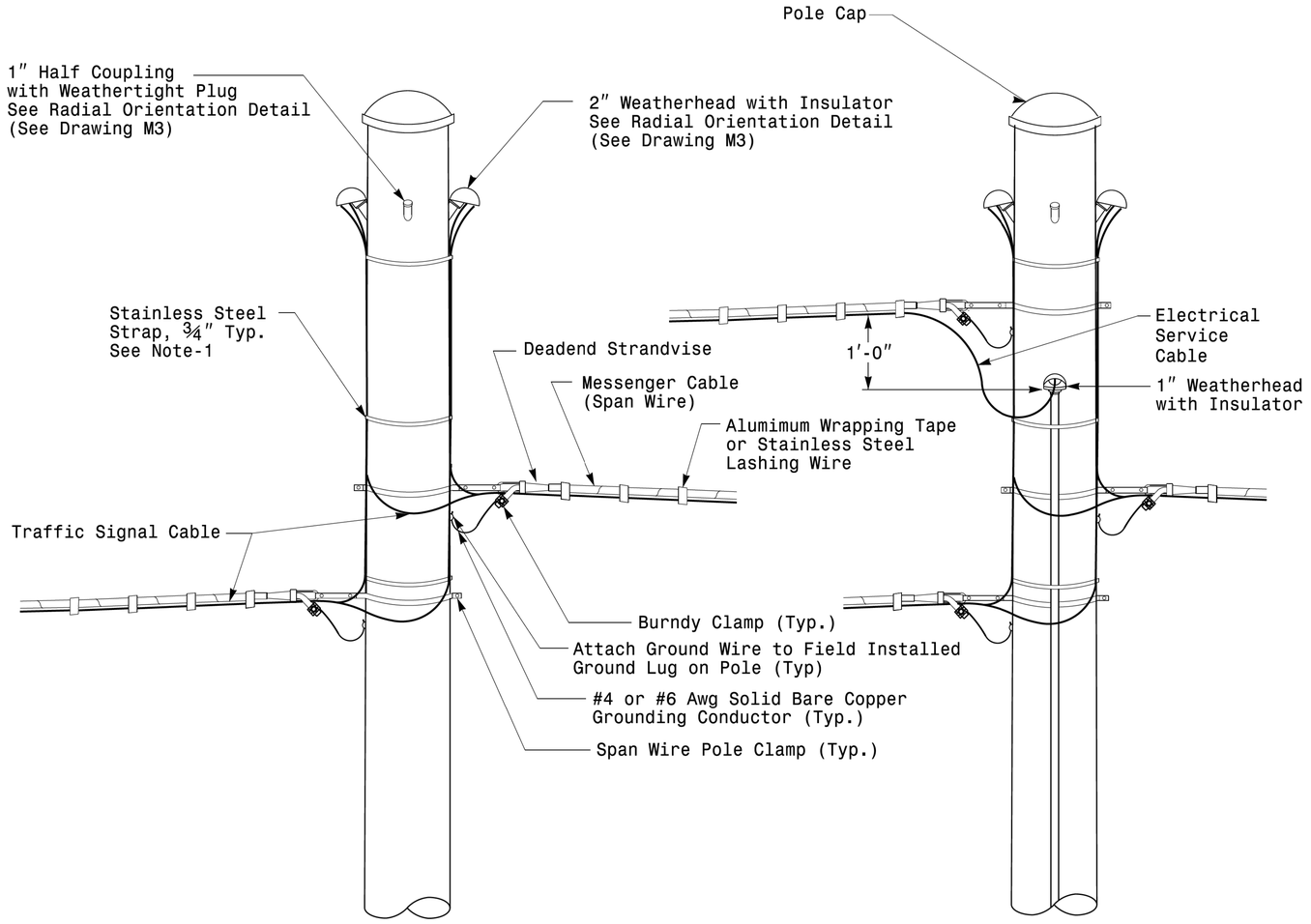
PROJECT ID. NO.	SHEET NO.
R-3833C	Sig.M6

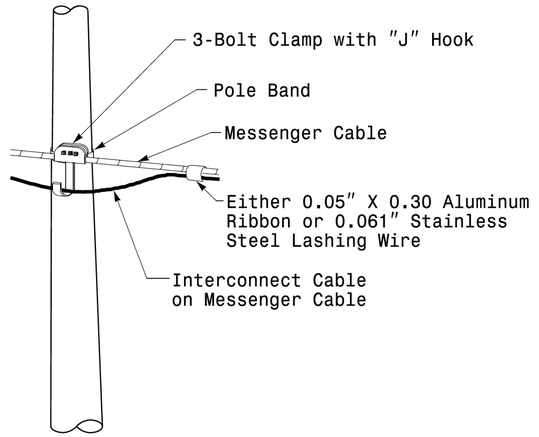
Fabrication Details – Strain Pole Attachments



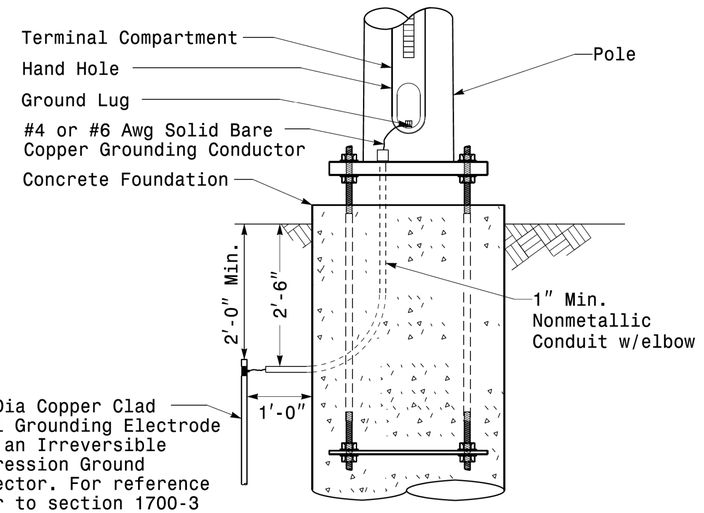
Strain Pole Attachments

NOTE:

1. Strap all signal cables to the side of the pole with ¾″ stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 3′-0″.
2. Provide minimum two spanwire 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 2018.



Attachment of Cable to Intermediate Metal Pole



Metal Pole Grounding Detail For Strain Pole and Mast Arm

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
Strain Pole Attachments

PLAN DATE:	OCTOBER 2017	DESIGNED BY:	C.F.ANDREWS
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

REVISIONS	INIT.	DATE

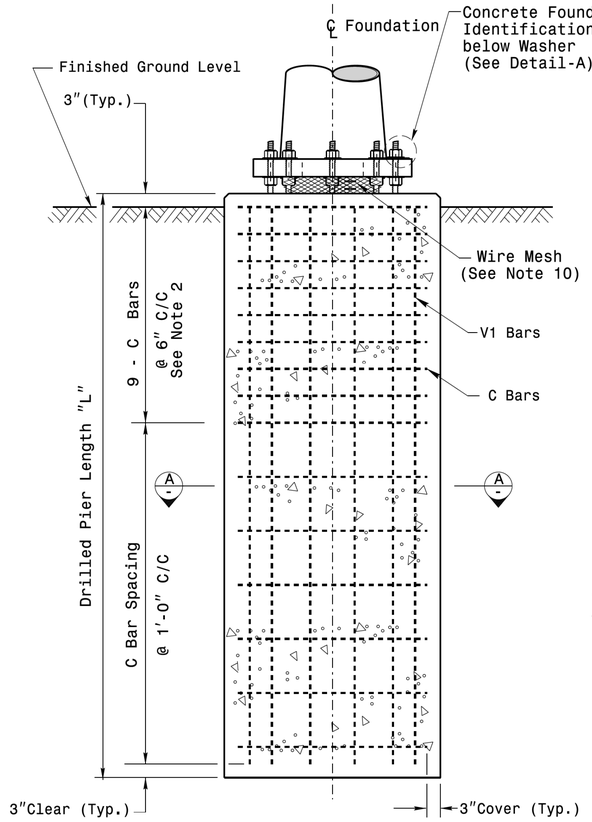
SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
028094
ENGINEER
DEBASH C. SARKAR

