

TIP PROJECT: B-5982

CONTRACT: C204925

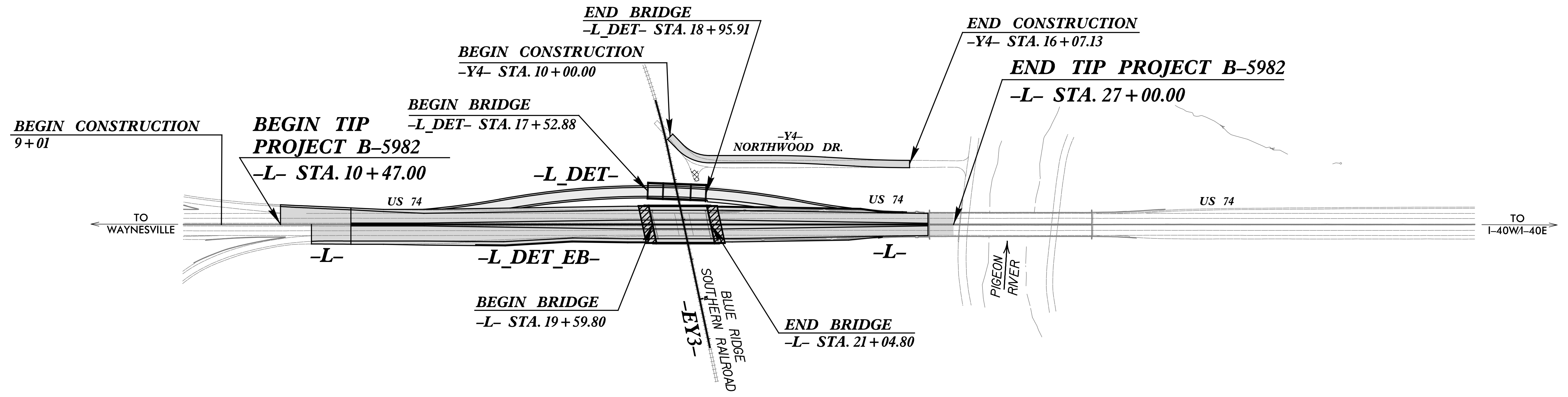
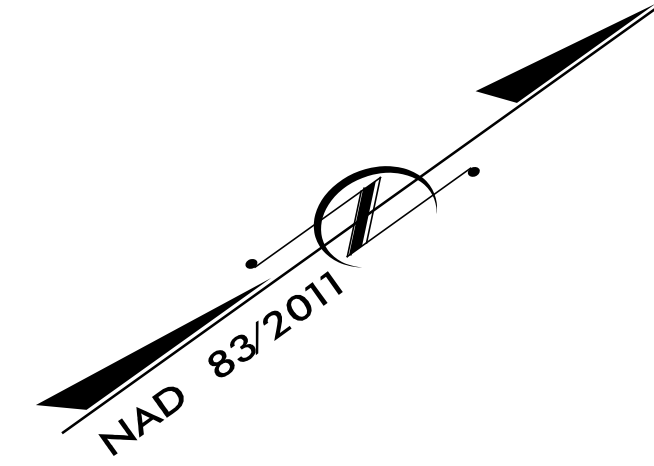
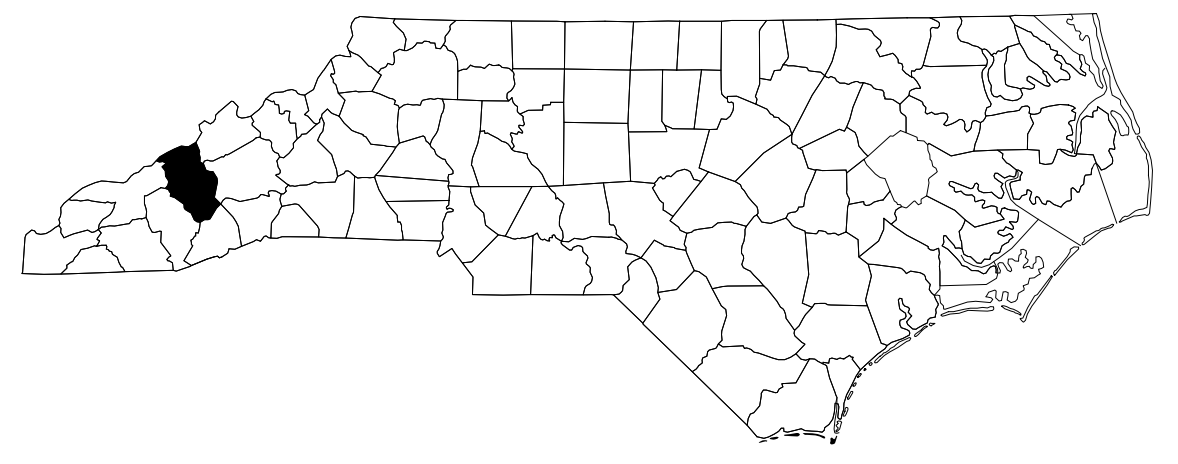
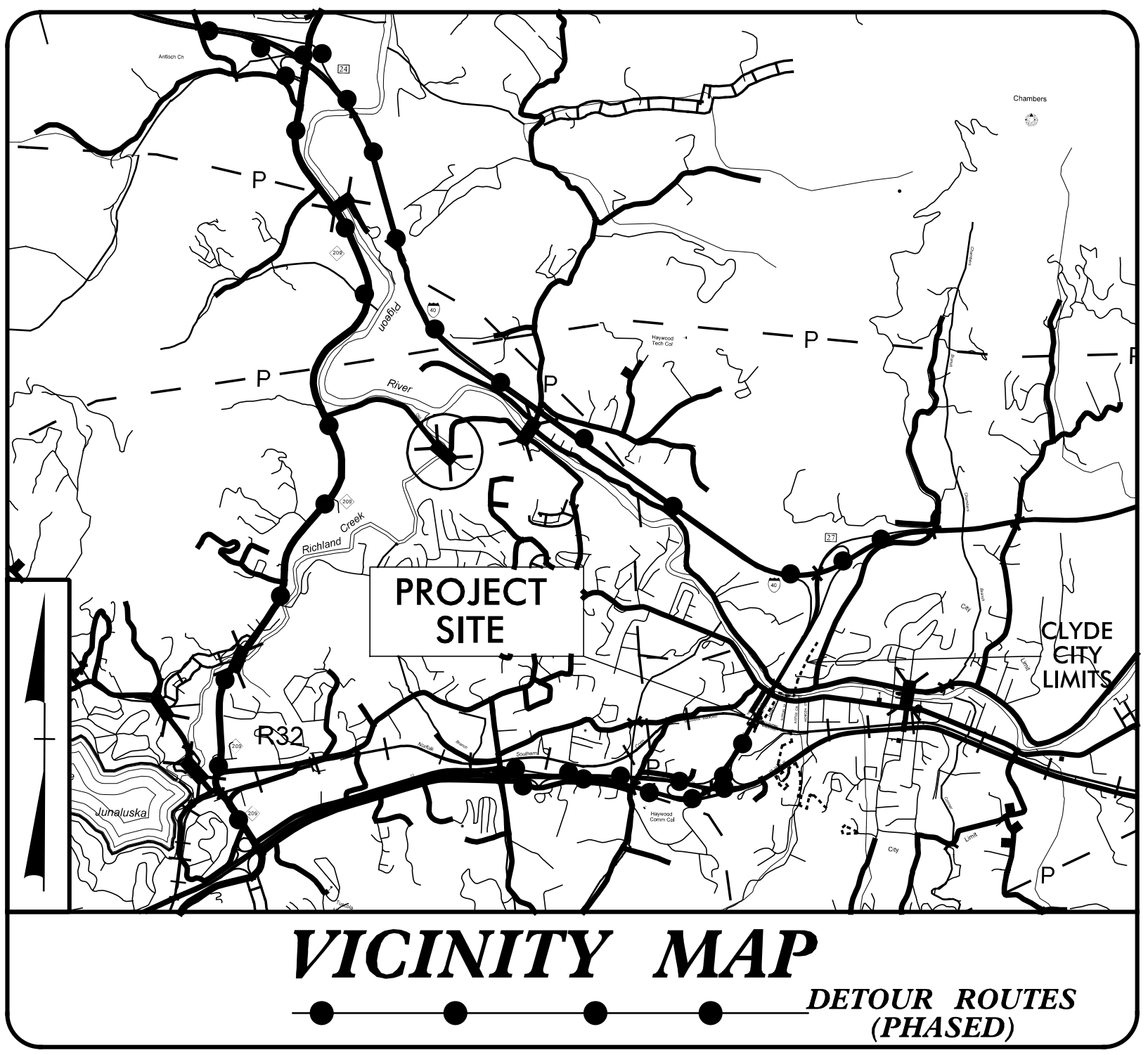
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

