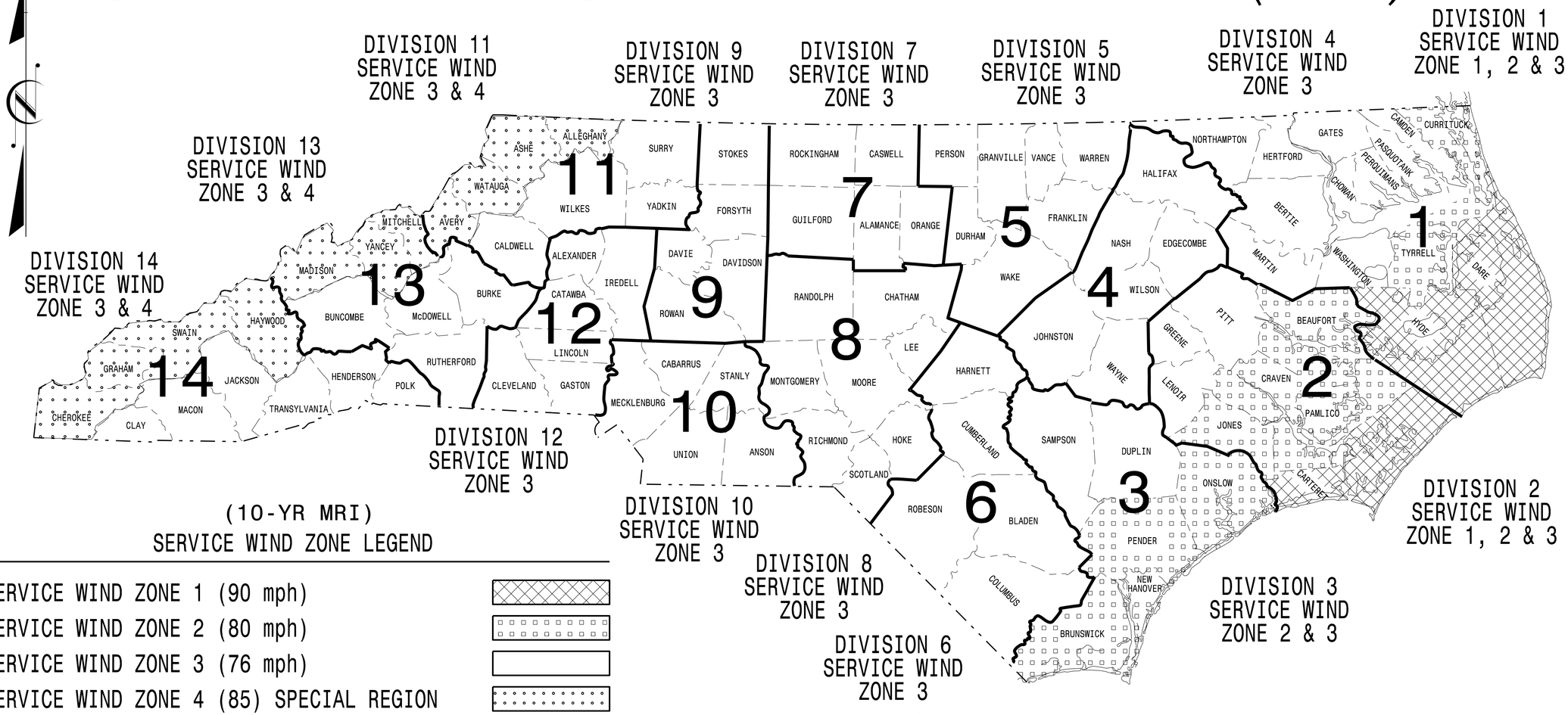
PROJECT I.D. NO.	SHEET NO.
U-5813	Sig.M1B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)

POLE STANDARDS

NCDOT METAL POLES



(10-YR MRI)
SERVICE WIND ZONE LEGEND

SERVICE WIND ZONE 1 (90 mph)	
SERVICE WIND ZONE 2 (80 mph)	
SERVICE WIND ZONE 3 (76 mph)	
SERVICE WIND ZONE 4 (85) SPECIAL REGION	

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

Prepared in the Offices of:

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

750 N.Greenfield Pkwy.
Garner,NC 27529

Designed in conformance with the latest 2020 Interim to the 1st Edition 2015

AASHTO LRFD

Standard Specifications for Highway Signs, Luminaires, and Traffic Signals

INDEX OF PLANS

DRAWING NUMBER	DESCRIPTION
Sig. M 1A	Statewide Wind Zone Map (700-yr MRI)
Sig. M 1B	Statewide Wind Zone Map (10-yr MRI)
Sig. M 2	Typical Fabrication Details-All Metal Poles
Sig. M 3	Typical Fabrication Details-Strain Poles
Sig. M 4	Typical Fabrication Details-Mast Arm Poles
Sig. M 5	Typical Fabrication Details-Mast Arm Connection
Sig. M 6	Typical Fabrication Details-Strain Pole Attachments
Sig. M 7	Construction Details-Foundations
Sig. M 8	Standard Strain Pole Foundation-All Soil Conditions
Sig. M 9	Typical Fabrication Details-CCTV Camera Poles

NCDOT CONTACTS:

MOBILITY AND SAFETY DIVISION – TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS UNIT

D.Y. ISHAK – STATE SIGNALS ENGINEER

K. DURIGON, P.E. – ITS AND SIGNALS STRUCTURAL ENGINEER

B. WALKER, P.E. – ITS AND SIGNALS STRUCTURAL ENGINEER

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE

21-SEP-2023 08:22
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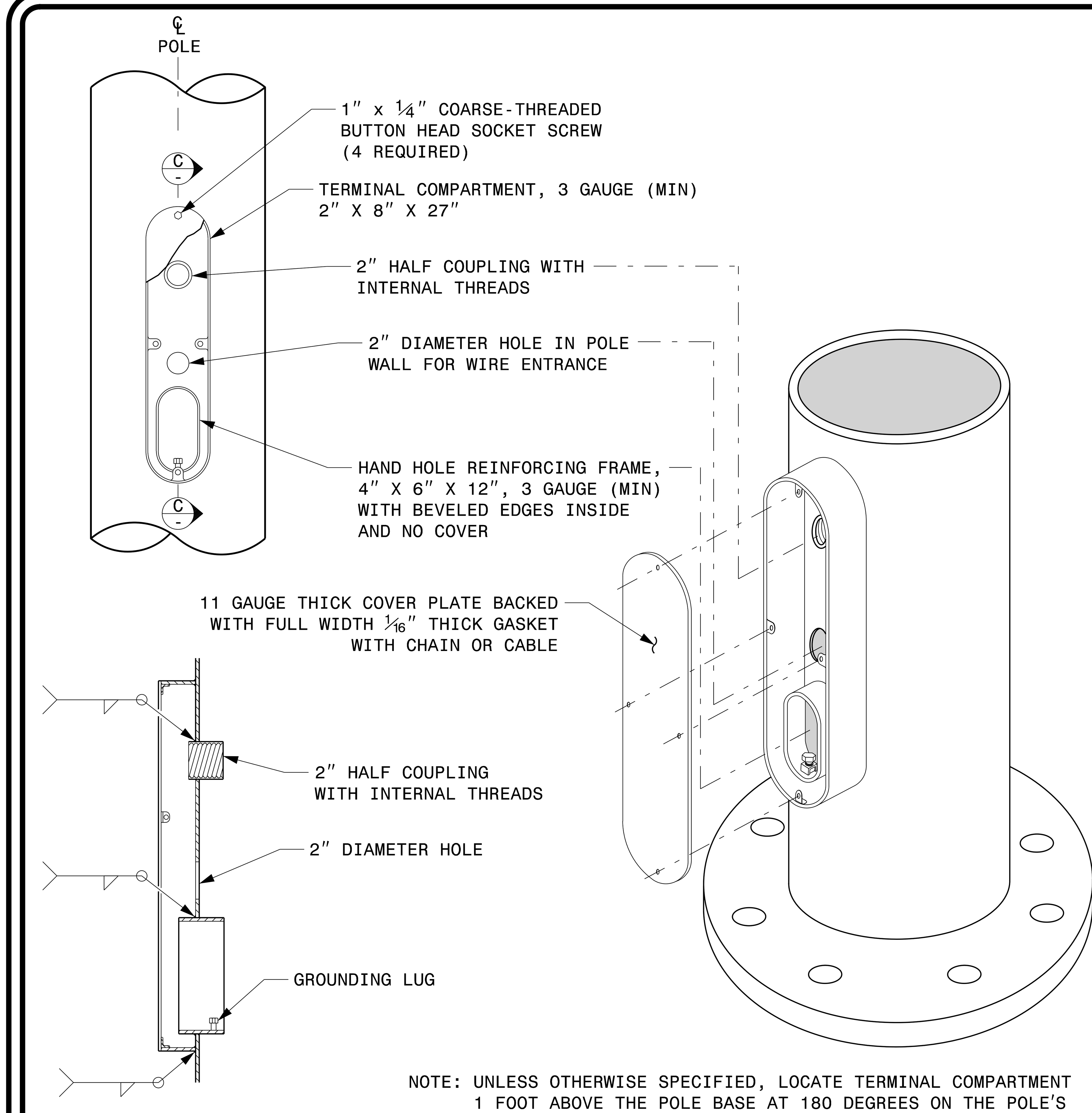
Kcdurigon

PROJECT I.D. NO.	SHEET NO.
U-5813	Sig.M2

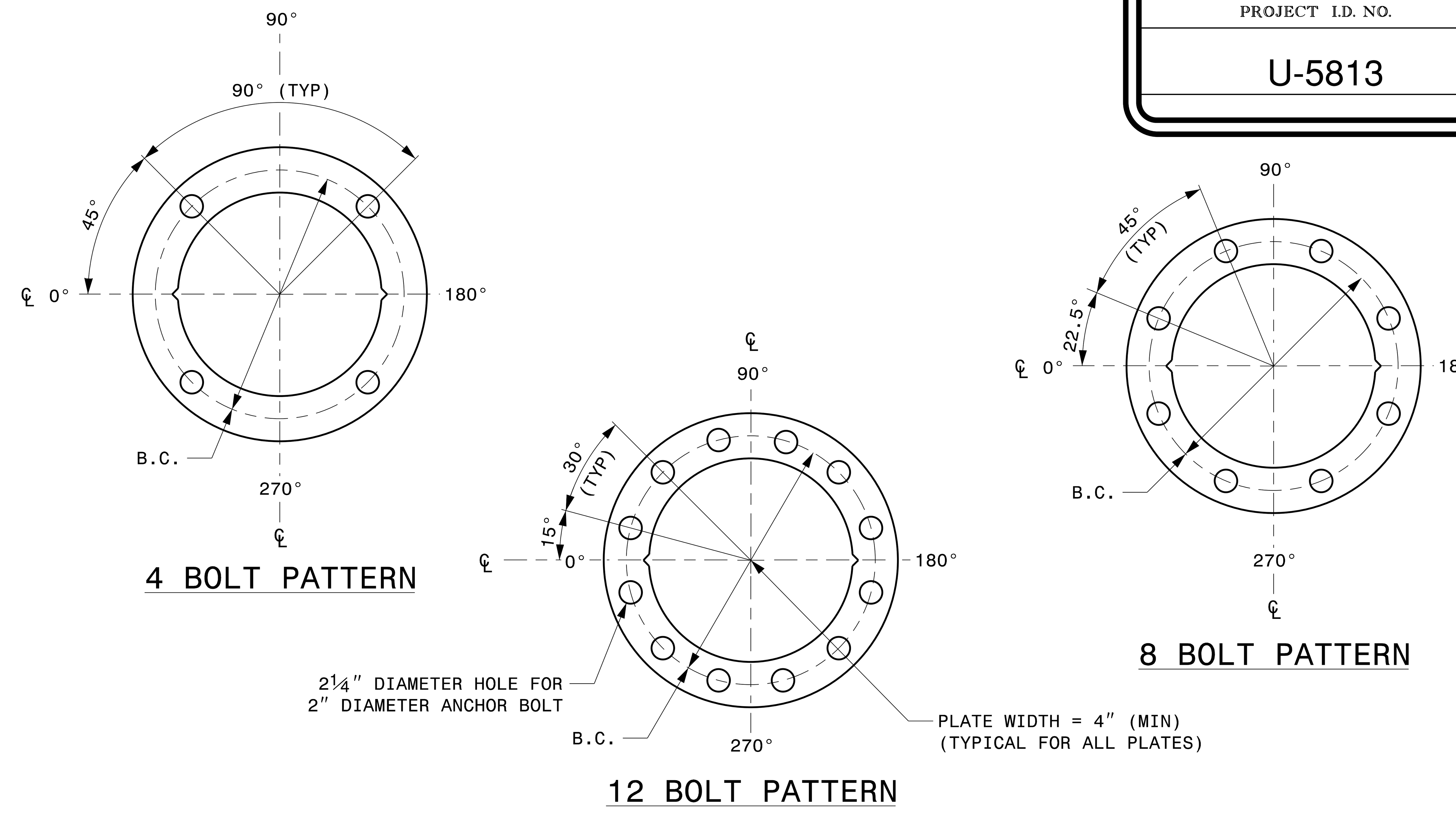
Fabrication Details – All Metal Poles



SECTION C-C

NOTE: UNLESS OTHERWISE SPECIFIED, LOCATE TERMINAL COMPARTMENT 1 FOOT ABOVE THE POLE BASE AT 180 DEGREES ON THE POLE'S RADIAL INDEX.

TERMINAL COMPARTMENT DETAIL



CONSTRUCT TEMPLATES AND PLATES FROM 1/4″ (MIN) THICK STEEL. GALVANIZING IS NOT REQUIRED.

BASE PLATE TEMPLATE AND ANCHOR BOLT LOCK PLATE DETAILS

MFG ________ MFG. DATE: MM/YY
SHAFT D/T/L/Y ----/----/----/----
ARM-A D/T/L/Y ----/----/----/----
----/----/----/----
ARM-B D/T/L/Y ----/----/----/----
----/----/----/----
A.B. DIA./B.C./L/Y ----/----/----/----
NCDOT SIG. INV. NO. __ __ __ __
NCDOT POLE NO. __ __ __ __

SHAFT I.D. TAG
(PROVIDE ON SHAFT OF STRAIN POLES AND MAST ARM POLE SHAFT)

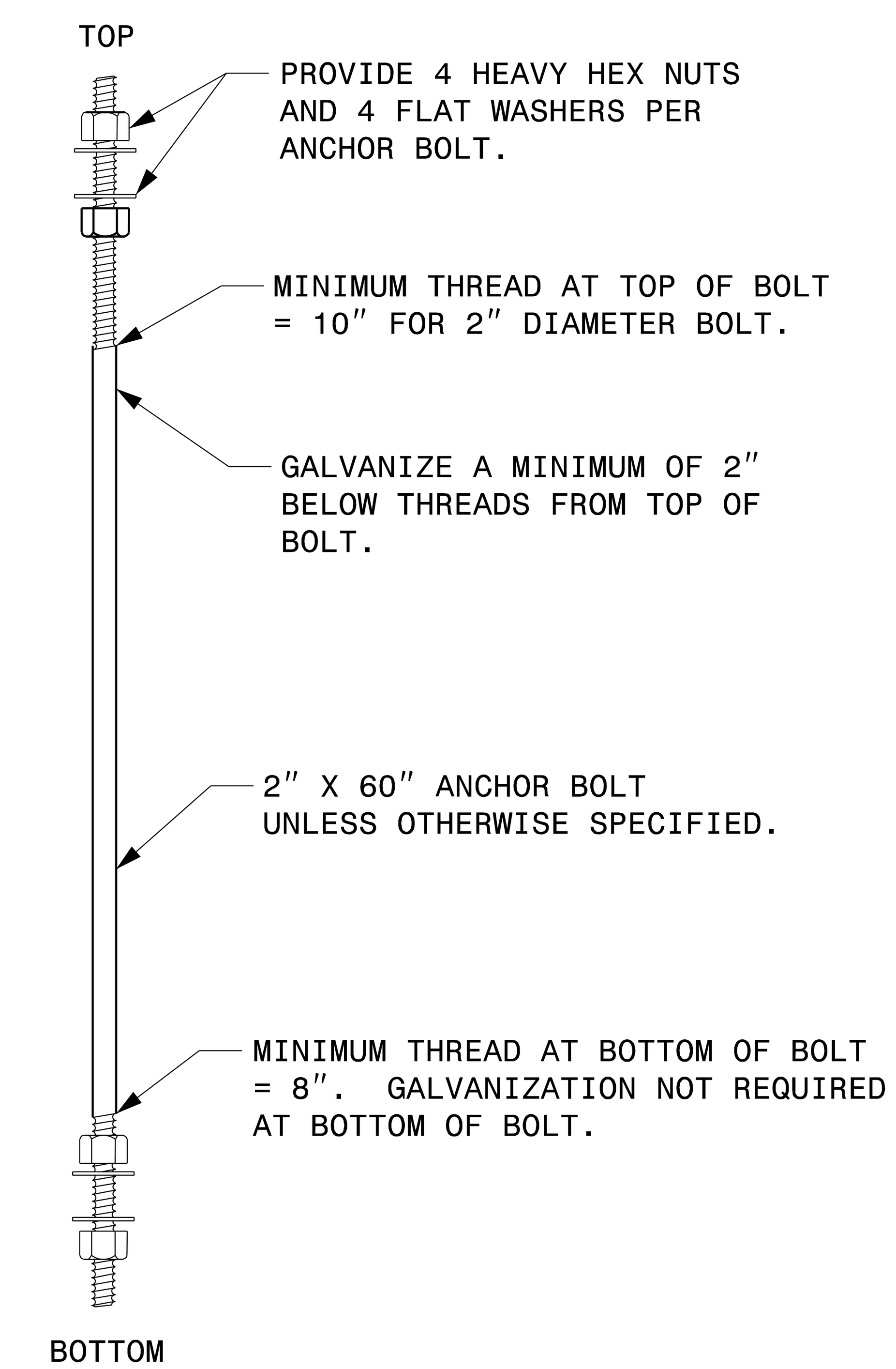
MFG ________ MFG. DATE: MM/YY
SECTION D/T/L/Y ----/----/----/----
NCDOT SIG. INV. NO. __ __ __ __
NCDOT POLE NO. __ __ __ __

ARM I.D. TAG
(PROVIDE ON EACH SECTION OF A MULTI-SECTION MAST ARM)

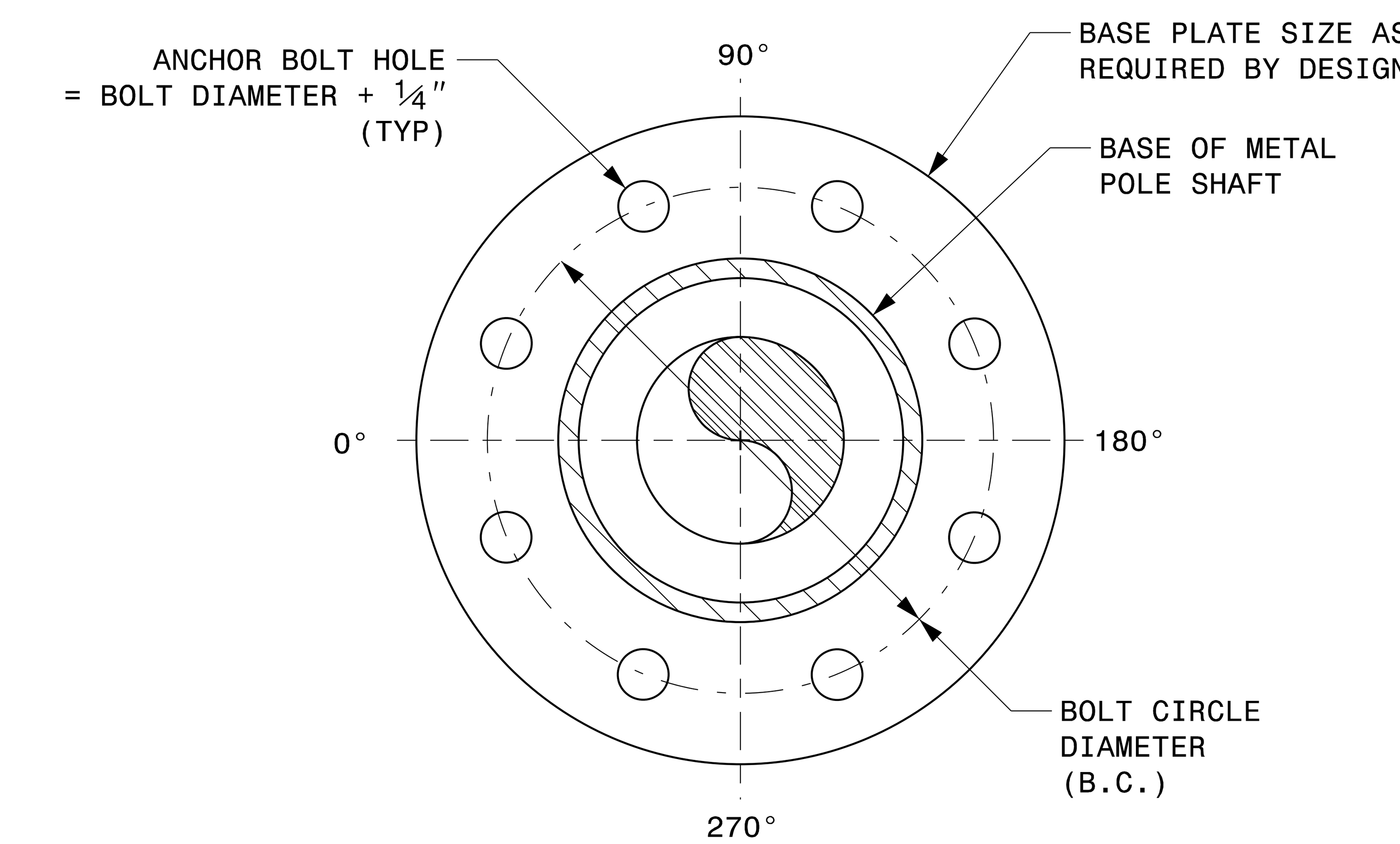
NOTES:

1. D = DIAMETER, T = THICKNESS, L = LENGTH, Y = YIELD STRENGTH
2. A.B. = ANCHOR BOLT
3. B.C. = BOLT CIRCLE OF ANCHOR BOLTS
4. IF STANDARD DESIGN, INCLUDE CASE NUMBER IN ADDITION TO POLE NUMBER ON "NCDOT POLE NO." LINE.
5. SIGNAL INV. NUMBER AND POLE I.D. NUMBER. SEE DRAWING M3 AND M4 FOR MOUNTING POSITIONS OF I.D. TAGS.

IDENTIFICATION TAG DETAILS



ANCHOR BOLT DETAIL



NOTE: BASE PLATE MAY BE CIRCULAR, OCTAGONAL, SQUARE OR RECTANGULAR IN SHAPE.

TYPICAL BASE PLATE DETAIL

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

SCALE 0 NA
NONE

Typical Fabrication Details
For
All Metal Poles

PLAN DATE: SEPTEMBER 2023	DESIGNED BY: C.F.ANDREWS
PREPARED BY: K.C. DURIGON	REVIEWED BY: D.C. SARKAR

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
09/21/2023
DATE

21-SEP-2023 07:56
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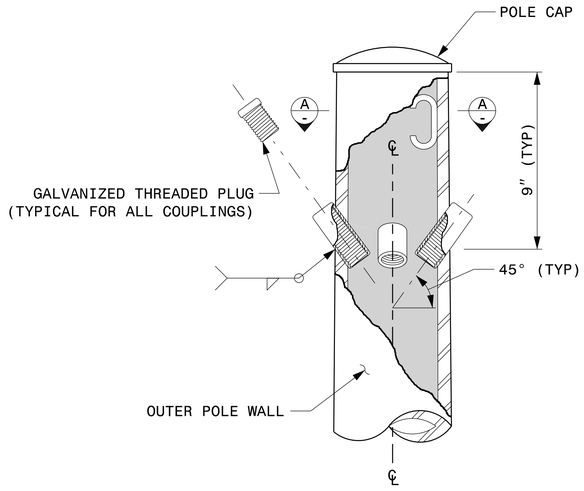
kcdurigon

PROJECT I.D. NO.	SHEET NO.
U-5813	Sig.M3

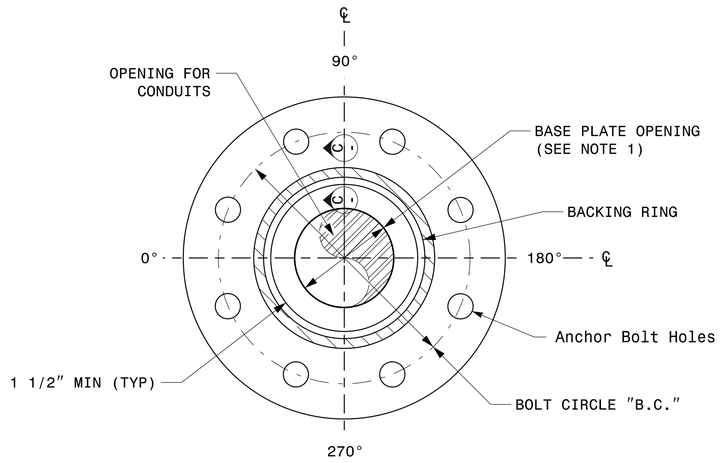
Fabrication Details – Strain Poles

NOTE:

1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3½" BUT SHALL NOT BE LESS THAN 8½".

