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09/08/99

# TIP PROJECT: R–2828

# CONTRACT: C204197

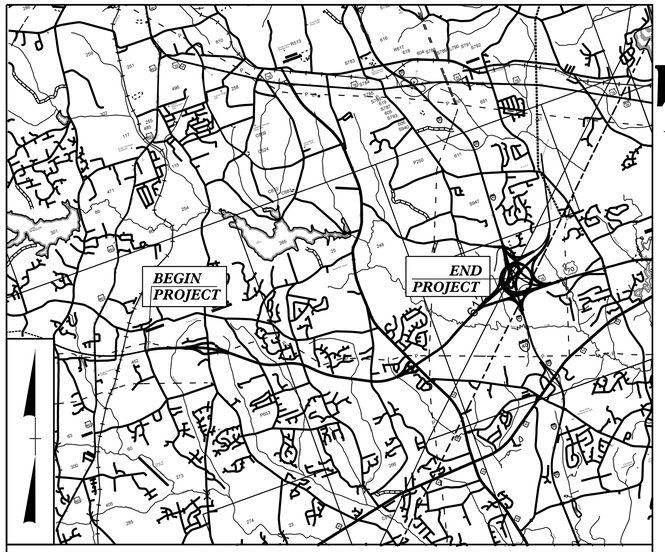
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| N.C. | R–2828 | ITS-01 | |

| STATE PROJ. NO. | F. A. PROJ. NO. | DESCRIPTION |
|---|---|---|
| 35516.3.GV1 | NHP–0540(043) | DESIGN–BUILD |
| 35516.2.3 | NHP–0540(043) | R/W |
| 35516.2.TA1 | NHP–0540(043) | R/W |

# WAKE & JOHNSTON COUNTIES

See Sheet ITS-02 For Index of Sheets




VICINITY MAP (NOT TO SCALE)

***LOCATION: TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION FROM EAST OF US 401 TO EAST OF I–40***

***TYPE OF WORK: INSTALLATION OF FIBER–OPTIC COMMUNICATIONS NETWORK, CCTV, DMS, MVD AND TOLL SYSTEMS***

***END TIP PROJECT R–2828***
***BEGIN TIP PROJECT R–2829***
***END CONSTRUCTION***
***–L– STA. 968+50.00***

***END TIP PROJECT R–2721B***
***BEGIN TIP PROJECT R–2828***
***–L– STA. 500+00.00***

***BEGIN CONSTRUCTION***
***–L– STA. 499+67.43***






RFC
ITS PLANS

SUBMITTAL: X–286R1
DATE: 11–19–2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Office of:
NORTH CAROLINA Turnpike Authority

Prepared for the Office of:
Transportation Mobility and Safety Division
Intelligent Transportation Systems Section
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Parkway
Garner, NC 27529

***GRAPHIC SCALES***

50 25 0 50 100
PLANS

***DESIGN DATA***

ADT 2018 = NA
ADT 2040 = 53,400
DHV = 12 %
D = 65 %
T = 11 % *
V = 75 MPH
*(TTST 4 + DUAL 7)

FUNCTIONAL CLASS: FREEWAY

***PROJECT LENGTH***

LENGTH OF ROADWAY PROJECT R–2828 = 8.055 Miles

LENGTH OF STRUCTURE PROJECT R–2828 = 0.562 Miles

TOTAL LENGTH OF TIP PROJECT R–2828 = 8.617 Miles

***NCDOT CONTACT:*** RODGER ROCHELLE, PE
*TURNPIKE AUTHORITY – CHIEF ENGINEER, INNOVATIVE DELIVERY*

Prepared In the Office of
WSP USA
1001 MOREHEAD SQUARE DR.
SUITE 400
CHARLOTTE, NC 28203
TEL: 1.704.342.5401
LICENSE NO. F-0165

*FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION*

*2018 STANDARD SPECIFICATIONS*

***RIGHT OF WAY DATE:*** NOV. 30, 2018

***LETTING DATE:*** NOV. 30, 2018

DANIEL BRIDGES, PE
*PROJECT ENGINEER*

DANIEL A JOHNSON, PE
*PROJECT DESIGN ENGINEER*

***ITS DESIGN ENGINEER***

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
002F2ECTOD9E49F...
*P.E.*
***SIGNATURE:***

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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | ITS-02 |

# INDEX OF SHEETS


| SHEET | DESCRIPTION |
|---|---|
| ITS–01 | Title Sheet |
| ITS–02 | Index of Sheets /Roadway Standard Drawings |
| ITS–03 | General Notes /Legend /Abbreviations |
| ITS–04 | Equipment Installation Summary |
| ITS–05 | System/Network Block Diagram |
| ITS–06 | Power Service Data |
| FS–01 | ITS & Toll Index of Splice Diagrams |
| FS–02 | ITS Communications Schematic |
| FS–03 | Toll Communications Schematic |
| FS–04 | Communications Schematic NCDOT Fiber |
| FS–05 thru FS–18 | Fiber Splice Details |
| CM–01 | Communications Construction Notes |
| CM–02 thru CM–51 | Cable Routing Plans |
| SD–01 | CCTV – Block Diagram Typical Detail (Revised V–1) |
| SD–02 | CCTV – Pole–Grounding Cabinet (Revised V–3) |
| SD–03 | CCTV – Pole–Mounted Cabinet (Revised V–4) |
| SD–04 | DMS – Block Diagram (Revised D–1) |
| SD–05 | DMS – Electrical Service and Grounding (Revised D–3) |
| SD–06 | MVD – Block Diagram (Revised M–1) |
| SD–07 | MVD – Elevation View (Revised M–2) |
| SD–08 | MVD – Microwave Detection Cabinet Layout (Revised M–3A) |
| SD–09 | MVD – Cabinet Layout with CCTV (Revised M–3B) |
| SD–10 | MVD – Grounding (Revised M–4) |
| SD–11 | MVD – Pole Placement (Revised M–5A) |
| SD–12 | MVD – Pole Placement with CCTV Equipment (Revised M–5B) |
| SD–13 | MVD – Sensor Mounting (Revised M–6) |
| SD–14 | Power Service Detail – Ground Mounted Cabinet (Revised P–1) |
| SD–15 | Power Service Detail Pole – Mounted Cabinet (Revised P–2) |
| SD–16 | Typical Configuration at Begin/End of Bridge |
| SD–17 | HUB Cabinet Layout |
| SD–18 | Junction Box Concrete Collar Detail |
| SD–19 | Power Service Detail Transformer Options |
| SD–20 | Duke Transformer Pad Concuit Layout |
| NCTA ITS Standard Detail V–2 | CCTV – Steel Pole |
| NCTA ITS Standard Detail V–5 | CCTV – Camera Lowering Device |
| NCTA ITS Standard Detail V–6 | CCTV – Cabinet Layout |
| NCTA ITS Standard Detail D–2A | DMS – Typical Mounting AET Gantry Structure |
| NCTA ITS Standard Detail D–2B | DMS – Typical Mounting On–site DMS Not at Toll Zone |
| NCTA ITS Standard Detail D–2C | DMS – Typical Mounting Off–site DMS |
| NCTA ITS Standard Detail D–4 | DMS – Cabinet Layout |
| NCTA ITS Standard Detail M–7 | Microwave Detection Placement Schematic |
| NCTA ITS Standard Detail W–1 | Wrong–Way Driver Detection Mainline Sign Infrastructure |
| NCTA ITS Standard Detail W–2a | Wrong–Way Driver Detection Ramp Sign Infrastructure Power Service From Outside of Ramp |
| NCTA ITS Standard Detail W–2b | Wrong–Way Driver Detection Ramp Sign Infrastructure Power Service From Inside of Ramp |


# ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES 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 ADVANCED WARNING SIGNS |
| 1101.02 | TEMPORARY LANE CLOSURES |
| 1101.03 | TEMPORARY ROAD CLOSURES |
| 1101.04 | TEMPORARY SHOULDER CLOSURES |
| 1101.11 | TRAFFIC CONTROL DESIGN TABLES |
| 1110.02 | PORTABLE WORK ZONE SIGNS |
| 1115.01 | FLASHING ARROW BOARDS |
| 1130.01 | DRUM |
| 1135.01 | CONES |
| 1145.01 | BARRICADES |
| 1150.01 | FLAGGING DEVICES |
| 1165.01 | WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION |
| 1180.01 | SKINNY–DRUM |
| 1700.01 | ELECTRICAL SERVICE OPTIONS |
| 1700.02 | ELECTRICAL SERVICE GROUNDING |
| 1715.01 | UNDERGROUND CONDUIT – TRENCHING |
| 1716.01 | JUNCTION BOXES |
| 1720.01 | WOOD POLES |


Plans Prepared By:

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Prepared for the Offices of:

NORTH CAROLINA Turnpike Authority

Index of Sheets/
Roadway Standard Drawings

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
DOZE2EC7DD5E48F DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | ITS-03 |

# GENERAL NOTES

1. THE FIELD LOCATION OF ANY ITEM TO BE INSTALLED AS PART OF THIS PROJECT SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
2. PIPELINES, STORM SEWERS, POWER CABLES, UTILITY CABLES, BASEMENTS, AND OTHER PUBLICLY AND PRIVATELY OWNED UNDERGROUND OBSTRUCTIONS EXIST ADJACENT TO AND WITHIN THE STREET RIGHT-OF-WAY WITH THE CONSTRUCTION LIMITS OF THIS PROJECT. INVESTIGATE THE LOCATION OF SUCH BURIED UTILITIES AND STRUCTURES WITH PUBLIC AND PRIVATE UTILITIES. CALL 811 (1-800-632-4949) OR VISIT WWW.NC811.ORG FOR UTILITY LOCATIONS.
3. THE PLAN SHEETS HAVE BEEN DEVELOPED AS CLOSE TO SCALE AS PRACTICAL. HOWEVER, ACTUAL FIELD CONDITIONS SHALL PROVIDE THE BASIS FOR APPLYING THE WORK SHOWN.
4. THE ROADWAY STANDARD DRAWINGS AND THE DETAILS PROVIDED IN THIS PLAN SET SHALL ALL APPLY TO ALL WORK REQUIRED IN THIS PROJECT, WHETHER A PARTICULAR DETAIL IS SPECIFICALLY REFERENCED TO A WORK ITEM OR NOT. IN THE EVENT OF A CONFLICT, THE ORDER OF PRECEDENCE SHALL BE: THE PROJECT SPECIAL PROVISIONS, THE PLAN SET INCLUDING DETAILS, SUPPLEMENTAL SPECIFICATIONS, THE NCTA AET STANDARD DRAWINGS, THE NCTA ITS STANDARD DRAWINGS, THE STANDARD SPECIFICATIONS, AND THEN THE ROADWAY STANDARD DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR APPLYING THE PROPER DETAILS.
5. ANY OF THE CONTRACTOR'S WORK ACTIVITIES WHICH IMPACT ANY UTILITY FACILITY SHALL BE COORDINATED WITH THE OWNER OF THE AFFECTED UTILITIES. THE CONTRACTOR SHALL FOLLOW ANY AND ALL WORK PROCEDURES THE UTILITY OWNERS MAY REQUIRE.
6. ALL WORK SHOWN ON THESE PLANS SHALL BE PERFORMED BY THE CONTRACTOR UNLESS SPECIFICALLY NOTED TO BE PERFORMED BY OTHERS.
7. SEE SIGNING AND AET PLANS FOR ADDITIONAL DETAILS ON DMS LOCATIONS.
8. SEE AET PLANS FOR ADDITIONAL DETAILS ON AET PADS, AET GANTRIES, AND CONDUITS AND JUNCTION BOXES INSTALLED WITHIN THE AET AREAS.
9. POLE HEIGHTS TO BE FIELD VERIFIED BY THE CONTRACTOR.
10. OVERSIZED JUNCTION BOXES TO BE PLACED APPROXIMATELY 1500 FEET APART UNLESS OTHERWISE NOTED ON PLANS.
11. ELECTRICAL SERVICE WIRES ARE SHOWN SCHEMATICALLY TO THE EQUIPMENT CABINETS. INSTALL SERVICE WIRES FROM METER/DISCONNECT EITHER DIRECTLY TO CABINET OR TO SECOND EQUIPMENT DISCONNECT AND THEN TO CABINET, AS SHOWN ON PLANS.
12. THE CONTRACTOR MAY, AT THEIR OPTION, INSTALL THE CONDUIT WITH TRENCHING IN LIEU OF DIRECTION DRILL, IF INSTALLATION IS PERFORMED BEFORE THE NEW ROADWAY PAVEMENT IS INSTALLED.
13. CONDUIT FOR ITS AND TOLL TRUNK LINE WILL BE INSTALLED ALONG LENGTH OF PROJECT. THE ITS AND NCDOT TRUNK LINE CABLES WILL BE COUNTED AS ONE CABLE AND INSTALLED IN THE SAME CONDUIT. THE TOLL TRUNK LINE CABLE WILL BE COUNTED AS ONE CABLE. TWO CONDUITS (ONE PER CABLE, ONE SPARE) WILL BE PROVIDED FOR EACH. FOLLOW COLOR CODE ON THIS SHEET FOR CONDUIT INSTALLATION. CONDUIT ROUTING FROM TRUNK LINE SHALL FOLLOW COLOR CODE BASED ON CABLES IN CONDUIT AS SHOWN ON THE PLAN SHEETS.
14. CONDUIT RUNS AND JUNCTION BOX LOCATIONS ARE SHOWN IN APPROXIMATE LOCATIONS. CONTRACTOR SHALL LOCATE CONDUIT AND JUNCTIONS BOXES IN A MANNER THAT AVOIDS CONFLICT WITH ALL EXISTING AND PROPOSED FEATURES AS FIELD CONDITIONS DICTATE.

# LEGEND

- FO — NEW FIBER OPTIC COMMUNICATIONS CABLE
- TWIST PR — NEW TWISTED PAIR 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
- B&J — NEW BORED AND JACKED CONDUIT
- NEW JUNCTION BOX
- EXISTING JUNCTION BOX
- NEW WOOD POLE
- EXISTING WOOD POLE
- S — UNDERGROUND SPLICE ENCLOSURE
- NEW METAL POLE
- EXISTING METAL POLE
- P — NEW STANDARD SIZED JUNCTION BOX FOR POWER
- M/D — METER WITH DISCONNECT IN COMBINATION PEDESTAL
- D — EQUIPMENT DISCONNECT
- T/D — TRANSFORMER WITH EQUIPMENT DISCONNECT
- UPS P — AET VAULT DISCONNECT PANEL – UPS POWER
- RAW P — AET VAULT DISCONNECT PANEL – RAW POWER
- P/T — PROPOSED TRANSFORMER PAD (INSTALLED BY POWER SERVICE PROVIDER)
- NEW CCTV ASSEMBLY
- EXISTING CCTV ASSEMBLY
- NEW EQUIPMENT CABINET
- EXISTING EQUIPMENT CABINET
- NEW SLAVE MVD CABINET
- NEW MICROWAVE DETECTOR
- H — HUB CABINET

# CONDUIT COLOR CODE

ITS & NCDOT CABLE – BLACK
ITS & NCDOT SPARE – ORANGE
TOLL CABLE – BLUE
TOLL SPARE – WHITE
POWER SERVICE – GRAY (SCHEDULE 80 AS PER RFP)
COMPOSITE CABLE/CAT6 – BLACK WITH WHITE STRIPES

# ABBREVIATIONS

| | |
|---|---|
| AET | All-Electronic Tolling |
| AVC | Automatic Vehicle Classification |
| AVI | Automatic Vehicle Identification |
| C | Conduit |
| CCTV | Closed-Circuit Television |
| C/L | Centerline |
| DBT | Design Build Team |
| DD | Directional Drill |
| DMS | Dynamic Message Sign |
| ELEC | Electric |
| EOP | Edge of Pavement |
| EQ | Equal Distance |
| FO | Fiber Optic |
| FON | Fiber Optic Network (includes conduit, fiber, boxes, etc.) |
| GFI | Ground Fault Interrupter |
| HDPE | High-Density Polyethylene Conduit |
| ITS | Intelligent Transportation Systems |
| KVA | KiloVolt Amp |
| LD | Lowering Device |
| LPS | Lighting Protection System |
| MVD | Microwave Vehicle Detection |
| NCDOT | North Carolina Department of Transportation |
| NCTA | North Carolina Turnpike Authority |
| NEC | National Electric Code |
| NEMA | National Electrical Manufacturers Association |
| NFPA | National Fire Protection Association |
| OH | Overhead |
| POE | Power Over Ethernet |
| PVC | Polyvinyl Chloride Conduit |
| RFP | Request for Proposals |
| R/W | Right-of-Way |
| RWIS | Roadside Weather Information System |
| SOW | Scope of Work |
| STA | Station Number |
| SPD | Surge Protection Device |
| TMC | Traffic Management Center |
| TOLL | NC Turnpike Authority |
| TSI | Toll System Integrator |
| TYP | Typical |
| UG | Underground |
| UL | Underwriters Laboratories |
| UPS | Uninterruptable Power Supply |
| WWD | Wrong Way Driver Notification |
| ZEC | Zone Equipment Cabinet |

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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority
750 N. Greenfield Pkwy., Garner, NC 27529

General Notes / Legend / Abbreviations

Wake & Divisions 4 & 5 Johnston Counties — Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON
DocuSigned by: Daniel A. Johnson 11-18-2020
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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | ITS-04 |

| CM SHEET NO. | DEVICE DESCRIPTION | DEVICE NAME | NCTA ASSET NO. | RDWY SECTION | STATION | ALIGNMENT | OFFSET | TOLL ZONE | INTERCHANGE/ CROSS STREET | SUPPORT | Metal Pole Height | Device Height* | Network Group |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CM-04 | MAINLINE HUB | HUB-6 | | R-2721B | 499+50 | L | RT 131' | | | | | | |
| CM-06 | MAINLINE CCTV | CCTV-14 | | A | 529+38 | L | RT 103' | | Fanny Brown Rd | CCTV POLE | 50' | 50' | ITS-1 |
| | MAINLINE MVD | MVD-M7A | | | | | | | | | | 27' | |
| CM-06 | MAINLINE MVD | MVD-M7B | | A | 529+31 | L | LT 98' | | Fanny Brown Rd | MVD POLE | 30' | 29' | ITS-1 |
| CM-08 | MAINLINE WWD | WWD-1 | | A | 549+50 | L | RT 10' | AET T41/ T42 | | TYPE III POLE | | | TOLL-1 |
| CM-08 | AET | AET T41/T42 | | A | 553+25 | L | | AET T41/ T42 | | | | | TOLL-1 |
| CM-08 | MAINLINE DMS | DMS-4 | | A | 553+50 | L | LT | AET T41/ T42 | | TOLL GANTRY | | | ITS-2 |
| CM-08 | MAINLINE WWD | WWD-2A | | A | 557+00 | L | LT 16' | AET T41/ T42 | | TYPE III POLE | | | Toll-1 |
| CM-08 | MAINLINE WWD | WWD-2B | | A | 557+00 | L | LT 98' | AET T41/ T42 | | TYPE III POLE | | | Toll-1 |
| CM-08 | MAINLINE CCTV | CCTV-15 | | A | 560+50 | L | LT 102' | | | CCTV POLE | 50' | 50' | ITS-3 |
| | MAINLINE MVD | MVD-M8A | | | | | | | | | | 35' | |
| | | MVD-M8B | | | | | | | | | | 25' | |
| CM-10 | RAMP MVD | MVD-R17 | | A | 26+89 | Y17RPB | RT 36' | | Old Stage Rd | MVD POLE | 35' | 33' | ITS-4 |
| CM-11 | RAMP MVD | MVD-R18 | | A | 21+00 | Y17RPC | RT 44' | | Old Stage Rd | MVD POLE | 35' | 33' | ITS-4 |
| CM-11 | RAMP WWD | WWD-3A | | A | 31+01 | Y17RPC | LT 27' | | Old Stage Rd | TYPE III POLE | | | TOLL-4 |
| CM-11 | RAMP WWD | WWD-3B | | A | 31+01 | Y17RPC | RT 50' | | Old Stage Rd | TYPE III POLE | | | TOLL-4 |
| CM-12 | RAMP WWD | WWD-4A | | A | 30+01 | Y17RPA | RT 34' | | Old Stage Rd | TYPE III POLE | | | TOLL-4 |
| CM-12 | RAMP WWD | WWD-4B | | A | 30+00 | Y17RPA | LT 19' | | Old Stage Rd | TYPE III POLE | | | TOLL-4 |
| CM-12 | RAMP MVD | MVD-R19 | | A | 21+50 | Y17RPA | LT 36' | | Old Stage Rd | MVD POLE | 35' | 31' | ITS-4 |
| CM-13 | MAINLINE CCTV | CCTV-16 | | A | 588+21 | L | RT 102' | | Old Stage Rd | CCTV POLE | 50' | 50' | ITS-4 |
| CM-14 | RAMP MVD | MVD-R20 | | A | 23+42 | Y17RPD | LT 44' | | Old Stage Rd | MVD POLE | 35' | 33' | ITS-4 |
| CM-18 | MAINLINE CCTV | CCTV-17 | | B | 644+15 | L_B | RT 103' | | Holland Church Rd | CCTV POLE | 50' | 50' | ITS-1 |
| CM-21 | MAINLINE MVD | MVD-M9B | | B | 684+39 | L_B | LT 103' | | Sauls Rd | CCTV POLE | 50' | 32' | ITS-2 |
| | MAINLINE CCTV | CCTV-18 | | | | | | | | | | 50' | |
| CM-21 | MAINLINE MVD | MVD-M9A | | B | 685+29 | L_B | RT 98' | | Sauls Rd | MVD POLE | 30' | 29' | ITS-2 |
| CM-24 | MAINLINE CCTV | CCTV-19 | | B | 723+04 | L_B | RT 103' | | | CCTV POLE | 50' | 50' | ITS-3 |
| CM-24 | MAINLINE WWD | WWD-5A | | B | 726+25 | L_B | RT 14' | AET T43/ T44 | | TYPE III POLE | | | TOLL-2 |
| CM-24 | MAINLINE WWD | WWD-5B | | B | 726+25 | L_B | RT 93' | AET T43/ T44 | | TYPE III POLE | | | TOLL-2 |
| CM-24 | MAINLINE DMS | DMS-5 | | C | 729+75 | L | RT | AET T43/ T44 | | TOLL GANTRY | | | ITS-4 |
| CM-24 | AET | AET T43/T44 | | C | 730+00 | L | | AET T43/ T44 | | | | | TOLL-2 |
| CM-24 | MAINLINE WWD | WWD-6B | | C | 733+75 | L | LT 98' | AET T43/ T44 | | TYPE III POLE | | | TOLL-2 |
| CM-24 | MAINLINE WWD | WWD-6A | | C | 733+75 | L | LT 12' | AET T43/ T44 | | TYPE III POLE | | | TOLL-2 |
| CM-25 | MAINLINE MVD | MVD-M10B | | C | 748+00 | L | LT 94' | | | MVD POLE | 30' | 26' | ITS-1 |
| CM-26 | MAINLINE CCTV | MVD-M10A | | C | 753+82 | L | RT 94' | | | MVD POLE | 30' | 26' | ITS-1 |
| CM-26 | MAINLINE MVD | CCTV-20 | | C | 761+55 | L | RT 94' | | | CCTV POLE | 50' | 50' | ITS-1 |
| CM-29 | RAMP MVD | MVD-R21 | | C | 20+56 | Y21RPC | LT 36' | | Benson Rd | MVD POLE | 35' | 31' | ITS-2 |
| CM-29 | RAMP MVD | MVD-R23 | | C | 14+71 | Y21LPB | RT 44' | | Benson Rd | MVD POLE | 30' | 25' | ITS-2 |
| CM-30 | RAMP MVD | MVD-R22 | | C | 26+00 | Y21RPB | LT 52' | | Benson Rd | MVD POLE | 35' | 32' | ITS-2 |
| CM-30 | RAMP WWD | WWD-7B | | C | 17+93 | Y21LPB | LT 22' | | Benson Rd | TYPE III POLE | | | TOLL-4 |
| CM-30 | RAMP WWD | WWD-7A | | C | 17+86 | Y21LPB | RT 32' | | Benson Rd | TYPE III POLE | | | TOLL-4 |
| CM-31 | RAMP MVD | MVD-R24 | | C | 16+87 | Y21LPC | LT 44' | | Benson Rd | MVD POLE | 30' | 25' | ITS-2 |
| CM-31 | RAMP WWD | WWD-8A | | C | 30+94 | Y21RPC | LT 18' | | Benson Rd | TYPE III POLE | | | TOLL-4 |
| CM-31 | RAMP WWD | WWD-8B | | C | 30+96 | Y21RPC | RT 46' | | Benson Rd | TYPE III POLE | | | TOLL-4 |
| CM-32 | MAINLINE CCTV | CCTV-21 | | C | 803+25 | L | RT 102' | | Benson Rd | CCTV POLE | 50' | 50' | ITS-2 |
| CM-35 | MAINLINE CCTV | CCTV-22 | | C | 848+22 | L | RT 103' | | | CCTV POLE | 50' | 50' | ITS-3 |
| | MAINLINE MVD | MVD-M11A | | | | | | | | | | 33' | |
| | | MVD-M11B | | | | | | | | | | 42' | |
| CM-35 | MAINLINE WWD | WWD-9A | | C | 850+00 | L | RT 15' | AET T45/ T46 | | TYPE III POLE | | | TOLL-3 |
| CM-35 | MAINLINE WWD | WWD-9B | | C | 850+00 | L | RT 96' | AET T45/ T46 | | TYPE III POLE | | | TOLL-3 |
| CM-35 | AET | AET T45/T46 | | C | 853+75 | L | | AET T45/ T46 | | | | | TOLL-3 |
| CM-35 | MAINLINE DMS | DMS-6 | | C | 854+00 | L | LT | AET T45/ T46 | | TOLL GANTRY | | | ITS-1 |
| CM-36 | MAINLINE WWD | WWD-10B | | C | 857+25 | L | LT 98' | AET T45/ T46 | | TYPE III POLE | | | TOLL-3 |
| CM-36 | MAINLINE WWD | WWD-10A | | C | 857+25 | L | LT 3' | AET T45/ T46 | | TYPE III POLE | | | TOLL-3 |
| CM-37 | MAINLINE CCTV | CCTV-23 | | C | 873+98 | L | RT 104' | | | CCTV POLE | 50' | 50' | ITS-4 |
| | MAINLINE MVD | MVD-M12A | | | | | | | | | | 24' | |
| CM-37 | MAINLINE MVD | MVD-M12B | | C | 874+18 | L | LT 106' | | | MVD POLE | 25' | 24' | ITS-4 |
| CM-40 | RAMP MVD | MVD-R27 | | C | 42 + 87 | Y22SLIPRPB | RT 44' | | Turbine Interchange | MVD POLE | 35' | 34' | ITS-2 |
| | RAMP MVD | MVD-R28 | | | | | | | | | | | |
| CM-40 | RAMP MVD | MVD-R29 | | C | 24+38 | Y22RPB | RT 36' | | Turbine Interchange | TYPE III POLE | 35' | 34' | ITS-4 |
| CM-41 | MAINLINE CCTV | CCTV-25 | | C | 32+24 | Y22RPB | LT 68' | | Turbine Interchange | CCTV POLE | 50' | 50' | ITS-4 |
| CM-41 | RAMP MVD | MVD-R32 | | C | 101+54 | Y22FLYCC | LT 44' | | Turbine Interchange | MVD POLE | 35' | 33' | ITS-4 |
| CM-42 | MAINLINE HUB | HUB-7 | | R-2828 | 458+15 | I-40 | RT 105' | | | | | | |
| CM-43 | RAMP MVD | MVD-R31 | | C | 20+66 | Y22LPA | LT 38' | | Turbine Interchange | MVD POLE | 35' | 32' | ITS-4 |
| CM-44 | MAINLINE CCTV | CCTV 24 | | C | 15+42 | Y22RPC | LT 36' | | Turbine Interchange | CCTV POLE | 50' | 50' | ITS-2 |
| | RAMP MVD | MVD-R25 | | | | | | | | | | 32' | |
| | RAMP MVD | MVD-R26 | | | | | | | | | | | |
| CM-45 | RAMP MVD | MVD-R33 | | C | 15 +12 | Y22RPCD | RT 44' | | Turbine Interchange | MVD POLE | 35' | 34' | ITS-2 |
| CM-50 | MAINLINE DMS | DMS-7 | | C | 4030' BEFORE STA 10+00 | Y22RPEA | | | | DMS PEDESTAL POLE | | | ITS-3 |

* DEVICE HEIGHTS ARE DESIGN RECOMMENDATIONS ONLY. THE CONTRACTOR SHALL VERIFY MOUNTING HEIGHTS AND ADJUST ACCORDINGLY, BASED ON FIELD CONDITIONS AND THE MANUFACTURERS REQUIREMENTS.

**Plans Prepared By:**

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*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Equipment Installation Summary

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 | REVIEWED BY: D. Johnson

PREPARED BY: D Burnett | REVIEWED BY:

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020

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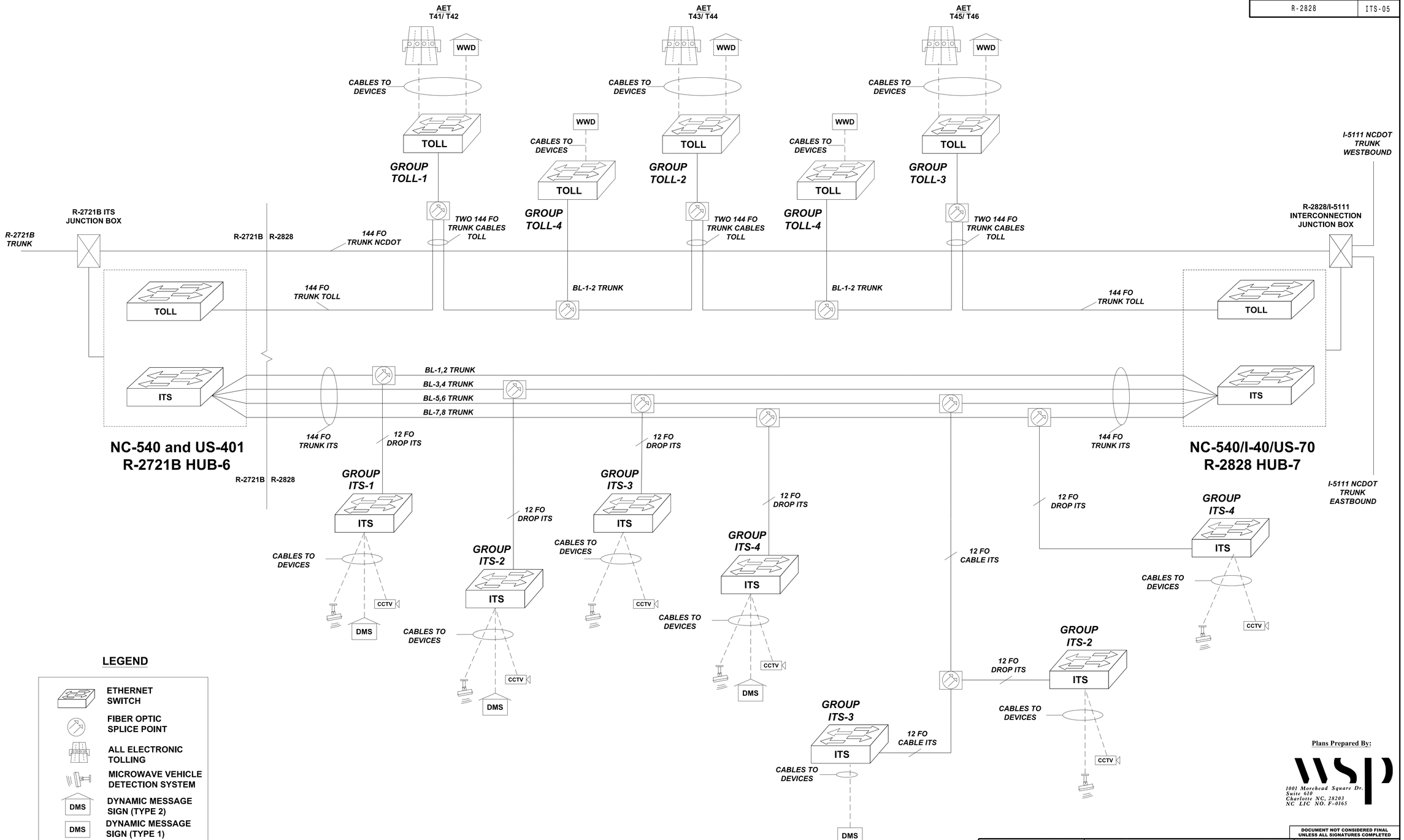
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | ITS-05 |




## LEGEND

- ETHERNET SWITCH
- FIBER OPTIC SPLICE POINT
- ALL ELECTRONIC TOLLING
- MICROWAVE VEHICLE DETECTION SYSTEM
- DMS — DYNAMIC MESSAGE SIGN (TYPE 2)
- DMS — DYNAMIC MESSAGE SIGN (TYPE 1)
- CCTV — CLOSED CIRCUIT CAMERA
- WWD — WRONG WAY DETECTION (AET)
- WWD — WRONG WAY DETECTION (RAMPS)

NOTES:
1. TOLL SWITCHES BY TSI.
2. ITS SWITCHES BY NCDOT/DBT.
3. DEVICES ARE SHOWN AS GENERIC AND DO NOT REPRESENT INDIVIDUAL NUMBER DEVICES.

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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

# System/Network Block Diagram

Wake & Johnston Counties Divisions 4 & 5 Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

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# POWER SERVICE DATA SHEET

| Service No. | Service Type | Service Voltage | Station and Offset Direction | Sheet No. | Service Disconnect Main Breaker | Feeder Circuit No. | Service Disconnect Sub-Breakers | Cable Type | Transformer (Step-Up) Disconnect or Sub-Panel Disconnect Breaker Size (A) | Transformer (Step-Up) | Junction / Splice | Cable Type | Primary Transformer Disconnect Breaker Size (A) | Transformer (Step-Down) | Cable Type | Equipment Disconnect Breaker Size (A) | Cable Type | Device | Max Load (VA) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | New Pedestal Mount Combination Service Panel | 120/240 VAC Single Phase | -L- 527+90 RT | CM-06 | 2P/50 | 1 | 1P/15 | II | | | | | | | | 1P/15 | I | **CCTV-14, MVD-M7** | 1284 |
| 2 | New Wall Mount Meter and Service Disconnect Panel | 120/240 VAC Single Phase | -L- 553+25 LT | CM-08 | 2P/200 | | AET Vault Building Panel with Multiple Breakers | By Others | | | | | | | | | | **AET T41 Vault Panel** | 29251 |
| | | | | | | 2 | 2P/100 | X | AET Equipment Pad Disconnect: 2P/100 (Main Breaker) 2P/50 (DMS Device Breaker) | | | VIII | | | | | **DMS-4** | |
| | | | | | | | | | AET Equipment Pad Disconnect: 2P/100 (Main Breaker) 1P/15 (ITS Device Breaker) | | | VI | | | 1P/15 | I | **CCTV-15, MVD-M8** | |
| 3 | New Pedestal Mount Combination Service Panel | 120/240 VAC Single Phase | -Y17- 45+15 RT | CM-12 | 2P/50 | 1 | 1P/15 | VI | | | | | | | | 1P/15 | I | **MVD-R17,R19** | 2555 |
| | | | | | | 2 | 1P/15 | IV | | | | | | | | 1P/15 | By Others | **WWD-5&6** | |
| 4 | New Pedestal Mount Combination Service Panel | 120/240 VAC Single Phase | -Y17- 34+00 RT | CM-14 | 2P/50 | 1 | 2P/15 | VII | 2P/15 | 10KVA, 120/240 Primary, 480 Secondary | | XI | 2P/15 | 10KVA, 480 Primary, 120/240 Secondary | III | 1P/15 | I | **CCTV-16** | 3791 |
| | | | | | | 2 | 1P/15 | V | | | | | | | | 1P/15 | I | **MVD-R18,R20** | |
| | | | | | | 3 | 1P/15 | V | | | | | | | | 1P/15 | By Others | **WWD-3&4** | |
| 5 | New Pedestal Mount Combination Service Panel | 120/240 VAC Single Phase | -L- 642+50 RT | CM-18 | 2P/50 | 1 | 1P/15 | III | | | | | | | | 1P/15 | I | **CCTV-17** | 1266 |
| 6 | New Pedestal Mount Combination Service Panel | 120/240 VAC Single Phase | -L- 686+50 LT | CM-21 | 2P/50 | 1 | 1P/15 | III | | | | | | | | 1P/15 | I | **CCTV-18, MVD-M9** | 1284 |
| 7 | New Pedestal Mount Combination Service Panel | 120/240 VAC Single Phase | -L- 723+75 LT | CM-24 | 2P/50 | 1 | 1P/15 | IV | | | | | | | | 1P/15 | I | **CCTV-19** | 1284 |
| 8 | New Wall Mount Meter and Service Disconnect Panel | 120/240 VAC Single Phase | -L- 730+00 RT | CM-24 | 2P/200 | | AET Vault Building Panel with Multiple Breakers | By Others | | | | | | | | | | **AET T43 Vault Panel** | 27967 |
| | | | | | | 2 | 2P/100 | X | AET Equipment Pad Disconnect: 2P/100(Main Breaker), 2P/50 (DMS Breaker) | | | VIII | | | | | **DMS-5** | |
| 9 | New Pedestal Mount Combination Service Panel | 120/240 VAC Single Phase | -L- 756+20 RT | CM-26 | 2P/50 | 1 | 1P/15 | III | | | | | | | | 1P/15 | I | **MVD-M10** | 2483 |
| | | | | | | 2 | 1P/15 | V | | | | | | | | 1P/15 | I | **CCTV-20** | |
| 10 | New Pedestal Mount Combination Service Panel | 120/240 VAC Single Phase | -Y21- 48+80 LT | CM-30 | 2P/50 | 1 | 1P/15 | V | | | | | | | | 1P/15 | I | **MVD-R22,R23** | 2622 |
| | | | | | | 2 | 1P/15 | III | | | | | | | | 1P/15 | By Others | **WWD-11&12** | |
| 11 | New Pedestal Mount Combination Service Panel | 120/240 VAC Single Phase | -Y21LPC- 20+00 LT | CM-31 | 2P/50 | 1 | 1P/15 | IV | | | | | | | | 1P/15 | I | **CCTV-21** | 3821 |
| | | | | | | 2 | 1P/15 | III | | | | | | | | 1P/15 | By Others | **WWD-13&14** | |
| | | | | | | 3 | 1P/15 | III | | | | | | | | 1P/15 | I | **MVD-R21,R24** | |
| 12 | New Pedestal Mount Combination Service Panel | 120/240 VAC Single Phase | -L- 848+22 | CM-35 | 2P/50 | 1 | 1P/15 | II | | | | | | | | 1P/15 | I | **CCTV-22,MVD-M11** | 1284 |
| 13 | New Wall Mount Meter and Service Disconnect Panel | 120/240 VAC Single Phase | '-Y- 853+75 | CM-35 | 2P/200 | | AET Vault Building Panel with Multiple Breakers | By Others | | | | | | | | | | **AET T46 Vault Panel** | 27967 |
| | | | | | | 2 | 2P/100 | X | AET Equipment Pad Disconnect: 2P/100(Main Breaker), 2P/50 (DMS Breaker) | | | VIII | | | | | **DMS-6** | |
| 14 | New Pedestal Mount Combination Service Panel | 240/480 VAC Single Phase | I-40 243+25 RT | CM-51 | 2P/20 | 1 | 2P/15 | XIII | To In-Line Sub-Panel Disconnect (CM-40): 2P/15 (Channel 1a) 2P/15 (Channel 1b) | | 1a | XII | 2P/15 | 10KVA, 480 Primary, 120/240 Secondary | III | 1P/15 | I | **MVD-R27,R28** | 13857 |
| | | | | | | | | | | | 1b | XIII | 2P/15 | 10KVA, 480 Primary, 120/240 Secondary | III | 1P/15 | I | **CCTV-23, MVD-M12** | |
| | | | | | | 2 | 2P/15 | XIII | To Equipment Disconnect at HUB-7 | | 2a | XIII | 2P/15 | 10KVA, 480 Primary, 120/240 Secondary | XIV | 2P/25 | VII | **HUB #7** | |
| | | | | | | | | | | | 2b | XIII | 2P/15 | 10KVA, 480 Primary, 120/240 Secondary | III | 1P/15 | I | **CCTV-24,MVD-R25,R26,R33** | |
| | | | | | | 3 | 2P/15 | XII | | | | | 2P/15 | 10KVA, 480 Primary, 120/240 Secondary | III | 1P/15 | I | **CCTV-25, MVD-R31,R32,R29** | |
| 15 | New Pedestal Mount Combination Service Panel | 120/240 VAC Single Phase | 3450' BEFORE STA 10+00 | CM-50 | 2P/50 | 1 | 2P/50 | IX | | | | | | | | 2P/50 | VIII | **DMS-7** | 5280 |


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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

Power Service Data

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 | REVIEWED BY: D Johnson

PREPARED BY: D Burnett | REVIEWED BY:

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020

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| PROJECT REFERENCE NO. | SHEET NO. |
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| R-2828 | FS-01 |

# ITS AND TOLL SPLICE DIAGRAMS

| FS Sheet No. | Splice No. | Device ID | CM Sheet | Network Group |
|---|---|---|---|---|
| FS-05 | SE-1 | CCTV-14, MVD-M7A&B | CM-06 | ITS-1 |
| | | CCTV-17 | CM-18 | ITS-1 |
| FS-05 | SE-2 | CCTV-18, MVD-M9A&B | CM-21 | ITS-2 |
| | | MVD-R27, MVD-R28 | CM-40 | ITS-2 |
| FS-06 | SE-3 | CCTV-15, MVD-M8A&B | CM-08 | ITS-3 |
| | | CCTV-19 | CM-24 | ITS-3 |
| | | CCTV-22, MVD-M11A&B | CM-35 | ITS-3 |
| FS-06 | SE-4 | CCTV-23, MVD-M12A&B | CM-37 | ITS-4 |
| FS-07 | SE-5 | CCTV-16, MVD-R17, MVD-R18, MVD-R19, MVD-R20 | CM-14 | ITS-4 |
| FS-08 | SE-6 | CCTV-21, MVD-R21, MVD-R22, MVD-R23, MVD-R24 | CM-32 | ITS-2 |
| FS-09 | SE-7 | CCTV-25, MVD-R29, MVD-R31, MVD-R32 | CM-40 | ITS-4 |
| FS-10 | SE-8 | CCTV-24, MVD-R25, MVD-R26, MVD-R33 | CM-45 | ITS-2 |
| | | DMS-7 | CM-45 | ITS-3 |
| FS-10 | SE-9 | NCDOT CABLE SPLICE AT HUB-6 | CM-04 | |
| | | NCDOT CABLE SPLICE AT AET T41 | CM-08 | |
| | | NCDOT CABLE SPLICE AT AET T44 | CM-24 | |
| | | NCDOT CABLE SPLICE AT AET T46 | CM-35 | |
| FS-11 | SE-10 | NCDOT (I-5111) INTERCONNECT | CM-42 | |
| FS-12 | SE-11 | CCTV-20, MVD-M10A&B | CM-26 | ITS-1 |
| FS-13 | SV-1 | AET T41 / T42, WWD-1,WWD-2A&B | CM-08 | TOLL-1 |
| | | DMS-4 | CM-08 | ITS-2 |
| FS-14 | SV-2 | AET T43 / T44, WWD-5A&B, WWD-6A&B | CM-24 | TOLL-2 |
| | | DMS-5 | CM-24 | ITS-4 |
| FS-15 | SV-3 | AET T45 / T46, WWD-9A&B, WWD-10A&B | CM-35 | TOLL-3 |
| | | DMS-6 | CM-35 | ITS-1 |
| FS-16 | SV-4 | WWD-3A&B, WWD-4A&B | CM-14 | TOLL-4 |
| | | WWD-7A&B, WWD-8A&B | CM-32 | TOLL-4 |
| FS-17 | HUB-6 | HUB-6 CABINET (R-2721B) | CM-04 | |
| FS-18 | HUB-7 | HUB-7 CABINET (R-2828) | CM-42 | |

## LEGEND

| Color Code TIA/EIA 598-B | | | |
|---|---|---|---|
| BL | (1) Blue | RD | (7) Red |
| OR | (2) Orange | BK | (8) Black |
| GR | (3) Green | YL | (9) Yellow |
| BR | (4) Brown | VI | (10) Violet |
| SL | (5) Slate | RS | (11) Rose |
| WH | (6) White | AQ | (12) Aqua |

X = Fusion Splice Individual Fiber

C = Cap and Seal

EXPRESS = Express entire buffer tube/fibers through without cutting

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 enclosure.
3. Ethernet edge and hub switches to be furnished and configured by NCDOT and installed by DBT.

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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

Fiber Splice Details
ITS & Toll Index
of Splice Diagrams

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D Johnson

PREPARED BY: S Schmid REVIEWED BY:

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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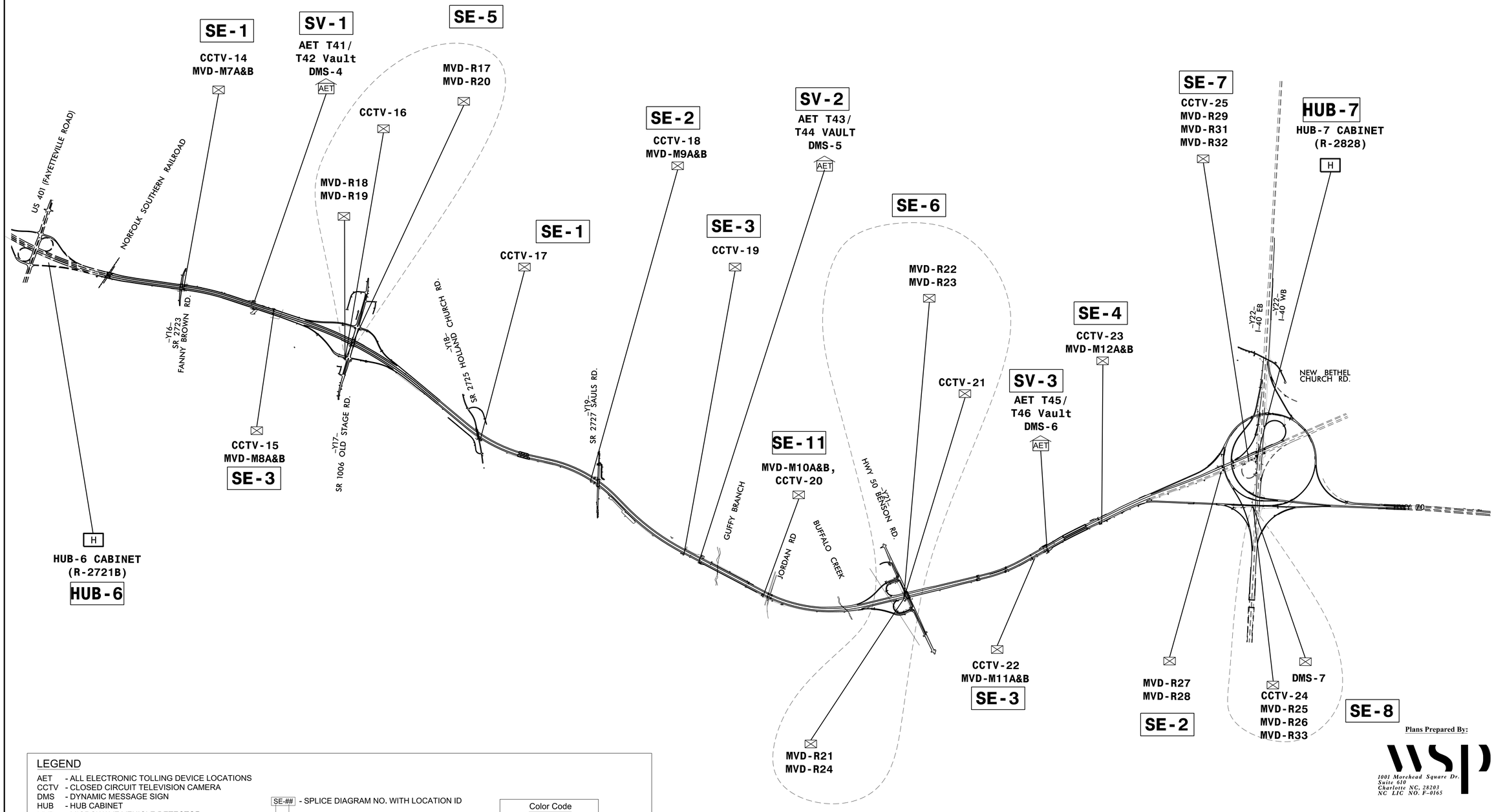
| R-2828 | FS-02 |




## LEGEND

| | |
|---|---|
| AET | - ALL ELECTRONIC TOLLING DEVICE LOCATIONS |
| CCTV | - CLOSED CIRCUIT TELEVISION CAMERA |
| DMS | - DYNAMIC MESSAGE SIGN |
| HUB | - HUB CABINET |
| MVD | - MICROWAVE VEHICLE DETECTOR |
| SE | - SPLICE ENCLOSURE |
| SV | - SPLICE ENCLOSURE AET VAULT |
| WWD | - WRONG WAY DETECTION SYSTEM |
| S | -UNDERGROUND SPLICE |
| | - DROP CABLE TO CABINET |
| | - MULTIPLE DROP CABLES FROM A SINGLE SPLICE ENCLOSURE |
| H | - HC - HUB CABINET |
| AET | - AET - TOLL VAULT BUILDING |

SE-## - SPLICE DIAGRAM NO. WITH LOCATION ID
- SPLICE DIAGRAM NO.
- ENCLOSURE TYPE (SE, SV, HUB)

| Color Code TIA/EIA 598-B | | | |
|---|---|---|---|
| (1) Blue | BL | (7) Red | RD |
| (2) Orange | OR | (8) Black | BK |
| (3) Green | GR | (9) Yellow | YL |
| (4) Brown | BR | (10) Violet | VI |
| (5) Slate | SL | (11) Rose | RS |
| (6) White | WH | (12) Aqua | AQ |

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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

# ITS Communications Schematic

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

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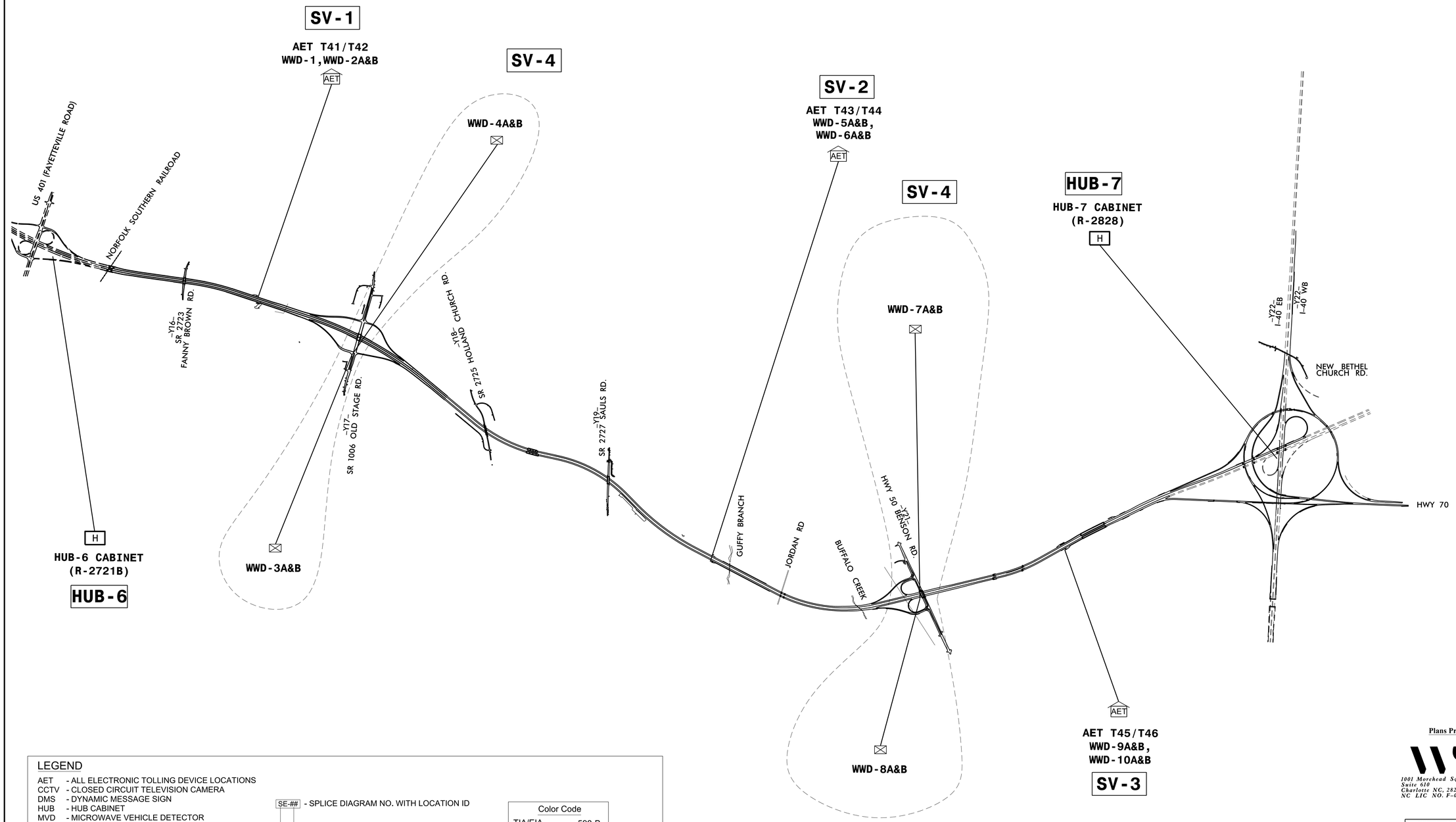
| R-2828 | FS-03 |




## LEGEND

| | |
|---|---|
| AET | - ALL ELECTRONIC TOLLING DEVICE LOCATIONS |
| CCTV | - CLOSED CIRCUIT TELEVISION CAMERA |
| DMS | - DYNAMIC MESSAGE SIGN |
| HUB | - HUB CABINET |
| MVD | - MICROWAVE VEHICLE DETECTOR |
| SE | - SPLICE ENCLOSURE |
| SV | - SPLICE ENCLOSURE AET VAULT |
| WWD | - WRONG WAY DETECTION SYSTEM |
| S | -UNDERGROUND SPLICE |
| | - DROP CABLE TO CABINET |
| | - MULTIPLE DROP CABLES FROM A SINGLE SPLICE ENCLOSURE |
| H | - HC - HUB CABINET |
| AET | - AET - TOLL VAULT BUILDING |

SE-## - SPLICE DIAGRAM NO. WITH LOCATION ID
(SE-## = SPLICE DIAGRAM NO. + ENCLOSURE TYPE (SE, SV, HUB))

| Color Code TIA/EIA 598-B | | | |
|---|---|---|---|
| (1) Blue | BL | (7) Red | RD |
| (2) Orange | OR | (8) Black | BK |
| (3) Green | GR | (9) Yellow | YL |
| (4) Brown | BR | (10) Violet | VI |
| (5) Slate | SL | (11) Rose | RS |
| (6) White | WH | (12) Aqua | AQ |

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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

# Toll Communications Schematic

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 | REVIEWED BY: D Johnson
PREPARED BY: D Burnett | REVIEWED BY:

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
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| | | |

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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

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| PROJECT REFERENCE NO. | SHEET NO. |
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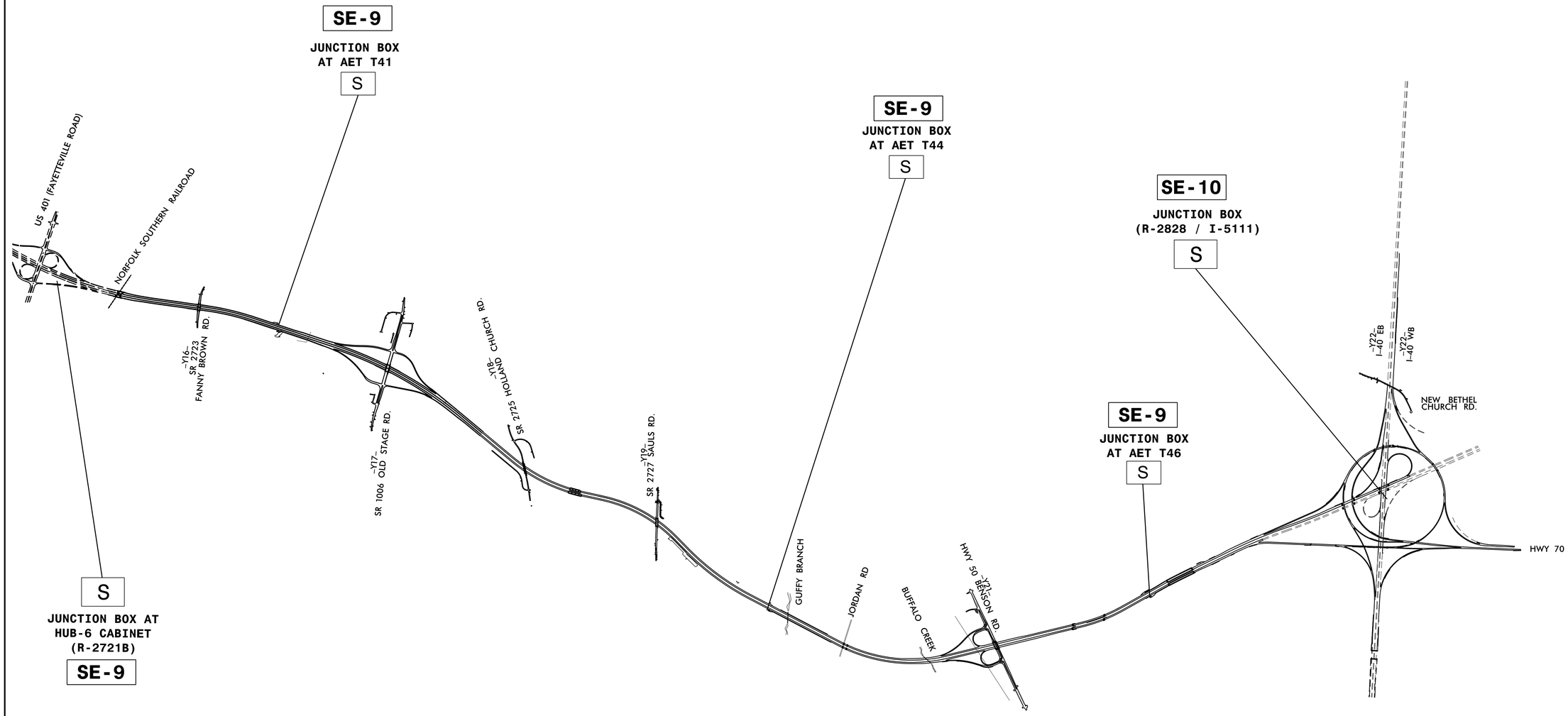
| R-2828 | FS-04 |




## LEGEND

AET - ALL ELECTRONIC TOLLING DEVICE LOCATIONS
CCTV - CLOSED CIRCUIT TELEVISION CAMERA
DMS - DYNAMIC MESSAGE SIGN
HUB - HUB CABINET
MVD - MICROWAVE VEHICLE DETECTOR
SE - SPLICE ENCLOSURE
SV - SPLICE ENCLOSURE AET VAULT
WWD - WRONG WAY DETECTION SYSTEM
[S] -UNDERGROUND SPLICE
[ST] -UNDERGROUND FIBER CABLE STORAGE
- DROP CABLE TO CABINET
- MULTIPLE DROP CABLES FROM A SINGLE SPLICE ENCLOSURE
[H] - HC - HUB CABINET

[SE-##] - SPLICE DIAGRAM NO. WITH LOCATION ID
SPLICE DIAGRAM NO.
ENCLOSURE TYPE (SE, SV, HUB)

| Color Code TIA/EIA 598-B | | | |
|---|---|---|---|
| (1) Blue | BL | (7) Red | RD |
| (2) Orange | OR | (8) Black | BK |
| (3) Green | GR | (9) Yellow | YL |
| (4) Brown | BR | (10) Violet | VI |
| (5) Slate | SL | (11) Rose | RS |
| (6) White | WH | (12) Aqua | AQ |

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*Prepared for the Offices of:*
NORTH CAROLINA Turnpike Authority

# Communications Schematic NCDOT Fiber

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

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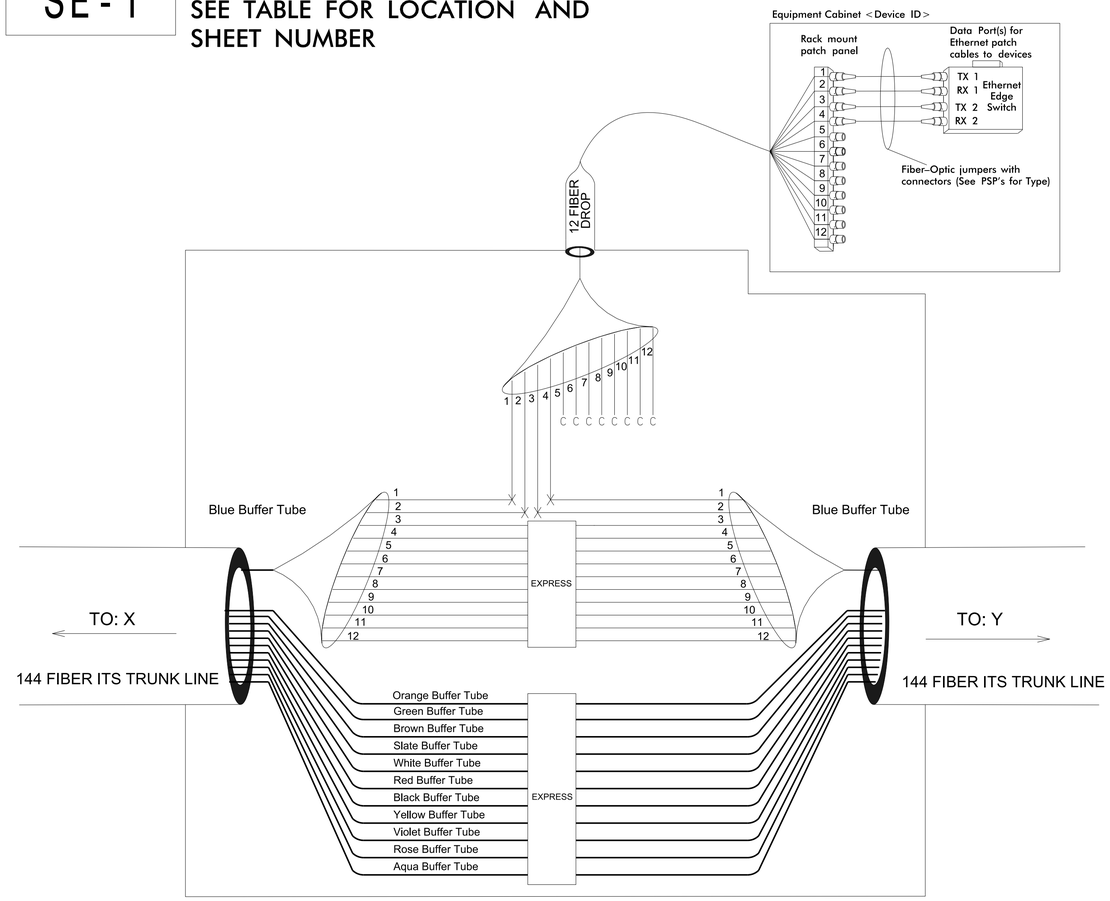
|---|---|
| R-2828 | FS-05 |

# SE-1

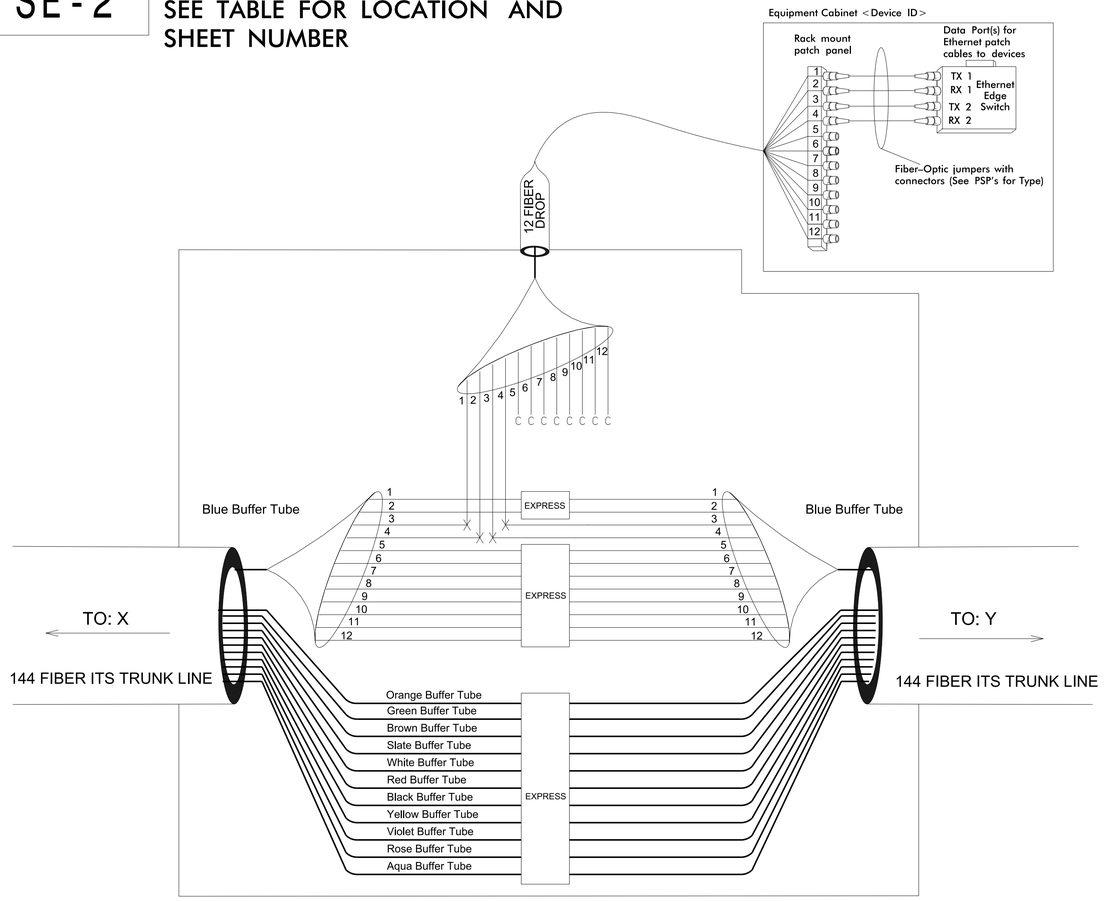
## PROPOSED UNDERGROUND SPLICES SEE TABLE FOR LOCATION AND SHEET NUMBER




| Splice Enclosure Typical No. SE-1 | | | | | |
|---|---|---|---|---|---|
| Device ID | CM Sheet | To | | To | |
| | | FS Sheet | X | FS Sheet | Y |
| CCTV-14; MVD-M7A&B | CM-06 | FS-16 | HUB-6: HUB-6 CABINET (R-2721B) | FS-12 | SV-1: AET T41/T42; WWD-1; WWD-2A&B; DMS-4 |
| CCTV-17 | CM-18 | FS-07 | SE-5: CCTV-16; MVD-R17-R20 | FS-05 | SE-2: CCTV-18; MVD-M9A&B |

# SE-2

## PROPOSED UNDERGROUND SPLICES SEE TABLE FOR LOCATION AND SHEET NUMBER




| Splice Enclosure Typical No. SE-2 | | | | | |
|---|---|---|---|---|---|
| Device ID | CM Sheet | To | | To | |
| | | FS Sheet | X | FS Sheet | Y |
| CCTV-18; MVD-M9A&B | CM-21 | FS-05 | SE-1: CCTV-17 | FS-06 | SE-3: CCTV-19 |
| MVD-R27; MVD-R28 | CM-40 | FS-06 | SE-4: CCTV-23; MVD-M12A&B | FS-09 | SE-7: CCTV-25; MVD-R29; MVD-R31; MVD-R32 |

## LEGEND

| Color Code TIA/EIA 598-B | | | |
|---|---|---|---|
| BL | (1) Blue | RD | (7) Red |
| OR | (2) Orange | BK | (8) Black |
| GR | (3) Green | YL | (9) Yellow |
| BR | (4) Brown | VI | (10) Violet |
| SL | (5) Slate | RS | (11) Rose |
| WH | (6) White | AQ | (12) Aqua |

X = Fusion Splice Individual Fiber

C = Cap and Seal

EXPRESS = Express entire buffer tube/fibers through without cutting

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 enclosure.
3. Ethernet edge and hub switches to be furnished and configured by NCDOT and installed by DBT.

