

PROJECT: I-4733

CONTRACT: C203203

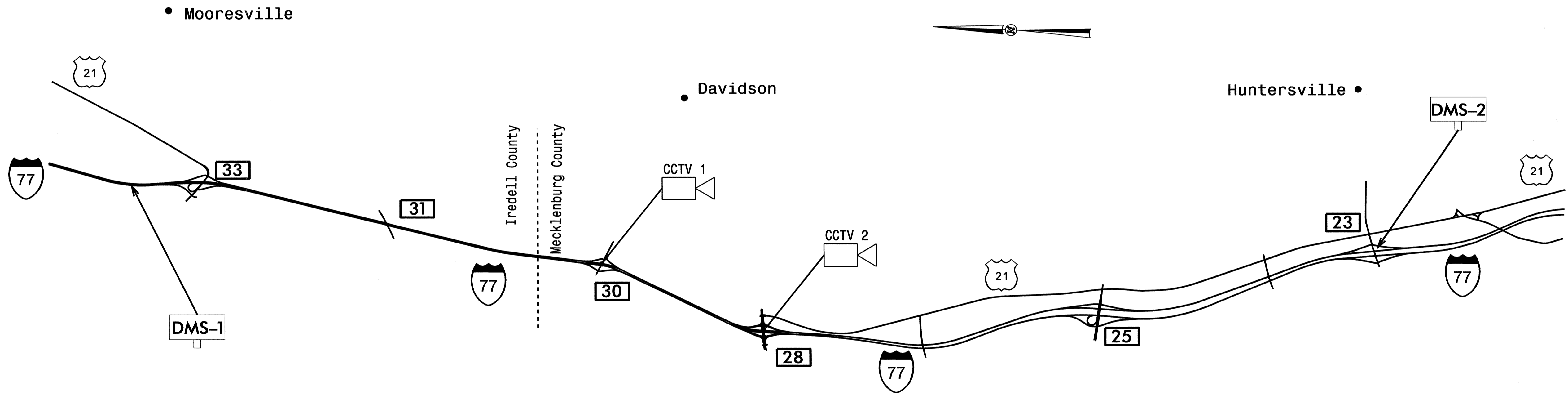
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG AND IREDELL COUNTIES

**PLANS FOR PROPOSED
DYNAMIC MESSAGE SIGN & CAMERA INSTALLATIONS**

THIS PROJECT CONSISTS OF FURNISHING AND INSTALLING EQUIPMENT AND MATERIALS FOR THE INSTALLATION OF TWO (2) DYNAMIC MESSAGE SIGNS AND TWO (2) CAMERAS ALONG I-77 IN MECKLENBURG AND IREDELL COUNTIES, NORTH CAROLINA. RELATED MATERIALS CONSIST OF DMS ASSEMBLIES, PEDESTAL STRUCTURES, WALKWAYS, LADDERS, CAMERAS, WOOD POLES, EQUIPMENT CABINETS WITH EQUIPMENT, AND ELECTRICAL SERVICE EQUIPMENT.

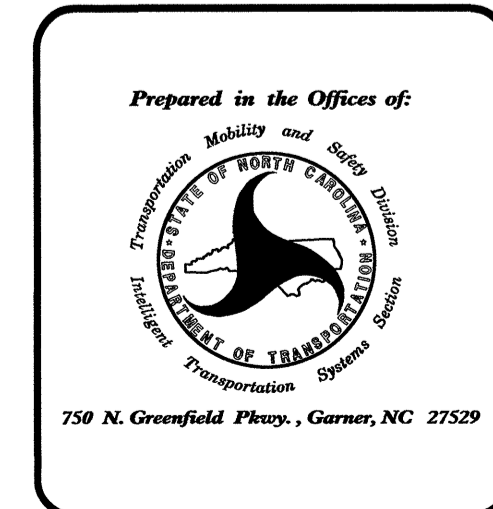
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.
N.C.	I-4733	ITS-1
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION
38063.1.1		PE
38063.2.1		ROW & UTIL
38063.3.1		CONST.



2012 STANDARD SPECIFICATIONS

NCDOT CONTACT:
TRANSPORTATION MOBILITY AND SAFETY

G.A. FULLER, P.E.
STATE ITS & SIGNALS ENGINEER



ENGLISH

ALL DIMENSIONS IN THESE
PLANS ARE IN FEET
UNLESS OTHERWISE NOTED

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
023919
ENGINEER
GREGORY A. FULLER
Gregory A. Fuller
5-13-13
DATE

INDEX OF SHEETS



















- SHEET 1TITLE SHEET
- SHEET 2INDEX OF SHEETS, ROADWAY STANDARD DRAWINGS, AND LEGEND
- SHEET 3-8PLAN SHEETS
- SHEET 9SPLICE PLAN
- SHEET 10-13TYPICAL DETAILS

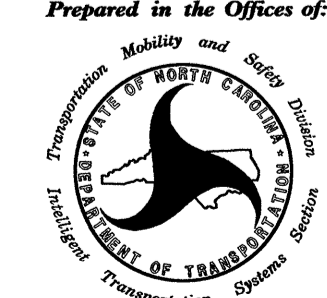

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS". ROADWAY DESIGN UNIT – N.C. DEPARTMENT OF TRANSPORTATION – RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1700.01	ELECTRICAL SERVICE OPTIONS
1700.02	ELECTRICAL SERVICE GROUNDING
1715.01	UNDERGROUND CONDUIT
1716.01	JUNCTION BOXES
1720.01	WOOD POLES