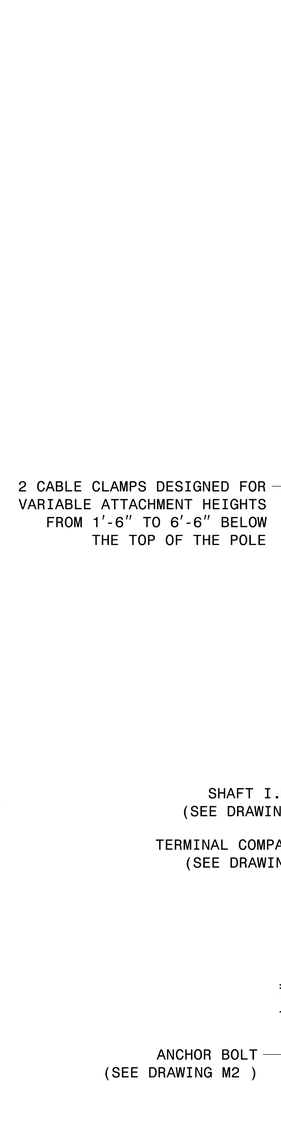


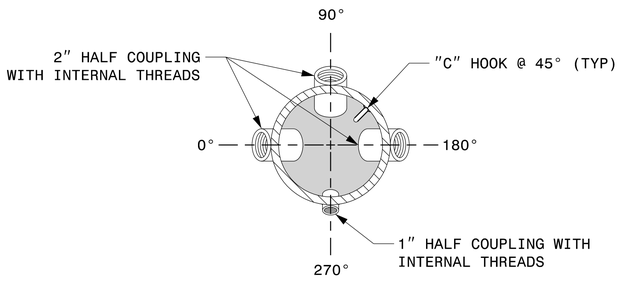
CABLE ENTRANCES AT TOP OF POLE



SECTION B-B

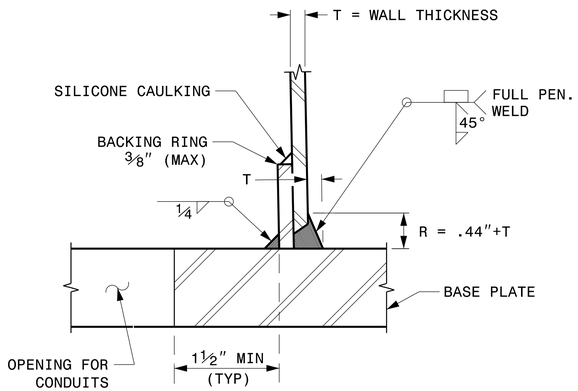
POLE BASE PLATE DETAILS
(8 AND 12 BOLT PATTERN)





SECTION A-A

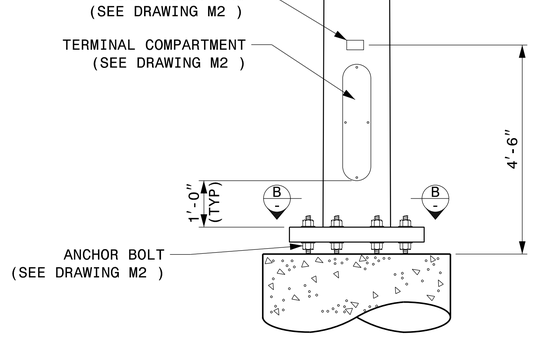
RADIAL ORIENTATION OF FACTORY INSTALLED ACCESSORIES AT TOP OF POLE



SECTION C-C

(POLE ATTACHMENT TO BASE PLATE)

FULL-PENETRATION GROOVE WELD DETAIL



MONOTUBE STRAIN POLE

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

SCALE
0 NA
NONE

Typical Fabrication Details
For
Strain Poles

PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON
PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL 036626
ENGINEER
KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
09/21/2023
DATE

21-SEP-2023 07:58
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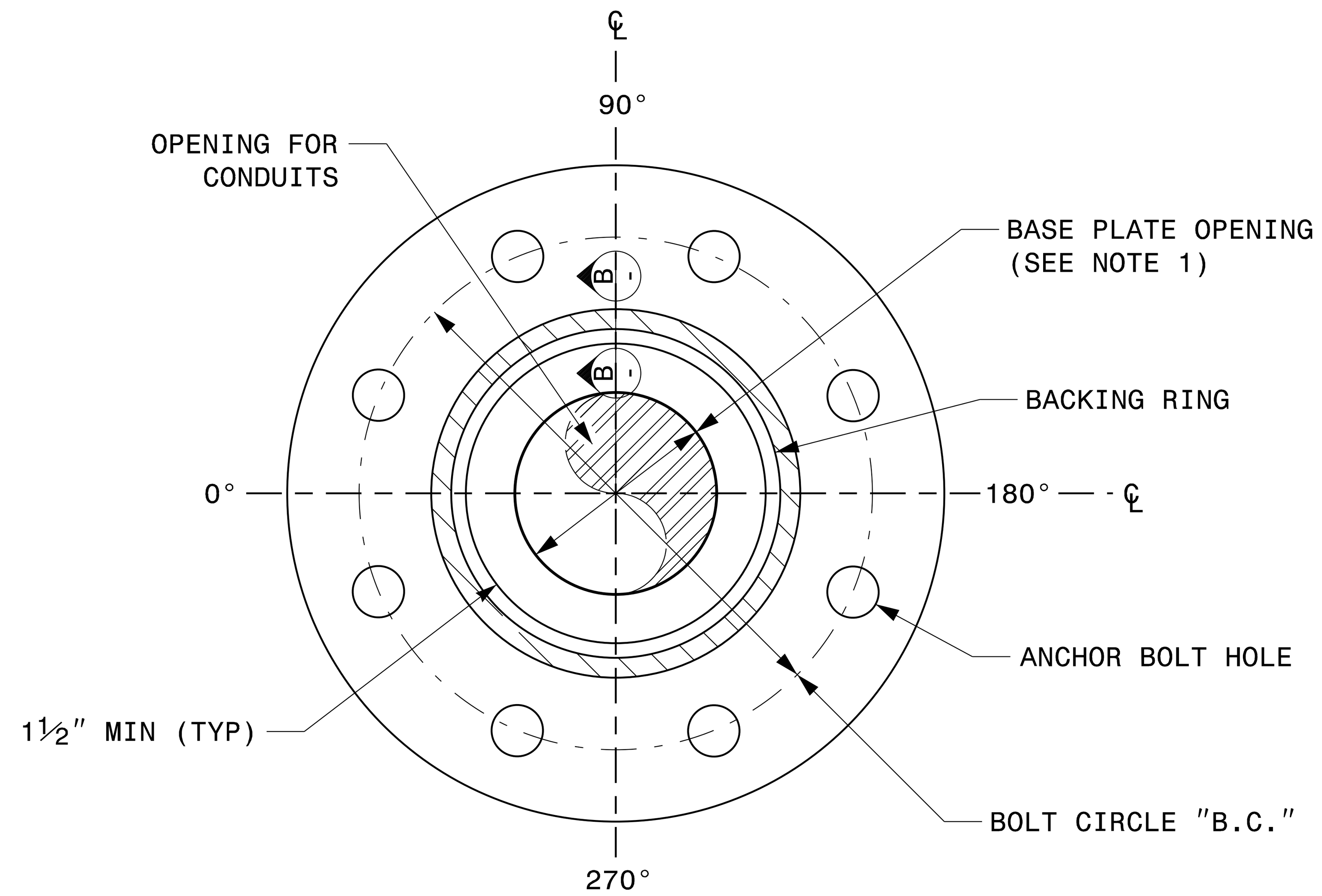
kdurigon

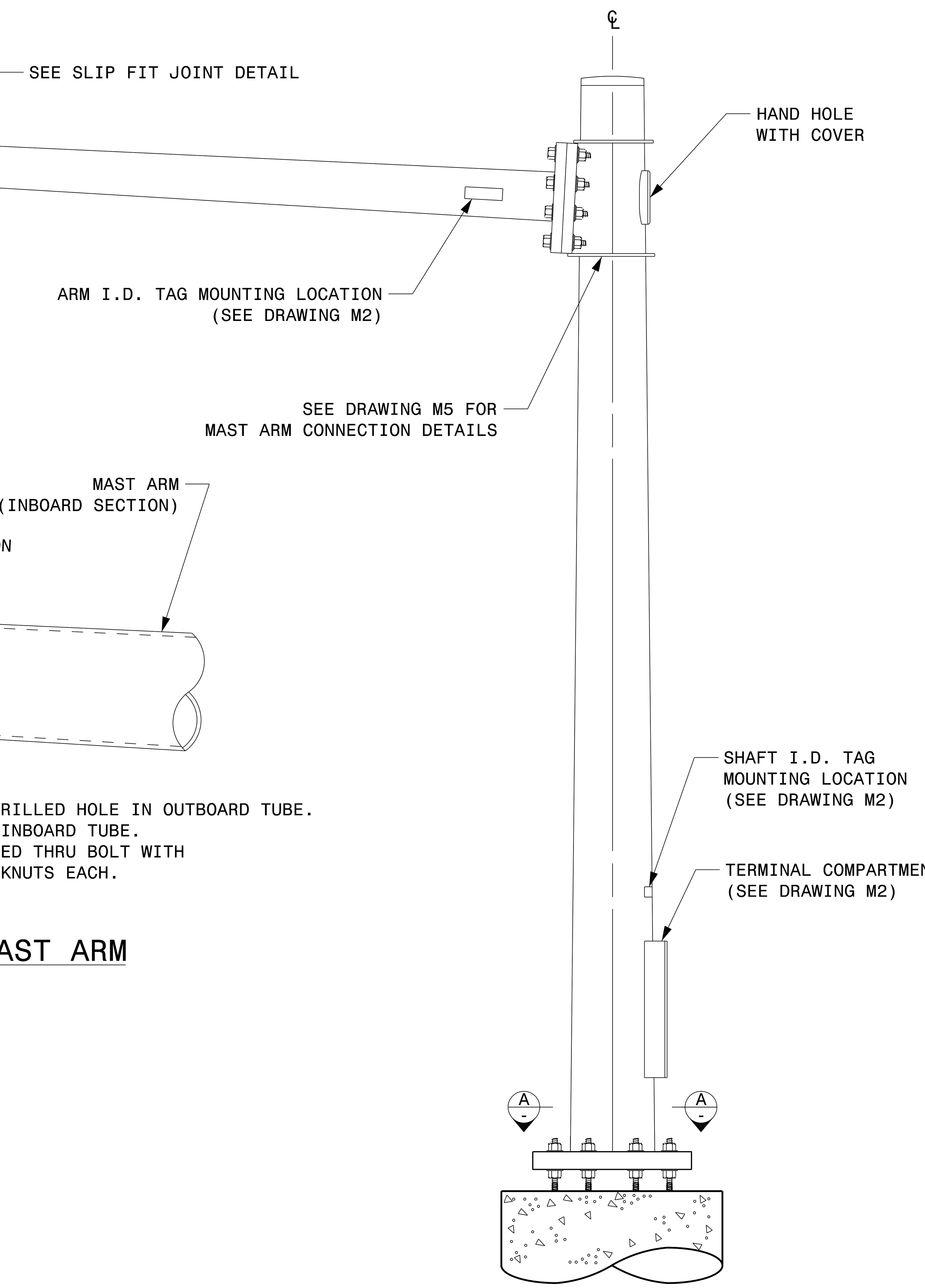
PROJECT I.D. NO.	SHEET NO.
U-5813	Sig.M4

NOTE:

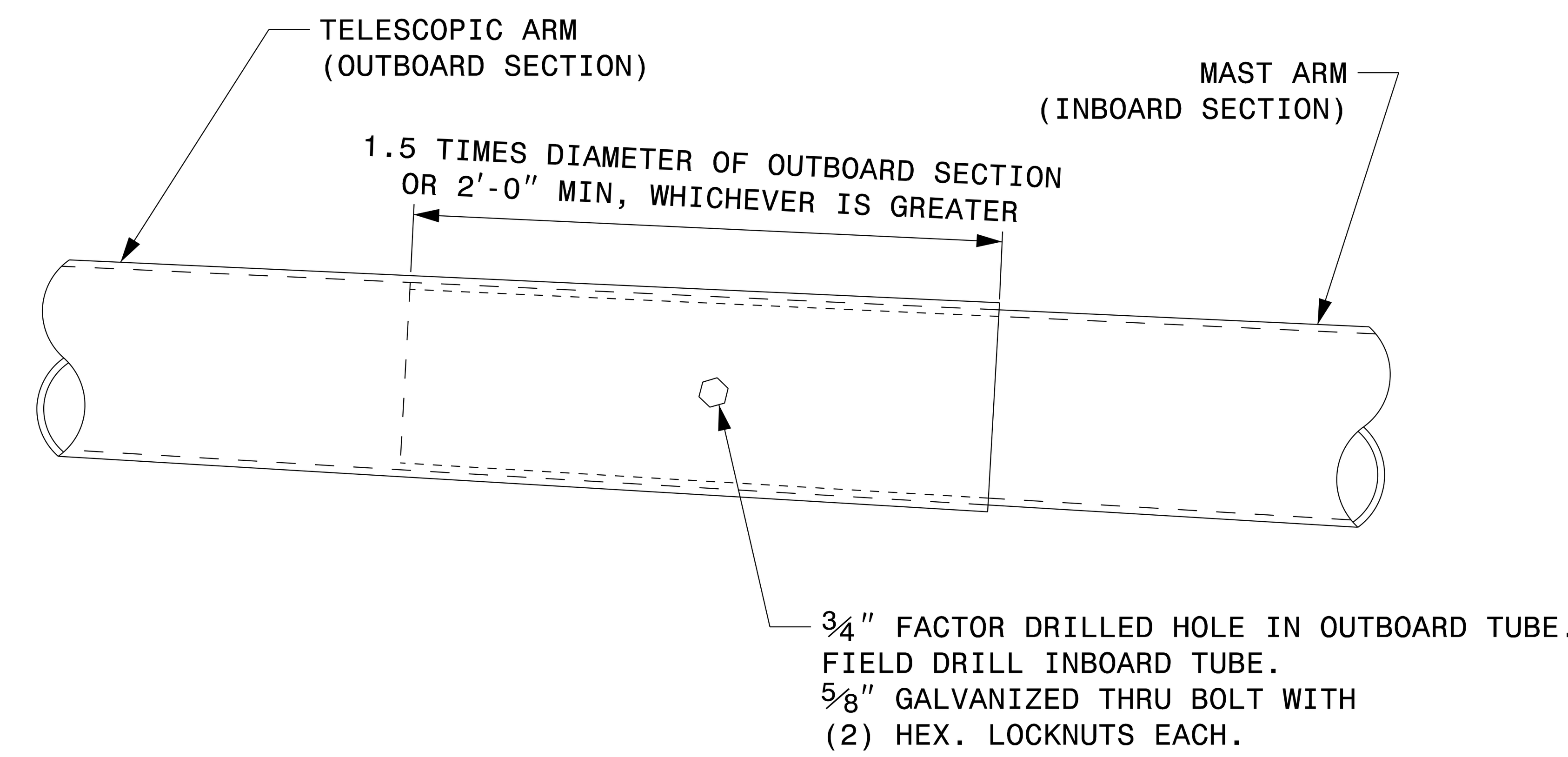
1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3½" BUT SHALL NOT BE LESS THAN 8½".



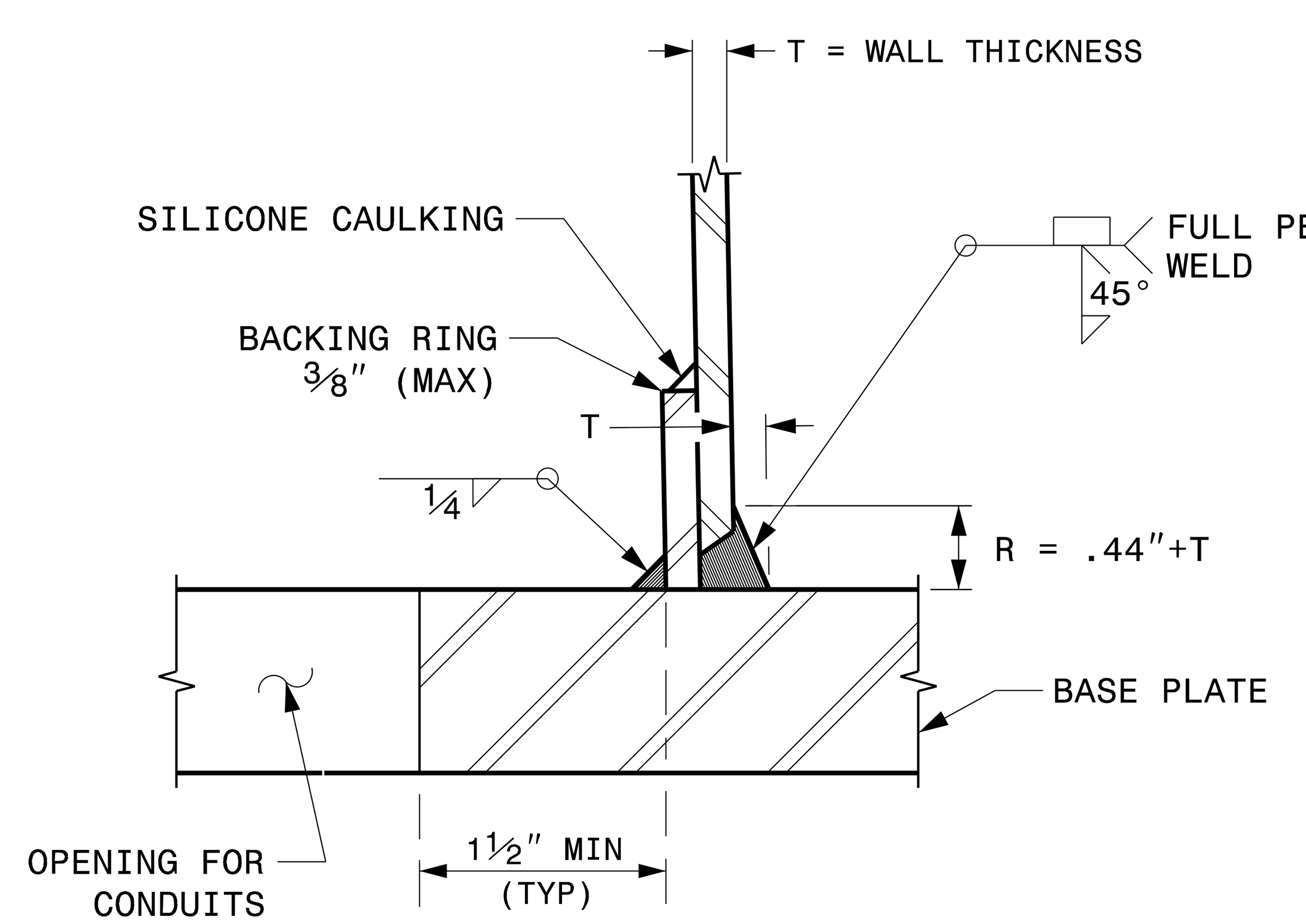
SECTION A-A
POLE BASE PLATE DETAILS



MAST ARM POLE

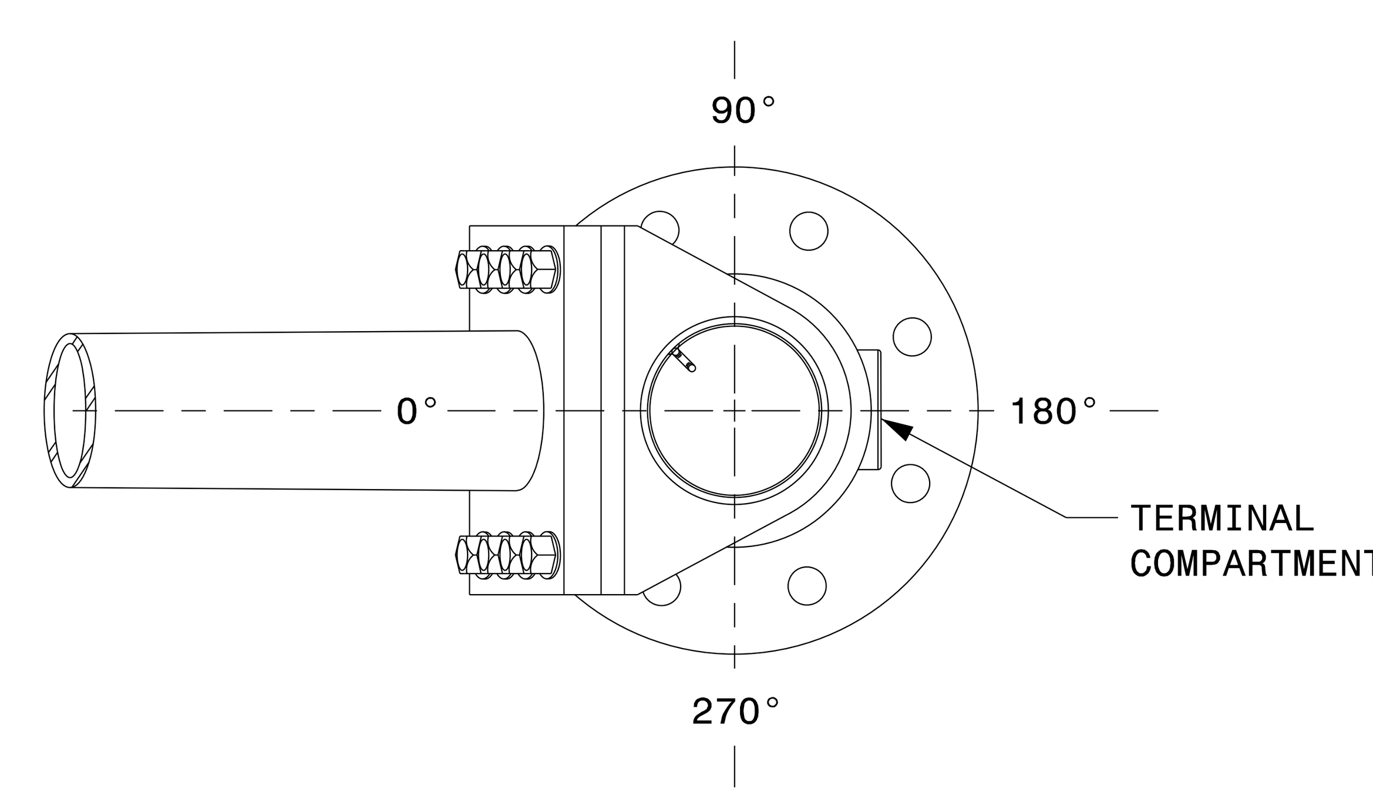


SLIP FIT JOINT DETAIL FOR MAST ARM



SECTION B-B
(POLE ATTACHMENT TO BASE PLATE)