DocuSigned by: Debash C. Sarkar
SIGNATURE

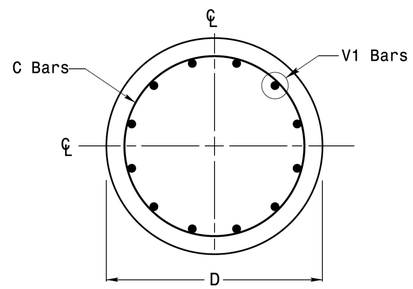
10/11/2017
DATE

PROJECT ID. NO.	SHEET NO.
R-3833C	Sig.M7

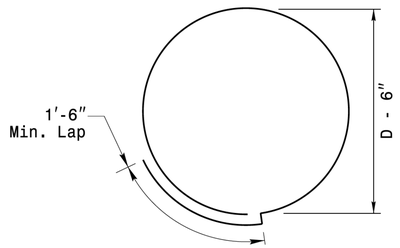
Construction Details – Foundations



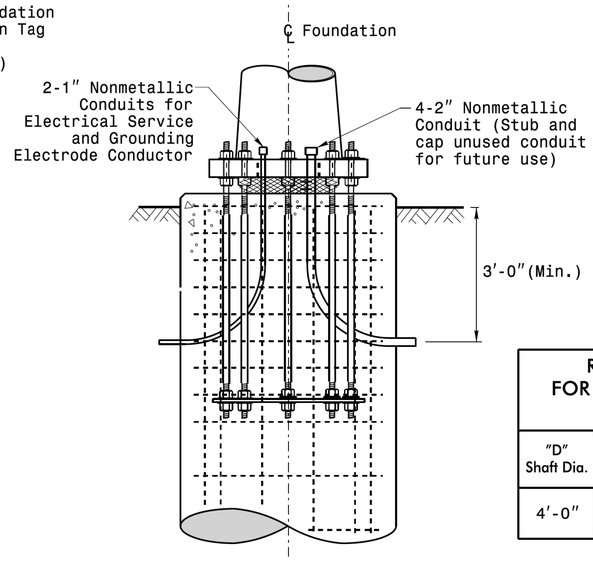
Concrete Shaft Elevation



Section A-A



Typical "C" Bar Detail



Typical Foundation Conduit Details

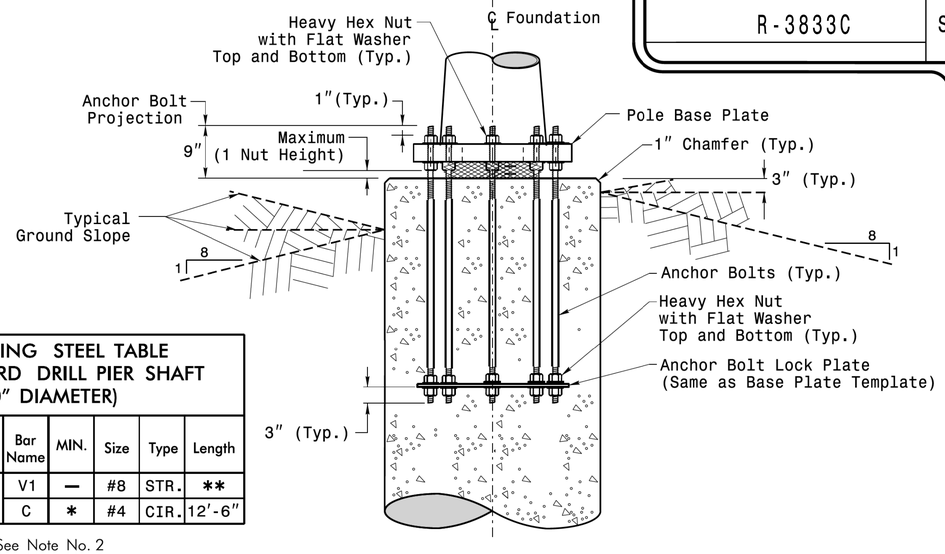
REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (4'–0" DIAMETER)						
"D" Shaft Dia.	Conc. Volume (cu. yds.)	Bar Name	MIN.	Size	Type	Length
4'-0"	.465 x L	V1	—	#8	STR.	**
		C	*	#4	CIR.	12'-6"

* See Note No. 2
** See Note No. 3

General Notes:

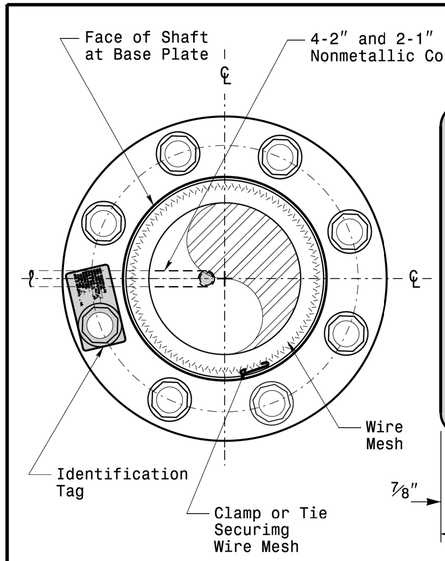
1. If actual subsurface conditions differ significantly from boring data contact the Engineer before excavating or placing concrete.
2. Circular tie reinforcing rings may be vertically adjusted by +/-3" at a depth between 2'-0" and 3'-0" to facilitate the installation of electrical conduit entering in 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 2018 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 the Identification Tag on the top of the base plate, directly above the conduit's entry point.
10. Provide two layers of galvanized welded 23 gauge (0.25) 6" wide 4 mesh wire 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.



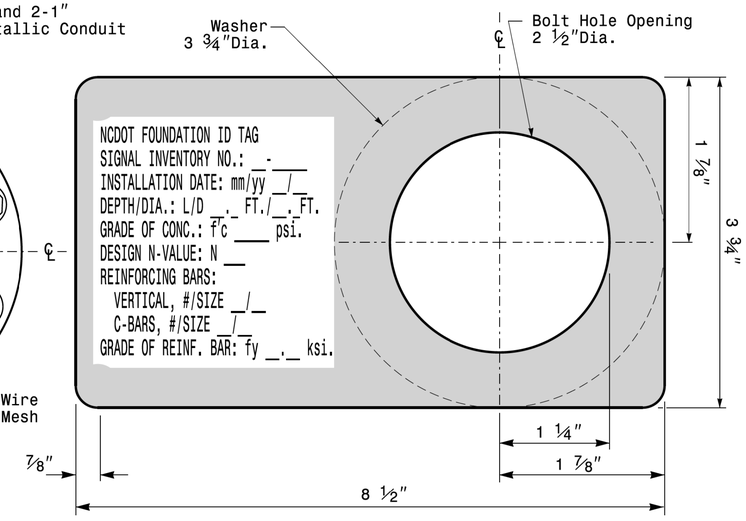
Typical Foundation Anchor Bolt Details

(Reinforcing Cage Not Shown for Clarity)



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
Traffic Engineering Branch
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

Construction Details For Foundations

PLAN DATE:	OCTOBER 2018	DESIGNED BY:	C.B.COGDELL
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

SCALE: 0 NA — NONE

REV. NO.	COMMENTS	INIT.	DATE
1	Revised Foundation Tag Details	N.B.	5/11/2015

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar
SIGNATURE

10/11/2017
DATE

11-OCT-2017 08:37
S:\ITS&SL\ITS Signals\Signal Design Section\Eastern Region\MW Sheets\2016\2014 Sig.M7 Std. Construction Details-Strain Poles.dgn
rnzitser

SOIL CONDITION

PROJECT ID. NO.	SHEET NO.
R-3833C	Sig.M8

		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.)
WIND ZONE 1	LIGHT	S26L3	26	25	2	11	270	19	13	10	8	17	14.5	12.5	8	12	4	12
		S30L3	30	25	2	11	300	19.5	13.5	10	8	17.5	15	13	8	14	4	12
		S35L3	35	25	3	11	320	20	13.5	10.5	8	17.5	15	13	8	14	4	12
	HEAVY	S30H3	30	29	3	16	450	24.5	16	12	9	21	17.5	15	8	16	4	6
		S35H3	35	29	4	16	515	26	17	12.5	9.5	22	18.5	16	8	16	4	6
WIND ZONE 2	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6
WIND ZONE 3	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6
WIND ZONE 4	LIGHT	S26L1	26	22	2	8	190	16	11.5	8.5	8	15	12.5	11	8	12	4	12
		S30L1	30	22	2	8	205	16.5	11.5	9	8	15	13	11.5	8	12	4	12
		S35L1	35	22	3	8	230	17	12	9	8	15.5	13.5	11.5	8	12	4	12
	HEAVY	S30H1	30	25	3	12	320	20.5	13.5	10.5	8	18	15	13.5	8	16	4	6
		S35H1	35	25	4	12	350	21	14	10.5	8.5	18.5	15.5	13.5	8	16	4	6
WIND ZONE 5	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6

48" Dia. Foundations 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 design CSR of 1.00.
2. Use chairs and spacers to maintain proper clearance.
3. For foundation, always use air-entrain 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 M 1 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 for Reference Drilled Shafts.

