

**This electronic collection of documents is provided
for the convenience of the user
and is Not a Certified Document –**

**The documents contained herein were originally issued
and sealed by the individuals whose names and license
numbers appear on each page, on the dates appearing
with their signature on that page.**

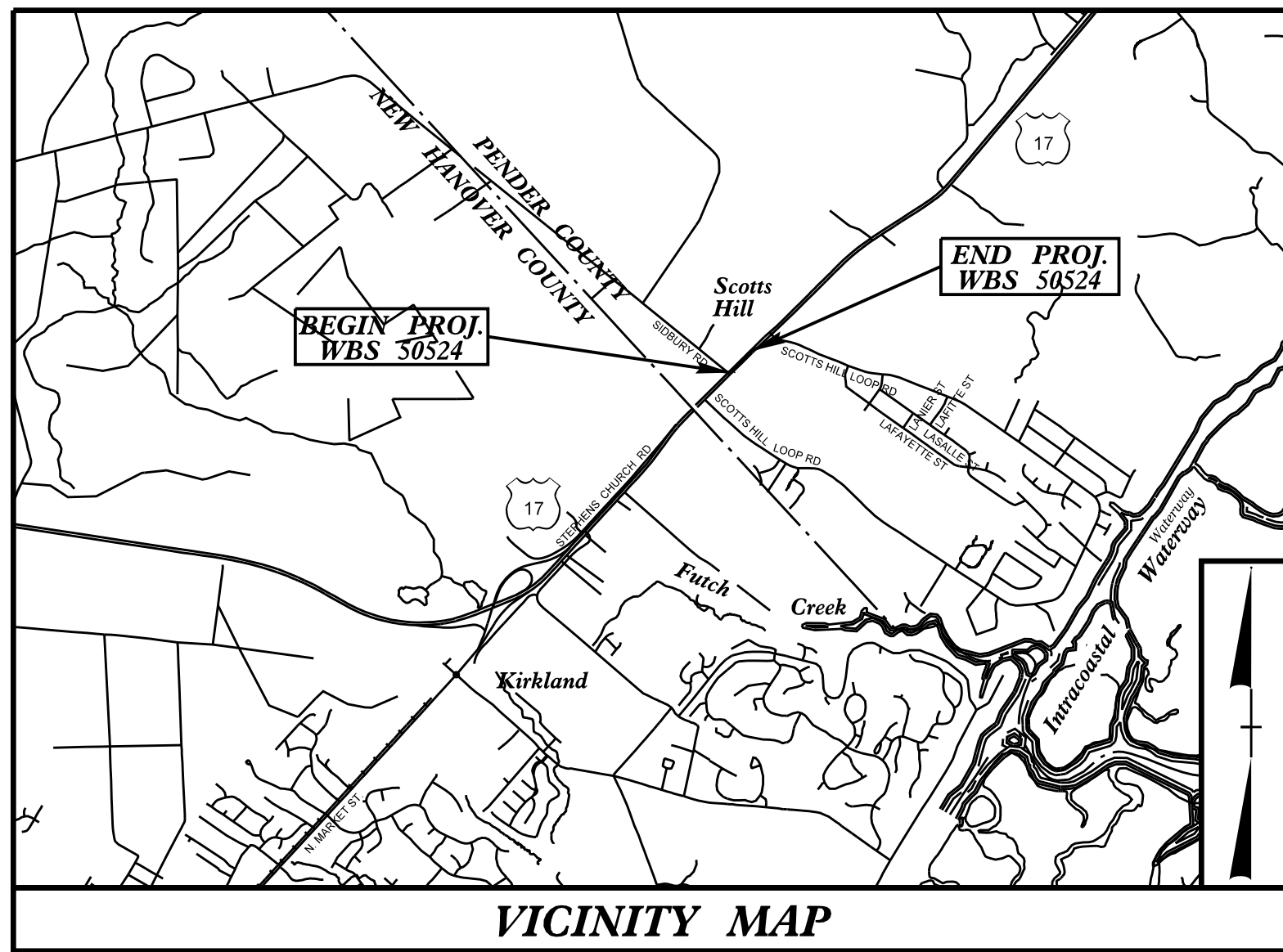
**This file or an individual page
shall not be considered a certified document.**

09/05/19

PROJECT: WBS 50524

CONTRACT: DC00416

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



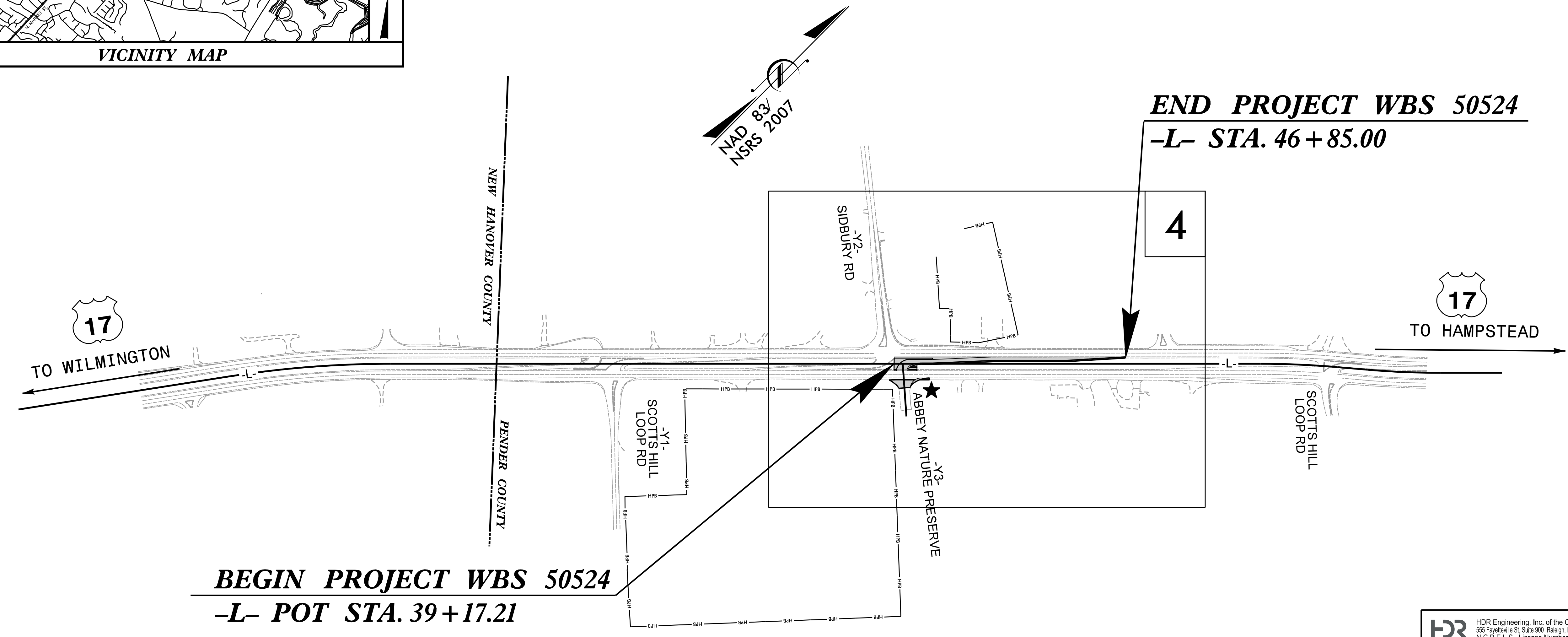
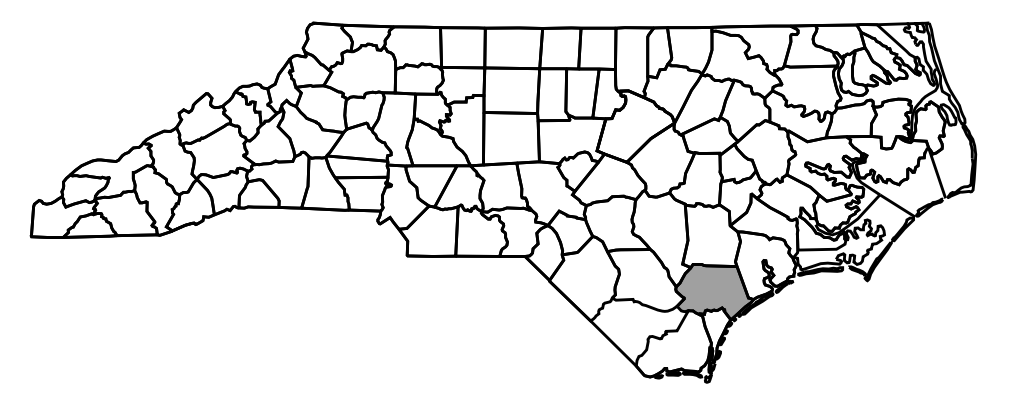
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PENDER COUNTY

**LOCATION: US 17 FROM SIDBURY RD TO
SCOTTS HILL LOOP RD**

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND SIGNALS.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	WBS 50524	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
WBS 48864		PE	
WBS 50524		CONST.	

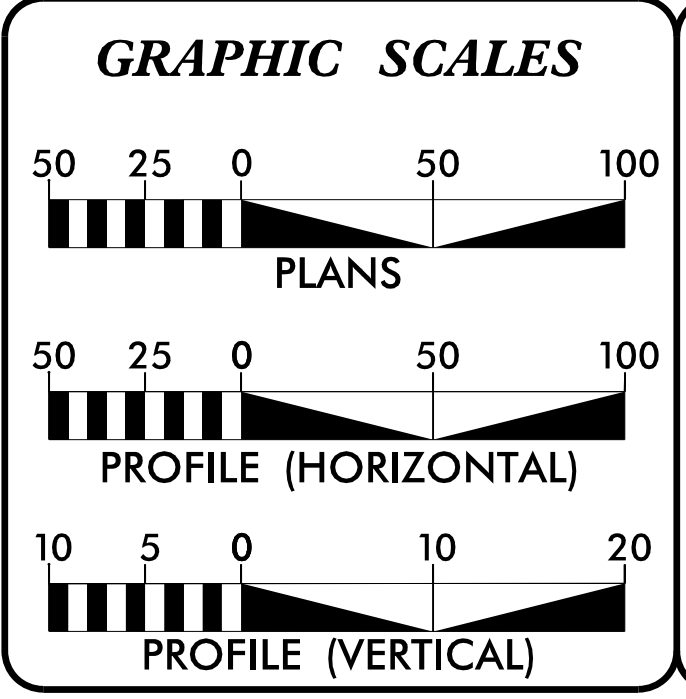


NOTES:
CLEARING ON THIS PROJECT SHOULD BE PERFORMED TO THE LIMITS ESTABLISHED BY MODIFIED METHOD III.

HDR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

★ PROPOSED SIGNAL

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



DESIGN DATA

ADT 2020 = 39,500
ADT =

K =
D =
T =
V = 60 MPH

* TTST =
FUNC CLASS =
PRINCIPAL ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT WBS 50524 = 0.145 miles
TOTAL LENGTH PROJECT WBS 50524 = 0.145 miles

Prepared for the Office of:
HIGHWAY DIVISION 3
5501 Barbados Blvd., Castle Hayne NC, 28429

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 15, 2022

LETTING DATE:
MARCH 16, 2023

CASEY HARRIS, P.E.
PROJECT ENGINEER

JORDAN BOND, P.E.
PROJECT DESIGN ENGINEER

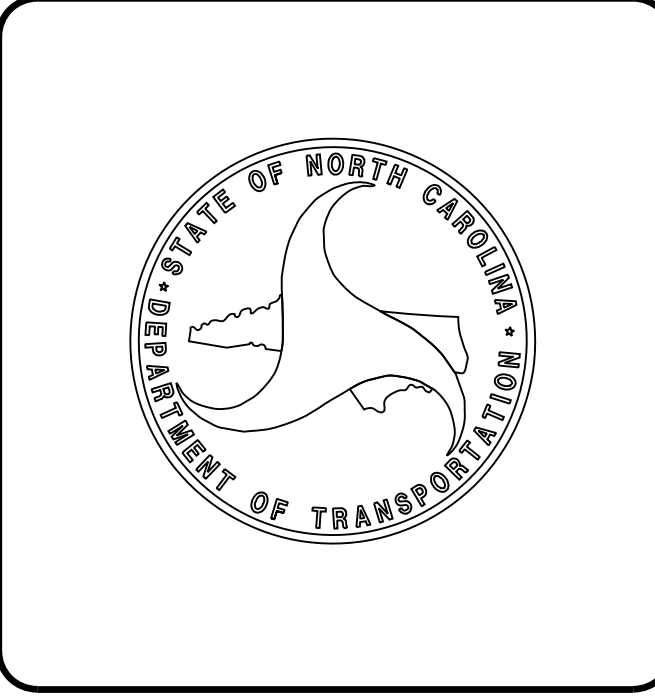
KRISTA KIMMEL, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

2/20/2023
P.E.

ROADWAY DESIGN ENGINEER

2/20/2023
P.E.



PLOT DRIVER: NCDOT_pdf_color_eng_50.ppt
USER: JBOND
DATE: 2/20/2023
TIME: 7:16:55 AM
FILE: \

12/2/2016

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
USER: CHARRIS
FILE: NCDOT\2017_NCDOT_Div_3_GESC_0n-Coll\NCDOT-Div_3_GESC_Svcs\6.0_CAD_BIM\6.2_WIP\WB48864_Roadway\Proj\48864_RDY_TSH.dgn
PENTABLE: NCDOT_pshpfl.tbl
DATE: 10/31/2022
TIME: 9:25:55 AM

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A-1	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS
1B-1	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	INTERSECTION DETAIL SHEET
2C-1	MODIFIED METHOD III DETAIL SHEET
3B-1	EARTHWORK SUMMARY, PAVEMENT REMOVAL SUMMARY
3D-1	DRAINAGE SUMMARY SHEET
4	PLAN SHEET
5	PROFILE SHEET
RW-1 THRU RW-2C1	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-4	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
SIG-1.0 THRU SIG-2.11	SIGNAL PLANS
SCP-1	SIGNAL COMMUNICATION PLAN
SIG.M1	STANDARD DRAWINGS FOR ALL METAL POLES
X-1	CROSS-SECTION INDEX
X-1A	CROSS-SECTION EARTHWORK VOLUME SUMMARY
X-2 THRU X-7	CROSS-SECTIONS

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 MODIFIED 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

SIDE ROADS:
THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

TEMPORARY SHORING:
SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

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

PROJECT REFERENCE NO.	SHEET NO.
WBS 50524	1A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	

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:

DIVISION	STD.NO.	TITLE
DIVISION 2 - EARTHWORK		
	200.03	Method of Clearing - Modified Method III (Use Detail in Lieu of Standard)
	225.01	Guide for Grading Subgrade - Interstate and Freeway
	225.02	Guide for Grading Subgrade - Secondary and Local
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 8 - INCIDENTALS		
	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
	840.22	Frames and Wide Slot Sag Grates
	840.25	Anchorage for Frames - Brick or Concrete or Precast
	840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
	840.45	Precast Drainage Structure
	840.66	Drainage Structure Steps
	852.01	Concrete Islands
	852.06	Method for Placement of Drop Inlets in Concrete Islands

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin (EIP)	○
Computed Property Corner	×
Existing Concrete Monument (ECM)	□
Parcel/Sequence Number	(23)
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-S-
Potential Contamination Area: Soil	-S-S-
Known Contamination Area: Water	-W-W-
Potential Contamination Area: Water	-W-W-
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○
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	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Secondary Horiz and Vert Control Point	◆
Vertical Benchmark	⊠
Existing Right of Way Monument	△
Proposed Right of Way Monument (Rebar and Cap)	▲
Proposed Right of Way Monument (Concrete)	⊙
Existing Permanent Easement Monument	◇
Proposed Permanent Easement Monument (Rebar and Cap)	◆
Existing C/A Monument	△
Proposed C/A Monument (Rebar and Cap)	▲
Proposed C/A Monument (Concrete)	⊙
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Existing Control of Access Line	-----
Proposed Control of Access Line	-----
Proposed ROW and CA Line	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage/Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed 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	○
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:

* SUE - Subsurface Utility Engineering
LOS - Level of Service - A, B, C or D (Accuracy)

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 Test Hole (SUE - LOS A)*	⊕
U/G Power Line (SUE - LOS B)*	-----
U/G Power Line (SUE - LOS C)*	-----
U/G Power Line (SUE - LOS D)*	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊙
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	⊕
U/G Telephone Test Hole (SUE - LOS A)*	⊕
U/G Telephone Cable (SUE - LOS B)*	-----
U/G Telephone Cable (SUE - LOS C)*	-----
U/G Telephone Cable (SUE - LOS D)*	-----
U/G Telephone Conduit (SUE - LOS B)*	-----
U/G Telephone Conduit (SUE - LOS C)*	-----
U/G Telephone Conduit (SUE - LOS D)*	-----
U/G Fiber Optics Cable (SUE - LOS B)*	-----
U/G Fiber Optics Cable (SUE - LOS C)*	-----
U/G Fiber Optics Cable (SUE - LOS D)*	-----

WATER:

Water Manhole	⊙
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line Test Hole (SUE - LOS A)*	⊕
U/G Water Line (SUE - LOS B)*	-----
U/G Water Line (SUE - LOS C)*	-----
U/G Water Line (SUE - LOS D)*	-----
Above Ground Water Line	-----

TV:

TV Pedestal	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	⊕
U/G TV Test Hole (SUE - LOS A)*	⊕
U/G TV Cable (SUE - LOS B)*	-----
U/G TV Cable (SUE - LOS C)*	-----
U/G TV Cable (SUE - LOS D)*	-----
U/G Fiber Optic Cable (SUE - LOS B)*	-----
U/G Fiber Optic Cable (SUE - LOS C)*	-----
U/G Fiber Optic Cable (SUE - LOS D)*	-----

GAS:


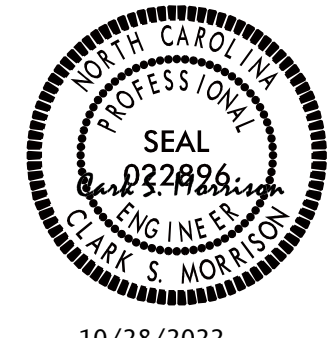

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line Test Hole (SUE - LOS A)*	⊕
U/G Gas Line (SUE - LOS B)*	-----
U/G Gas Line (SUE - LOS C)*	-----
U/G Gas Line (SUE - LOS D)*	-----
Above Ground Gas Line	-----

SANITARY SEWER:

Sanitary Sewer Manhole	⊙
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
SS Force Main Line Test Hole (SUE - LOS A)*	⊕
SS Force Main Line (SUE - LOS B)*	-----
SS Force Main Line (SUE - LOS C)*	-----
SS Force Main Line (SUE - LOS D)*	-----

MISCELLANEOUS:

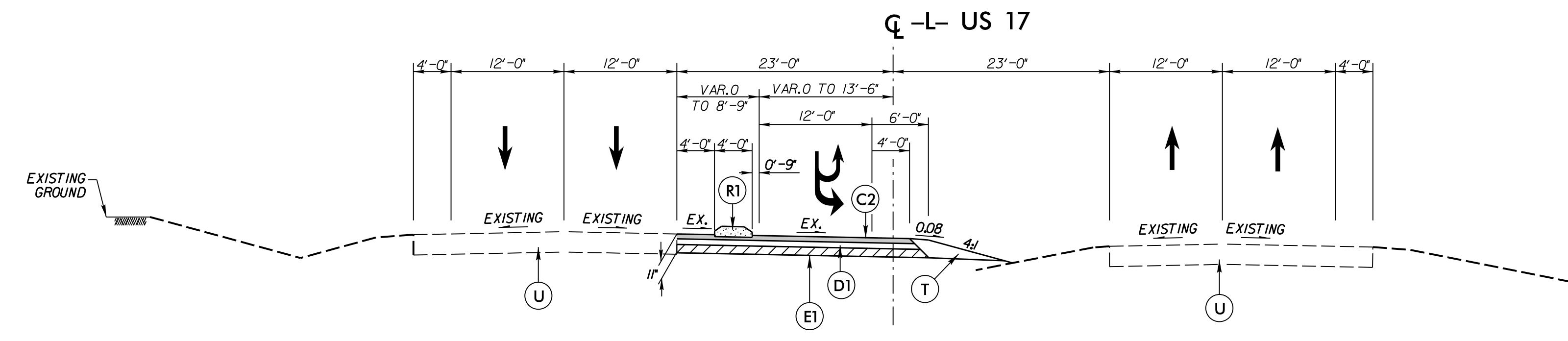
Utility Pole	●
Utility Pole with Base	⊠
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line (SUE - LOS B)*	-----
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
Abandoned According to Utility Records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

PROJECT REFERENCE NO. WBS 50524	SHEET NO. 2A-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	

PAVEMENT SCHEDULE

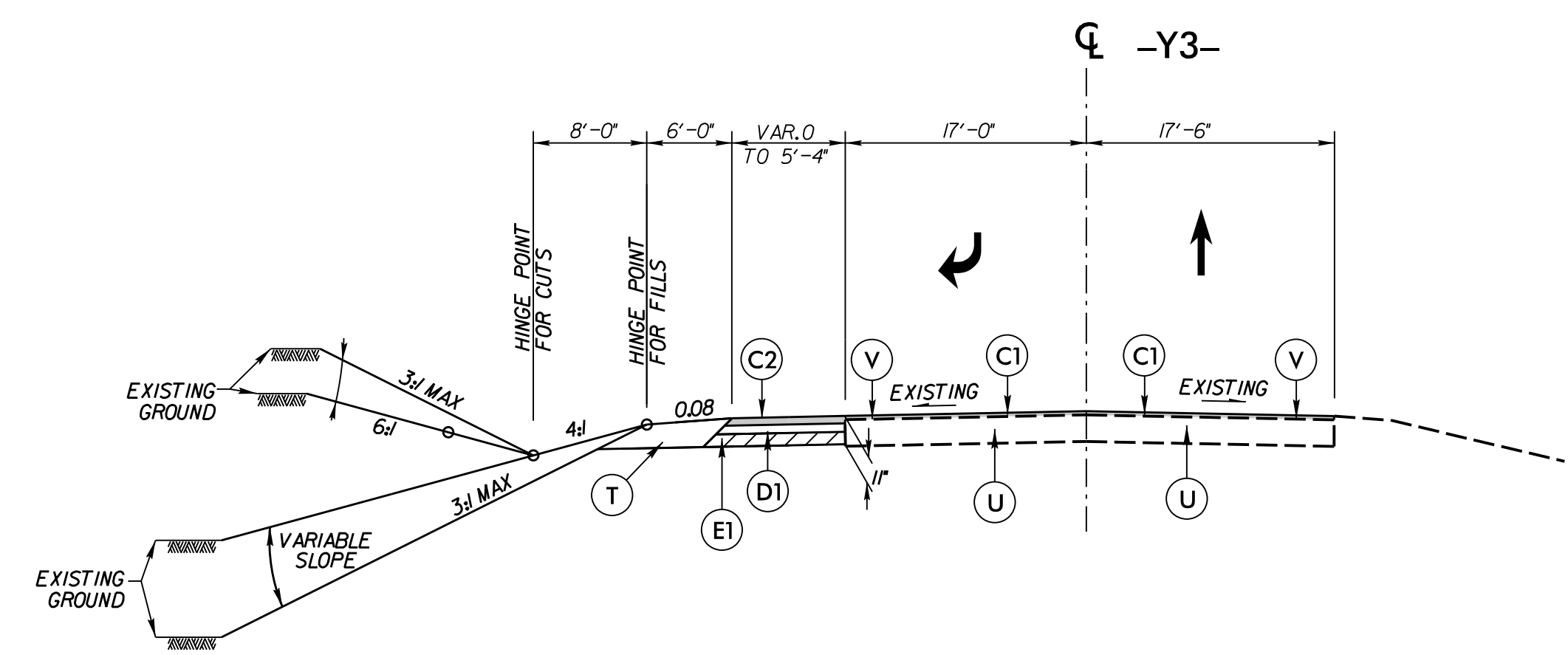
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R1	5" MONOLITHIC CONCRETE ISLAND (KEYED IN).
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	T	EARTH MATERIAL.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V	MILLING 1½" DEPTH.

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



TYPICAL SECTION NO. 1



LINE	FROM STATION	TO STATION
-L-	39 + 17.21	46 + 85.00

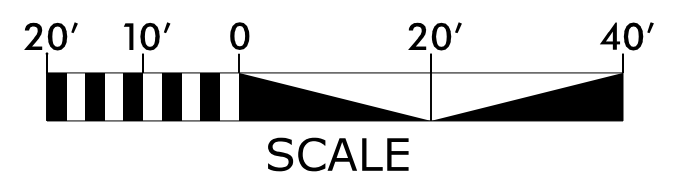


TYPICAL SECTION NO. 2

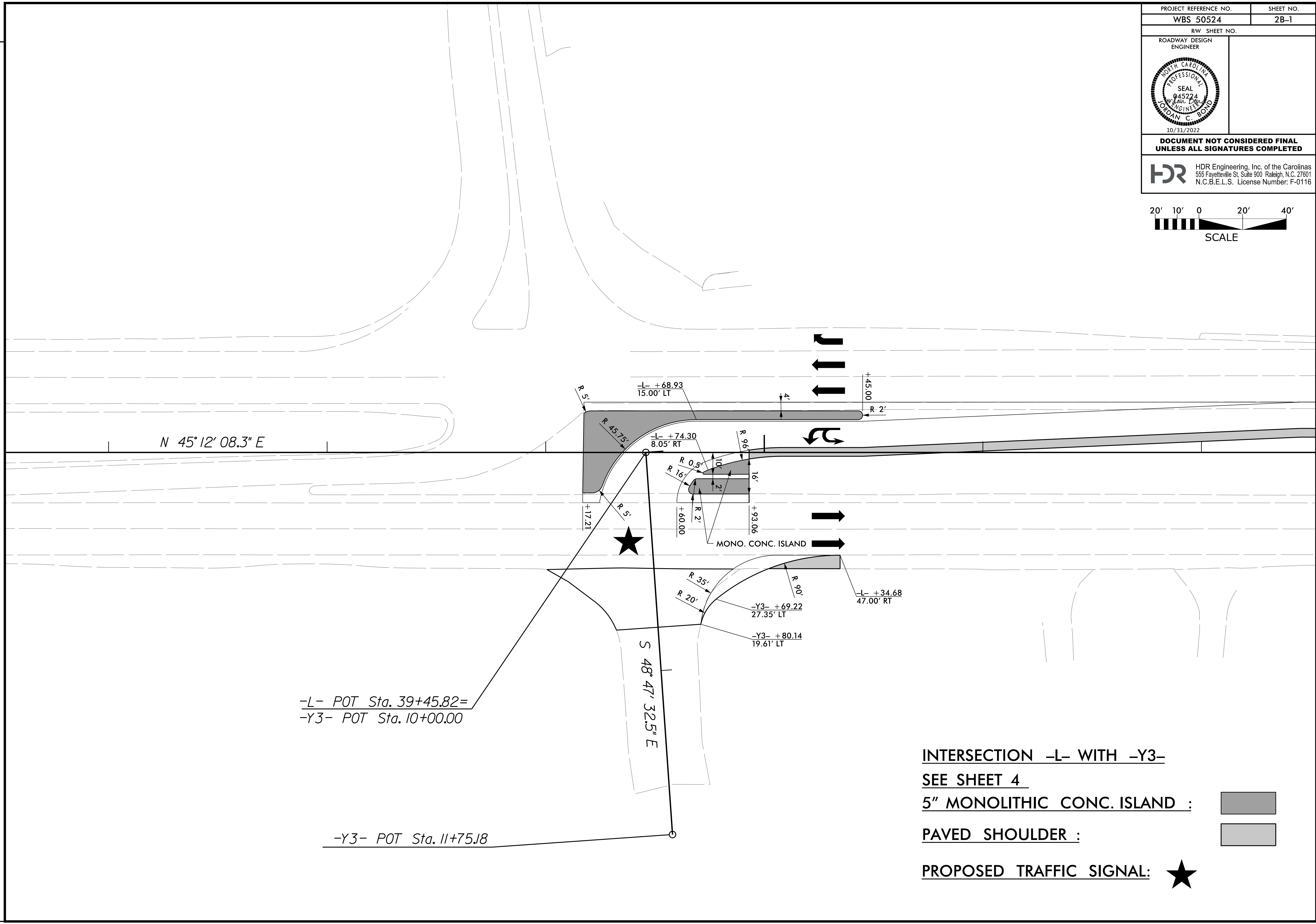
LINE	FROM STATION	TO STATION
-Y3-	10 + 47.11	10 + 80.14

PLOT DRIVER: NCDOT_color_eng_50.plt
 USER: CHARRIS
 FILE: NCDOT\2017\NCDOT_Div_3_GESC_0n-Coll\NCDOT-Div_3_GESC_Svcs\6.0_CAD_BITMAP\6.2_WTP\WB48864\Roadway\Proj\48864_RDY_TYP.dgn
 PENTABLE: NCDOT_pshp.plt
 DATE: 10/26/2022
 TIME: 11:51:12 AM
 REVISIONS

PROJECT REFERENCE NO. WBS 50524	SHEET NO. 2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	






REVISIONS



$-L-$ POT Sta. 39+45.82=
 $-Y3-$ POT Sta. 10+00.00

$-Y3-$ POT Sta. 11+75.18

INTERSECTION $-L-$ WITH $-Y3-$
SEE SHEET 4
5" MONOLITHIC CONC. ISLAND : 
PAVED SHOULDER : 
PROPOSED TRAFFIC SIGNAL: 

PLOT DRIVER: NCDOT_color_eng_50.plt
 USER: CHARRIS
 FILE: \

PENTABLE: NCDOT_pshp.plt
 DATE: 10/26/2022
 TIME: 11:57:11 AM

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

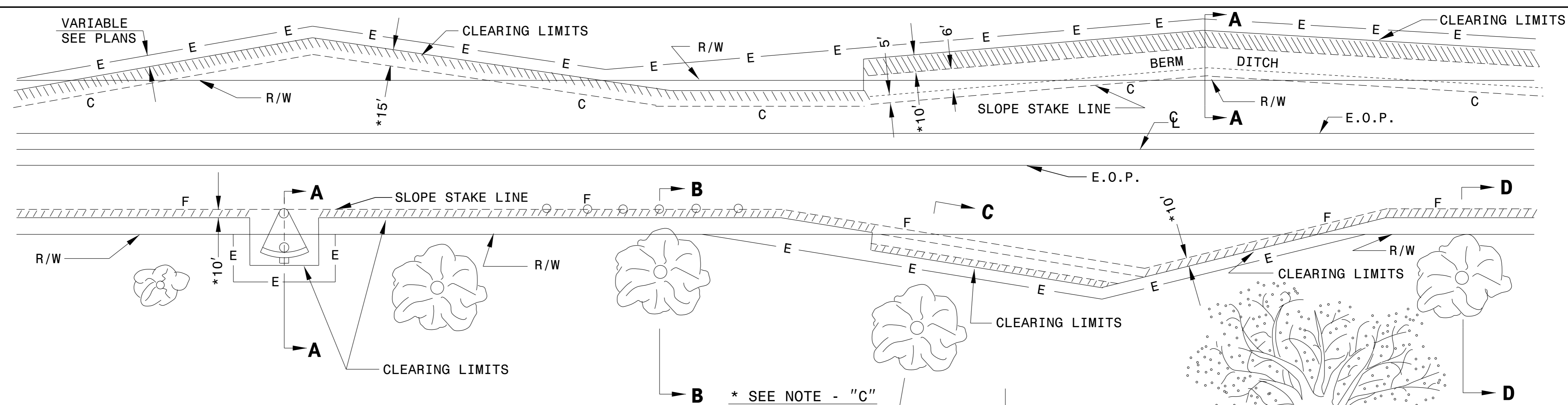
ENGLISH DETAIL DRAWING FOR METHOD OF CLEARING MODIFIED METHOD - III

SHEET 1 OF 1 200D03

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR METHOD OF CLEARING MODIFIED METHOD - III

SHEET 1 OF 1 200D03



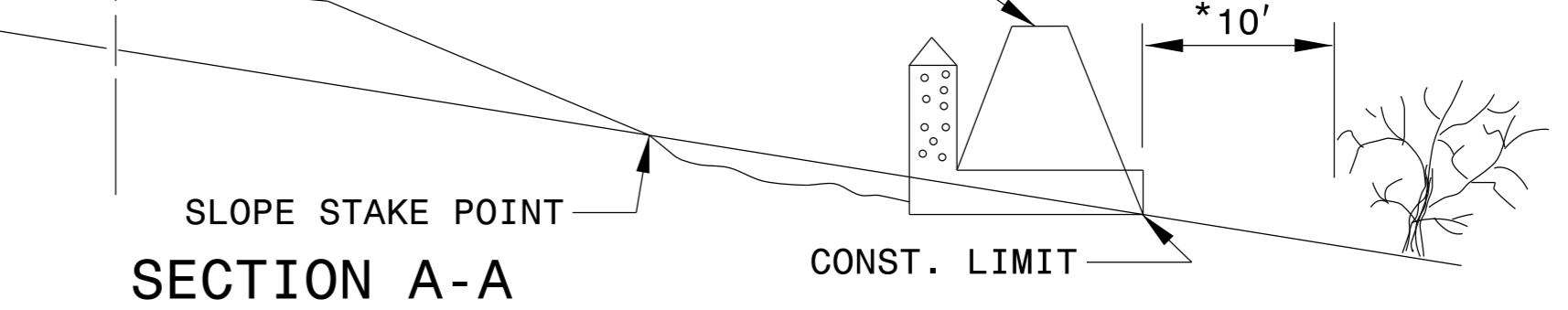
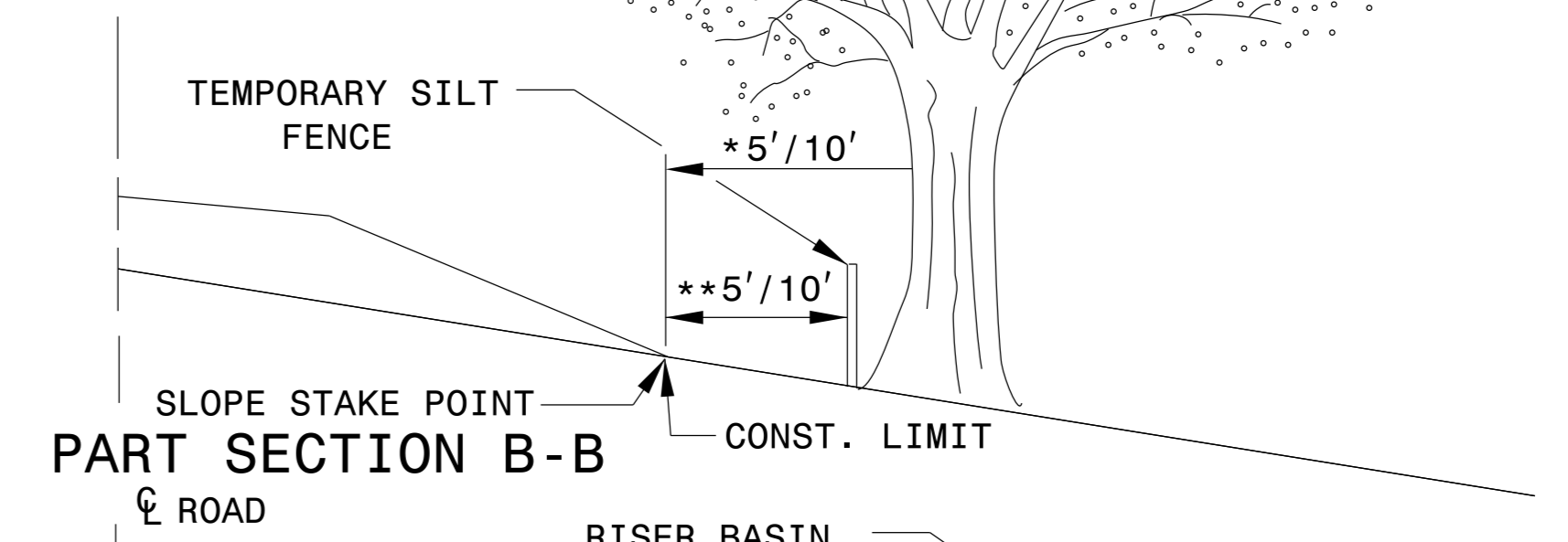
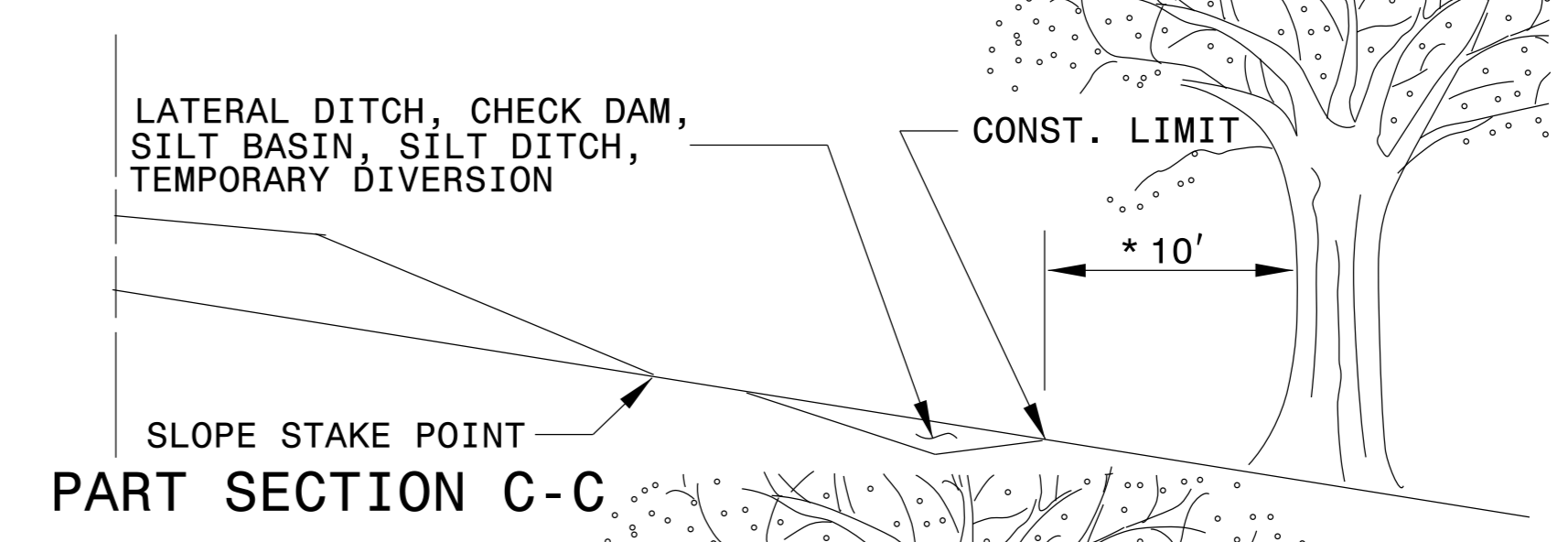
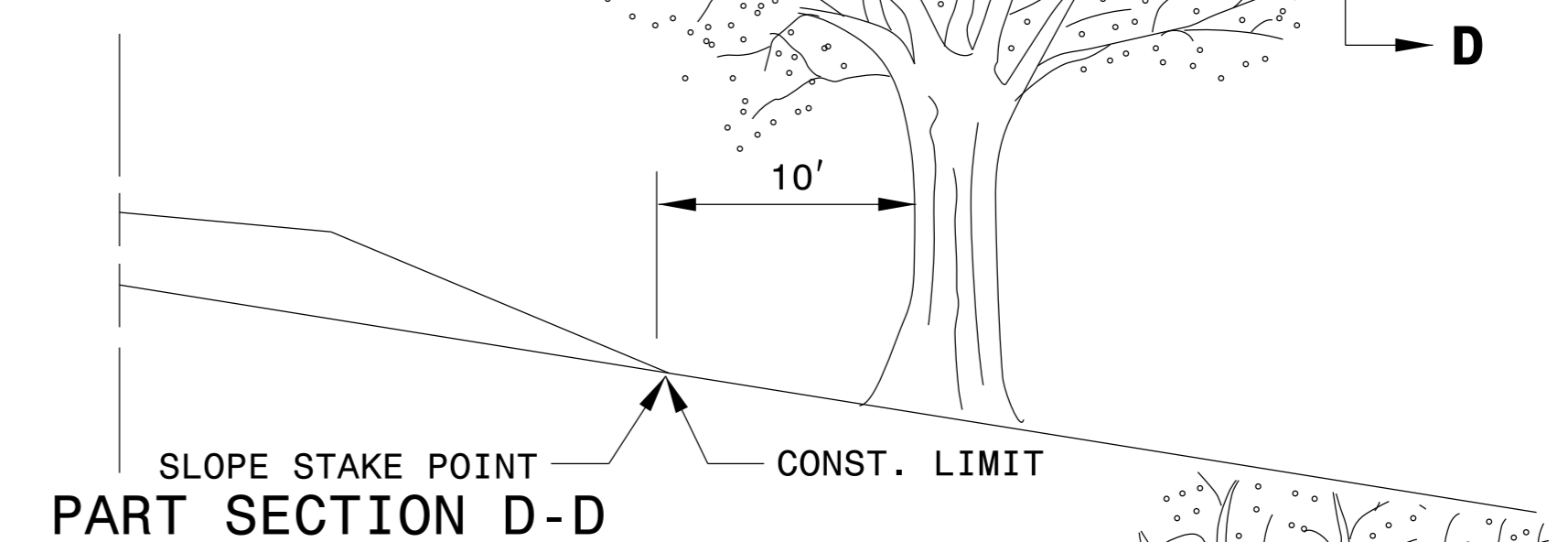
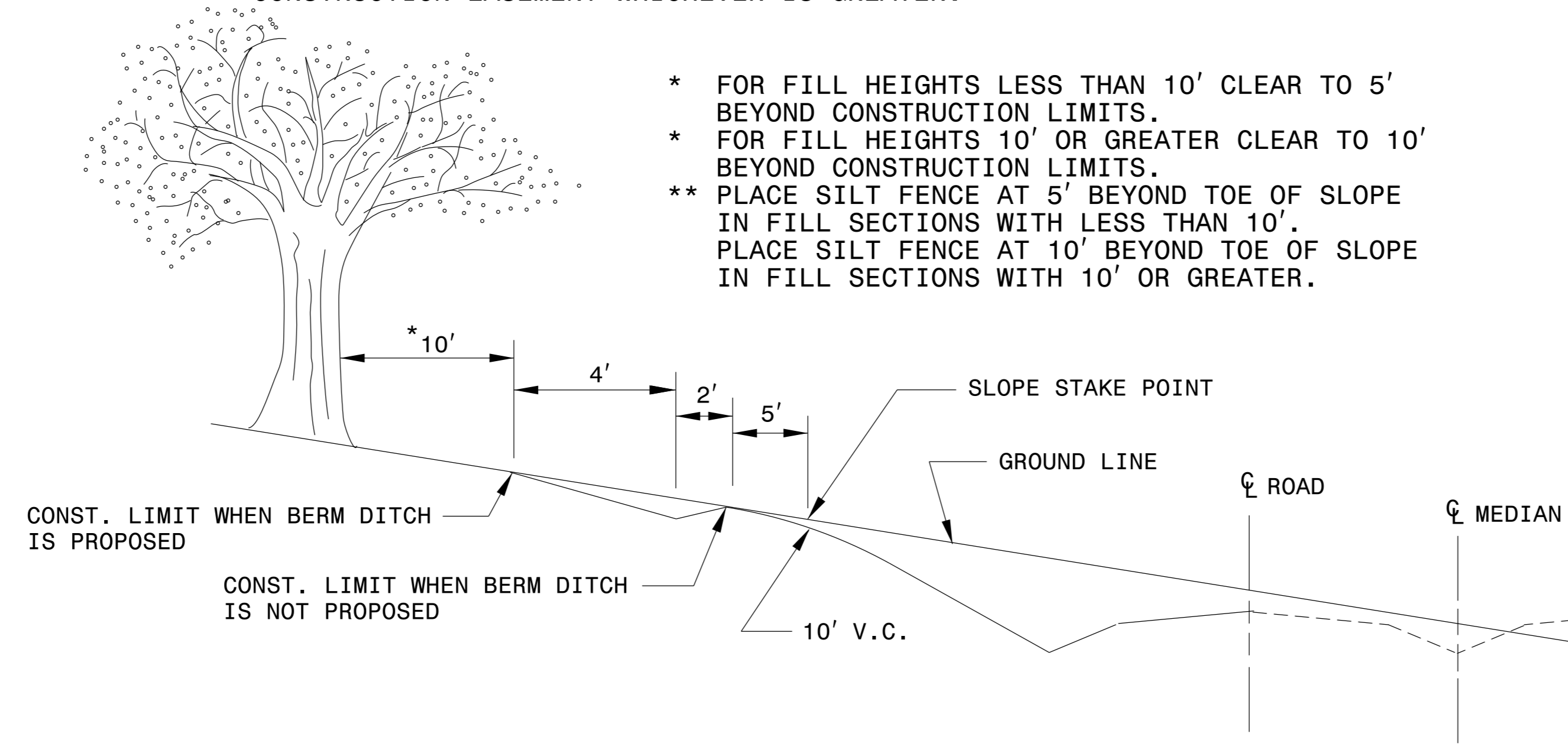
GENERAL NOTES:

1. REMOVE TREES OUTSIDE THE CLEARING LIMIT WHEN, IN THE OPINION OF THE ENGINEER, THE UTILITY OF A TREE WILL BE DESTROYED BY THE CONSTRUCTION OR THE CLEARING OPERATION.
2. CLEAR IN ACCORDANCE WITH THIS STANDARD EXCEPT WHERE ADDITIONAL CLEARING IS REQUIRED FOR SAFETY AS SHOWN ON THE PLANS.