**Plans Prepared By:**

wsp
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC NO. F-0165

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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

# Fiber Splice Details SE-1, SE-2

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D Johnson

PREPARED BY: S Schmid REVIEWED BY:

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020

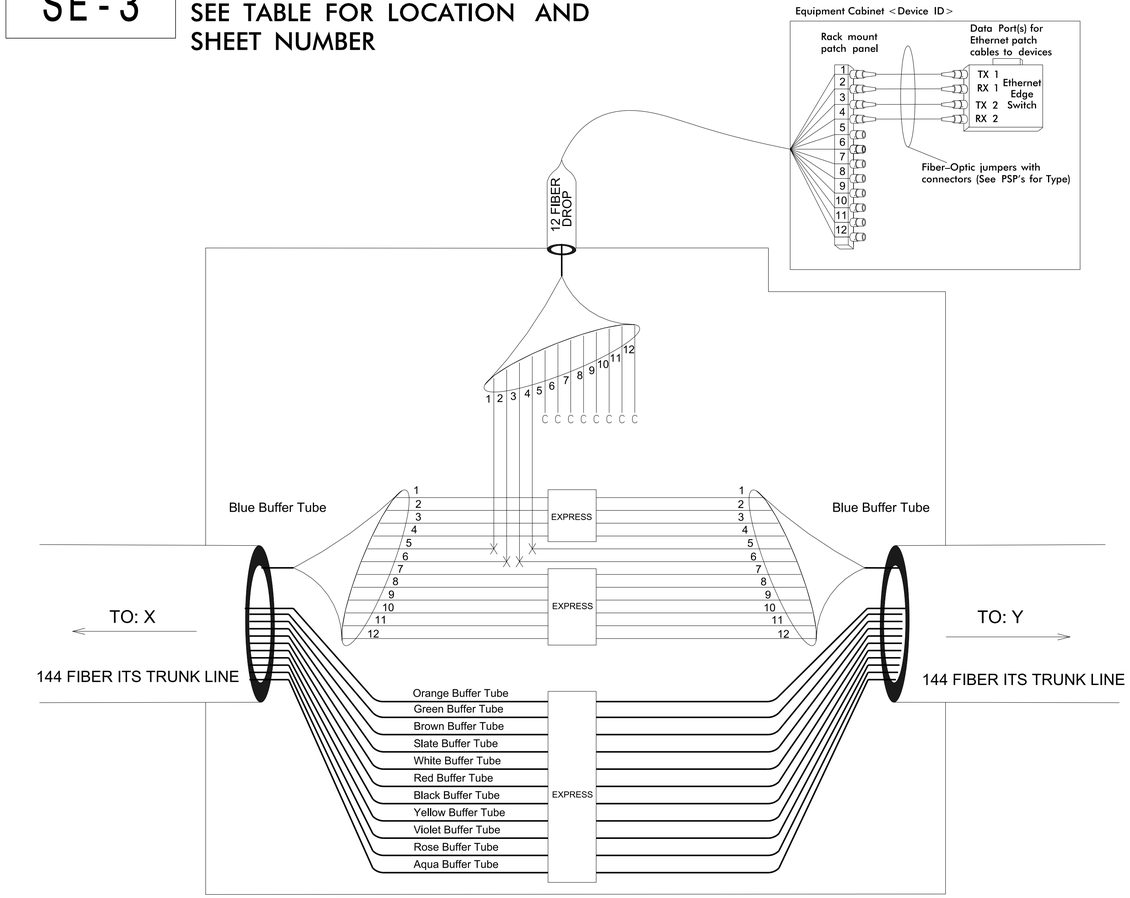
D02F2EC7DD9E49F... DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

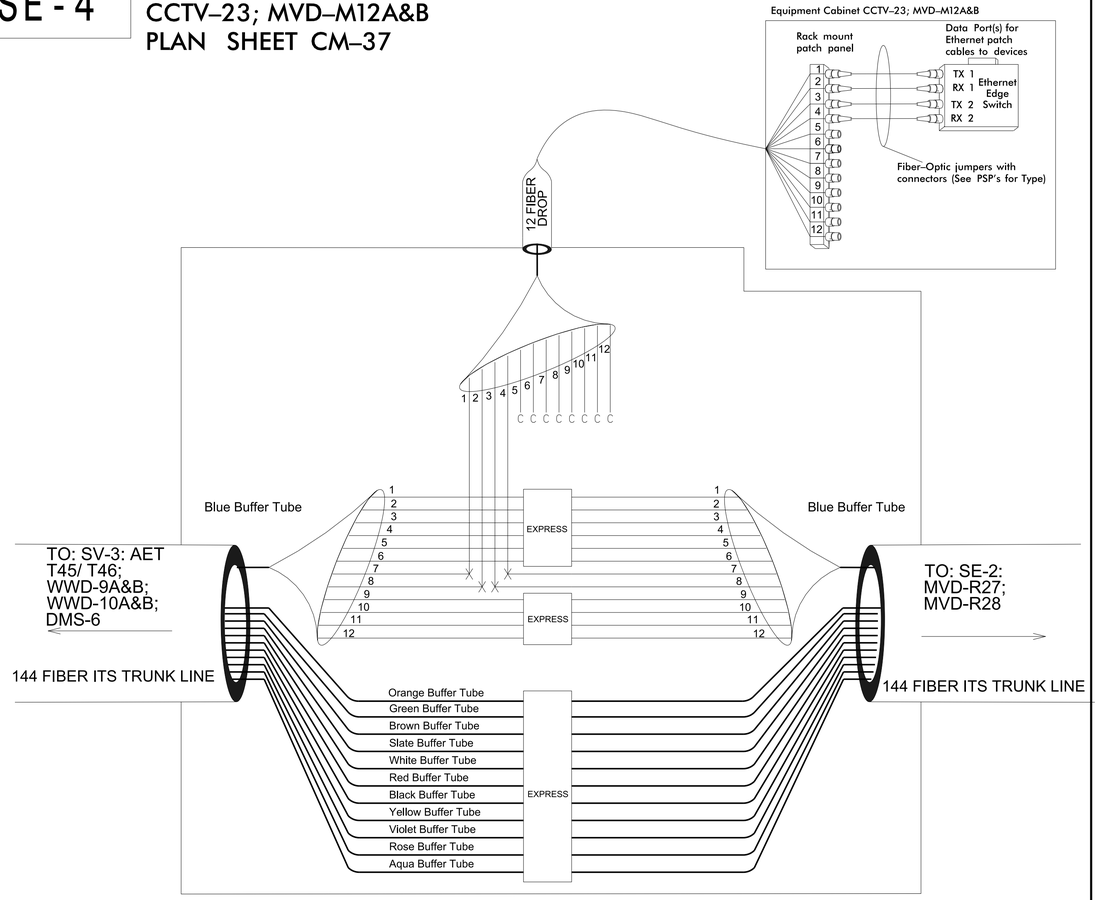
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | FS-06 |

# SE-3 PROPOSED UNDERGROUND SPLICES SEE TABLE FOR LOCATION AND SHEET NUMBER




| Splice Enclosure Typical No. SE-3 | | | | | |
|---|---|---|---|---|---|
| Device ID | CM Sheet | To | | To | |
| | | FS Sheet | X | FS Sheet | Y |
| CCTV-15; MVD-M8A&B | CM-08 | FS-12 | SV-1: AET T41/T42; WWD-1; WWD-2A&B; DMS-4 | FS-07 | SE-5: CCTV-16; MVD-R17-R20 |
| CCTV-19 | CM-24 | FS-05 | SE-2: CCTV-18; MVD-M9A&B | FS-13 | SV-2: AET T43/T44; WWD-5A&B; WWD-6A&B; DMS-5 |
| CCTV-22; MVD-M11A&B | CM-35 | FS-08 | SE-6: CCTV-2; MVD-R21-R24 | FS-14 | SV-3: AET T45/T46; WWD-9A&B; WWD-10A&B; DMS-6 |

# SE-4 PROPOSED UNDERGROUND SPLICES CCTV-23; MVD-M12A&B PLAN SHEET CM-37




## LEGEND

| Color Code | | | |
|---|---|---|---|
| TIA/EIA | 598-B | | |
| BL | (1) Blue | RD | (7) Red |
| OR | (2) Orange | BK | (8) Black |
| GR | (3) Green | YL | (9) Yellow |
| BR | (4) Brown | VI | (10) Violet |
| SL | (5) Slate | RS | (11) Rose |
| WH | (6) White | AQ | (12) Aqua |

X = Fusion Splice Individual Fiber

C = Cap and Seal

EXPRESS = Express entire buffer tube/fibers through without cutting

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 enclosure.
3. Ethernet edge and hub switches to be furnished and configured by NCDOT and installed by DBT.

Plans Prepared By:

WSP
1001 Morehead Square Dr.
Suite 610
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NC LIC NO. F-0165

Prepared for the Offices of:

NORTH CAROLINA Turnpike Authority

Fiber Splice Details
SE-3, SE-4

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | S Schmid | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
DATE

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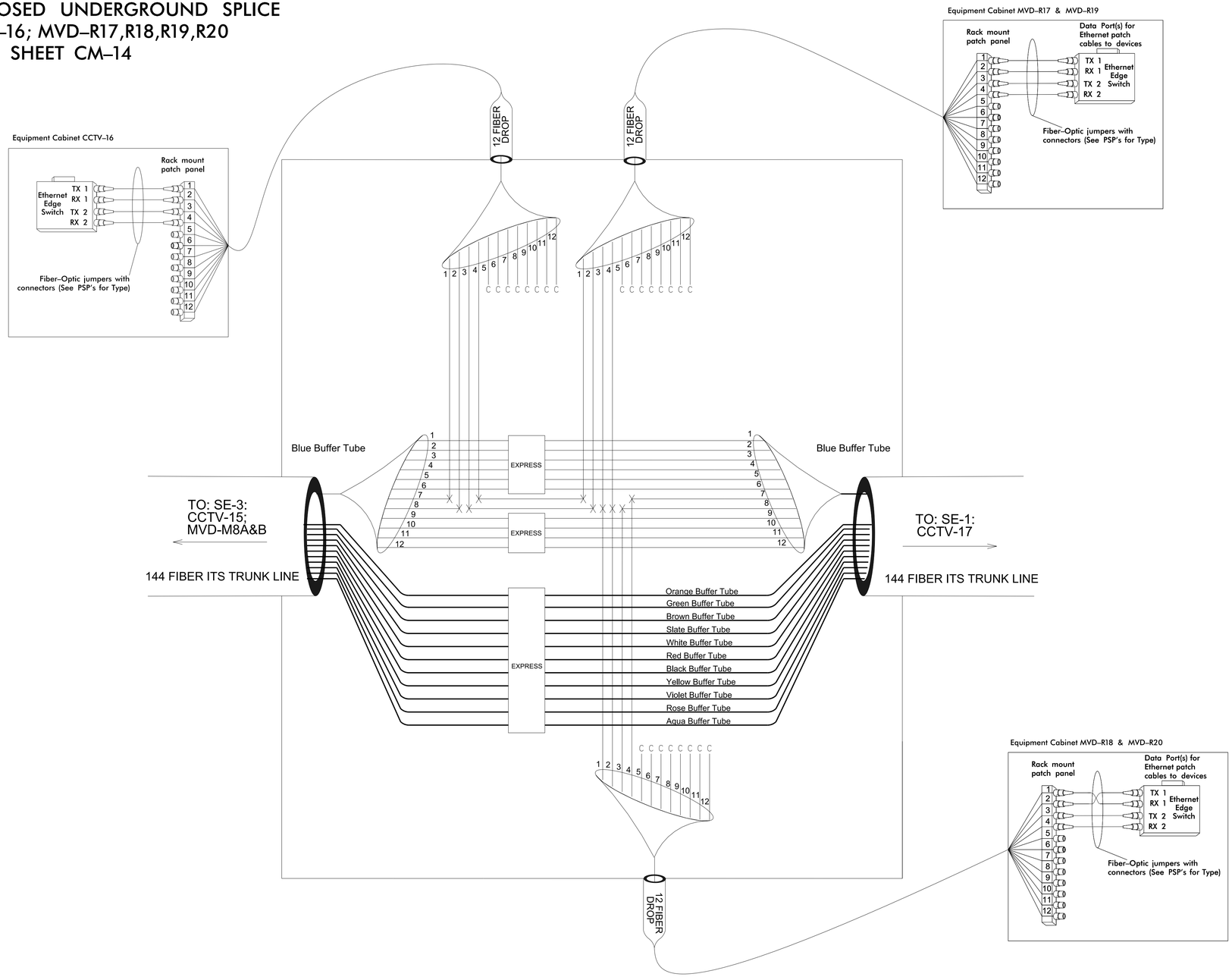
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | FS-07 |

# SE-5

# PROPOSED UNDERGROUND SPLICE
## CCTV–16; MVD–R17,R18,R19,R20
## PLAN SHEET CM–14




## LEGEND

| Color Code TIA/EIA 598-B | | | |
|---|---|---|---|
| BL | (1) Blue | RD | (7) Red |
| OR | (2) Orange | BK | (8) Black |
| GR | (3) Green | YL | (9) Yellow |
| BR | (4) Brown | VI | (10) Violet |
| SL | (5) Slate | RS | (11) Rose |
| WH | (6) White | AQ | (12) Aqua |

X = Fusion Splice Individual Fiber

C = Cap and Seal

EXPRESS = Express entire buffer tube/fibers through without cutting

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 enclosure.
3. Ethernet edge and hub switches to be furnished and configured by NCDOT and installed by DBT.

**Plans Prepared By:**

wsp

*1001 Morehead Square Dr. Suite 610 Charlotte NC, 28203 NC LIC NO. F–0165*

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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

**Fiber Splice Details**
**SE-5**
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D Johnson
PREPARED BY: S Schmid REVIEWED BY:

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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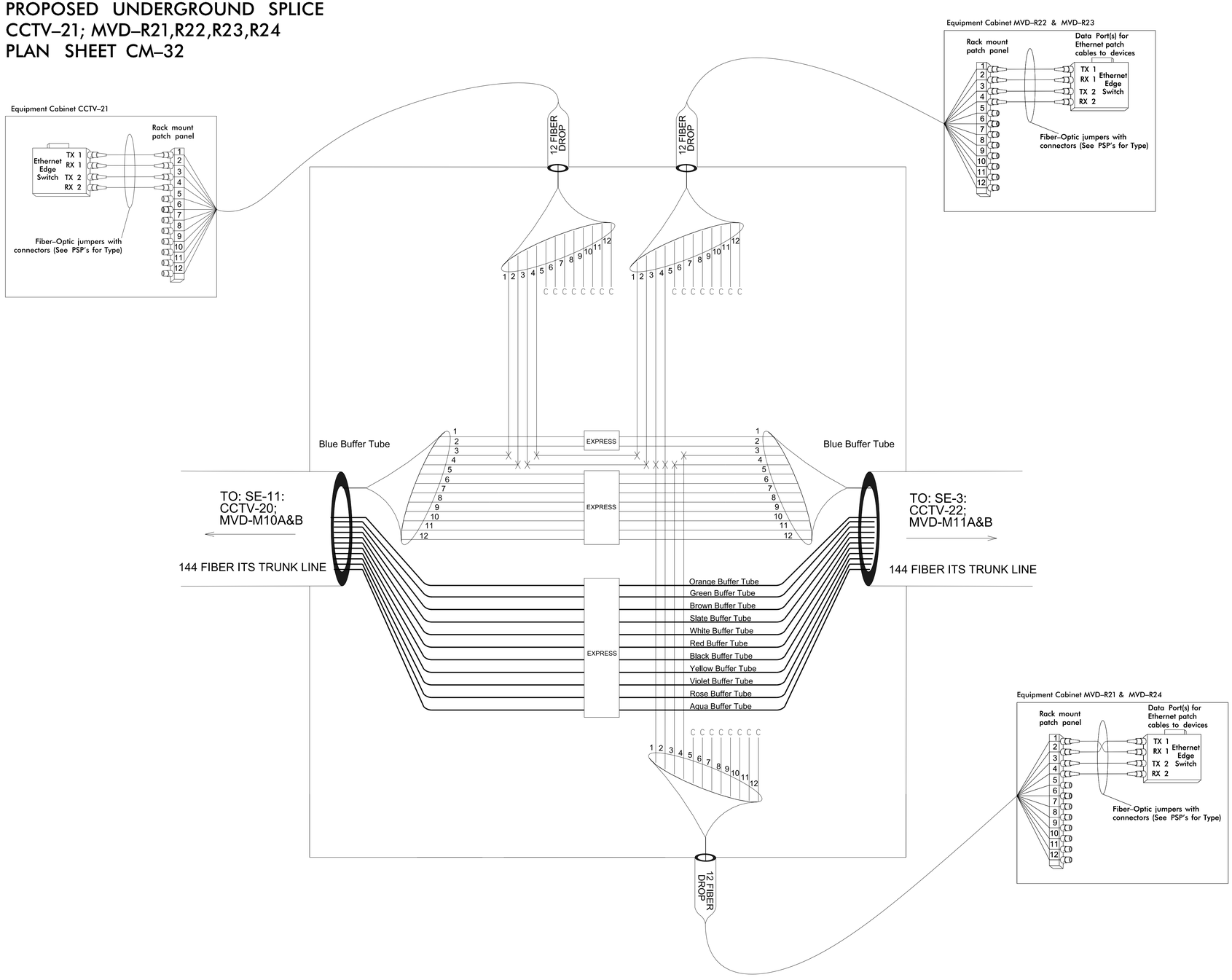
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | FS-08 |

# SE-6

# PROPOSED UNDERGROUND SPLICE
## CCTV–21; MVD–R21,R22,R23,R24
## PLAN SHEET CM–32




## LEGEND

| Color Code TIA/EIA 598-B | | | |
|---|---|---|---|
| BL | (1) Blue | RD | (7) Red |
| OR | (2) Orange | BK | (8) Black |
| GR | (3) Green | YL | (9) Yellow |
| BR | (4) Brown | VI | (10) Violet |
| SL | (5) Slate | RS | (11) Rose |
| WH | (6) White | AQ | (12) Aqua |

| | | |
|---|---|---|
| X | = | Fusion Splice Individual Fiber |
| C | = | Cap and Seal |
| EXPRESS | = | Express entire buffer tube/fibers through without cutting |
| 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 enclosure.
3. Ethernet edge and hub switches to be furnished and configured by NCDOT and installed by DBT.

**Plans Prepared By:**

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*1001 Morehead Square Dr. Suite 610 Charlotte NC, 28203 NC LIC NO. F–0165*

*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

**Fiber Splice Details**
**SE-6**

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | S Schmid | REVIEWED BY: | |

| SCALE | REVISIONS | INIT. | DATE |
|---|---|---|---|
| N.T.S. | | | |

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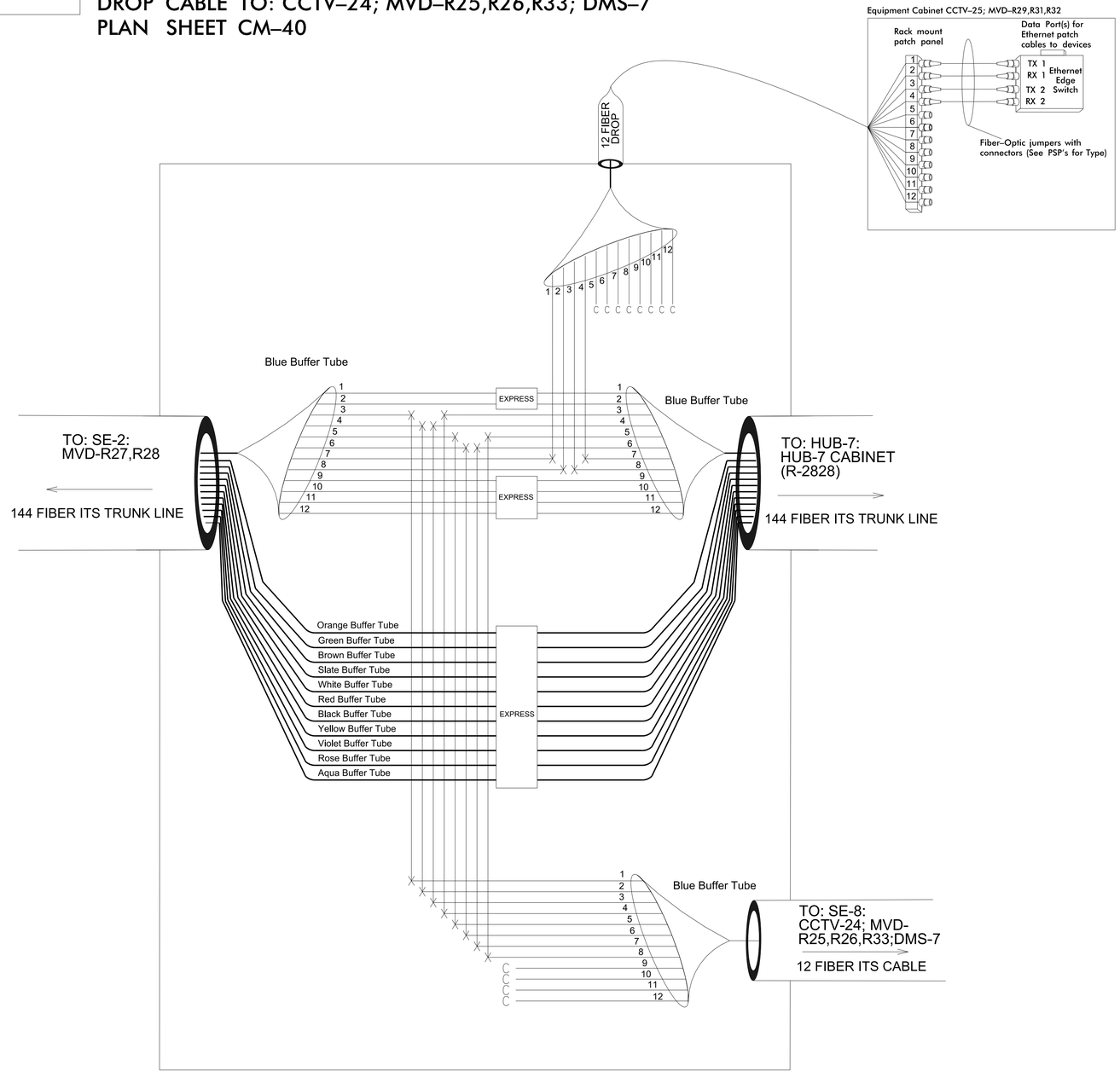
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | FS-09 |

# SE-7

# PROPOSED UNDERGROUND SPLICE
## CCTV–25; MVD–R29,R31,R32
## DROP CABLE TO: CCTV–24; MVD–R25,R26,R33; DMS–7
## PLAN SHEET CM–40




## LEGEND

| Color Code TIA/EIA 598-B | | | |
|---|---|---|---|
| BL | (1) Blue | RD | (7) Red |
| OR | (2) Orange | BK | (8) Black |
| GR | (3) Green | YL | (9) Yellow |
| BR | (4) Brown | VI | (10) Violet |
| SL | (5) Slate | RS | (11) Rose |
| WH | (6) White | AQ | (12) Aqua |

X = Fusion Splice Individual Fiber

C = Cap and Seal

EXPRESS = Express entire buffer tube/fibers through without cutting

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 enclosure.
3. Ethernet edge and hub switches to be furnished and configured by NCDOT and installed by DBT.

**Plans Prepared By:**

WSP
*1001 Morehead Square Dr. Suite 610 Charlotte NC, 28203 NC LIC NO. F–0165*

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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

**Fiber Splice Details**
**SE-7**

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D Johnson

PREPARED BY: S Schmid REVIEWED BY:

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

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DocuSigned by: Daniel A. Johnson 11-18-2020

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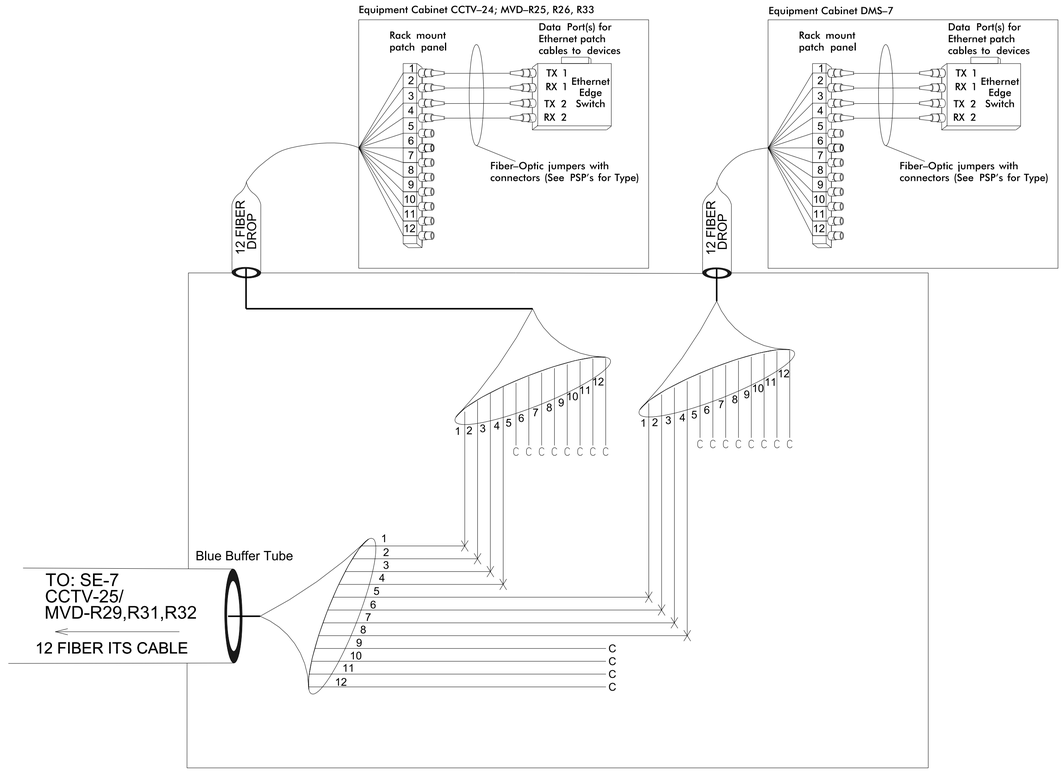
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | FS-10 |

# SE-8

## PROPOSED UNDERGROUND SPLICE
## CCTV–24; MVD–R25,R26,R33; DMS–7
## PLAN SHEET CM–45




## LEGEND

| Color Code TIA/EIA 598-B | | | |
|---|---|---|---|
| BL | (1) Blue | RD | (7) Red |
| OR | (2) Orange | BK | (8) Black |
| GR | (3) Green | YL | (9) Yellow |
| BR | (4) Brown | VI | (10) Violet |
| SL | (5) Slate | RS | (11) Rose |
| WH | (6) White | AQ | (12) Aqua |

X = Fusion Splice Individual Fiber

C = Cap and Seal

EXPRESS = Express entire buffer tube/fibers through without cutting

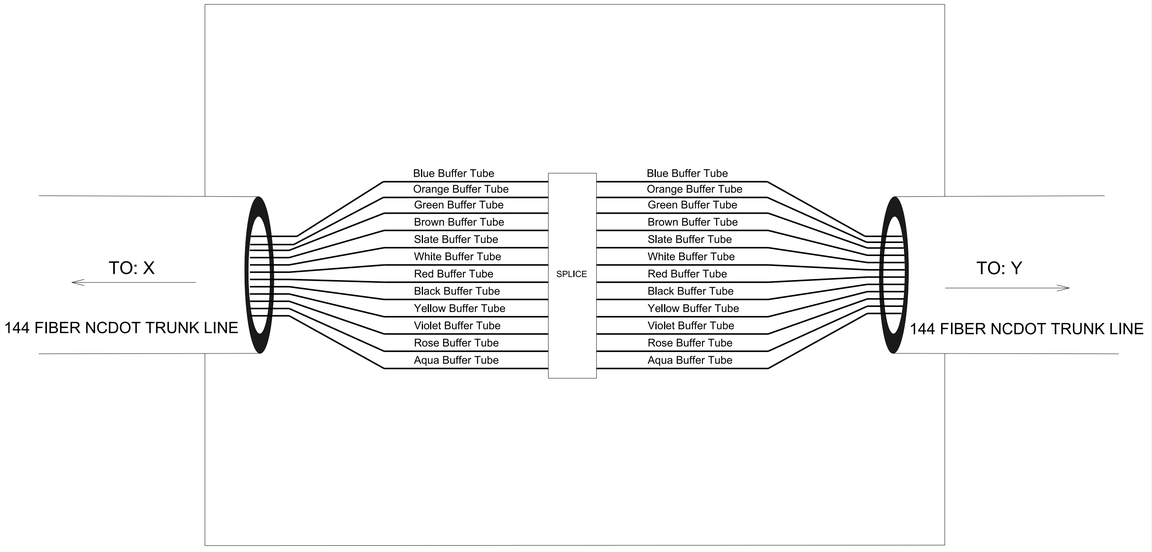
SPLICE = Splice all fibers in buffer tube color to color

## NOTES

1. Unused fibers left coiled and stored in splice tray.
2. Unused buffer tubes left coiled and stored in splice enclosure.
3. Ethernet edge and hub switches to be furnished and configured by NCDOT and installed by DBT.

# SE-9

## PROPOSED UNDERGROUND SPLICES
## SEE TABLE FOR LOCATION AND
## SHEET NUMBER




| Splice Enclosure Typical No. SE-9 | | | | | |
|---|---|---|---|---|---|
| SPLICE LOCATION | CM Sheet | To | | To | |
| | | FS Sheet | X | FS Sheet | Y |
| HUB-6 (R-2721B) ITS JUNCTION BOX | CM-04 | N/A | WEST OF HUB-6 (R-2721B) | FS-9 | SE-9: AET T41 ITS JUNCTION BOX |
| AET T41 UNDERGROUND ITS JUNCTION BOX | CM-08 | FS-9 | FS-9: HUB-6 (R-2721B) ITS JUNCTION BOX | FS-9 | SE-9: AET T43 ITS JUNCTION BOX |
| AET T43 UNDERGROUND ITS JUNCTION BOX | CM-24 | FS-9 | SE-9: AET T41 ITS JUNCTION BOX | FS-9 | SE-9: AET T46 ITS JUNCTION BOX |
| AET T46 UNDERGROUND ITS JUNCTION BOX | CM-35 | FS-9 | SE-9: AET T43 ITS JUNCTION BOX | N/A | I-5111 INTERCONNECT JUNCTION BOX |

**Plans Prepared By:**

WSP
*1001 Morehead Square Dr. Suite 610 Charlotte NC, 28203 NC LIC NO. F-0165*

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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

**Fiber Splice Details**
**SE-8, SE-9**

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D Johnson

PREPARED BY: S Schmid REVIEWED BY:

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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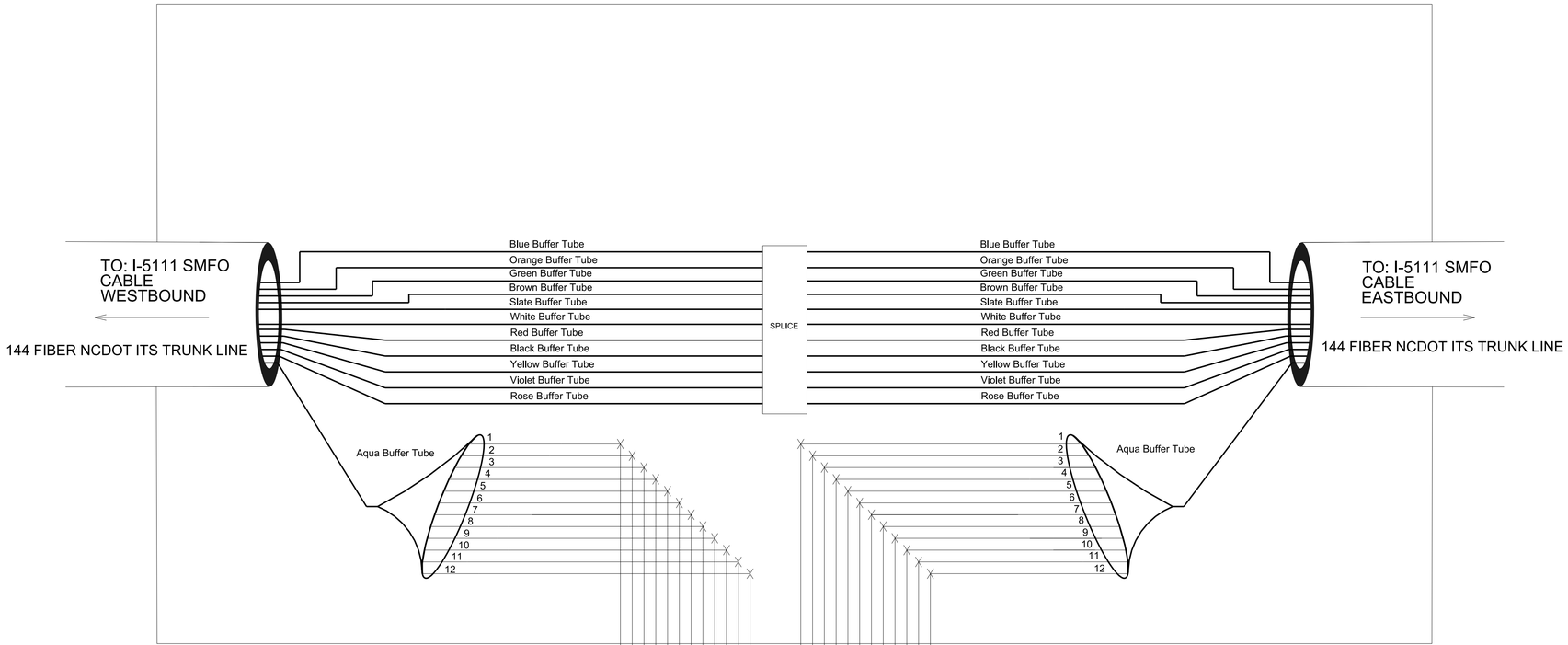
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | FS-11 |

# SE-10

## PROPOSED UNDERGROUND SPLICE
## NCDOT ITS (I–5111) INTERCONNECT
## PLAN SHEET CM–42




### LEGEND

| Color Code TIA/EIA | 598-B | | |
|---|---|---|---|
| BL | (1) Blue | RD | (7) Red |
| OR | (2) Orange | BK | (8) Black |
| GR | (3) Green | YL | (9) Yellow |
| BR | (4) Brown | VI | (10) Violet |
| SL | (5) Slate | RS | (11) Rose |
| WH | (6) White | AQ | (12) Aqua |

X = Fusion Splice Individual Fiber

C = Cap and Seal

EXPRESS = Express entire buffer tube/fibers through without cutting

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 enclosure.
3. Ethernet edge and hub switches to be furnished and configured by NCDOT and installed by DBT.

**Plans Prepared By:**

wsp
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC NO. F-0165

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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

**Fiber Splice Details**
**SE-10**

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D Johnson

PREPARED BY: S Schmid REVIEWED BY:

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2EC7DD9E49F DATE

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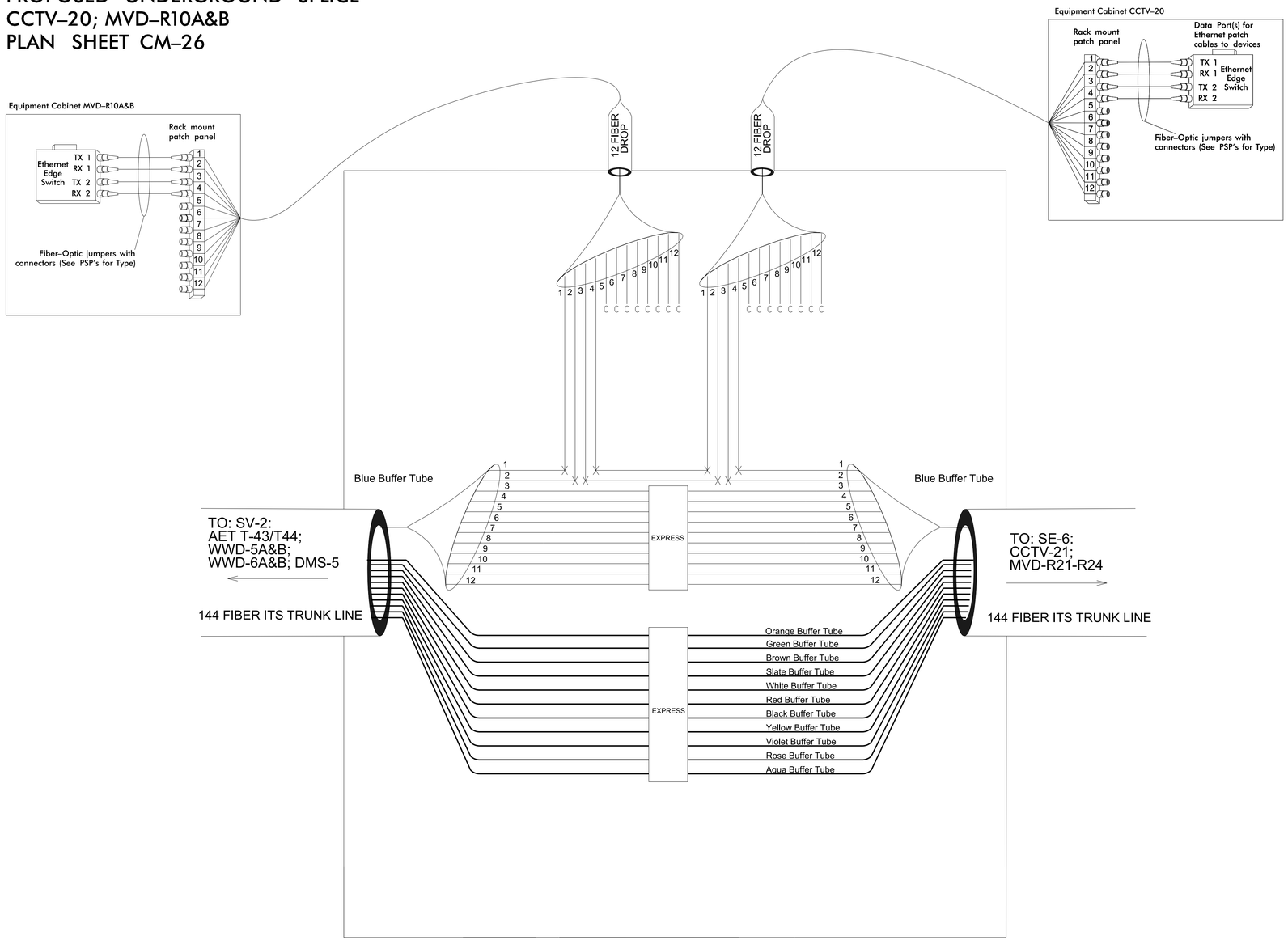
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | FS-12 |

# SE-11

# PROPOSED UNDERGROUND SPLICE
# CCTV–20; MVD–R10A&B
# PLAN SHEET CM–26




## LEGEND

| Color Code TIA/EIA 598-B | | | |
|---|---|---|---|
| BL | (1) Blue | RD | (7) Red |
| OR | (2) Orange | BK | (8) Black |
| GR | (3) Green | YL | (9) Yellow |
| BR | (4) Brown | VI | (10) Violet |
| SL | (5) Slate | RS | (11) Rose |
| WH | (6) White | AQ | (12) Aqua |

X = Fusion Splice Individual Fiber

C = Cap and Seal

EXPRESS = Express entire buffer tube/fibers through without cutting

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 enclosure.
3. Ethernet edge and hub switches to be furnished and configured by NCDOT and installed by DBT.

**Plans Prepared By:**

WSP
*1001 Morehead Square Dr. Suite 610 Charlotte NC, 28203 NC LIC NO. F-0165*

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

Fiber Splice Details
SE-11
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | S Schmid | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2EC7DD0E49F DATE

CADD Filename:

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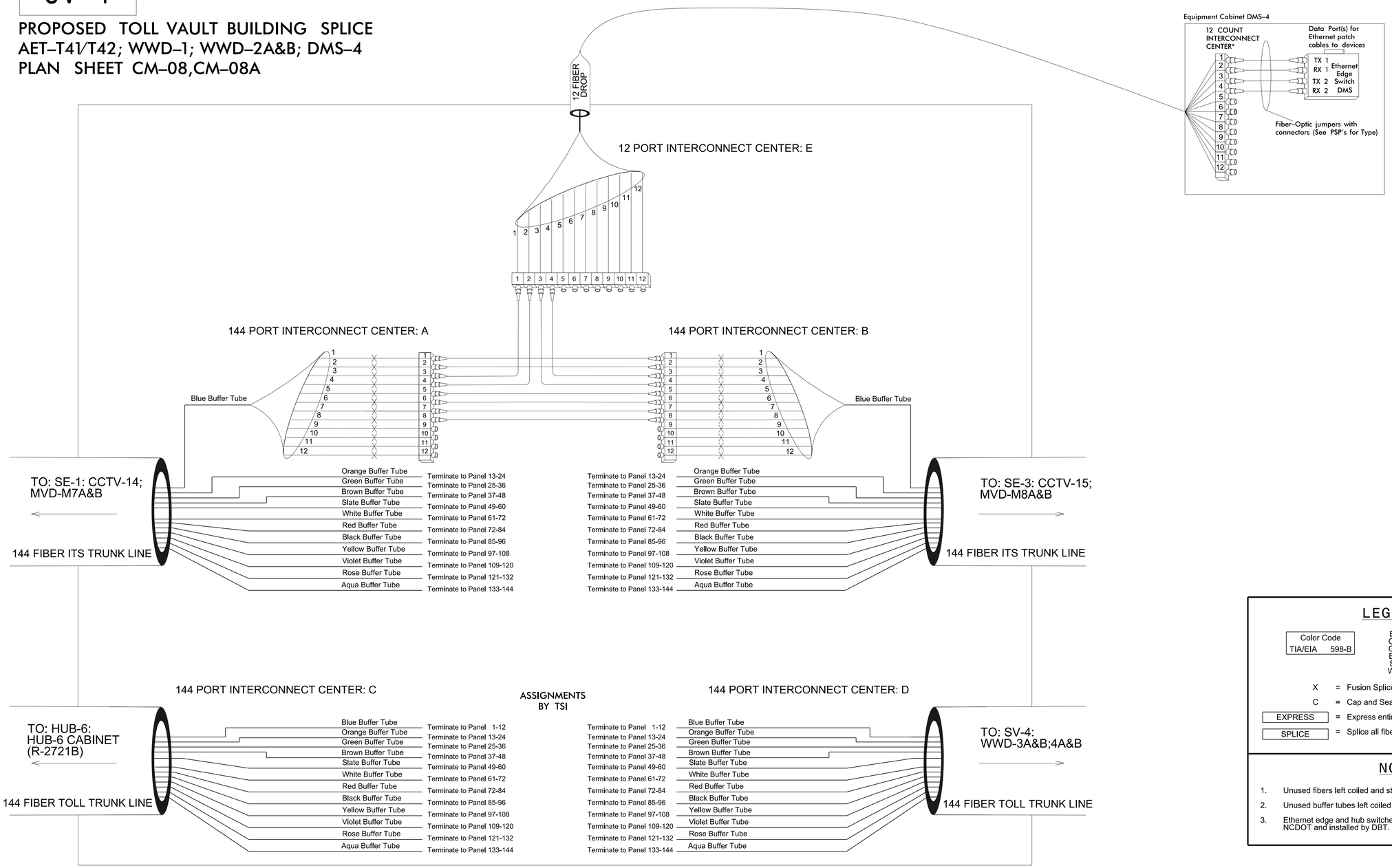
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | FS-13 |

# SV-1

## PROPOSED TOLL VAULT BUILDING SPLICE
## AET–T41/T42; WWD–1; WWD–2A&B; DMS–4
## PLAN SHEET CM–08,CM–08A




## LEGEND

| Color Code TIA/EIA 598-B | | | |
|---|---|---|---|
| BL | (1) Blue | RD | (7) Red |
| OR | (2) Orange | BK | (8) Black |
| GR | (3) Green | YL | (9) Yellow |
| BR | (4) Brown | VI | (10) Violet |
| SL | (5) Slate | RS | (11) Rose |
| WH | (6) White | AQ | (12) Aqua |

X = Fusion Splice Individual Fiber

C = Cap and Seal

EXPRESS = Express entire buffer tube/fibers through without cutting

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 enclosure.
3. Ethernet edge and hub switches to be furnished and configured by NCDOT and installed by DBT.

**Plans Prepared By:**

WSP
*1001 Morehead Square Dr. Suite 610 Charlotte NC, 28203 NC LIC NO. F–0165*

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

Fiber Splice Details
SV-1

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D Johnson

PREPARED BY: S Schmid REVIEWED BY:

SCALE N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020 — D92F2EC7DD9E49F DATE

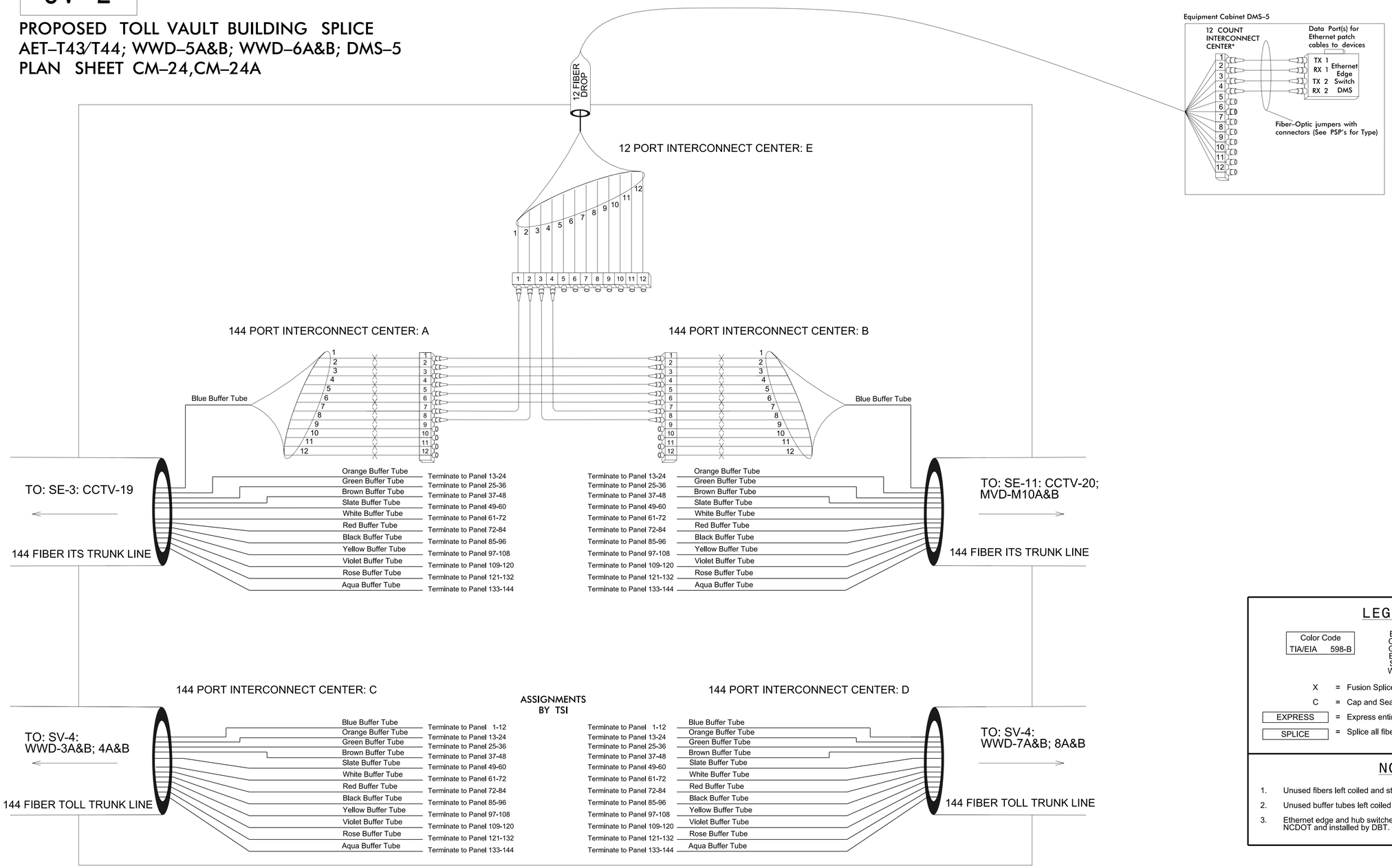
CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | FS-14 |

# SV-2

## PROPOSED TOLL VAULT BUILDING SPLICE
## AET–T43/T44; WWD–5A&B; WWD–6A&B; DMS–5
## PLAN SHEET CM–24,CM–24A




## LEGEND

| Color Code TIA/EIA 598-B | | | |
|---|---|---|---|
| BL | (1) Blue | RD | (7) Red |
| OR | (2) Orange | BK | (8) Black |
| GR | (3) Green | YL | (9) Yellow |
| BR | (4) Brown | VI | (10) Violet |
| SL | (5) Slate | RS | (11) Rose |
| WH | (6) White | AQ | (12) Aqua |

X = Fusion Splice Individual Fiber

C = Cap and Seal

EXPRESS = Express entire buffer tube/fibers through without cutting

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 enclosure.
3. Ethernet edge and hub switches to be furnished and configured by NCDOT and installed by DBT.

**Plans Prepared By:**

WSP
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC NO. F-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

Fiber Splice Details
SV-2

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D Johnson

PREPARED BY: S Schmid REVIEWED BY:

SCALE N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | FS-15 |

# SV-3

## PROPOSED TOLL VAULT BUILDING SPLICE
## AET–T45/T46; WWD–9A&B; WWD–10A&B; DMS–6
## PLAN SHEET CM–35,CM–35A

12 FIBER DROP

12 PORT INTERCONNECT CENTER: E

1 2 3 4 5 6 7 8 9 10 11 12

Equipment Cabinet DMS–6

12 COUNT INTERCONNECT CENTER*

Data Port(s) for Ethernet patch cables to devices

TX 1 / RX 1 Ethernet Edge Switch TX 2 / RX 2 DMS

Fiber–Optic jumpers with connectors (See PSP's for Type)

144 PORT INTERCONNECT CENTER: A

144 PORT INTERCONNECT CENTER: B

Blue Buffer Tube

Blue Buffer Tube

TO: SE-3: CCTV-22; MVD-11A&B

144 FIBER ITS TRUNK LINE

| | |
|---|---|
| Orange Buffer Tube | Terminate to Panel 13-24 |
| Green Buffer Tube | Terminate to Panel 25-36 |
| Brown Buffer Tube | Terminate to Panel 37-48 |
| Slate Buffer Tube | Terminate to Panel 49-60 |
| White Buffer Tube | Terminate to Panel 61-72 |
| Red Buffer Tube | Terminate to Panel 72-84 |
| Black Buffer Tube | Terminate to Panel 85-96 |
| Yellow Buffer Tube | Terminate to Panel 97-108 |
| Violet Buffer Tube | Terminate to Panel 109-120 |
| Rose Buffer Tube | Terminate to Panel 121-132 |
| Aqua Buffer Tube | Terminate to Panel 133-144 |

| | |
|---|---|
| Terminate to Panel 13-24 | Orange Buffer Tube |
| Terminate to Panel 25-36 | Green Buffer Tube |
| Terminate to Panel 37-48 | Brown Buffer Tube |
| Terminate to Panel 49-60 | Slate Buffer Tube |
| Terminate to Panel 61-72 | White Buffer Tube |
| Terminate to Panel 72-84 | Red Buffer Tube |
| Terminate to Panel 85-96 | Black Buffer Tube |
| Terminate to Panel 97-108 | Yellow Buffer Tube |
| Terminate to Panel 109-120 | Violet Buffer Tube |
| Terminate to Panel 121-132 | Rose Buffer Tube |
| Terminate to Panel 133-144 | Aqua Buffer Tube |

TO: SE-4: CCTV-23; MVD-M12A&B

144 FIBER ITS TRUNK LINE

144 PORT INTERCONNECT CENTER: C

144 PORT INTERCONNECT CENTER: D

ASSIGNMENTS BY TSI

TO: SV-4: WWD-7A&B; 8A&B

144 FIBER TOLL TRUNK LINE

| | |
|---|---|
| Blue Buffer Tube | Terminate to Panel 1-12 |
| Orange Buffer Tube | Terminate to Panel 13-24 |
| Green Buffer Tube | Terminate to Panel 25-36 |
| Brown Buffer Tube | Terminate to Panel 37-48 |
| Slate Buffer Tube | Terminate to Panel 49-60 |
| White Buffer Tube | Terminate to Panel 61-72 |
| Red Buffer Tube | Terminate to Panel 72-84 |
| Black Buffer Tube | Terminate to Panel 85-96 |
| Yellow Buffer Tube | Terminate to Panel 97-108 |
| Violet Buffer Tube | Terminate to Panel 109-120 |
| Rose Buffer Tube | Terminate to Panel 121-132 |
| Aqua Buffer Tube | Terminate to Panel 133-144 |

| | |
|---|---|
| Terminate to Panel 1-12 | Blue Buffer Tube |
| Terminate to Panel 13-24 | Orange Buffer Tube |
| Terminate to Panel 25-36 | Green Buffer Tube |
| Terminate to Panel 37-48 | Brown Buffer Tube |
| Terminate to Panel 49-60 | Slate Buffer Tube |
| Terminate to Panel 61-72 | White Buffer Tube |
| Terminate to Panel 72-84 | Red Buffer Tube |
| Terminate to Panel 85-96 | Black Buffer Tube |
| Terminate to Panel 97-108 | Yellow Buffer Tube |
| Terminate to Panel 109-120 | Violet Buffer Tube |
| Terminate to Panel 121-132 | Rose Buffer Tube |
| Terminate to Panel 133-144 | Aqua Buffer Tube |

TO: SE-10: I-5111 INTERCONNECT

144 FIBER TOLL TRUNK LINE

## LEGEND

Color Code TIA/EIA 598-B

| | | | |
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**Plans Prepared By:**

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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

Fiber Splice Details

SV-3

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D Johnson

PREPARED BY: S Schmid REVIEWED BY:

SCALE N.T.S.

| REVISIONS | INIT. | DATE |
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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

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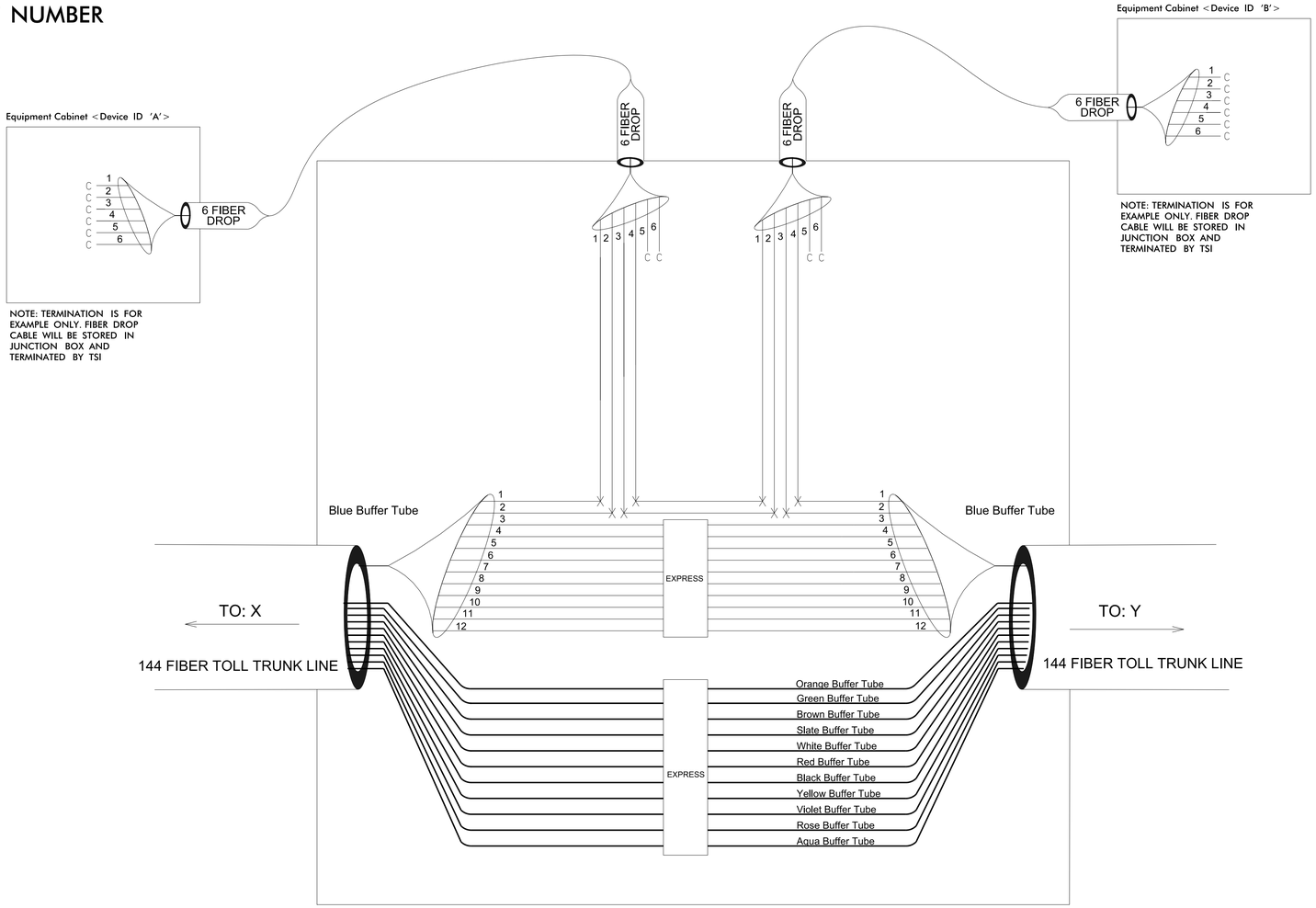
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | FS-16 |

# SV-4

## PROPOSED UNDERGROUND SPLICES SEE TABLE FOR LOCATION AND SHEET NUMBER




| Splice Enclosure Typical No. SV-4 | | | | | | |
|---|---|---|---|---|---|---|
| Device ID 'A' | Device ID 'B' | CM Sheet | To | | To | |
| | | | FS Sheet | X | FS Sheet | Y |
| WWD-3A&B | WWD-4A&B | CM-14 | FS-12 | SV-1: AET T41/ T42; WWD-1; WWD-2A&B | FS-13 | SV-2: AET T43/ T44; WWD-5A&B; WWD-6A&B |
| WWD-7A&B | WWD-8A&B | CM-31 | FS-13 | SV-2: AET T43/ T44; WWD-5A&B; WWD-6A&B | FS-14 | SV-3: AET T45/ T46; WWD-9A&B; WWD-10A&B |

**Plans Prepared By:**

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Fiber Splice Details
SV-4
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | S Schmid | REVIEWED BY: | |

SCALE: N.T.S.

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| | | |

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11-18-2020
DATE

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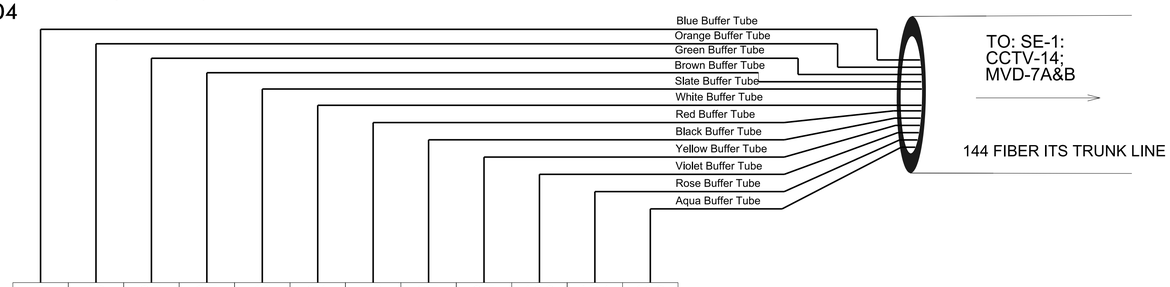
|---|---|
| R-2828 | FS-17 |

# HUB-6

PROPOSED HUB–6 CABINET (R–2721B)
PLAN SHEET CM–04

## ITS SMFO CABLE RACK MOUNT 144–PORT INTERCONNECT CENTER




| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 25 | 37 | 49 | 61 | 73 | 85 | 97 | 109 | 121 | 133 |
| 2 | 14 | 26 | 38 | 50 | 62 | 74 | 86 | 98 | 110 | 122 | 134 |
| 3 | 15 | 27 | 39 | 51 | 63 | 75 | 87 | 99 | 111 | 123 | 135 |
| 4 | 16 | 28 | 40 | 52 | 64 | 76 | 88 | 100 | 112 | 124 | 136 |
| 5 | 17 | 29 | 41 | 53 | 65 | 77 | 89 | 101 | 113 | 125 | 137 |
| 6 | 18 | 30 | 42 | 54 | 66 | 78 | 90 | 102 | 114 | 126 | 138 |
| 7 | 19 | 31 | 43 | 55 | 67 | 79 | 91 | 103 | 115 | 127 | 139 |
| 8 | 20 | 32 | 44 | 56 | 68 | 80 | 92 | 104 | 116 | 128 | 140 |
| 9 | 21 | 33 | 45 | 57 | 69 | 81 | 93 | 105 | 117 | 129 | 141 |
| 10 | 22 | 34 | 46 | 58 | 70 | 82 | 94 | 106 | 118 | 130 | 142 |
| 11 | 23 | 35 | 47 | 59 | 71 | 83 | 95 | 107 | 119 | 131 | 143 |
| 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 |

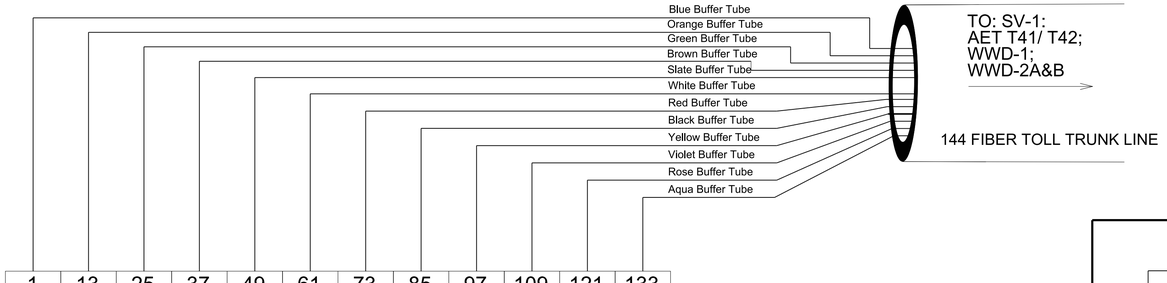
| Toll Layer 3 Switch to Patch Panel Assignments | | |
|---|---|---|
| Switch Port* | Patch Panel Port* | Description |
| 1 | 1 | TOLL-1 (WWD Devices) |
| | 2 | |
| | 9-36 | No Assignment |
| TBD | 37 | Hub to Hub Interconnect |
| | 38 | |
| TBD | 39 | Backhaul |
| | 40 | |
| | 41 - 144 | No Assignment |

* Interconnect Center is by others (R-2721B)

## TOLL SMFO CABLE RACK MOUNT 144–PORT INTERCONNECT CENTER

| Toll Layer 3 Switch to Patch Panel Assignments | | |
|---|---|---|
| Switch Port* | Patch Panel Port* | Description |
| 1 | 1 | TOLL-1 (WWD Devices) |
| | 2 | |
| | 3-36 | No Assignment |
| TBD | 37 | Hub to Hub Interconnect |
| | 38 | |
| TBD | 39 | Backhaul |
| | 40 | |
| | 41-48 | No Assignment |
| 2 | 49 | TOLL-2 |
| | 50 | |
| 3 | 51 | TOLL-3 |
| | 52 | |
| | 53 | Spare |
| | 54 | |
| 4 | 55 | TOLL-4 |
| | 56 | |
| 5 | 57 | TOLL-5 |
| | 58 | |
| | 59 | Spare |
| | 60 | |
| 6 | 61 | TOLL-6 |
| | 62 | |
| | 63 | Spare |
| | 64 | |
| | 65-144 | No Assignment |

* Interconnect Center is by others (R-2721B)




| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 25 | 37 | 49 | 61 | 73 | 85 | 97 | 109 | 121 | 133 |
| 2 | 14 | 26 | 38 | 50 | 62 | 74 | 86 | 98 | 110 | 122 | 134 |
| 3 | 15 | 27 | 39 | 51 | 63 | 75 | 87 | 99 | 111 | 123 | 135 |
| 4 | 16 | 28 | 40 | 52 | 64 | 76 | 88 | 100 | 112 | 124 | 136 |
| 5 | 17 | 29 | 41 | 53 | 65 | 77 | 89 | 101 | 113 | 125 | 137 |
| 6 | 18 | 30 | 42 | 54 | 66 | 78 | 90 | 102 | 114 | 126 | 138 |
| 7 | 19 | 31 | 43 | 55 | 67 | 79 | 91 | 103 | 115 | 127 | 139 |
| 8 | 20 | 32 | 44 | 56 | 68 | 80 | 92 | 104 | 116 | 128 | 140 |
| 9 | 21 | 33 | 45 | 57 | 69 | 81 | 93 | 105 | 117 | 129 | 141 |
| 10 | 22 | 34 | 46 | 58 | 70 | 82 | 94 | 106 | 118 | 130 | 142 |
| 11 | 23 | 35 | 47 | 59 | 71 | 83 | 95 | 107 | 119 | 131 | 143 |
| 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 |

## LEGEND

| Color Code TIA/EIA 598-B | | | | | |
|---|---|---|---|---|---|
| BL | (1) Blue | RD | (7) Red | | |
| OR | (2) Orange | BK | (8) Black | | |
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## NOTES

1. Unused fibers left coiled and stored in splice tray.
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NC LIC NO. F-0165

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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

# Fiber Splice Details HUB-6

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | S Schmid | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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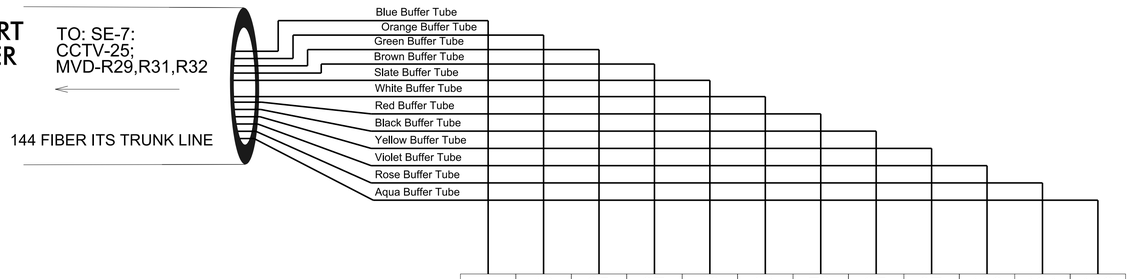
|---|---|
| R-2828 | FS-18 |

# HUB - 7

## PROPOSED HUB–7 CABINET SPLICE PLAN SHEET CM–42

### ITS RACK MOUNT 144–PORT INTERCONNECT CENTER




| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 25 | 37 | 49 | 61 | 73 | 85 | 97 | 109 | 121 | 133 |
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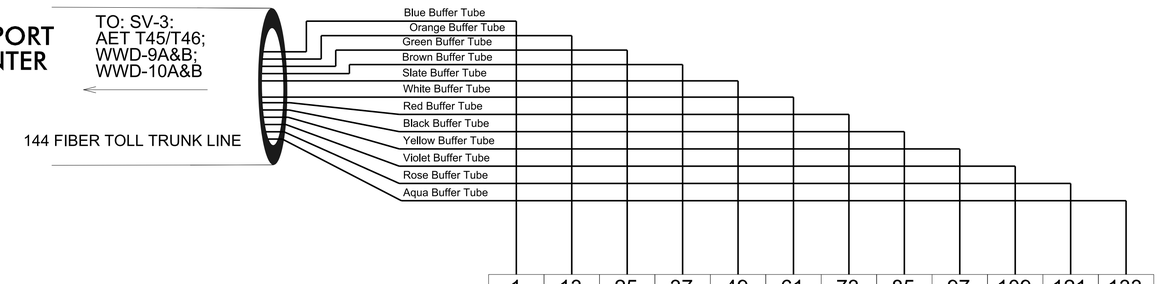
| 11 | 23 | 35 | 47 | 59 | 71 | 83 | 95 | 107 | 119 | 131 | 143 |
| 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 |

| ITS Layer 3 Switch to Patch Panel Assignments | | |
|---|---|---|
| Switch Port | Patch Panel Port | Description |
| 1 | 1 | GROUP 1: ITS-1 (ITS Devices) |
| | 2 | |
| 2 | 3 | GROUP 2: ITS-2 (ITS Devices) |
| | 4 | |
| 3 | 5 | GROUP 3: ITS-3 (ITS Devices) |
| | 6 | |
| 4 | 7 | GROUP 4: ITS-4 (ITS Devices) |
| | 8 | |
| | 9-36 | No Assignment |
| TBD | 37 | Hub to Hub Interconnect |
| | 38 | |
| TBD | 39 | Backhaul |
| | 40 | |
| | 41 - 144 | No Assignment |

### TOLL RACK MOUNT 144–PORT INTERCONNECT CENTER




| | | | | | | | | | | | | |
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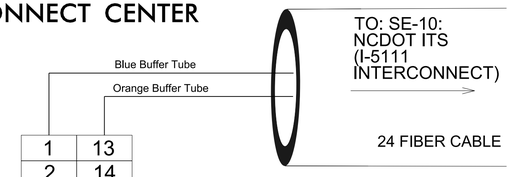
| Toll Layer 3 Switch to Patch Panel Assignments | | |
|---|---|---|
| Switch Port | Patch Panel Port | Description |
| 1 | 1 | TOLL-1 (WWD Devices) |
| | 2 | |
| | 9-36 | No Assignment |
| TBD | 37 | Hub to Hub Interconnect |
| | 38 | |
| TBD | 39 | Backhaul |
| | 40 | |
| | 41 - 144 | No Assignment |

### NCDOT CABLE RACK MOUNT 24–PORT INTERCONNECT CENTER




| | |
|---|---|
| 1 | 13 |
| 2 | 14 |
| 3 | 15 |
| 4 | 16 |
| 5 | 17 |
| 6 | 18 |
| 7 | 19 |
| 8 | 20 |
| 9 | 21 |
| 10 | 22 |
| 11 | 23 |
| 12 | 24 |

### LEGEND

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wsp

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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

## Fiber Splice Details HUB-7

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | S Schmid | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | CM-01 |

1. INSTALL ELECTRICAL SERVICE WIRE (BY TYPE)
2. INSTALL MVD COMPOSITE CABLE
2A. INSTALL SPECIAL MVD COMPOSITE CABLE
3. INSTALL ETHERNET CABLE
4. INSTALL SMFO CABLE
5. INSTALL DMS COMM AND POWER
6. INSTALL FIBER OPTIC DROP CABLE
7. INSTALL TRACER WIRE
8. TRENCH OR PLOW
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 NEW CABINET BASE
23. INSTALL NEW RISER INTO NEW CABINET BASE
24. INSTALL NEW CONDUIT INTO NEW POLE MOUNTED CABINET
25. INSTALL NEW RISER INTO NEW POLE MOUNTED CABINET
26. MODIFY EXISTING INTERCONNECT CENTER/SPLICE ENCLOSURE
27. INSTALL FIBER OPTIC EDGE SWITCH (PROVIDED BY OTHERS)
28. INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS AND FUSION SPLICE CABLE IN CABINET
29. INSTALL UNDERGROUND SPLICE ENCLOSURE
30. INSTALL AERIAL SPLICE ENCLOSURE
31A. INSTALL DMS CABINET
31B. INSTALL POLE MOUNTED CCTV CABINET
31C. INSTALL POLE MOUNTED CCTV AND MVD CABINET
31D. INSTALL POLE MOUNTED MVD CABINET
31E. INSTALL POLE MOUNTED MVD SLAVE CABINET
32A. INSTALL BASE MOUNTED HUB CABINET
32B. MODIFY EXISTING HUB CABINET/BUILDING
33. INSTALL ETHERNET HUB SWITCH (PROVIDED BY OTHERS)
34A. INSTALL CABINET FOUNDATION
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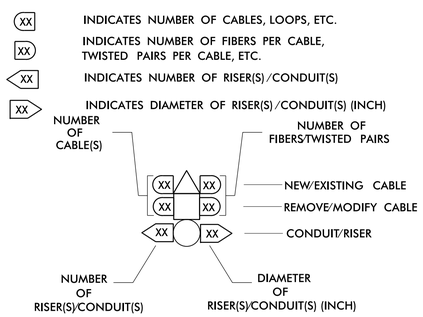
62. BOND RISER AND MESSENGER CABLE TO POLE GROUND
63. INSTALL WRONG WAY DETECTION DEVICE (BY OTHERS)
64. INSTALL UPS IN CABINET

SERVICE WIRE TYPE:

WHT = WHITE INSULATED STRANDED COPPER
BLK = BLACK INSULATED STRANDED COPPER
RED = RED INSULATED STRANDED COPPER
GRN = GREEN INSULATED STRANDED COPPER

| | | | | |
|---|---|---|---|---|
| TYPE I - | #12 AWG BLK, | #12 AWG WHT, | #12 AWG GRN | |
| TYPE II - | #10 AWG BLK, | #10 AWG WHT, | #10 AWG GRN | |
| TYPE III - | #6 AWG BLK, | #6 AWG WHT, | #6 AWG GRN | |
| TYPE IV - | #4 AWG BLK, | #4 AWG WHT, | #4 AWG GRN | |
| TYPE V - | #3 AWG BLK, | #3 AWG WHT, | #3 AWG GRN | |
| TYPE VI - | #2 AWG BLK, | #2 AWG WHT, | #2 AWG GRN | |
| TYPE VII - | #10 AWG BLK, | #10 AWG RED, | #10 AWG WHT, | #8 AWG GRN |
| TYPE VIII - | #8 AWG BLK, | #8 AWG RED, | #8 AWG WHT, | #8 AWG GRN |
| TYPE IX - | #3 AWG BLK, | #3 AWG RED, | #3 AWG WHT, | #3 AWG GRN |
| TYPE X - | #2 AWG BLK, | #2 AWG RED, | #2 AWG WHT, | #2 AWG GRN |
| TYPE XI - | #10 AWG BLK, | #10 AWG RED, | #10 AWG GRN | |
| TYPE XII - | #8 AWG BLK, | #8 AWG RED, | #8 AWG GRN | |
| TYPE XIII - | #1 AWG BLK, | #1 AWG RED, | #1 AWG GRN | |
| TYPE XIV- | #6 AWG BLK, | #6 AWG RED, | #6 AWG WHT, | #6 AWG GRN |

## *CONSTRUCTION NOTE SYMBOLOGY KEY*




**Plans Prepared By:**

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*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

*750 N. Greenfield Pkwy., Garner, NC 27529*

# Communication Construction Notes

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

N.T.S.

