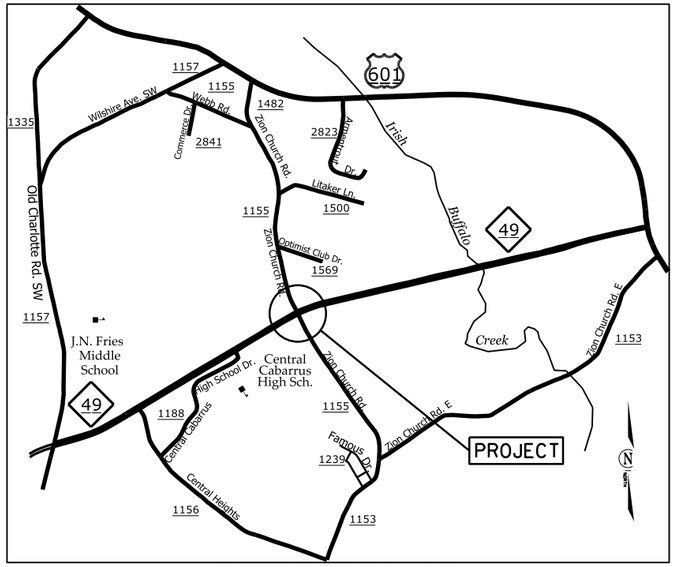
TIP: HS-2010H

PROJECT: 49291.3.8



VICINITY MAP NOT TO SCALE

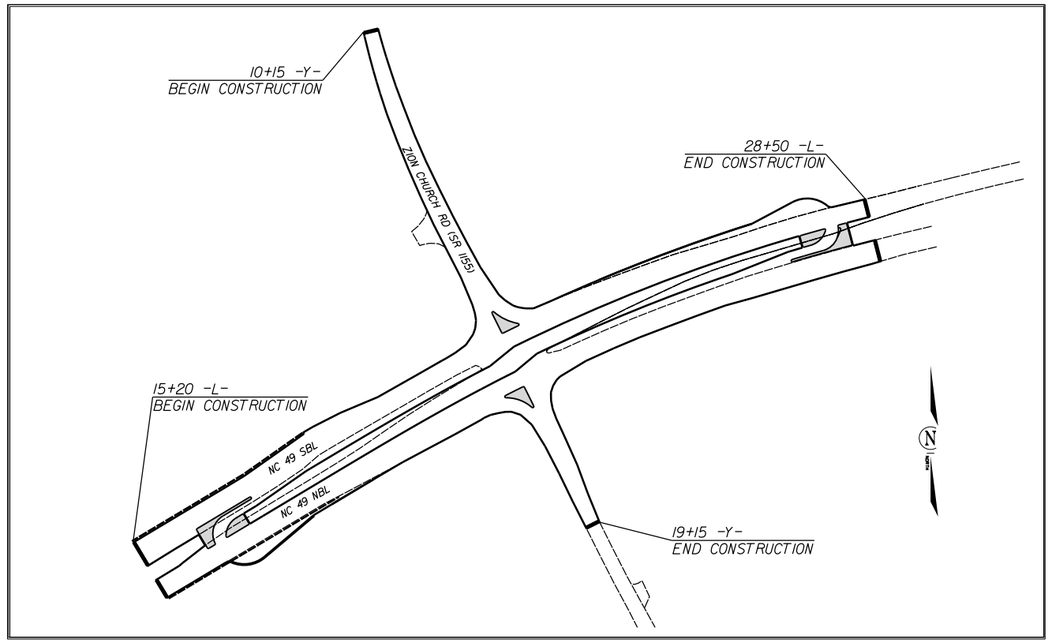
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CABARRUS COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	49291.3.8	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
49291.1.8	0049041	*P.E.*
49291.2.11	0049041	*R/W*
49291.3.8	0049041	*CONST.*

LOCATION: *INTERSECTION OF HWY. NC 49 AND ZION CHURCH RD. (SR-1155)*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, PAVEMENT REMOVAL, CONCRETE ISLANDS, THERMOPLASTIC PAVEMENT MARKINGS, AND SIGNAL.*



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

GRAPHIC SCALES

PLANS 0 50 100

PROFILE (HORIZONTAL) 0 50 100

PROFILE (VERTICAL) 0 5 10

DESIGN DATA

ADT _____= _____

ADT _____= _____

DHV = ___ %

D = ___ %

T = ___ %

V = ___ MPH

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT	*2100 FT*	=	*0.40 MILES*
TOTAL LENGTH OF STATE PROJECT	*2100 FT*	=	*0.40 MILES*

Prepared In the Office of:

DIVISION OF HIGHWAYS

DIVISION TEN

DIVISION DESIGN / CONSTRUCT UNIT

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 30, 2025

LETTING DATE:
JUNE 17, 2026

DONALD HARWARD
PROJECT ENGINEER

CHAD BURRIS
PROJECT DESIGN ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

05/21/2026

NORTH CAROLINA PROFESSIONAL SEAL 042673 ENGINEER TRAVIS J PRESLAR

Document signed by:
Travis Preslar
A53C1AC7A1FF47B...

APPROVED BY
DIVISION PROJECT TEAM LEAD *DATE*

24-FEB-2026 11:49
S:\DOCUMENTS\cabarrus\HS-2010H_NC 49_Zion C
$$$$USERNAME$$$$

9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
49291.3.8	1A
F.A. PROJECT NO.	0049041

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
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary
- Existing Historic Property Boundary
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- 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
- Buffer Zone 1
- Buffer Zone 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — 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
- Proposed Slope Stakes Fill
- 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 — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- 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 — A/G Water

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 — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line
- Above Ground Sanitary Sewer — A/G 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. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

SURVEY CONTROL SHEET

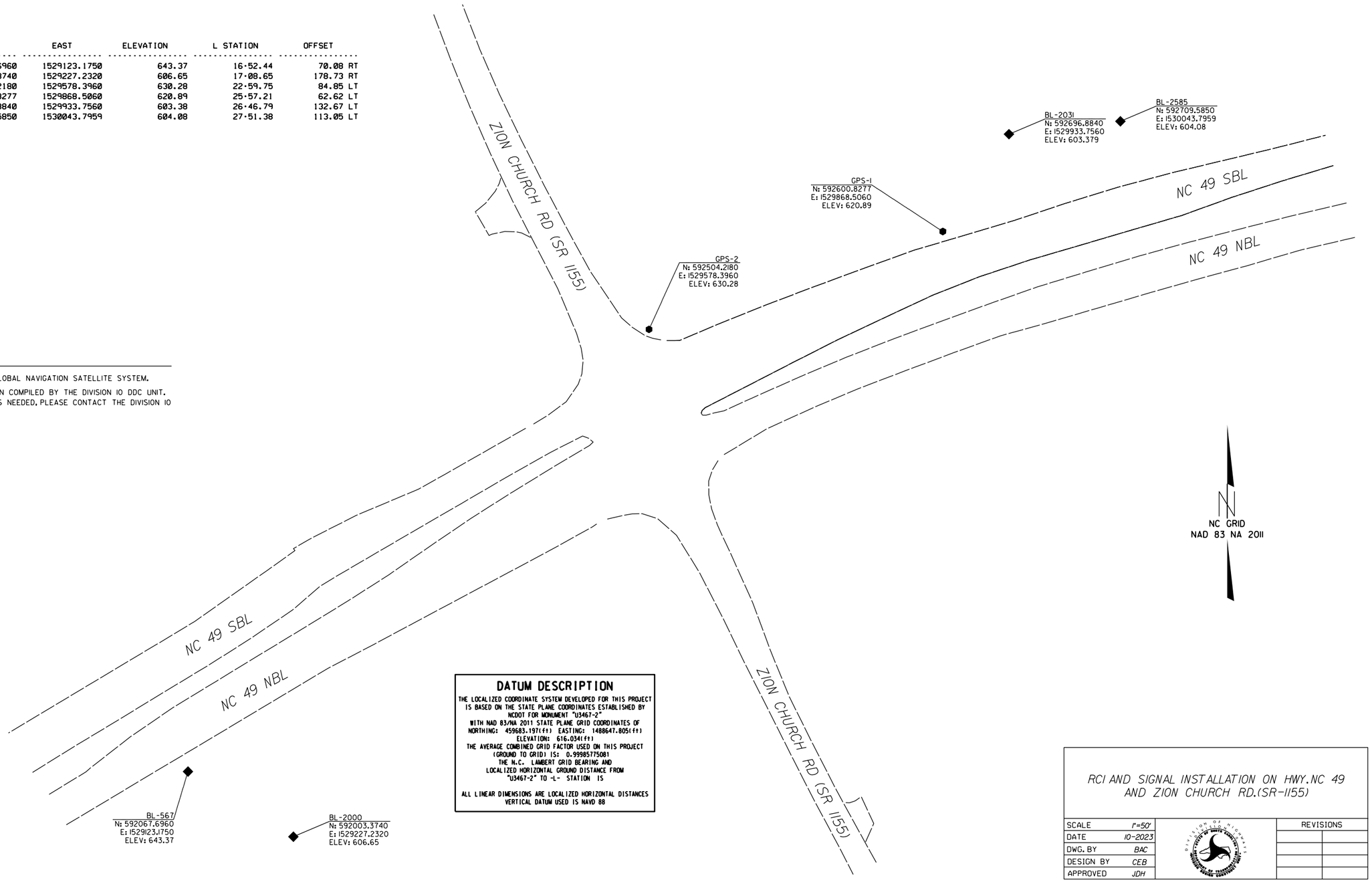
PROJECT NO.	SHEET NO.
49291.3.8	1B
F.A. PROJECT NO.	0049041

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
567		592067.6960	1529123.1750	643.37	16+52.44	70.08 RT
2000		592003.3740	1529227.2320	606.65	17+08.65	178.73 RT
2		592504.2180	1529578.3960	630.28	22+59.75	84.85 LT
1		592600.8277	1529868.5060	620.89	25+57.21	62.62 LT
2031		592696.8840	1529933.7560	603.38	26+46.79	132.67 LT
2585		592709.5850	1530043.7959	604.08	27+51.38	113.05 LT

NOTES:

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



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U3467-2"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 459683.197(ft) EASTING: 1488647.805(ft)
ELEVATION: 616.034(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99985775081
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U3467-2" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

RCI AND SIGNAL INSTALLATION ON HWY.NC 49 AND ZION CHURCH RD.(SR-1155)

		REVISIONS	
SCALE	1"=50'		
DATE	10-2023		
DWG. BY	BAC		
DESIGN BY	CEB		
APPROVED	JDH		

PROJECT NO.	SHEET NO.
49291.3.8	IC
F.A. PROJECT NO.	0049041

RIGHT OF WAY, EASEMENT AND PROPOSED ALIGNMENT SHEET

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	591792.4949	1528527.4791
TS	18+34.47	592221.3618	1529243.3096
SC	21+46.15	592376.6616	1529513.4954
CS	27+27.61	592594.2364	1530051.6418
ST	30+39.29	592670.3541	1530353.8412

Y

TYPE	STATION	NORTH	EAST
PC	10+00.00	592967.8194	1529335.7009
PT	13+43.88	592644.9595	1529451.7113
EOB	19+87.42	592069.4795	1529739.7503
EOA	0+00.00	592069.4795	1529739.7503

ROW MARKER PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	26+40.36	-119.47	592682.2640	1529931.4210
L	26+50.00	-122.00	592687.7511	1529940.2076
L	27+50.00	-122.00	592717.8078	1530039.9893
L	27+72.00	-103.00	592705.6229	1530067.0266

PERMANENT DRAINAGE EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	17+29.00	157.83	592031.7619	1529233.9522
L	17+35.00	170.00	592024.4097	1529245.3514
L	17+15.00	180.00	592005.5527	1529233.3342
L	17+05.50	165.68	592012.9530	1529217.8230

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

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

Witness my signature, registration number and seal this 24th day of FEB 2026

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

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

NC GRID
NAD 83 NA 2011

NOTES:

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

RCI AND SIGNAL INSTALLATION ON HWY.NC 49 AND ZION CHURCH RD.(SR-1155)

		REVISIONS	
SCALE	1"=50'		
DATE	10-2023		
DWG. BY	BAC		
DESIGN BY	JDH		
APPROVED	JDH		

PROJECT NO.	SHEET NO.
49291.3.8	ID
F.A. PROJECT NO.	0049041

PC Sta. 10+00.00 -Y-

PI Sta 11+72.76 -Y-
△ = 13° 38' 55.7" (LT)
D = 3° 58' 08.5"
L = 343.88'
T = 172.76'
R = 1,443.57'

PT Sta. 13+43.88 -Y-

SC Sta. 21+46.15 -L-

TS Sta. 18+34.47 -L-

CS Sta. 27+27.61 -L-

30+39.29 -L-

Pls Sta 20+42.29 -L-
Θs = 3° 06' 37.2"
Ls = 311.68'
LT = 207.82'
ST = 103.92'

Pls Sta 28+31.53 -L-
Θs = 3° 06' 37.2"
Ls = 311.68'
LT = 207.82'
ST = 103.92'

PI Sta 24+37.88 -L-
△ = 11° 36' 18.4" (RT)
D = 1° 59' 45.1"
L = 581.46'
T = 291.73'
R = 2,870.73'

POC Sta. 22+10.99 -L-=
POT Sta. 16+10.80 -Y-

POT Sta. 19+87.42 -Y-

Z-109 CHURCH RD (SR 1155)

NC 49 SBL

NC 49 NBL

BL-2031
N: 592696.8840
E: 1529933.7560
ELEV: 603.379

BL-2585
N: 592709.5850
E: 1530043.7959
ELEV: 604.08

GPS-1
N: 592600.8277
E: 1529868.5060
ELEV: 620.89

GPS-2
N: 592504.2180
E: 1529578.3960
ELEV: 630.28

BL-567
N: 592067.6960
E: 1529123.1750
ELEV: 643.37

BL-2000
N: 592003.3740
E: 1529227.2320
ELEV: 606.65

26+18 -L-	119.34'
26+40.36 -L-	119.47'
26+50 -L-	132.00'
26+50 -L-	122.00'
27+50 -L-	132.00'
27+50 -L-	122.00'
27+72 -L-	103.00'
27+84 -L-	104.34'
18+52.97	116.46' 127.00'
17+58 -L-	158.50'
17+29 -L-	157.83'
17+35 -L-	170.00'
17+15 -L-	180.00'
17+05.50 -L-	165.68'
16+72 -L-	161.84'
16+90 -L-	188.00'

NC GRID
NAD 83 NA 2011

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

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

Witness my signature, registration number and seal this 24th day of FEB 2026

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

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

RCI AND SIGNAL INSTALLATION ON HWY.NC 49 AND ZION CHURCH RD.(SR-1155)

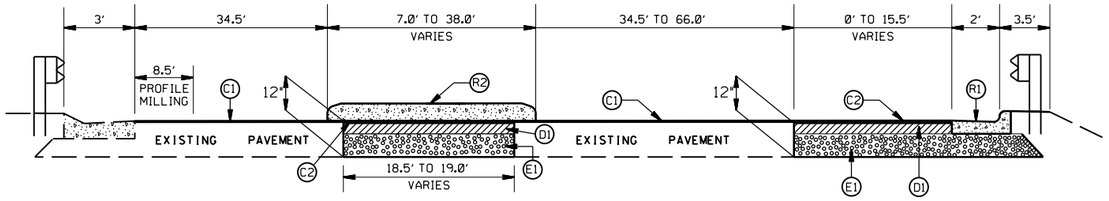
SCALE	1"=50'
DATE	10-2023
DWG. BY	BAC
DESIGN BY	JDH
APPROVED	JDH

DIVISION OF HIGHWAYS — NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

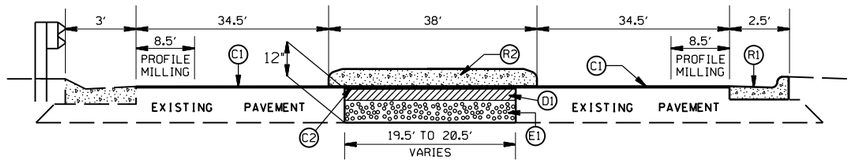
REVISIONS	

PROJECT NO.	SHEET NO.
49291.3.8	2
F.A. PROJECT NO.	0049041

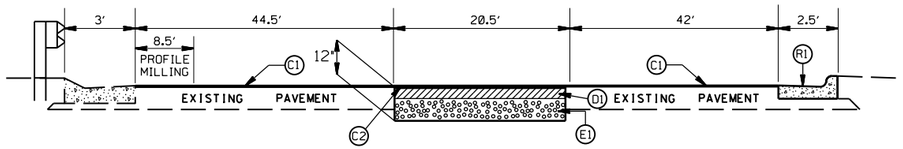
ROADWAY DESIGN ENGINEER
05/21/2026
NOT VALID UNTIL PROFESSIONAL SEAL 042673 ENGINEER
DocuSigned by: A53C1AC7A1FF47B...



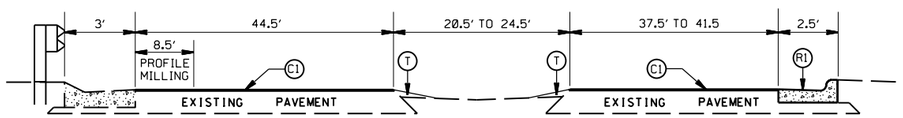
TYPICAL SECTION NO.4
STA. 16+36.00 TO 16+57.00 -L-



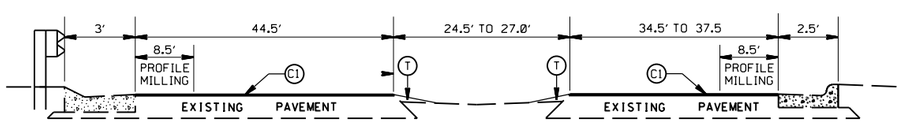
TYPICAL SECTION NO.3
STA. 16+21.00 TO 16+36.00 -L-



TYPICAL SECTION NO.3
STA. 16+20.00 TO 16+21.00 -L-

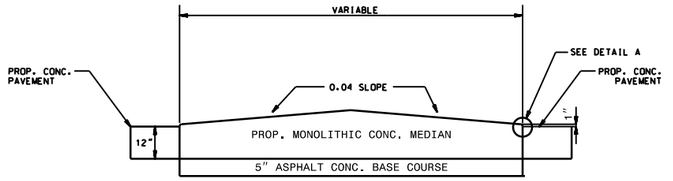


TYPICAL SECTION NO.2
STA. 15+86.50 TO 16+20.00 -L-

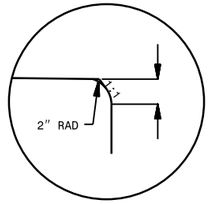


TYPICAL SECTION NO.1
STA. 15+20.00 TO 15+86.50 -L-

R3 DETAIL



MONOLITHIC CONCRETE MOUNTABLE ISLAND DETAIL



DETAIL - A

NOTES:
-UTILIZE WELDED WIRE MESH (EITHER 4X4 W3.5XW3.5 OR 6X6 W5XW5) IN ALL 12" MONOLITHIC CONCRETE MOUNTABLE ISLANDS.
-OVERLAP WELDED WIRE MESH PANELS 4".

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
R1	PROP. 2'-6" CONC. CURB & GUTTER
R2	PROP. 5" MONOLITHIC CONC. ISLAND (SURFACE MOUNTED)
R3	PROP. 12" MONOLITHIC CONCRETE MOUNTABLE ISLAND, CLASS AA CONCRETE WITH WIRE MESH. SEE R3 DETAIL.
T	EARTH MATERIAL

RCI AND SIGNAL INSTALLATION ON HWY.NC 49 AND ZION CHURCH RD.(SR-1155)

SCALE	N/A
DATE	05-2026
DWG. BY	BAC
DESIGN BY	CEB
APPROVED	JDH

DIVISION OF HIGHWAYS

REVISIONS	

PROJECT NO.	SHEET NO.
49291.3.8	2A
F.A. PROJECT NO.	0049041

ROADWAY DESIGN ENGINEER

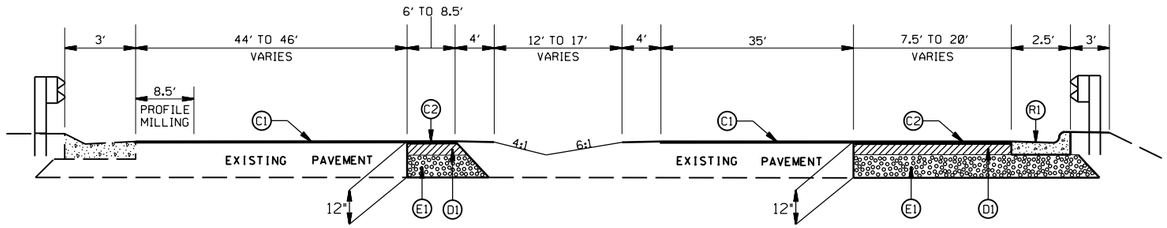
05/21/2026

NOT VALID FOR CONSTRUCTION PURPOSES UNLESS SIGNED BY A PROFESSIONAL ENGINEER

SEAL 042673

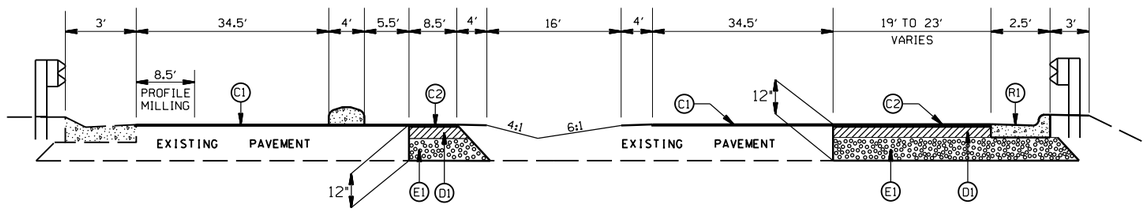
ENGINEER

DocuSigned by: A53C1AC7A1FF47B...



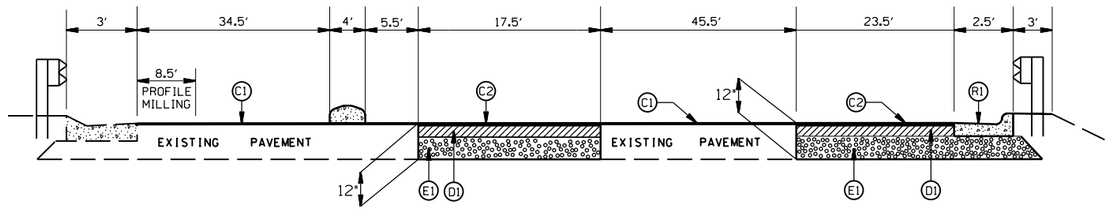
TYPICAL SECTION NO.8

STA. 17+26.00 TO 18+00 -L-



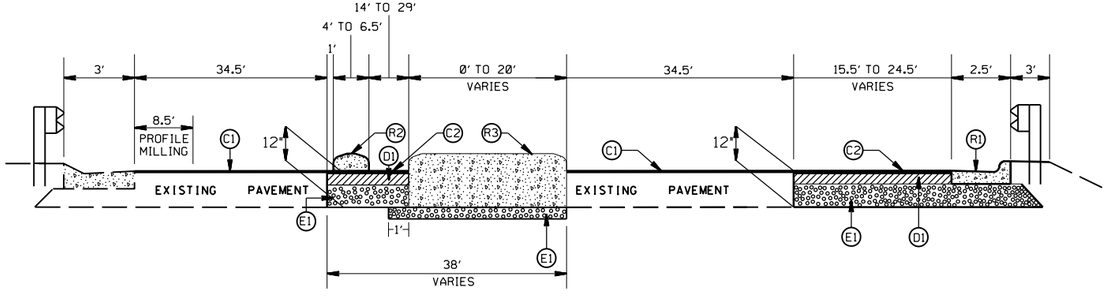
TYPICAL SECTION NO.7

STA. 17+02.00 TO 17+26.00 -L-



TYPICAL SECTION NO.6

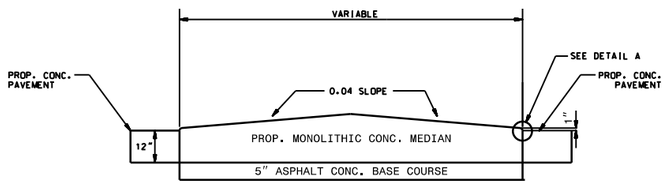
STA. 17+01.00 TO 17+02.00 -L-



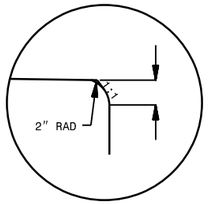
TYPICAL SECTION NO.5

STA. 16+56.00 TO 17+01.00 -L-

R3 DETAIL



MONOLITHIC CONCRETE MOUNTABLE ISLAND DETAIL



DETAIL - A

NOTES:
-UTILIZE WELDED WIRE MESH (EITHER 4X4 W3.5XW3.5 OR 6X6 W5XW5) IN ALL 12" MONOLITHIC CONCRETE MOUNTABLE ISLANDS.
-OVERLAP WELDED WIRE MESH PANELS 4".

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
R1	PROP. 2'-6" CONC. CURB & GUTTER
R2	PROP. 5" MONOLITHIC CONC. ISLAND (SURFACE MOUNTED)
R3	PROP. 12" MONOLITHIC CONCRETE MOUNTABLE ISLAND, CLASS AA CONCRETE WITH WIRE MESH. SEE R3 DETAIL.
T	EARTH MATERIAL

RCI AND SIGNAL INSTALLATION ON HWY. NC 49 AND ZION CHURCH RD. (SR-1155)

SCALE	N/A
DATE	05-2026
DWG. BY	BAC
DESIGN BY	CEB
APPROVED	JDH

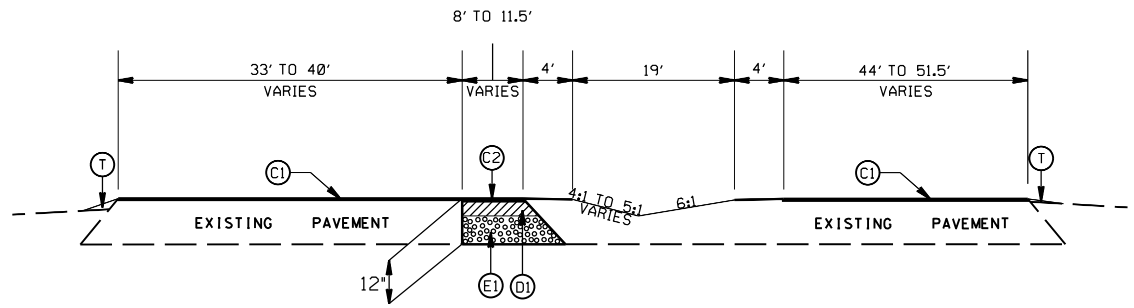
REVISIONS	

PROJECT NO.	SHEET NO.
49291.3.8	2B
F.A. PROJECT NO.	0049041

ROADWAY DESIGN ENGINEER

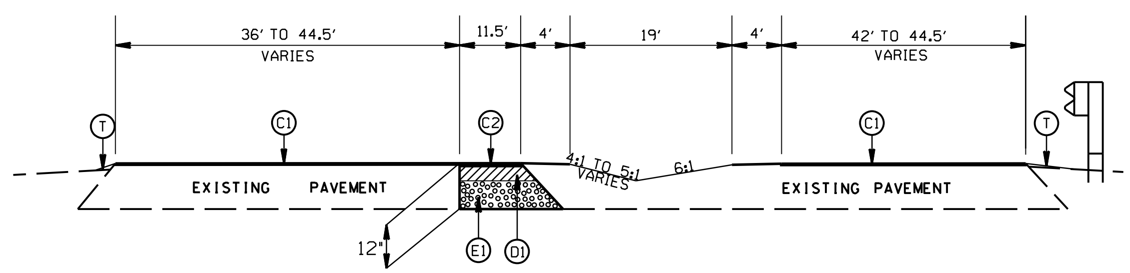
05/21/2025

SEAL 042673



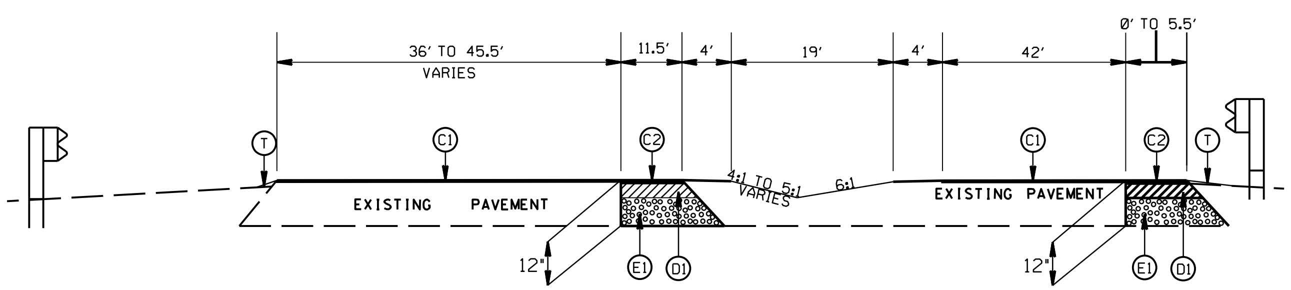
TYPICAL SECTION NO.12

STA. 20+44 TO 21+62.32 -L-



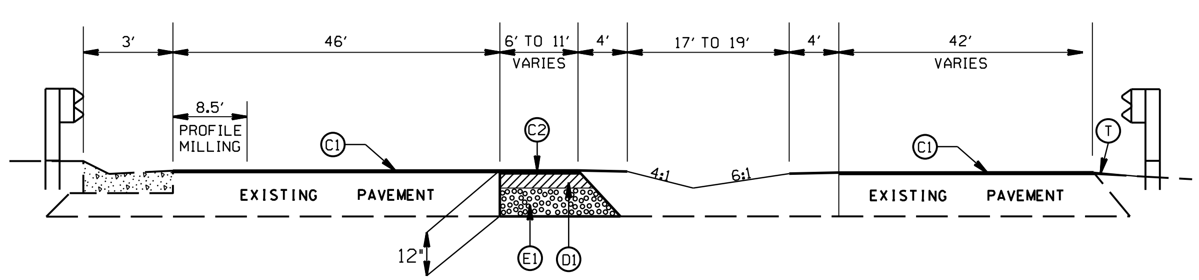
TYPICAL SECTION NO.11

STA. 19+71.42 TO 20+44 -L-



TYPICAL SECTION NO.10

STA. 18+55 TO 19+71.42 -L-



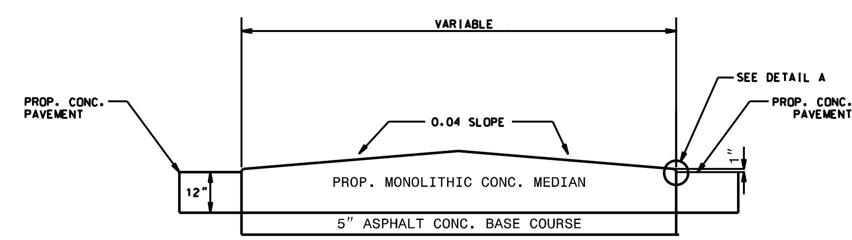
TYPICAL SECTION NO.9

STA. 18+00 TO 18+55 -L-

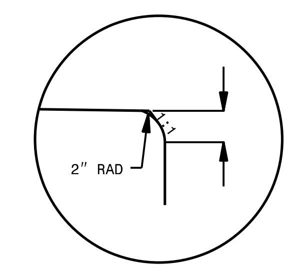
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
R1	PROP. 2'-6" CONC. CURB & GUTTER
R2	PROP. 5" MONOLITHIC CONC. ISLAND (SURFACE MOUNTED)
R3	PROP. 12" MONOLITHIC CONCRETE MOUNTABLE ISLAND, CLASS AA CONCRETE WITH WIRE MESH. SEE R3 DETAIL.
T	EARTH MATERIAL

R3 DETAIL



MONOLITHIC CONCRETE MOUNTABLE ISLAND DETAIL



DETAIL - A

NOTES:
- UTILIZE WELDED WIRE MESH (EITHER 4X4 W3.5XW3.5 OR 6X6 W5XW5) IN ALL 12" MONOLITHIC CONCRETE MOUNTABLE ISLANDS.
- OVERLAP WELDED WIRE MESH PANELS 4".

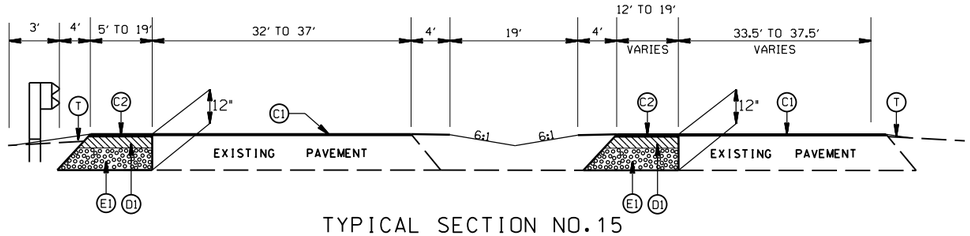
RCI AND SIGNAL INSTALLATION ON HWY.NC 49 AND ZION CHURCH RD.(SR-1155)

SCALE	N/A
DATE	09-2025
DWG. BY	BAC
DESIGN BY	CEB
APPROVED	JDH

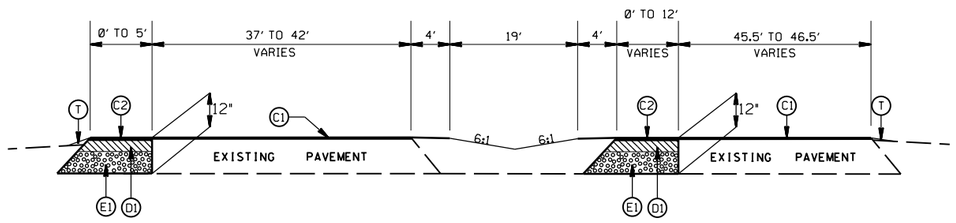
REVISIONS

PROJECT NO.	SHEET NO.
49291.3.8	2C
F.A. PROJECT NO.	0049041

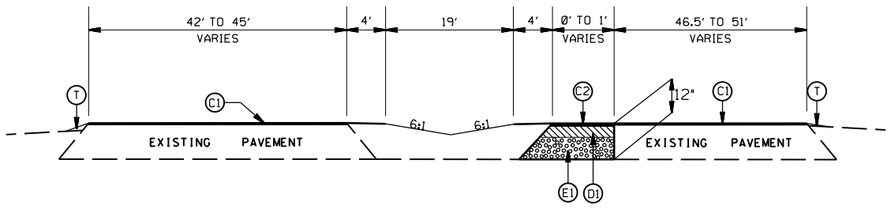
ROADWAY DESIGN ENGINEER
05/21/2026
NOT OFFICIAL UNTIL SIGNED PROFESSIONAL SEAL 042673 ENGINEER
DocuSigned by: A53C1AC7A1FF47B...



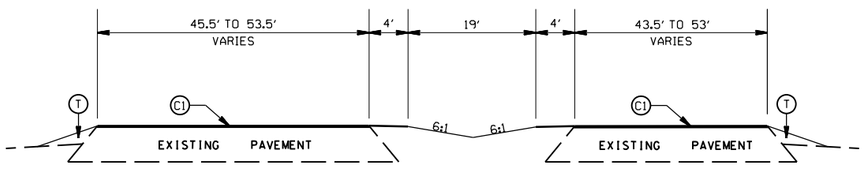
TYPICAL SECTION NO.15
STA. 24+69.5 TO 27+05 -L-



TYPICAL SECTION NO.14
STA. 23+12 TO 24+69.5 -L-

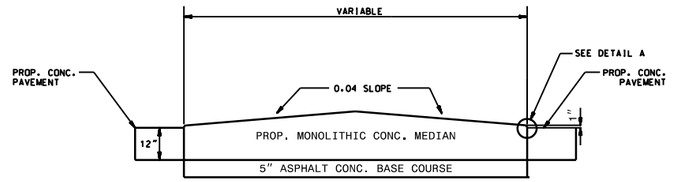


TYPICAL SECTION NO.14
STA. 22+70.68 TO 23+12 -L-

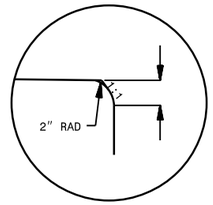


TYPICAL SECTION NO.13
STA. 21+62.32 TO 22+70.68 -L-

R3 DETAIL



MONOLITHIC CONCRETE MOUNTABLE ISLAND DETAIL



DETAIL - A

NOTES:
-UTILIZE WELDED WIRE MESH (EITHER 4X4 W3.5XW3.5 OR 6X6 W5XW5) IN ALL 12" MONOLITHIC CONCRETE MOUNTABLE ISLANDS.
-OVERLAP WELDED WIRE MESH PANELS 4".