FULL-PENETRATION
GROOVE WELD DETAIL



MAST ARM RADIAL ORIENTATION

Fabrication Details – Mast Arm Poles

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

SCALE 0 NA
NONE

Typical Fabrication Details
For
Mast Arm Poles

PLAN DATE: SEPTEMBER 2023	DESIGNED BY: K.C. DURIGON
PREPARED BY: K.C. DURIGON	REVIEWED BY: D.C. SARKAR

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
09/21/2023
DATE

21-SEP-2023 08:00
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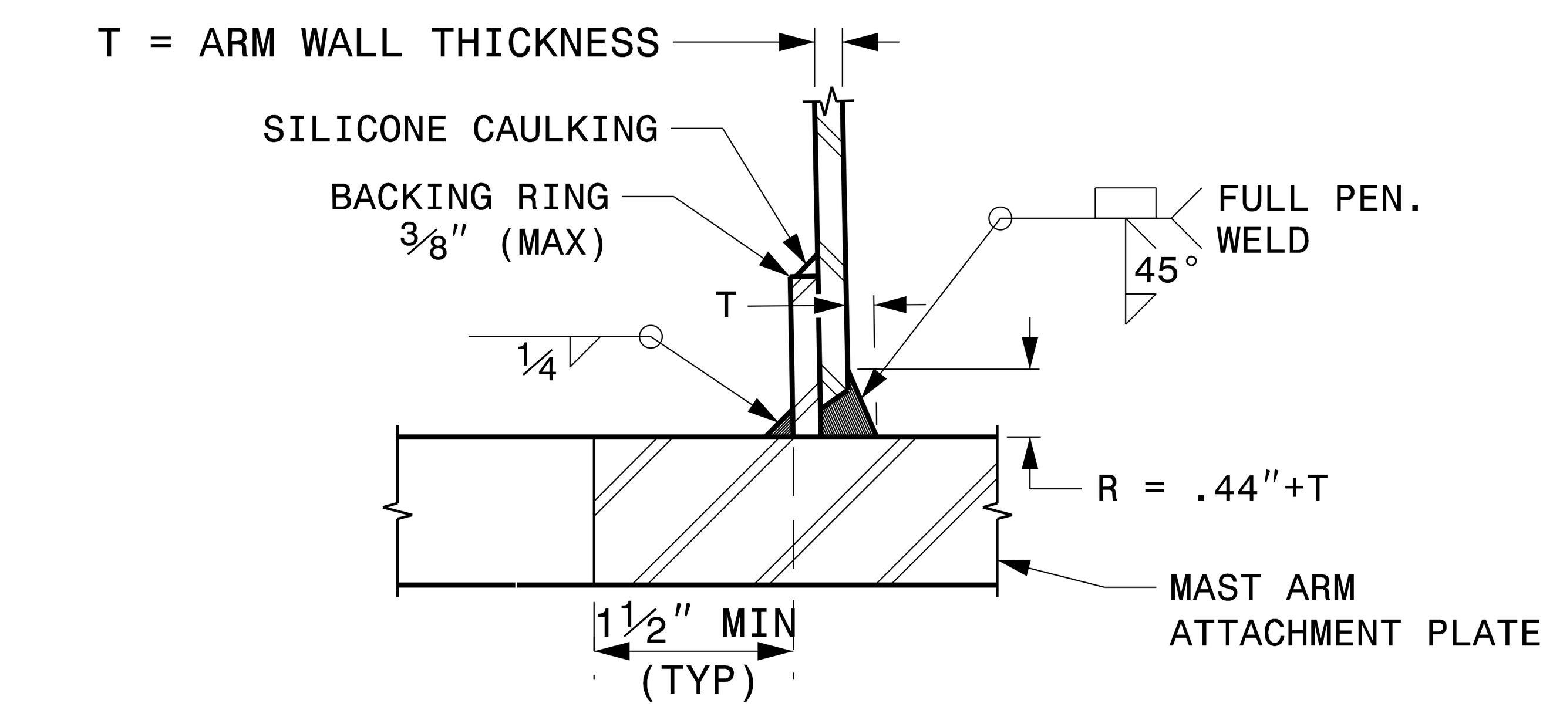
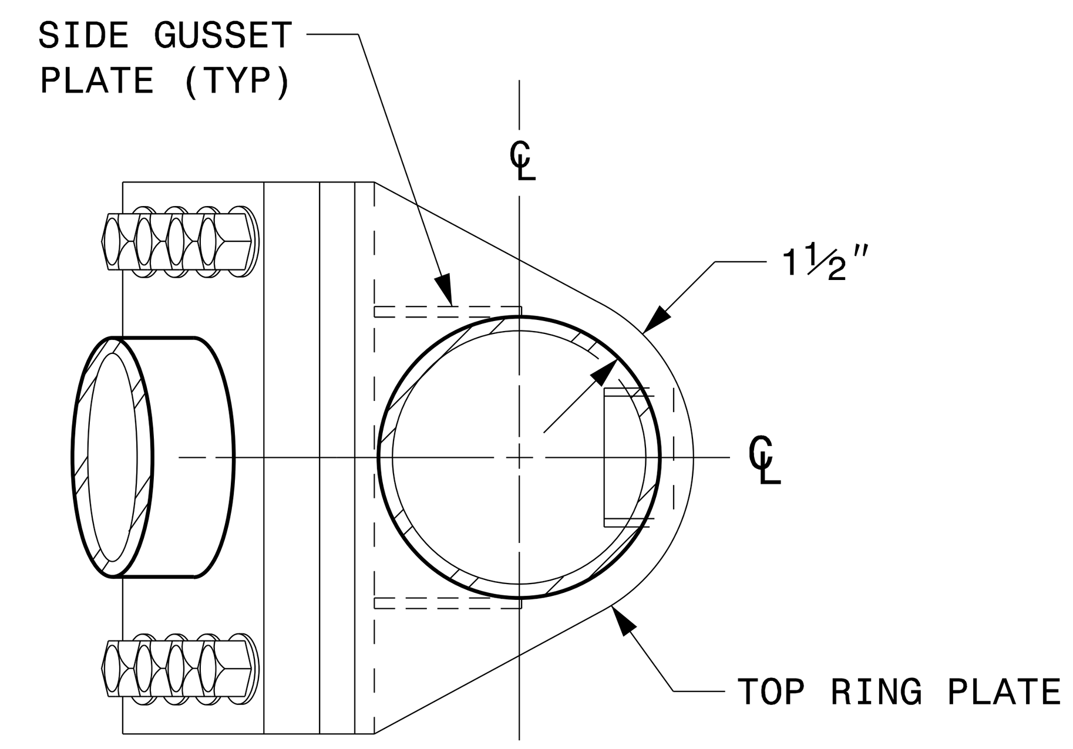
kcdurigon

WELDED RING STIFFENED MAST ARM CONNECTION

PROJECT I.D. NO.	SHEET NO.
U-5813	Sig.M5



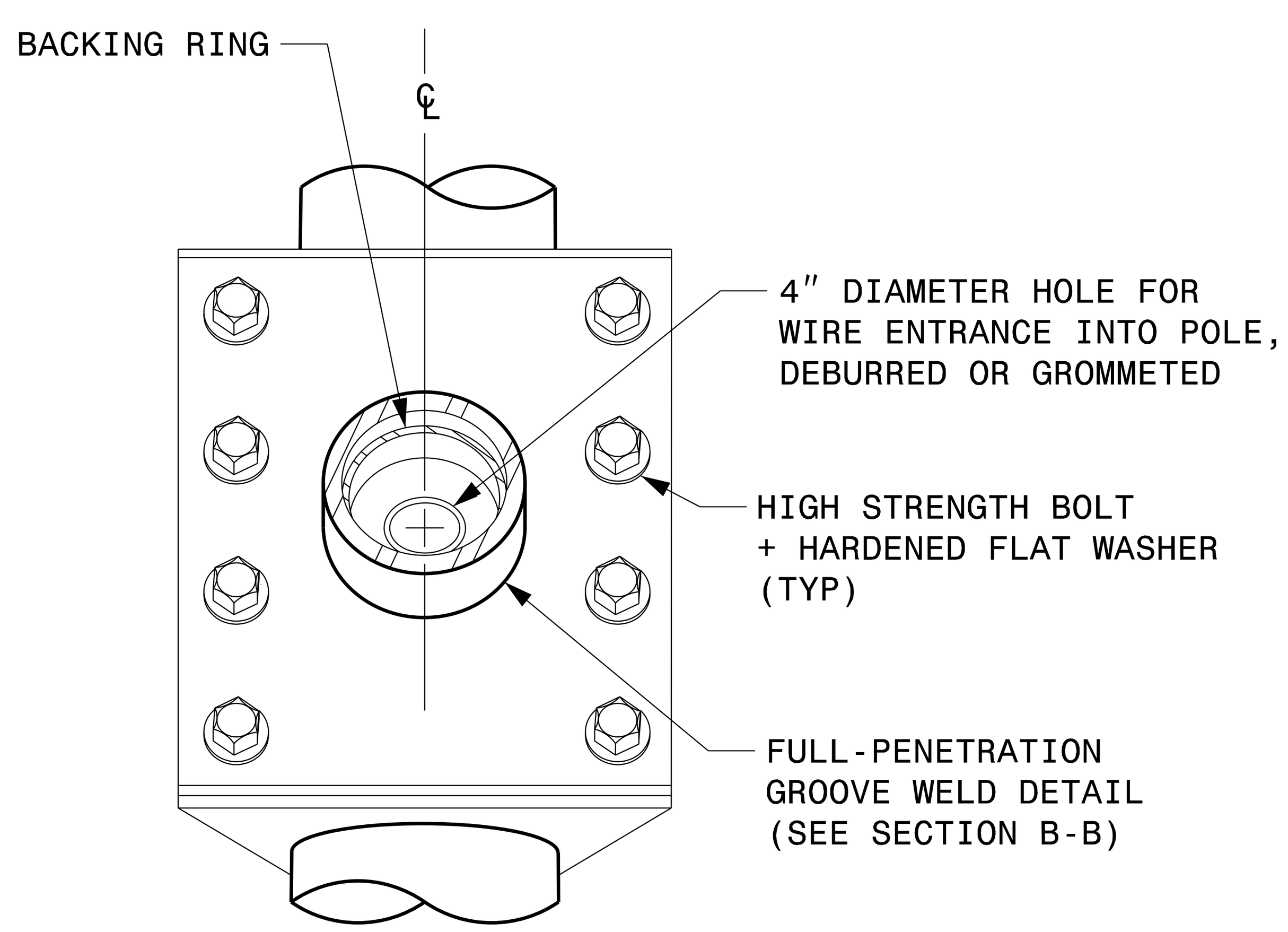
SECTION B-B
FULL-PENETRATION GROOVE WELD DETAIL



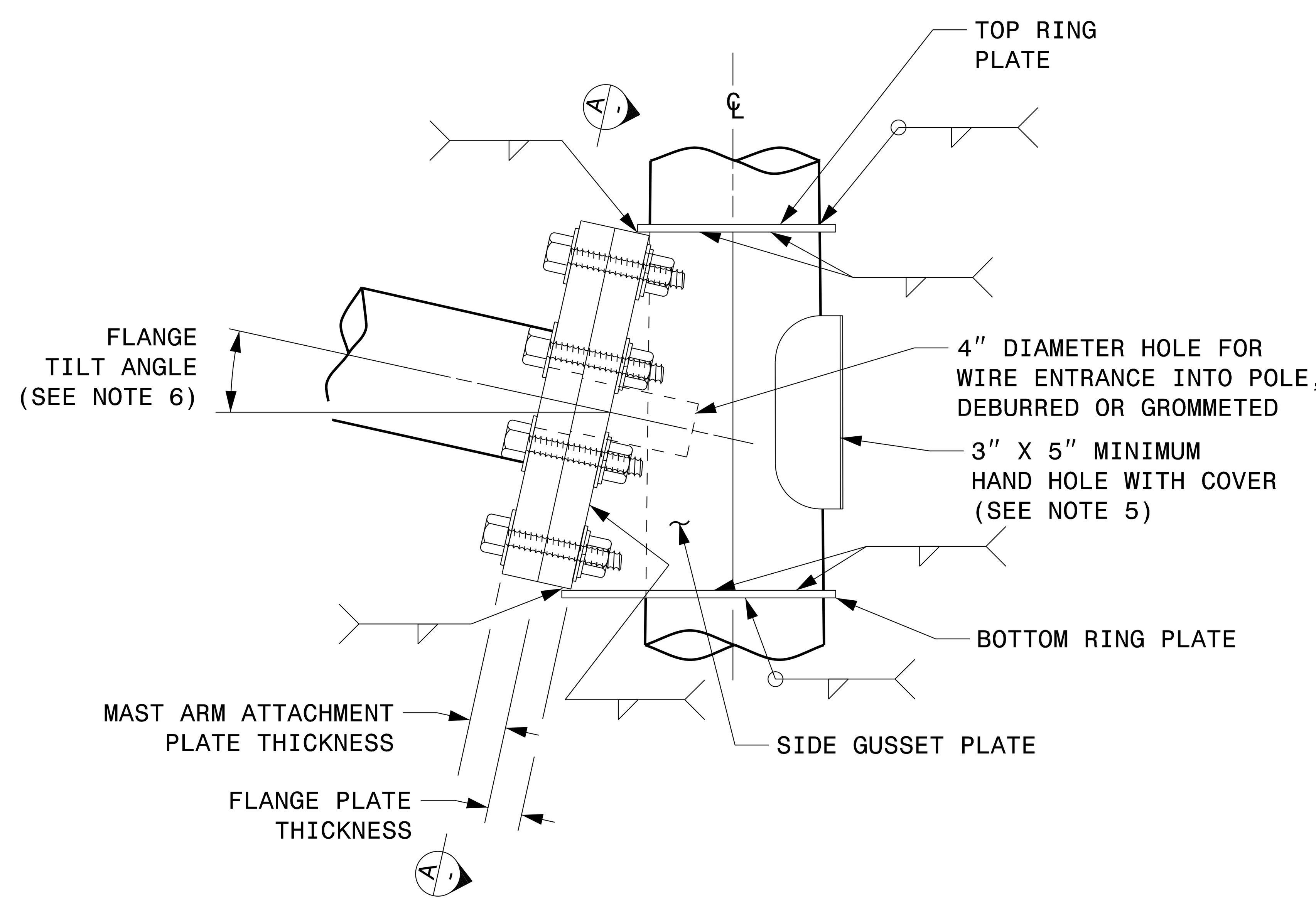
PLAN VIEW

NOTES:

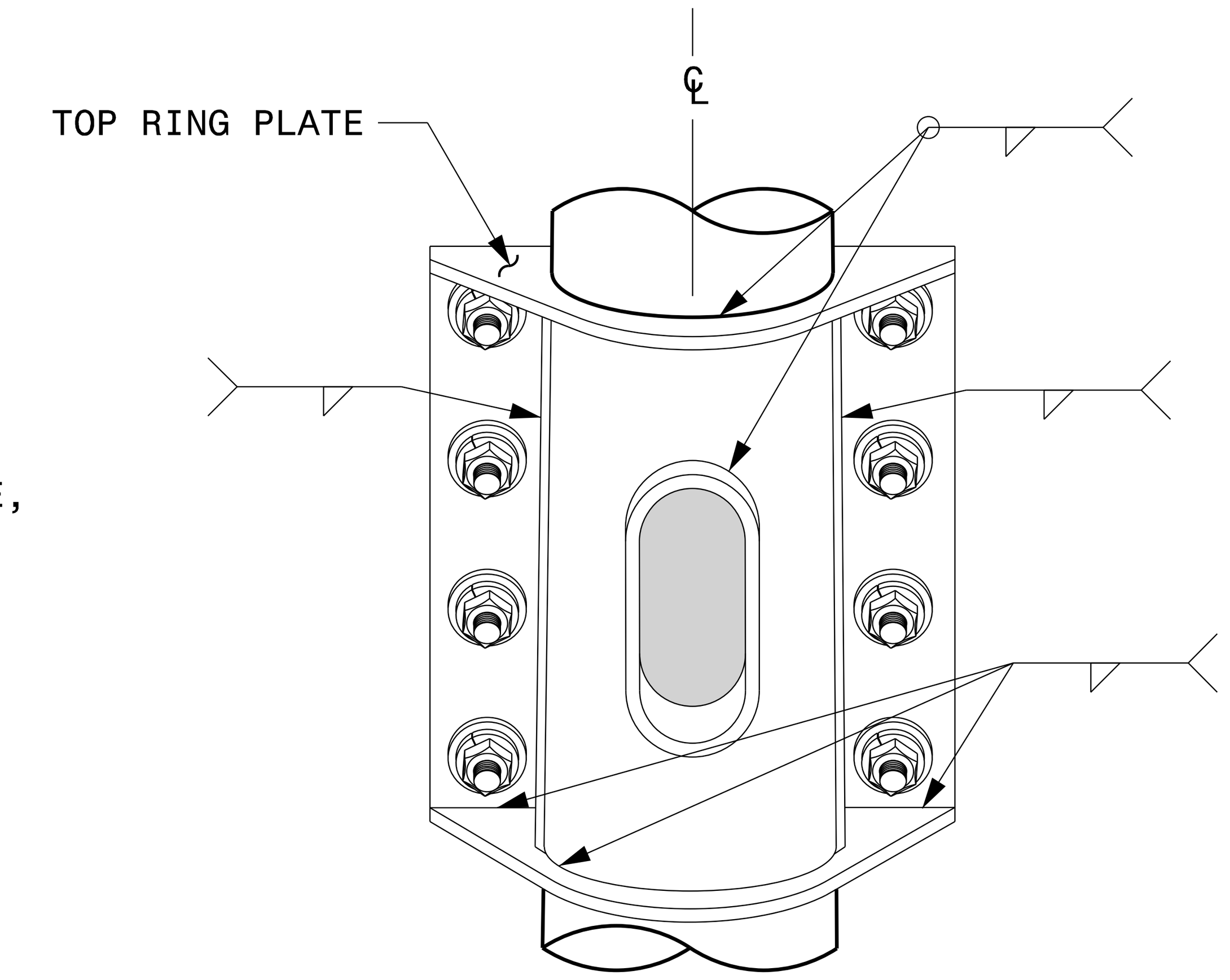
1. PROVIDE A PERMANENT MEANS OF IDENTIFICATION ABOVE THE MAST ARM TO INDICATE PROPER ATTACHMENT ORIENTATION OF THE MAST ARM.
2. DESIGNER WILL DETERMINE THE SIZE OF ALL STRUCTURAL COMPONENTS, PLATES, FASTENERS, AND WELDS SHOWN UNLESS THEY ARE ALREADY SPECIFIED.
3. FABRICATOR IS RESPONSIBLE FOR PROVIDING APPROPRIATE HOLES AT DRAINAGE POINTS TO DRAIN GALVANIZING MATERIALS.
4. FOR MINIMUM EDGE DISTANCE AND NOMINAL BOLT HOLE SIZE, FOLLOW THE LATEST AISC STEEL CONSTRUCTION MANUAL.
5. PROVIDE UPPER HANDHOLE AS NECESSARY WHEN SHAFT EXTENSIONS ARE REQUIRED FOR LUMINAIRE ARMS OR CAMERA. FOR POLES WITHOUT LUMINAIRES/CAMERA, WIRING CAN BE DONE THROUGH THE TOP OF POLE.
6. ALLOWABLE RANGE OF FLANGE TILT ANGLE WILL VARY FROM 0° TO AS REQUIRED.



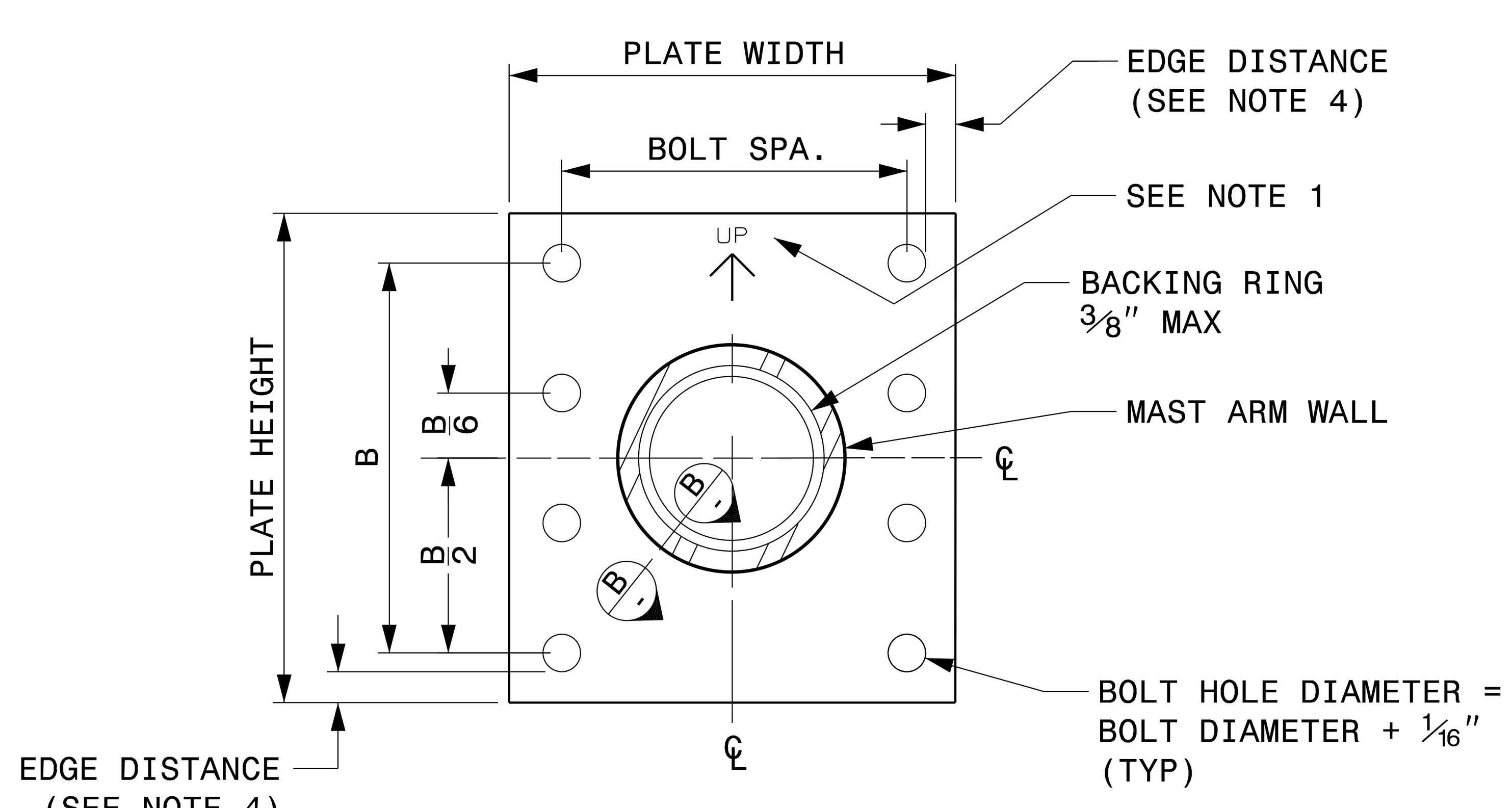
FRONT ELEVATION VIEW



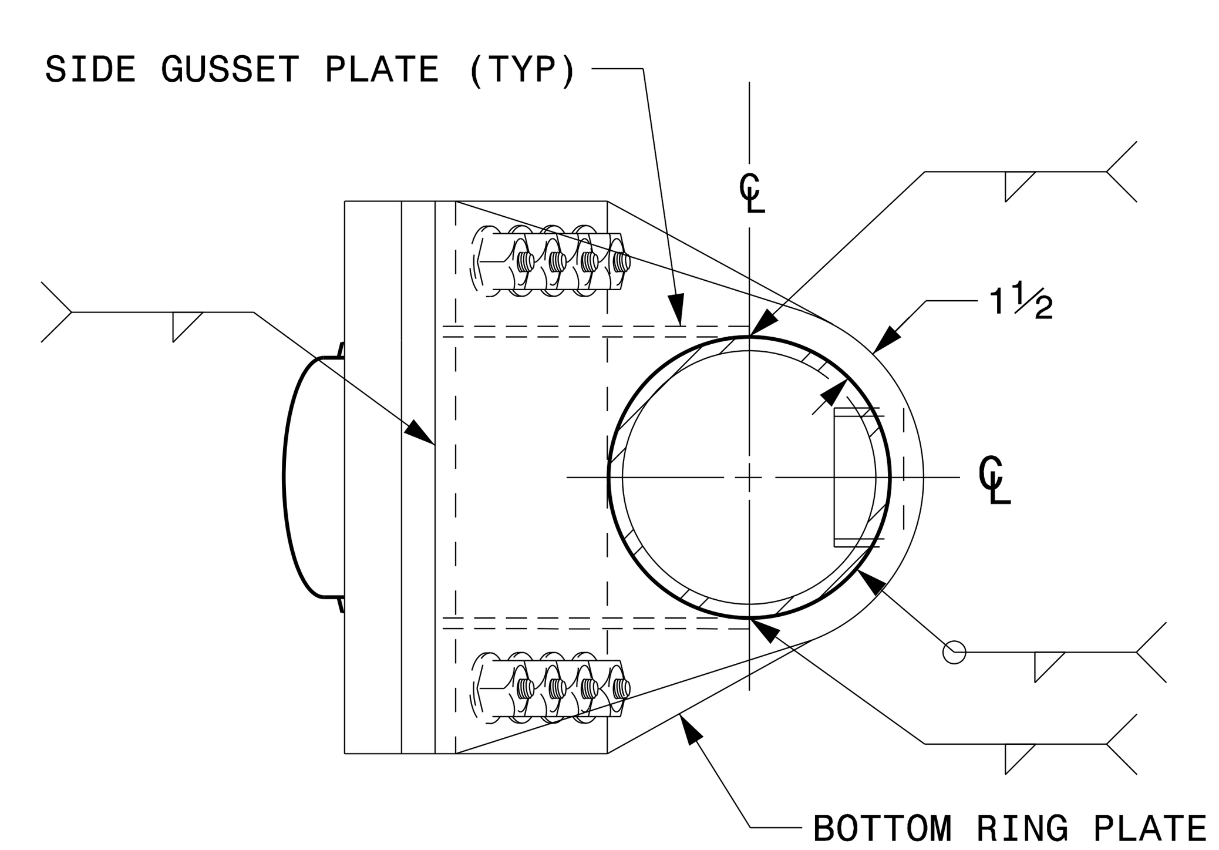
SIDE ELEVATION VIEW



BACK ELEVATION VIEW



SECTION A-A
MAST ARM ATTACHMENT PLATE



BOTTOM VIEW

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

SCALE
0 NA
NONE

Typical Fabrication Details
For
Mast Arm Connection To Pole

PLAN DATE:	SEPTEMBER 2023	DESIGNED BY:	C.F. ANDREWS
PREPARED BY:	K.C. DURIGON	REVIEWED BY:	D.C. SARKAR

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036626 KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
09/21/2023
DATE