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2EC7DD6E49F DATE

CADD Filename:

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| PROJECT REFERENCE NO. | SHEET NO. |
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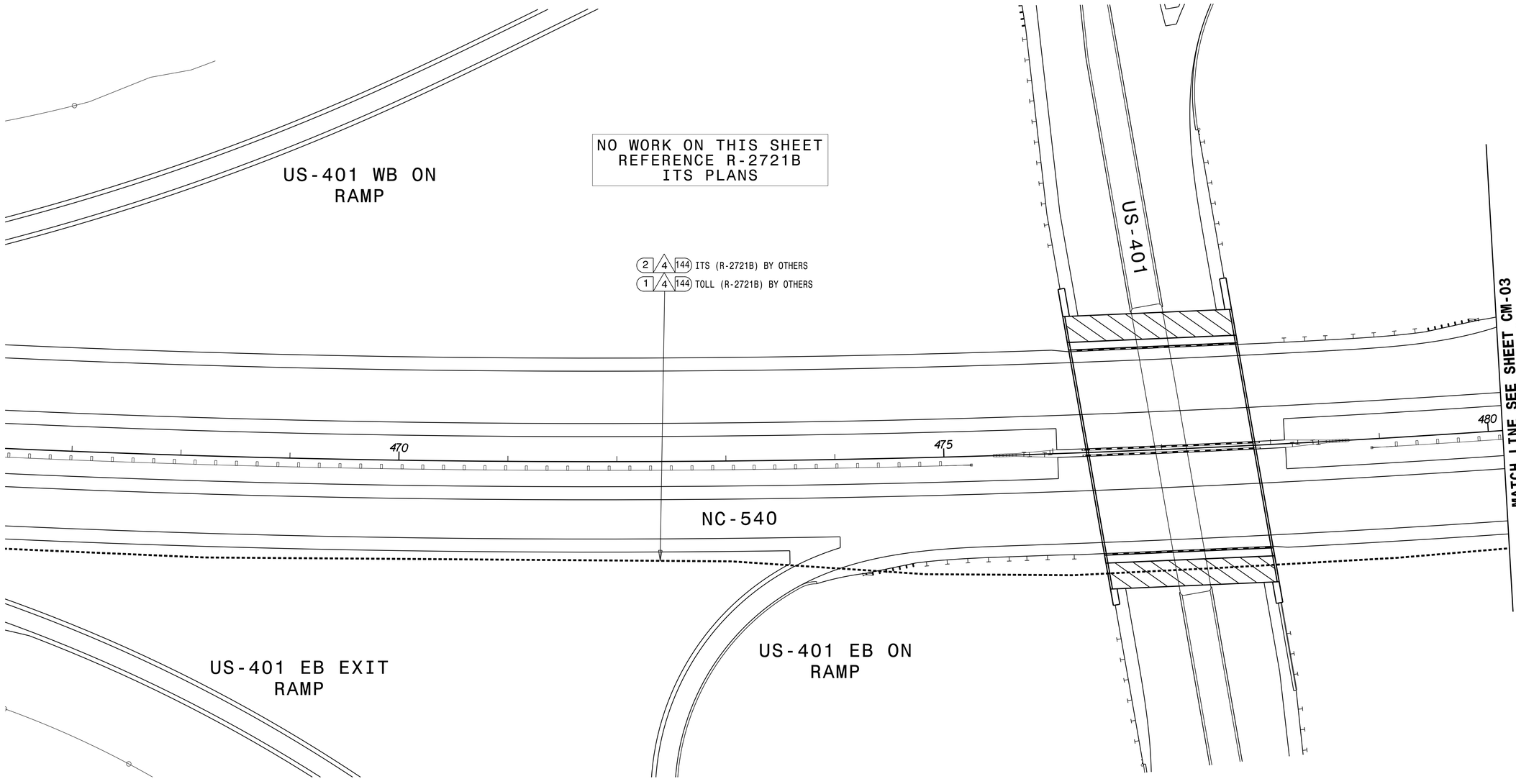


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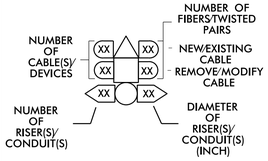


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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2EC7DD9E49F DATE

CADD Filename:

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| PROJECT REFERENCE NO. | SHEET NO. |
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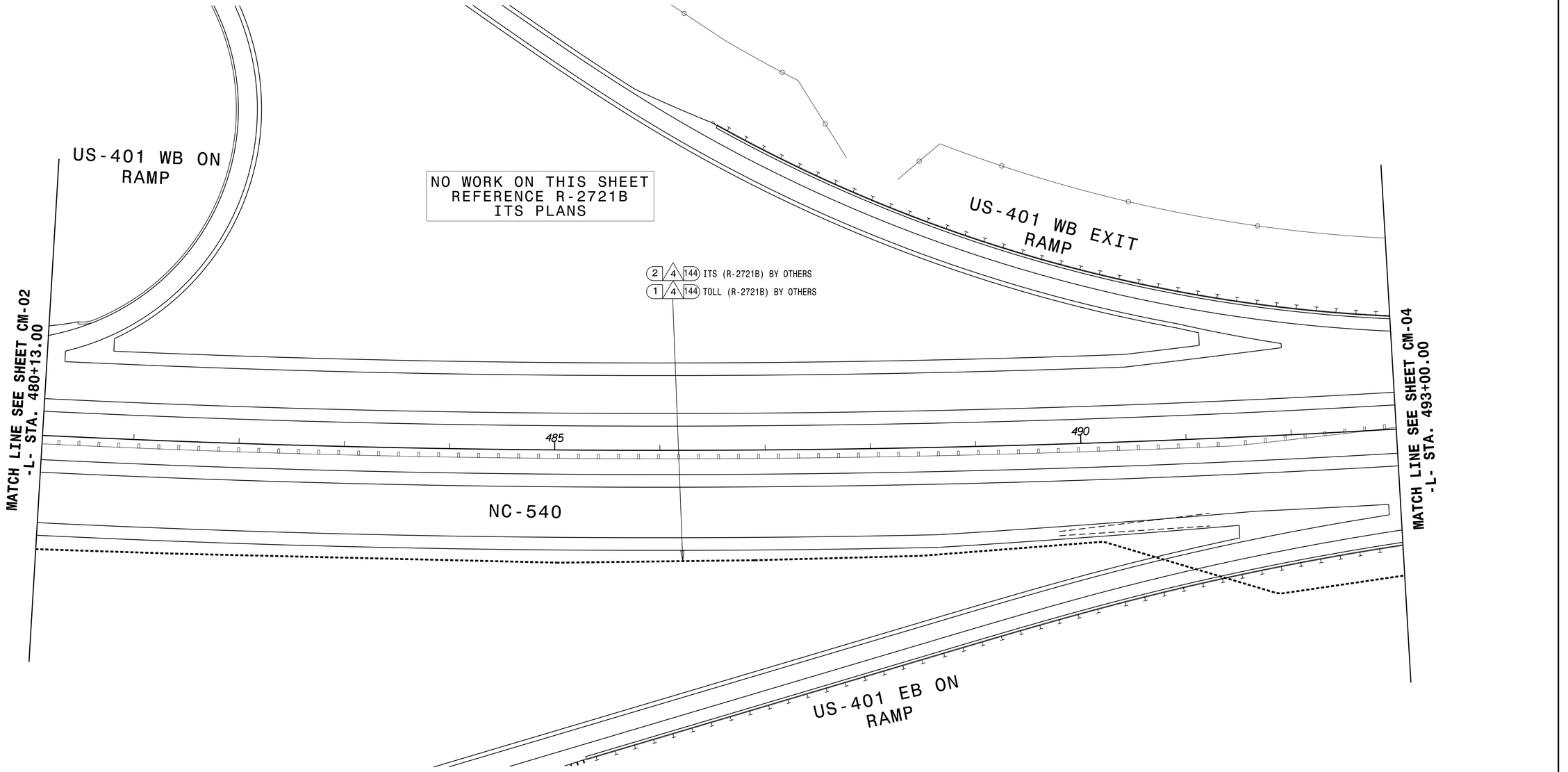
| R-2828 | CM-03 |

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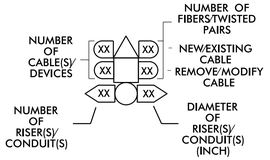


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*Charlotte NC, 28203*
*NC LIC NO. F-0165*

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

*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2EC7DD9E49F DATE

CADD Filename:

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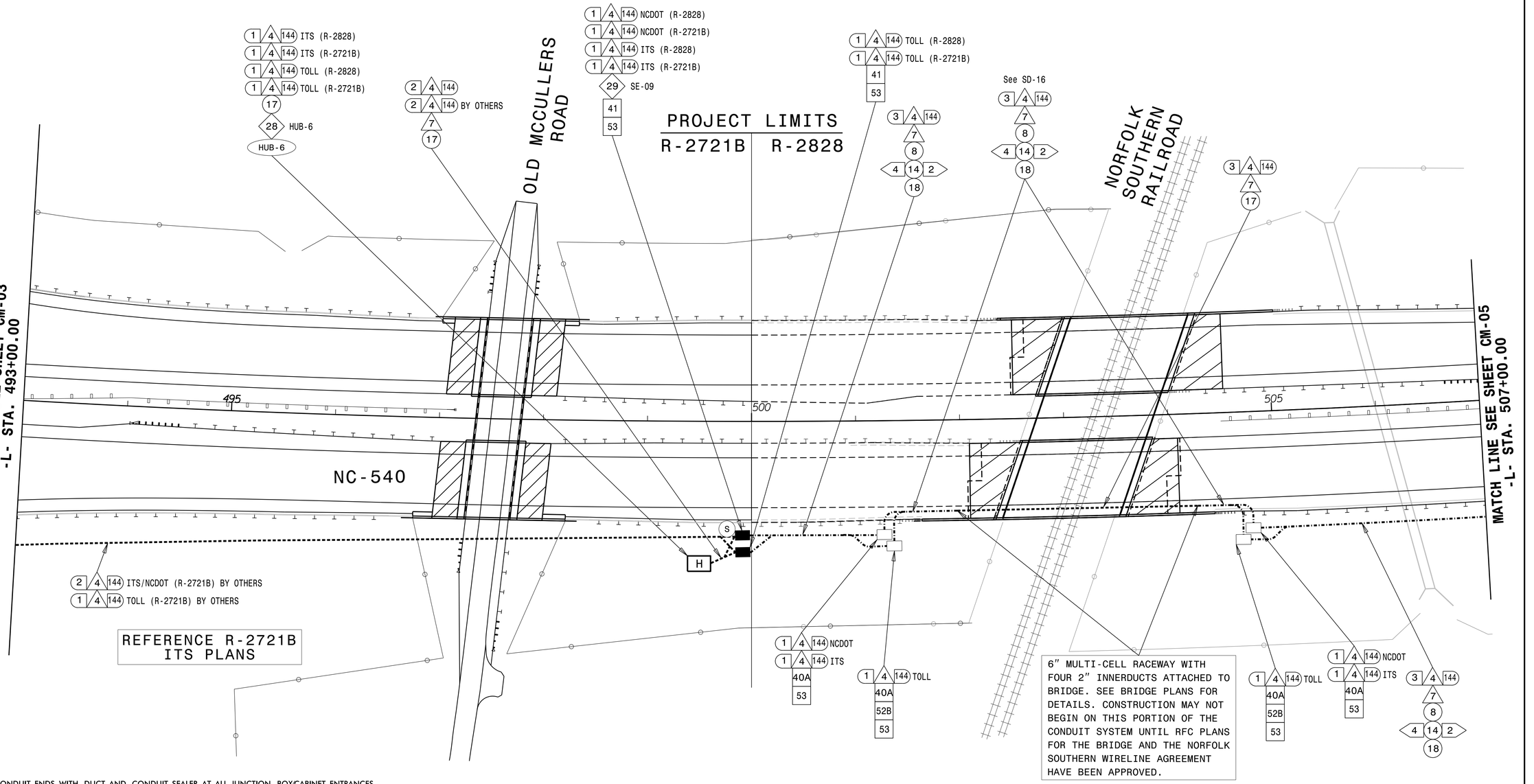


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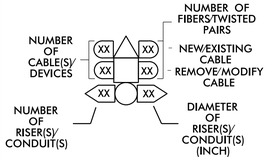


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# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D. Johnson
PREPARED BY: D Burnett REVIEWED BY:

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2EC7DD5E49F DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
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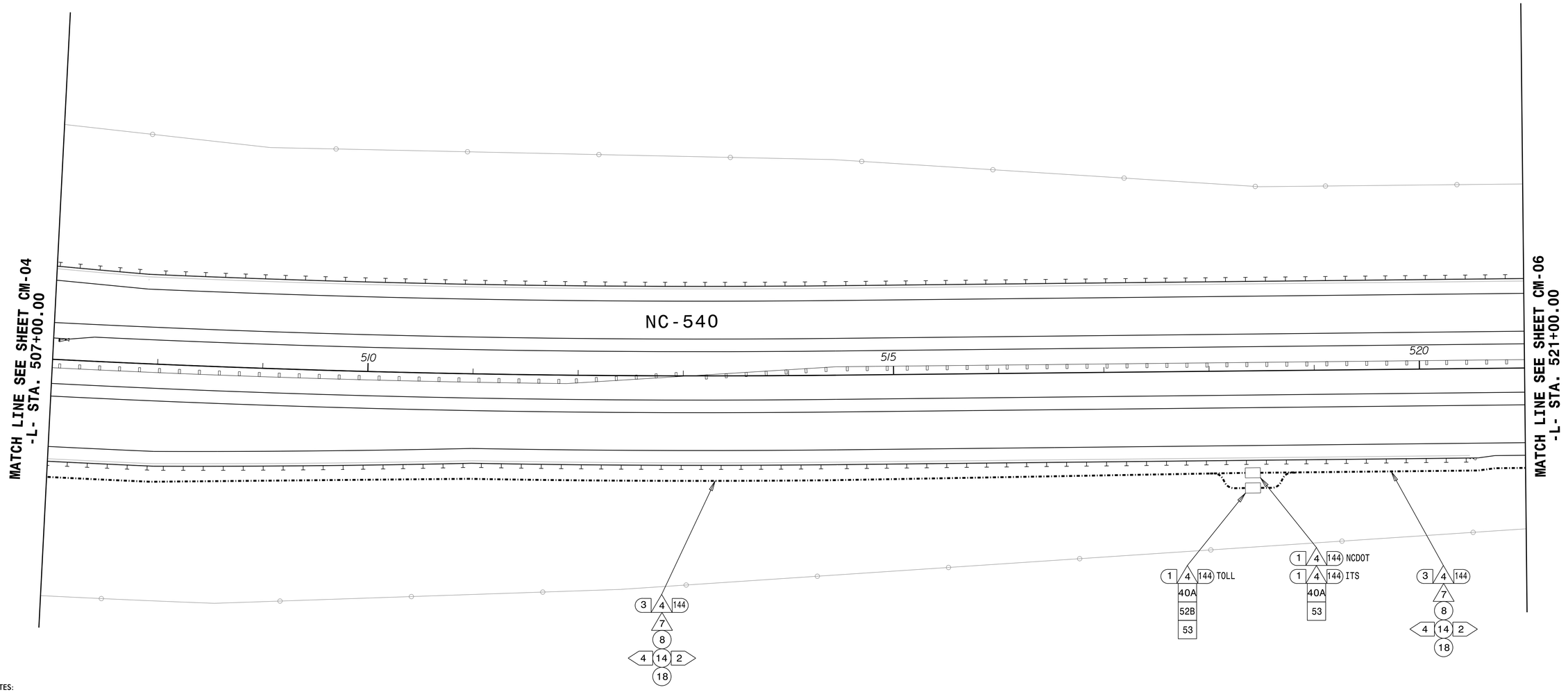
| R-2828 | CM-05 |

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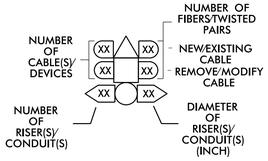


**Plans Prepared By:**

wsp

*1001 Morehead Square Dr.*
*Suite 610*
*Charlotte NC, 28203*
*NC LIC NO. F-0165*

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*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D. Johnson

PREPARED BY: D Burnett REVIEWED BY:

SCALE 0 50 1" = 50'

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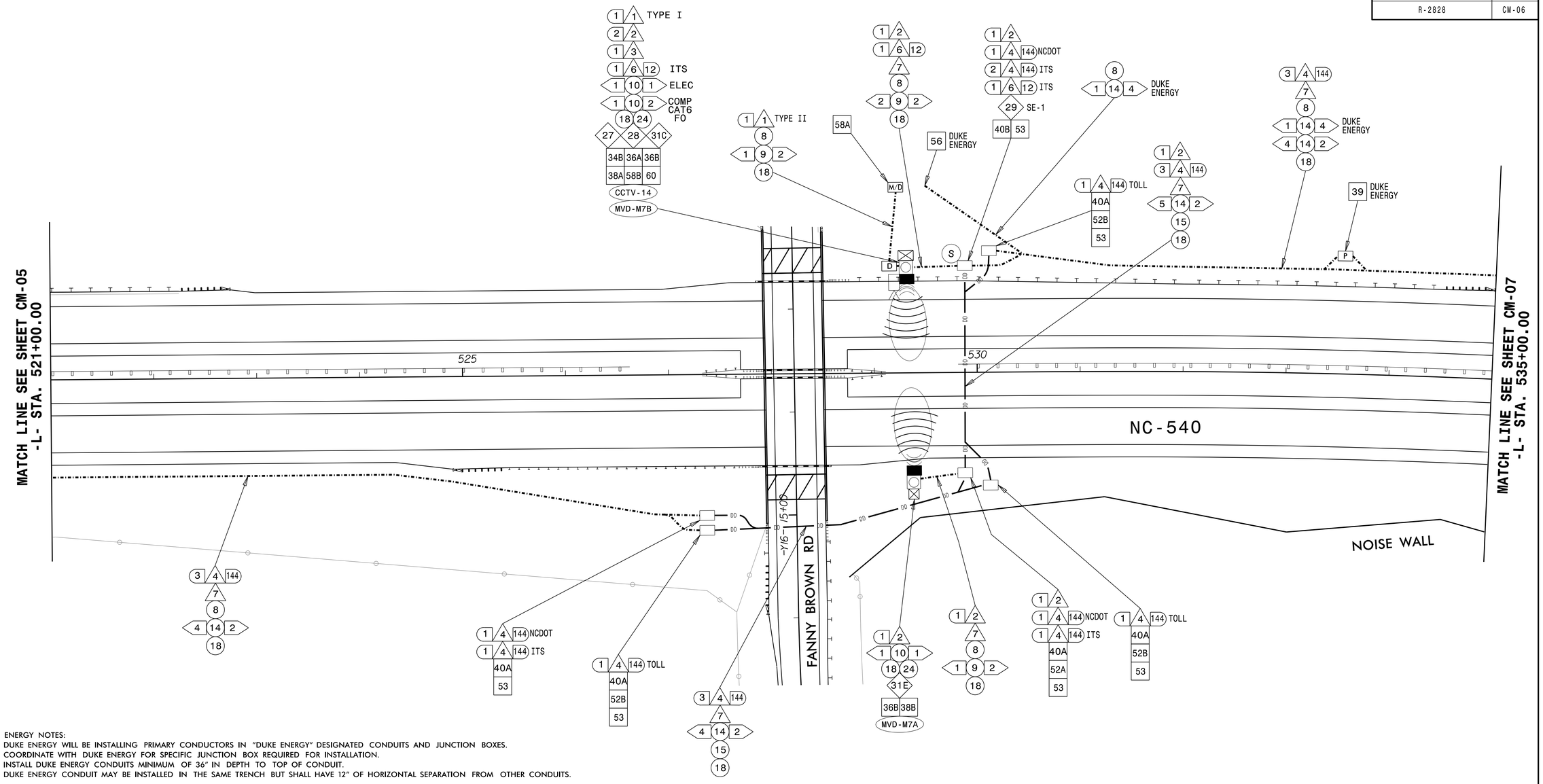


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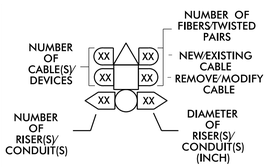


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*NC LIC NO. F-0165*

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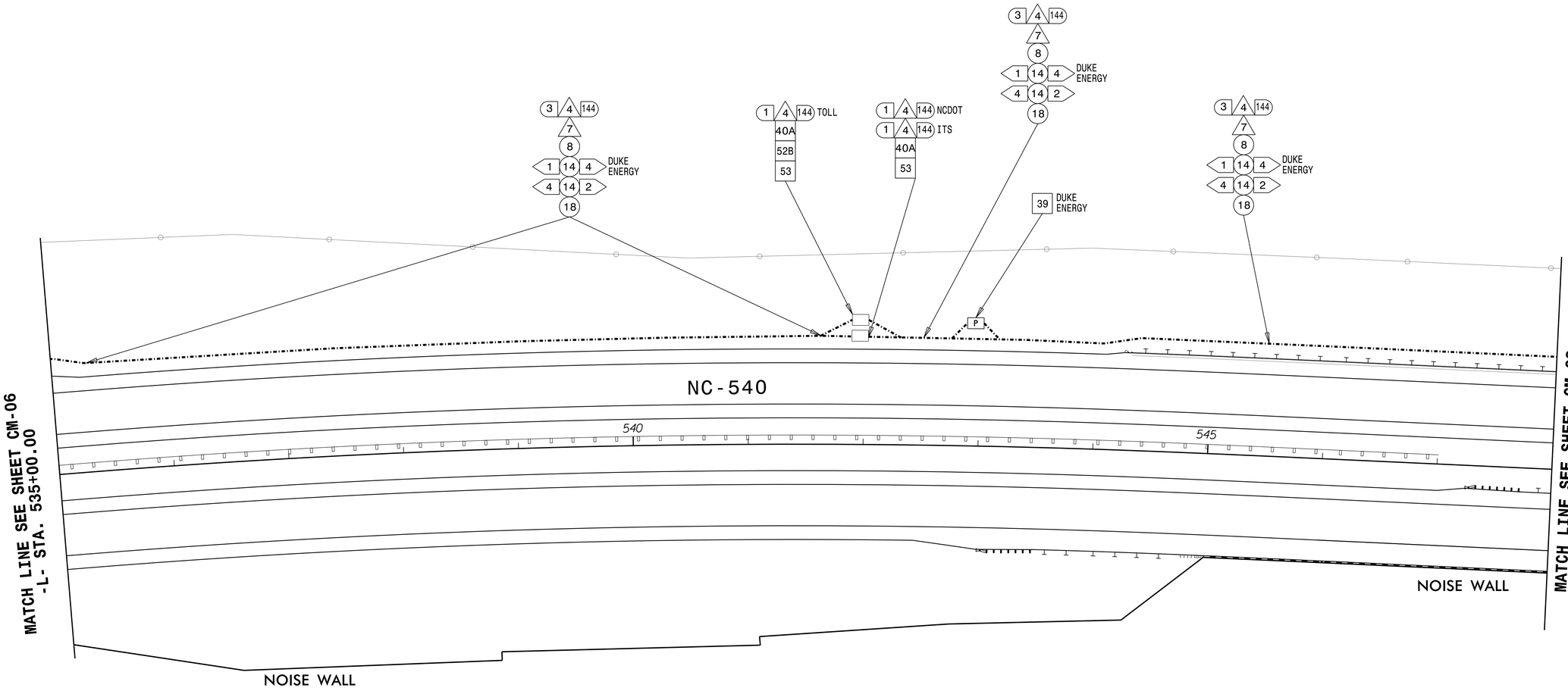


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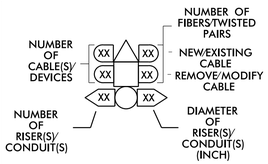


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FIGURE 1




REFERENCE APPROVED AET PLANS FOR INSTALLATION DETAILS FOR AET PADS, CONDUITS, AND JUNCTION BOXES WITHIN THIS AREA.

AET T41

AET T42

DUKE ENERGY

WWD-1 FIGURE 1

WWD-2B FIGURE 1

WWD-2A FIGURE 1

DMS-4

DMS

NC-540

NOISE WALL

INSET SEE SHEET CM-08A

MATCH LINE SEE SHEET CM-07 -L- STA. 548+00.00

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| 11 | INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD | 27 | INSTALL FIBER OPTIC EDGE SWITCH (PROVIDED BY OTHERS) | 36A | INSTALL CCTV CAMERA ASSEMBLY | 47 | INSTALL MESSENGER CABLE |
| 12 | INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL | 28 | INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS AND FUSION SPLICE CABLE IN CABINET | 36B | INSTALL MICROWAVE VEHICLE DETECTION SYSTEM (MVD) (BY OTHERS) | 48 | REMOVE EXISTING COMMUNICATIONS CABLE |
| 13 | INSTALL FIBER OPTIC CABLE SEAL | 29 | INSTALL UNDERGROUND SPLICE ENCLOSURE | 37 | INSTALL TYPE III PEDESTAL POLE WITH FOUNDATION | 49 | RELOCATE EXISTING COMMUNICATIONS CABLE |
| 14 | INSTALL POLYETHYLENE CONDUIT | 30 | INSTALL AERIAL SPLICE ENSLOSURE | 38A | INSTALL CCTV METAL POLE WITH LOWERING DEVICE AND FOUNDATION | 50 | INTERCEPT EXISTING CONDUIT RUN |
| 15 | DIRECTIONAL DRILL CONDUIT | 31A | INSTALL DMS CABINET | 38B | INSTALL MVD METAL POLE AND FOUNDATION | 51 | INSTALL PEDESTAL SUPPORT FOR DMS |

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| 52A | INSTALL DELINEATOR MARKER | 58A | INSTALL NEW ELECTRICAL SERVICE (METER AND DISCONNECT) |
| 52B | INSTALL JUNCTION BOX MARKER | 58B | INSTALL NEW DISCONNECT |
| 53 | STORE 50 FEET OF FIBER OPTIC CABLE | 59 | INSTALL NEW TRANSFORMER AND DISCONNECT (PEDESTAL MOUNTED) |
| 54 | INSTALL TRAFFIC BEARING JUNCTION BOX | 60 | BOND TRACER WIRE TO EQUIPMENT GROUND BUS |
| 55 | STUB UP CONDUITS FOR POWER PROVIDER INSTALLED SERVICE TRANSFORMER PAD | 61 | DO NOT BOND TRACER WIRE TO EQUIPMENT GROUND BUS |
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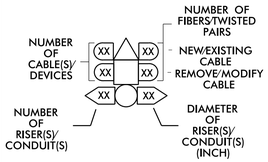
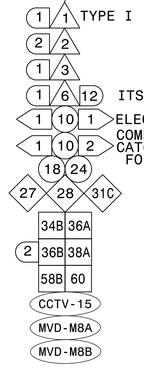
| 57 | MODIFY EXISTING ELECTRICAL SERVICE | 63 | INSTALL WRONG WAY DETECTION DEVICE (BY OTHERS) |
| | | 64 | INSTALL UPS IN CABINET |

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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 | REVIEWED BY: D. Johnson
PREPARED BY: D Burnett | REVIEWED BY:

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2EC7DD9E46F DATE

CADD Filename:

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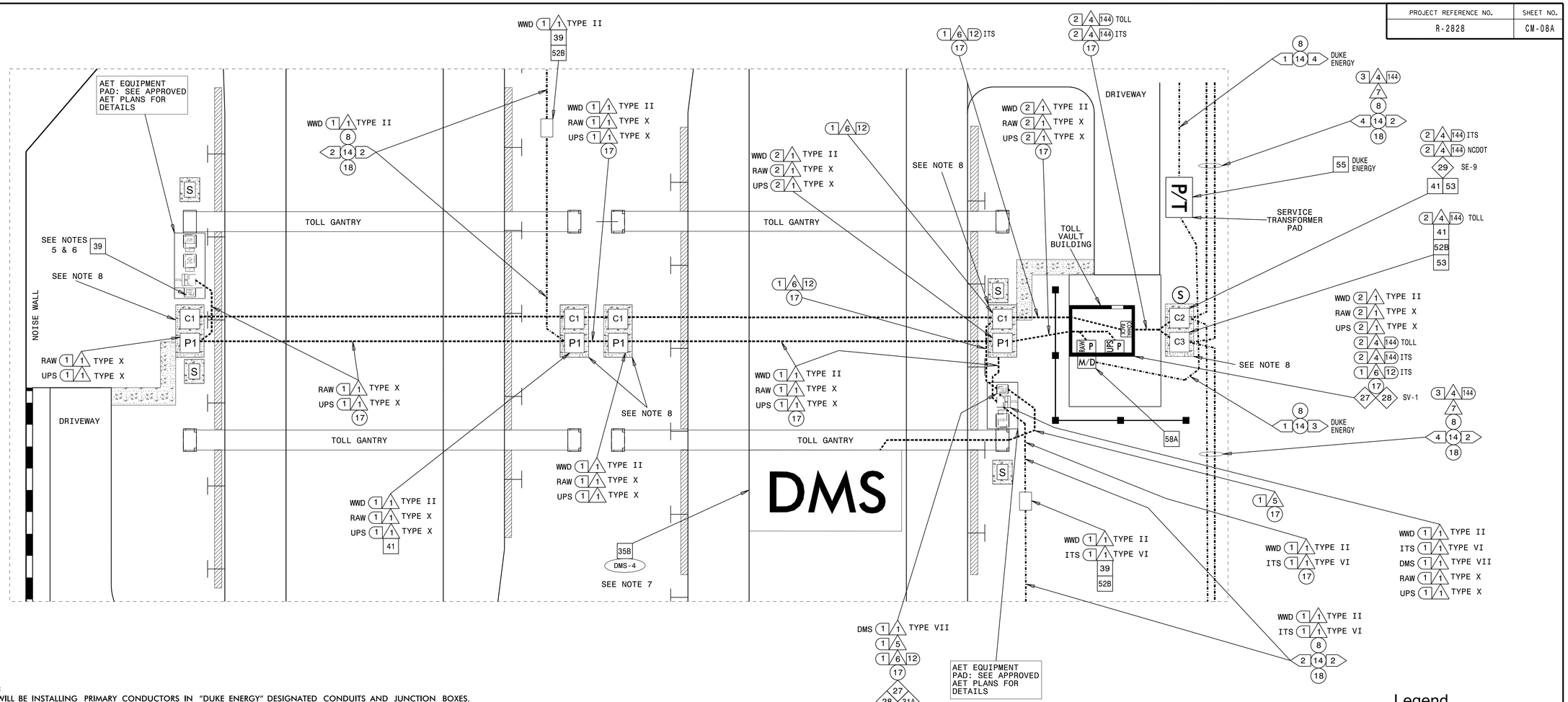
| R-2828 | CM-08A |




## Legend

- C1 - AET Comm. Junction Box
- C2 - ITS Communications Junction Box
- C3 - TOLL Communications Junction Box
- P1 - AET Power Junction Box
- P2 - Service Power Junction Box (DUKE)
- S - Loop Splice Junction Box

DUKE ENERGY NOTES:

1. DUKE ENERGY WILL BE INSTALLING PRIMARY CONDUCTORS IN "DUKE ENERGY" DESIGNATED CONDUITS AND JUNCTION BOXES.
2. COORDINATE WITH DUKE ENERGY FOR SPECIFIC JUNCTION BOX REQUIRED FOR INSTALLATION.
3. INSTALL DUKE ENERGY CONDUITS MINIMUM OF 36" IN DEPTH TO TOP OF CONDUIT.
4. DUKE ENERGY CONDUIT MAY BE INSTALLED IN THE SAME TRENCH BUT SHALL HAVE 12" OF HORIZONTAL SEPARATION FROM OTHER CONDUITS.

NOTES:

1. INSTALL DMS CABINET ON AET EQUIPMENT PAD PER THE APPROVED AET PLANS FOR TOLL ZONE AET T41/T42.
2. INSTALL FEEDER CIRCUIT CONDUCTORS IN POWER NETWORK CONDUITS/JUNCTION BOXES PER THE APPROVED AET PLANS FOR TOLL ZONE AET T41/T42, FROM AET TOLL ZONE VAULT RAW AND UPS POWER BREAKER PANELS TO AET EQUIPMENT PAD, RAW AND UPS POWER SUB-PANELS.
3. INSTALL BRANCH CIRCUIT CONDUCTORS FOR DMS OR ADJACENT ITS DEVICE CABINETS, AS SHOWN ON THE PLANS, FROM THE AET EQUIPMENT PAD RAW POWER SUB-PANEL TO THE DMS OR ITS DEVICE CABINETS.
4. INSTALL DROP CABLE IN COMMUNICATIONS NETWORK CONDUIT/JUNCTION BOXES PER THE APPROVED AET PLANS FOR TOLL ZONE AET T41/T42, FROM AET TOLL ZONE VAULT TO DMS CABINET ON AET EQUIPMENT PAD.
5. INSTALL A STANDARD JUNCTION BOX UNDER THE FUTURE DMS CABINET LOCATION. INSTALL DMS CABINET LOCATION PER THE APPROVED AET PLANS FOR TOLL ZONE AET T41/T42.
6. ENSURE FUTURE POWER SERVICE CABLES CAN BE INSTALLED IN POWER NETWORK CONDUITS/ JUNCTION BOXES PER THE APPROVED AET PLANS FOR TOLL ZONE AET T45/T46.
7. INSTALL DMS AS SHOWN IN NCTA ITS STANDARD DETAILS (DATED 05-24-2018), SHEETS SD-3, SD-4, D-2A, AND D-4.
8. INSTALL CONDUIT AND JUNCTION BOXES AT AET ZONES AS PER THE APPROVED AET PLANS.
9. INSTALL CONCRETE EQUIPMENT PADS PER THE APPROVED AET PLANS FOR TOLL ZONE AET T45/T46.
10. SEAL ALL CONDUIT ENDS WITH DUCT AND CONDUIT SEALER AT ALL JUNCTION BOX/CABINET ENTRANCES.
11. AET LOOP DETECTION SHALL BE INSTALLED PER THE APPROVED AET PLANS FOR TOLL ZONE AET T45/T46.

1 INSTALL ELECTRICAL SERVICE WIRE (BY TYPE)
2 INSTALL MVD COMPOSITE CABLE
2A INSTALL SPECIAL MVD COMPOSITE CABLE
3 INSTALL ETHERNET CABLE
4 INSTALL SMFO CABLE
5 INSTALL DMS COMM AND POWER
6 INSTALL FIBER OPTIC CABLE DROP
7 INSTALL TRACER WIRE
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32A INSTALL BASE MOUNTED HUB CABINET
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38A INSTALL CCTV METAL POLE WITH LOWERING DEVICE AND FOUNDATION
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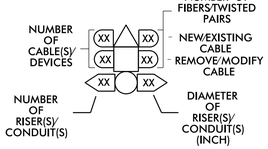


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*NC LIC NO. F-0165*

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*Prepared for the Offices of:*
NORTH CAROLINA **Turnpike Authority**

# R-2828 TOLL ZONE DETAIL AET T41/ T42

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE 0 12.5 1" = 12.5'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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CADD Filename:

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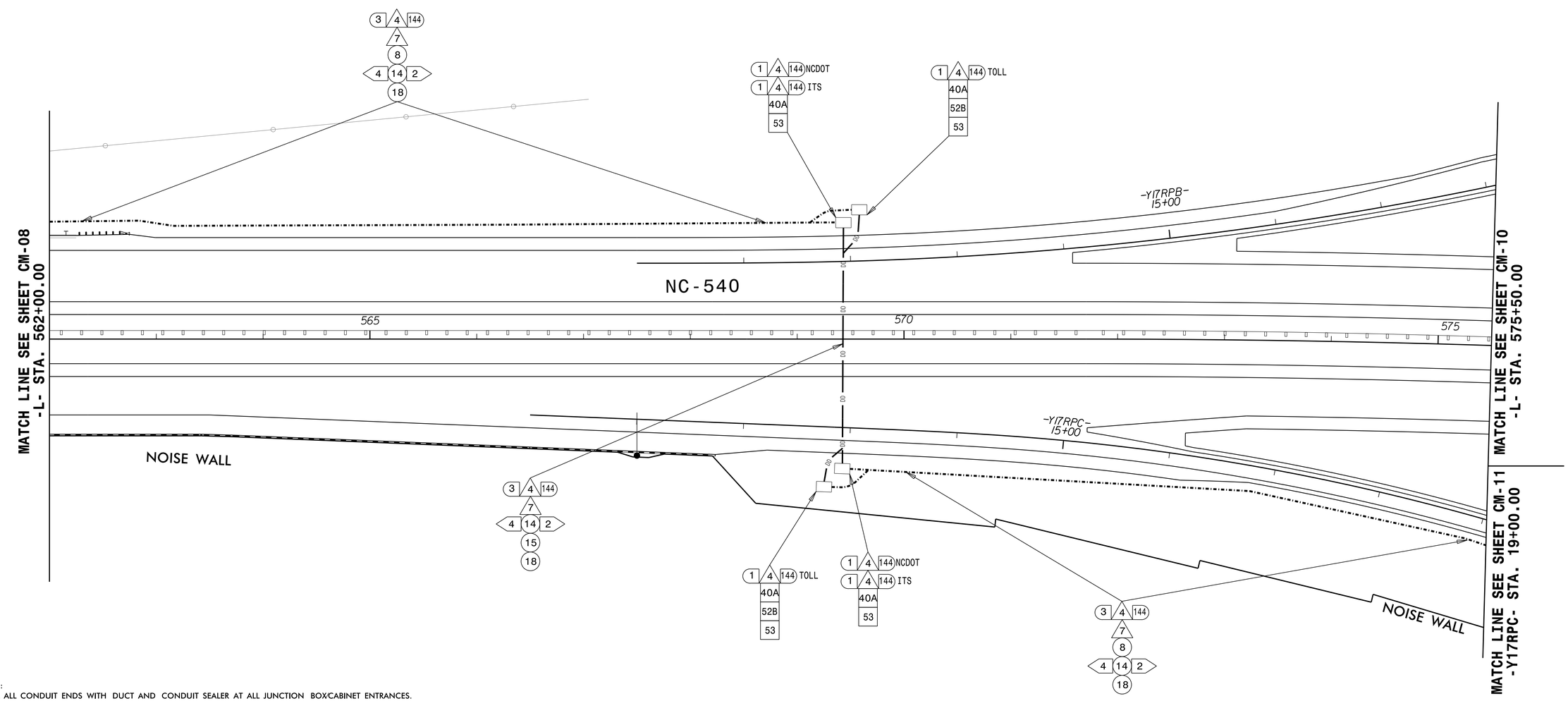


NOTES:
1. SEAL ALL CONDUIT ENDS WITH DUCT AND CONDUIT SEALER AT ALL JUNCTION BOX/CABINET ENTRANCES.
2. WHEN A JUNCTION BOX IS USED TO CHANGE INSTALLATION METHODS ONLY, THE JUNCTION BOX MAY BE ELIMINATED WITH THE APPROVAL OF THE ENGINEER.

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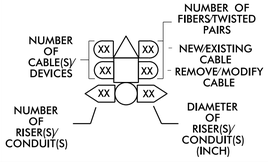


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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D. Johnson

PREPARED BY: D Burnett REVIEWED BY:

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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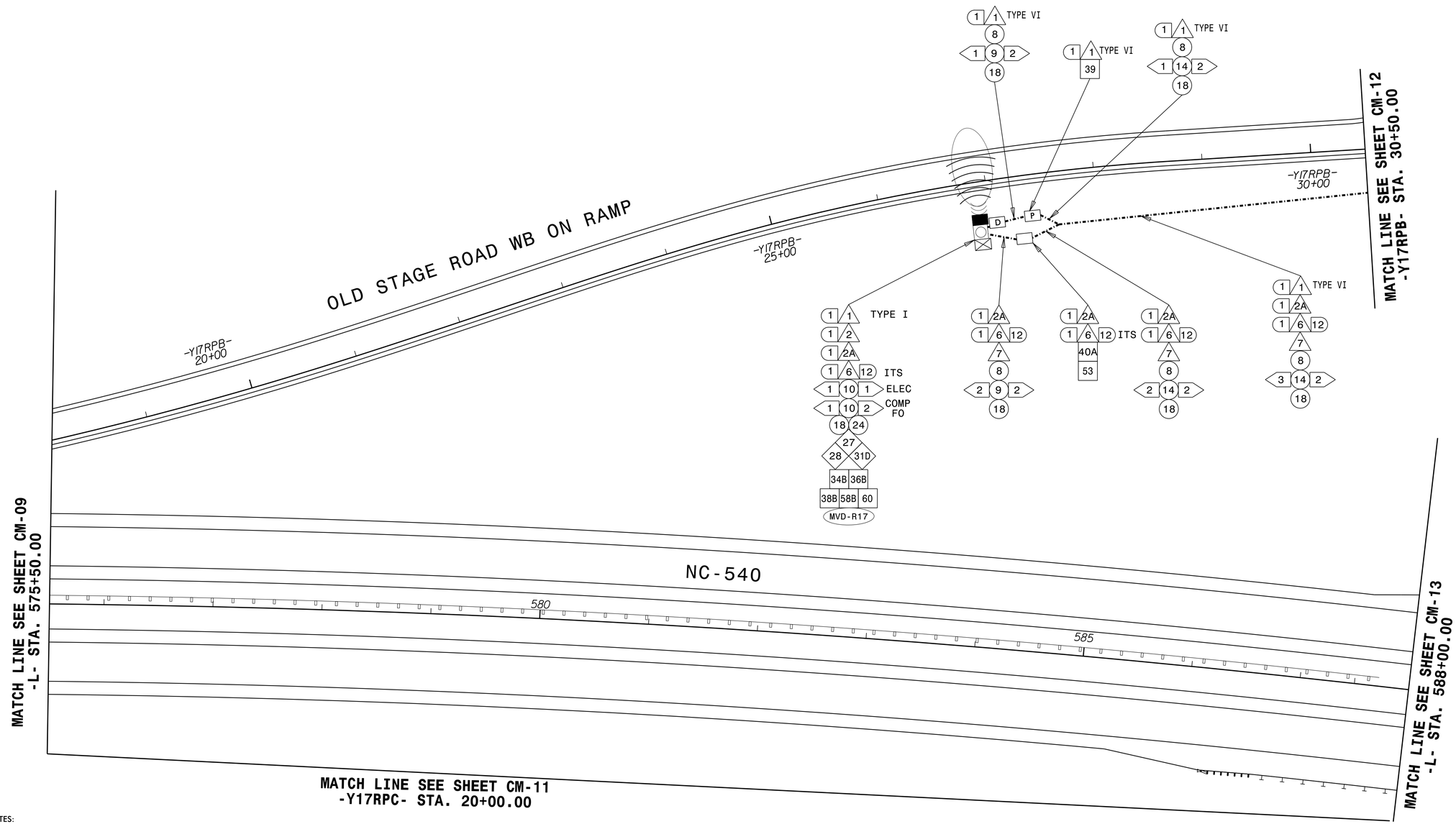


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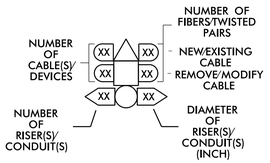


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*1001 Morehead Square Dr. Suite 610 Charlotte NC, 28203 NC LIC NO. F-0165*

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*Prepared for the Offices of:*
NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 | REVIEWED BY: D. Johnson
PREPARED BY: D Burnett | REVIEWED BY:

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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CADD Filename:

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| R-2828 | CM-11 |

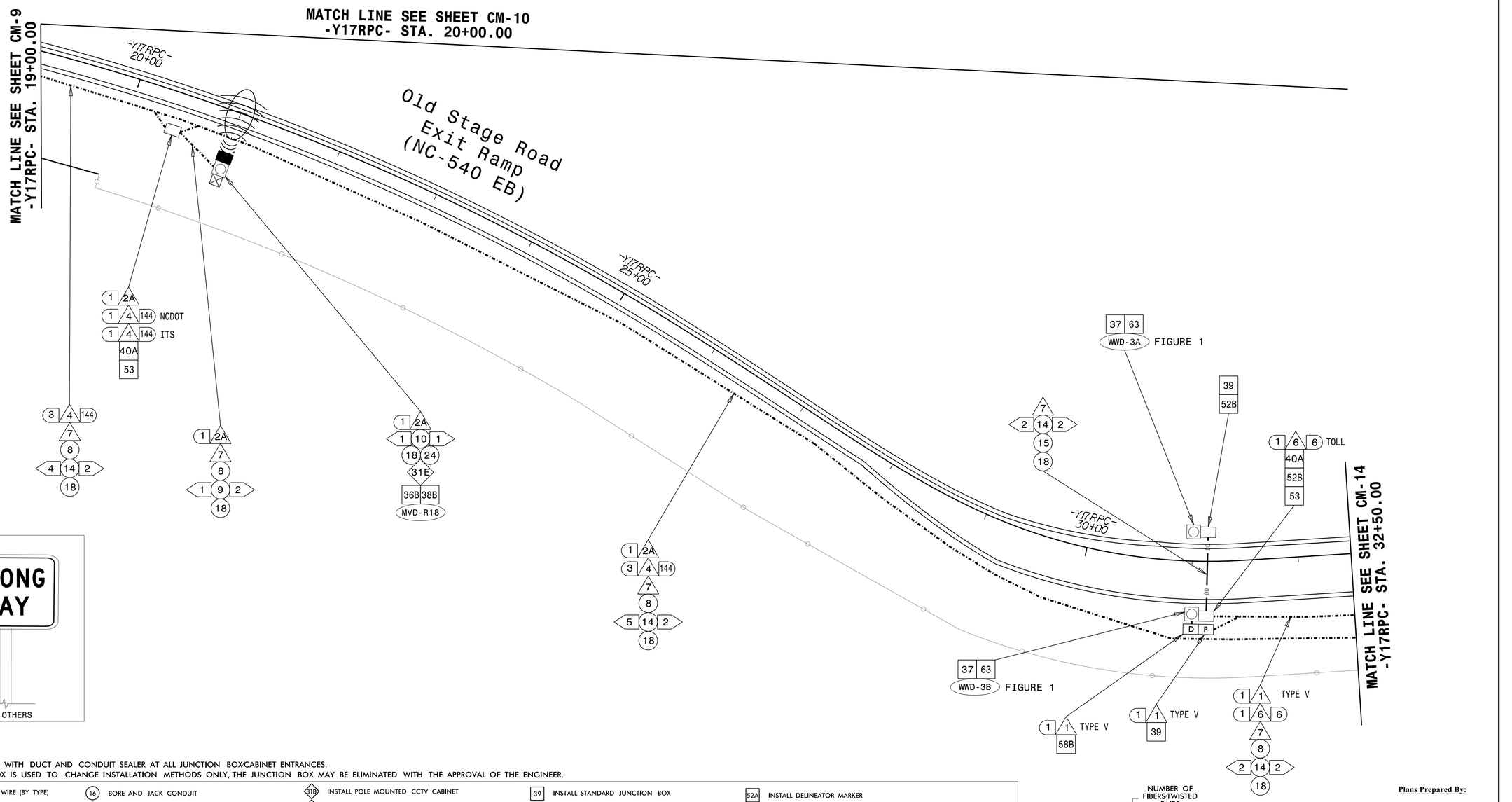


FIGURE 1




NOTES:
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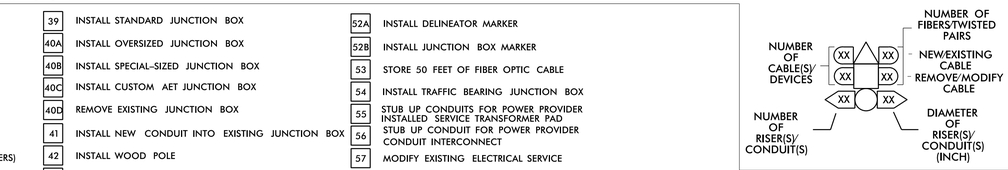


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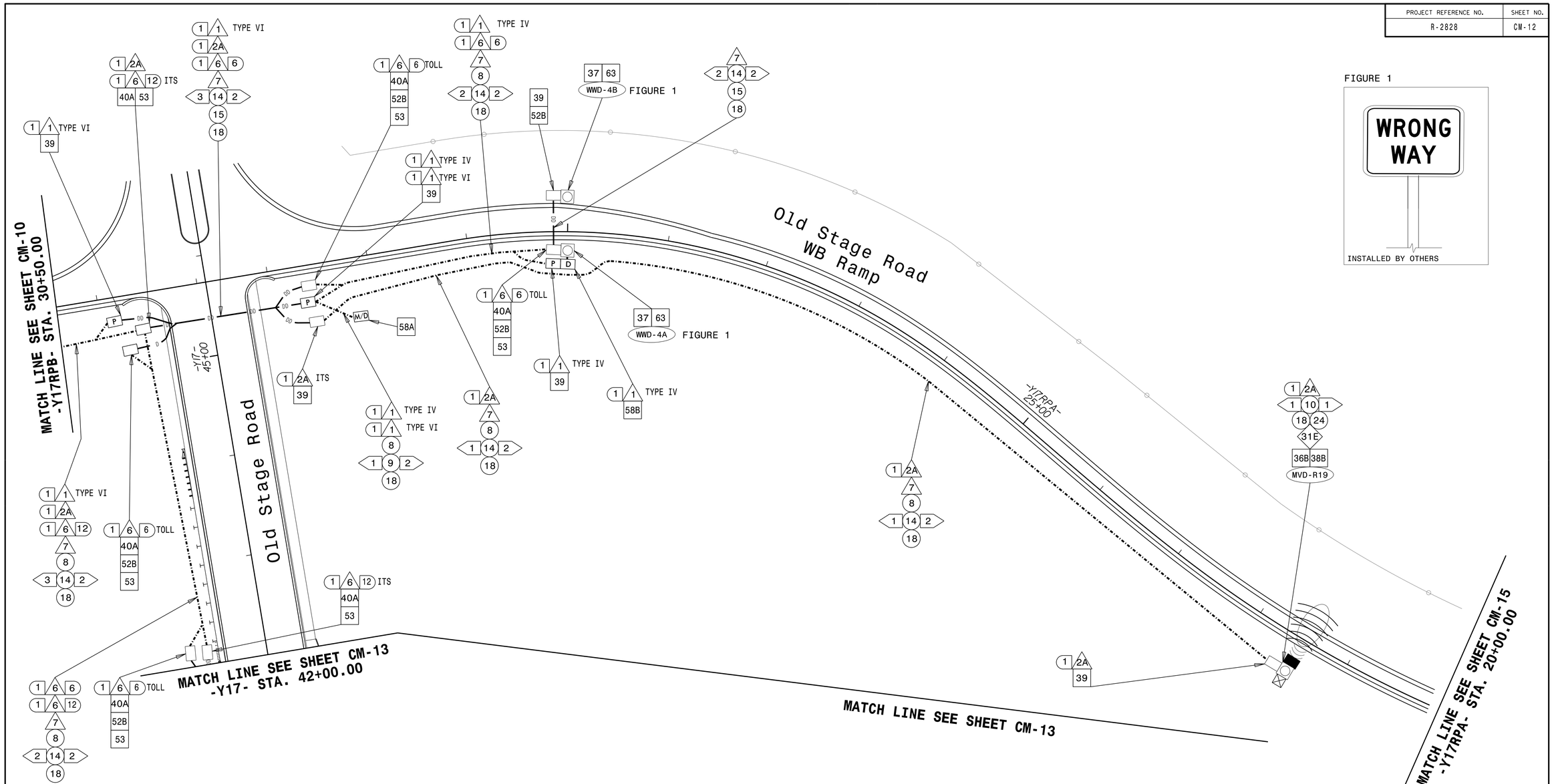


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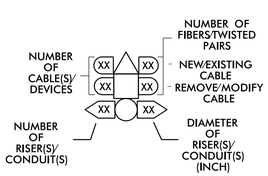


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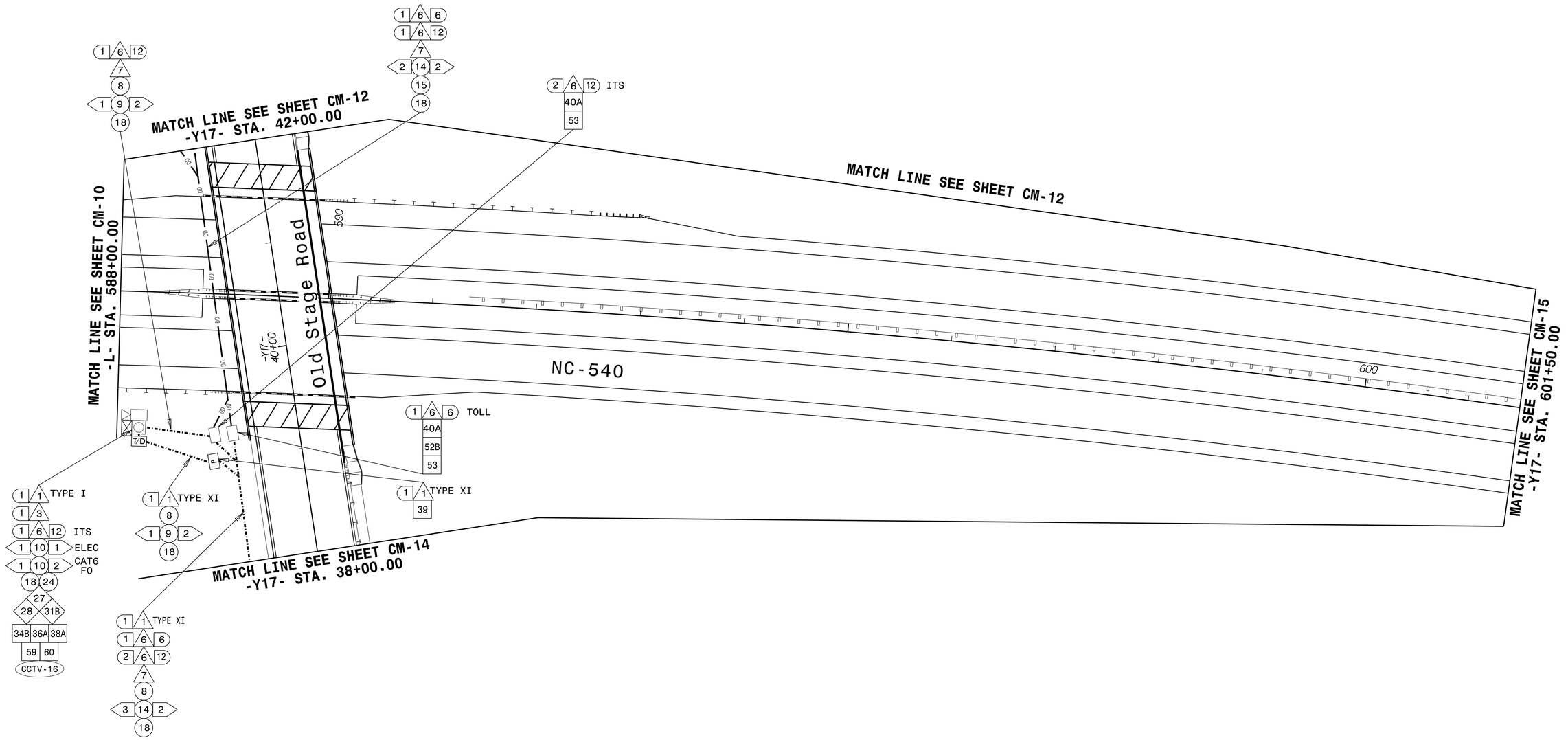


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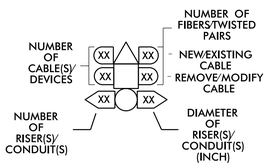


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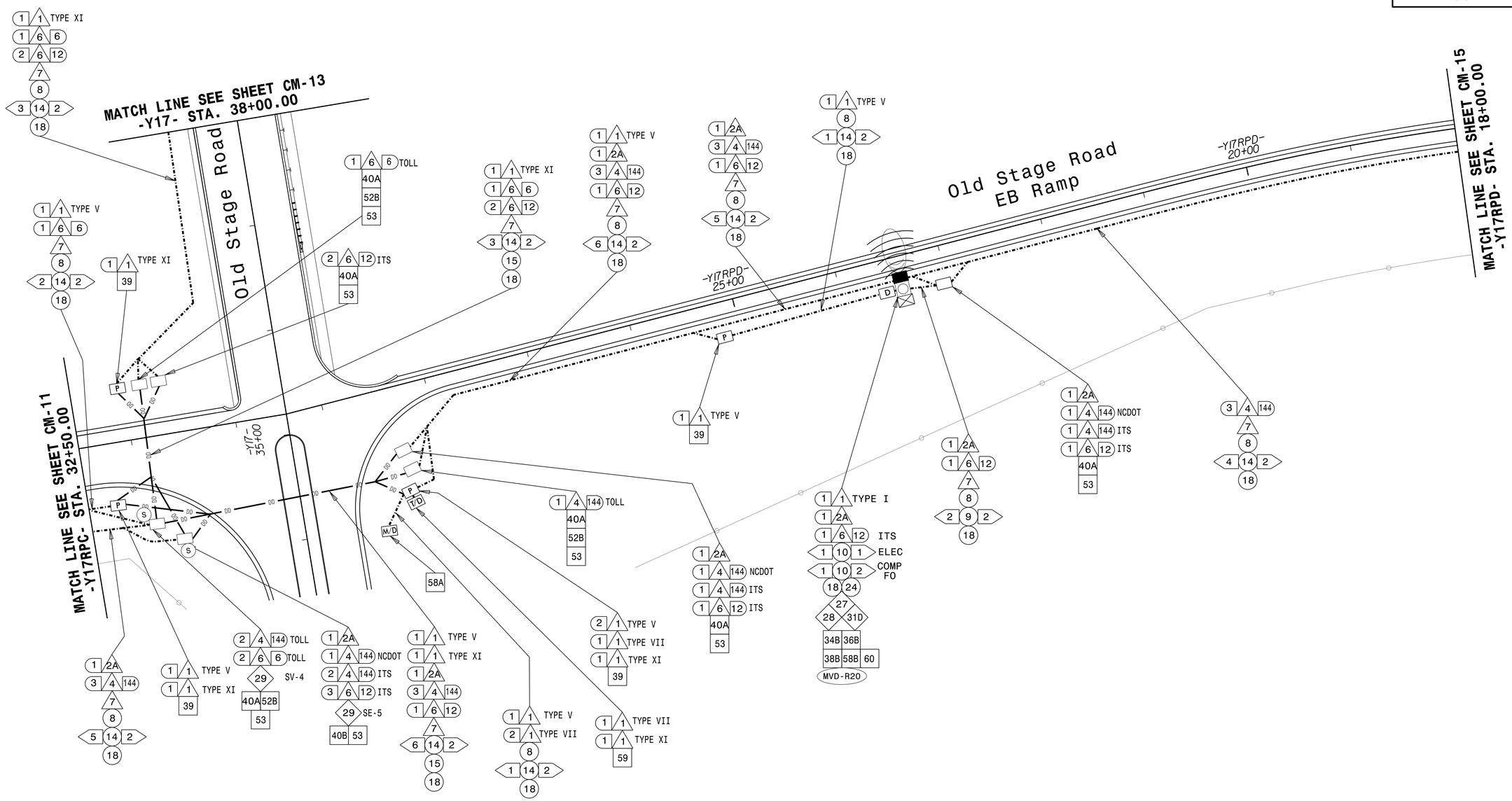


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| 53 | STORE 50 FEET OF FIBER OPTIC CABLE | 59 | INSTALL NEW TRANSFORMER AND DISCONNECT (PEDESTAL MOUNTED) |
| 54 | INSTALL TRAFFIC BEARING JUNCTION BOX | 60 | BOND TRACER WIRE TO EQUIPMENT GROUND BUS |
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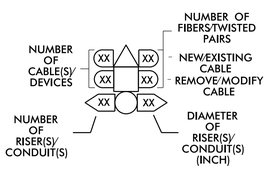
| 57 | MODIFY EXISTING ELECTRICAL SERVICE | 63 | INSTALL WRONG WAY DETECTION DEVICE (BY OTHERS) |
| | | 64 | INSTALL UPS IN CABINET |




**Plans Prepared By:**

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*Charlotte NC, 28203*
*NC LIC NO. F-0165*

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*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
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| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE
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1" = 50'

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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2EC7D0B64BF... DATE

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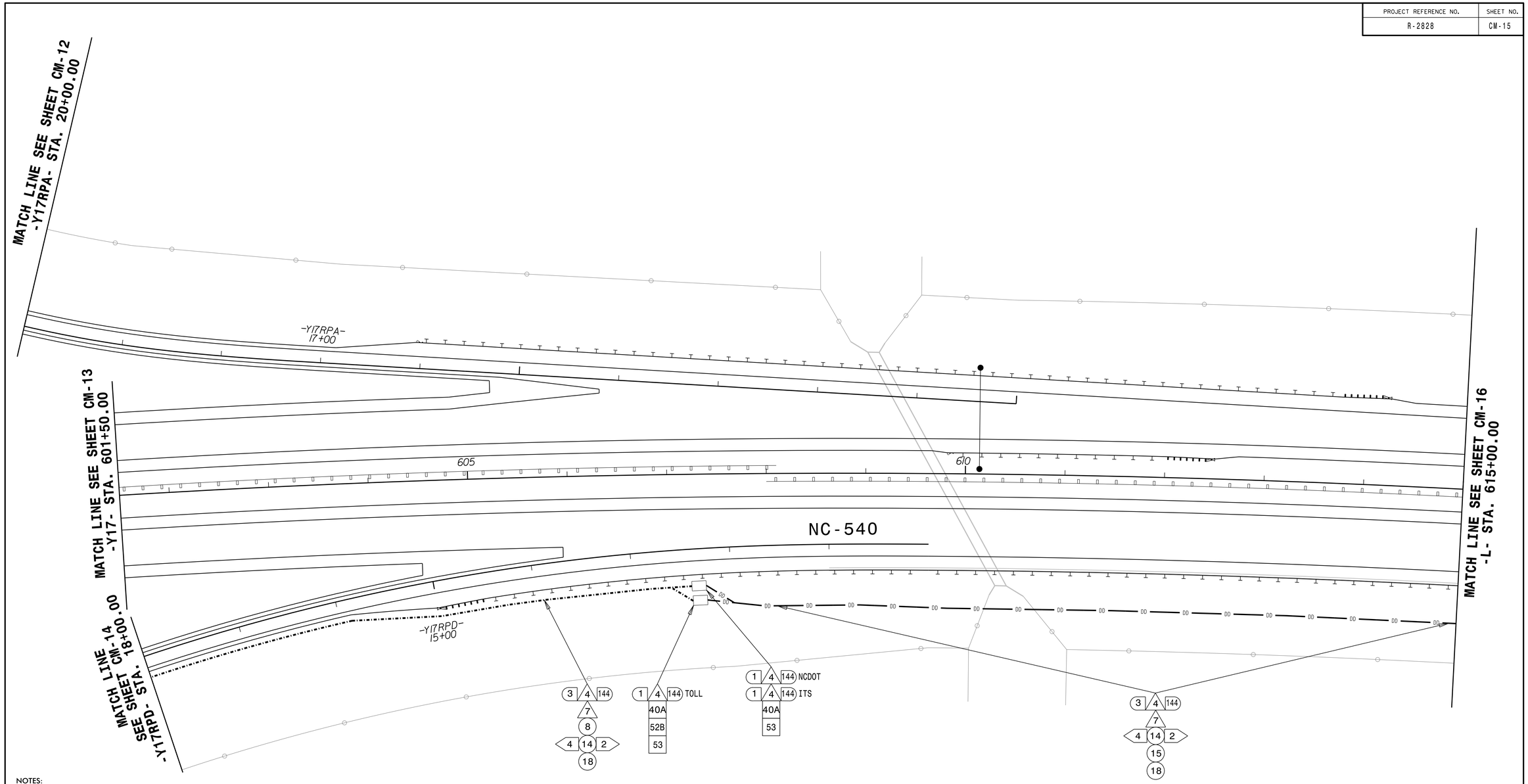


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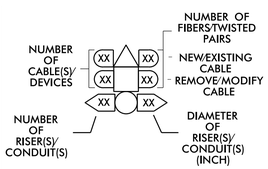


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Wake &
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| PREPARED BY: | D Burnett | REVIEWED BY: | |