METHOD III CLEARING LIMITS

- (A) CUTS -- CLEAR TO CONSTRUCTION LIMITS.
- (B) FILLS - CLEAR TO 5'/10' * BEYOND CONSTRUCTION LIMITS, UNLESS SPECIFIED OTHERWISE BY WETLAND PERMIT.
- (C) CUTS AND FILLS - WHEN THE CLEARING LIMITS (A AND B) EXCEED THE PROPOSED R/W OR PROPOSED CONSTRUCTION EASEMENTS, THEN CLEAR ONLY TO THE R/W OR CONSTRUCTION EASEMENT WHICHEVER IS GREATER.

- * FOR FILL HEIGHTS LESS THAN 10' CLEAR TO 5' BEYOND CONSTRUCTION LIMITS.
- * FOR FILL HEIGHTS 10' OR GREATER CLEAR TO 10' BEYOND CONSTRUCTION LIMITS.
- ** PLACE SILT FENCE AT 5' BEYOND TOE OF SLOPE IN FILL SECTIONS WITH LESS THAN 10'. PLACE SILT FENCE AT 10' BEYOND TOE OF SLOPE IN FILL SECTIONS WITH 10' OR GREATER.



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: T.S.S. DATE: FEB. 2000
 MODIFIED BY: K.A.K. DATE: AUG. 2016
 CHECKED BY: DATE:
 FILE SPEC.: kkempf/english/0200d301.dgn

5/14/99
C:\TIME\SS\DRAWING\CONSTRUCTION\SS\USER\NAME

COMPUTED BY: CEH DATE: 8/31/22
 CHECKED BY: DATE:

PROJECT NO.	SHEET NO.
WBS 50524	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUMMARY OF EARTHWORK
 IN CUBIC YARDS

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
L Sta. 39+17.21	L Sta. 46+85.00	271	269	0	2
Y3 Sta. 10+56.23	Y3 Sta. 10+80.14	9	0	0	9
SUBTOTALS:		280	269	0	11
TOTALS:		280	269	0	11
Material for Shoulder Construction :			88	88	
Waste In Lieu of Borrow :				-11	-11
PROJECT TOTALS:		280	357	77	0
Est. 5% To Replace Top Soil on Borrow Pit				4	
GRAND TOTALS:		280	357	81	0
SAY:		300		100	

Note: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, and Removal of Existing Pavement will be paid for at the contract lump sum price for grading.

EST. SHALLOW UNDERCUT = 50 CY
 EST. CLASS IV SUBGRADE STABILIZATION = 50 TONS

PAVEMENT REMOVAL SUMMARY
 IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	39+18.21	46+85.00	LT	293.77			
-L-	39+17.67	39+93.06	RT	34.94			
			TOTAL:	328.71			
			SAY:	330			

RAI-5000942LPH

COMPUTED BY: CGM DATE: 11/14/2022
CHECKED BY: DWL DATE: 11/14/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO. SHEET NO.
WBS-50524 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".

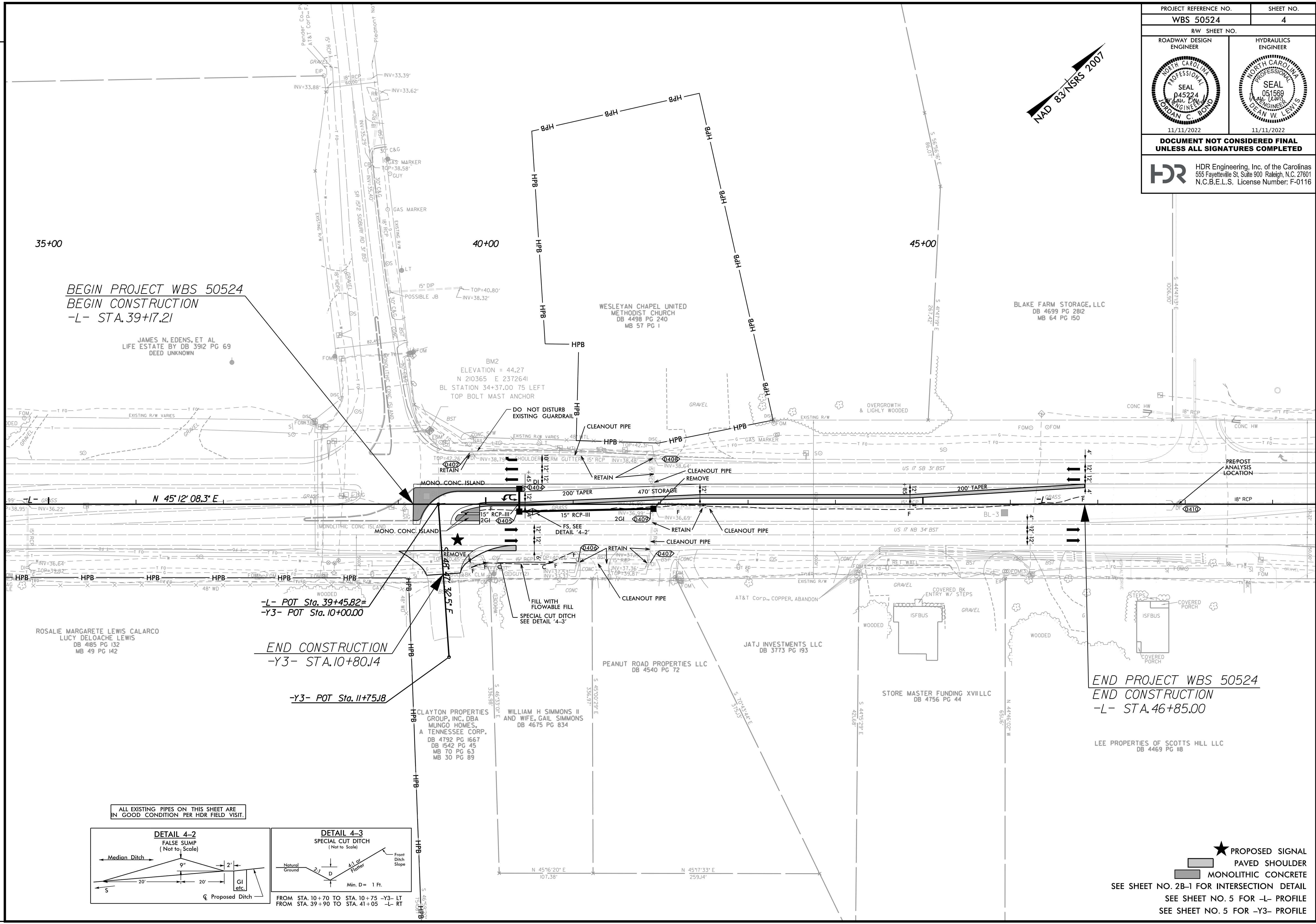
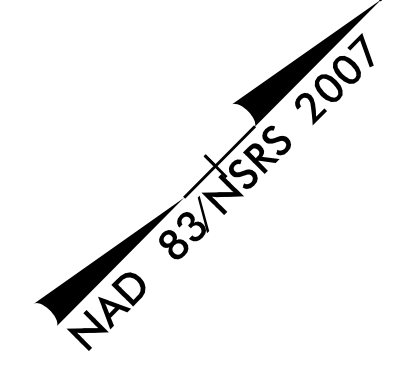
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

Table with columns: LINE & STATION, OFFSET, STRUCTURE NUMBER, R. C. PIPE CLASS III, R. C. PIPE CLASS IV, ENDWALLS, REINFORCED ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES, AND HOOD, CONCRETE TRANSITIONAL SECTION, and REMARKS. Includes sub-headers for SIZE, THICKNESS OR GAUGE, and various pipe specifications.

SHEET TOTALS: 172
PROJECT TOTALS: 172

ABBREVIATIONS
C.A.A. CORRUGATED ALUMINIUM ALLOY
C.B. CATCH BASIN
C.S. CORRUGATED STEEL
D.I. DROP INLET
G.D.I. GRATED DROP INLET
H.D.P.E. HIGH DENSITY POLYETHYLENE
J.B. JUNCTION BOX
M.H. MANHOLE
N.S. NARROW SLOT
P.V.C. POLYVINYL CHLORIDE
R.C. REINFORCED CONCRETE
T.B.D.I. TRAFFIC BEARING DROP INLET
T.B.J.B. TRAFFIC BEARING JUNCTION BOX
W.S. WIDE SLOT

PROJECT REFERENCE NO. WBS 50524	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	



**BEGIN PROJECT WBS 50524
BEGIN CONSTRUCTION
-L- STA. 39+17.21**

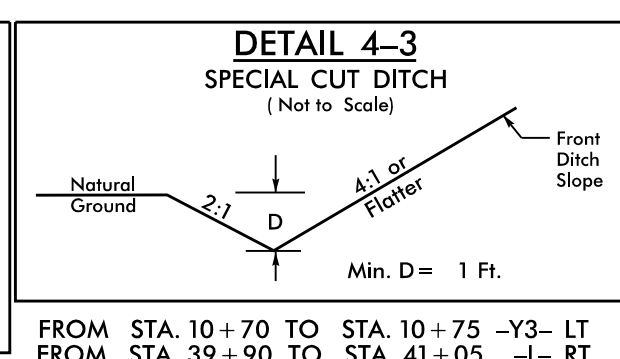
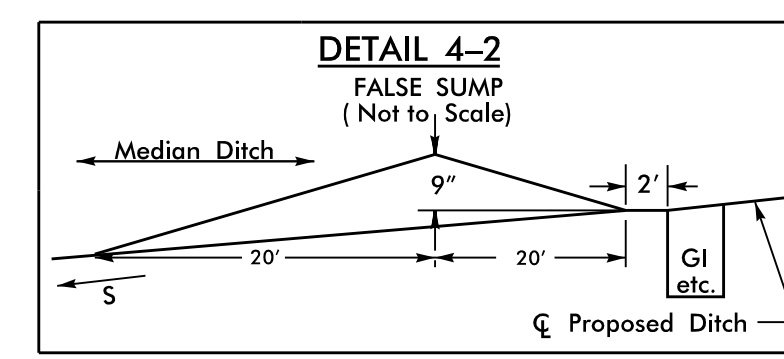
**-L- POT Sta. 39+45.82 =
-Y3- POT Sta. 10+00.00**

**END CONSTRUCTION
-Y3- STA. 10+80.14**

-Y3- POT Sta. 11+75.18

**END PROJECT WBS 50524
END CONSTRUCTION
-L- STA. 46+85.00**

ALL EXISTING PIPES ON THIS SHEET ARE
IN GOOD CONDITION PER HDR FIELD VISIT.



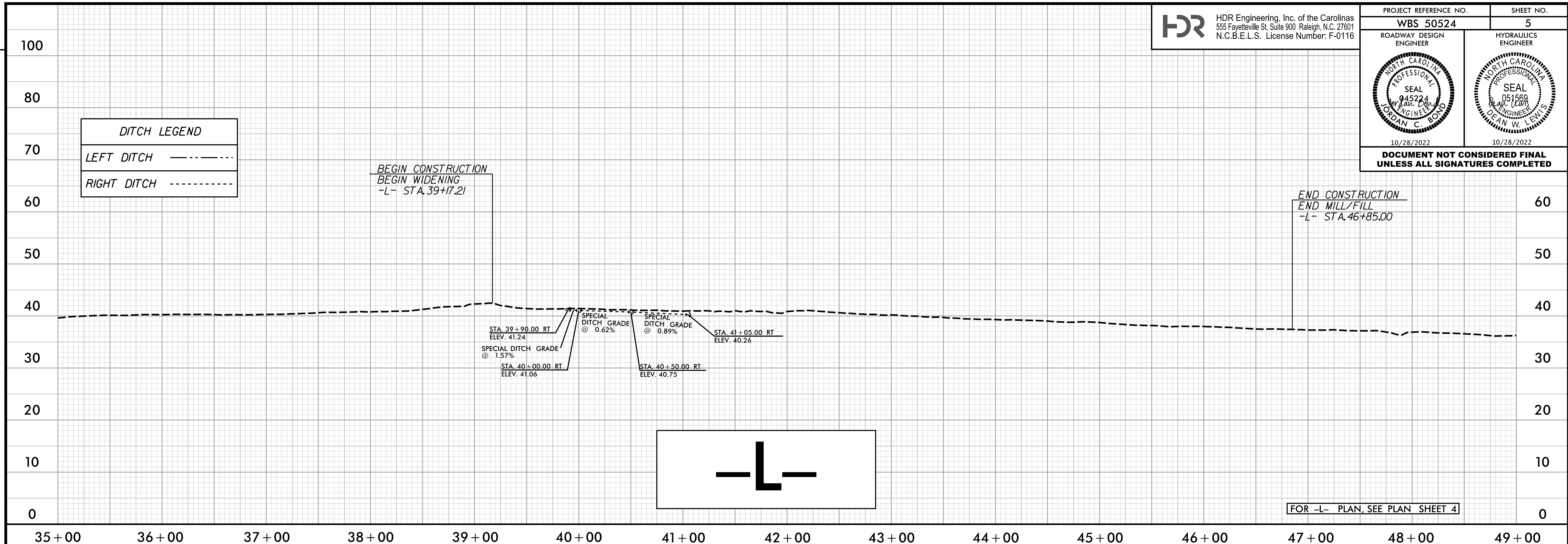
FROM STA. 10+70 TO STA. 10+75 -Y3- LT
FROM STA. 39+90 TO STA. 41+05 -L- RT

PLOT DRIVER: NCDOT_color_eng_50.plt
 USER: CHARRIS
 FILE: NCDOT\2017\NCDOT_Div_3_GESC_On-Coll\NCDOT-Div_3_GESC_Svcs\6.0_CAD\BTM\6.2_WTP\WB48864_Roadway\Pro\48864_RDY_FSH04.dgn
 PENTABLE: NCDOT_pshp.plt
 TIME: 9:51:59 AM
 DATE: 11/11/2022

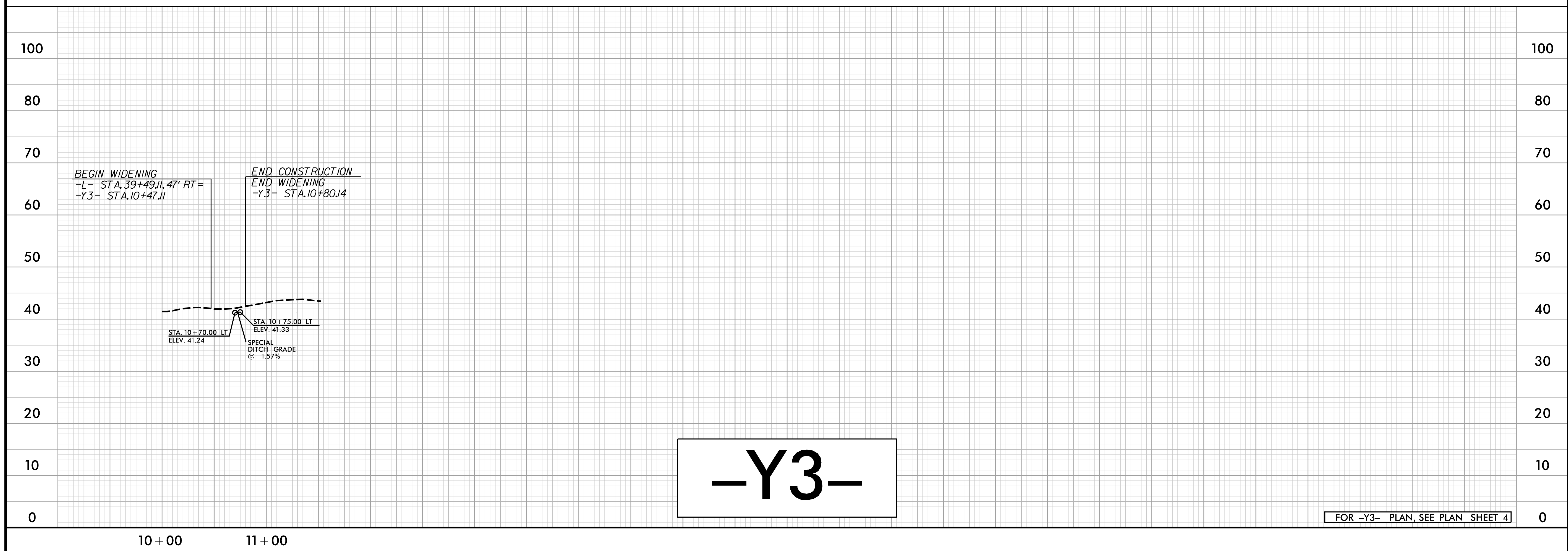
REVISIONS

PROPOSED SIGNAL
 PAVED SHOULDER
 MONOLITHIC CONCRETE
 SEE SHEET NO. 2B-1 FOR INTERSECTION DETAIL
 SEE SHEET NO. 5 FOR -L- PROFILE
 SEE SHEET NO. 5 FOR -Y3- PROFILE

PROJECT REFERENCE NO. WBS 50524	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



FOR -L- PLAN, SEE PLAN SHEET 4



FOR -Y3- PLAN, SEE PLAN SHEET 4

REVISIONS

PLOT DRIVER: NCDOT_color_eng_50.plt
USER: CHARRIS
FILE: \\\n
PENTABLE: NCDOT_pshp.plt.tdi
DATE: 10/26/2022
TIME: 11:57:15 AM

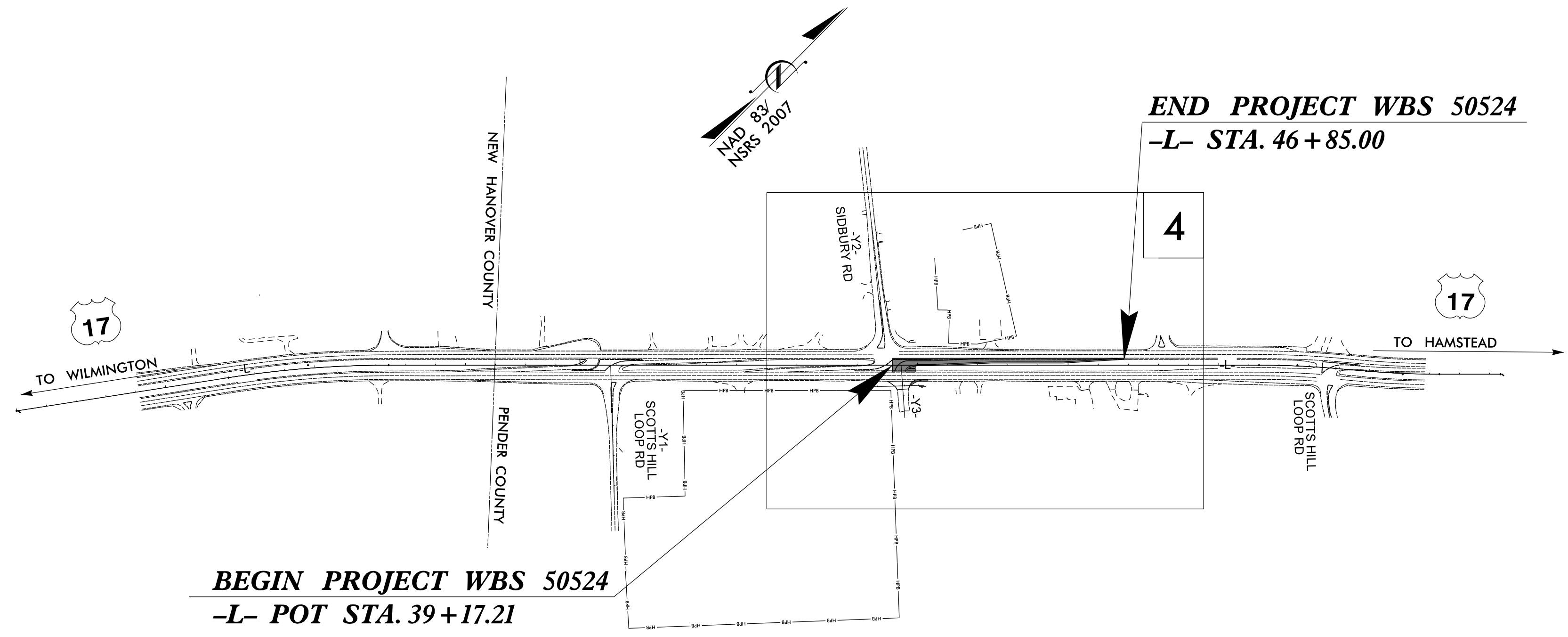
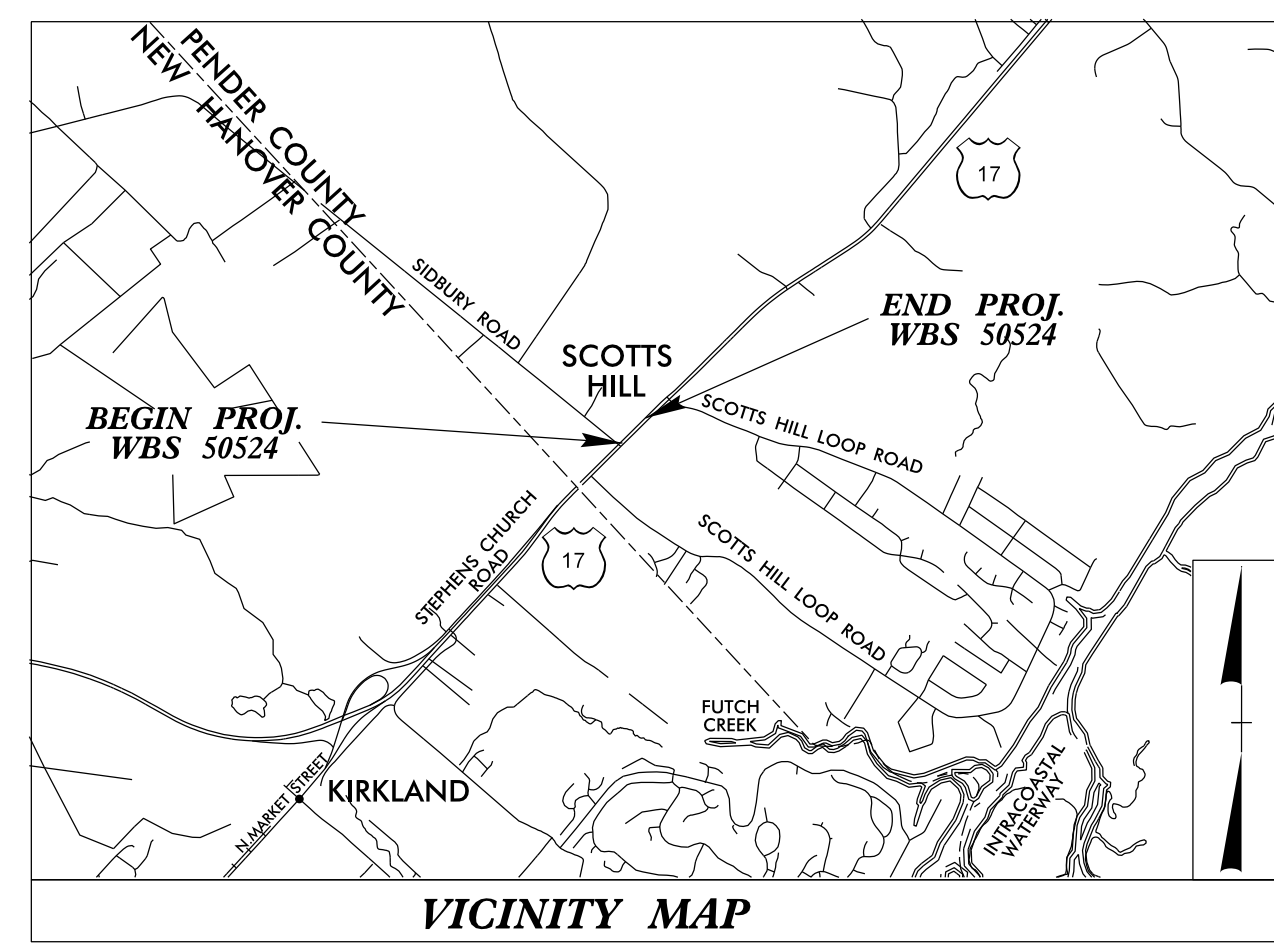
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	WBS 50524	RW01	02

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SURVEY CONTROL & EXISTING CENTERLINES,
PENDER COUNTY

US 17 FROM SIDBURY RD TO SCOTTS HILL LOOP ROAD

(NO RIGHT OF WAY OR EASEMENTS ACQUIRED ON THIS PROJECT)



PROJECT: WBS 50524

PROJECT: WBS 50524

22-FEB-2023 10:59 S:\Units\Div03\Projects\MISC-INTERSTATE\Misc\Working\US 17 at Scotts Hill\Working\Control Sheets\230222 revised RW01\48864_Is_rw01.dgn

**GRAPHIC SCALE
SHEETS NOT
TO SCALE**

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "P-122" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 205424.53(ft) EASTING: 2360493.54(ft) ELEVATION: 48.644(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000012368 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "P-122" TO -L- STATION 10+00.00 IS N 75-09'44.7" E 10590.91(ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

**LOCATION AND SURVEYS UNIT
DIVISION 3
5310 BARBADOS BLVD, SUITE 102
CASTLE HAYNE, NORTH CAROLINA 28429**

2018 STANDARD SPECIFICATIONS

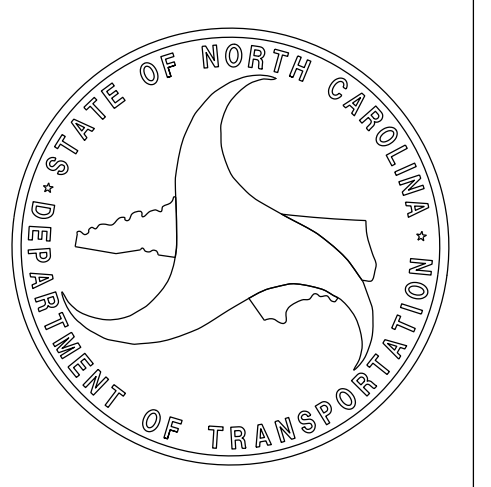
RIGHT OF WAY DATE:
N/A

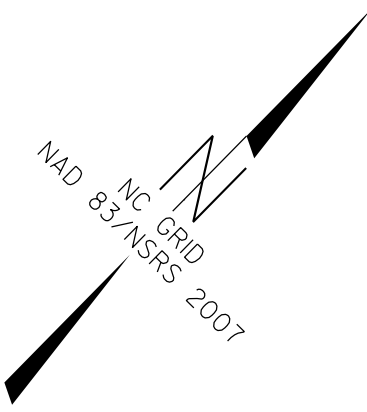
LETTING DATE:
MARCH 16, 2023

**PROFESSIONAL LAND
SURVEYOR**



DocuSigned by:
Christopher Sawyer 02/22/2023
SIGNATURE: _____ Date: _____





SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. WBS 50524	SHEET NO. RW02C-1
Location and Surveys	
LOCATION AND SURVEYS UNIT DIVISION 3 5310 BARBADOS BLVD, SUITE 102 CASTLE HAYNE, NORTH CAROLINA 28429	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	20815.934	2370759.515	N 36°17'16.3" E	711.00					
LINE									
PC	208689.035	2371180.313	N 40°44'42.3" E	527.97	08°54'52.0"(RT)	01°41'12.2"	528.51	264.79	3396.87
CURVE									
PT	209089.039	2371524.919	N 45°12'08.3" E	2888.70					
LINE									
PC	211124.431	2373574.736	N 48°06'45.8" E	299.16	05°49'15.0"(RT)	01°56'41.6"	299.29	149.77	2945.97
CURVE									
PCC	211324.171	2373797.449	N 48°06'23.3" E	291.54	05°50'00.0"(LT)	02°00'00.0"	291.67	145.96	2864.79
CURVE									
PT	211518.846	2374014.468	N 45°11'23.3" E	211.56					
LINE									
POT	211667.945	2374164.558							

EY1 POINT	N	E	BEARING	DIST
POT	209610.161	2372049.734	S 46°01'54.7" E	316.19
LINE				
POT	209390.647	2372277.301		

EY2 POINT	N	E	BEARING	DIST
POT	210595.814	2372282.346	S 51°17'36.7" E	538.98
LINE				
POT	210258.774	2372702.943		

EY3 POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	211278.902	2373742.858	S 40°21'21.7" E	13.13					
LINE									
PC	211268.894	2373751.362	S 59°07'21.2" E	263.87	37°31'59.0"(LT)	13°58'15.7"	268.65	139.34	410.10
CURVE									
PT	211133.475	2373977.834							

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

Class of survey: **AA**
 Type of GPS field procedure: RTN
 Dates of survey: December 13, 2021
 Datum/Epoch: NAD 83/ NSRS 2007
 Published/Fixed-control use: N/A RTN
 Localized around: P-122
 Northing: 205424.53
 Easting: 2360493.54
 Combined grid factor: 1.000012368
 Geoid model: G09NC
 Units: Survey Feet

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed during December 2021 and all coordinates are based on NAD 83/2007 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 27th day of October, 2022.

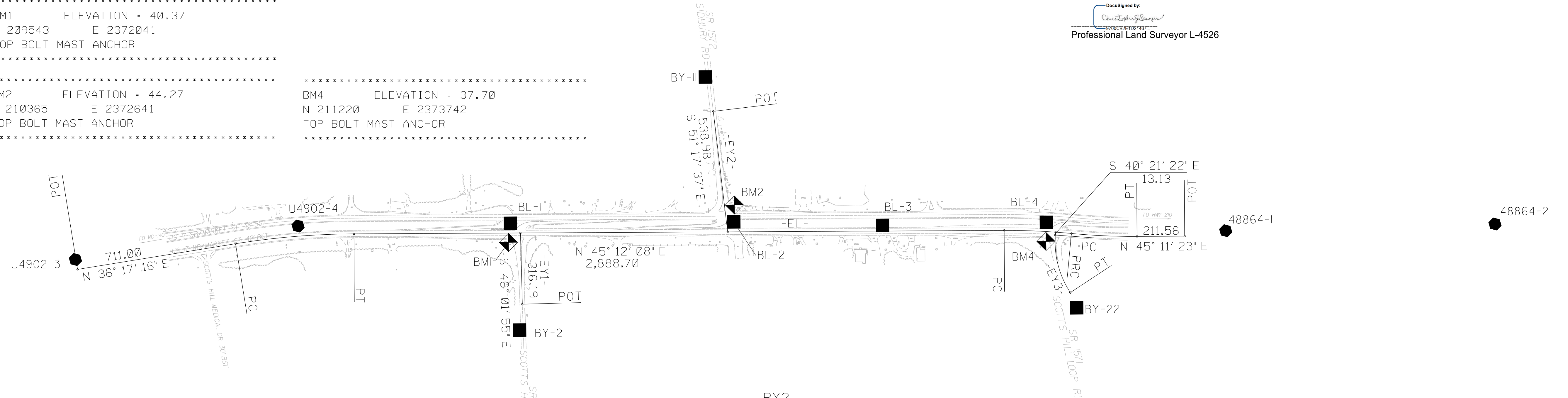
DocuSigned by:

 9700c3b5e1c21467
 Professional Land Surveyor L-4526

.....
 BM1 ELEVATION = 40.37
 N 209543 E 2372041
 TOP BOLT MAST ANCHOR

 BM2 ELEVATION = 44.27
 N 210365 E 2372641
 TOP BOLT MAST ANCHOR

 BM4 ELEVATION = 37.70
 N 211220 E 2373742
 TOP BOLT MAST ANCHOR



BL POINT	DESC.	NORTH	EAST	ELEVATION
U4902-3	GPS CAP & REBAR	208140.3760	2370722.0540	47.94
U4902-4	GPS CAP & REBAR	208939.6100	2371323.4290	39.41
BL-1	TRV PK & WASHER	209609.5870	2371987.6560	41.23
BL-2	TRV CAP & REBAR	210309.3060	2372691.1710	41.59
BL-3	TRV CAP & REBAR	210761.6150	2373173.5050	38.25
BL-4	TRV CAP & REBAR	211281.2170	2373683.0040	36.46
48864-1	GPS CAP & REBAR	211813.2165	2374277.7239	27.92
48864-2	GPS CAP & REBAR	212672.6927	2375110.1244	39.47

BY1 POINT	DESC.	NORTH	EAST	ELEVATION
BL-1	TRV PK & WASHER	209609.5870	2371987.6560	41.23
BY-2	TRV CAP & REBAR	209299.9940	2372348.8430	26.36

BY2 POINT	DESC.	NORTH	EAST	ELEVATION
BY-11	TRV CAP & REBAR	210679.7240	2372150.2830	37.32
BL-2	TRV CAP & REBAR	210309.3060	2372691.1710	41.59
BY3 POINT	DESC.	NORTH	EAST	ELEVATION
BL-4	TRV CAP & REBAR	211281.2170	2373683.0040	36.46
BY-22	TRV CAP & REBAR	211104.8460	2374045.1190	27.96

NOTES:

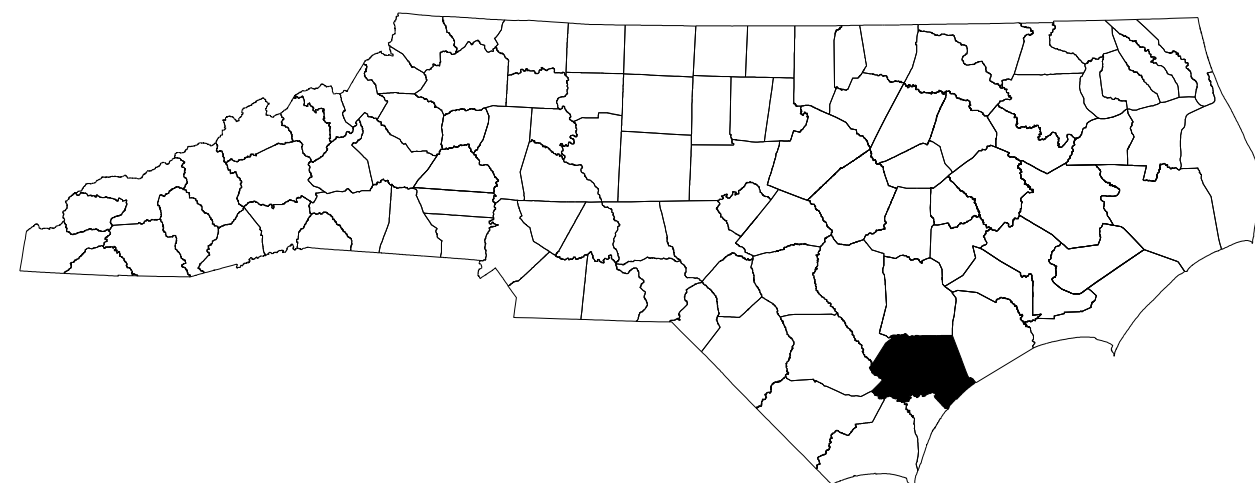
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT. THIS PROJECT SURVEYED AS 48864.

REVISIONS

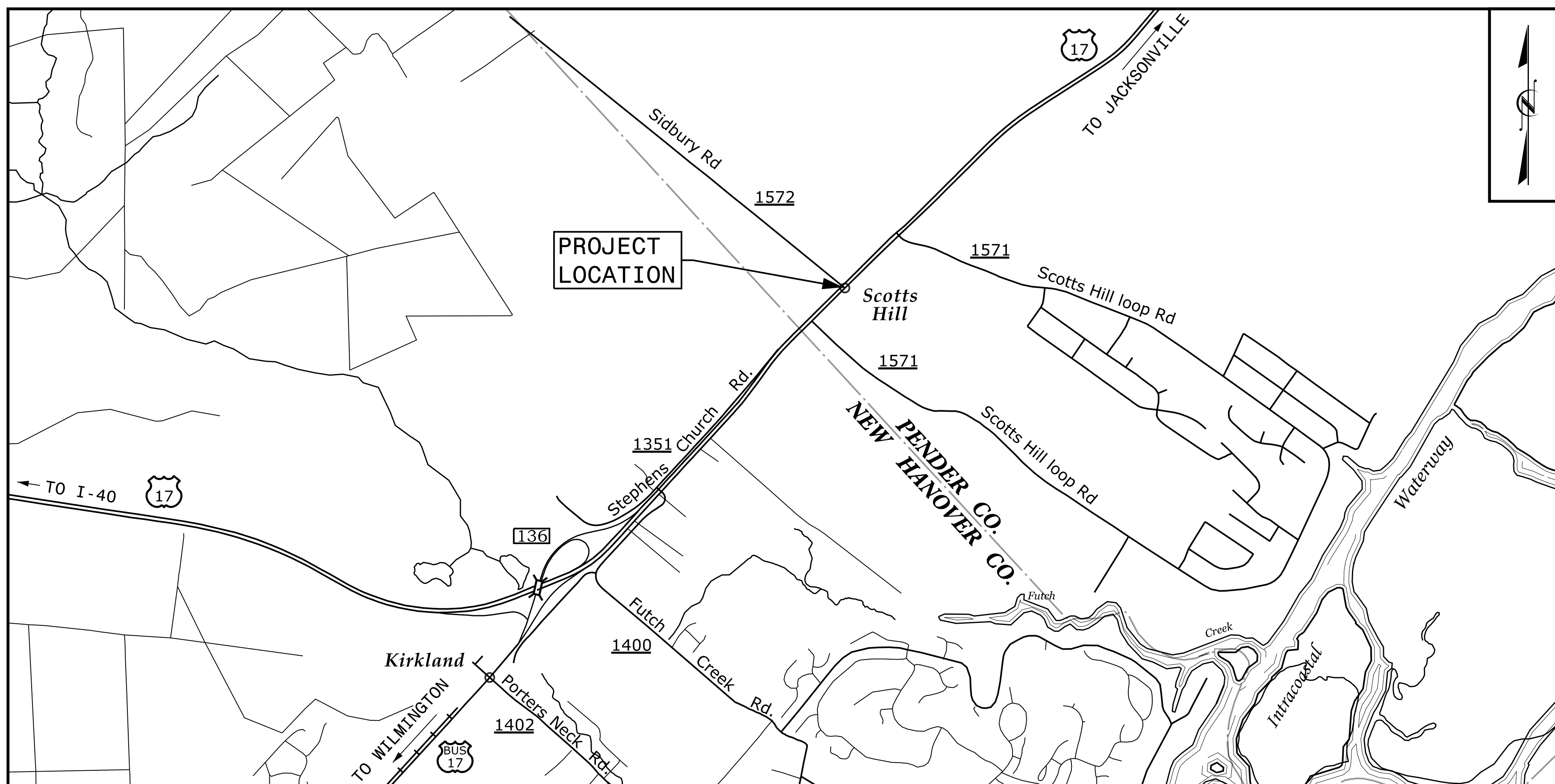
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

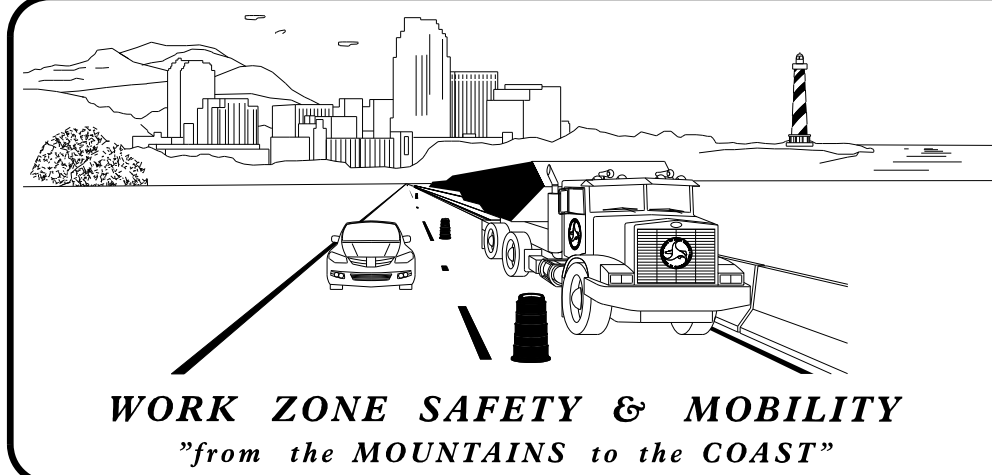
PENDER COUNTY



LOCATION: US 17 FROM SIDBURY RD TO SCOTTS HILL LOOP RD



PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
 USER: CHARNDEN
 FILE: p:\w\h\users\01\HDR_US_East_01\Documents\3322\10001938\10125092\6.0_CAD_BIM\6.2_WIP\WB48864\TrafficControl\TCP\50524_TC_TMP01.dgn
 PENTABLE: NCDOT_tcp.tbl
 TIME: 8:49:15 AM
 DATE: 11/9/2022



PLANS PREPARED BY:
 MICHELLE WARD, P.E.
 TRAFFIC CONTROL PROJECT ENGINEER
 CHRIS HARNDEN
 TRAFFIC CONTROL DESIGN ENGINEER

NCDOT CONTACTS:
 DAVID LEONARD, P.E.
 DIV. 3 PROJ. DEVELOPMENT TEAM LEAD
 DON A. PARKER, P.E.
 EASTERN WZTC ENGINEER



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-2	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES)
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING
TMP-4	TEMPORARY TRAFFIC CONTROL PHASE 1 DETAIL

SHEET NO.
TMP-1

WBS 50524

PROJECT NO.:

PLAN PREPARED BY:



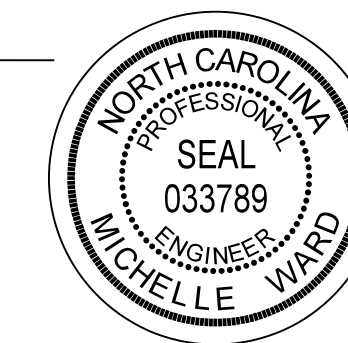
HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

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

APPROVED: Michelle Ward

DATE: 11/9/2022

SEAL




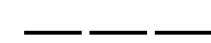
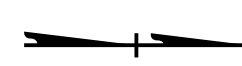

ROADWAY STANDARD DRAWINGS

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 ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER 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
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGERS
1165.01	TRUCK MOUNTED ATTENUATOR
1180.01	SKINNY-DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE 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
1205.15	PAVEMENT MARKINGS - SUPERSTREETS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

LEGEND






GENERAL

-  DIRECTION OF TRAFFIC FLOW
-  EXIST. PVMT.
-  NORTH ARROW
-  PROPOSED PVMT.