Fabrication Details – Mast Arm Connection

21-SEP-2023 08:01
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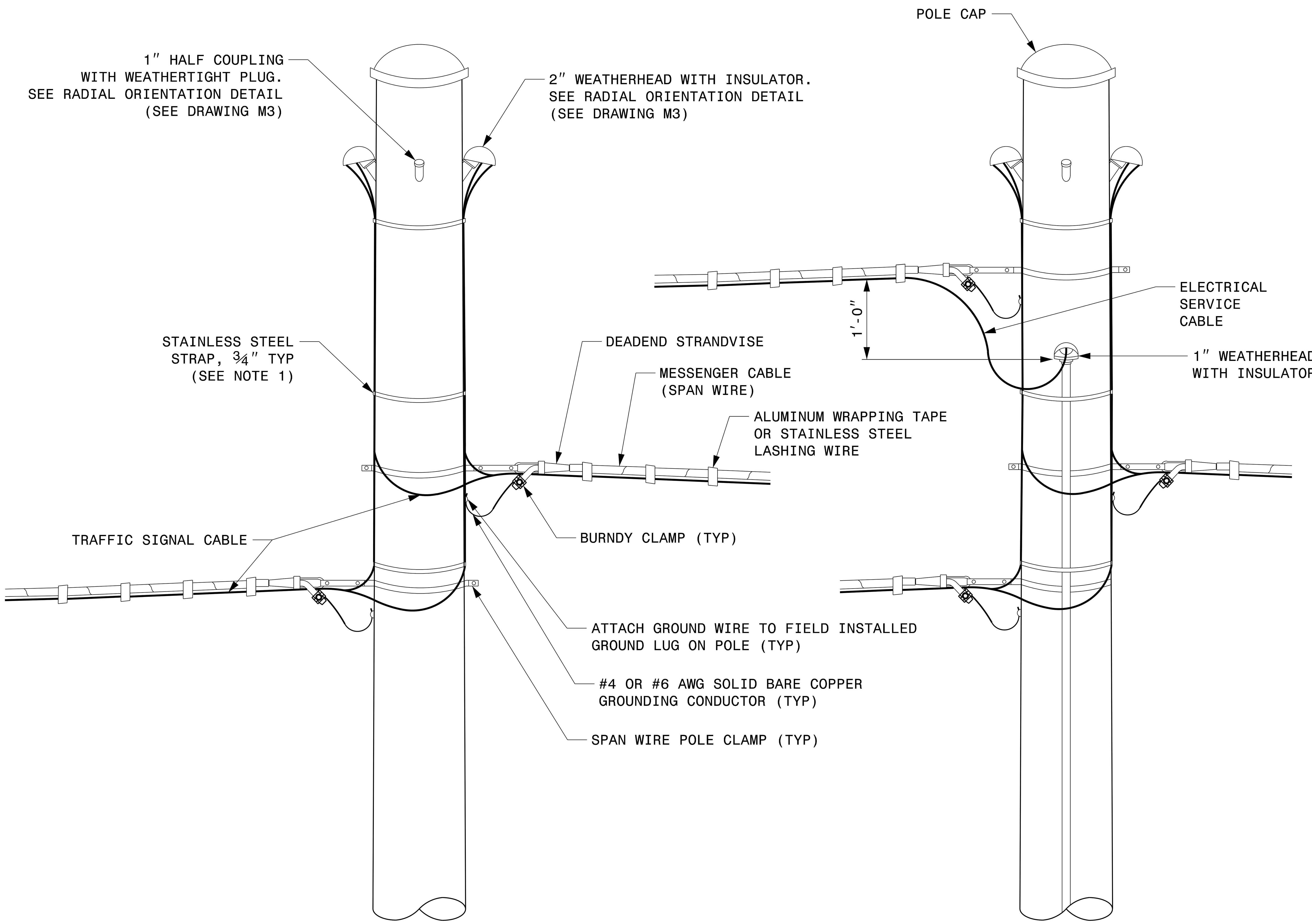
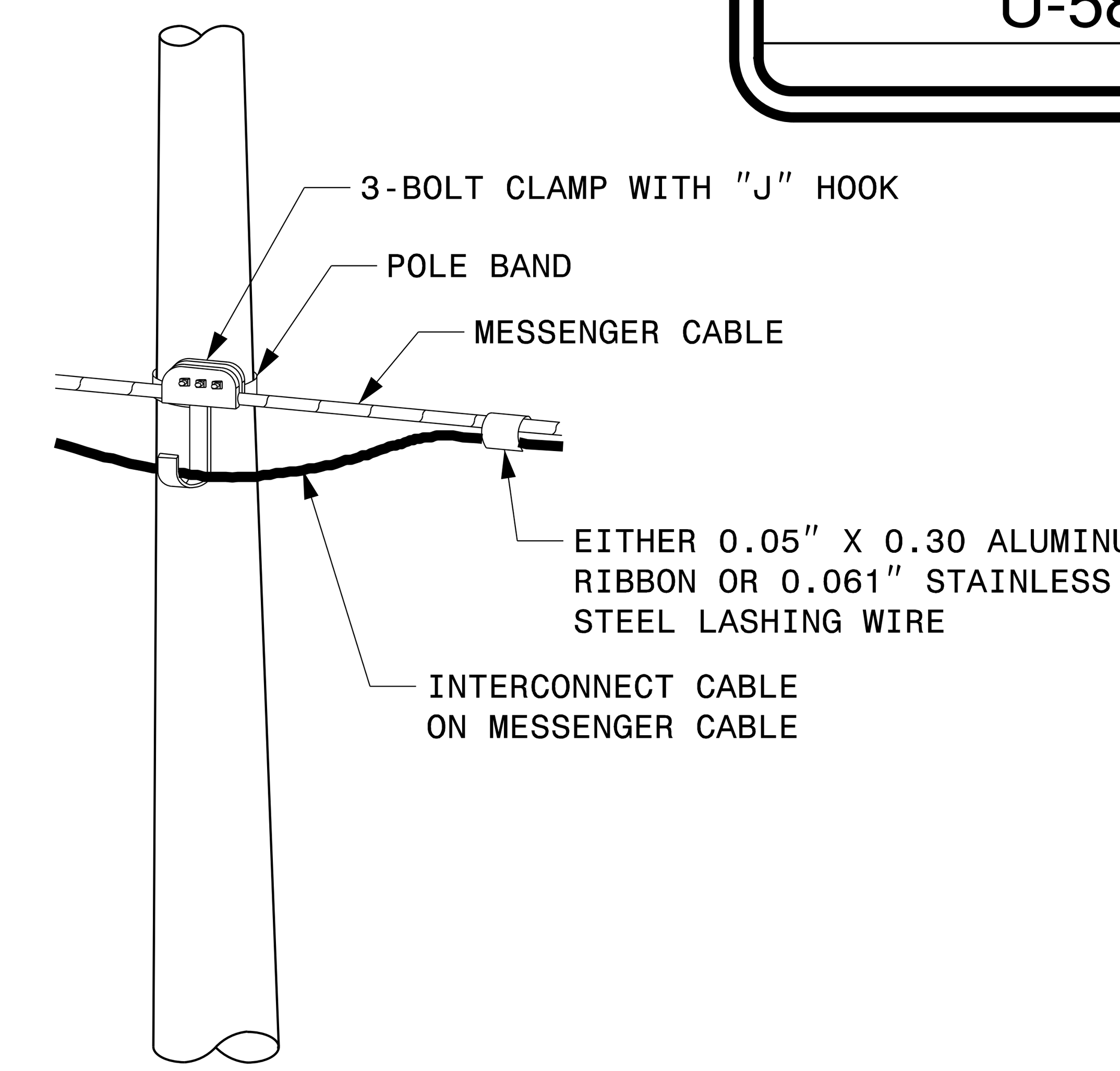
kcdurigon

PROJECT I.D. NO.	SHEET NO.
U-5813	Sig.M6

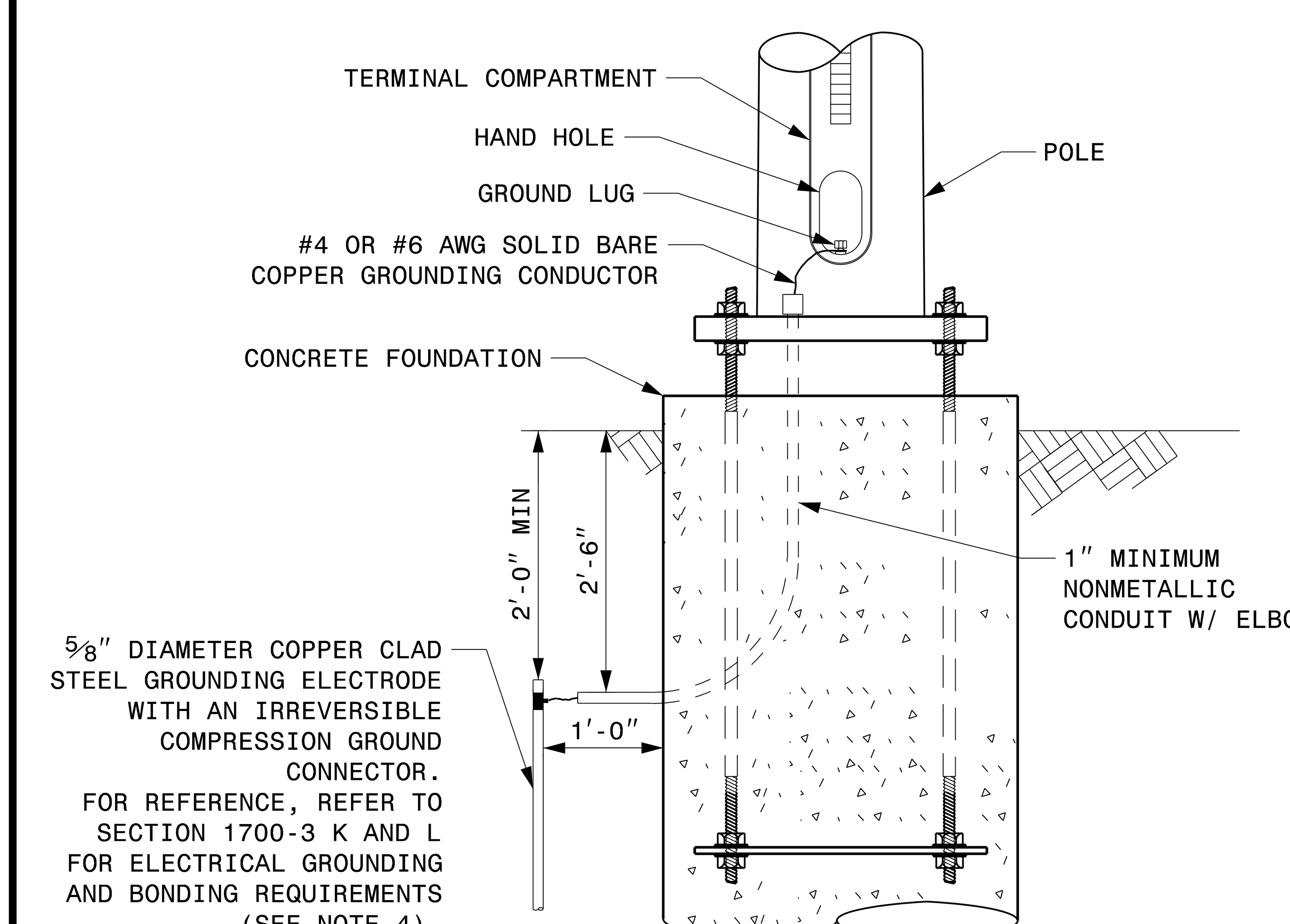
Fabrication Details – Strain Pole Attachments



STRAIN POLE ATTACHMENTS



ATTACHMENT OF CABLE TO INTERMEDIATE METAL POLE



METAL POLE GROUNDING DETAIL FOR STRAIN POLE AND MAST ARM

NOTES:

1. STRAP ALL SIGNAL CABLES TO THE SIDE OF THE POLE WITH 3/4" STAINLESS STEEL STRAPS WHEN THE DISTANCE BETWEEN SPAN WIRE ATTACHMENT CLAMP AND WEATHERHEADS EXCEEDS 3'-0".
2. PROVIDE MINIMUM TWO SPAN WIRE POLE CLAMPS PER POLE.
3. IT IS PROHIBITED TO ATTACH TWO SPAN WIRES AT ONE POLE CLAMP.
4. FOR GENERAL REQUIREMENTS, REFER TO NCDOT STANDARD SPECIFICATIONS FOR ROADWAY AND STRUCTURES, JANUARY 2024.

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

Typical Fabrication Details For Strain Pole Attachments

PLAN DATE:	SEPTEMBER 2023	DESIGNED BY:	C.F. ANDREWS
PREPARED BY:	K.C. DURIGON	REVIEWED BY:	D.C. SARKAR

SCALE: 0 NA — NONE

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON
DocuSigned by: Kevin Durigon
SIGNATURE 09/21/2023 DATE

21-SEP-2023 08:03
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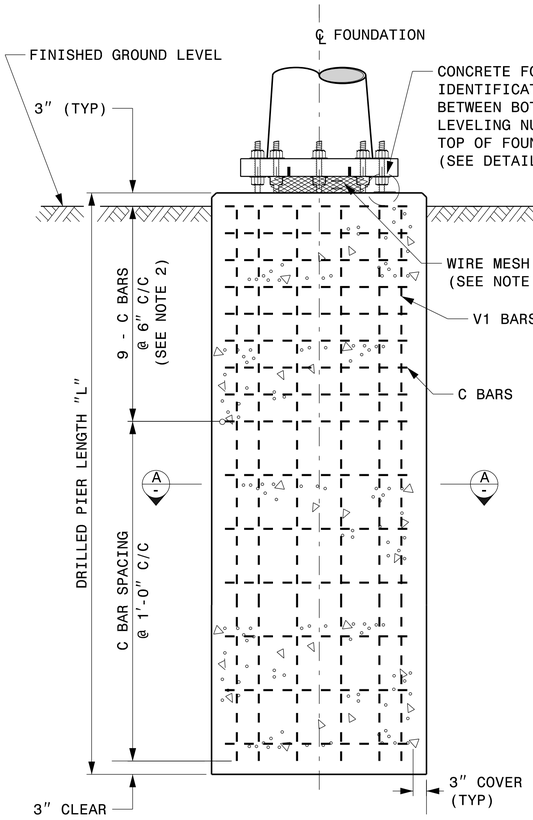
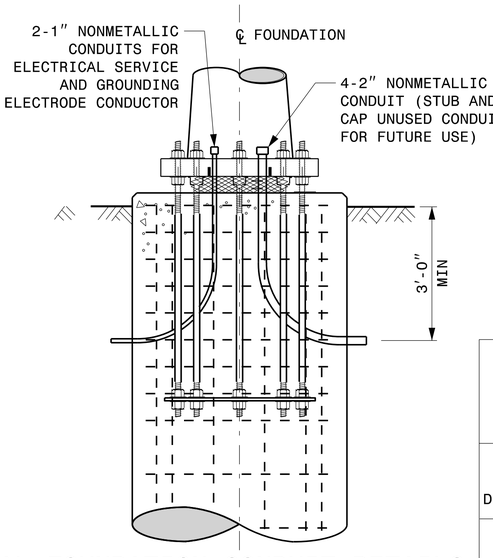
kcdurigon

PROJECT I.D. NO.	SHEET NO.
U-5813	Sig.M7

Construction Details — Foundations



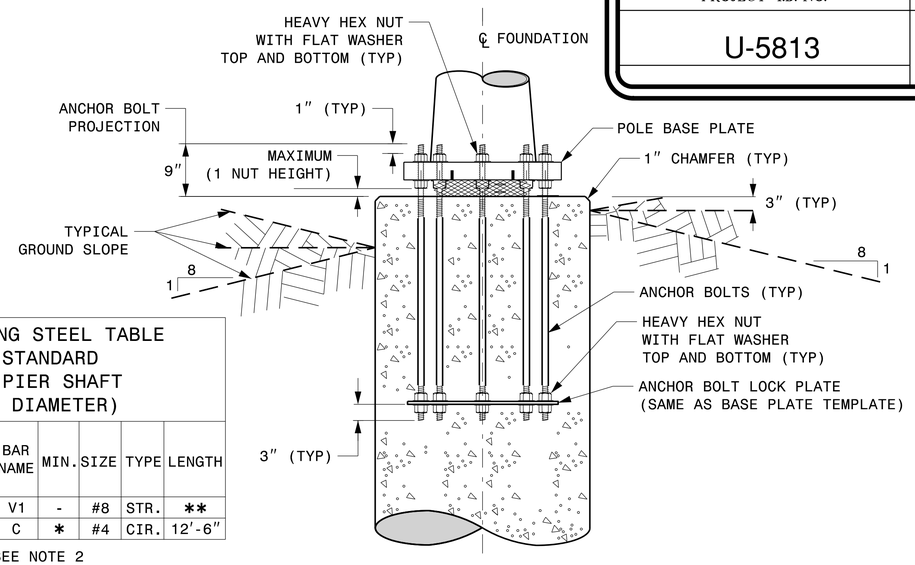
CONCRETE SHAFT ELEVATION



TYPICAL FOUNDATION CONDUIT DETAILS

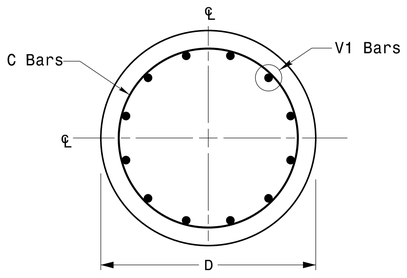
REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (4′-0″ DIAMETER)						
"D" SHAFT DIAMETER	CONCRETE VOLUME (CU. YDS)	BAR NAME	MIN.	SIZE	TYPE	LENGTH
4′-0″	.465 X L	V1	-	#8	STR.	**
		C	*	#4	CIR.	12′-6″

* SEE NOTE 2
** SEE NOTE 3

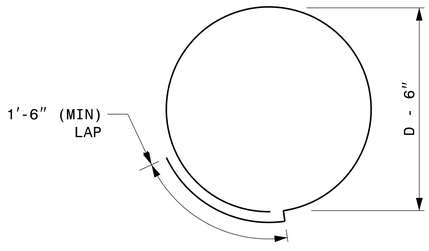


TYPICAL FOUNDATION ANCHOR BOLT DETAILS

(REINFORCING CAGE NOT SHOWN FOR CLARITY)



SECTION A-A



TYPICAL "C" BAR DETAIL

GENERAL NOTES:

1. IF ACTUAL SUBSURFACE CONDITIONS DIFFER SIGNIFICANTLY FROM BORING DATA, CONTACT THE ENGINEER BEFORE EXCAVATING OR PLACING CONCRETE.

2. CIRCULAR TIE REINFORCING RINGS MAY BE VERTICALLY ADJUSTED BY +/-3″ AT A DEPTH BETWEEN 2′-0″ AND 3′-0″ TO FACILITATE THE INSTALLATION OF ELECTRICAL CONDUIT ENTERING IN THE CAGE.

3. FOR STANDARD FOUNDATIONS, SEE SHEET SIG. M8 FOR DETAILS. VERTICAL REINFORCING BARS (V1) MAY BE HORIZONTALLY ADJUSTED BY +/-3″ TO FACILITATE THE INSTALLATION OF ELECTRICAL CONDUIT ENTERING INTO THE CAGE.

4. PROVIDE 2″ TO 5″ FOUNDATION PROJECTION ABOVE GROUND LEVEL, DEPENDING ON THE GROUND SLOPE.

5. UNLESS OTHERWISE SHOWN, FOUNDATION DESIGNS ARE BASED ON NON-SLOPING LEVEL GROUND SURFACES WITH SLOPE RATIOS OF 8:1 (H:V) OR FLATTER. IF ACTUAL GROUND LINE SLOPES ARE STEEPER, CONTACT THE ENGINEER BEFORE EXCAVATING OR PLACING CONCRETE.

6. CONSTRUCT FOUNDATIONS IN ACCORDANCE WITH NCDOT STANDARD PROVISIONS SP09 R005- FOUNDATIONS AND ANCHOR ROD ASSEMBLIES FOR METAL POLES. ALL APPLICABLE 2024 NCDOT STANDARD SPECIFICATIONS ARE REFERENCED IN THIS PROVISION. REFER TO THE NCDOT RESOURCES/SPECIFICATIONS PAGE LOCATED ON THE CONNECT NCDOT WEBSITE.

   https://connect.ncdot.gov/resources/Specifications and Special Provisions.aspx

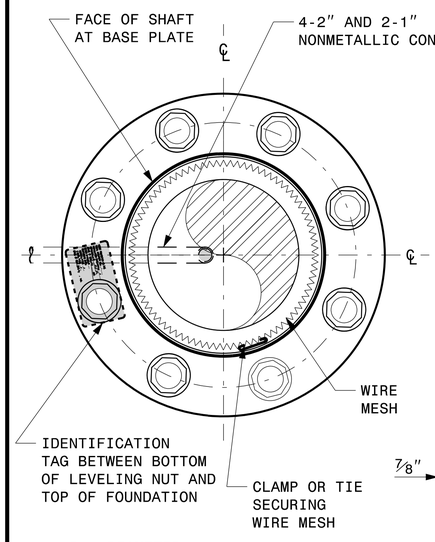
7. USE AIR ENTRAINED AA CONCRETE MIX WITH A COMPRESSION STRENGTH OF f′c=4500 psi (MIN) AFTER 28 DAYS.

8. USE ASTM A615 GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL. MAINTAIN AT LEAST 3″ COVER ON ALL REINFORCEMENT.

9. LOCATE IDENTIFICATION TAG ON TOP OF THE FOUNDATION, DIRECTLY ABOVE THE CONDUIT'S ENTRY POINT.

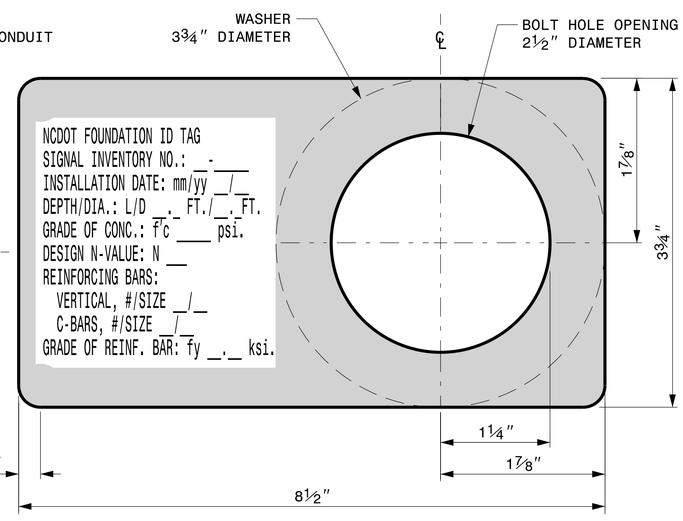
10. PROVIDE TWO LAYERS OF 4 MESH GALVANIZED WELDED 23 GAUGE (0.025) 6″ WIDE AROUND PIPES UNDER THE BASE PLATE AND SECURE IT WITH TIES IF NECESSARY.

