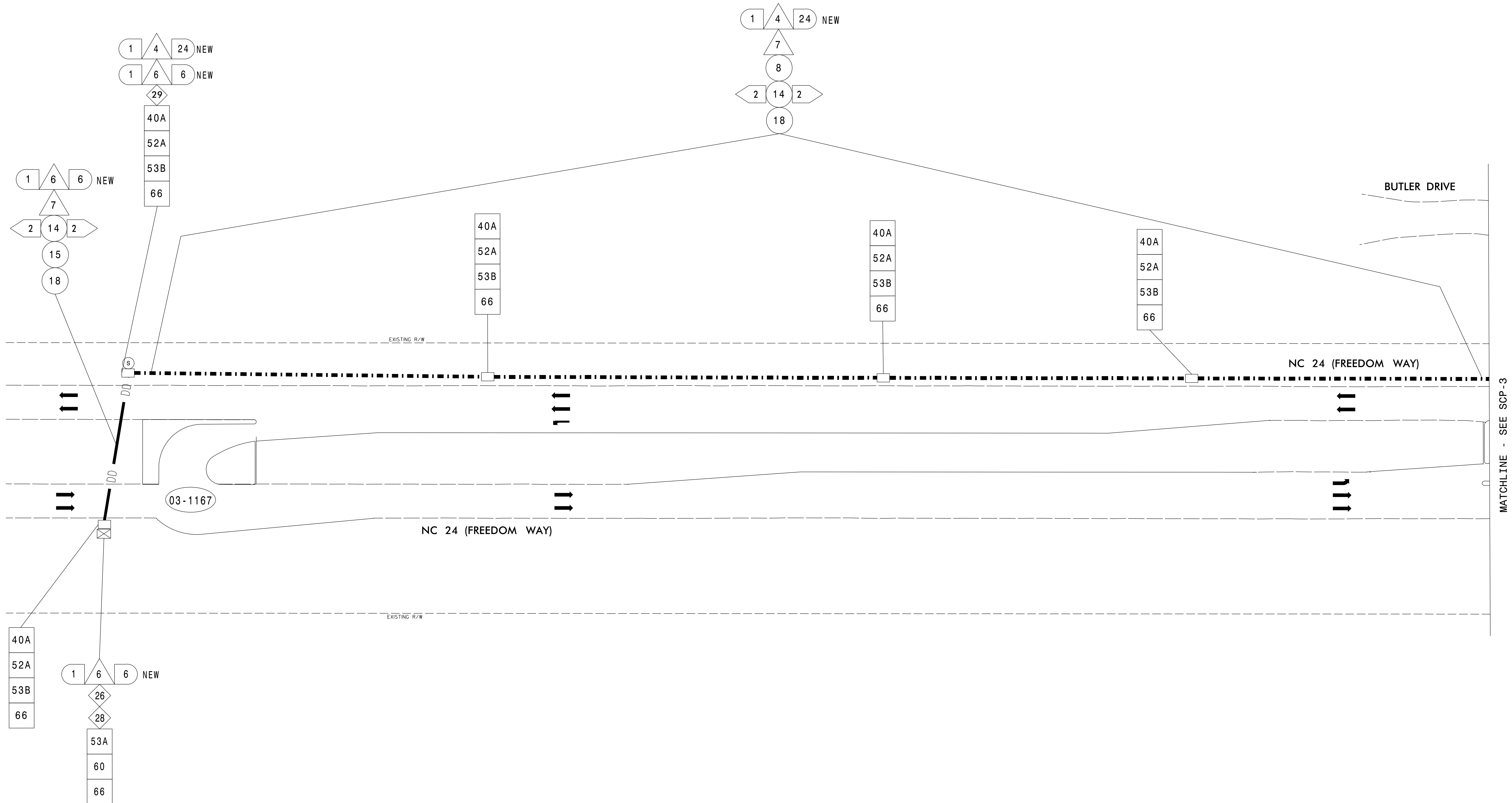


Construction Notes table with fields for Division, Plan Date, Prepared By (M.L. Stygles), Reviewed By (J.L. Lewis), Date, Revisions, and Signatures.



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Sig. Inventory No. and Date field.

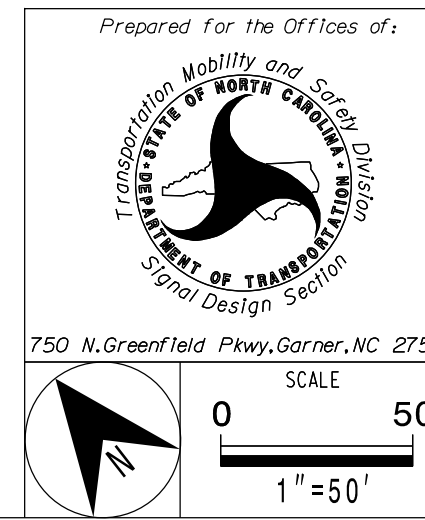


NOTES:

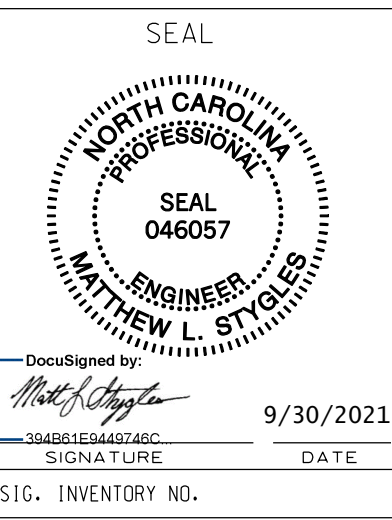
- 1) NOTIFY THE NCDOT DIVISION 3 TRAFFIC ENGINEER, AT 910-341-2200 FIVE (5) DAYS PRIOR TO BEGINNING WORK ON SIGNAL SYSTEM COMMUNICATIONS CABLE. NOTIFY THE TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. ALL WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
- 2) CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.
- 3) TAG/IDENTIFY FIBER CHANNELS IN JUNCTION BOXES.