 WORK AREA

 WEDGING





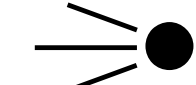


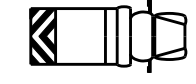
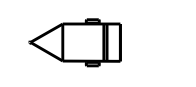
SIGNALS

-  EXISTING
-  T TEMPORARY
-  E TEMPORARY
-  M TEMPORARY
-  P TEMPORARY




PAVEMENT MARKINGS

-  EXISTING LINES
-  TEMPORARY LINES

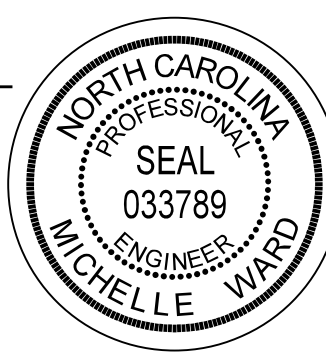

TRAFFIC CONTROL DEVICES


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

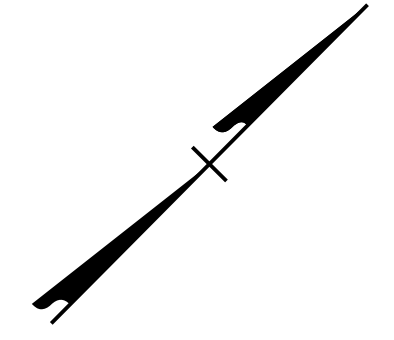
TEMPORARY SIGNING

-  PORTABLE SIGN
-  STATIONARY SIGN
-  STATIONARY OR PORTABLE SIGN

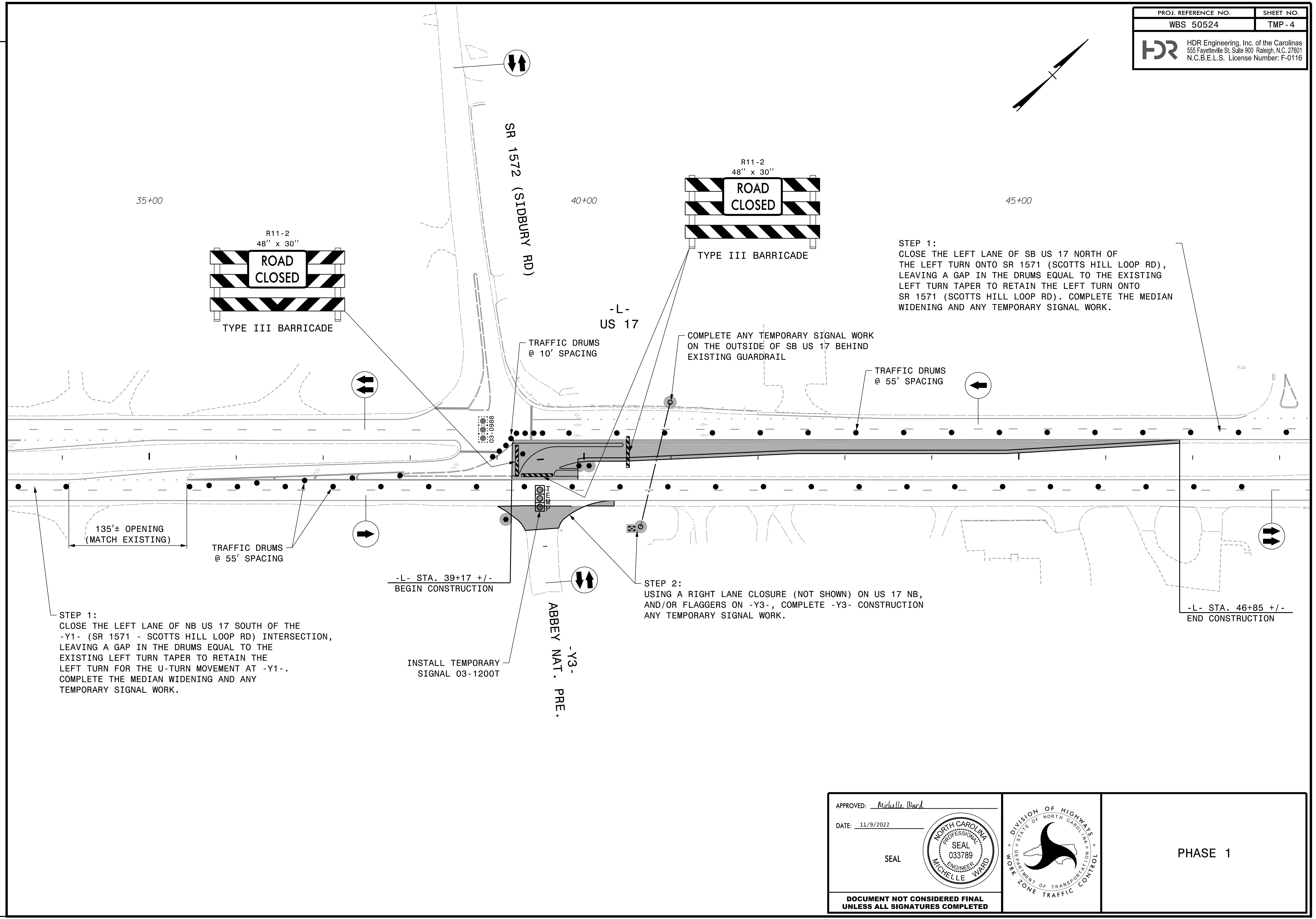
PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
 USER: CHARNDEN DATE: 11/9/2022
 PENTABLE: NCDOT_tcp.tbl
 TIME: 8:49:19 AM
 FILE: p:\p\p\h\p\uses\01\HDR_US_East_01\Documents\3322\10001938\10125092\6.O.CAD.BIM 6.2.WIP\WB48864\TrafficControl\TCP\50524_TC_TMP01A.dgn

APPROVED: <i>Michelle Ward</i> DATE: 11/9/2022 		ROADWAY STANDARD DRAWINGS & LEGEND
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

PROJ. REFERENCE NO. WBS 50524	SHEET NO. TMP -4
 HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	



REVISIONS





PLOT DRIVER: NCDOT_pdf_color_eng_50.pit
 USER: CHARNDEN
 DATE: 11/9/2022
 TIME: 8:49:35 AM
 FILE: p:\pwhdr\uses01\hdr_us_east_01\Documents\3322\10001938\10125092\6.0_CAD\BIM\6.2_WIP\WB48864\TrafficControl\TCP\50524_TC_TMP04.dgn

STEP 1:
 CLOSE THE LEFT LANE OF NB US 17 SOUTH OF THE -Y1- (SR 1571 - SCOTTS HILL LOOP RD) INTERSECTION, LEAVING A GAP IN THE DRUMS EQUAL TO THE EXISTING LEFT TURN TAPER TO RETAIN THE LEFT TURN FOR THE U-TURN MOVEMENT AT -Y1-. COMPLETE THE MEDIAN WIDENING AND ANY TEMPORARY SIGNAL WORK.

STEP 1:
 CLOSE THE LEFT LANE OF SB US 17 NORTH OF THE LEFT TURN ONTO SR 1571 (SCOTTS HILL LOOP RD), LEAVING A GAP IN THE DRUMS EQUAL TO THE EXISTING LEFT TURN TAPER TO RETAIN THE LEFT TURN ONTO SR 1571 (SCOTTS HILL LOOP RD). COMPLETE THE MEDIAN WIDENING AND ANY TEMPORARY SIGNAL WORK.

STEP 2:
 USING A RIGHT LANE CLOSURE (NOT SHOWN) ON US 17 NB, AND/OR FLAGGERS ON -Y3-, COMPLETE -Y3- CONSTRUCTION ANY TEMPORARY SIGNAL WORK.

APPROVED: <i>Michelle Ward</i> DATE: 11/9/2022 SEAL 		PHASE 1
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		


PROJECT: WBS 50524

PLOT DRIVER: NCDOT_color_eng_50.pht
 USER: CHARNDEN
 FILE: p:\pwhdr\users\01\HDR_US_East_01\Documents\3322\10001938\10125092\6_0_CAD_BITMAP\6_2_WIP_WB48864\Traffic\Pavement Marking\50524_PM_PMP01.dgn
 PENTABLE: NCDOT_PMP.tbl
 TIME: 11/9/2022 10:52:08 AM

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
PENDER COUNTY**

LOCATION: US 17 FROM SIDBURY RD TO SCOTTS HILL LOOP RD

<small>PROJECT NO.</small> WBS 50524	<small>SHEET NO.</small> PMP - 1
<small>APPROVED:</small> <u>Ron King</u>	
<small>DATE:</small> 11/9/2022	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

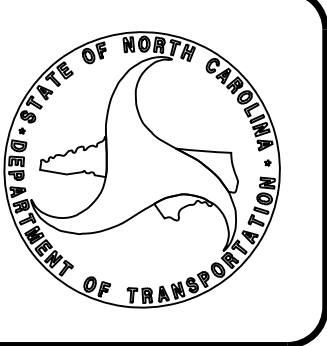
INDEX	
<u>SHEET NO.</u>	<u>DESCRIPTION</u>
PMP-1	PAVEMENT MARKING PLAN TITLE, GENERAL NOTES, ROADWAY STANDARD DRAWINGS, AND INDEX
PMP-1A AND PMP-1B	PAVEMENT MARKING DETAILS
PMP-2	PAVEMENT MARKING SHEET

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:		
<u>ROAD NAME</u>	<u>MARKING</u>	<u>MARKER</u>
ALL ROADS	THERMOPLASTIC	NON-CAST IRON SNOWFLOWABLE
D) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.		
E) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.		
I) 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.		

ROADWAY STANDARD DRAWING	
THE FOLLOWING ROADWAY STANDARDS AS APPEAR 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:	
<u>STD. NO.</u>	<u>TITLE</u>
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS (SHEET 1 OF 2 ONLY. SEE PMP-1A FOR REVISED SHEET 2 OF 2)
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1253.01	RAISED PAVEMENT MARKERS - SNOWFLOWABLE

SUMMARY OF QUANTITIES				
ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	1,508	L.F.
4695000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	429	L.F.
4700000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)	68	L.F.
4709000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 90 MILS)	72	L.F.
4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOLS (90 MILS)	8	EA.
4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	13	EA.
4905100000-N	SP	NON-CAST IRON SNOWFLOWABLE MARKERS	21	EA.

PLAN SUBMITTED TO: N.C.D.O.T. SIGNING AND DELINEATION UNIT	
JESSI LEONARD, P.E. _____	DIVISION 3 TRAFFIC ENGINEER
AYMAN I. ALQUDWAH, P.E. _____	SIGNING & DELINEATION PROJECT REGIONAL ENGINEER



PLAN PREPARED BY: HDR ENGINEERING, INC. OF THE CAROLINAS	
RON KING, P.E. _____	SIGNING & DELINEATION PROJECT DESIGN ENGINEER
CHRIS HARNDEN _____	SIGNING & DELINEATION PROJECT DESIGN TECHNICIAN

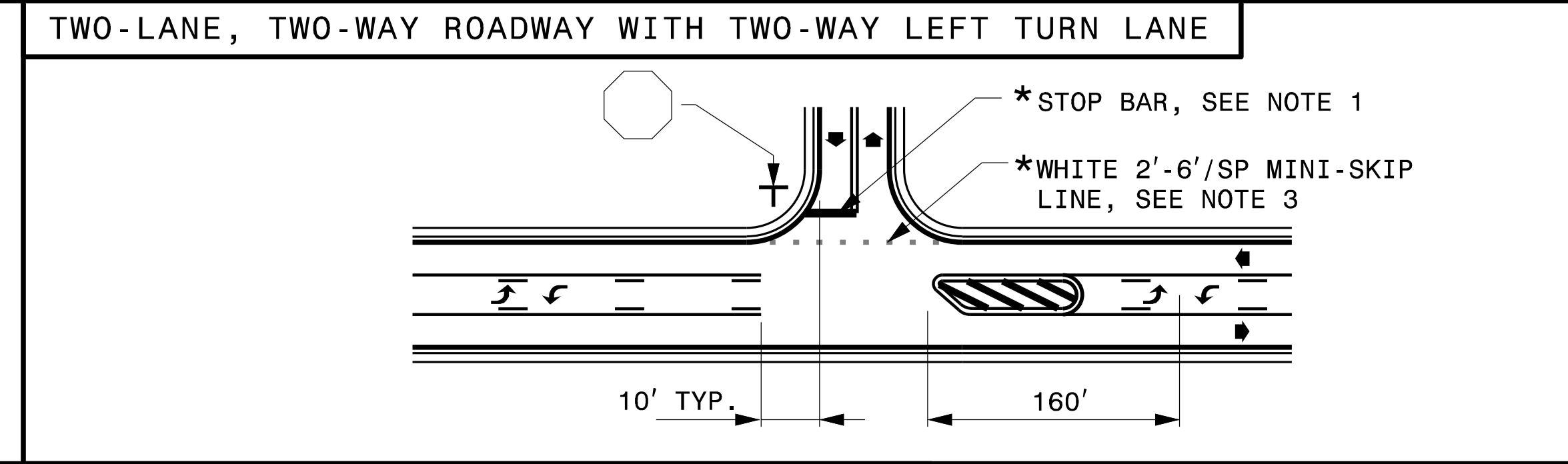
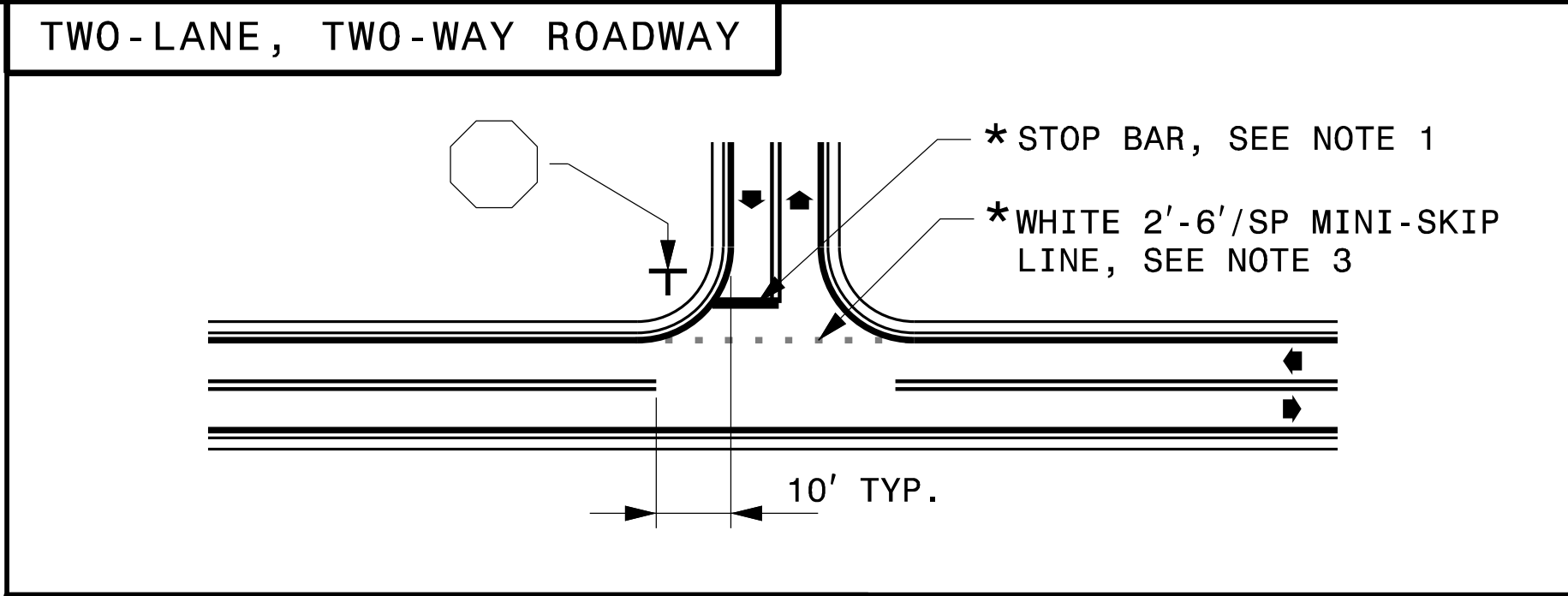
	HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116
---	---

TIP NO. WBS 50524 DocuSign
SHEET NO. MP-1A

APPROVED: *Matthew V. Springer*
DATE: 8/13/2019

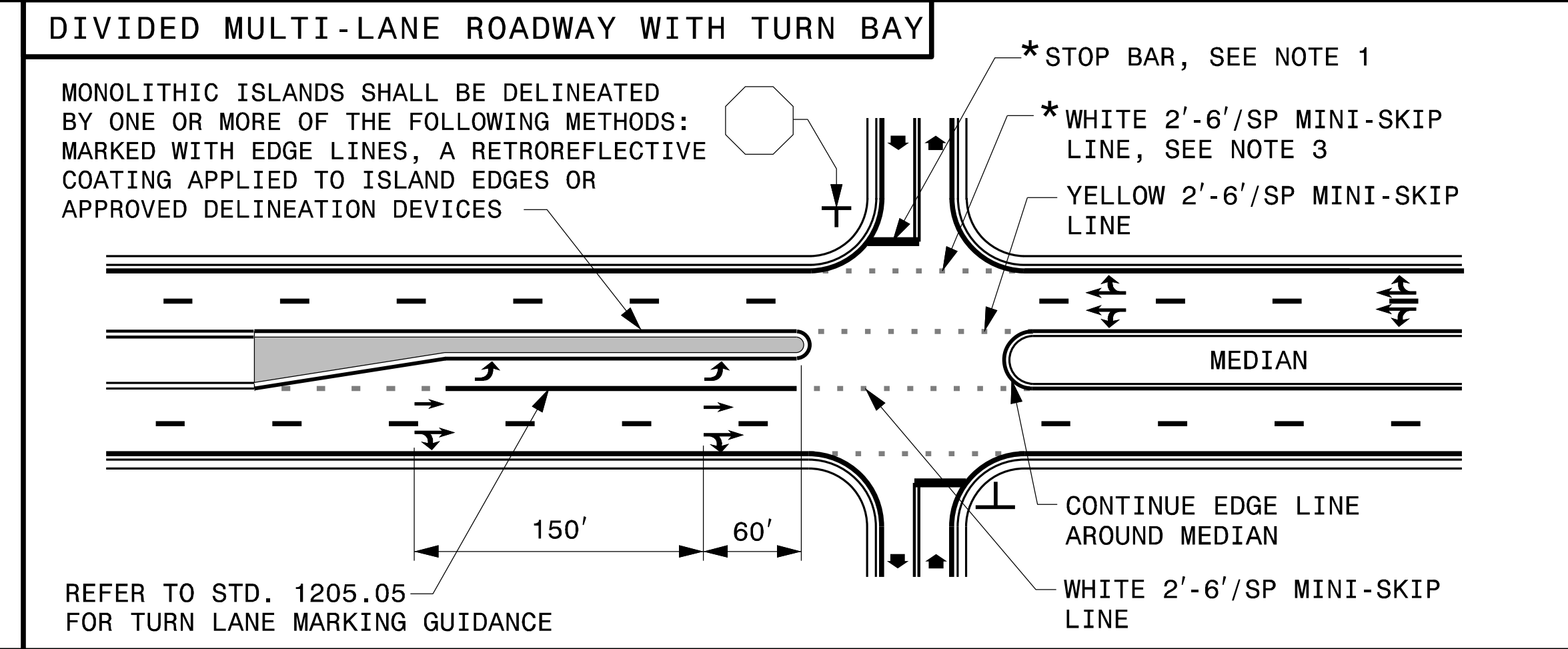
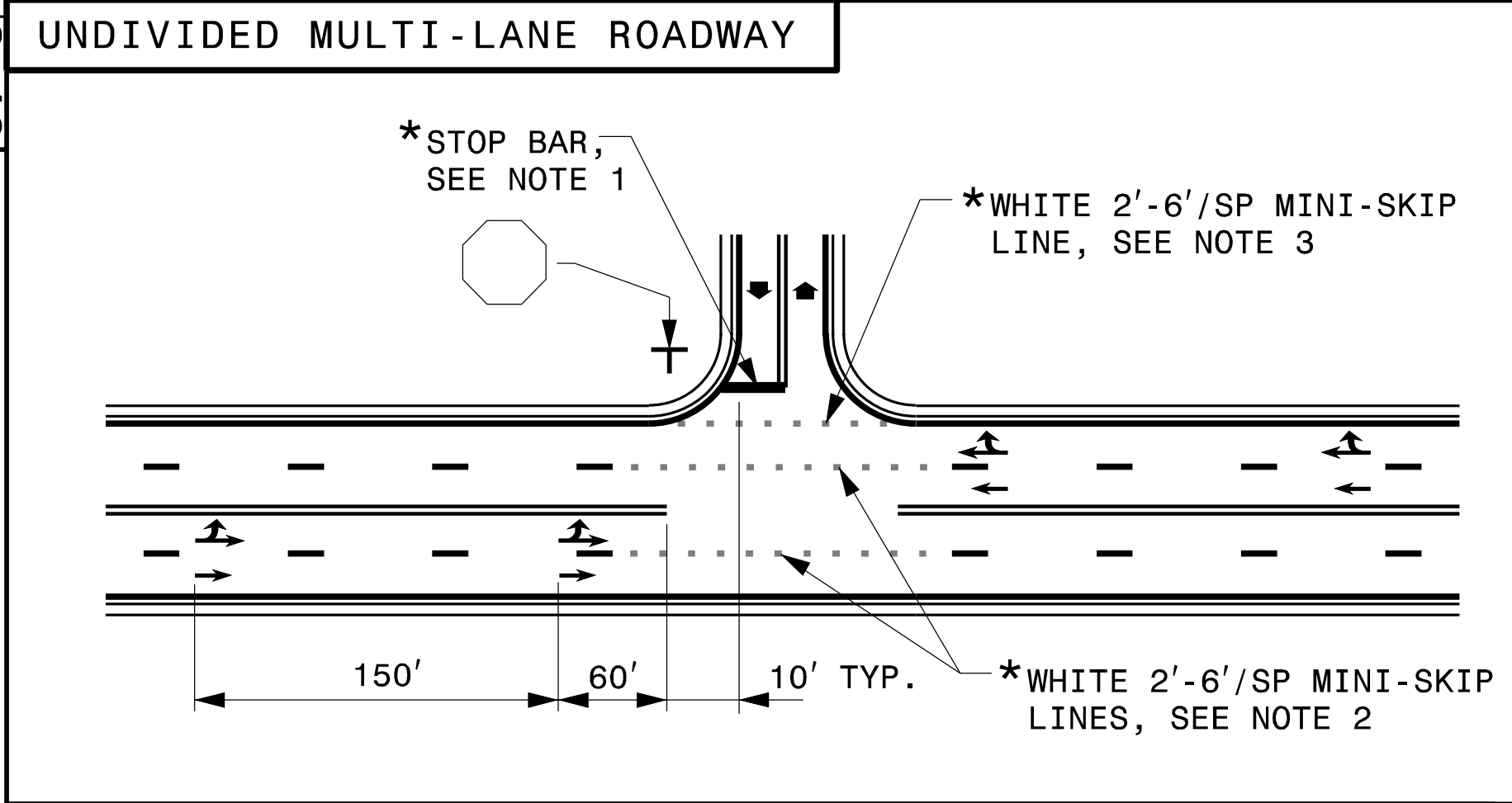
SEAL
NORTH CAROLINA PROFESSIONAL SEAL
042546
ENGINEER
MATTHEW V. SPRINGER

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.



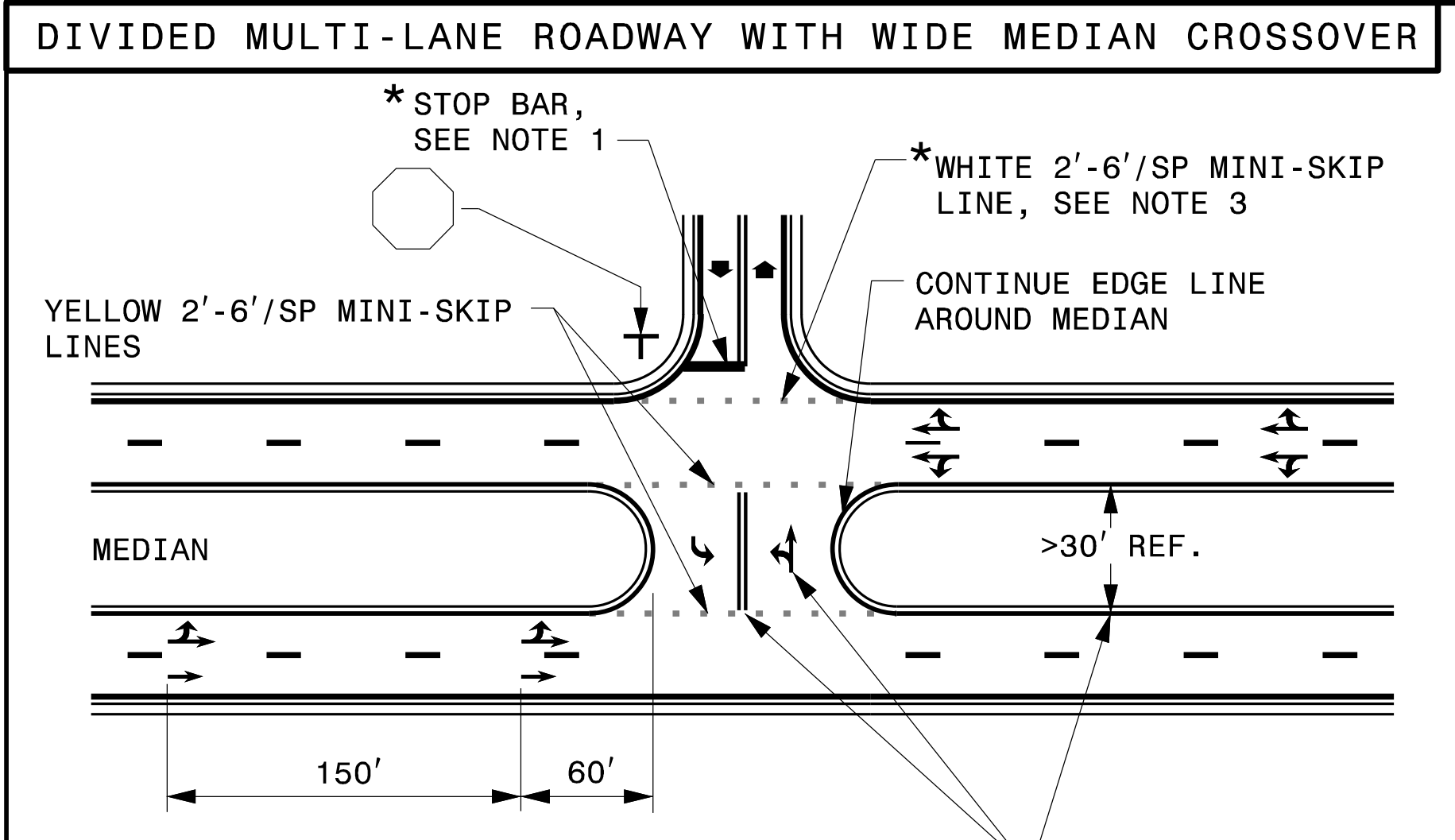
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

8-19



8-19

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
INTERSECTIONS



- GENERAL NOTES:
- 1- PLACEMENT OF STOP BARS AT NON-SIGNALIZED INTERSECTIONS IS OPTIONAL AND USED WHERE IT IS IMPORTANT TO INDICATE THE POINT WHICH VEHICLES ARE REQUIRED TO STOP. PLACE STOP BARS NO LESS THAN 4 FEET AND NO MORE THAN 30 FEET FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY. USE 10 FEET AS THE TYPICAL SETBACK DISTANCE OR AS DIRECTED BY THE ENGINEER.
 - 2- MINI-SKIP LANE LINE EXTENSIONS SHOULD BE USED AT INTERSECTIONS THAT HAVE REDUCED VISIBILITY CONDITIONS SUCH AS OFFSET, SKEWED, OR CURVED ROADWAYS.
 - 3- MINI-SKIP EDGE LINE EXTENSIONS MAY BE PLACED THROUGH INTERSECTIONS AND MAJOR DRIVEWAYS.
 - 4- REFER TO ROADWAY STANDARD DRAWINGS 1205.01, 1205.02, 1205.05, 1205.08 AND 1205.09 FOR ADDITIONAL PAVEMENT MARKING GUIDANCE.

LEGEND

STOP SIGN	STATIONARY SIGN
DIRECTION OF TRAFFIC FLOW	PAVEMENT MARKING SYMBOLS
* OPTIONAL	

SHEET 2 OF 2
1205D04

USE DOUBLE YELLOW CENTER LINE AND ARROW SYMBOLS IN MEDIAN CROSSOVER WHEN WIDTH OF MEDIAN EXCEEDS 30 FT, OTHERWISE THEY ARE NOT REQUIRED.

SHEET 2 OF 2
1205D04

REVISED PAVEMENT MARKING ROADWAY STANDARD DRAWING

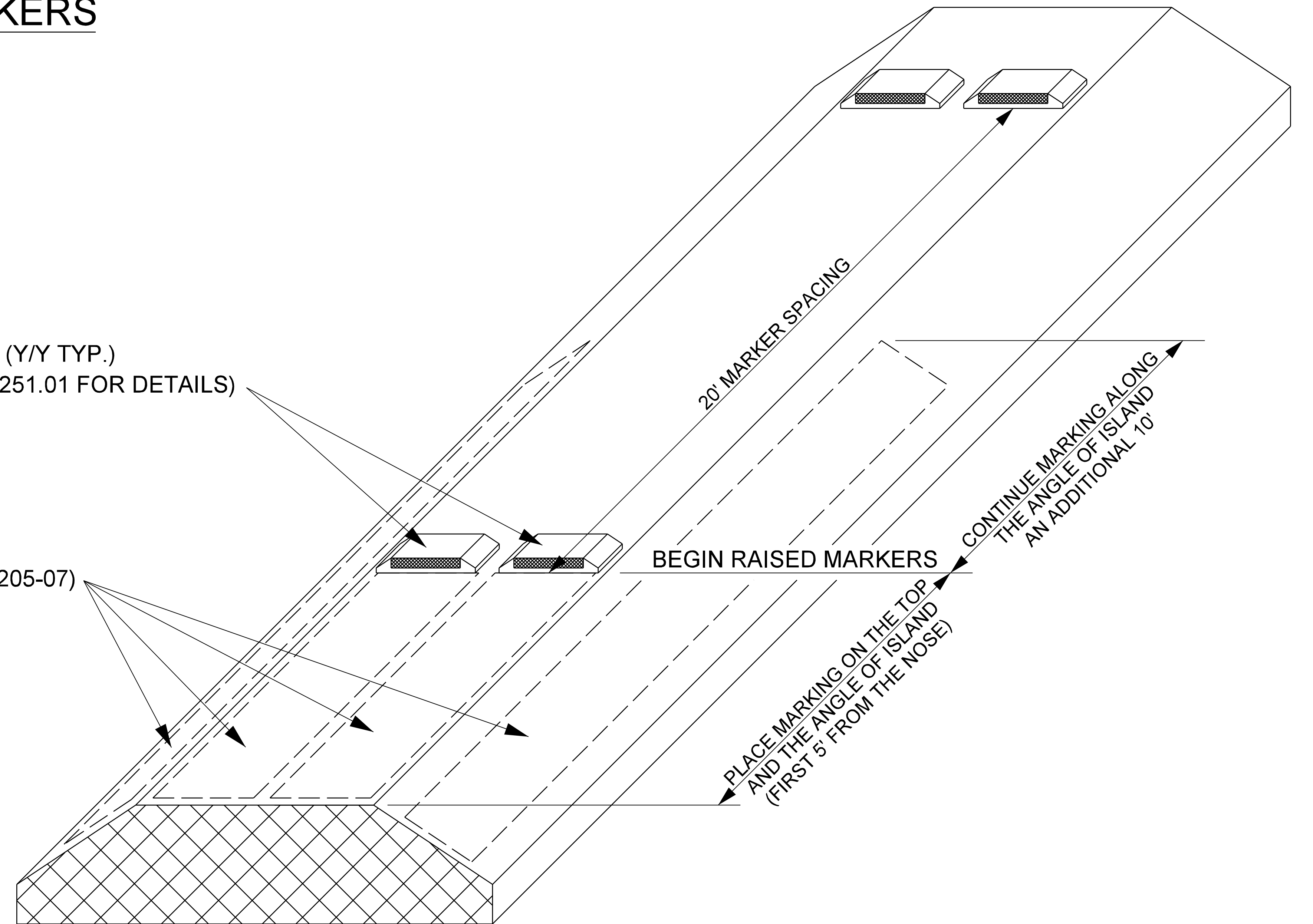
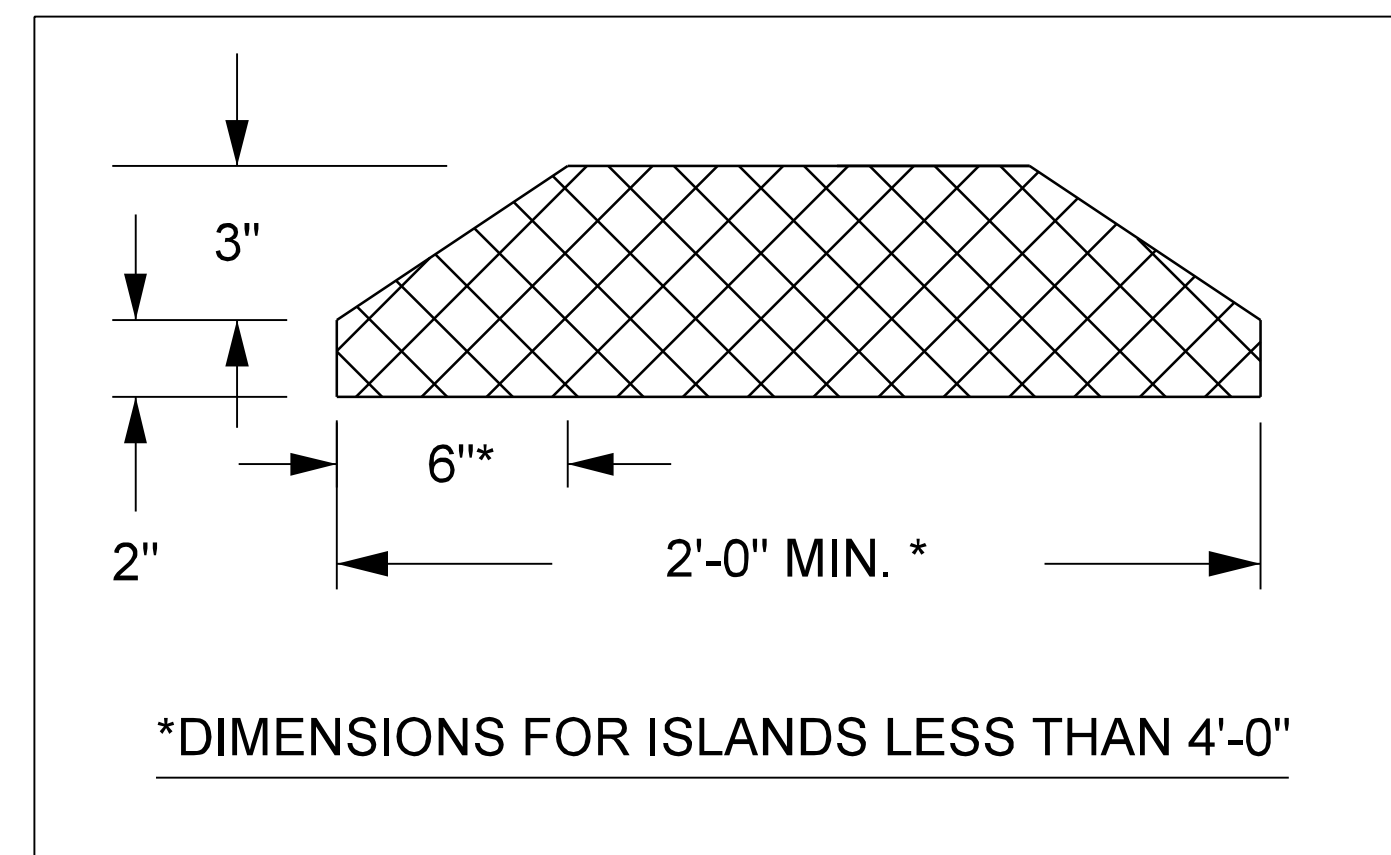
U:\13\13-11\Standards and Drawings\Drawings\2018 Standard Dwg\Division 12 Final\2050402_08-13-19.dgn
User:dstokes

PAVEMENT MARKING DETAIL

PAVEMENT MARKING AND MARKERS ON CONCRETE ISLANDS

RAISED PAVEMENT MARKER (Y/Y TYP.)
(SEE STANDARD DRAWING 1251.01 FOR DETAILS)

YELLOW PAVEMENT MARKING
(HEATED-IN-PLACE THERMOPLASTIC
WITH PRIMER SEALER PER STD. SPEC 1205-07)



20' MARKER SPACING

BEGIN RAISED MARKERS

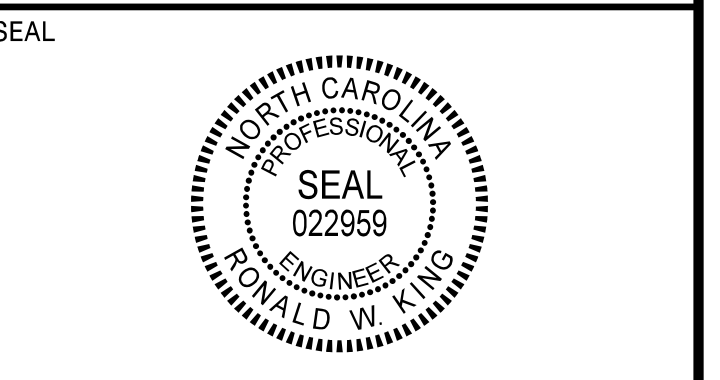
CONTINUE MARKING ALONG
THE ANGLE OF ISLAND
AN ADDITIONAL 10'

PLACE MARKING ON THE TOP
AND THE ANGLE OF ISLAND
(FIRST 5' FROM THE NOSE)

(DRAWING NOT TO SCALE)

PLOT DRIVER: NCDOT_pdf_color_eng_100.plt PENTABLE: NCDOT_PMP.tbl
 USER: CHARNDEN DATE: 12/6/2022 TIME: 4:52:59 PM
 FILE: p:\pwhdr\users\01\HDR_US_East_01\Documents\3322\10001938\10125092\6.0_CAD\BIM\6.2_WIP\WB48864\Traffic\Pavement Marking\50524_PMP\01B.dgn