11. PREFERRED LOCATION FOR THE I.D. TAG IS AS SHOWN IN DETAIL-A: DIRECTLY ABOVE THE CONDUIT ENTERING THE FOUNDATION.



D = DIAMETER
L = LENGTH / DEPTH
mm = MONTH
yy = YEAR

DETAIL-A



CONCRETE FOUNDATION IDENTIFICATION TAG DETAILS

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

SCALE
0 NA
NONE

Construction Details For Foundations

PLAN DATE: SEPTEMBER 2023	DESIGNED BY: K.C. DURIGON
PREPARED BY: K.C. DURIGON	REVIEWED BY: D.C. SARKAR

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
09/21/2023
DATE

21-SEP-2023 08:06
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kdurigon

SOIL CONDITION

STANDARD STRAIN POLES						STANDARD FOUNDATIONS 48" Diameter Drilled Pier Length (L) – Feet							Reinforcement			
			Reactions at the Pole Base			Clay				Sand			Longitudinal		Stirrups	
Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Axial (kip)	Shear (kip)	Moment (ft–kip)	Medium N–Value 4–8	Stiff N–Value 9–15	Very Stiff N–Value 16–30	Hard N–Value >30	Loose N–Value 4–10	Medium N–Value 11–30	Dense N–Value >30	Bar Size (#)	Quantity (ea.)	Bar Size (#)	Spacing (in.)
S26L1	26	22	2	9	210	19.5	12.5	9	6.5	15.5	14.5	13	8	12	4	12
S26L2	26	23	2	10	240	19.5	12	9	6.5	15.5	14.5	13	8	12	4	12
S26L3	26	25	2	11	260	20.5	12	10	8	16	15	13	8	12	4	12
S30L1	30	22	2	9	230	19	11	9	7	15.5	14	12.5	8	12	4	12
S30L2	30	23	2	10	270	20	12	10	8	16	14.5	13	8	12	4	12
S30L3	30	25	2	11	290	21	12	10	8	17	15	13.5	8	12	4	12
S30H1	30	25	3	13	355	23	13	11	9	18	16.5	14.5	8	12	4	12
S30H2	30	29	3	15	405	25	14	11	9	19	17.5	15.5	8	14	4	12
S30H3	30	29	3	16	430	26	15	12	9	20	18	16	8	14	4	6
S35L1	35	22	3	8	260	19.5	12	10	8	15.5	14.5	13	8	12	4	12
S35L2	35	23	3	10	300	21	12	10	8	16.5	15	13.5	8	12	4	12
S35L3	35	25	3	10	320	21.5	13	10	8	17	15.5	14	8	12	4	12
S35H1	35	25	3	12	390	23.5	14	11	9	18	17	15	8	14	4	12
S35H2	35	29	4	14	460	26	15	12	9	20	18	16	8	14	4	6
S35H3	35	29	4	16	495	28.5	15	13.5	10	21.5	19	17	8	14	4	6

48" DIAMETER FOUNDATION CONCRETE VOLUME (CUBIC YARDS) = (0.465) x DRILLED PIER LENGTH

GENERAL NOTES:

1. VALUES SHOWN IN THE "REACTIONS AT THE POLE BASE" COLUMN REPRESENT THE MINIMUM ACCEPTABLE CAPACITY ALLOWED FOR DESIGN USING A COMBINED FORCE RATIO (CFR) OF 1.00.
2. USE CHAIRS AND SPACERS TO MAINTAIN PROPER CLEARANCE.
3. FOR FOUNDATION, ALWAYS USE AIR-ENTRAINED CONCRETE MIX.

FOUNDATION SELECTION:

1. PERFORM A STANDARD PENETRATION TEST AT EACH PROPOSED FOUNDATION SITE TO DETERMINE "N" VALUE.
2. SELECT THE APPROPRIATE WIND ZONE FROM M1 DRAWING.
3. SELECT THE SOIL TYPE (CLAY OR SAND) THAT BEST DESCRIBES THE SOIL CHARACTERISTICS.
4. GET THE APPROPRIATE STANDARD POLE CASE NUMBER FROM THE PLANS OR FROM THE ENGINEER.
5. SELECT THE APPROPRIATE COLUMN UNDER "STANDARD FOUNDATIONS" BASED ON SOIL TYPE AND "N" VALUE. SELECT THE APPROPRIATE ROW BASED ON THE POLE LOAD CASE.
6. THE FOUNDATION DEPTH IS THE VALUE SHOWN IN THE "STANDARD FOUNDATIONS" CATEGORY WHERE THE COLUMN AND THE ROW INTERSECT.
7. USE CONSTRUCTION PROCEDURES AND DESIGN METHODS PRESCRIBED BY FHWA-NHI-10-016 MANUAL FOR DRILLED SHAFTS.

PROJECT I.D. NO.	SHEET NO.
U-5813	Sig.M8

Standard Strain Pole Foundation – All Soil Conditions

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

SCALE
0 NA
NONE

Standard Strain Pole Foundation for All Soil Conditions

PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON
PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
09/21/2023
DATE

21-SEP-2023 08:08
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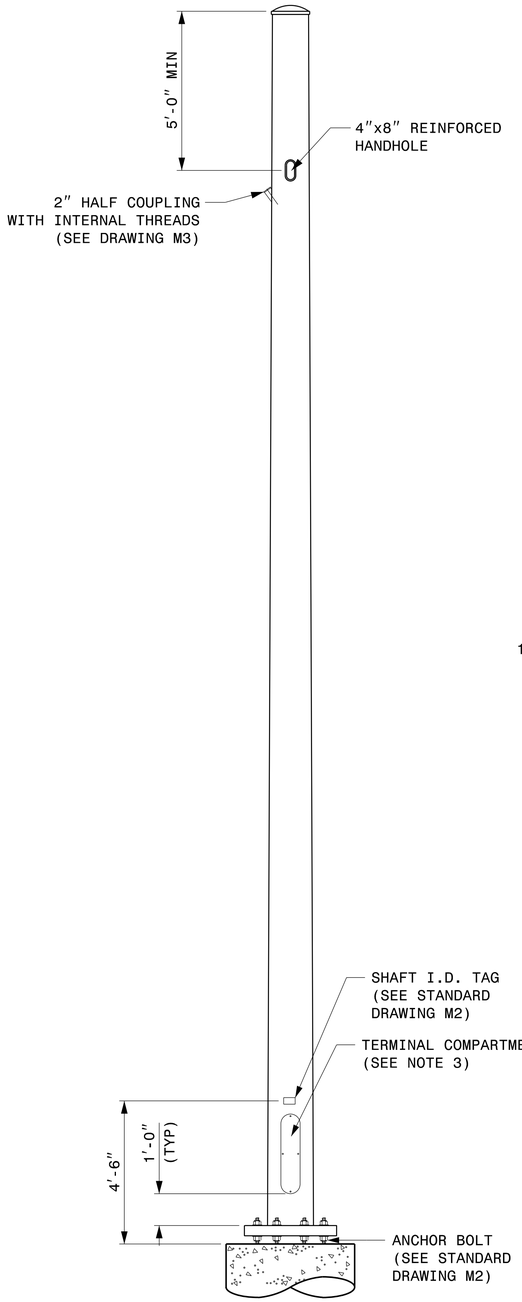
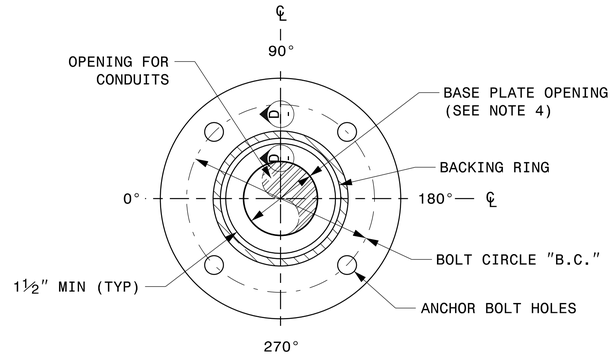
kdurigon

PROJECT I.D. NO.	SHEET NO.
U-5813	Sig.M9

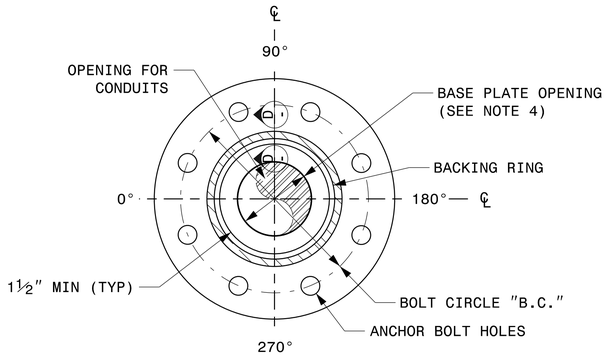
Fabrication Details – CCTV Camera Poles



CCTV CAMERA POLE
(NOT TO SCALE)

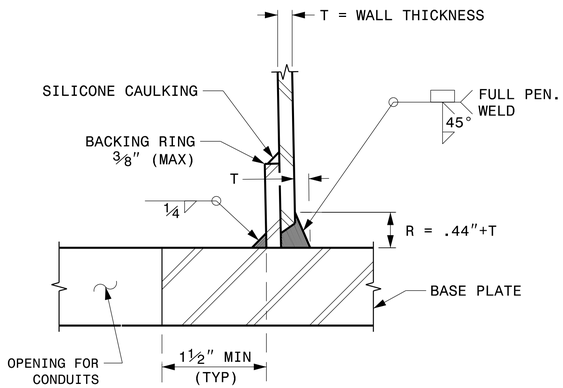


4 BOLT PATTERN
FOR POLES UP TO 40'



8 BOLT PATTERN
FOR POLES TALLER THAN 40'

BASE PLATE DETAILS



SECTION D-D
(POLE ATTACHMENT TO BASE PLATE)

FULL-PENETRATION
GROOVE WELD DETAIL

NOTES:

1. THIS DRAWING PROVIDES BASIC DETAILS FOR CCTV POLES. PROJECT REQUIREMENTS MAY REQUIRE SPECIAL FACTORY PREPS THAT ARE NOT SHOWN ON THESE DETAILS.
2. DETAILS FOR INTERNAL CAMERA LOWERING SYSTEMS ARE NOT SHOWN.
3. POLE MOUNTED CABINETS MAY REQUIRE MODIFICATIONS TO THE LOWER HANDHOLE OPENING TO MOUNT CABINETS. 4" X 8" REINFORCED HANDHOLES ARE ACCEPTABLE OPTIONS, AND MAY BE PREFERRED.
4. OPENING IN POLE BASE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3½" BUT SHALL NOT BE LESS THAN 8½".
5. USE COMPACT SECTION CRITERIA D/T RATIO PER AASHTO LTS-LRFD 1ST EDITION SECTION 5.7.2.

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

SCALE
0 NA
NONE

Typical Fabrication Details
For
CCTV Poles

PLAN DATE:	SEPTEMBER 2023	DESIGNED BY:	K.C. DURIGON
PREPARED BY:	K.C. DURIGON	REVIEWED BY:	C.F. ANDREWS

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
09/21/2023
DATE

21-SEP-2023 08:16
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kdurigon

PROJECT REFERENCE NO.	SHEET NO.
U-5813	SCP. 1

No.	Construction Note
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
68	INSTALL 8.5 DB GAIN YAGI ANTENNA ASSEMBLY
69	RELOCATE EXISTING 8.5 DB GAIN YAGI ANTENNA
70	REMOVE EXISTING ANTENNA, RADIO, AND CABLE
71	INSTALL 8.5 DB GAIN YAGI ANTENNA

UTILITY PLAN NOTES

BRSP Brightspeed

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

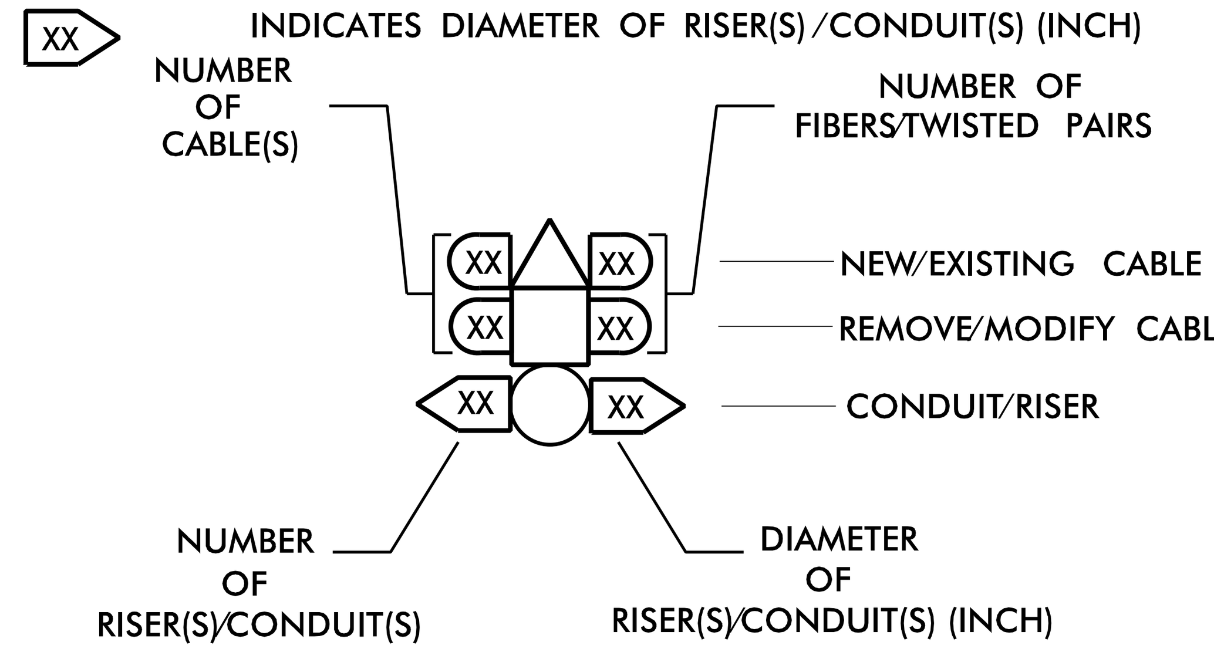
CONSTRUCTION NOTE SYMBOLOGY KEY

(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)



LEGEND

Symbol	Description
—FO—FO—	NEW FIBER OPTIC COMMUNICATIONS CABLE
—EXI—EXI—	EXISTING COMMUNICATIONS CABLE
—REM—REM—	EXISTING COMMUNICATIONS CABLE TO BE REMOVED
	NEW CONDUIT
	EXISTING CONDUIT
—DD—DD—	NEW DIRECTIONAL DRILLED CONDUIT
	NEW GUARDRAIL
	EXISTING RIGHT OF WAY
	NEW JUNCTION BOX
	EXISTING JUNCTION BOX
S	NEW SPECIAL OVERSIZED HEAVY DUTY JUNCTION BOX WITH SPLICE ENCLOSURE
S	EXISTING SPECIAL OVERSIZED HEAVY DUTY JUNCTION BOX WITH NEW SPLICE ENCLOSURE
	SNOW SHOE
	NEW WOOD POLE
	EXISTING WOOD POLE
S	NEW SPLICE ENCLOSURE
S	EXISTING SPLICE ENCLOSURE
	NEW METAL POLE
	EXISTING METAL POLE
	NEW STANDARD GUY ASSEMBLY
	EXISTING STANDARD GUY ASSEMBLY
	NEW SIGNAL CABINET
	EXISTING SIGNAL CABINET
	EXISTING YAGI ANTENNA
	NEW YAGI ANTENNA (SINGLE)
SP	SIGNAL POLE
XX–XXXX	SIGNAL INVENTORY NUMBER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB

HNTB NORTH CAROLINA, P.C.
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Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

Plans Prepared for: Transportation Mobility and Safety Division, Signals Management Section, State of North Carolina Department of Transportation
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE: NONE

LEGEND AND CONSTRUCTION NOTES

Division 8 Randolph County Asheboro

PLAN DATE:	Sept 2021	REVIEWED BY:	J.A. Wagner
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

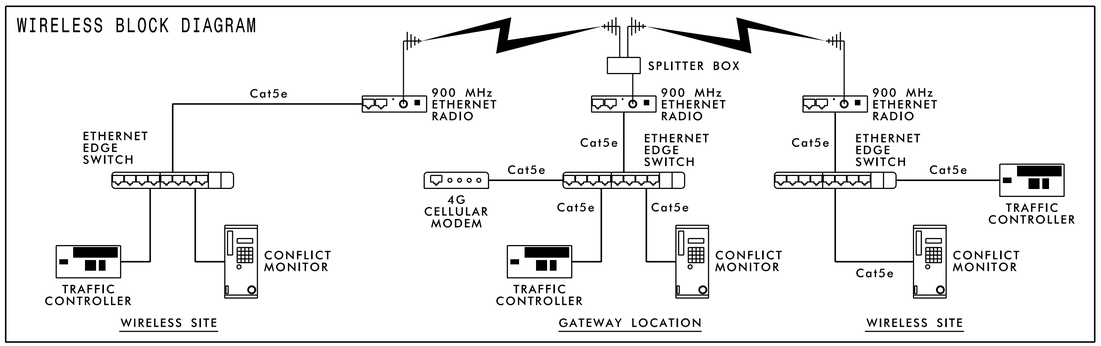
DocuSigned by: Natasha R Simmons 5/21/2024

SIGNATURE DATE

CADD Filename: U5813_SCP-01.dgn

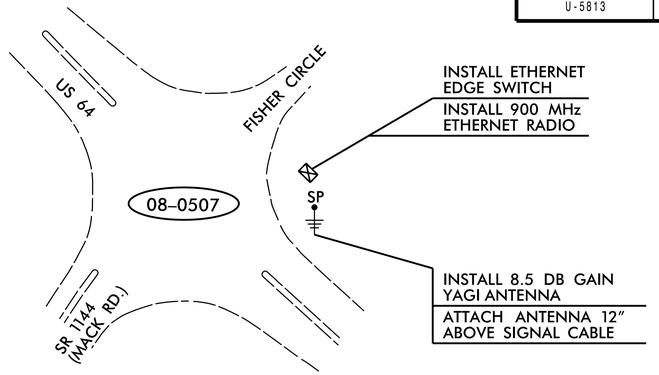
PROJECT REFERENCE NO.	SHEET NO.
U-5813	SCP. 2

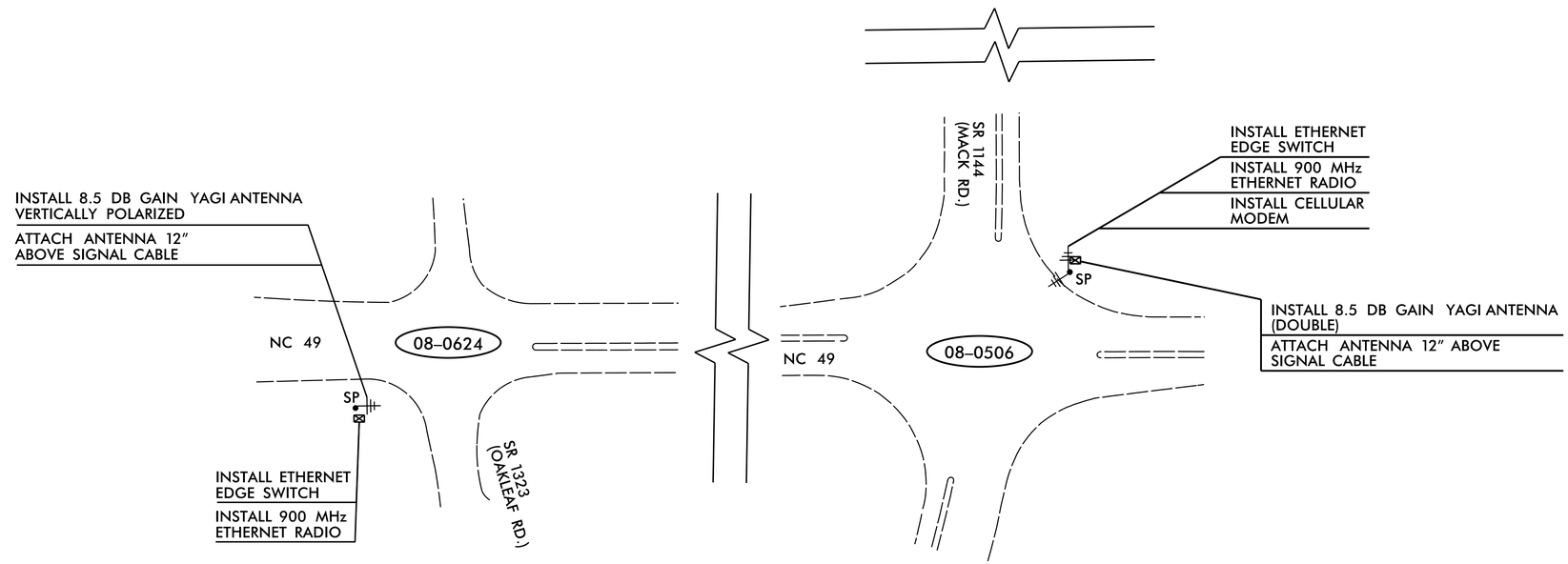
WIRELESS BLOCK DIAGRAM



LEGEND

- YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
- YAGI ANTENNA (SINGLE)
- NEW CONTROLLER AND CABINET
- NEW GATEWAY RADIO LOCATION
- EXISTING CONTROLLER AND CABINET
- XX-XXXX SIGNAL INVENTORY NUMBER
- NEW METAL POLE W/MAST ARM
- EXISTING METAL POLE W/MAST ARM
- NEW METAL STRAIN POLE
- EXISTING METAL STRAIN POLE
- NEW WOOD POLE
- EXISTING WOOD POLE





NOTES FOR EXISTING COMMUNICATIONS CABLE:

1. REMOVE ALL EXISTING COMMUNICATIONS CABLE FROM INSIDE THE CONTROLLER CABINET AND THE RISER ASSEMBLY. LEAVE RISER ASSEMBLY IN PLACE.

NOTES FOR WIRELESS COMMUNICATIONS:

1. INSTALL COAXIAL CABLE:
   - A. ON WOOD POLES, REQUIRING A NEW RIGID GALVANIZED STEEL RISER, INSTALL A 2" RISER WITH WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
   - B. ON METAL POLES WITH MAST ARMS, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE MAST ARM; FIELD DRILL A 1/2" HOLE UP THROUGH THE BOTTOM OF MAST ARM FOR INSTALLATION OF THE COAXIAL CABLE TO THE ANTENNA.
   - C. ON METAL STRAIN POLES, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
   - D. BETWEEN THE POINT OF EXITING THE RISER, METAL POLE, OR MAST ARM AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12".
2. IF AN EXISTING 2" SPARE RIGID GALVANIZED STEEL RISER IS AVAILABLE, INSTALL THE COAXIAL CABLE IN THE SPARE RISER.
3. INSTALL WIRELESS ANTENNA ON POLE WITH RF WARNING SIGN. (NOTE: RF WARNING SIGN NOT REQUIRED WHEN ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
4. MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRICAL SAFETY CODE.
5. REFERENCE "WIRELESS RADIO ANTENNA TYPICAL DETAILS" IN THE 2024 NCDOT ROADWAY STANDARD DRAWINGS.
6. RETURN EXISTING WIRELESS RADIO EQUIPMENT TO THE DIVISION 8 SIGNAL SHOP. THE DIVISION 8 OFFICE CAN BE REACHED AT 910-773-8000.
7. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 8 DEPUTY TRAFFIC ENGINEER AT (910) 773-8000 TO ARRANGE FOR THE DIVISION TO PROGRAM THE NEW FIELD ETHERNET SWITCH 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 DEPUTY 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 FUNCTIONAL.