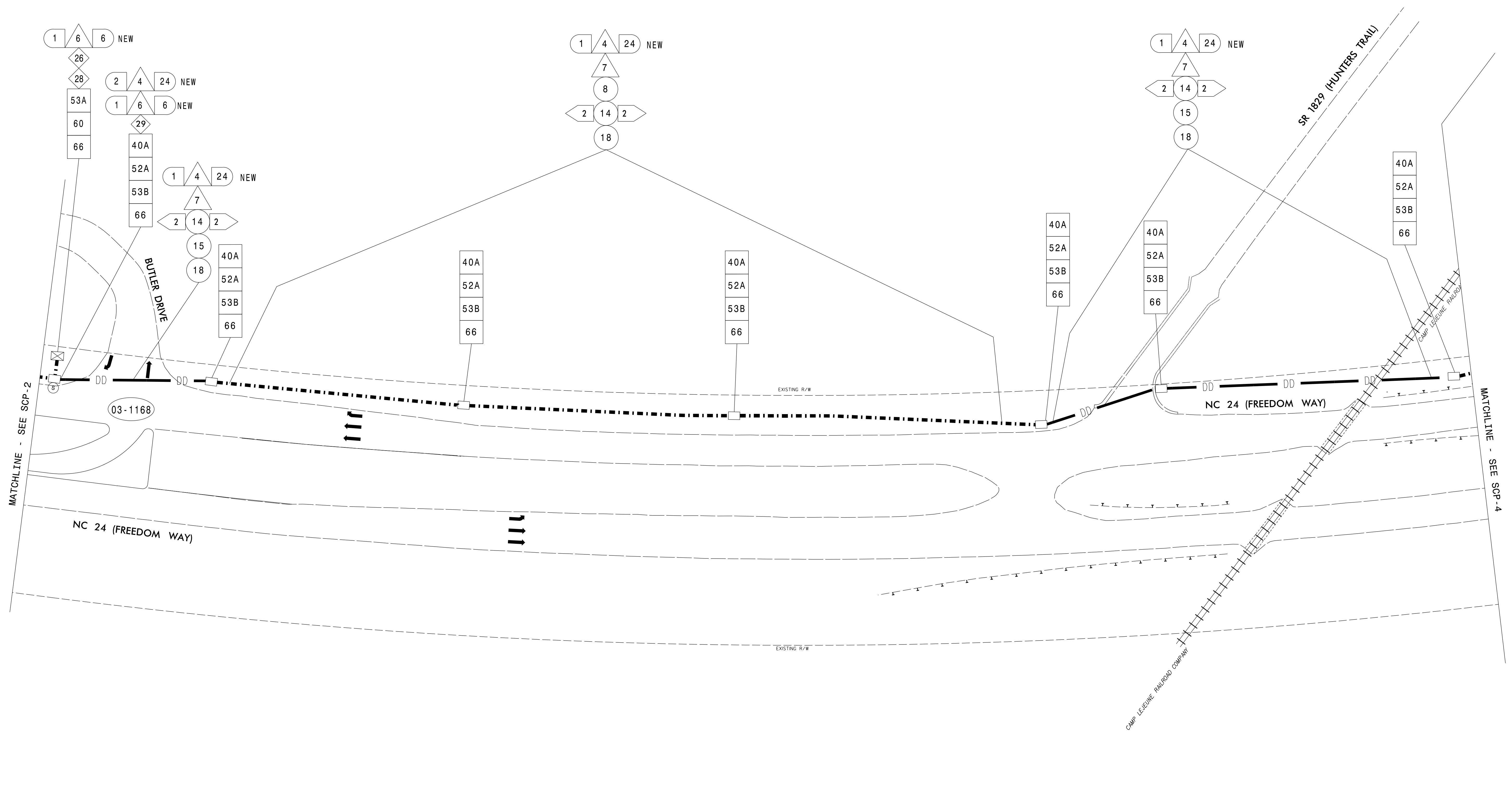
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**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**



Cable Routing Plan	
Division 3 Onslow County Jacksonville	
PLAN DATE: September 2021	REVIEWED BY: J.L. Lewis
PREPARED BY: M.L. Styles	REVIEWED BY: J. Ma
REVISIONS	INIT. DATE

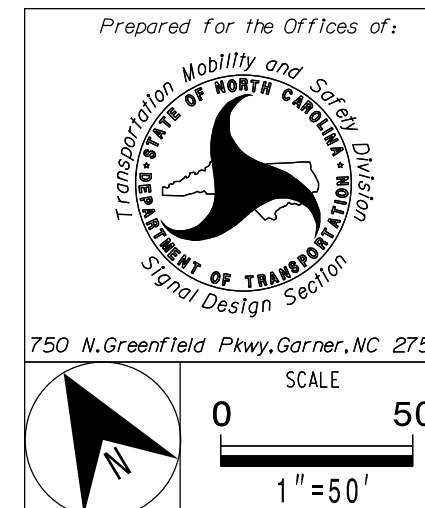




- NOTES:**
- 1) NOTIFY THE NCDOT DIVISION 3 TRAFFIC ENGINEER, AT 910-341-2200 FIVE (5) DAYS PRIOR TO BEGINNING WORK ON SIGNAL SYSTEM COMMUNICATIONS CABLE. NOTIFY THE TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. ALL WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
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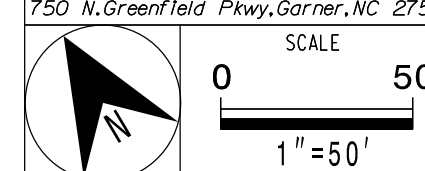
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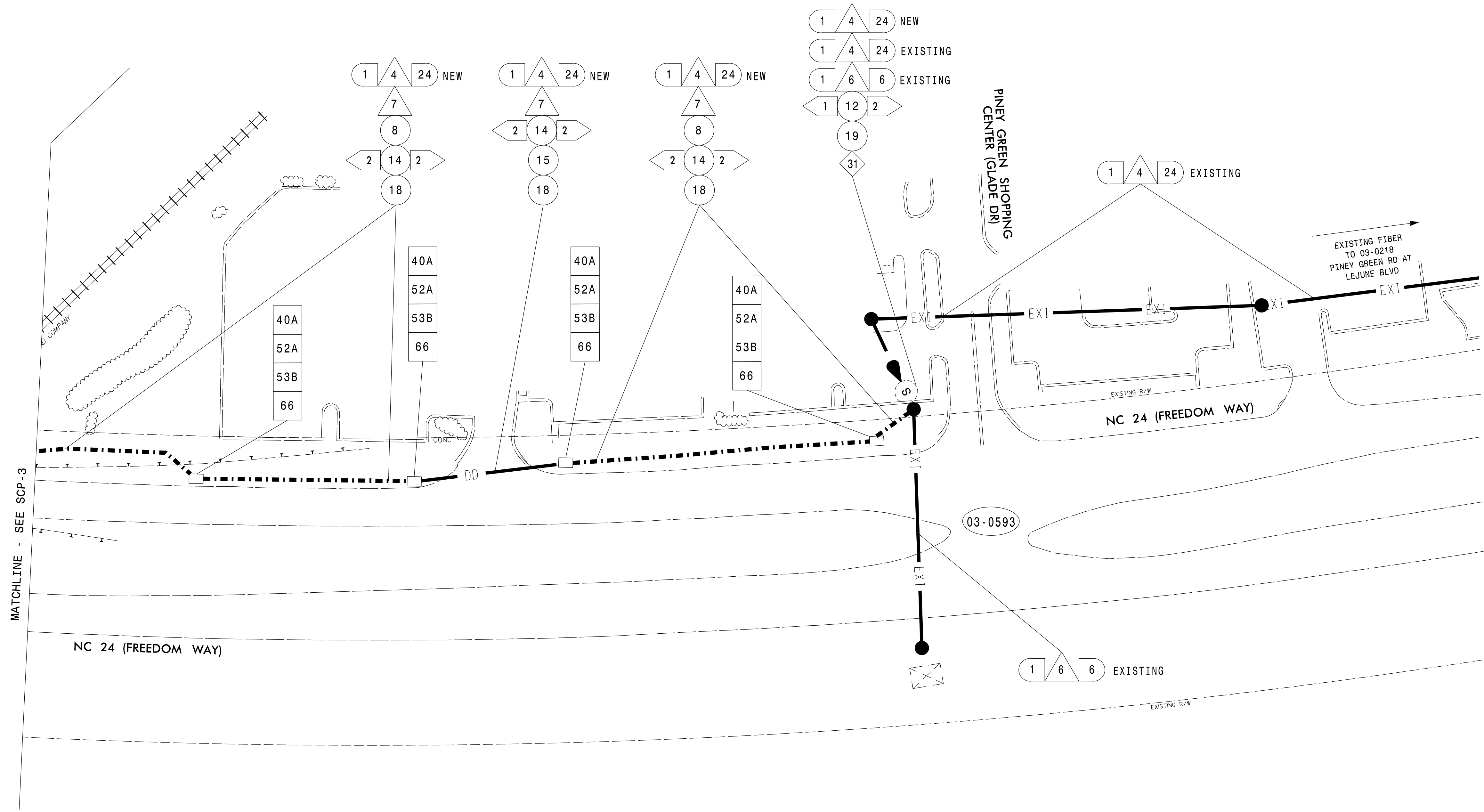
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Cable Routing Plan	
Division 3 Onslow County Jacksonville	
PLAN DATE: September 2021	REVIEWED BY: J.L. Lewis
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SEAL
DocuSigned by: SIGNATURE DATE 9/30/2021
SIG. INVENTORY NO.