APPROVED: *Ron King*
 DATE: 11/9/2022



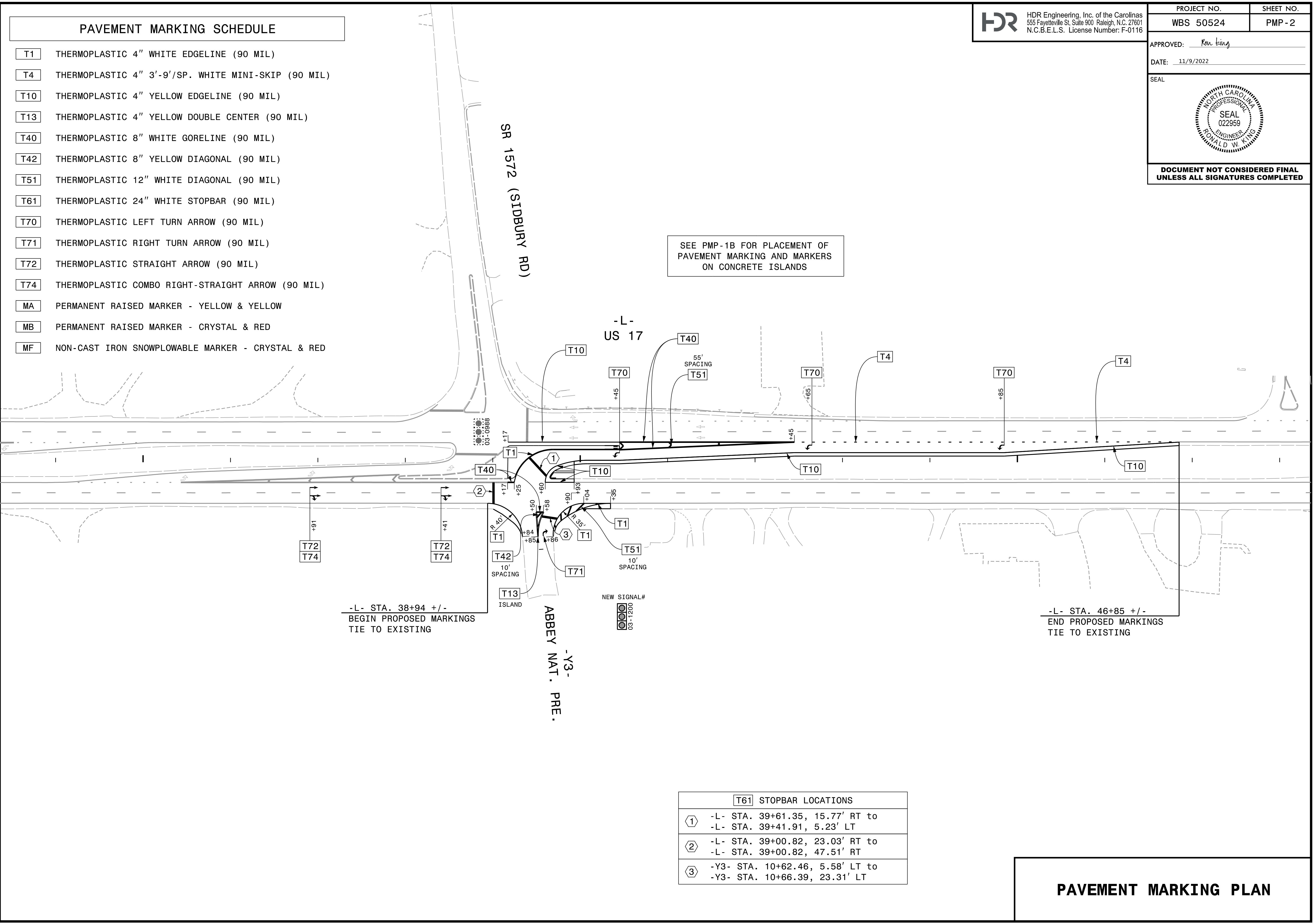
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

PAVEMENT MARKING SCHEDULE

- T1** THERMOPLASTIC 4" WHITE EDGELINE (90 MIL)
- T4** THERMOPLASTIC 4" 3'-9"/SP. WHITE MINI-SKIP (90 MIL)
- T10** THERMOPLASTIC 4" YELLOW EDGELINE (90 MIL)
- T13** THERMOPLASTIC 4" YELLOW DOUBLE CENTER (90 MIL)
- T40** THERMOPLASTIC 8" WHITE GORELINE (90 MIL)
- T42** THERMOPLASTIC 8" YELLOW DIAGONAL (90 MIL)
- T51** THERMOPLASTIC 12" WHITE DIAGONAL (90 MIL)
- T61** THERMOPLASTIC 24" WHITE STOPBAR (90 MIL)
- T70** THERMOPLASTIC LEFT TURN ARROW (90 MIL)
- T71** THERMOPLASTIC RIGHT TURN ARROW (90 MIL)
- T72** THERMOPLASTIC STRAIGHT ARROW (90 MIL)
- T74** THERMOPLASTIC COMBO RIGHT-STRAIGHT ARROW (90 MIL)
- MA** PERMANENT RAISED MARKER - YELLOW & YELLOW
- MB** PERMANENT RAISED MARKER - CRYSTAL & RED
- MF** NON-CAST IRON SNOWFLOWABLE MARKER - CRYSTAL & RED

SEE PMP-1B FOR PLACEMENT OF
 PAVEMENT MARKING AND MARKERS
 ON CONCRETE ISLANDS

PLOT DRIVER: NCDOT_color_eng_50.pit
 USER: CHARNDEN
 FILE: p:\dw\hdr\users\01\hdr\US_East_01\Documents\3322\10001938\10125092\6.0_CAD\BIM\6.2_WIP\WB48864\Traffic\Pavement_Markings\50524_PM_PMP02.dgn
 PENTABLE: NCDOT_PMP.tbl
 DATE: 11/9/2022
 TIME: 10:52:13 AM



-L- STA. 38+94 +/-
 BEGIN PROPOSED MARKINGS
 TIE TO EXISTING

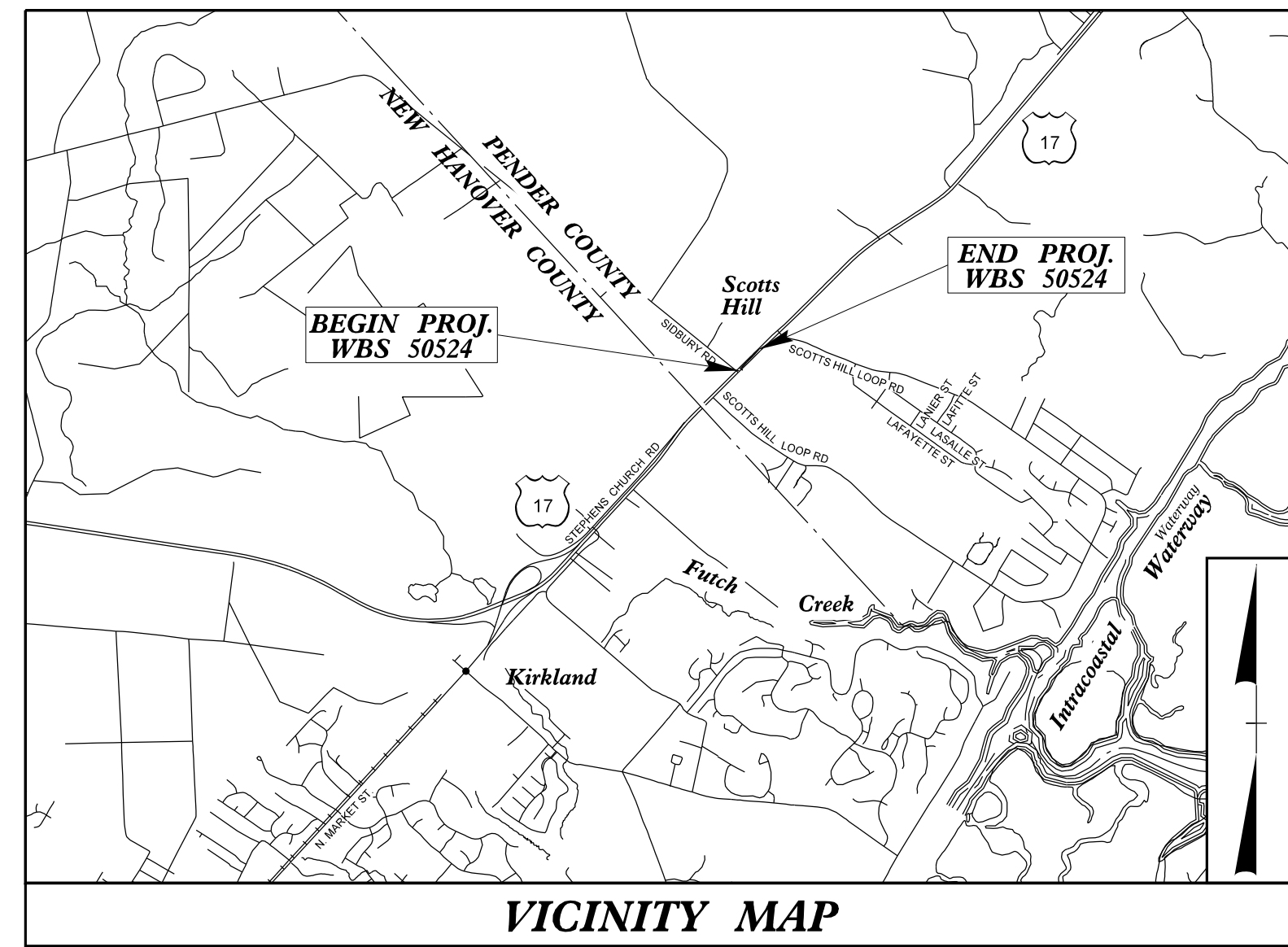
-L- STA. 46+85 +/-
 END PROPOSED MARKINGS
 TIE TO EXISTING

T61	STOPBAR LOCATIONS
①	-L- STA. 39+61.35, 15.77' RT to -L- STA. 39+41.91, 5.23' LT
②	-L- STA. 39+00.82, 23.03' RT to -L- STA. 39+00.82, 47.51' RT
③	-Y3- STA. 10+62.46, 5.58' LT to -Y3- STA. 10+66.39, 23.31' LT

PAVEMENT MARKING PLAN

09/08/19

PROJECT: WBS 50524



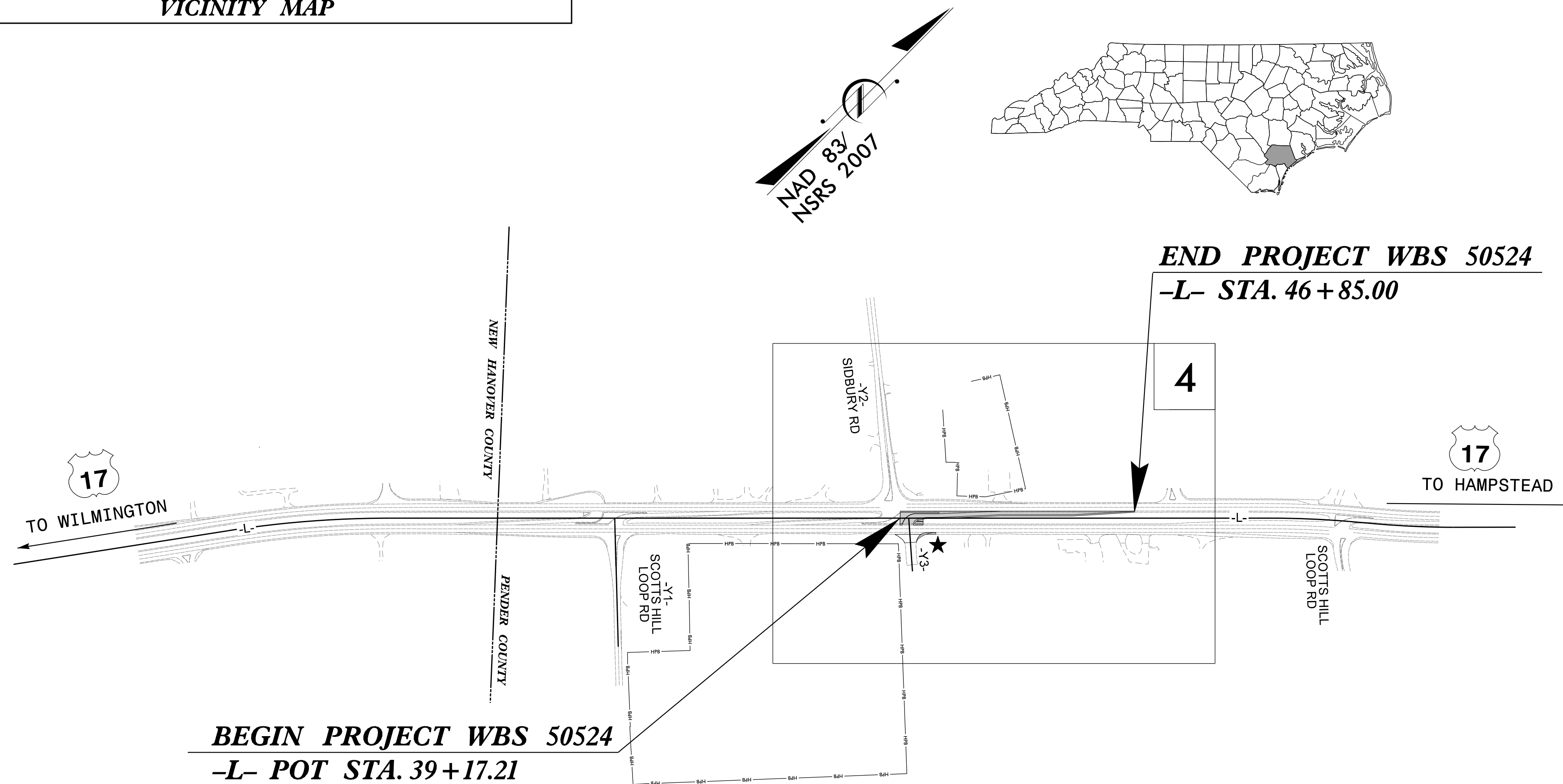
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

PENDER COUNTY

**LOCATION: US 17 FROM SIDBURY RD
TO SCOTTS HILL LOOP RD**

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND SIGNALS.



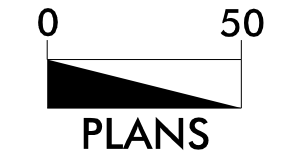
EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Silt Ditch	TD
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	— T —
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 —
1654.01	Temporary Rock Sediment Dam Type-A	▨
1654.02	Temporary Rock Sediment Dam Type-B	▨
1655.01	Rock Pipe Inlet Sediment Trap Type-A	U
1655.02	Rock Pipe Inlet Sediment Trap Type-B	U
1650.04	Stilling Basin	▭
1630.06	Special Stilling Basin	▭
	Rock Inlet Sediment Trap:	
1652.01	Type A	A
1652.02	Type B	B
1652.05	Type C	C
	Skimmer Basin	▭
	Tiered Skimmer Basin	▭
	Infiltration Basin	▭

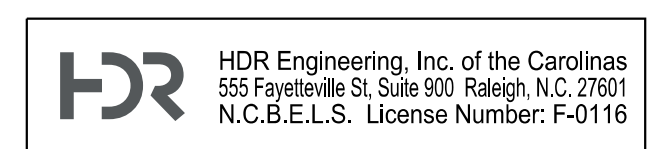
**THIS PROJECT CONTAINS
EROSION CONTROL PLANS
FOR CLEARING AND
GRUBBING PHASE OF
CONSTRUCTION.**

NOTES:
CLEARING ON THIS PROJECT SHOULD BE PERFORMED TO THE LIMITS ESTABLISHED BY MODIFIED METHOD III.

GRAPHIC SCALE



**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:
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116
2018 STANDARD SPECIFICATIONS

Designed by:
David R. Wagner II, PE 4286
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	

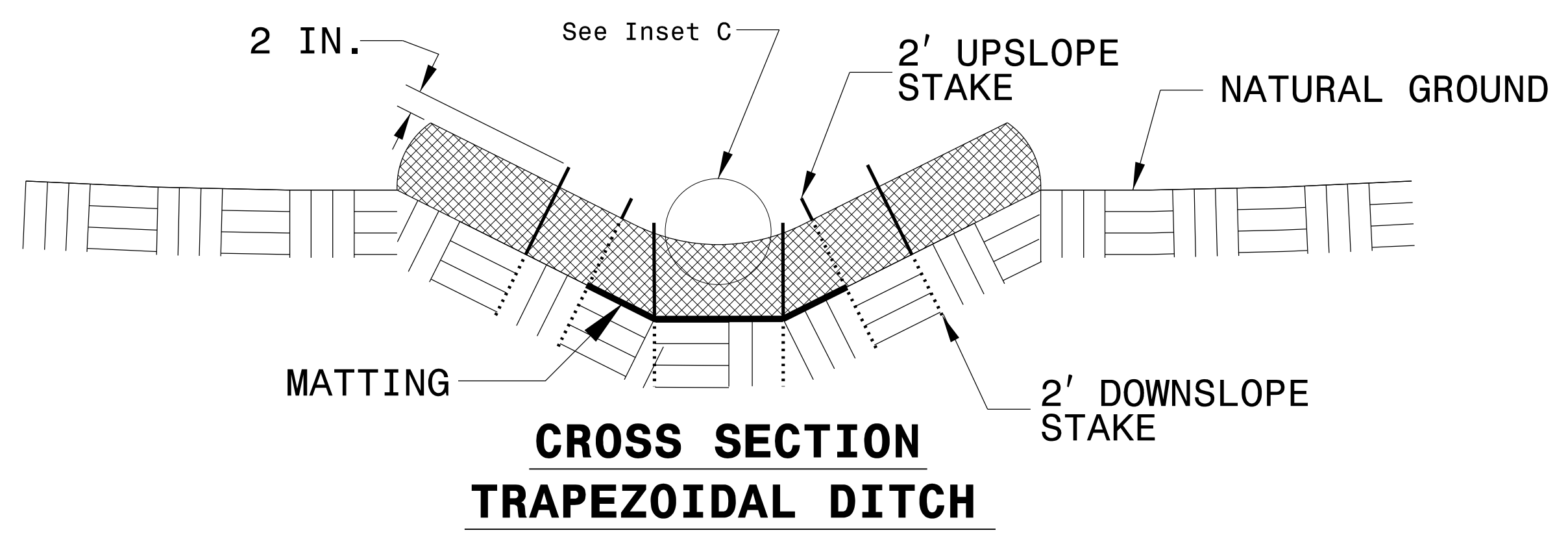
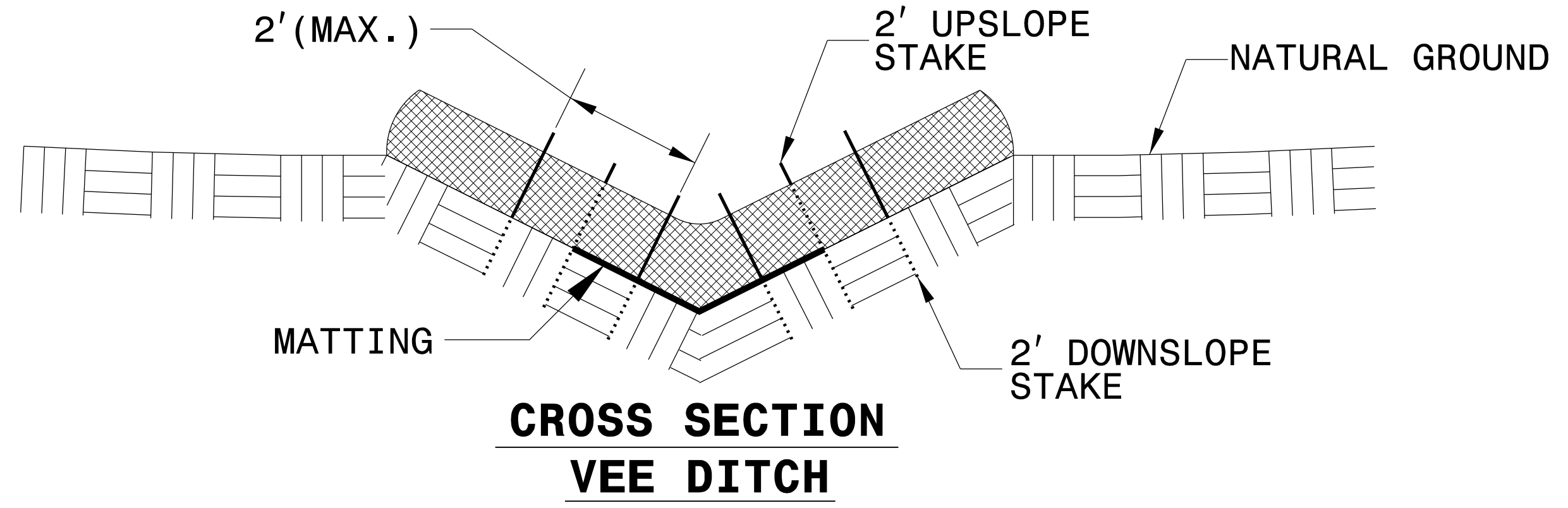
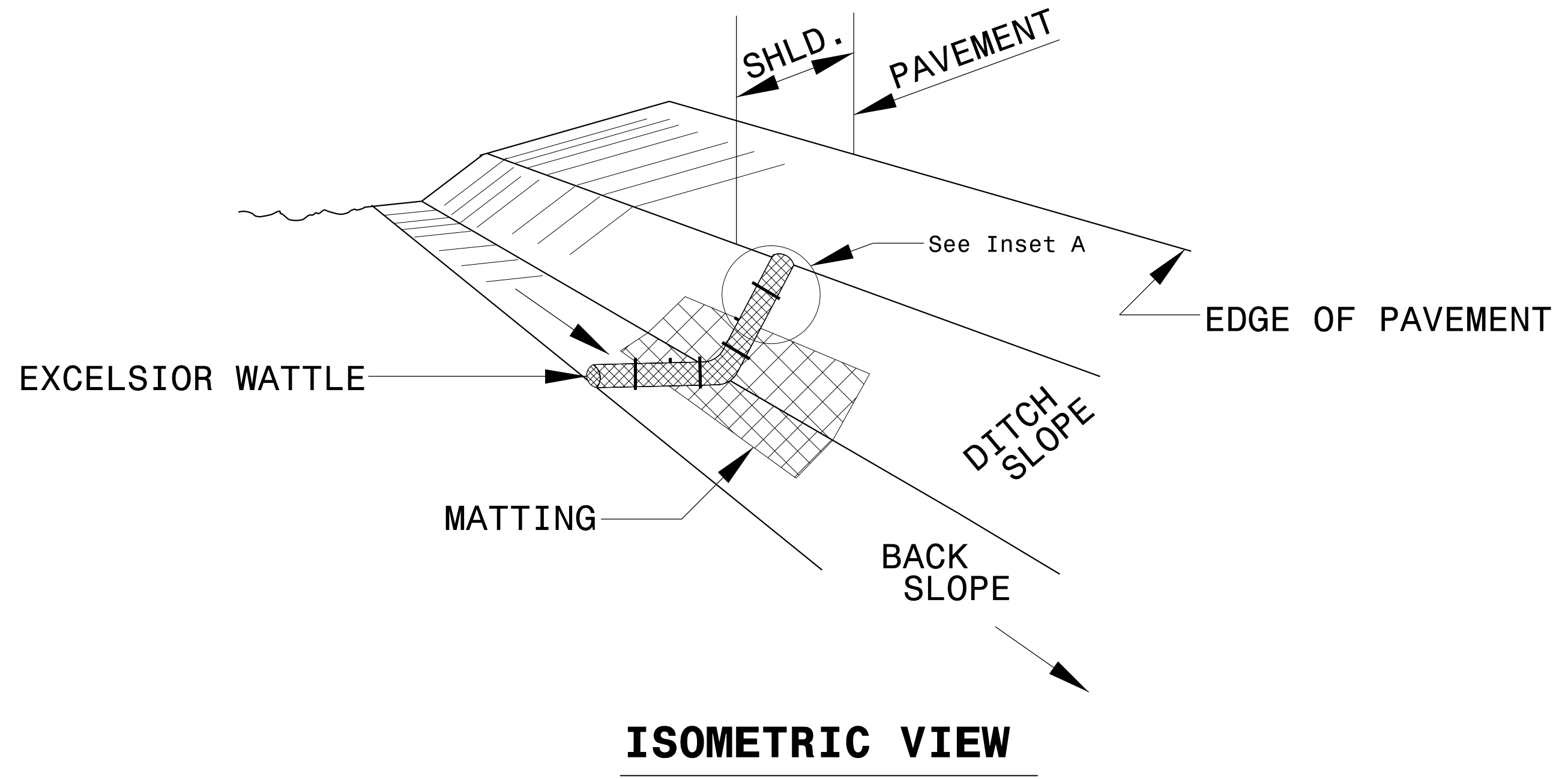
PENTABLE: WBS48864.NCDDOT_TSH.tbi
DATE: 10/27/2022
TIME: 4:17:34 PM

PLOT DRIVER: NCDDOT_pdf_color_eng_100.plt
USER: WYELVERT
FILE: \

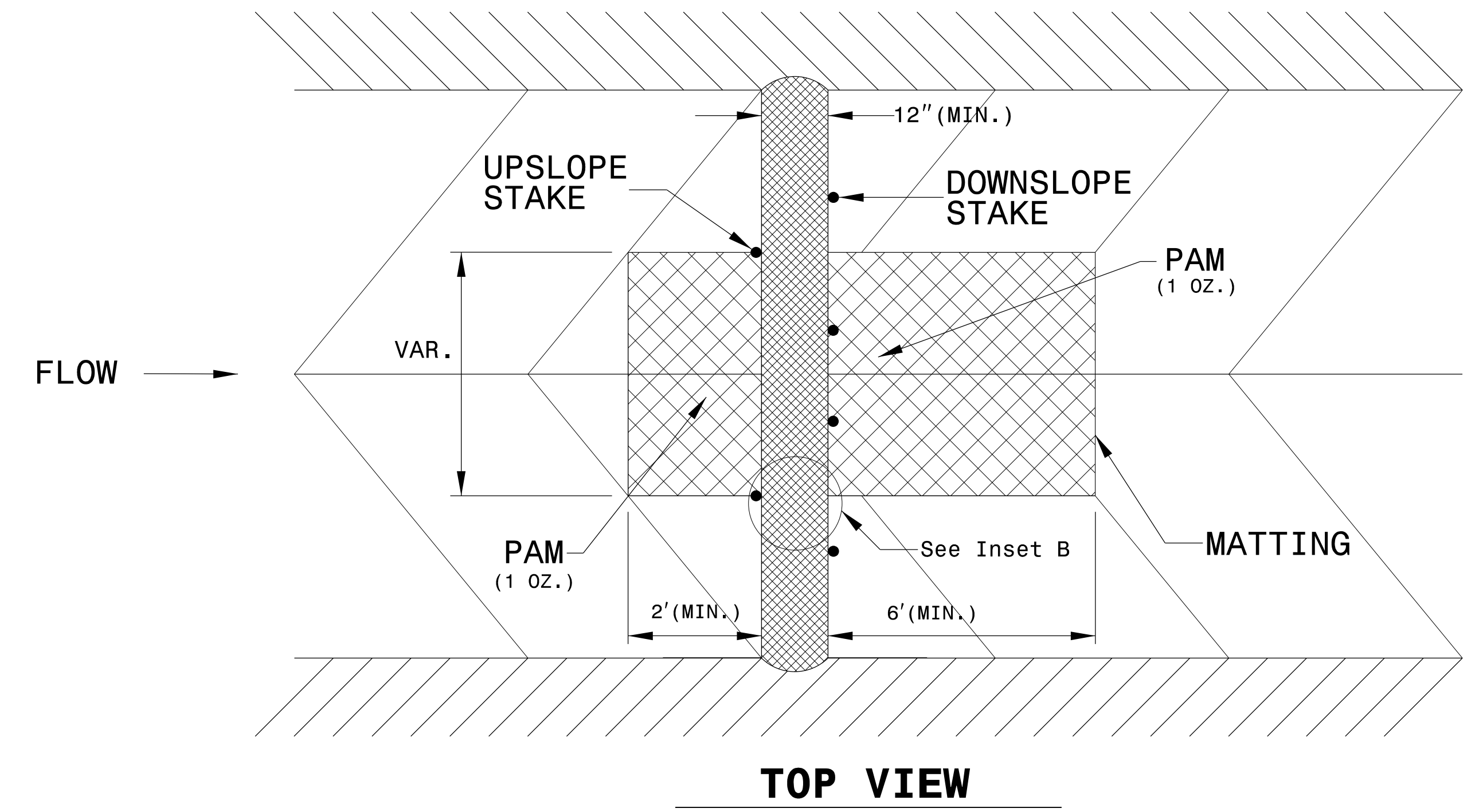
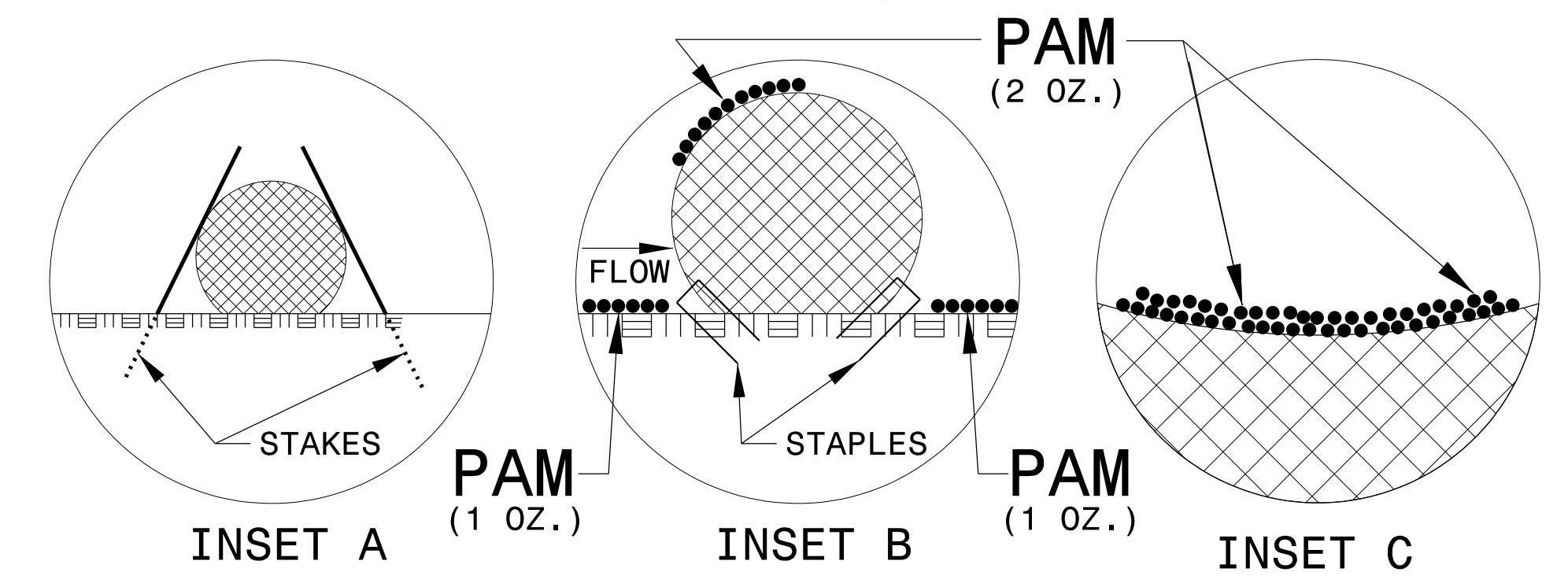
CONTRACT:

PROJECT REFERENCE NO. WBS 50524	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.



DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>WBS 50524</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.
WBS 50524	EC-04/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

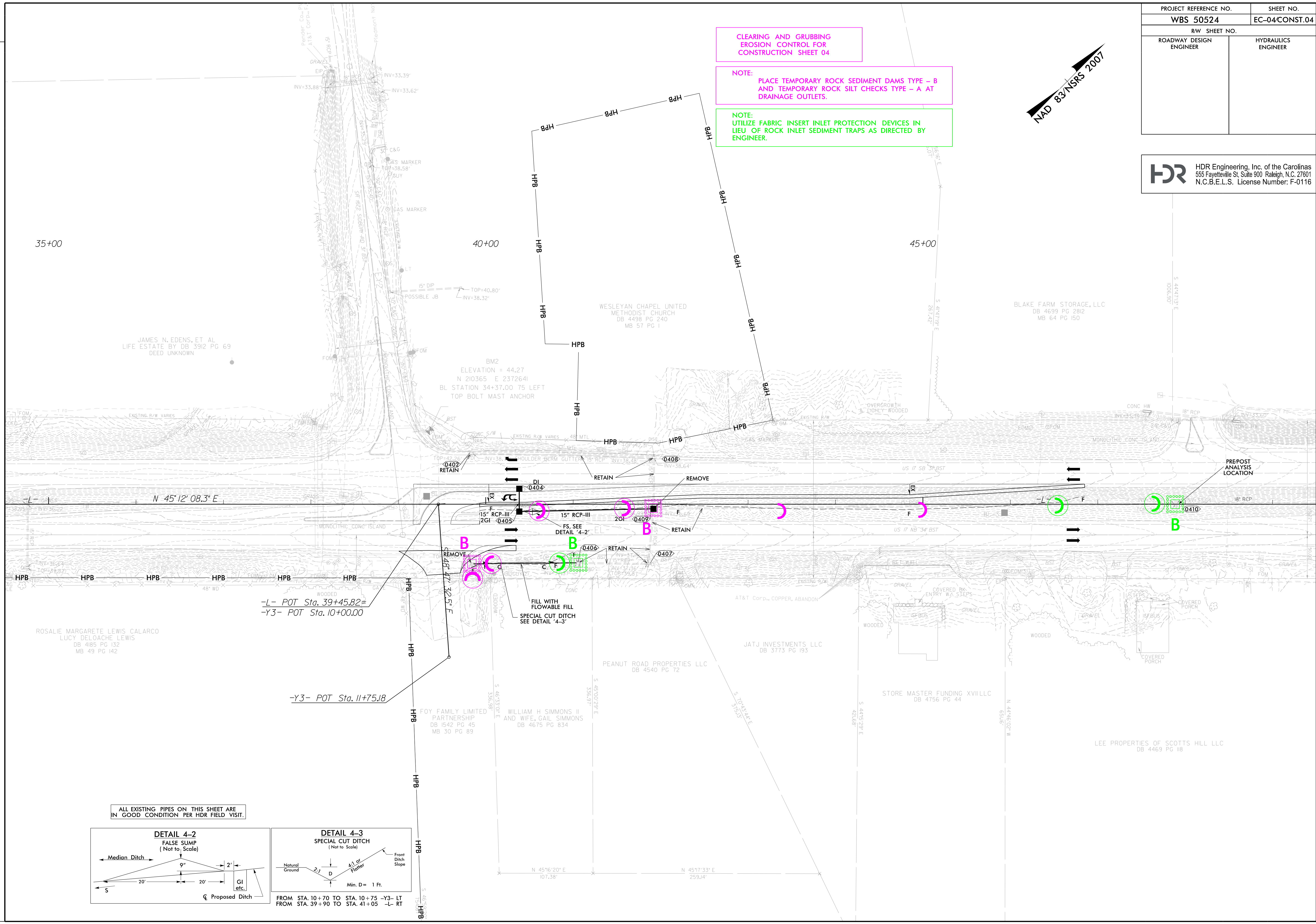
HDR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116



**CLEARING AND GRUBBING
 EROSION CONTROL FOR
 CONSTRUCTION SHEET 04**

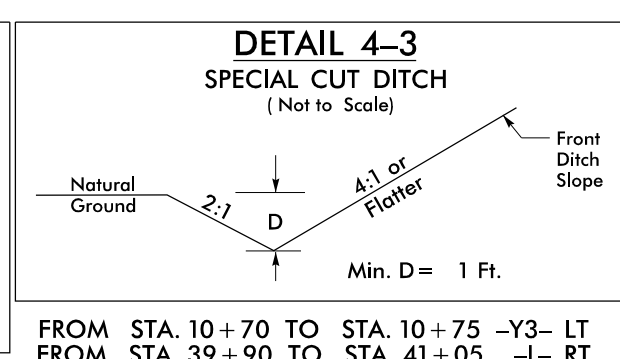
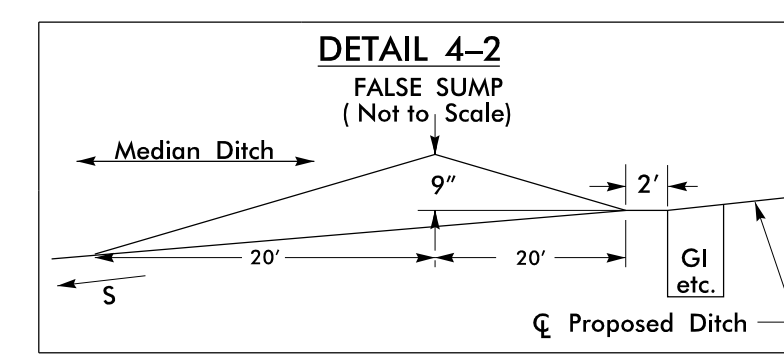
NOTE:
 PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
 AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
 DRAINAGE OUTLETS.

NOTE:
 UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN
 LIEU OF ROCK INLET SEDIMENT TRAPS AS DIRECTED BY
 ENGINEER.



REVISIONS

ALL EXISTING PIPES ON THIS SHEET ARE
 IN GOOD CONDITION PER HDR FIELD VISIT.



FROM STA. 10+70 TO STA. 10+75 -Y3- LT
 FROM STA. 39+90 TO STA. 41+05 -L- RT

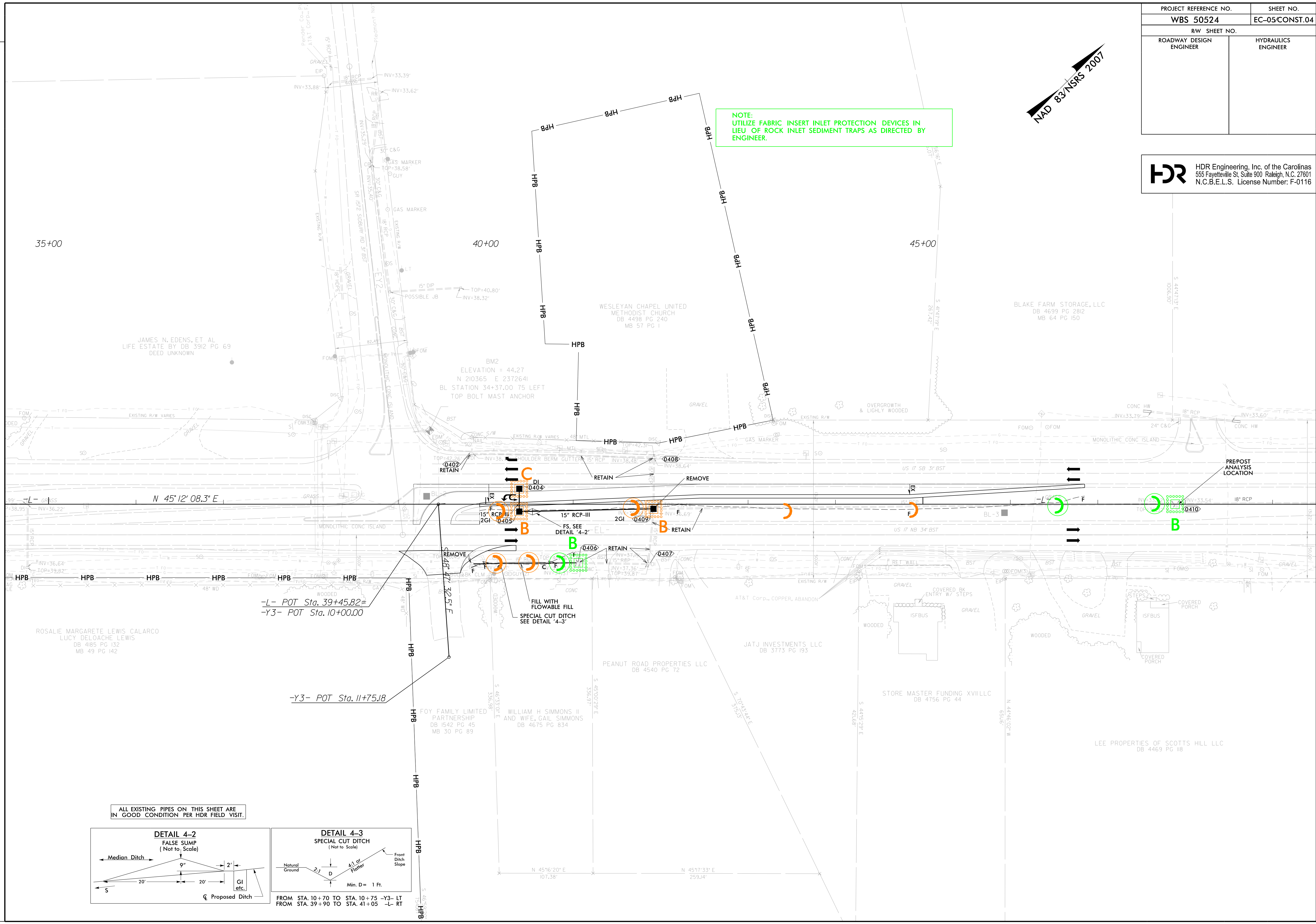
PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
 USER: WYELVERT
 FILE: PENTABLE: WBS48864_NCDOT_EC_C&G.TDI
 DATE: 10/27/2022
 TIME: 4:17:42 PM

PROJECT REFERENCE NO.	SHEET NO.
WBS 50524	EC-05/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

HDR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

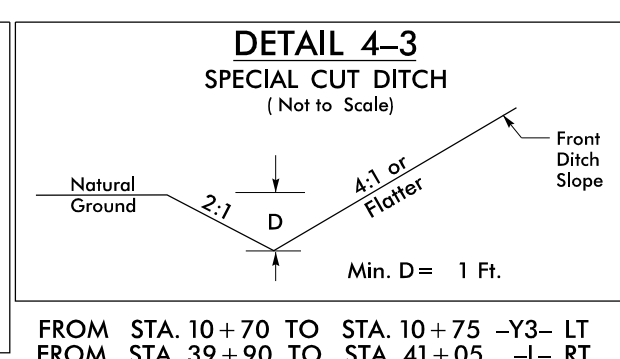
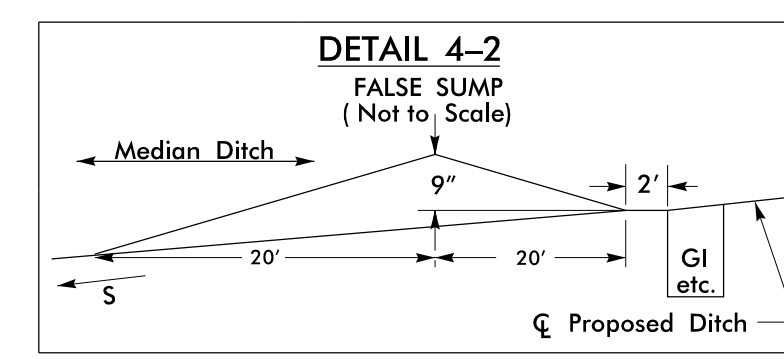


NOTE:
 UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF ROCK INLET SEDIMENT TRAPS AS DIRECTED BY ENGINEER.