**LOCATION: BRIDGE 430095 ON US 74 OVER
BLUE RIDGE SOUTHERN RAILROAD**

TYPE OF WORK: FIBER OPTIC CABLE INSTALLATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5982	ITS-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
47814.1.1		PE	
47814.2.1		RW, UTIL	
47814.3.1		CONST.	



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" HIGHWAY DESIGN BRANCH - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY, 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE ARE HEREBY CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1715.01	UNDERGROUND CONDUIT - TRENCHING
1716.01	JUNCTION BOXES
1730.01	FIBER OPTIC CABLE

INDEX OF SHEETS

ITS-1	TITLE SHEET
ITS-2	CONSTRUCTION NOTES
ITS-3 TO 4	TEMPORARY DESIGN
ITS-5 TO 7	FINAL DESIGN

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

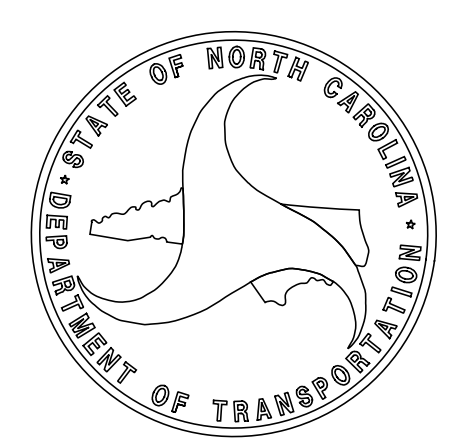


2024 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: APRIL 28, 2023	MARK A. COLGAN, PE PROJECT ENGINEER
LETTING DATE: AUGUST 20, 2024	KYLE F. SMIACH, PE PROJECT DESIGN ENGINEER
NCDOT CONTACT	DAVID S. STUTTS, PE PROJECT ENGINEER-ROADWAY DESIGN

ITS ENGINEER



DocuSigned by:
sechiluka
6/13/2024 P.E.
SIGNATURE:



LEGEND

	NEW FIBER OPTIC COMMUNICATIONS CABLE
	EXISTING COMMUNICATIONS CABLE
	EXISTING COMMUNICATIONS CABLE TO BE REMOVED
	NEW AERIAL GUY ASSEMBLY
	NEW CONDUIT
	EXISTING CONDUIT
	NEW DIRECTIONAL DRILLED CONDUIT

NEW

	OVERSIZED JUNCTION BOX
	WOOD POLE
	AERIAL SPLICE ENCLOSURE
	UNDERGROUND SPLICE ENCLOSURE
	METAL POLE
	CCTV ASSEMBLY
	STANDARD GUY ASSEMBLY
	SIDEWALK GUY ASSEMBLY
	CABLE STORAGE RACKS (SNOW SHOES)
	SIGNAL/EQUIPMENT CABINET
	SPLICE CABINET
	FLAT PANEL ANTENNA (SINGLE)
	YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
	YAGI ANTENNA (SINGLE)
	OMNI ANTENNA
	SIGNAL POLE
	SIGNAL INVENTORY NUMBER

EXISTING

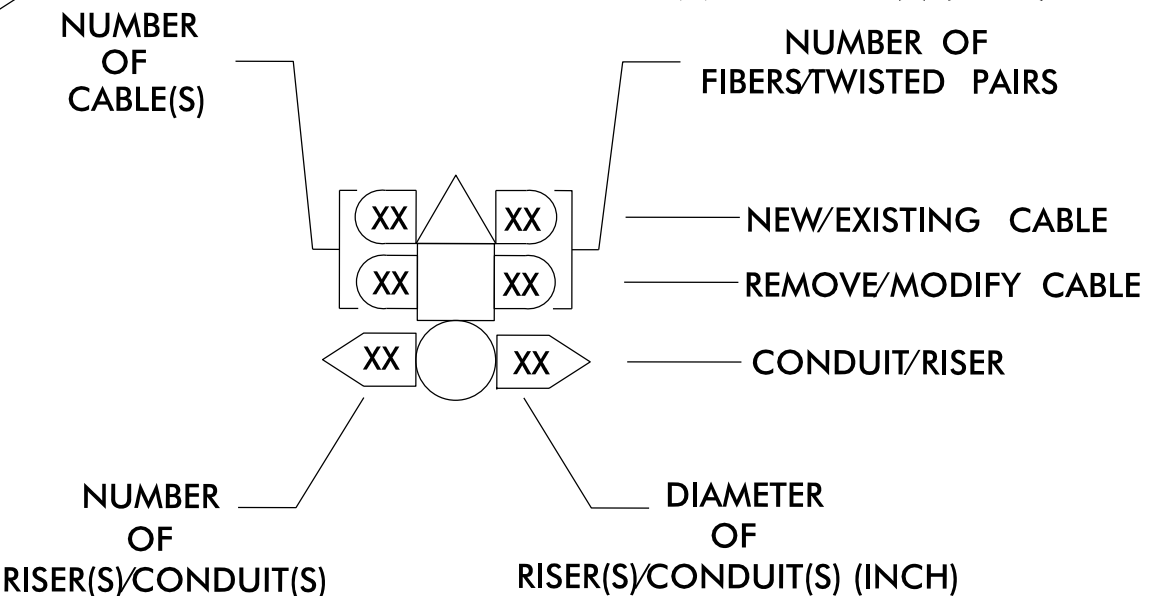
	OVERSIZED JUNCTION BOX
	WOOD POLE
	AERIAL SPLICE ENCLOSURE
	UNDERGROUND SPLICE ENCLOSURE
	METAL POLE
	CCTV ASSEMBLY
	STANDARD GUY ASSEMBLY
	SIDEWALK GUY ASSEMBLY
	CABLE STORAGE RACKS (SNOW SHOES)
	SIGNAL/EQUIPMENT CABINET
	SPLICE CABINET
	FLAT PANEL ANTENNA (SINGLE)
	YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
	YAGI ANTENNA (SINGLE)
	OMNI ANTENNA
	SIGNAL POLE
	SIGNAL INVENTORY NUMBER

CONSTRUCTION NOTE SYMBOLOLOGY KEY

	INDICATES NUMBER OF CABLES, LOOPS, ETC.
	INDICATES NUMBER OF FIBERS PER CABLE, TWISTED PAIRS PER CABLE, ETC.
	INDICATES NUMBER OF RISER(S)/CONDUIT(S)
	INDICATES DIAMETER OF RISER(S)/CONDUIT(S) (INCH)

ATTACHMENT POINT:

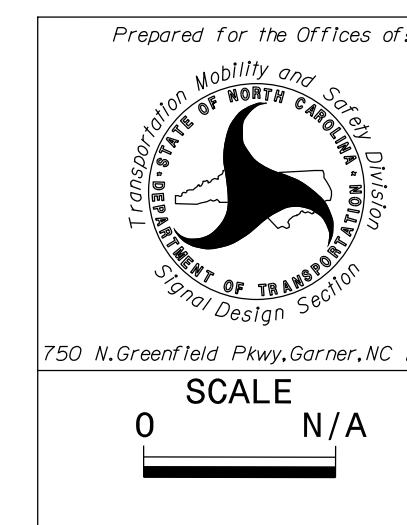
	DISTANCE ABOVE (IN)/ATTACHMENT POINT REFERENCE POINT
	REFERENCE POINT DISTANCE BELOW (IN)/ATTACHMENT POINT
"SS" REFERENCE LOCATION	
FS = FRONT SIDE OF POLE	
BS = BACK SIDE OF POLE	