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
R1	PROP. 2'-6" CONC. CURB & GUTTER
R2	PROP. 5" MONOLITHIC CONC. ISLAND (SURFACE MOUNTED)
R3	PROP. 12" MONOLITHIC CONCRETE MOUNTABLE ISLAND, CLASS AA CONCRETE WITH WIRE MESH. SEE R3 DETAIL.
T	EARTH MATERIAL

RCI AND SIGNAL INSTALLATION ON HWY.NC 49 AND ZION CHURCH RD.(SR-1155)

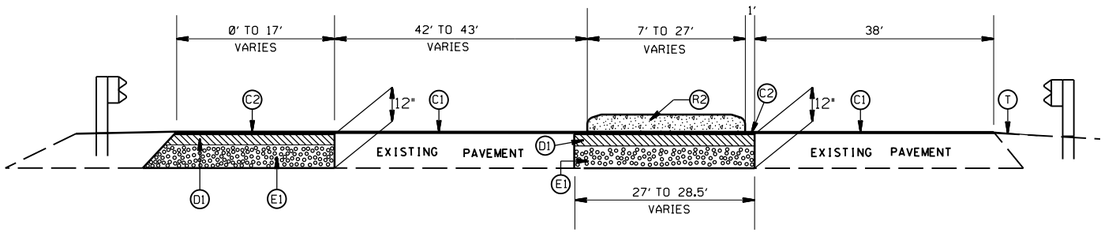
SCALE	N/A
DATE	09-2025
DWG. BY	BAC
DESIGN BY	CEB
APPROVED	JDH

DIVISION OF HIGHWAYS

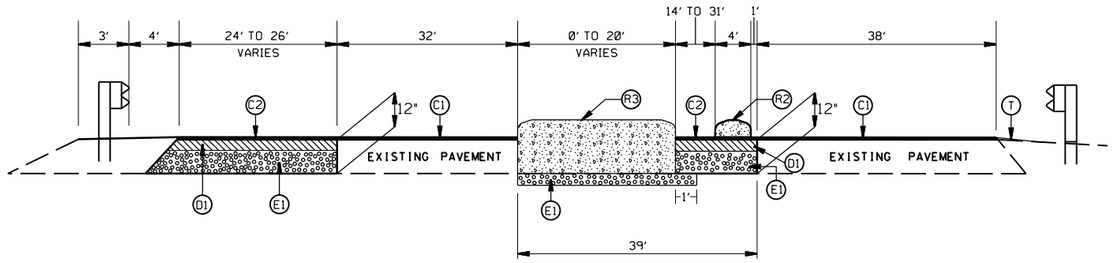
REVISIONS	

PROJECT NO.	SHEET NO.
49291.3.8	2D
F.A. PROJECT NO.	0049041

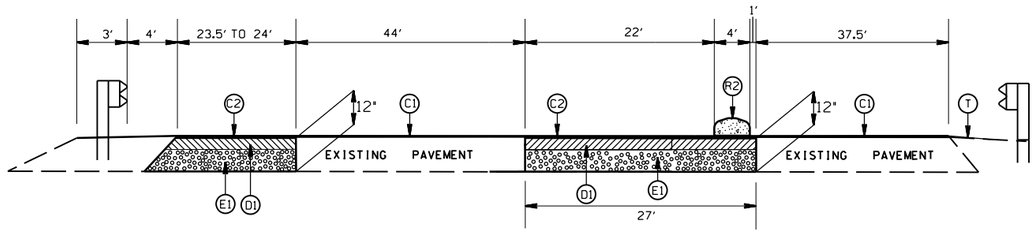
ROADWAY DESIGN ENGINEER
05/21/2026
NOT VALID FOR CONSTRUCTION PROFESSIONAL SEAL 042673 ENGINEER
DocuSigned by: A53C1AC7A1FF47B...



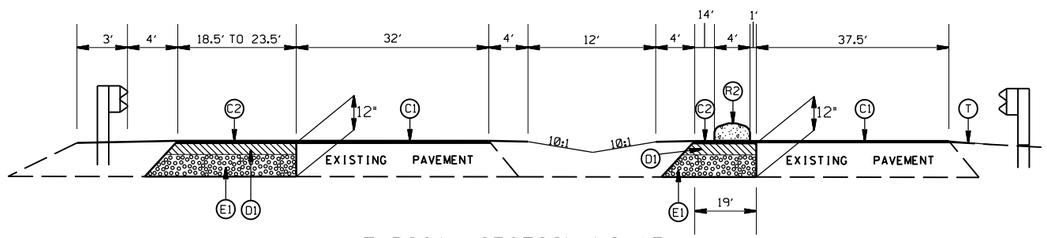
TYPICAL SECTION NO.19
STA. 27+74 TO 27+95 -L-



TYPICAL SECTION NO.18
STA. 27+30 TO 27+74 -L-



TYPICAL SECTION NO.17
STA. 27+29 TO 27+30 -L-

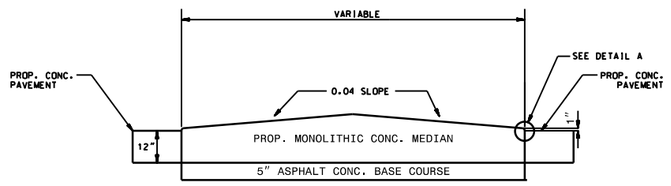


TYPICAL SECTION NO.17
STA. 27+05.00 TO 27+29.00 -L-

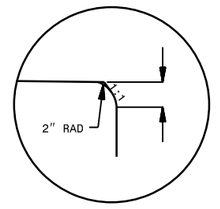
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
R1	PROP. 2'-6" CONC. CURB & GUTTER
R2	PROP. 5" MONOLITHIC CONC. ISLAND (SURFACE MOUNTED)
R3	PROP. 12" MONOLITHIC CONCRETE MOUNTABLE ISLAND, CLASS AA CONCRETE WITH WIRE MESH. SEE R3 DETAIL.
T	EARTH MATERIAL

R3 DETAIL



MONOLITHIC CONCRETE MOUNTABLE ISLAND DETAIL



DETAIL - A

NOTES:
-UTILIZE WELDED WIRE MESH (EITHER 4X4 W3.5XW3.5 OR 6X6 W5XW5) IN ALL 12" MONOLITHIC CONCRETE MOUNTABLE ISLANDS.
-OVERLAP WELDED WIRE MESH PANELS 4".

RCI AND SIGNAL INSTALLATION ON HWY.NC 49 AND ZION CHURCH RD.(SR-1155)

SCALE	N/A
DATE	09-2025
DWG. BY	BAC
DESIGN BY	CEB
APPROVED	JDH

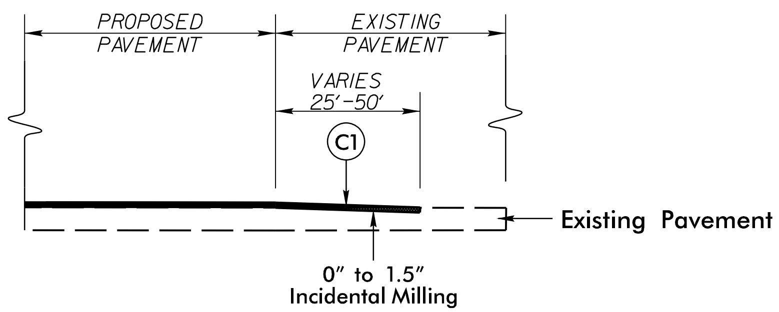
REVISIONS

PROJECT NO.	SHEET NO.
49291.3.8	2E
F.A. PROJECT NO.	0049041

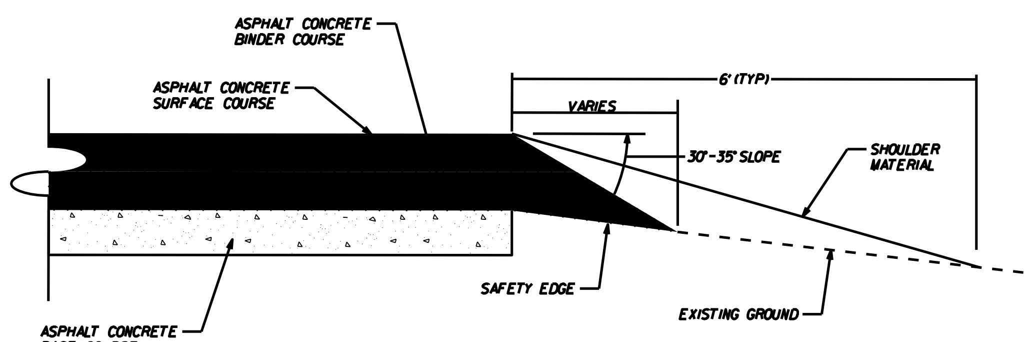
ROADWAY DESIGN ENGINEER

05/21/2026

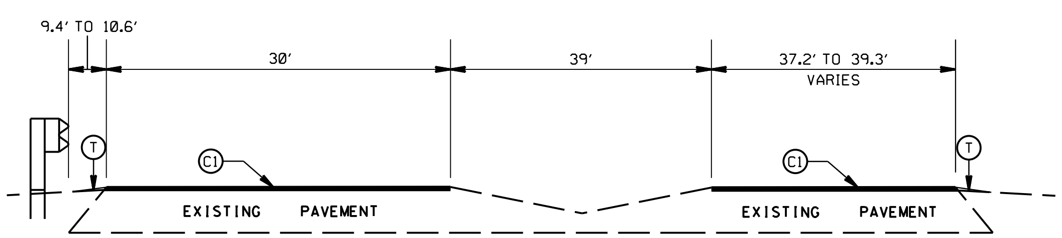
SEAL 042673



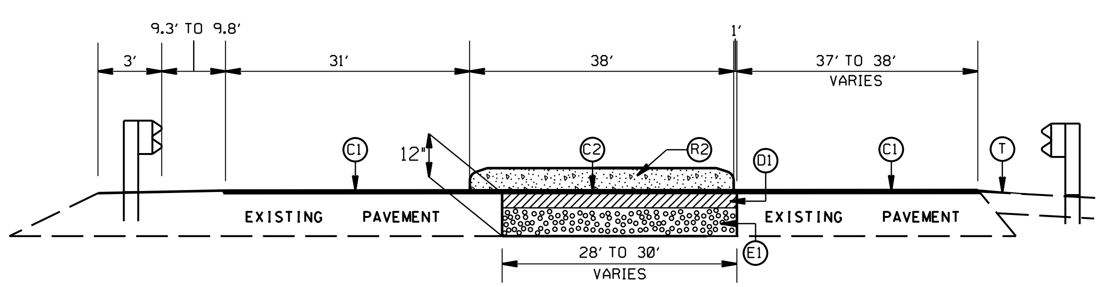
INCIDENTAL MILLING DETAIL
EXISTING ROAD TIE–IN
PROJECT TIE–INS



SAFETY EDGE DETAIL



TYPICAL SECTION NO.21
STA. 28+11.00 TO 28+50.00 -L-

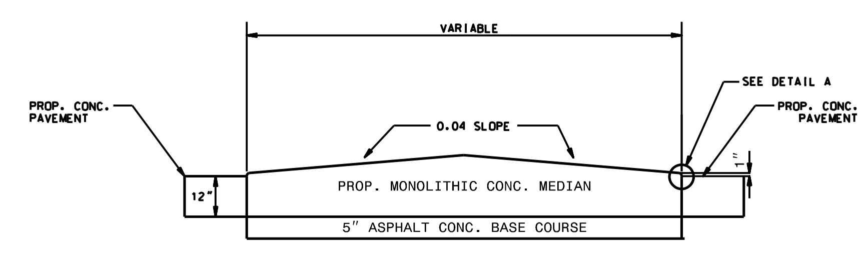


TYPICAL SECTION NO.20
STA. 27+95 TO 28+11 -L-

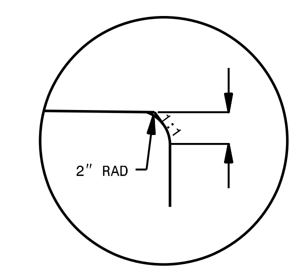
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
R1	PROP. 2'-6" CONC. CURB & GUTTER
R2	PROP. 5" MONOLITHIC CONC. ISLAND (SURFACE MOUNTED)
R3	PROP. 12" MONOLITHIC CONCRETE MOUNTABLE ISLAND, CLASS AA CONCRETE WITH WIRE MESH. SEE R3 DETAIL.
T	EARTH MATERIAL

R3 DETAIL



MONOLITHIC CONCRETE MOUNTABLE ISLAND DETAIL



DETAIL - A

NOTES:
-UTILIZE WELDED WIRE MESH (EITHER 4X4 W3.5XW3.5 OR 6X6 W5XW5) IN ALL 12" MONOLITHIC CONCRETE MOUNTABLE ISLANDS.
-OVERLAP WELDED WIRE MESH PANELS 4".

RCI AND SIGNAL INSTALLATION ON HWY. NC 49 AND ZION CHURCH RD. (SR-1155)

SCALE	N/A
DATE	09-2025
DWG. BY	BAC
DESIGN BY	CEB
APPROVED	JDH

REVISIONS

4/04/06

COMPUTED BY: BAC DATE: 9-2025
CHECKED BY: CEB DATE: 2-2026

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

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

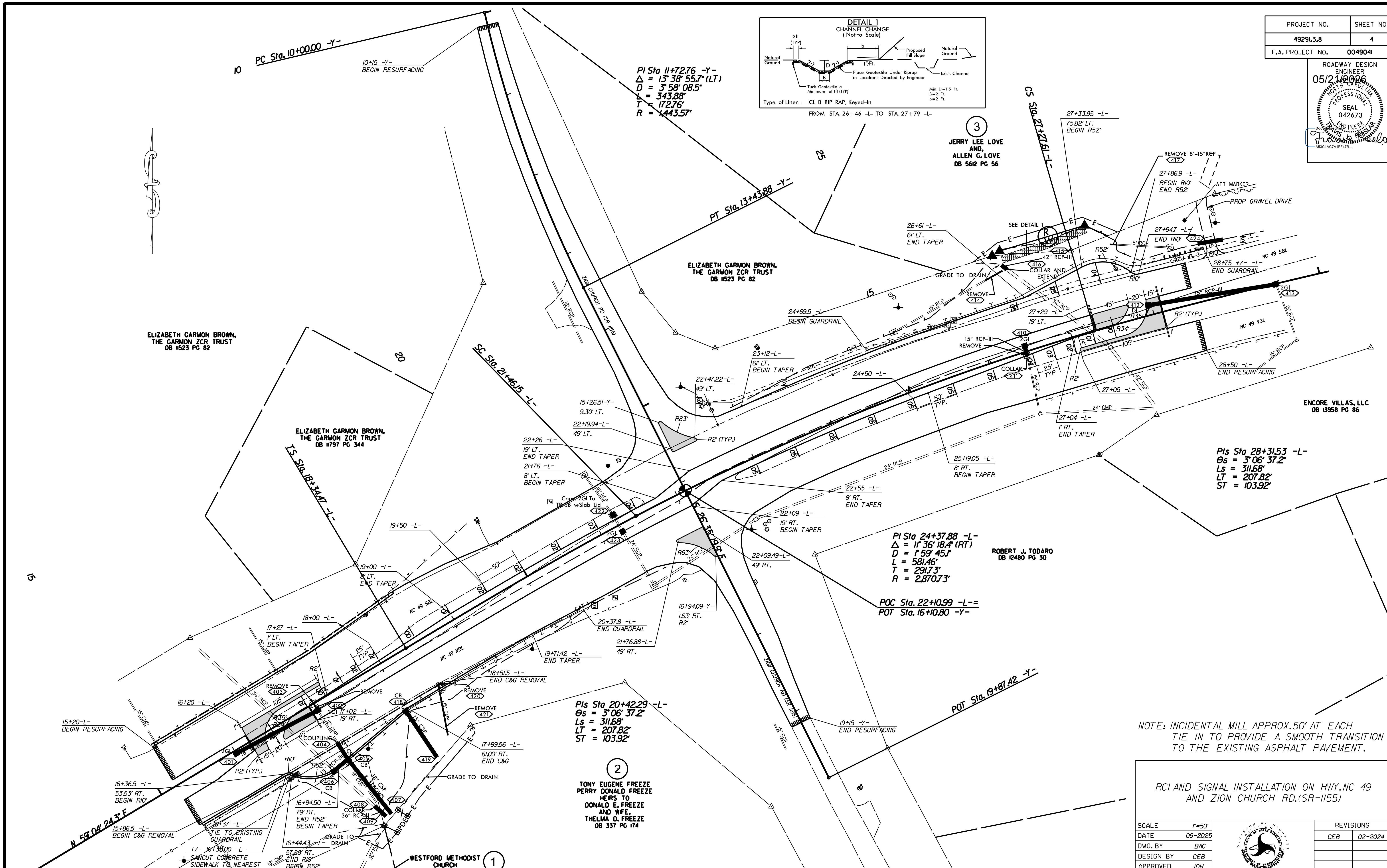
PROJECT NO.	SHEET NO.
49291.3.8	3
F.A. PROJECT NO.	0049041

ABBREVIATIONS

C.B. CATCH BASIN
N.D.I. NARROW DROP INLET
D.I. DROP INLET
G.D.I. GRATED DROP INLET
G.D.I. (N.S.) GRATED DROP INLET (NARROW SLOT)
J.B. JUNCTION BOX
M.H. MANHOLE
T.B.D.I. TRAFFIC BEARING DROP INLET
T.B.J.B. TRAFFIC BEARING JUNCTION BOX

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"	*** R. C. PIPE (CLASS V)	*** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	*** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET STD. 840.14 OR 840.15	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. FRAME WITH TWO GRATES STD. 840.22	T.B.J.B. STD. 840.34	FRAME, GRATES, AND HOOD STD. 840.03	J.B. STD. 840.31 OR 840.32	M.H. FRAME & COVER STD. 840.54	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN.FT.	REMOVE DRAINAGE STRUCTURE EACH	REMARKS
16+00 -L-	RT	401		643.95																																													1	0.60									1	1											
		401	402		638.37	636.27																						105'																																									
17+08 -L-	RT	402		641.96	636.27	636.07																																											1	0.9									1	1											TIE EXISTING 18" CMP INTO DRAINAGE STRUCTURE
17+08 -L-	CL	403																																																																				1	REMOVE EXISTING DRAINAGE STRUCTURE
		403	402																																																																		8'		18" CORRUGATED STEEL PIPE
17+09 -L-	RT	404			635.96																																																																			COUPLING BAND INCIDENTAL TO PIPE INSTALLATION
		404	405		635.96	635.85																22'																																																	
17+09 -L-	RT	405		640.51	635.85	636.52																																											1			1		1			1					1									
16+88 -L-	RT	406		641.02	637.02																																												1			1		1			1					1									
		406	405		637.02	636.52																					19'																																													
17+20 -L-	RT	407			602.25																																																																	86'		REMOVE EXISTING PIPE 226 L.S. GRADING
		405	407		635.75	602.25																82'																																												2~18"				18" CORRUGATED STEEL PIPE AND 2 ELBOWS
17+08 -L-	RT	408			602.24																																																																0.76			
		408	409		602.24	601.61																									16'																																									
17+13 -L-	RT	409			601.61																																																																			PIPE OUTLET
26+44 -L-	LT	410		614.88	607.54																																												1	2.4									1	1											
		410	411		607.54	607.48																					11'																																													
26+43 -L-	RT	411			607.48																																																																0.40			REMOVE EXISTING DRAINAGE STRUCTURE 226 L.S. GRADING
27+96 -L-	LT	412		614.60	612.35																																												1									1							1	1					
		412	413		612.35	607.37																					151'																																													
29+48 -L-	RT	413		611.03	607.37	607.27																																											1										1	1											
26+46 -L-	LT	414																																																																				24'		18" REINFORCED CONCRETE PIPE
26+47 -L-	LT	415			597.23																																																																			PIPE INLET
		415	416		597.23	597.07																										8'																																							
26+51 -L-	LT	416			597.07																																																															0.89			
27+72 -L-	LT	417																																																																				8'		15" REINFORCED CONCRETE PIPE
17+96 -L-	RT	418		638.51	634.34																																												1			1		1			1					1									
		418	419		634.34	611.10																70'																																													2~15"				15" CORRUGATED STEEL PIPE WITH 2 ELBOWS
18+45 -L-	RT	420																																																																					1	REMOVE EXISTING DRAINAGE STRUCTURE
18+45 -L-	RT	421																																																																				62'		REMOVE EXISTING 15" CMP
21+22 -L-	LT	422		628.64	625.23	624.39																																																						1										CONV. 2GI to TBJB w/Slab Lid
21+24 -L-	RT	423		628.98	623.10	622.90																																											1	1.1									1	1											INSTALL DRAINAGE STRUCTURE INTO EXISTING 24' RCP PIPE RUN
28+85.76 -L-	LT	424			612.46	612.64				30'																																																													DRIVEWAY PIPE
TOTAL										30'											70'	104'					181'	105'			16'	8'																	9	5		3		3			3	1	5	5	1	3			1	1	4	2.0	188'	2	

PROJECT NO.	SHEET NO.
49291.3.8	4
F.A. PROJECT NO.	0049041



ROADWAY DESIGN ENGINEER
05/21/2026
NORTH CAROLINA PROFESSIONAL SEAL 042673 ENGINEER
DETAIL 1
CHANNEL CHANGE
(Not to Scale)
Natural Ground
Proposed Fill Slope
Exist. Channel
Place Geotextile Under Riprap in Locations Directed by Engineer
Tuck Geotextile a Minimum of 1ft (TYP)
Min. D=1.5 Ft. B=2 Ft. b=2 Ft.
Type of Liner= CL B RIP RAP, Keyed-In
FROM STA. 26+46 -L- TO STA. 27+79 -L-
PC Sta. 10+00.00 -Y-
10+15 -Y- BEGIN RESURFACING
PI Sta 11+72.76 -Y-
Δ = 13° 38' 55.7" (LT)
D = 3° 58' 08.5"
L = 343.88'
T = 172.76'
R = 1,443.57'
PT Sta. 13+43.88 -Y-
JERRY LEE LOVE AND, ALLEN G. LOVE DB 5612 PG 56
ELIZABETH GARMON BROWN, THE GARMON ZCR TRUST DB #523 PG 82
ELIZABETH GARMON BROWN, THE GARMON ZCR TRUST DB #797 PG 344
CS Sta. 27+27.61 -L-
27+33.95 -L- 75.82' LT. BEGIN R52'
REMOVE 8'-15" RCP
27+86.9 -L- BEGIN R10' END R52'
ATT MARKER
PROP GRAVEL DRIVE
SEE DETAIL 1
26+61 -L- 61' LT. END TAPER
27+94.7 -L- END R10'
28+75 +/- -L- END GUARDRAIL
NC 49 SBL
NC 49 NBL
GRADE TO DRAIN
COLLAR AND EXTEND
24+69.5 -L- BEGIN GUARDRAIL
23+12 -L- 61' LT. BEGIN TAPER
27+29 -L- 19' LT.
15" RCP-III REMOVE
28+50 -L- END RESURFACING
22+47.22 -L- 49' LT.
24+50 -L-
27+05 -L-
27+04 -L- 1' RT. END TAPER
ENCORE VILLAS, LLC DB 13958 PG 86
SC Sta. 21+46.15 -L-
15+26.51 -Y- 9.30' LT.
22+19.94 -L- 49' LT.
22+26 -L- 19' LT. END TAPER
21+76 -L- 8' LT. BEGIN TAPER
25+19.05 -L- 8' RT. BEGIN TAPER
PIs Sta 28+31.53 -L-
Θs = 3° 06' 37.2"
Ls = 311.68'
LT = 207.82'
ST = 103.92'
TS Sta. 18+34.47 -L-
Conv. 2GI To TB JB w/Slab Lid
22+55 -L- 8' RT. END TAPER
22+09 -L- 19' RT. BEGIN TAPER
PI Sta 24+37.88 -L-
Δ = 11° 36' 18.4" (RT)
D = 1° 59' 45.1"
L = 581.46'
T = 291.73'
R = 2,870.73'
ROBERT J. TODARO DB 12480 PG 30
19+50 -L-
19+00 -L- 8' LT. END TAPER
22+09.49 -L- 49' RT.
POC Sta. 22+10.99 -L- =
POT Sta. 16+10.80 -Y-
18+00 -L-
17+27 -L- 1' LT. BEGIN TAPER
20+37.8 -L- END GUARDRAIL
16+94.09 -Y- 1.63' RT. R2'
21+76.88 -L- 49' RT.
19+71.42 -L- END TAPER
18+51.5 -L- END C&G REMOVAL
ZION CHURCH RD (SR 1155)
16+20 -L-
15+20 -L- BEGIN RESURFACING
17+02 -L- 19' RT.
17+99.56 -L- 61.00' RT. END C&G
PIs Sta 20+42.29 -L-
Θs = 3° 06' 37.2"
Ls = 311.68'
LT = 207.82'
ST = 103.92'
POT Sta. 19+87.42 -Y-
19+15 -Y- END RESURFACING
GRADE TO DRAIN
16+36.5 -L- 53.53' RT. BEGIN R10'
16+94.50 -L- 79' RT. END R52' BEGIN TAPER
15+86.5 -L- BEGIN C&G REMOVAL
16+37 -L- TIE TO EXISTING GUARDRAIL
+/- 16+36.00 -L- SAWCUT CONCRETE SIDEWALK TO NEAREST JOINT AND REMOVE
16+44.43 -L- 57.58' RT. END R10' BEGIN R52'
TONY EUGENE FREEZE PERRY DONALD FREEZE HEIRS TO DONALD E. FREEZE AND WIFE, THELMA D. FREEZE DB 337 PG 174
WESTFORD METHODIST CHURCH DB 16684 PG 269
N 59° 04' 24.3" E

NOTE: INCIDENTAL MILL APPROX. 50' AT EACH TIE IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING ASPHALT PAVEMENT.

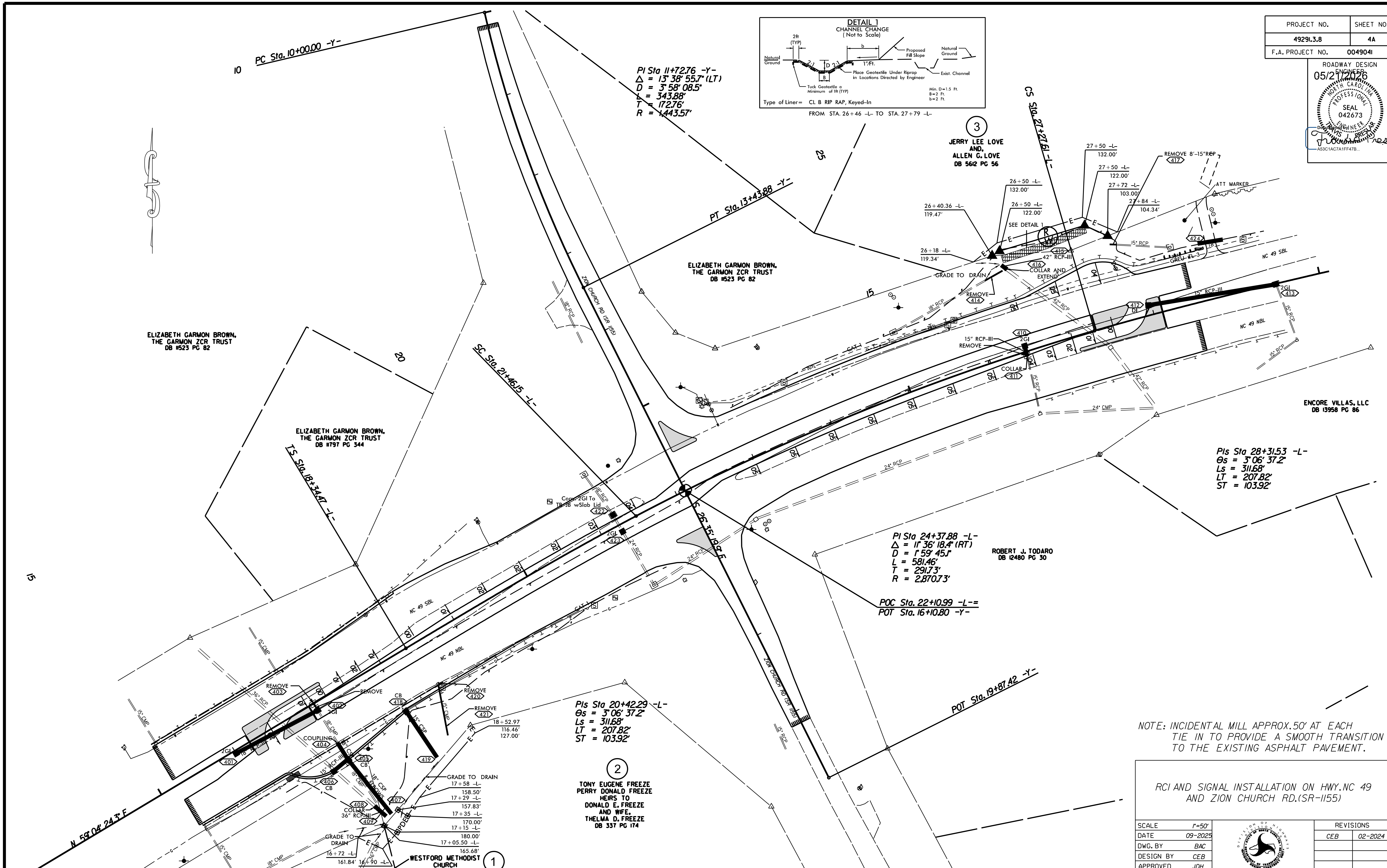
RCI AND SIGNAL INSTALLATION ON HWY. NC 49 AND ZION CHURCH RD. (SR-1155)

SCALE	1"=50'
DATE	09-2025
DWG. BY	BAC
DESIGN BY	CEB
APPROVED	JDH

REVISIONS	
CEB	02-2024

PROJECT NO.	SHEET NO.
49291.3.8	4A
F.A. PROJECT NO.	0049041

ROADWAY DESIGN ENGINEER
05/21/2026



DETAIL 1
CHANNEL CHANGE
(Not to Scale)
Natural Ground
Proposed Fill Slope
Place Geotextile Under Riprap in Locations Directed by Engineer
Tuck Geotextile a Minimum of 1ft (TYP)
Exist. Channel
Min. D=1.5 Ft. B=2 Ft. b=2 Ft.
Type of Liner= CL B RIP RAP, Keyed-In
FROM STA. 26+46 -L- TO STA. 27+79 -L-
PC Sta. 10+00.00 -Y-
PI Sta 11+72.76 -Y-
Δ = 13° 38' 55.7" (LT)
D = 3° 58' 08.5"
L = 343.88'
T = 172.76'
R = 1,443.57'
PT Sta. 13+43.88 -Y-
CS Sta. 27+27.61 -L-
JERRY LEE LOVE AND, ALLEN G. LOVE
DB 5612 PG 56
ELIZABETH GARMON BROWN, THE GARMON ZCR TRUST
DB #523 PG 82
ELIZABETH GARMON BROWN, THE GARMON ZCR TRUST
DB #797 PG 344
SC Sta. 21+46.15 -L-
TS Sta. 18+34.47 -L-
ENCORE VILLAS, LLC
DB 13958 PG 86
PIs Sta 28+31.53 -L-
θs = 3° 06' 37.2"
Ls = 311.68'
LT = 207.82'
ST = 103.92'
PI Sta 24+37.88 -L-
Δ = 11° 36' 18.4" (RT)
D = 1° 59' 45.1"
L = 581.46'
T = 291.73'
R = 2,870.73'
ROBERT J. TODARO
DB 12480 PG 30
POC Sta. 22+10.99 -L-=
POT Sta. 16+10.80 -Y-
POT Sta. 19+87.42 -Y-
PIs Sta 20+42.29 -L-
θs = 3° 06' 37.2"
Ls = 311.68'
LT = 207.82'
ST = 103.92'
TONY EUGENE FREEZE
PERRY DONALD FREEZE
HEIRS TO
DONALD E. FREEZE
AND WIFE,
THELMA D. FREEZE
DB 337 PG 174
WESTFORD METHODIST CHURCH
DB 16684 PG 269
ZION CHURCH RD (SR 1155)
NC 49 SBL
NC 49 NBL
N 59° 04' 24.3" E
S 26° 35' 19.9" E
Conv. 2GI To TB JB w/Slab Lid
REMOVE 8'-15" RCP
ATT MARKER
SEE DETAIL 1
COLLAR AND EXTEND
GRADE TO DRAIN
15" RCP-III REMOVE
GRADE TO DRAIN
COUPLING
COLLAR 36" RCP-III

NOTE: INCIDENTAL MILL APPROX. 50' AT EACH TIE IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING ASPHALT PAVEMENT.

RCI AND SIGNAL INSTALLATION ON HWY. NC 49 AND ZION CHURCH RD. (SR-1155)

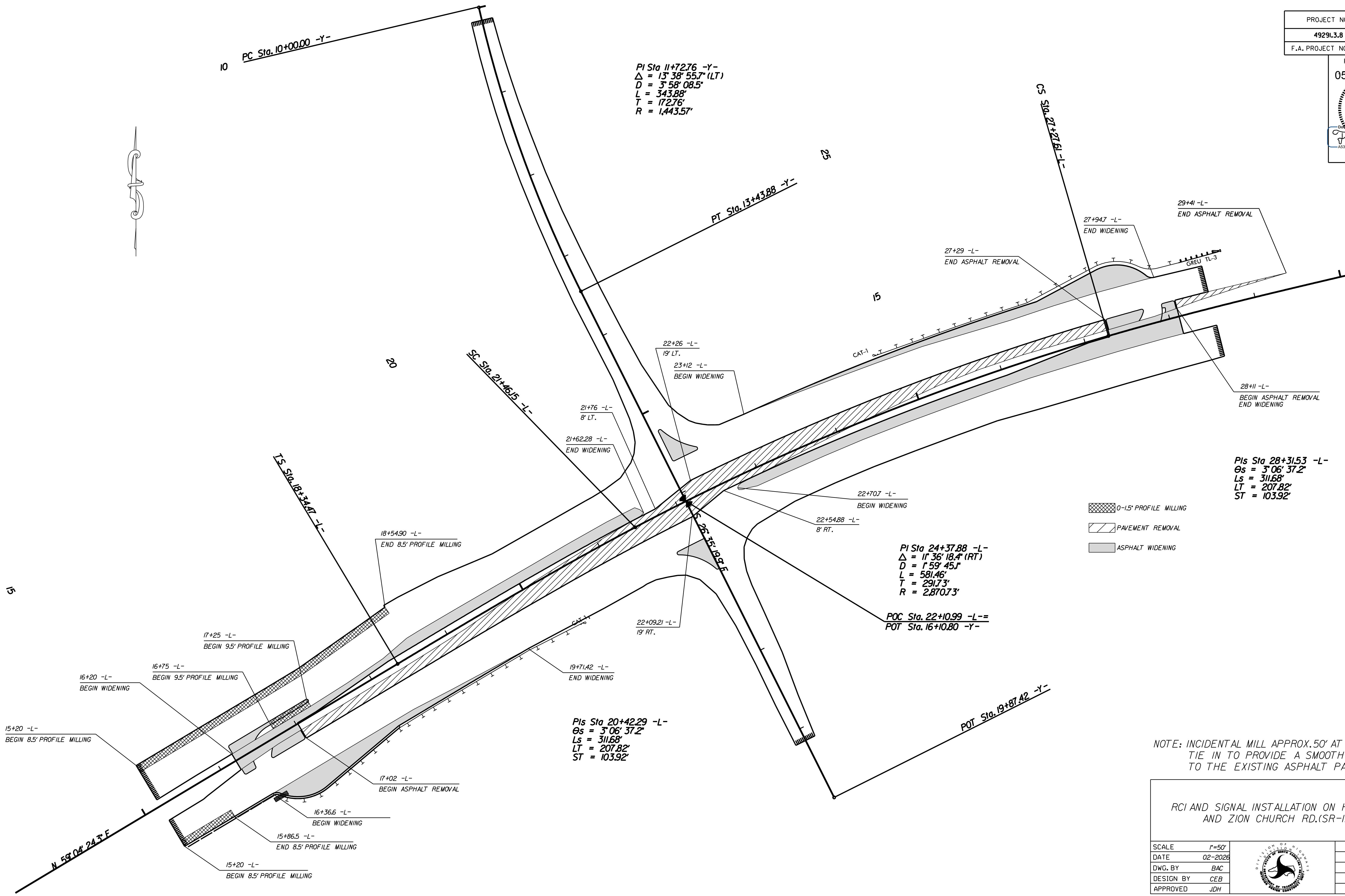
		REVISIONS	
SCALE	1"=50'	CEB	02-2024
DATE	09-2025		
DWG. BY	BAC		
DESIGN BY	CEB		
APPROVED	JDH		

PROJECT NO.	SHEET NO.
49291.3.8	4B
F.A. PROJECT NO.	0049041

ROADWAY DESIGN ENGINEER

05/21/2026

NORTH CAROLINA PROFESSIONAL SEAL 042673 ENGINEER



PC Sta. 10+00.00 -Y-
10
PI Sta 11+72.76 -Y-
Δ = 13° 38' 55.7" (LT)
D = 3° 58' 08.5"
L = 343.88'
T = 172.76'
R = 1,443.57'
25
PT Sta. 13+43.88 -Y-
CS Sta. 27+27.61 -L-
29+41 -L-
END ASPHALT REMOVAL
27+94.7 -L-
END WIDENING
27+29 -L-
END ASPHALT REMOVAL
GREU TL-3
15
CAT-1
22+26 -L-
19' LT.
23+12 -L-
BEGIN WIDENING
20
SC Sta. 21+46.15 -L-
21+76 -L-
8' LT.
21+62.28 -L-
END WIDENING
28+11 -L-
BEGIN ASPHALT REMOVAL
END WIDENING
PIs Sta 28+31.53 -L-
Θs = 3° 06' 37.2"
Ls = 311.68'
LT = 207.82'
ST = 103.92'
0-1.5" PROFILE MILLING
PAVEMENT REMOVAL
ASPHALT WIDENING
22+70.7 -L-
BEGIN WIDENING
22+54.88 -L-
8' RT.
TS Sta. 18+34.47 -L-
18+54.90 -L-
END 8.5' PROFILE MILLING
S 26° 35' 19.9" E
PI Sta 24+37.88 -L-
Δ = 11° 36' 18.4" (RT)
D = 1° 59' 45.1"
L = 581.46'
T = 291.73'
R = 2,870.73'
15
POC Sta. 22+10.99 -L- =
POT Sta. 16+10.80 -Y-
22+09.21 -L-
19' RT.
CAT-1
17+25 -L-
BEGIN 9.5' PROFILE MILLING
16+75 -L-
BEGIN 9.5' PROFILE MILLING
16+20 -L-
BEGIN WIDENING
19+71.42 -L-
END WIDENING
PIs Sta 20+42.29 -L-
Θs = 3° 06' 37.2"
Ls = 311.68'
LT = 207.82'
ST = 103.92'
POT Sta. 19+87.42 -Y-
15+20 -L-
BEGIN 8.5' PROFILE MILLING
17+02 -L-
BEGIN ASPHALT REMOVAL
16+36.6 -L-
BEGIN WIDENING
15+86.5 -L-
END 8.5' PROFILE MILLING
15+20 -L-
BEGIN 8.5' PROFILE MILLING
N 59° 04' 24.3" E

NOTE: INCIDENTAL MILL APPROX. 50' AT EACH TIE IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING ASPHALT PAVEMENT.