LEGEND

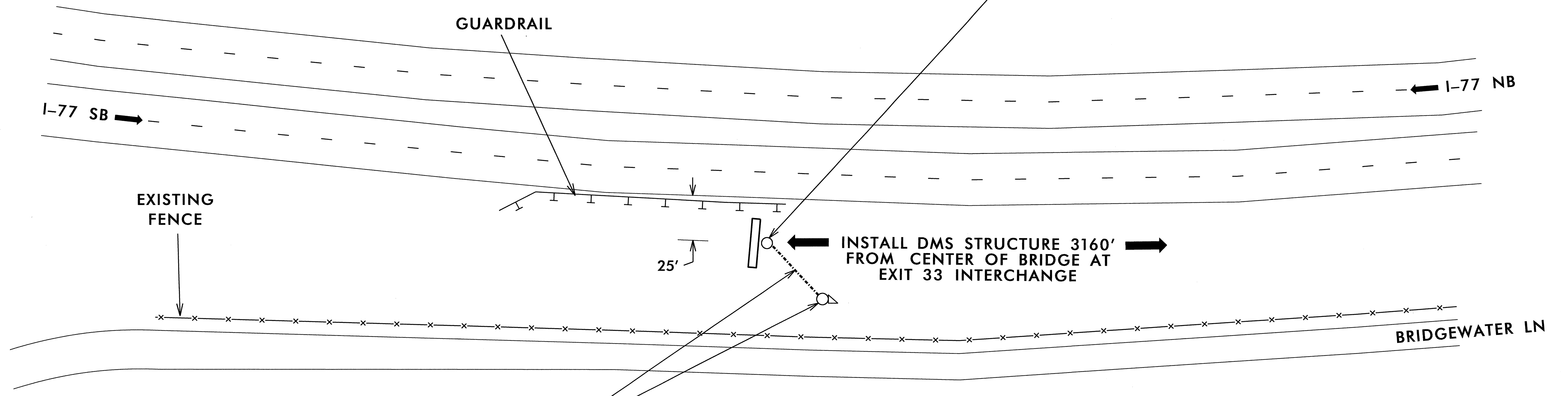
	NEW CONDUIT
	EXISTING CONDUIT
	NEW DIRECTIONAL DRILLED CONDUIT
	NEW GUARDRAIL
	EXISTING GUARDRAIL
	EXISTING CABLE GUARD
	NEW ELECTRICAL SERVICE
	EXISTING ELECTRICAL SERVICE
	NEW WOOD POLE
	EXISTING WOOD POLE
	NEW JUNCTION BOX
	EXISTING JUNCTION BOX
	EXISTING SPLICE ENCLOSURE
	EXISTING METAL POLE
	NEW CCTV CAMERA ASSEMBLY
	EXISTING CCTV CAMERA ASSEMBLY
	EXISTING SIGNAL CONTROLLER AND CABINET
	NEW DMS PEDESTAL STRUCTURE

 <p>759 N. Greenfield Place, Garner, NC 27529</p>	<p align="center">DMS & CCTV INSTALLATION</p> <p align="center">INDEX OF SHEETS, ROADWAY STANDARD DRAWINGS, AND LEGEND</p>		<p align="center">SEAL</p> 					
	<p>DIVISION 10 & 12 MECKLENBURG & IREDELL CO.</p> <p>PLAN DATE: MAY 2013 REVIEWED BY: GREEN</p> <p>PREPARED BY: WARDLE REVIEWED BY: PARKER</p>	<table border="1"> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>		REVISIONS	INIT.	DATE		
REVISIONS	INIT.	DATE						
<p>SCALE</p> <p>0 _____</p> <p>N/A</p>	<p>CADD File name:</p>		<p>DATE</p>					

DMS-1 GPS COORDINATES

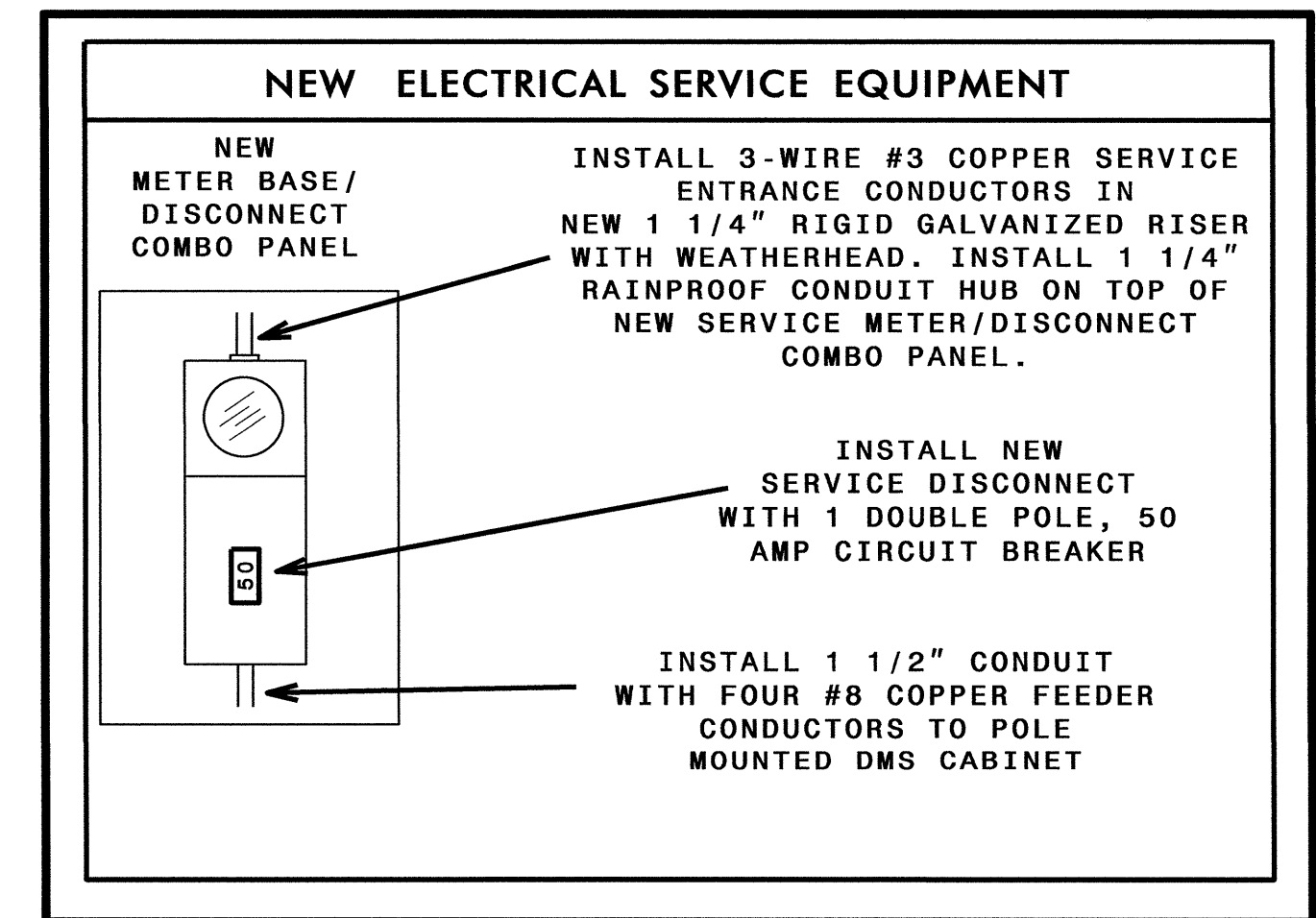
35° 33.722 N
80° 51.537 W

INSTALL THE FOLLOWING	
QUANTITY	DESCRIPTION
1	DMS
1	STRUCTURE
1	FOUNDATION
1	LADDER



INSTALL THE FOLLOWING	
QUANTITY	DESCRIPTION
1	WOOD POLE (CLASS 4, 40')
1	METER BASE/DISCONNECT COMBINATION PANEL
1	1 1/4" RISER WITH WEATHERHEAD
25'	UNPAVED TRENCHING (2)(1 1/2")
35'	4-WIRE COPPER FEEDER CONDUCTORS
3	5/8" x 10' GROUNDING ELECTRODE
60'	#4 SOLID BARE COPPER GROUNDING CONDUCTOR

* CONTACT MR. THOMAS EDELEN - DUKE ENERGY (704-582-8070) TO ESTABLISH NEW ELECTRICAL SERVICE.