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

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

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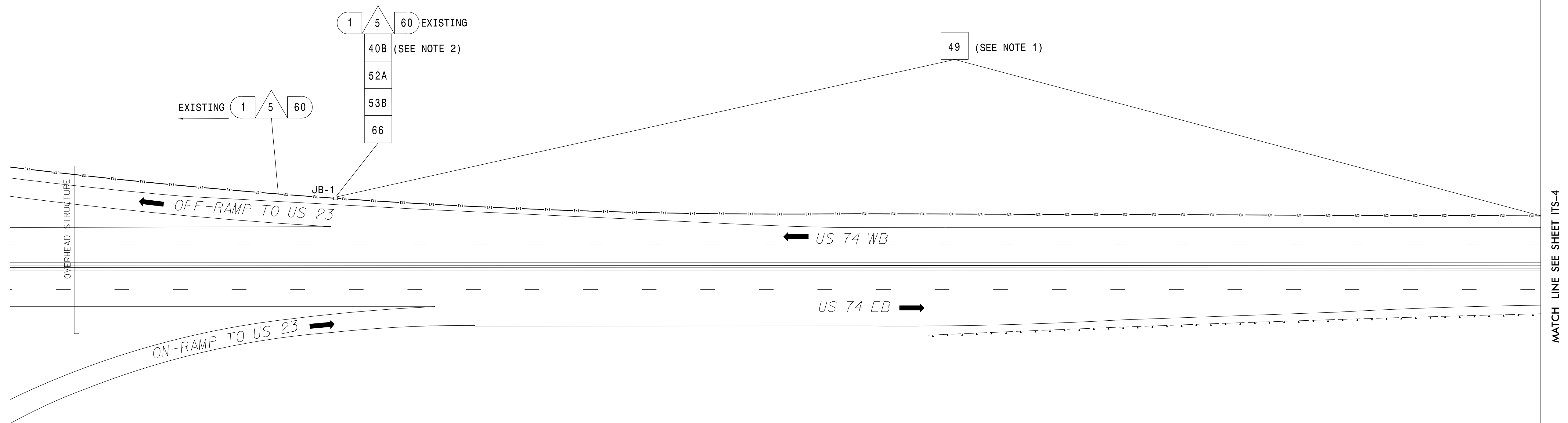


Construction Notes	
Division 14	Haywood County
CLYDE	
PLAN DATE: June 2024	REVIEWED BY: M. L. Stygles
PREPARED BY: S.R. Chiluka	REVIEWED BY: J. Ma
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

6/13/2024



NOTES:

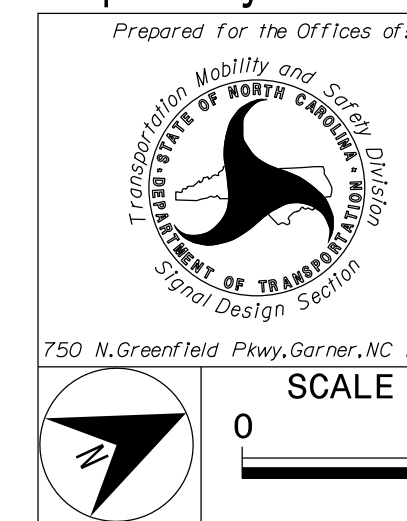
- 1) THE CONTRACTOR SHALL CUT THE OVERHEAD FIBER OPTIC CABLE SPANNING OVER THE BLUE RIDGE SOUTHERN RAILROAD AND BACK PULL INTO THE NEW JUNCTIONS BOXES JB-1 & JB-4 LOCATED TO THE WEST AND EAST OF THE BRIDGE THE BACK PULLED CABLE SHALL BE COILED, CUT & CAPPED AND STORED PROPERLY. A MINIMUM OF 50 FEET OF SLACK SHALL BE LEFT AT JB-1 & JB-4. JB-2 & JB-3 TO BE BUILT DURING THE FINAL CONSTRUCTION (SEE FINAL DESIGN PLANS).
- 2) INTERCEPT EXISTING CONDUIT AND INSTALL JUNCTION BOX JB-1. THE CONDUIT SHALL BE CUT AND REMOVE THE CONDUIT ENTERING FROM EAST.

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Temporary Design 1



VHB Engineering NC, P.C. (C-3705)
 940 Main Campus Drive, Suite 500
 Raleigh, NC 27607
 P: 919-829-0328