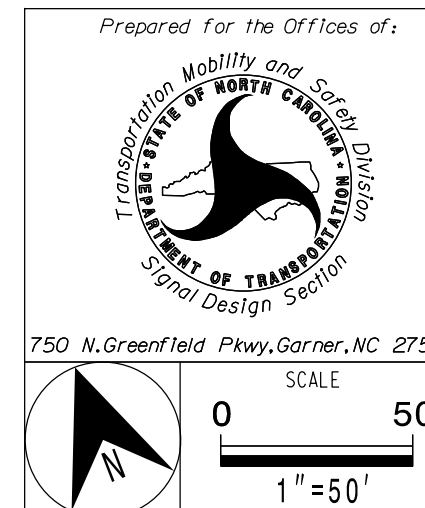


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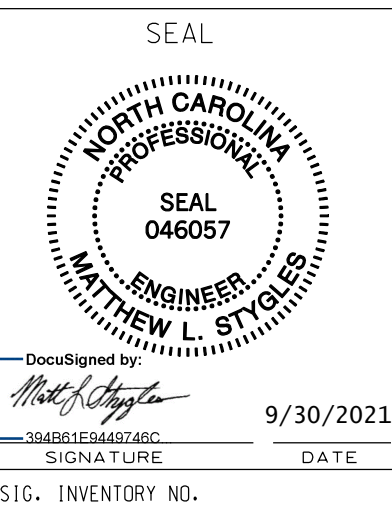
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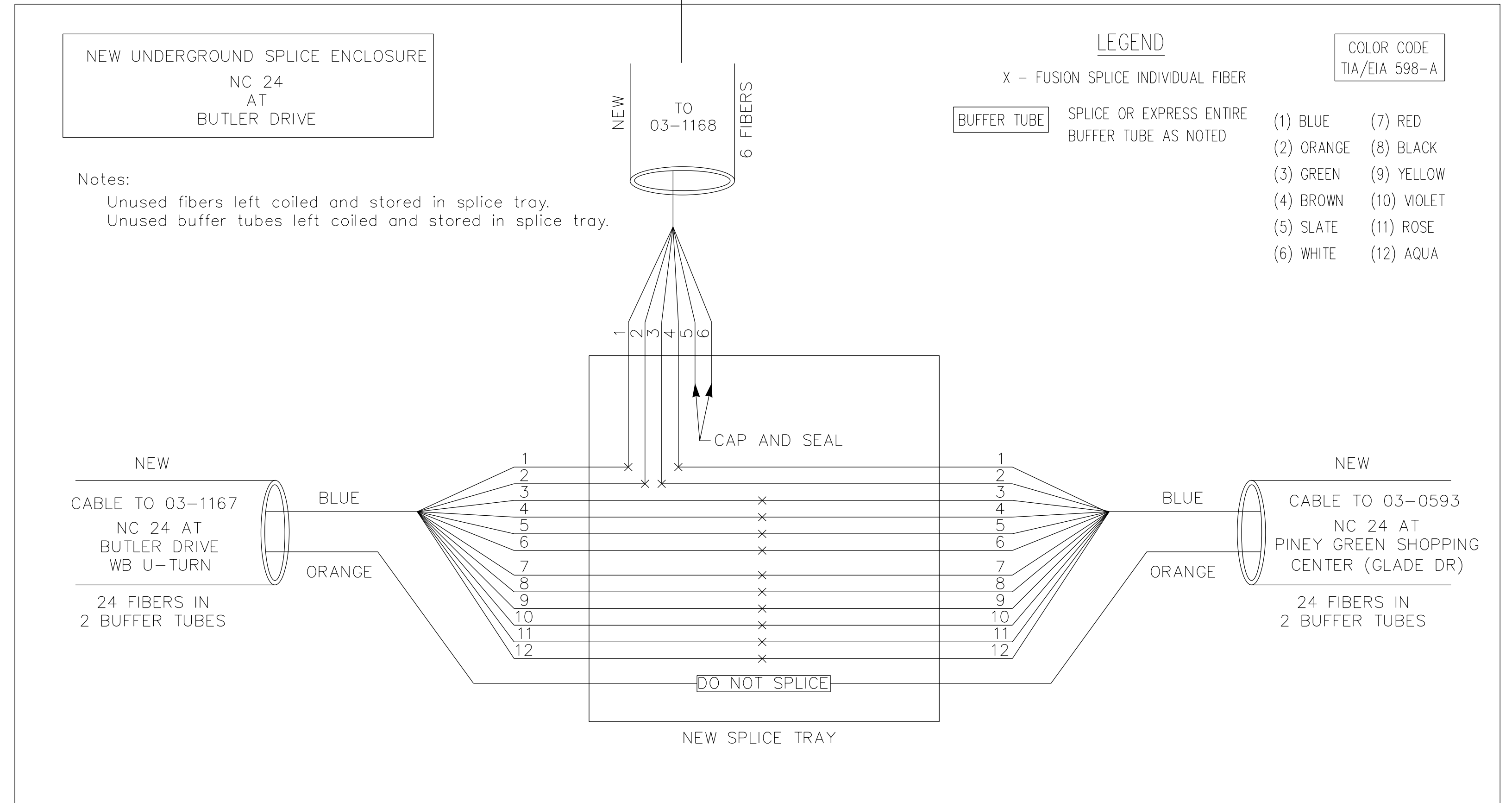
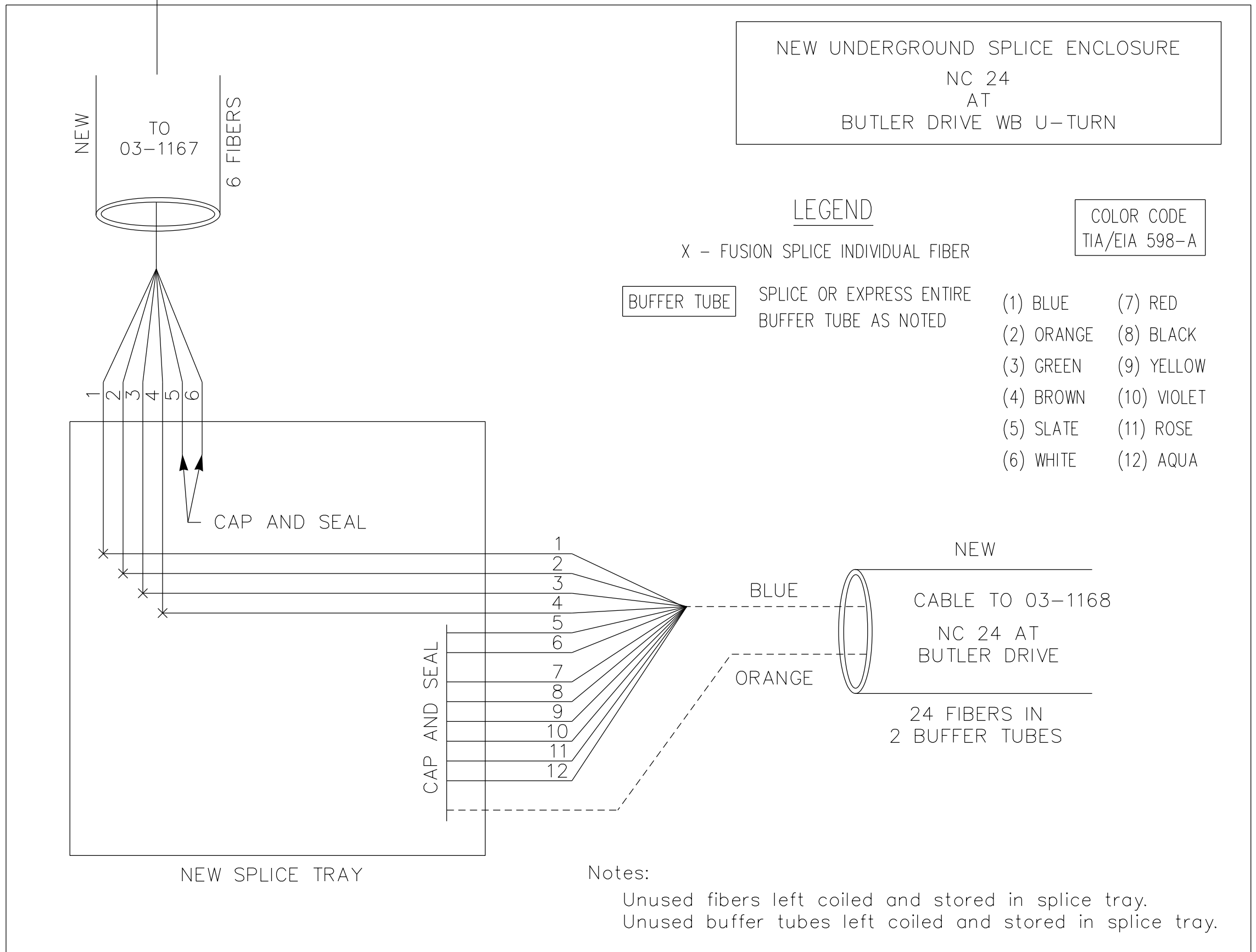
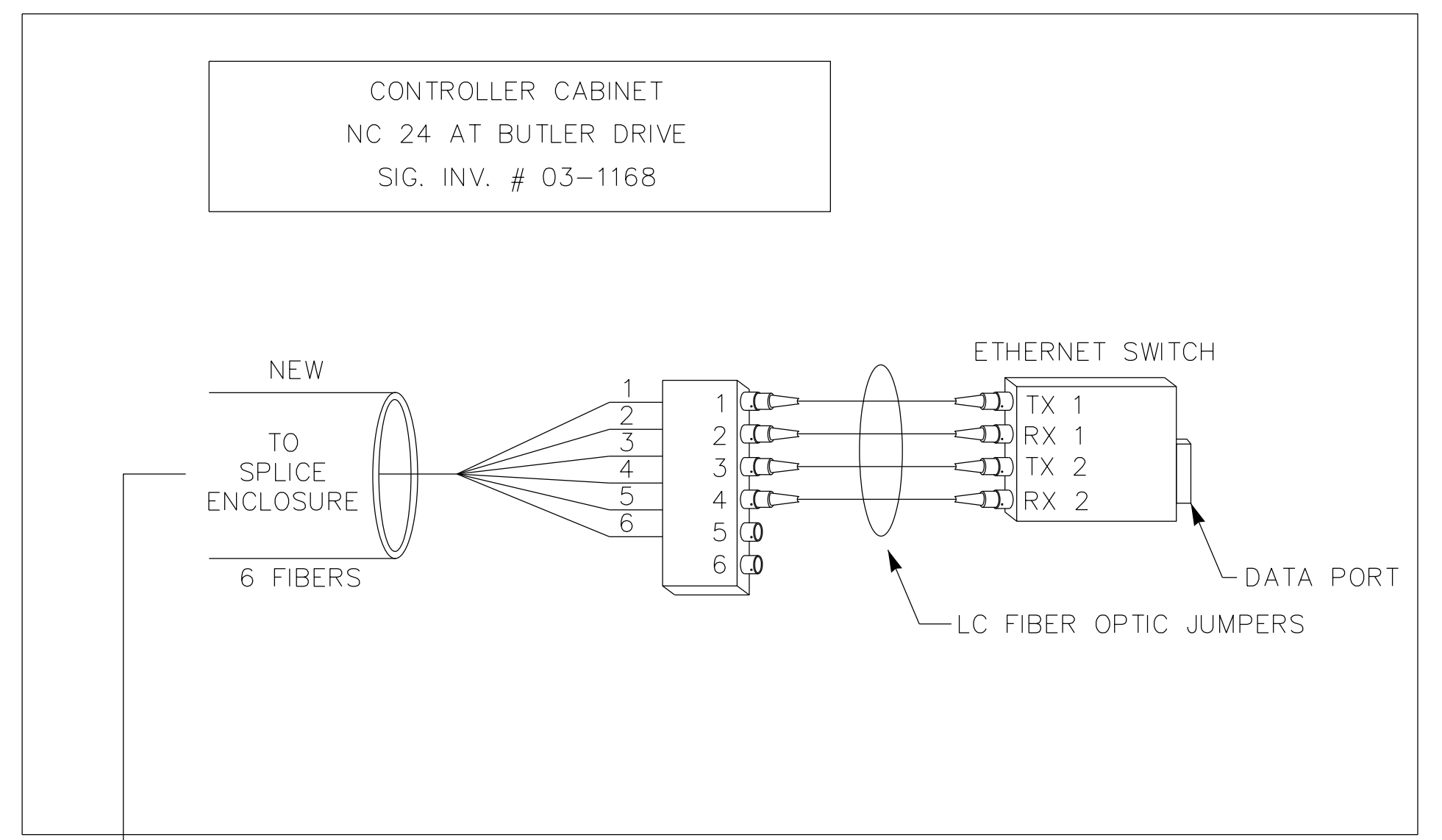
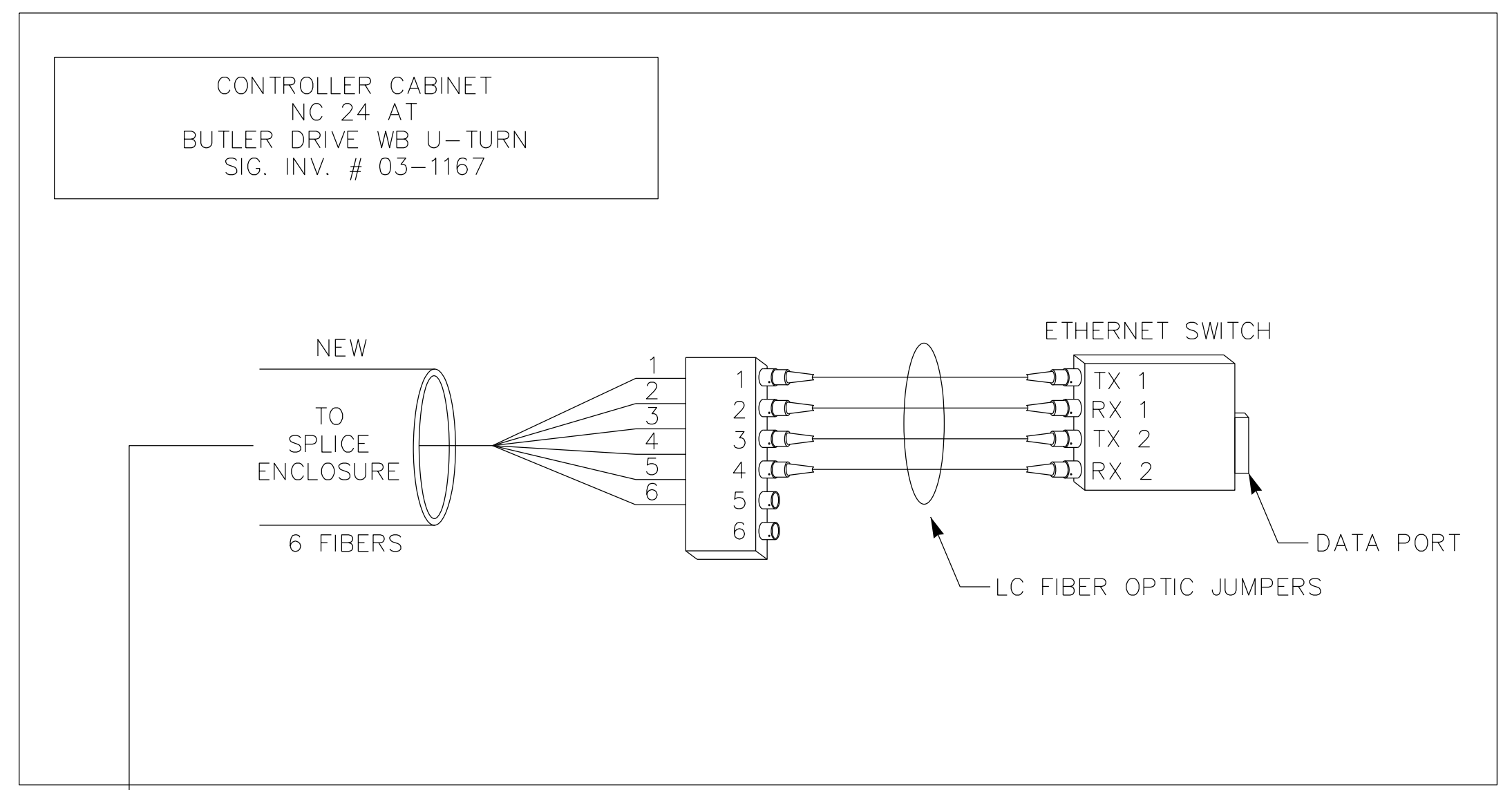
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Cable Routing Plan	
Division 3	Onslow County Jacksonville
PLAN DATE: September 2021	REVIEWED BY: J.L. Lewis
PREPARED BY: M.L. Styles	REVIEWED BY: J. Ma
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- 4) INCLUDE ON THE COVER OF EACH SPlice TRAY THE FOLLOWING: REFERENCE SECTION 1731 "FIBER OPTIC SPlice ENCLOSURE"
 - 1) SPlice LOCATION
 - 2) DATE
 - 3) COMPANY NAME
 - 4) NAME OF INDIVIDUAL PERFORMING THE SPlicing