REVISIONS

ALL EXISTING PIPES ON THIS SHEET ARE IN GOOD CONDITION PER HDR FIELD VISIT.



FROM STA. 10+70 TO STA. 10+75 -Y3- LT
 FROM STA. 39+90 TO STA. 41+05 -L- RT

PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
 USER: WYELVERT
 FILE: PENTABLE: WBS48864_NCDOT_EC_FINAL.TDI
 DATE: 10/27/2022
 TIME: 4:17:43 PM


PLOT DRIVER: NCDOT_pdf_color_eng_50.pht
USER: CHARNDEN
FILE: p:\p\h\h\users\01\HDR_US_East_01\Documents\3322\10001938\10125092\6.0_CAD_BIM\6.2_WIP_WB48864\Traffic\Signing\CADD\Signing_Layout_Plans\50524_SIGN_S01.dgn

PROJECT: WBS 50524

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**SIGNING PLAN
NEW HANOVER COUNTY**

LOCATION: US 17 FROM SIDBURY RD TO SCOTTS HILL LOOP RD

TIP NO. WBS 50524	SHEET NO. SIGN-1
APPROVED: <u>Ron King</u>	
DATE: <u>11/14/2022</u>	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	164	L.F.
4102000000	904	SIGN ERECTION, TYPE E	10	EA.
4108000000	904	SIGN ERECTION, TYPE F	3	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	1	EA.

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-1A	REVISED RSD 904D50
SIGN-2	TYPE "E" AND "F" SIGNS SHEET
SIGN-3 AND 3A	SPECIAL SIGN DESIGNS
SIGN-4	SIGN DETAIL SHEET

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR 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
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS (SHEET 2 OF 2)

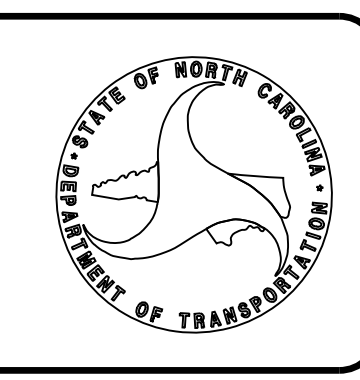
GENERAL NOTES

- SIGNS FURNISHED BY STATE.
- CONFIRM IN WRITING AT LEAST 4 MONTHS IN ADVANCE, THE ACTUAL DATE THE DEPARTMENT FURNISHED SIGNS WILL BE REQUIRED.
- 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.
- THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
- SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

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

JESSI LEONARD, P.E. DIVISION 3 TRAFFIC ENGINEER

AYMAN I. ALQUDWAH, P.E. SIGNING & DELINEATION PROJECT REGIONAL ENGINEER




PLAN PREPARED BY: HDR ENGINEERING, INC. OF THE CAROLINAS

RON KING, P.E. SIGNING & DELINEATION PROJECT DESIGN ENGINEER

CHRIS HARNDEN SIGNING & DELINEATION PROJECT DESIGN TECHNICIAN

HDR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

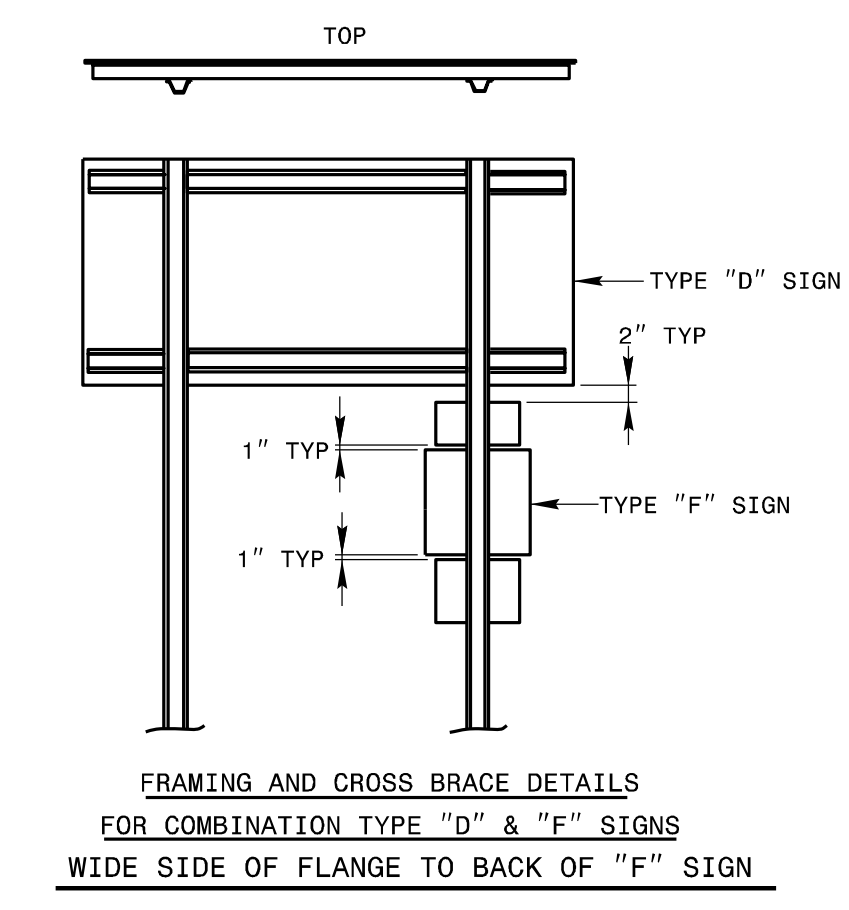
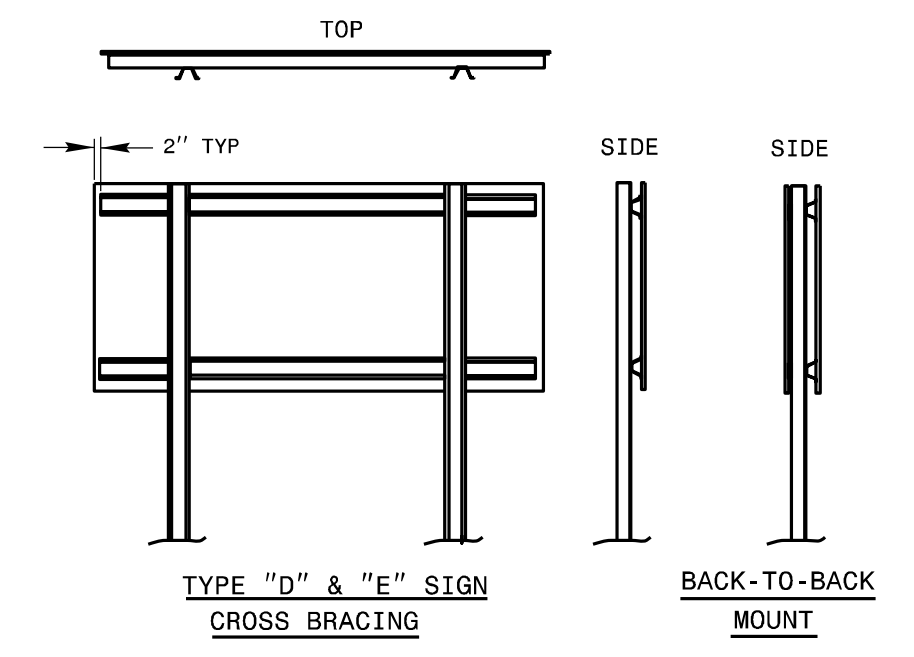
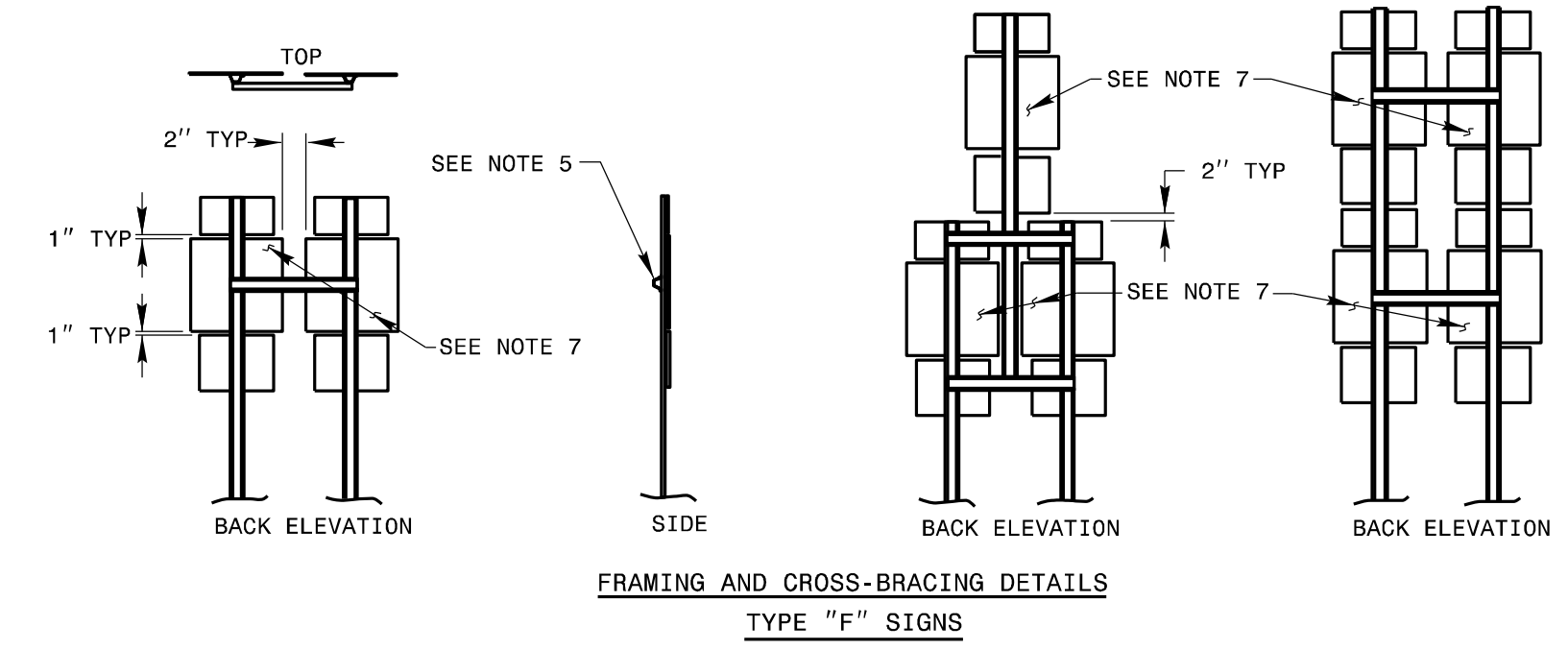
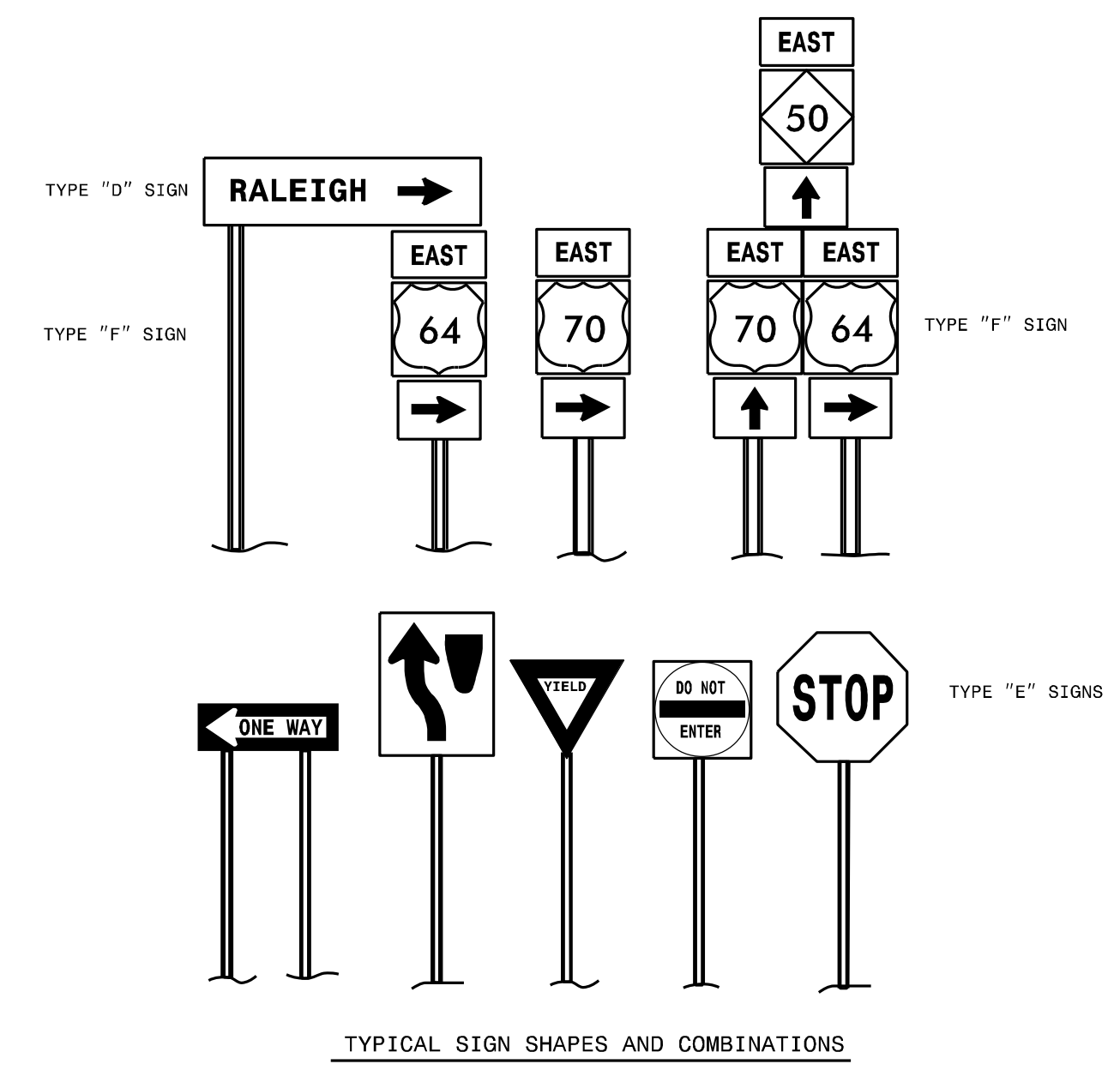
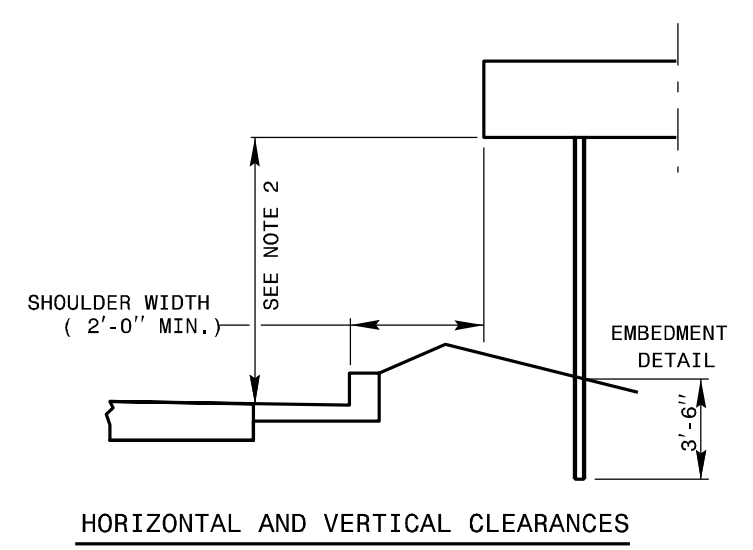
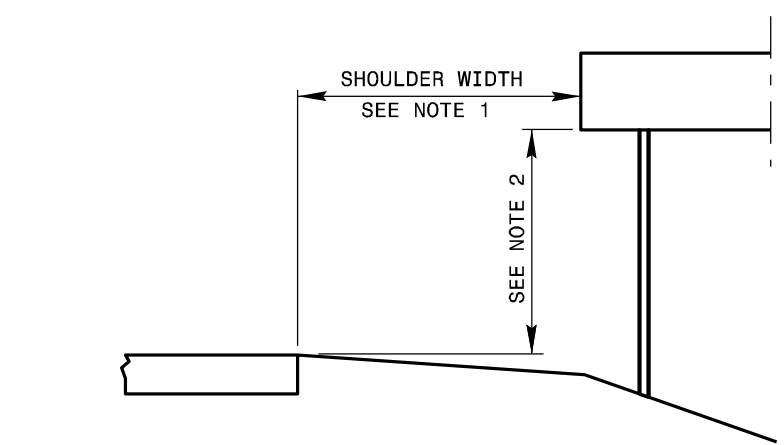
TIP NO. WBS 50524	SHEET NO. Signed by: SIGN-1A
APPROVED: 6/23/2021	<i>Matthew V. Springer</i>
DATE:	
SEAL	
	

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

6-21

ENGLISH DETAIL DRAWING FOR
MOUNTING OF
TYPE 'D', 'E' AND 'F' SIGNS
ON 'U' CHANNEL POSTS

SHEET 1 OF 2
904D50



- NOTES:
- ERECT TYPE "D", "E", AND "F" SIGNS ON FREEWAYS WITH THE NEAR EDGE OF THE SIGN 20 FT. FROM THE TRAVEL LANE. ERECT ALL OTHER "D", "E", AND "F" SIGNS WITH THE NEAR EDGE OF THE SIGN AT THE EDGE OF THE SHOULDER BREAK (6 FT. MINIMUM CLEARANCE, 12 FT. DESIRABLE, FROM THE EDGE OF TRAVEL LANE), OR AS DIMENSIONED ON PLAN SHEETS.
 - ERECT TYPE "D", "E", AND "F" SIGNS WITH THE BOTTOM OF SIGN ASSEMBLY AT LEAST 7 FT. ABOVE THE EDGE OF THE TRAVEL LANE ON ROADS WITH 2 OR MORE LANES IN THE SAME DIRECTION AND AT LEAST 5 FT. ON OTHER ROUTES. THE VERTICAL CLEARANCE IS 7 FT. WHERE REQUIRED FOR PEDESTRIAN TRAFFIC AND/OR PARKED VEHICLES.
 - THE VERTICAL DIMENSION BETWEEN MOUNTING HOLE CENTERS ON ALL TYPES "D", "E", AND "F" SIGNS IS 30" MAXIMUM. THE VERTICAL AND HORIZONTAL DIMENSIONS BETWEEN MOUNTING HOLES IS TO THE WHOLE INCH. EACH SIGN PANEL HAS A MINIMUM OF 2 BOLTS PER SUPPORT.
 - ATTACH SIGN W/ 3/8" HEX HEAD BOLT, NYLON WASHER, SHIM, FLAT WASHER, LOCK WASHER, HEX NUT NO BUCKLING OF THE SIGN WILL BE PERMITTED. SEE ASSEMBLY DETAIL SHEET# 2 OF 904.50.
 - FURNISH AND INSTALL CROSS-BRACING AS SHOWN IN DETAIL. PAINT ENDS OF CROSS BRACES W/ APPROVED. ZINC PAINT
 - INSTALL POST AND CROSS-BRACING WITH THE WIDE SIDE OF THE FLANGE TOWARD THE BACK OF SIGN(S) FOR COMBINATION TYPE "D" AND "F" SIGNS.
 - THE SHIELD HEIGHTS IN THESE ASSEMBLIES CAN NOT BE LARGER THAN 24".
 - IF SIGN ASSEMBLIES REQUIRE MORE THAN TWO U-CHANNEL SUPPORTS, THE SUPPORTS SHALL BE PLACED A MINIMUM OF 4 FT. BETWEEN POSTS. NO MORE THAN TWO POSTS SHALL FALL WITHIN 7 FT. PATH, OR THE SIGN ASSEMBLY MUST BE PLACED BEHIND BARRIER PROTECTION.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

6-21

ENGLISH DETAIL DRAWING FOR
MOUNTING OF
TYPE 'D', 'E' AND 'F' SIGNS
ON 'U' CHANNEL POSTS

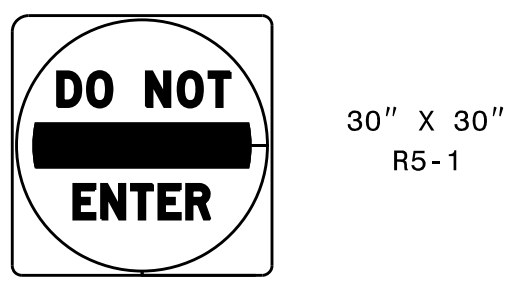
SHEET 1 OF 2
904D50

REVISED SIGNING
ROADWAY STANDARD DRAWING

6/18/2021
S:\S&DU\Standards Group\Standards and Drawings\Drawings\2018 Standard Dwg\Division 9 Final\904.50_sgn_sht01_uchannel.post_6-21.dgn
User:rstokes

TIP NO.	SHEET NO.
WBS 50524	SIGN-2
APPROVED: <i>Ron King</i>	
DATE: 10/27/2022	
SEAL	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

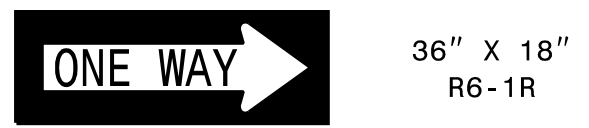
401 QUANTITY REQ'D 2



30" X 30"
R5-1

ONE "U" POST PER SIGN

402 QUANTITY REQ'D 1



36" X 18"
R6-1R

TWO "U" POSTS PER SIGN

403 QUANTITY REQ'D 1



36" X 18"
R6-1L

TWO "U" POSTS PER SIGN

404 QUANTITY REQ'D 1



24" X 12"
M4-4

ONE "U" POST PER ASSEMBLY

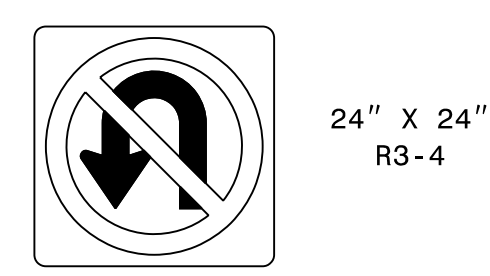
405 QUANTITY REQ'D 1



24" X 12"
SP-01

MOUNT BELOW SIGN 404
IN ONE ASSEMBLY
(SEE SIGN-3 FOR SPECIAL SIGN DESIGN SP-01)

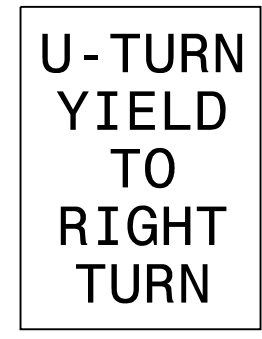
406 QUANTITY REQ'D 1



24" X 24"
R3-4

MOUNT BELOW SIGN 405
IN ONE ASSEMBLY

407 QUANTITY REQ'D 1



30" X 36"
R10-6

ONE "U" POST PER SIGN

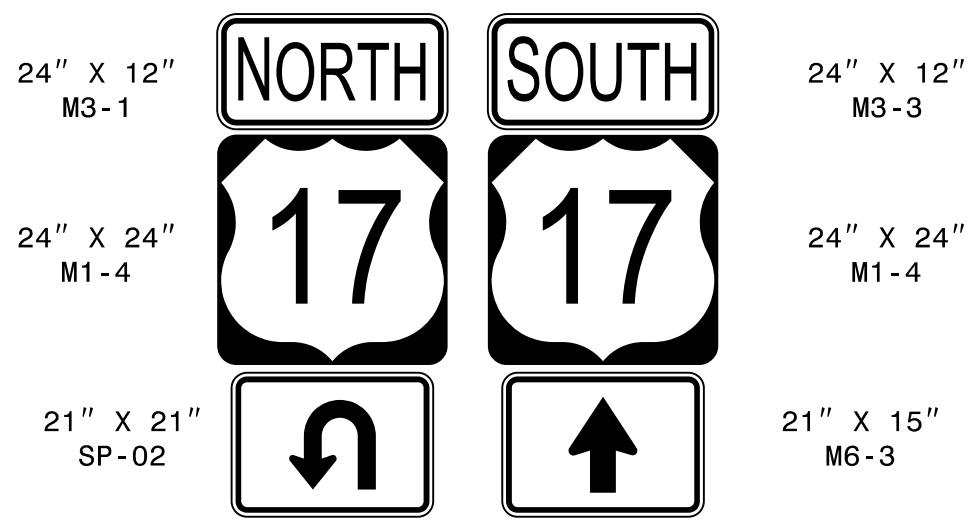
408 QUANTITY REQ'D 2



12" X 36"
OMC-3

ONE "U" POST PER SIGN

501 QUANTITY REQ'D 1



24" X 12"
M3-1

24" X 12"
M3-3

24" X 24"
M1-4

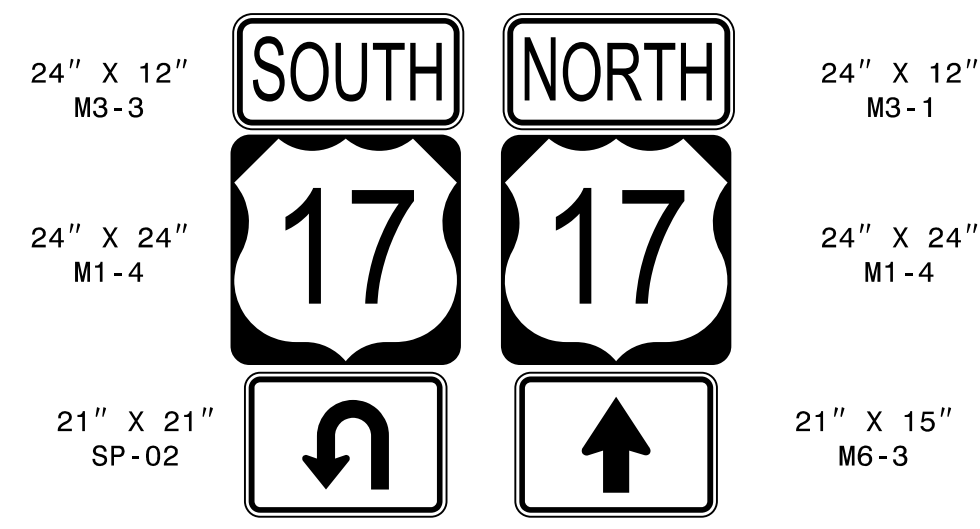
24" X 24"
M1-4

21" X 21"
SP-02

21" X 15"
M6-3

TWO "U" POST PER EACH ASSEMBLY
(SEE SIGN-3A FOR SPECIAL SIGN DESIGN SP-02)

502 QUANTITY REQ'D 1



24" X 12"
M3-3

24" X 12"
M3-1

24" X 24"
M1-4

24" X 24"
M1-4

21" X 21"
SP-02

21" X 15"
M6-3

TWO "U" POST PER EACH ASSEMBLY
(SEE SIGN-3A FOR SPECIAL SIGN DESIGN SP-02)

503 QUANTITY REQ'D 1



24" X 24"
M1-4

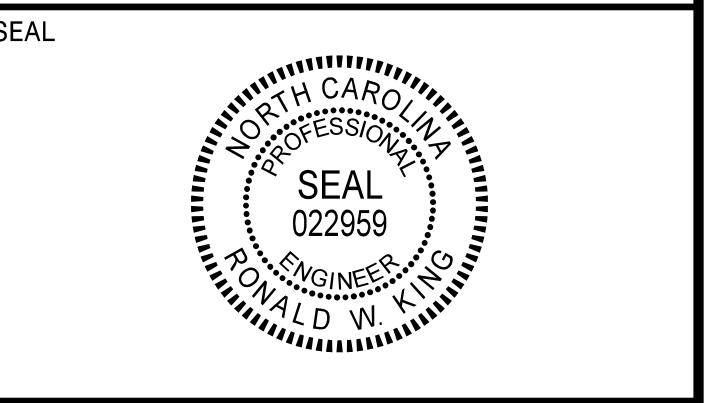
21" X 15"
M6-1

ONE "U" POST PER ASSEMBLY

PLOT DRIVER: NCDOT_color_eng_50.plt
USER: CHARNDEN
FILE: p:\p\p\h\h\users\01\HDR_US_East_01\Documents\3322\10001938\10125092\6.0_CAD_BITMAP.6.2.WIP.WB48864\Traffic\Signing\CADD\Signing Layout Plans\50524_SIGN_S02.dgn
PENTABLE: NCDOT_Signing.tbl
DATE: 10/27/22
TIME: 15:21:34

TYPE "E" AND "F" SIGNS

APPROVED: Ron King
DATE: 10/27/2022



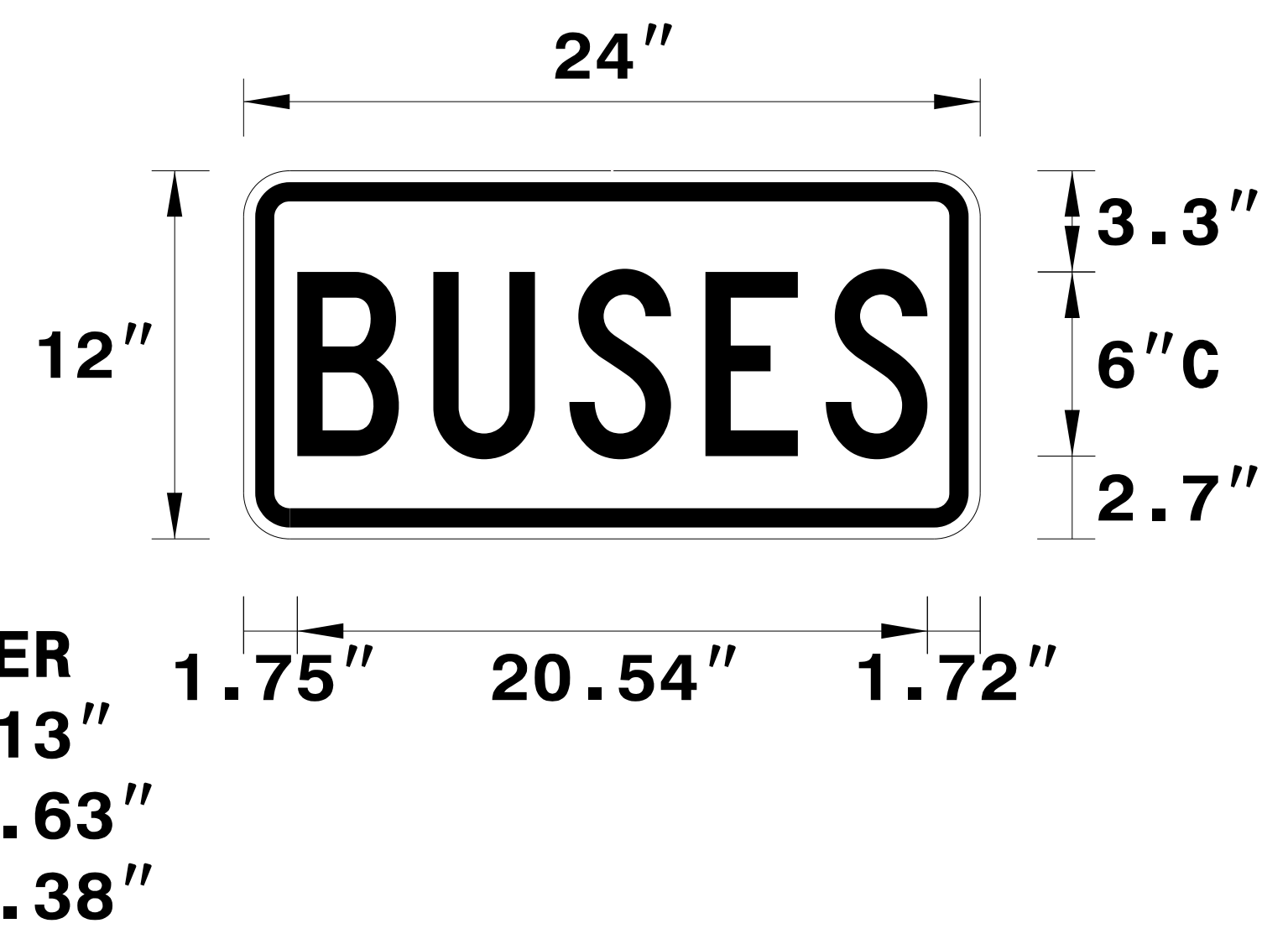
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

SIGN NUMBER: SP-01
TYPE: E
QUANTITY: 1
SIGN WIDTH: 2'-0"
HEIGHT: 1'-0"
TOTAL AREA: 2.0 Sq.Ft.
BORDER TYPE: RECESSED
RECESS: 0.38"
WIDTH: 0.63"
RADII: 1.13"
NO. Z BARS:
LENGTH:

BACKG COLOR: White
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

DESIGN BY: R. DRAYTON
PROJECT ID: WBS 50524
CHECKED BY: R. KING
DATE: Oct 19, 2022
DIV: 3



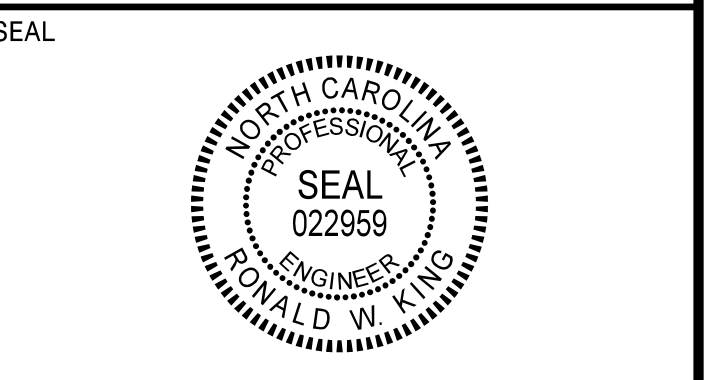
USE NOTES: 1,2
1. Legend and border (except those that are colored black) shall be direct applied Grade C sheeting.
2. Background shall be Grade C reflective sheeting.

LETTER POSITIONS

Letter spacings are to start of next letter								Series/Size
B	U	S	E	S				Text Length
1.7	4.4	4.4	4.4	3.9	3.3	1.7		C
								20.5

SPECIAL SIGN DESIGN

PLOT DRIVER: NCDOT_pdf_color_eng_50.pht
USER: CHARNDEN
FILE: p:\p\h\dr\users\01\HDR_US_East_01\Documents\3322\10001938\10125092\6.0_CAD_BITMAP.6.2_WIP_WB48864\Traffic\Signing\CADD\Signing_Layout_Plans\50524_SIGN_S03.dgn
PENTABLE: NCDOT_Signing.tbl
DATE: 10/27/22
TIME: 15:21:40



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

SIGN NUMR: SP-02 TYPE: F Ground QUANTITY: 2 SIGN WIDTH: 1'-9" HEIGHT: 1'-9" TOTAL AREA: 3.1 Sq.Ft. MAT'L: 0.063" ALUMINUM BORDER TYPE: RECESSED RECESS: 0.38" WIDTH: 0.63" RADII: 1.5" NO. Z BARS: LENGTH:	BACKG. COLOR: White COPY COLOR: Black	DESIGN BY: PROJECT ID:	CHK BY: DIV:	STD #: DATE:	N. C. DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS TRANSPORTATION MOBILITY & SAFETY SIGNING & DELINEATION UNIT
--	--	---------------------------	-----------------	-----------------	--

SYMBOL	X	Y	WID	HT
u arrow	3.7	3.5	12.7	13.9

NOTES:

- Legend and border shall be direct applied
Non-reflective sheeting.
- Background shall be Grade C reflective sheeting.