HNTB
HNTB NORTH CAROLINA, P.C.
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Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

Temporary Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Plans Prepared for: Transportation Mobility and Safety Division, Traffic Engineering Branch, Traffic Signals Management Section

750 N. Greenfield Pkwy., Garner, NC 27529

WIRELESS COMMUNICATIONS PLANS

Division 8 Randolph County Asheboro

PLAN DATE:	Sept 2021	REVIEWED BY:	J.A. Wagner
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

SCALE 0 50 1"=50'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R Simmons 5/21/2024
FEDERAL APPROVAL SIGNATURE DATE

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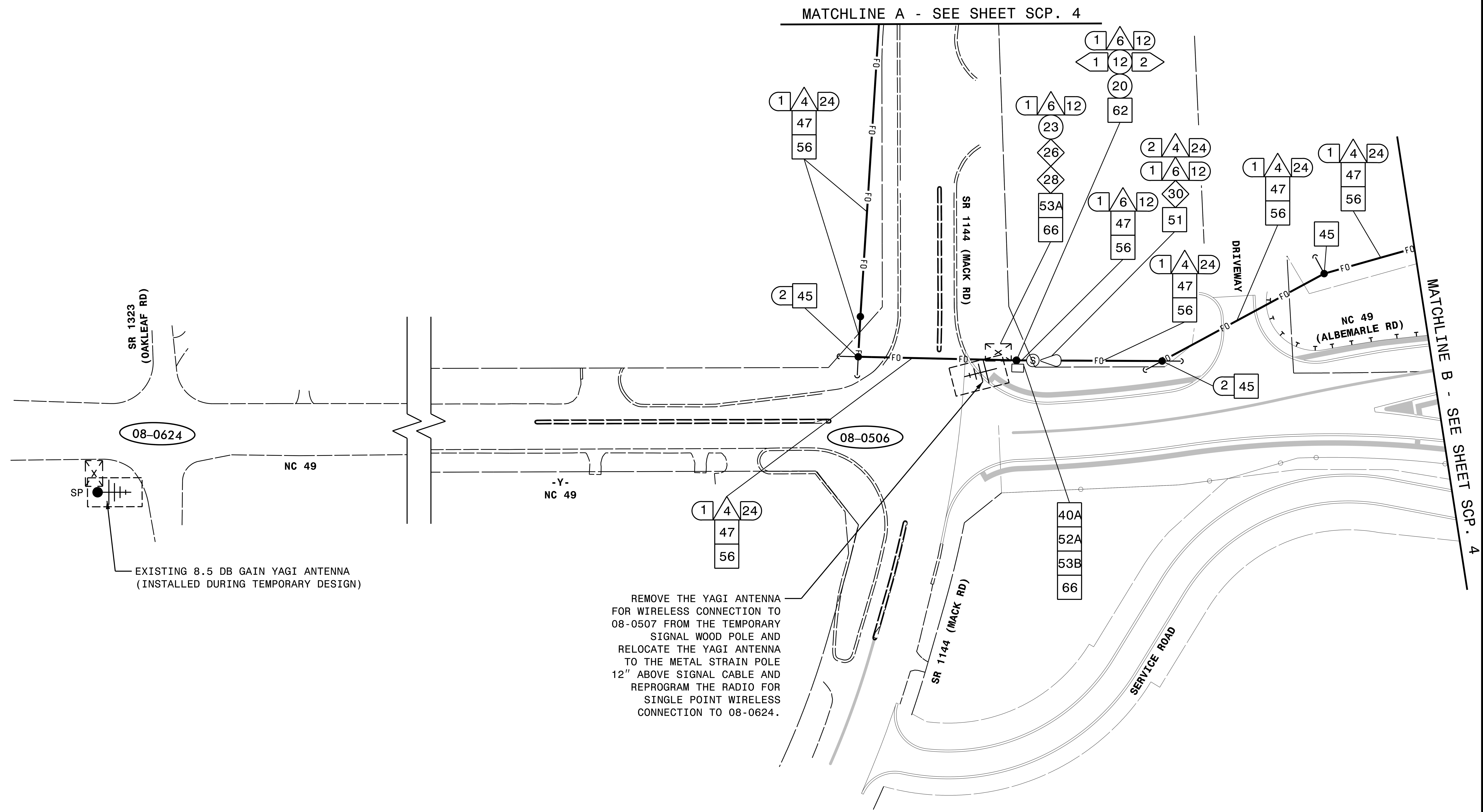

NOTES:

1. UNLESS OTHERWISE NOTED:
   - ATTACH NEW MESSENGER CABLE MINIMUM 40 INCHES BELOW POWER.
   - ATTACH ON FRONT SIDE (FS) OF POLE.
2. MAINTAIN A MINIMUM OF SIX (6) FEET FROM THE EDGE OF PAVEMENT WHEN TRENCHING PARALLEL TO THE ROADWAY.
3. TWO (2) WEEKS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DEPUTY DIVISION TRAFFIC ENGINEER AT (910) 947-3930 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.
4. NOTIFY THE DEPUTY DIVISION 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 FUNCTIONAL.

HNTB
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Raleigh, North Carolina 27609
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(919) 546-8997

Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Plans Prepared for:

750 N. Greenfield Pkwy., Garner, NC 27529

CABLE ROUTING PLAN

Division 8 Randolph County Asheboro

PLAN DATE:	Sept 2021	REVIEWED BY:	J.A. Wagner
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

SCALE 0 50 1"=50'

REVISIONS	INIT.	DATE

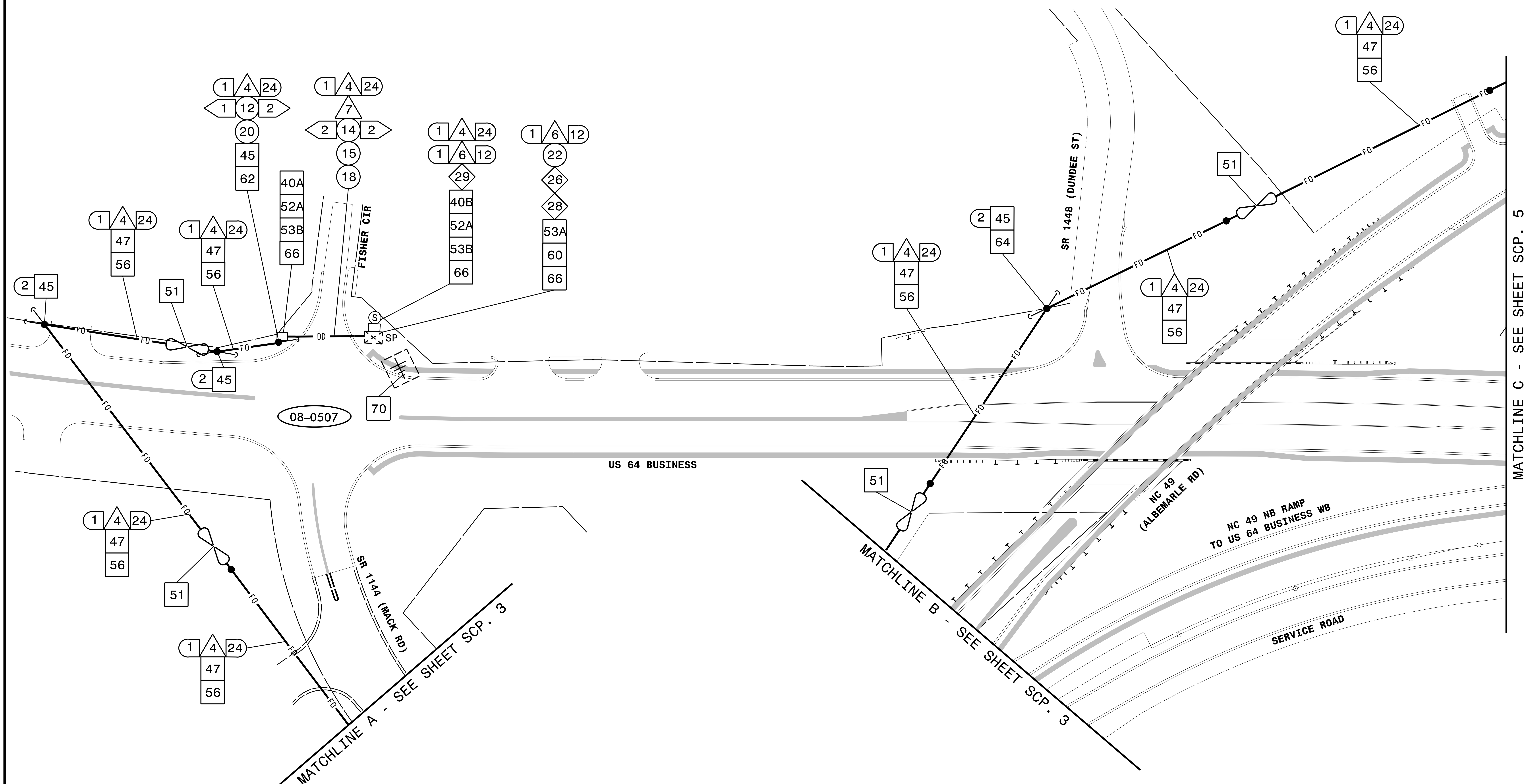
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by:

SIGNATURE 5/21/2024 DATE

CADD Filename: U5813_SCP-03.dgn



NOTES:

1. UNLESS OTHERWISE NOTED:
   - ATTACH NEW MESSENGER CABLE MINIMUM 40 INCHES BELOW POWER.
   - ATTACH ON FRONT SIDE (FS) OF POLE.
2. MAINTAIN A MINIMUM OF SIX (6) FEET FROM THE EDGE OF PAVEMENT WHEN TRENCHING PARALLEL TO THE ROADWAY.
3. TWO (2) WEEKS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DEPUTY DIVISION TRAFFIC ENGINEER AT (910) 947-3930 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.
4. NOTIFY THE DEPUTY DIVISION 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 FUNCTIONAL.
5. AFTER THE FIBER OPTIC CABLE CONSTRUCTION IS COMPLETE AND TRAFFIC IS IN THE FINAL PATTERN, REMOVE THE EXISTING WIRELESS ASSEMBLY AT SIN 08-0507 AND DELIVER TO THE DIVISION 8 TRAFFIC SERVICES.

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Plans Prepared for:
ITS Transportation Mobility and Safety Division
ITS & Signals Management Section
750 N. Greenfield Pkwy., Garner, NC 27529

CABLE ROUTING PLAN

Division 8 Randolph County Asheboro

PLAN DATE:	Sept 2021	REVIEWED BY:	J.A. Wagner
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

SCALE 0 50 1"=50'

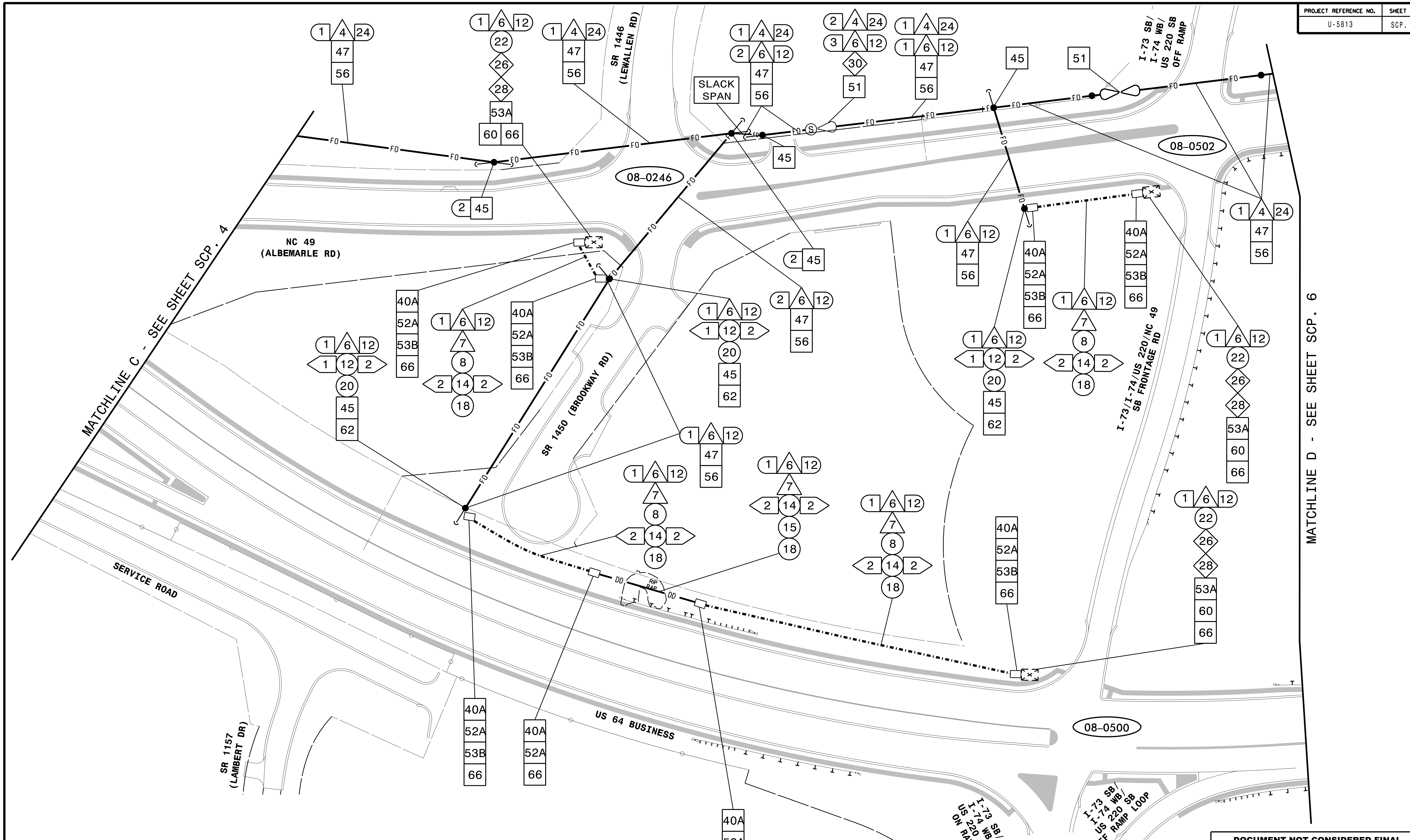
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R Simmons 5/21/2024
F6DA88DF3AD445A
SIGNATURE DATE

CADD Filename: U5813_SCP-04.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5813	SCP. 5



Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

1. UNLESS OTHERWISE NOTED:
   - –ATTACH NEW MESSENGER CABLE MINIMUM 40 INCHES BELOW POWER.
   - –ATTACH ON FRONT SIDE (FS) OF POLE.
2. MAINTAIN A MINIMUM OF SIX (6) FEET FROM THE EDGE OF PAVEMENT WHEN TRENCHING PARALLEL TO THE ROADWAY.
3. TWO (2) WEEKS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DEPUTY DIVISION TRAFFIC ENGINEER AT (910) 947-3930 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.
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HNTB

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(919) 546-8997

Plans Prepared for:
Transportation Mobility and Safety Division – Signals Management Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 50 — 1"=50'

CABLE ROUTING PLAN

Division 8 | Randolph County | Asheboro

PLAN DATE:	Sept 2021	REVIEWED BY:	J.A. Wagner
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

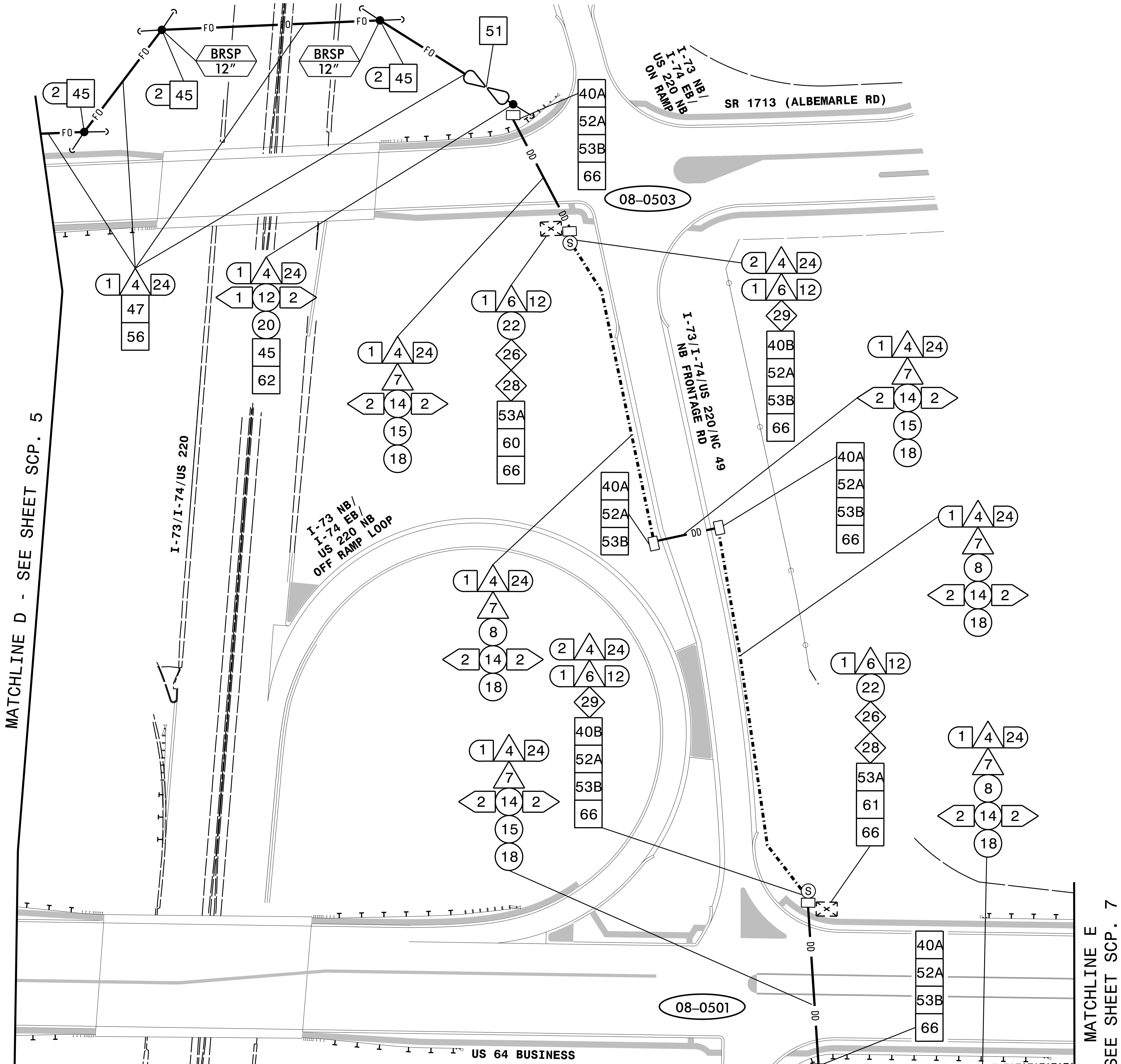
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R Simmons 5/21/2024
SIGNATURE DATE

CADD Filename: U5813_SCP-05.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5813	SCP. 6



NOTES:

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HNTB

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(919) 546-8997

Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Plans Prepared for:

Transportation Mobility and Safety Division — Signals Management Section

750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 50 1″=50′

CABLE ROUTING PLAN

Division 8 | Randolph County | Asheboro

PLAN DATE:	Sept 2021	REVIEWED BY:	J.A. Wagner
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

REVISIONS	INIT.	DATE

SEAL

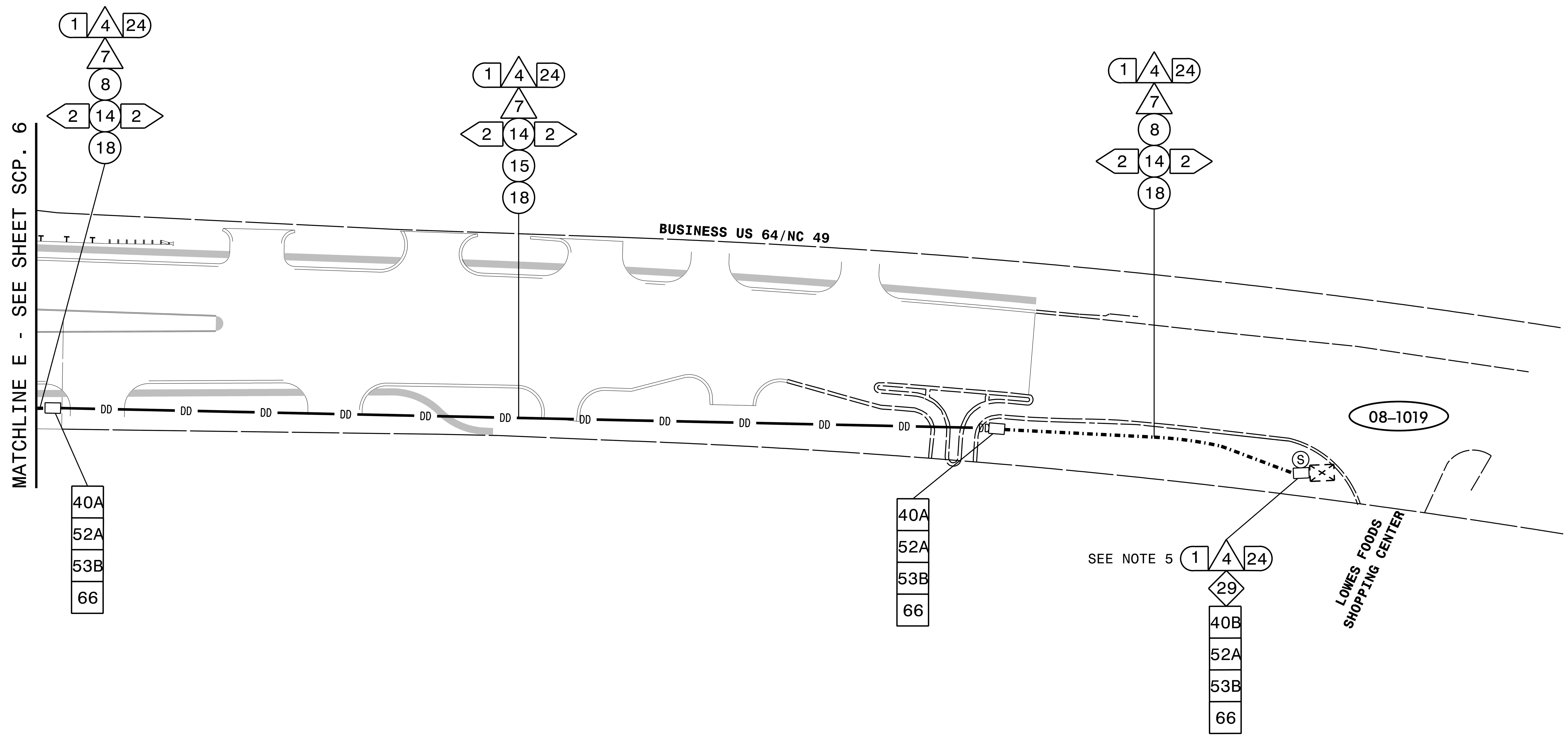
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R Simmons 5/21/2024

SIGNATURE DATE

CADD Filename: U5813_SCP-06.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5813	SCP. 7



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5. TERMINATE THE FIBER IN THE SPLICE ENCLOSURE. A SEPARATE PROJECT WILL INSTALL A DROP CABLE FROM THE SPLICE ENCLOSURE INTO THE CABINET TO CONNECT TO THE EXISTING SYSTEM ON US 64 BUSINESS/NC 49.