PRIOR TO INSTALLING THE COVER ON THE SPlice TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPlice TRAY AND INFORMATION SHOWN ABOVE (1-4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.

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Prepared for the Offices of:
 Transportation Mobility and Safety Division
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Design Section

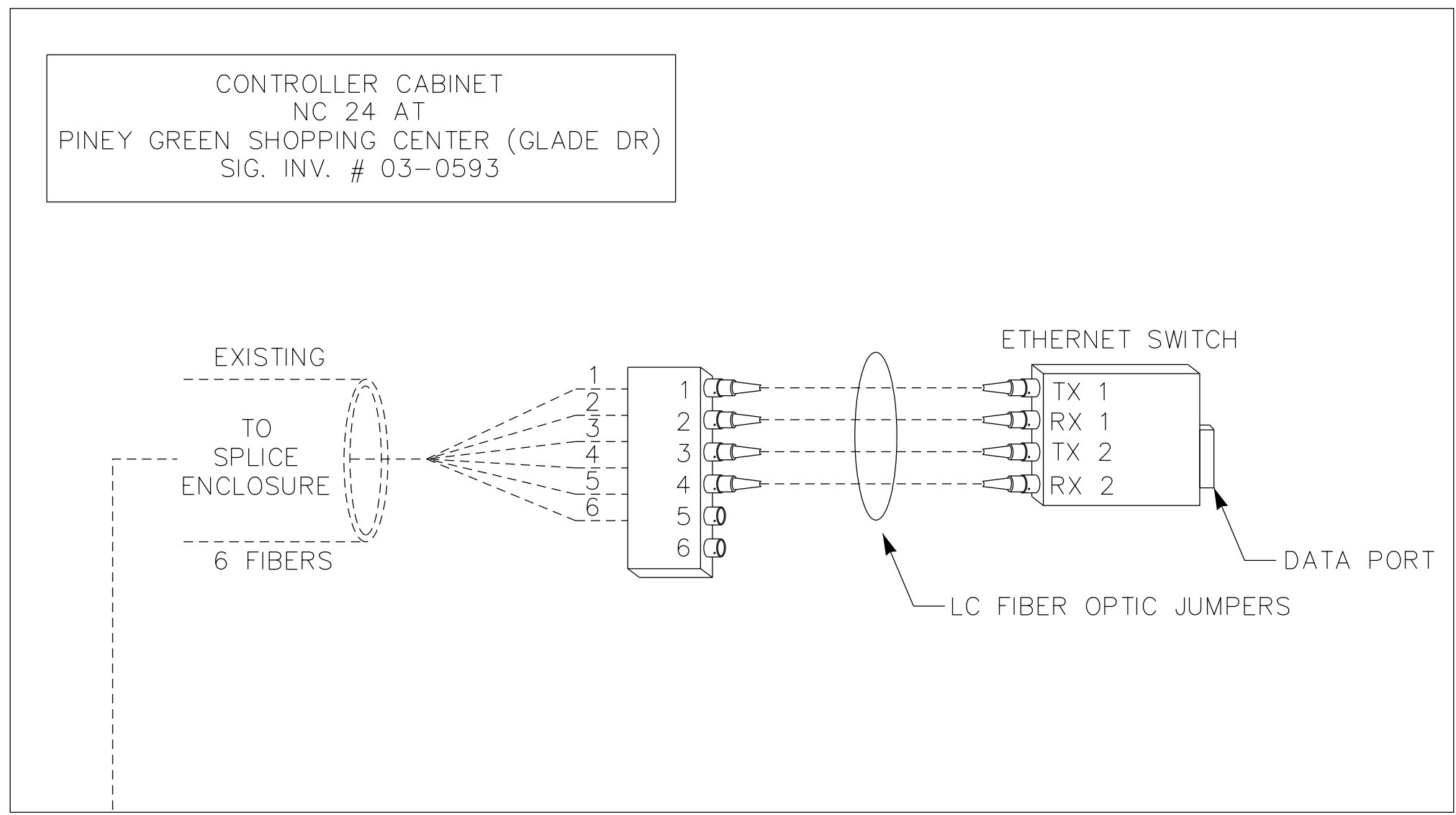
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SPlice DETAILS