RCI AND SIGNAL INSTALLATION ON HWY. NC 49 AND ZION CHURCH RD. (SR-1155)

SCALE	1"=50'
DATE	02-2026
DWG. BY	BAC
DESIGN BY	CEB
APPROVED	JDH

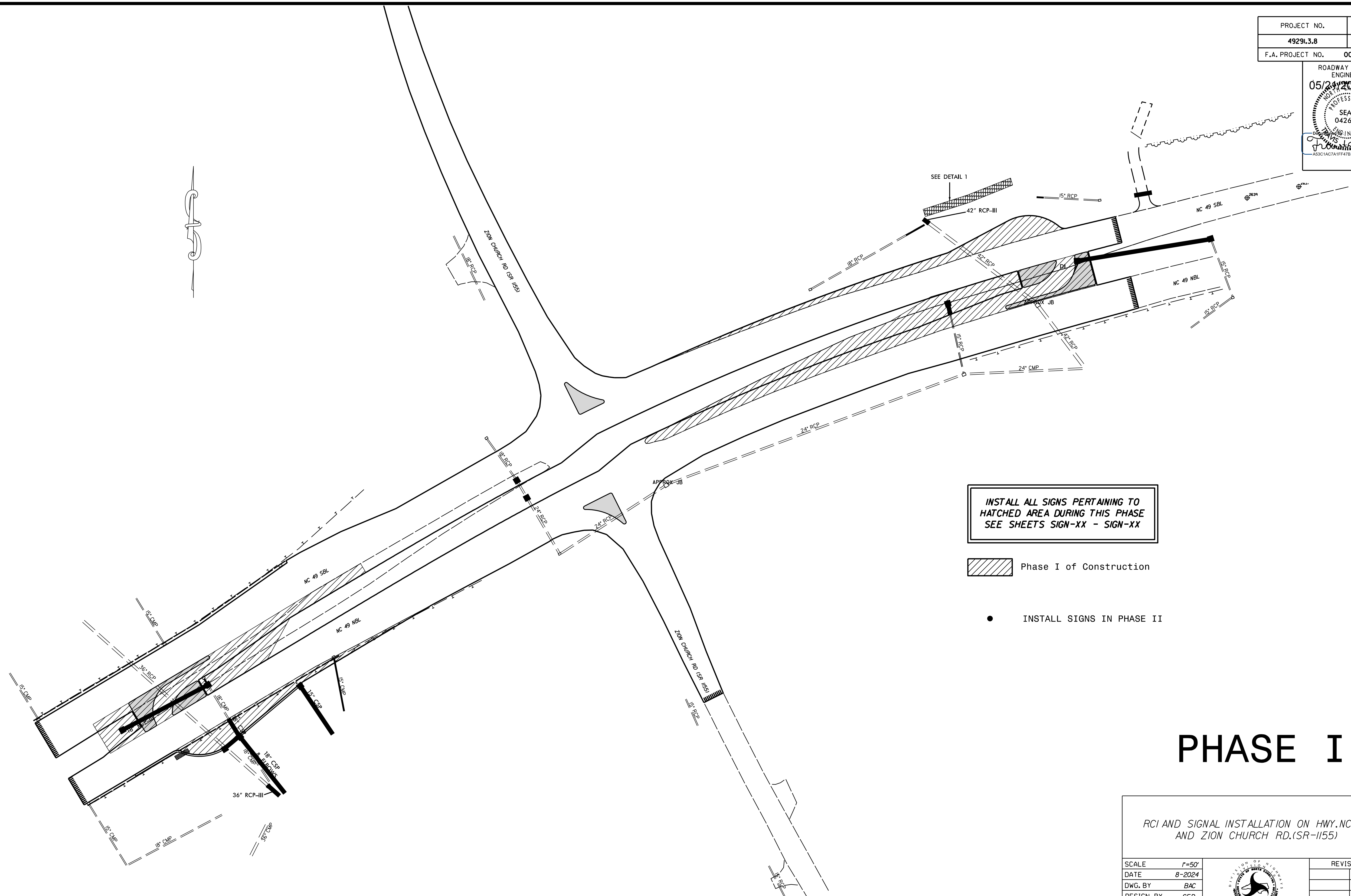
REVISIONS	
CEB	04/2026

PROJECT NO.	SHEET NO.
49291.3.8	TCP-1
F.A. PROJECT NO.	0049041

ROADWAY DESIGN ENGINEER

05/21/2026

NORTH CAROLINA PROFESSIONAL SEAL 042673 ENGINEER



INSTALL ALL SIGNS PERTAINING TO HATCHED AREA DURING THIS PHASE SEE SHEETS SIGN-XX - SIGN-XX

Phase I of Construction

● INSTALL SIGNS IN PHASE II

PHASE I

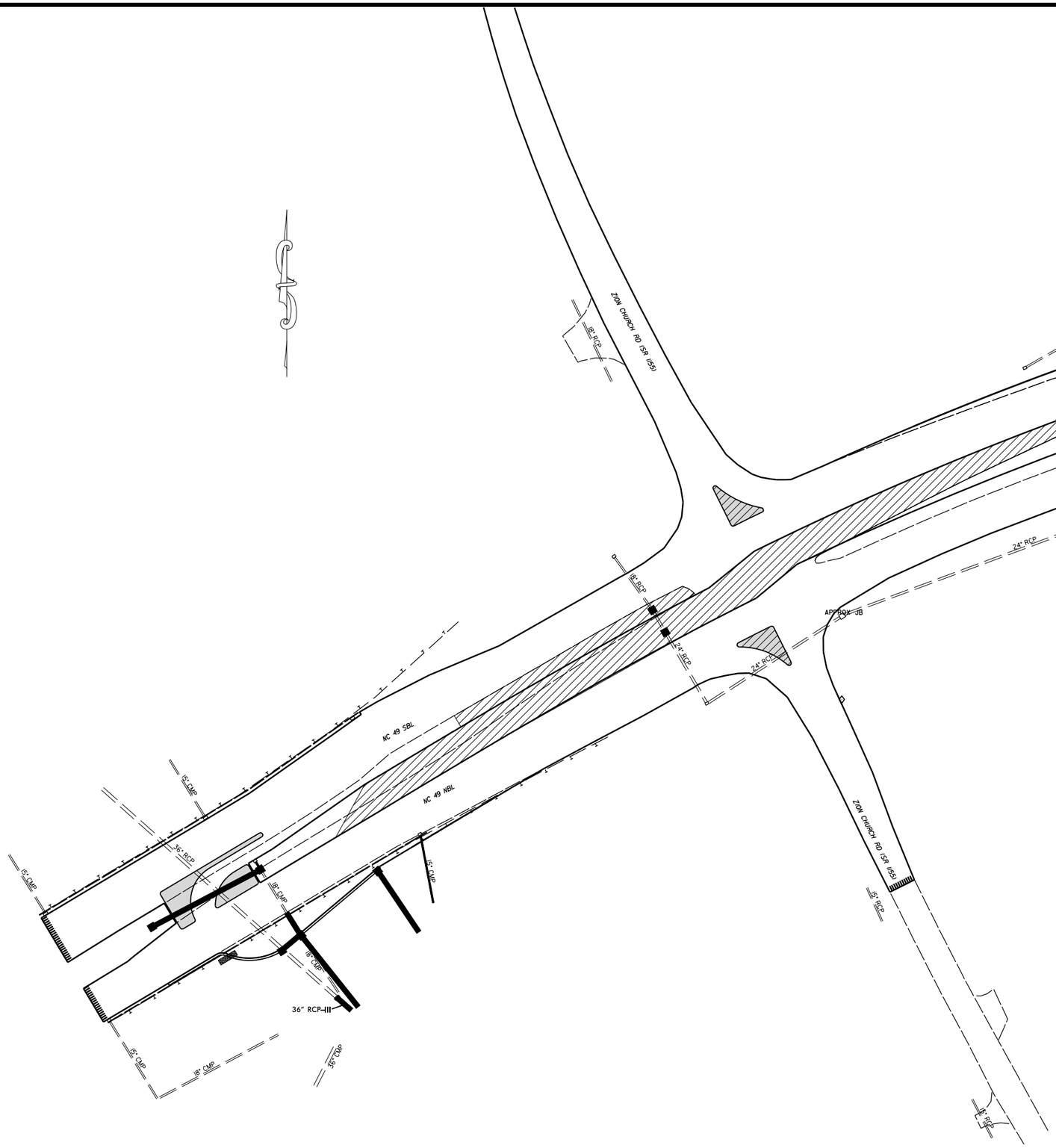
RCI AND SIGNAL INSTALLATION ON HWY.NC 49 AND ZION CHURCH RD.(SR-1155)

SCALE	1"=50'
DATE	8-2024
DWG. BY	BAC
DESIGN BY	CEB
APPROVED	JDH

REVISIONS

PROJECT NO.	SHEET NO.
49291.3.8	TCP-2
F.A. PROJECT NO.	0049041

ROADWAY DESIGN ENGINEER
05/21/2026
NORTH CAROLINA PROFESSIONAL SEAL 042673 ENGINEER
DocuSigned by: Thomas Harrell
A53C1AC7A1FF47B...



INSTALL ALL SIGNS PERTAINING TO HATCHED AREA DURING THIS PHASE SEE SHEETS SIGN-XX - SIGN-XX

Phase II of Construction

● INSTALL SIGNS IN PHASE II

PHASE II

RCI AND SIGNAL INSTALLATION ON HWY.NC 49 AND ZION CHURCH RD.(SR-1155)

		REVISIONS	
SCALE	1"=50'		
DATE	8-2024		
DWG. BY	BAC		
DESIGN BY	CEB		
APPROVED	JDH		

PROJECT NO.	SHEET NO.
49291.3.8	PMP-1
F.A. PROJECT NO.	0024096

ROADWAY DESIGN ENGINEER

05/21/2026

NORTH CAROLINA PROFESSIONAL SEAL 042673 ENGINEER TRAVIS J. PRESTON

PAVEMENT MARKING SCHEDULE

PAVEMENT MARKING LINES

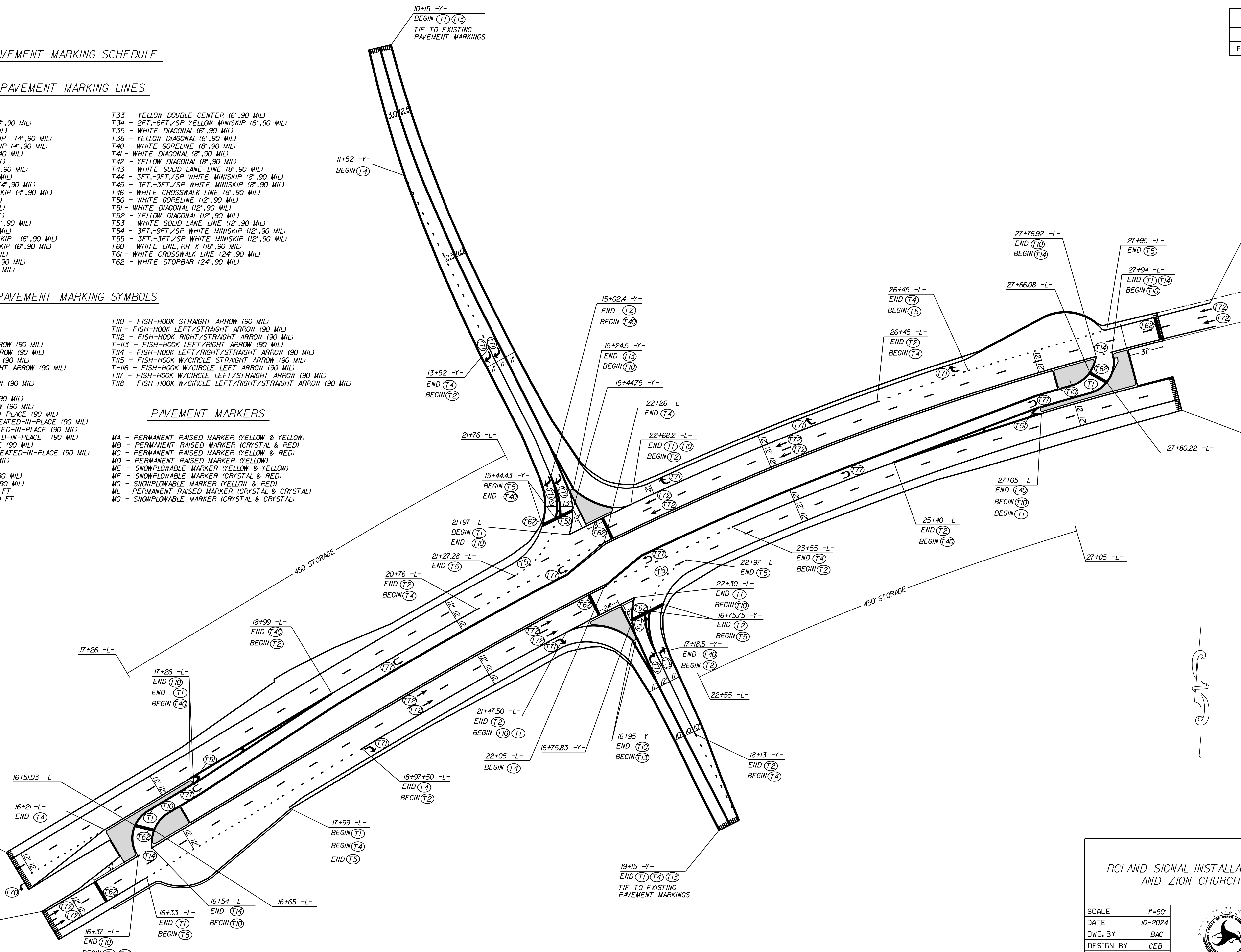
T1 - WHITE EDGELINE (4",90 MIL)
T2 - WHITE SOLID LANE LINE (4",90 MIL)
T3 - 10FT. WHITE SKIP (4",90 MIL)
T4 - 3FT.-9FT./SP WHITE MINISKIP (4",90 MIL)
T5 - 2FT.-6FT./SP WHITE MINISKIP (4",90 MIL)
T9 - WHITE RUMBLE STRIP (4",240 MIL)
T10 - YELLOW EDGELINE (4",90 MIL)
T11 - YELLOW SINGLE CENTER (4",90 MIL)
T12 - 10FT. YELLOW SKIP (4",90 MIL)
T13 - YELLOW DOUBLE CENTER (4",90 MIL)
T14 - 2FT.-6FT./SP YELLOW MINISKIP (4",90 MIL)
T15 - WHITE DIAGONAL (4",90 MIL)
T16 - YELLOW DIAGONAL (4",90 MIL)
T20 - WHITE EDGELINE (6",90 MIL)
T21 - WHITE SOLID LANE LINE (6",90 MIL)
T22 - 10FT. WHITE SKIP (6",90 MIL)
T23 - 3FT.-9FT./SP WHITE MINISKIP (6",90 MIL)
T24 - 2FT.-6FT./SP WHITE MINISKIP (6",90 MIL)
T30 - YELLOW EDGELINE (6",90 MIL)
T31 - YELLOW SINGLE CENTER (6",90 MIL)
T32 - 10FT. YELLOW SKIP (6",90 MIL)
T33 - YELLOW DOUBLE CENTER (6",90 MIL)
T34 - 2FT.-6FT./SP YELLOW MINISKIP (6",90 MIL)
T35 - WHITE DIAGONAL (6",90 MIL)
T36 - YELLOW DIAGONAL (6",90 MIL)
T40 - WHITE GORELINE (8",90 MIL)
T41 - WHITE DIAGONAL (8",90 MIL)
T42 - YELLOW DIAGONAL (8",90 MIL)
T43 - WHITE SOLID LANE LINE (8",90 MIL)
T44 - 3FT.-9FT./SP WHITE MINISKIP (8",90 MIL)
T45 - 3FT.-3FT./SP WHITE MINISKIP (8",90 MIL)
T46 - WHITE CROSSWALK LINE (8",90 MIL)
T50 - WHITE GORELINE (12",90 MIL)
T51 - WHITE DIAGONAL (12",90 MIL)
T52 - YELLOW DIAGONAL (12",90 MIL)
T53 - WHITE SOLID LANE LINE (12",90 MIL)
T54 - 3FT.-9FT./SP WHITE MINISKIP (12",90 MIL)
T55 - 3FT.-3FT./SP WHITE MINISKIP (12",90 MIL)
T60 - WHITE LINE, RR X (16",90 MIL)
T61 - WHITE CROSSWALK LINE (24",90 MIL)
T62 - WHITE STOPBAR (24",90 MIL)

PAVEMENT MARKING SYMBOLS

T70 - LEFT TURN ARROW (90 MIL)
T71 - RIGHT TURN ARROW (90 MIL)
T72 - STRAIGHT ARROW (90 MIL)
T73 - COMBO. LEFT/STRAIGHT ARROW (90 MIL)
T74 - COMBO. RIGHT/STRAIGHT ARROW (90 MIL)
T75 - COMBO. LEFT/RIGHT ARROW (90 MIL)
T76 - COMBO. LEFT/RIGHT/STRAIGHT ARROW (90 MIL)
T77 - U-TURN ARROW (90 MIL)
T78 - COMBO. LEFT/U-TURN ARROW (90 MIL)
T79 - MERGE ARROW (90 MIL)
T80 - WRONG-WAY RAMP ARROW (90 MIL)
T81 - ELONGATED STRAIGHT ARROW (90 MIL)
T90 - BICYCLE SYMBOL, HEATED-IN-PLACE (90 MIL)
T91 - BICYCLE STRAIGHT ARROW, HEATED-IN-PLACE (90 MIL)
T92 - BICYCLE LEFT ARROW, HEATED-IN-PLACE (90 MIL)
T93 - BICYCLE CHARACTER, HEATED-IN-PLACE (90 MIL)
T94 - SHARROW, HEATED-IN-PLACE (90 MIL)
T95 - BICYCLE LOOP DETECTOR, HEATED-IN-PLACE (90 MIL)
T100 - ALPHANUMERIC CHAR. (90 MIL)
T101 - HANDICAP PARKING (90 MIL)
T102 - 12" YIELD LINE TRIANGLE (90 MIL)
T103 - 24" YIELD LINE TRIANGLE (90 MIL)
T104 - ROUTE SHIELD 6 FT X 15 FT
T105 - ROUTE SHIELD 8 FT X 20 FT
T110 - FISH-HOOK STRAIGHT ARROW (90 MIL)
T111 - FISH-HOOK LEFT/STRAIGHT ARROW (90 MIL)
T112 - FISH-HOOK RIGHT/STRAIGHT ARROW (90 MIL)
T-113 - FISH-HOOK LEFT/RIGHT ARROW (90 MIL)
T114 - FISH-HOOK LEFT/RIGHT/STRAIGHT ARROW (90 MIL)
T115 - FISH-HOOK W/CIRCLE STRAIGHT ARROW (90 MIL)
T-116 - FISH-HOOK W/CIRCLE LEFT ARROW (90 MIL)
T117 - FISH-HOOK W/CIRCLE LEFT/STRAIGHT ARROW (90 MIL)
T118 - FISH-HOOK W/CIRCLE LEFT/RIGHT/STRAIGHT ARROW (90 MIL)

PAVEMENT MARKERS

MA - PERMANENT RAISED MARKER (YELLOW & YELLOW)
MB - PERMANENT RAISED MARKER (CRYSTAL & RED)
MC - PERMANENT RAISED MARKER (YELLOW & RED)
MD - PERMANENT RAISED MARKER (YELLOW)
ME - SNOWPLOWABLE MARKER (YELLOW & YELLOW)
MF - SNOWPLOWABLE MARKER (CRYSTAL & RED)
MG - SNOWPLOWABLE MARKER (YELLOW & RED)
ML - PERMANENT RAISED MARKER (CRYSTAL & CRYSTAL)
MO - SNOWPLOWABLE MARKER (CRYSTAL & CRYSTAL)



RCI AND SIGNAL INSTALLATION ON HWY. NC 49 AND ZION CHURCH RD. (SR-1155)

			REVISIONS	
SCALE	1"=50'		CEB	02-2024
DATE	10-2024			
DWG. BY	BAC			
DESIGN BY	CEB			
APPROVED	JDH			

TIP PROJECT: HS-2010H

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HS-2010H	EC-1	

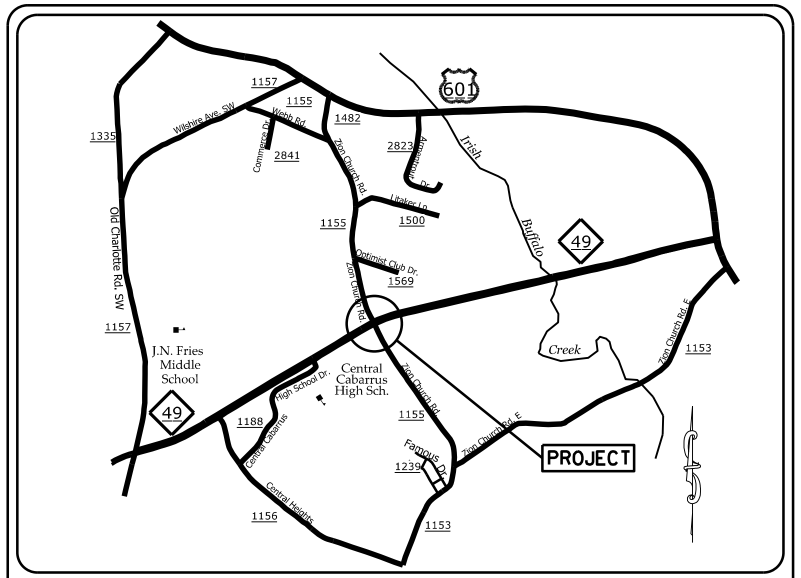
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
49291.1.8	0049041	P.E.
49291.2.11	0049041	R/W
49291.3.8	0049041	CONST.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

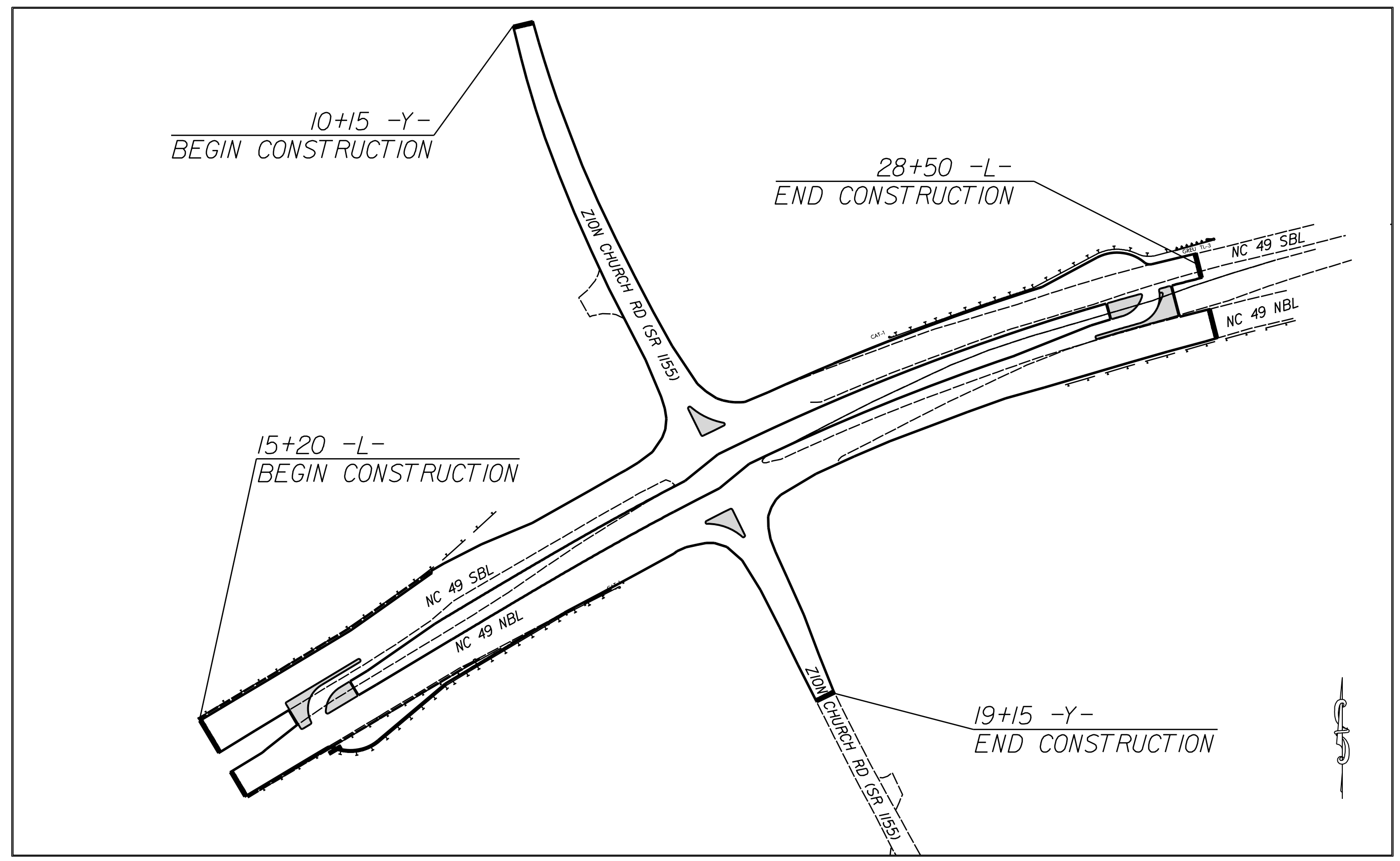
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

CABARRUS COUNTY

LOCATION: *INTERSECTION OF NC 49 AND ZION CHURCH RD. (SR-1155)*



VICINITY MAP
NOT TO SCALE



ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

INSTALL PERIMETER EROSION CONTROL MEASURES DURING INTIAL CLEARING PHASE

EROSION AND SEDIMENT CONTROL MEASURES

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

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRU33ING PHASE OF CONSTRUCTION.

HIGH QUALITY WATER(S) EXIST ON THIS PROJECT

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

THIS PROJECT HAS 3EEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

GRAPHIC SCALE

50 25 0 50 100
PLANS

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

DIVISION OF HIGHWAYS · DIVISION 10 · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · DIVISION DESIGN CONSTRUCT UNIT

Prepared In the Office of:

DDC UNIT DIVISION 10
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Designed by:

CHAD BURRIS	*4159*
NAME	*LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

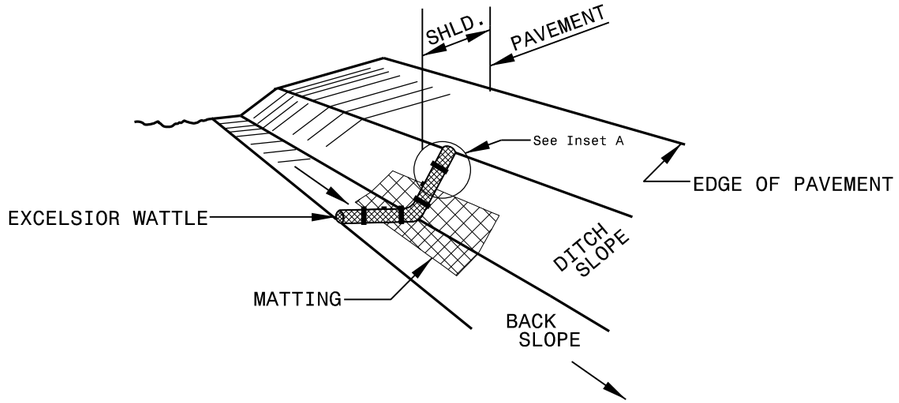
The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2024 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type 3
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 3erms and Slope Drains	1633.02	Temporary Rock Silt Check Type 3
1630.01	Riser 3asin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt 3asin Type 3	1634.02	Temporary Rock Sediment Dam Type 3
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling 3asin	1635.02	Rock Pipe Inlet Sediment Trap Type 3
1630.05	Temporary Diversion	1640.01	Coir Fiber 3affle
1630.06	Special Stilling 3asin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

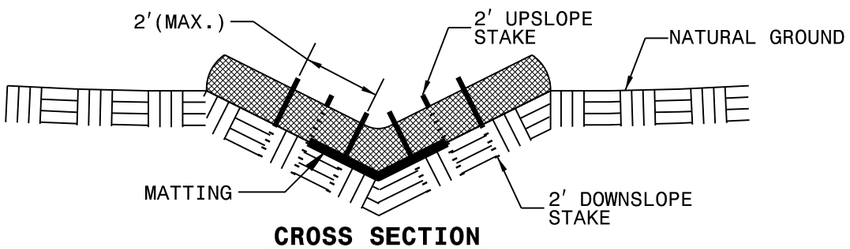
18-MAY-2026 12:43
...HS-2010H_NC 49_Zion Church_RCI_EC_TSH_1.dgn
$$$$USERNAME$$$$

PROJECT NO.	SHEET NO.
49291.3.8	EC-2
F.A. PROJECT NO.	0049041

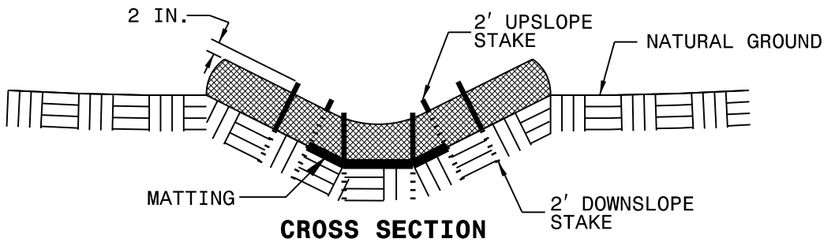
WATTLE DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

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

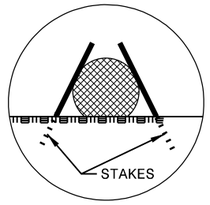
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

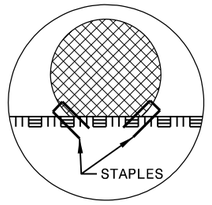
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

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

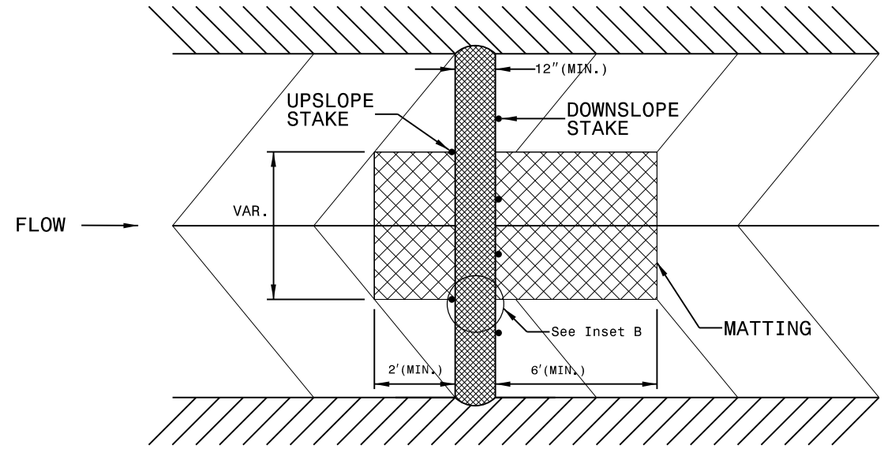
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



INSET B



TOP VIEW

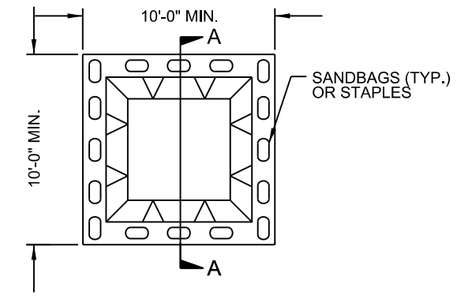
RCI AND SIGNAL INSTALLATION ON HWY.NC 49 AND ZION CHURCH RD.(SR-1155)

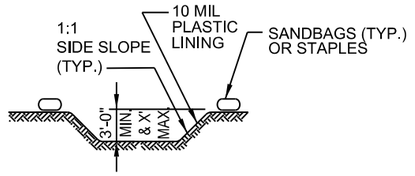
SCALE	1″=50′
DATE	09-2025
DWG. BY	BAC
DESIGN BY	CEB
APPROVED	JDH

REVISIONS	

PROJECT NO.	SHEET NO.
49291.3.8	EC-2A
F.A. PROJECT NO.	0049041

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER





SECTION A-A

PLAN

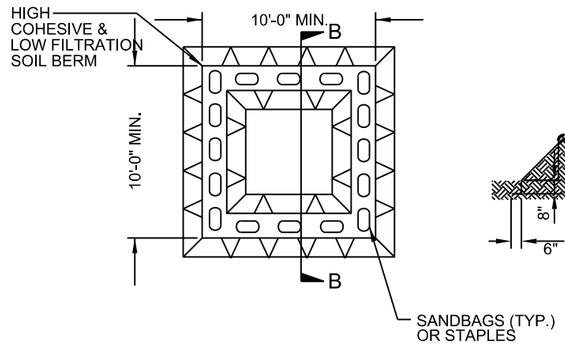
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

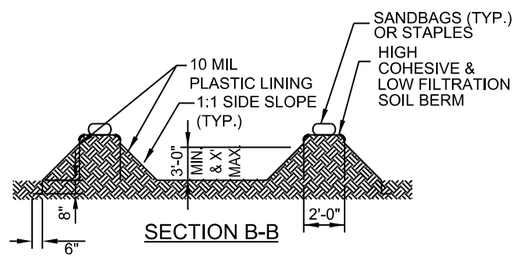
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.