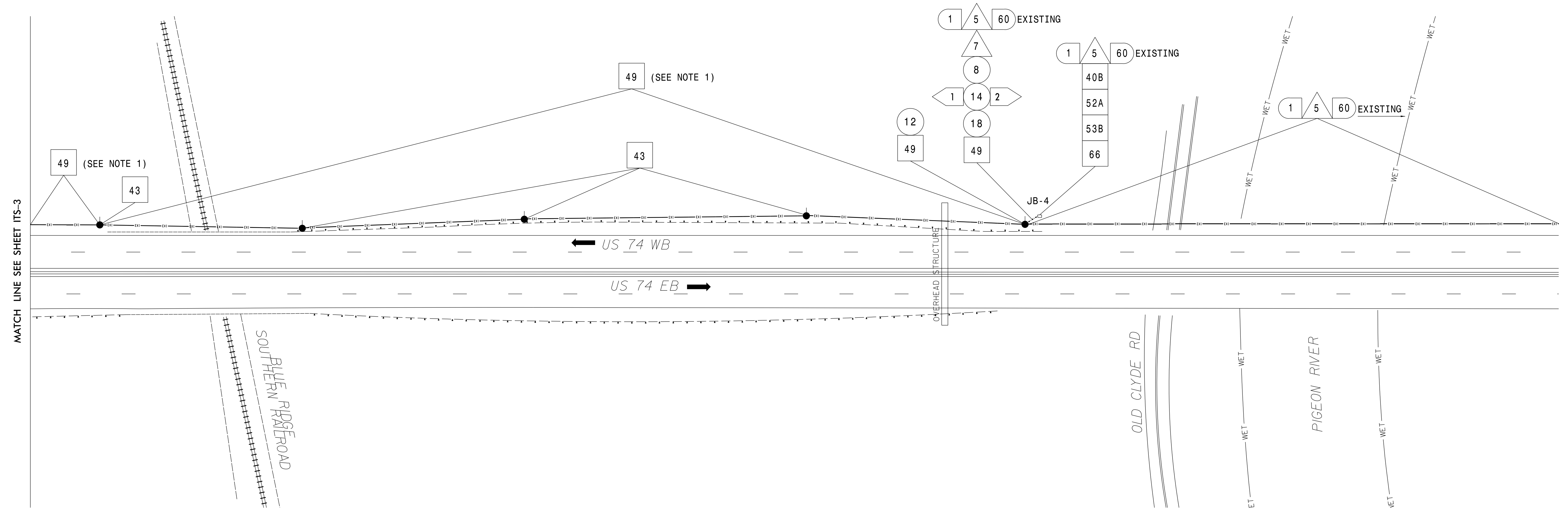
Prepared For the Offices of:		US 74 over Blue Ridge Southern Railroad Fiber Optic Cable Installation	
Division 14	Haywood County	Clyde	
PLAN DATE: June 2024	REVIEWED BY: M. L. Stygles		
PREPARED BY: S.R. Chiluka	REVIEWED BY: J. Ma		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

SEAL 047250
 S. R. CHILUKA
 PROFESSIONAL ENGINEER
 STATE OF NORTH CAROLINA

SIGNATURE DATE 6/13/2024



NOTES:

- 1) THE CONTRACTOR SHALL CUT THE OVERHEAD FIBER OPTIC CABLE SPANNING OVER THE BLUE RIDGE SOUTHERN RAILROAD AND BACK PULL INTO THE NEW JUNCTIONS BOXES JB-1 & JB-4 LOCATED TO THE WEST AND EAST OF THE BRIDGE. THE BACK PULLED CABLE SHALL BE COILED, CUT & CAPPED AND STORED PROPERLY. A MINIMUM OF 50 FEET OF SLACK SHALL BE LEFT AT JB-1 & JB-4. JB-2 & JB-3 TO BE BUILT DURING THE FINAL CONSTRUCTION (SEE FINAL DESIGN PLANS).
- 2) REMOVAL OF EXISTING POLES SHALL BE INCIDENTAL TO ITEM BACK PULL EXISTING COMMUNICATIONS CABLE.

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Temporary Design 1

Prepared For the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 74 over Blue Ridge Southern Railroad Fiber Optic Cable Installation	
Division 14	Haywood County Clyde
PLAN DATE: June 2024	REVIEWED BY: M. L. Stygles
PREPARED BY: S.R. Chiluka	REVIEWED BY: J. Ma
REVISIONS	INIT. DATE

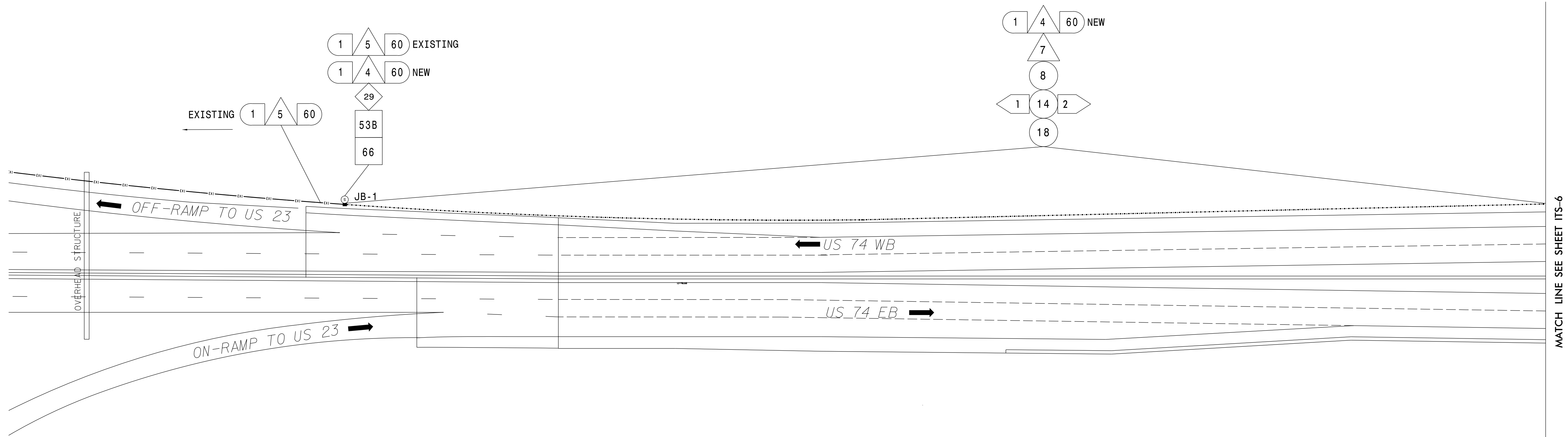
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SEAL 047250