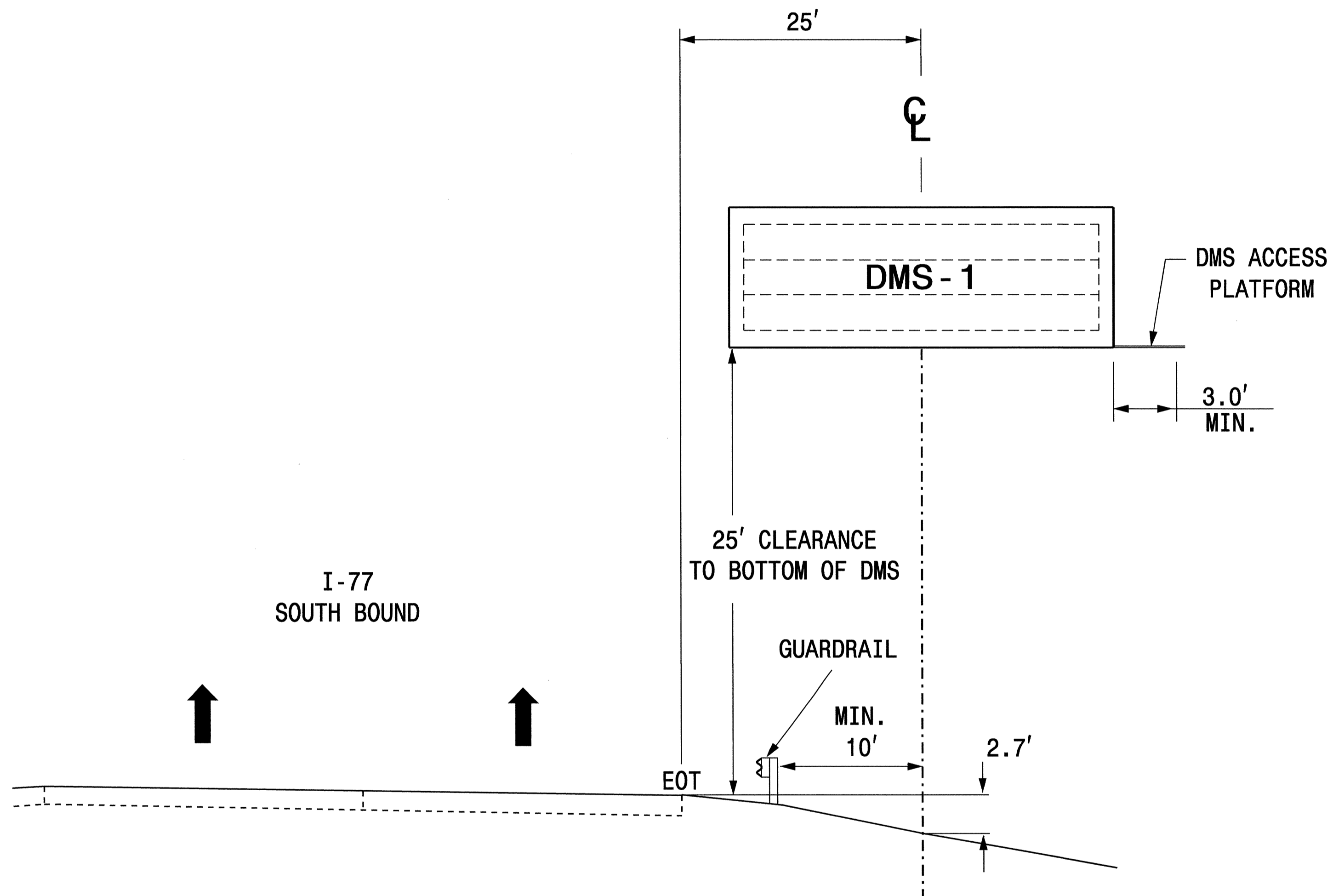


NOTES

1. INSTALL NEW DMS, WALKWAY, AND LADDER ON NEW DMS STRUCTURE.
2. INSTALL NEW DMS POLE MOUNTED CABINET ON NEW DMS STRUCTURE.
3. CONTACT MR. THOMAS EDELEN - DUKE ENERGY (704-582-8070) TO ESTABLISH NEW ELECTRICAL SERVICE.
4. COMMUNICATIONS LINK BETWEEN DEVICES AND MRTMC WILL BE ESTABLISHED BY OTHERS.
5. INSTALL NEW GROUNDING SYSTEM AS SHOWN ON SHEET ITS-10 AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.

	DMS INSTALLATION		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER GREGORY A. FULLER 023919
	DIVISION 12 IREDELL CO. MOORESVILLE PLAN DATE: MAY 2013 PREPARED BY: WARDLE REVIEWED BY: GREEN REVIEWED BY: PARKER	REVISIONS INIT. DATE	