Prepared in the Offices of:
Traffic Engineering, Mobility and Safety Division
Traffic Signal Design Section
1561 Mail Service Center, Raleigh, NC 27699-1561
750 N.Greenfield Pkwy.,Garner,NC 27529

SCALE: 0 NA NONE

Standard Strain Pole Foundation for All Soil Conditions

PLAN DATE:	OCTOBER 2017	DESIGNED BY:	C.B. COGDELL
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

REVISIONS	INIT.	DATE
Changed "Foundation Depth" to "Drilled Pier Length"in Conc. Eqn.	N.B.	7/17/2015

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar
SIGNATURE

10/11/2017
DATE

Standard Strain Pole Foundation–All Soil Condition

11-OCT-2017 08:40
S:\MTS&SU\MTS Signals\Signal Design Section\Eastern Region\MW Sheets\2016\2014 Sig_M8 Std. Strain Pole Found.-Saturated Soil Condition.dgn
rnzinger

09/08/09

TIP PROJECT: R–3833C

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

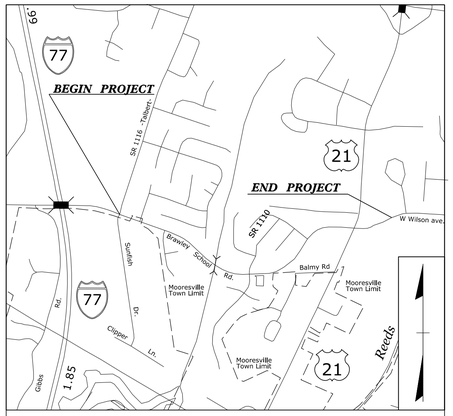
IREDELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–3833C	1	

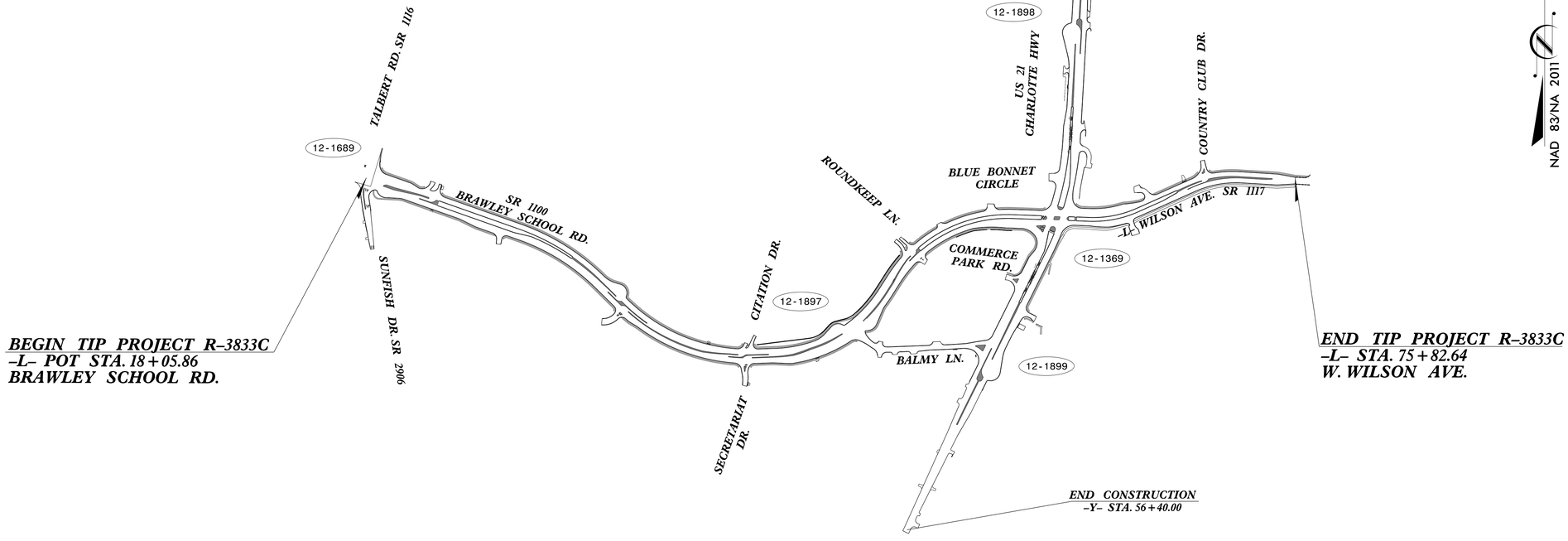
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34554.1.FD1		P.E
34554.2.4		R/W
34554.2.5		UTIL

LOCATION: SR 1100 BRAWLEY SCHOOL ROAD FROM SR 1116 TALBERT ROAD TO 1000' EAST OF US 21

TYPE OF WORK: TRAFFIC SIGNAL COMMUNICATIONS SYSTEM #11210



VICINITY MAP



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF MOORESVILLE

2018 STANDARD SPECIFICATIONS

PROJECT LENGTH:
1.940 MILES

LETTING DATE:
MAY 22nd, 2022

INDEX OF PLANS

SCP–1	TITLE SHEET
SCP–2	CONSTRUCTION NOTES AND LEGEND
SCP–3 thru SCP–7	CABLE ROUTING PLANS
SCP–8 thru SCP–10	FIBER–OPTIC SPLICING DETAILS

ROADWAY STANDARD DRAWINGS

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

STD. No.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURE
1101.04	TEMPORARY SHOULDER CLOSURE
1715.01	UNDERGROUND CONDUIT - TRENCHING
1716.01	JUNCTION BOXES
1721.01	GUY ASSEMBLIES
1730.01	FIBER OPTIC CABLE - SPARE CABLE STORAGE
1751.02	CONTROLLERS AND CABINETS - POWER, GROUND, AND AUXILIARY

LEGEND

XX-XXXX *SIGNAL INVENTORY No.*

NCDOT CONTACT:
TRANSPORTATION SAFETY AND MOBILITY
INTELLIGENT TRANSPORTATION SYSTEMS SECTION

Gregory Green
Signal Communication Project Engineer

Heidi Berggren, EIT
Signal Communication Project Design Engineer

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Rd-Suite 300
Raleigh, NC 27606
Tel. 919.851.6866
Fax. 919.851.7024
www.stantec.com
License No. F-0672

Larry Overn, PE, PTOE
Senior Transportation Engineer

Regina Muncey, PE
Transportation Engineer

Dean Harris
Senior Transportation Designer

Ryan Costello, EIT
Transporation Engineer In Training

Prepared for the Offices of:
ITS & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

NORTH CAROLINA PROFESSIONAL SEAL 045933 ENGINEER JAMES E. OVERN
Docusigned by: James E. Overn
9636FFF6548C427...
SIGNATURE
11/2/2022
DATE

PROJECT REFERENCE NO.	SHEET NO.
R-3833C	SCP-02

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 30 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

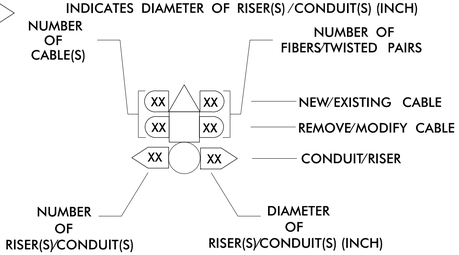
LEGEND

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

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

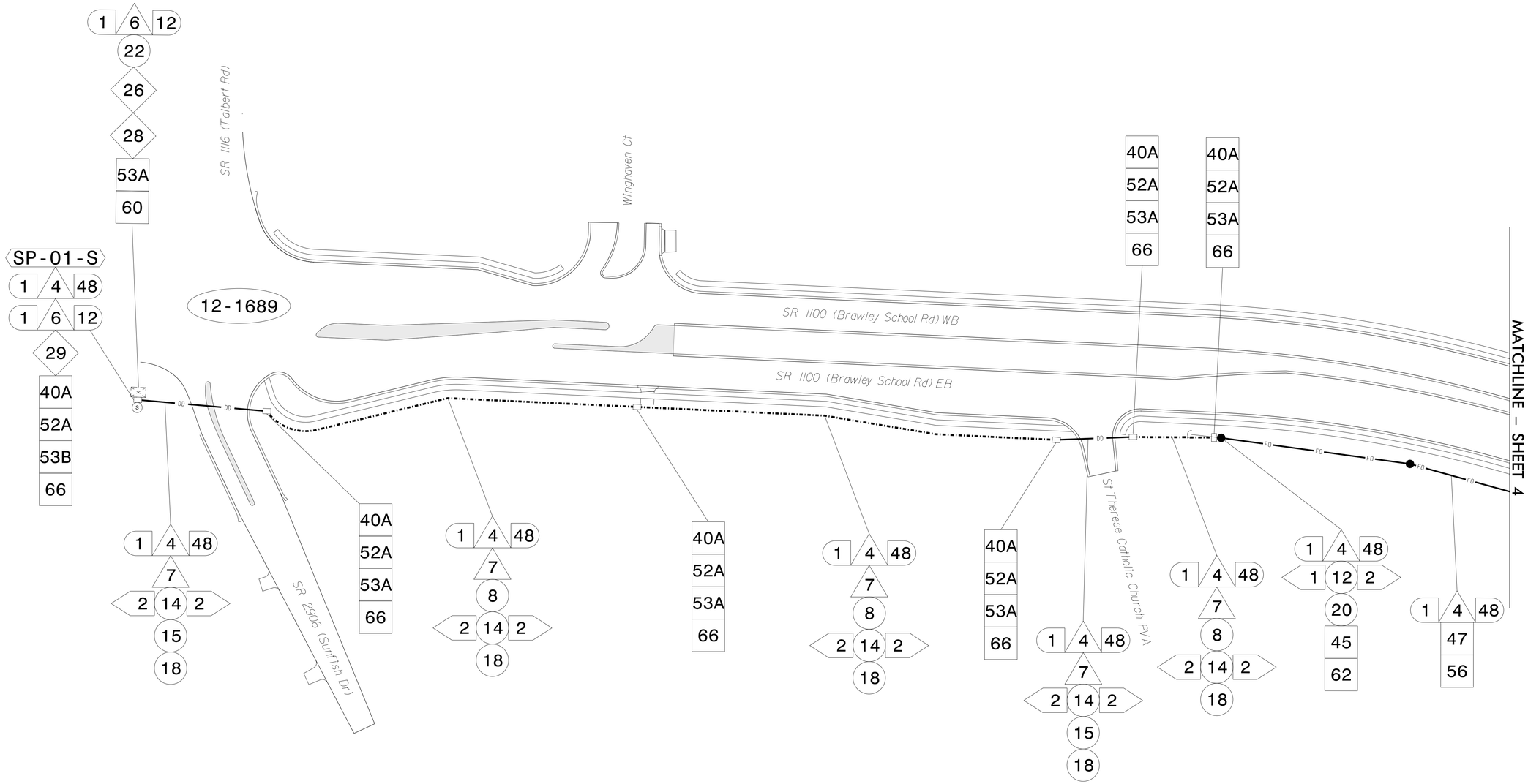
Prepared for the Offices of:
Traffic Engineering, Mobility and Safety Division
Traffic Engineering Branch
Signals Management Section
DEPARTMENT OF TRANSPORTATION
STATE OF NORTH CAROLINA
750 N.Greenfield Pkwy.Garner,NC 27529