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

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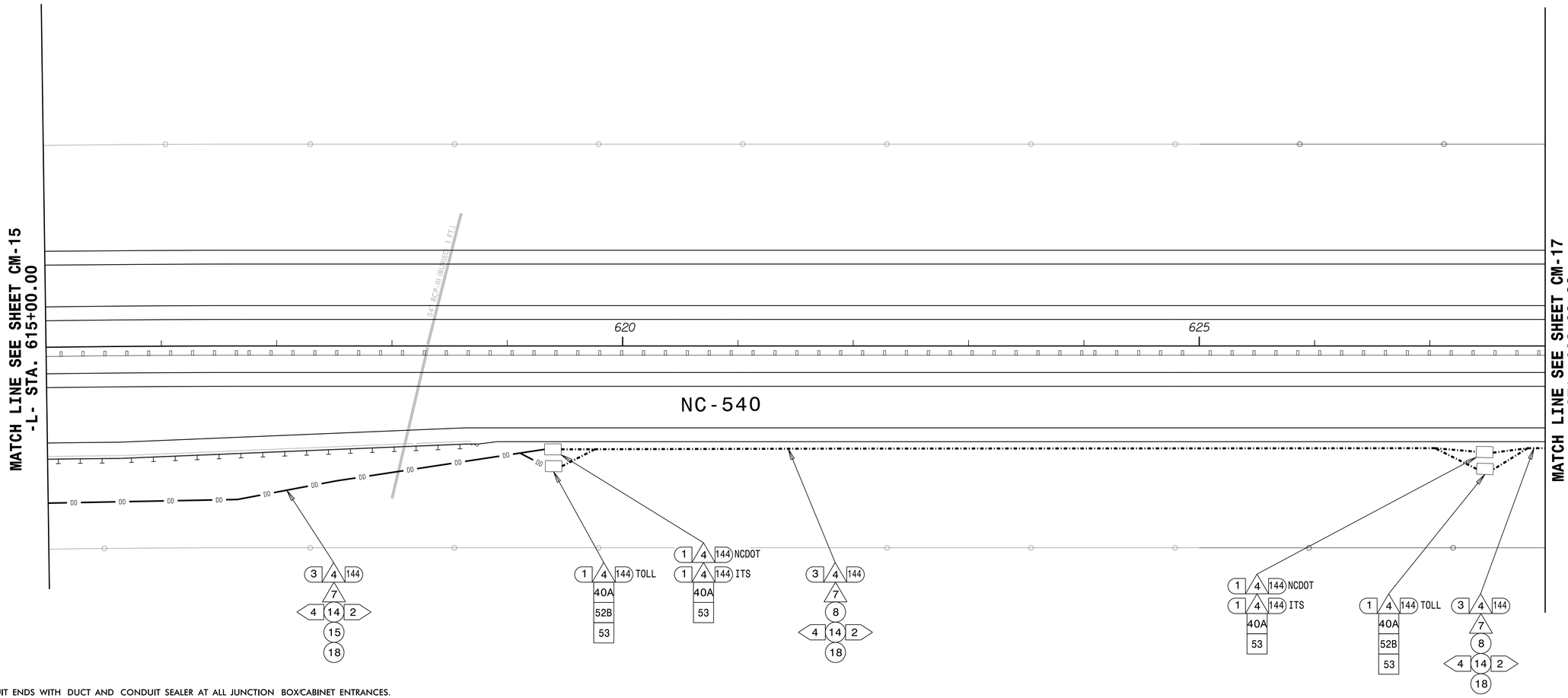
| R-2828 | CM-16 |

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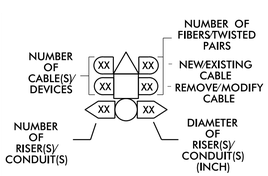


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NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
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| PREPARED BY: | D Burnett | REVIEWED BY: | |

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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

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D02F2E6CTDD5E4EF DATE

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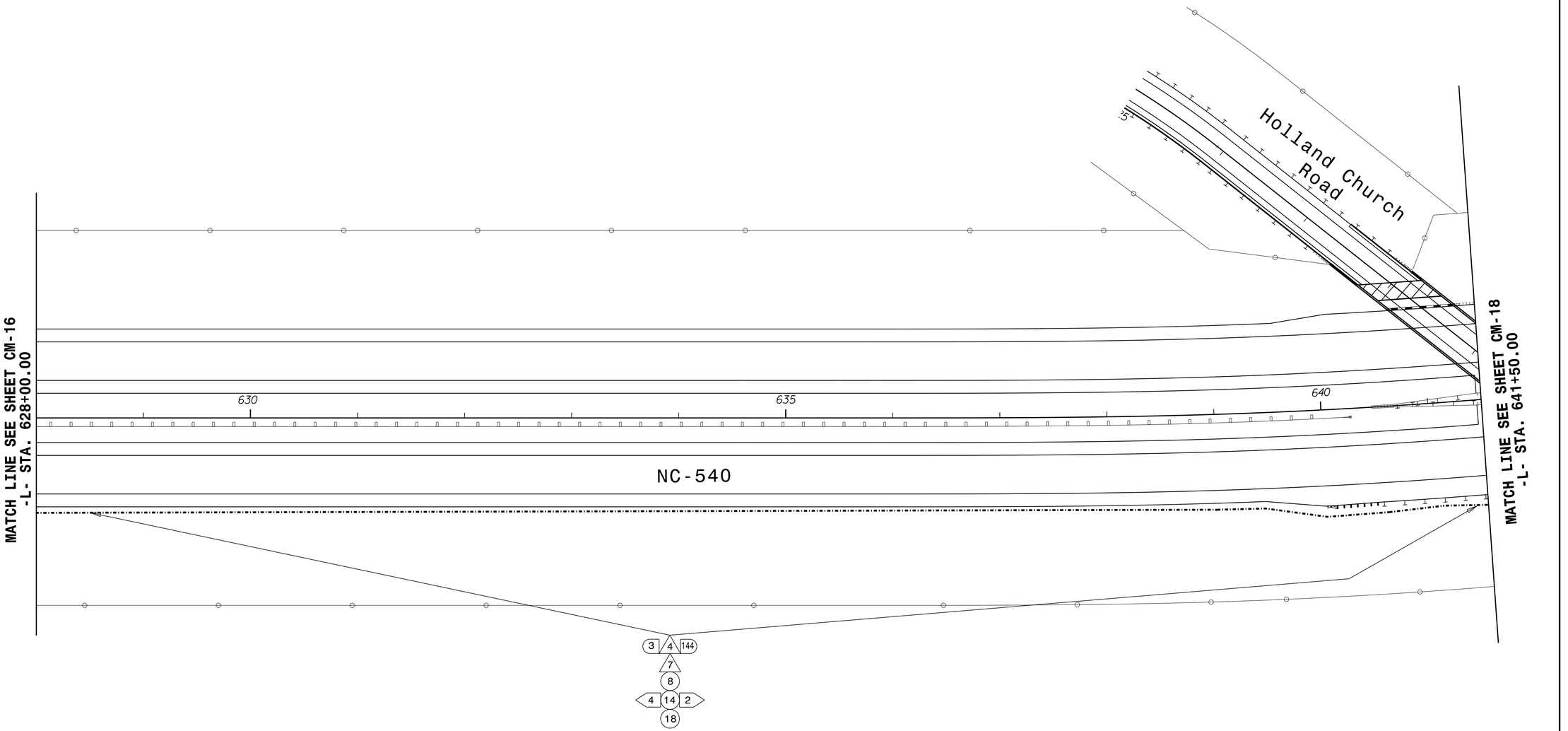


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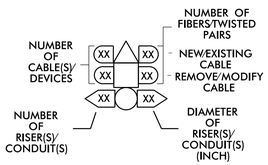


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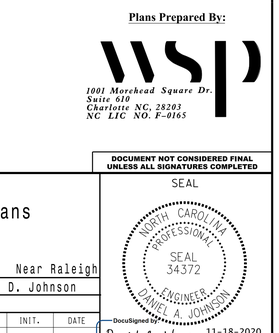


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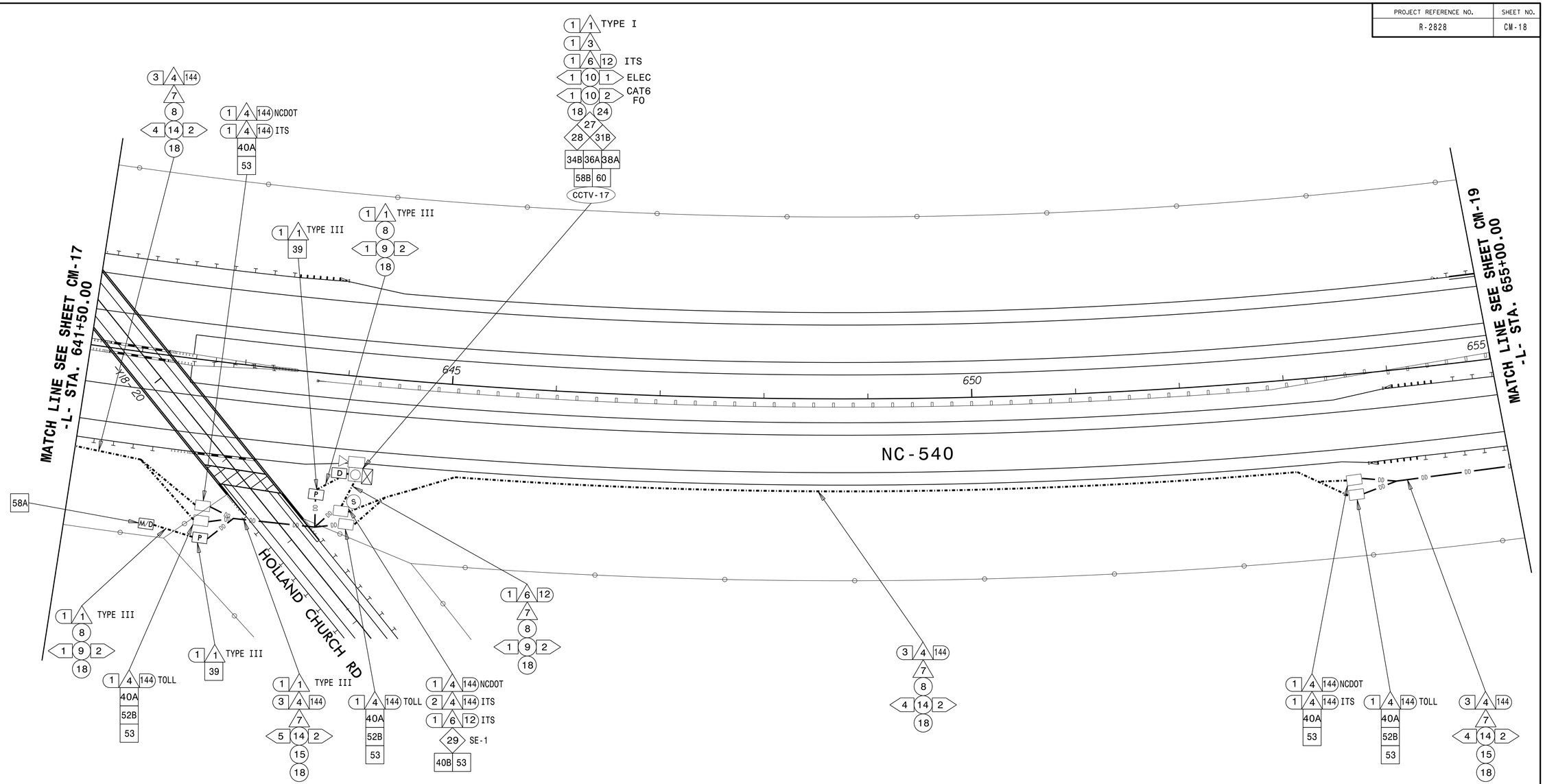


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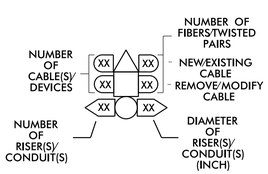


**Plans Prepared By:**

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*NC LIC NO. F-0165*

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*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
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| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

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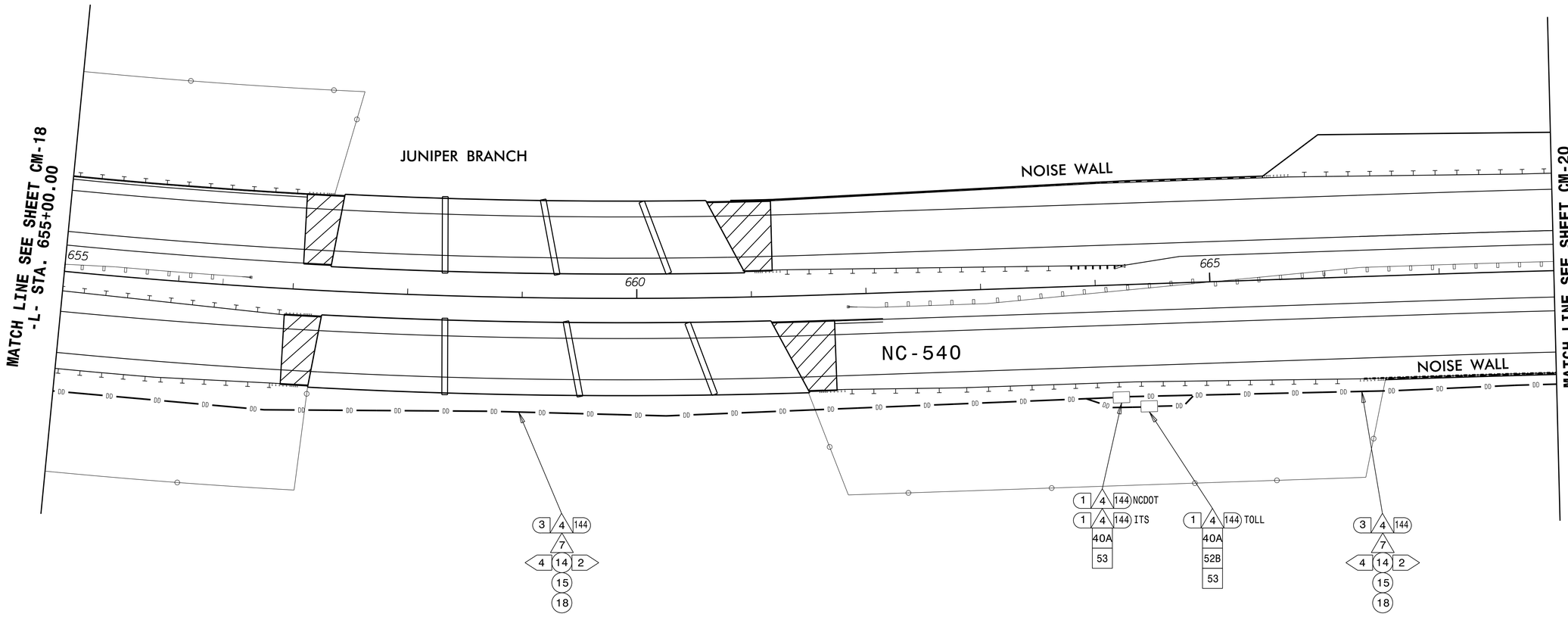
| R-2828 | CM-19 |

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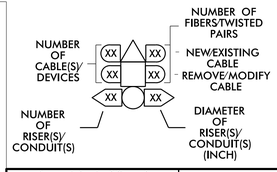


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*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
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| PREPARED BY: | D Burnett | REVIEWED BY: | |

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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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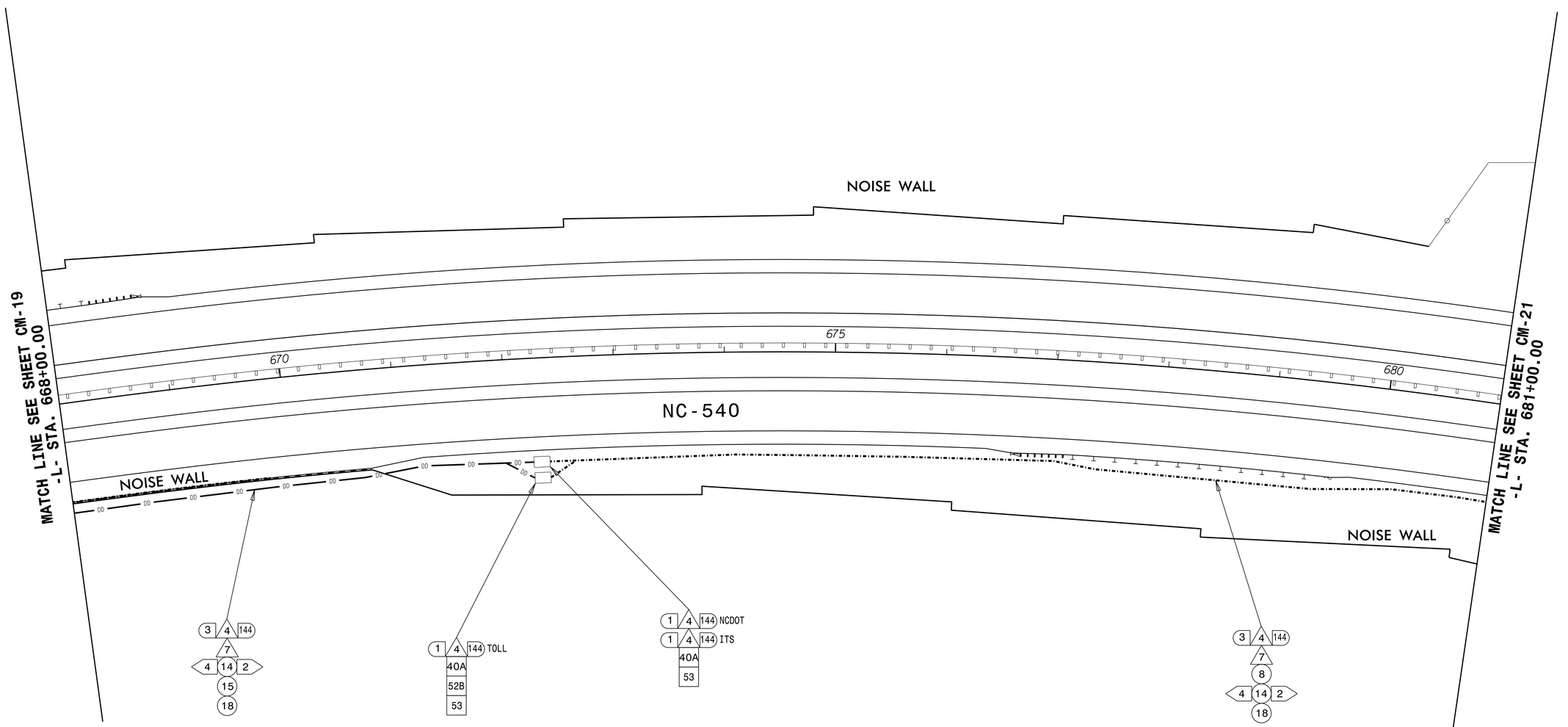


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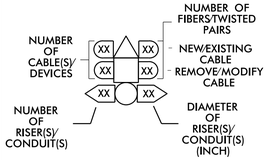


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# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D. Johnson

PREPARED BY: D Burnett REVIEWED BY:

SCALE 0 50 1" = 50'

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2EC7DDBE49F DATE

CADD Filename:

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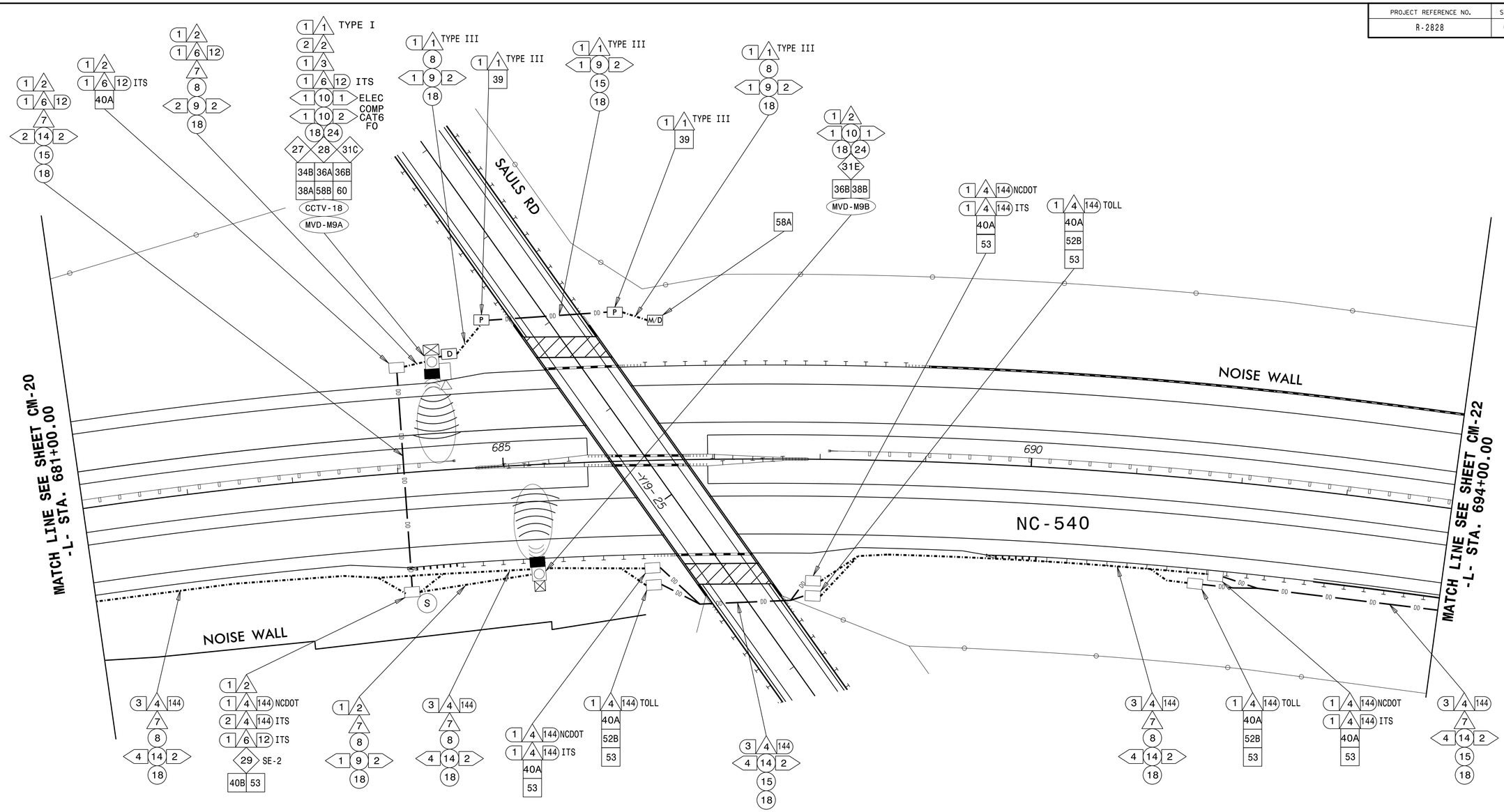
| R-2828 | CM-21 |

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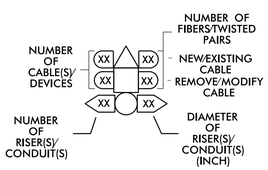


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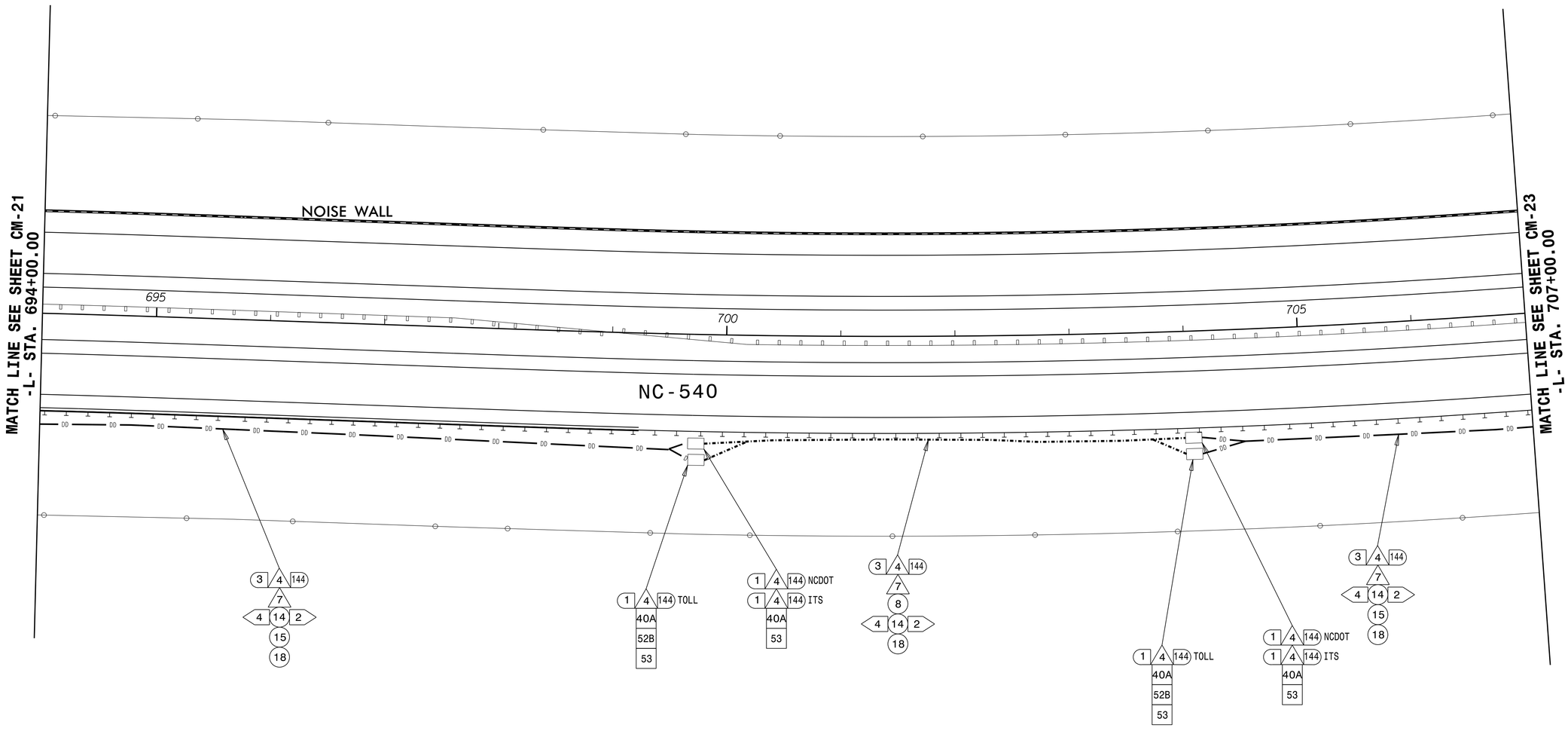


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| 1 | INSTALL ELECTRICAL SERVICE WIRE (BY TYPE) | 16 | BORE AND JACK CONDUIT | 31B | INSTALL POLE MOUNTED CCTV CABINET | 39 | INSTALL STANDARD JUNCTION BOX |
| 2 | INSTALL MVD COMPOSITE CABLE | 17 | INSTALL CABLE(S) IN EXISTING CONDUIT | 31C | INSTALL POLE MOUNTED CCTV AND MVD CABINET | 40A | INSTALL OVERSIZED JUNCTION BOX |
| 2A | INSTALL SPECIAL MVD COMPOSITE CABLE | 18 | INSTALL CABLE(S) IN NEW CONDUIT | 31D | INSTALL POLE MOUNTED MVD CABINET | 40B | INSTALL SPECIAL-SIZED JUNCTION BOX |
| 3 | INSTALL ETHERNET CABLE | 19 | INSTALL CABLE(S) IN EXISTING RISER | 31E | INSTALL POLE MOUNTED MVD SLAVE CABINET | 40C | INSTALL CUSTOM AET JUNCTION BOX |
| 4 | INSTALL SMFO CABLE | 20 | INSTALL CABLE(S) IN NEW RISER | 32A | INSTALL BASE MOUNTED HUB CABINET | 40D | REMOVE EXISTING JUNCTION BOX |
| 5 | INSTALL DMS COMM AND POWER | 21 | INSTALL CABLE(S) IN EXISTING CONDUIT STUB-OUTS | 32B | MODIFY EXISTING HUB CABINET/BUILDING | 41 | INSTALL NEW CONDUIT INTO EXISTING JUNCTION BOX |
| 6 | INSTALL FIBER OPTIC CABLE DROP | 22 | INSTALL NEW CONDUIT INTO NEW CABINET BASE | 33 | INSTALL ETHERNET HUB SWITCH (PROVIDED BY OTHERS) | 42 | INSTALL WOOD POLE |
| 7 | INSTALL TRACER WIRE | 23 | INSTALL NEW RISER INTO NEW CABINET BASE | 34A | INSTALL CABINET FOUNDATION | 43 | REMOVE EXISTING WOOD POLE |
| 8 | TRENCH OR PLOW | 24 | INSTALL NEW CONDUIT INTO NEW POLE MOUNTED CABINET | 34B | INSTALL TECHNICIAN PAD | 44 | INSTALL AERIAL GUY ASSEMBLY |
| 9 | INSTALL PVC CONDUIT | 25 | INSTALL NEW RISER INTO NEW POLE MOUNTED CABINET | 35A | INSTALL TYPE A DMS – WALK-IN ENCLOSURE | 45 | INSTALL STANDARD GUY ASSEMBLY |
| 10 | INSTALL RIGID, GALVANIZED STEEL CONDUIT | 26 | MODIFY EXISTING INTERCONNECT CENTER /SPLICE ENCLOSURE | 35B | INSTALL TYPE B DMS – FRONT ACCESS | 46 | INSTALL SIDEWALK GUY ASSEMBLY |
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| 13 | INSTALL FIBER OPTIC CABLE SEAL | 29 | INSTALL UNDERGROUND SPLICE ENCLOSURE | 37 | INSTALL TYPE III PEDESTAL POLE WITH FOUNDATION | 49 | RELOCATE EXISTING COMMUNICATIONS CABLE |
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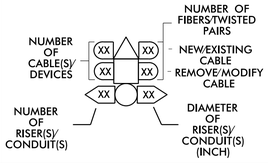
| 15 | DIRECTIONAL DRILL CONDUIT | 31A | INSTALL DMS CABINET | 38B | INSTALL MVD METAL POLE AND FOUNDATION | 51 | INSTALL PEDESTAL SUPPORT FOR DMS |

| | | | |
|---|---|---|---|
| 52A | INSTALL DELINEATOR MARKER | 54 | INSTALL TRAFFIC BEARING JUNCTION BOX |
| 52B | INSTALL JUNCTION BOX MARKER | 55 | STUB UP CONDUITS FOR POWER PROVIDER INSTALLED SERVICE TRANSFORMER PAD |
| 53 | STORE 50 FEET OF FIBER OPTIC CABLE | 56 | STUB UP CONDUIT FOR POWER PROVIDER CONDUIT INTERCONNECT |
| 57 | MODIFY EXISTING ELECTRICAL SERVICE | 58A | INSTALL NEW ELECTRICAL SERVICE (METER AND DISCONNECT) |
| 58B | INSTALL NEW DISCONNECT | 59 | INSTALL NEW TRANSFORMER AND DISCONNECT (PEDESTAL MOUNTED) |
| 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 | INSTALL WRONG WAY DETECTION DEVICE (BY OTHERS) |
| 64 | INSTALL UPS IN CABINET | | |

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

*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

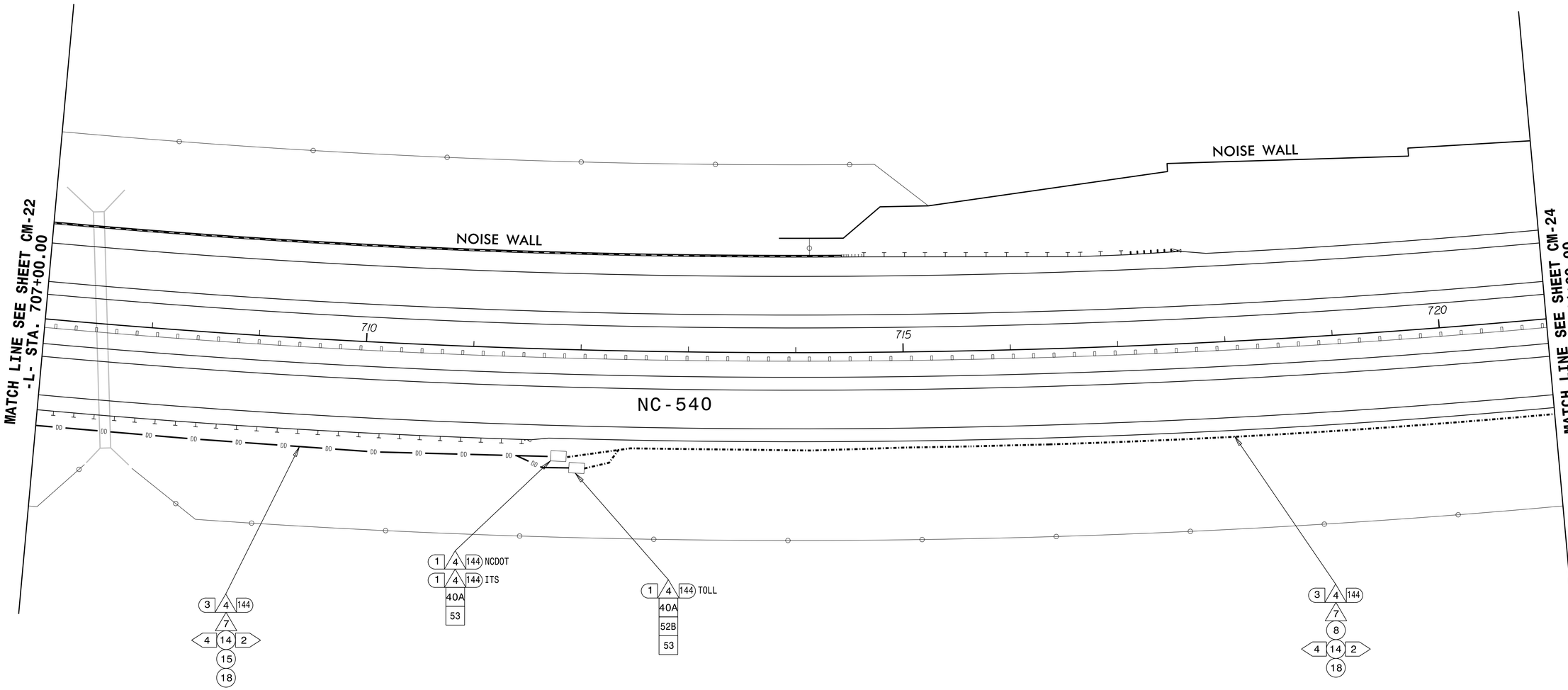
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2ECTOD9E49F... DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | CM-23 |




NOTES:
1. SEAL ALL CONDUIT ENDS WITH DUCT AND CONDUIT SEALER AT ALL JUNCTION BOX/CABINET ENTRANCES.
2. WHEN A JUNCTION BOX IS USED TO CHANGE INSTALLATION METHODS ONLY, THE JUNCTION BOX MAY BE ELIMINATED WITH THE APPROVAL OF THE ENGINEER.

| | | | | | |
|---|---|---|---|---|---|
| 1 INSTALL ELECTRICAL SERVICE WIRE (BY TYPE) | 16 BORE AND JACK CONDUIT | 31B INSTALL POLE MOUNTED CCTV CABINET | 39 INSTALL STANDARD JUNCTION BOX | 52A INSTALL DELINEATOR MARKER |
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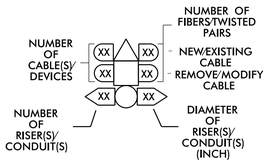


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# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

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| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE
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1" = 50'

| REVISIONS | INIT. | DATE |
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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson D02F2ECTDDRE49F 11-18-2020 DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | CM-24 |

FIGURE 1







DUKE ENERGY NOTES:
1. DUKE ENERGY WILL BE INSTALLING PRIMARY CONDUCTORS IN "DUKE ENERGY" DESIGNATED CONDUITS AND JUNCTION BOXES.
2. COORDINATE WITH DUKE ENERGY FOR SPECIFIC JUNCTION BOX REQUIRED FOR INSTALLATION.
3. INSTALL DUKE ENERGY CONDUITS MINIMUM OF 36" IN DEPTH TO TOP OF CONDUIT.
4. DUKE ENERGY CONDUIT MAY BE INSTALLED IN THE SAME TRENCH BUT SHALL HAVE 12" OF HORIZONTAL SEPARATION FROM OTHER CONDUITS.

1. INSTALL ELECTRICAL SERVICE WIRE (BY TYPE)
2. INSTALL MVD COMPOSITE CABLE
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3. INSTALL ETHERNET CABLE
4. INSTALL SMFO CABLE
5. INSTALL DMS COMM AND POWER
6. INSTALL FIBER OPTIC CABLE DROP
7. INSTALL TRACER WIRE
8. TRENCH OR PLOW
9. INSTALL PVC CONDUIT
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11. INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD
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13. INSTALL FIBER OPTIC CABLE SEAL
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 NEW CABINET BASE
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31B. INSTALL POLE MOUNTED CCTV CABINET
31C. INSTALL POLE MOUNTED CCTV AND MVD CABINET
31D. INSTALL POLE MOUNTED MVD CABINET
31E. INSTALL POLE MOUNTED MVD SLAVE CABINET
32A. INSTALL BASE MOUNTED HUB CABINET
32B. MODIFY EXISTING HUB CABINET/BUILDING
33. INSTALL ETHERNET HUB SWITCH (PROVIDED BY OTHERS)
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38B. INSTALL MVD METAL POLE AND FOUNDATION
39. INSTALL STANDARD JUNCTION BOX
40A. INSTALL OVERSIZED JUNCTION BOX
40B. INSTALL SPECIAL-SIZED JUNCTION BOX
40C. INSTALL CUSTOM AET JUNCTION BOX
40D. REMOVE EXISTING JUNCTION BOX
41. INSTALL NEW CONDUIT INTO 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
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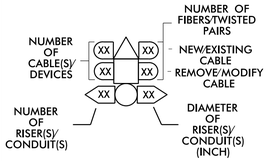


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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
002F2EC7DD9F49F DATE

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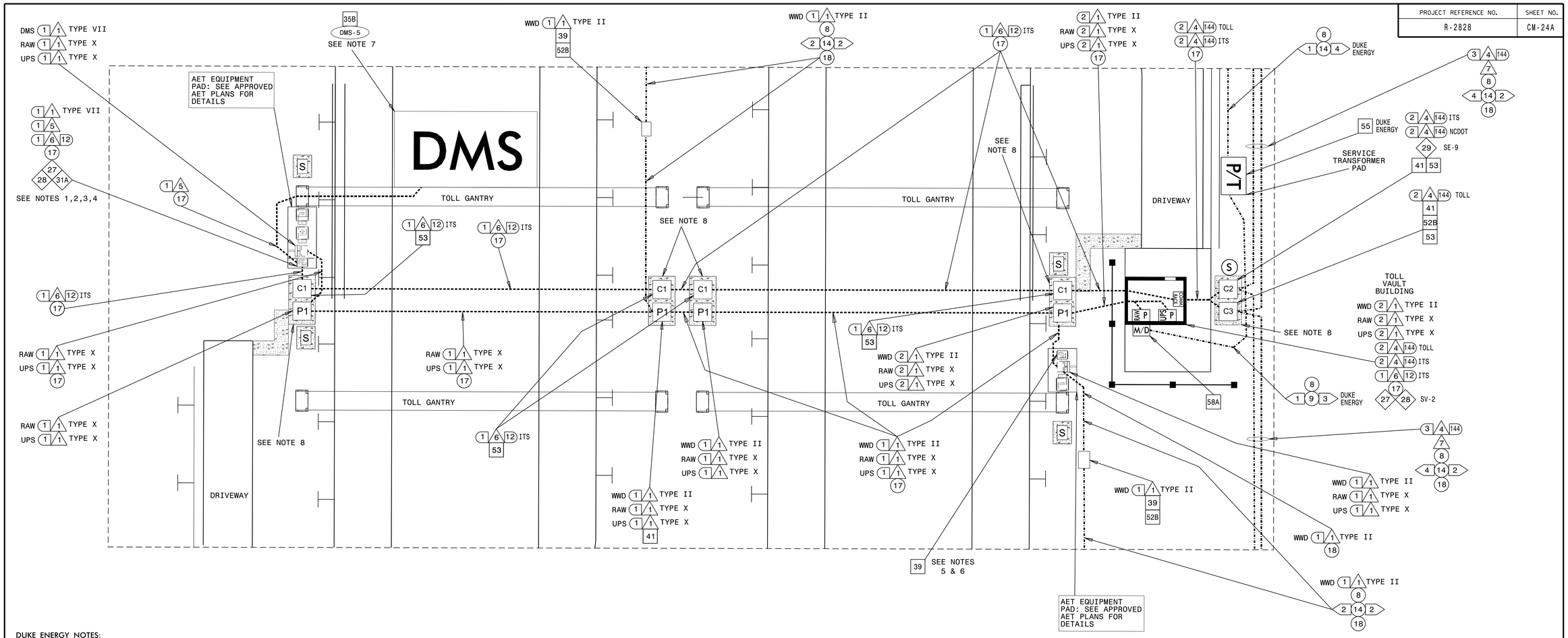


PROJECT REFERENCE NO. R-2828 | SHEET NO. CM-24A

DUKE ENERGY NOTES:
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3. INSTALL DUKE ENERGY CONDUITS MINIMUM OF 36" IN DEPTH TO TOP OF CONDUIT.
4. DUKE ENERGY CONDUIT MAY BE INSTALLED IN THE SAME TRENCH BUT SHALL HAVE 12" OF HORIZONTAL SEPARATION FROM OTHER CONDUITS.

NOTES:

1. INSTALL DMS CABINET ON AET EQUIPMENT PAD PER THE APPROVED AET PLANS FOR TOLL ZONE AET T41/T42.
2. INSTALL FEEDER CIRCUIT CONDUCTORS IN POWER NETWORK CONDUITS/JUNCTION BOXES PER THE APPROVED AET PLANS FOR TOLL ZONE AET T41/T42, FROM AET TOLL ZONE VAULT RAW AND UPS POWER BREAKER PANELS TO AET EQUIPMENT PAD, RAW AND UPS POWER SUB-PANELS.
3. INSTALL BRANCH CIRCUIT CONDUCTORS FOR DMS OR ADJACENT ITS DEVICE CABINETS, AS SHOWN ON THE PLANS, FROM THE AET EQUIPMENT PAD RAW POWER SUB-PANEL TO THE DMS OR ITS DEVICE CABINETS.
4. INSTALL DROP CABLE IN COMMUNICATIONS NETWORK CONDUIT/JUNCTION BOXES PER THE APPROVED AET PLANS FOR TOLL ZONE AET T41/T42, FROM AET TOLL ZONE VAULT TO DMS CABINET ON AET EQUIPMENT PAD.
5. INSTALL A STANDARD JUNCTION BOX UNDER THE FUTURE DMS CABINET LOCATION. INSTALL DMS CABINET LOCATION PER THE APPROVED AET PLANS FOR TOLL ZONE AET T41/T42.
6. ENSURE FUTURE POWER SERVICE CABLES CAN BE INSTALLED IN POWER NETWORK CONDUITS/ JUNCTION BOXES PER THE APPROVED AET PLANS FOR TOLL ZONE AET T45/T46.
7. INSTALL DMS AS SHOWN IN NCTA ITS STANDARD DETAILS (DATED 05-24-2018), SHEETS SD-3, SD-4, D-2A, AND D-4.
8. INSTALL CONDUIT AND JUNCTION BOXES AT AET ZONES AS PER THE APPROVED AET PLANS.
9. INSTALL CONCRETE EQUIPMENT PADS PER THE APPROVED AET PLANS FOR TOLL ZONE AET T45/T46.
10. SEAL ALL CONDUIT ENDS WITH DUCT AND CONDUIT SEALER AT ALL JUNCTION BOX/CABINET ENTRANCES.
11. AET LOOP DETECTION SHALL BE INSTALLED PER THE APPROVED AET PLANS FOR TOLL ZONE AET T45/T46.

## Legend

- C1 - AET Comm. Junction Box
- C2 - ITS Communications Junction Box
- C3 - TOLL Communications Junction Box
- P1 - AET Power Junction Box
- P2 - Service Power Junction Box (DUKE)
- S - Loop Splice Junction Box

| | | | | | |
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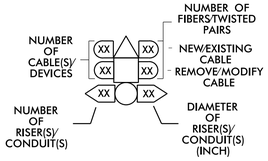


Plans Prepared By:

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NC LIC NO. F-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of: NORTH CAROLINA Turnpike Authority

# R-2828 TOLL ZONE DETAIL AET T43/ T44

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE 0 12.5 1" = 12.5'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D92F2EC7DD5E46F DATE

CADD Filename:

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| PROJECT REFERENCE NO. | SHEET NO. |
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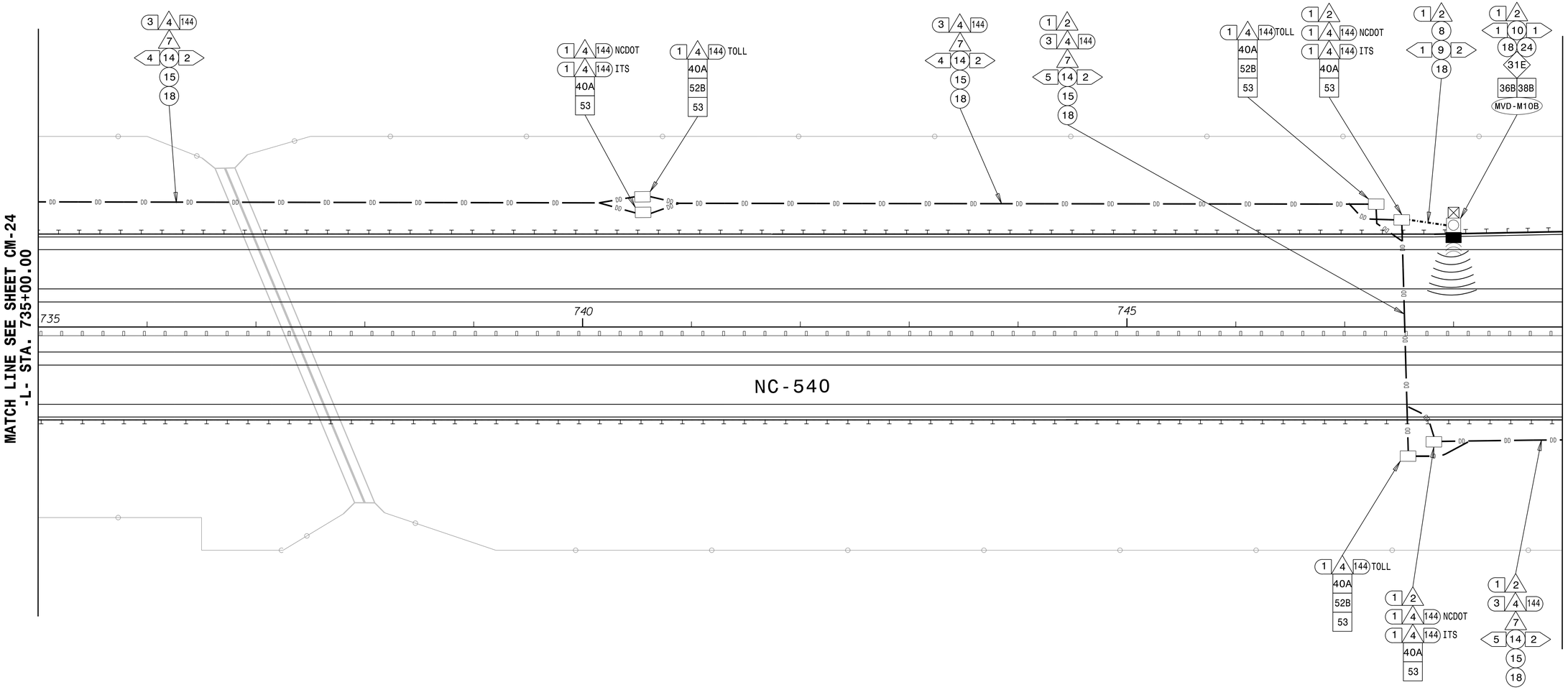
| R-2828 | CM-25 |




NOTES:
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| 1 INSTALL ELECTRICAL SERVICE WIRE (BY TYPE) | 16 BORE AND JACK CONDUIT | 21B INSTALL POLE MOUNTED CCTV CABINET | 39 INSTALL STANDARD JUNCTION BOX | 52A INSTALL DELINEATOR MARKER |
| 2 INSTALL MVD COMPOSITE CABLE | 17 INSTALL CABLE(S) IN EXISTING CONDUIT | 21C INSTALL POLE MOUNTED CCTV AND MVD CABINET | 40A INSTALL OVERSIZED JUNCTION BOX | 52B INSTALL JUNCTION BOX MARKER |
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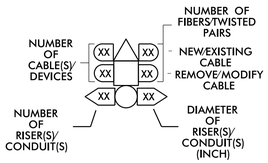


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*NC LIC NO: F-0165*

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

*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D. Johnson
PREPARED BY: D Burnett REVIEWED BY:

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by:
Daniel A. Johnson 11-18-2020
D02F2EC7DD9E49F... DATE

CADD Filename:

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| PROJECT REFERENCE NO. | SHEET NO. |
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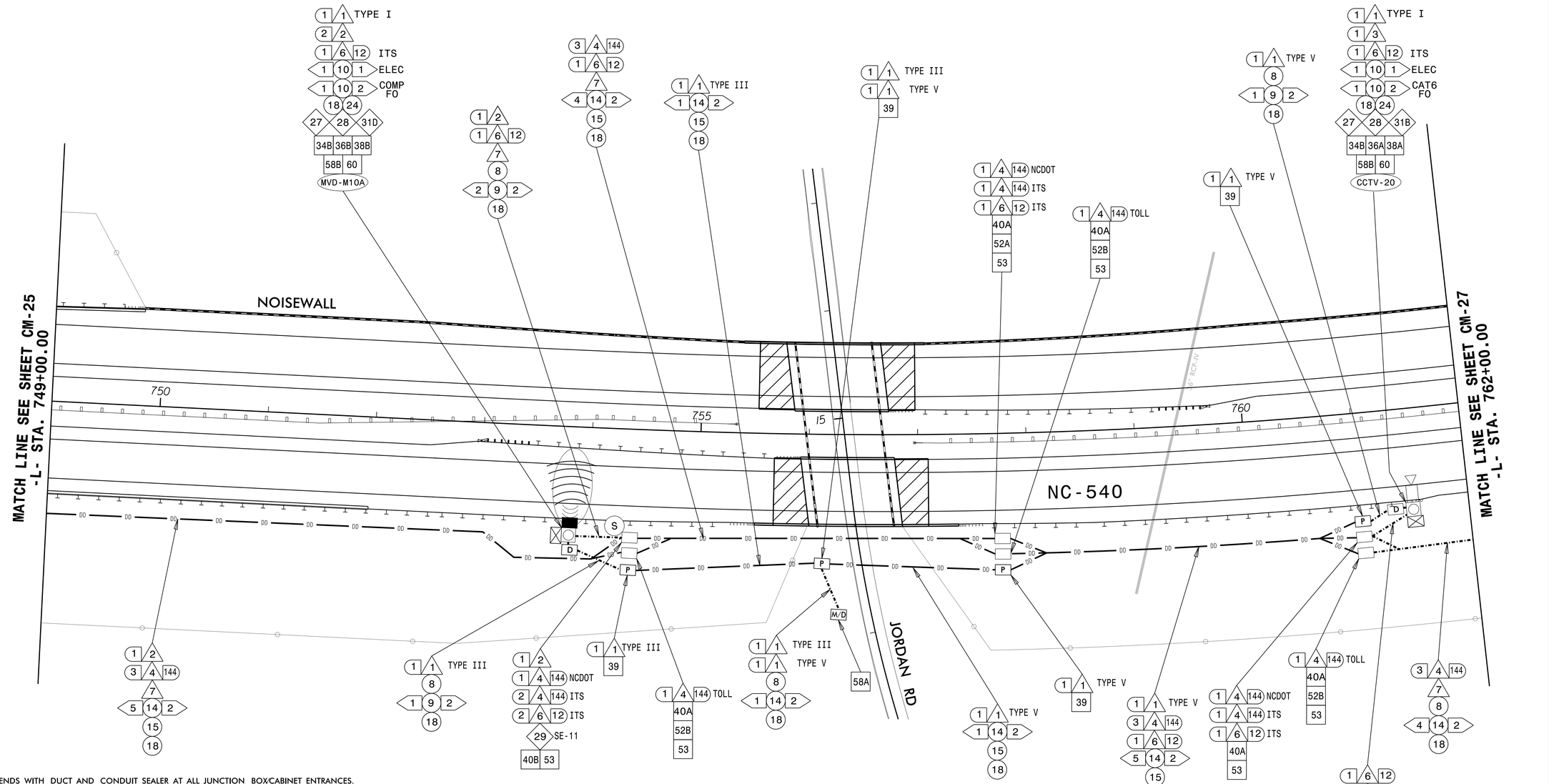
| R-2828 | CM-26 |

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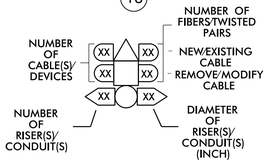


Plans Prepared By:

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NC LIC NO. F-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D. Johnson
PREPARED BY: D Burnett REVIEWED BY:

SCALE
0 50
1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

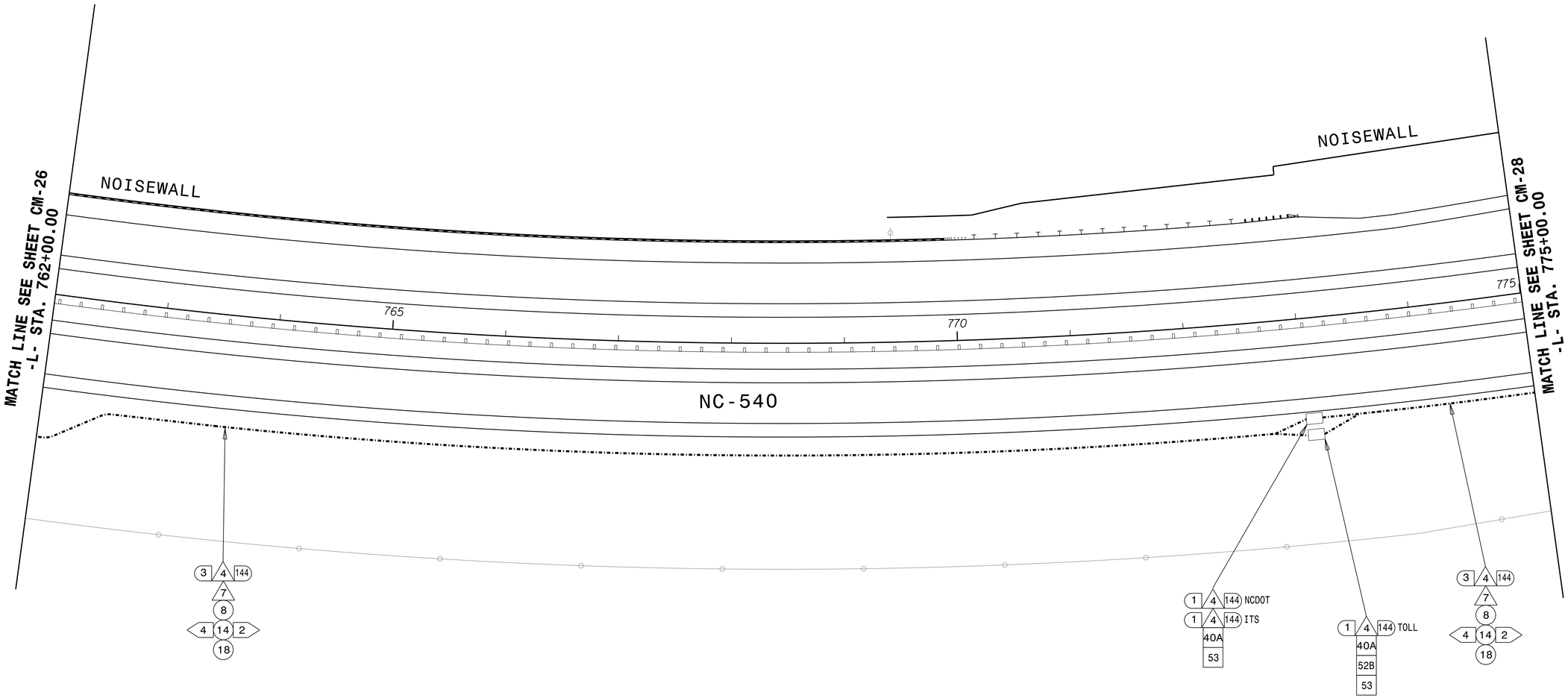
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by:
David A. Johnson 11-18-2020
D02F2EC7DD9E49F... DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | CM-27 |

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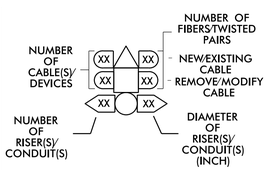


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wsp

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*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
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| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE
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1" = 50'

| REVISIONS | INIT. | DATE |
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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by:
Daniel A. Johnson 11-18-2020
D02F2EC7DD2E49F DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

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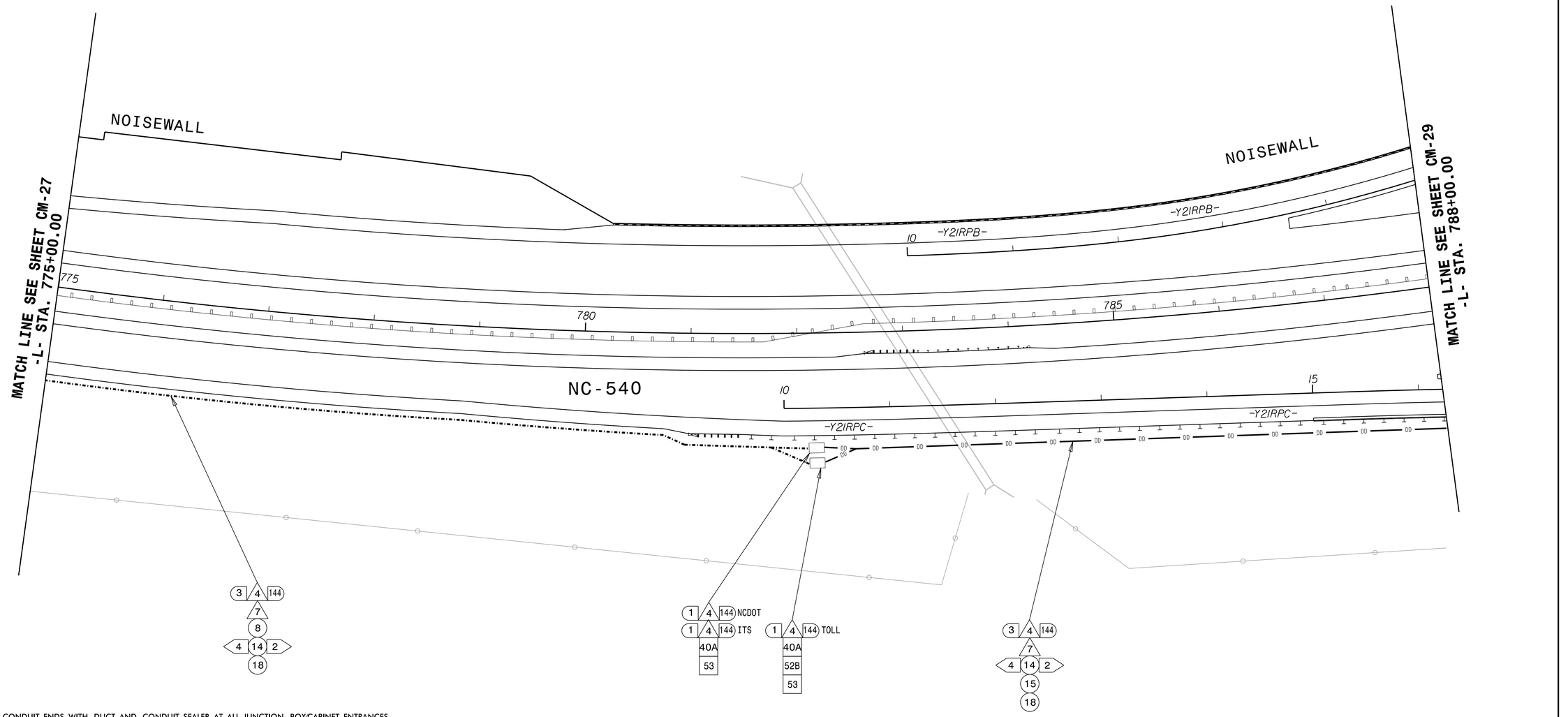
| R-2828 | CM-28 |

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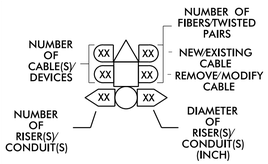


**Plans Prepared By:**

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*NC LIC NO. F-0165*

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

*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE
0 50
1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |
| | | |
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by:
Daniel A. Johnson 11-18-2020
DOF2E3C7D0A64EF... DATE

CADD Filename:

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| PROJECT REFERENCE NO. | SHEET NO. |
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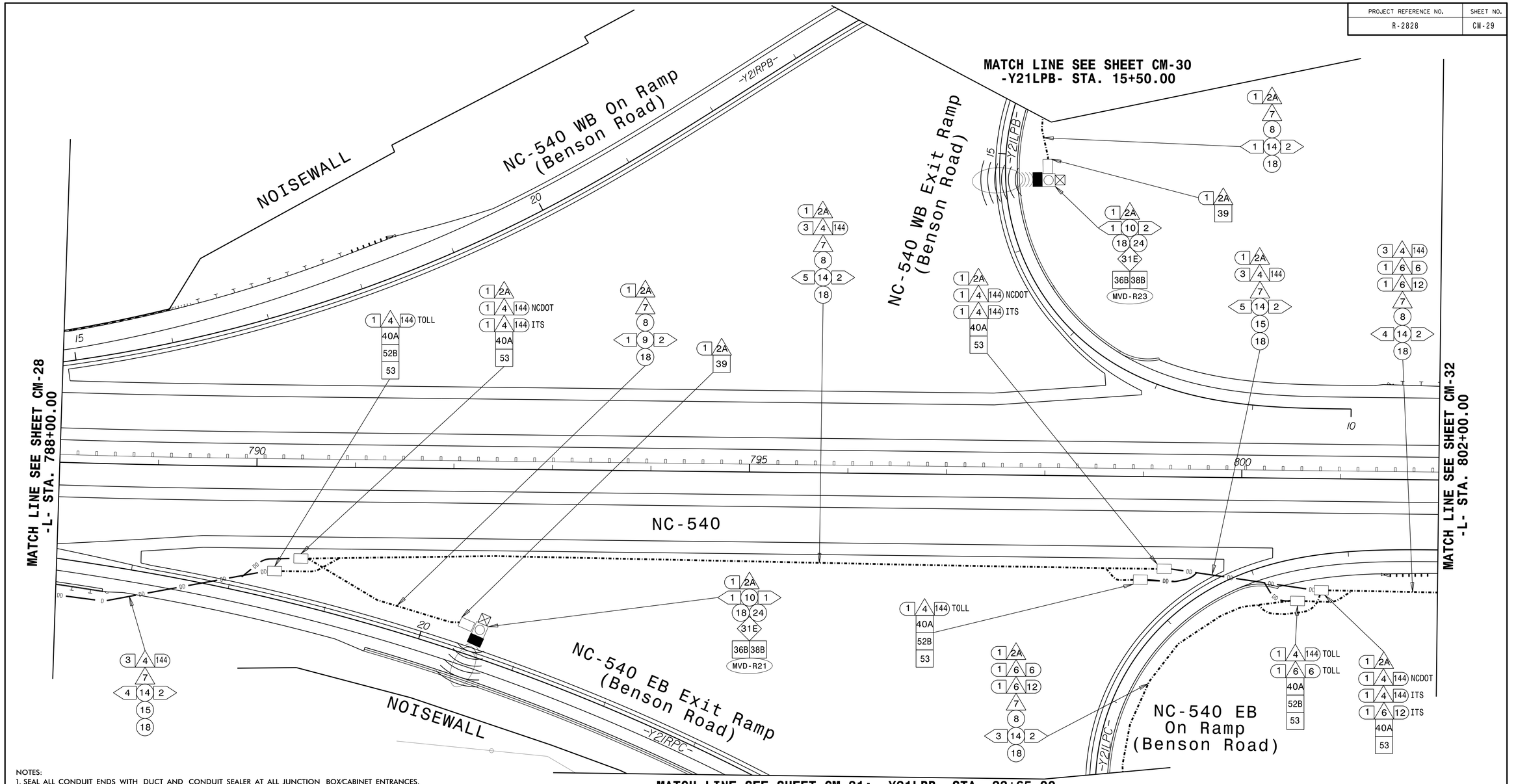
| R-2828 | CM-29 |

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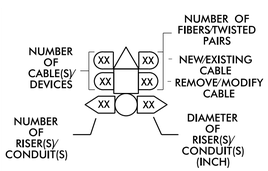


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# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

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| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE
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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by:
Daniel A. Johnson
D0F28C7DDE4AF...
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DATE

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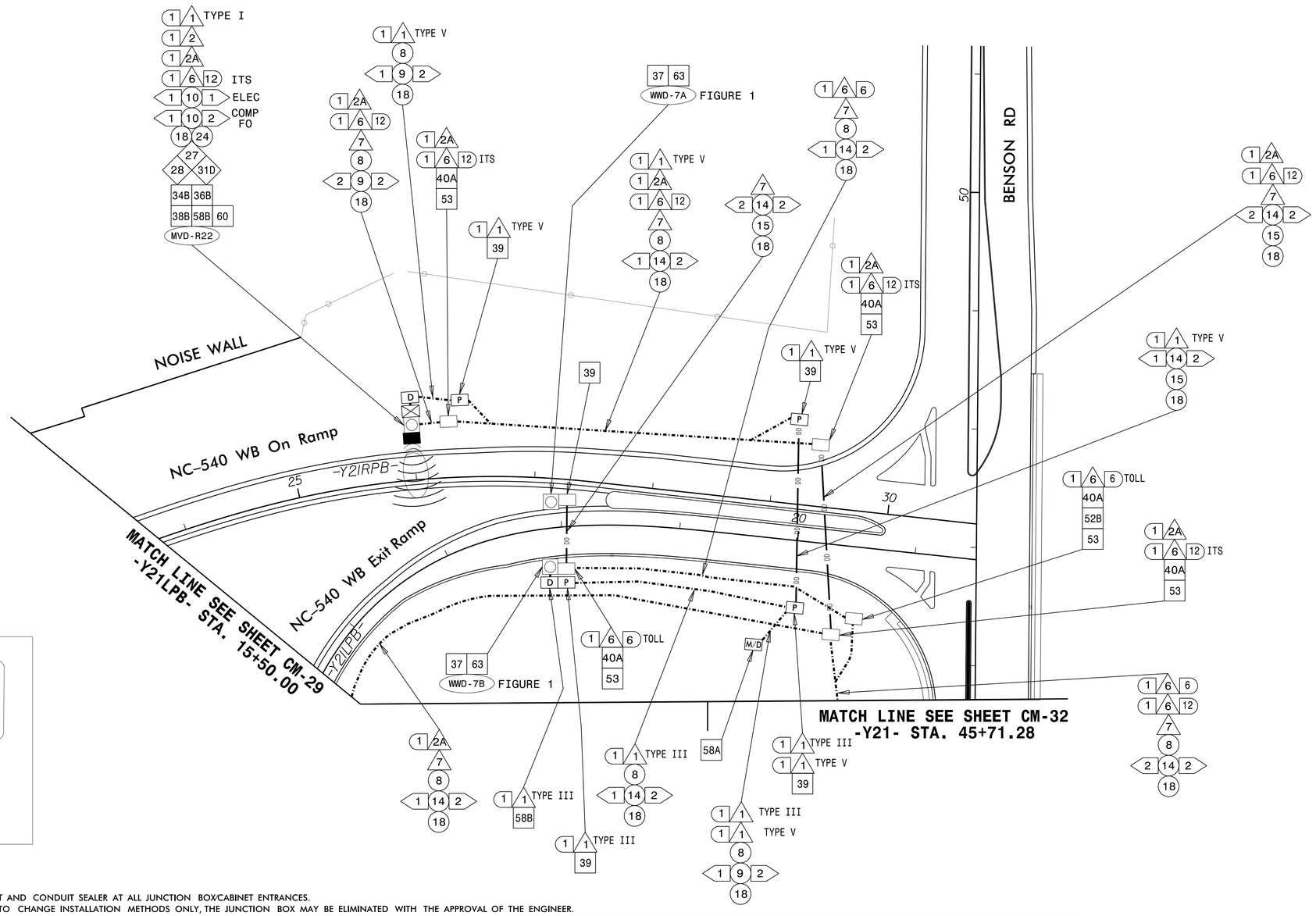


FIGURE 1




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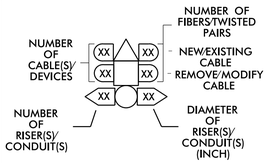


Plans Prepared By:
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NC LIC NO. F-0165

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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 | REVIEWED BY: D. Johnson
PREPARED BY: D Burnett | REVIEWED BY:

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
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| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
DOCFIRSTDOSEASF DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
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| R-2828 | CM-31 |

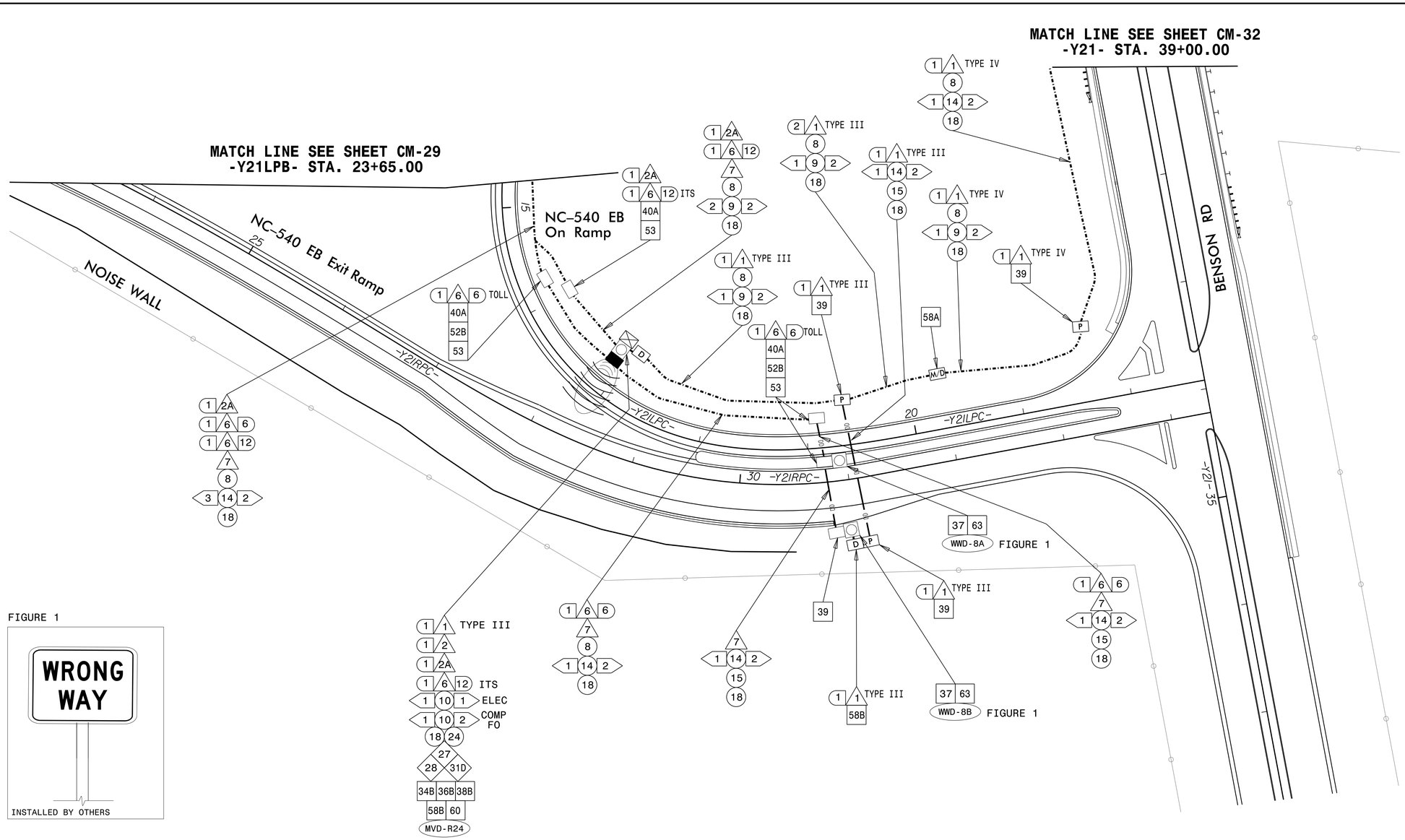


FIGURE 1




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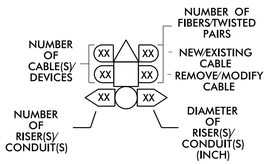