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

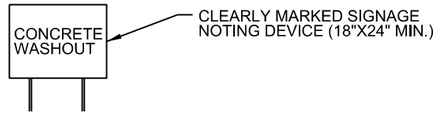
BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE





SECTION B-B



PLAN

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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

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

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

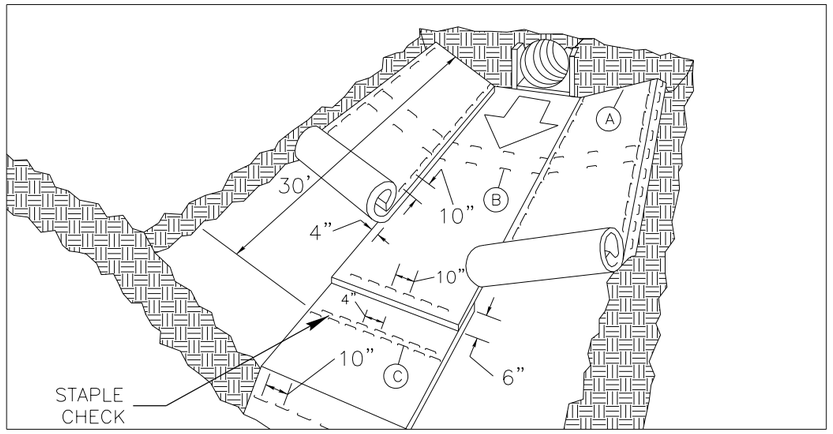
RCI AND SIGNAL INSTALLATION ON HWY.NC 49 AND ZION CHURCH RD.(SR-1155)

SCALE	1"=50'
DATE	09-2025
DWG. BY	BAC
DESIGN BY	JDH
APPROVED	JDH

REVISIONS	
CEB	02-2024

PROJECT NO.	SHEET NO.
49291.3.8	EC-2B
F.A. PROJECT NO.	0049041

MATTING INSTALLATION DETAIL



MATTING IN DITCHES

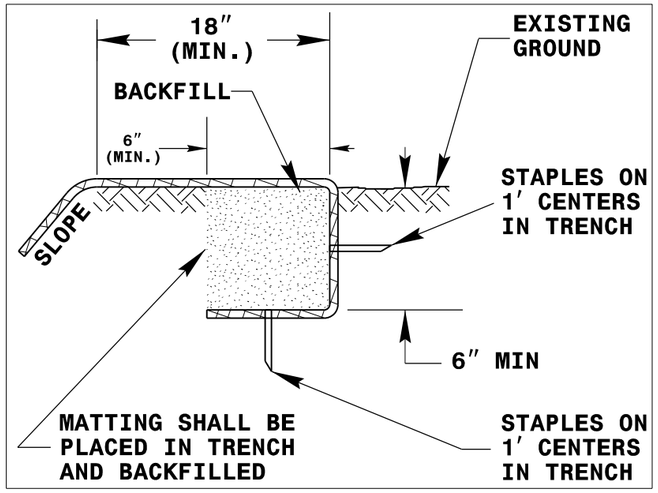
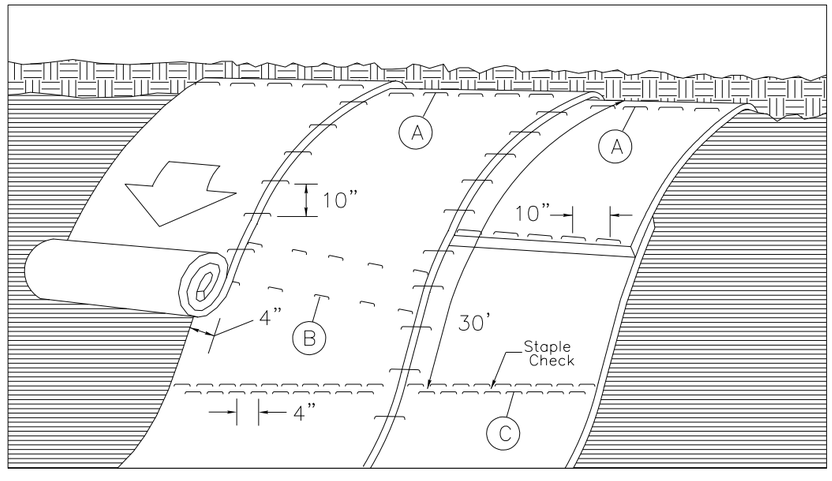


DIAGRAM (A)



MATTING ON SLOPES

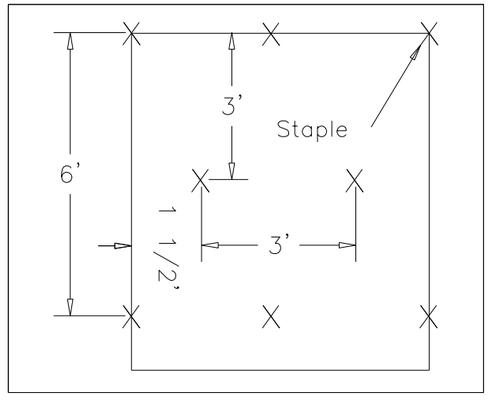


DIAGRAM (B)

Staple Check Pattern

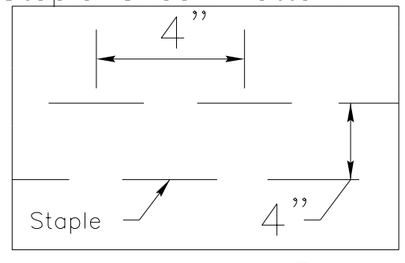


DIAGRAM (C)

NOTES:

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

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

NOT TO SCALE

RCI AND SIGNAL INSTALLATION ON HWY.NC 49 AND ZION CHURCH RD.(SR-1155)

SCALE	1"=50'
DATE	09-2025
DWG. BY	BAC
DESIGN BY	CEB
APPROVED	JDH

REVISIONS	

PROJECT NO.	SHEET NO.
49291.3.8	EC-3
F.A. PROJECT NO.	0049041

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

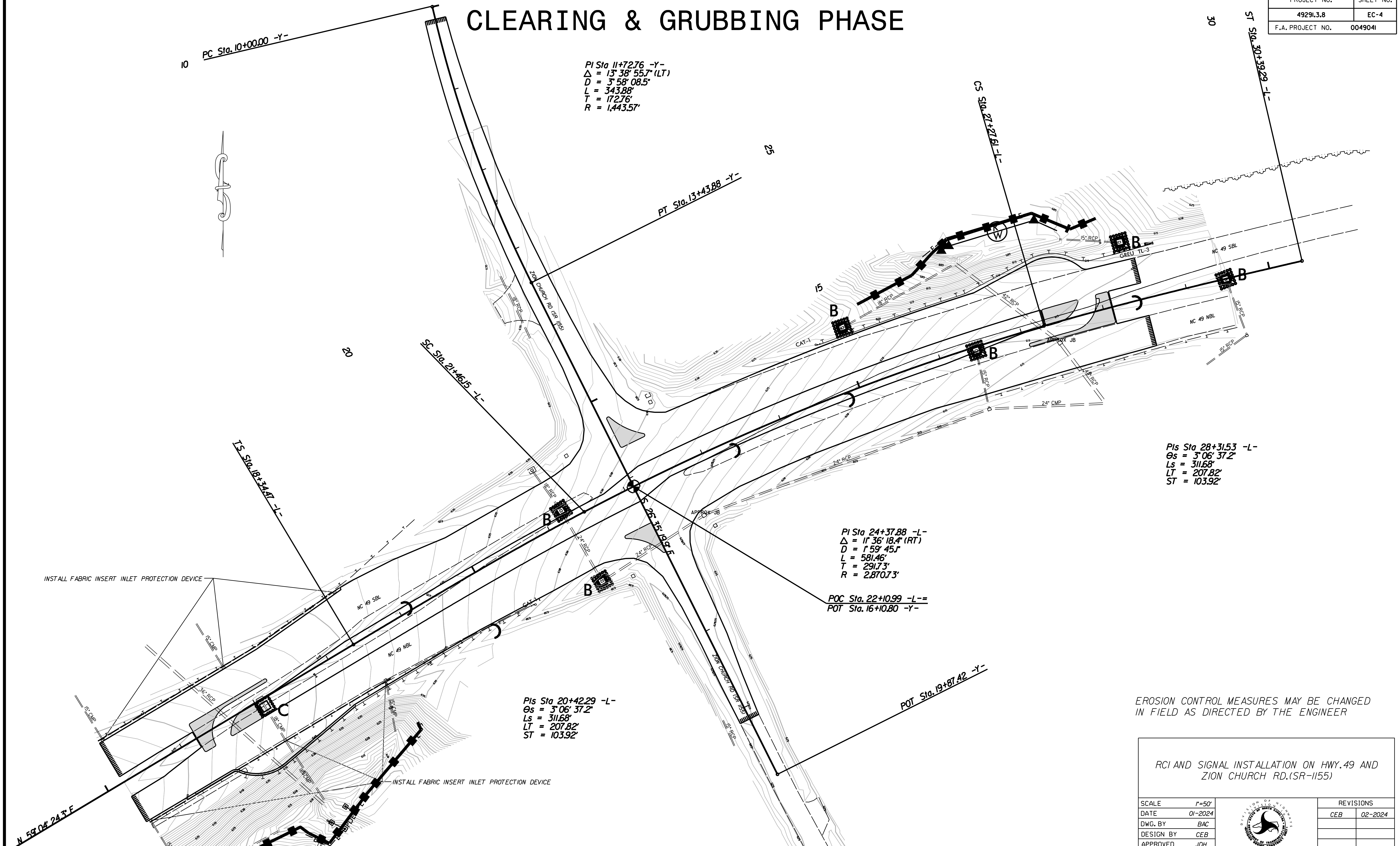
RCI AND SIGNAL INSTALLATION ON HWY. NC 49 AND ZION CHURCH RD. (SR-1155)

SCALE	1"=50'
DATE	09-2025
DWG. BY	BAC
DESIGN BY	CEB
APPROVED	JDH

REVISIONS	

PROJECT NO.	SHEET NO.
49291.3.8	EC-4
F.A. PROJECT NO.	0049041

CLEARING & GRUBBING PHASE



PC Sta. 10+00.00 -Y-
PI Sta 11+72.76 -Y-
Δ = 13° 38' 55.7" (LT)
D = 3° 58' 08.5"
L = 343.88'
T = 172.76'
R = 1,443.57'
PT Sta. 13+43.88 -Y-
CS Sta. 27+27.61 -L-
ST Sta. 30+39.29 -L-
SC Sta. 21+46.15 -L-
TS Sta. 18+34.47 -L-
ZION CHURCH RD (SR 1155)
NC 49 SBL
NC 49 NBL
GREU TL-3
CAT-1
APPROX JB
24" CMP
PIs Sta 28+31.53 -L-
Θs = 3° 06' 37.2"
Ls = 311.68'
LT = 207.82'
ST = 103.92'
PI Sta 24+37.88 -L-
Δ = 11° 36' 18.4" (RT)
D = 1° 59' 45.1"
L = 581.46'
T = 291.73'
R = 2,870.73'
POC Sta. 22+10.99 -L-=
POT Sta. 16+10.80 -Y-
INSTALL FABRIC INSERT INLET PROTECTION DEVICE
PIs Sta 20+42.29 -L-
Θs = 3° 06' 37.2"
Ls = 311.68'
LT = 207.82'
ST = 103.92'
POT Sta. 19+87.42 -Y-
N 59° 04' 24.3" E
S 26° 35' 19.9" E

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

RCI AND SIGNAL INSTALLATION ON HWY.49 AND ZION CHURCH RD.(SR-1155)

SCALE	1"=50'
DATE	01-2024
DWG. BY	BAC
DESIGN BY	CEB
APPROVED	JDH

REVISIONS	
CEB	02-2024

CONSTRUCTION PHASE

PROJECT NO.	SHEET NO.
49291.3.8	EC-5
F.A. PROJECT NO.	0049041

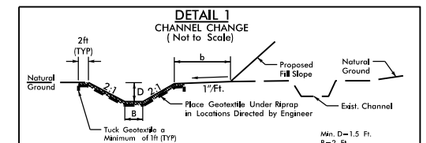
INSTALL STRAW MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.

27+00 TO 27+50 -L- LT
17+50 TO 27+00 -L- MEDIAN

INSTALL PERMANENT MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.

26+50 TO 27+00 -L- LT

DETAIL 1
CHANNEL CHANGE
(Not to Scale)



Type of Liner= CL B RIP RAP, Keyed-In

FROM STA. 26+46 -L- TO STA. 27+79 -L-

PC Sta. 10+00.00 -Y-

PI Sta 11+72.76 -Y-
Δ = 13° 38' 55.7" (LT)
D = 3° 58' 08.5"
L = 343.88'
T = 172.76'
R = 1443.57'

PT Sta. 13+43.88 -Y-

CS Sta. 27+27.61 -L-

ST Sta. 30+39.29 -L-

REMOVE 8"-15"RCP

SEE NOTE

SEE DETAIL 1

GRADE TO DRAIN

42" RCP-III

15" RCP

GREU TL-3

NC 49 SBL

REMOVE

18" RCP

CAT-1

15" RCP-III

REMOVE

42" RCP

DI

NC 49 NBL

15" RCP

24" CMP

24" RCP

Pls Sta 28+31.53 -L-
Θs = 3° 06' 37.2"
Ls = 311.68'
LT = 207.82'
ST = 103.92'

Pl Sta 24+37.88 -L-
Δ = 11° 36' 18.4" (RT)
D = 1° 59' 45.1"
L = 581.46'
T = 291.73'
R = 2,870.73'

POC Sta. 22+10.99 -L-=
POT Sta. 16+10.80 -Y-

POT Sta. 19+87.42 -Y-

ZION CHURCH RD (SR 1155)

18" RCP

TS Sta. 18+34.47 -L-

SC Sta. 21+46.15 -L-

Conn. 2GI To TB JB w/Slab Lid

24" RCP

CS Sta. 25+35.19 -L-

NC 49 SBL

NC 49 NBL

15" CMP

36" RCP

INSTALL 15' SLOPE DRAIN PER STANDARD 1622.01

REMOVE

REMOVE

REMOVE

REMOVE

15" CMP

18" CMP

36" CMP

15" RCP-III

REMOVE

18" CMP

2 TONS CLASS B RIP RAP
7 SY GEOFAB

GRADE TO DRAIN

INSTALL FABRIC INSERT INLET PROTECTION DEVICE

INSTALL FABRIC INSERT INLET PROTECTION DEVICE

36" RCP-III

3 TONS CLASS B RIP RAP
10 SY GEOFAB

11 TONS CLASS B RIP RAP
28 SY GEOFAB

SEE NOTE

GRADE TO DRAIN

Pls Sta 20+42.29 -L-
Θs = 3° 06' 37.2"
Ls = 311.68'
LT = 207.82'
ST = 103.92'

N 58° 04' 24.3" E

NOTES:

INSTALL STRAW MATTING ON SLOPE UPON COMPLETION OF EACH BULB

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

RCI AND SIGNAL INSTALLATION ON HWY. 49 AND ZION CHURCH RD. (SR-1155)

		REVISIONS	
SCALE	1"=50'	CEB	03-2026
DATE	05-2024		
DWG. BY	BAC		
DESIGN BY	CEB		
APPROVED	JDH		

5/26/20

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN
CABARRUS COUNTY

LOCATION: NC 49 AT SR 1155 (ZION CHURCH Rd) AND EAST & WEST U-TURNS

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 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
910.30	SIGNING SIGNALIZED AND UNSIGNALIZED SUPERSTREET
910.50	SIGNING FOR SPEED REDUCTION ZONE

PROJECT NOTES

1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL
2 RELOCATE SIGN, TYPE E
3 DISPOSAL OF SUPPORT, U-CHANNEL

GENERAL NOTES

. SIGNS FURNISHED BY CONTRACTOR

. ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TW0 U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.

. IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.

. WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER

. ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.

. WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.

. THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.

. SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4025000000	901	CONTRACTOR FURNISHED, TYPE E SIGN	154.500	S.F.
4025000000	901	CONTRACTOR FURNISHED, TYPE F SIGN	103.375	S.F.
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	600	L.F.
4102000000	904	SIGN ERECTION, TYPE E	21	EA.
4108000000	904	SIGN ERECTION, TYPE F	10	EA.
4116100000	904	SIGN ERECTION, RELOCATE SIGN TYPE D (GROUND MOUNTED)	2	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	22	EA.
4192000000	907	DISPOSAL OF SUPPORT, U-CHANNEL	1	EA.

INDEX

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

K. L. JORDAN — SIGNING & DELINEATION REGIONAL ENGINEER

J. G. MARTINEZ, PE — SIGNING & DELINEATION PROJECT DESIGN ENGINEER

HS-2010H
SIGN 001

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

APPROVED: DocuSigned by: Jose G. Martinez 4A7D8418C886461...

DATE: 04/14/2026

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 046786 ENGINEER JOSE G MARTINEZ

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

T.I.P.: HS-2010H

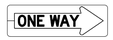
5/26/20

401 QUANTITY REQ'D 1

36" X 36"
R1-1

ONE "U" POST PER SIGN

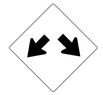
406 QUANTITY REQ'D 2



48" X 18"
R6-1(R)

TWO "U" POSTS PER SIGN

411 QUANTITY REQ'D 2



30" X 30"
W12-1

ONE "U" POST PER SIGN

402 QUANTITY REQ'D 1

30" X 36"
R2-1

ONE "U" POST PER SIGN

407 QUANTITY REQ'D 2

36" X 36"
R3-2

ONE "U" POST PER SIGN

412 QUANTITY REQ'D 1

36" X 36"
W3-5

ONE "U" POST PER SIGN

403 QUANTITY REQ'D 2

24" X 30"
R2-1

ONE "U" POST PER SIGN

408 QUANTITY REQ'D 4

36" X 36"
R3-7R

ONE "U" POST PER SIGN

404 QUANTITY REQ'D 2

36" X 36"
R5-1

ONE "U" POST PER SIGN

409 QUANTITY REQ'D 1

36" X 36"
S1-1

FLUORESCENT YELLOW-GREEN

ONE "U" POST PER SIGN

405 QUANTITY REQ'D 2

48" X 18"
R6-1(L)

TWO "U" POSTS PER SIGN

410 QUANTITY REQ'D 1

24" X 9"
S4-3P

FLUORESCENT YELLOW-GREEN

MOUNT BELOW SIGN 409
IN 1 INSTALLATIONS

SIGN NUMR:
TYPE: F Ground
QUANTITY: 1

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

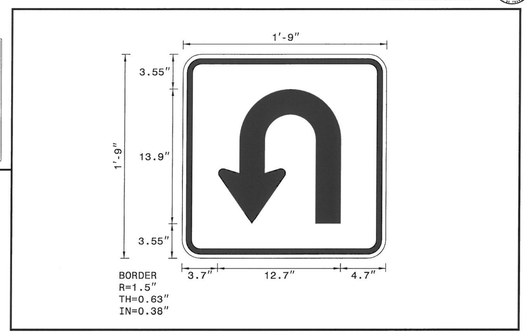
DESIGN BY:
PROJECT ID:

CHK BY:
DIV:

STD #:
DATE:

N. C. DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY & SAFETY
SIGNING & DELINEATION UNIT

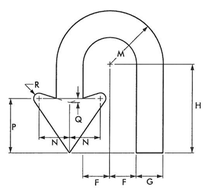
SYMBOL	X	Y	WID	HT
u arrow	3.7	3.5	12.7	13.9



NOTES:

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

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

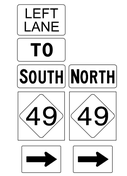
Spacing Factor is 1 unless specified otherwise
FILENAME: GSENG

501 502

24" X 12"
24" X 24"
21" X 21"

ONE "U" POST PER SIGN

508



24" X 18"
24" X 12"
2 - 24" X 12"
2 - 24" X 24"
2 - 21" X 15"

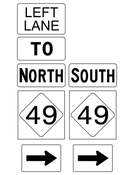
TWO "U" POSTS PER SIGN

503

24" X 12"
24" X 24"

ONE "U" POST PER SIGN

510



24" X 18"
24" X 12"
2 - 24" X 12"
2 - 24" X 24"
2 - 21" X 15"

TWO "U" POSTS PER SIGN

504 505

24" X 12"
24" X 24"
21" X 21"

ONE "U" POST PER SIGN

506

24" X 12"
24" X 24"

ONE "U" POST PER SIGN

507 509

21" X 15"
24" X 24"

ONE "U" POST PER SIGN

HS-2010H
SIGN 002

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

APPROVED: DocuSigned by: Jose G. Martinez
4A7DB418C886461...

DATE: 04/14/2026

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 046786 ENGINEER JOSE G. MARTINEZ

INCOMPLETE PLANS
DO NOT USE FOR ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

TYPE E & F SIGNS

5/26/20

EXISTING SIGNS

ZION CHURCH RD (SR 1155)

JCT 50 SEE NOTE 1

SPEED LIMIT 45 SEE NOTE 1

SEE NOTE 1 ONE WAY

SEE NOTE 1 WRONG WAY 2 SIGNS

SEE NOTE 1 DO NOT ENTER

SEE NOTES 2 & 3 STOP

SEE NOTE 1 45 2 SIGNS

SEE NOTE 1 NORTH 49 SOUTH 49

SEE NOTE 1 SOUTH 49

SEE NOTE 1 AHEAD

2 SIGNS RETAIN SPEED LIMIT 55

2 SIGNS SEE NOTE 1

2 SIGNS SPEED LIMIT 55 SEE NOTE 1

SEE NOTE 1 DO NOT ENTER

SEE NOTE 1 2 SIGNS WRONG WAY

SEE NOTE 1 ONE WAY

SEE NOTE 1 SPEED LIMIT 45

HARRISBURG CONCORD SEE NOTE 1

2 SIGNS RETAIN WRONG WAY

2 SIGNS RETAIN SPEED LIMIT 45

2 SIGNS SPEED LIMIT 55 RETAIN

NC 49 SBL

NC 49 NBL

ZION CHURCH RD (SR 1155)

* SIGNILIZED

PROJECT NOTES

1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL
2 RELOCATE SIGN, TYPE E
3 DISPOSAL OF SUPPORT, U-CHANNEL

HS-2010H

SIGN 003

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

APPROVED: DocuSigned by: Jose G. Martinez 4A7DB418C886461...

DATE: 04/14/2026

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 046786 ENGINEER JOSE G. MARTINEZ

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

HS-2010H

SIGN | 004

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

APPROVED: DocuSigned by: Jose G. Martinez
4A7DB418C886461...

DATE: 04/14/2026

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 046786 ENGINEER JOSE G MARTINEZ

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROPOSED SIGNS

Project: HS-2010H

Project No.	Sheet No.
HS-2010H	Sig. 1.0

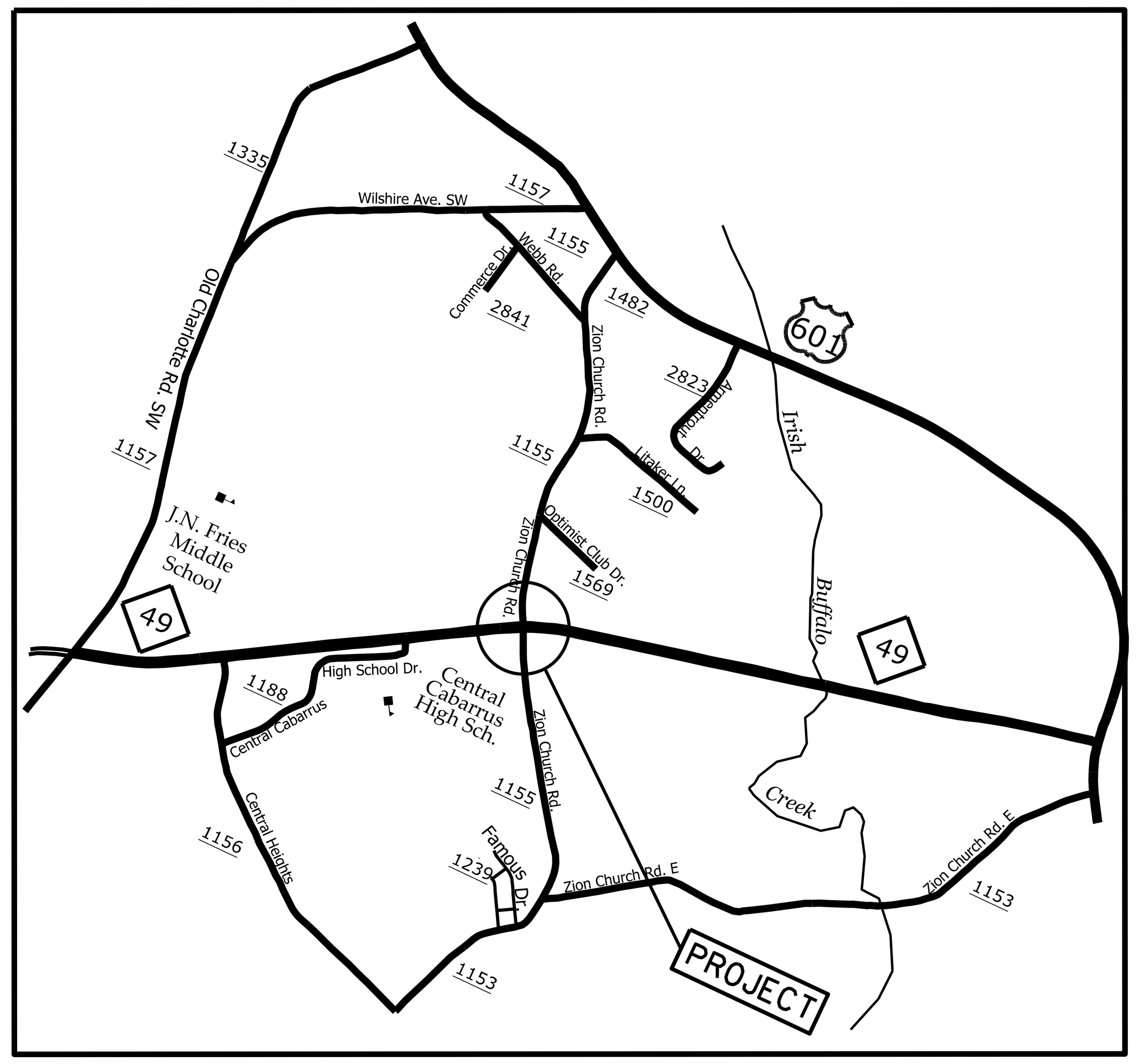
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

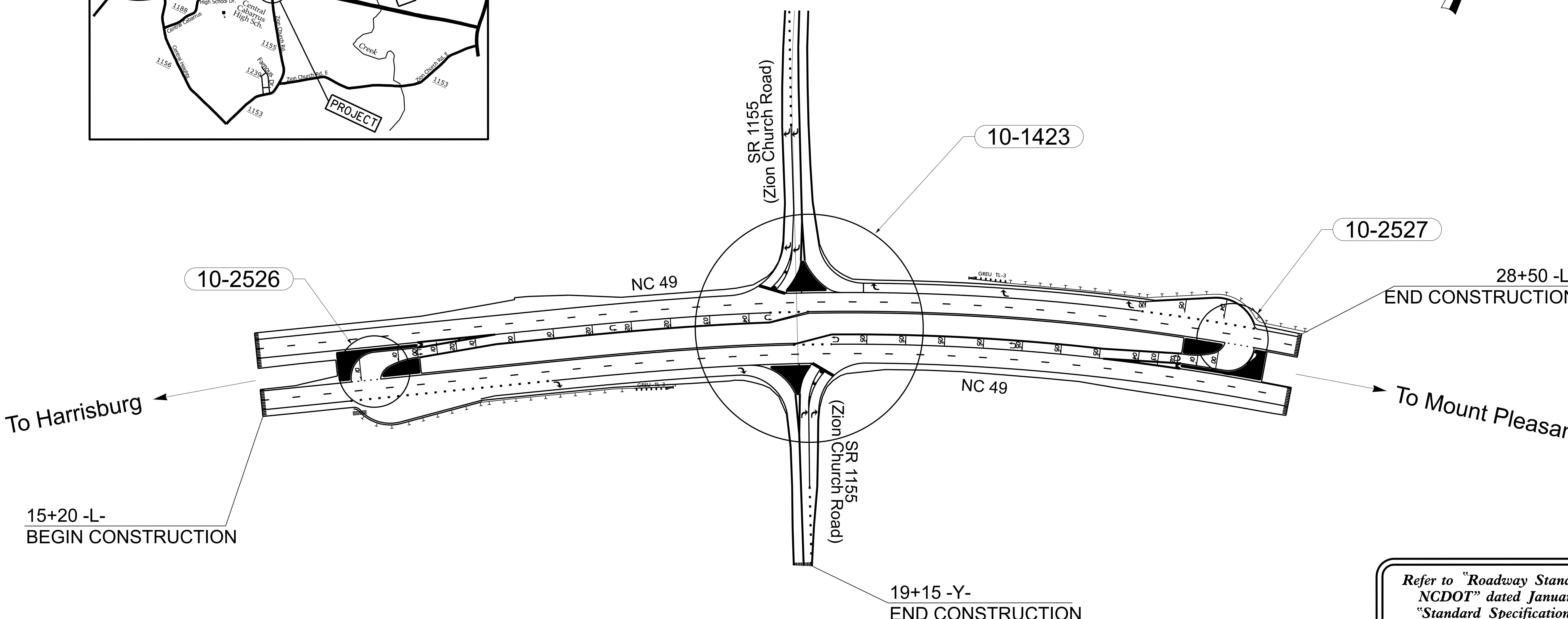
CABARRUS COUNTY

LOCATION: NC 49 AT SR 1155 (ZION CHURCH ROAD) AND EAST AND WEST U-TURNS

TYPE OF WORK: TRAFFIC SIGNALS & SIGNAL COMMUNICATIONS

Vicinity





Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.

Index of Plans

Sheet #	Reference #	Location/Description
Sig. 1.0	-------	Title Sheet
Sig. 2.0 – 2.1	10-2526	U-Turn West of NC 49 at SR 1155 (Zion Church Road)
Sig. 3.0 – 4.1	10-1423	NC 49 at SR 1155 (Zion Church Road)
Sig. 5.0 – 5.1	10-2527	U-Turn East of NC 49 at SR 1155 (Zion Church Road)
SCP-1 – SCP-6	-------	Signal Communication Plans

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS

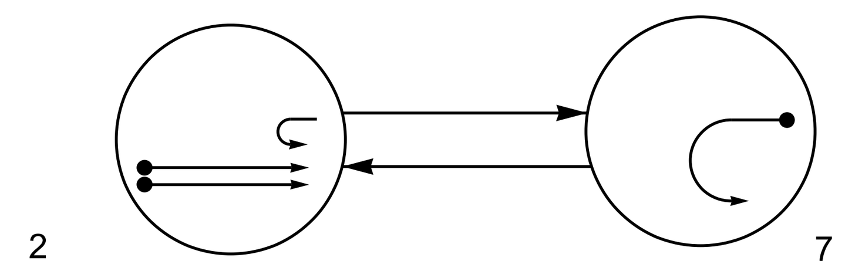
Contacts:

R. Nicholas Zinser, PE – Western Region Signals Engineer
D. Todd Joyce, PE – Signal Equipment Design Engineer
Gregg A. Green – Signal Communications Project Engineer

Prepared In the Office of:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY & SAFETY DIVISION
Transportation Mobility and Safety Division – State of North Carolina – Department of Transportation – TSMO UNIT
750 N. Greenfield Parkway, Garner, NC 27529

3-SEP-2025 09:33
pw://ncdot-pw.bentley.com:ncdot-pw-01/Documents/NCDOT TSMO/Signal Design Section/Division_10/HS-2010H/Signal Design/2024-06/Title Sheet, PSP, Specs/HS-2010H_sig_tsh.dgn
rnzinser

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

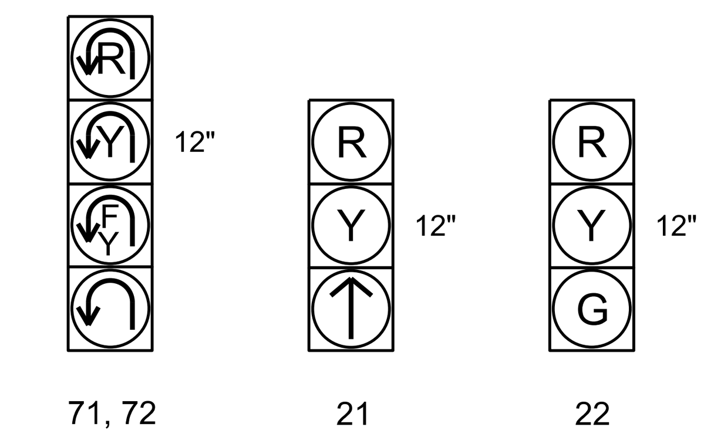
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 2	PHASE 7	FLASH
21	↑	R	R
22	G	R	R
71, 72	F Y	↶	R

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
7A	6 X 40	0	*	*	7	15.0	-	X	-	X	-	*
7B	6 X 6	0	*	*	7	15.0	-	X	-	X	-	*

* Microwave Detection Zone

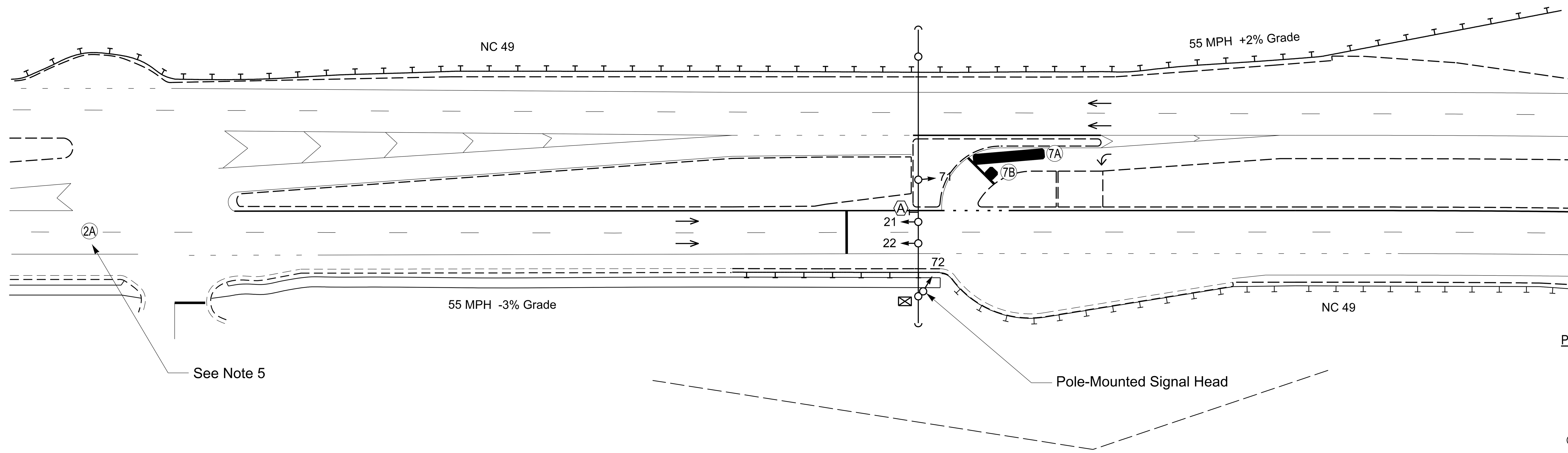
ADVANCE MICROWAVE DETECTION

FUNCTION	SENSOR 1 (2A)	
Channel	1	
Phase	2	
Direction of Travel	EB	
Type	Priority	
Level	1	QUEUE
Detection Zone (ft)	500-100	150-100
Enable Speed	Y	Y
Speed Range (mph)	35-100	1-35
Enable Estimated Time of Arrival	Y	N
Estimated Time of Arrival (sec)	2.5-6.5	-

2-Phase
Fully Actuated
Concord Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
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. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



LEGEND

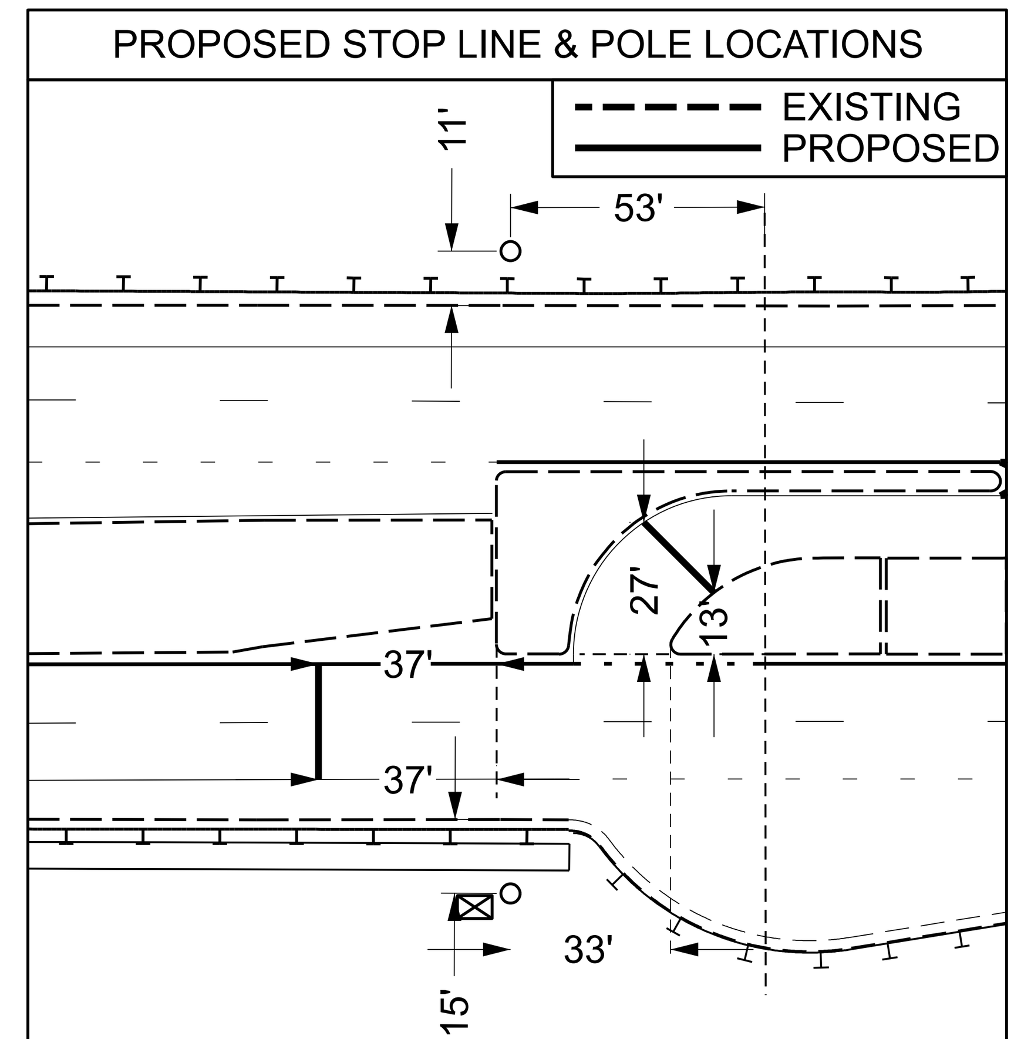
PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Guardrail	
	Non-Intrusive Detection Zone	
(A)	No Left Turn Sign (R3-2)	(A)

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 7
Walk *	-	-
Ped Clear	-	-
Min Green *	14	7
Passage *	6.0	2.0
Max 1 *	90	25
Yellow Change	5.5	3.0
Red Clear	1.4	3.9
Added Initial *	-	-
Maximum Initial *	-	-
Time Before Reduction *	-	-
Time To Reduce *	-	-
Minimum Gap	-	-
Advance Walk	-	-
Non Lock Detector	-	X
Vehicle Recall	MIN RECALL	-
Dual Entry	-	-

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

PROPOSED STOP LINE & POLE LOCATIONS



This plan supersedes the plan signed and sealed on 01/21/25.

New Installation

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of: Transportation Mobility and Safety Division, State of North Carolina Department of Transportation, Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

U-Turn West of
NC 49
at
SR 1155 (Zion Church Road)

Division 10 Cabarrus County Concord

PLAN DATE:	February 2026	REVIEWED BY:	R.N. Zinser
PREPARED BY:	K. Singleton	REVIEWED BY:	

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043914 RICHARD N. ZINSER

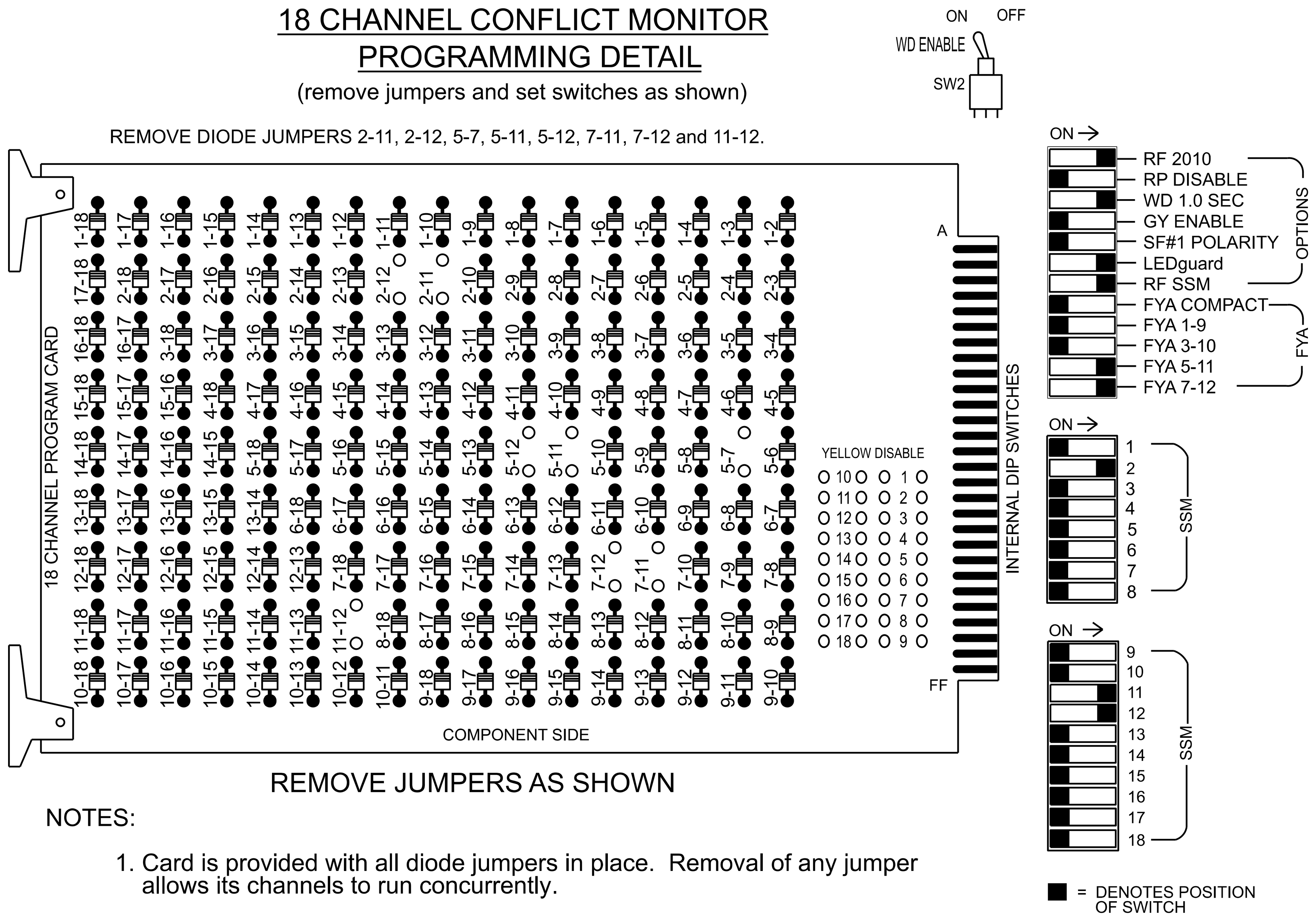
DocuSigned by: R. Nicholas Zinser 02/25/2026
E1388973472248F...
DATE

SIG. INVENTORY NO. 10-2526

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-11, 2-12, 5-7, 5-11, 5-12, 7-11, 7-12 and 11-12.