Construction Notes and Legend

Division 12 Catawba and Iredell Co. Mooresville
PLAN DATE: May 2022 REVIEWED BY: E D Harris
PREPARED BY: R J Costello REVIEWED BY: L Overn
SCALE: N.T.S.
REVISIONS | INIT. | DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 045933 ENGINEER LAWRENCE E. OVERN II
DocuSigned by: 11/2/2022
SIGNATURE DATE
CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
R-3833C	SCP-03



NOTES:
1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT DIVISION 12 TRAFFIC ENGINEER AT (980) 552-4214 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 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 OPERATIONAL.

2) ALL CABLE ATTACHMENT POINTS ARE 40″ BELOW POWER, FRONT SIDE OF POLE (FS) UNLESS OTHERWISE NOTED.

3) CELL MODEM FOR MASTER SIGNAL SYSTEM CABINET WILL BE PROVIDED TO CONTRACTOR BY NCDOT. CONTRACTOR MUST CONTACT NCDOT DIVISION 12 TRAFFIC ENGINEER, BYRON ENGLE AT 980-552-4214 SIX (6) WEEKS PRIOR TO INSTALLATION TO ALLOW LEAD TIME FOR ACQUIRING DEVICES.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Prepared for the Offices of:
Traffic Engineering, Signal Design & Electronics Section
NCDEPARTMENT OF TRANSPORTATION
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1100 (Brawley School Road)
Cable Routing Plan

Division 12 Catawba and Iredell Co. Mooresville

PLAN DATE:	May 2022	REVIEWED BY:	E D Harris
PREPARED BY:	R J Costello	REVIEWED BY:	L Overn

SCALE: 0 100 1"=100'

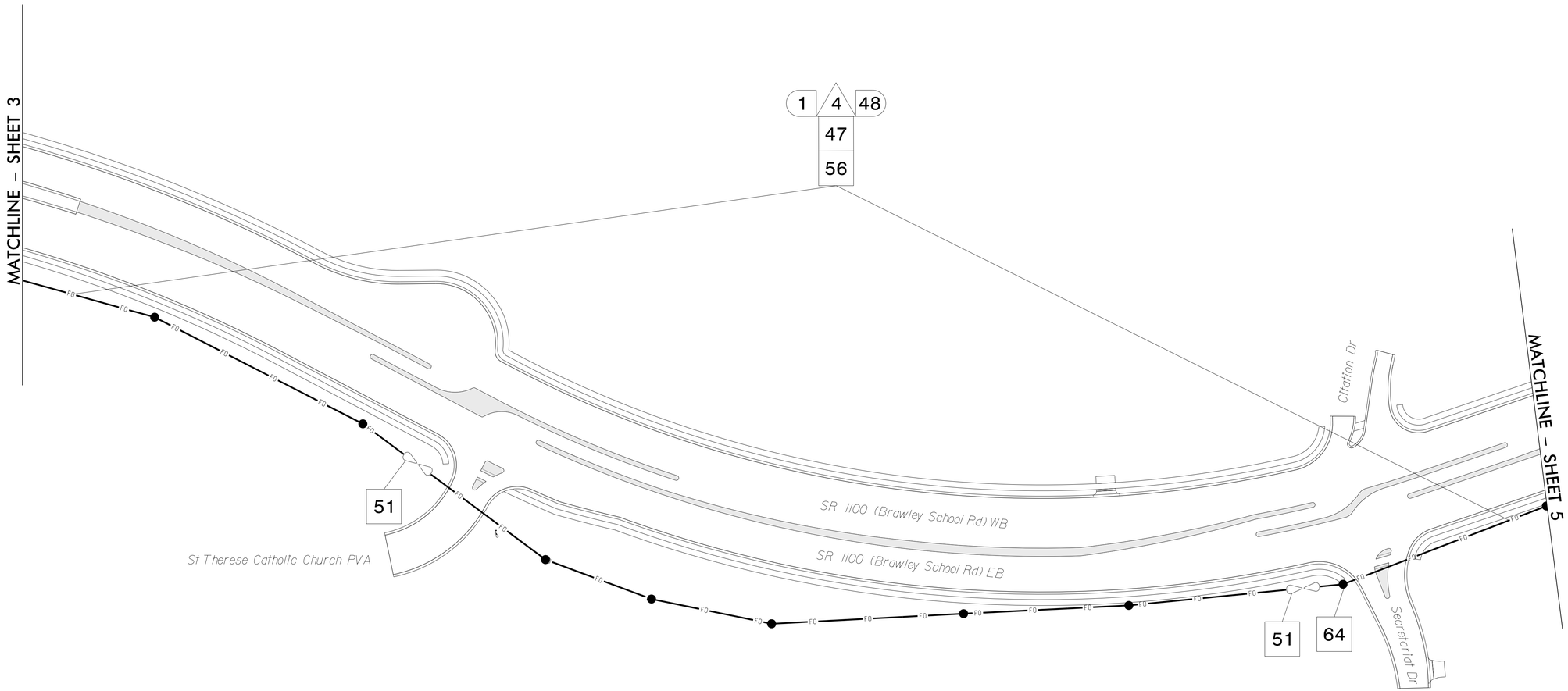
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 045933 ENGINEER LAWRENCE E. OVERN II

DocuSigned by:
11/2/2022
SIGNATURE DATE

CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
R-3833C	SCP-04



NOTES:
1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT DIVISION 12 TRAFFIC ENGINEER AT (980) 552-4214 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 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 OPERATIONAL.

2) ALL CABLE ATTACHMENT POINTS ARE 40″ BELOW POWER, FRONT SIDE OF POLE (FS) UNLESS OTHERWISE NOTED.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Prepared for the Offices of:
Traffic Engineering Branch, Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE
0 100
1"=100'

SR 1100 (Brawley School Road) Cable Routing Plan

Division 12 Catawba and Iredell Co. Mooresville

PLAN DATE: May 2022
PREPARED BY: R J Costello
REVIEWED BY: E D Harris
REVIEWED BY: L Overn