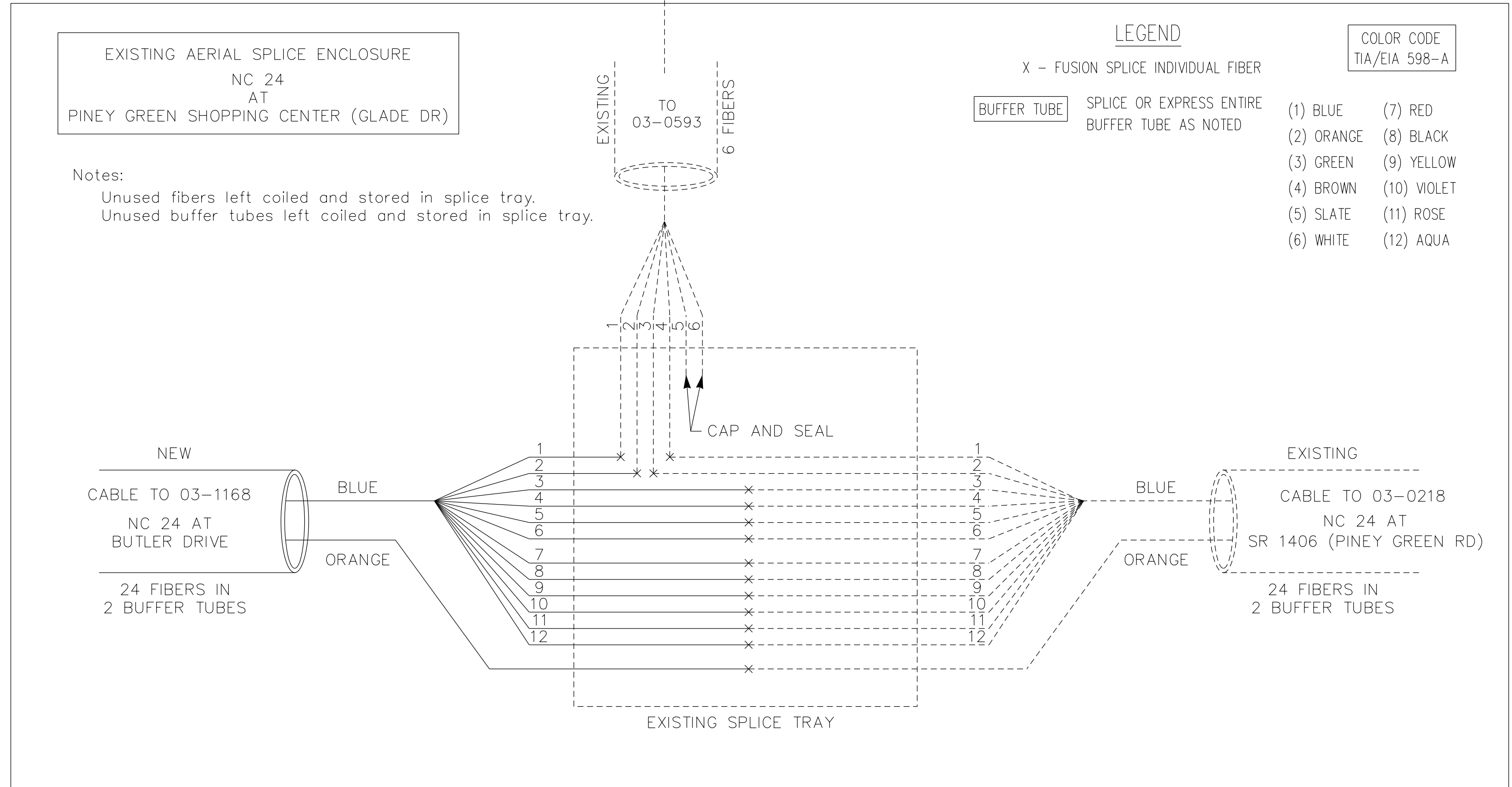
Division 3 Onslow County Jacksonville
 PLAN DATE: September 2021 REVIEWED BY: J.L. Lewis
 PREPARED BY: M.L. Stygles REVIEWED BY: J. Ma

REVISIONS	INIT.	DATE

DocuSigned by:
 Matthew L. Stygles
 394891E44078C
 SIGNATURE DATE 9/30/2021
 SIG. INVENTORY NO.



SPLICE ENCLOSURE 30



Notes:
 Unused fibers left coiled and stored in splice tray.
 Unused buffer tubes left coiled and stored in splice tray.