BORDER
R=1.5"
TH=0.63"
IN=0.38"


Arrow Details

ARROW DIMENSIONS (INCHES)	F	G	H	M	N	P	Q	R
	2.625	2.625	8.659	5.25	3	5.25	0.375	0.5

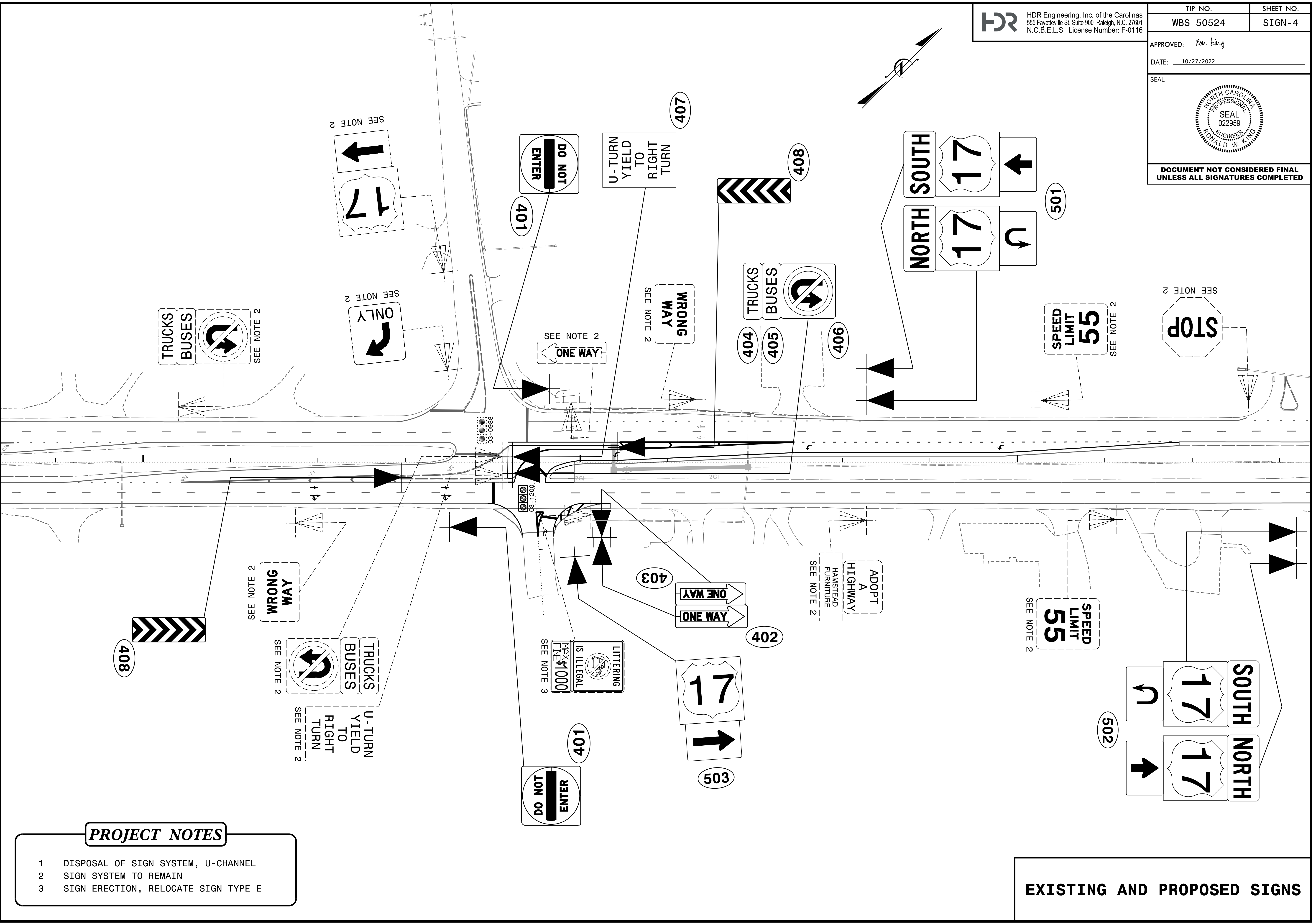
Spacing Factor is 1 unless specified otherwise
FILENAME: GSENG

PLOT DRIVER: NCDOT_pdf_color_eng_50.pht
 USER: CHARNDEN
 FILE: p:\p\p\h\p\users\01\HDR_US_East_01\Documents\3322\10001938\10125092\6.0_CAD_BIM\6.2_WIP\WB48864\Traffic\Signing\CADD\Signing Layout Plans\50524_SIGN_S03A.dgn
 PENTABLE: NCDOT_Signing.tbl
 DATE: 10/27/22
 TIME: 15:21:46

SPECIAL SIGN DESIGN

TIP NO. WBS 50524	SHEET NO. SIGN-4
APPROVED: <i>Ron King</i>	
DATE: 10/27/2022	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
 USER: CHARNDEN
 FILE: p:\p\hdr\users\01\HDR_US_East_01\Documents\3322\10001938\10125092\6.0_CAD.BIM\6.2_WIP\WB48864\Traffic\Signing\CADD\Signing Layout Plans\50524_SIGN_504.dgn
 PENTABLE: NCDOT_Signing.tbl
 TIME: 15:21:56
 DATE: 10/27/22



PROJECT NOTES

- 1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL
- 2 SIGN SYSTEM TO REMAIN
- 3 SIGN ERECTION, RELOCATE SIGN TYPE E

EXISTING AND PROPOSED SIGNS

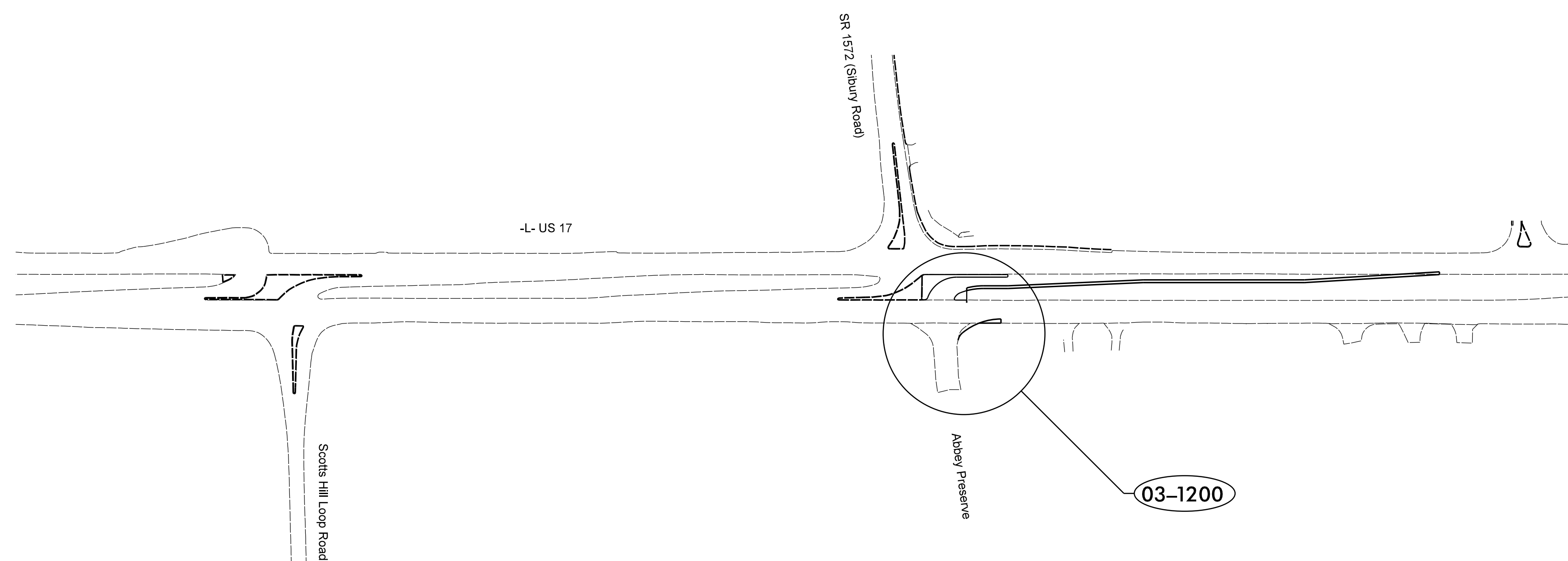
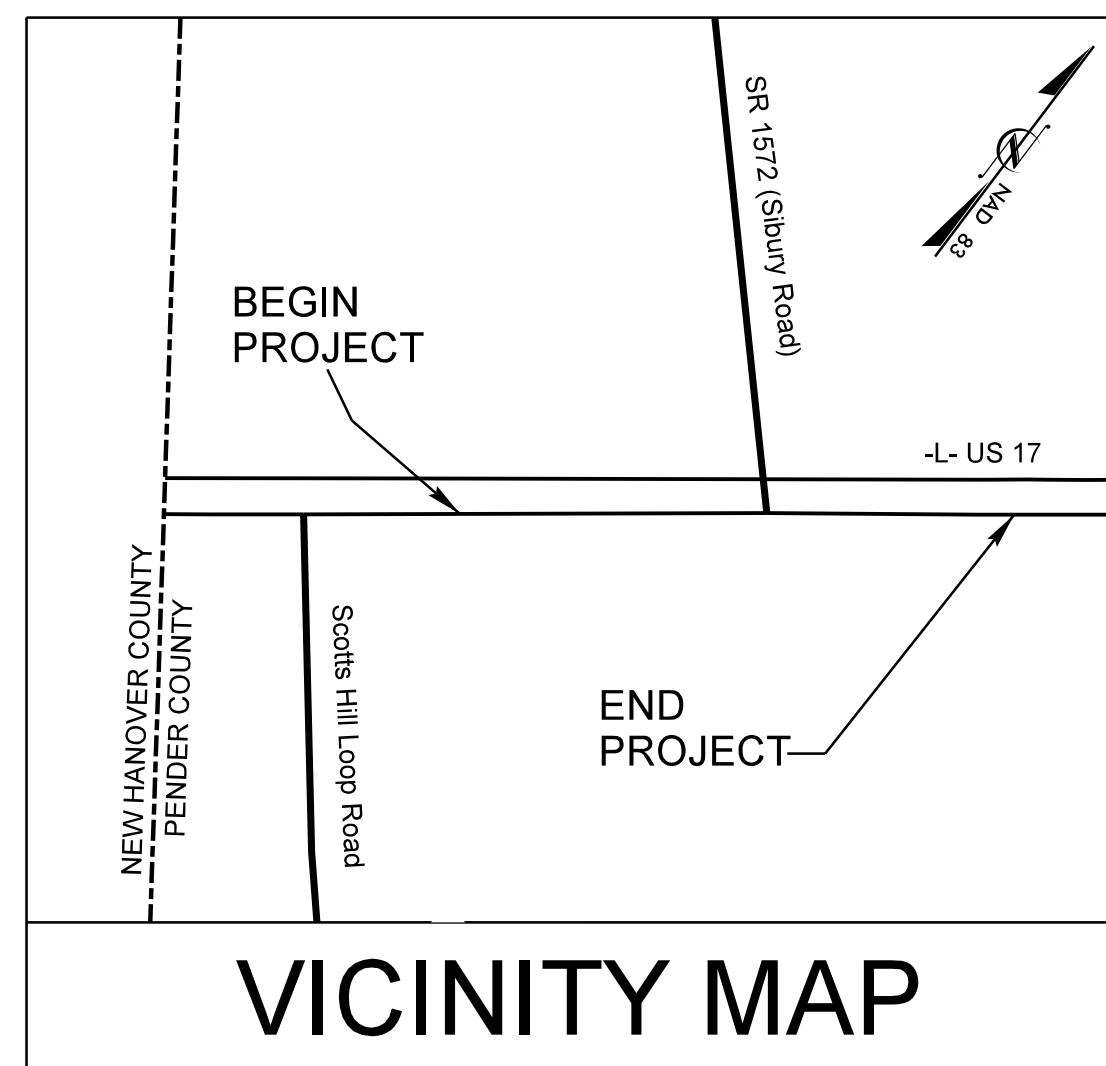
TIP PROJECT: WBS 50524

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PENDER COUNTY

LOCATION: US 17 FROM SIDBURY RD TO SCOTTS HILL LOOP RD

TYPE OF WORK: TRAFFIC SIGNALS AND SIGNAL COMMUNICATIONS



PROJECT REFERENCE NO. WBS 50524	SHEET NO. Sig 1.0
DESIGNED BY APPROVED: <i>William J. Hamilton</i> A05600704848484	
DATE: 10/25/2022	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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

Infrastructure Consulting Services, Inc.
RKA
RAMEY KEMP ASSOCIATES
8210 University Executive Park Drive Suite 220 Charlotte, North Carolina 28262
Phone: 704-549-4300 | www.rameykemp.com | NC License No. P-1489

PLANS PREPARED BY:

W. Jason Hamilton, P.E., PTOE - Project Manager

Zachary M. Esposito, P.E., TCDS - Project Engineer

INDEX OF PLANS

Sheet Number	SIN	Location/Description
Sig. 1.0	-	Project Title Sheet
Sig. 1.1-1.2	-	2018 Revised Standard Drawings
Sig. 2.0-2.11	03-1200	US 17 EB at Abbey Preserve
SCP-1	-	Wireless Communication Plans

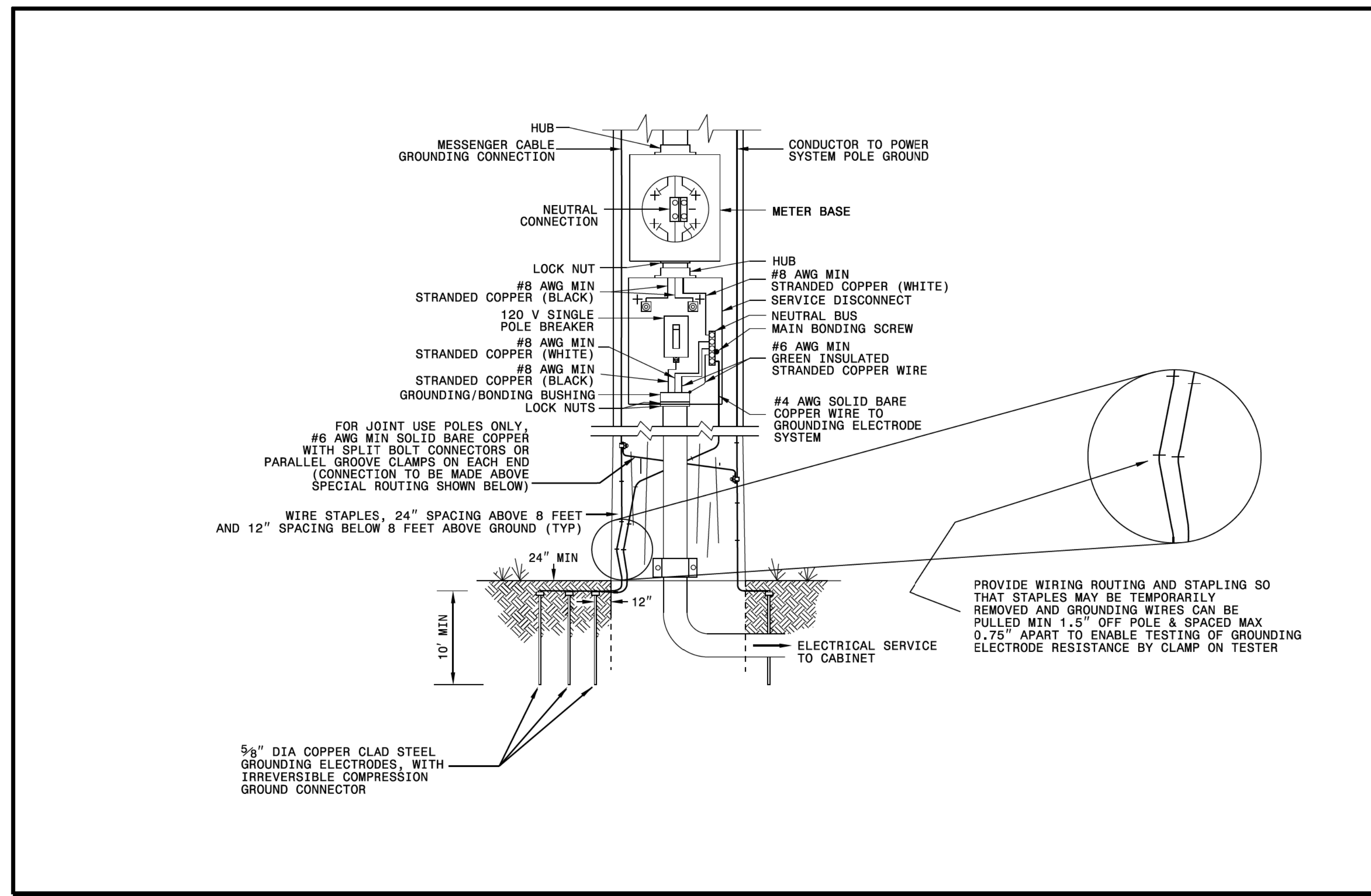
LEGEND

TRAFFIC SIGNAL

**TRANSPORTATION SYSTEMS
MANAGEMENT & OPERATIONS**

Contacts:
Zachary Little, P.E. - Eastern Region Signals Engineer
D. Todd Joyce, P.E. - Signal Equipment Design Review Engineer
Gregory A. Green - Signal Communications Project Engineer

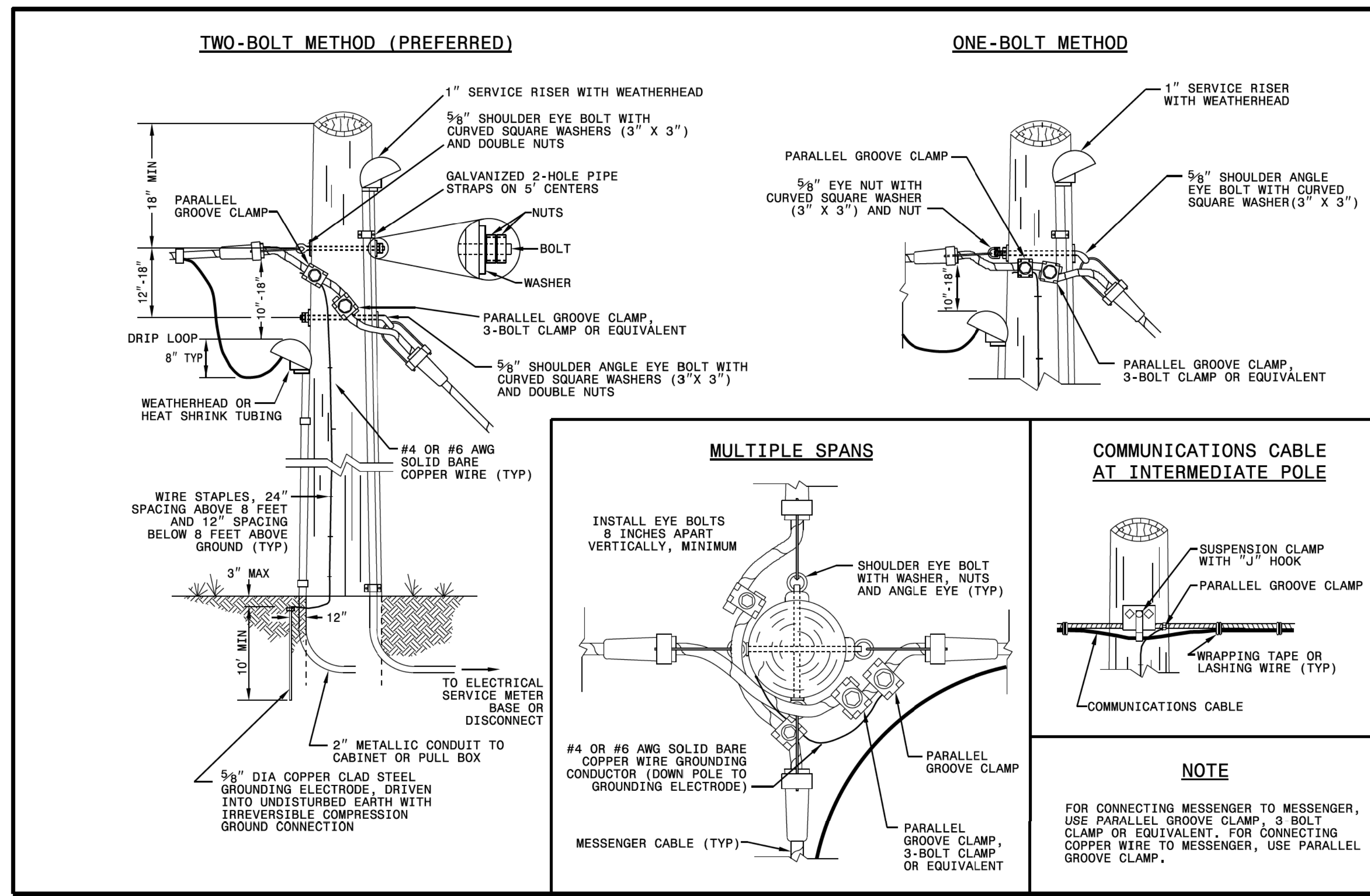
\$\$\$\$\$ SYSTEM \$\$\$\$\$\$ DDN \$\$\$\$\$\$ USER NAME \$\$\$\$\$\$



STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
ELECTRICAL SERVICE GROUNDING
GROUNDING AND BONDING

SHEET 1 OF 1
1700D01



STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
WOOD POLES
METHODS OF ATTACHMENT AND GROUNDING

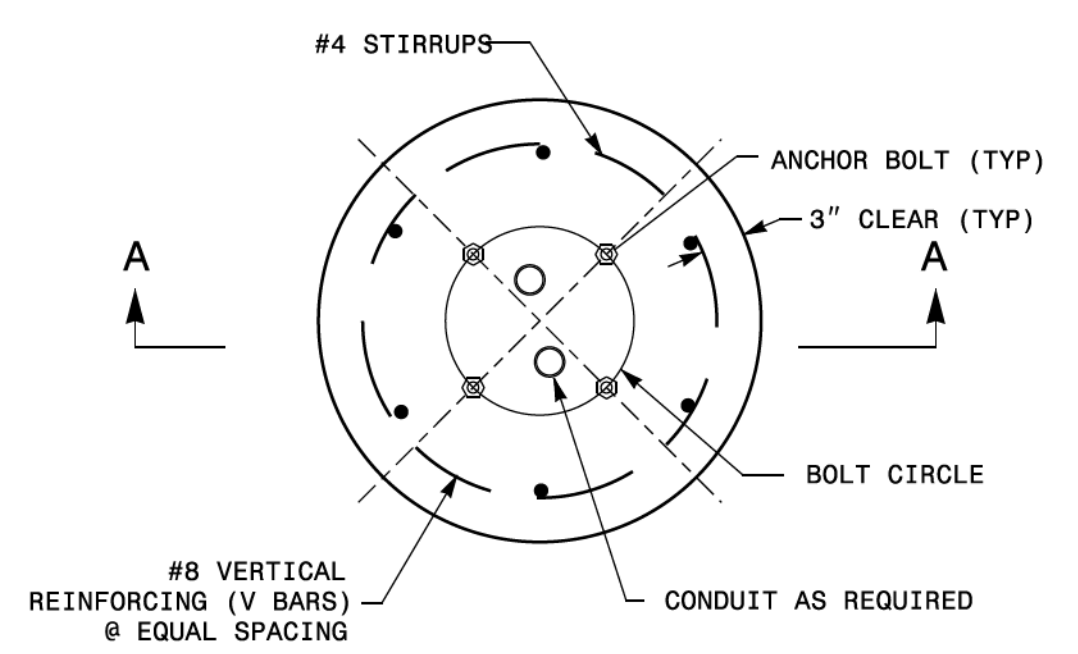
SHEET 1 OF 1
1720D01

11-001-2017 08:56
L:\2018 3rd Drawings\Plate Sheets\2018_Plate_Sheet.dgn
msw

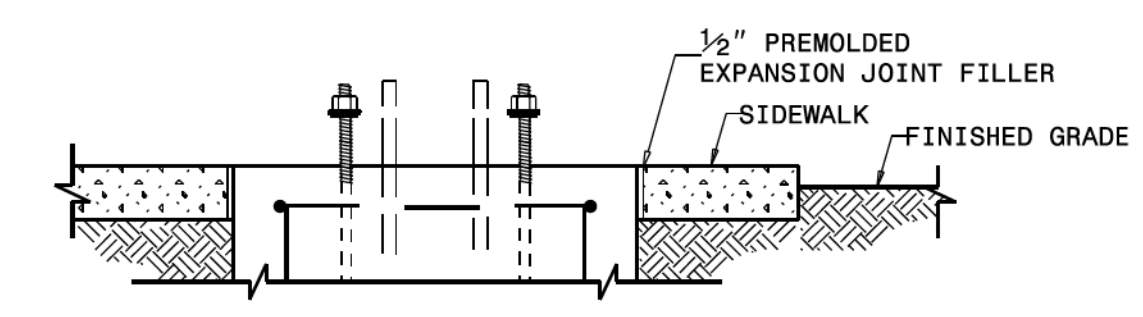
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

See Plate for Title

<p>Prepared in the Offices of:</p> <p>750 N. Greenfield Parkway Garner, NC 27529</p>	<p>SEAL</p> <p>DocuSigned by: <i>Mohd Aslami</i> 10/11/2017 DATE</p>
--	--



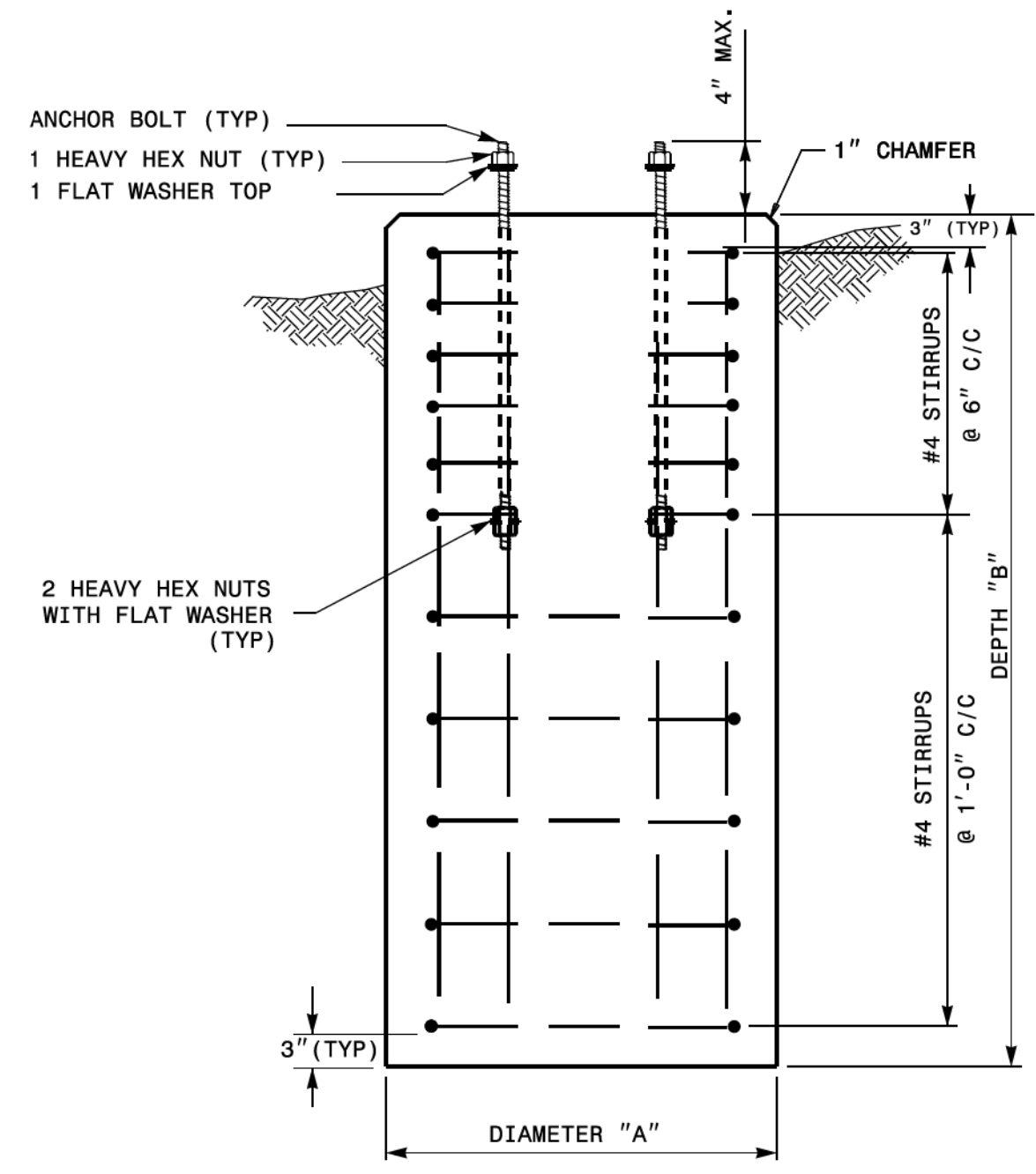
PEDESTAL FOUNDATION - PLAN VIEW



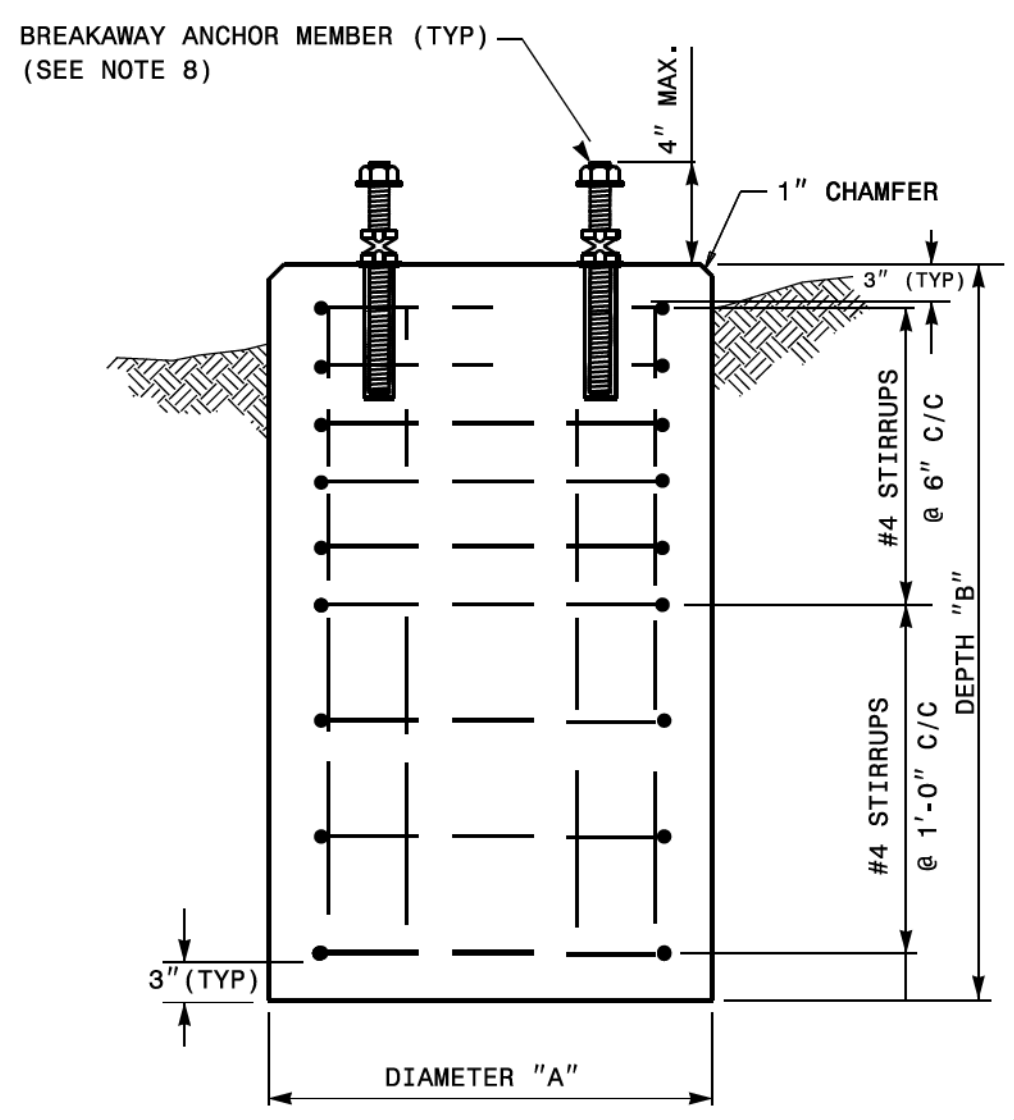
PEDESTAL FOUNDATION DETAILS FOR SIDEWALK

NOTES:

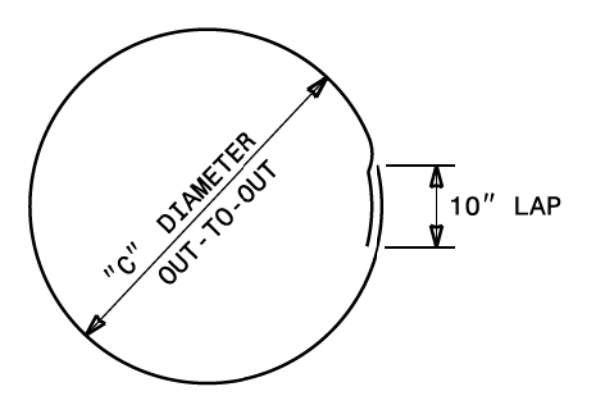
- CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
- COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
- USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION STRENGTH AT 28 DAYS OF $F'c = 3000$ PSI (MIN.).
- USE ASTM GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL.
- GRADE IS ASSUMED TO BE (8H:1V) OR FLATTER. FOUNDATION SIZE AND DEPTHS ARE BASED ON THE FOLLOWING SOIL DESIGN PARAMETERS:
 - A. SANDY TYPE SOIL
 - B. NO GROUND WATER WITHIN 5'-0" OF SURFACE ELEVATION
 - C. WIND SPEED NOT TO EXCEED 140 MPH
 IF ACTUAL CONDITIONS VARY SUBSTANTIALLY FROM THOSE ASSUMED, THE FOUNDATION DEPTH MAY BE ADJUSTED. IN THIS CASE, CONTACT THE ENGINEER.
- MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
- ORIENT CONDUIT AS REQUIRED BY THE DESIGN OR AS DICTATED BY FIELD CONDITIONS.
- USE ADHESIVE ANCHOR FOR THREADED COUPLING INSERT. FOR TYPE I MINIMUM DEPTH NECESSARY IS 0'-4 1/2" AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0'-6 5/8". FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.



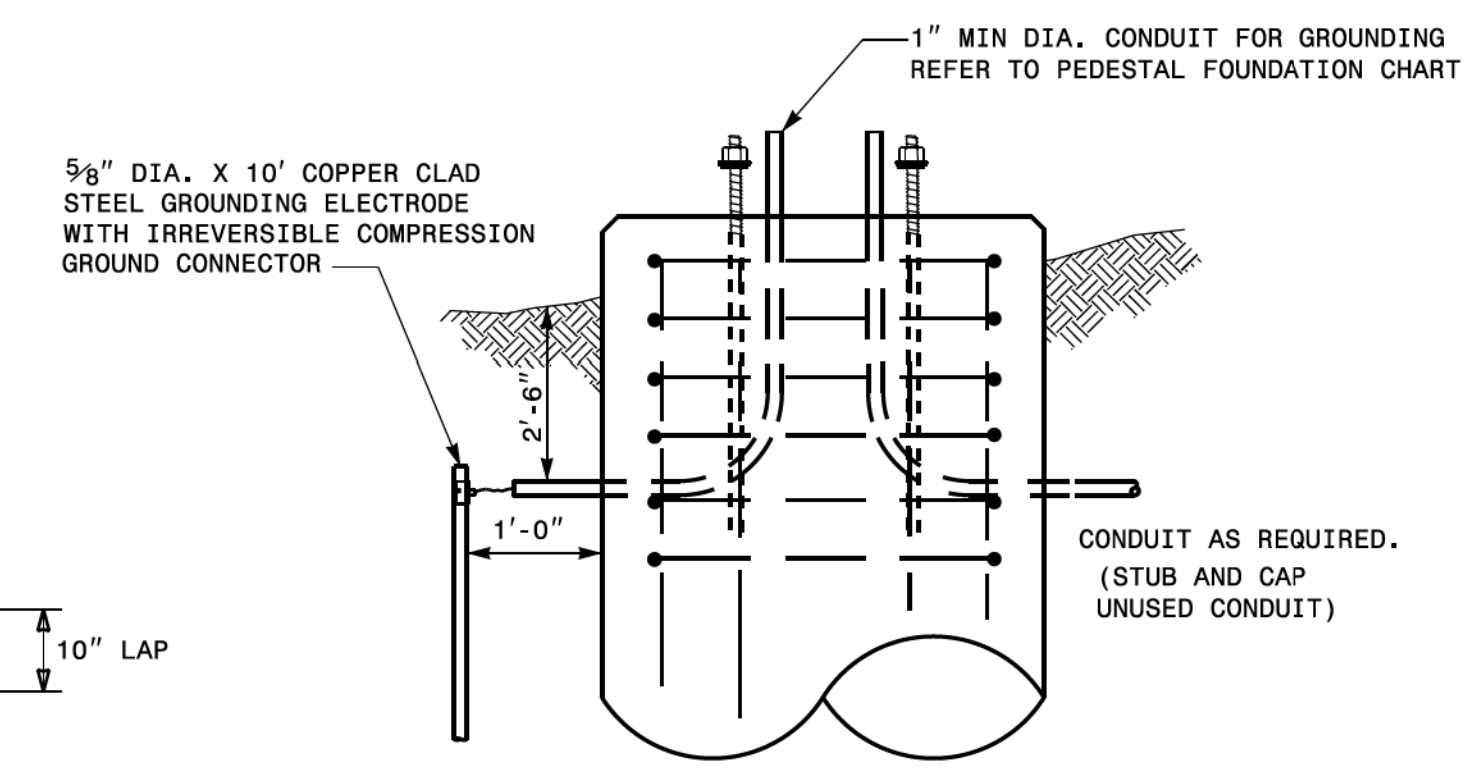
TYPES I, II & III SECTION A-A



TYPES I & II ONLY SECTION A-A



CLOSED HOOPS



GROUNDING & CONDUIT DETAIL

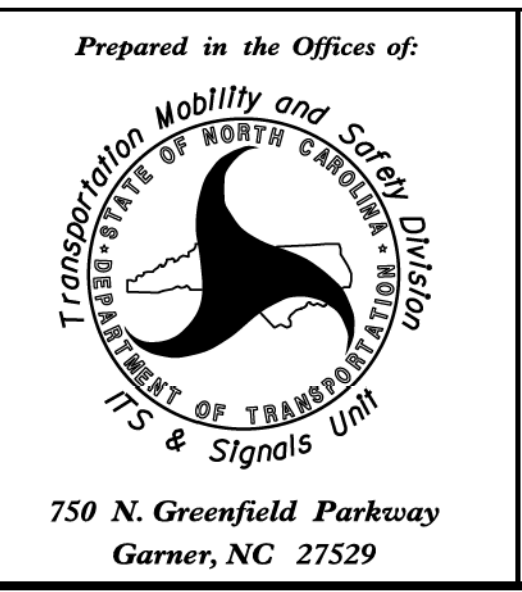
PEDESTAL FOUNDATION TYPE AND SIZE							
TYPE	PEDESTAL DESCRIPTION	SIZE			ANCHOR BOLT		INSTALL GROUNDING SYSTEM (YES/NO)
		DIAMETER "A" FT	DEPTH "B" FT	CONCRETE VOLUME CY	DIAMETER (MIN.) IN	LENGTH FT-IN	
I	PEDESTRIAN PUSHBUTTON	2'-0"	3'-6"	.41	1/2	1'-6"	NO
II	NORMAL-DUTY	2'-0"	5'-0"	.58	3/4	2'-0"	YES
III	HEAVY-DUTY	2'-6"	7'-0"	1.27	1	4'-0"	YES

REINFORCING STEEL SCHEDULE													
TYPE	V-BAR				STIRRUP								
	SIZE #	QTY	LENGTH	WEIGHT LBS	SIZE #	QUANTITY			LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	TOTAL STEEL WEIGHT LBS
						VERTICAL ON 6" CENTERS	SPACING ON 12" CENTERS	TOTAL					
I	8	6	3'-0"	56	4	0	4	4	5'-7"	1'-6"	0'-10"	15	71
II	8	6	4'-6"	86	4	5	3	8	5'-7"	1'-6"	0'-10"	30	116
III	8	6	6'-6"	122	4	7	4	11	7'-2"	2'-0"	0'-10"	53	175

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

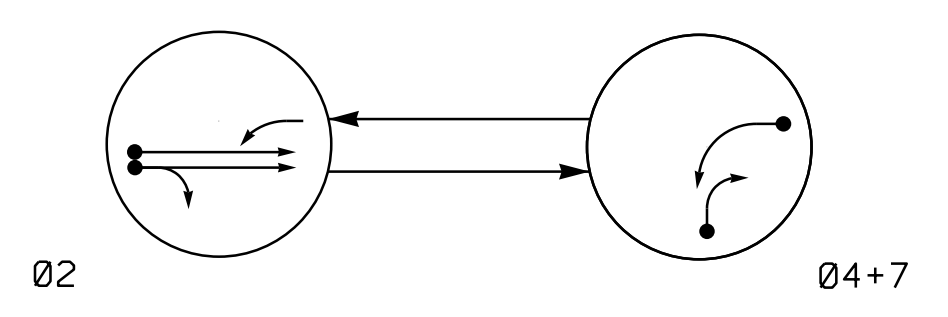
1-18
ENGLISH STANDARD DRAWING FOR
PEDESTALS FOUNDATIONS
SHEET 1 OF 1
1743D01

See Plate for Title

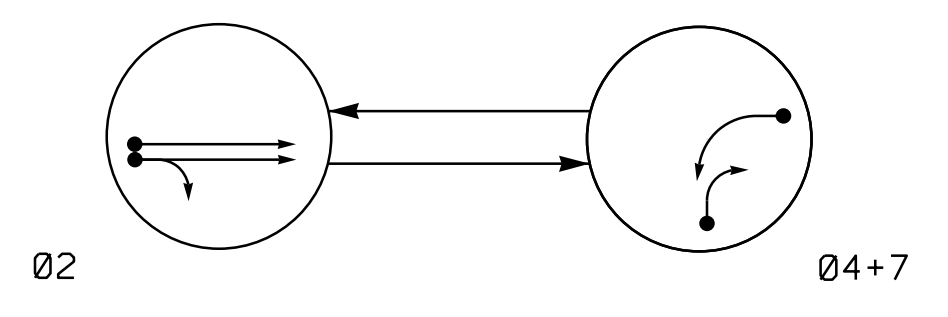


DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM

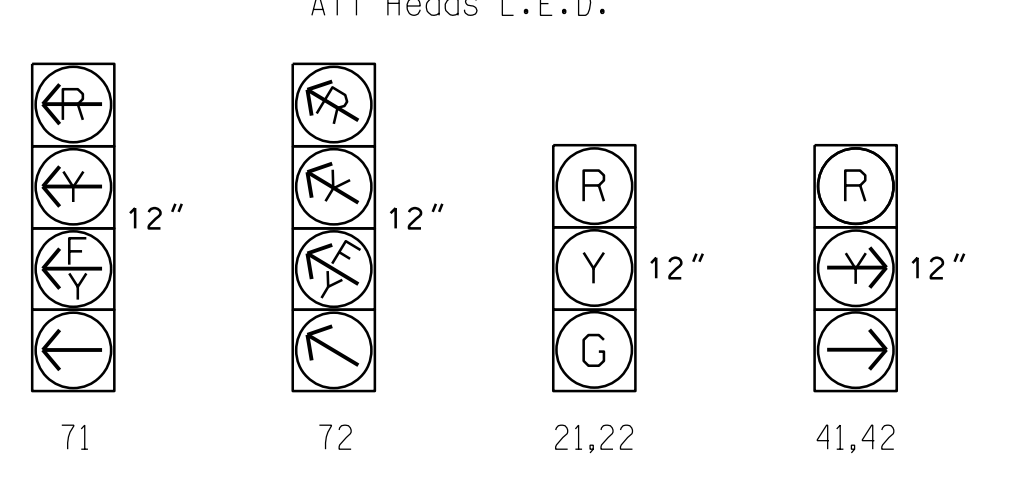


PHASING DIAGRAM DETECTION LEGEND
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

DEFAULT PHASING TABLE OF OPERATION

Table with columns: SIGNAL FACE, PHASE, and FLASH. Rows include 21,22; 41,42; 71; 72.

SIGNAL FACE I.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

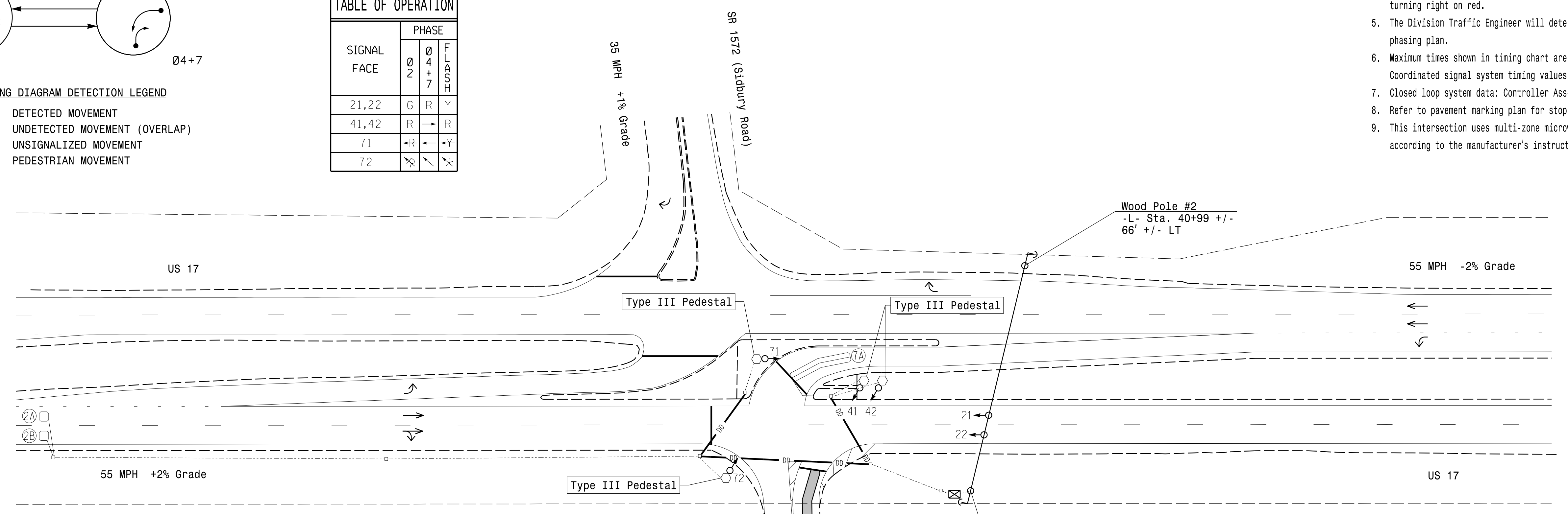
Table with columns: LOOP / ZONE, SIZE (FT), DISTANCE FROM STOPBAR (FT), TURNS, NEW LOOP, PHASE, CALLING, EXTENSION, FULL TIME DELAY, STRETCH TIME, DELAY TIME, SYSTEM LOOP, NEW CARD.

Disable delay during Alternate Phasing operation.
* Microwave Detection

2 Phase Fully Actuated Signal System: D03-13_Scotts Hill

NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. The Division Traffic Engineer will determine the hours of use for each phasing plan.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Closed loop system data: Controller Asset #1200
8. Refer to pavement marking plan for stop line locations.
9. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.



OASIS 2070 TIMING CHART table with columns: FEATURE, PHASE (2, 4, 7).

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

LEGEND table with columns: PROPOSED, EXISTING, and descriptions of symbols like Traffic Signal Head, Pedestrian Signal Head, etc.

New Installation - Temporary Design

Infrastructure Consulting Services, Inc. RKA RAMEY KEMP ASSOCIATES logo and address information.

Professional Engineer seal for William J. Hamilton, State of North Carolina, License No. 32396.