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PREPARED BY: D Burnett | REVIEWED BY:

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020

D02F2E7CDDBE49F DATE

CADD Filename:

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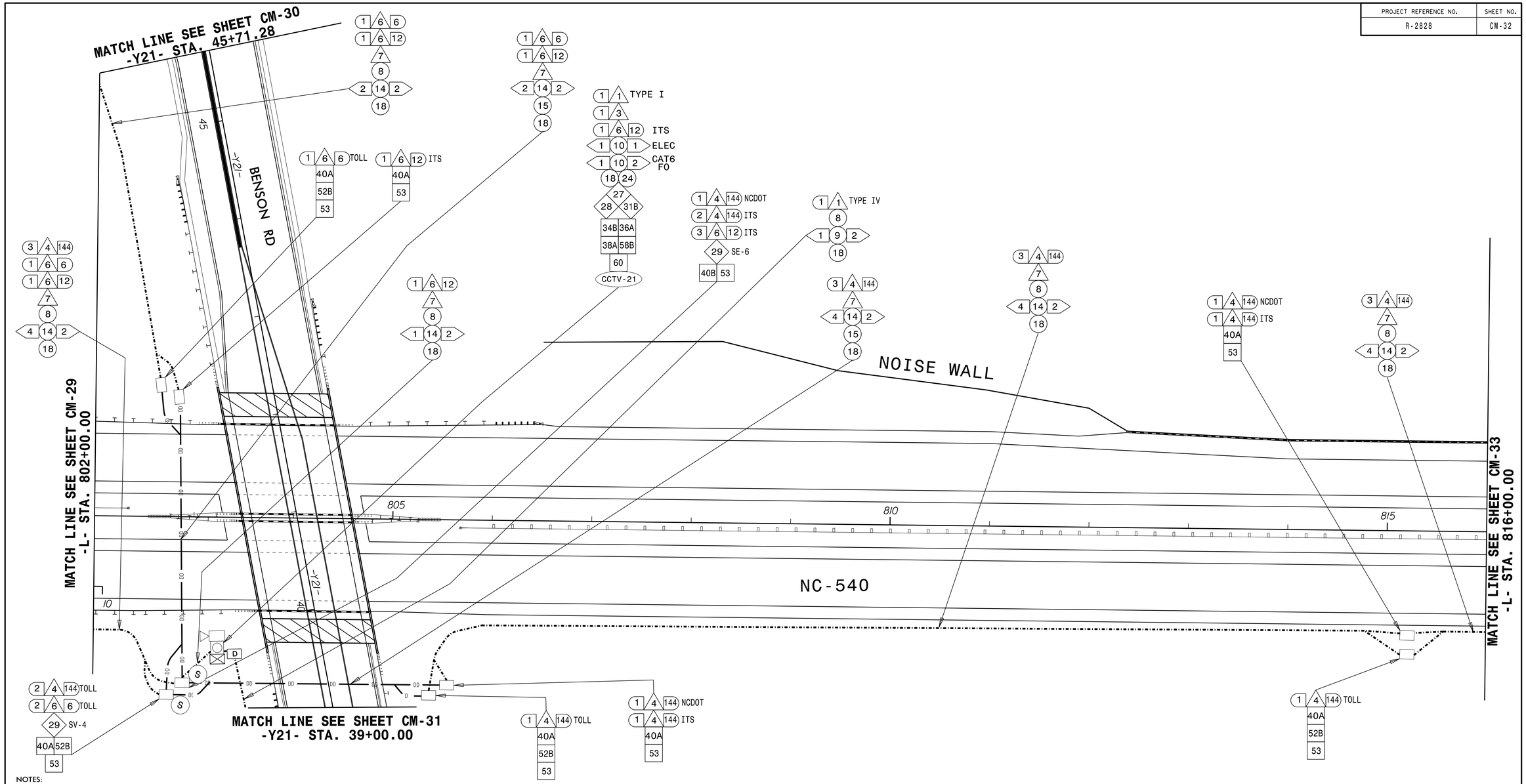
| R-2828 | CM-32 |

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| 2 INSTALL MVD COMPOSITE CABLE | 17 INSTALL CABLE(S) IN EXISTING CONDUIT | 31C INSTALL POLE MOUNTED CCTV AND MVD CABINET | 40A INSTALL OVERSIZED JUNCTION BOX | 52B INSTALL JUNCTION BOX MARKER |
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| 5 INSTALL DMS COMM AND POWER | 21 INSTALL CABLE(S) IN EXISTING CONDUIT STUB-OUTS | 32B MODIFY EXISTING HUB CABINET/BUILDING | 41 INSTALL NEW CONDUIT INTO EXISTING JUNCTION BOX | 56 STUB UP CONDUIT FOR POWER PROVIDER CONDUIT INTERCONNECT |
| 6 INSTALL FIBER OPTIC CABLE DROP | 22 INSTALL NEW CONDUIT INTO NEW CABINET BASE | 33 INSTALL ETHERNET HUB SWITCH (PROVIDED BY OTHERS) | 42 INSTALL WOOD POLE | 57 MODIFY EXISTING ELECTRICAL SERVICE |
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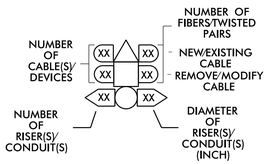


**Plans Prepared By:**

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

*Prepared for the Offices of:*
NORTH CAROLINA Turnpike Authority

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 | REVIEWED BY: D. Johnson
PREPARED BY: D Burnett | REVIEWED BY:

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

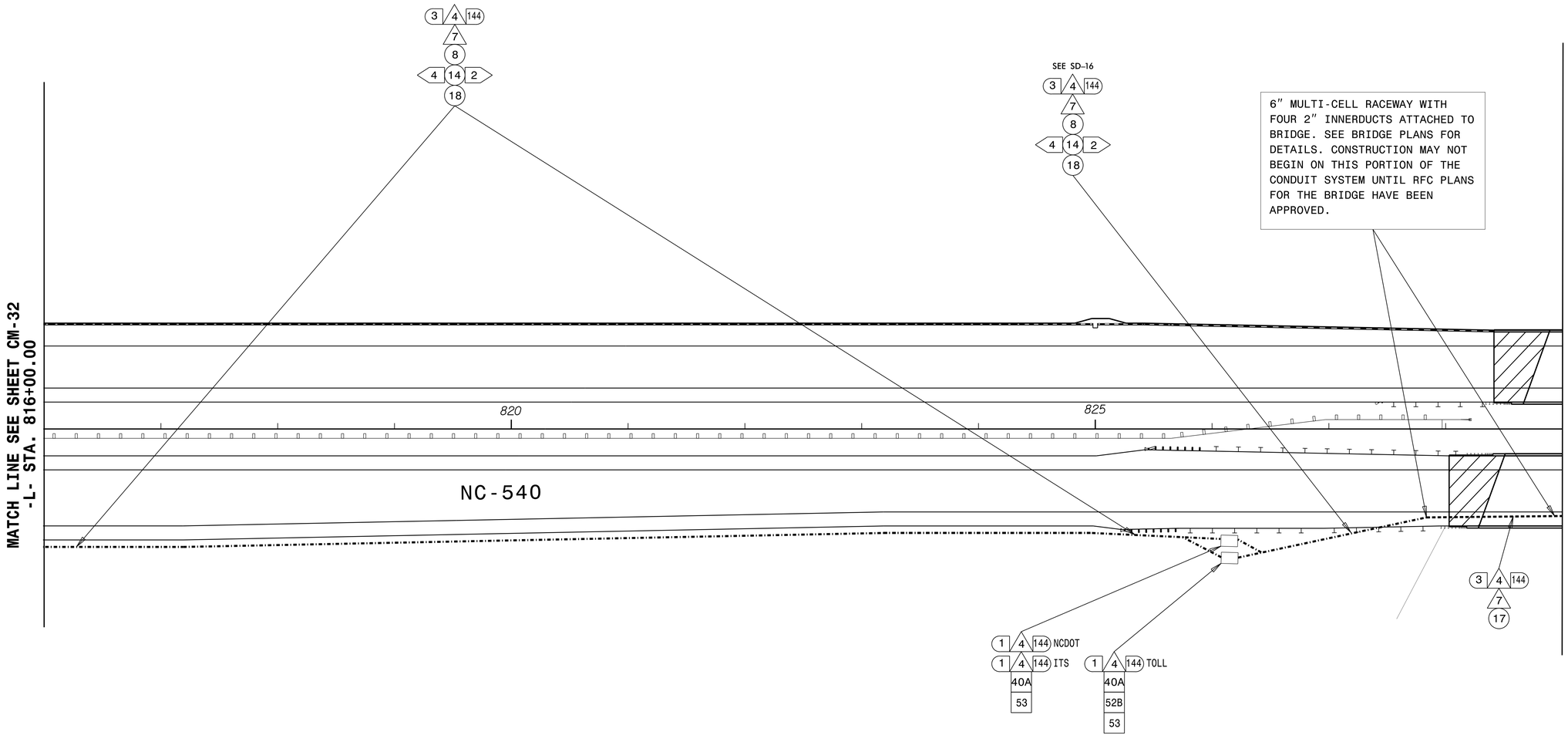
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: David A. Johnson 11-18-2020
DOCUSIGNED.DOSE.elf DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | CM-33 |




NOTES:
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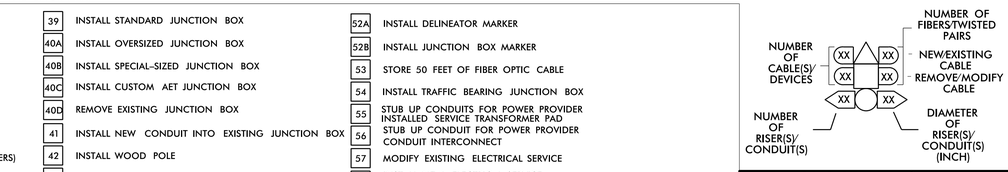


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Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

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| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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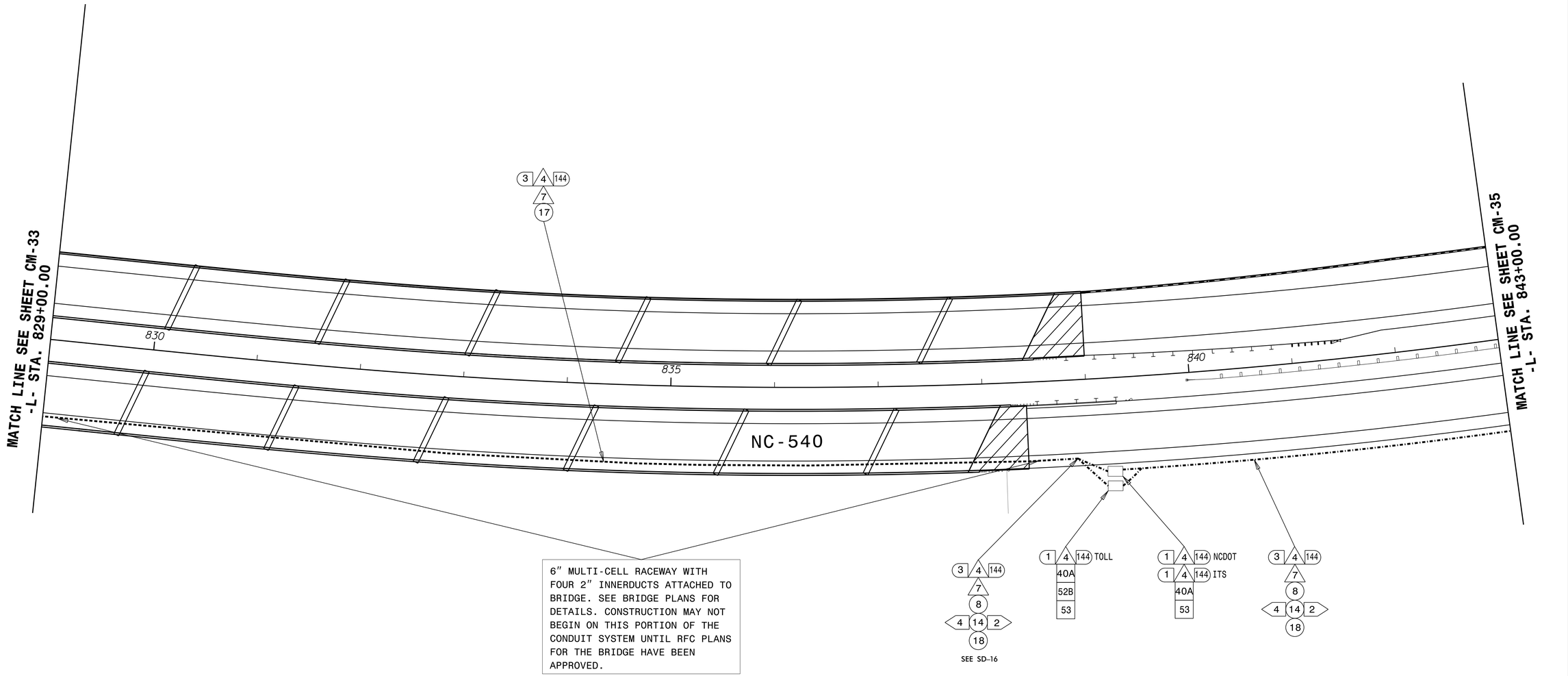


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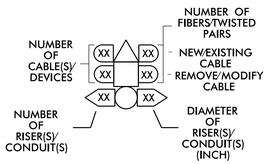


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Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D. Johnson

PREPARED BY: D Burnett REVIEWED BY:

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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

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| R-2828 | CM-35 |

MATCH LINE SEE SHEET CM-34 -L- STA. 843+00.00

MATCH LINE SEE SHEET CM-36 -L- STA. 856+00.00

NOISE WALL

NC-540

AET T45

AET T46

INSET SEE SHEET CM-35A

DMS

DMS-6

845

850

855

TYPE I
1 1
2 2
1 3
1 6 12 ITS
1 10 1 ELEC
1 10 2 COMP CAT6 FO
18 24
27 28 31C
34B 36A
2 36B 38A 58B 60
CCTV-22 MVD-M11A
MVD-M11B

TYPE II
1 1 8
2 14 2
18

3 4 144
7
8
4 14 2
18

37 63
WWD-9A FIGURE 1

1 1 39
52B

1 1 3 4 144
8
6 14 2
18

35B

1 4 144 NCDOT
2 4 144 ITS
1 6 12 ITS
29 SE-3
40B 53

1 6 12
7
8
1 9 2
18

1 1 8
1 9 2
18 TYPE II

58B

56 DUKE ENERGY

8
1 14 4 DUKE ENERGY

3 4 144
8
4 14 2
18

1 1 39
52B TYPE II

37 63
WWD-9B FIGURE 1

FIGURE 1




REFERENCE APPROVED AET PLANS FOR INSTALLATION DETAILS FOR AET PADS, CONDUITS, AND JUNCTION BOXES, WITHIN THIS AREA.

DUKE ENERGY NOTES:
1. DUKE ENERGY WILL BE INSTALLING PRIMARY CONDUCTORS IN "DUKE ENERGY" DESIGNATED CONDUITS AND JUNCTION BOXES.
2. COORDINATE WITH DUKE ENERGY FOR SPECIFIC JUNCTION BOX REQUIRED FOR INSTALLATION.
3. INSTALL DUKE ENERGY CONDUITS MINIMUM OF 36" IN DEPTH TO TOP OF CONDUIT.
4. DUKE ENERGY CONDUIT MAY BE INSTALLED IN THE SAME TRENCH BUT SHALL HAVE 12" OF HORIZONTAL SEPARATION FROM OTHER CONDUITS.

1 INSTALL ELECTRICAL SERVICE WIRE (BY TYPE)
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2A INSTALL SPECIAL MVD COMPOSITE CABLE
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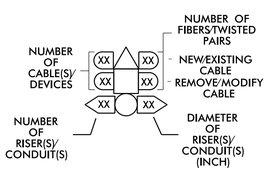


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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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| PROJECT REFERENCE NO. | SHEET NO. |
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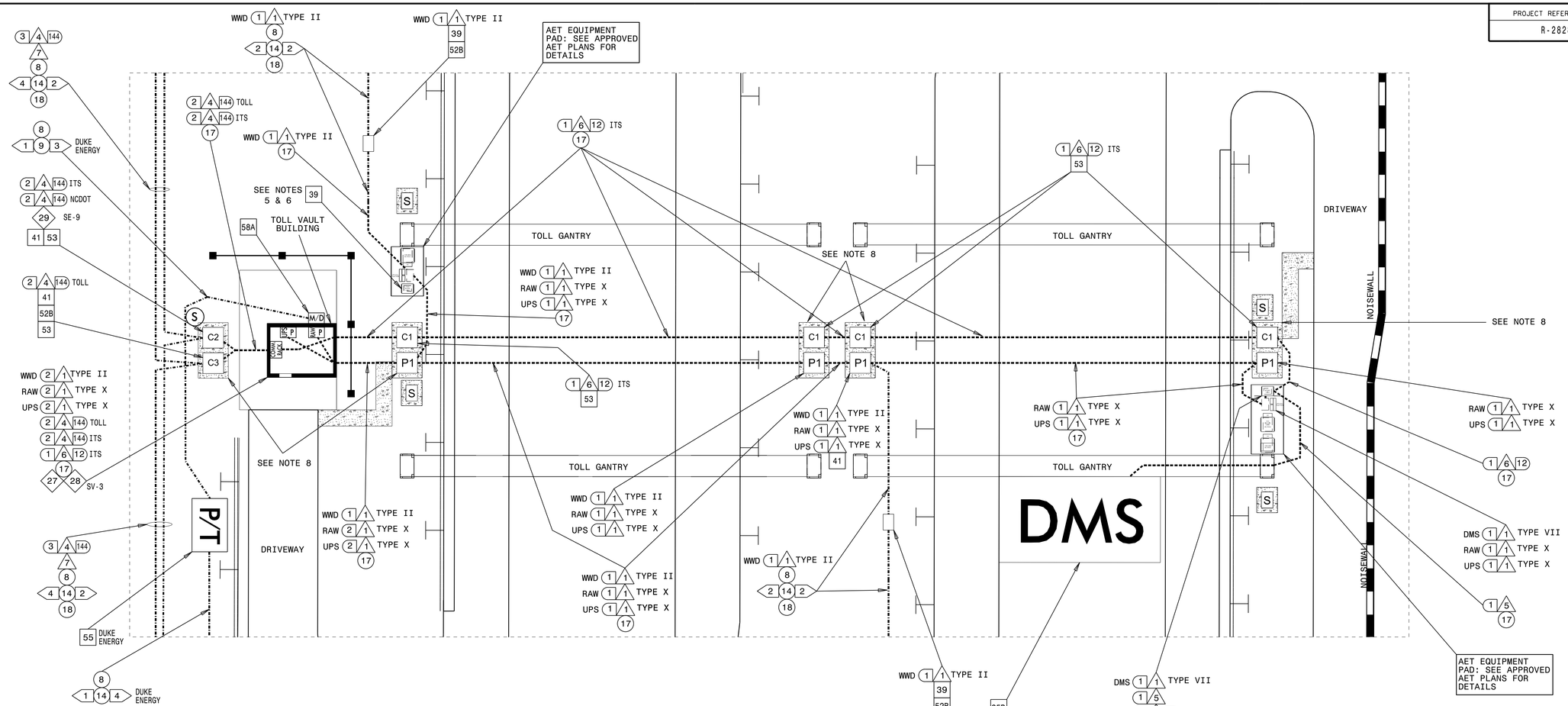
| R-2828 | CM-35A |




DUKE ENERGY NOTES:

1. DUKE ENERGY WILL BE INSTALLING PRIMARY CONDUCTORS IN "DUKE ENERGY" DESIGNATED CONDUITS AND JUNCTION BOXES.
2. COORDINATE WITH DUKE ENERGY FOR SPECIFIC JUNCTION BOX REQUIRED FOR INSTALLATION.
3. INSTALL DUKE ENERGY CONDUITS MINIMUM OF 36" IN DEPTH TO TOP OF CONDUIT.
4. DUKE ENERGY CONDUIT MAY BE INSTALLED IN THE SAME TRENCH BUT SHALL HAVE 12" OF HORIZONTAL SEPARATION FROM OTHER CONDUITS.

NOTES:

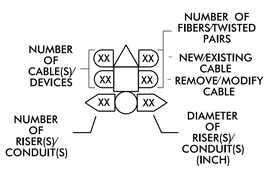
1. INSTALL DMS CABINET ON AET EQUIPMENT PAD PER THE APPROVED AET PLANS FOR TOLL ZONE AET T45/T46.
2. INSTALL FEEDER CIRCUIT CONDUCTORS IN POWER NETWORK CONDUITS/JUNCTION BOXES PER THE APPROVED AET PLANS FOR TOLL ZONE AET T45/T46, FROM AET TOLL ZONE VAULT RAW AND UPS POWER BREAKER PANELS TO AET EQUIPMENT PAD, RAW AND UPS POWER SUB-PANELS.
3. INSTALL BRANCH CIRCUIT CONDUCTORS FOR DMS OR ADJACENT ITS DEVICE CABINETS, AS SHOWN ON THE PLANS, FROM THE AET EQUIPMENT PAD RAW POWER SUB-PANEL TO THE DMS OR ITS DEVICE CABINETS.
4. INSTALL DROP CABLE IN COMMUNICATIONS NETWORK CONDUIT/JUNCTION BOXES PER THE APPROVED AET PLANS FOR TOLL ZONE AET T45/T46, FROM AET TOLL ZONE VAULT TO DMS CABINET ON AET EQUIPMENT PAD.
5. INSTALL A STANDARD JUNCTION BOX UNDER THE FUTURE DMS CABINET LOCATION. INSTALL DMS CABINET LOCATION PER THE APPROVED AET PLANS FOR TOLL ZONE AET T45/T46.
6. ENSURE FUTURE POWER SERVICE CABLES CAN BE INSTALLED IN POWER NETWORK CONDUITS/ JUNCTION BOXES PER THE APPROVED AET PLANS FOR TOLL ZONE AET T45/T46.
7. INSTALL DMS AS SHOWN IN NCTA ITS STANDARD DETAILS (DATED 05-24-2018), SHEETS SD-3, SD-4, D-2A, AND D-4.
8. INSTALL CONDUIT AND JUNCTION BOXES AT AET ZONES AS PER THE APPROVED AET PLANS.
9. INSTALL CONCRETE EQUIPMENT PADS PER THE APPROVED AET PLANS FOR TOLL ZONE AET T45/T46.
10. SEAL ALL CONDUIT ENDS WITH DUCT AND CONDUIT SEALER AT ALL JUNCTION BOX/CABINET ENTRANCES.
11. AET LOOP DETECTION SHALL BE INSTALLED PER THE APPROVED AET PLANS FOR TOLL ZONE AET T45/T46.

## Legend

- C1 - AET Comm. Junction Box
- C2 - ITS Communications Junction Box
- C3 - TOLL Communications Junction Box
- P1 - AET Power Junction Box
- P2 - Service Power Junction Box (DUKE)
- S - Loop Splice Junction Box

| | | | | | |
|---|---|---|---|---|---|
| 1 | INSTALL ELECTRICAL SERVICE WIRE (BY TYPE) | 16 | BORE AND JACK CONDUIT | 31B | INSTALL POLE MOUNTED CCTV CABINET |
| 2 | INSTALL MVD COMPOSITE CABLE | 17 | INSTALL CABLE(S) IN EXISTING CONDUIT | 31C | INSTALL POLE MOUNTED CCTV AND MVD CABINET |
| 2A | INSTALL SPECIAL MVD COMPOSITE CABLE | 18 | INSTALL CABLE(S) IN NEW CONDUIT | 31D | INSTALL POLE MOUNTED MVD CABINET |
| 3 | INSTALL ETHERNET CABLE | 19 | INSTALL CABLE(S) IN EXISTING RISER | 31E | INSTALL POLE MOUNTED MVD SLAVE CABINET |
| 4 | INSTALL SMFO CABLE | 20 | INSTALL CABLE(S) IN NEW RISER | 32A | INSTALL BASE MOUNTED HUB CABINET |
| 5 | INSTALL DMS COMM AND POWER | 21 | INSTALL CABLE(S) IN EXISTING CONDUIT STUB-OUTS | 32B | MODIFY EXISTING HUB CABINET/BUILDING |
| 6 | INSTALL FIBER OPTIC CABLE DROP | 22 | INSTALL NEW CONDUIT INTO NEW CABINET BASE | 33 | INSTALL ETHERNET HUB SWITCH (PROVIDED BY OTHERS) |
| 7 | INSTALL TRACER WIRE | 23 | INSTALL NEW RISER INTO NEW CABINET BASE | 34A | INSTALL CABINET FOUNDATION |
| 8 | TRENCH OR PLOW | 24 | INSTALL NEW CONDUIT INTO NEW POLE MOUNTED CABINET | 34B | INSTALL TECHNICIAN PAD |
| 9 | INSTALL PVC CONDUIT | 25 | INSTALL NEW RISER INTO NEW POLE MOUNTED CABINET | 35A | INSTALL TYPE A DMS - WALK-IN ENCLOSURE |
| 10 | INSTALL RIGID, GALVANIZED STEEL CONDUIT | 26 | MODIFY EXISTING INTERCONNECT CENTER /SPLICE ENCLOSURE | 35B | INSTALL TYPE B DMS - FRONT ACCESS |
| 11 | INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD | 27 | INSTALL FIBER OPTIC EDGE SWITCH (PROVIDED BY OTHERS) | 36A | INSTALL CCTV CAMERA ASSEMBLY |
| 12 | INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL | 28 | INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS AND FUSION SPLICE CABLE IN CABINET | 36B | INSTALL MICROWAVE VEHICLE DETECTION SYSTEM (MVD) (BY OTHERS) |
| 13 | INSTALL FIBER OPTIC CABLE SEAL | 29 | INSTALL UNDERGROUND SPLICE ENCLOSURE | 37 | INSTALL TYPE III PEDESTAL POLE WITH FOUNDATION |
| 14 | INSTALL POLYETHYLENE CONDUIT | 30 | INSTALL AERIAL SPLICE ENSLOSURE | 38A | INSTALL CCTV METAL POLE WITH LOWERING DEVICE AND FOUNDATION |
| 15 | DIRECTIONAL DRILL CONDUIT | 31A | INSTALL DMS CABINET | 38B | INSTALL MVD METAL POLE AND FOUNDATION |

| | | | | | |
|---|---|---|---|---|---|
| 39 | INSTALL STANDARD JUNCTION BOX | 52A | INSTALL DELINEATOR MARKER | | |
| 40A | INSTALL OVERSIZED JUNCTION BOX | 52B | INSTALL JUNCTION BOX MARKER | | |
| 40B | INSTALL SPECIAL-SIZED JUNCTION BOX | 53 | STORE 50 FEET OF FIBER OPTIC CABLE | | |
| 40C | INSTALL CUSTOM AET JUNCTION BOX | 54 | INSTALL TRAFFIC BEARING JUNCTION BOX | | |
| 40D | REMOVE EXISTING JUNCTION BOX | 55 | STUB UP CONDUITS FOR POWER PROVIDER INSTALLED SERVICE TRANSFORMER PAD | | |
| 41 | INSTALL NEW CONDUIT INTO EXISTING JUNCTION BOX | 56 | STUB UP CONDUIT FOR POWER PROVIDER CONDUIT INTERCONNECT | | |
| 42 | INSTALL WOOD POLE | 57 | MODIFY EXISTING ELECTRICAL SERVICE | | |
| 43 | REMOVE EXISTING WOOD POLE | 58A | INSTALL NEW ELECTRICAL SERVICE (METER AND DISCONNECT) | | |
| 44 | INSTALL AERIAL GUY ASSEMBLY | 58B | INSTALL NEW DISCONNECT | | |
| 45 | INSTALL STANDARD GUY ASSEMBLY | 59 | INSTALL NEW TRANSFORMER AND DISCONNECT (PEDESTAL MOUNTED) | | |
| 46 | INSTALL SIDEWALK GUY ASSEMBLY | 60 | BOND TRACER WIRE TO EQUIPMENT GROUND BUS | | |
| 47 | INSTALL MESSENGER CABLE | 61 | DO NOT BOND TRACER WIRE TO EQUIPMENT GROUND BUS | | |
| 48 | REMOVE EXISTING COMMUNICATIONS CABLE | 62 | BOND RISER AND MESSENGER CABLE TO POLE GROUND | | |
| 49 | RELOCATE EXISTING COMMUNICATIONS CABLE | 63 | INSTALL WRONG WAY DETECTION DEVICE (BY OTHERS) | | |
| 50 | INTERCEPT EXISTING CONDUIT RUN | 64 | INSTALL UPS IN CABINET | | |
| 51 | INSTALL PEDESTAL SUPPORT FOR DMS | | | | |




**Plans Prepared By:**

wsp

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*Charlotte NC, 28203*
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*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# R-2828 TOLL ZONE DETAIL AET T45/ T46

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE 0 12.5 1" = 12.5'

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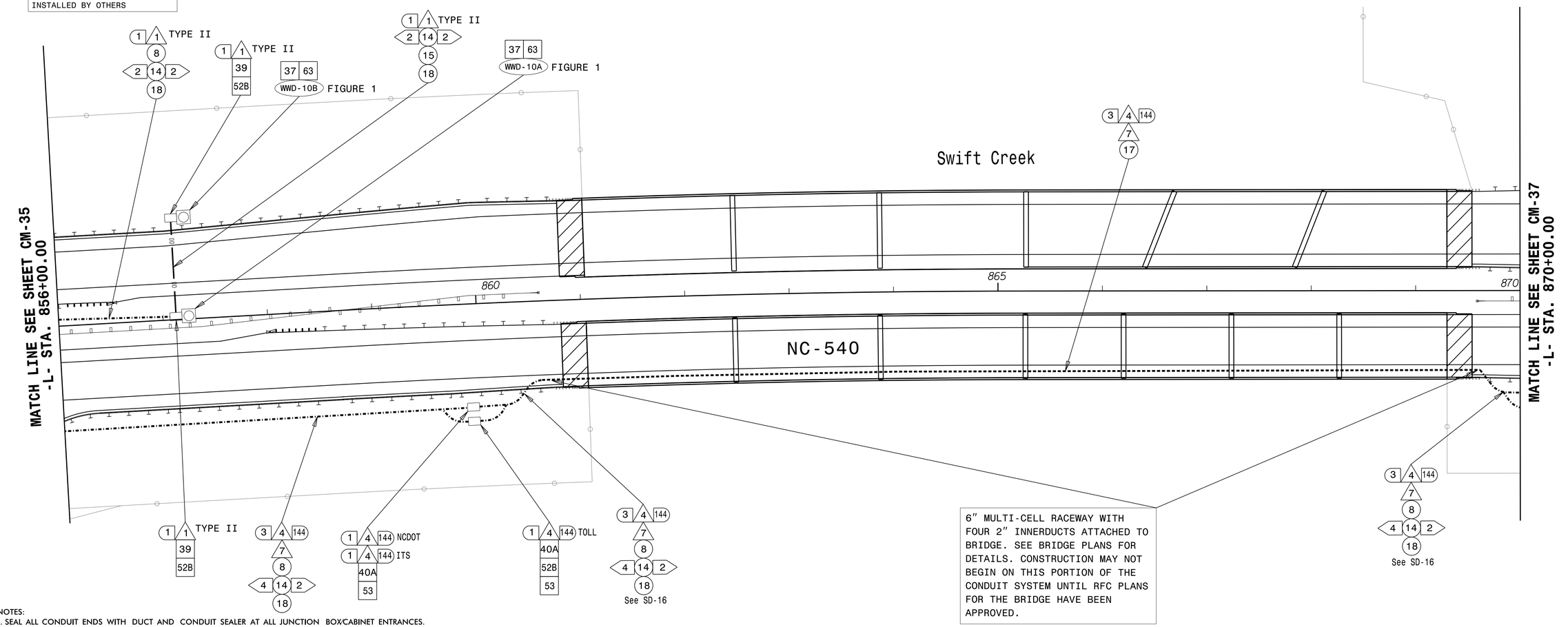
FIGURE 1




6" MULTI-CELL RACEWAY WITH FOUR 2" INNERDUCTS ATTACHED TO BRIDGE. SEE BRIDGE PLANS FOR DETAILS. CONSTRUCTION MAY NOT BEGIN ON THIS PORTION OF THE CONDUIT SYSTEM UNTIL RFC PLANS FOR THE BRIDGE HAVE BEEN APPROVED.

NOTES:
1. SEAL ALL CONDUIT ENDS WITH DUCT AND CONDUIT SEALER AT ALL JUNCTION BOX/CABINET ENTRANCES.
2. WHEN A JUNCTION BOX IS USED TO CHANGE INSTALLATION METHODS ONLY, THE JUNCTION BOX MAY BE ELIMINATED WITH THE APPROVAL OF THE ENGINEER.

1 INSTALL ELECTRICAL SERVICE WIRE (BY TYPE)
2 INSTALL MVD COMPOSITE CABLE
2A INSTALL SPECIAL MVD COMPOSITE CABLE
3 INSTALL ETHERNET CABLE
4 INSTALL SMFO CABLE
5 INSTALL DMS COMM AND POWER
6 INSTALL FIBER OPTIC CABLE DROP
7 INSTALL TRACER WIRE
8 TRENCH OR PLOW
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 FIBER OPTIC CABLE SEAL
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 NEW CABINET BASE
23 INSTALL NEW RISER INTO NEW CABINET BASE
24 INSTALL NEW CONDUIT INTO NEW POLE MOUNTED CABINET
25 INSTALL NEW RISER INTO NEW POLE MOUNTED CABINET
26 MODIFY EXISTING INTERCONNECT CENTER /SPLICE ENCLOSURE
27 INSTALL FIBER OPTIC EDGE SWITCH (PROVIDED BY OTHERS)
28 INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS AND FUSION SPLICE CABLE IN CABINET
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31E INSTALL POLE MOUNTED MVD SLAVE CABINET
22A INSTALL BASE MOUNTED HUB CABINET
22B MODIFY EXISTING HUB CABINET/BUILDING
33 INSTALL ETHERNET HUB SWITCH (PROVIDED BY OTHERS)
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35A INSTALL TYPE A DMS – WALK-IN ENCLOSURE
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40D REMOVE EXISTING JUNCTION BOX
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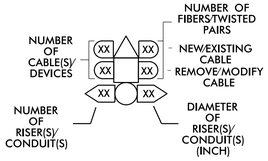


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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE
0 50
1" = 50'

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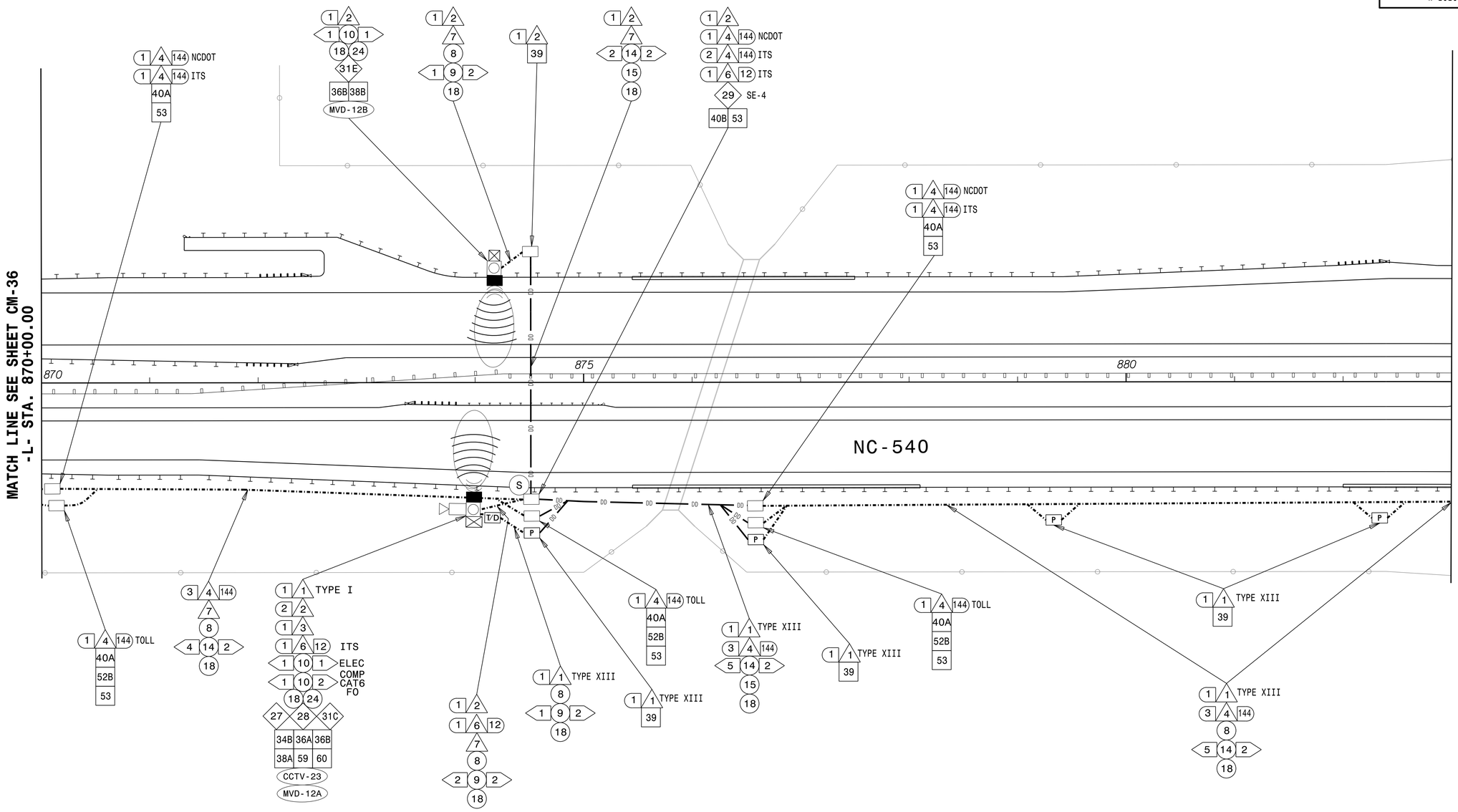


NOTES:
1. SEAL ALL CONDUIT ENDS WITH DUCT AND CONDUIT SEALER AT ALL JUNCTION BOX/CABINET ENTRANCES.
2. WHEN A JUNCTION BOX IS USED TO CHANGE INSTALLATION METHODS ONLY, THE JUNCTION BOX MAY BE ELIMINATED WITH THE APPROVAL OF THE ENGINEER.

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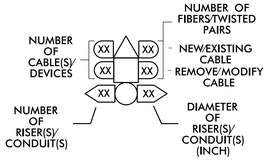


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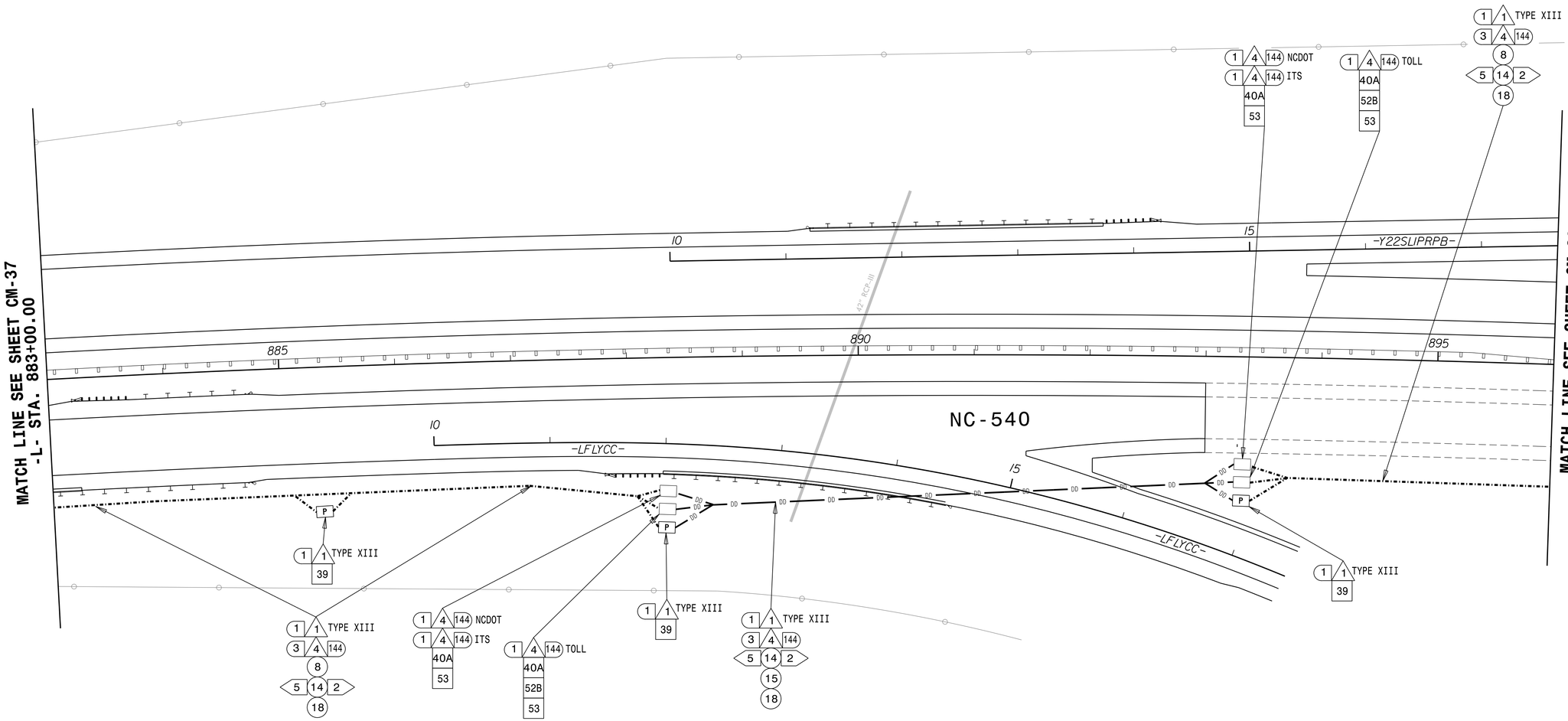


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| 8 | TRENCH OR PLOW | 24 | INSTALL NEW CONDUIT INTO NEW POLE MOUNTED CABINET | 34B | INSTALL TECHNICIAN PAD | 44 | INSTALL AERIAL GUY ASSEMBLY |
| 9 | INSTALL PVC CONDUIT | 25 | INSTALL NEW RISER INTO NEW POLE MOUNTED CABINET | 35A | INSTALL TYPE A DMS – WALK-IN ENCLOSURE | 45 | INSTALL STANDARD GUY ASSEMBLY |
| 10 | INSTALL RIGID, GALVANIZED STEEL CONDUIT | 26 | MODIFY EXISTING INTERCONNECT CENTER /SPLICE ENCLOSURE | 35B | INSTALL TYPE B DMS – FRONT ACCESS | 46 | INSTALL SIDEWALK GUY ASSEMBLY |
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| 12 | INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL | 28 | INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS AND FUSION SPLICE CABLE IN CABINET | 36B | INSTALL MICROWAVE VEHICLE DETECTION SYSTEM (MVD) (BY OTHERS) | 48 | REMOVE EXISTING COMMUNICATIONS CABLE |
| 13 | INSTALL FIBER OPTIC CABLE SEAL | 29 | INSTALL UNDERGROUND SPLICE ENCLOSURE | 37 | INSTALL TYPE III PEDESTAL POLE WITH FOUNDATION | 49 | RELOCATE EXISTING COMMUNICATIONS CABLE |
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| 15 | DIRECTIONAL DRILL CONDUIT | 31A | INSTALL DMS CABINET | 38B | INSTALL MVD METAL POLE AND FOUNDATION | 51 | INSTALL PEDESTAL SUPPORT FOR DMS |

| | | | |
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| 54 | INSTALL TRAFFIC BEARING JUNCTION BOX | 60 | BOND TRACER WIRE TO EQUIPMENT GROUND BUS |
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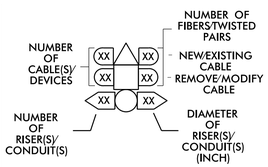
| 57 | MODIFY EXISTING ELECTRICAL SERVICE | 63 | INSTALL WRONG WAY DETECTION DEVICE (BY OTHERS) |
| | | 64 | INSTALL UPS IN CABINET |




Plans Prepared By:

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NC LIC NO. F-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D. Johnson
PREPARED BY: D Burnett REVIEWED BY:

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02E2EC7D0E64AF... DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

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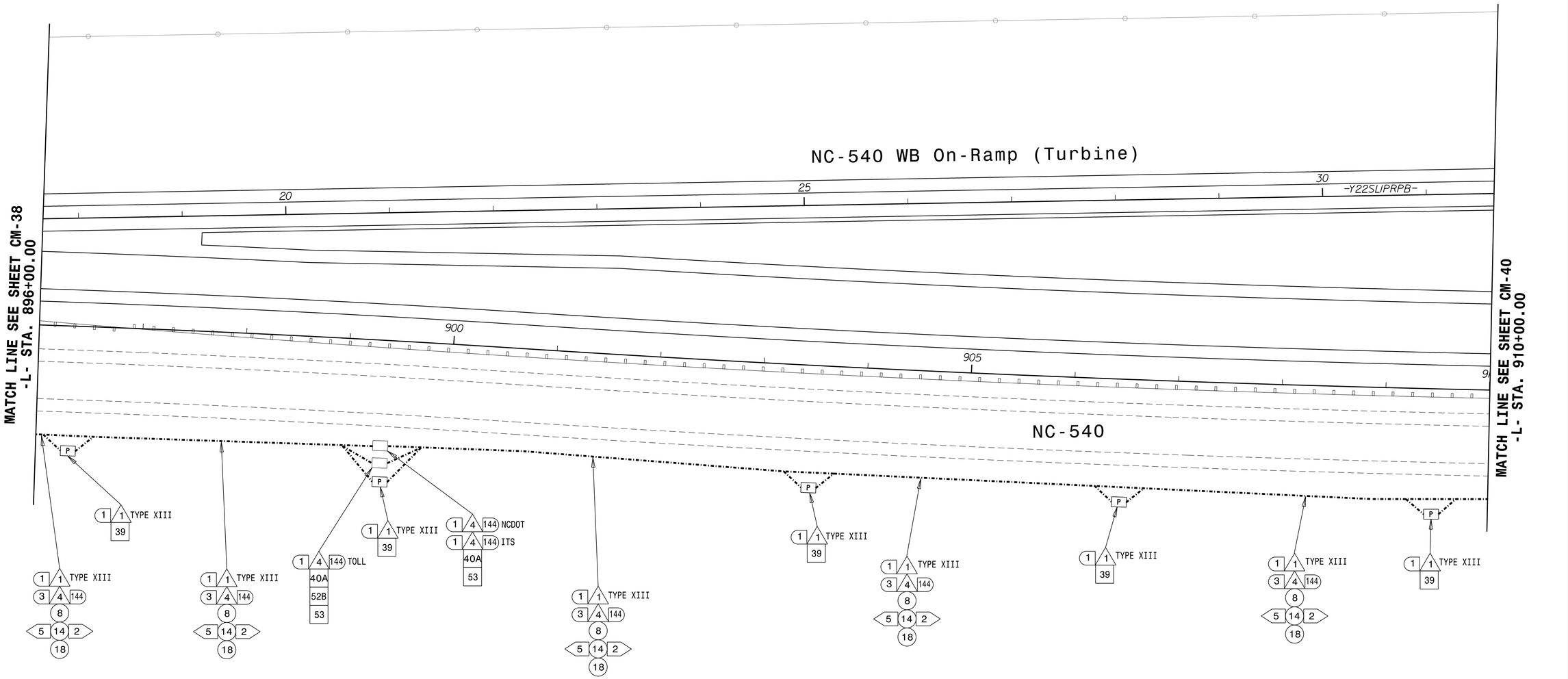
| R-2828 | CM-39 |




NOTES:
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2A INSTALL SPECIAL MVD COMPOSITE CABLE
3 INSTALL ETHERNET CABLE
4 INSTALL SMFO CABLE
5 INSTALL DMS COMM AND POWER
6 INSTALL FIBER OPTIC CABLE DROP
7 INSTALL TRACER WIRE
8 TRENCH OR PLOW
9 INSTALL PVC CONDUIT
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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
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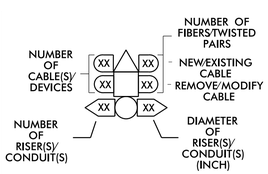


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**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
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| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE
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1" = 50'

| REVISIONS | INIT. | DATE |
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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON
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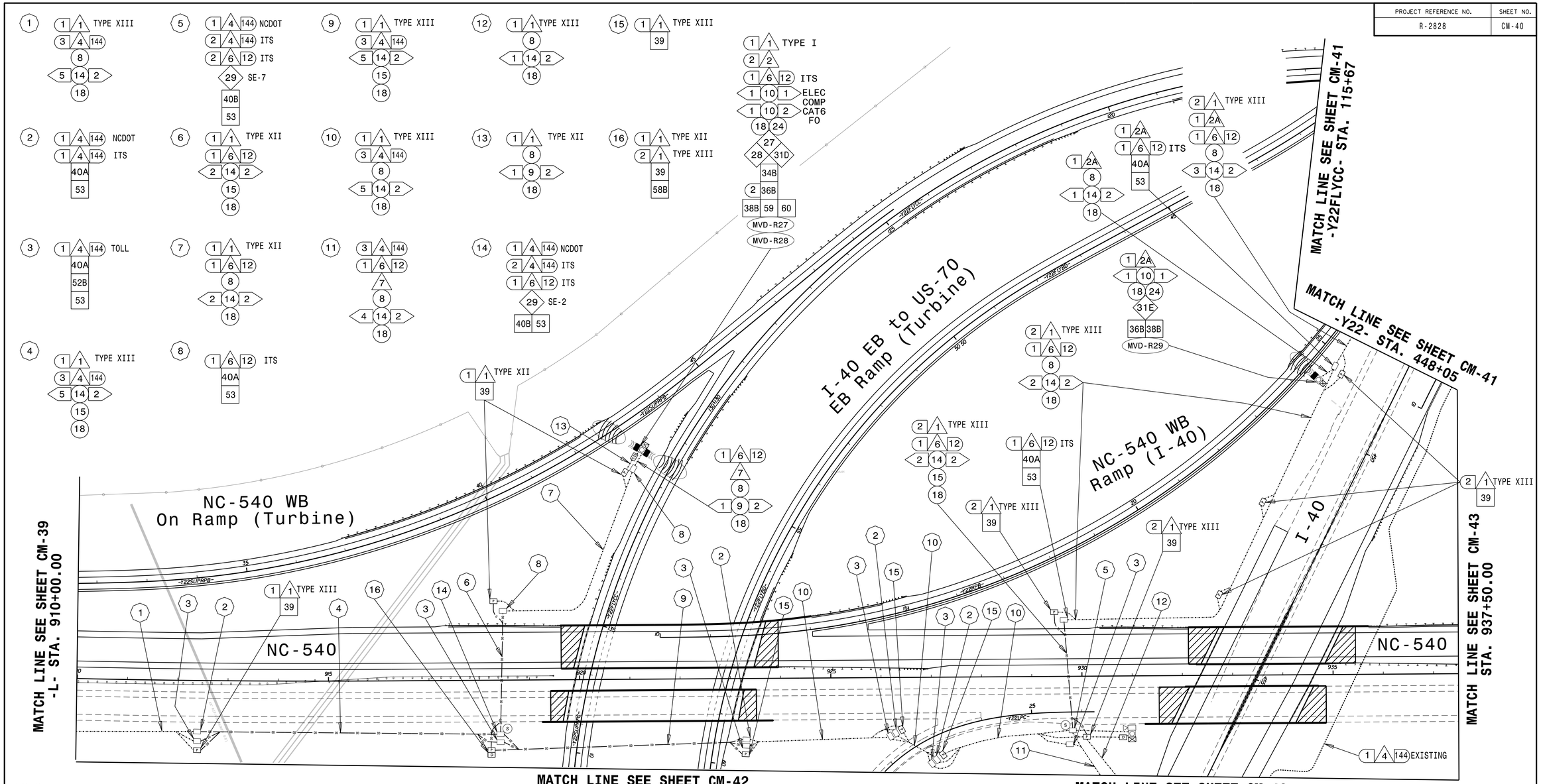
| R-2828 | CM-40 |

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| 2 | INSTALL MVD COMPOSITE CABLE | 17 | INSTALL CABLE(S) IN EXISTING CONDUIT | 31C | INSTALL POLE MOUNTED CCTV AND MVD CABINET | 40A | INSTALL OVERSIZED JUNCTION BOX |
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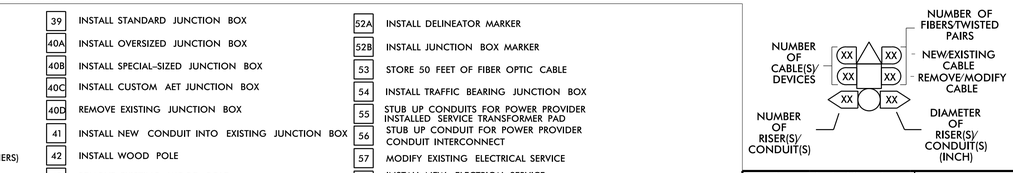


Plans Prepared By:
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE 0 100 1" = 100'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F3ECTDD9E49F DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

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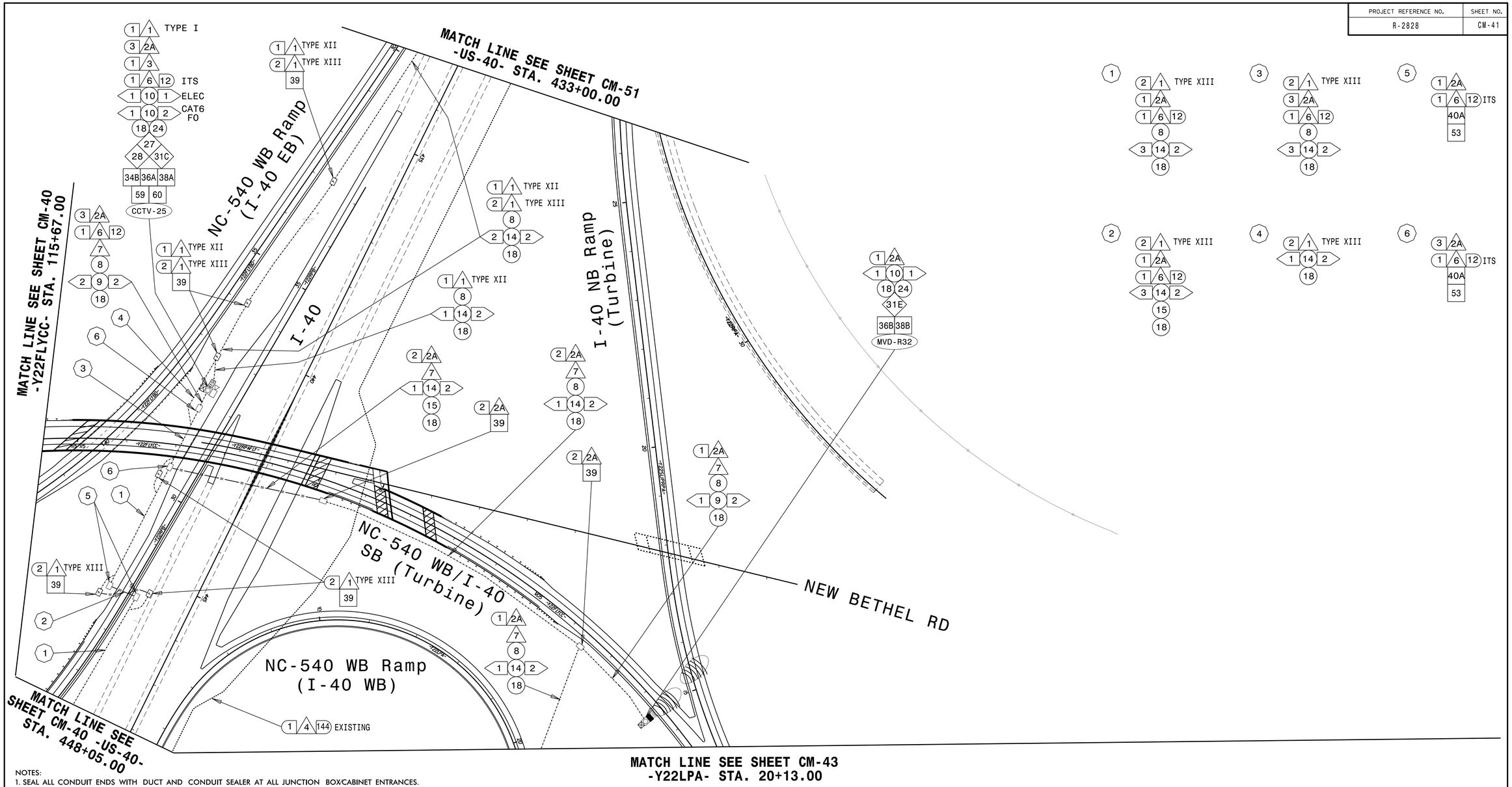
| R-2828 | CM-41 |

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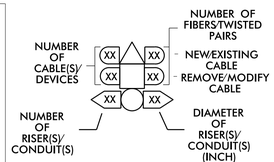


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Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

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PREPARED BY: D Burnett REVIEWED BY:

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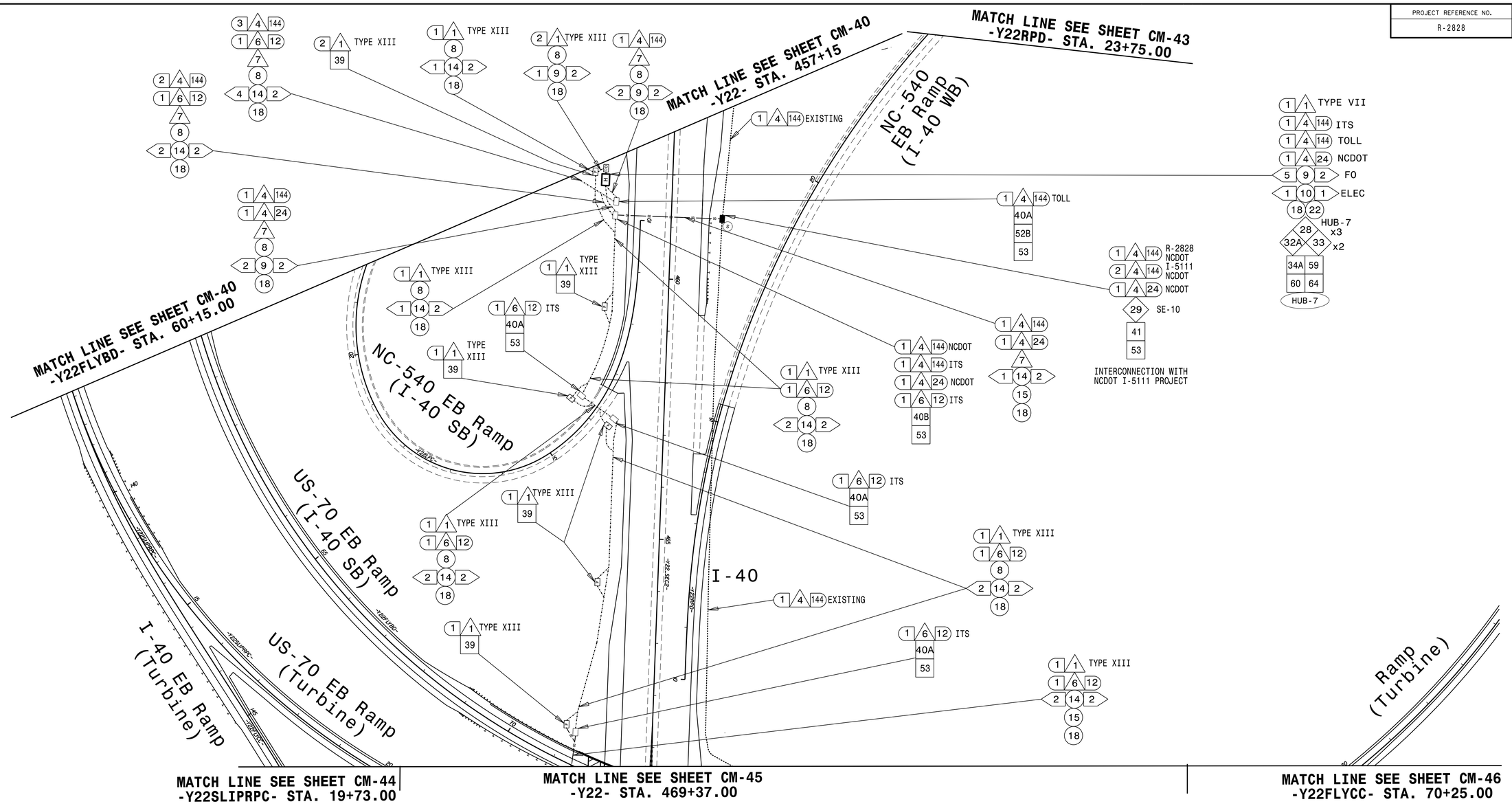
| R-2828 | CM-42 |




NOTES:
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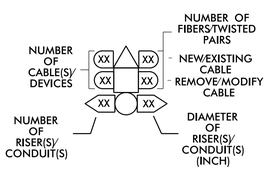


**Plans Prepared By:**

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*Suite 610*
*Charlotte NC, 28203*
*NC LIC NO. F-0165*

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

*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE 0 100 1" = 100'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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CADD Filename:

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| PROJECT REFERENCE NO. | SHEET NO. |
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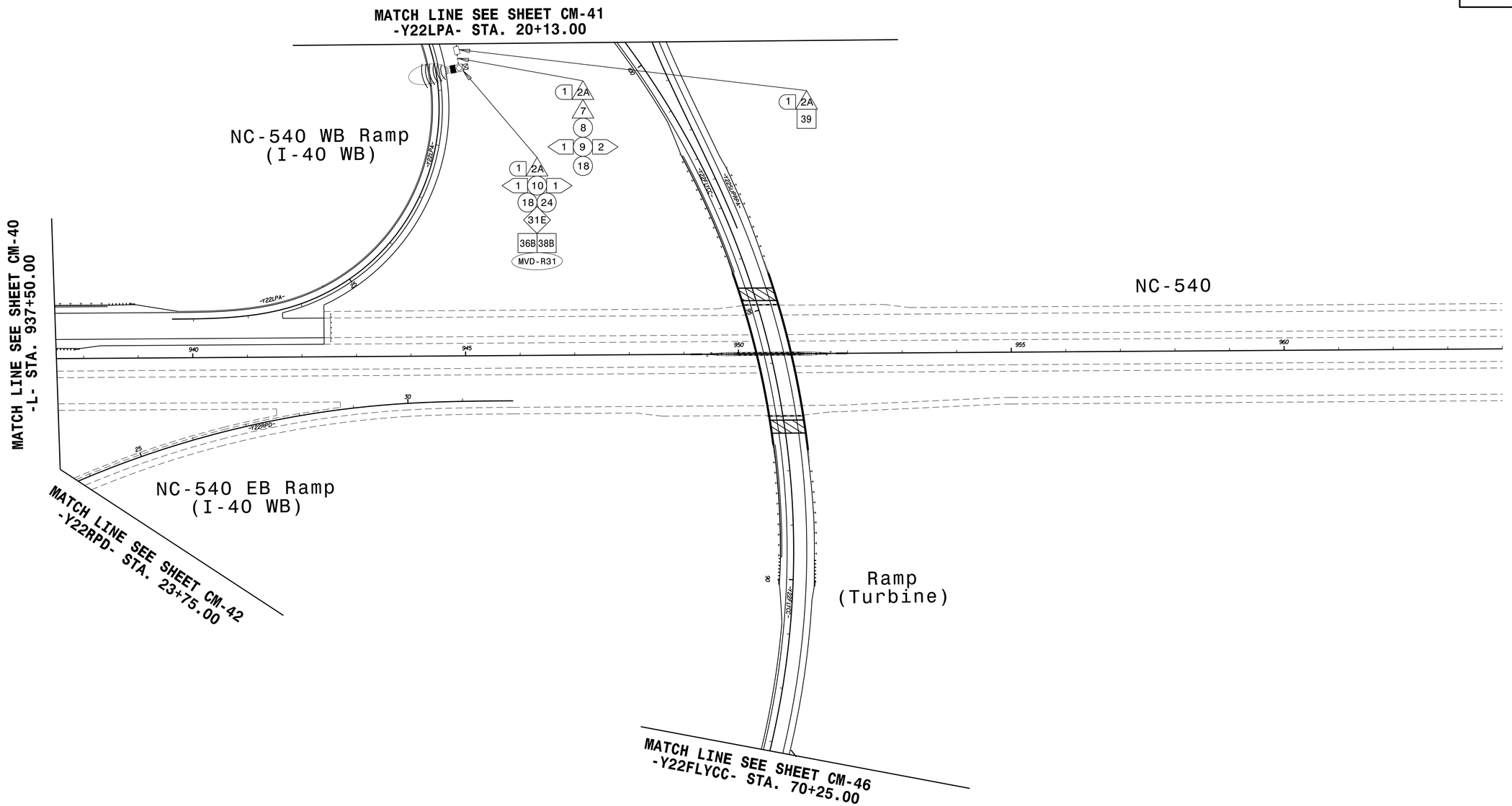
| R-2828 | CM-43 |

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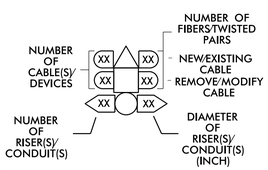


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NC LIC NO. F-0165

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NORTH CAROLINA
**Turnpike Authority**

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

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| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE
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1" = 100'

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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

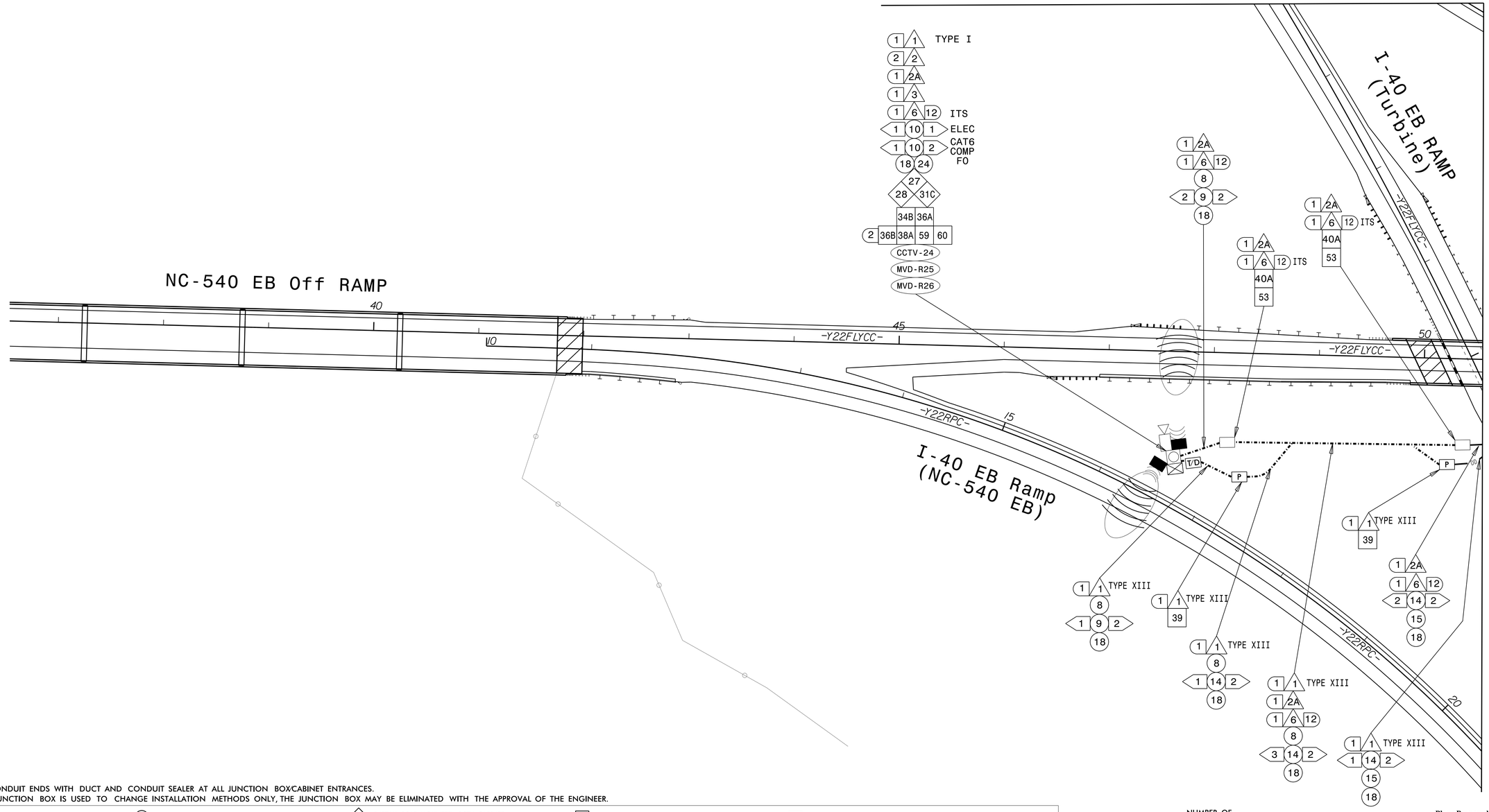
DocuSigned by:
Daniel A. Johnson
D02F2E7CD0B649F...
11-18-2020
DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | CM-44 |