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Final Design

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

CABLE ROUTING PLAN

Division 8 — Randolph County — Asheboro

PLAN DATE:	Sept 2021	REVIEWED BY:	J.A. Wagner
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

SCALE 0 50 1"=50'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R Simmons 5/21/2024
F6DA88DF3AD445A
SIGNATURE DATE

CADD Filename: U5813_SCP-07.dgn

08–0507
US 64
AT
SR 1144 (MACK ROAD)
AND FISHER CIRCLE

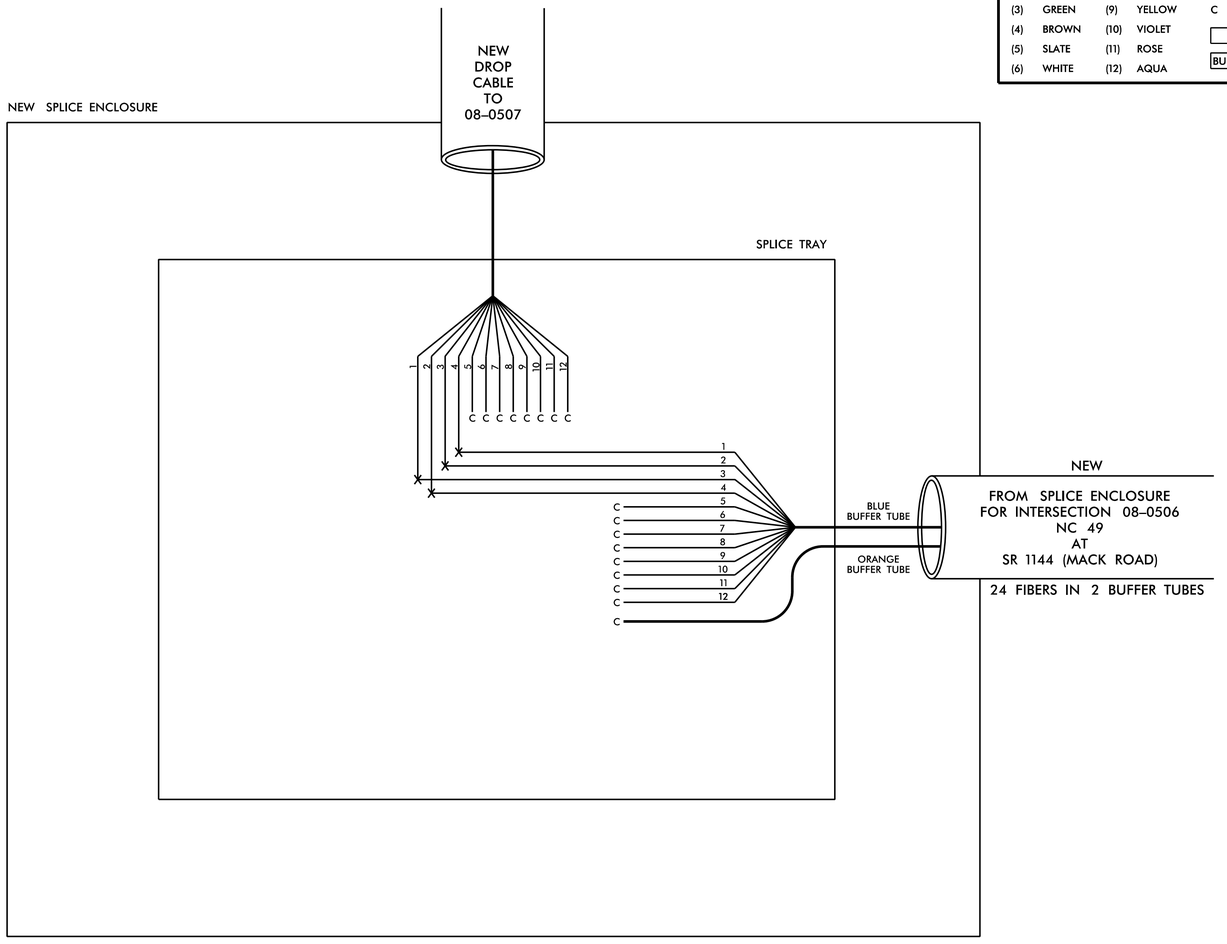
PROJECT REFERENCE NO.	SHEET NO.
U-5813	SCP. 8

LEGEND

COLOR CODE TIA/EIA 598-C

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

X = NEW FUSION SPLICE INDIVIDUAL FIBER
● = EXISTING FUSION SPLICE
C = CAP AND SEAL
EXPRESS = EXPRESS ENTIRE BUFFER TUBE THROUGH WITHOUT CUTTING
BUFFER SPLICE = SPLICE ALL FIBERS IN BUFFER TUBE COLOR TO COLOR



NOTES:

1. UNUSED FIBERS LEFT COILED AND STORED IN SPLICE TRAY.
2. UNUSED BUFFER TUBES LEFT COILED AND STORED IN SPLICE TRAY.
3. ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING / ENSURING PROPER TERMINATION.
4. INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING: REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"

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

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

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HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Plans Prepared for: Transportation Mobility and Safety Division, Traffic Engineering Branch, Signals Management Section
750 N. Greenfield Pkwy., Garner, NC 27529

FIBER SPLICE DETAIL

Division 8 Randolph County Asheboro

PLAN DATE:	Sept 2021	REVIEWED BY:	J.A. Wagner
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

SCALE: NONE

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R Simmons 5/21/2024
FOR REVIEW ONLY
SIGNATURE DATE

CADD Filename: U5813_SCP-08.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5813	SCP. 9

08–0506
NC 49
AT
SR 1144 (MACK RD)

LEGEND

COLOR CODE TIA/EIA 598-C

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

X = NEW FUSION SPLICE INDIVIDUAL FIBER
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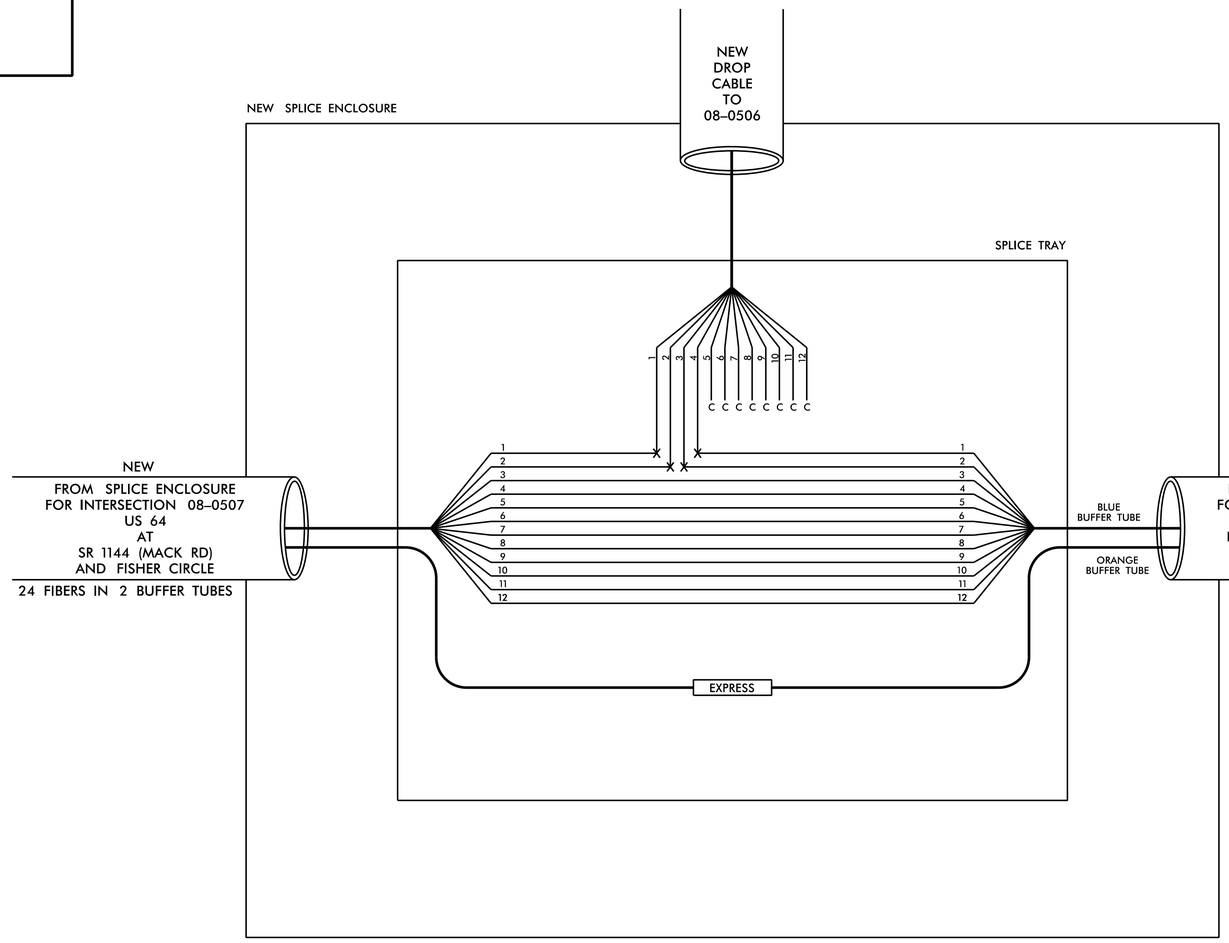
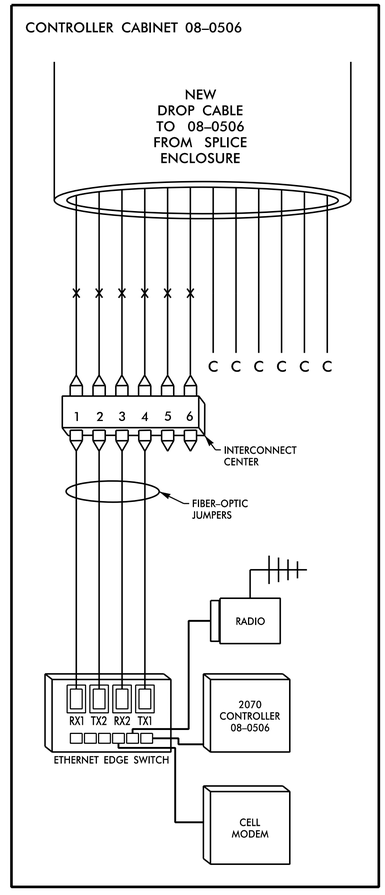
C = CAP AND SEAL
EXPRESS = EXPRESS ENTIRE BUFFER TUBE THROUGH WITHOUT CUTTING
BUFFER SPLICE = SPLICE ALL FIBERS IN BUFFER TUBE COLOR TO COLOR





NOTES:

1. UNUSED FIBERS LEFT COILED AND STORED IN SPLICE TRAY.
2. UNUSED BUFFER TUBES LEFT COILED AND STORED IN SPLICE TRAY.
3. ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING /ENSURING PROPER TERMINATION.
4. INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING: REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"

   (1) SPLICE
   (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

HNTB NORTH CAROLINA, P.C.
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Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

Plans Prepared for: Transportation Mobility and Safety Division, NCDOT

750 N. Greenfield Pkwy., Garner, NC 27529

FIBER SPLICE DETAIL

Division 8 | Randolph County | Asheboro

PLAN DATE:	Sept 2021	REVIEWED BY:	J.A. Wagner
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

SCALE: NONE

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R Simmons 5/21/2024
FEDERALLY APPROVED SIGNATURE DATE

CADD Filename: U5813_SCP-09.dgn

08-0246
NC 49/SR 1713 (ALBEMARLE RD) AT SR 1446 (LEWALLEN RD)/ SR 1450 (BROOKWAY RD)

LEGEND

COLOR CODE TIA/EIA 598-C

(1)	BLUE	(7)	RED
(2)	ORANGE	(8)	BLACK
(3)	GREEN	(9)	YELLOW
(4)	BROWN	(10)	VIOLET
(5)	SLATE	(11)	ROSE
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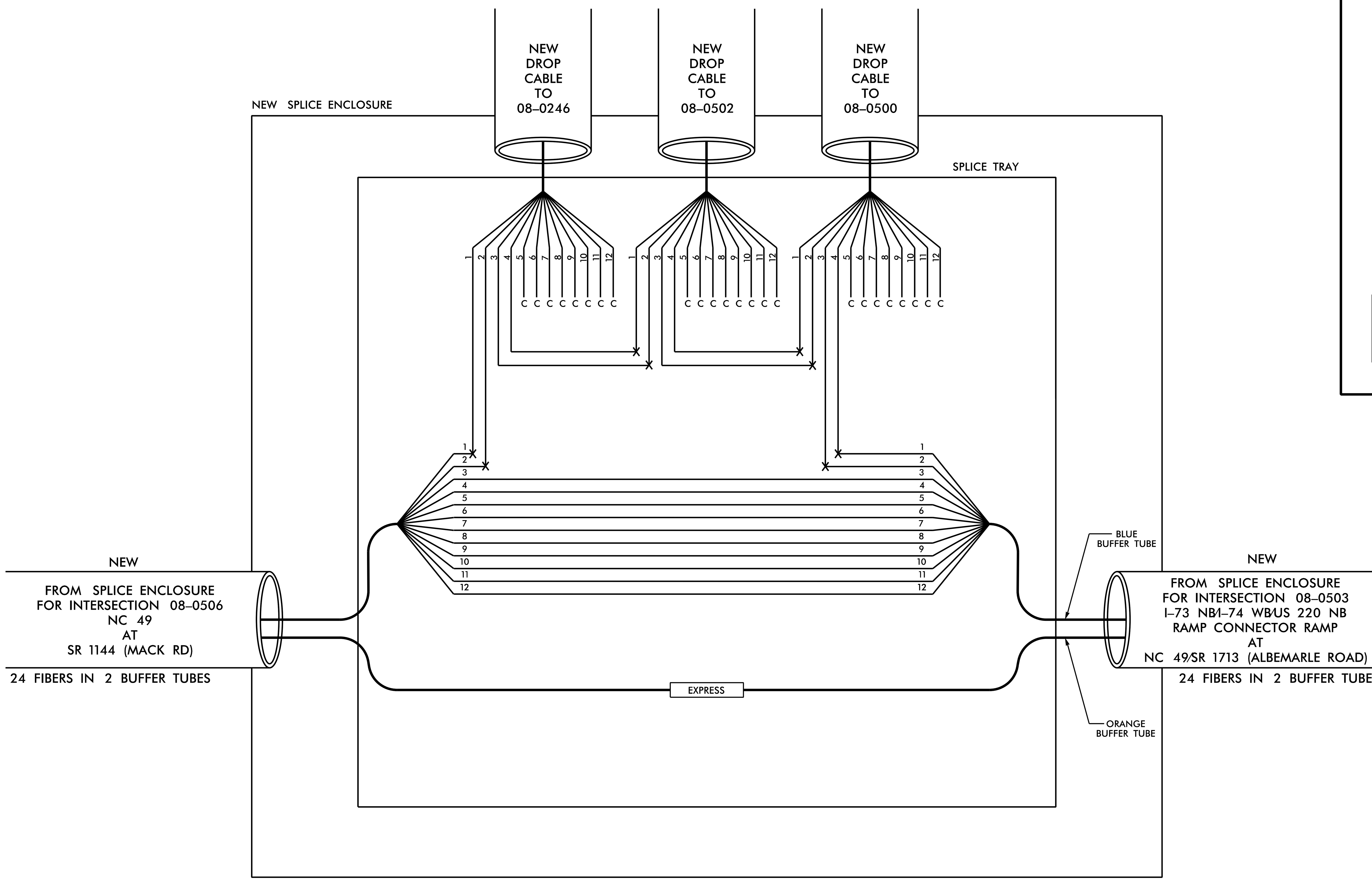
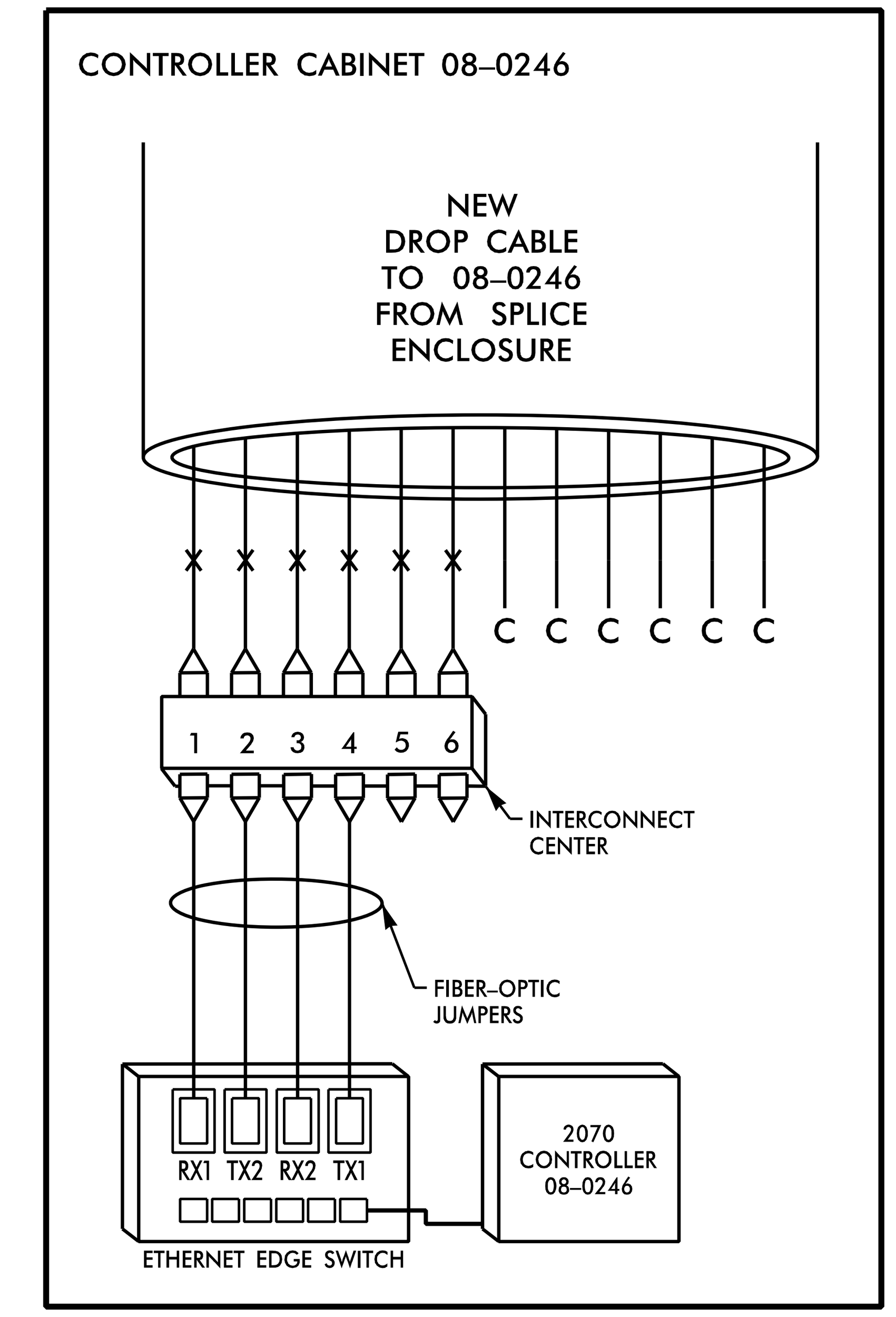
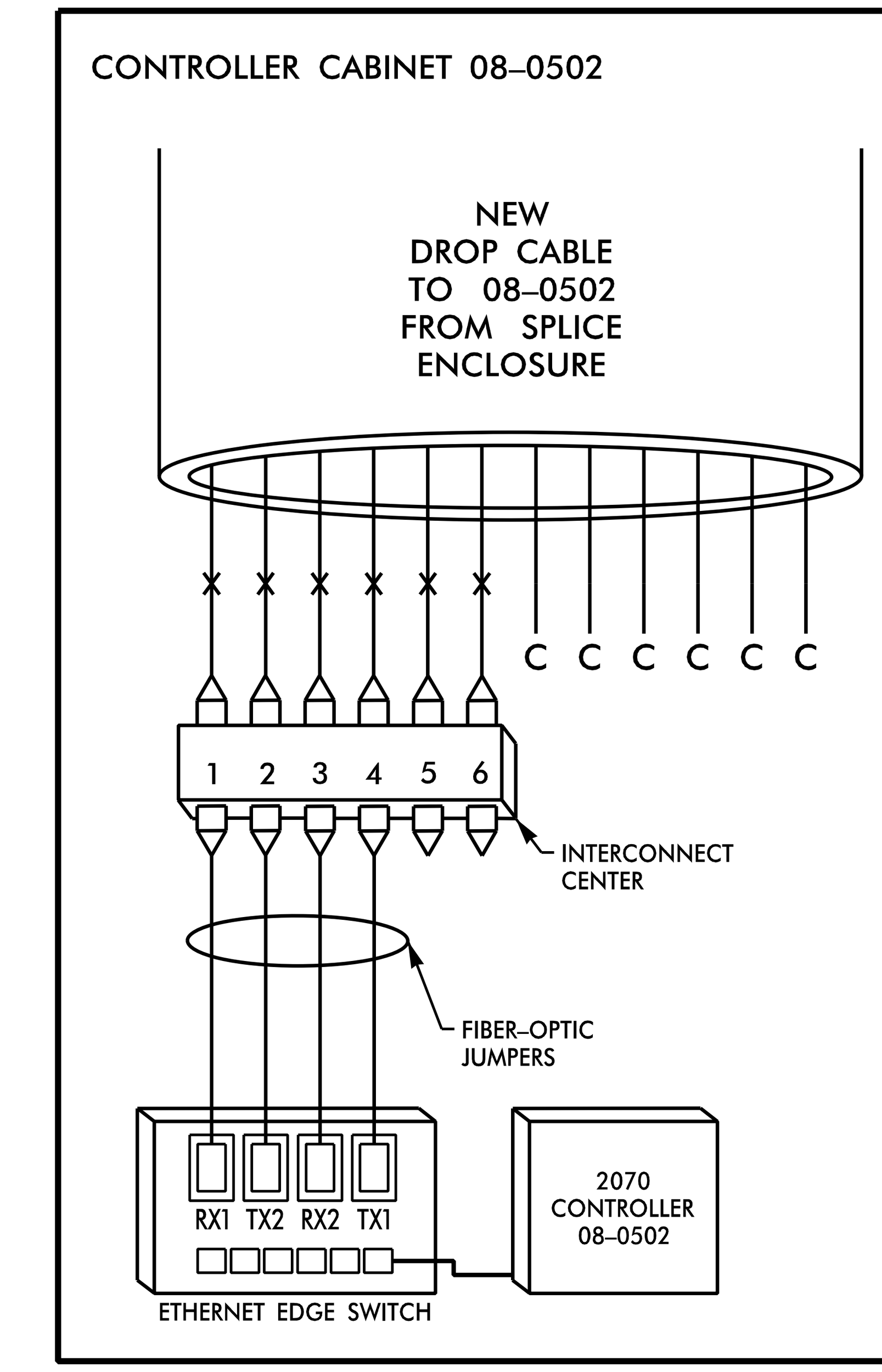
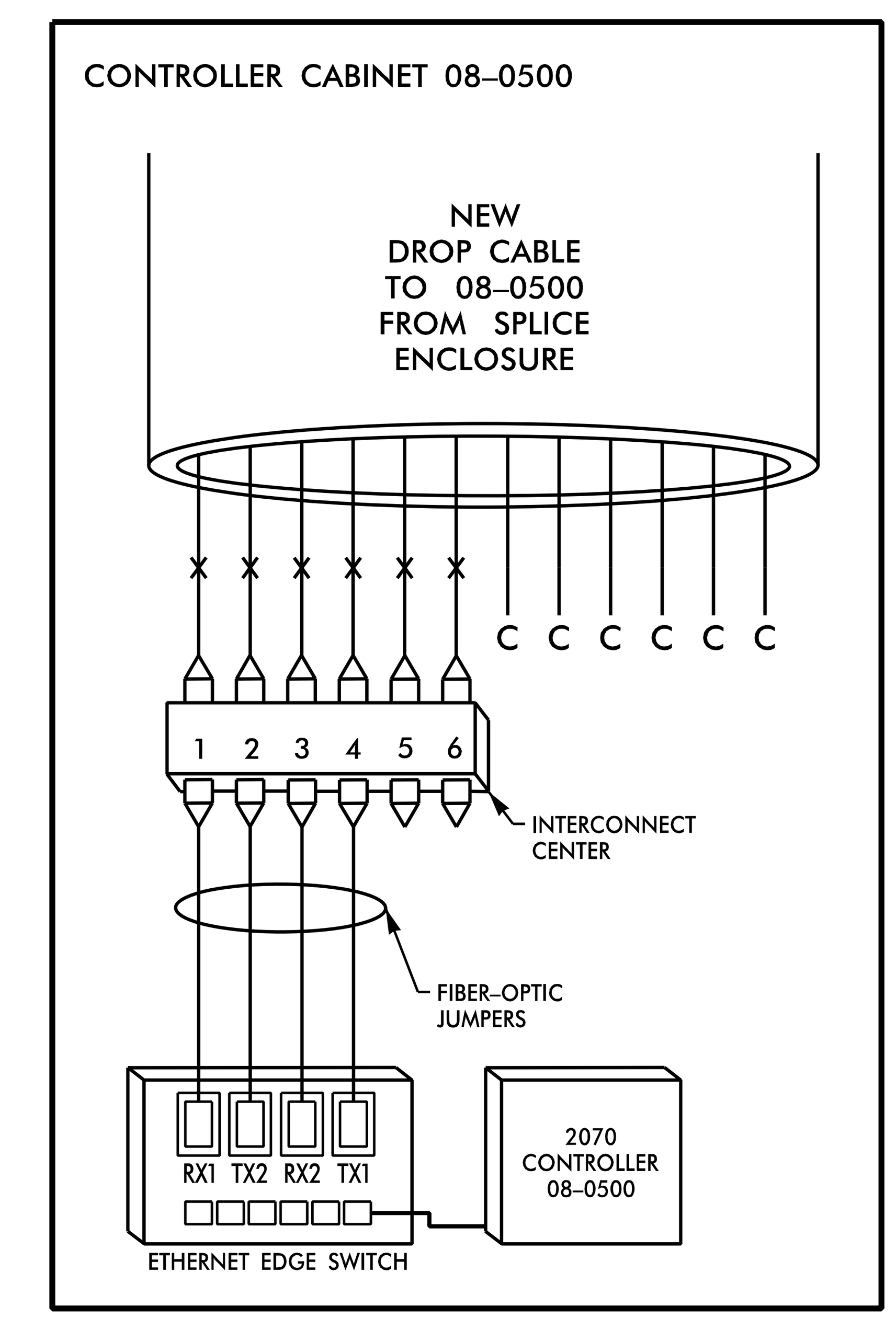
- BUFFER SPLICE = SPLICE ALL FIBERS IN BUFFER TUBE COLOR TO COLOR