ESTIMATED DIMENSION : 27' X 10'
 MAXIMUM DEADLOAD OF 5200 LBS



NOTES

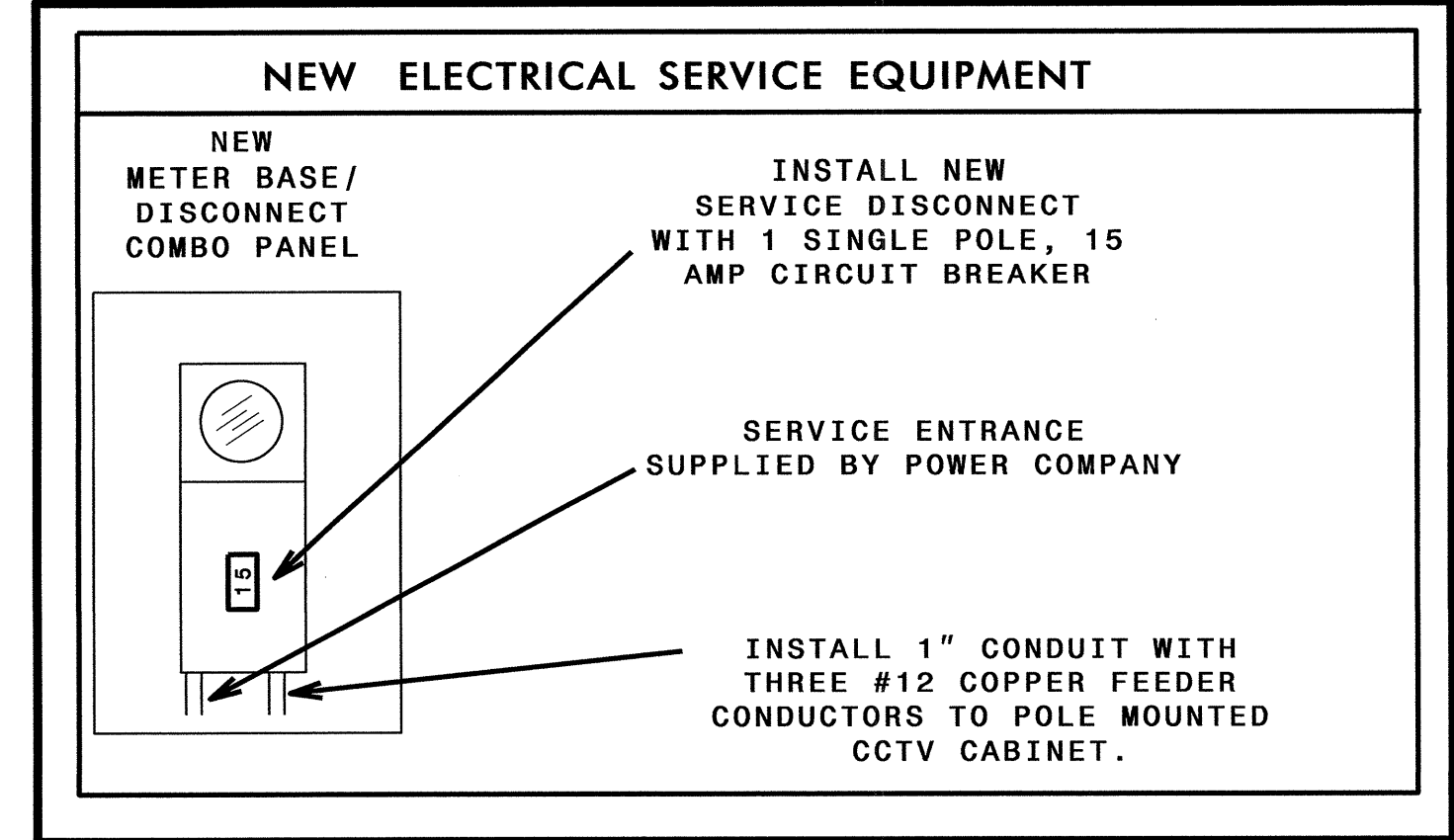
1. PROVIDE A FIXED LADDER LEADING TO THE ACCESS PLATFORM.
2. EQUIP THE LADDER WITH A SECURITY COVER (LADDER GUARD). START THE FIRST LADDER RUNG NO MORE THAN 18 INCHES ABOVE A CONCRETE LANDING PAD. DESIGN RUNGS ON 12 INCH CENTER-TO-CENTER TYPICAL SPACING.
3. INSTALL A CONCRETE LANDING PAD MEASURING A MINIMUM 4 INCHES DEEP, 24 INCHES WIDE, AND 36 INCHES LONG DIRECTLY BENEATH THE LADDER.
4. USE ACTUAL DIMENSIONS AND WEIGHT OF THE DMS TO COMPLETE THE DESIGN OF THE DMS STRUCTURE.
5. FIELD VERIFY ALL FOOTING ELEVATIONS AND GROUND SLOPES AT THE FOOTING 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 CABLES DURING CONSTRUCTION.

Prepared in the Offices of: 750 N. Greenfield Pkwy., Garner, NC 27529	DMS INSTALLATION		SEAL GREGORY A. FULLER ENGINEER
	DIVISION 12 IREDELL CO. MOORESVILLE PLAN DATE: MAY 2013 REVIEWED BY: GREEN PREPARED BY: WARDLE REVIEWED BY: PARKER	REVISIONS INIT. DATE	
SCALE 0 N/A	SIGNATURE: <i>Gregory A. Fuller</i> DATE: 5-13-13		CADD Filename:

CCTV-1 GPS COORDINATES

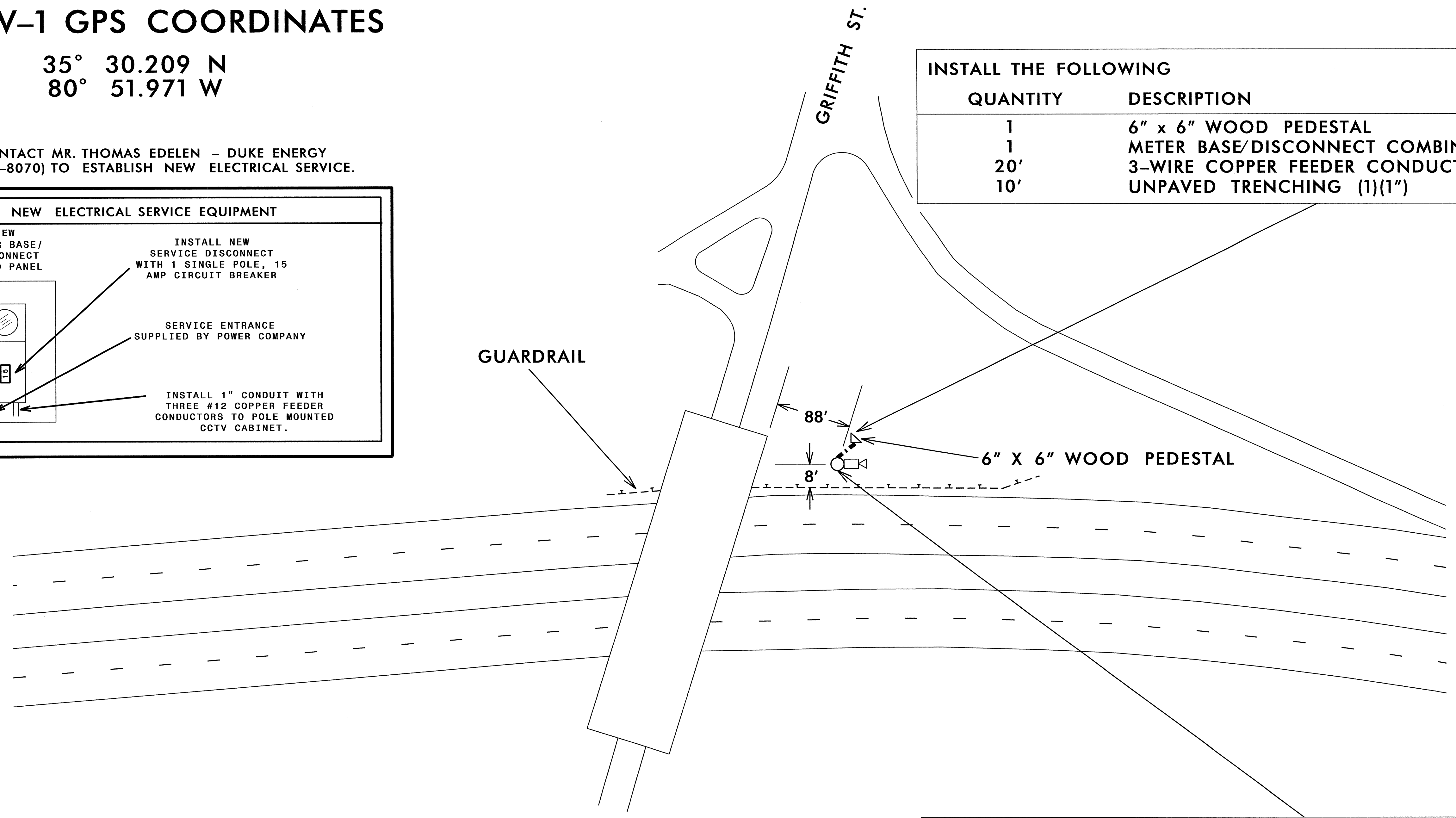
35° 30.209 N
80° 51.971 W

* CONTACT MR. THOMAS EDELEN - DUKE ENERGY (704-582-8070) TO ESTABLISH NEW ELECTRICAL SERVICE.