**MATCH LINE SEE SHEET CM-43**
**-Y22SLIPRC- STA. 19+73.00**




**MATCH LINE SEE SHEET CM-45**
**-Y22FLYCC- STA. 50+50.00**

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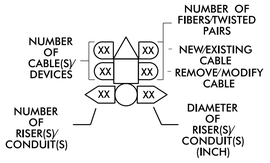


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Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 | REVIEWED BY: D. Johnson
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SCALE
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| REVISIONS | INIT. | DATE |
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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2EC7DD9E49F DATE

CADD Filename:

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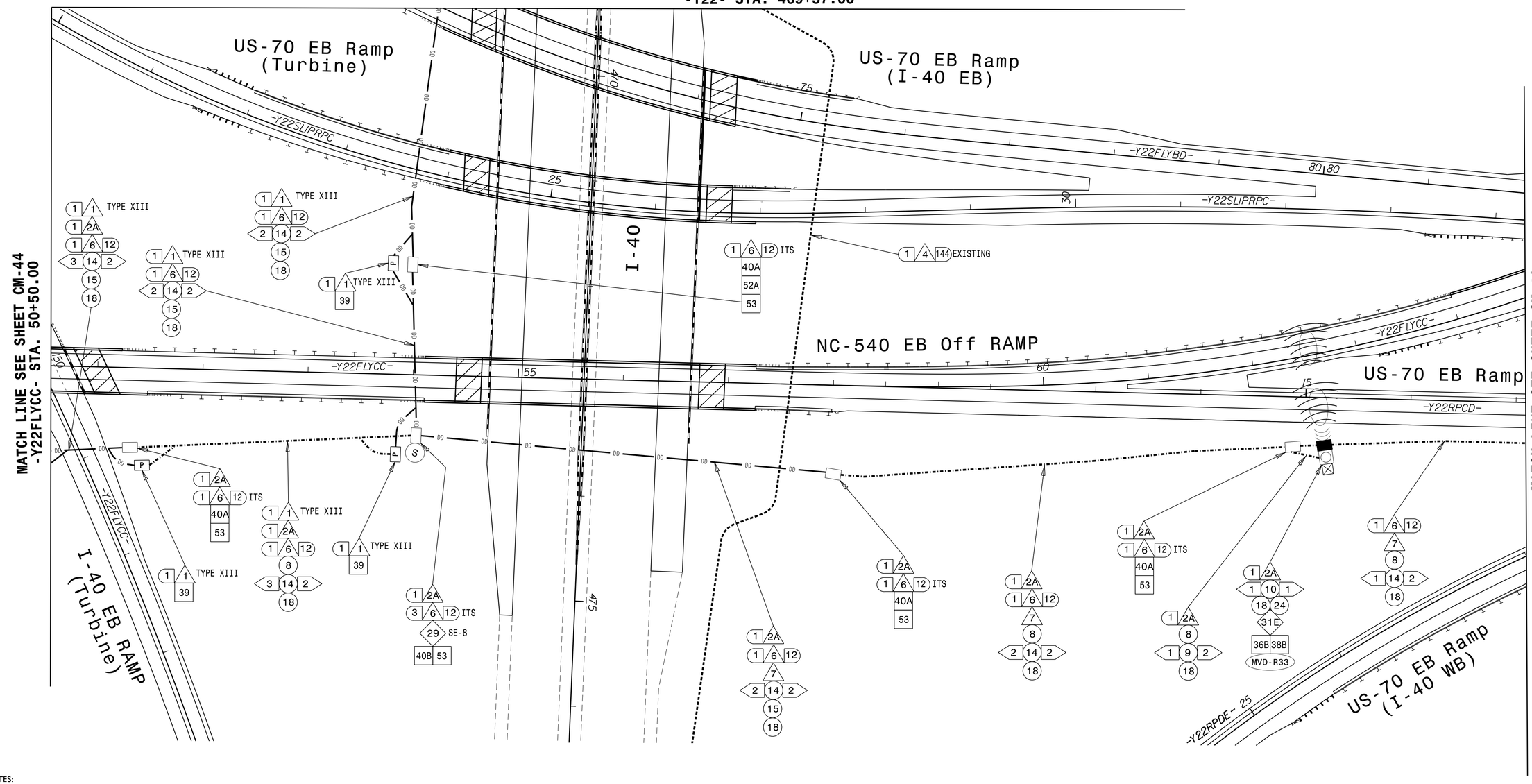


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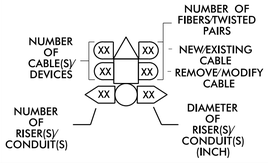
| 63 | INSTALL WRONG WAY DETECTION DEVICE (BY OTHERS) | | |
| 64 | INSTALL UPS IN CABINET | | |




**Plans Prepared By:**

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NC LIC NO. F-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D92F2EC7DD9E49F... DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
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| R-2828 | CM-46 |

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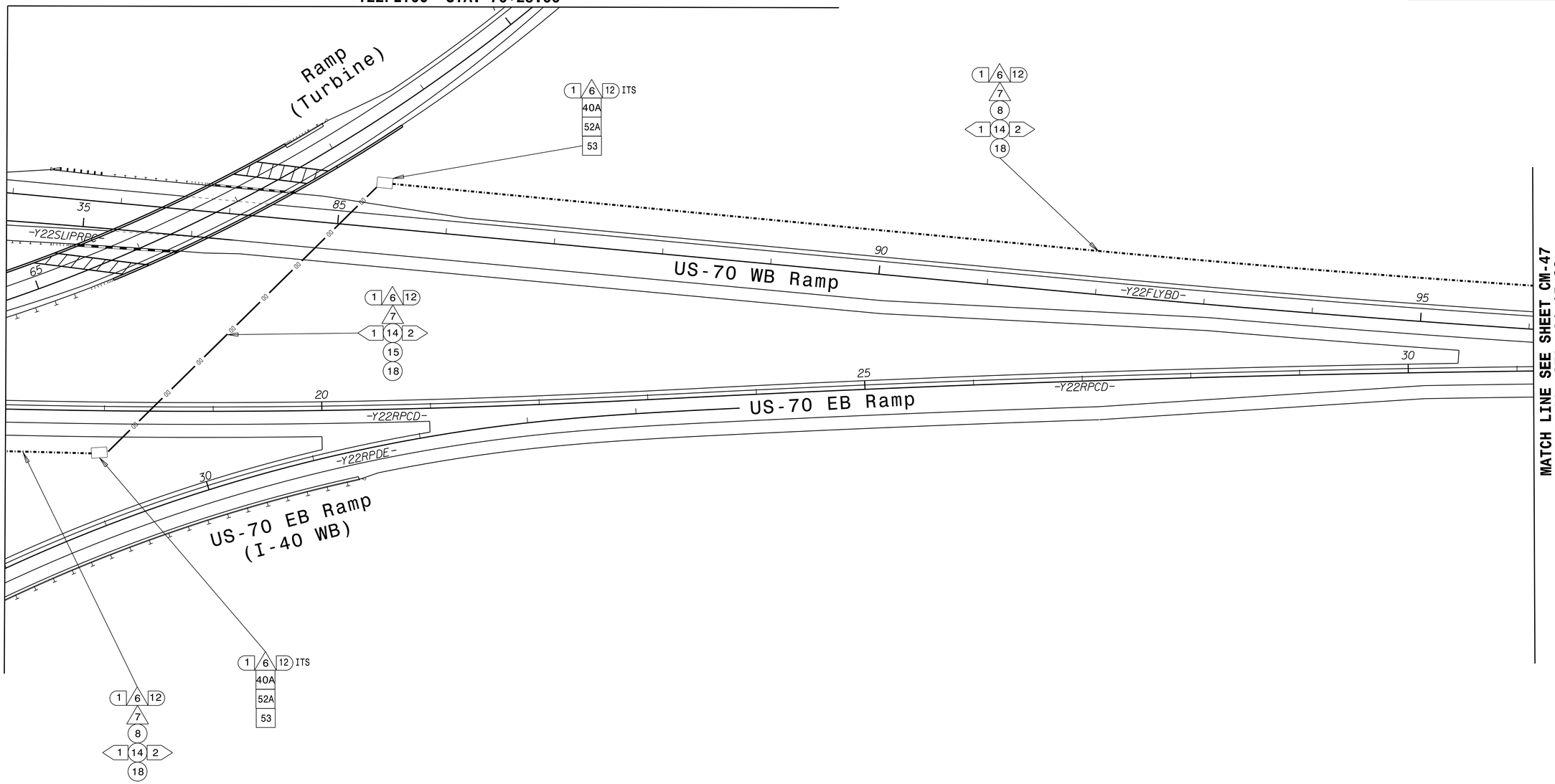
**-Y22FLYCC- STA. 70+25.00**




**MATCH LINE SEE SHEET CM-45**
**-Y22RPCS- STA. 17+10.00**

**MATCH LINE SEE SHEET CM-47**
**-Y22RPCS- STA. 31+15.00**

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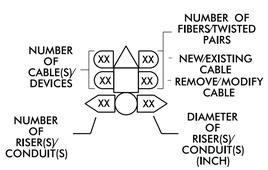


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*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
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SEAL

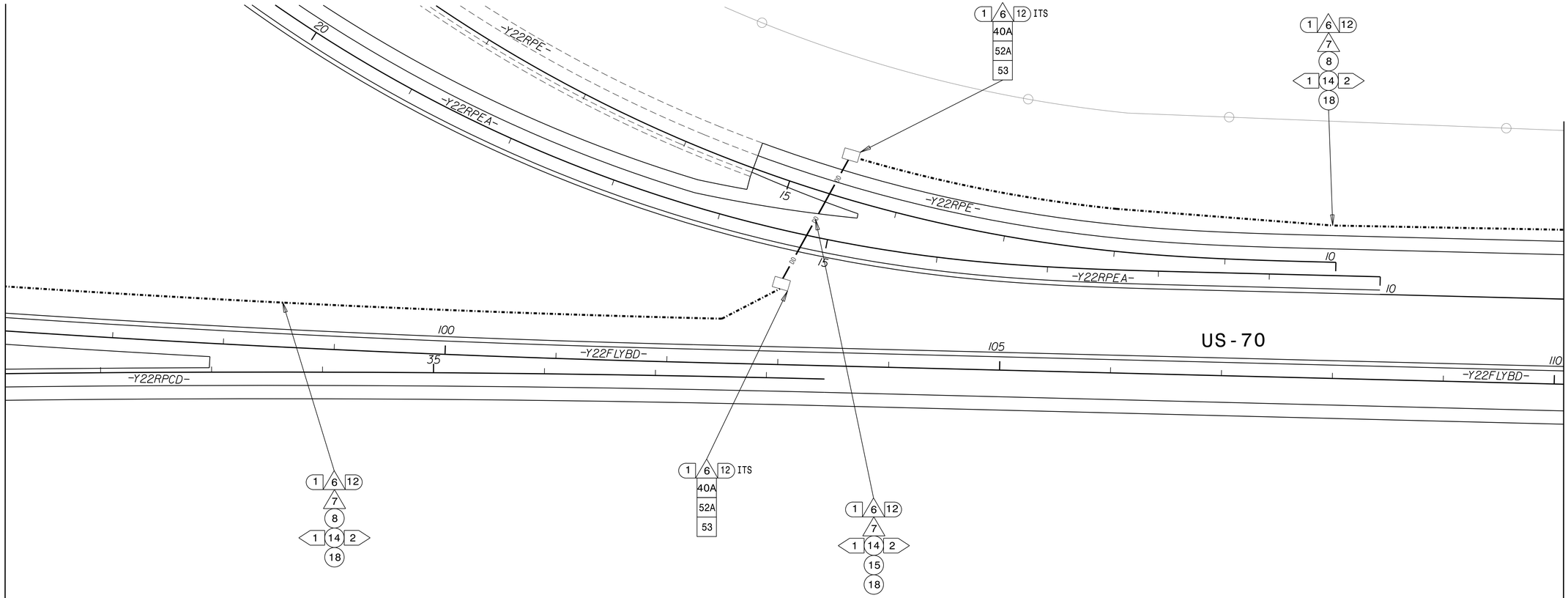
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
-D02F2ECTDD9E49F... DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | CM-47 |

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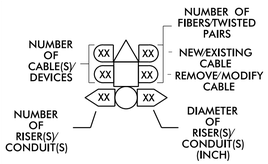


**Plans Prepared By:**

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*NC LIC NO. F-0165*

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*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
DOCUSIGNED ON FILE DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
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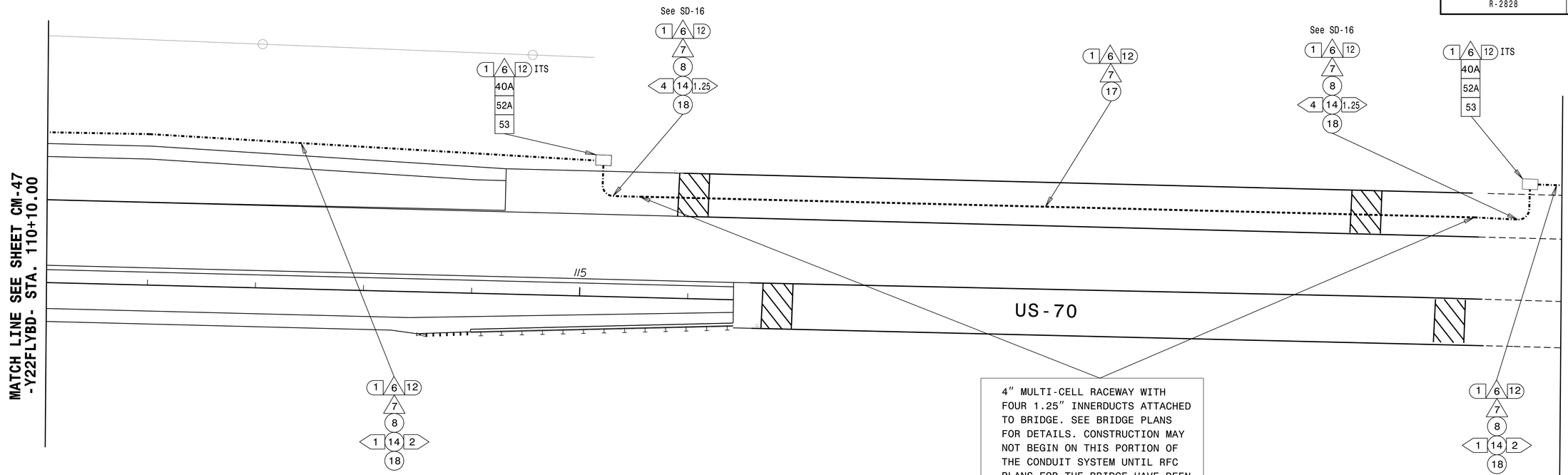
| R-2828 | CM-48 |

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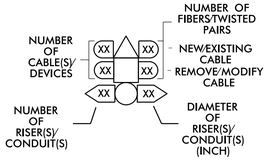


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Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D. Johnson
PREPARED BY: D Burnett REVIEWED BY:

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SEAL
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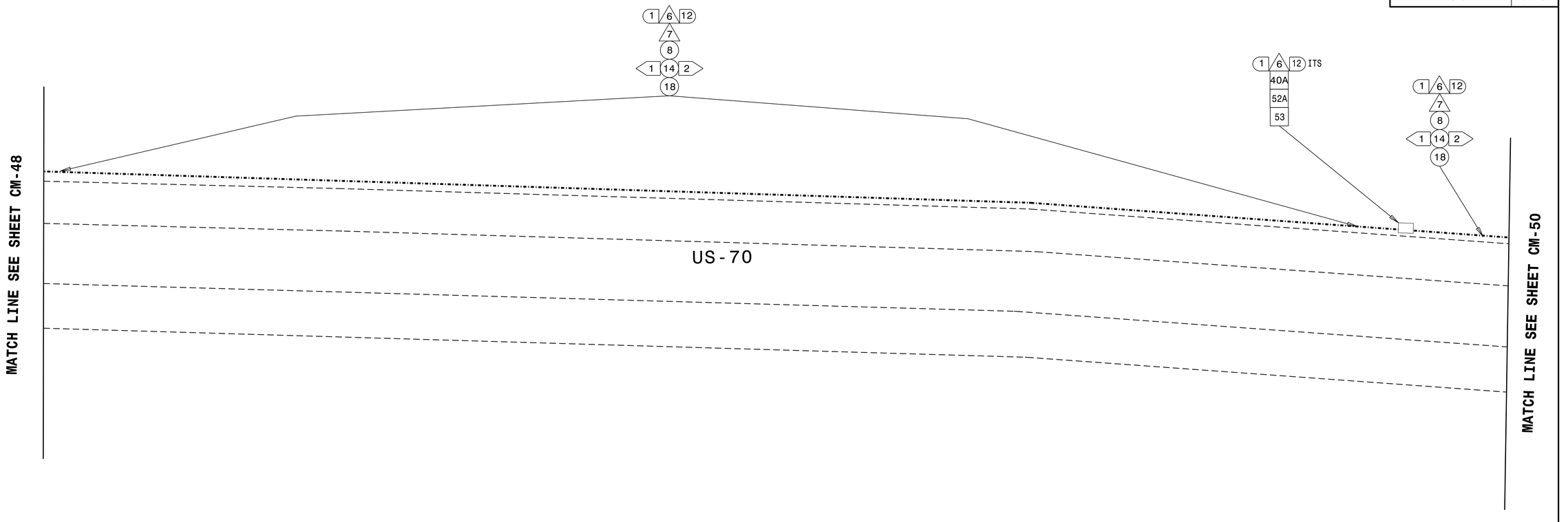


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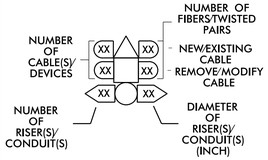
22B. MODIFY EXISTING HUB CABINET/BUILDING
33. INSTALL ETHERNET HUB SWITCH (PROVIDED BY OTHERS)
34A. INSTALL CABINET FOUNDATION
34B. INSTALL TECHNICIAN PAD
35A. INSTALL TYPE A DMS – WALK-IN ENCLOSURE
35B. INSTALL TYPE B DMS – FRONT ACCESS
36A. INSTALL CCTV CAMERA ASSEMBLY
36B. INSTALL MICROWAVE VEHICLE DETECTION SYSTEM (MVD) (BY OTHERS)
37. INSTALL TYPE III PEDESTAL POLE WITH FOUNDATION
38A. INSTALL CCTV METAL POLE WITH LOWERING DEVICE AND FOUNDATION
38B. INSTALL MVD METAL POLE AND FOUNDATION
39. INSTALL STANDARD JUNCTION BOX
40A. INSTALL OVERSIZED JUNCTION BOX
40B. INSTALL SPECIAL-SIZED JUNCTION BOX
40C. INSTALL CUSTOM AET JUNCTION BOX
40D. REMOVE EXISTING JUNCTION BOX
41. INSTALL NEW CONDUIT INTO 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
48. REMOVE EXISTING COMMUNICATIONS CABLE
49. RELOCATE EXISTING COMMUNICATIONS CABLE
50. INTERCEPT EXISTING CONDUIT RUN
51. INSTALL PEDESTAL SUPPORT FOR DMS
52A. INSTALL DELINEATOR MARKER
52B. INSTALL JUNCTION BOX MARKER
53. STORE 50 FEET OF FIBER OPTIC CABLE
54. INSTALL TRAFFIC BEARING JUNCTION BOX
55. STUB UP CONDUITS FOR POWER PROVIDER INSTALLED SERVICE TRANSFORMER PAD
56. STUB UP CONDUIT FOR POWER PROVIDER CONDUIT INTERCONNECT
57. MODIFY EXISTING ELECTRICAL SERVICE
58A. INSTALL NEW ELECTRICAL SERVICE (METER AND DISCONNECT)
58B. INSTALL NEW DISCONNECT
59. INSTALL NEW TRANSFORMER AND DISCONNECT (PEDESTAL MOUNTED)
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. INSTALL WRONG WAY DETECTION DEVICE (BY OTHERS)
64. INSTALL UPS IN CABINET




**Plans Prepared By:**

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*Charlotte NC, 28203*
*NC LIC NO. F-0165*

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

*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE
0 50
1" = 50'

| REVISIONS | INIT. | DATE |
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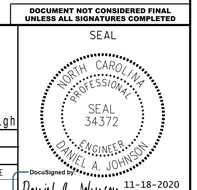
SEAL




DocuSigned by:
Daniel A. Johnson 11-18-2020
D02F2EC7DD9E46F... DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
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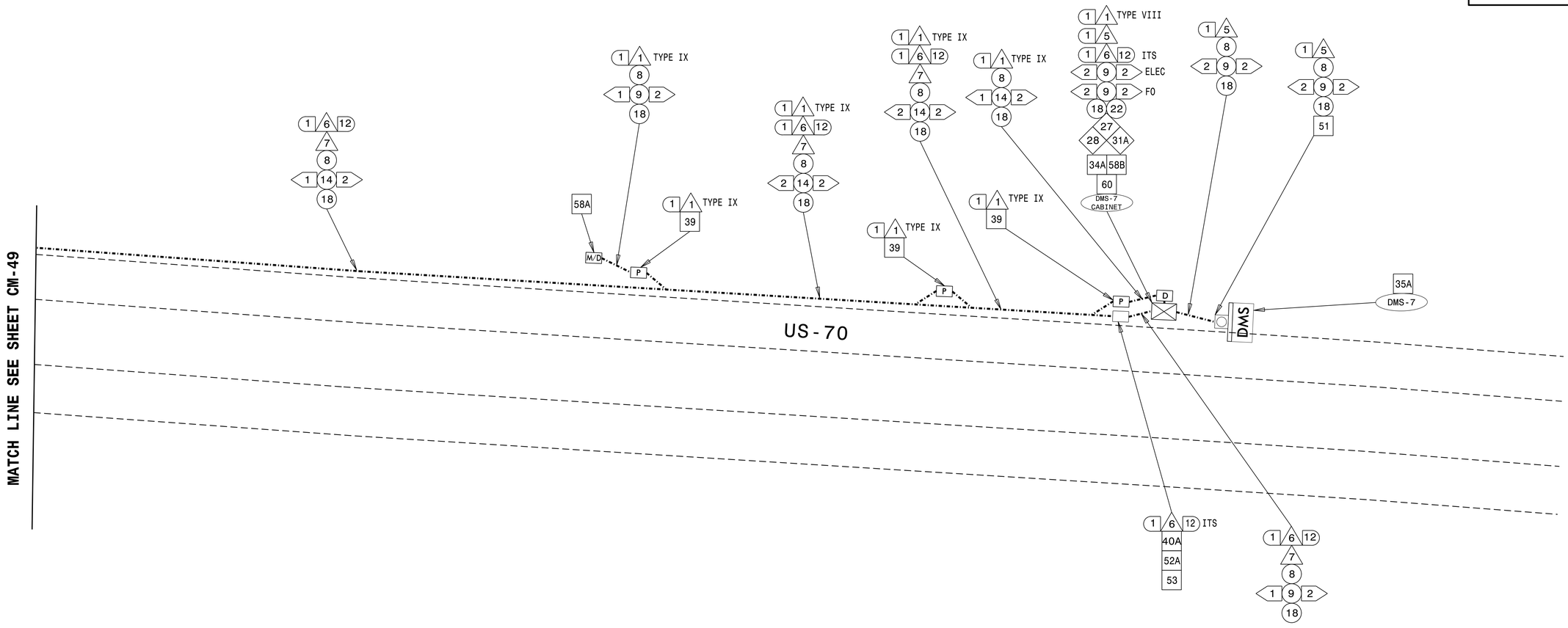
| R-2828 | CM-50 |




NOTES:
1. SEAL ALL CONDUIT ENDS WITH DUCT AND CONDUIT SEALER AT ALL JUNCTION BOX/CABINET ENTRANCES.
2. WHEN A JUNCTION BOX IS USED TO CHANGE INSTALLATION METHODS ONLY, THE JUNCTION BOX MAY BE ELIMINATED WITH THE APPROVAL OF THE ENGINEER.

| | | | | | |
|---|---|---|---|---|---|
| 1 INSTALL ELECTRICAL SERVICE WIRE (BY TYPE) | 16 BORE AND JACK CONDUIT | 31B INSTALL POLE MOUNTED CCTV CABINET | 39 INSTALL STANDARD JUNCTION BOX | 52A INSTALL DELINEATOR MARKER |
| 2 INSTALL MVD COMPOSITE CABLE | 17 INSTALL CABLE(S) IN EXISTING CONDUIT | 31C INSTALL POLE MOUNTED CCTV AND MVD CABINET | 40A INSTALL OVERSIZED JUNCTION BOX | 52B INSTALL JUNCTION BOX MARKER |
| 2A INSTALL SPECIAL MVD COMPOSITE CABLE | 18 INSTALL CABLE(S) IN NEW CONDUIT | 31D INSTALL POLE MOUNTED MVD CABINET | 40B INSTALL SPECIAL-SIZED JUNCTION BOX | 53 STORE 50 FEET OF FIBER OPTIC CABLE |
| 3 INSTALL ETHERNET CABLE | 19 INSTALL CABLE(S) IN EXISTING RISER | 31E INSTALL POLE MOUNTED MVD SLAVE CABINET | 40C INSTALL CUSTOM AET JUNCTION BOX | 54 INSTALL TRAFFIC BEARING JUNCTION BOX |
| 4 INSTALL SMFO CABLE | 20 INSTALL CABLE(S) IN NEW RISER | 22A INSTALL BASE MOUNTED HUB CABINET | 40D REMOVE EXISTING JUNCTION BOX | 55 STUB UP CONDUITS FOR POWER PROVIDER INSTALLED SERVICE TRANSFORMER PAD |
| 5 INSTALL DMS COMM AND POWER | 21 INSTALL CABLE(S) IN EXISTING CONDUIT STUB-OUTS | 22B MODIFY EXISTING HUB CABINET/BUILDING | 41 INSTALL NEW CONDUIT INTO EXISTING JUNCTION BOX | 56 STUB UP CONDUIT FOR POWER PROVIDER CONDUIT INTERCONNECT |
| 6 INSTALL FIBER OPTIC CABLE DROP | 22 INSTALL NEW CONDUIT INTO NEW CABINET BASE | 33 INSTALL ETHERNET HUB SWITCH (PROVIDED BY OTHERS) | 42 INSTALL WOOD POLE | 57 MODIFY EXISTING ELECTRICAL SERVICE |
| 7 INSTALL TRACER WIRE | 23 INSTALL NEW RISER INTO NEW CABINET BASE | 34A INSTALL CABINET FOUNDATION | 43 REMOVE EXISTING WOOD POLE | 58A INSTALL NEW ELECTRICAL SERVICE (METER AND DISCONNECT) |
| 8 TRENCH OR PLOW | 24 INSTALL NEW CONDUIT INTO NEW POLE MOUNTED CABINET | 34B INSTALL TECHNICIAN PAD | 44 INSTALL AERIAL GUY ASSEMBLY | 58B INSTALL NEW DISCONNECT |
| 9 INSTALL PVC CONDUIT | 25 INSTALL NEW RISER INTO NEW POLE MOUNTED CABINET | 35A INSTALL TYPE A DMS – WALK-IN ENCLOSURE | 45 INSTALL STANDARD GUY ASSEMBLY | 59 INSTALL NEW TRANSFORMER AND DISCONNECT (PEDESTAL MOUNTED) |
| 10 INSTALL RIGID, GALVANIZED STEEL CONDUIT | 26 MODIFY EXISTING INTERCONNECT CENTER /SPLICE ENCLOSURE | 35B INSTALL TYPE B DMS – FRONT ACCESS | 46 INSTALL SIDEWALK GUY ASSEMBLY | 60 BOND TRACER WIRE TO EQUIPMENT GROUND BUS |
| 11 INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD | 27 INSTALL FIBER OPTIC EDGE SWITCH (PROVIDED BY OTHERS) | 36A INSTALL CCTV CAMERA ASSEMBLY | 47 INSTALL MESSENGER CABLE | 61 DO NOT BOND TRACER WIRE TO EQUIPMENT GROUND BUS |
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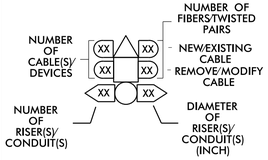
| 15 DIRECTIONAL DRILL CONDUIT | 31A INSTALL DMS CABINET | 38B INSTALL MVD METAL POLE AND FOUNDATION | 51 INSTALL PEDESTAL SUPPORT FOR DMS | |

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NC LIC NO. F-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

# Cable Routing Plans

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D. Johnson
PREPARED BY: D Burnett REVIEWED BY:

SCALE 0 50 1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

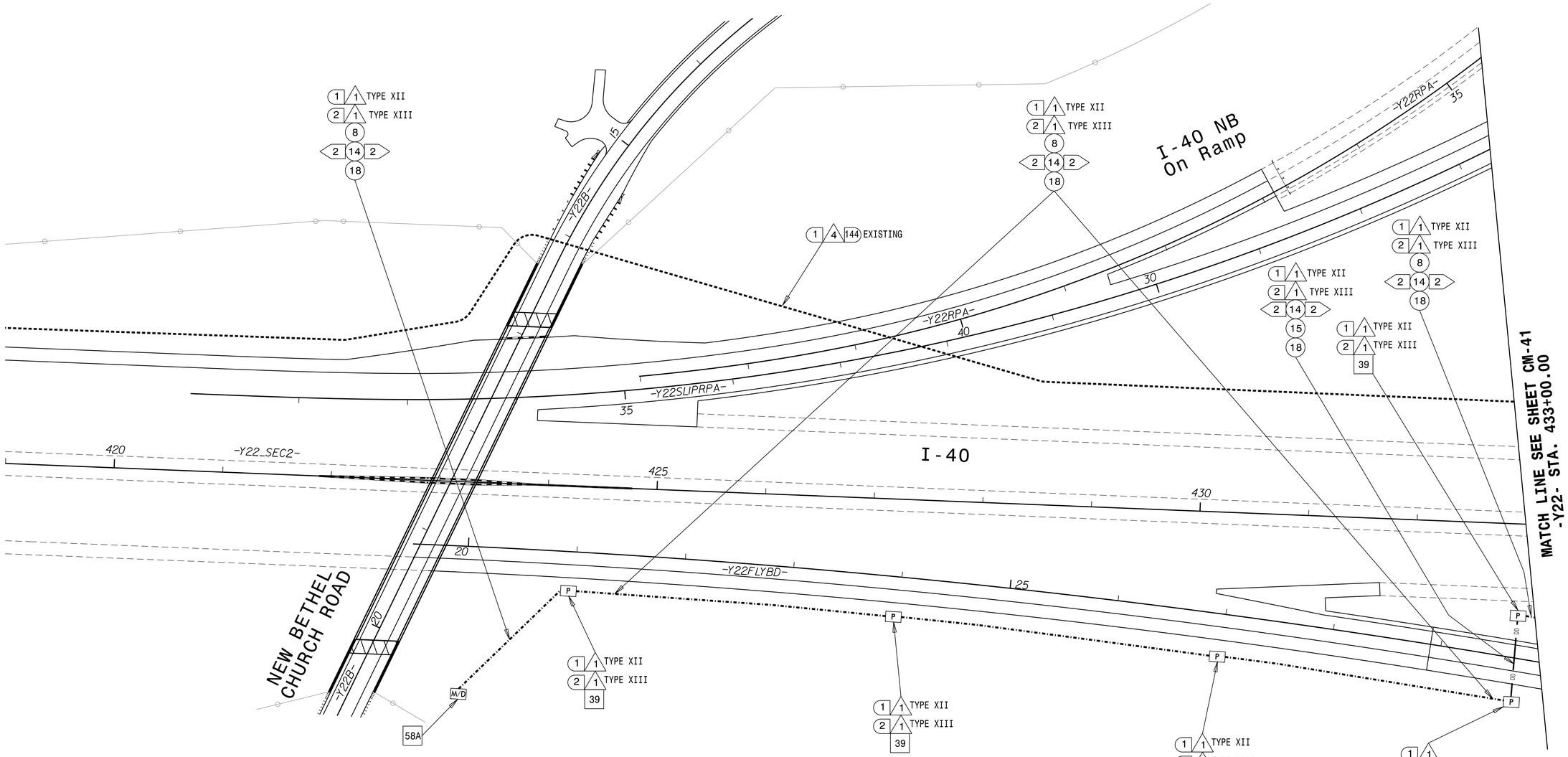
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 34372 DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2EC7DD9E49F... DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | CM-51 |




NOTES:
1. SEAL ALL CONDUIT ENDS WITH DUCT AND CONDUIT SEALER AT ALL JUNCTION BOX/CABINET ENTRANCES.
2. WHEN A JUNCTION BOX IS USED TO CHANGE INSTALLATION METHODS ONLY, THE JUNCTION BOX MAY BE ELIMINATED WITH THE APPROVAL OF THE ENGINEER.

CM-51

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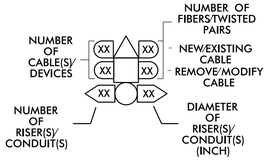
| 63 | INSTALL WRONG WAY DETECTION DEVICE (BY OTHERS) | | |
| 64 | INSTALL UPS IN CABINET | | |




TYPE XII
TYPE XIII

**Plans Prepared By:**

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*1001 Morehead Square Dr.*
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*Charlotte NC, 28203*
*NC LIC NO. F-0165*

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*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

# Cable Routing Plans

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D. Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE
0 50
1" = 50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by:
Daniel A. Johnson 11-18-2020
D02F2EC7DD0E49F DATE

CADD Filename:

DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
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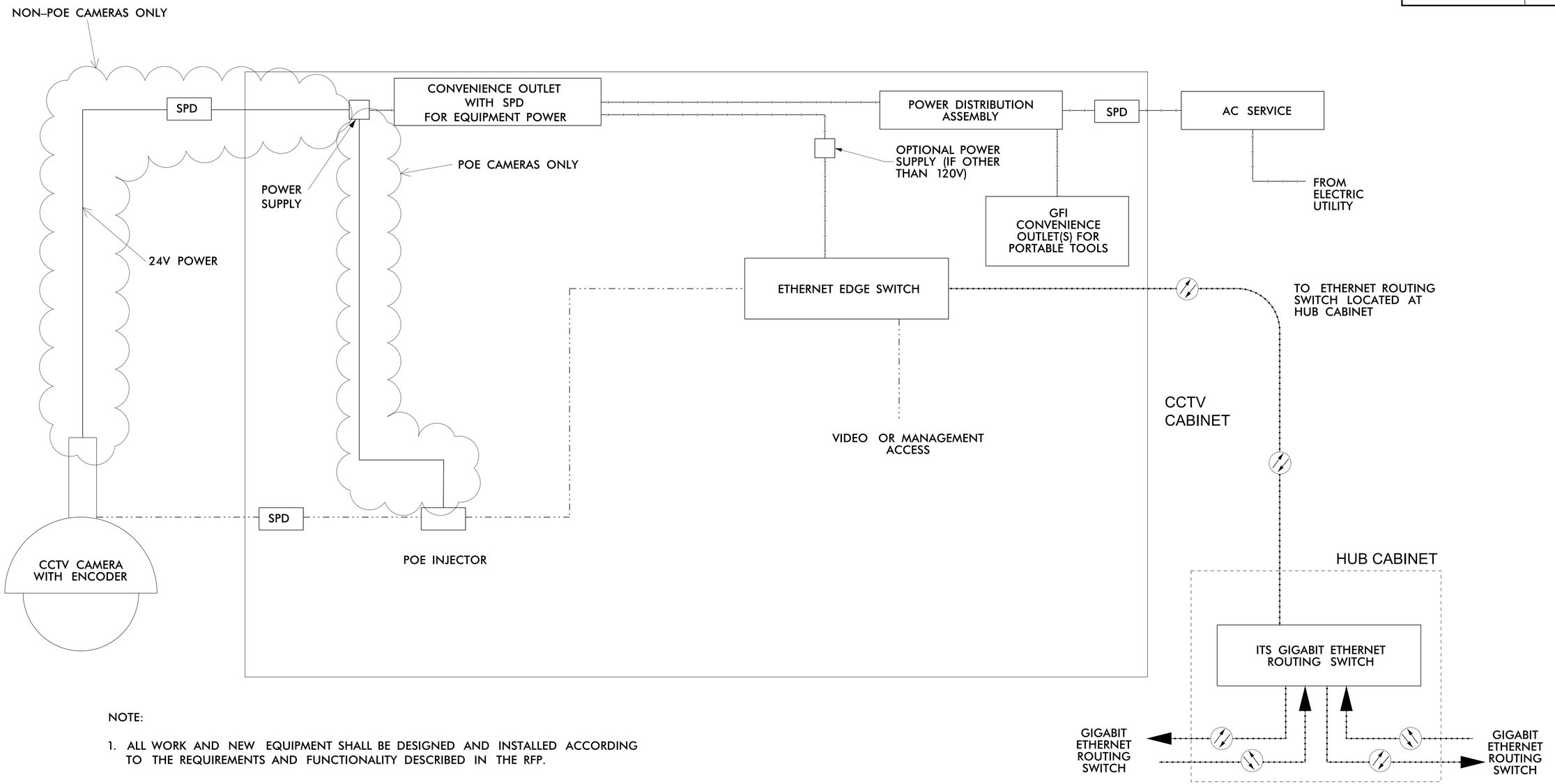
| R-2828 | SD-01 |




NOTE:

1. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.

LEGEND

- 100/1000 BASE TX ETHERNET
- 120 VAC POWER
- 1000 BASE FX ETHERNET (FIBER)
- RS–232/422/485
- EXISTING DEVICE
- EXISTING FIBER CABLE

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# Special Details
## CCTV Block Diagram
## Typical Detail (Revised V-1)

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

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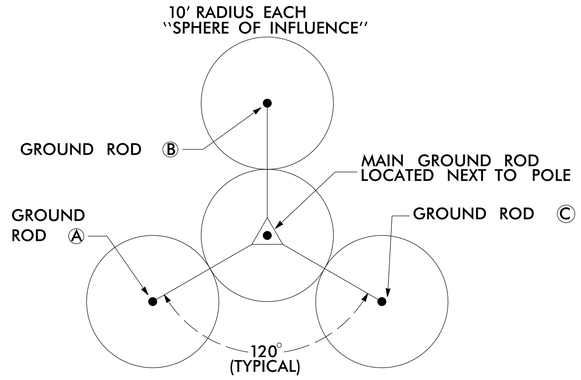
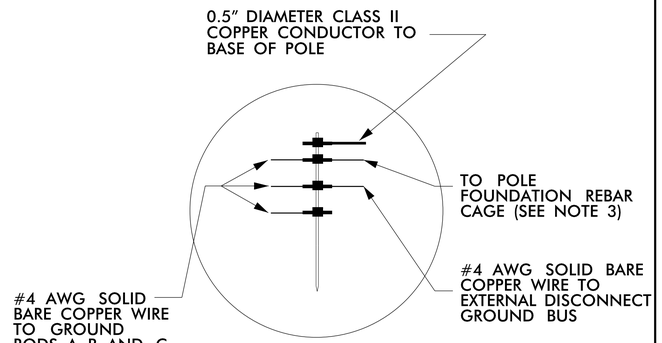
| R-2828 | SD-02 |




## GROUND ROD PLACEMENT DETAIL

(TYPICAL EACH POLE)

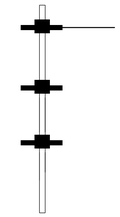



## INSET `A′




### ALTERNATE GROUNDING METHOD

IF SPACE IS NOT AVAILABLE TO DRIVE MULTIPLE RODS, DRIVE SECTIONAL GROUND RODS A MINIMUM OF 30′. SEE NOTE 6.



JOIN SECTIONAL GROUND RODS WITH IRREVERSIBLE COMPRESSION CONNECTORS

## NOTES

1. BOND 0.5″ DIAMETER, 28 STRAND (MINIMUM) CLASS II COPPER CONDUCTOR TO THE MAIN GROUND ROD WITH AN IRREVERSIBLE COMPRESSION CONNECTOR.
2. USE IRREVERSIBLE COMPRESSION CONNECTORS FOR ALL CONNECTIONS TO GROUND RODS.
3. BOND #4 AWG SOLID BARE COPPER WIRE TO REBAR CAGE AND THE MAIN GROUND ROD WITH AN IRREVERSIBLE COMPRESSION CONNECTOR.
4. ENSURE CAMERA HOUSING, CAMERA, AND PAN–TILT UNIT ARE BONDED TO POLE.
5. REMOVE BONDING JUMPER BETWEEN EQUIPMENT CABINET GROUND BUS AND NEUTRAL BUS.
6. THE CONTRACTOR MAY, UPON APPROVAL OF THE ENGINEER, INSTALL A 30 FOOT SECTIONAL GROUND ROD WHEN CONDITIONS WILL NOT ALLOW FOR THE INSTALLATION OF THE 3 – RADIAL GROUND RODS.
7. INSTALL MARKER TAPE DIRECTLY ABOVE ALL GROUNDING ELECTRODES AND CONDUCTORS AT A DEPTH OF 12″.
8. AIR TERMINAL LENGTH DEPENDS ON LENGTH OF LOWERING DEVICE ARM OR ALTERNATE CCTV MOUNTING ARM.
9. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.

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Prepared for the Offices of:
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Special Details
CCTV Pole-Grounding
Cabinet (Revised V-3)

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

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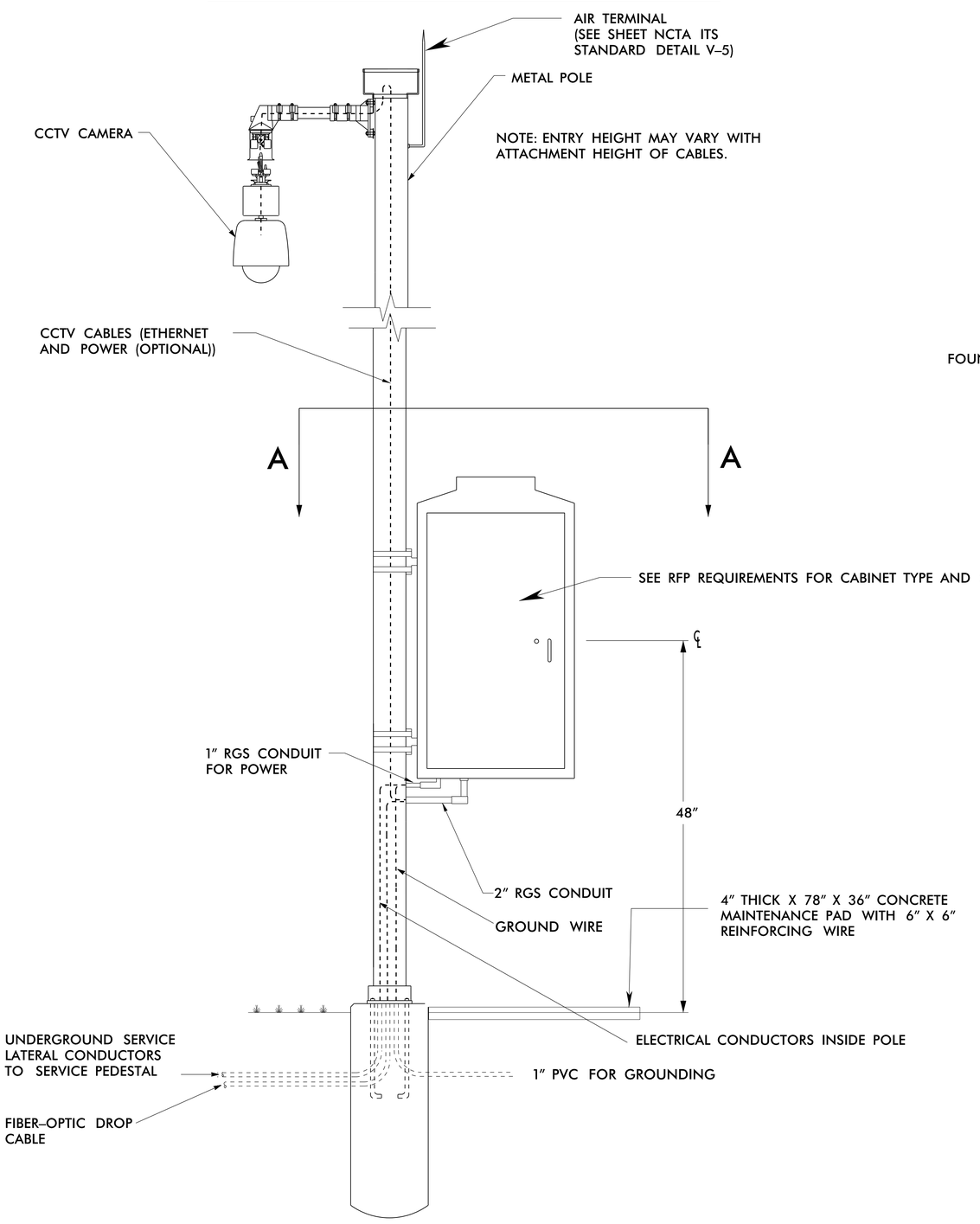
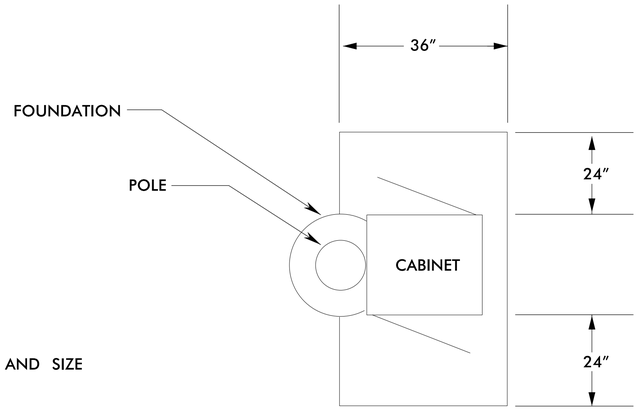
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | SD-03 |

# POLE–MOUNTED CCTV CABINET DETAIL




## SECTION A–A




## NOTES

1. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.
2. ENSURE CONDUITS STRAPS DO NOT OBSTRUCT ACCESS TO HANDHOLES.
3. DO NOT INSTALL MAINTENANCE PAD ON EXCESSIVE SLOPE (GREATER THAN 3:1).

**Plans Prepared By:**

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*Charlotte NC, 28203*
*NC LIC NO. F–0165*

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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

**Special Details**
**CCTV Pole-Mounted**
**Cabinet (Revised V-4)**

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

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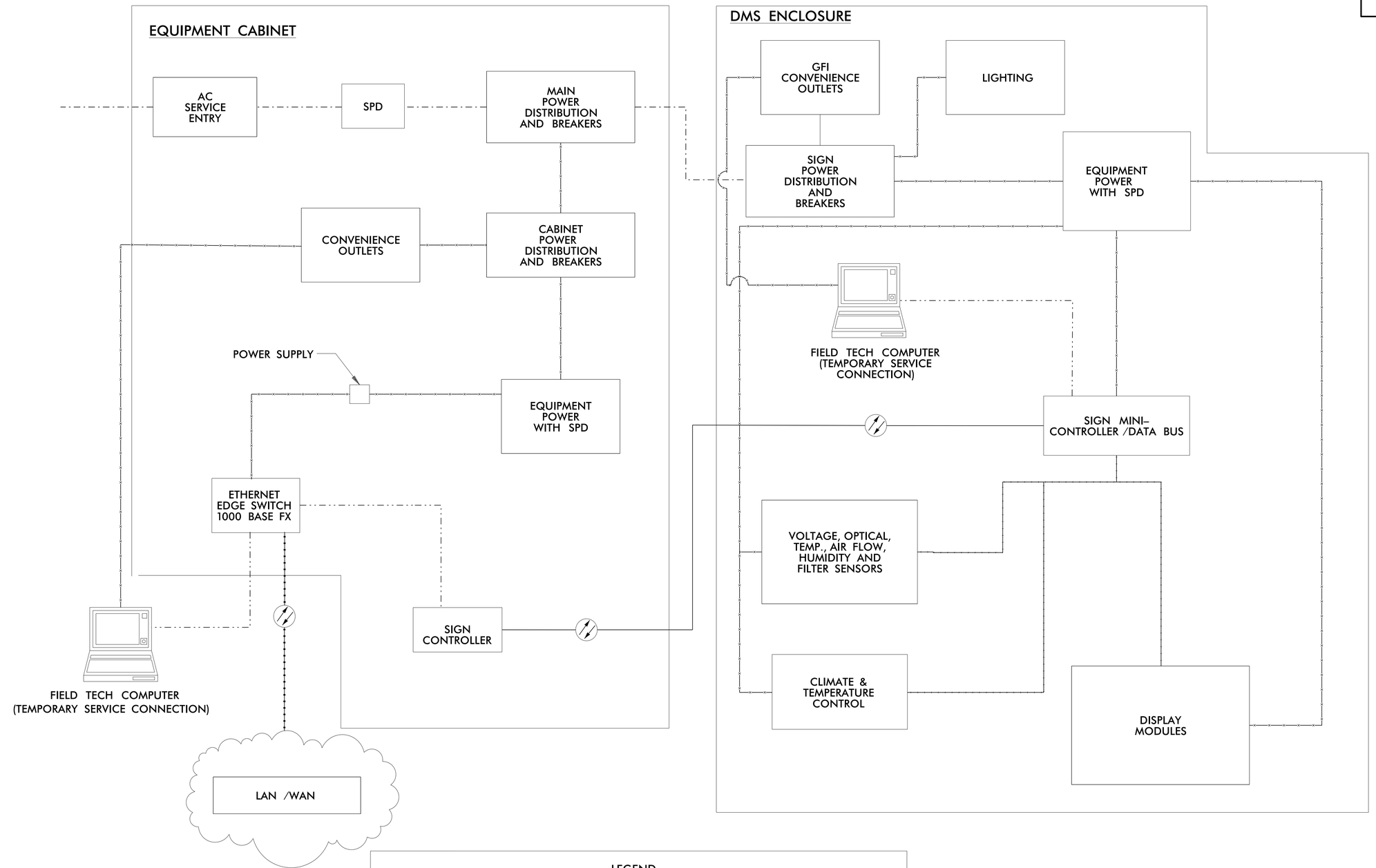
| R-2828 | SD-04 |




## GENERAL NOTES:

1. AC WIRED CABINET SHALL BE EQUIPPED WITH A SURGE PROTECTOR WITH AN ALARM FEATURE.
2. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN RFP.

### LEGEND

- 1000 BASE TX ETHERNET
- 100 BASE TX ETHERNET
- 240 VAC POWER
- 120 VAC POWER
- LOW VOLTAGE POWER
- 100 BASE FX ETHERNET (FIBER)
- 1000 BASE FX ETHERNET (FIBER)
- RS-232/422/485
- EXISTING DEVICE
- EXISTING FIBER CABLE

Plans Prepared By:

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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

Special Details
DMS Block Diagram
(Revised D-1)
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

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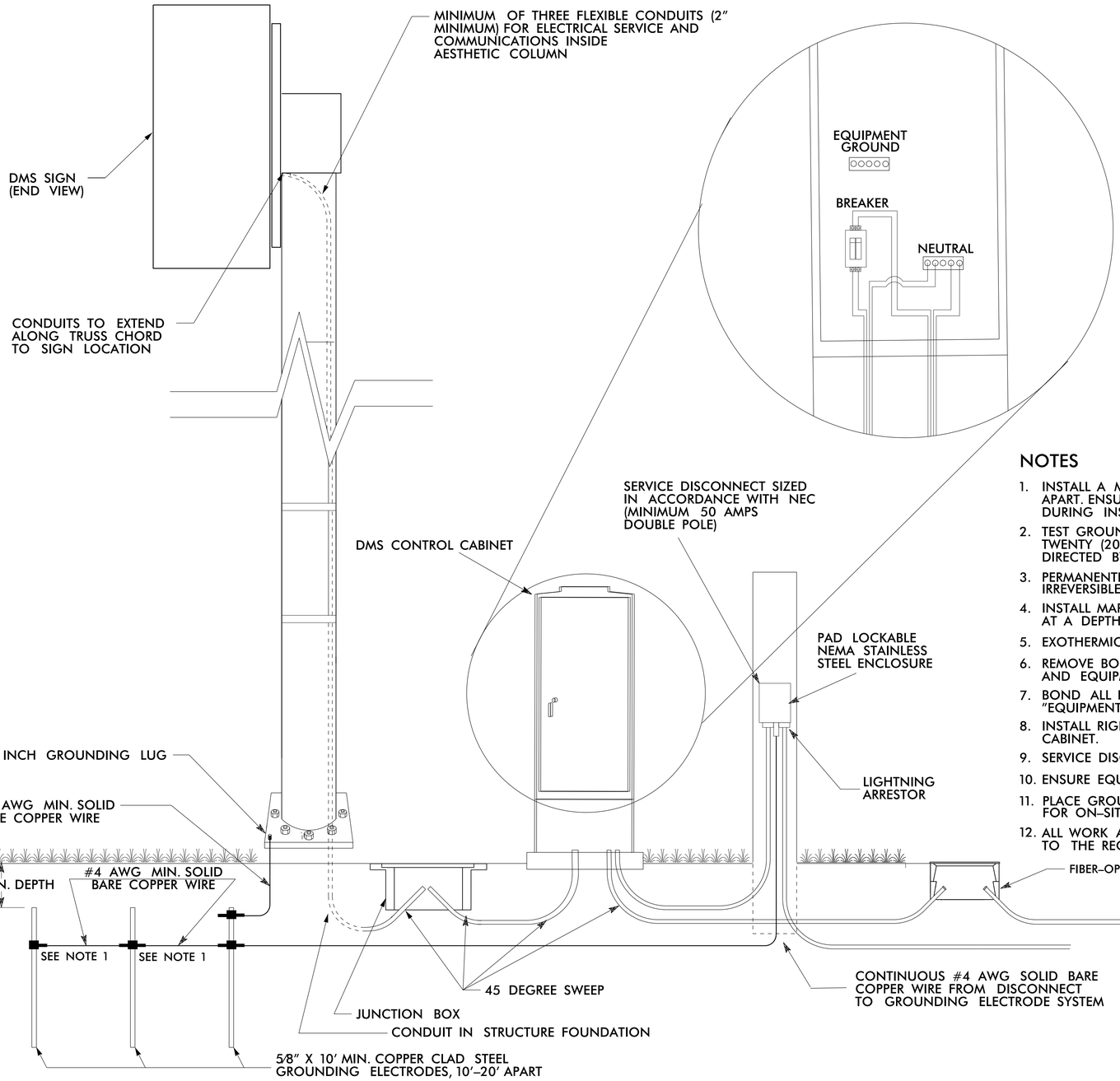


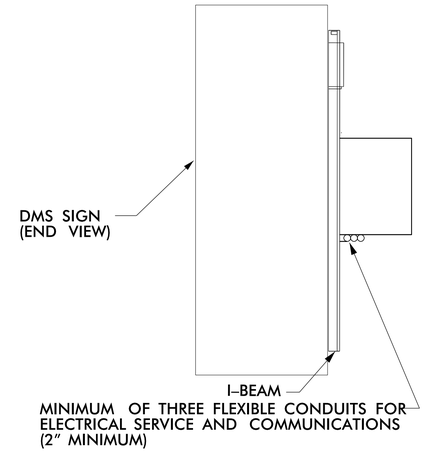


## NOTES

1. INSTALL A MINIMUM OF THREE (3) GROUND RODS SPACED A MINIMUM OF 10 FEET APART. ENSURE THAT EXISTING UNDERGROUND FACILITIES ARE NOT DAMAGED DURING INSTALLATION.
2. TEST GROUNDING SYSTEM USING AN APPROVED METHOD. SYSTEM SHALL MEASURE TWENTY (20) OHMS OR LESS. ADDITIONAL GROUND RODS SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER TO MEET THIS REQUIREMENT.
3. PERMANENTLY BOND GROUNDING CONDUCTOR TO GROUND RODS USING IRREVERSIBLE COMPRESSION GROUND CONNECTORS.
4. INSTALL MARKER TAPE DIRECTLY ABOVE ALL GROUNDING ELECTRODES AND CONDUCTORS AT A DEPTH OF 12''.
5. EXOTHERMICALLY WELD THE SERVICE POLE GROUND WIRE TO THE GROUND ROD SYSTEM.
6. REMOVE BONDING JUMPER IN EQUIPMENT CABINET IF INSTALLED BETWEEN AC NEUTRAL AND EQUIPMENT GROUND.
7. BOND ALL RIGID GALVANIZED STEEL CONDUITS ENTERING THE CABINET TO "EQUIPMENT GROUND".
8. INSTALL RIGID GALVANIZED STEEL CONDUIT (MINIMUM 2'') BETWEEN DISCONNECT AND CABINET.
9. SERVICE DISCONNECT NEUTRAL BUS BAR SHALL PROVIDE FOR 2 #4 AWG CONNECTIONS.
10. ENSURE EQUIPMENT GROUND IS ELECTRICALLY BONDED TO CABINET.
11. PLACE GROUND MOUNTED DMS CABINET DOWNSTREAM AND BEHIND SUPPORT COLUMN FOR ON–SITE INSTALLATIONS; OTHERWISE PLACE AS DIRECTED BY ENGINEER.
12. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.

**Plans Prepared By:**

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*Prepared for the Offices of:*
NORTH CAROLINA Turnpike Authority

# Special Details
# DMS Electrical Service and Grounding (Revised D-3)

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

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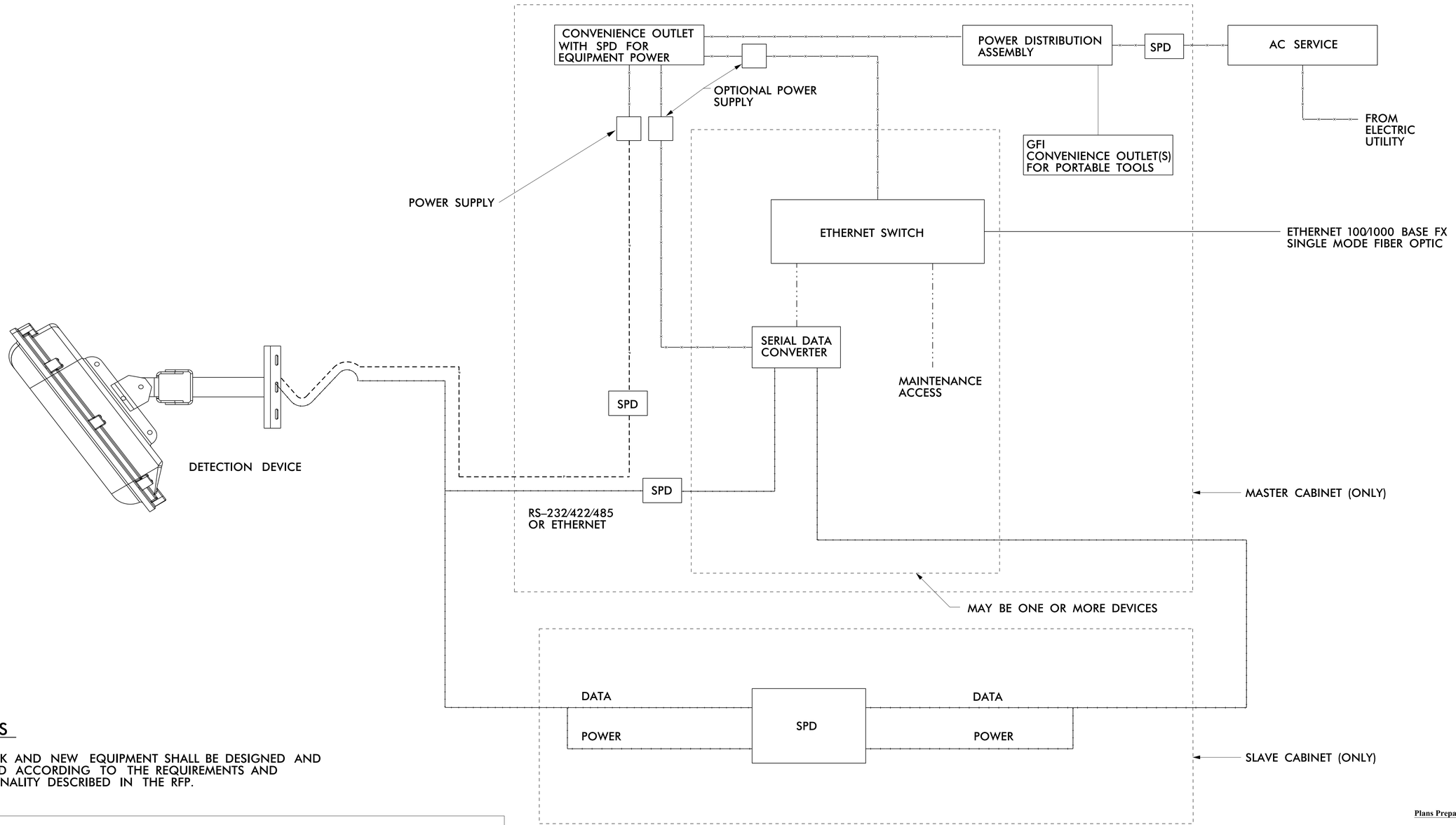


## NOTES

ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.

LEGEND

| | |
|---|---|
| 1000 BASE TX ETHERNET | 100 BASE FX ETHERNET (FIBER) |
| 100 BASE TX ETHERNET | 1000 BASE FX ETHERNET (FIBER) |
| ANALOG VIDEO | RS–232/422/485 |
| 120 VAC POWER | EXISTING DEVICE |
| LOW VOLTAGE POWER | EXISTING FIBER CABLE |

**Plans Prepared By:**

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*NC LIC NO. F-0165*

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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

# Special Details
# Microwave Detection Block Diagram (Revised M-1)

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson — D0F3E7C7D0ME45F

11-18-2020 DATE

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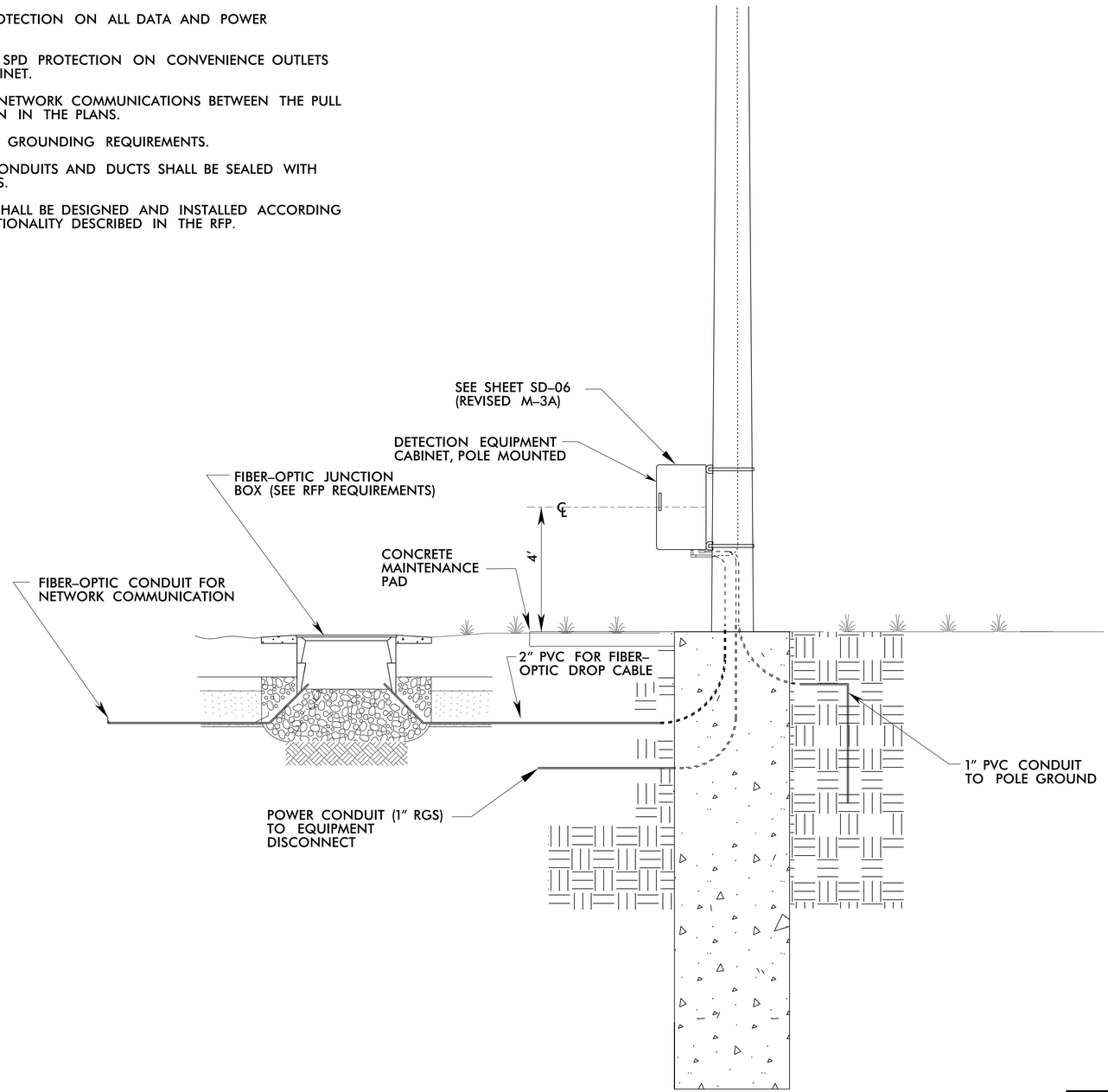
| R-2828 | SD-07 |

## NOTES:

1. CONTRACTOR SHALL TERMINATE FIBER–OPTIC CABLES IN CABINET WITH INTERCONNECT CENTER AS DESCRIBED IN THE RFP.
2. FURNISH AND INSTALL THE SPD PROTECTION ON ALL DATA AND POWER CABLING INTO CABINET.
3. FURNISH AND INSTALL SECONDARY SPD PROTECTION ON CONVENIENCE OUTLETS FOR EQUIPMENT HARDWARE IN CABINET.
4. SIZE AND TYPE OF CONDUITS FOR NETWORK COMMUNICATIONS BETWEEN THE PULL BOX AND CABINET SHALL BE SHOWN IN THE PLANS.
5. SEE SHEET SD–08 (REVISED M–4) FOR GROUNDING REQUIREMENTS.
6. ALL NETWORK COMMUNICATIONS CONDUITS AND DUCTS SHALL BE SEALED WITH APPROVED WATERPROOF DUCT SEALS.
7. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.