SIGNATURE DATE

6/13/2024

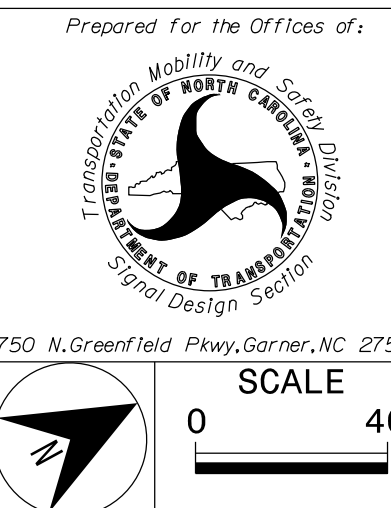


MATCH LINE SEE SHEET ITS-6

- NOTES:**
- 1) INSTALL NEW CABLE BETWEEN JB-1 AND JB-4 AND FUSION SPLICE NEW 60 STRAND SMFO TO EXISTING 60 SMFO AT EACH JUNCTION BOX.

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Final Design



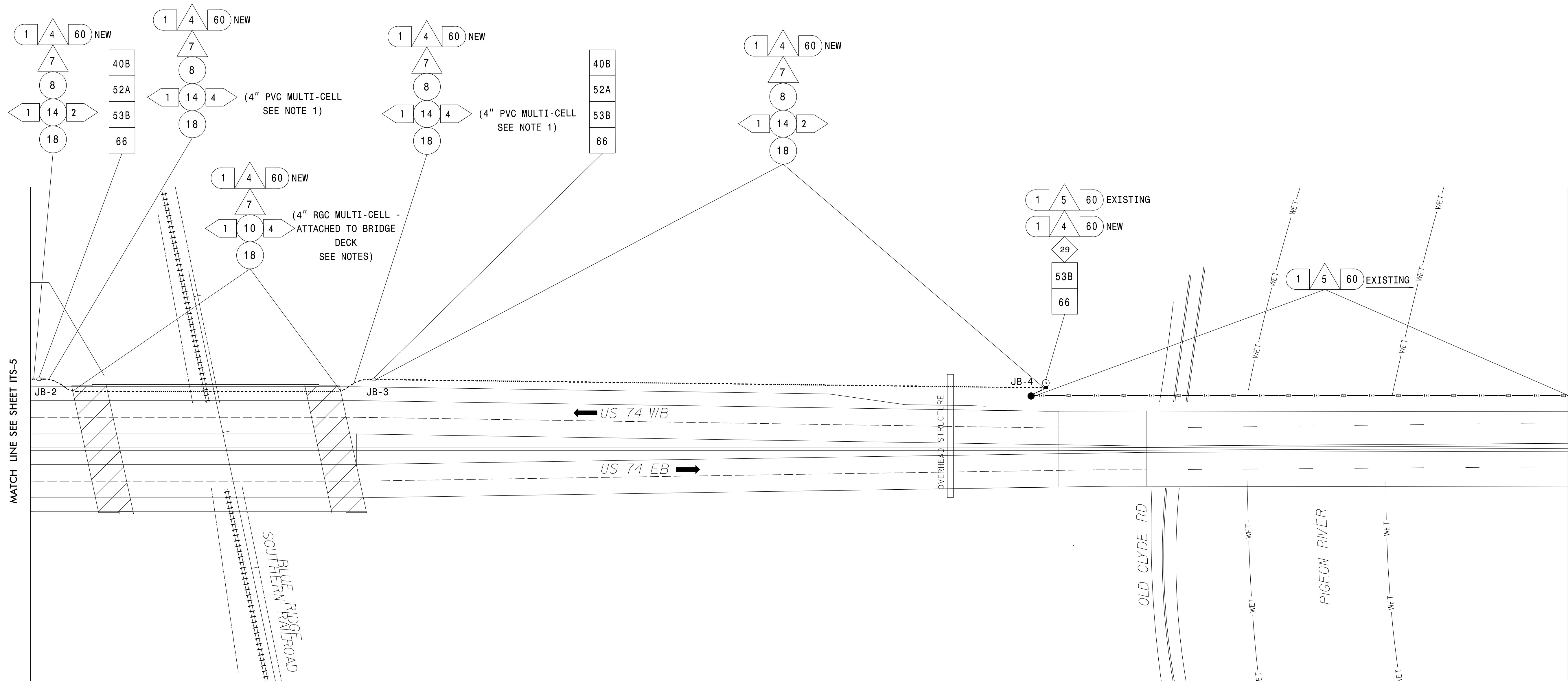
**US 74 over Blue Ridge
Southern Railroad
Fiber Optic Cable Installation**

Division 14	Haywood County	Clyde
PLAN DATE: June 2024	REVIEWED BY: M. L. Stygles	
PREPARED BY: S.R.Chiluka	REVIEWED BY: J.Ma	
REVISIONS	INIT.	DATE

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6/13/2024



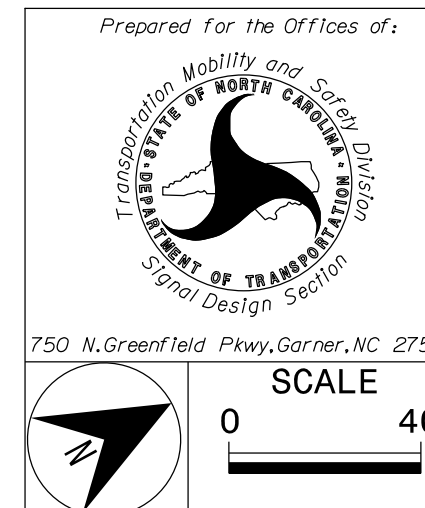
NOTES:

- 1) INSTALL NEW CABLE BETWEEN JB-1 AND JB-4 AND FUSION SPLICE NEW 60 STRAND SMFO TO EXISTING 60 SMFO AT EACH JUNCTION BOX.
- 2) THE CONDUIT ATTACHMENT TO BRIDGE AND TRANSITION TO GROUND WITH ADAPTORS SHALL BE PERFORMED IN ACCORDANCE WITH NCDOT STD. NO. EC51. SEE STRUCTURE PLANS FOR DETAILS OF CONDUIT ATTACHMENT TO THE BRIDGE AND PENETRATIONS THROUGH BRIDGE SUBSTRUCTURES.

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 ***PLOT BY: S.R.Chiluka

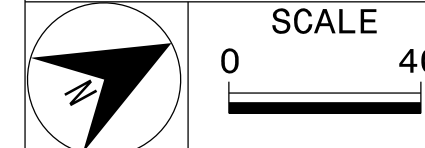
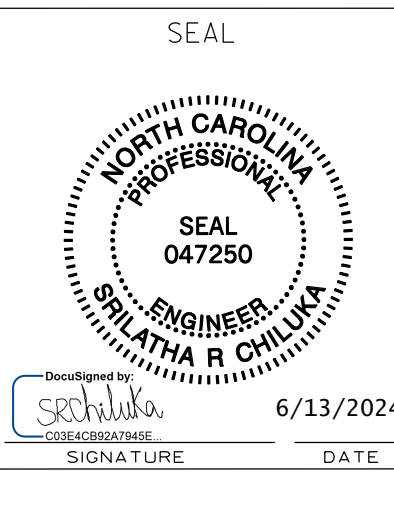