INSTALL THE FOLLOWING

QUANTITY	DESCRIPTION
1	6" x 6" WOOD PEDESTAL
1	METER BASE/DISCONNECT COMBINATION PANEL
20'	3-WIRE COPPER FEEDER CONDUCTORS
10'	UNPAVED TRENCHING (1)(1")



INSTALL THE FOLLOWING

QUANTITY	DESCRIPTION
1	CCTV CAMERA ASSEMBLY
1	CCTV WOOD POLE (CLASS 3, 60')
1	FIELD EQUIPMENT CABINET
1	VIDEO ETHERNET ENCODER
4	5/8" x 10' GROUNDING ELECTRODE
50'	#4 SOLID BARE COPPER GROUNDING CONDUCTOR

NOTES

1. MOUNT CAMERA 45' ABOVE GRADE.
2. INSTALL NEW FIELD EQUIPMENT CABINET ON NEW CCTV POLE.
3. CONTACT MR. THOMAS EDELEN - DUKE ENERGY (704-582-8070) TO ESTABLISH NEW ELECTRICAL SERVICE.
4. COMMUNICATIONS LINK BETWEEN DEVICES AND MRTMC WILL BE ESTABLISHED BY OTHERS.
5. INSTALL NEW GROUNDING SYSTEM AS SHOWN ON SHEET ITS-12 AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.

EXIT 30

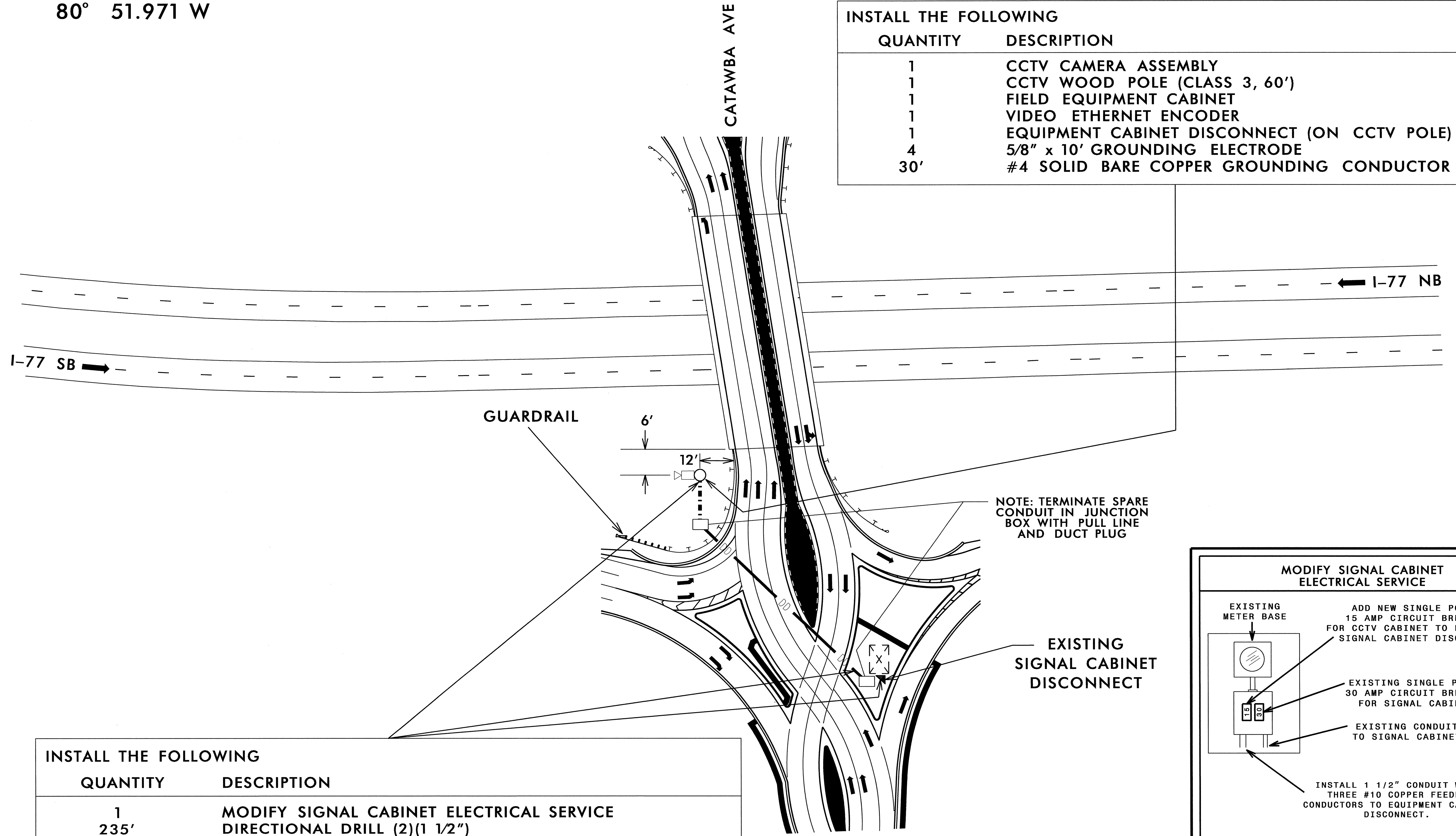
<p>Prepared in the Offices of: Transportation Mobility and Safety Division STATE OF NORTH CAROLINA 750 N. Greenfield Blvd., Garner, NC 27529</p>	CCTV INSTALLATION		
	DIVISION 10 MECKLENBURG CO. DAVIDSON PLAN DATE: MAY 2013 REVIEWED BY: GREEN PREPARED BY: WARDLE REVIEWED BY: PARKER	REVISIONS: _____ INIT. DATE _____ INIT. DATE _____ INIT. DATE	
	SIGNATURE: <i>Gregory A. Fuller</i> DATE: 5-13-13 <small>CADD File name:</small>		