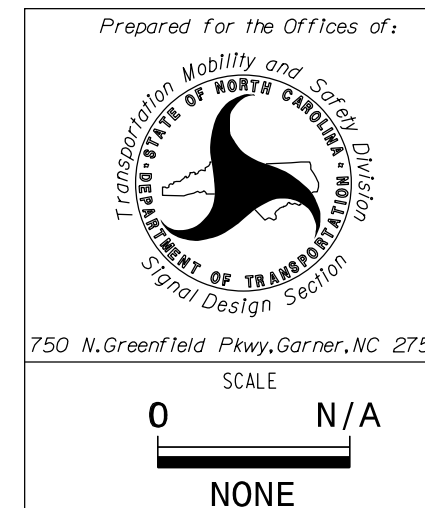
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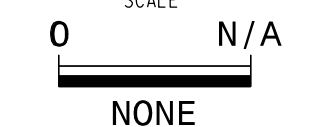
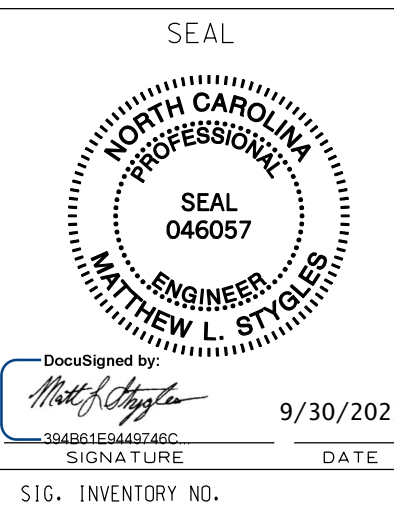
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SPLICE DETAILS	
Division 3	Onslow County Jacksonville
PLAN DATE: September 2021	REVIEWED BY: J.L. Lewis
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Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the lump sum price for "Grading".

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJ. REFERENCE NO.	SHEET NO.
W-5703D	X-1A

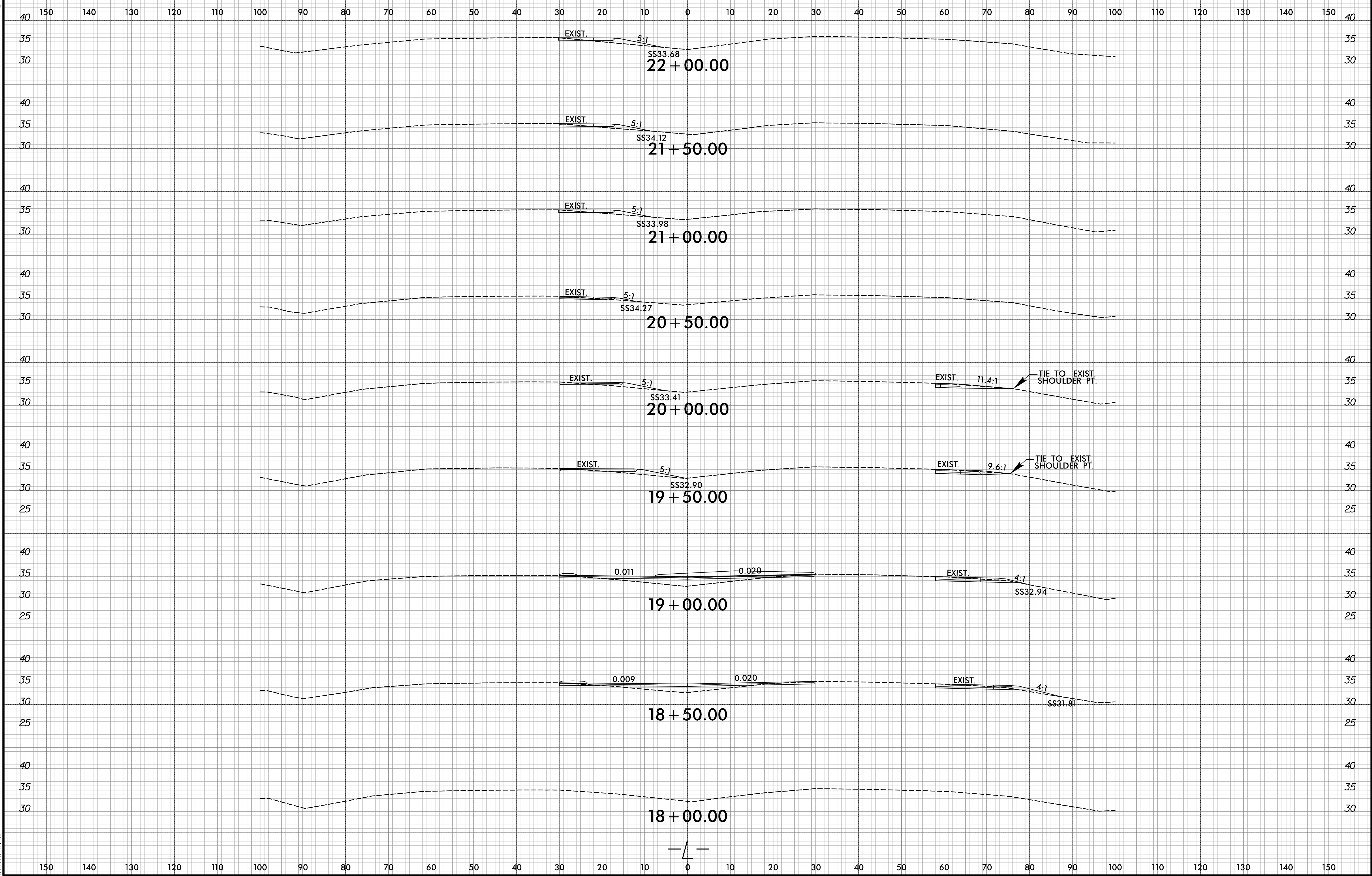
Quantities are approximate only. The Resident Engineer will recross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

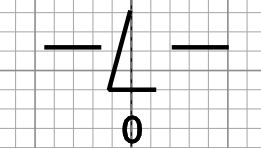
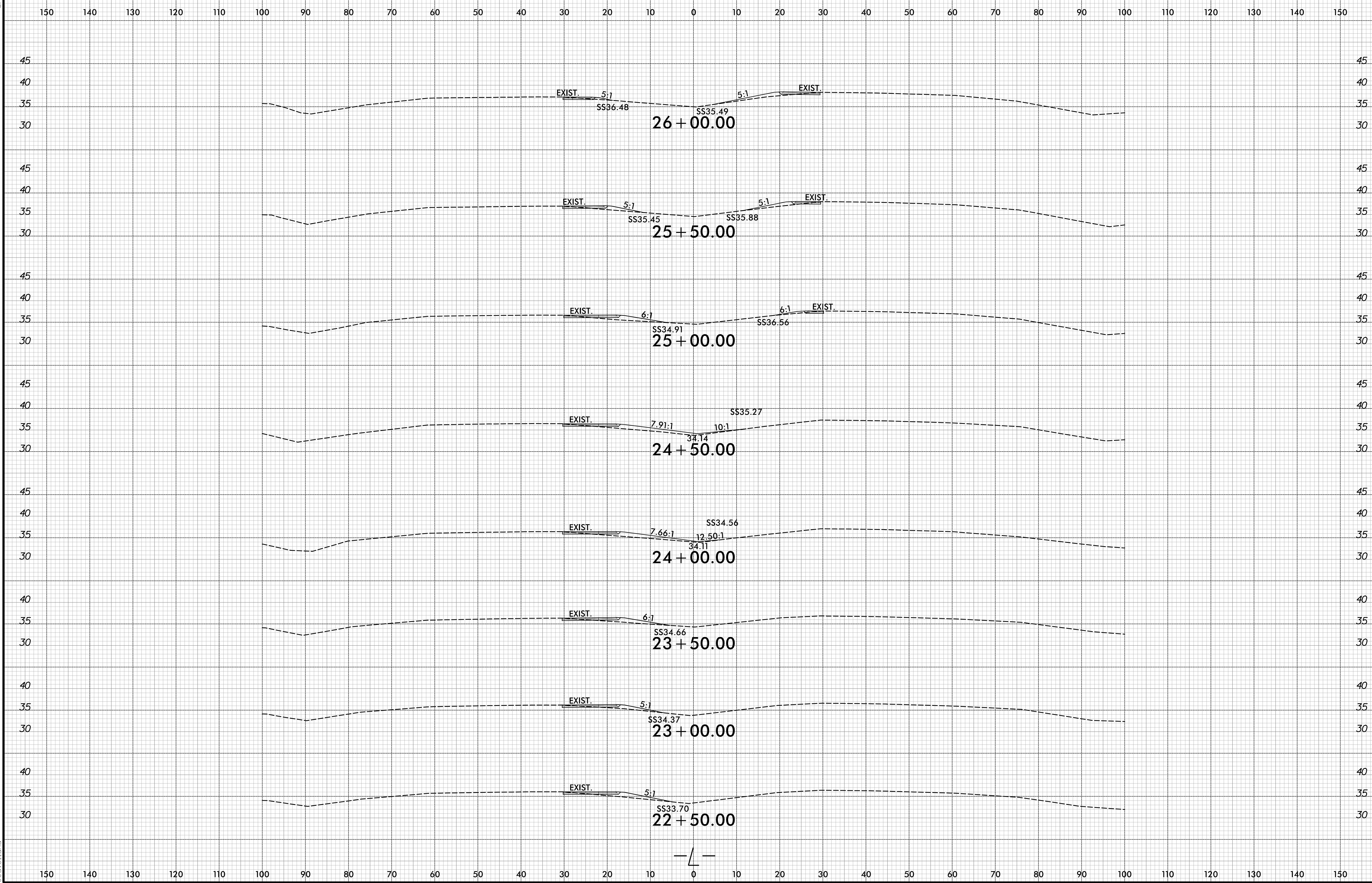
NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