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

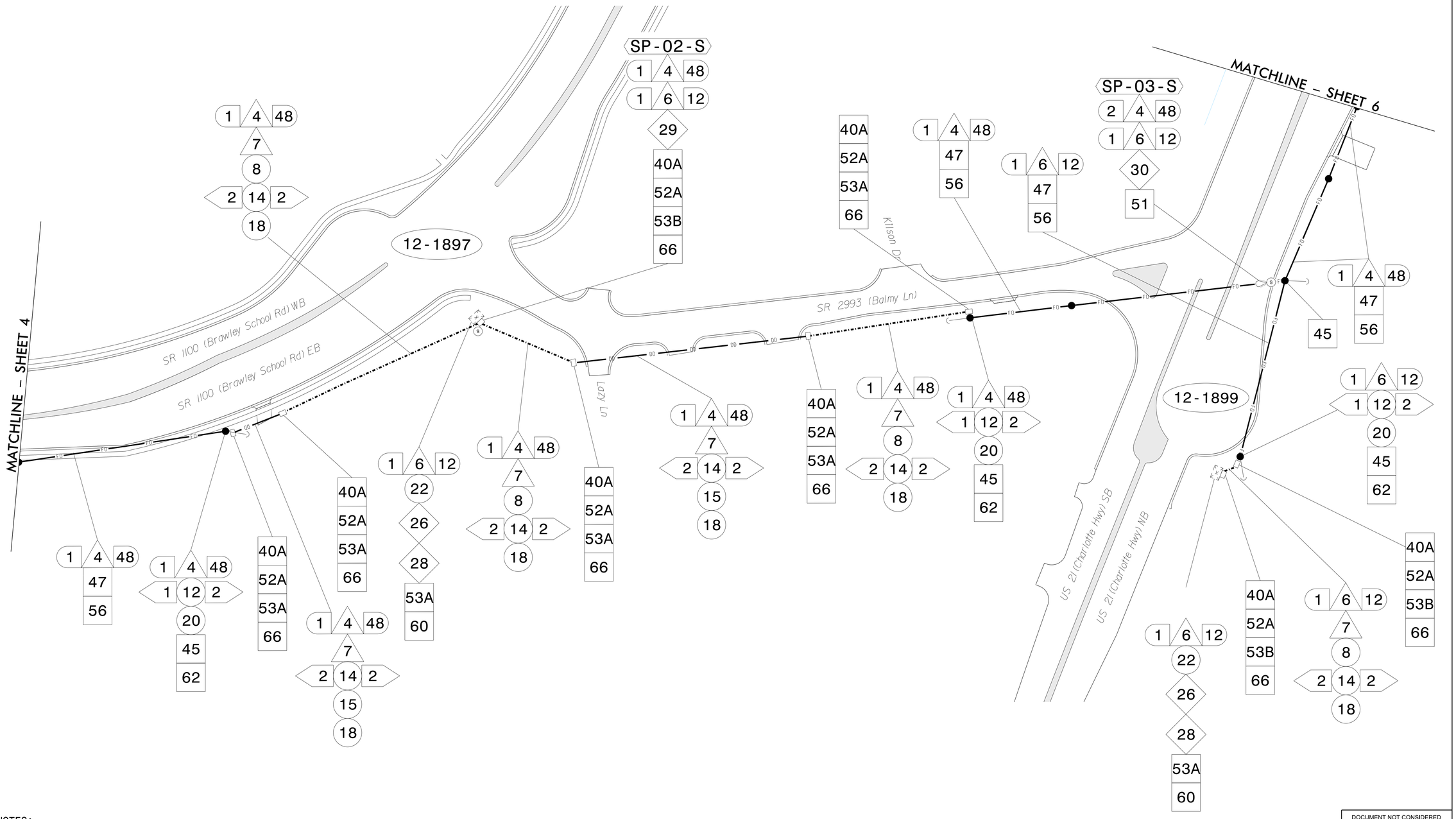
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 045933 ENGINEER LAWRENCE E. OVERN II

DocuSigned by:
9636EF0A4C4B4...
11/2/2022
DATE

CADD Filename:

1:41:15 PM
U:\Traffic\Signals\Design\ITS and SCP Design\Cable Routing\R3833C_scp_04.dgn
User:rmuncey

PROJECT REFERENCE NO.	SHEET NO.
R-3833C	SCP-05



NOTES:
1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT DIVISION 12 TRAFFIC ENGINEER AT (980) 552-4214 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 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 OPERATIONAL.

2) ALL CABLE ATTACHMENT POINTS ARE 40″ BELOW POWER, FRONT SIDE OF POLE (FS) UNLESS OTHERWISE NOTED.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

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

SCALE
0 100
1"=100'

SR 1100 (Brawley School Road)/ US 21 (Charlotte Hwy) Cable Routing Plan

Division 12 Catawba and Iredell Co. Mooresville

PLAN DATE:	May 2022	REVIEWED BY:	E D Harris
PREPARED BY:	R J Costello	REVIEWED BY:	L Overn

REVISIONS	INIT.	DATE

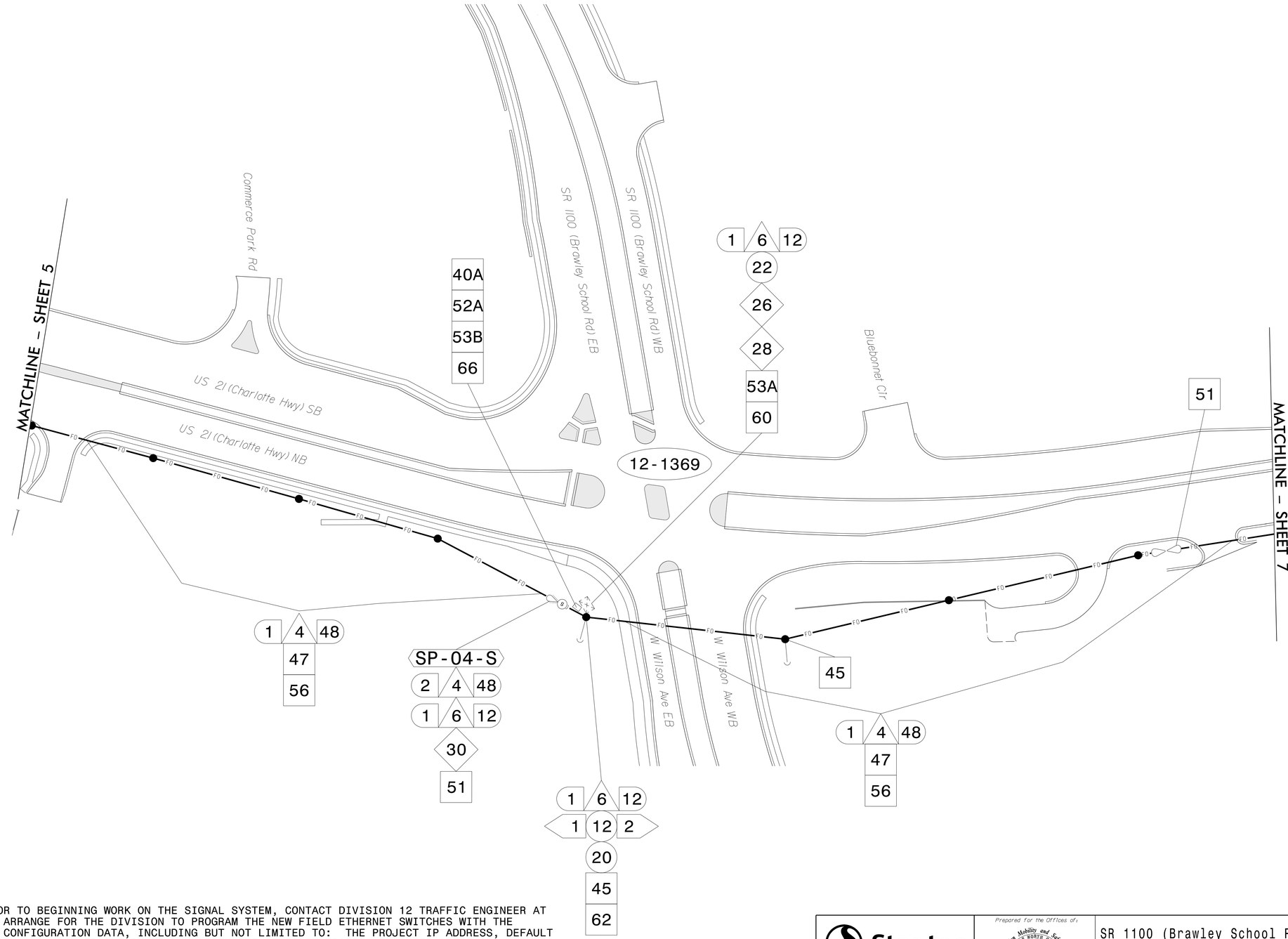
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 045933 ENGINEER
AMBROSE E. OVERN II

DocuSigned by:
SIGNATURE
11/2/2022
DATE

CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
R-3833C	SCP-06



NOTES:
1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT DIVISION 12 TRAFFIC ENGINEER AT (980) 552-4214 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 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 OPERATIONAL.