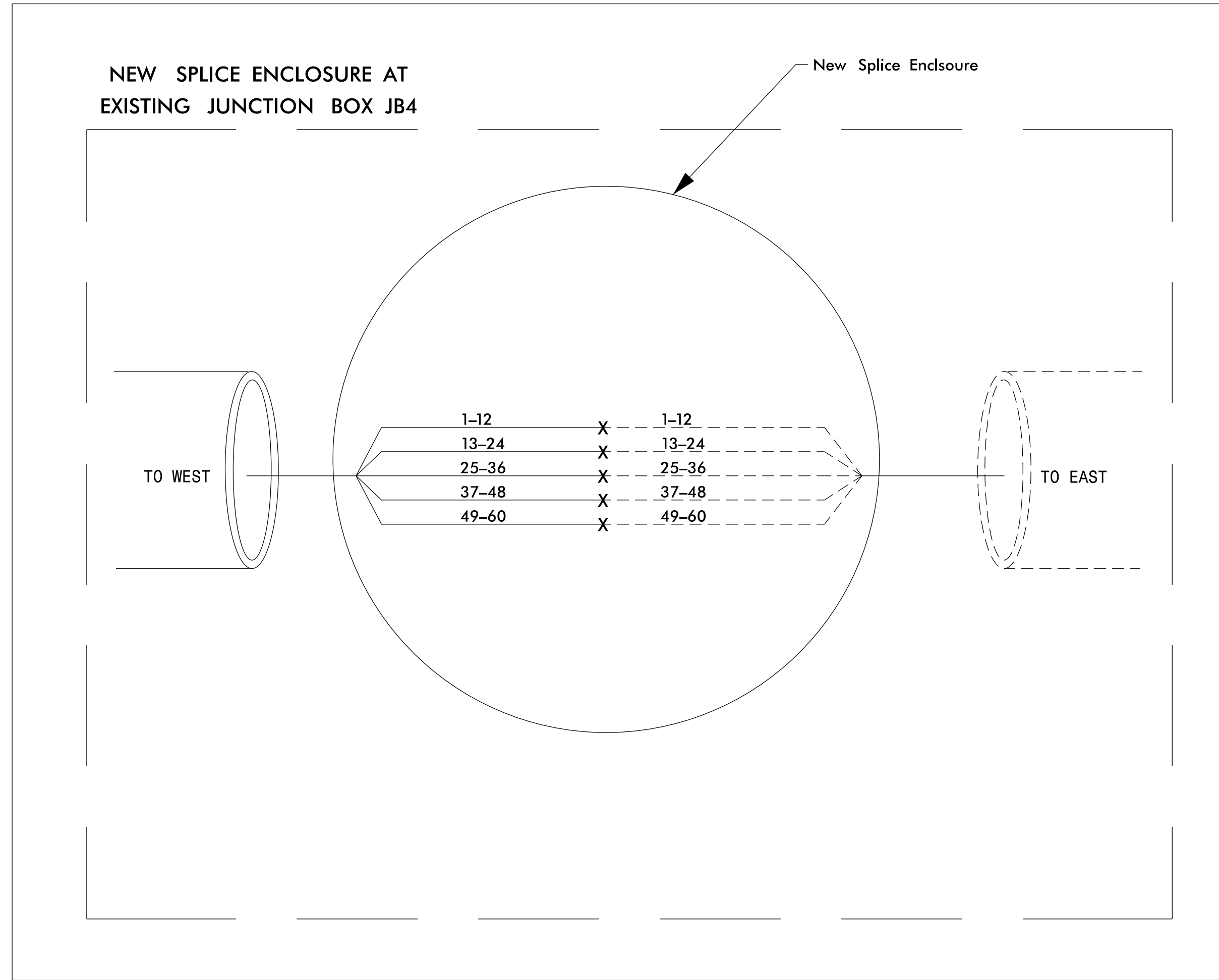
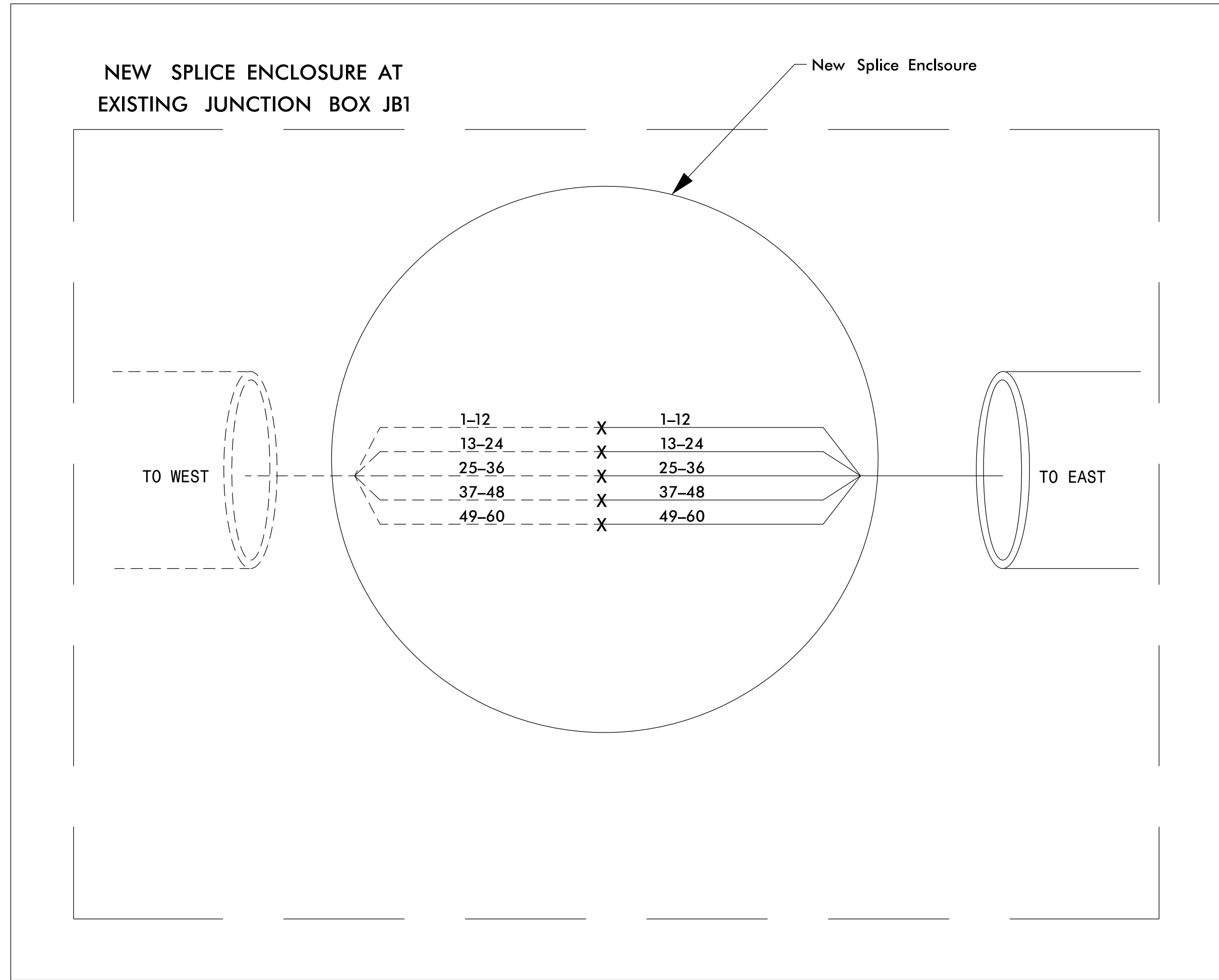
Final Design



US 74 over Blue Ridge Southern Railroad Fiber Optic Cable Installation	
Division 14	Haywood County Clyde
PLAN DATE: June 2024	REVIEWED BY: M. L. Stygles
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REVISIONS	INIT. DATE

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NOTES

- CONTRACTOR SHALL PROVIDE AS-BUILTS PLANS TO THE ENGINEER FOR FINAL SPLICE ARRANGEMENT.
- INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING: REFER TO SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"
 1) SPLICE LOCATION
 2) DATE
 3) COMPANY DATE
 4) NAME OF INDIVIDUAL PERFORMING THE SPLICING
- PRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.

LEGEND
X = FUSION SPLICE

COLOR CODE	TI/EIA 598-A
(1) BLUE	
(2) ORANGE	
(3) GREEN	
(4) BROWN	
(5) SLATE	
(6) WHITE	
(7) RED	
(8) BLACK	
(9) YELLOW	
(10) VIOLET	
(11) ROSE	
(12) AQUA	

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Final Design

Prepared For the Offices of:

SCALE
0 N/A

US 74 over Blue Ridge Southern Railroad Fiber Optic Cable Installation

Division 14 Haywood County Clyde

PLAN DATE: June 2024 REVIEWED BY: M. L. Stygles

PREPARED BY: S.R.Chiluka REVIEWED BY: J.Ma

REVISIONS	INIT.	DATE

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SEAL

SIGNATURE DATE