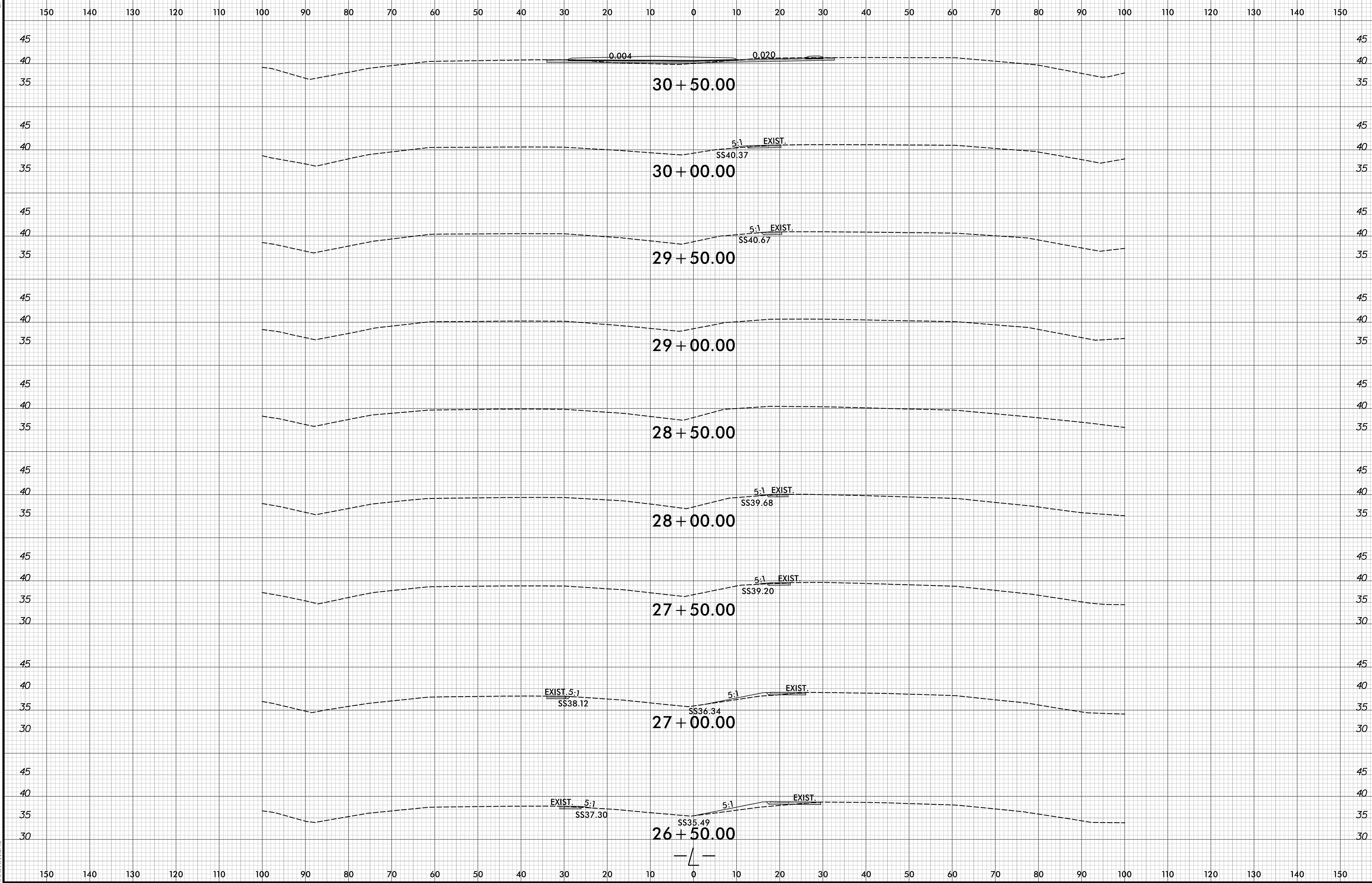
CROSS-SECTION SUMMARY

Station	Uncl. Exc. (cu. yd.)	Undercut Exc. (cu. yd.)	Embt (cu. yd.)
L			
18+50.00	0		0
19+00.00	37		56
19+50.00	31		39
20+00.00	25		15
20+50.00	16		7
21+00.00	6		7
21+50.00	4		11
22+00.00	4		14
22+50.00	4		17
23+00.00	4		14
23+50.00	4		13
24+00.00	4		20
24+50.00	4		28
25+00.00	6		24
25+50.00	6		19
26+00.00	6		19
26+50.00	7		19
27+00.00	8		17
27+50.00	6		6
28+00.00	5		0
28+50.00	0		0
29+00.00	0		0
29+50.00	17		0
30+00.00	6		1
30+50.00	26		5
31+00.00	65		4
31+50.00	96		0
32+00.00	76		0
32+50.00	31		0
33+00.00	19		0

INDEX OF SHEETS			
LINE		STATIONS	SHEETS
-L-	NC 24	18+50.00 TO 33+00.00	X-1 THRU X-4







6/23/2021
R:\Roadway\CorridorModeling\W5703D_RDY_XPL.dgn
Juvalliana