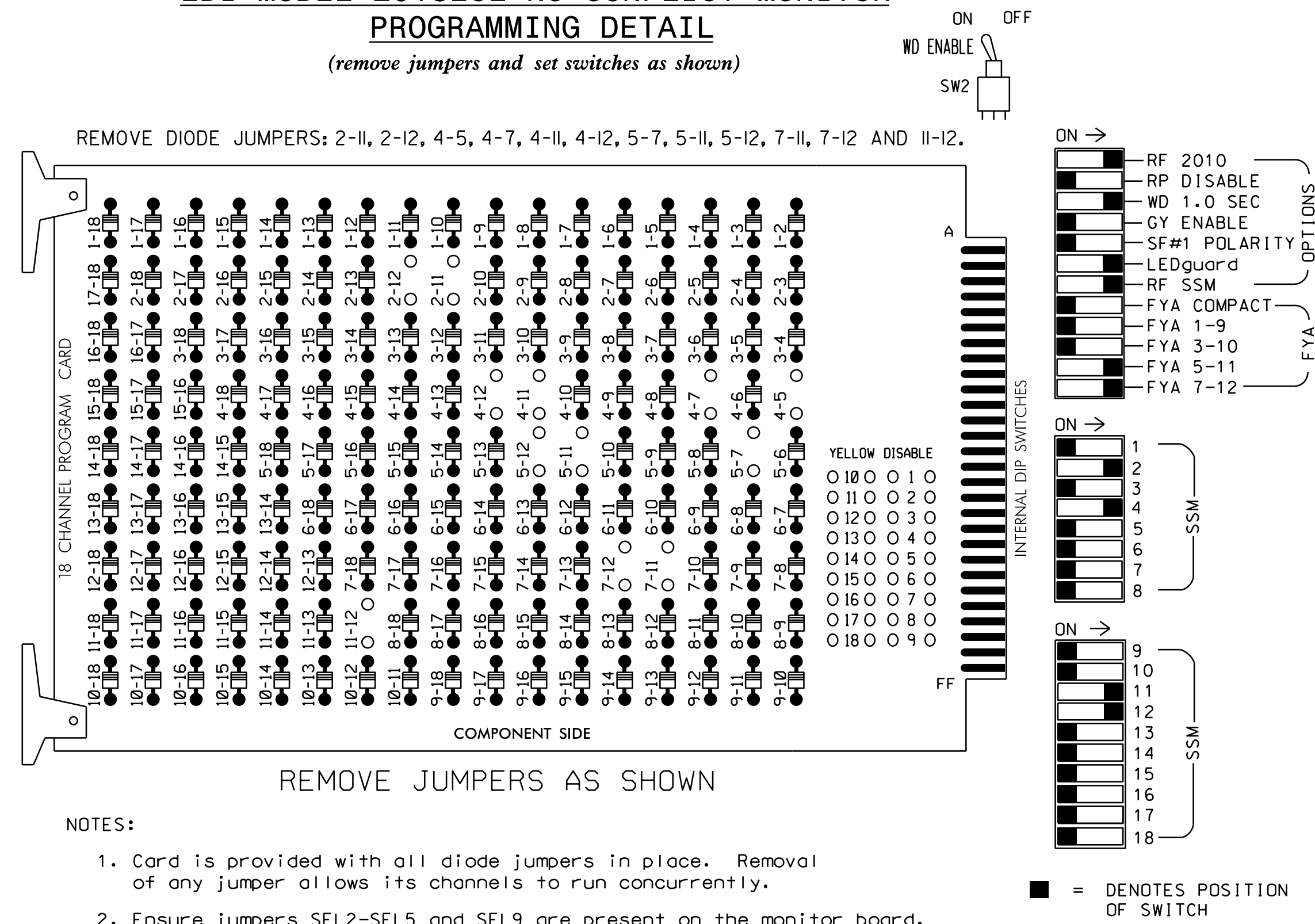
Project information: US 17 EB at Abbey Preserve, Division 3, Pender County, N of Wilmington. Includes plan date (October 2022) and reviewer (WJ Hamilton).

Professional Engineer seal for William J. Hamilton, State of North Carolina, License No. 32396.

Vertical text on the left edge of the page.

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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 4 and 7 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 2 for Variable Initial and Gap Reduction.
- Program phase 2 for Startup In Green.
- Program phase 2 for Yellow Flash.
- The cabinet and controller are part of the D03-13_Scotts Hill Signal System. Controller Asset #XXXX

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,S5,S7,S10,AUX S4,AUX S5
 PHASES USED.....2,4,7
 OVERLAP "A"NONE
 OVERLAP "B"NONE
 OVERLAP "C"2+7
 OVERLAP "D"2+7
 OVERLAP "G"7

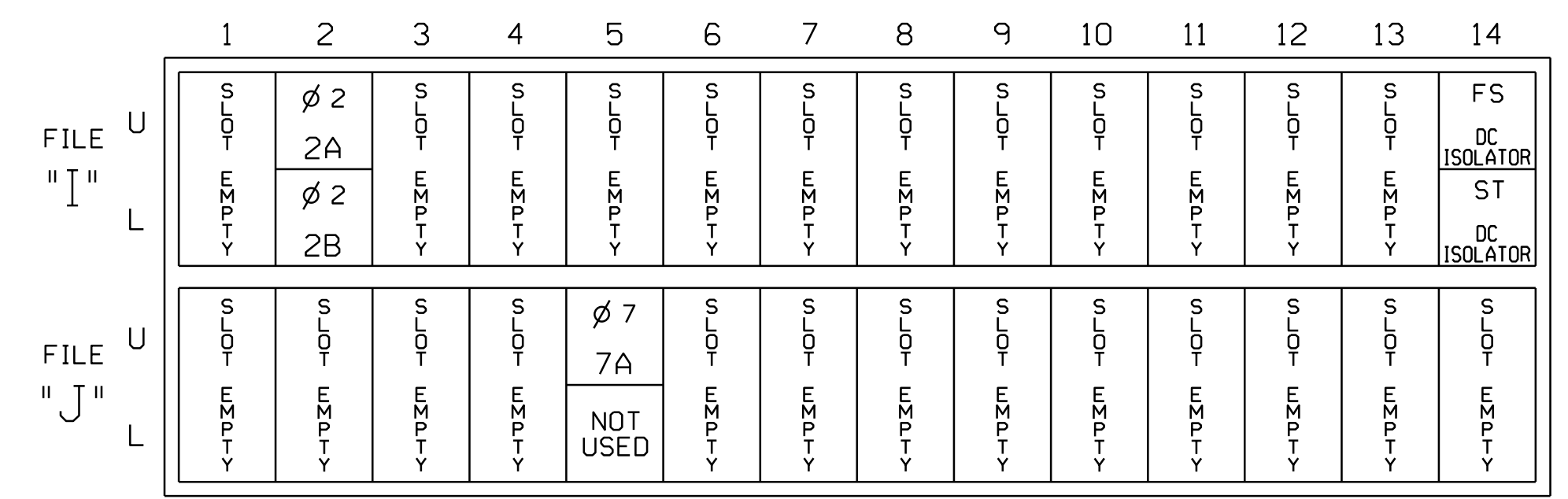
SIGNAL HEAD HOOK-UP CHART

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	** OLG	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	72*	NU	NU	71*	NU	NU	NU	NU	NU	72*	71*	NU
RED		128			101													
YELLOW		129					*			*								
GREEN		130																
RED ARROW																A114	A101	
YELLOW ARROW						102										A115	A102	
FLASHING YELLOW ARROW																A116	A103	
GREEN ARROW					103		133			124								

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ** Requires special programming and output remapping. See sheets 2 and 5.
 * See pictorial of head wiring in detail below.

INPUT FILE POSITION LAYOUT

(front view)



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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			15
	-	J5U	57	19 *	57	7	Y	Y			

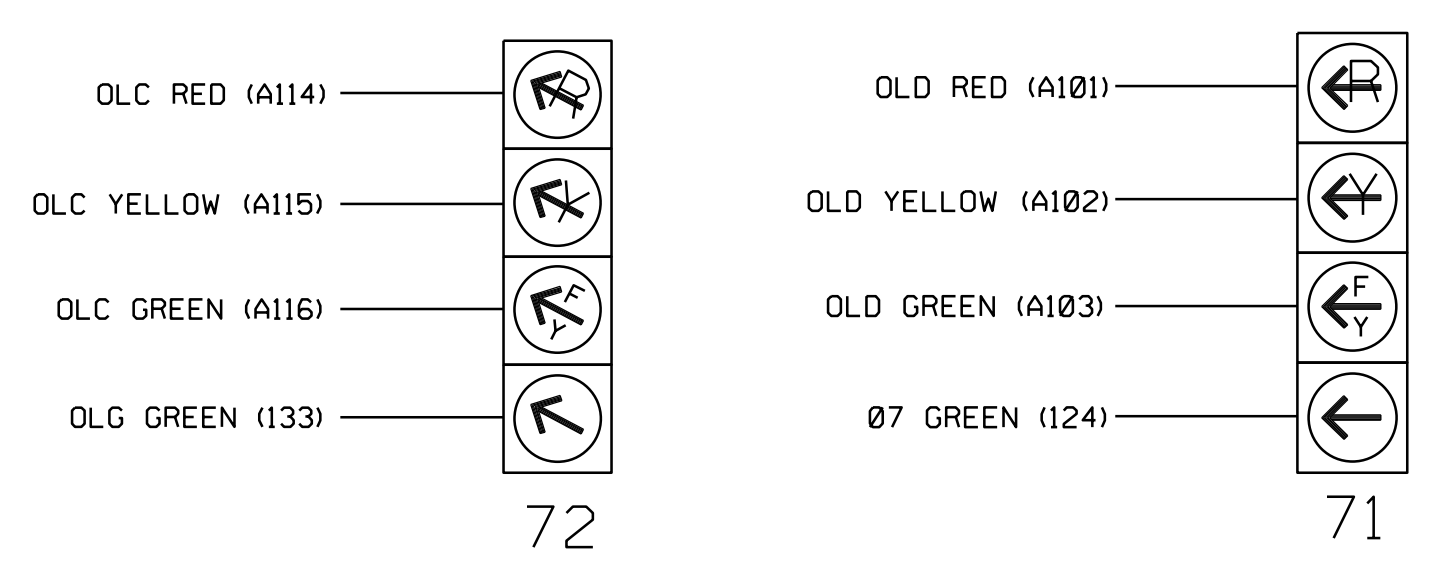
* See Input Page Assignment programming detail on sheet 3.

INPUT FILE POSITION LEGEND: J2L

FILE J
 SLOT 2
 LOWER

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

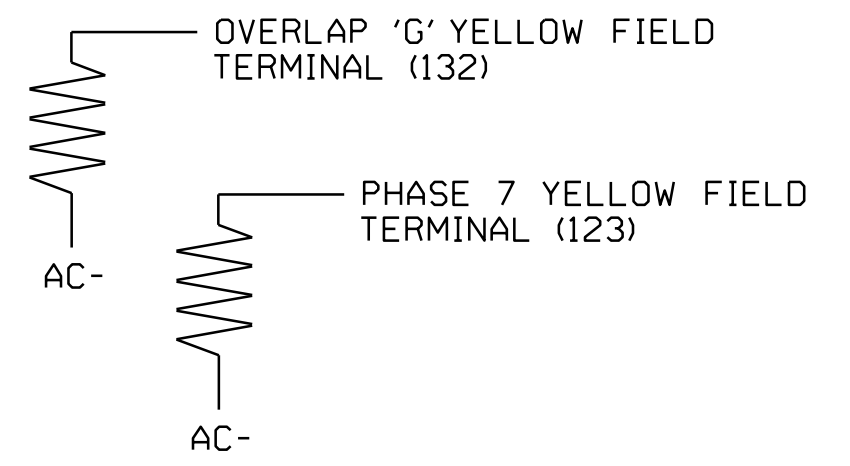


NOTE
 The sequence display for signal heads 71 and 72 require special programming. See sheet 2 for programming instructions.

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

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



SPECIAL DETECTOR NOTE

For loop 4A, install a microwave detection system for vehicle detection. Perform installation according to the manufacturer's directions and NCDOT engineer approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1200T
 DESIGNED: Oct 2022
 SEALED: 10/25/2022
 REVISED: N/A

Temporary Design
 Electrical Detail - Sheet 1 of 5



ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 17 EB at Abbey Preserve

Division 3 Pender County N of Wilmington

PLAN DATE: October 2022 REVIEWED BY: WJ Hamilton
 PREPARED BY: ZM Esposito RKA PROJ. NO: 22182 (040)

REVISIONS	INIT.	DATE

750 N. Greenfield Pkwy, Corner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 32396
 WILLIAM J. HAMILTON
 SIGNATURE

10/25/2022 DATE

SIG. INVENTORY NO. 03-1200T

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, 4, 5 AND 6.
- 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 (HEAD 71).

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 (HEAD 71).

LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF YELLOW ON PHASE #7 IS ON

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #40 ON

PRESS '+'

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

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

SCROLL DOWN

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

PRESS '+'

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

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

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

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

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

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 7 (HEAD 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
OUTPUT 42	=	Overlap C Red
OUTPUT 43	=	Overlap C Yellow
OUTPUT 44	=	Overlap C Green

OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(program controller as shown below)

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

PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' 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)...0.0
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)...0.0

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)...0.0
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)...0.0

PAGE 1: VEHICLE OVERLAP 'G' 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?...N
GREEN EXTENSION (0-255 SEC)...0.0
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)...0.0

NOTICE GREEN FLASH

NOTICE GREEN FLASH

PRESS '+'

PRESS '+' UNTIL OVERLAP 'G' APPEARS

OVERLAP PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

(program controller as shown below)

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

PRESS '+' TWICE

NOTICE PAGE 2

PAGE 2: VEHICLE OVERLAP 'C' 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)...0.0
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)...0.0

REMOVE GREEN FLASH

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)...0.0
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)...0.0

REMOVE GREEN FLASH

PAGE 2: VEHICLE OVERLAP 'G' 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?...N
GREEN EXTENSION (0-255 SEC)...0.0
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)...0.0

PRESS '+' UNTIL OVERLAP 'G' APPEARS

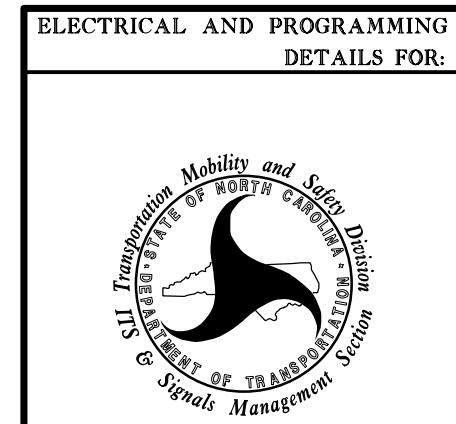
OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1200T
DESIGNED: Oct 2022
SEALED: 10/25/2022
REVISED: N/A

Temporary Design
Electrical Detail - Sheet 2 of 5

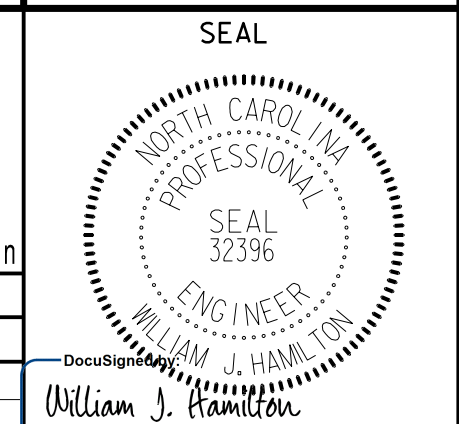


8210 University Executive Park Drive, Suite 220 - Charlotte, NC 28262
Phone: 704-549-4260 | www.rameykemp.com | NC License No. C-0910



ELECTRICAL AND PROGRAMMING DETAILS FOR:	
US 17 EB at Abbey Preserve	
Division 3	Pender County N of Wilmington
PLAN DATE: October 2022	REVIEWED BY: WJ Hamilton
PREPARED BY: ZM Esposito	RKA PROJ. NO: 22182 (040)
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



10/25/2022
SIGNATURE DATE
SIG. INVENTORY NO. 03-1200T

INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 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 LOOP 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 '57' TO REASSIGN THE VEHICLE DETECTOR FOR THIS INPUT

(LOOP 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 - LOOP 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

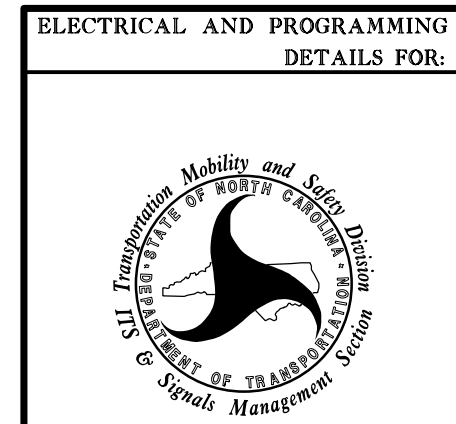
NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1200T
DESIGNED: Oct 2022
SEALED: 10/25/2022
REVISED: N/A

Temporary Design
Electrical Detail - Sheet 3 of 5

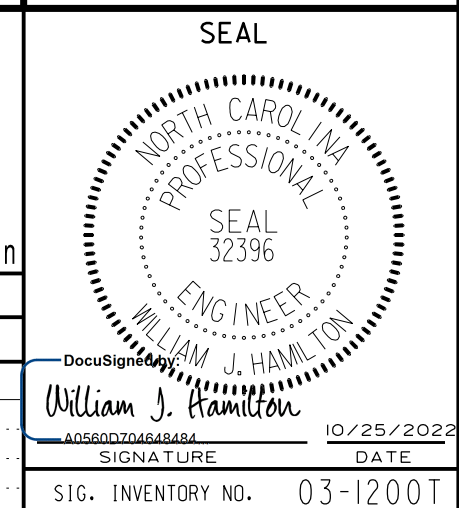


8210 University Executive Park Drive, Suite 220 - Charlotte, NC 28262
Phone: 704-549-4260 | www.rameykemp.com | NC License No. C-0910



ELECTRICAL AND PROGRAMMING DETAILS FOR:		US 17 EB at Abbey Preserve	
Division 3	Pender County	N of Wilmington	
PLAN DATE: October 2022	REVIEWED BY: WJ Hamilton		
PREPARED BY: ZM Esposito	RKA PROJ. NO: 22182 (040)		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SIG. INVENTORY NO. 03-1200T

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.

<u>PHASING</u>	<u>INPUTS PAGE</u>	<u>OVERLAPS PAGE</u>
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 loop 7A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 03-1200T
 DESIGNED: Oct 2022
 SEALED: 10/25/2022
 REVISED: N/A

Temporary Design
 Electrical Detail - Sheet 4 of 5

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED



8210 University Executive Park Drive, Suite 220 - Charlotte, NC 28262
 Phone: 704-543-4260 | www.rameykemp.com | NC License No. C-0910

ELECTRICAL AND PROGRAMMING
 DETAILS FOR:

750 N. Greenfield Pkwy, Corner, NC 27529

US 17 EB at Abbey Preserve		
Division 3 Pender County N of Wilmington		
PLAN DATE: October 2022	REVIEWED BY: WJ Hamilton	
PREPARED BY: ZM Esposito	RKA PROJ. NO: 22182 (040)	
REVISIONS	INIT.	DATE

SEAL

William J. Hamilton
 10/25/2022
 SIGNATURE DATE
 SIG. INVENTORY NO. 03-1200T

OUTPUT ASSIGNMENT PROGRAMMING DETAIL FOR OVERLAP "G" TO LOADSWITCH "S7"

(program controller as shown below)

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
- WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 30. AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:32 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....30
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0.0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED. ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:32 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=161)...7
SELECT COLOR (0=RED,1=YEL,2=GRN)...0

```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN. PRESS THE 'ENT' AFTER INPUTTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:32 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....30
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0.0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

```

PRESS '+' KEY FOR OUTPUT 31

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:33 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....31
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0.0
MODE (0=SOLID,1=FLASH)...1
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED. ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:33 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=161)...7
SELECT COLOR (0=RED,1=YEL,2=GRN)...1

```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN. PRESS THE 'ENT' AFTER INPUTTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:33 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....31
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0.0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

```

PRESS '+' KEY FOR OUTPUT 32

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:34 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....32
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0.0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED. ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:34 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=161)...7
SELECT COLOR (0=RED,1=YEL,2=GRN)...2

```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN. PRESS THE 'ENT' AFTER INPUTTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:34 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....32
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0.0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

```

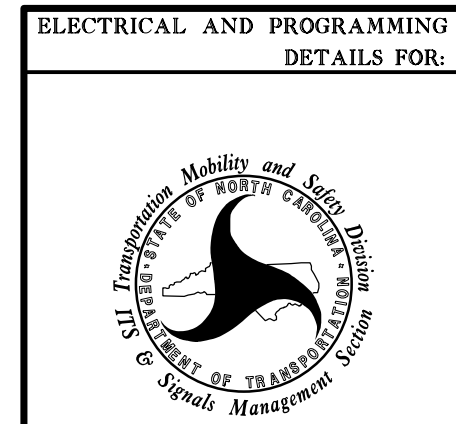
OUTPUT PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1200T
 DESIGNED: Oct 2022
 SEALED: 10/25/2022
 REVISED: N/A

Temporary Design Electrical Detail - Sheet 5 of 5



8210 University Executive Park Drive, Suite 220 - Charlotte, NC 28262 Phone: 704-549-4260 | www.rameykemp.com | NC License No. C-0910



ELECTRICAL AND PROGRAMMING DETAILS FOR:	
US 17 EB at Abbey Preserve	
Division 3	Pender County N of Wilmington
PLAN DATE: October 2022	REVIEWED BY: WJ Hamilton
PREPARED BY: ZM Esposito	RKA PROJ. NO: 22182 (040)
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER

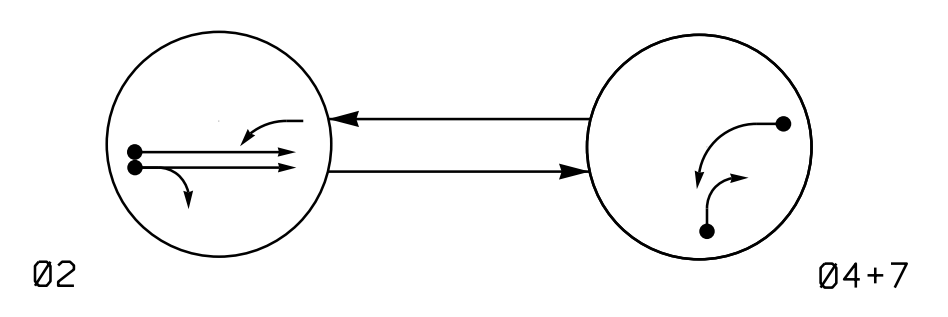
WILLIAM J. HAMILTON

10/25/2022

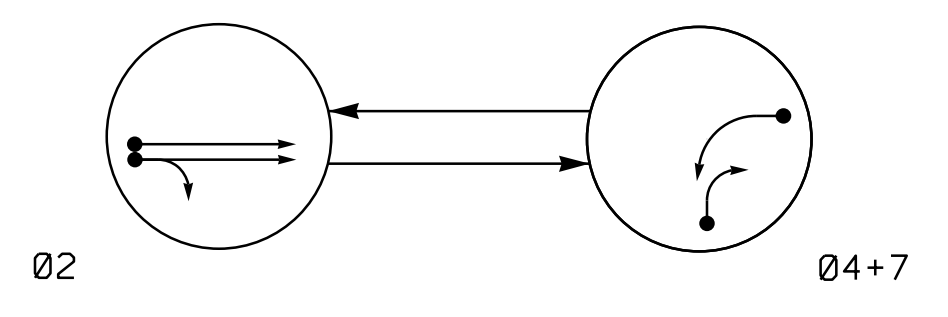
SIGNATURE DATE

SIG. INVENTORY NO. 03-1200T

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- ←●→ DETECTED MOVEMENT
- ←→ UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ←- - -> PEDESTRIAN MOVEMENT

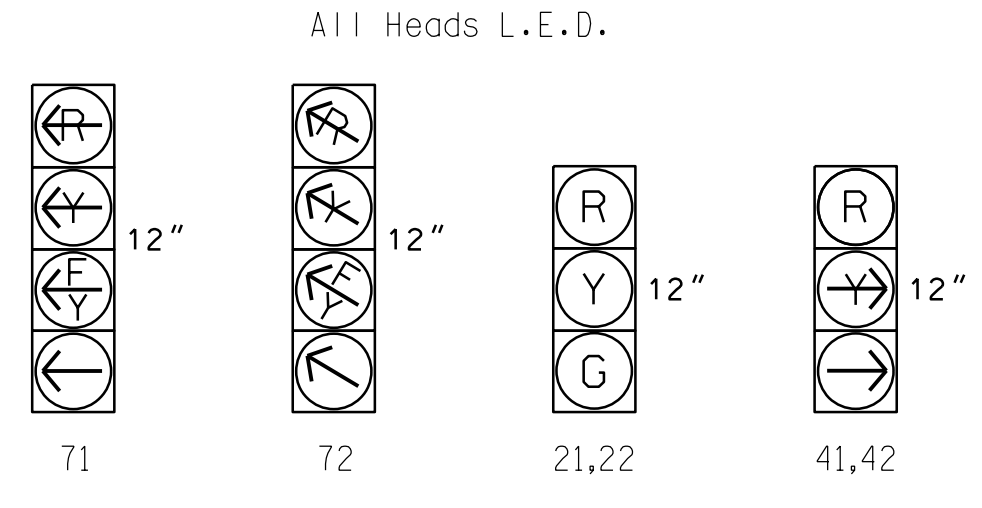
DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02	04+7	FLASH
21,22	G	R	Y
41,42	R	←	R
71	←	←	←
72	↘	↗	↘

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02	04+7	FLASH
21,22	G	R	Y
41,42	R	←	R
71	←	←	←
72	↘	↗	↘

SIGNAL FACE I.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

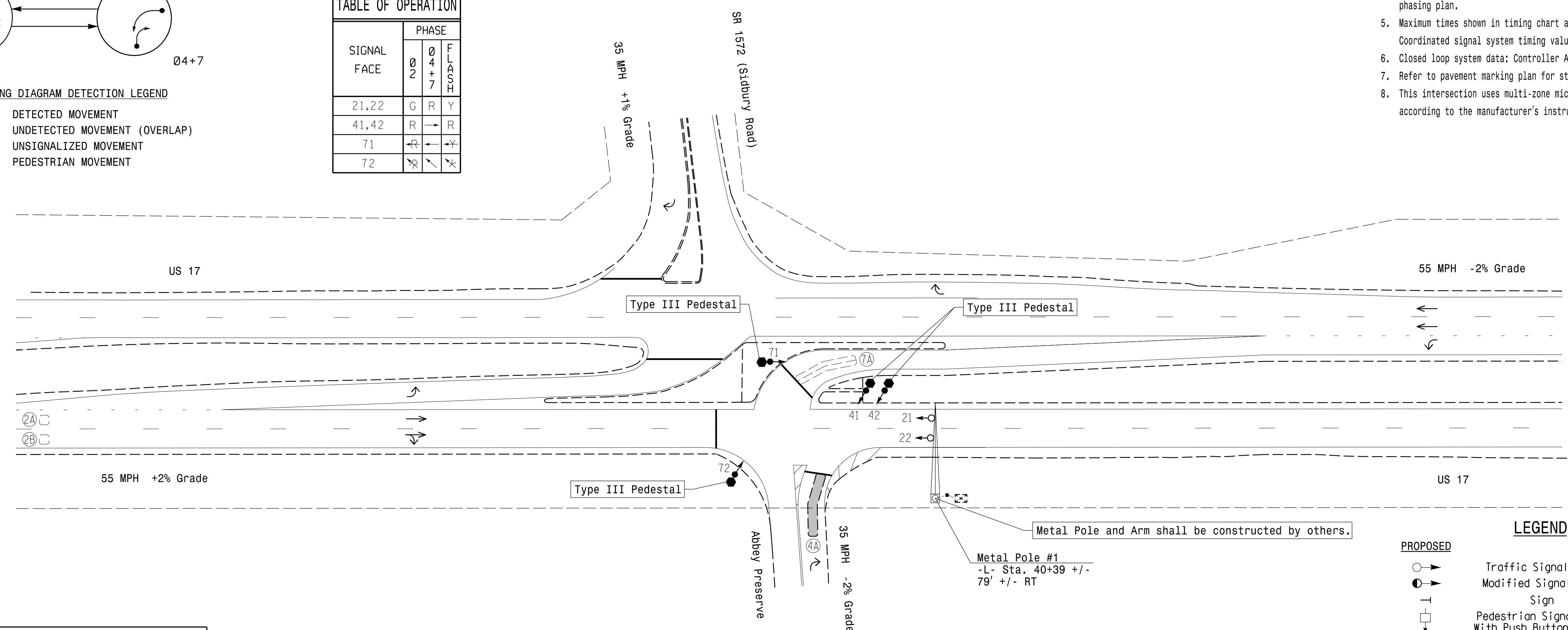
LOOP / ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING						
					PHASE	CALLING	EXTENSION	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	420	6	-	2	Y	Y	-	-	-	-
2B	6X6	420	6	-	2	Y	Y	-	-	-	-
4A	6X40	0	*	*	4	Y	Y	-	15	-	*
7A	6X40	0	2-4-2	-	7	Y	Y	-	15#	-	-

Disable delay during Alternate Phasing operation.
* Microwave Detection

2 Phase Fully Actuated Signal System: D03-13_Scotts Hill

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.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- 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 #1200
- Refer to pavement marking plan for stop line locations.
- This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.



OASIS 2070 TIMING CHART

FEATURE	PHASE		
	2	4	7
Min Green 1 *	14	7	7
Extension 1 *	6.0	2.0	2.0
Max Green 1 *	90	20	20
Yellow Clearance	5.0	3.0	3.0
Red Clearance	1.1	1.9	1.9
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	1.5	-	-
Max Variable Initial *	46	-	-
Time Before Reduction *	15	-	-
Time To Reduce *	30	-	-
Minimum Gap	3.4	-	-
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 phase 2 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

PROPOSED	EXISTING
○ → Traffic Signal Head	● → N/A
○ → Modified Signal Head	○ → N/A
○ → Sign	○ → N/A
○ → Pedestrian Signal Head	○ → 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	○ → N/A
○ → Right of Way	○ → N/A
○ → Directional Arrow	○ → N/A
○ → Directional Drill	○ → N/A
○ → Type III Signal Pedestal	○ → N/A
○ → Metal Pole with Mastarm	○ → N/A
○ → Microwave Detection Zone	○ → N/A

Infrastructure Consulting Services, Inc.
RKA
RAMEY KEMP ASSOCIATES
8210 University Executive Park Drive, Suite 220 - Charlotte, NC 28262
Phone: 704-549-4260 | www.rameykemp.com | NC License No. F-1489

New Installation - Final Design

US 17 EB at Abbey Preserve

Division 3 Pender County N of Wilmington

PLAN DATE: October 2022 REVIEWED BY: WJ Hamilton
PREPARED BY: ZM Esposito RKA PROJ. NO: 22182 (040)

750 N. Greenfield Pkwy, Garner, NC 27529

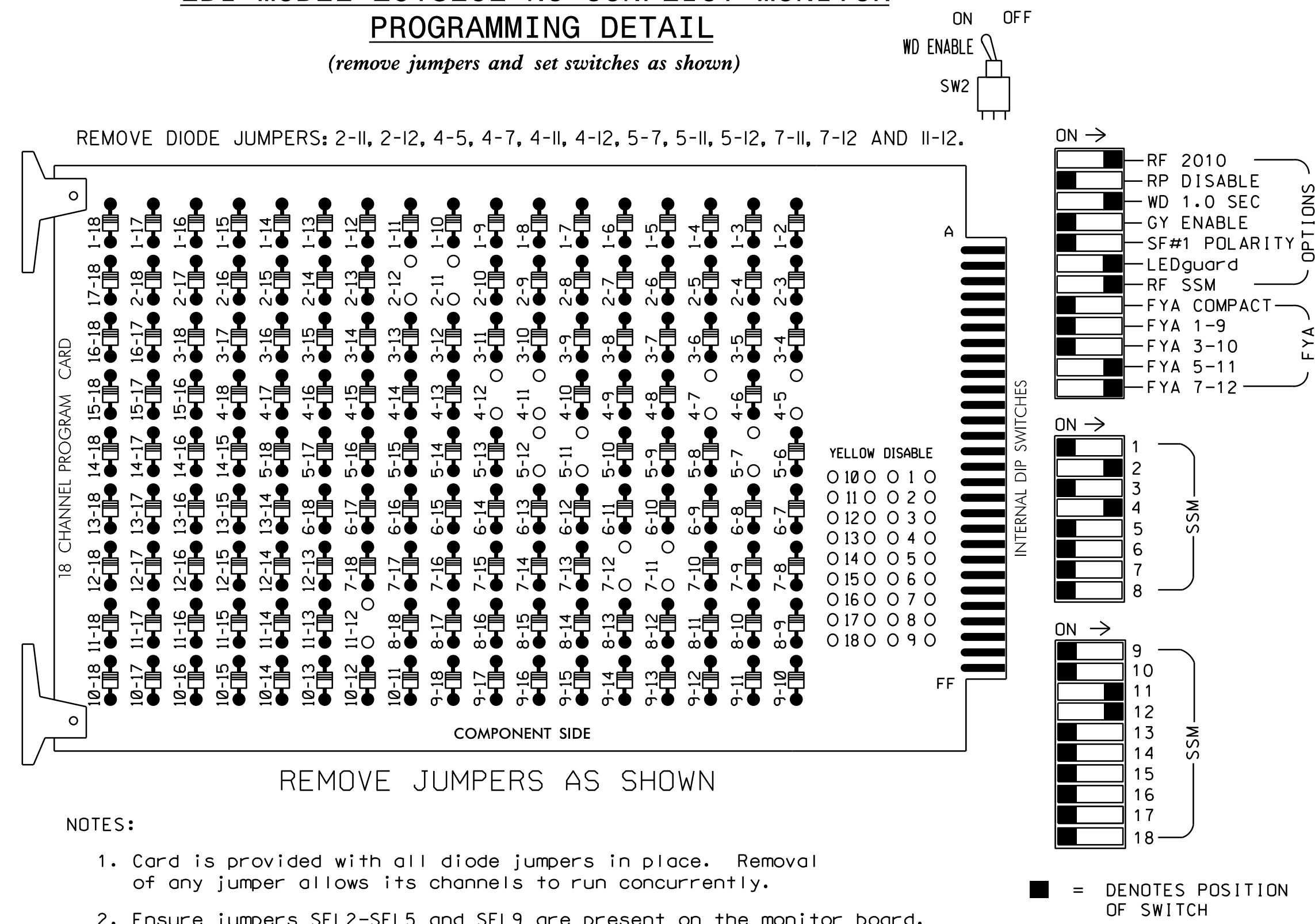
0 SCALE 40
1" = 40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
WILLIAM J. HAMILTON
10/25/2022
DATE
SIG. INVENTORY NO. 03-1200

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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 4 and 7 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phase 2 for Variable Initial and Gap Reduction.
- Program phase 2 for Startup In Green.
- Program phase 2 for Yellow Flash.
- The cabinet and controller are part of the D03-13_Scotts Hill Signal System. Controller Asset #XXXX

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	** OLG	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	72*	NU	NU	71*	NU	NU	NU	NU	NU	72*	71*	NU
RED		128			101													
YELLOW		129					*			*								
GREEN		130																
RED ARROW																A114	A101	
YELLOW ARROW						102										A115	A102	
FLASHING YELLOW ARROW																A116	A103	
GREEN ARROW					103		133			124								

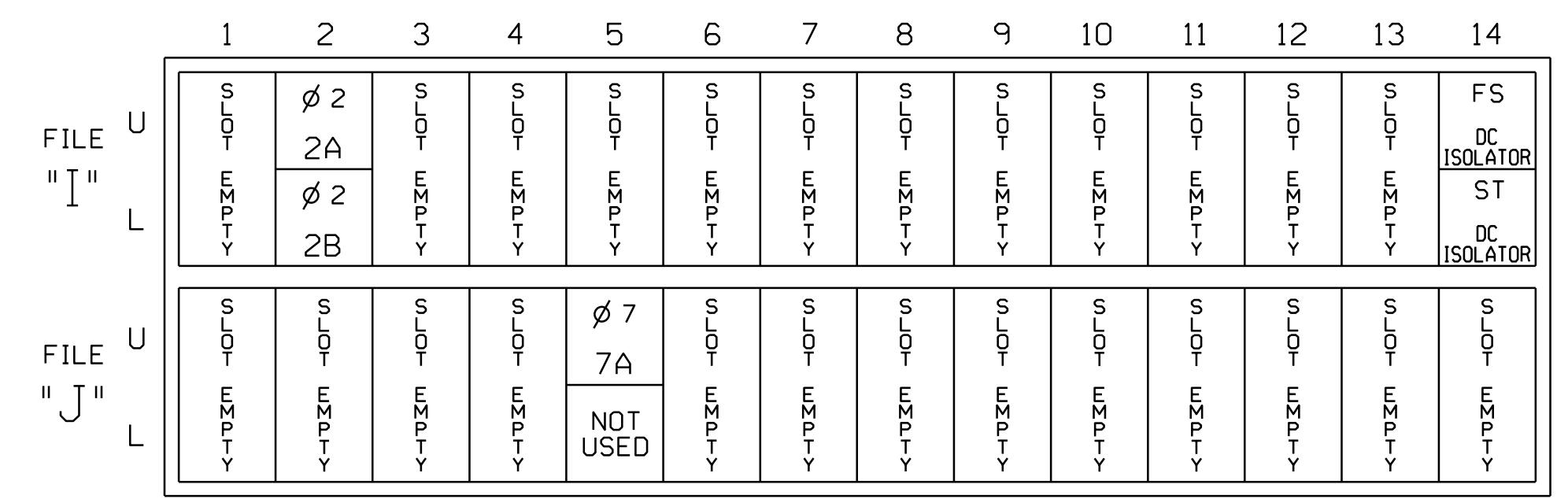
NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ** Requires special programming and output remapping. See sheets 2 and 5.
 ★ See pictorial of head wiring in detail below.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S7,S10,AUX S4,AUX S5
 PHASES USED.....2,4,7
 OVERLAP "A"NONE
 OVERLAP "B"NONE
 OVERLAP "C"2+7
 OVERLAP "D"2+7
 OVERLAP "G"7

INPUT FILE POSITION LAYOUT

(front view)

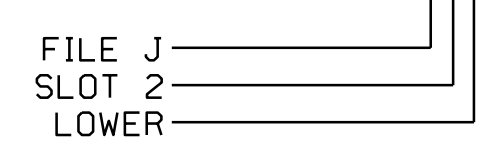


INPUT FILE CONNECTION & PROGRAMMING CHART

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			15
	-	J5U	57	19 ★	57	7	Y	Y			

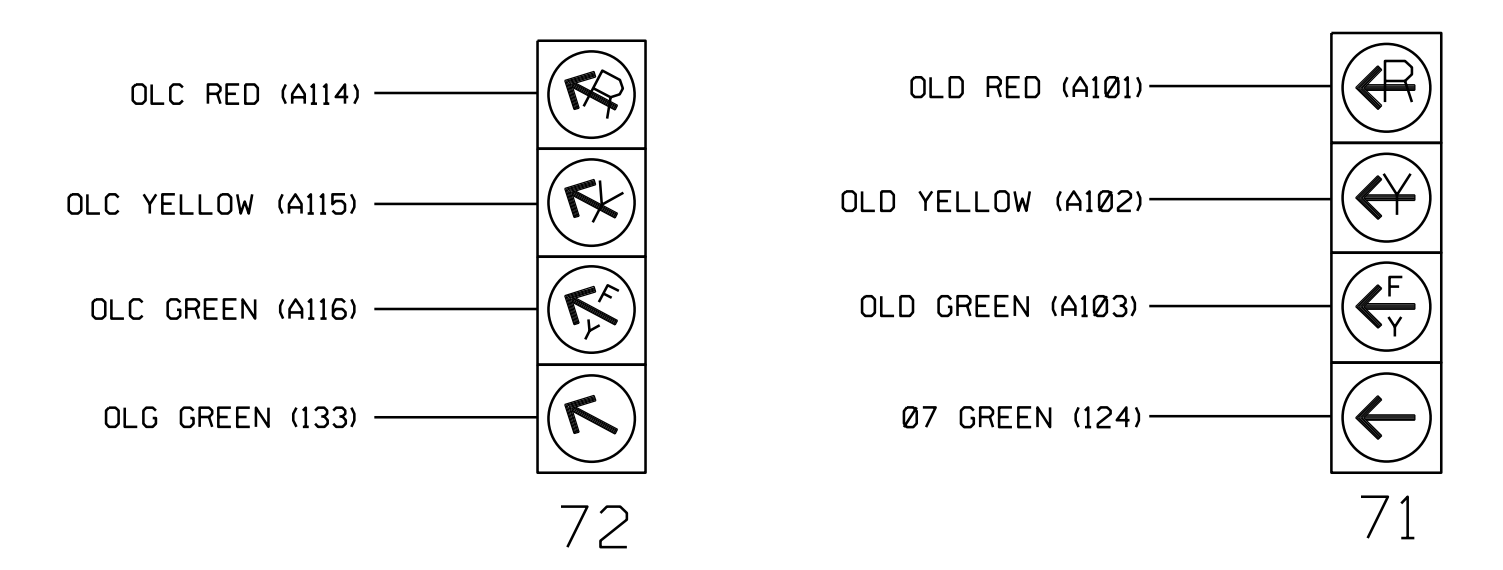
★ See Input Page Assignment programming detail on sheet 3.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



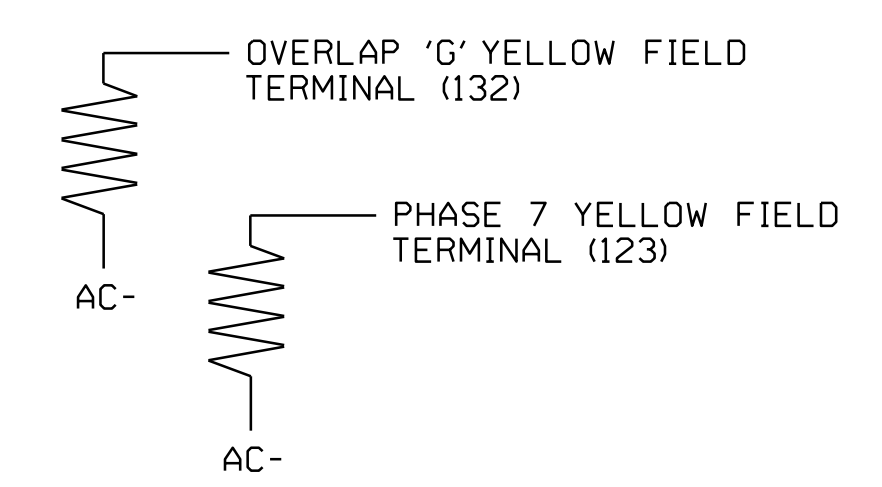
NOTE

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

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

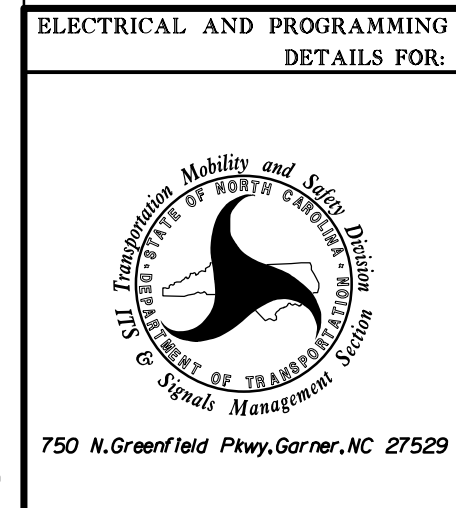


SPECIAL DETECTOR NOTE

For loop 4A, install a microwave detection system for vehicle detection. Perform installation according to the manufacturer's directions and NCDOT engineer approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1200
 DESIGNED: Oct 2022
 SEALED: 10/25/2022
 REVISED: N/A

Final Design
 Electrical Detail - Sheet 1 of 5



ELECTRICAL AND PROGRAMMING DETAILS FOR:		US 17 EB at Abbey Preserve	
Division 3	Pender County	N of Wilmington	
PLAN DATE: October 2022	REVIEWED BY: WJ Hamilton		
PREPARED BY: ZM Esposito	RKA PROJ. NO: 22182 (040)		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

William J. Hamilton
 PROFESSIONAL ENGINEER
 License No. 32396
 State of North Carolina

10/25/2022
 DATE

SIG. INVENTORY NO. 03-1200

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, 4, 5 AND 6.
- 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
  
```

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

```

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

SCROLL DOWN

```

THEN:
SET OUTPUT ASSIGNMENT #41 OFF
  
```

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

```

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 (HEAD 71).