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and phase 6 Phase Not On.
3. The cabinet and controller are part of the Concord Signal System.

EQUIPMENT INFORMATION

Controller..2070LX
Cabinet...332 w/ Aux
Software..Q-Free MAXTIME
Cabinet Mount.....................................Base
Output File Positions...........................18 With Aux. Output File
Load Switches Used.............................S2, S7, S10, AUX S4, AUX S5
Phases Used.......................................2, 7
Overlap "1"..Not Used
Overlap "2"..Not Used
Overlap "3"..*
Overlap "4"..*
Overlap "5"..Not Used
Overlap "6"..Not Used
Overlap "7"..*

*See overlap programming detail on this sheet

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	OL7	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21	22	NU	NU	NU	NU	72★	NU	NU	71★	NU	NU	NU	NU	NU	72★	71★	NU
RED		128	128																
YELLOW		129	129					*			*								
GREEN			130																
RED ARROW																	A114	A101	
YELLOW ARROW																	A115	A102	
FLASHING YELLOW ARROW																	A116	A103	
GREEN ARROW		130						133			124								
(Don't Walk)																			
(Walk)																			

NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L														ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L														

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

FS = FLASH SENSE
ST = STOP TIME

SPECIAL DETECTOR NOTE

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

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

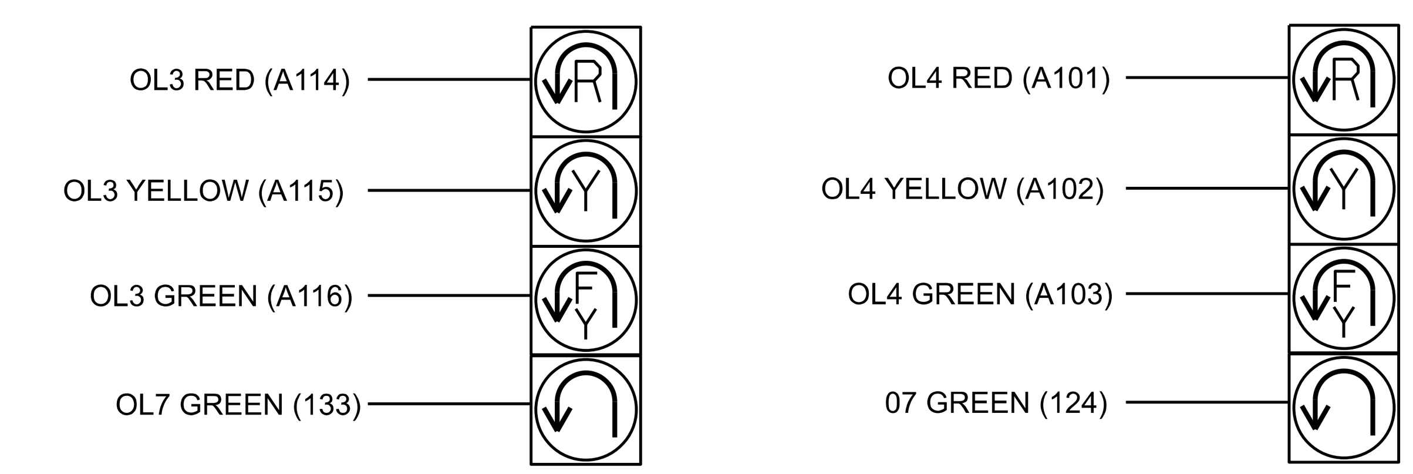
StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

FYA SIGNAL WIRING DETAIL

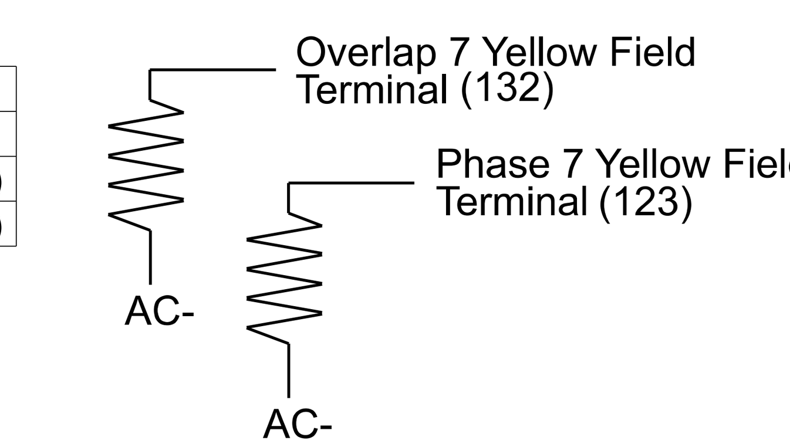
(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

NOTE: CHANNEL 5 CHANGED TO OVERLAP 7 →

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Overlap	7		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

SEQUENCE DETAIL

Front Panel
Main Menu >Controller >
Sequence & Phs Config>Sequences

Web Interface
Home >Controller >Sequence

Sequence 1

Ring	Sequence Data
1	2,a,7,b
2	

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >
Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	3	4	7
Type	FYA 4 - Section	FYA 4 - Section	Normal
Included Phases	2	2	7
Modifier Phases	7	7	-
Modifier Overlaps	-	-	-
Trail Green	0	0	0
Trail Yellow	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0

This Plan Supersedes Electrical Detail Sealed on 1/22/2025

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 10-2526
DESIGNED: February 2026
SEALED: 2/25/2026
REVISED: N/A

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

U-Turn West of
NC 49
at
SR 1155 (Zion Church Road)

Division 10 Cabarrus County Concord

PLAN DATE: February 2026 REVIEWED BY:
PREPARED BY: Zarrar Zafar REVIEWED BY:

REVISIONS	INIT.	DATE

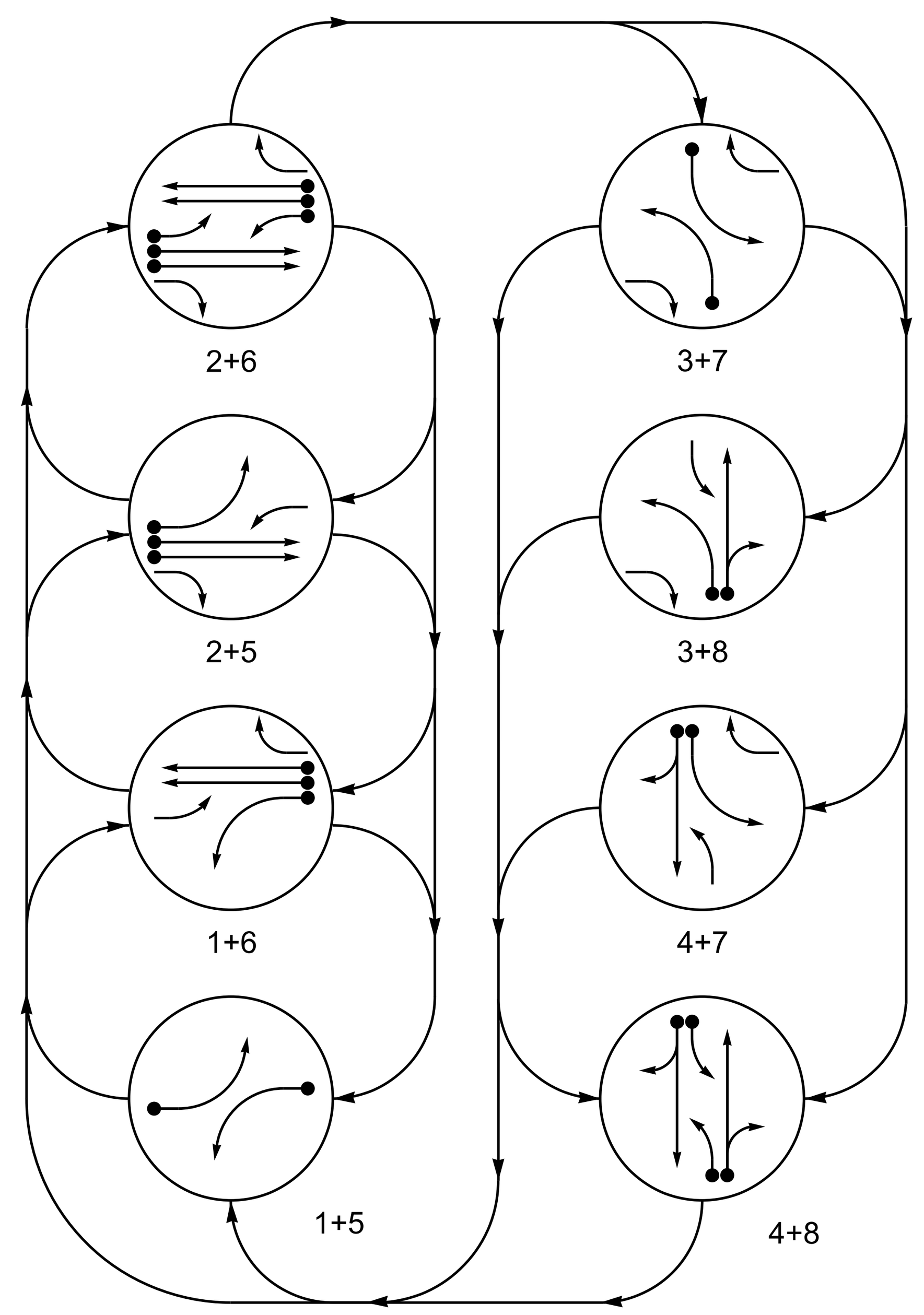
Prepared in the Offices of:
Transportation Mobility and Safety Division
ITS & Signals Management Section
State of North Carolina Department of Transportation
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 02/26/2026
A90CADEDBD4241D...
DATE

SIG. INVENTORY NO. 10-2526

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

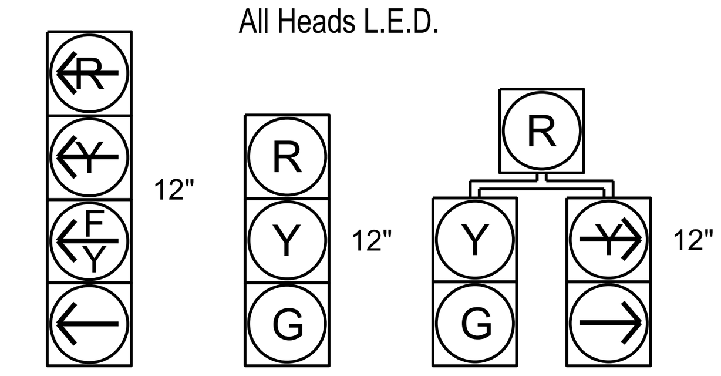
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←	←	F/Y ←	F/Y ←	←R	←R	←R	←R	←R
21	R	R	G	G	R	R	R	R	R
22	R	R	G	G	R / →	R / →	R	R	R
31	←R	←R	←R	←R	←	←	F/Y ←	F/Y ←	←R
41,42,43	R	R	R	R	R	R	G	G	R
51	←	F/Y ←	←	F/Y ←	←R	←R	←R	←R	←R
61	R	G	R	G	R	R	R	R	R
62	R	G	R	G	R / →	R	R / →	R	R
71	←R	←R	←R	←R	←	F/Y ←	←	F/Y ←	←R
81,82,83	R	R	R	R	R	G	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



11	21	22
31	41,42,43	62
51	61	
71	81,82,83	

MAXTIME DETECTOR INSTALLATION CHART

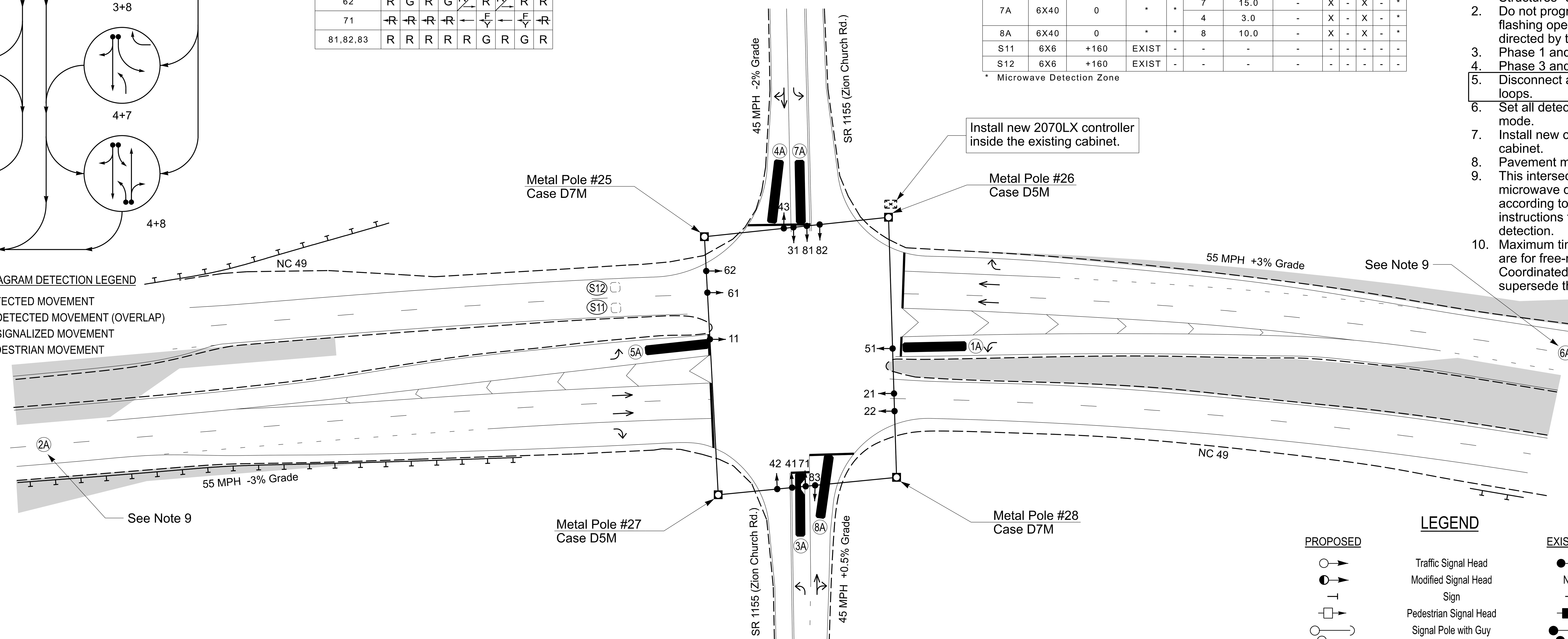
DETECTOR: LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	PROGRAMMING: CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
1A	6X40	0	*	*	1	15.0	-	X	-	X	-	*
					6	3.0	-	X	-	X	X	*
3A	6X40	0	*	*	3	15.0	-	X	-	X	-	*
					8	3.0	-	X	-	X	-	*
4A	6X40	0	*	*	4	10.0	-	X	-	X	-	*
5A	6X40	0	*	*	5	15.0	-	X	-	X	-	*
					2	3.0	-	X	-	X	X	*
7A	6X40	0	*	*	7	15.0	-	X	-	X	-	*
					4	3.0	-	X	-	X	-	*
8A	6X40	0	*	*	8	10.0	-	X	-	X	-	*
S11	6X6	+160	EXIST	-	-	-	-	-	-	-	-	-
S12	6X6	+160	EXIST	-	-	-	-	-	-	-	-	-

* Microwave Detection Zone

8 Phase
Fully Actuated
Concord Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Disconnect and Abandon ALL existing loops.
6. Set all detector units to presence mode.
7. Install new controller in existing cabinet.
8. Pavement markings are existing.
9. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Metal Strain Pole	
	Non-Intrusive Detection Zone	
N/A	Construction Zone	

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	-	-	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-	-	-
Min Green *	7	14	7	7	7	14	7	7
Passage *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	15	90	15	25	15	90	15	25
Yellow Change	3.0	5.5	3.0	4.7	3.0	5.5	3.0	4.7
Red Clear	3.3	1.4	3.5	2.2	3.3	1.4	3.5	2.2
Added Initial *	-	-	-	-	-	-	-	-
Maximum Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-	-
Advance Walk	-	-	-	-	-	-	-	-
Non Lock Detector	X	-	X	X	X	-	X	X
Vehicle Recall	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Dual Entry	-	-	-	X	-	-	-	X

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

ADVANCE MICROWAVE DETECTION

FUNCTION	SENSOR 1 (2A)		SENSOR 2 (6A)	
Channel	1		1	
Phase	2		6	
Direction of Travel	EB		WB	
Type	Priority		Priority	
Level	1	QUEUE	1	QUEUE
Detection Zone (ft)	500-100	150-100	500-100	150-100
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35-100	1-35	35-100	1-35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5-6.5	-	2.5-6.5	-

Signal Upgrade - Temporary Design (Phase I)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
Transportation Mobility and Safety Division
State of North Carolina Department of Transportation
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 49 at SR 1155 (Zion Church Road)

Division 10 | Cabarrus County | Concord

PLAN DATE:	November 2024	REVIEWED BY:	R.N. Zinser
PREPARED BY:	T.A. Kenion	REVIEWED BY:	

SCALE 0 40 — 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043914 RICHARD N. ZINSER

DocuSigned by: R. Nicholas Zinser 01/21/2025
F1388973472248F...
DATE

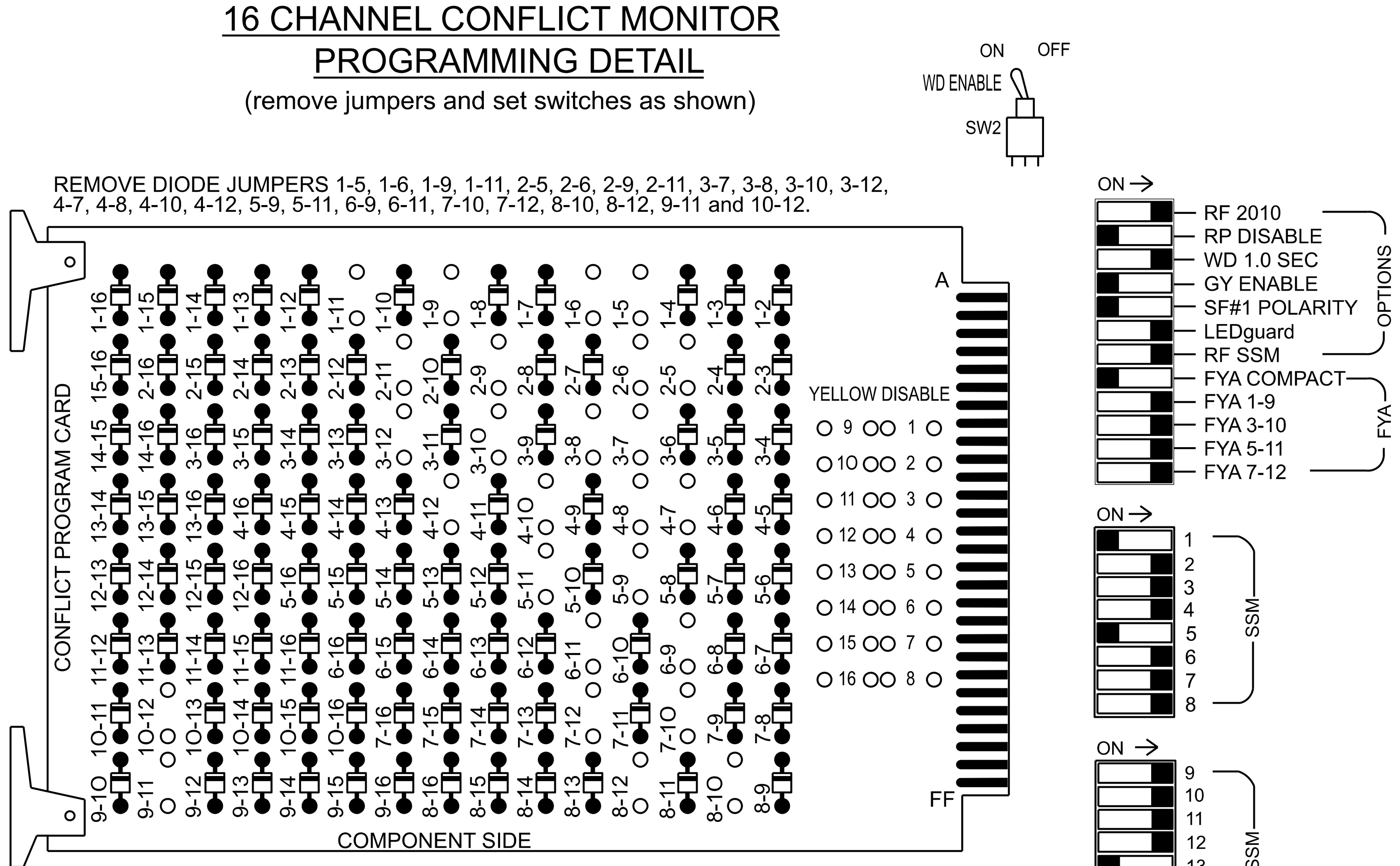
SIG. INVENTORY NO. 10-1423T1

21-JAN-2025 10:24
pw://ncdot-pw.bentley.com:ncdot-pw-01/Documents/NCDOT TSMO/Signal Design Section/Division_10/HS-2010H/Signal Design/2024-06/10-1423/101423T1_sig_dsn_yyyymmdd.dgn
rnzinser

16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 2-5, 2-6, 2-9, 2-11, 3-7, 3-8, 3-10, 3-12, 4-7, 4-8, 4-10, 4-12, 5-9, 5-11, 6-9, 6-11, 7-10, 7-12, 8-10, 8-12, 9-11 and 10-12.



REMOVE JUMPERS AS SHOWN

■ = DENOTES POSITION OF SWITCH

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,5,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 4 and 8 for Dual Entry.
4. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
5. The cabinet and controller are part of the Concord Signal System.

EQUIPMENT INFORMATION

Controller..2070LX
Cabinet..332 w/ Aux
Software...Q-Free MAXTIME
Cabinet Mount.....................................Base
Output File Positions...........................18 With Aux. Output File
Load Switches Used............................S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S12, S13
Phases Used..1, 2, 3, 4, 5, 6, 7, 8
Overlap "1"...*
Overlap "2"...*
Overlap "3"...*
Overlap "4"...*

*See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S3	S4	S4P	S5	S6	S6P	S7	S7	S8	S8P	S9	S10	S11	S12	S13	S14
CMU CHANNEL NO.	1	2	13	3		4	14	5	6	15	7		8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3		4	4 PED	5	6	6 PED	7		8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11★	21.22	NU	22	31★	41, 42,43	NU	51★	61,62	NU	62	71★	81, 82,83	NU	11★	31★	NU	51★	71★	NU
RED		128			*	101			134			*	107							
YELLOW	*	129				102		*	135				108							
GREEN		130				103			136				109							
RED ARROW															A121	A124		A114	A101	
YELLOW ARROW				117							123				A122	A125		A115	A102	
FLASHING YELLOW ARROW															A123	A126		A116	A103	
GREEN ARROW	127			118	118			133			124	124								
(hand)																				
(pedestrian)																				

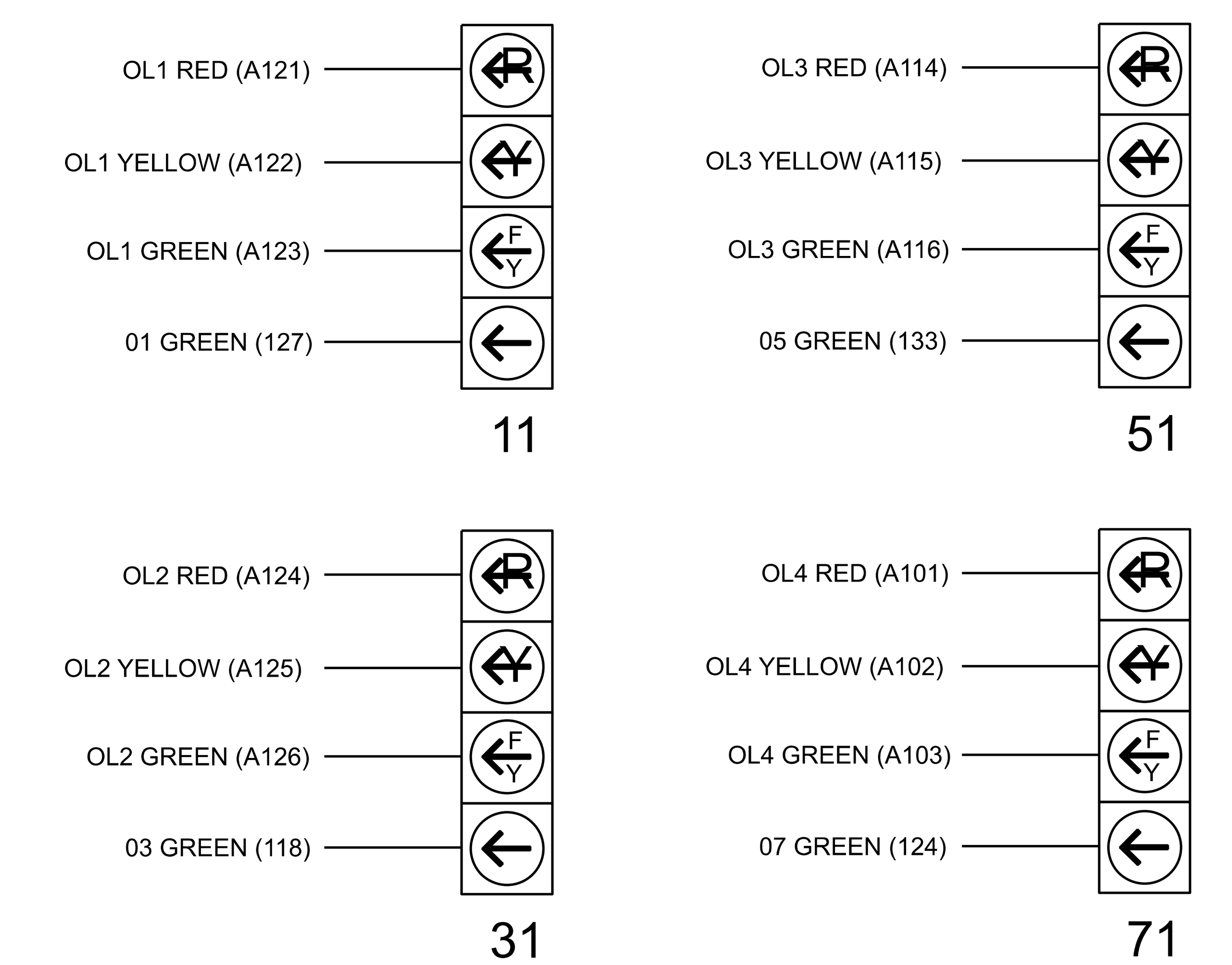
NU = Not Used

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

★See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SYS. DET. S11	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
"I"	L									SYS. DET. S12					ST DC ISOLATOR
"J"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
"J"	L														

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
*S11	TB6-9,10	I9U	60	22	13	SYS						
*S12	TB6-11,12	I9L	62	24	14	SYS						

*System detector only. Remove any assigned vehicle phase.

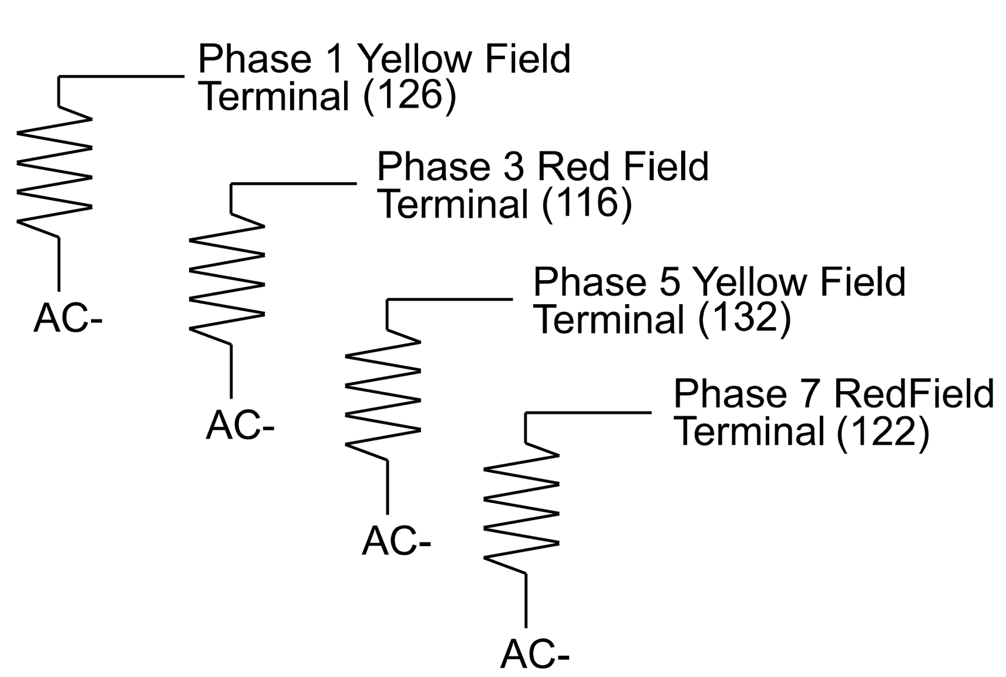
INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



SPECIAL DETECTOR NOTE

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1423T1
DESIGNED: November 2024
SEALED: 1/21/2025
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

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

NC 49 at SR 1155 (Zion Church Road)

Division 10 Cabarrus County Concord

PLAN DATE: January 2025	REVIEWED BY:
PREPARED BY: Zarrar Zafar	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce A90CADEDBD4241D... 01/22/2025 DATE

SIG. INVENTORY NO. 10-1423T1

PROJECT REFERENCE NO.	SHEET NO.
HS-2010	Sig. 3.2

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	3	4
Type	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
Modifier Phases	1	3	5	7
Modifier Overlaps	-	-	-	-
Trail Green	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1423T1
DESIGNED: November 2024
SEALED: 1/21/2025
REVISED: N/A

Electrical Detail - Sheet 2 of 2

Electrical and Programming Details For:

NC 49
at
SR 1155 (Zion Church Road)

Division 10 Cabarrus County Concord

PLAN DATE:	January 2025	REVIEWED BY:
PREPARED BY:	Zarrar Zafar	REVIEWED BY:

REVISIONS	INIT.	DATE

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

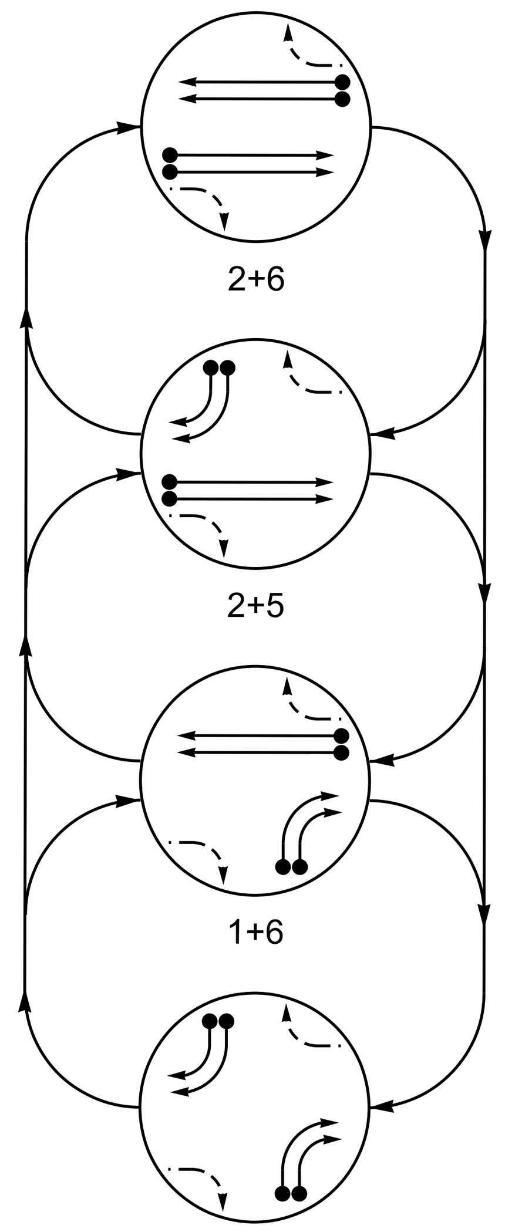
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031001 D. TODD JOYCE

DocuSigned by:
D. Todd Joyce
A90CADEDBD4241D...
01/22/2025
DATE

SIG. INVENTORY NO. 10-1423T1

22-JAN-2025 12:10
pw://ncdot-pw.bentley.com:ncdot-pw-01/Documents/NCDOT TSMO/Signal Design Section/Division_10/HS-2010H/Signals Management/10-1423/101423_sm_ele_2025mmdd.dgn
zzafar

PHASING DIAGRAM



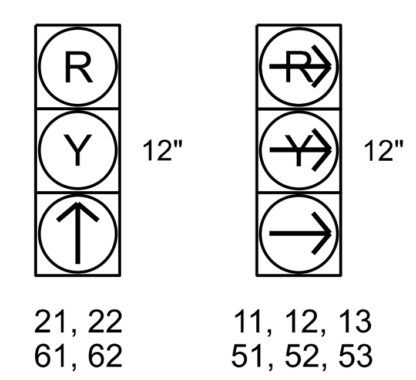
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION					
SIGNAL FACE	PHASE				
	1+5	1+6	2+5	2+6	FLASH
11, 12, 13	→	→	R→	R→	R→
21, 22	R	R	↑	↑	R
51, 52, 53	→	R→	→	R→	R→
61, 62	R	↑	R	↑	R

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
1A	6X40	0	*	*	1	-	-	X	-	X	-	*
1B	6X40	0	*	*	1	-	-	X	-	X	-	*
5A	6X40	0	*	*	5	-	-	X	-	X	-	*
5B	6X40	0	*	*	5	-	-	X	-	X	-	*

* Microwave Detection Zone

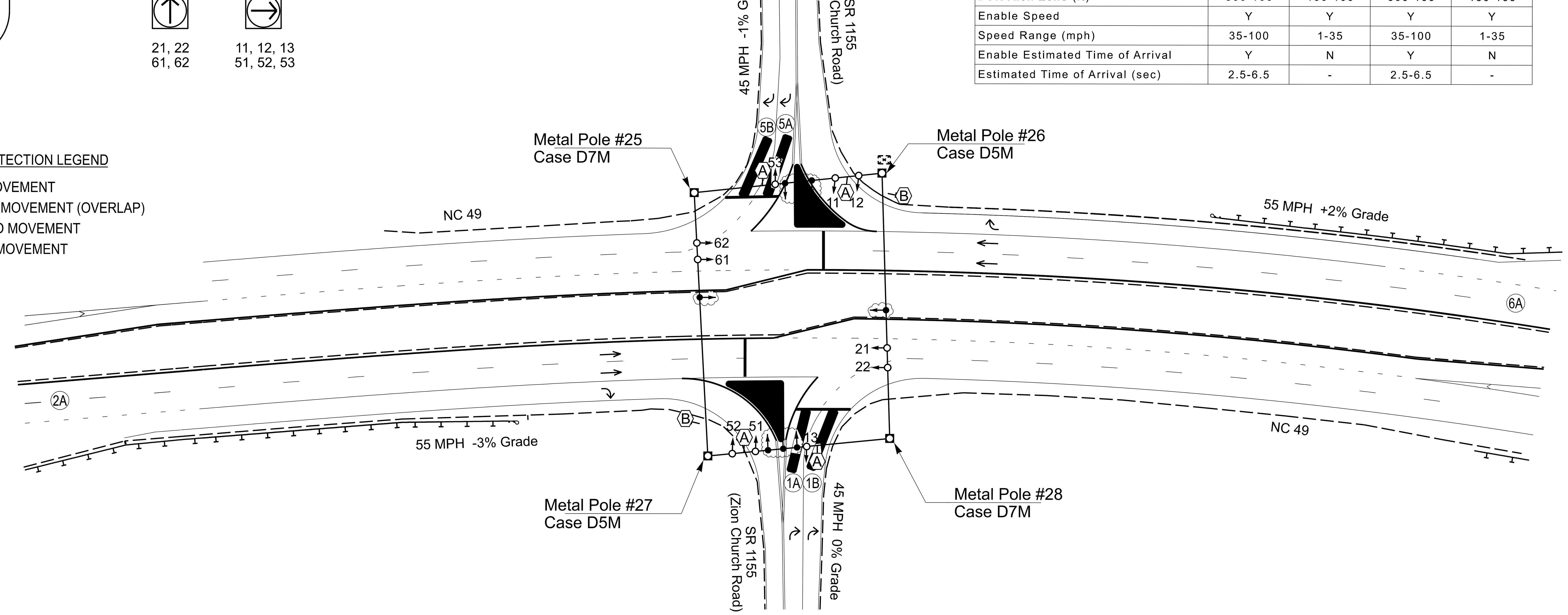
ADVANCE MICROWAVE DETECTION				
FUNCTION	SENSOR 1 (2A)		SENSOR 2 (6A)	
Channel	1		1	
Phase	2		6	
Direction of Travel	EB		WB	
Type	Priority		Priority	
Level	1	QUEUE	1	QUEUE
Detection Zone (ft)	500-100	150-100	500-100	150-100
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35-100	1-35	35-100	1-35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5-6.5	-	2.5-6.5	-

4-Phase
Fully Actuated
Concord Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
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. Disconnect and remove existing signal heads numbered 31, 81, and 82.
5. Disconnect and remove existing signal heads numbered 71, 41, and 42.
6. Disconnect and remove existing signal heads numbered 11 and 51.
7. Disconnect and abandon existing detection zones numbered 1A and 5A.
8. Disconnect and abandon existing detection zones numbered 7A and 4A.
9. Disconnect and abandon existing detection zones numbered 3A and 8A.
10. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

- Disconnect & Remove Existing Signal Head



LEGEND

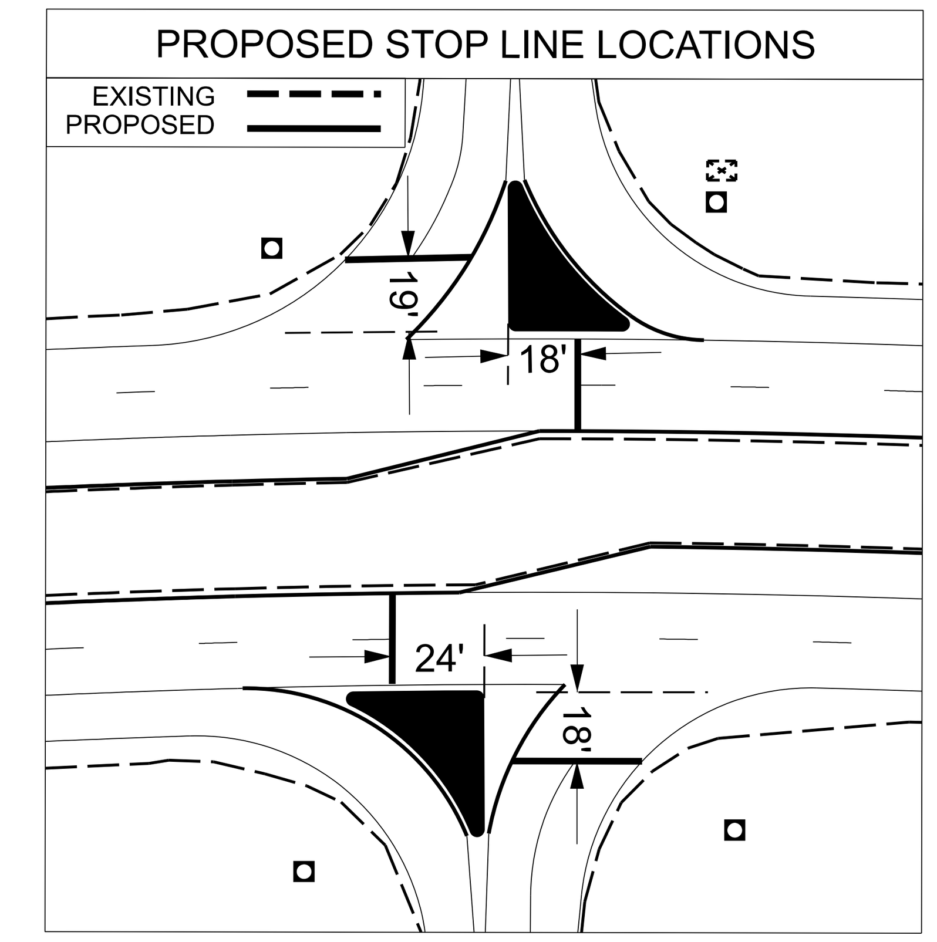
PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Guardrail	
	Metal Strain Pole	
	Non-Intrusive Detection Zone	
(A)	"NO TURN ON RED" Sign (R10-11)	(A)
(B)	"FREE FLOWING RIGHT TURN" Sign (W-26s)	(B)

MAXTIME TIMING CHART				
FEATURE	PHASE			
	1	2	5	6
Walk *	-	-	-	-
Ped Clear	-	-	-	-
Min Green *	7	14	7	14
Passage *	2.0	6.0	2.0	6.0
Max 1 *	35	90	35	90
Yellow Change	3.0	5.5	3.0	5.5
Red Clear	2.6	1.3	2.8	1.3
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Advance Walk	-	-	-	-
Non Lock Detector	X	-	X	-
Vehicle Recall	-	MIN RECALL	-	MIN RECALL
Dual Entry	-	-	-	-

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

This plan supersedes the plan signed and sealed on 01/21/25.