CCTV-2 GPS COORDINATES

35° 30.209 N
80° 51.971 W

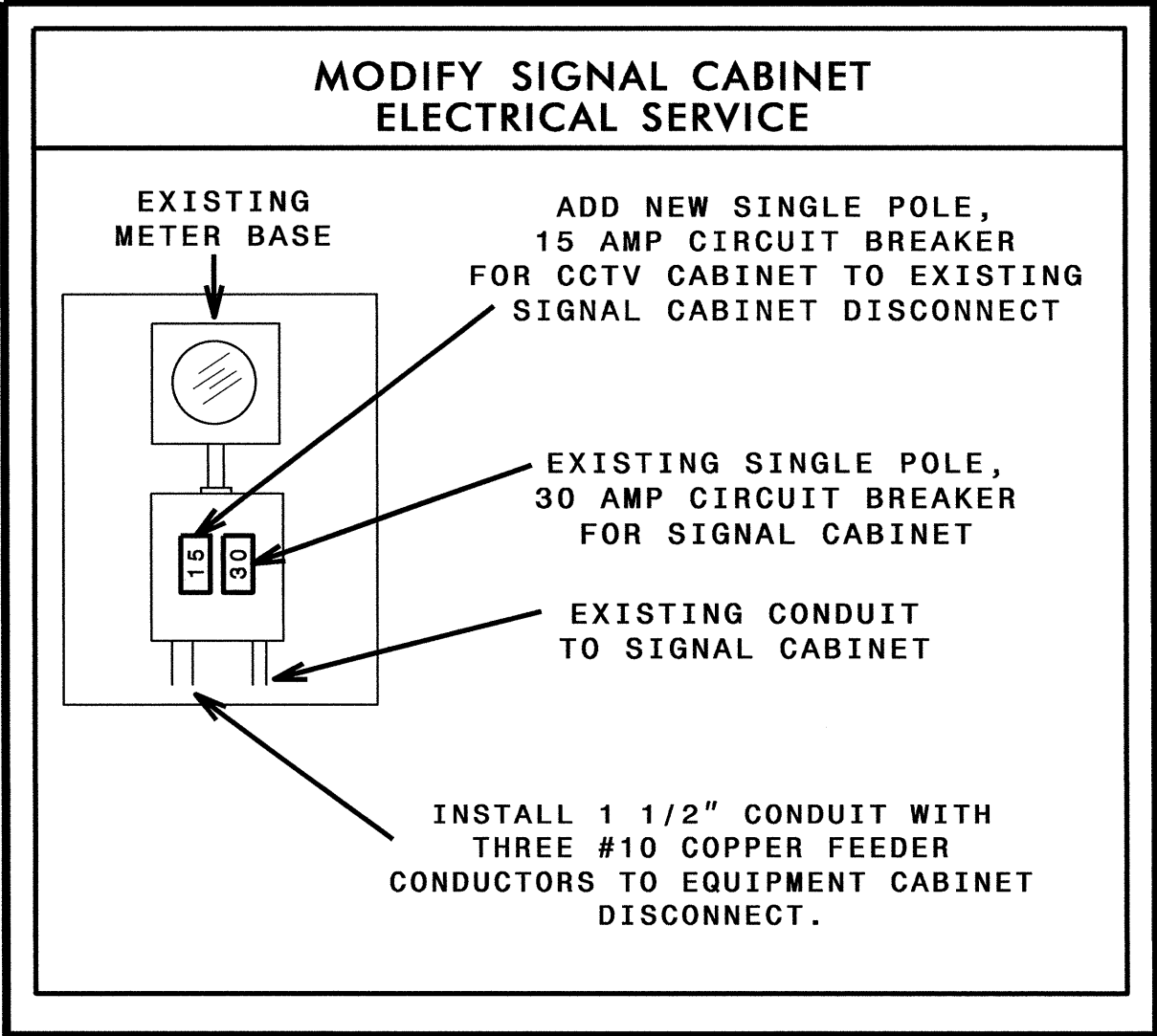
INSTALL THE FOLLOWING

QUANTITY	DESCRIPTION
1	CCTV CAMERA ASSEMBLY
1	CCTV WOOD POLE (CLASS 3, 60')
1	FIELD EQUIPMENT CABINET
1	VIDEO ETHERNET ENCODER
1	EQUIPMENT CABINET DISCONNECT (ON CCTV POLE)
4	5/8" x 10' GROUNDING ELECTRODE
30'	#4 SOLID BARE COPPER GROUNDING CONDUCTOR



INSTALL THE FOLLOWING

QUANTITY	DESCRIPTION
1	MODIFY SIGNAL CABINET ELECTRICAL SERVICE
235'	DIRECTIONAL DRILL (2)(1 1/2")
70'	UNPAVED TRENCHING (1)(1")
2	JUNCTION BOX (STANDARD SIZE)
315'	3-WIRE COPPER FEEDER CONDUCTORS



EXIT 28

NOTES

1. MOUNT CAMERA 45' ABOVE GRADE.
2. INSTALL NEW FIELD EQUIPMENT CABINET ON NEW CCTV POLE.
3. COMMUNICATIONS LINK BETWEEN DEVICES AND MRTMC WILL BE ESTABLISHED BY OTHERS.
4. INSTALL NEW GROUNDING SYSTEM AS SHOWN ON SHEET ITS-13 AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.

<p>Prepared in the Offices of: Department of Transportation 750 N. Greenfield Pkwy., Garner, NC 27529</p>	CCTV INSTALLATION		<p>SEAL</p> <p>SEAL 023919 ENGINEER GREGORY A. FULLER</p> <p><i>Gregory A. Fuller</i> SIGNATURE</p> <p>5-13-13 DATE</p>	
	DIVISION 10	MECKLENBURG CO.		CORNELIUS
	PLAN DATE: MAY 2013	REVIEWED BY: GREEN		
	PREPARED BY: WARDLE	REVIEWED BY: PARKER		
SCALE: 0 N/A	REVISIONS	INIT.	DATE	