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*NC LIC NO: F–0165*

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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

# Special Details
# Microwave Detection Elevation View (Revised M-2)

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

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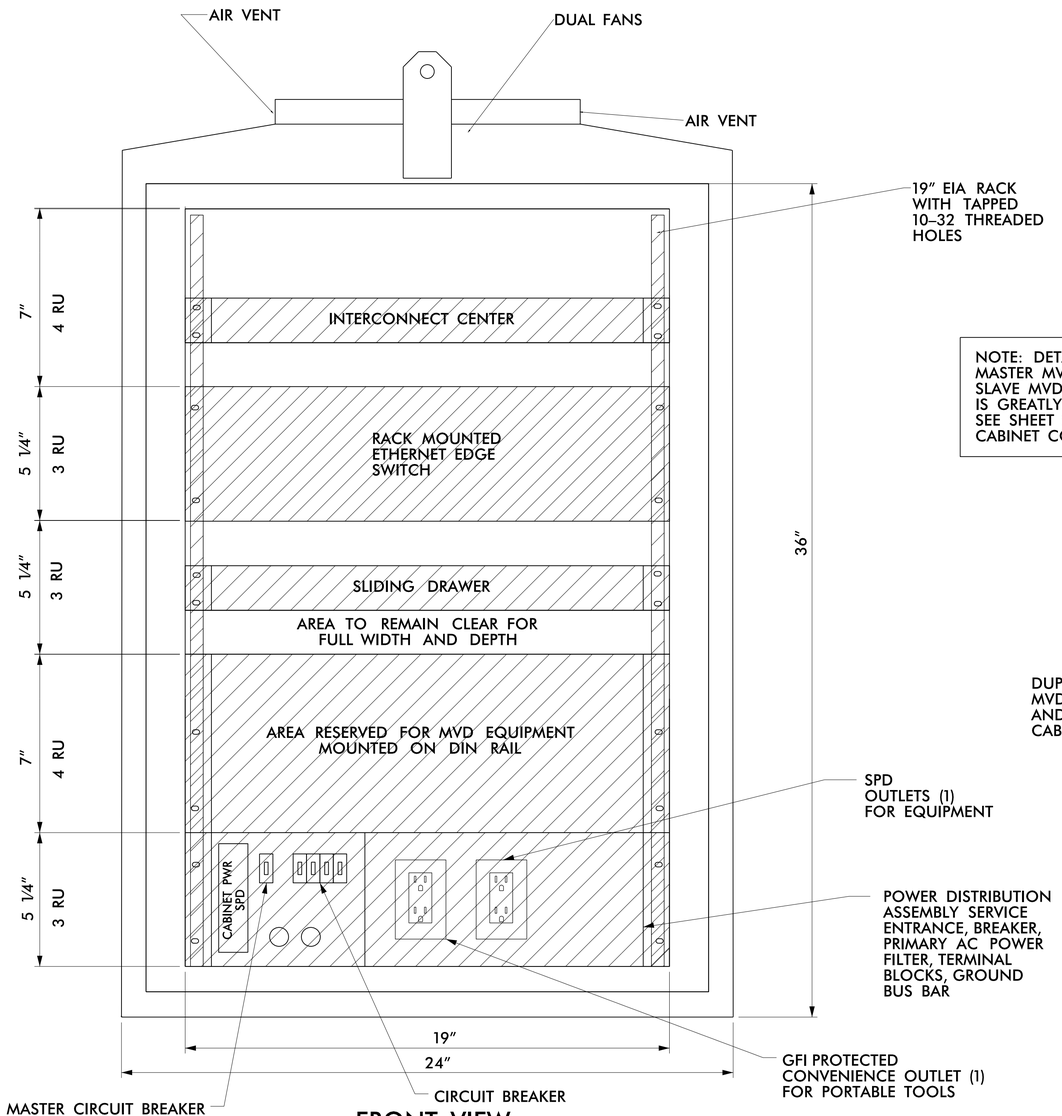
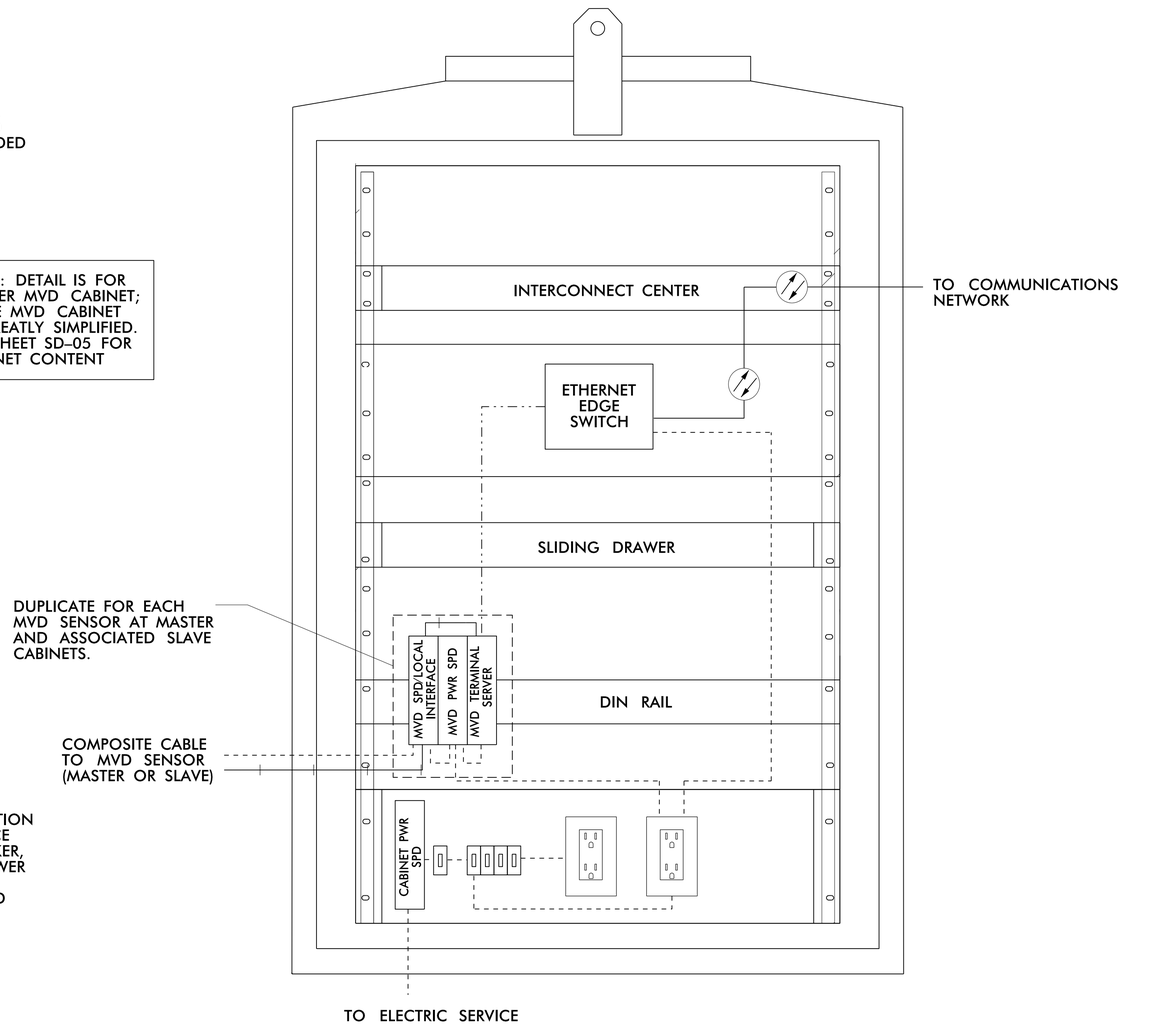



FRONT VIEW

NOTE: DETAIL IS FOR MASTER MVD CABINET; SLAVE MVD CABINET IS GREATLY SIMPLIFIED. SEE SHEET SD–05 FOR CABINET CONTENT




CABINET WIRING VIEW

## NOTES

1. ALL DIMENSIONS AND SCALE ARE APPROXIMATE.
2. ALL EQUIPMENT RACKS SHALL HAVE A MINIMUM OF ONE RACK UNIT SPACE IN BETWEEN THEM FOR VENTILATION.
3. SEE RFP REQUIREMENTS FOR CABINET SIZE AND TYPE.
4. CONDUIT ENTRANCES ARE IN BOTTOM OF CABINET.
5. MINIMUM NUMBER OF OUTLETS IS TWO, (2) SPD AND (1) GFI PROTECTED.
6. SPD SHALL FULLY PROTECT ALL DATA COMMUNICATIONS BETWEEN DETECTOR AND CABINET.
7. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.

CONNECTION LEGEND

- 1000 BASE FX ETHERNET (FIBER)
- 100/1000 BASE TX ETHERNET
- ELECTRICAL POWER
- RS–232/422/485

Plans Prepared By:
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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

Special Details
Microwave Detection Cabinet Layout (Revised M-3A)
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
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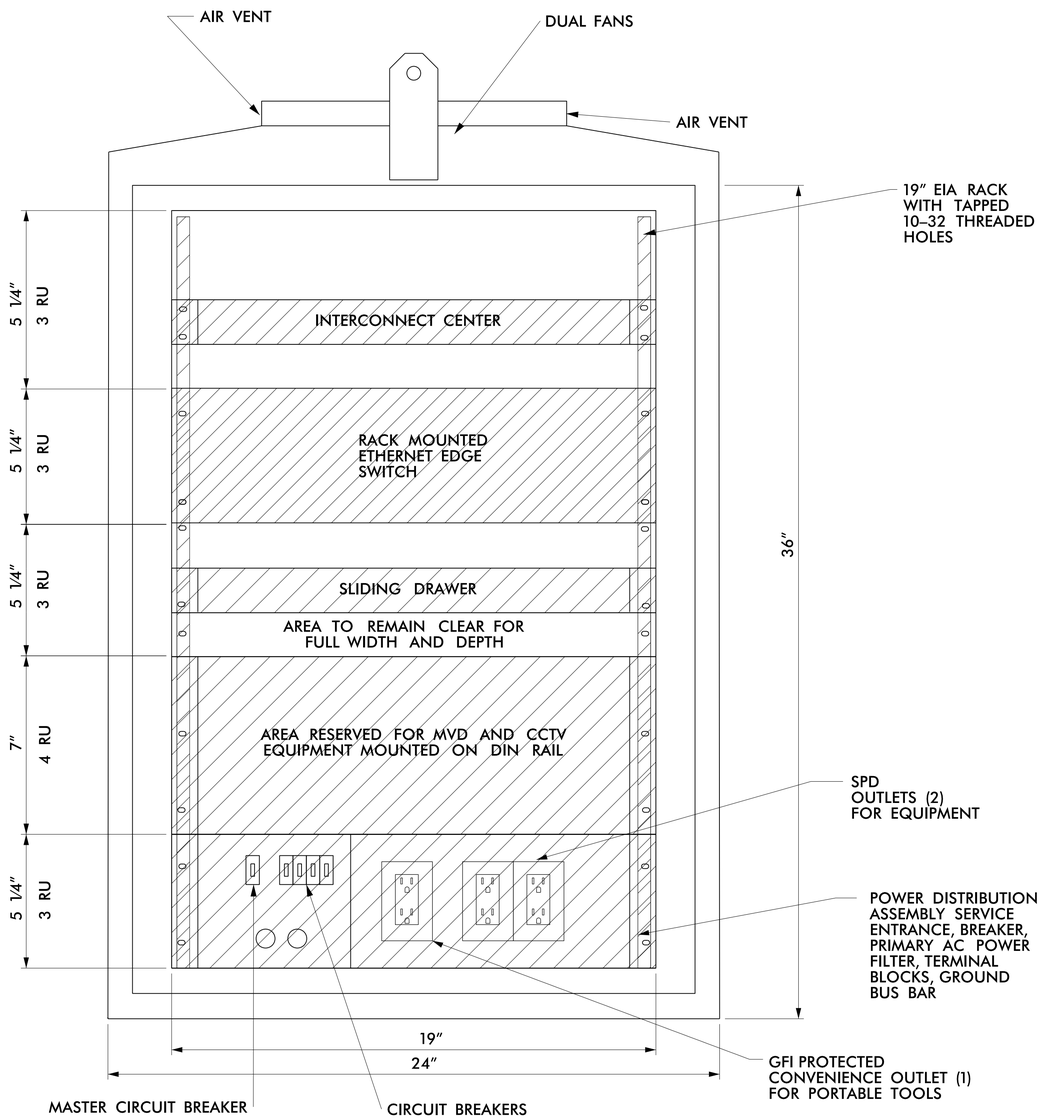
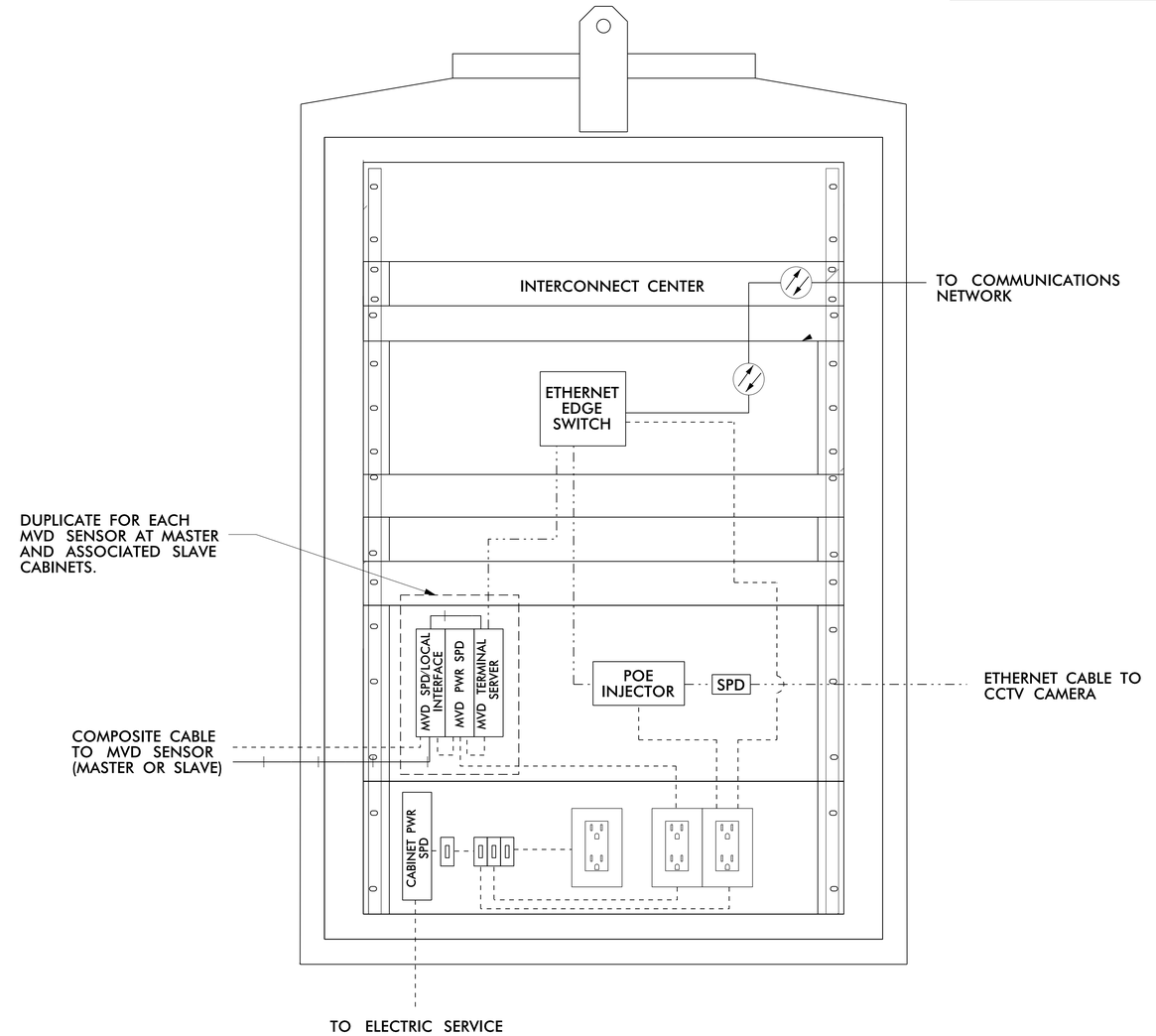



## FRONT VIEW




## CABINET WIRING VIEW

## NOTES

1. ALL DIMENSIONS AND SCALE ARE APPROXIMATE.
2. ALL EQUIPMENT RACKS SHALL HAVE A MINIMUM OF ONE RACK UNIT SPACE IN BETWEEN THEM FOR VENTILATION.
3. SEE RFP REQUIREMENTS FOR CABINET SIZE AND TYPE.
4. CONDUIT ENTRANCES ARE IN BOTTOM OF CABINET.
5. MINIMUM NUMBER OF OUTLETS IS THREE, (2) SPD AND (1) GFI PROTECTED.
6. SPD SHALL FULLY PROTECT ALL DATA COMMUNICATIONS BETWEEN DETECTOR AND CABINET.
7. THERE SHALL BE FRONT AND REAR DOORS. BOTH DOORS SHALL HAVE THE HINGE SIDE NEXT TO THE POLE WHEN POLE MOUNTED.
8. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.

CONNECTION LEGEND

- 1000 BASE FX ETHERNET (FIBER)
- 100/1000 BASE TX ETHERNET
- ELECTRICAL POWER
- RS–232/422/485

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NC LIC NO. F-0165

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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

Special Details
Microwave Detection Cabinet
Layout with CCTV (Revised M-3B)

Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

PLAN DATE: October 2020 REVIEWED BY: D Johnson
PREPARED BY: D Burnett REVIEWED BY:

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

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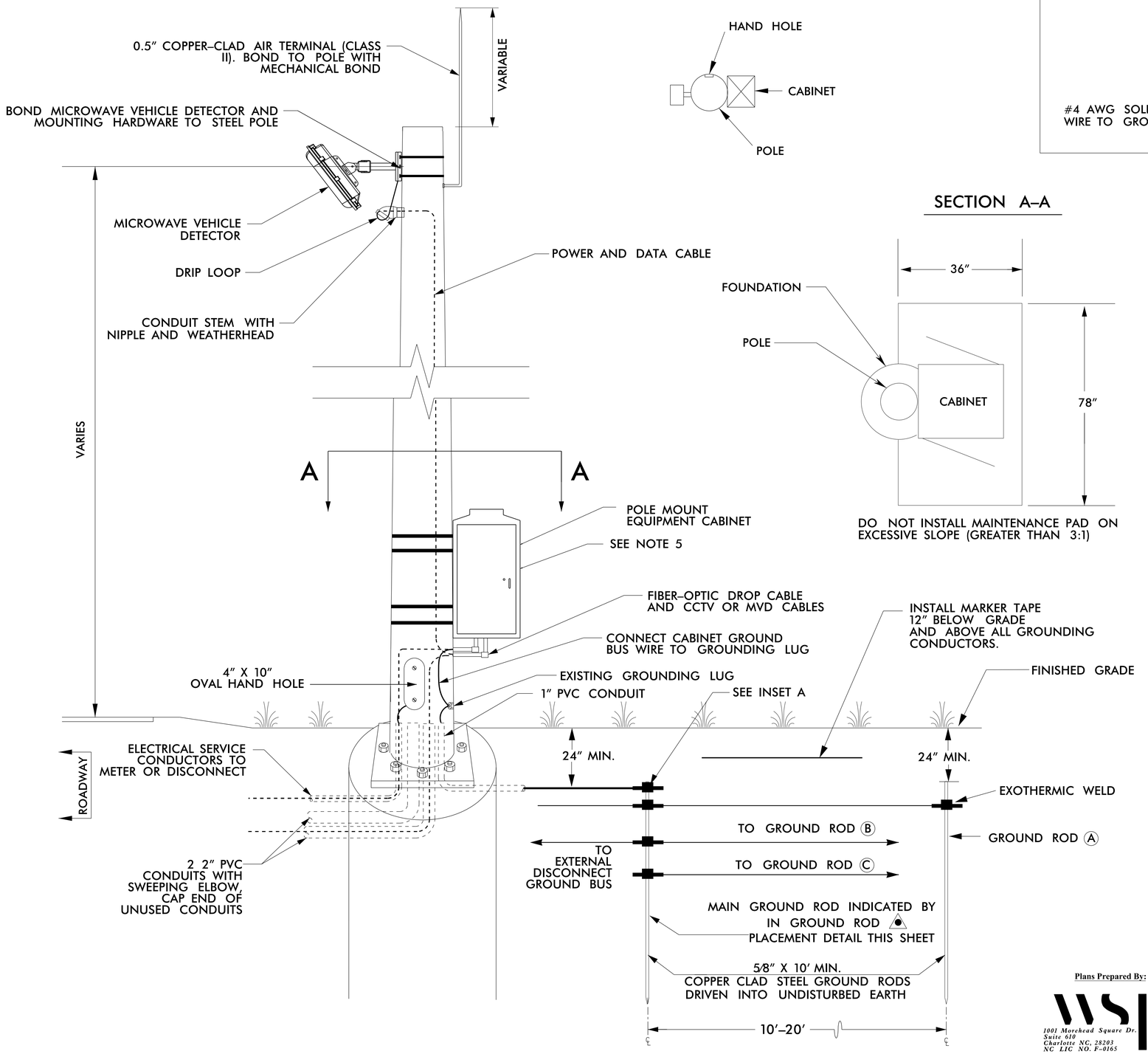


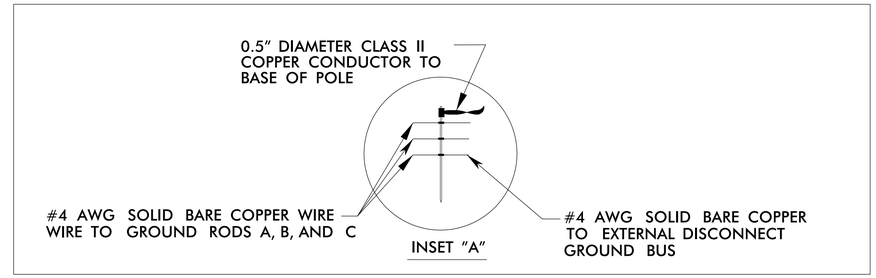

ORIENTATION OF DEVICES ON POLE

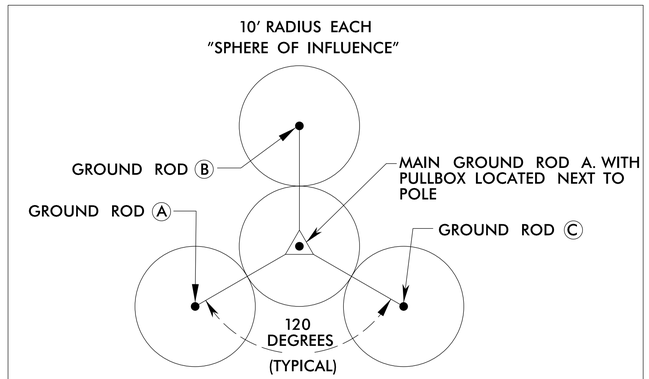



SECTION A–A




DO NOT INSTALL MAINTENANCE PAD ON EXCESSIVE SLOPE (GREATER THAN 3:1)




GROUND ROD PLACEMENT DETAIL
(TYPICAL EACH POLE)

## GROUNDING NOTES

1. BOND 0.5" DIAMETER, 28 STRAND (MINIMUM) CLASS II COPPER CONDUCTOR TO THE MAIN GROUND ROD BY AN EXOTHERMIC WELD METHOD.
2. PERMANENTLY BOND GROUNDING CONDUCTOR TO GROUND RODS USING IRREVERSIBLE COMPRESSION GOUND CONNECTORS.
3. BOND #4 AWG SOLID BARE COPPER WIRE TO THE REBAR CAGE AND THE MAIN GROUND ROD.
4. ENSURE MICROWAVE VEHICLE DETECTOR UNIT IS BONDED TO POLE.
5. REMOVE BONDING JUMPER BETWEEN EQUIPMENT CABINET GROUND BUS AND NEUTRAL BUS.
6. THE CONTRACTOR MAY, UPON APPROVAL OF THE ENGINEER, INSTALL A 30–FOOT SECTIONAL GROUND ROD WHEN CONDITIONS WILL NOT ALLOW FOR THE INSTALLATION OF THE 3 – RADIAL GROUND RODS.
7. INSTALL MARKER TAPE DIRECTLY ABOVE ALL GROUNDING ELECTRODES AND CONDUCTORS AT A DEPTH OF 12".
8. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.

Plans Prepared By:
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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

Special Details
Microwave Detection
Grounding (Revised M-4)

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

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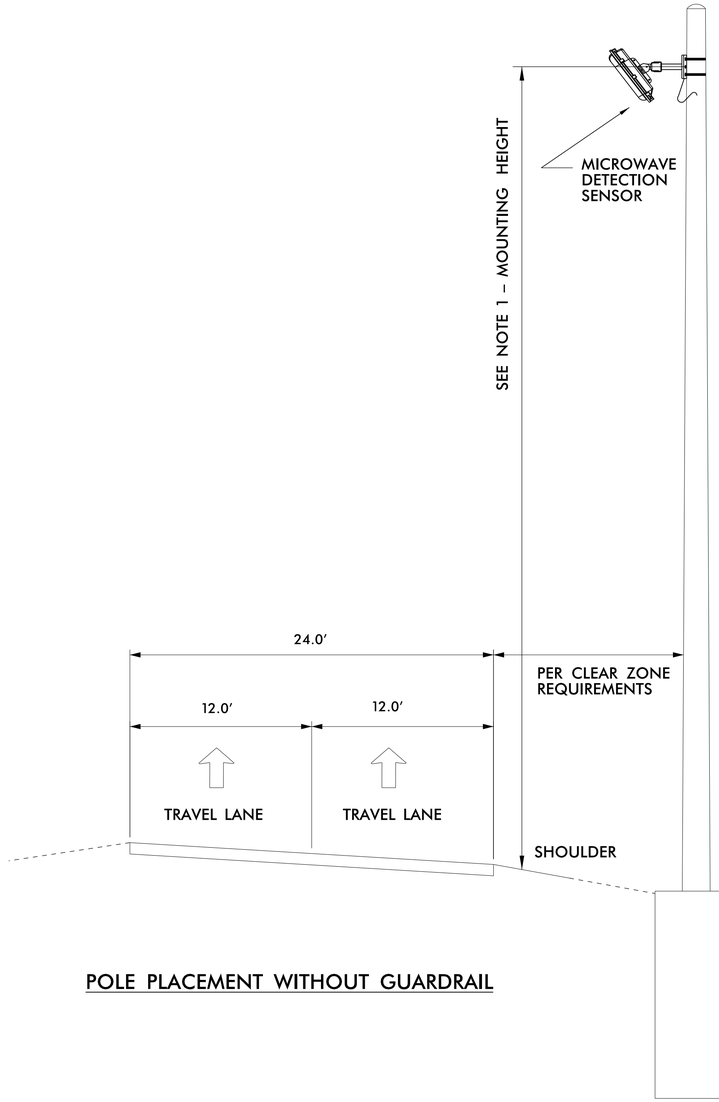
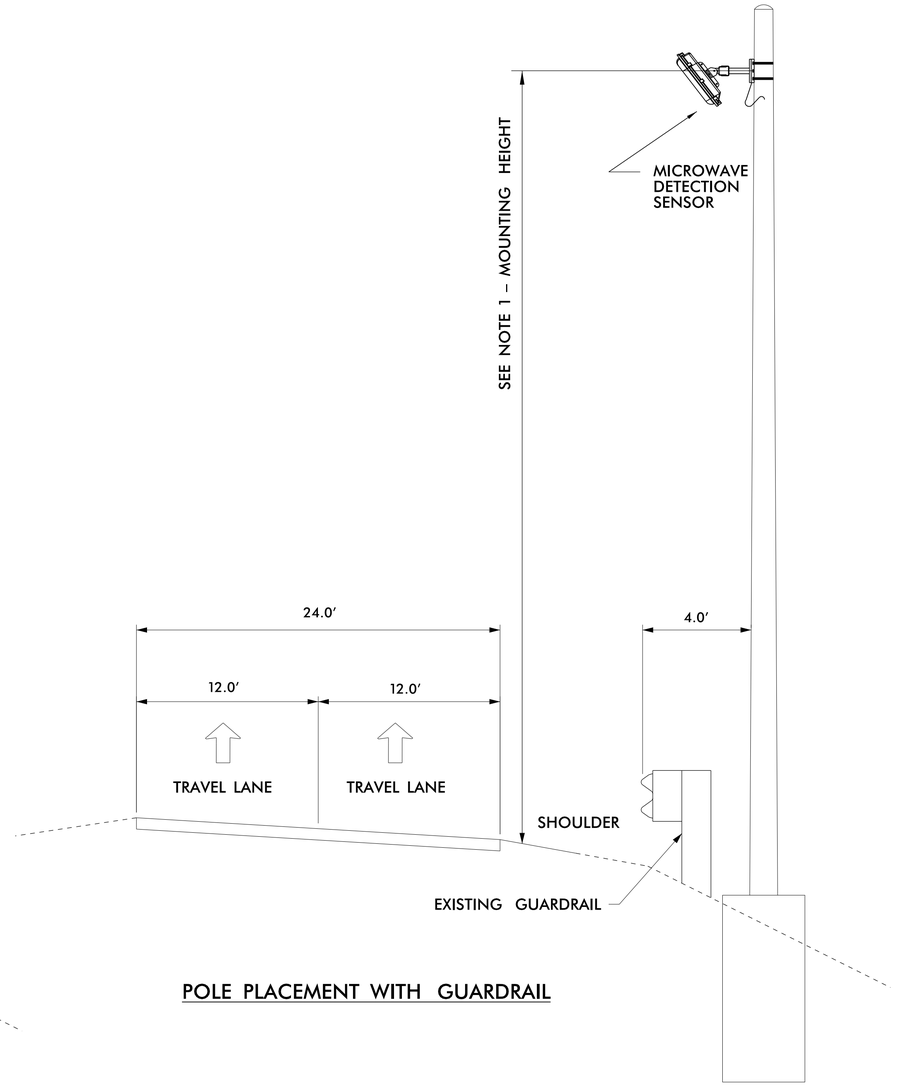
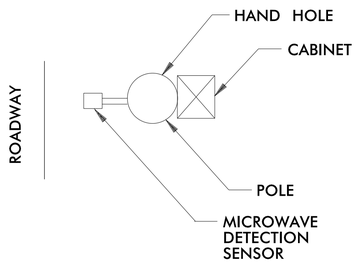



POLE PLACEMENT WITHOUT GUARDRAIL




POLE PLACEMENT WITH GUARDRAIL




TOP VIEW OF DEVICES ON POLE

## NOTE:

1. LOCATE DETECTOR MOUNTING HEIGHT PER THE MANUFACTURER'S MOUNTING CHART FOR HORIZONTAL SETBACK AND NUMBER OF LANES TO BE DETECTED.
2. ALIGN SENSOR MOUNTING ANGLE PER MANUFACTURER'S INSTALLATION GUIDE WITH RESPECT TO HEIGHT, HORIZONTAL SETBACK AND NUMBER OF LANES.
3. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE PROPOSED SUPPORT, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA, TO THE ENGINEER FOR REVIEW AND APPROVAL.
4. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.

Plans Prepared By:
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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

# Special Details
# Microwave Detection Pole Placement (Revised M-5A)

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
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| | | |

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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSEN

DocuSigned by: Daniel A. Johnsen 11-18-2020
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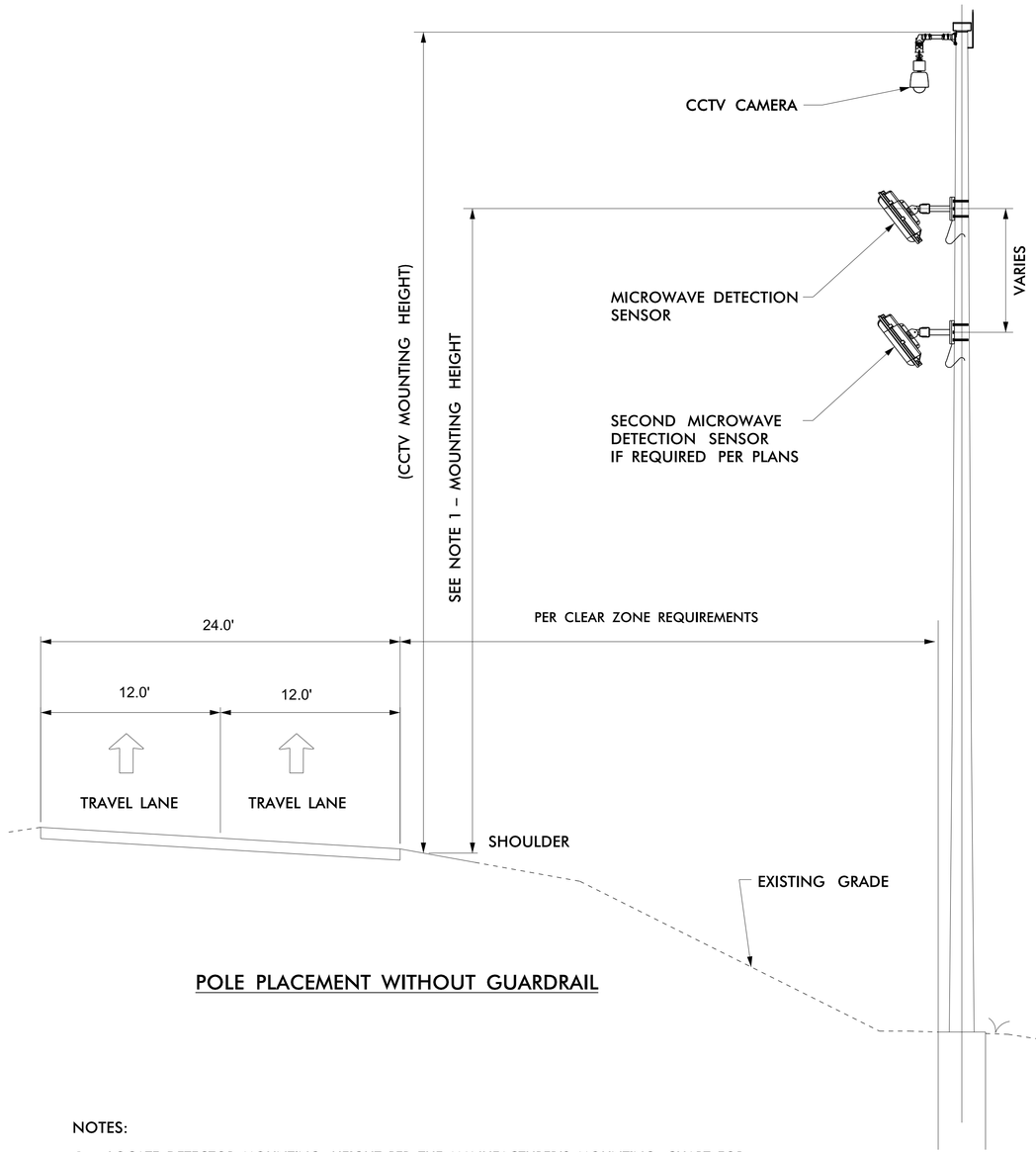
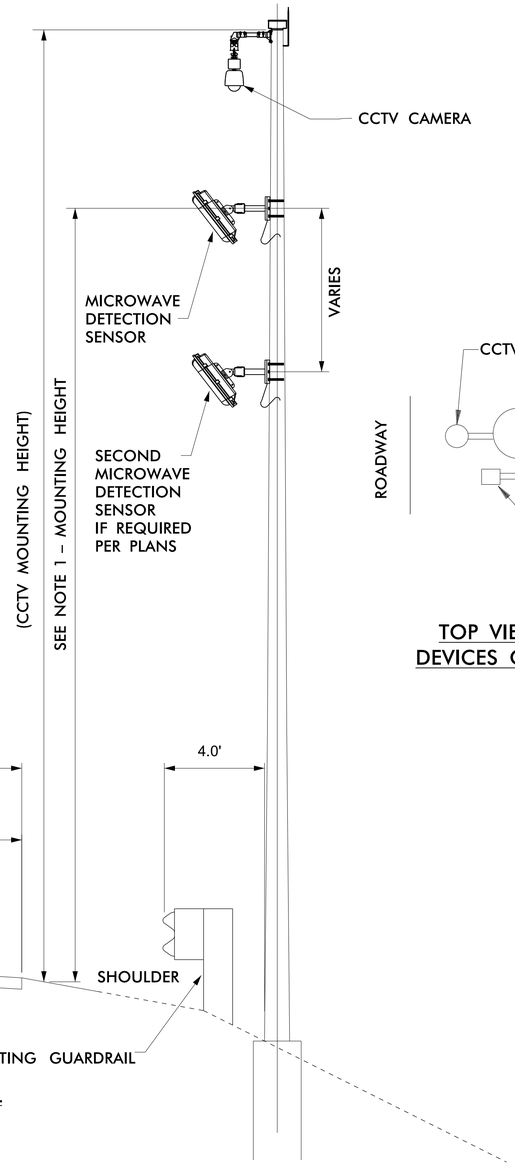
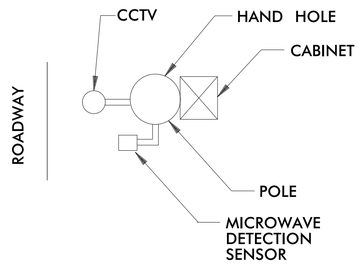



## POLE PLACEMENT WITHOUT GUARDRAIL




## POLE PLACEMENT WITH GUARDRAIL




## TOP VIEW OF DEVICES ON POLE

NOTES:

1. LOCATE DETECTOR MOUNTING HEIGHT PER THE MANUFACTURER'S MOUNTING CHART FOR HORIZONTAL SETBACK AND NUMBER OF LANES TO BE DETECTED.
2. ALIGN SENSOR MOUNTING ANGLE PER MANUFACTURER'S INSTALLATION GUIDE WITH RESPECT TO HEIGHT, HORIZONTAL SETBACK AND NUMBER OF LANES.
3. MOUNT DETECTOR ON SIDE OF POLE, 90 DEGREES TO CAMERA ARM SO THE DETECTOR DOESN'T INTERFERE WITH CAMERA LOWERING DEVICE.
4. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.

Plans Prepared By:
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NC LIC NO. F-0165

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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

Special Details
Microwave Detection Pole Placement with CCTV Equipment (Revised M-5B)
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
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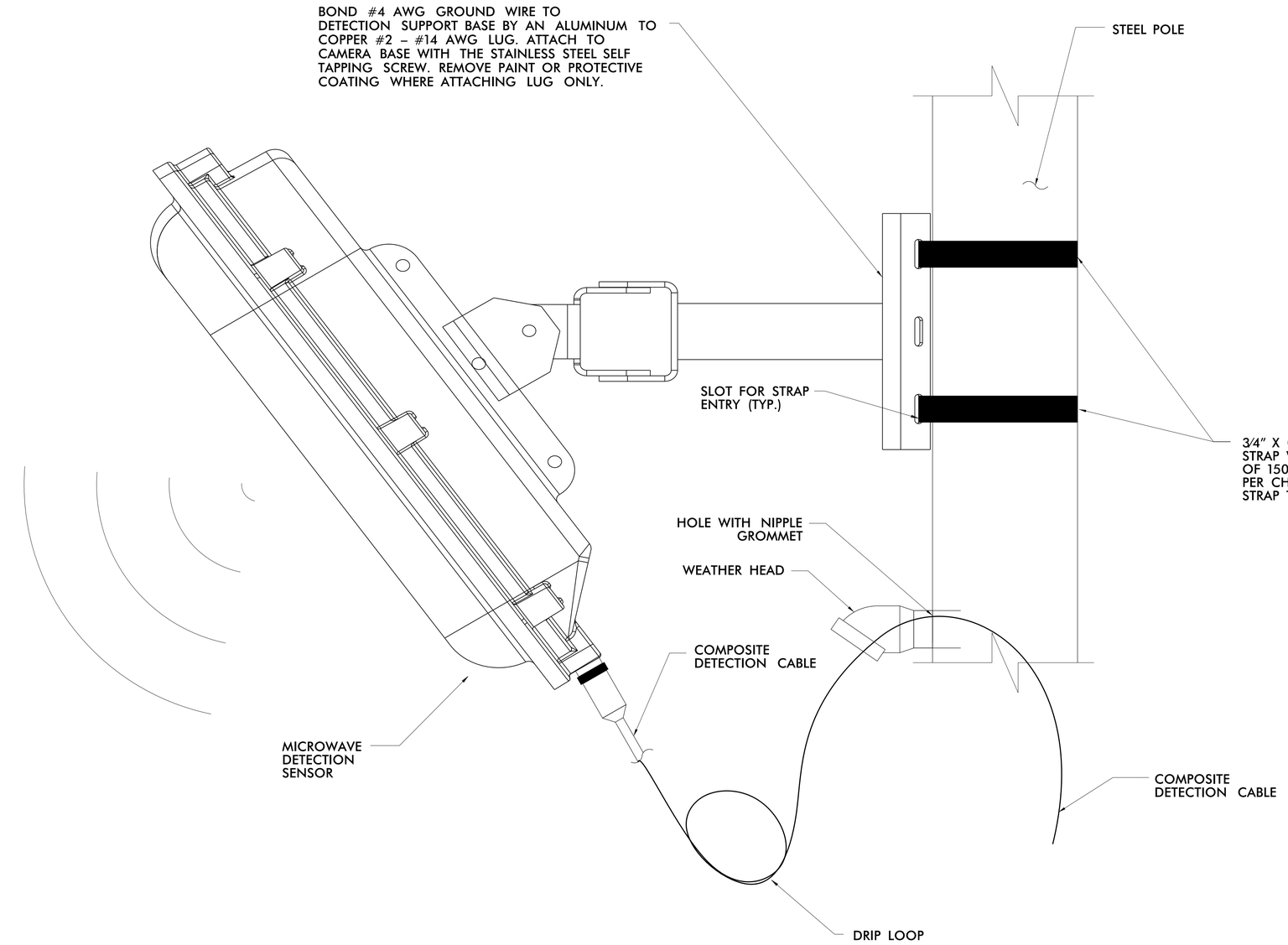
| R-2828 | SD-13 |




MICROWAVE DETECTION SENSOR ELEVATION VIEW

## NOTES:

1. NO FIELD WELDING SHALL BE PERMITTED.
2. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE PROPOSED SUPPORT, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA, TO THE ENGINEER FOR REVIEW AND APPROVAL.
3. MOUNTING BRACKET CONNECTION TO POLE SHALL ALLOW ADJUSTMENT OF TILT ANGLE.
4. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.

**Plans Prepared By:**

wsp

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*Suite 610*
*Charlotte NC, 28203*
*NC LIC NO. F-0165*

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*Prepared for the Offices of:*

NORTH CAROLINA **Turnpike Authority**

Special Details

Microwave Detection Sensor Mounting (Revised M-6)

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
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| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020

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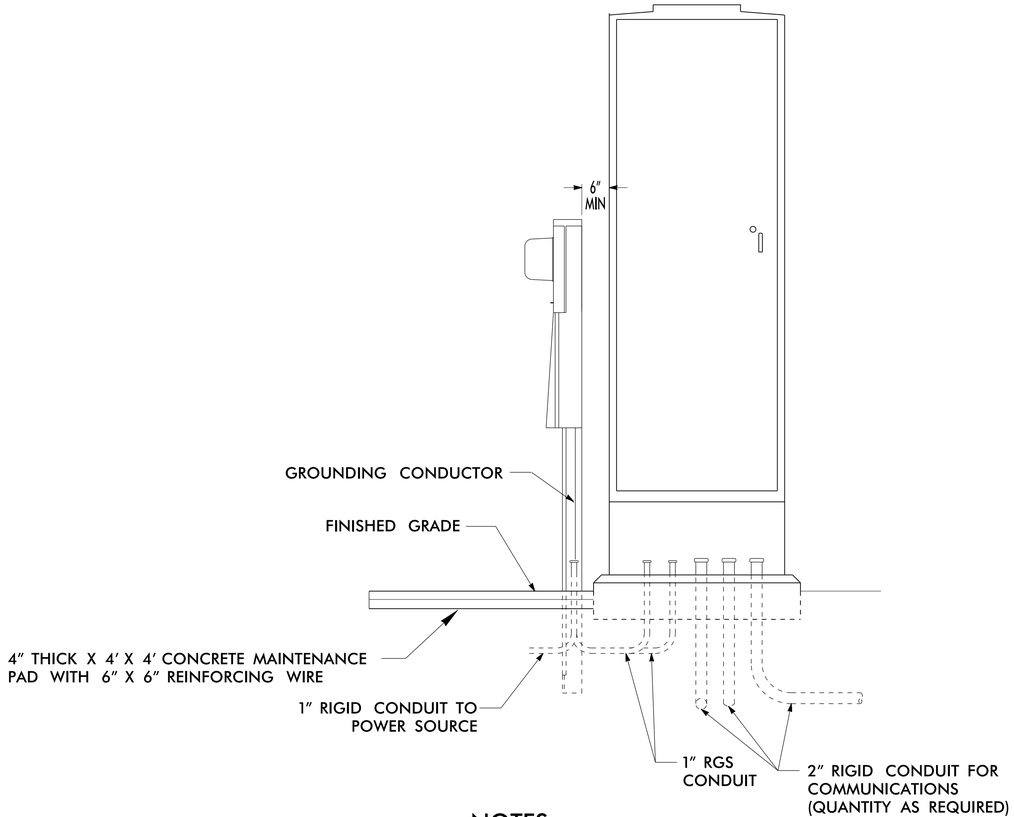
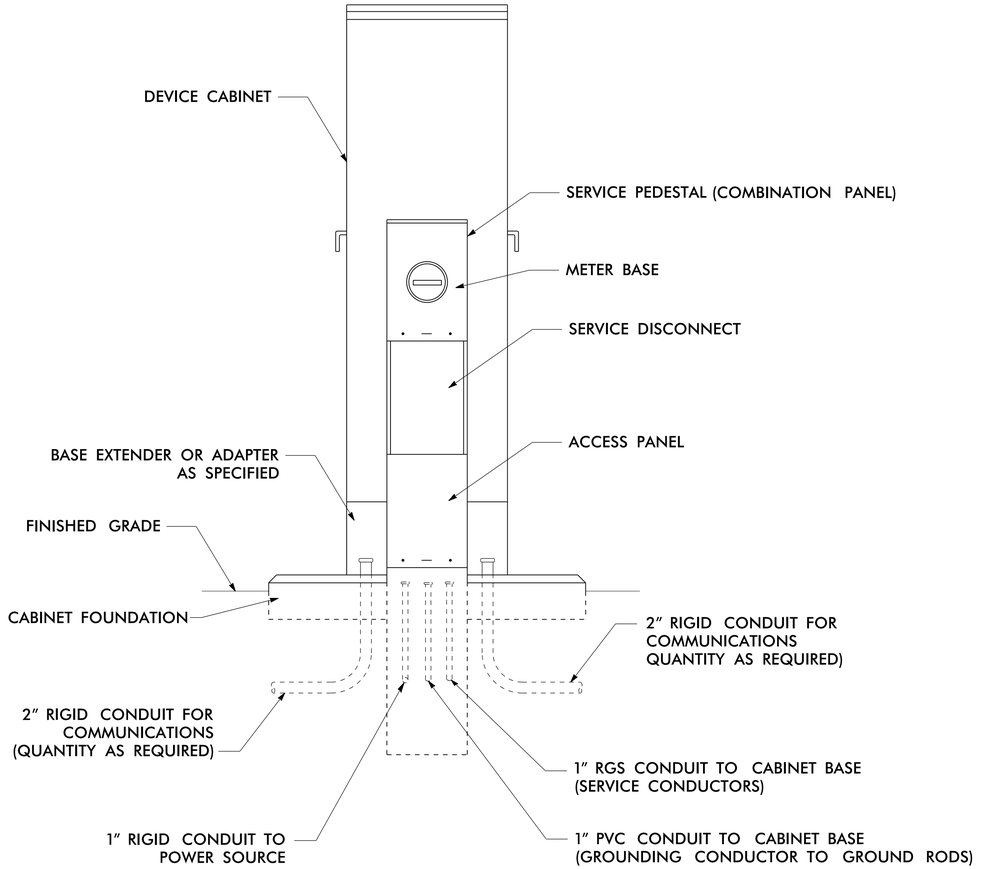
| R-2828 | SD-14 |




## NOTES

1. TEST GROUNDING SYSTEM USING AN APPROVED METHOD IN ACCORDANCE WITH SPECIAL PROVISIONS. INSTALL GROUND RODS AS DIRECTED BY THE ENGINEER TO MEET THIS REQUIREMENT.
2. REMOVE ANY EXISTING GROUND RODS IN CONCRETE CABINET FOUNDATION BY CUTTING OFF FLUSH WITH FOUNDATION SURFACE.
3. REMOVE BONDING JUMPER IN EQUIPMENT CABINET IF INSTALLED BETWEEN AC NEUTRAL AND EQUIPMENT GROUND.
4. BOND ALL RIGID GALVANIZED STEEL CONDUITS ENTERING THE CABINET TO EQUIPMENT GROUND.
5. INSTALL RIGID GALVANIZED STEEL CONDUIT (MINIMUM 1") BETWEEN DISCONNECT AND CABINET.
6. SERVICE DISCONNECT GROUND BUS BAR SHALL PROVIDE FOR 2 #4 AWG CONNECTIONS.
7. IF CONDITIONS REQUIRE SERVICE PEDESTAL TO BE INSTALLED IN FRONT OR REAR OF CABINET, MAINTAIN SUFFICIENT CLEARANCE FOR DOOR TO FULLY OPEN.
8. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.
9. COMBINATION PANELS NOT ADJACENT TO CABINETS DO NOT REQUIRE MAINTENANCE PADS.

Plans Prepared By:

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NC LIC NO. F-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

Special Details
Power Service Detail
Ground-Mounted Cabinet
(Revised P-1)
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2EC7DD9E49F DATE

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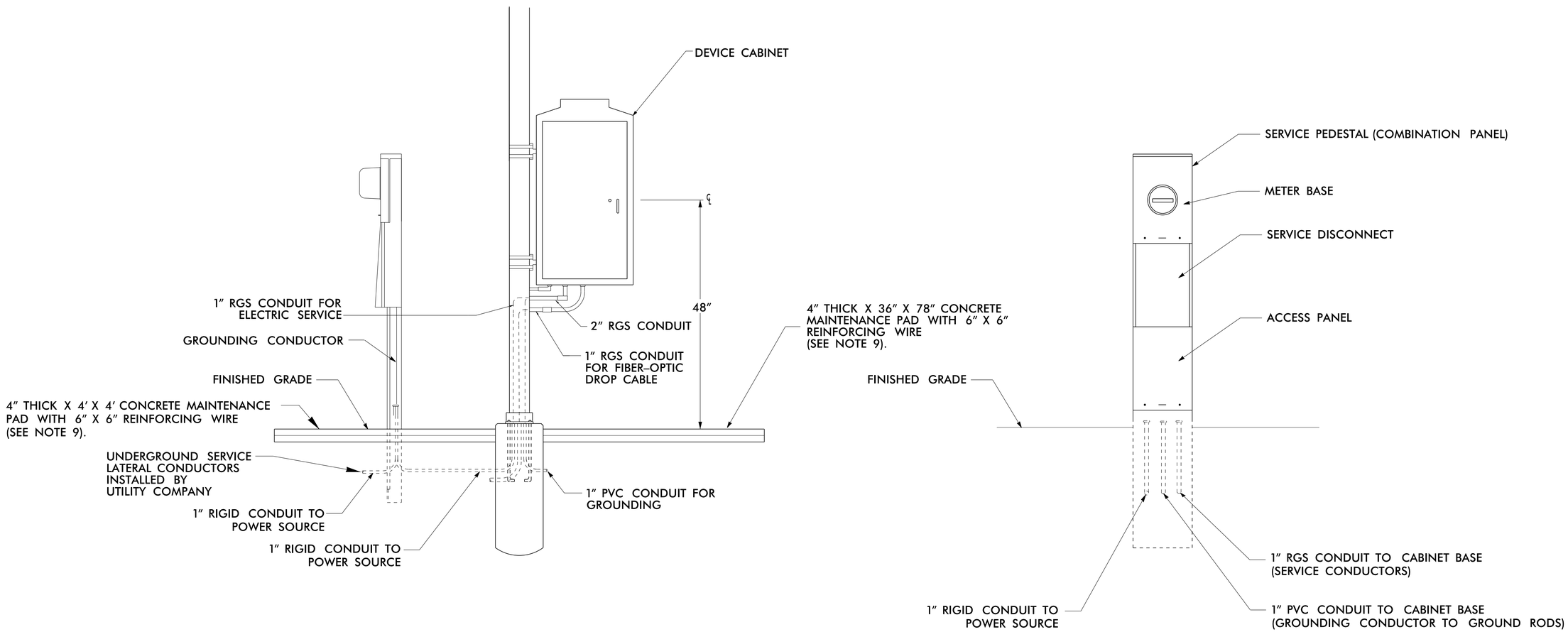


## NOTES

1. TEST GROUNDING SYSTEM USING AN APPROVED METHOD IN ACCORDANCE WITH SPECIAL PROVISIONS. INSTALL GROUND RODS AS DIRECTED BY THE ENGINEER TO MEET THIS REQUIREMENT.
2. REMOVE ANY EXISTING GROUND RODS IN CONCRETE CABINET FOUNDATION BY CUTTING OFF FLUSH WITH FOUNDATION SURFACE.
3. REMOVE BONDING JUMPER IN EQUIPMENT CABINET IF INSTALLED BETWEEN AC NEUTRAL AND EQUIPMENT GROUND.
4. BOND ALL RIGID GALVANIZED STEEL CONDUITS ENTERING THE CABINET TO "EQUIPMENT GROUND."
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8. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.
9. CONCRETE PADS FOR SERVICE PEDESTAL AND CABINET SHALL BE COMBINED INTO A SINGLE PAD, IF PEDESTAL IS PRESENT NEXT TO POLE. COMBINATION PANELS NOT ADJACENT TO CABINETS DO NOT REQUIRE A MAINTENANCE PAD.

Plans Prepared By:

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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

Special Details
Power Service Detail Pole-Mounted Cabinet (Revised P-2)
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
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| PROJECT REFERENCE NO. | SHEET NO. |
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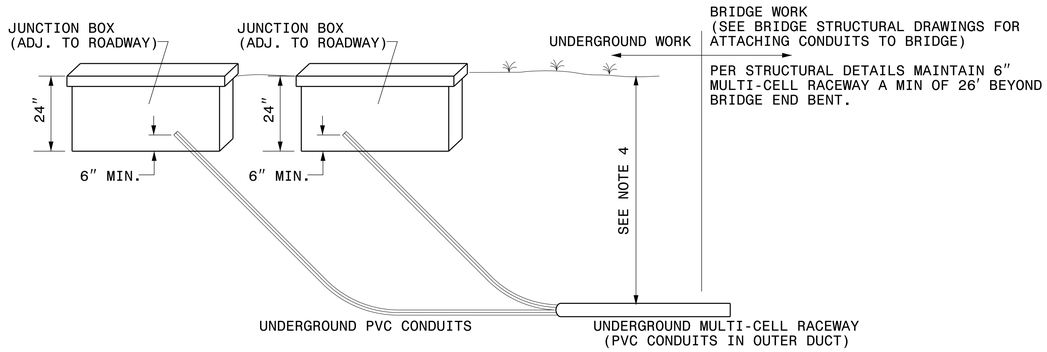
| R-2828 | SD-16 |

## BRIDGE-MOUNTED CONDUIT NOTES

1. CONDUIT SHALL BE INSTALLED UNDERGROUND FROM OVERSIZED JUNCTION BOXES LOCATED ADJACENT TO ROADWAY, UP TO AND THRU THE BRIDGE END WALL TO BRIDGE MOUNTED ATTACHMENT.
2. UNDERGROUND PVC CONDUITS WILL BE 4-2″ OR 2-1.25″ PVC CONDUITS, AS DIRECTED ON THE PLANS.
3. CONDUIT ROUTING SHALL MAINTAIN NO MORE THAN 180 DEGREES OF BENDS BETWEEN PULL POINTS FOR ANY RUN.
4. CONDUIT INSTALLATION SHALL CONFORM TO THE MINIMUM CLEARANCE REQUIREMENTS AS STATED IN SECTION 1715 - UNDERGROUND CONDUITS.
5. INSTALL CONDUITS INTO JUNCTION BOXES PER ROADWAY STANDARD DRAWING 1716.01.




MULTI-CELL RACEWAY CAN BE ENDED (BY REMOVING OUTER DUCT) AT ANY POINT AFTER MIN. 26′ FROM END BENT AT DISCRETION OF CONTRACTOR.

## SECTION AT JUNCTION BOX/BRIDGE BOX
## (TYPICAL FOR CONFIGURATION AT BEGIN/END OF BRIDGE)

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*NC LIC NO. F-0165*

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NORTH CAROLINA Turnpike Authority

Special Details
Typical Configuration at Begin/End of Bridge

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

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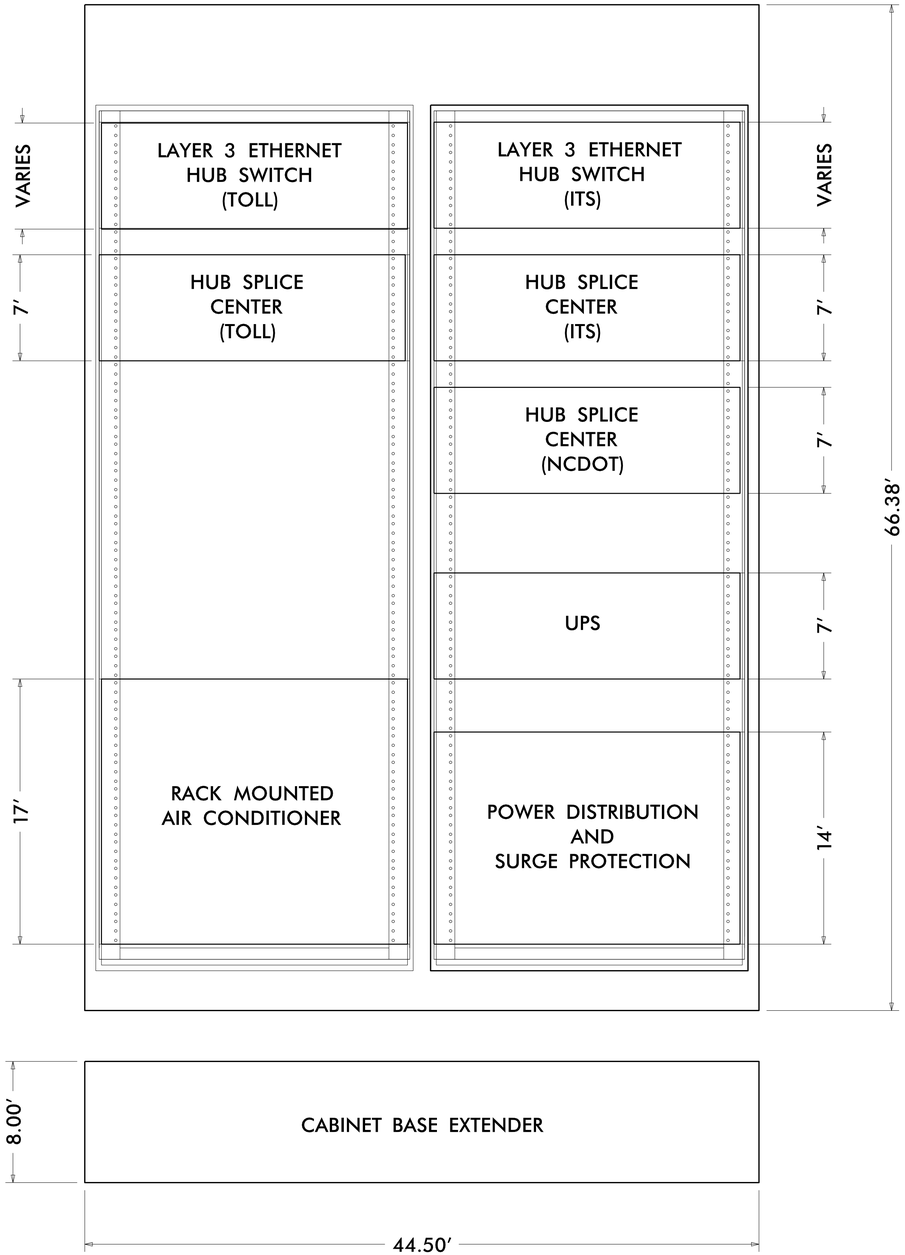


# ITS HUB CABINET

| PROPOSED HUB-7 CABINET (I-40) | | |
|---|---|---|
| UNITS | DESCRIPTION | HUB QTY |
| EA | INTERCONNECT CENTER (144 FIBER) TOLL | 1 |
| EA | INTERCONNECT CENTER (144 FIBER) ITS | 1 |
| EA | GIGABIT ETHERNET ROUTING SWITCH (TOLL) | 1 |
| EA | GIGABIT ETHERNET ROUTING SWITCH (ITS) | 1 |
| EA | INTERCONNECT CENTER (24 FIBER) NCDOT | 1 |

## GENERAL NOTES:

1. SEE RFP REQUIREMENTS FOR CABINET TYPE AND SIZE.
2. ALL DIMENSIONS ARE APPROXIMATE.
3. CONDUIT ENTRANCES ARE AT BOTTOM OF CABINET.
4. SEE RFP FOR FOR HUB CABINET INTERNAL COMPONENT REQUIREMENTS.
5. MINIMUM OF THREE (3) TOTAL OUTLETS: TWO (2) SURGED PROTECTED AND ONE (1) GFCI PROTECTED.
6. SURGE PROTECTION PANEL SHALL BE MOUNTED BEHIND THE POWER DISTRIBUTION PANEL.
7. FRONT DOOR SHALL HAVE A VENT WITH FILTER ALIGNING WITH THE AIR CONDITIONER INTAKE.
8. INSTALL A/C DRAIN LINE.
9. MOUNT PATCH PANEL AS LOW AS POSSIBLE FOR EASY ACCESS AND MAINTENANCE.


Plans Prepared By:

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NC LIC NO. F-0165


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Prepared for the Offices of:

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Special Details
HUB Cabinet
Layout
Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

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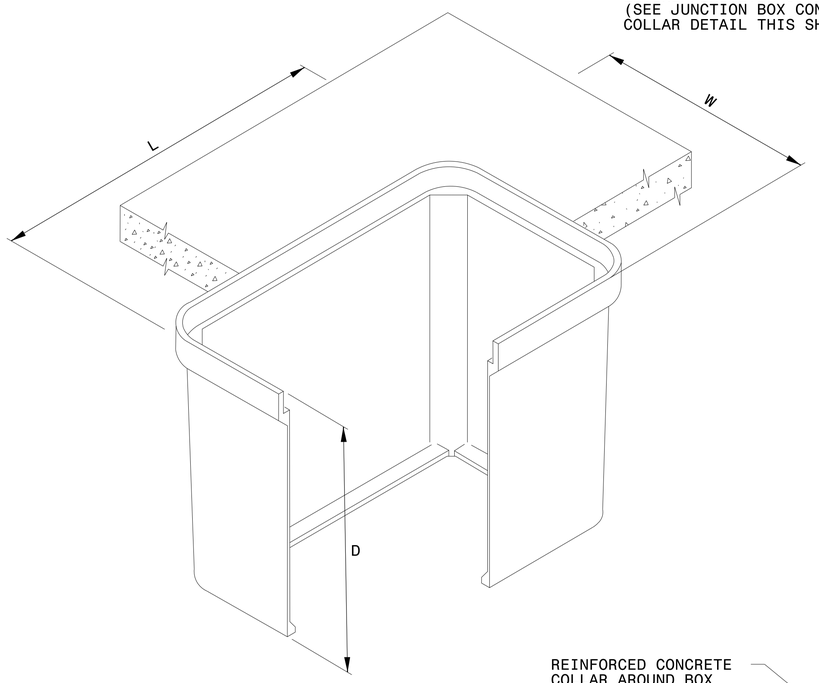
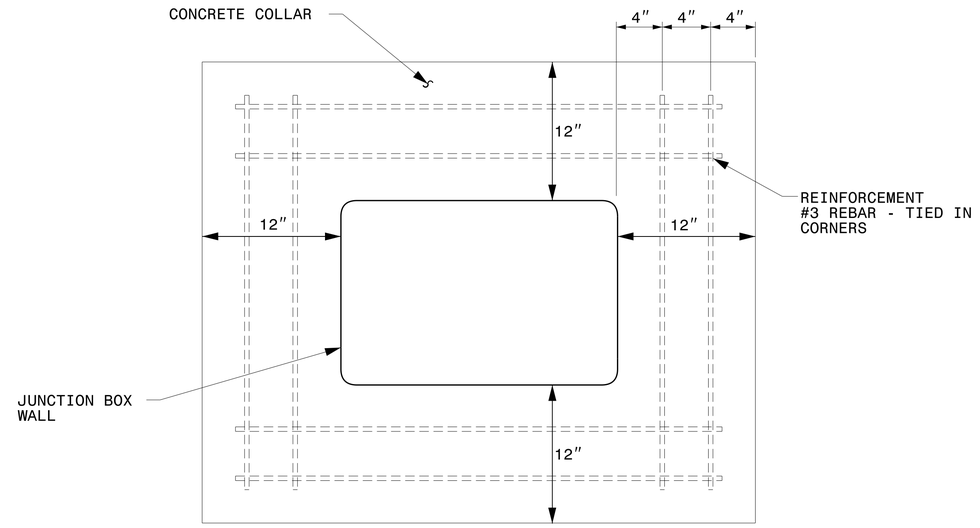
| R-2828 | SD-18 |

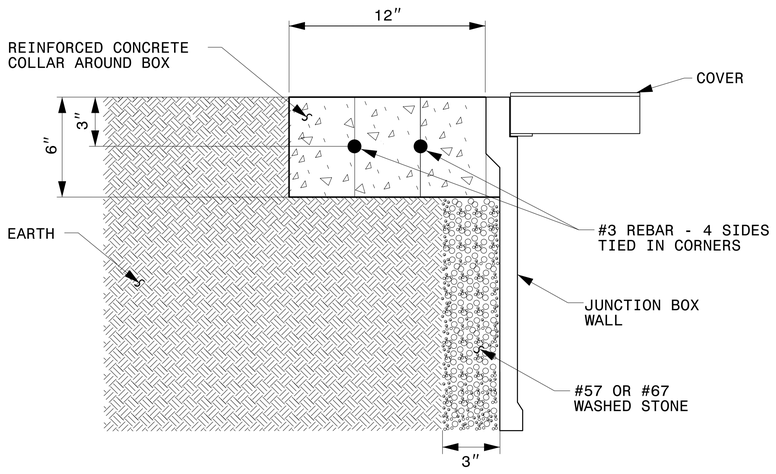



## BOX DIMENSIONS

| | INSIDE DIMENSIONS | | |
|---|---|---|---|
| BOX TYPE | "l" inch | "w" inch | "d" inch |
| STANDARD | 16 | 10 | 10 |
| OVERSIZED | 30 | 15 | 24 |
| TOLL SYSTEM LOOPS | 36 | 17 | 30 |
| SPECIAL OVERSIZED | 36 | 24 | 24 |
| CUSTOM | 48 | 24 | 24 |




## PLAN VIEW - JUNCTION BOX AND CONCRETE COLLAR




## JUNCTION BOX CONCRETE COLLAR DETAIL

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*Charlotte NC, 28203*
*NC LIC NO. F-0165*

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*Prepared for the Offices of:*

NORTH CAROLINA Turnpike Authority

# Special Details
# Junction Box Concrete Collar Detail

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A JOHNSON

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Daniel A. Johnson
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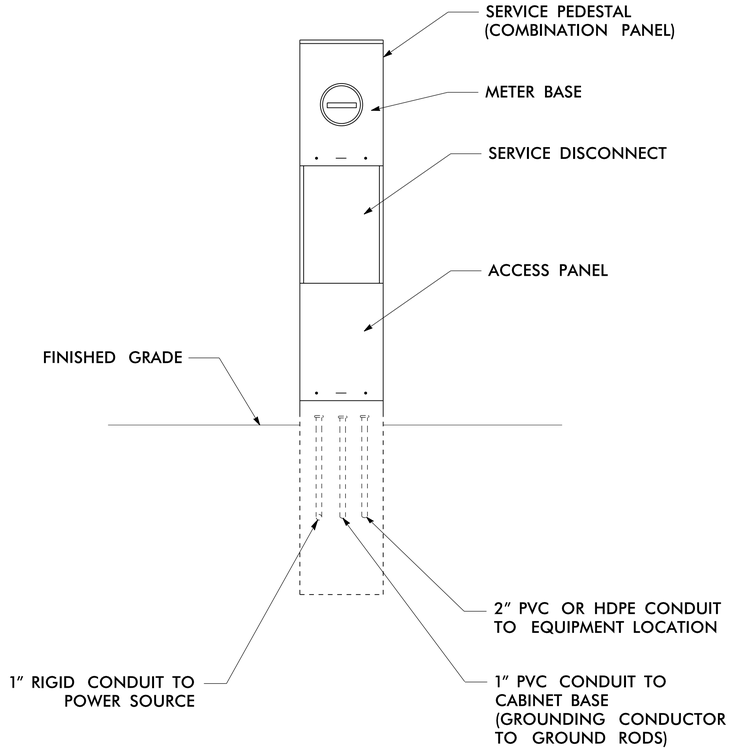
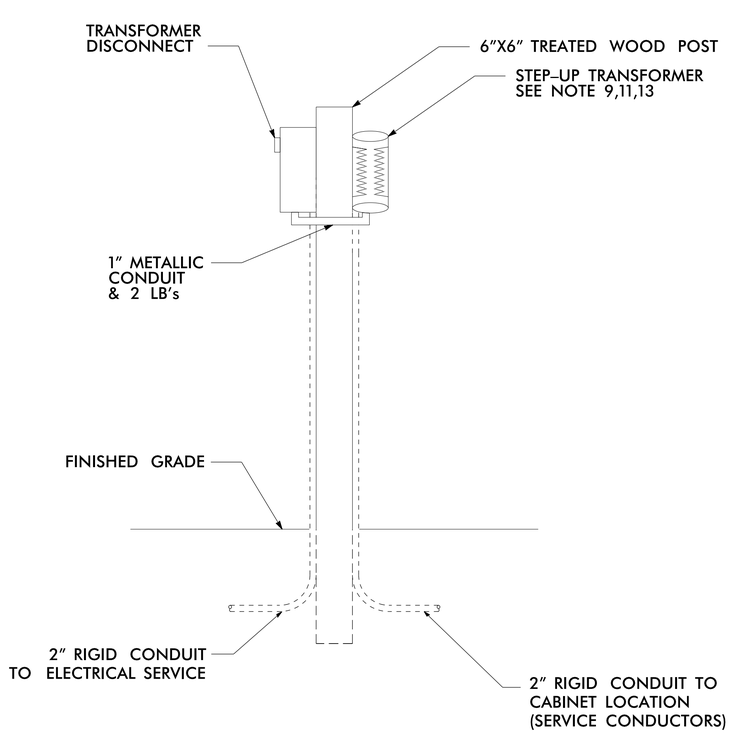
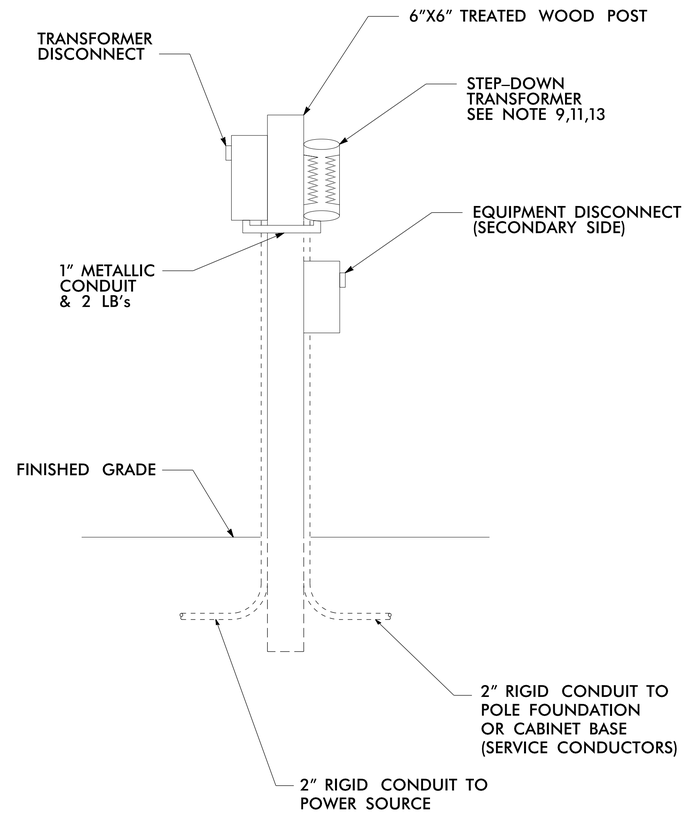



POWER SERVICE ENTRANCE
COMBINATION PEDESTAL DETAIL




STEP-UP TRANSFORMER
DETAIL




STEP-DOWN TRANSFORMER
DETAIL

## NOTES

1. TREATED WOOD POSTS SHALL BE INSTALLED A MINIMUM OF THREE (3) FEET INTO THE GROUND.
2. INSTALL ALL PEDESTAL MOUNTED ELECTRICAL SERVICE EQUIPMENT AT A HEIGHT NOT TO EXCEED 5 FEET AS MEASURED FROM THE CENTER OF EQUIPMENT.
3. ELECTRICAL EQUIPMENT SHALL BE GROUNDED. TEST GROUNDING SYSTEM USING AN APPROVED METHOD. SYSTEM SHALL MEASURE TWENTY (20) OHMS OR LESS. ADDITIONAL GROUND RODS SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER TO MEET THIS REQUIREMENT.
4. REMOVE BONDING JUMPER IN EQUIPMENT CABINET IF INSTALLED BETWEEN AC NEUTRAL AND EQUIPMENT GROUND.
5. BOND ALL RIGID GALVANIZED STEEL CONDUITS ENTERING THE CABINET TO "EQUIPMENT GROUND."
6. INSTALL RIGID GALVANIZED STEEL CONDUIT (MINIMUM 1") BETWEEN DISCONNECT AND CABINET.
7. SERVICE DISCONNECT GROUND BUS BAR SHALL PROVIDE FOR 2 #4 AWG CONNECTIONS.
8. IF CONDITIONS REQUIRE SERVICE PEDESTAL TO BE INSTALLED IN FRONT OR REAR OF CABINET, MAINTAIN SUFFICIENT CLEARANCE FOR DOOR TO FULLY OPEN.
9. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.
10. CONCRETE PADS FOR SERVICE OR EQUIPMENT DISCONNECT PEDESTAL AND CABINET SHALL BE COMBINED INTO A SINGLE PAD, IF PEDESTAL IS PRESENT NEXT TO POLE. COMBINATION PANELS NOT ADJACENT TO CABINETS DO NOT REQUIRE A MAINTENANCE PAD.
11. STEP-UP/STEP-DOWN TRANSFORMERS VARY BY LOCATION. SEE SHEET ITS-06 "POWER SERVICE DATA" FOR DETAILS.
12. TRANSFORMERS ARE NOT NEEDED AT ALL LOCATIONS. SEE ITS AND AET PLANS FOR DETAILS.
13. ELECTRICAL DEVICES SHALL BE MOUNTED USING CORROSION RESISTANT FASTENNERS AND IN ACCORDANCE WITH THE MANUFACTURE'S REQUIREMENTS.
14. ELECTRICAL SERVICES AND DEVICES WILL BE INSTALLED ON THE BACK OF THE RIGHT OF WAY OR WITHIN SIX FEET OF THE CABINET OR POLE STRUCTURE, UNLESS OTHERWISE SHOWN ON THE ITS PLANS.