PROPOSED STOP LINE LOCATIONS



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade

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

NC 49
at
SR 1155 (Zion Church Road)

Division 10 | Cabarrus County | Concord

PLAN DATE: February 2026 | REVIEWED BY: R.N. Zinser
PREPARED BY: K. Singleton | REVIEWED BY:

SCALE 0 50 1"=50'

REVISIONS | INIT. | DATE

SEAL
NORTH CAROLINA PROFESSIONAL
SEAL 043914
ENGINEER
RICHARD N. ZINSER

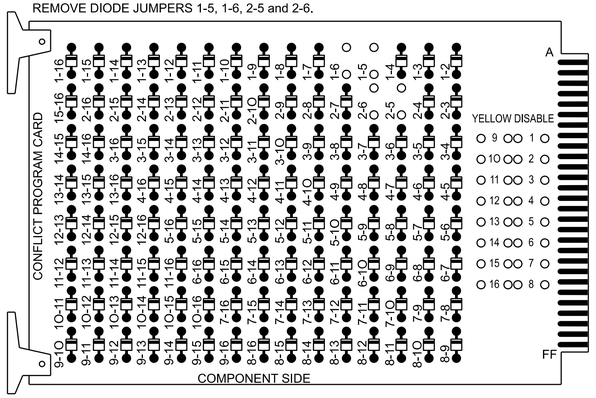
DocuSigned by: R. Nicholas Zinser 02/25/2026
DATE

SIG. INVENTORY NO. 10-1423

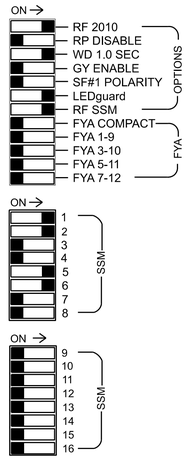
PROJECT REFERENCE NO.	SHEET NO.
HS-2010	Sig. 4.1

16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

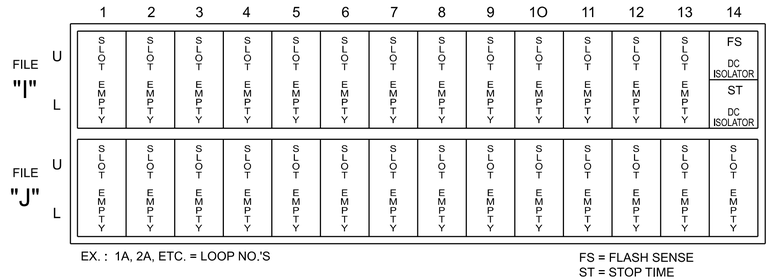


NOTES:

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

INPUT FILE POSITION LAYOUT

(front view)



SPECIAL DETECTOR NOTE

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 3,4,7,8,9,10,11,12.13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. The cabinet and controller are part of the Concord Signal System.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S1, S2, S5, S6
Phases Used.....1, 2, 5, 6
Overlaps.....None

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11, 12,13	21,22	NU	NU	NU	NU	51, 52,53	61,62	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED		128						134										
YELLOW		129						135										
GREEN																		
RED ARROW	125						131											
YELLOW ARROW	126						132											
FLASHING YELLOW ARROW																		
GREEN ARROW	127	130					133	136										
✋																		
🚶																		

NU = Not Used

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

This Plan Supersedes Electrical Detail Sealed on 1/22/2025

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1423
DESIGNED: February 2026
SEALED: 2/25/2026
REVISED: N/A

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

NC 49
at
SR 1155 (Zion Church Road)

Division 10 | Cabarrus County | Concord

PLAN DATE: February 2026 | REVIEWED BY:
PREPARED BY: Zarrar Zafar | REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

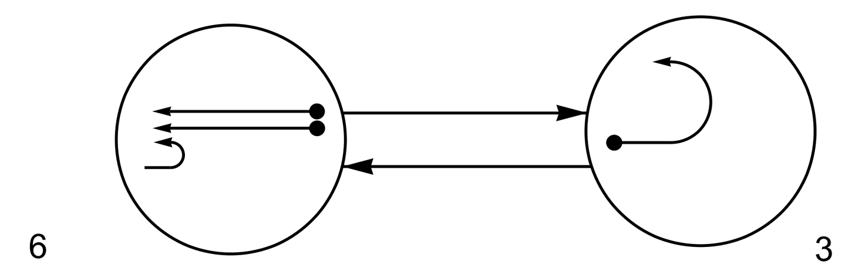
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 02/26/2026
SIGNATURE DATE

SIG. INVENTORY NO. 10-1423

26-FEB-2026 09:13
dgn: //ncdot-pw.bentley.com:ncdot-pw-01/Documents/NCDOT Units/NCDOT TSMO/Signal Design Section/Division_10/HS-2010H/Signals Management/10-1423/101423_sm_ele_2026mod1.dgn
22zfcr

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

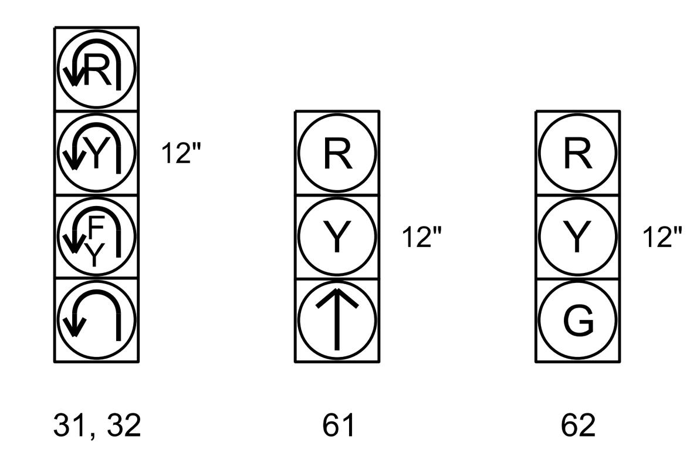
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 6	PHASE 3	PHASE FLASH
31, 32	FY	↶	R
61	↑	R	R
62	G	R	R

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
3A	6 X 40	0	*	*	3	15.0	-	X	-	X	-	*
3B	6 X 6	0	*	*	3	15.0	-	X	-	X	-	*

* Microwave Detection Zone

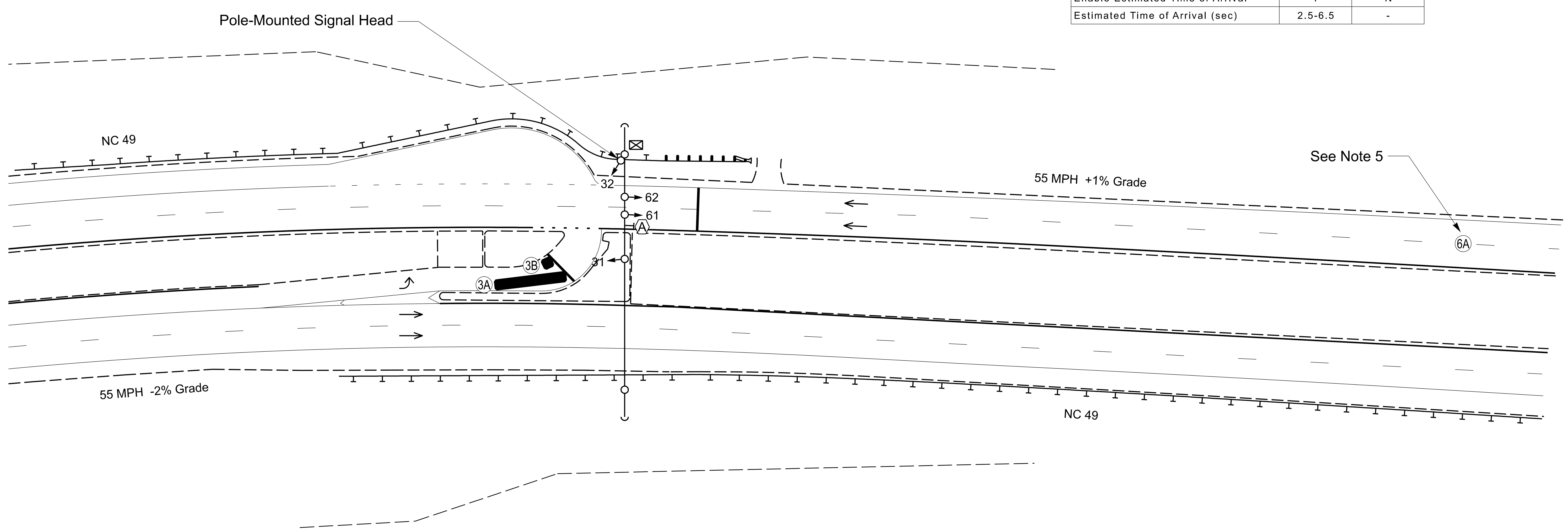
2-Phase
Fully Actuated
Concord Signal System

ADVANCE MICROWAVE DETECTION

FUNCTION	SENSOR 1 (6A)	
Channel	1	
Phase	2	
Direction of Travel	WB	
Type	Priority	
Level	1	QUEUE
Detection Zone (ft)	500-100	150-100
Enable Speed	Y	Y
Speed Range (mph)	35-100	1-35
Enable Estimated Time of Arrival	Y	N
Estimated Time of Arrival (sec)	2.5-6.5	-

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
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. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



LEGEND

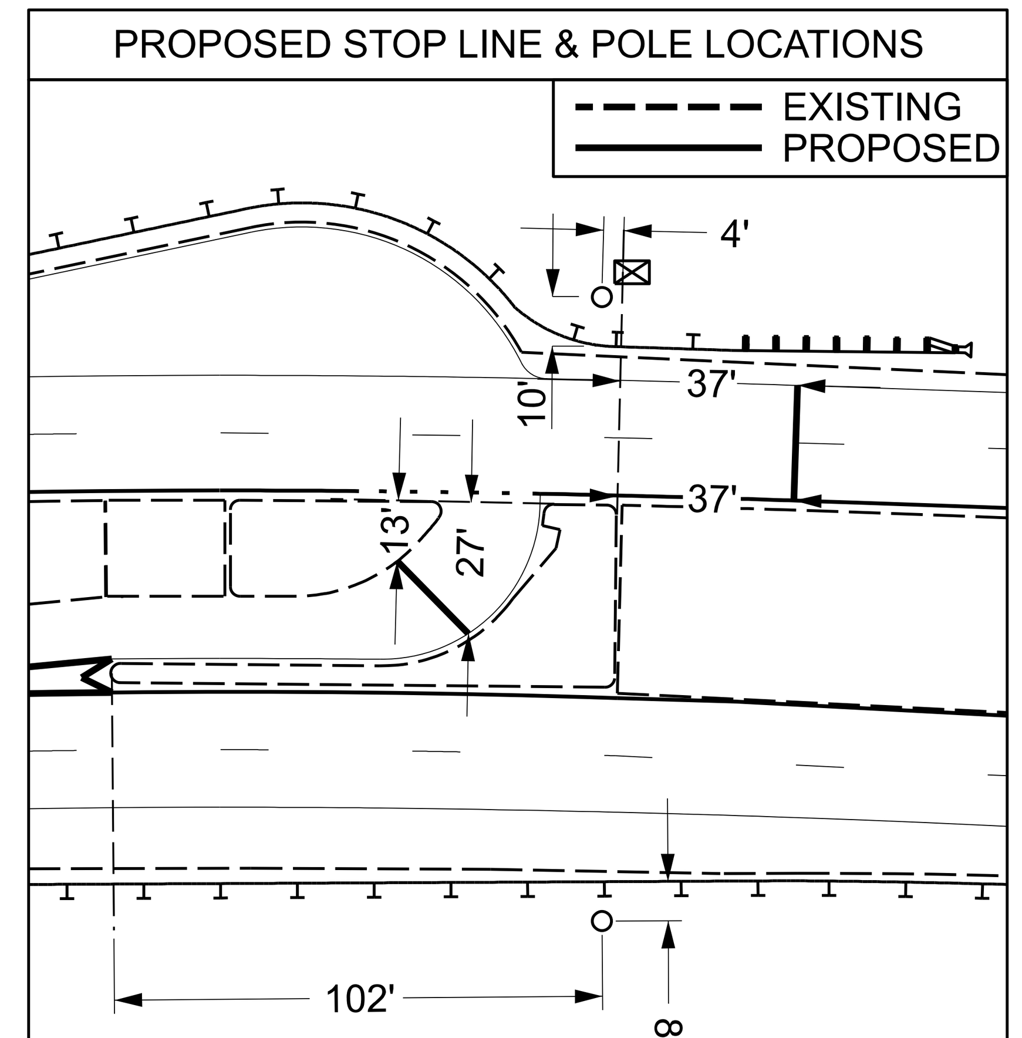
PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
N/A	Guardrail	
	Non-Intrusive Detection Zone	
(A)	No Left Turn Sign (R3-2)	(A)

MAXTIME TIMING CHART

FEATURE	PHASE 3	PHASE 6
Walk *	-	-
Ped Clear	-	-
Min Green *	7	14
Passage *	2.0	6.0
Max 1 *	25	90
Yellow Change	3.0	5.1
Red Clear	3.8	1.4
Added Initial *	-	-
Maximum Initial *	-	-
Time Before Reduction *	-	-
Time To Reduce *	-	-
Minimum Gap	-	-
Advance Walk	-	-
Non Lock Detector	X	-
Vehicle Recall	-	MIN RECALL
Dual Entry	-	-

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

PROPOSED STOP LINE & POLE LOCATIONS



This plan supersedes the plan signed and sealed on 01/21/25.

New Installation

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

U-Turn East of NC 49 at SR 1155 (Zion Church Road)

Division 10 — Cabarrus County — Concord

PLAN DATE:	February 2026	REVIEWED BY:	R.N. Zinser
PREPARED BY:	K. Singleton	REVIEWED BY:	

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043914 RICHARD N. ZINSER

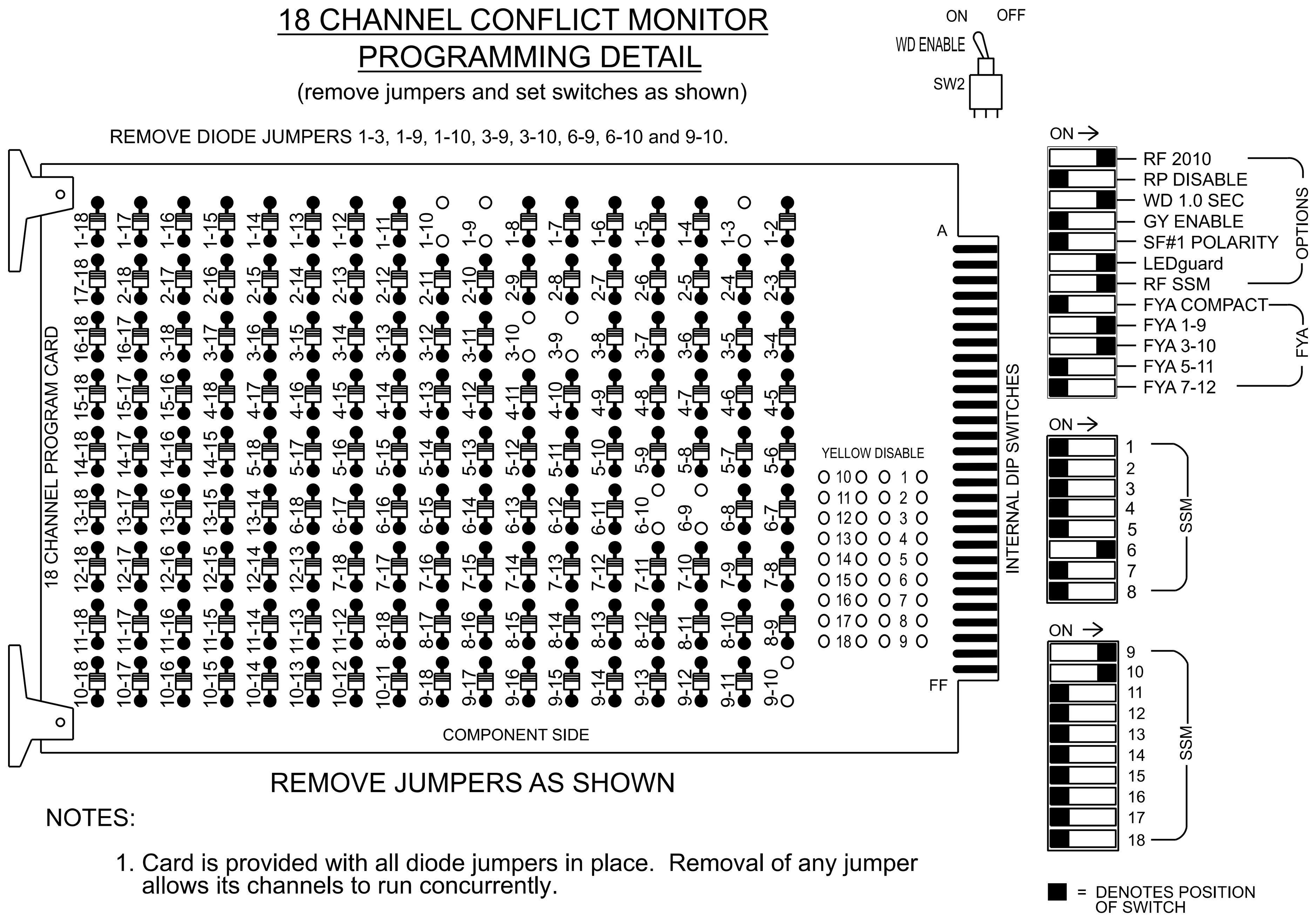
DocuSigned by: R. Nicholas Zinser 02/25/2026
F1388973472248F...
DATE

SIG. INVENTORY NO. 10-2527

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-3, 1-9, 1-10, 3-9, 3-10, 6-9, 6-10 and 9-10.



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Phase Not On and phase 6 Green No Walk.
3. The cabinet and controller are part of the Concord Signal System.

EQUIPMENT INFORMATION

Controller..2070LX
Cabinet...332 w/ Aux
Software...Q-Free MAXTIME
Cabinet Mount......................................Base
Output File Positions...........................18 With Aux. Output File
Load Switches Used............................S1, S4, S8, AUX S1, AUX S2
Phases Used.......................................3, 6
Overlap "1"..*
Overlap "2"..*
Overlap "3"..Not Used
Overlap "4"..Not Used
Overlap "5"..Not Used
Overlap "6"..Not Used
Overlap "7"..*

*See overlap programming detail on this sheet

PROJECT REFERENCE NO.	SHEET NO.
HS-2010H	Sig. 5.1

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	OL7	2	2 PED	3	4	4 PED	5	6		6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	32★	NU	NU	31★	NU	NU	NU	61	62	NU	NU	NU	NU	32★	31★	NU	NU	NU	NU
RED								134	134										
YELLOW	*			*				135	135										
GREEN									136										
RED ARROW														A121	A124				
YELLOW ARROW														A122	A125				
FLASHING YELLOW ARROW														A123	A126				
GREEN ARROW	127			118				136											
(Don't Walk)																			
(Walk)																			

NU = Not Used

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

★See pictorial of head wiring in detail this sheet.

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

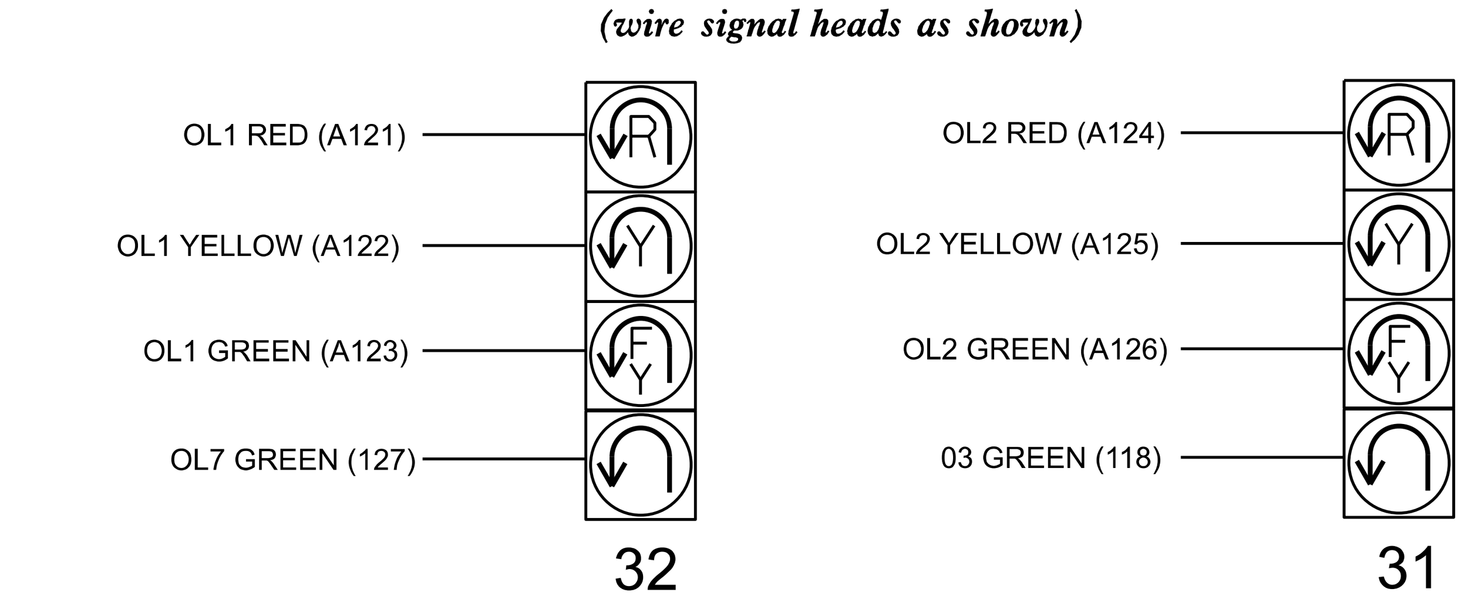
Modify parameters as shown below and save changes.

Start Up Parameters
StartUp Clearance Hold
6

Unit Flash Parameters
All Red Flash Exit Time
6

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
"I"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L														ST DC ISOLATOR
"J"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L														

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

FS = FLASH SENSE
ST = STOP TIME

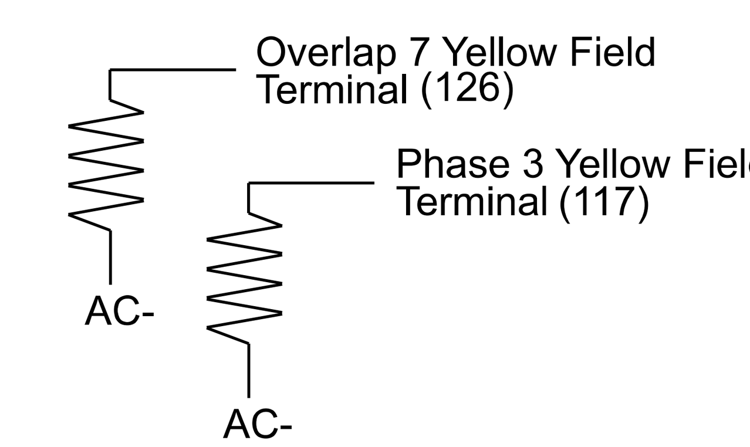
SPECIAL DETECTOR NOTE

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

NOTE: CHANNEL 1 CHANGED TO OVERLAP 7 →

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Overlap	7		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

SEQUENCE DETAIL

Front Panel
Main Menu >Controller >
Sequence & Phs Config>Sequences

Web Interface
Home >Controller >Sequence

Sequence 1

Ring	Sequence Data
1	3,a,6,b
2	

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >
Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	7
Type	FYA 4 - Section	FYA 4 - Section	Normal
Included Phases	6	6	3
Modifier Phases	3	3	-
Modifier Overlaps	-	-	-
Trail Green	0	0	0
Trail Yellow	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0

This Plan Supersedes Electrical Detail Sealed on 1/22/2025

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-2527
DESIGNED: February 2026
SEALED: 2/25/2026
REVISED: N/A

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

U-Turn East of
NC 49
at
SR 1155 (Zion Church Road)

Division 10 Cabarrus County Concord

Prepared in the Offices of:
Transportation Mobility and Safety Division
ITS & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

PLAN DATE: February 2026	REVIEWED BY:
PREPARED BY: Zarrar Zafar	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 02/26/2026
DATE

SIG. INVENTORY NO. 10-2527

PROJECT REFERENCE NO.	SHEET NO.
HS-2010H	SCP-1

1. INSTALL COAX CABLE
2. INSTALL ETHERNET CABLE
3. EXISTING ETHERNET (OR COAX) CABLE
4. INSTALL SMFO CABLE
5. EXISTING SMFO CABLE
6. INSTALL FIBER OPTIC DROP CABLE
7. INSTALL TRACER WIRE
8. TRENCH
9. INSTALL PVC CONDUIT
10. INSTALL RIGID, GALVANIZED STEEL CONDUIT
11. INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD
12. INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL
13. INSTALL OUTER-DUCT POLYETHYLENE CONDUIT
14. INSTALL POLYETHYLENE CONDUIT
15. DIRECTIONAL DRILL CONDUIT
16. BORE AND JACK CONDUIT
17. INSTALL CABLE(S) IN EXISTING CONDUIT
18. INSTALL CABLE(S) IN NEW CONDUIT
19. INSTALL CABLE(S) IN EXISTING RISER
20. INSTALL CABLE(S) IN NEW RISER
21. INSTALL CABLE(S) IN EXISTING CONDUIT STUB-OUTS
22. INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
23. INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
24. INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET
25. INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
26. INSTALL NEW ETHERNET EDGE SWITCH
27. INSTALL NEW FIBER OPTIC TRANSCEIVER
28. INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS AND FUSION SPLICE CABLE IN CABINET
29. INSTALL UNDERGROUND SPLICE ENCLOSURE
30. INSTALL AERIAL SPLICE ENCLOSURE
31. MODIFY EXISTING INTERCONNECT CENTER / SPLICE ENCLOSURE
32. INSTALL POLE MOUNTED SPLICE CABINET
33. INSTALL BASE MOUNTED SPLICE CABINET
34. INSTALL CABINET FOUNDATION
35. INSTALL CCTV CAMERA POLE MOUNTED CABINET
36. INSTALL CCTV CAMERA ASSEMBLY
37. INSTALL CCTV CAMERA WOOD POLE
38. INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
39. INSTALL JUNCTION BOX
40A. INSTALL OVERSIZED JUNCTION BOX
40B. INSTALL SPECIAL OVERSIZED JUNCTION BOX (36" x 24" x 24")
41. REMOVE EXISTING JUNCTION BOX
42. INSTALL WOOD POLE
43. REMOVE EXISTING WOOD POLE
44. INSTALL AERIAL GUY ASSEMBLY
45. INSTALL STANDARD GUY ASSEMBLY
46. INSTALL SIDEWALK GUY ASSEMBLY
47. INSTALL MESSENGER CABLE
48A. REMOVE EXISTING COMMUNICATIONS AND MESSENGER CABLE
48B. REMOVE EXISTING COMMUNICATIONS CABLE
49. BACK PULL EXISTING COMMUNICATIONS CABLE
50. INSTALL CELL MODEM AND ANTENNA
51. INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
52A. INSTALL DELINEATOR MARKER
52B. INSTALL JUNCTION BOX MARKER
53A. STORE 20 FEET OF COMMUNICATIONS CABLE
53B. STORE 50 FEET OF EACH COMMUNICATIONS CABLE
54. LASH CABLE(S) TO EXISTING COMMUNICATIONS CABLE
55. LASH CABLE(S) TO EXISTING MESSENGER CABLE
56. LASH CABLE(S) TO NEW MESSENGER CABLE
57. MODIFY EXISTING ELECTRICAL SERVICE
58. INSTALL NEW ELECTRICAL SERVICE
59. INSTALL NEW EQUIPMENT CABINET DISCONNECT
60. BOND TRACER WIRE TO EQUIPMENT GROUND BUS
61. DO NOT BOND TRACER WIRE TO EQUIPMENT GROUND BUS
62. BOND RISER AND MESSENGER CABLE TO POLE GROUND
63. BOND RISER TO POLE GROUND
64. BOND MESSENGER CABLE TO POLE GROUND
65. INSTALL HEAT SHRINK TUBING RETROFIT KIT
66. INSTALL MOLDABLE DUCT SEAL
67. SLACK SPAN

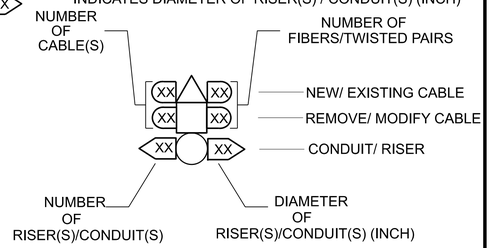
LEGEND

- FO — NEW FIBER OPTIC COMMUNICATIONS CABLE
- EXI — EXISTING COMMUNICATIONS CABLE
- REM — EXISTING COMMUNICATIONS CABLE TO BE REMOVED
- NEW AERIAL GUY ASSEMBLY
- NEW CONDUIT
- EXISTING CONDUIT
- DD — NEW DIRECTIONAL DRILLED CONDUIT

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

CONSTRUCTION NOTE SYMBOLOGY KEY

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



ATTACHMENT POINT:

- XX"/SS / YYY — DISTANCE ABOVE (IN)/ATTACHMENT POINT REFERENCE POINT
- YYY / XX"/SS — REFERENCE POINT DISTANCE BELOW (IN)/ATTACHMENT POINT

"SS" REFERENCE LOCATION
FS = FRONT SIDE OF POLE
BS = BACK SIDE OF POLE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:

750 N. Greenfield Pkwy. , Garner, NC 27529

CONSTRUCTION NOTES

DIVISION 10 CABARRUS COUNTY CONCORD

PLAN DATE: AUGUST 2025

PREPARED BY: M. DIAZ

REVIEWED BY: DocuSigned by: Greg Green

REVISIONS | INIT. | DATE

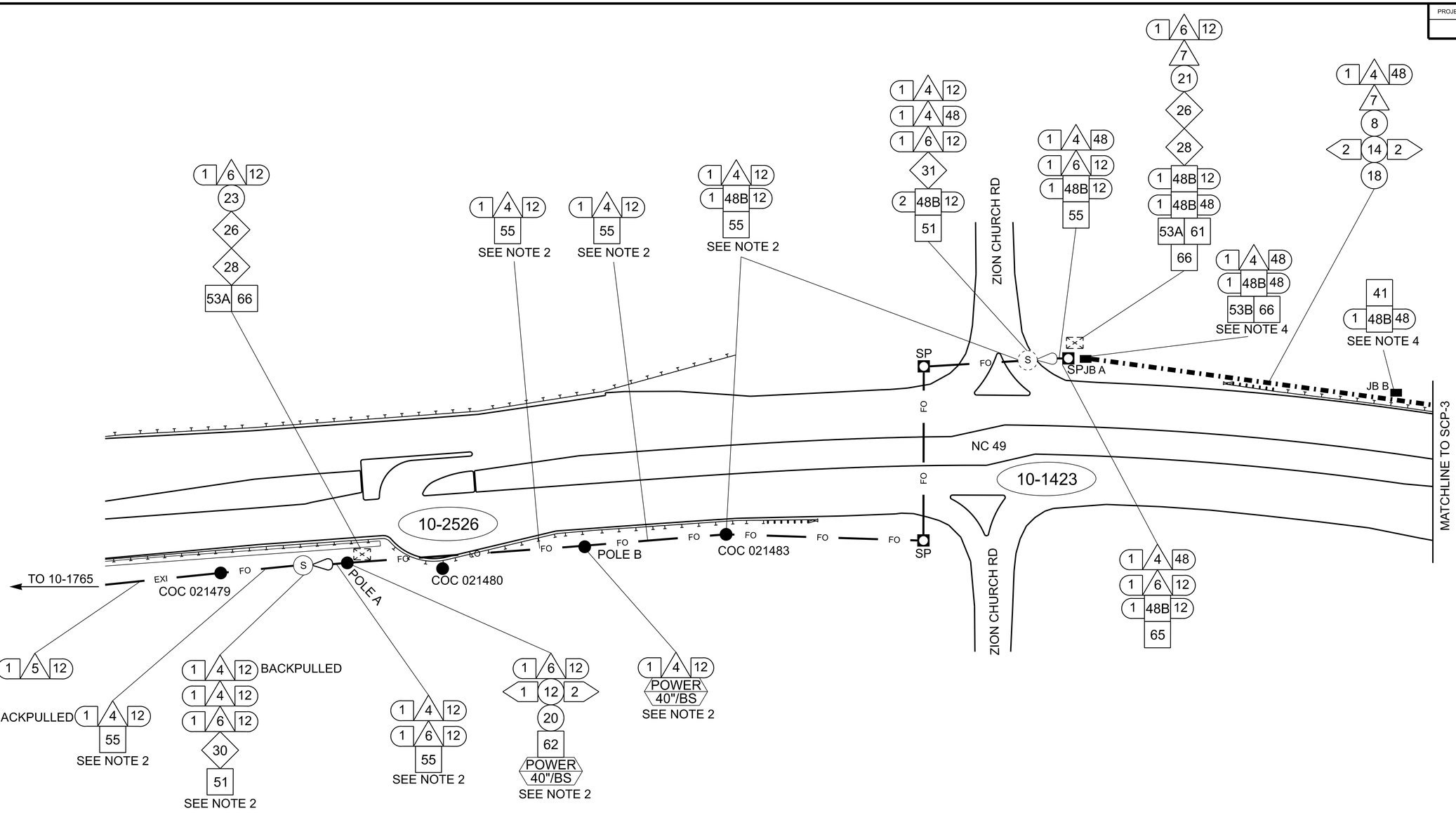
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 042578 ENGINEER MATTHEW T. CARLISLE

SIGNATURE: Matthew T. Carlisle

DATE: 08/26/2025

PROJECT REFERENCE NO.	SHEET NO.
HS-2010H	SCP-2



1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF CONCORD TRAFFIC ENGINEER AT 704-920-5377 TO ARRANGE FOR THE DIVISION TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE CITY OF CONCORD TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.