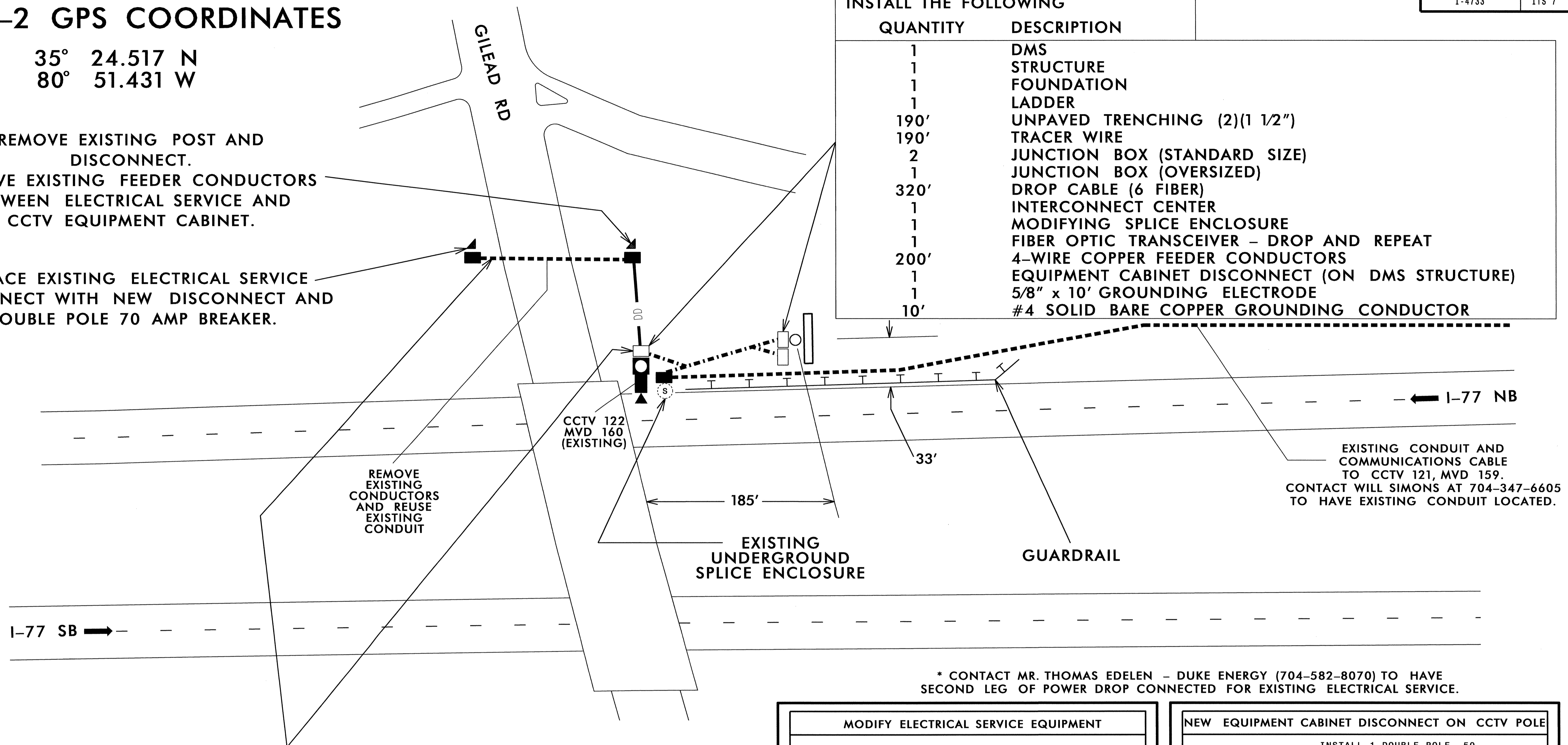
CADD Filename:

DMS-2 GPS COORDINATES

35° 24.517 N
80° 51.431 W

REMOVE EXISTING POST AND DISCONNECT.
REMOVE EXISTING FEEDER CONDUCTORS BETWEEN ELECTRICAL SERVICE AND CCTV EQUIPMENT CABINET.

REPLACE EXISTING ELECTRICAL SERVICE DISCONNECT WITH NEW DISCONNECT AND DOUBLE POLE 70 AMP BREAKER.



INSTALL THE FOLLOWING

QUANTITY	DESCRIPTION
1	DMS
1	STRUCTURE
1	FOUNDATION
1	LADDER
190'	UNPAVED TRENCHING (2)(1 1/2")
190'	TRACER WIRE
2	JUNCTION BOX (STANDARD SIZE)
1	JUNCTION BOX (OVERSIZED)
320'	DROP CABLE (6 FIBER)
1	INTERCONNECT CENTER
1	MODIFYING SPLICE ENCLOSURE
1	FIBER OPTIC TRANSCEIVER - DROP AND REPEAT
200'	4-WIRE COPPER FEEDER CONDUCTORS
1	EQUIPMENT CABINET DISCONNECT (ON DMS STRUCTURE)
1	5/8" x 10' GROUNDING ELECTRODE
10'	#4 SOLID BARE COPPER GROUNDING CONDUCTOR