2) ALL CABLE ATTACHMENT POINTS ARE 40″ BELOW POWER, FRONT SIDE OF POLE (FS) UNLESS OTHERWISE NOTED.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Prepared for the Offices of:
Traffic Engineering, Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1100 (Brawley School Road)/
US 21 (Charlotte Hwy)
Cable Routing Plan

Division 12 Catawba and Iredell Co. Mooresville

PLAN DATE:	May 2022	REVIEWED BY:	E D Harris
PREPARED BY:	R J Costello	REVIEWED BY:	L Overn

REVISIONS	INIT.	DATE

SCALE 0 100 1"=100'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

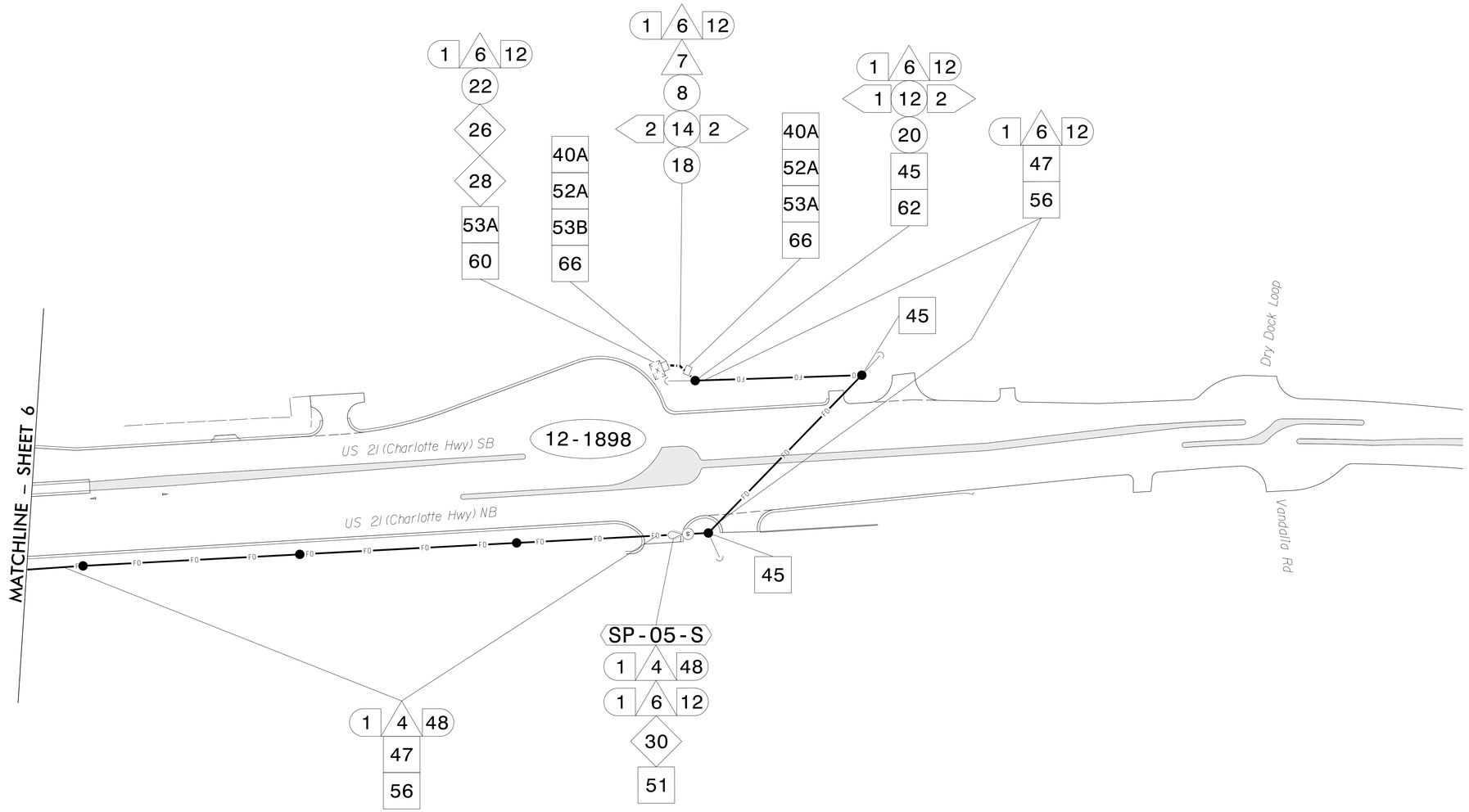
SEAL
NORTH CAROLINA
SEAL 045933
PROFESSIONAL ENGINEER
LAWRENCE E. OVERNITE

Docusigned by:
11/2/2022
DATE

CADD Filename:

1:41:18 PM
U:\Traffic\Signals\Design\ITS and SCP Design\Cable Routing\R3833C_scp_06.dgn
User:rmuncey

PROJECT REFERENCE NO.	SHEET NO.
R-3833C	SCP-07



NOTES:
1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT DIVISION 12 TRAFFIC ENGINEER AT (980) 552-4214 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 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 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.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Prepared for the Offices of:
Traffic Engineering, Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

US 21 (Charlotte Hwy) Cable Routing Plan

Division 12 Catawba and Iredell Co. Mooresville

PLAN DATE:	May 2022	REVIEWED BY:	E D Harris
PREPARED BY:	R J Costello	REVIEWED BY:	L Overn

SCALE 0 100 1"=100'

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 045933 ENGINEER LAWRENCE E. OVERN II

DocuSigned by: 11/2/2022
DATE

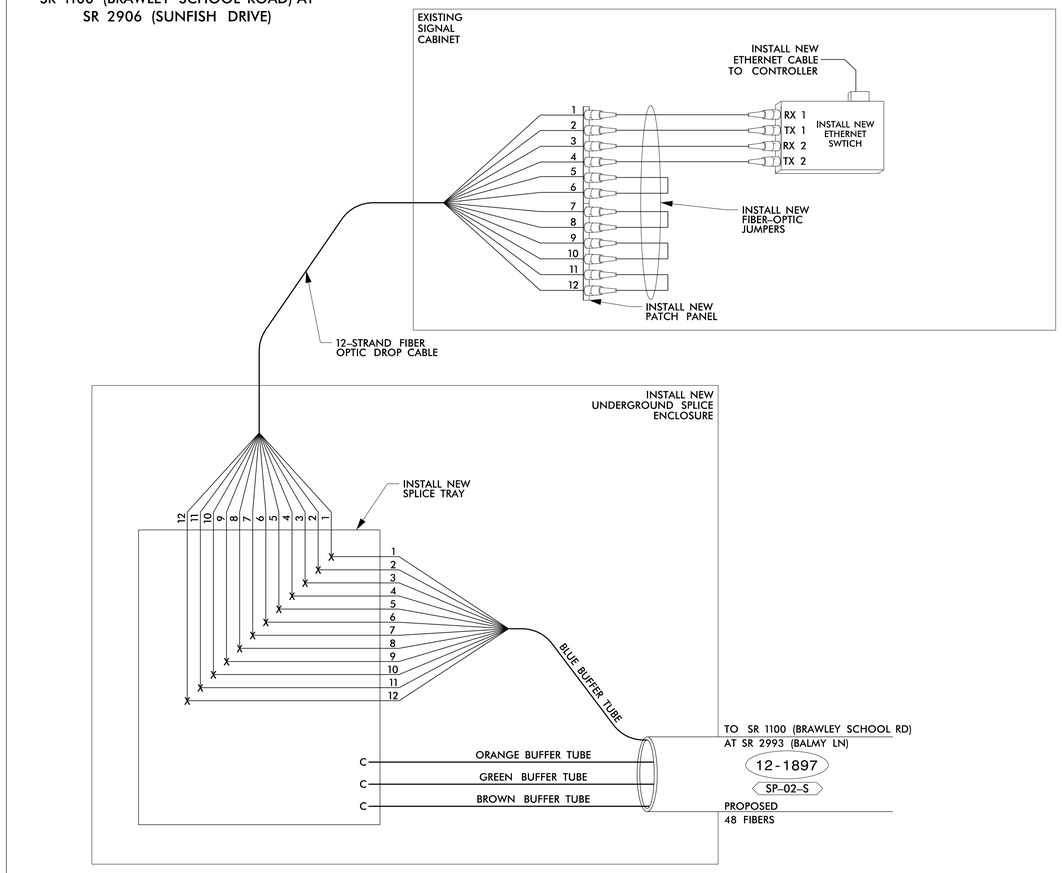
CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
R-3833C	SCP-08

SPLICE NUMBER:
SP–01–S

12-1689

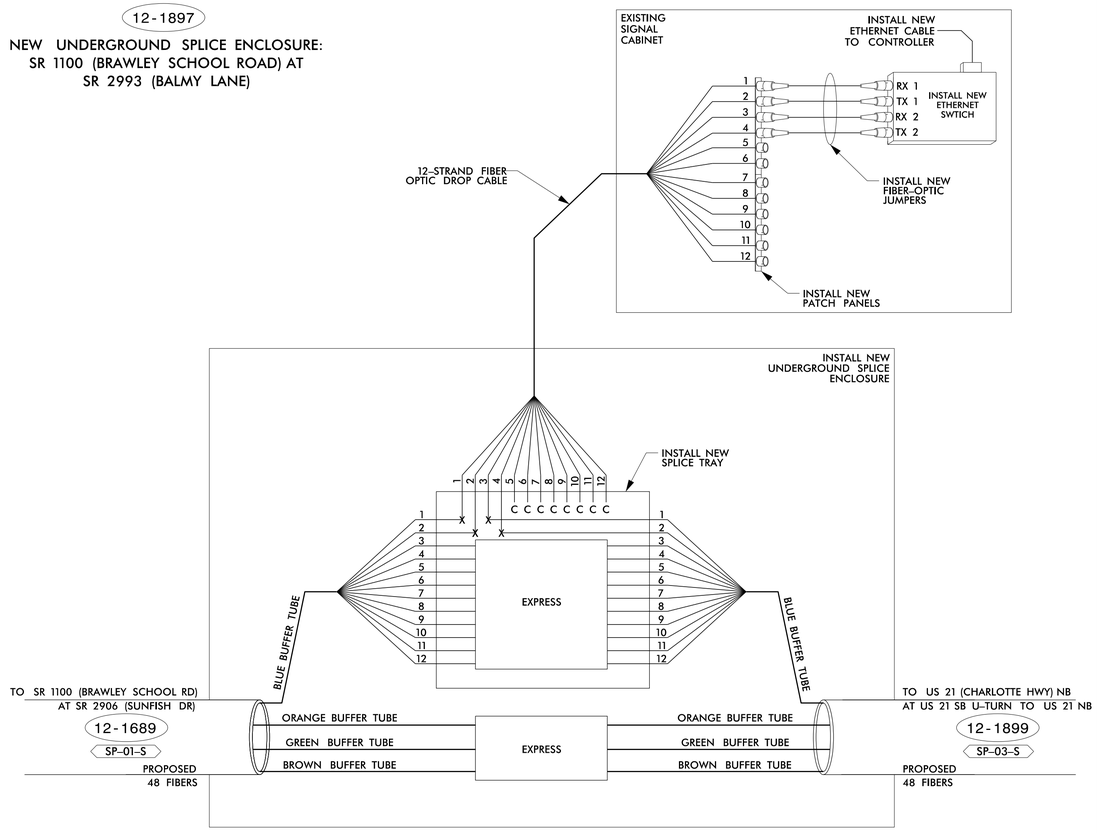
NEW UNDERGROUND SPLICE ENCLOSURE:
SR 1100 (BRAWLEY SCHOOL ROAD) AT
SR 2906 (SUNFISH DRIVE)