2. COC 021480 IS BEING REMOVED BY THE CITY OF CONCORD. POLE A AND POLE B TO BE ADDED BY THE CITY OF CONCORD ELECTRICAL DEPARTMENT. CUT EXISTING 12-FIBER CABLE BETWEEN EXISTING JOINT USE POLES COC 021480 AND COC 021483 AND BACK PULL TO COC 021479 TO ENSURE 100 FEET OF STORAGE IN SPLICE ENCLOSURE SNOW SHOE. REMOVE EXISTING 12-FIBER CABLE FROM COC 021483 TO EXISTING SPLICE ENCLOSURE AT 10-1423. TRANSFER EXISTING MESSENGER CABLE FROM COC 021480 ONTO POLA A AND POLE B AS SHOWN.

3. CUT EXISTING 48-FIBER CABLE AT JB C. BACK PULL EXISTING 48-FIBER CABLE FROM JB C TO JB D. REPLACE JUNCTION BOX AT JB D WITH SPECIAL OVERSIZED JUNCTION BOX.

4. REMOVE AND DISPOSE OF EXISTING 48-FIBER OPTIC CABLE FROM JB A TO JB B AND JB B TO JB C. CUT AND ABANDON CONDUITS AT 30" BELOW GRADE. REMOVE EXISTING JUNCTION BOXES B AND C. FILL WITH APPROVED MATERIALS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared In the Offices of:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Transportation Mobility and Safety Division Signal Engineering Section

750 N. Greenfield Pkwy. , Garner, NC 27529

SCALE 0 N/A

CONCORD SIGNAL SYSTEM COMMUNICATIONS AND CABLE ROUTING PLANS

DIVISION 10 CABARRUS COUNTY CONCORD

PLAN DATE: AUGUST 2025

PREPARED BY: M. DIAZ

REVIEWED BY: DocuSigned by: Greg Green

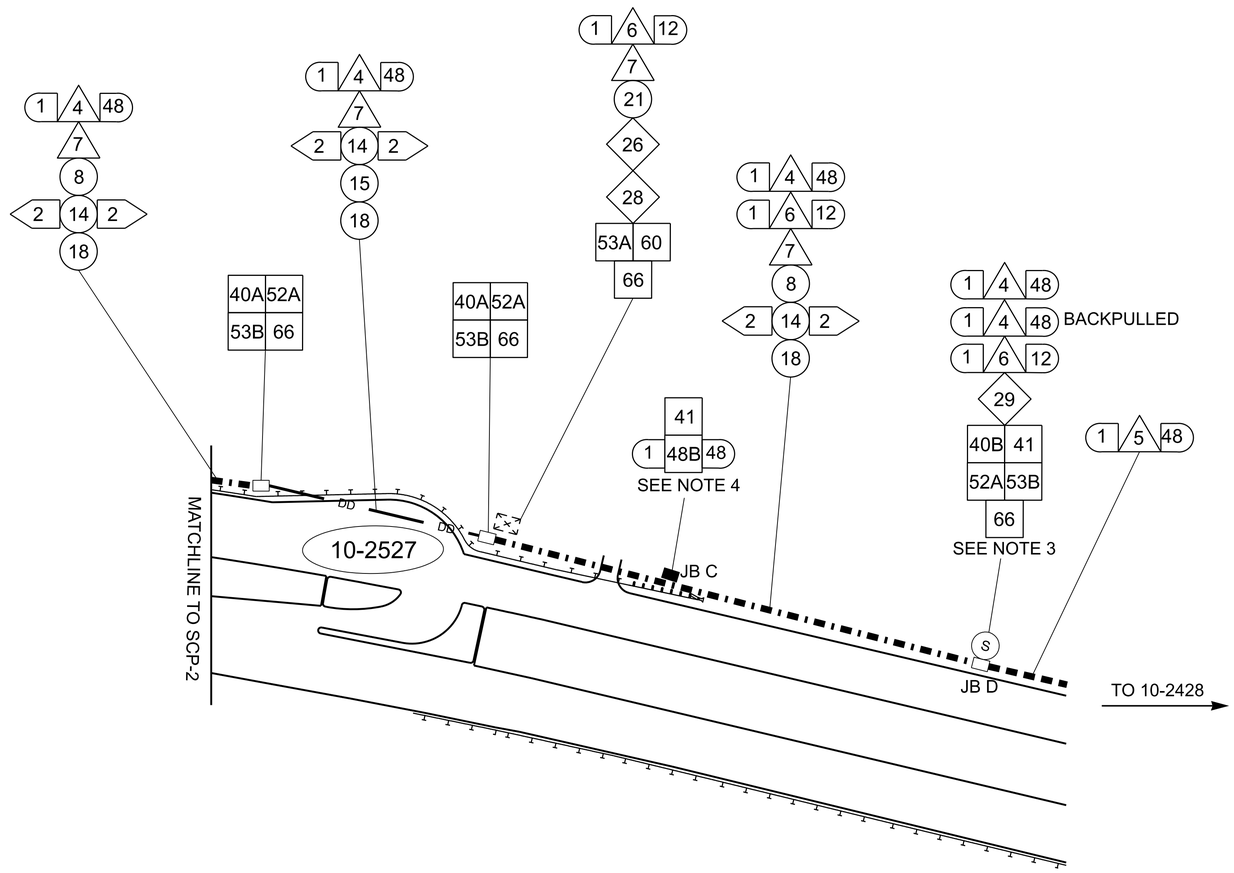
REVISIONS	INIT.	DATE

SEAL
042578
NORTH CAROLINA PROFESSIONAL ENGINEER
MATTHEW T. CARLISLE

SIGNATURE: DocuSigned by: Matthew T. Carlisle

DATE: 08/26/2025

PROJECT REFERENCE NO.	SHEET NO.
HS-2010H	SCP-3



1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF CONCORD TRAFFIC ENGINEER AT 704-920-5377 TO ARRANGE FOR THE DIVISION TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE CITY OF CONCORD TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.

2. COC 021480 IS BEING REMOVED BY THE CITY OF CONCORD. POLE A AND POLE B TO BE ADDED BY THE CITY OF CONCORD ELECTRICAL DEPARTMENT. CUT EXISTING 12-FIBER CABLE BETWEEN EXISTING JOINT USE POLES COC 021480 AND COC 021483 AND BACK PULL TO COC 021479 TO ENSURE 100 FEET OF STORAGE IN SPLICE ENCLOSURE SNOW SHOE. REMOVE EXISTING 12-FIBER CABLE FROM COC 021483 TO EXISTING SPLICE ENCLOSURE AT 10-1423. TRANSFER EXISTING MESSENGER CABLE FROM COC 021480 ONTO POLA A AND POLE B AS SHOWN.

3. CUT EXISTING 48-FIBER CABLE AT JB C. BACK PULL EXISTING 48-FIBER CABLE FROM JB C TO JB D. REPLACE JUNCTION BOX AT JB D WITH SPECIAL OVERSIZED JUNCTION BOX.

4. REMOVE AND DISPOSE OF EXISTING 48-FIBER OPTIC CABLE FROM JB A TO JB B AND JB B TO JB C. CUT AND ABANDON CONDUITS AT 30" BELOW GRADE. REMOVE EXISTING JUNCTION BOXES B AND C. FILL WITH APPROVED MATERIALS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared In the Offices of:

North Carolina Department of Transportation, Transportation Mobility and Safety Division, Traffic Engineering Branch, Signal Design Section

750 N. Greenfield Pkwy. , Garner, NC 27529

SCALE 0 N/A

CONCORD SIGNAL SYSTEM COMMUNICATIONS AND CABLE ROUTING PLANS

DIVISION 10 CABARRUS COUNTY CONCORD

PLAN DATE: AUGUST 2025

PREPARED BY: M. DIAZ

REVIEWED BY: DocuSigned by: Greg Green

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042578 MATTHEW T. CARLISLE

SIGNATURE: Matthew T. Carlisle

DATE: 08/26/2025

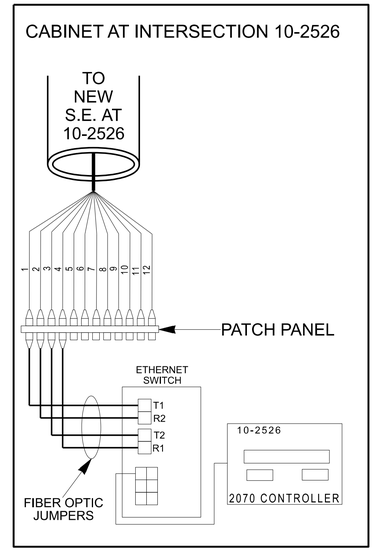
PROJECT REFERENCE NO.	SHEET NO.
HS-2010H	SCP-4

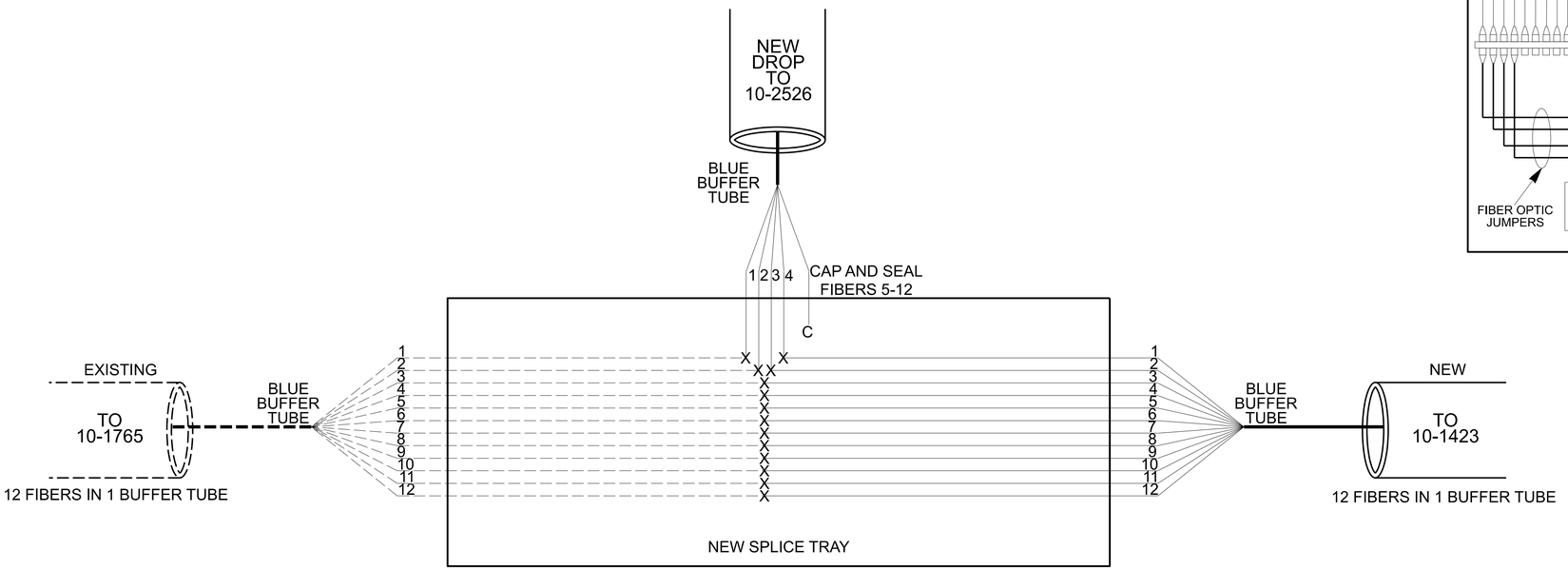
AERIAL SPLICE ENCLOSURE
U-TURN WEST OF NC 49 AT
SR 1155 (ZION CHURCH RD)
SIG. INV. # 10-2526

Notes:
Unused fibers left coiled and stored in splice tray.
Unused Buffer Tubes left coiled and stored in splice tray.

LEGEND
X = FUSION SPLICE
E = EXISTING SPLICE
C = CAP IN TRAY
EXPRESS = EXPRESS ALL FIBERS/ BUFFER TUBES
BUFFER SPLICE = SPLICE ALL FIBERS/ BUFFER TUBES

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





1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF CONCORD TRAFFIC ENGINEER AT 704-920-5377 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE CITY OF CONCORD TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL

2. CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.

3. ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \\ ENSURING PROPER TERMINATIONS.

4. INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING:
REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"

1) SPLICE LOCATION
2) DATE
3) COMPANY NAME
4) NAME OF INDIVIDUAL PERFORMING THE SPLICING

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

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Integrated Mobility Division
Traffic Engineering Branch
Traffic Signal Systems Section
750 N. Greenfield Pkwy. , Garner, NC 27529

CONCORD SIGNAL SYSTEM
SPLICE DETAIL

DIVISION 10 CABARRUS COUNTY CONCORD

PLAN DATE: AUGUST 2025
PREPARED BY: M. DIAZ
REVIEWED BY: DocuSigned by: Greg Green

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042578 MATTHEW T. CARLISLE
SIGNATURE: Matthew T. Carlisle
DATE: 08/26/2025

PROJECT REFERENCE NO.	SHEET NO.
HS-2010H	SCP-5

AERIAL SPLICE ENCLOSURE

NC 49 AT SR 1155 (ZION CHURCH RD)

SIG. INV. # 10-1423

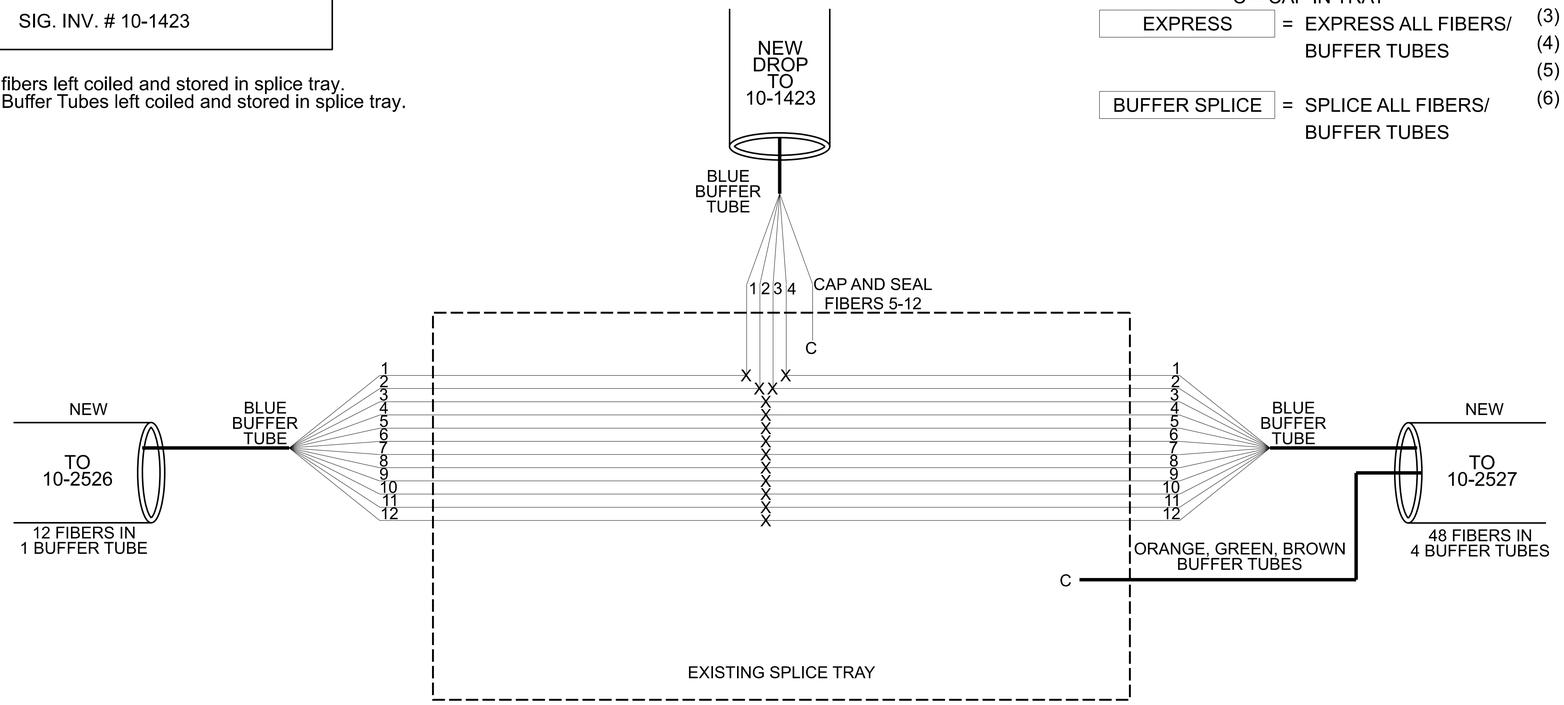
Notes:
Unused fibers left coiled and stored in splice tray.
Unused Buffer Tubes left coiled and stored in splice tray.

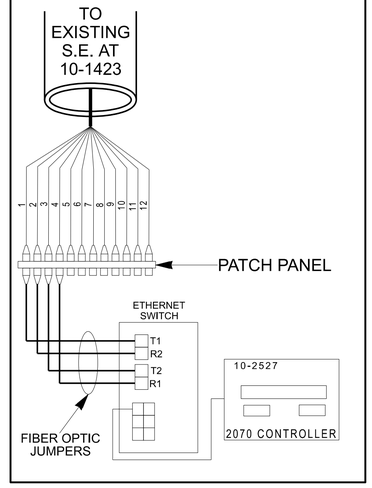
LEGEND
X = FUSION SPLICE
E = EXISTING SPLICE
C = CAP IN TRAY

EXPRESS = EXPRESS ALL FIBERS/ BUFFER TUBES

BUFFER SPLICE = SPLICE ALL FIBERS/ BUFFER TUBES

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





1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF CONCORD TRAFFIC ENGINEER AT 704-920-5377 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE CITY OF CONCORD TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL

2. CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.

3. ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \\ ENSURING PROPER TERMINATIONS.

4. INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING:
REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"

1) SPLICE LOCATION
2) DATE
3) COMPANY NAME
4) NAME OF INDIVIDUAL PERFORMING THE SPLICING

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
Traffic Engineering, Mobility and Safety Division
CITY OF CONCORD, NORTH CAROLINA
Transportation Planning and Intelligent Transportation Systems Divisions
DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy. , Garner, NC 27529

CONCORD SIGNAL SYSTEM
SPLICE DETAIL

DIVISION 10 CABARRUS COUNTY CONCORD

PLAN DATE: AUGUST 2025 REVIEWED BY: DocuSigned by: Gregg Green

PREPARED BY: M. DIAZ

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042578 MATTHEW T. CARLISLE

SIGNATURE: Digitally signed by: Matthew T. Carlisle

DATE: 08/26/2025

PROJECT REFERENCE NO.	SHEET NO.
HS-2010H	SCP-6

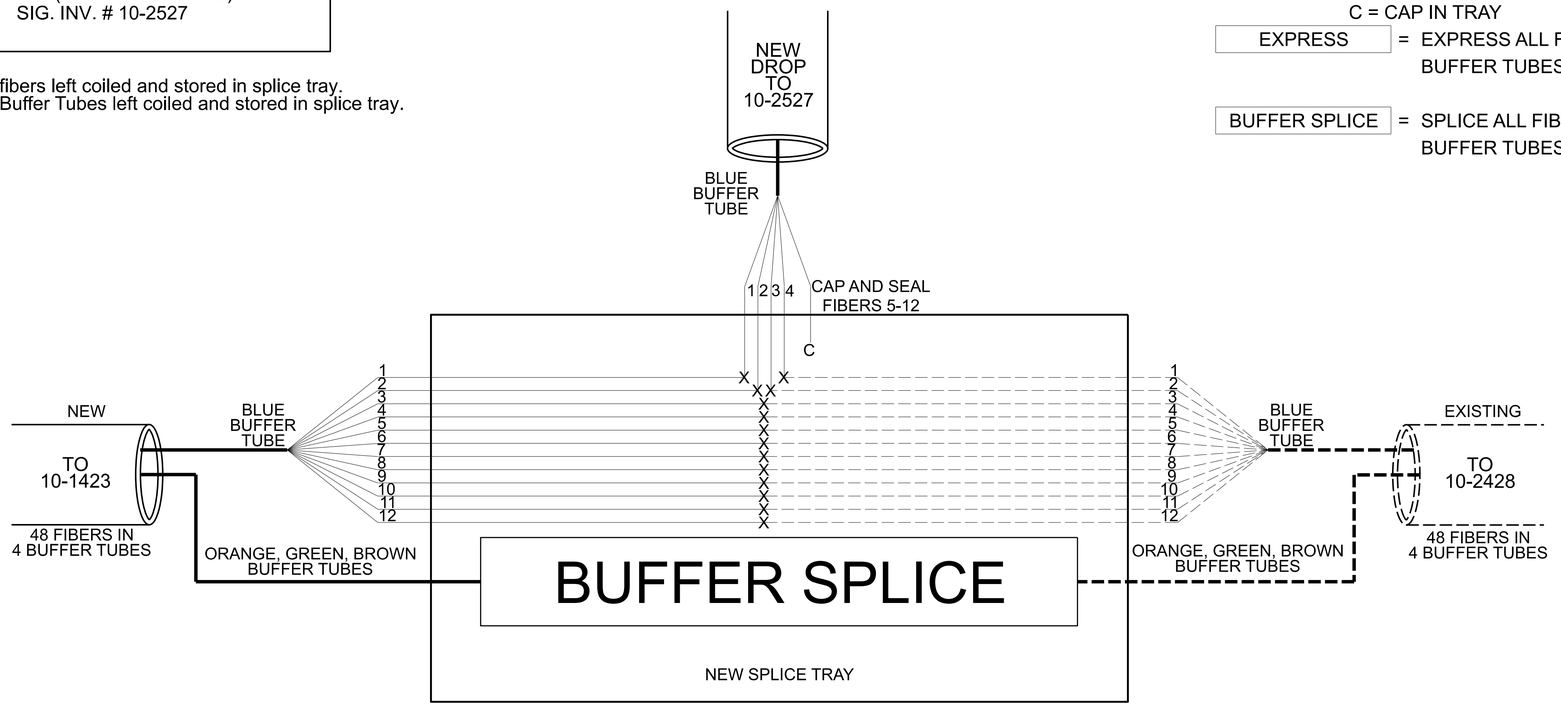
UNDERGROUND SPLICE ENCLOSURE
U-TURN EAST OF NC 49 AT
SR 1155 (ZION CHURCH RD)
SIG. INV. # 10-2527

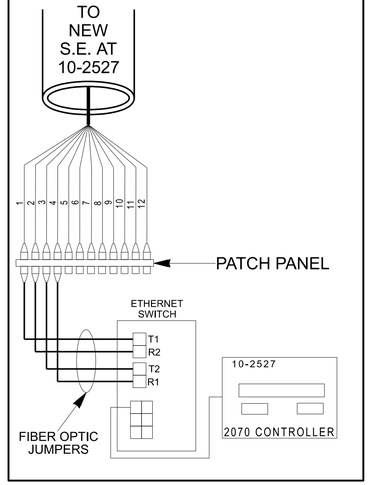
Notes:
Unused fibers left coiled and stored in splice tray.
Unused Buffer Tubes left coiled and stored in splice tray.

LEGEND
X = FUSION SPLICE
E = EXISTING SPLICE
C = CAP IN TRAY
EXPRESS = EXPRESS ALL FIBERS/ BUFFER TUBES
BUFFER SPLICE = SPLICE ALL FIBERS/ BUFFER TUBES

COLOR CODE TIA/EIA 598-A

(1) BLUE	(7) RED
(2) ORANGE	(8) BLACK
(3) GREEN	(9) YELLOW
(4) BROWN	(10) VIOLET
(5) SLATE	(11) ROSE
(6) WHITE	(12) AQUA





1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF CONCORD TRAFFIC ENGINEER AT 704-920-5377 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE CITY OF CONCORD TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL

2. CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.

3. ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \\ ENSURING PROPER TERMINATIONS.

4. INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING:
REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"

1) SPLICE LOCATION
2) DATE
3) COMPANY NAME
4) NAME OF INDIVIDUAL PERFORMING THE SPLICING

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
NCDOT Transportation Mobility and Safety Division
750 N. Greenfield Pkwy, , Garner, NC 27529

CONCORD SIGNAL SYSTEM
SPLICE DETAIL

DIVISION 10 CABARRUS COUNTY CONCORD

PLAN DATE: AUGUST 2025
PREPARED BY: M. DIAZ
REVIEWED BY: DocuSigned by: Greg Gren

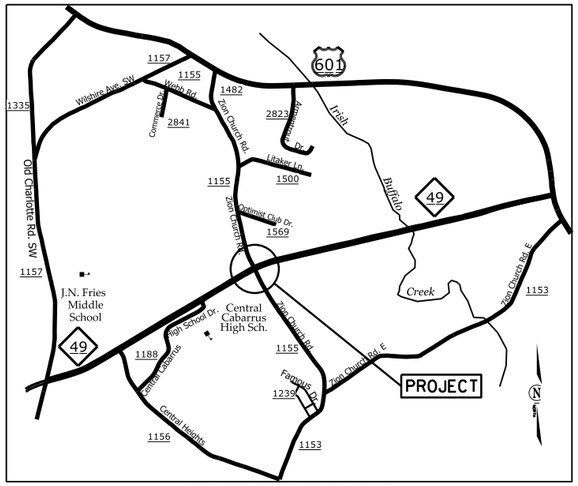
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 042578 ENGINEER MATTHEW T. CARLISLE
SIGNATURE: DocuSigned by: Matthew T. Carlisle
DATE: 08/26/2025

09/08/99

TIP: HS-2010H

PROJECT: 49391.3.8



VICINITY MAP NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

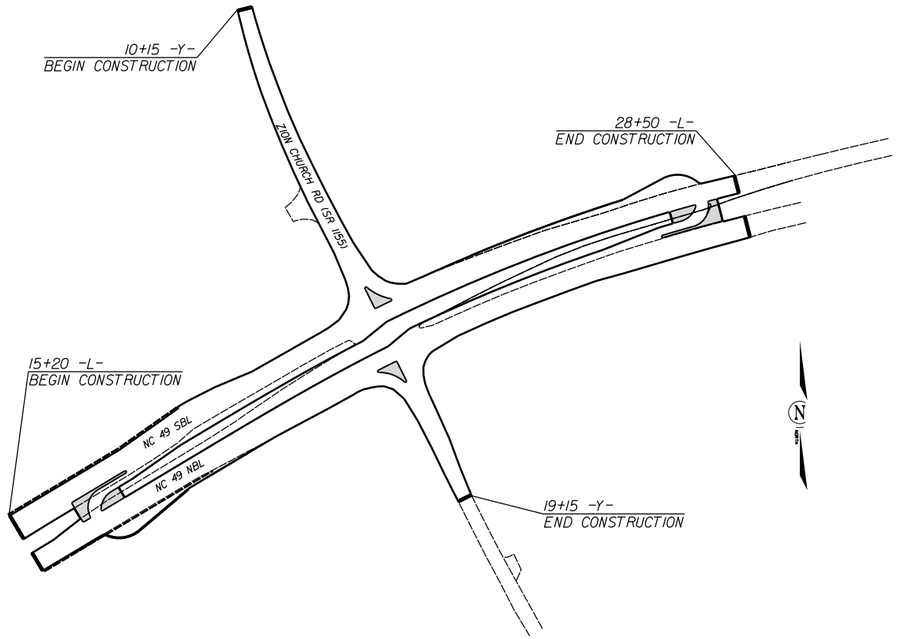
UTILITIES BY OTHERS PLANS
CABARRUS COUNTY

T.I.P. NO.	SHEET NO.
49291.3.8	UO–1

NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.

LOCATION: *INTERSECTION OF HWY. NC 49 AND ZION CHURCH RD. (SR–1155)*

TYPE OF WORK: *POWER, COMMUNICATIONS, AND GAS RELOCATION.*



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.:	*DESCRIPTION:*
UO–1	*TITLE SHEET*
UO–2 THRU UO–3	*UBO PLAN SHEETS*

UTILITY OWNERS WITH CONFLICTS

(A) POWER TRANSMISSION – CONCORD ELECTRIC
(B) GAS TRANSMISSION – ENBRIDGE
(C) COMMUNICATIONS – WINDSTREAM
(D) COMMUNICATIONS – CHARTER

PREPARED IN THE OFFICE OF:

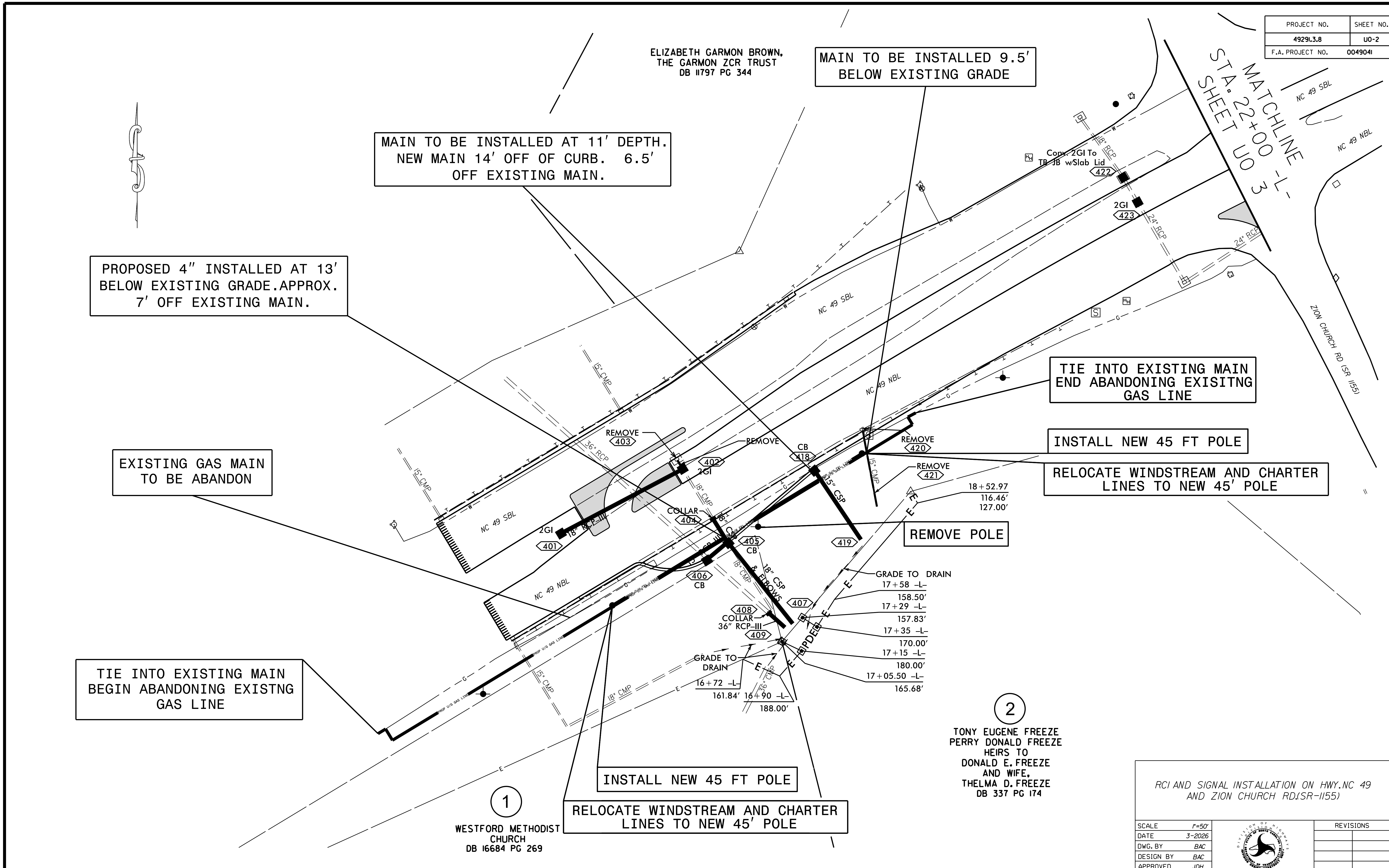
DDC UNIT DIVISION 10
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

DIVISION 10
UTILITIES UNIT
716 W. MAIN ST.
ALBEMARLE, NC 28001
PHONE (704) 983–4400

ADAM PRESLAR — *ASSISTANT UTILITIES ENGINEER*
BARRY CARLTON — *UTILITIES COORDINATOR*

16-APR-2026 09:50
S:\DDC\RDY\Cabarrus\HS-2010H_NC 49_Zion Church_RCI\utility\UBO\HS-2010H_UBO-TSH.dgn
$$$$USERNAME$$$$

PROJECT NO.	SHEET NO.
49291.3.8	U0-2
F.A. PROJECT NO.	0049041



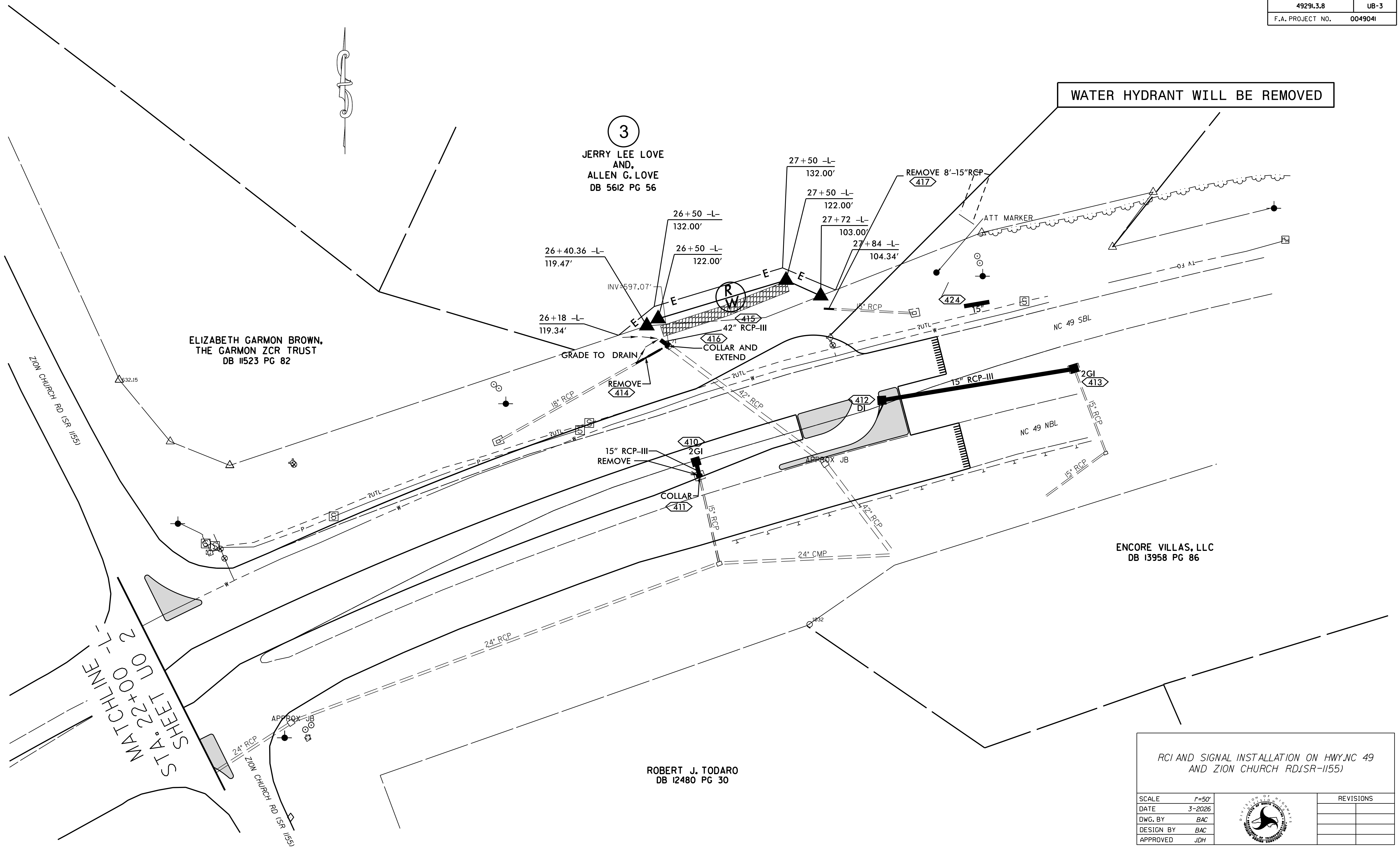
ELIZABETH GARMON BROWN, THE GARMON ZCR TRUST DB 11797 PG 344
MAIN TO BE INSTALLED 9.5' BELOW EXISTING GRADE
MATCHLINE STA. 22+00 -L- SHEET U0 3
MAIN TO BE INSTALLED AT 11' DEPTH. NEW MAIN 14' OFF OF CURB. 6.5' OFF EXISTING MAIN.
PROPOSED 4" INSTALLED AT 13' BELOW EXISTING GRADE.APPROX. 7' OFF EXISTING MAIN.
NC 49 SBL
NC 49 NBL
ZION CHURCH RD (SR 1155)
TIE INTO EXISTING MAIN END ABANDONING EXISITNG GAS LINE
INSTALL NEW 45 FT POLE
RELOCATE WINDSTREAM AND CHARTER LINES TO NEW 45' POLE
REMOVE POLE
EXISTING GAS MAIN TO BE ABANDON
TIE INTO EXISTING MAIN BEGIN ABANDONING EXISTNG GAS LINE
INSTALL NEW 45 FT POLE
RELOCATE WINDSTREAM AND CHARTER LINES TO NEW 45' POLE
1
WESTFORD METHODIST CHURCH DB 16684 PG 269
2
TONY EUGENE FREEZE PERRY DONALD FREEZE HEIRS TO DONALD E. FREEZE AND WIFE, THELMA D. FREEZE DB 337 PG 174
GRADE TO DRAIN
17+58 -L- 158.50'
17+29 -L- 157.83'
17+35 -L- 170.00'
17+15 -L- 180.00'
17+05.50 -L- 165.68'
18+52.97 116.46' 127.00'
16+72 -L- 161.84'
16+90 -L- 188.00'

RCI AND SIGNAL INSTALLATION ON HWY.NC 49 AND ZION CHURCH RD.(SR-1155)

SCALE	1"=50'
DATE	3-2026
DWG. BY	BAC
DESIGN BY	BAC
APPROVED	JDH

REVISIONS

PROJECT NO.	SHEET NO.
49291.3.8	UB-3
F.A. PROJECT NO.	0049041



WATER HYDRANT WILL BE REMOVED
3
JERRY LEE LOVE
AND,
ALLEN G. LOVE
DB 5612 PG 56
ELIZABETH GARMON BROWN,
THE GARMON ZCR TRUST
DB 11523 PG 82
ENCORE VILLAS, LLC
DB 13958 PG 86
ROBERT J. TODARO
DB 12480 PG 30
26+40.36 -L- 119.47'
26+50 -L- 132.00'
26+50 -L- 122.00'
27+50 -L- 132.00'
27+50 -L- 122.00'
27+72 -L- 103.00'
27+84 -L- 104.34'
26+18 -L- 119.34'
INV=597.07'
REMOVE 8'-15" RCP
417
ATT MARKER
415
42" RCP-III
416
COLLAR AND EXTEND
GRADE TO DRAIN
REMOVE
414
18" RCP
42" RCP
412
DI
15" RCP-III
2GI
413
15" RCP
424
NC 49 SBL
NC 49 NBL
410
2GI
15" RCP-III
REMOVE
COLLAR
411
APPROX JB
24" CMP
24" RCP
ZION CHURCH RD (SR 1155)
MATCHLINE -L-
STA. 22+00
SHEET UO 2

RCI AND SIGNAL INSTALLATION ON HWY. NC 49 AND ZION CHURCH RD. (SR-1155)

		REVISIONS
SCALE	1"=50'	
DATE	3-2026	
DWG. BY	BAC	
DESIGN BY	BAC	
APPROVED	JDH	

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	49291.3.8	X-1

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190

650
640
630
620
610
600

EXIST.
0.02
EXIST.
0.02

16+50.00

650
640
630
620

EXIST.
EXIST.