Plans Prepared By:
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1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC NO. F-0165

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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

Special Details
Power Service Detail
Transformer Options
Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
|---|---|---|---|
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

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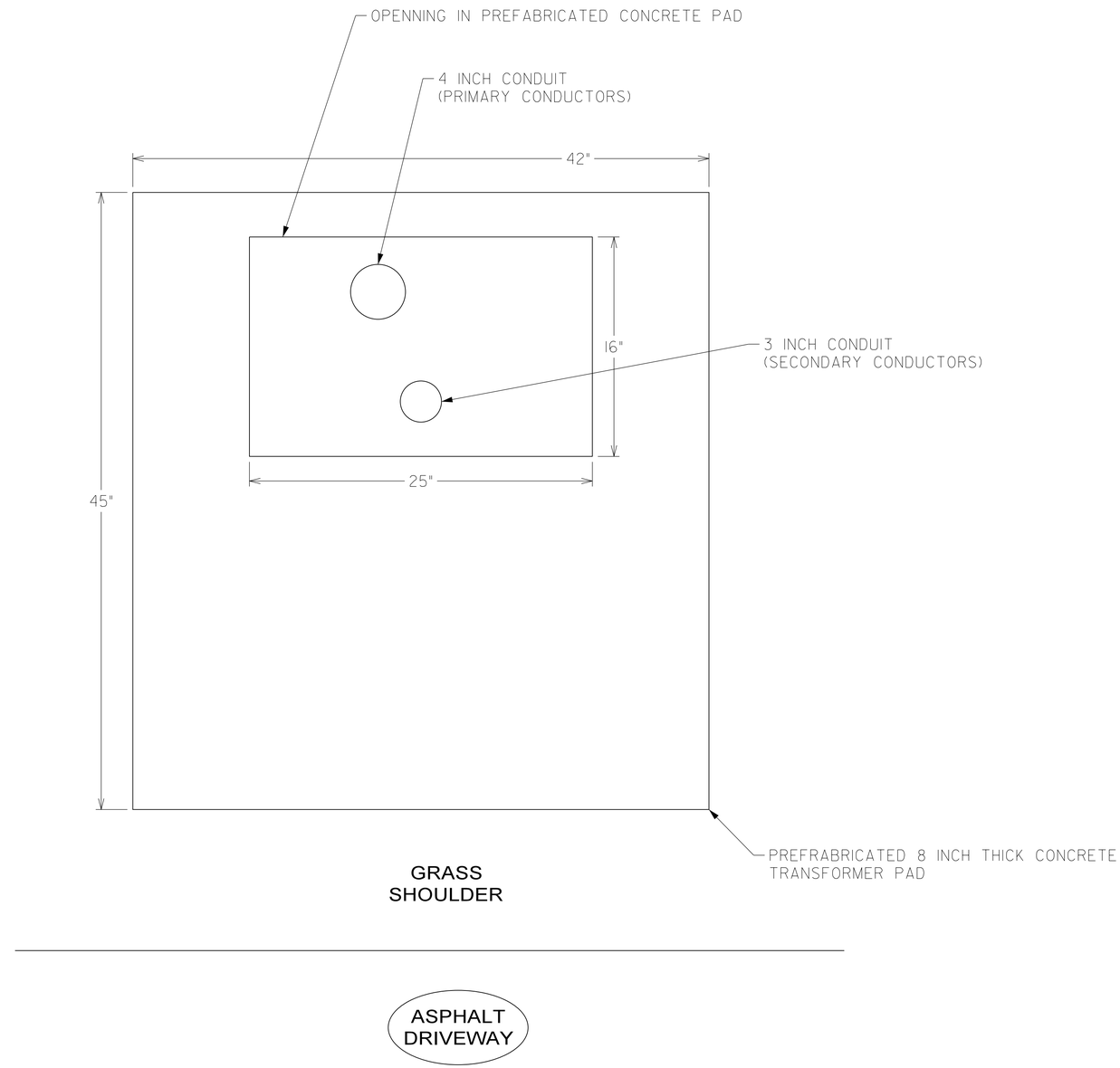


## NOTES

1. CONDUITS DESIGNATED AS "DUKE ENERGY" SHALL BE STUBBED UP IN THE CONFIGURATION PROVIDED IN THIS DETAIL.
2. THE PREFABRICATED EIGHT INCH CONCRETE TRANSFORMER PAD, TRANSFORMER, TRANSFORMER HOUSING, PRIMARY CONDUITS, AND SECONDARY CONDUCTORS, WILL BE FURNISHED AND INSTALLED BY DUKE ENERGY.
3. A 10 FOOT WORKING AREA SHALL BE PROVIDED AROUND THE DUKE TRANSFORMER PAD. NO OBSTRUCTIONS INCLUDING BUSHES, RENCES, WALLS, JUNCTION BOXES, WILL BE PLACED WITHIN THIS WORKING AREA.
4. THE CONTRACTOR SHALL COORDINATE WITH DUKE ENERGY FOR THE APPROVED LOCATION OF STUBBED UP CONDUITS.

Plans Prepared By:

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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

Special Details
Duke Transformer Pad
Conduit Layout

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

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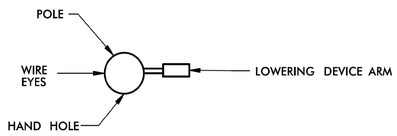
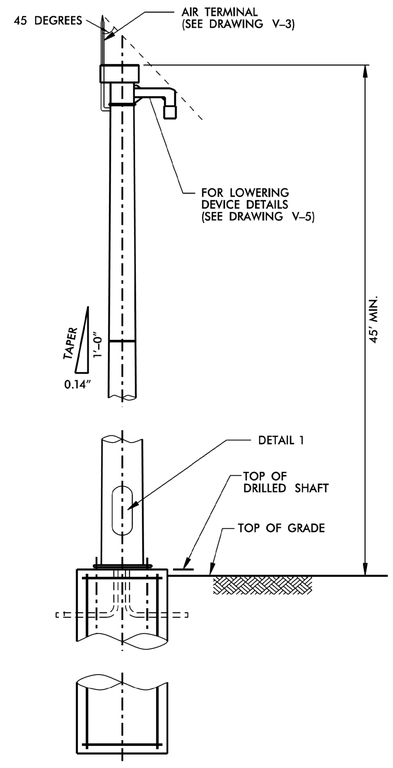
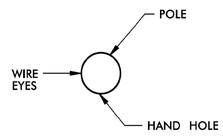
| R-2828 | V-2 |



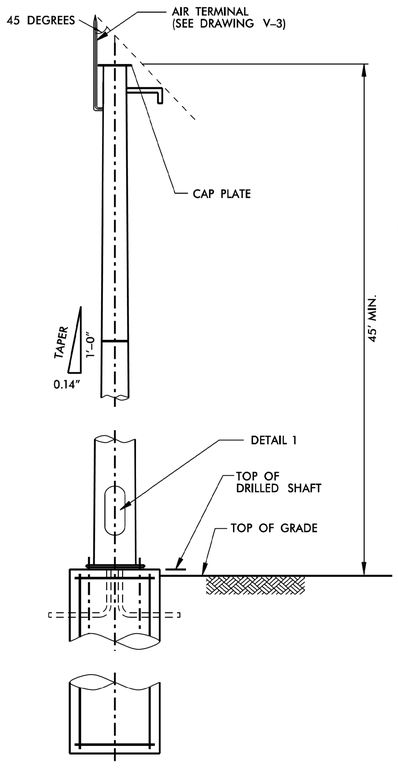

ORIENTATION VIEW



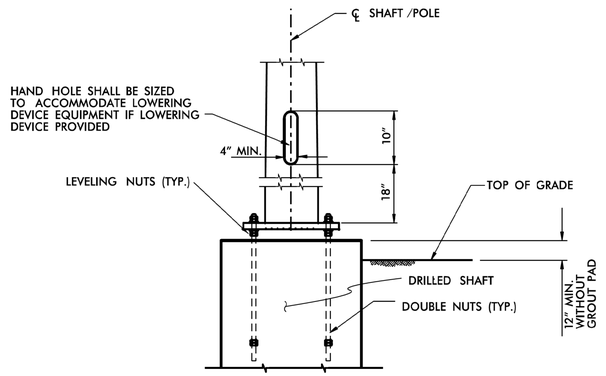

WITH LOWERING DEVICE ELEVATION




ORIENTATION VIEW




WITHOUT LOWERING DEVICE ELEVATION




DETAIL 1

NOTE
1. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.
2. BANDING TO ATTACH CABINET AND ANY CONDUITS SHALL NOT INTERFERE WITH THE HAND HOLE.

NORTH CAROLINA Turnpike Authority

| REV. NO. | BY | DATE | DESCRIPTION |
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| 1 | DLJ | 10/7/14 | Border content and labeling only |
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ATKINS 5200 77 Center Drive, Suite 50 Charlotte, North Carolina 28217 (704) 522-7275 NCBEES #F-0326

# ITS STANDARD DETAILS
CCTV
STEEL POLE

| | | |
|---|---|---|
| SCALE: N.T.S. | NORTH CAROLINA TURNPIKE AUTHORITY | SHEET NO. V-2 |
| DATE: August, 2011 | | |
| DWG. BY: B. Slocum | | |
| DESIGN BY: A. Badgett / D. Jones | | |
| APPROVED: A. Lelewald | | |

Plans Prepared By:

wsp
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC NO. F-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of: NORTH CAROLINA Turnpike Authority

Typical Details

CCTV Steel Pole

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
SIGNATURE DATE

CADD Filename:

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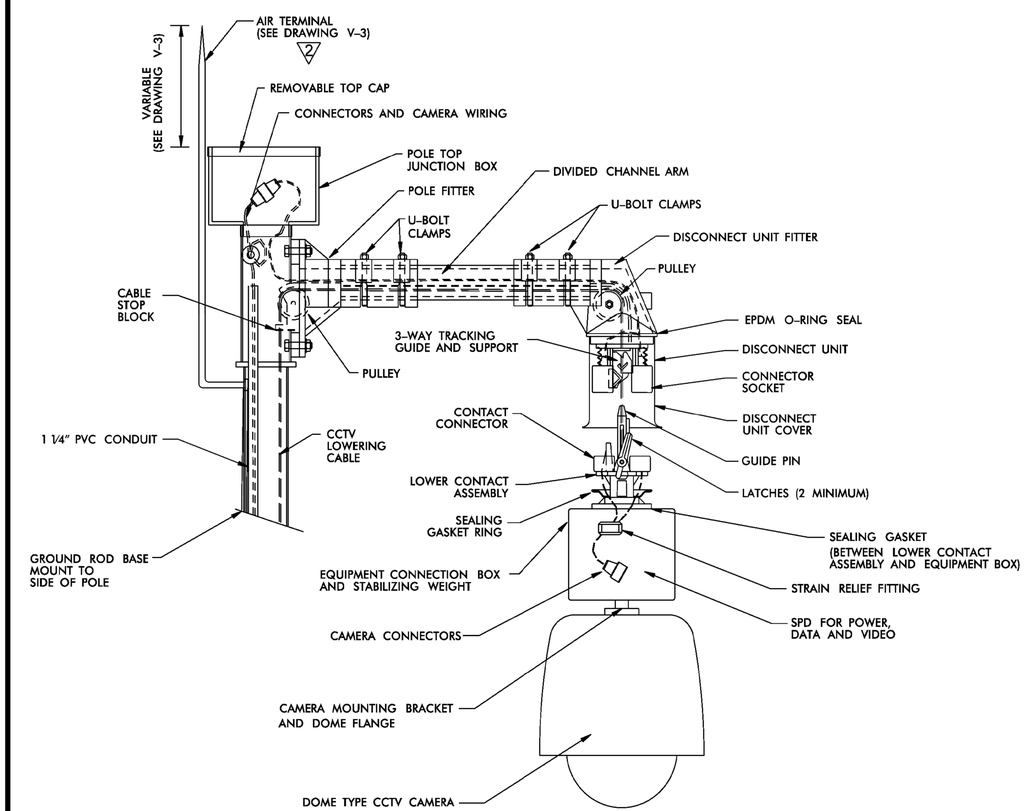
NORTH CAROLINA
**Turnpike Authority**




## GENERAL NOTES:

1. LOWERING DEVICE TO BE SHIPPED READY FOR POLE ATTACHMENT TO INCLUDE 100 FT. OF COMPOSITE POWER AND SIGNAL CABLE PREWIRED TO LOWERING DEVICE AT THE FACTORY.
2. THE LOWERING DEVICE MANUFACTURER SHALL SUPPLY BOTH A PORTABLE LOWERING TOOL WITH A MANUAL HAND CRANK AND A PORTABLE ELECTRIC DRILL MOTOR WITH CUSTOM CLUTCH ADAPTER. ONE LOWERING TOOL PER EVERY 10 LOWERING DEVICES IS REQUIRED.
3. THE LOWERING DEVICE MANUFACTURER SHALL PROVIDE AN ON-SITE INSTALLATION INSPECTION AND OPERATOR INSTRUCTION AND CERTIFICATION. THIS ENSURES THE PRODUCT IS ASSEMBLED CORRECTLY AND, MORE IMPORTANTLY, THAT ALL NECESSARY PERSONS ARE TRAINED IN THE PROPER, SAFE OPERATION OF THE SYSTEM. BEFORE ERECTING THE FIRST POLE THE CONTRACTOR MUST CONTACT THE LOWERING DEVICE SUPPLIER AND SCHEDULE A FACTORY REPRESENTATIVE TO BE ON-SITE.
4. LOWERING DEVICE CONNECTION TO TOP OF POLE SHALL BE CAPABLE OF SERVICE TENSION AND SHEAR OF 1 KIP MINIMUM. THE CONTRACTOR SHALL PROVIDE PRODUCT CUT SHEET AND CAPACITY DATA FOR THE ENGINEER'S REVIEW AND APPROVAL PRIOR TO INSTALLATION.
5. CAMERA TO BE MOUNTED TO CAMERA JUNCTION BOX AND STABILIZING WEIGHT VIA 1 1/2" STANDARD NPT PIPE THREAD.
6. USE AIR TERMINAL EXTENSION WHEN THE POLE TOP JUNCTION BOX IS WIDER THAN TOP OF POLE.
7. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.

**REVISED 10 /21 /2011**

| REV. NO. | BY | DATE | DESCRIPTION |
|---|---|---|---|
| 1 | DLJ | 10/7/14 | Border content and labeling only |
| 2 | DLJ | 8/31/16 | See Notes |
| | | | |
| | | | |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Charlotte, North Carolina 28217
(704) 522-7275 NCBEES #F-0326


# ITS STANDARD DETAILS

CCTV
CAMERA LOWERING DEVICE

| | | |
|---|---|---|
| SCALE: N.T.S. | NORTH CAROLINA TURNPIKE AUTHORITY | SHEET NO. V-5 |
| DATE: August, 2011 | | |
| DWG. BY: B. Slocum | | |
| DESIGN BY: A. Badgett / D. Jones | | |
| APPROVED: A. Lelewski | | |

**Plans Prepared By:**


wsp
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC NO. F-0165


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*Prepared for the Offices of:*
NORTH CAROLINA
**Turnpike Authority**

Typical Details

CCTV Camera Lowering Device

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
DOCUSIGNATURE DATE

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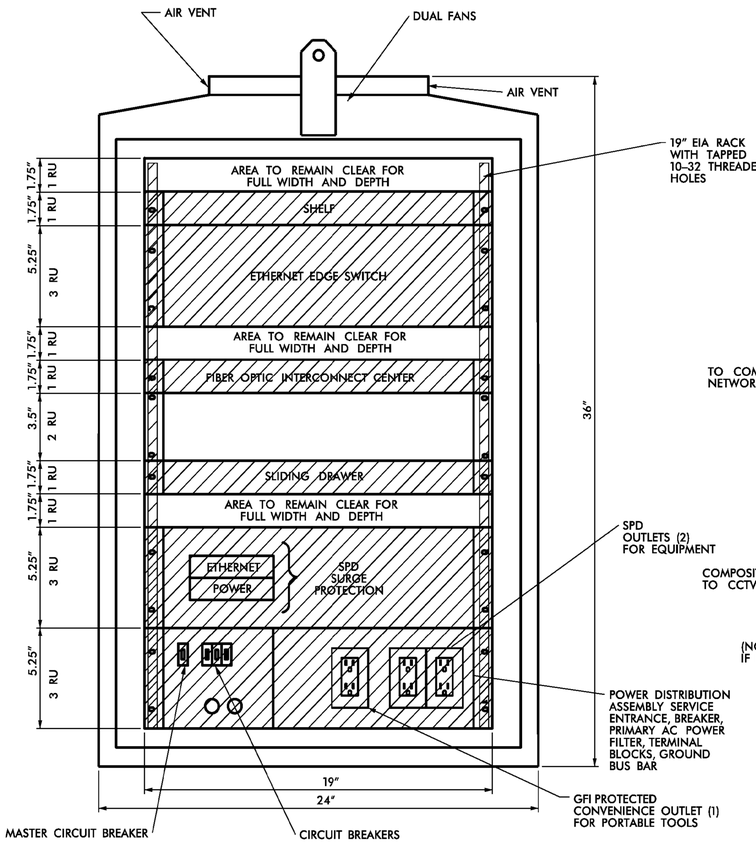
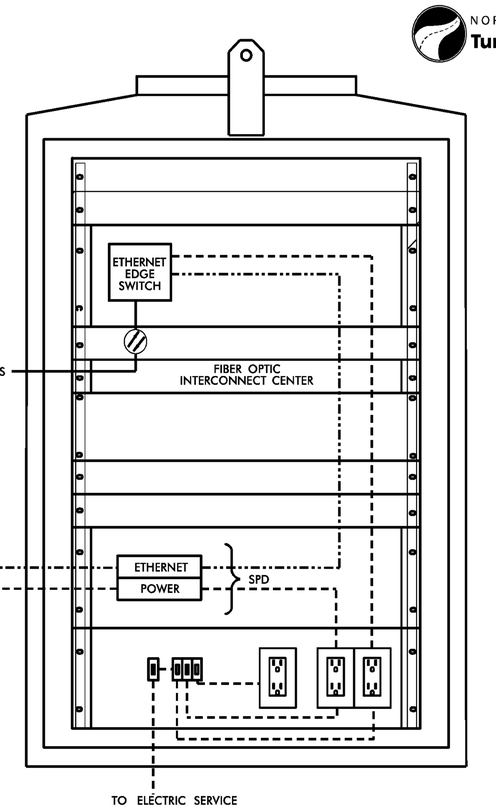
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | V-6 |




FRONT VIEW




CABINET WIRING VIEW

**NOTES**

1. SEE RFP REQUIREMENTS FOR CABINET TYPE.
2. ALL DIMENSIONS AND SCALE ARE APPROXIMATE.
3. THE MINIMUM CCTV CABINET DIMENSIONS SHALL BE 36"H X 24"W X 22"D.
4. CONDUIT ENTRANCES ARE IN BOTTOM OF CABINET.
5. MINIMUM NUMBER OF OUTLETS IS THREE: (2) SPD AND (1) GFI PROTECTED.
6. THERE SHALL BE FRONT AND REAR DOORS. BOTH DOORS SHALL HAVE THE HINGE SIDE NEXT TO THE POLE WHEN POLE MOUNTED.
7. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.

CONNECTION LEGEND

- 100 BASE FX ETHERNET (FIBER)
- 100 BASE TX ETHERNET
- ELECTRICAL POWER
- RS-232/422/485

| REV. NO. | BY | DATE | DESCRIPTION |
|---|---|---|---|
| 1 | DLJ | 10/7/14 | Border content and labeling only |
| 2 | DLJ | 8/4/17 | Changed to all-digital video |
| | | | |
| | | | |

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# ITS STANDARD DETAILS

CCTV
CABINET LAYOUT

| | | |
|---|---|---|
| SCALE: N.T.S. | NORTH CAROLINA TURNPIKE AUTHORITY | SHEET NO. V-6 |
| DATE: August, 2011 | | |
| DWG. BY: B. Slocum | | |
| DESIGN BY: A. Badgett / D. Jones | | |
| APPROVED: A. Lelewski | | |

Plans Prepared By:

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NC LIC NO. F-0165

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*Prepared for the Offices of:*
NORTH CAROLINA Turnpike Authority

Typical Details

CCTV Cabinet Layout

Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

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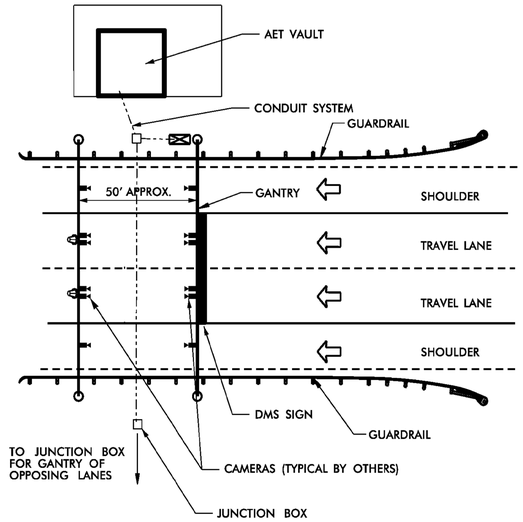
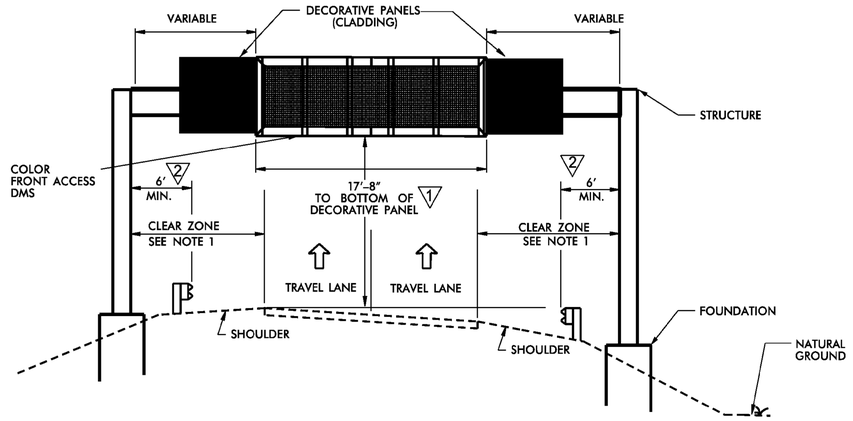
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | D-2A |

NORTH CAROLINA
**Turnpike Authority**




TYPICAL PLAN VIEW
ON–SITE DMS AT AET GANTRY STRUCTURE




TYPICAL ELEVATION VIEW
ON–SITE DMS AT AET GANTRY STRUCTURE

## GENERAL NOTES:

1. DESIGN COLUMNS IN ACCORDANCE WITH NCTA AESTHETIC DESIGN GUIDELINES AS REQUIRED BY RFP.
2. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.
3. CONDUCTORS SHALL BE CONNECTED TO STEEL FRAMEWORK THAT HAVE BEEN CLEANED TO BASE METAL, BY USE OF BONDING PLATES HAVING CONTACT AREA OF NOT LESS THAN 8 SQUARE INCHES OR BY WELDING OR BRAZING. DRILLING AND TAPPING THE STEEL STRUCTURE TO ACCEPT A THREADED CONNECTOR IS ALSO AN ACCEPTABLE METHOD.
4. IF STEEL FRAMEWORK IS TO BE DRILLED AND TAPPED TO ACCEPT THREADED CONNECTOR, THE THREADED CONNECTOR SHALL HAVE AT LEAST 5 THREADS FULLY ENGAGED AND SECURED WITH A JAM NUT TO THE STEEL FRAMEWORK.
5. BENDS IN THE CONDUIT WITH DMS COMMUNICATIONS CABLE (6–COUNT SINGLE MODE FIBER–OPTIC CABLE) SHALL NOT EXCEED THE MANUFACTURER'S MINIMUM RADIUS FOR THE FIBER–OPTIC CABLE.
5. CONDUITS ON STRUCTURE OR COLUMNS SHALL BE HIDDEN FROM VIEW OF APPROACHING TRAFFIC BY PLACING THEM ON DOWNSTREAM SIDE OR WITHIN STRUCTURAL MEMBERS OR COLUMNS.
6. (NOTE DELETED)
7. ALL DATA AND POWER CABLES FOR THE DMS SHALL BE COMPLETELY CONCEALED FROM ONCOMING TRAFFIC.

REVISED 10 /21 /2011

| REV. NO. | BY | DATE | DESCRIPTION |
|---|---|---|---|
| 1 | DLJ | 10/7/14 | Border content and labeling; see revision marks |
| 2 | DLJ | 8/31/16 | See Notes |
| | | | |
| | | | |

ATKINS 5200 77 Center Drive, Suite 50 Charlotte, North Carolina 28217 (704) 522-7275 NCBEES #F-0326

# ITS STANDARD DETAILS

DMS - TYPICAL MOUNTING
AET GANTRY STRUCTURE

| | | |
|---|---|---|
| SCALE: N.T.S. | NORTH CAROLINA TURNPIKE AUTHORITY | SHEET NO. D-2A |
| DATE: August, 2011 | | |
| DWG. BY: B. Slocum | | |
| DESIGN BY: A. Badgett / D. Jones | | |
| APPROVED: A. Lelewski | | |

Plans Prepared By:

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Charlotte NC, 28203
NC LIC NO. F-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

*Prepared for the Offices of:*
NORTH CAROLINA **Turnpike Authority**

Typical Details
DMS - Typical Mounting AET Gantry Structure
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

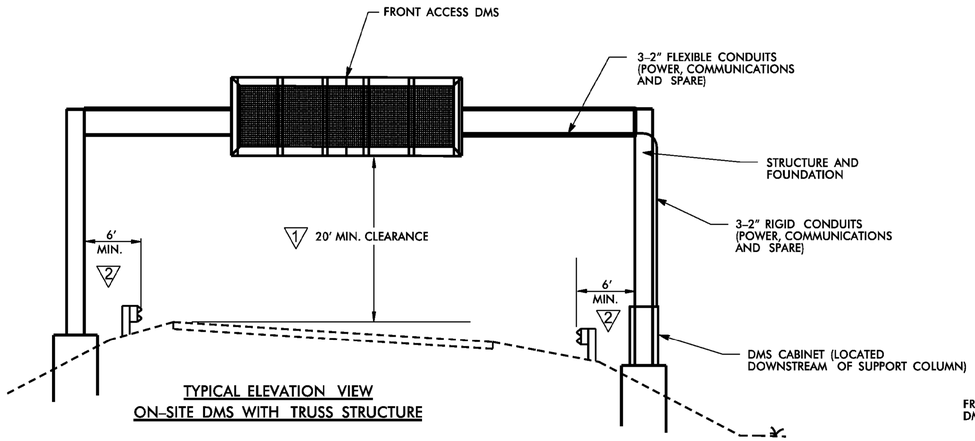
DocuSigned by: Daniel A. Johnson 11-18-2020
D92F2EC7DD9E49F... DATE

CADD Filename:

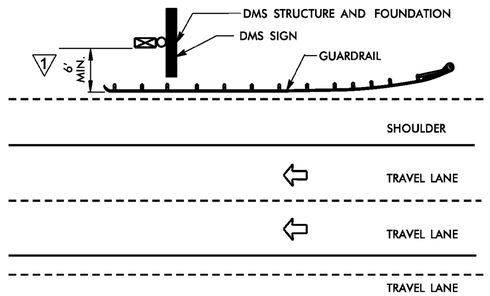
DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | D-2B |

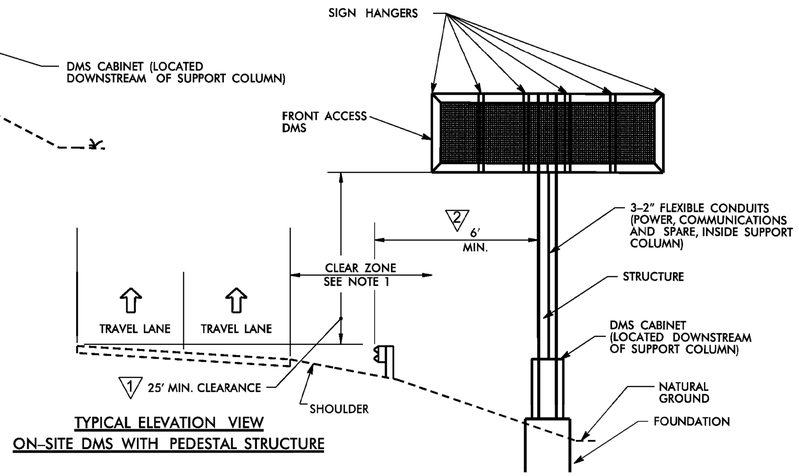
NORTH CAROLINA **Turnpike Authority**




TYPICAL ELEVATION VIEW
ON-SITE DMS WITH TRUSS STRUCTURE




TYPICAL PLAN VIEW
ON-SITE DMS CANTILEVER STRUCTURE




TYPICAL ELEVATION VIEW
ON-SITE DMS WITH PEDESTAL STRUCTURE

| REV. NO. | BY | DATE | DESCRIPTION |
|---|---|---|---|
| 1 | DLJ | 10/7/14 | Border content and labeling; see revision marks |
| 2 | DLJ | 8/31/16 | See Notes |
| | | | |
| | | | |

## GENERAL NOTES:

1. CONDUCTORS SHALL BE CONNECTED TO STEEL FRAMEWORK THAT HAVE BEEN CLEANED TO BASE METAL, BY USE OF BONDING PLATES HAVING CONTACT AREA OF NOT LESS THAN 8 SQUARE INCHES OR BY WELDING OR BRAZING. DRILLING AND TAPPING THE STEEL STRUCTURE TO ACCEPT A THREADED CONNECTOR IS ALSO AN ACCEPTABLE METHOD.
2. IF STEEL FRAMEWORK IS TO BE DRILLED AND TAPPED TO ACCEPT THREADED CONNECTOR, THE THREADED CONNECTOR SHALL HAVE AT LEAST 5 THREADS FULLY ENGAGED AND SECURED WITH A JAM NUT TO THE STEEL FRAMEWORK.
3. BENDS IN THE CONDUIT WITH DMS COMMUNICATIONS CABLE (6-COUNT SINGLE MODE FIBER-OPTIC CABLE) SHALL NOT EXCEED THE MANUFACTURER'S MINIMUM RADIUS FOR THE FIBER-OPTIC CABLE.
4. CONDUITS ON STRUCTURE OR COLUMNS SHALL BE HIDDEN FROM VIEW OF APPROACHING TRAFFIC BY PLACING THEM ON DOWNSTREAM SIDE OR WITHIN STRUCTURAL MEMBERS OR COLUMNS.
5. ALL DATA AND POWER CABLES FOR THE DMS SHALL BE COMPLETELY CONCEALED.
6. (NOTE DELETED)
7. DMS CABINETS SHALL BE GROUND MOUNTED OR MOUNTED ON STRUCTURE, AS DIRECTED BY THE ENGINEER.
8. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.
9. TRUSS DETAIL ONLY APPLIES IF TRUSS IS NOT AT AN AET TOLL ZONE. FOR CONDUIT DETAILS FOR TRUSSES AT AET TOLL ZONES, SEE AET STANDARD DRAWINGS.
10. IF NO GUARDRAIL OR BARRIER WALL EXISTS, STRUCTURE SHALL BE OUTSIDE CLEAR ZONE. CLEAR ZONE SHALL BE MEASURED TO EDGE OF DRILLED SHAFT IF DRILLED SHAFT IS MORE THAN 4" ABOVE ADJACENT GRADE.
11. DESIGN COLUMNS IN ACCORDANCE WITH NCTA AESTHETIC DESIGN GUIDELINES AS REQUIRED BY RFP.

**REVISED 10 /21 /2011**

ATKINS 5200 77 Center Drive, Suite 50
Charlotte, North Carolina 28217
(704) 522-7275 NCBEES #F-0326

# ITS STANDARD DETAILS

DMS - TYPICAL MOUNTING
ON-SITE DMS NOT AT TOLL ZONE

| SCALE: N.T.S. | NORTH CAROLINA TURNPIKE AUTHORITY | SHEET NO. |
|---|---|---|
| DATE: August, 2011 | | D-2B |
| DWG. BY: B. Slocum | | |
| DESIGN BY: A. Badgett / D. Jones | | |
| APPROVED: A. Lelewski | | |

Plans Prepared By:
WSP
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Charlotte NC, 28203
NC LIC NO. F-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

*Prepared for the Offices of:*
NORTH CAROLINA **Turnpike Authority**

Typical Details
DMS - Typical Mounting On-Site
DMS Not At Toll Zone
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: October 2020 | REVIEWED BY: D Johnson |
|---|---|
| PREPARED BY: D Burnett | REVIEWED BY: |

SCALE N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

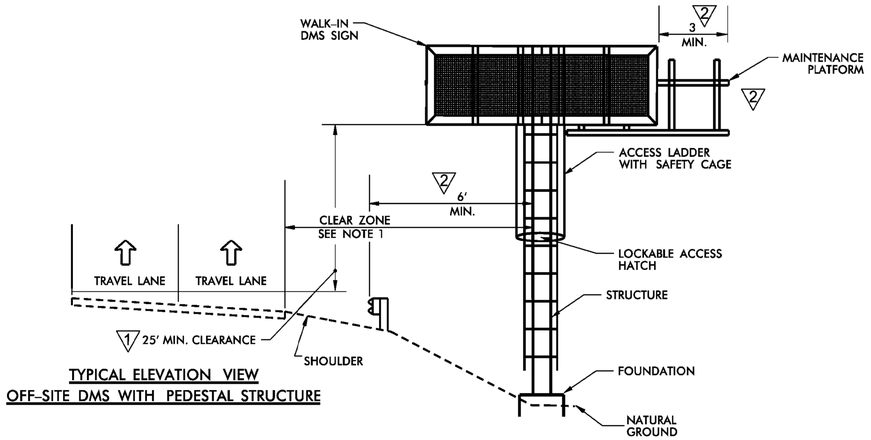
DocuSigned by: Daniel A. Johnson 11-18-2020
D02F2EC7DD9E49F... DATE

CADD Filename:

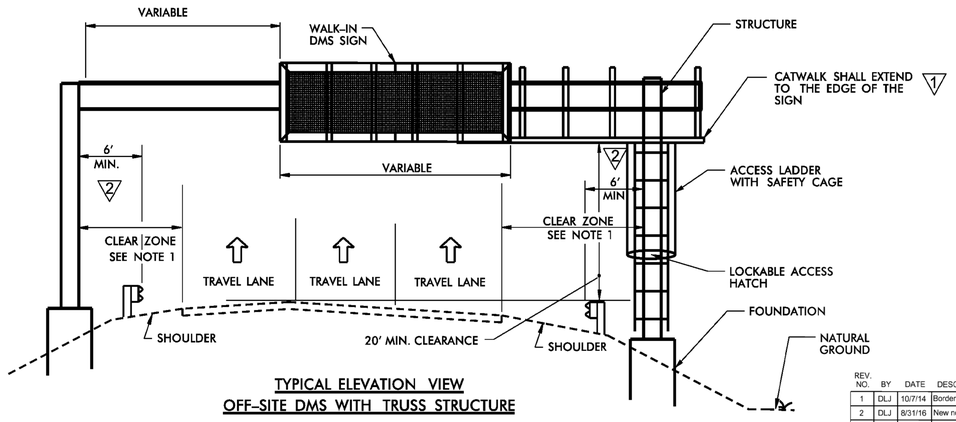
DocuSign Envelope ID: 97580486-91FA-4A1D-A645-DCA07243BFE5

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | D-2C |

NORTH CAROLINA Turnpike Authority




TYPICAL ELEVATION VIEW
OFF-SITE DMS WITH PEDESTAL STRUCTURE




TYPICAL ELEVATION VIEW
OFF-SITE DMS WITH TRUSS STRUCTURE

## GENERAL NOTES:

1. IF NO GUARDRAIL OR BARRIER WALL EXISTS, STRUCTURE SHALL BE OUTSIDE CLEAR ZONE. CLEAR ZONE SHALL BE MEASURED TO EDGE OF DRILLED SHAFT IF DRILLED SHAFT IS MORE THAN 4" ABOVE GRADE.
2. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.
3. CONTRACTOR IS RESPONSIBLE FOR FURNISHING DMS ELEVATIONS FOR ENGINEER'S APPROVAL.
4. USE THE ACTUAL DIMENSIONS AND WEIGHT OF THE DMS PROVIDED BY THE DMS FABRICATOR TO COMPLETE THE DESIGN OF THE DMS STRUCTURE.
5. FIELD VERIFY ALL FOOTING ELEVATIONS AND GROUND SLOPES AT THE FOOTINGS USING THE LATEST NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
6. ENSURE THAT THE TOP OF THE FOOTING EXTENDS AT LEAST 6 INCHES AND NOT MORE THAN 24 INCHES ABOVE THE HIGHEST POINT OF THE GROUND SURFACE AT THE FOOTING.
7. DESIGN AND CONSTRUCT THE PEDESTAL STRUCTURE AND DMS ENCLOSURE TO WITHSTAND WIND VELOCITIES OF 90 MPH.
8. VERIFY ALL UNDERGROUND UTILITY LOCATIONS BEFORE BEGINNING ANY UNDERGROUND WORK. DO NOT DAMAGE ANY EXISTING UTILITIES OR NCDOT COMMUNICATIONS CABLE DURING CONSTRUCTION.
9. PROVIDE A FIXED LADDER LEADING TO THE ACCESS PLATFORM. EQUIP THE LADDER WITH A SECURITY COVER (LADDER GUARD). START THE FIRST LADDER RUNG NO MORE THAN 18 INCHES ABOVE A CONCRETE LANDING PAD. DESIGN RUNGS ON 12 INCH CENTER-TO-CENTER TYPICAL SPACING.
10. INSTALL A CONCRETE LANDING PAD MEASURING A MINIMUM 4 INCHES DEEP, 24 INCHES WIDE, AND 36 INCHES LONG DIRECTLY BENEATH THE LADDER.
11. SEE ROADWAY PLANS FOR GUARDRAIL DETAILS.
12. BENDS IN THE CONDUIT WITH DMS COMMUNICATIONS CABLE (6-COUNT SINGLE MODE FIBER-OPTIC CABLE) SHALL NOT EXCEED THE MANUFACTURER'S MINIMUM RADIUS FOR THE FIBER-OPTIC CABLE.
13. DMS CABINETS SHALL BE EITHER BE GROUND-MOUNTED OR MOUNTED ON STRUCTURE, AS DIRECTED BY THE ENGINEER.

REVISED 10 /21 /2011

| REV. NO. | BY | DATE | DESCRIPTION |
|---|---|---|---|
| 1 | DLJ | 10/7/14 | Border content and labeling; see revision marks |
| 2 | DLJ | 8/31/16 | New notes |
| | | | |
| | | | |

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# ITS STANDARD DETAILS

DMS - TYPICAL MOUNTING
OFF-SITE DMS

| | | |
|---|---|---|
| SCALE: N.T.S. | NORTH CAROLINA TURNPIKE AUTHORITY | SHEET NO. D-2C |
| DATE: August, 2011 | | |
| DWG. BY: B. Slocum | | |
| DESIGN BY: A. Badgett / D. Jones | | |
| APPROVED: A. Lelewski | | |

Plans Prepared By:
WSP
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NORTH CAROLINA Turnpike Authority

Typical Details
DMS - Typical Mounting
Off-Site DMS
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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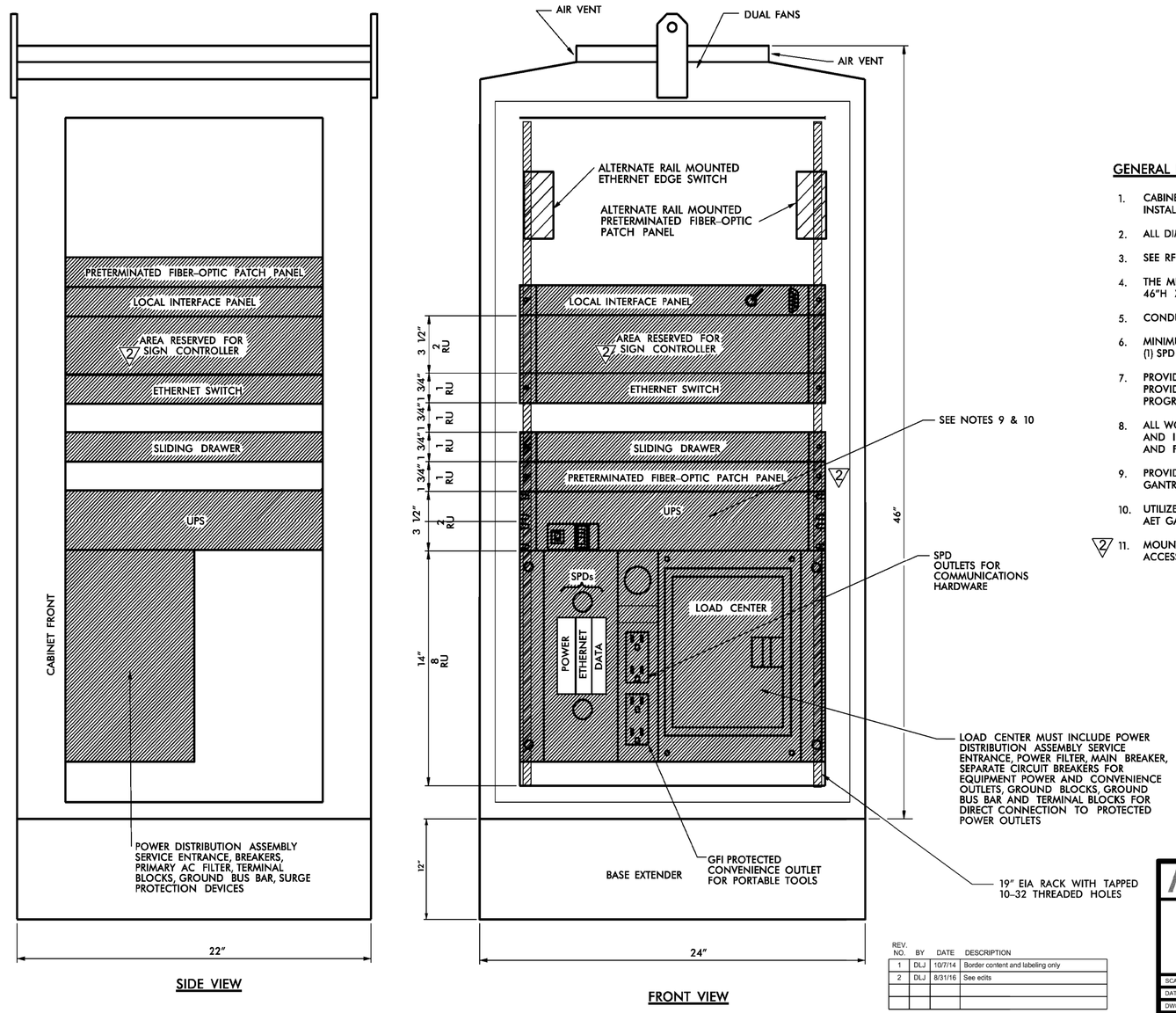
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | D-4 |




NORTH CAROLINA Turnpike Authority

## GENERAL NOTES:

1. CABINET LAYOUT IS FOR BASE-MOUNTED INSTALLATIONS.
2. ALL DIMENSIONS ARE APPROXIMATE.
3. SEE RFP REQUIREMENTS FOR CABINET TYPE AND SIZE.
4. THE MINIMUM DMS CABINET DIMENSIONS SHALL BE 46"H X 24"W X 22"D.
5. CONDUIT ENTRANCES ARE AT BOTTOM OF CABINET.
6. MINIMUM NUMBER OF DUPLEX OUTLETS IS TWO, (1) SPD AND (1) GFI PROTECTED.
7. PROVIDE SIGN CONTROLLER IN GROUND CABINET TO PROVIDE FULL ACCESS TO DMS SIGN FOR CONTROL, PROGRAMMING AND TROUBLESHOOTING.
8. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.
9. PROVIDE UPS FOR ALL DMS NOT LOCATED AT AET GANTRY STRUCTURES.
10. UTILIZE UPS IN AET VAULT FOR ALL DMS LOCATED AT AET GANTRY STRUCTURE LOCATIONS.
11. (2) MOUNT PATCH PANEL AS LOW AS POSSIBLE FOR EASY ACCESS AND MAINTENANCE.

REVISED 10 /21 /2011

| REV. NO. | BY | DATE | DESCRIPTION |
|---|---|---|---|
| 1 | DLJ | 10/7/14 | Border content and labeling only |
| 2 | DLJ | 8/31/16 | See edits |

ATKINS 5200 77 Center Drive, Suite 50 Charlotte, North Carolina 28217 (704) 522-7275 NCBEES #F-0326

# ITS STANDARD DETAILS
DMS
CABINET LAYOUT

| | | |
|---|---|---|
| SCALE: N.T.S. | NORTH CAROLINA TURNPIKE AUTHORITY | SHEET NO. |
| DATE: August, 2011 | | D-4 |
| DWG. BY: B. Slocum | | |
| DESIGN BY: A. Badgett / D. Jones | | |
| APPROVED: A. Lelewski | | |

Plans Prepared By:
wsp
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC NO. F-0165

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Prepared for the Offices of:
NORTH CAROLINA Turnpike Authority

Typical Details
DMS - Cabinet Layout
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: | October 2020 | REVIEWED BY: | D Johnson |
| PREPARED BY: | D Burnett | REVIEWED BY: | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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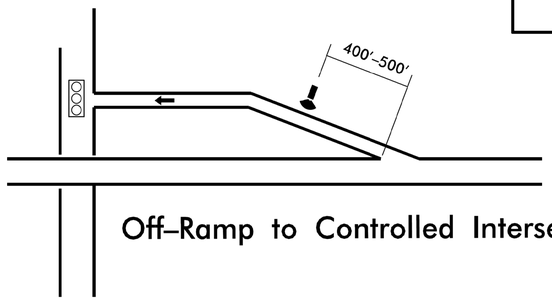
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828 | M-7 |

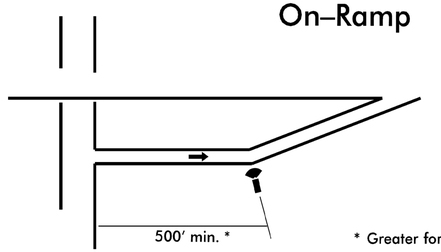
NORTH CAROLINA
**Turnpike Authority**

# Ramp Detector Location

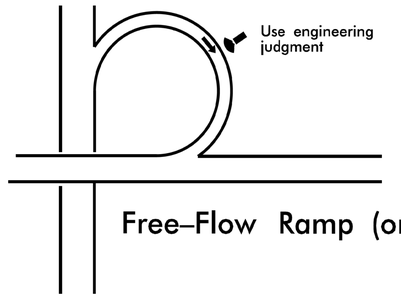



Off–Ramp to Controlled Intersection

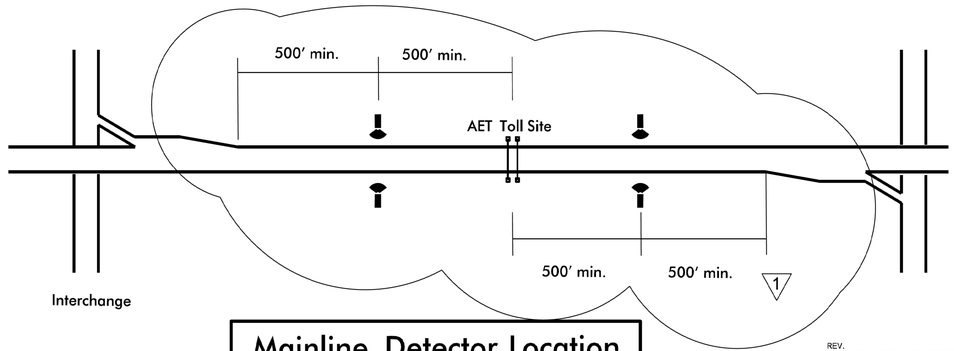
On–Ramp




* Greater for steep grades




Free–Flow Ramp (on– or off–ramp)




# Mainline Detector Location

NOTES:

1. One or 2 detectors per site may be required; see Scope of Work.
2. Locate detector sites roughly half way between toll site and on/off ramp, if possible.

| REV. NO. | BY | DATE | DESCRIPTION |
|---|---|---|---|
| 1 | DLJ | 10/7/14 | Revised mainline spacing, border changes |
| | | | |
| | | | |
| | | | |

ATKINS 5200 77 Center Drive, Suite 50
Charlotte, North Carolina 28217
(704) 522-7275 NCBEES #F-0326

## ITS STANDARD DETAILS
MICROWAVE DETECTION
PLACEMENT SCHEMATIC

| | | |
|---|---|---|
| SCALE: N.T.S. | NORTH CAROLINA TURNPIKE AUTHORITY | SHEET NO. M-7 |
| DATE: August, 2011 | | |
| DWG. BY: B. Slocum | | |
| DESIGN BY: A. Badgett / D. Jones | | |
| APPROVED: A. Lelewski | | |

**Plans Prepared By:**
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*Prepared for the Offices of:*
NORTH CAROLINA **Turnpike Authority**

Typical Details
Microwave Detection
Placement Schematic
Wake &
Divisions 4 & 5 Johnston Counties Near Raleigh

| | | | |
|---|---|---|---|
| PLAN DATE: October 2020 | REVIEWED BY: D Johnson | | |
| PREPARED BY: D Burnett | REVIEWED BY: | | |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
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| PROJECT REFERENCE NO. | SHEET NO. |
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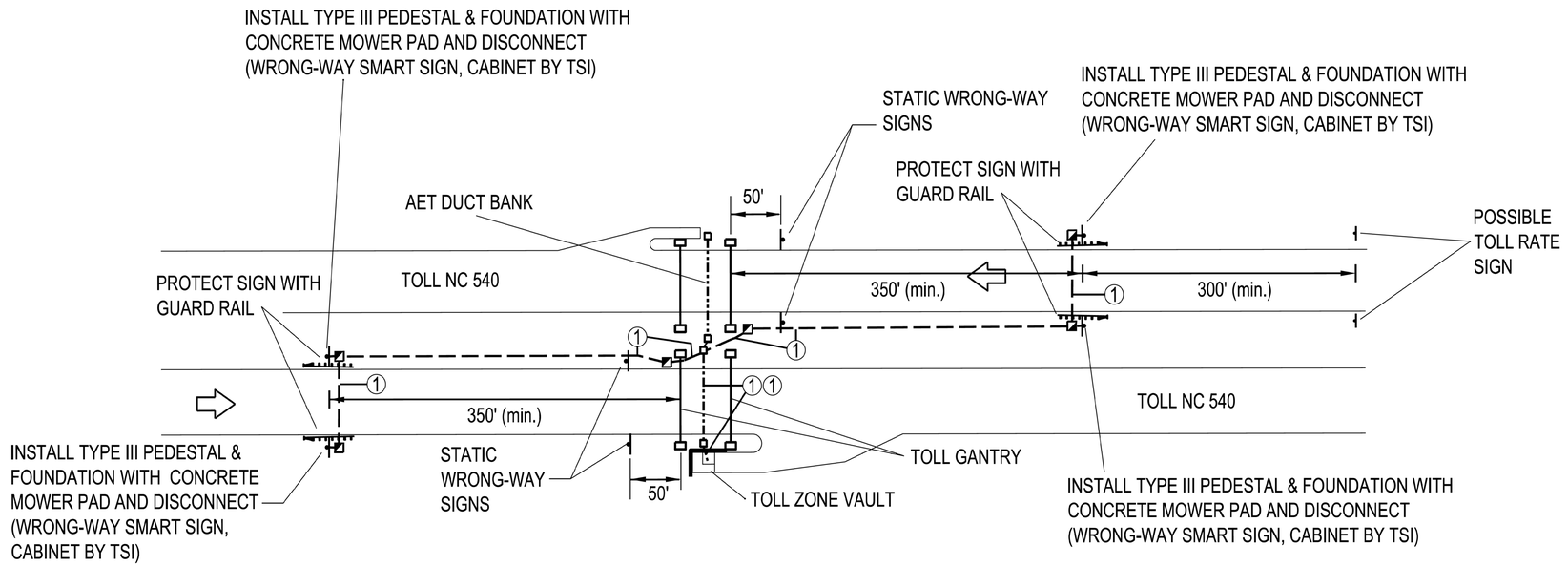
| R-2828 | W-1 |




NOTES:

1. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.
2. USE SPARE CONDUITS IN AET DUCT BANK.
3. INSTALL 12" WIDE, 8" DEEP CONCRETE COLLAR FOR ALL PEDESTALS.
4. LOCATE SIGN PEDESTALS ACCORDING TO SECTION 2A.19 OF THE MUTCD.
5. INSTALL 12" WIDE, 8" DEEP CONCRETE COLLAR PAD FOR ALL JUNCTION BOXES
6. CONDUIT ROUTE FROM TOLL ZONE TO SIGNS MAY USE EITHER SHOULDER.
7. CONDUIT ROUTE MAY BE TRENCHED IN TANDEM WITH FIBER TRUNKLINE, BUT MAY NOT USE CONDUIT DEDICATED TO FIBER.
8. IF A MAJOR OBSTRUCTION (E.G. A NOISE WALL) CONFLICTS WITH INSTALLATION OF ONE OF THE TWO SIGN PEDESTALS FOR A GIVEN DIRECTION, IT MAY BE OMITTED.
9. RUN A SINGLE 3-WIRE CONDUCTOR FROM BOX AT FURTHEST SIGN TO VAULT. STORE 25' OF WIRE IN EACH JUNCTION BOX AND VAULT, FOR CONNECTION BY TSI. AWG SIZE TO BE CONFIRMED WITH TSI/NCTA.

LEGEND

- TRENCH OR BORED CONDUIT (2 X 2" HDPE)
- TOLL SITE ELECTRICAL PULLBOX
- ELECTRICAL PULL BOX FOR WRONG-WAY SIGN
- WRONG-WAY SMART SIGN PEDESTAL & FOUNDATION

CONDUIT FILL CALLOUTS

① 1 x 3-WIRE CONDUCTOR (10 AWG)

NORTH CAROLINA Turnpike Authority

WRONG-WAY DRIVER DETECTION
MAINLINE SIGN INFRASTRUCTURE

| SCALE: N.T.S. | NORTH CAROLINA TURNPIKE AUTHORITY | W-1 |
|---|---|---|
| DATE: Rev Jan 2020 | | |

Plans Prepared By:

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Prepared for the Offices of:

NORTH CAROLINA Turnpike Authority

Typical Details
Wrong-Way Driver Detection
Mainline Sign Infrastructure
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: October 2020 | REVIEWED BY: D Johnson |
|---|---|
| PREPARED BY: D Burnett | REVIEWED BY: |

| SCALE | REVISIONS | INIT. | DATE |
|---|---|---|---|
| N.T.S. | | | |

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| PROJECT REFERENCE NO. | SHEET NO. |
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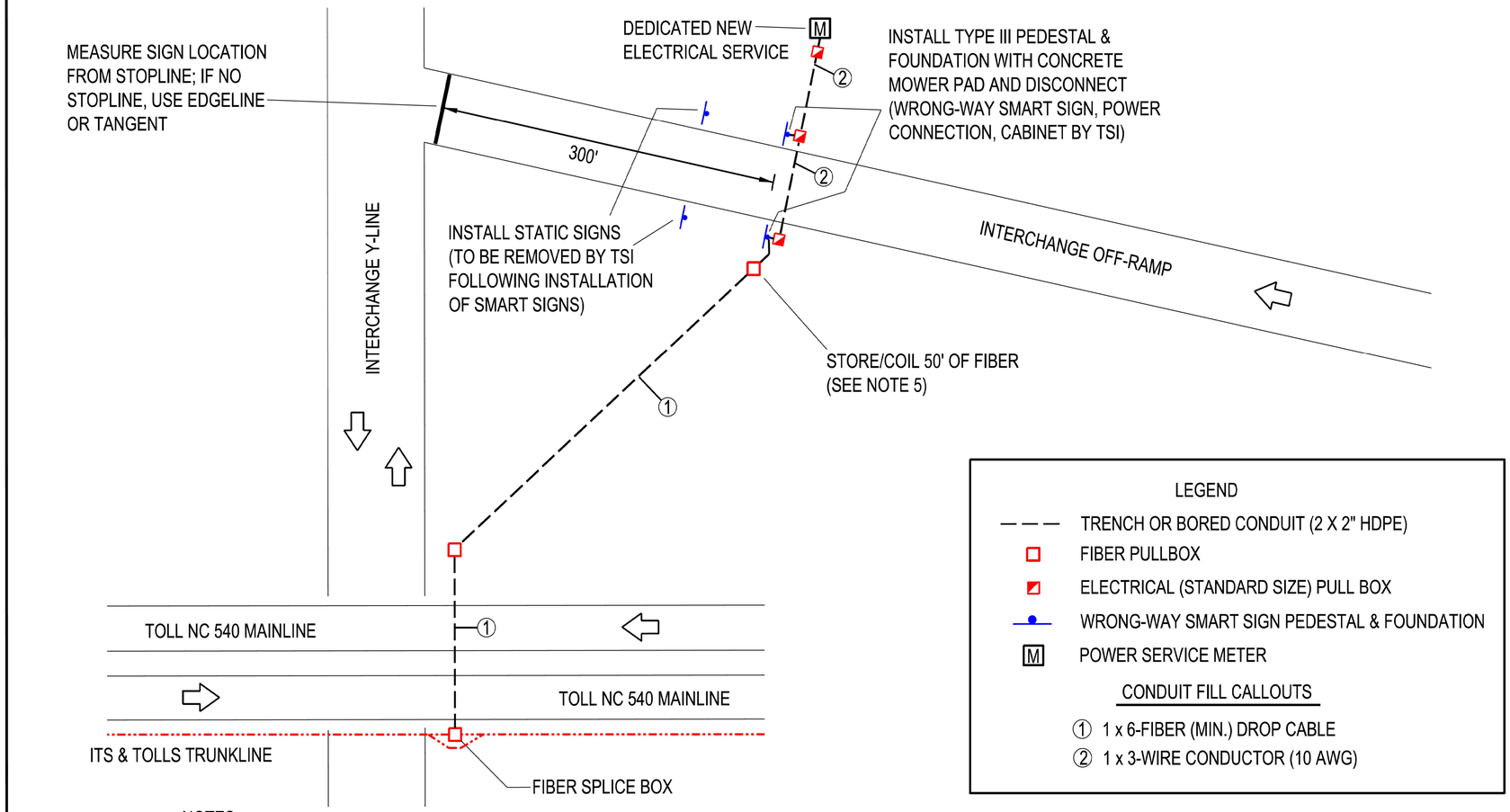
| R-2828 | W-2a |




NOTES:

1. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE RFP.
2. INSTALL 12" WIDE, 8" DEEP CONCRETE COLLAR (FLUSH WITH GRADE) FOR ALL PEDESTALS.
3. LOCATE SIGN PEDESTALS ACCORDING TO SECTION 2A.19 OF THE MUTCD.
4. INSTALL 12" WIDE, 8" DEEP CONCRETE COLLAR FOR ALL JUNCTION BOXES
5. COIL/STORE FIBER-OPTIC CABLE IN JUNCTION BOX FOR CONNECTION BY TSI.
6. POWER SERVICE CAN BE SHARED WITH MVD OR CCTV BUT NOT A TRAFFIC SIGNAL.
7. SPLICE WWDD FIBER DROP INTO THE TOLLS CABLE AS AS DIRECTED BY NCTA.
8. FOR OFF-RAMP LOOPS, INSTALL SIGNS 250' FROM STOPLINE, OR USE ENGINEERING JUDGEMENT.
9. RUN A SINGLE 3-WIRE CONDUCTOR FROM METER TO FURTHEST DEVICE BOX. STORE 25' OF WIRE IN EACH JUNCTION BOX, FOR CONNECTION BY TSI. AWG SIZE TO BE CONFIRMED WITH TSI/NCTA.

NORTH CAROLINA Turnpike Authority

WRONG-WAY DRIVER DETECTION
RAMP SIGN INFRASTRUCTURE
POWER SERVICE FROM OUTSIDE OF RAMP

| SCALE: N.T.S. | NORTH CAROLINA TURNPIKE AUTHORITY | W-2a |
|---|---|---|
| DATE: JUNE 2020 | | |

Plans Prepared By:

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Charlotte NC, 28203
NC LIC NO. F-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of: NORTH CAROLINA Turnpike Authority

Typical Details
Wrong-Way Driver Detection
Ramp Sign Infrastructure
Power Service From Outside Of Ramp
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: October 2020 | REVIEWED BY: D Johnson |
|---|---|
| PREPARED BY: D Burnett | REVIEWED BY: |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 34372 DANIEL A. JOHNSON

DocuSigned by: Daniel A. Johnson 11-18-2020
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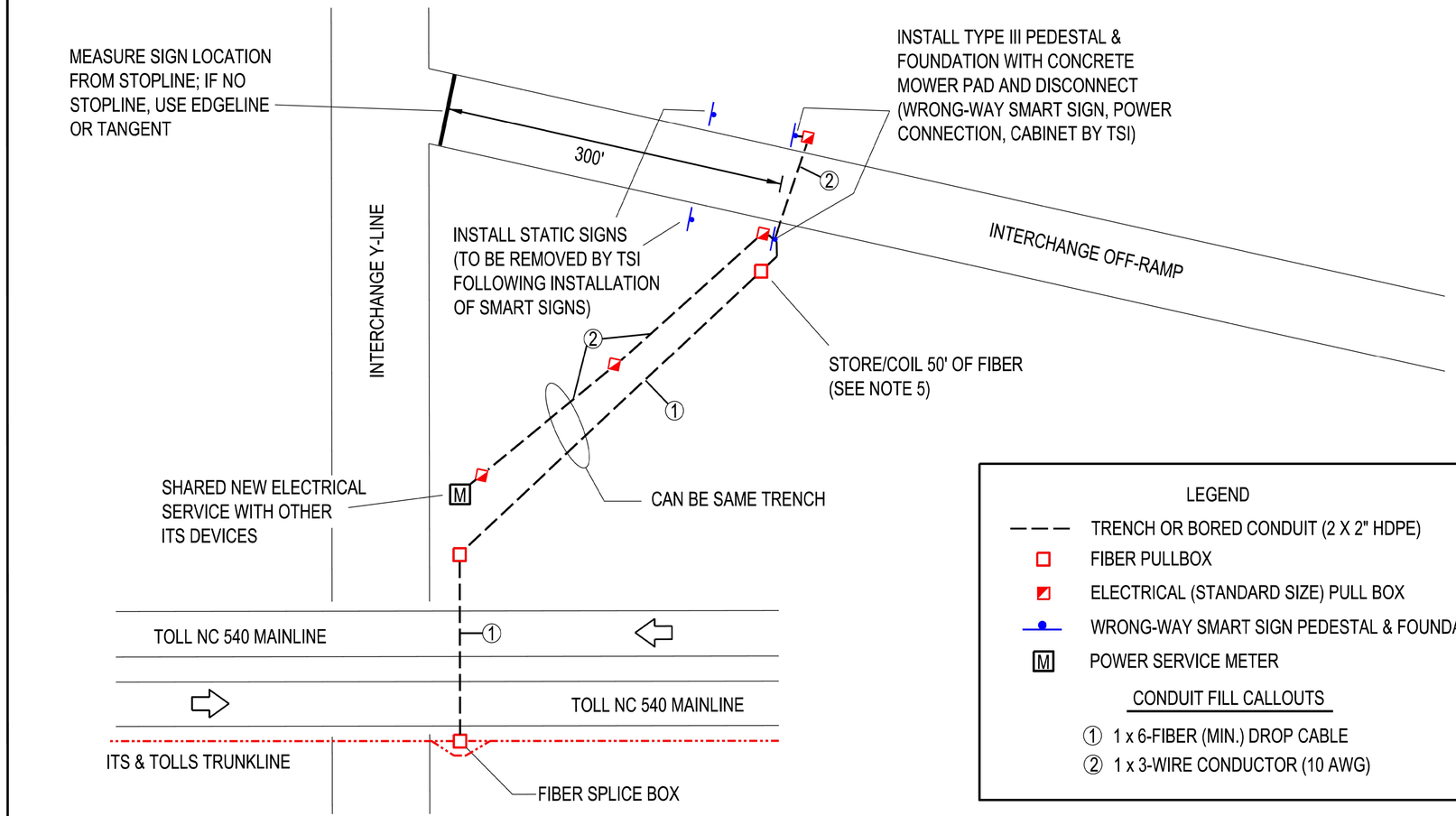
| R-2828 | W-2b |




LEGEND

- TRENCH OR BORED CONDUIT (2 X 2" HDPE)
- FIBER PULLBOX
- ELECTRICAL (STANDARD SIZE) PULL BOX
- WRONG-WAY SMART SIGN PEDESTAL & FOUNDATION
- M POWER SERVICE METER

CONDUIT FILL CALLOUTS

① 1 x 6-FIBER (MIN.) DROP CABLE
② 1 x 3-WIRE CONDUCTOR (10 AWG)

NOTES:

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2. INSTALL 12" WIDE, 8" DEEP CONCRETE COLLAR (FLUSH WITH GRADE) FOR ALL PEDESTALS.
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NORTH CAROLINA Turnpike Authority

WRONG-WAY DRIVER DETECTION
RAMP SIGN INFRASTRUCTURE
POWER SERVICE FROM INSIDE OF RAMP

| SCALE: N.T.S. | NORTH CAROLINA TURNPIKE AUTHORITY | W-2b |
|---|---|---|
| DATE: JUNE 2020 | | |

Plans Prepared By:

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Prepared for the Offices of: NORTH CAROLINA Turnpike Authority

Typical Details
Wrong-Way Driver Detection
Ramp Sign Infrastructure
Power Service From Inside Of Ramp
Wake & Divisions 4 & 5 Johnston Counties Near Raleigh

| PLAN DATE: October 2020 | REVIEWED BY: D Johnson |
|---|---|
| PREPARED BY: D Burnett | REVIEWED BY: |

SCALE: N.T.S.

| REVISIONS | INIT. | DATE |
|---|---|---|

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NORTH CAROLINA PROFESSIONAL SEAL 34372 ENGINEER DANIEL A. JOHNSON

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