SPLICE NUMBER:
SP–02–S

12-1897

NEW UNDERGROUND SPLICE ENCLOSURE:
SR 1100 (BRAWLEY SCHOOL ROAD) AT
SR 2993 (BALMY LANE)



LEGEND

COLOR CODE TIA/EIA 598–B			
(1) BLUE	(7) RED	E =	EXISTING FUSION SPLICE INDIVIDUAL FIBER TO REMAIN
(2) ORANGE	(8) BLACK		
(3) GREEN	(9) YELLOW	X =	FUSION SPLICE INDIVIDUAL FIBER
(4) BROWN	(10) VIOLET	C =	CAP AND SEAL
(5) SLATE	(11) ROSE		
(6) WHITE	(12) AQUA	EXPRESS =	EXPRESS ENTIRE BUFFER TUBE FIBERS THROUGH WITHOUT CUTTING
		BUFFER SPLICE =	SPLICE ALL FIBERS IN BUFFER TUBE COLOR TO COLOR
		=	SM FIBER PATCH CORD WITH CONNECTORS

NOTES:

1. UNUSED FIBERS AND/OR BUFFER TUBES LEFT COILED AND STORED IN SPLICE TRAY.
2. ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING/ENSURING THE PROPER TERMINATIONS.
3. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE NCDOT DIVISION 12 TRAFFIC ENGINEER BYRON ENGLE, AT 980–552–4214 TO ARRANGE FOR NCDOT 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 NCDOT DIVISION 12 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 UP AND OPERATIONAL.
4. INCLUDE ON THE COVER OF SPLICE TRAY THE FOLLOWING INFORMTION (REFERENCE STANDARD SPECIFICATIONS SECTION 1731):
   - A. SPLICE LOCATION
   - B. DATE
   - C. COMPANY NAME
   - D. NAME OF INDIVIDUAL PERFORMING THE SPLICE

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

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Prepared for the Offices of:
Traffic Engineering Branch, Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

N.T.S.

SR 1100 (Brawley School Road)/ US 21 (Charlotte Hwy) Fiber Optic Splice Details

Division 12 | Iredell County | Mooresville

PLAN DATE:	March 2022	REVIEWED BY:	E D Harris
PREPARED BY:	R M Muncey	REVIEWED BY:	L Overn

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 045933 ENGINEER
LAWRENCE E. OVERN II

DocuSigned by:
9B3B2FE6B4B24D3...
SIGNATURE
11/2/2022
DATE

CADD Filename:

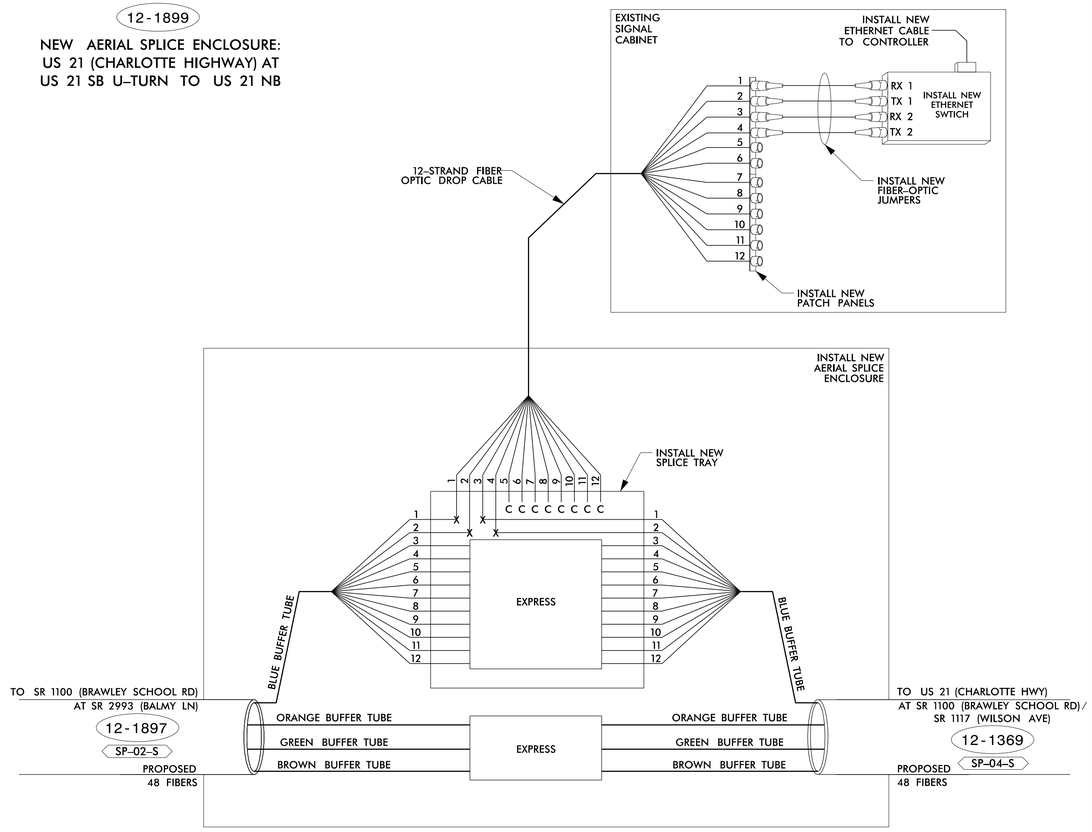
1:41:23 PM
U:\Traffic\Signals\Design\TIS and SCP Design\Fiber Splicing Details\R-3833C_SCP_FS.dgn
User:rmuncey

PROJECT REFERENCE NO.	SHEET NO.
R-3833C	SCP-09

SPLICE NUMBER: SP–03–S

12-1899

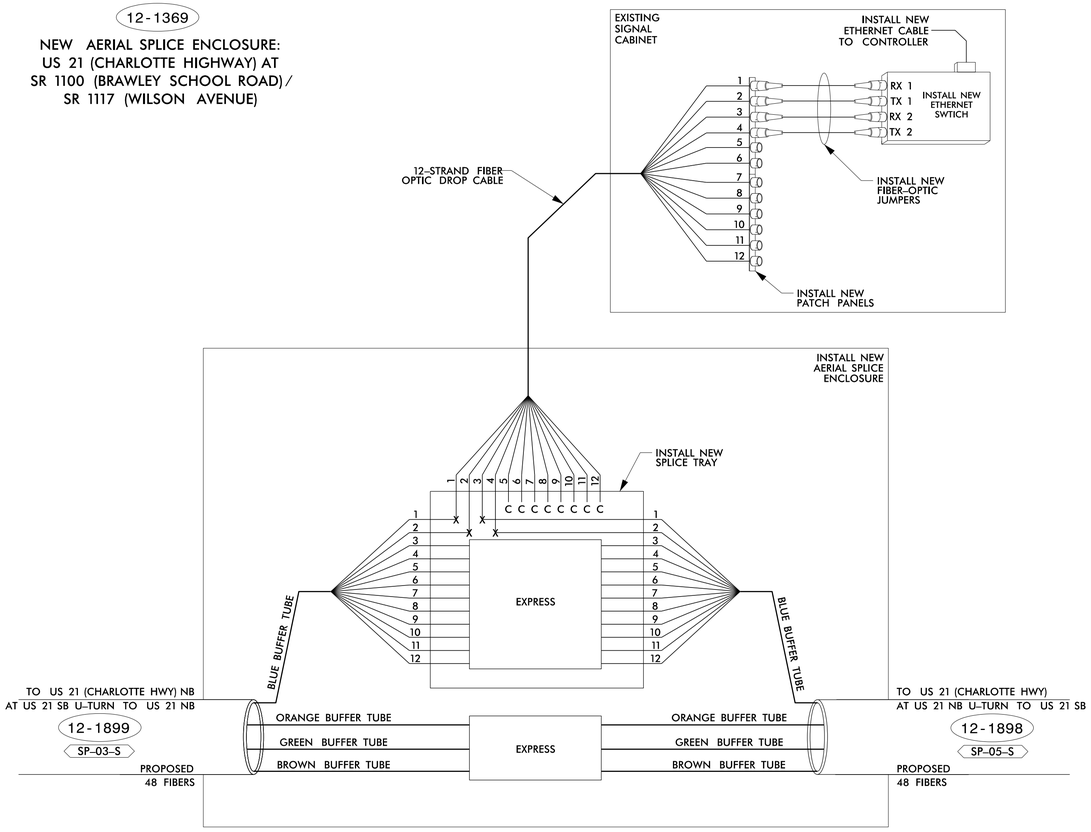
NEW AERIAL SPLICE ENCLOSURE:
US 21 (CHARLOTTE HIGHWAY) AT
US 21 SB U–TURN TO US 21 NB