16+00.00

650
640
630
620

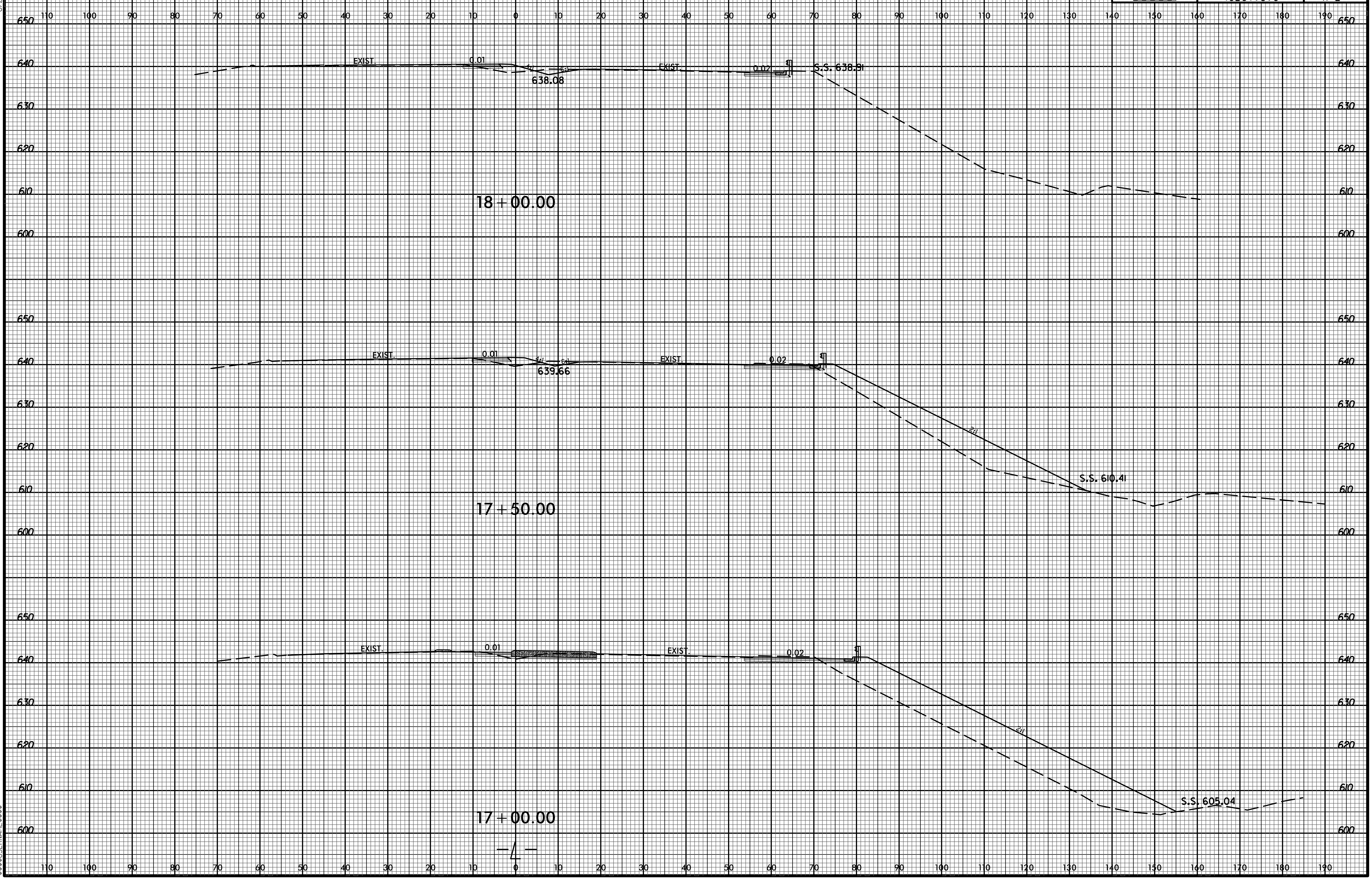
EXIST.
EXIST.

15+50.00

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190

20-MAY-2026 11:21
S:\DOC\LIBRARY\Cabarrus\HS-2010H_NC 49_Zion Church\RCI\XSC\HS-2010H_NC 49_Zion Church_RCI_L_xp1.dgn
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
49291.3.8	X-2

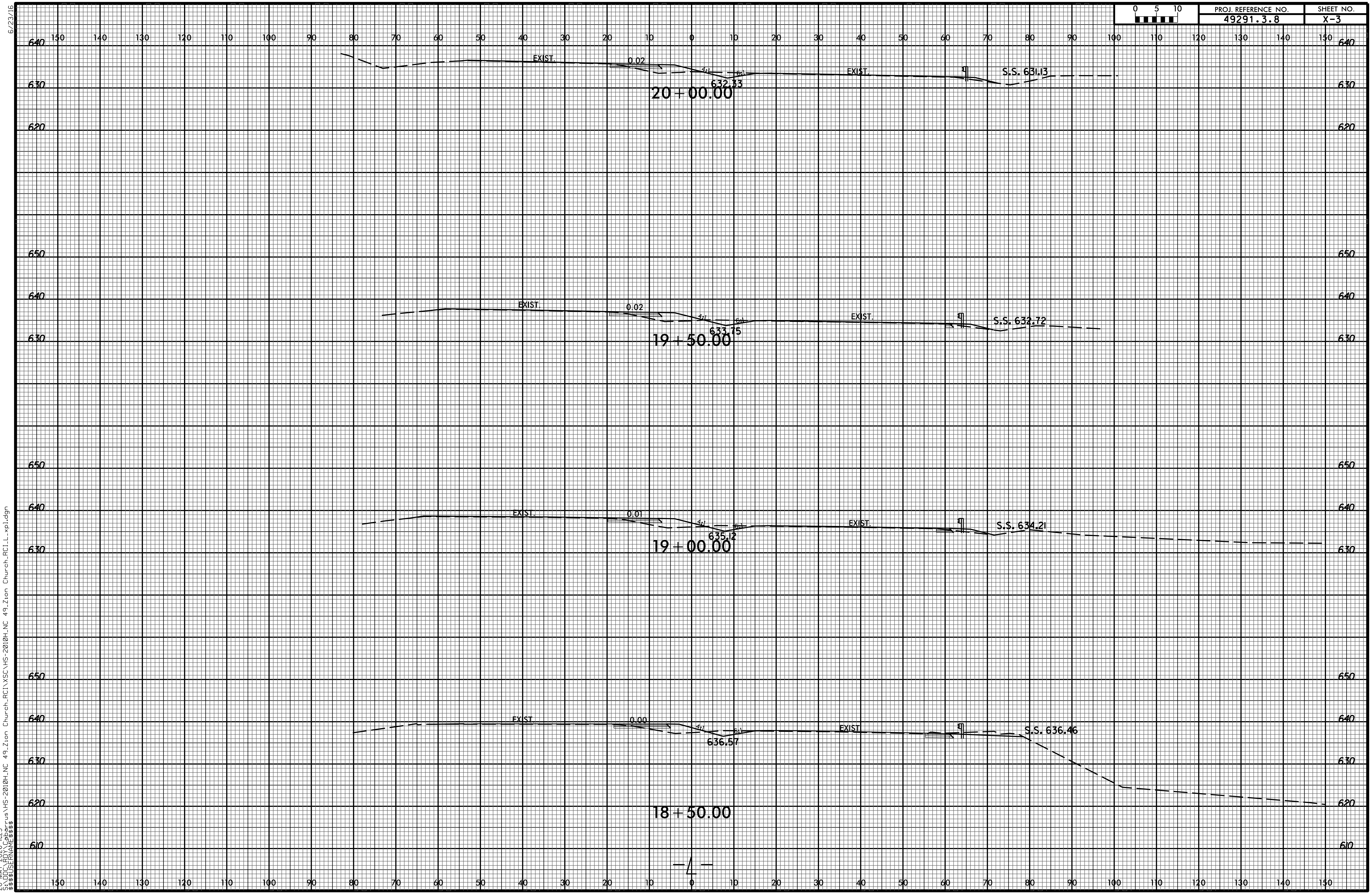


6/23/16

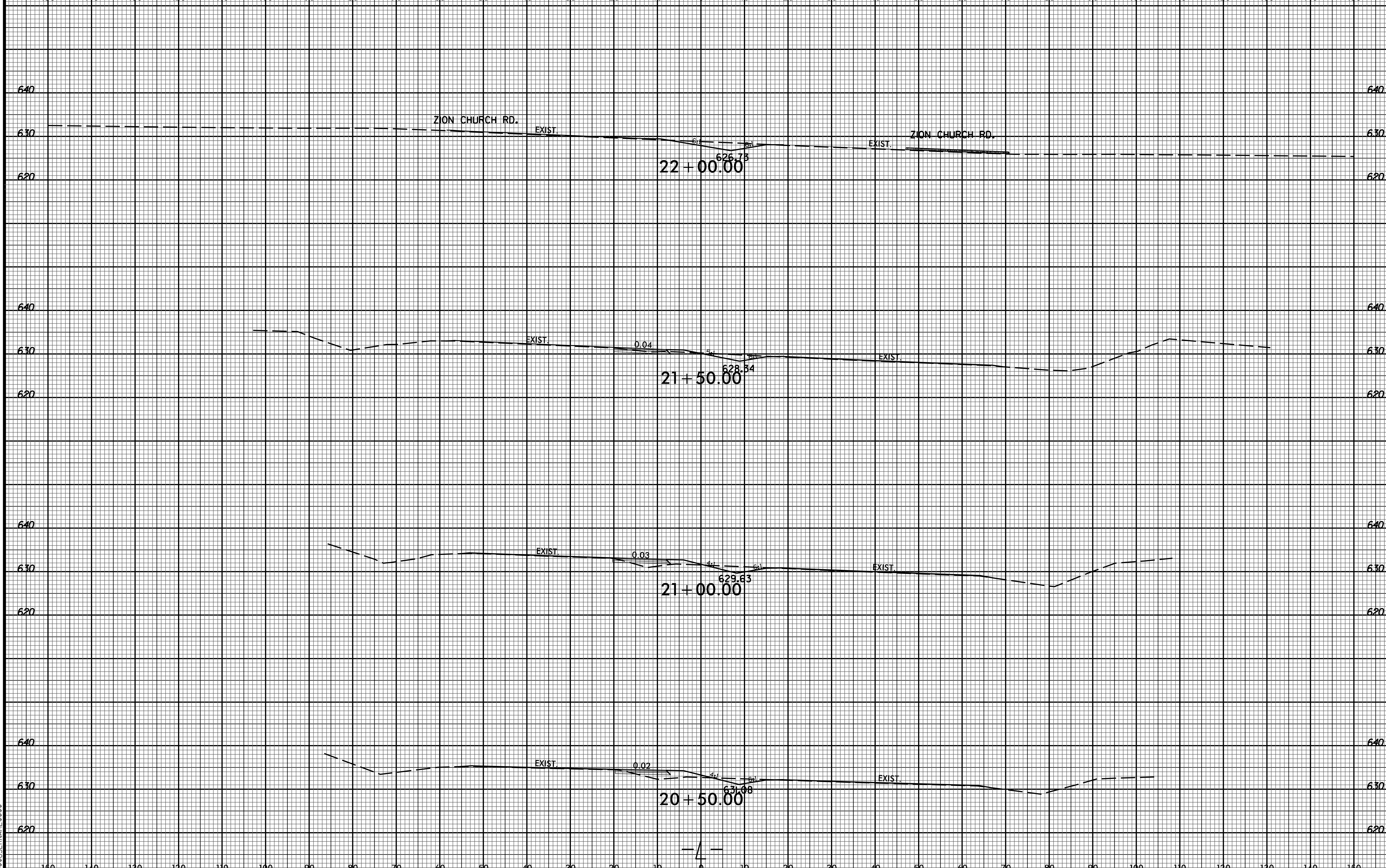
20-MAY-2026 11:22
S:\DDC\RDY\Cabarrus\HS-2010H_NC 49_Zion Church_RCI\XSC\HS-2010H_NC 49_Zion Church_RCI_L_xpl.dgn
$$$$USERNAME$$$$

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
49291.3.8	X-3



20-MAY-2026 11:23
S:\DDC\Y\RDY\Cabarrus\HS-2010H_NC 49_Zion Church_RCI\XSC\HS-2010H_NC 49_Zion Church_RCI_L_xpl.dgn
$$$$USERNAME$$$$

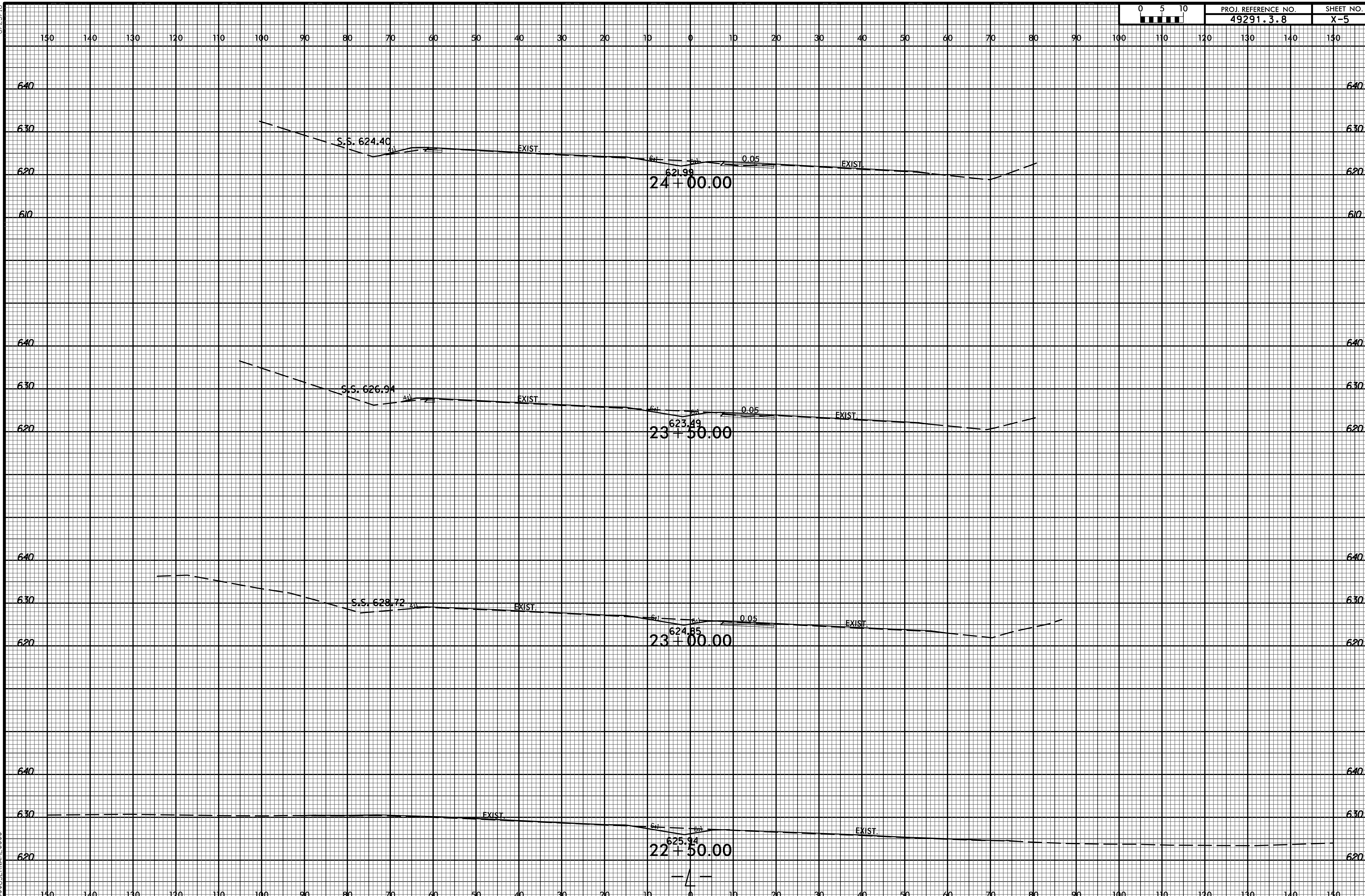


6/23/16

20-MAY-2026 11:23
S:\DDCY\RDY\Cabarrus\HS-2010H_NC 49_Zion Church_RCI\XSC\HS-2010H_NC 49_Zion Church_RCI_L_xpl.dgn
$$$$USERNAME$$$$

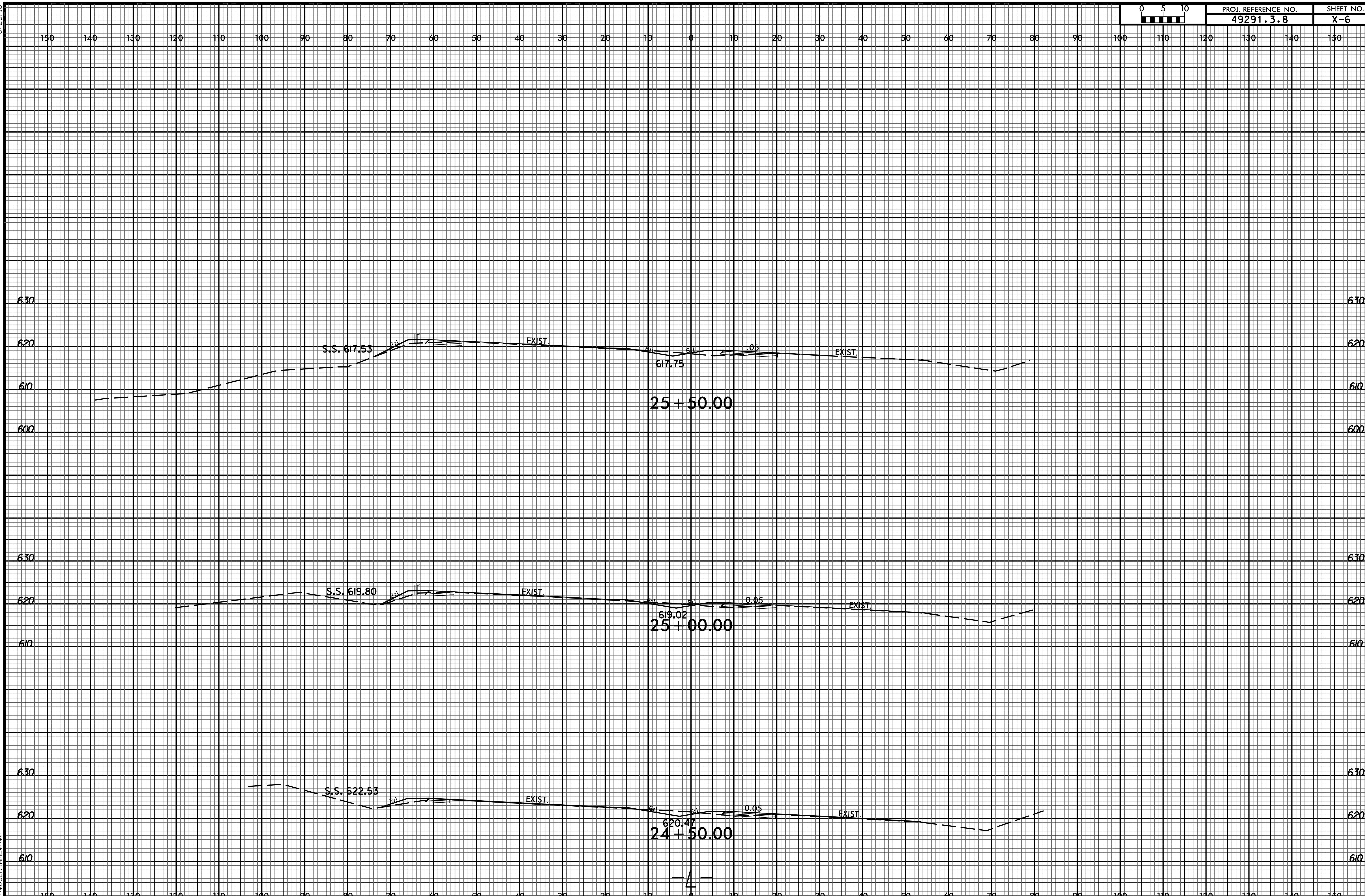
6/23/16

PROJ. REFERENCE NO.	SHEET NO.
49291.3.8	X-5



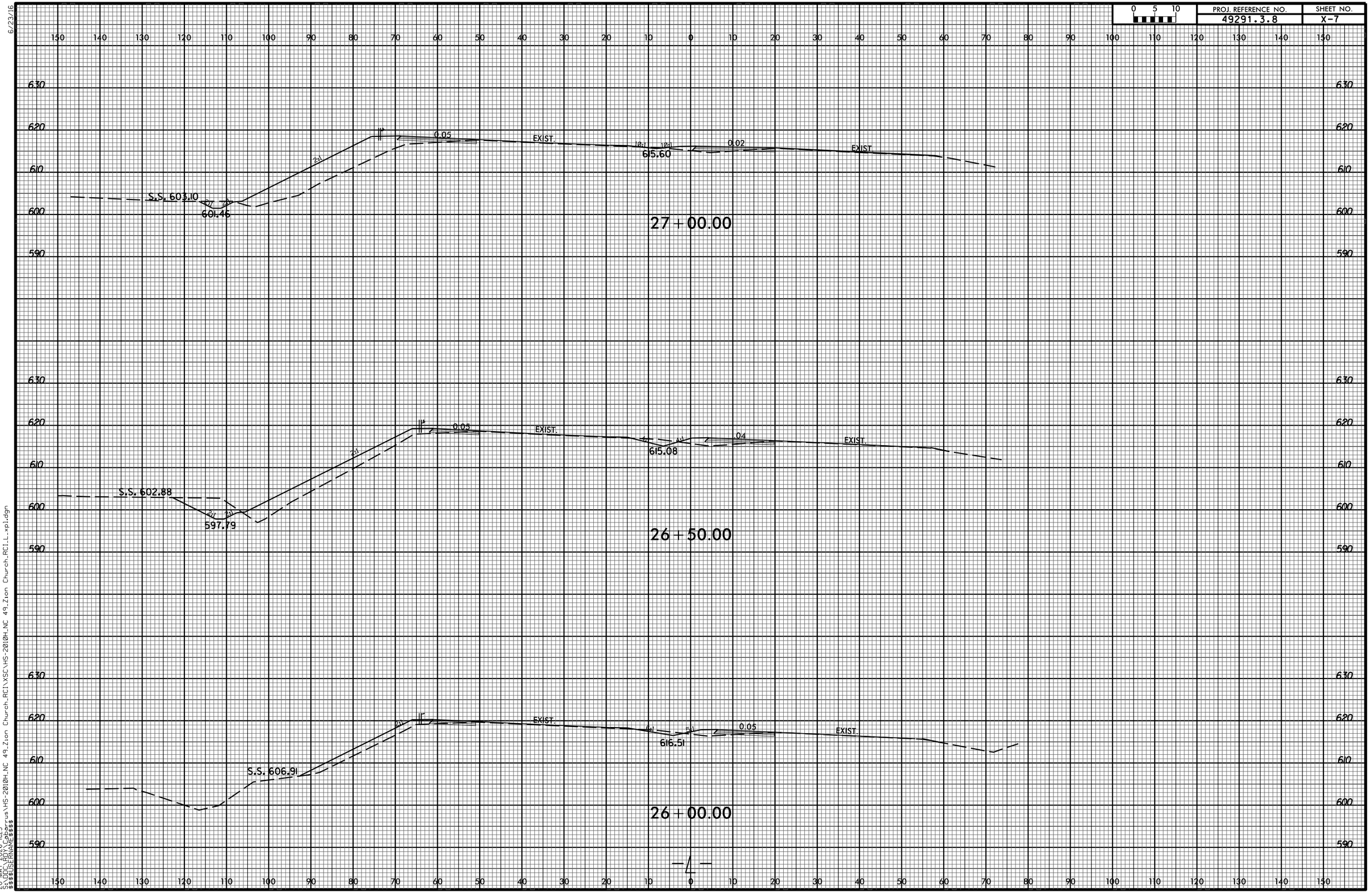
–4–

20-MAY-2026 11:24
$$$$USERNAME$$$$


PROJ. REFERENCE NO.
49291.3.8
SHEET NO.
X-6
0 5 10
S.S. 617.53
EXIST.
617.75
.05
EXIST.
25+50.00
S.S. 619.80
EXIST.
619.02
0.05
EXIST.
25+00.00
S.S. 622.53
EXIST.
620.47
0.05
EXIST.
24+50.00
630
620
610
600
6/23/16
20-MAY-2026 11:24
$$$$USERNAME$$$$

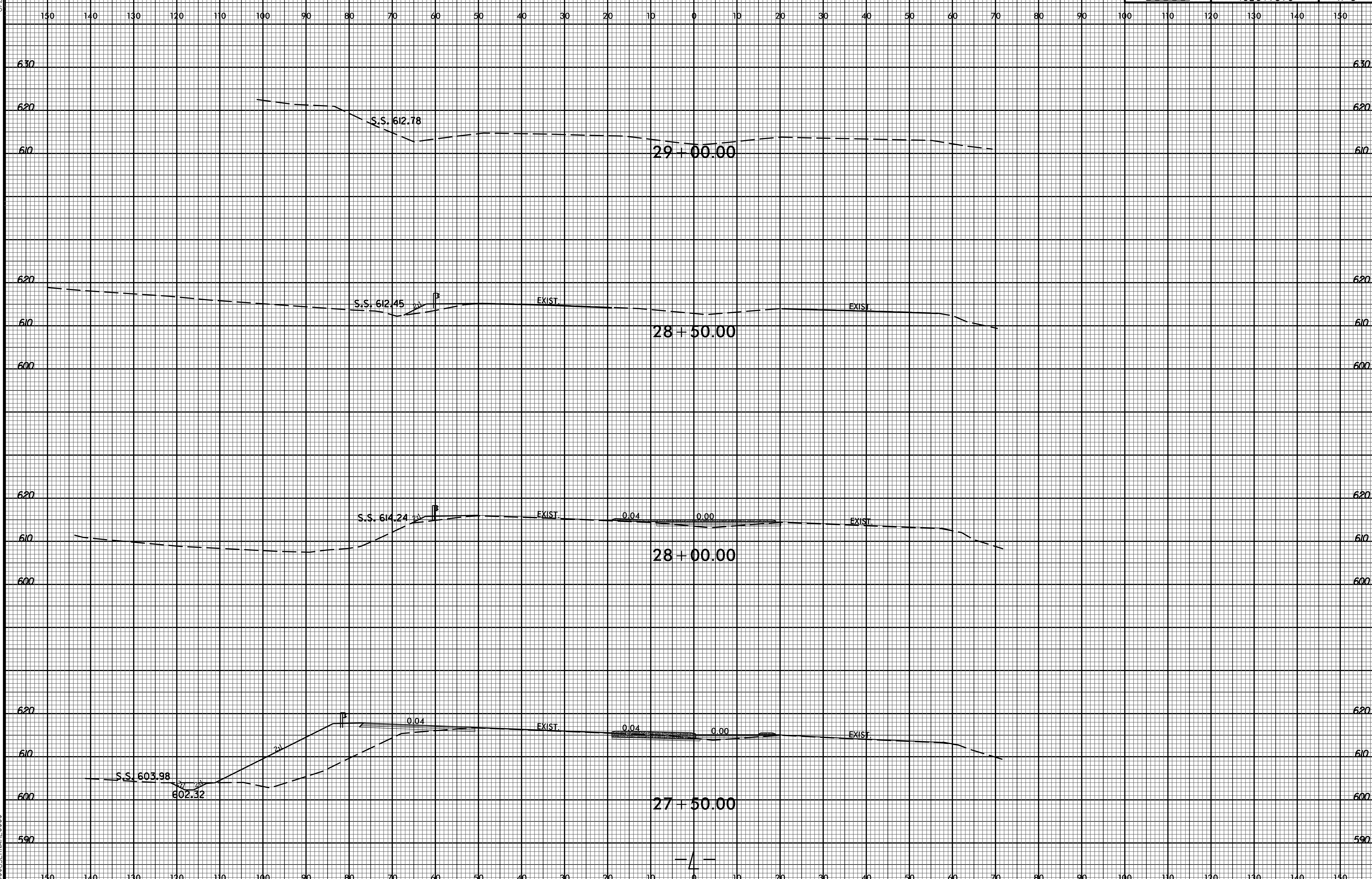
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	49291.3.8	X-7



20-MAY-2026 11:25
S:\DOT\ROY\Cobarrus\HS-2010H_NC 49_Zion Church_RCI\XSC\HS-2010H_NC 49_Zion Church_RCI_L_xpl.dgn
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
49291.3.8	X-8



6/23/16

20-MAY-2026 11:25
S:\...\HS-2010H_NC 49.Zion Church.RCI\XSC\HS-2010H_NC 49.Zion Church.RCI_L_xpl.dgn
$$$$USERNAME$$$$

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	49291.3.8	X-9

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

640
635
630

EXIST. EXIST.
13+50.00

640
635
630

EXIST. EXIST.
13+00.00

640
635
630

EXIST. EXIST.
12+50.00

640
635
630

EXIST. EXIST.
12+00.00

640
635
630

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

—Y—

11-MAY-2026 13:48
S:\DOCUMENTS\Corridors\HS-2010H_NC 49_Zion Church_RCI\XSC\HS-2010H_NC 49_Zion Church_RCI_Y.xpl.dgn
$$$$USERNAME$$$$

INTERSECTION OF NC 49 AND ZION CHURCH RD.

15+50.00

EXIST. EXIST.

15+00.00

EXIST. EXIST.

14+50.00

EXIST. EXIST.

14+00.00

—Y—

6/23/16

11-MAY-2026 13:48
S:\DOCUMENTS\Corridor\HS-2010H_NC 49_Zion Church_RC1\XSC\HS-2010H_NC 49_Zion Church_RC1_Y_xpl.dgn
$$$$USERNAME$$$$

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	49291.3.8	X-11

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

635
630
625
620

EXIST. EXIST.

17+50.00

630
625
620

EXIST. EXIST.

17+00.00

630
625
620

INTERSECTION OF NC 49 AND ZION CHURCH RD.

16+50.00

635
630
625

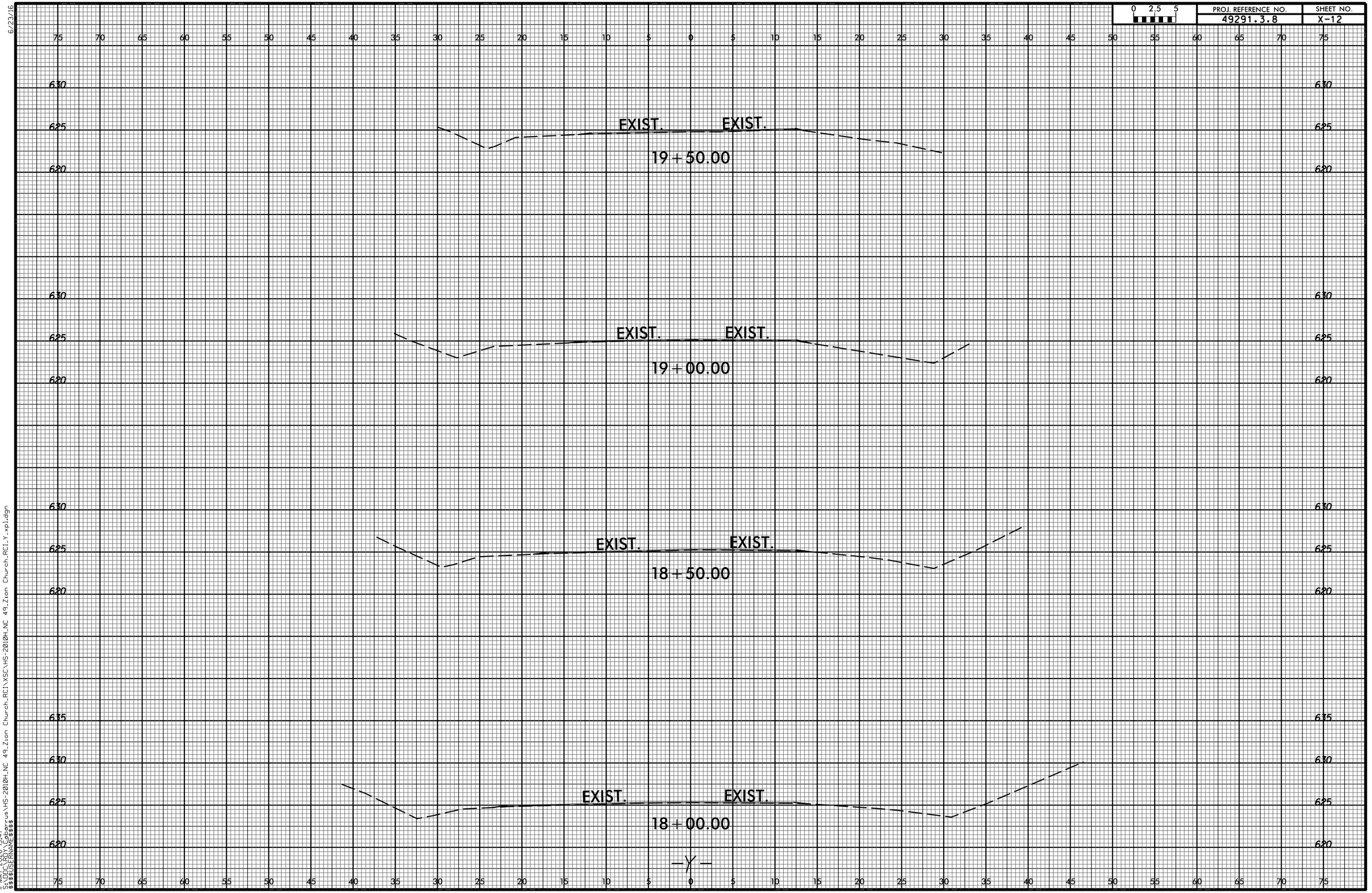
INTERSECTION OF NC 49 AND ZION CHURCH RD.

16+00.00

—Y—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

11-MAY-2026 13:48
S:\DOT\RDY\Cabarrus\HS-2010H_NC 49_Zion Church_RCI\XSC\HS-2010H_NC 49_Zion Church_RCI_Y_xpl.dgn
$$$$USERNAME$$$$



6/23/16
11-MAY-2026 13:47
S:\DOCUMENTS\Corridors\HS-2010H_NC 49_Zion Church_RC1\XSC\HS-2010H_NC 49_Zion Church_RC1_Y.xpl.dgn
$$$$USERNAME$$$$