```

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

SCROLL DOWN

```

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

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

```

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

SCROLL DOWN

```

THEN:
SET OUTPUT ASSIGNMENT #44 OFF
  
```

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

```

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

SCROLL DOWN

```

THEN:
SET OUTPUT ASSIGNMENT #43 ON
  
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 7 (HEAD 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
OUTPUT 42	=	Overlap C Red
OUTPUT 43	=	Overlap C Yellow
OUTPUT 44	=	Overlap C Green

OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(program controller as shown below)

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

PRESS '+' TWICE

```

PAGE 1: VEHICLE OVERLAP 'C' 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)...0.0
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
  
```

```

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)...0.0
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
  
```

```

PAGE 1: VEHICLE OVERLAP 'G' 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?...N
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0
  
```

NOTICE GREEN FLASH

NOTICE GREEN FLASH

PRESS '+'

PRESS '+' UNTIL OVERLAP 'G' APPEARS

OVERLAP PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

(program controller as shown below)

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

NOTICE PAGE 2 →

PRESS '+' TWICE

```

PAGE 2: VEHICLE OVERLAP 'C' 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)...0.0
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
  
```

REMOVE GREEN FLASH

```

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)...0.0
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
  
```

REMOVE GREEN FLASH

```

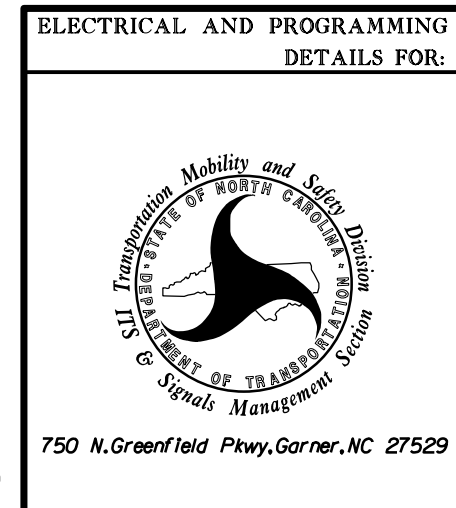
PAGE 2: VEHICLE OVERLAP 'G' SETTINGS
PHASE: :12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW - GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC)...0.0
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
  
```

PRESS '+' UNTIL OVERLAP 'G' APPEARS

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1200
DESIGNED: Oct 2022
SEALED: 10/25/2022
REVISED: N/A

Final Design
Electrical Detail - Sheet 2 of 5



ELECTRICAL AND PROGRAMMING DETAILS FOR:	
US 17 EB at Abbey Preserve	
Division 3	Pender County N of Wilmington
PLAN DATE: October 2022	REVIEWED BY: WJ Hamilton
PREPARED BY: ZM Esposito	RKA PROJ. NO: 22182 (040)
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SEAL
10/25/2022
SIGNATURE
SIG. INVENTORY NO. 03-1200

INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 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 LOOP 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 '57' TO REASSIGN THE VEHICLE DETECTOR FOR THIS INPUT

(LOOP 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 - LOOP 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: 03-1200 DESIGNED: Oct 2022 SEALED: 10/25/2022 REVISED: N/A

Final Design Electrical Detail - Sheet 3 of 5

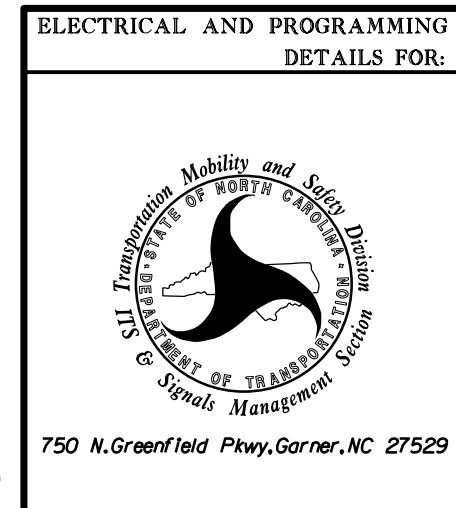


Table with project details: Division 3, Pender County, N of Wilmington, Plan Date: October 2022, Prepared by: ZM Esposito, RKA Proj. No: 22182 (040)

Table with revision history and signature/initials columns

SIG. INVENTORY NO. 03-1200

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.

<u>PHASING</u>	<u>INPUTS PAGE</u>	<u>OVERLAPS PAGE</u>
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 loop 7A to 0 seconds.

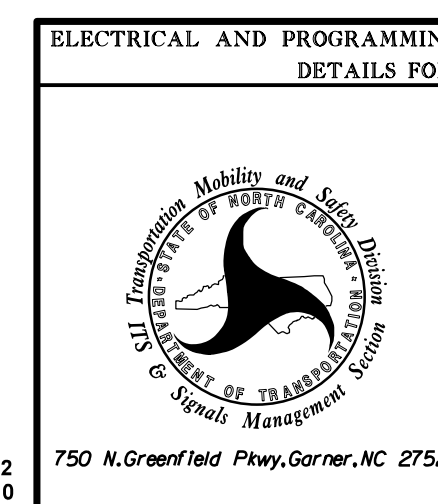
THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 03-1200
 DESIGNED: Oct 2022
 SEALED: 10/25/2022
 REVISED: N/A

Final Design
 Electrical Detail - Sheet 4 of 5

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED



8210 University Executive Park Drive, Suite 220 - Charlotte, NC 28262
 Phone: 704-543-4260 | www.rameykemp.com | NC License No. C-0910



ELECTRICAL AND PROGRAMMING DETAILS FOR:	
US 17 EB at Abbey Preserve	
Division 3 Pender County N of Wilmington	
PLAN DATE: October 2022	REVIEWED BY: WJ Hamilton
PREPARED BY: ZM Esposito	RKA PROJ. NO: 22182 (040)
REVISIONS	INIT. DATE

SEAL	
NORTH CAROLINA PROFESSIONAL ENGINEER WILLIAM J. HAMILTON 32396	
SIGNATURE	DATE
<i>William J. Hamilton</i>	10/25/2022
SIG. INVENTORY NO. 03-1200	

OUTPUT ASSIGNMENT PROGRAMMING DETAIL FOR OVERLAP "G" TO LOADSWITCH "S7"

(program controller as shown below)

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
- WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 30. AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:32 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....30
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0.0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....Y
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....Y
RUN FREE.....Y
RESERVED.....Y
PREEMPT.....Y
SOFT PREEMPT.....Y
ANY PREEMPT.....Y
COORDINATION PLAN.....Y
OFFSET.....Y
PHASE CHECK.....Y
PHASE ON.....Y
PHASE NEXT.....Y

```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED. ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:32 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=161)...7
SELECT COLOR (0=RED,1=YEL,2=GRN)...0

```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN. PRESS THE 'ENT' AFTER INPUTTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:32 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....30
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0.0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....Y
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....Y
RUN FREE.....Y
RESERVED.....Y
PREEMPT.....Y
SOFT PREEMPT.....Y
ANY PREEMPT.....Y
COORDINATION PLAN.....Y
OFFSET.....Y
PHASE CHECK.....Y
PHASE ON.....Y
PHASE NEXT.....Y

```

PRESS '+' KEY FOR OUTPUT 31

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:33 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....31
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0.0
MODE (0=SOLID,1=FLASH)...1
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....Y
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....Y
RUN FREE.....Y
RESERVED.....Y
PREEMPT.....Y
SOFT PREEMPT.....Y
ANY PREEMPT.....Y
COORDINATION PLAN.....Y
OFFSET.....Y
PHASE CHECK.....Y
PHASE ON.....Y
PHASE NEXT.....Y

```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED. ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:33 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=161)...7
SELECT COLOR (0=RED,1=YEL,2=GRN)...1

```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN. PRESS THE 'ENT' AFTER INPUTTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:33 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....31
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0.0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....Y
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....Y
RUN FREE.....Y
RESERVED.....Y
PREEMPT.....Y
SOFT PREEMPT.....Y
ANY PREEMPT.....Y
COORDINATION PLAN.....Y
OFFSET.....Y
PHASE CHECK.....Y
PHASE ON.....Y
PHASE NEXT.....Y

```

PRESS '+' KEY FOR OUTPUT 32

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:34 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....32
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0.0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....Y
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....Y
RUN FREE.....Y
RESERVED.....Y
PREEMPT.....Y
SOFT PREEMPT.....Y
ANY PREEMPT.....Y
COORDINATION PLAN.....Y
OFFSET.....Y
PHASE CHECK.....Y
PHASE ON.....Y
PHASE NEXT.....Y

```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED. ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:34 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=161)...7
SELECT COLOR (0=RED,1=YEL,2=GRN)...2

```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN. PRESS THE 'ENT' AFTER INPUTTING DATA, THEN 'ESC'.

```

PAGE:1 C1 PIN:34 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....32
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0.0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....Y
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....Y
RUN FREE.....Y
RESERVED.....Y
PREEMPT.....Y
SOFT PREEMPT.....Y
ANY PREEMPT.....Y
COORDINATION PLAN.....Y
OFFSET.....Y
PHASE CHECK.....Y
PHASE ON.....Y
PHASE NEXT.....Y

```

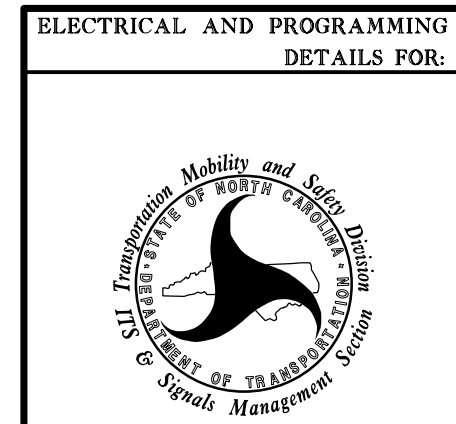
OUTPUT PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-1200
DESIGNED: Oct 2022
SEALED: 10/25/2022
REVISED: N/A

Final Design
Electrical Detail - Sheet 5 of 5



8210 University Executive Park Drive, Suite 220 - Charlotte, NC 28262
Phone: 704-549-4260 | www.rameykemp.com | NC License No. C-0910



ELECTRICAL AND PROGRAMMING DETAILS FOR:		US 17 EB at Abbey Preserve	
Division 3	Pender County	N of Wilmington	
PLAN DATE: October 2022	REVIEWED BY: WJ Hamilton		
PREPARED BY: ZM Esposito	RKA PROJ. NO: 22182 (040)		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER

WILLIAM J. HAMILTON

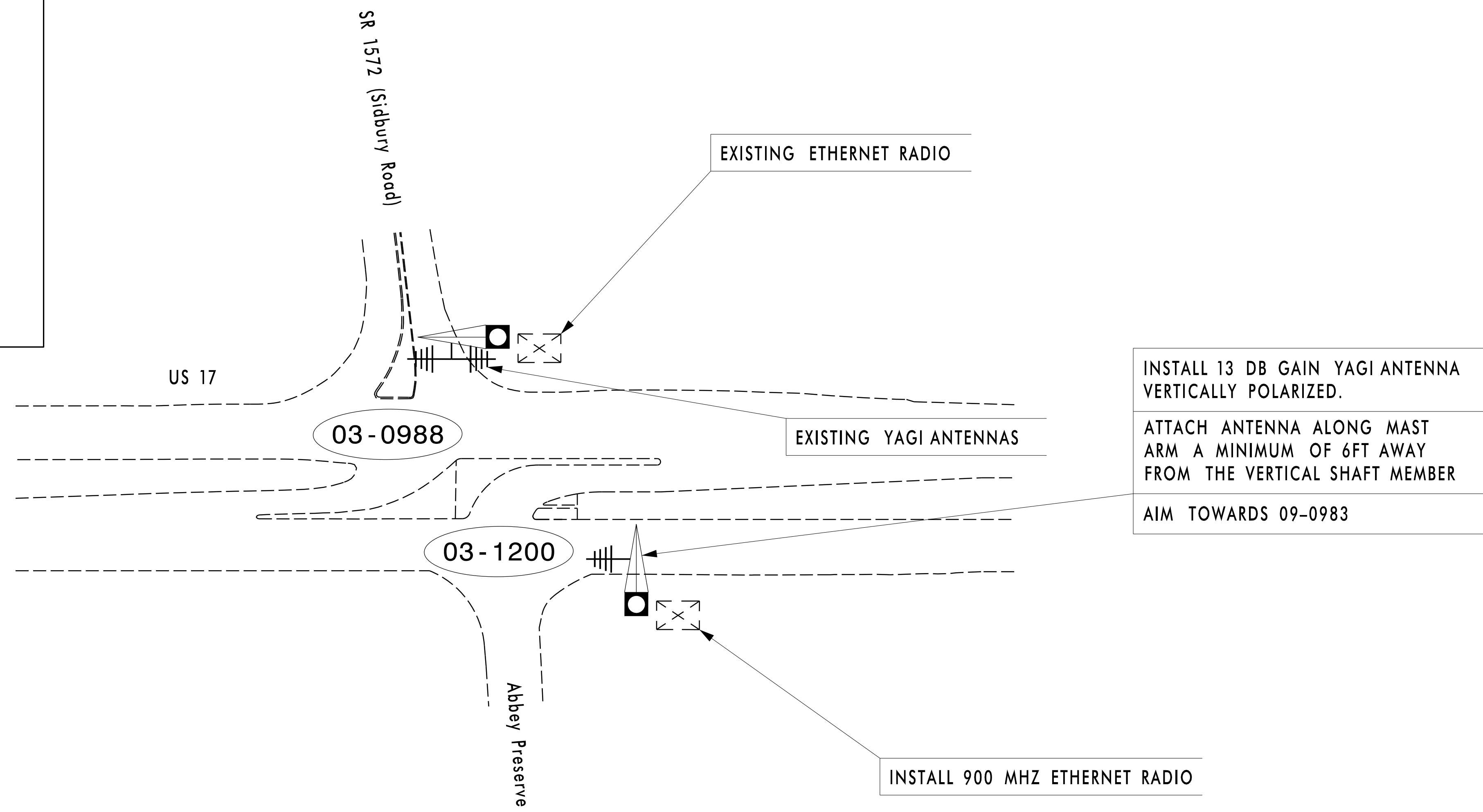
02/25/2022

SIGNATURE DATE

SIG. INVENTORY NO. 03-1200

LEGEND

	YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
	YAGI ANTENNA (SINGLE)
	OMNI ANTENNA
	EXISTING CONTROLLER AND CABINET
	MASTER RADIO LOCATION
	SIGNAL INVENTORY NUMBER
	NEW METAL POLE W/MAST ARM
	EXISTING METAL POLE W/MAST ARM
	EXISTING WOOD POLE
	NEW METAL POLE
	EXISTING METAL POLE
	SIGNAL POLE
	NEW OVERSIZED JUNCTION BOX
	EXISTING OVERSIZED JUNCTION BOX
	NEW COAXIAL CABLE
	NEW CONDUIT
	EXISTING COMMUNICATION CABLE



NOTES FOR WIRELESS COMMUNICATIONS:

1. INSTALL COAXIAL CABLE:
 - A. ON WOOD POLES, REQUIRING A NEW RIGID GALVANIZED STEEL RISER, INSTALL A 2" RISER WITH WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
 - B. ON METAL POLES WITH MAST ARMS, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE MAST ARM; FIELD DRILL A 1/2" HOLE UP THROUGH THE BOTTOM OF MAST ARM FOR INSTALLATION OF THE COAXIAL CABLE TO THE ANTENNA.
 - C. ON METAL STRAIN POLES, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
 - D. BETWEEN THE POINT OF EXITING THE RISER, METAL POLE OR MAST ARM AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12".
2. IF EXISTING 2" SPARE RIGID STEEL GALVANIZED RISER IS AVAILABLE, INSTALL THE COAXIAL CABLE IN THE SPARE RISER WITH 2" WEATHERHEAD.
3. INSTALL WIRELESS ANTENNA ON POLE WITH RF WARNING SIGN. (NOTE: RF WARNING SIGN NOT REQUIRED WHEN ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
4. MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRICAL SAFETY CODE.
5. INSTALL WIRELESS ETHERNET RADIO MODEM WITH EXTERIOR DISCONNECT SWITCH LOCATED ON CABINET. (NOTE: RF ANTENNA DISCONNECT SWITCH AND DECAL ARE NOT REQUIRED WHEN THE ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
6. REFERENCE WIRELESS RADIO ANTENNA TYPICAL DETAILS.
7. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DEPUTY DIVISION 3 TRAFFIC ENGINEER AT (910) 341-2200 . NOTIFY THE DEPUTY DIVISION 3 TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL WIRELESS CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.

Infrastructure Consulting Services, Inc.
RKA
 RAMEY KEMP ASSOCIATES
8210 University Executive Park Drive, Suite 220 Charlotte, North Carolina 28262
 Phone: 704-548-4288 | www.rameykemp.com | NC License No. F-1489

Prepared for:

 750 N. Greenfield Pkwy., Garner, NC 27529
 SCALE: N/A

Signal System: D03-13_Scotts Hill Wireless Communication Plan	
Division 3	Pender County N of Wilmington
PLAN DATE: October 2022	REVIEWED BY: WJ Hamilton
PREPARED BY: ZM Esposito	RKA PROJ NO: 22182 (040)
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

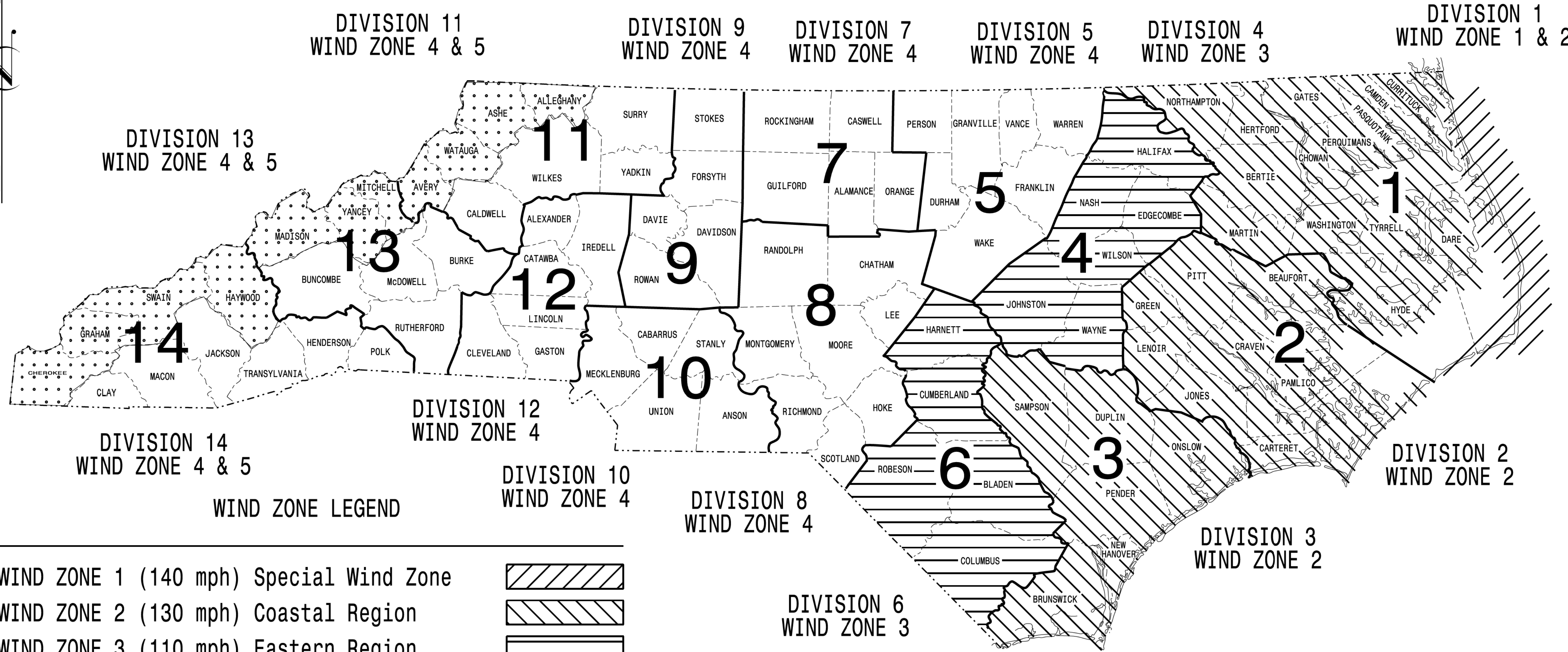
SEAL

WILLIAM J. HAMILTON
 PROFESSIONAL ENGINEER
 10/25/2022
 DATE

**STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS**

PROJECT I.D. NO.	SHEET NO.
	Sig.M1

STANDARD DRAWINGS FOR ALL METAL POLES



WIND ZONE LEGEND

WIND ZONE 1 (140 mph) Special Wind Zone		
WIND ZONE 2 (130 mph) Coastal Region		
WIND ZONE 3 (110 mph) Eastern Region		
WIND ZONE 4 (90 mph) Central & Mtn. Region		
WIND ZONE 5 (120 mph) Special Wind Zone		

<https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

Prepared in the Offices of:

750 N. Greenfield Pkwy,
Garner, NC 27529

*Designed in conformance
with the latest
2015 Interim to the
6th Edition 2013*
AASHTO
*Standard Specifications for
Structural Supports for
Highway Signs, Luminaires,
and Traffic Signals*

INDEX OF PLANS

DRAWING NUMBER	DESCRIPTION
Sig. M 1	Statewide Wind Zone Map
Sig. M 2	Typical Fabrication Details-All Metal Poles
Sig. M 3	Typical Fabrication Details-Strain Poles
Sig. M 4	Typical Fabrication Details-Mast Arm Poles
Sig. M 5	Typical Fabrication Details-Mast Arm Connection
Sig. M 6	Typical Fabrication Details-Strain Pole Attachments
Sig. M 7	Construction Details-Foundations
Sig. M 8	Standard Strain Pole Foundation-All Soil Conditions

NCDOT CONTACTS:

MOBILITY AND SAFETY DIVISION - ITS AND SIGNALS UNIT

M.M. MCDIARMID, P.E. - STATE ITS AND SIGNALS ENGINEER

J. P. GALLOWAY, P.E. - STATE SIGNALS ENGINEER

D.C. SARKAR, P.E. - ITS AND SIGNALS SENIOR STRUCTURAL ENGINEER

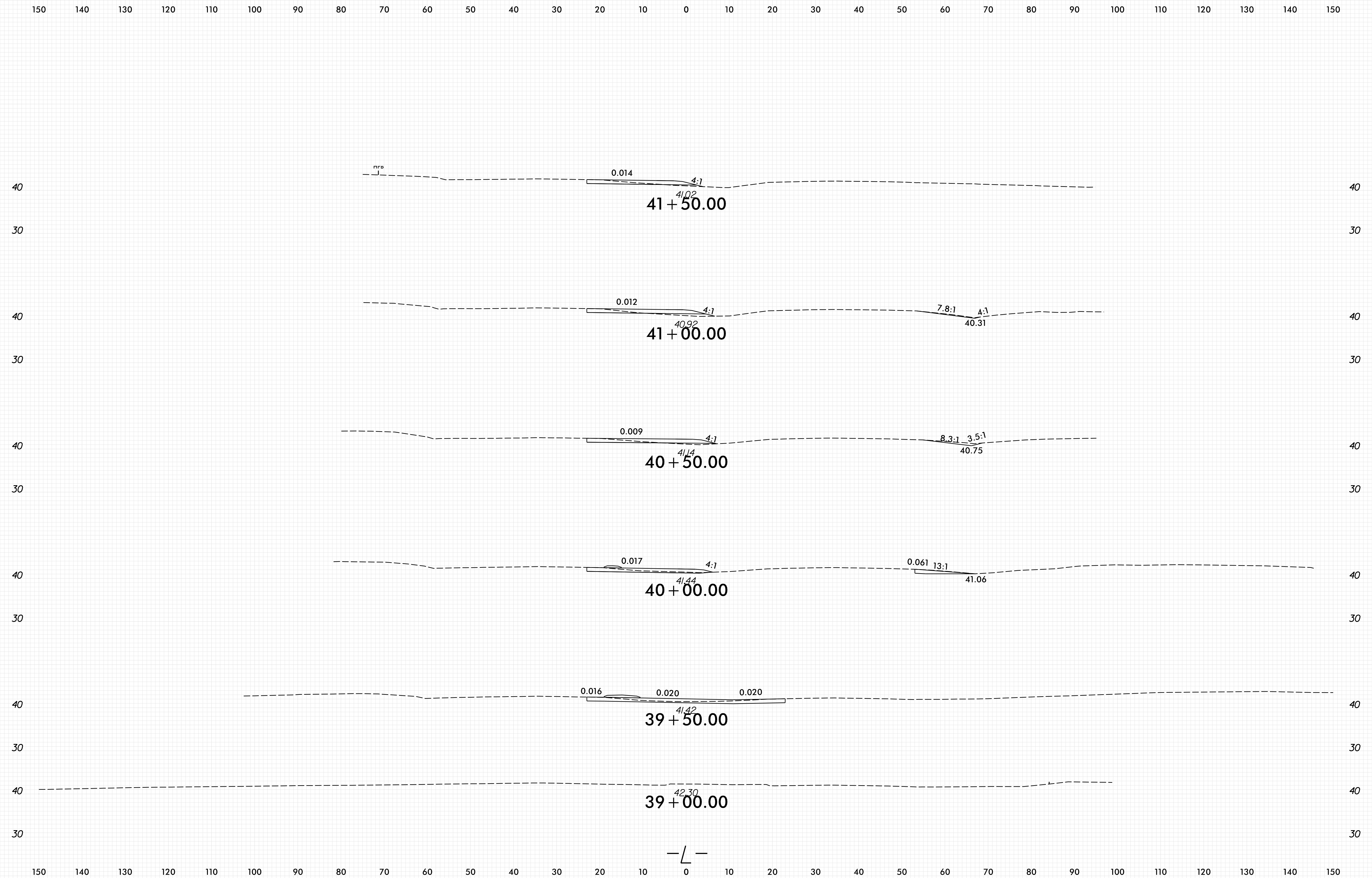
SEAL

DocuSign by: Debesh C. Sarkar 10/11/2017
DATE

CROSS-SECTIONS INDEX OF SHEETS

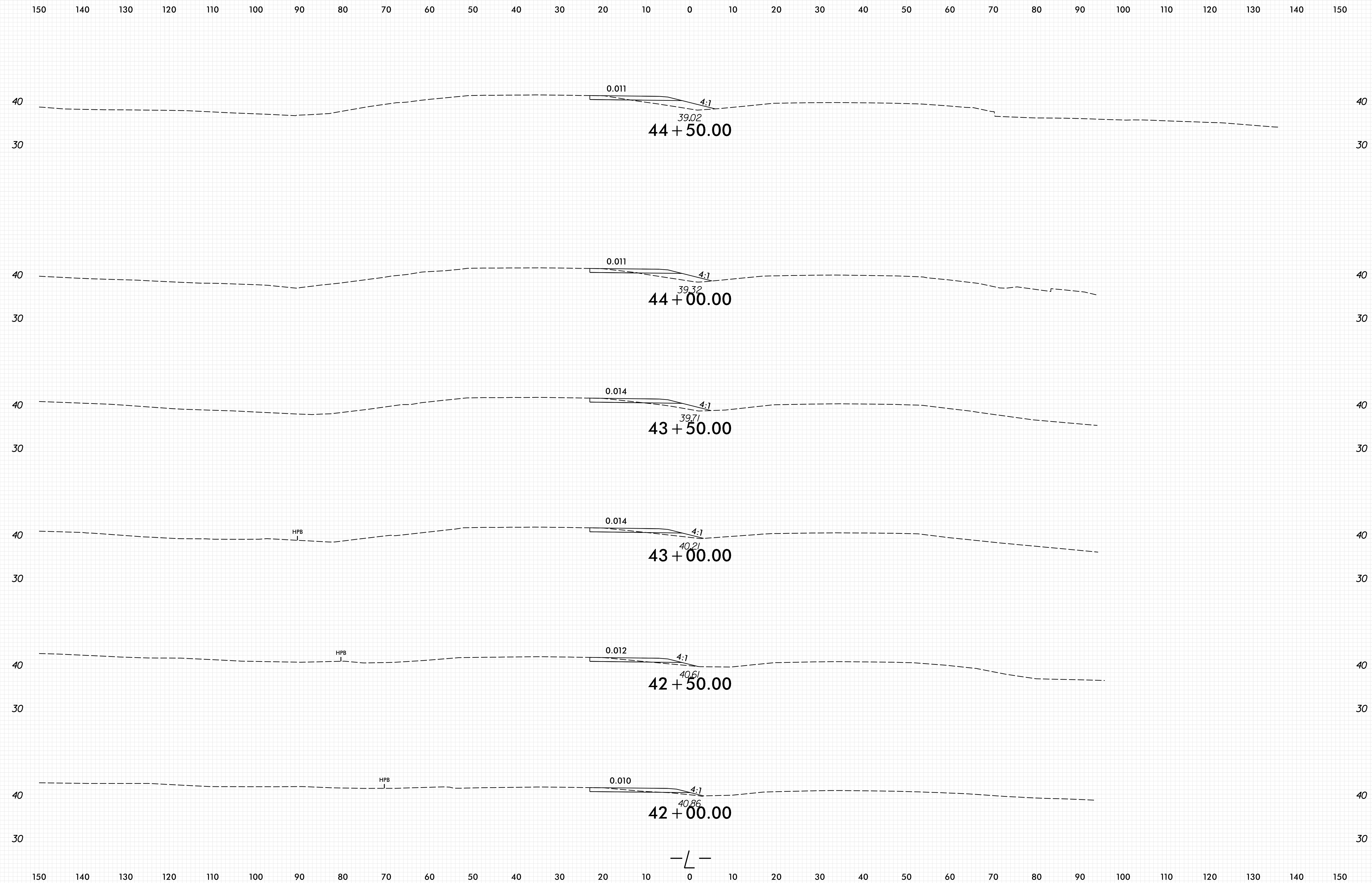
INDEX OF SHEETS	X-1
XSC EARTHWORK VOLUMS	X-1A
-L-	X-2 THRU X-6
-Y3-	X-7

8/23/99



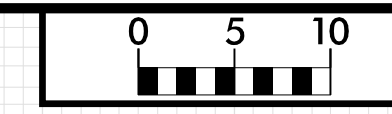
PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
 USER: CHARRIS
 DATE: 10/26/2022
 TIME: 12:11:16 PM
 FILE: \

8/23/99

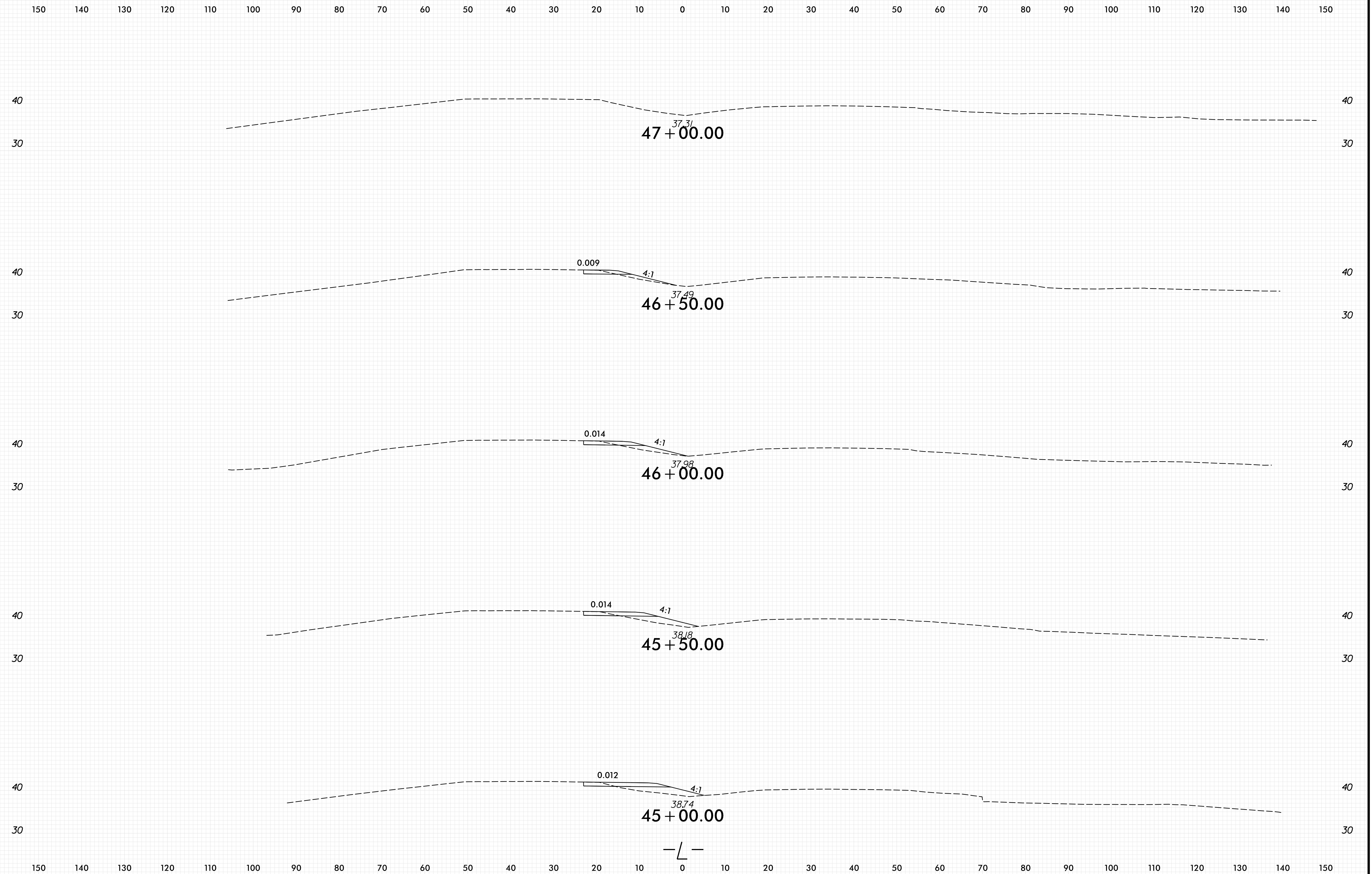


PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
 USER: CHARRIS
 DATE: 10/26/2022
 TIME: 12:11:16 PM
 FILE: \

8/23/99

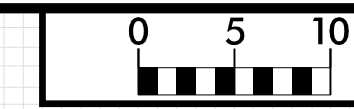


PROJ. REFERENCE NO.	SHEET NO.
WBS 50524	X-4



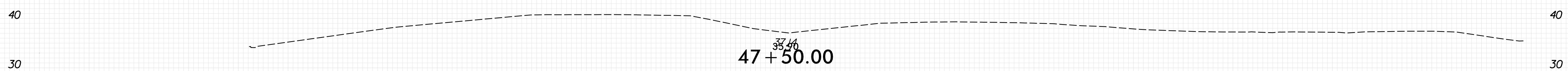
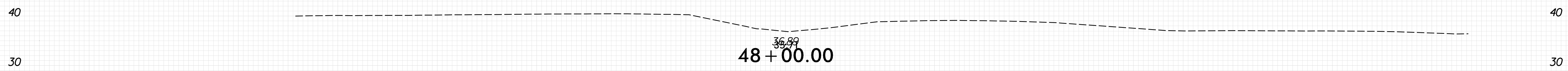
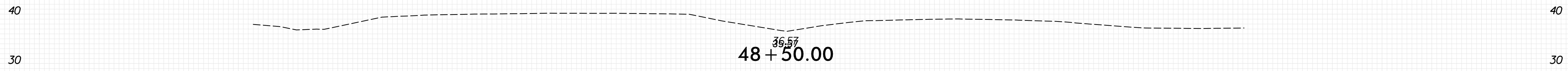
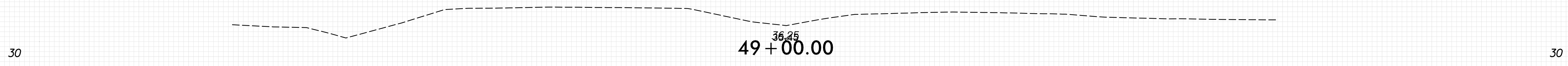
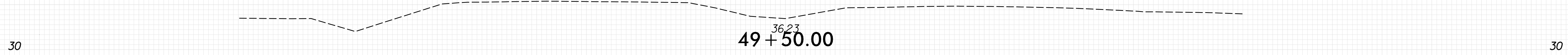
PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
 USER: CHARRIS
 DATE: 10/26/2022
 TIME: 12:11:17 PM
 FILE: \

8/23/99



PROJ. REFERENCE NO.	SHEET NO.
WBS 50524	X-5

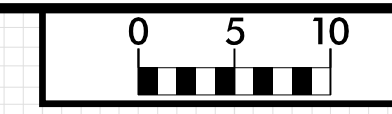
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



— L —

PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
 USER: CHARRIS
 FILE: \PENTABLE: xpl_en_v8.tbl
 DATE: 10/26/2022
 TIME: 12:11:17 PM

8/23/99



PROJ. REFERENCE NO.	SHEET NO.
WBS 50524	X-6

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

30

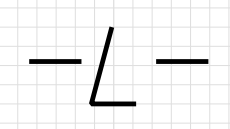
30

30

30

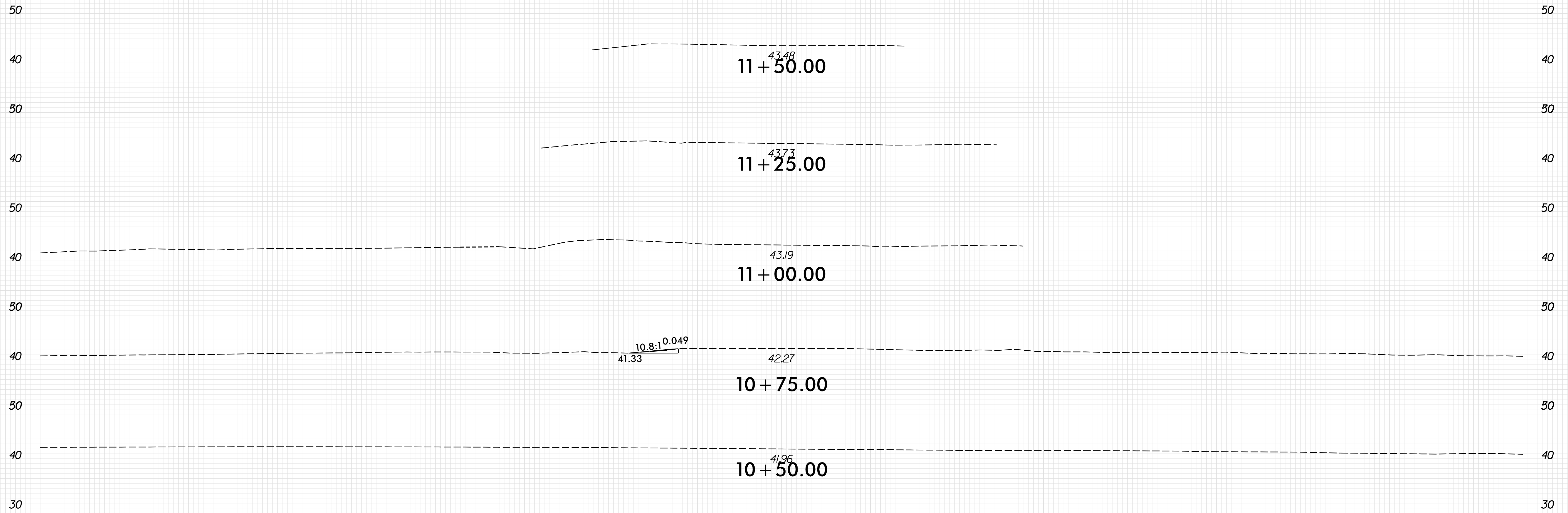
36.78
50 + 50.00

36.52
50 + 00.00



PLOT DRIVER: NCDOT_pdf_color_eng_50.plt
 USER: CHARRIS
 FILE: \ PENTABLE: xpl_en_v8.tbl
 DATE: 10/26/2022
 TIME: 12:11:17 PM

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



-Y3-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150