SPLICE NUMBER: SP–04–S

12-1369

NEW AERIAL SPLICE ENCLOSURE:
US 21 (CHARLOTTE HIGHWAY) AT
SR 1100 (BRAWLEY SCHOOL ROAD)/
SR 1117 (WILSON AVENUE)



LEGEND

COLOR CODE TIA/EIA 598–B				
(1) BLUE	(7) RED			
(2) ORANGE	(8) BLACK			
(3) GREEN	(9) YELLOW	X	=	FUSION SPLICE INDIVIDUAL FIBER
(4) BROWN	(10) VIOLET			
(5) SLATE	(11) ROSE	C	=	CAP AND SEAL
(6) WHITE	(12) AQUA	EXPRESS	=	EXPRESS ENTIRE BUFFER TUBE FIBERS THROUGH WITHOUT CUTTING
		BUFFER SPLICE	=	SPLICE ALL FIBERS IN BUFFER TUBE COLOR TO COLOR
			=	SM FIBER PATCH CORD WITH CONNECTORS

E = EXISTING FUSION SPLICE INDIVIDUAL FIBER TO REMAIN

NOTES:

1. UNUSED FIBERS AND/OR BUFFER TUBES LEFT COILED AND STORED IN SPLICE TRAY.
2. ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING/ENSURING THE PROPER TERMINATIONS.
3. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE NCDOT DIVISION 12 TRAFFIC ENGINEER, BYRON ENGLE, AT 980–552–4214 TO ARRANGE FOR NCDOT 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 NCDOT DIVISION 12 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 UP AND OPERATIONAL.
4. INCLUDE ON THE COVER OF SPLICE TRAY THE FOLLOWING INFORMTION (REFERENCE STANDARD SPECIFICATIONS SECTION 1731):
   - A. SPLICE LOCATION
   - B. DATE
   - C. COMPANY NAME
   - D. NAME OF INDIVIDUAL PERFORMING THE SPLICE

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

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Prepared for the Offices of:
Traffic Engineering Branch, Traffic Management Unit, Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N.Greenfield Pkwy.Garner,NC 27529

N.T.S.

SR 1100 (Brawley School Road)/ US 21 (Charlotte Hwy) Fiber Optic Splice Details

Division 12	Iredell County	Mooresville	
PLAN DATE: March 2022		REVIEWED BY:	E D Harris
PREPARED BY: R M Muncey		REVIEWED BY:	L Overn

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL 045933
ENGINEER
LAWRENCE E. OVERN II

DocuSigned by:
96387F7B4A0C4D3...
SIGNATURE
11/2/2022
DATE

CADD Filename:

1:41:24 PM
U:\Traffic\Signals\Design\ITS and SCP Design\Fiber Splicing Details\R-3833C_SCP_FS.dgn
User:rmuncey

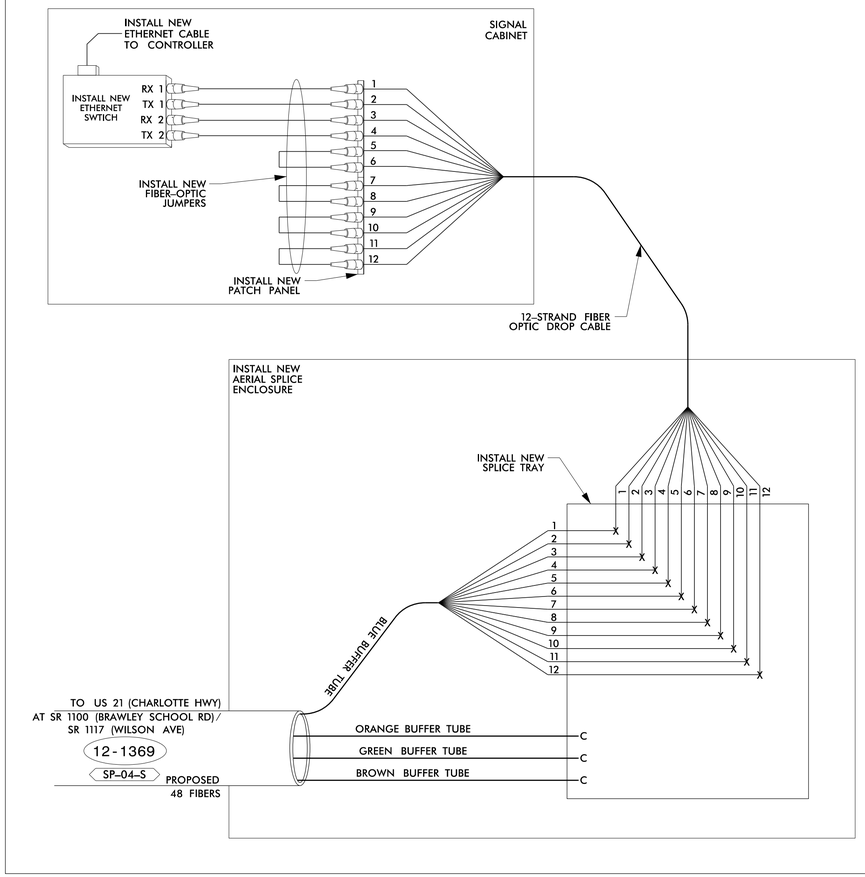
PROJECT REFERENCE NO.	SHEET NO.
R-3833C	SCP-10

SPLICE NUMBER:

SP–05–S

12-1898

NEW AERIAL SPLICE ENCLOSURE:
US 21 (CHARLOTTE HIGHWAY) AT
US 21 NB U–TURN TO US 21 SB



LEGEND

COLOR CODE TIA/EIA 598–B			
(1) BLUE	(7) RED	E	= EXISTING FUSION SPLICE INDIVIDUAL FIBER TO REMAIN
(2) ORANGE	(8) BLACK		
(3) GREEN	(9) YELLOW	X	= FUSION SPLICE INDIVIDUAL FIBER
(4) BROWN	(10) VIOLET	C	= CAP AND SEAL
(5) SLATE	(11) ROSE		
(6) WHITE	(12) AQUA	EXPRESS	= EXPRESS ENTIRE BUFFER TUBE/FIBERS THROUGH WITHOUT CUTTING
		BUFFER SPLICE	= SPLICE ALL FIBERS IN BUFFER TUBE COLOR TO COLOR
			= SM FIBER PATCH CORD WITH CONNECTORS

NOTES:

1. UNUSED FIBERS AND/OR BUFFER TUBES LEFT COILED AND STORED IN SPLICE TRAY.
2. ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING/ENSURING THE PROPER TERMINATIONS.
3. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE NCDOT DIVISION 12 TRAFFIC ENGINEER, BYRON ENGLE AT 980-552-4214 TO ARRANGE FOR NCDOT 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 NCDOT DIVISION 12 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 UP AND OPERATIONAL.
4. INCLUDE ON THE COVER OF SPLICE TRAY THE FOLLOWING INFORMTION (REFERENCE STANDARD SPECIFICATIONS SECTION 1731):
   - A. SPLICE LOCATION
   - B. DATE
   - C. COMPANY NAME
   - D. NAME OF INDIVIDUAL PERFORMING THE SPLICE

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

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Prepared for the Offices of:
NC Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

N.T.S.

SR 1100 (Brawley School Road)/
US 21 (Charlotte Hwy)
Fiber Optic Splice Details

Division 12 | Iredell County | Mooresville

PLAN DATE:	March 2022	REVIEWED BY:	E D Harris
PREPARED BY:	R M Muncey	REVIEWED BY:	L Overn

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL 045933
ENGINEER
LAWRENCE E. OVERN, II

DocuSigned by:
SIGNATURE
11/2/2022
DATE

CADD Filename:

1:41:26 PM
U:\Traffic\Signals\Design\ITS and SCP Design\Fiber Splicing Details\R-3833C_SCP_FS.dgn
User:rmuncey