NOTES:

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Plans Prepared for: Transportation Mobility and Safety Division, ITS & Signals Management Section
750 N. Greenfield Pkwy., Garner, NC 27529

FIBER SPLICE DETAIL

Division 8 | Randolph County | Asheboro

PLAN DATE:	Sept 2021	REVIEWED BY:	J.A. Wagner
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

SCALE: NONE

REVISIONS	INIT.	DATE

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R Simmons 5/21/2024
SIGNATURE DATE

CADD Filename: U5813_SCP-10.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5813	SCP. 11

08–0503
I–73 NB/I–74 WB/US 220 NB RAMP CONNECTOR RAMP AT NC 49/SR 1713 (ALBEMARLE ROAD)

LEGEND

COLOR CODE TIA/EIA 598–C

(1)	BLUE	(7)	RED
(2)	ORANGE	(8)	BLACK
(3)	GREEN	(9)	YELLOW
(4)	BROWN	(10)	VIOLET
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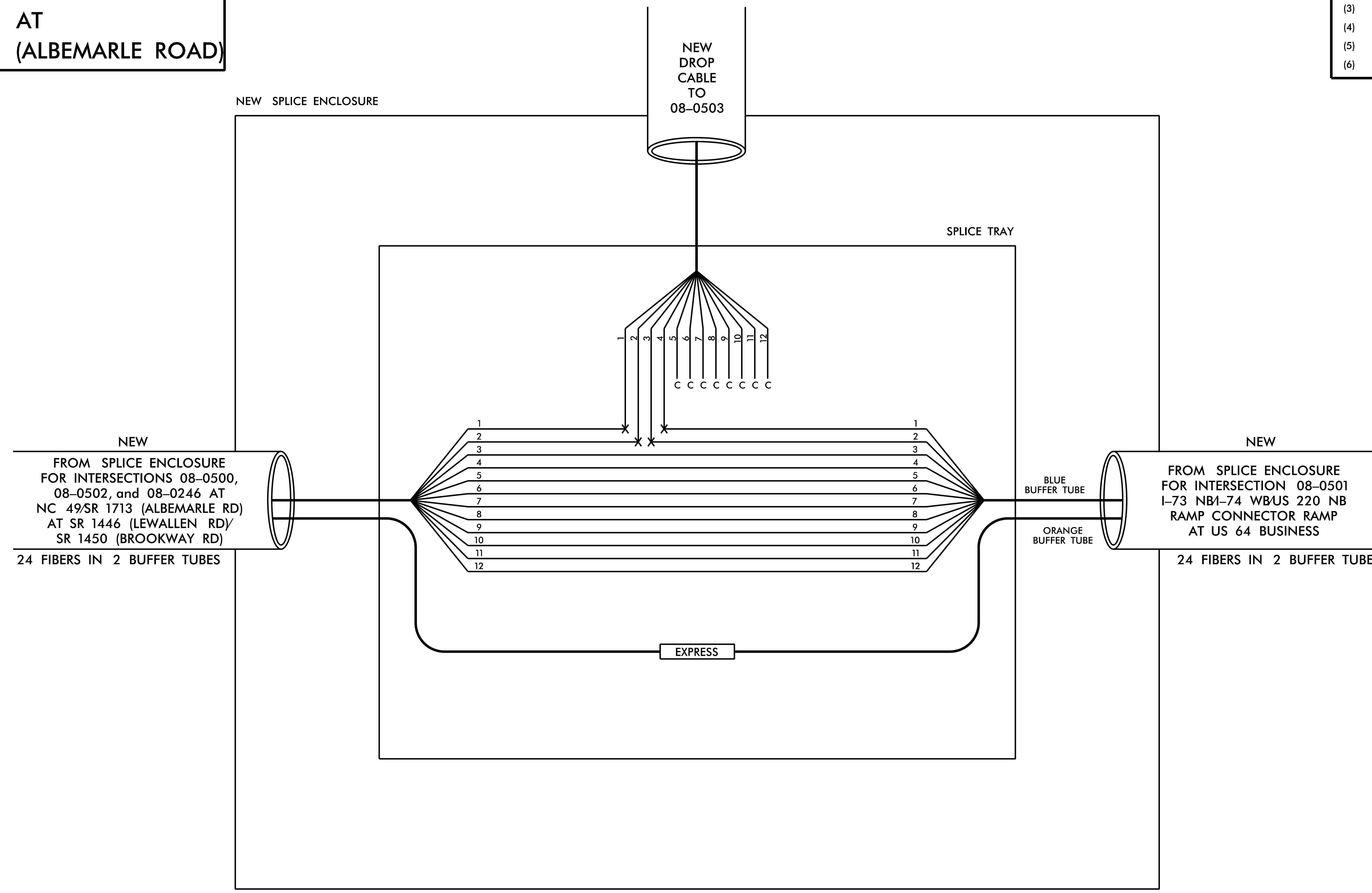

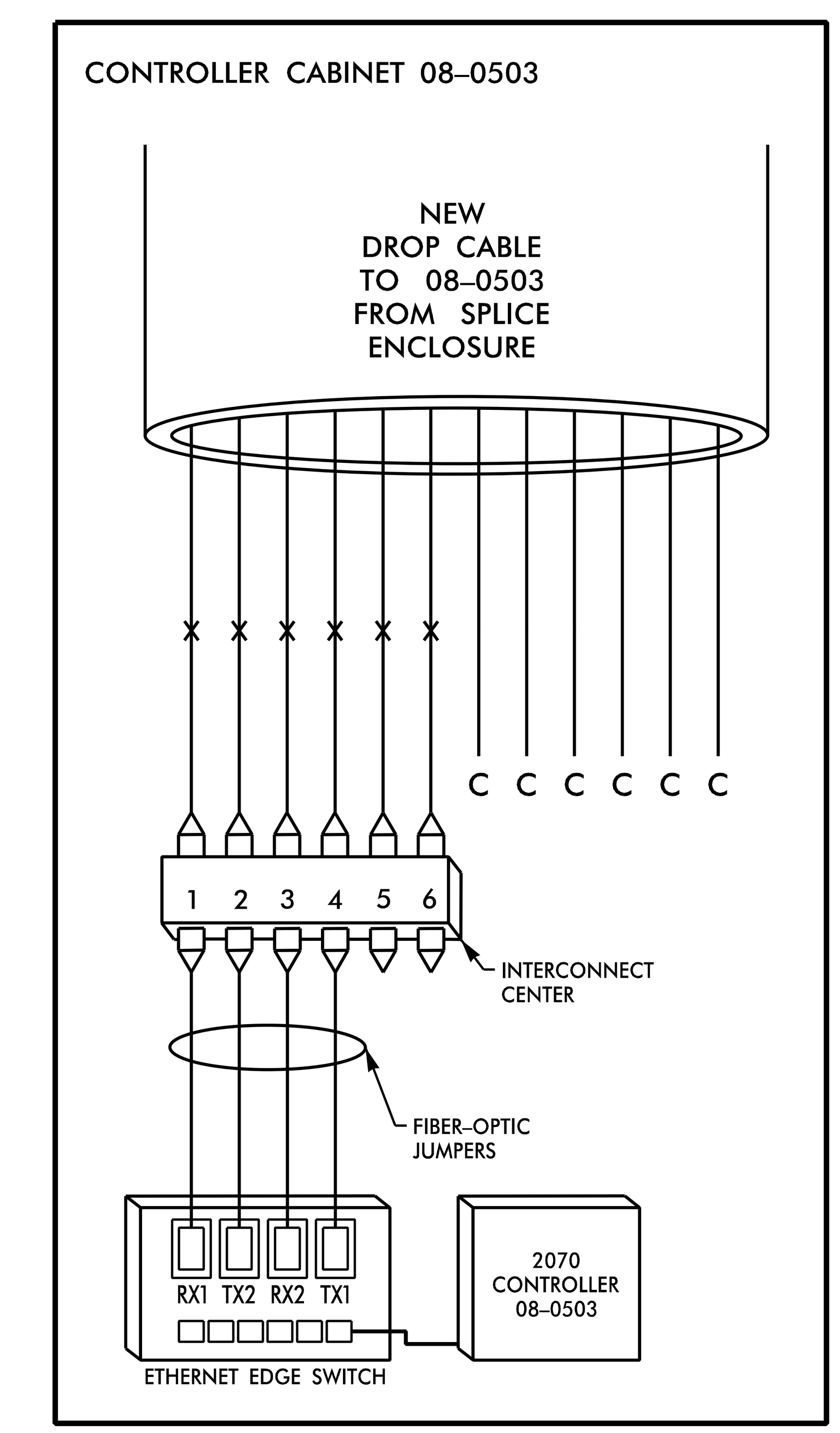

NOTES:

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   (1) SPLICE
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Plans Prepared for: Transportation Mobility and Safety Division, ITS & Signals Management Section
750 N. Greenfield Pkwy., Garner, NC 27529

FIBER SPLICE DETAIL

Division 8 | Randolph County | Asheboro

PLAN DATE:	Sept 2021	REVIEWED BY:	J.A. Wagner
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

SCALE: NONE

REVISIONS | INIT. | DATE

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R Simmons 5/21/2024
SIGNATURE DATE

CADD Filename: U5813_SCP-11.dgn

08–0501
I–73 NB/I–74 WB/US 220 NB RAMP CONNECTOR RAMP AT US 64 BUSINESS

PROJECT REFERENCE NO.	SHEET NO.
U-5813	SCP. 12

LEGEND

COLOR CODE TIA/EIA 598-C

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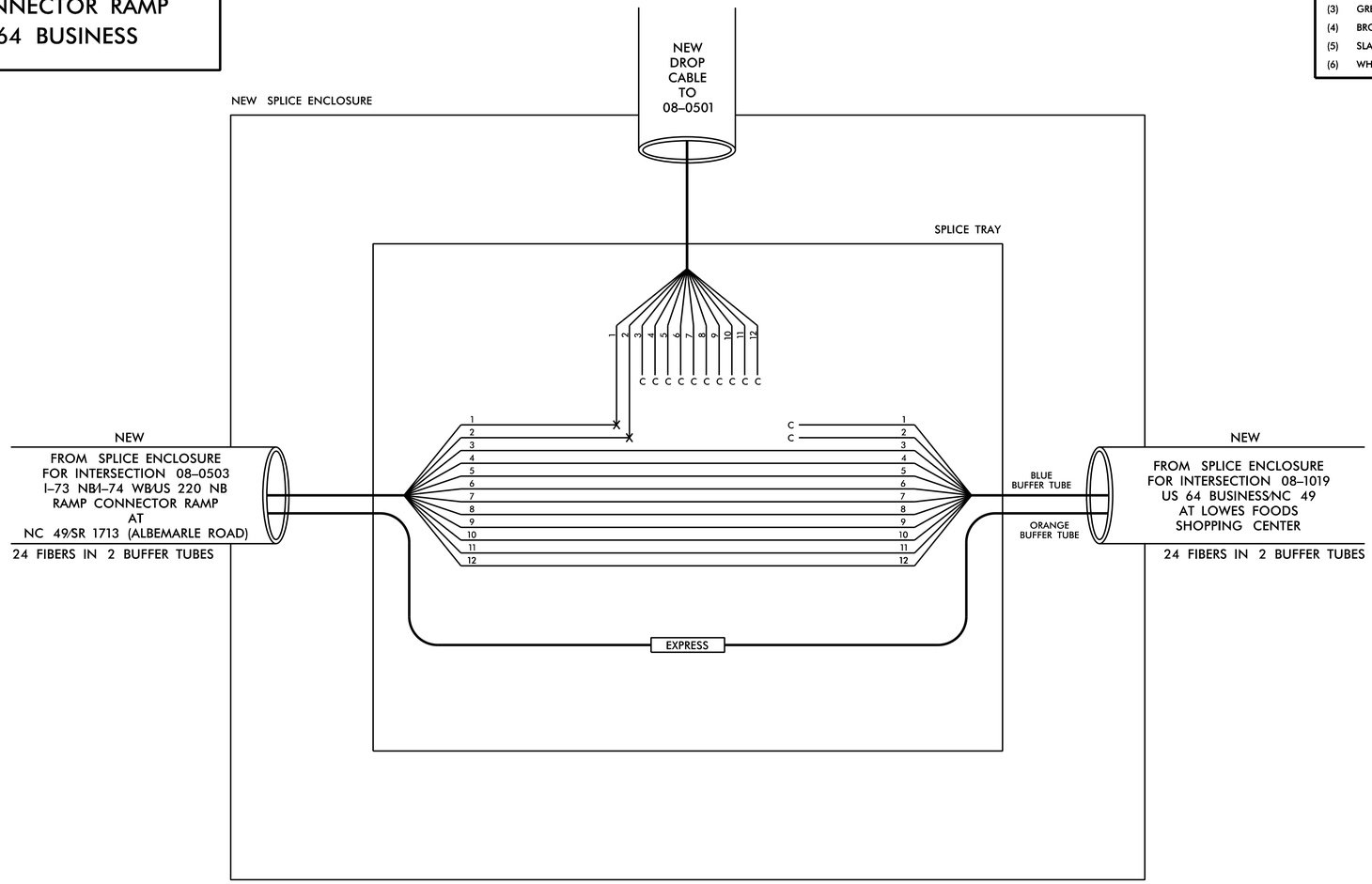

NOTES:

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NC License No: C-1554
(919) 546-8997

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Plans Prepared for: NC Department of Transportation, Mobility and Safety Division, Traffic Engineering Branch, Signals Management Section
750 N. Greenfield Pkwy., Garner, NC 27529

FIBER SPLICE DETAIL

Division 8 Randolph County Asheboro

PLAN DATE: Sept 2021 REVIEWED BY: J.A. Wagner
PREPARED BY: T.R. Terrell REVIEWED BY: N.R. Simmons

SCALE: NONE

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R Simmons 5/21/2024
FHWA/NCDOT SIGNATURE DATE

CADD Filename: U5813_SCP-12.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5813	SCP. 13

08–1019
US 64 BUSINESS/NC 49
AT LOWES FOODS
SHOPPING CENTER

LEGEND

COLOR CODE
TIA/EIA 598–C

(1)	BLUE	(7)	RED
(2)	ORANGE	(8)	BLACK
(3)	GREEN	(9)	YELLOW
(4)	BROWN	(10)	VIOLET
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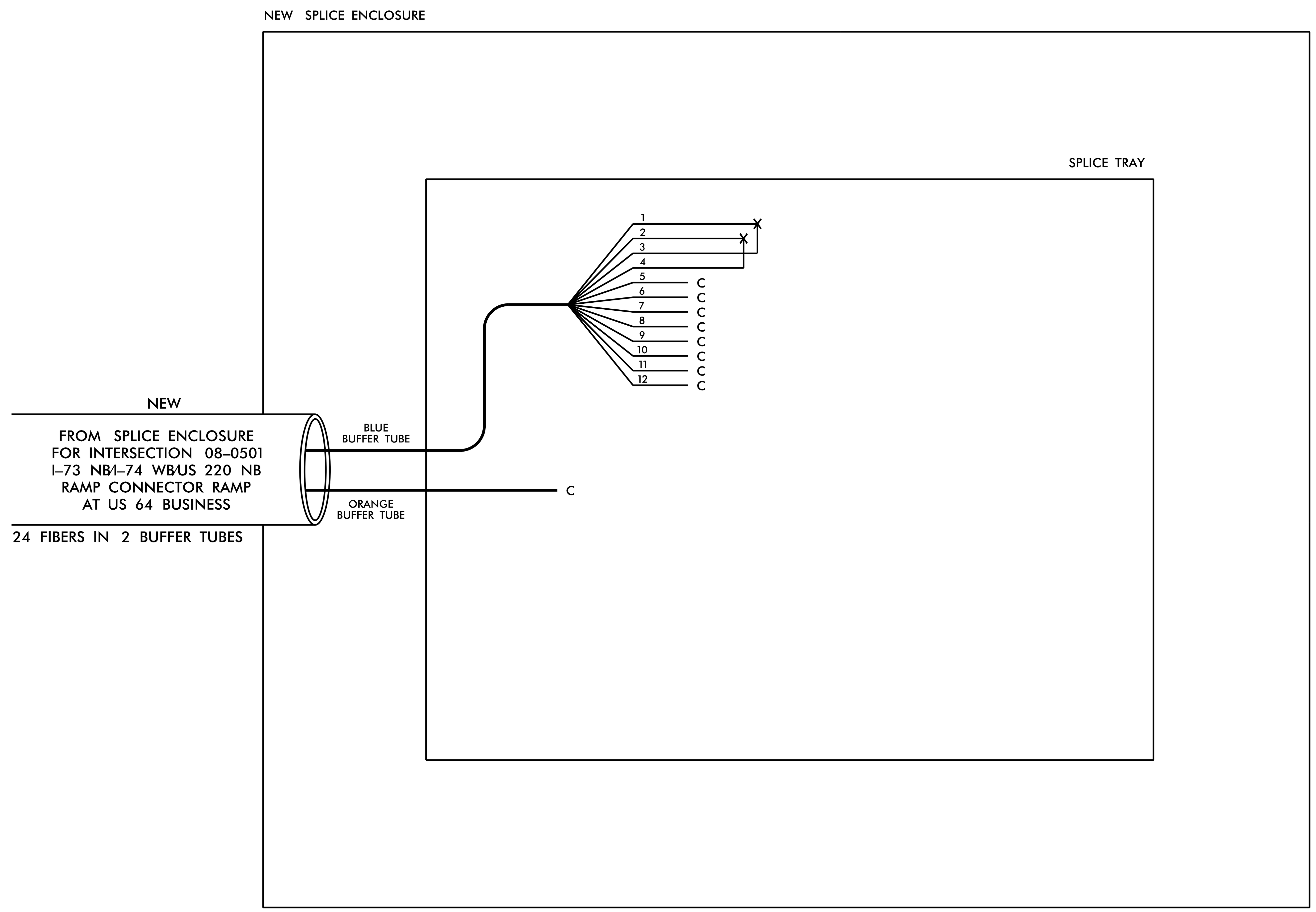
EXPRESS = EXPRESS ENTIRE BUFFER TUBE THROUGH WITHOUT CUTTING
BUFFER SPLICE = SPLICE ALL FIBERS IN BUFFER TUBE COLOR TO COLOR



NOTES:

1. UNUSED FIBERS LEFT COILED AND STORED IN SPLICE TRAY.

2. UNUSED BUFFER TUBES LEFT COILED AND STORED IN SPLICE TRAY.

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

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

   (1) SPLICE
   (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.

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Plans Prepared for:
Transportation Mobility and Safety Division – ITS & Signals Management Section
750 N. Greenfield Pkwy., Garner, NC 27529

FIBER SPLICE DETAIL

Division 8 Randolph County Asheboro

PLAN DATE:	Sept 2021	REVIEWED BY:	J.A. Wagner
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

SCALE
NONE

REVISIONS	INIT.	DATE

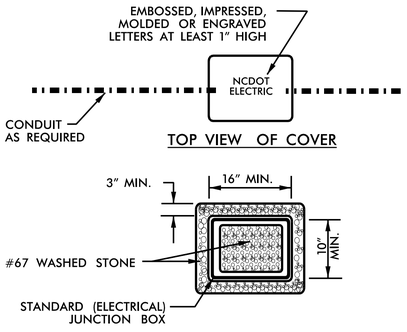
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by:
Natasha R Simmons 5/21/2024
SIGNATURE DATE

CADD Filename: U5813_SCP-13.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5813	SCP. 14

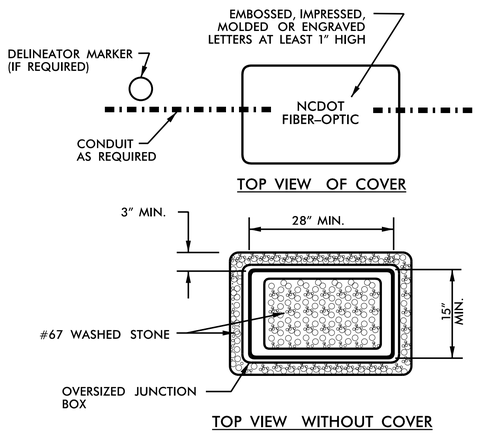
STANDARD (ELECTRICAL) JUNCTION BOX



TOP VIEW OF COVER

TOP VIEW WITHOUT COVER

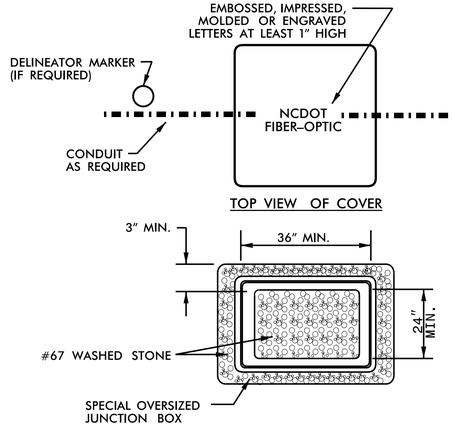
OVERSIZED HEAVY DUTY JUNCTION BOX



TOP VIEW OF COVER

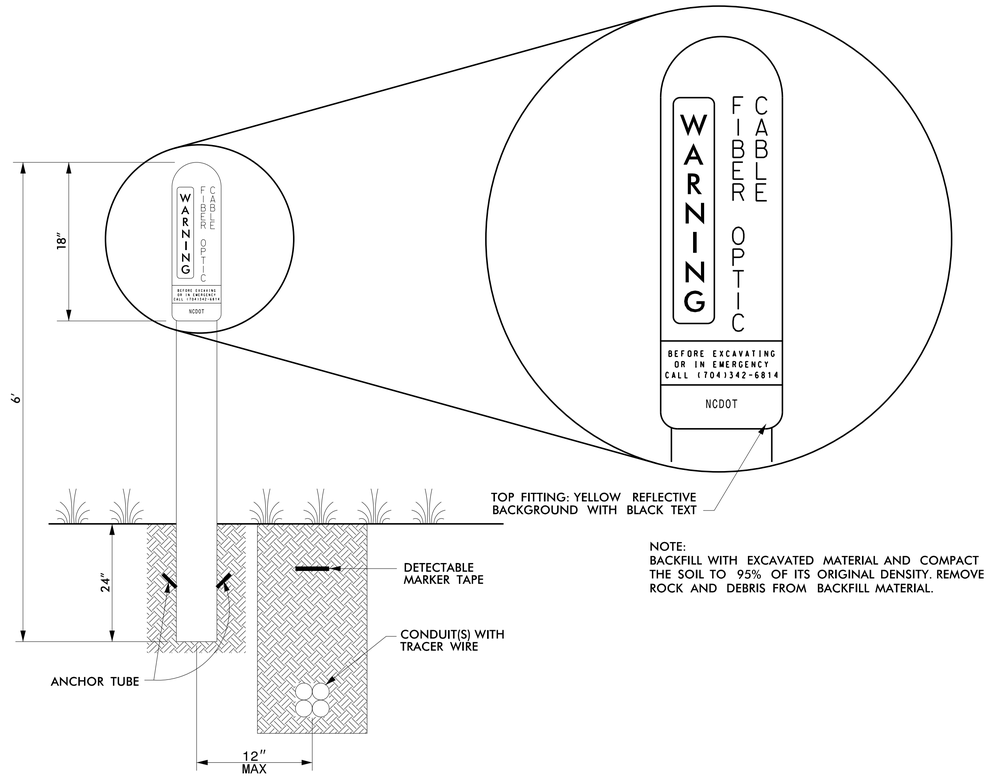
TOP VIEW WITHOUT COVER

SPECIAL OVERSIZED HEAVY DUTY JUNCTION BOX



TOP VIEW OF COVER

TOP VIEW WITHOUT COVER



NOTE:
BACKFILL WITH EXCAVATED MATERIAL AND COMPACT THE SOIL TO 95% OF ITS ORIGINAL DENSITY. REMOVE ROCK AND DEBRIS FROM BACKFILL MATERIAL.

PVC POST–MOUNTED DELINEATOR MARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Plans Prepared for:

NC DEPARTMENT OF TRANSPORTATION — Transportation Mobility and Safety Division — Traffic Engineering Branch — Signal Management Section

750 N. Greenfield Pkwy., Garner, NC 27529

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TYPICAL DETAILS

Division 8 | Randolph County | Asheboro

PLAN DATE:	Sept 2021	REVIEWED BY:	J.A. Wagner
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

SCALE: NONE

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R Simmons 5/21/2024
SIGNATURE DATE

CADD Filename: u5813_SCP-14.dgn