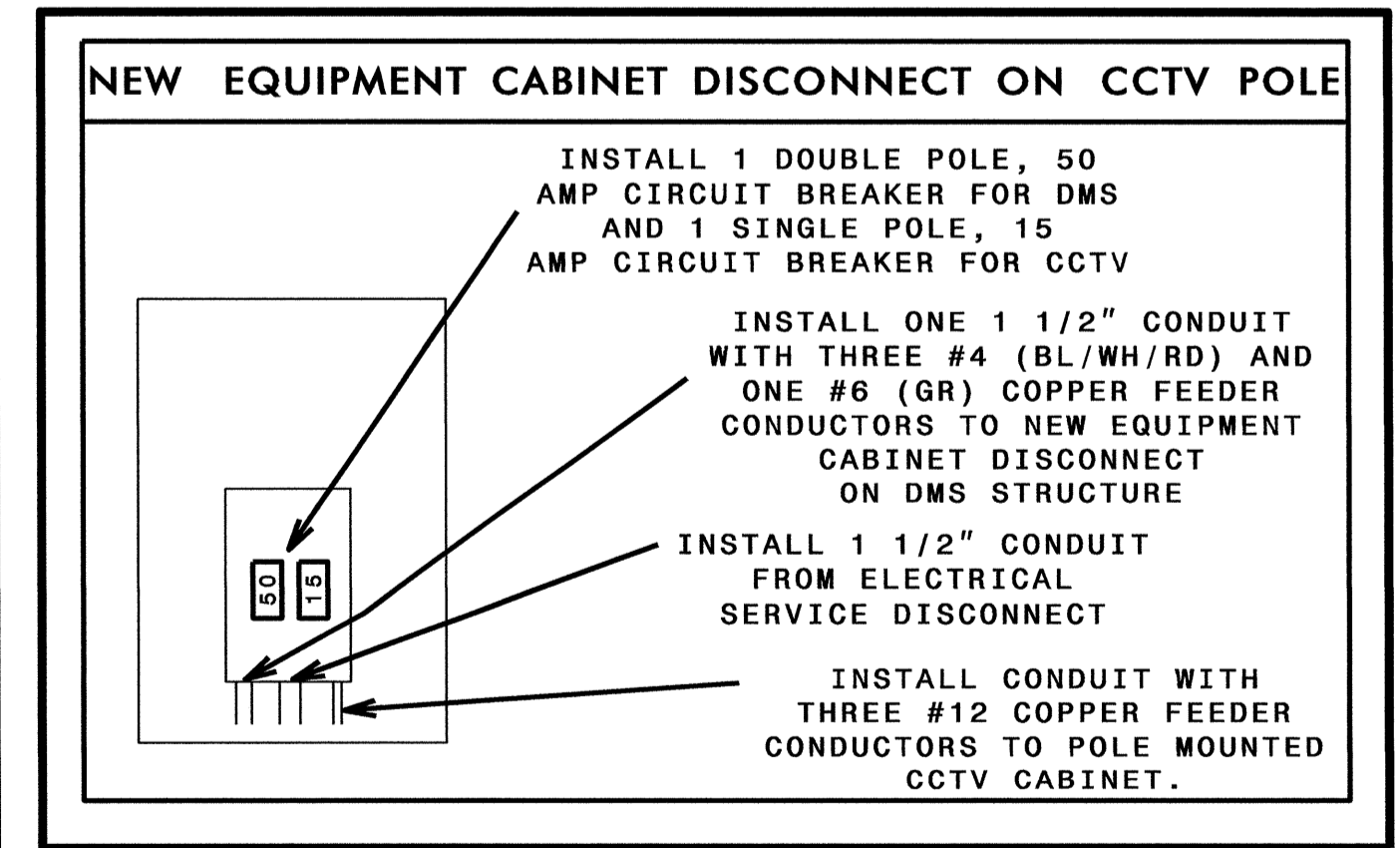
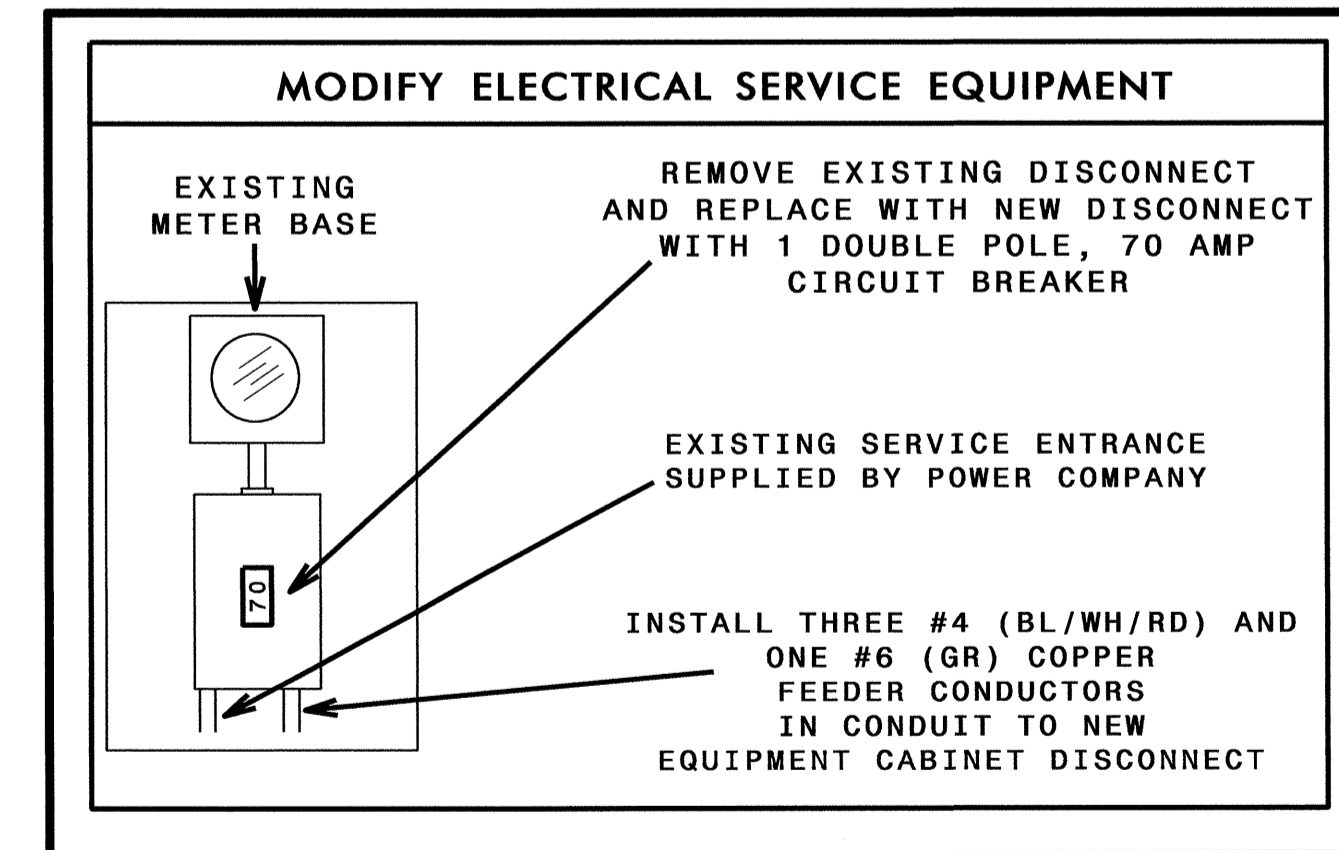
REMOVE EXISTING CONDUCTORS AND REUSE EXISTING CONDUIT

EXISTING CONDUIT AND COMMUNICATIONS CABLE TO CCTV 121, MVD 159. CONTACT WILL SIMONS AT 704-347-6605 TO HAVE EXISTING CONDUIT LOCATED.

* CONTACT MR. THOMAS EDELEN - DUKE ENERGY (704-582-8070) TO HAVE SECOND LEG OF POWER DROP CONNECTED FOR EXISTING ELECTRICAL SERVICE.

INSTALL THE FOLLOWING

QUANTITY	DESCRIPTION
1	MODIFY EXISTING ELECTRICAL SERVICE EQUIPMENT
75'	DIRECTIONAL DRILL (2)(1 1/2")
185'	4-WIRE COPPER FEEDER CONDUCTORS
5'	3-WIRE COPPER FEEDER CONDUCTORS
1	EQUIPMENT CABINET DISCONNECT (ON CCTV POLE)



NOTES

1. INSTALL NEW DMS, WALKWAY, AND LADDER ON NEW DMS STRUCTURE.
2. INSTALL NEW DMS POLE MOUNTED CABINET ON NEW DMS STRUCTURE.
3. INSTALL NEW EQUIPMENT CABINET DISCONNECT ON NEW DMS STRUCTURE.
4. INSTALL CONDUITS FOR FEEDER CONDUCTORS AND FIBER OPTIC CABLE IN SAME TRENCH. USE SEPARATE CONDUIT AND JUNCTION BOXES.
5. CONTACT MR. THOMAS EDELEN - DUKE ENERGY (704-582-8070) TO HAVE SECOND LEG OF POWER DROP CONNECTED.
6. INSTALL NEW GROUNDING SYSTEM AS SHOWN ON SHEET ITS-11 AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.

EXIT 23

Prepared in the Offices of:

750 N. Greenfield Pkwy., Garner, NC 27529

SCALE: 0 N/A

DMS INSTALLATION

DIVISION 10 MECKLENBURG CO. HUNTERSVILLE

PLAN DATE: MAY 2013 REVIEWED BY: GREEN

PREPARED BY: WARDLE REVIEWED BY: PARKER

REVISIONS	INIT.	DATE

SEAL

SEAL 023919

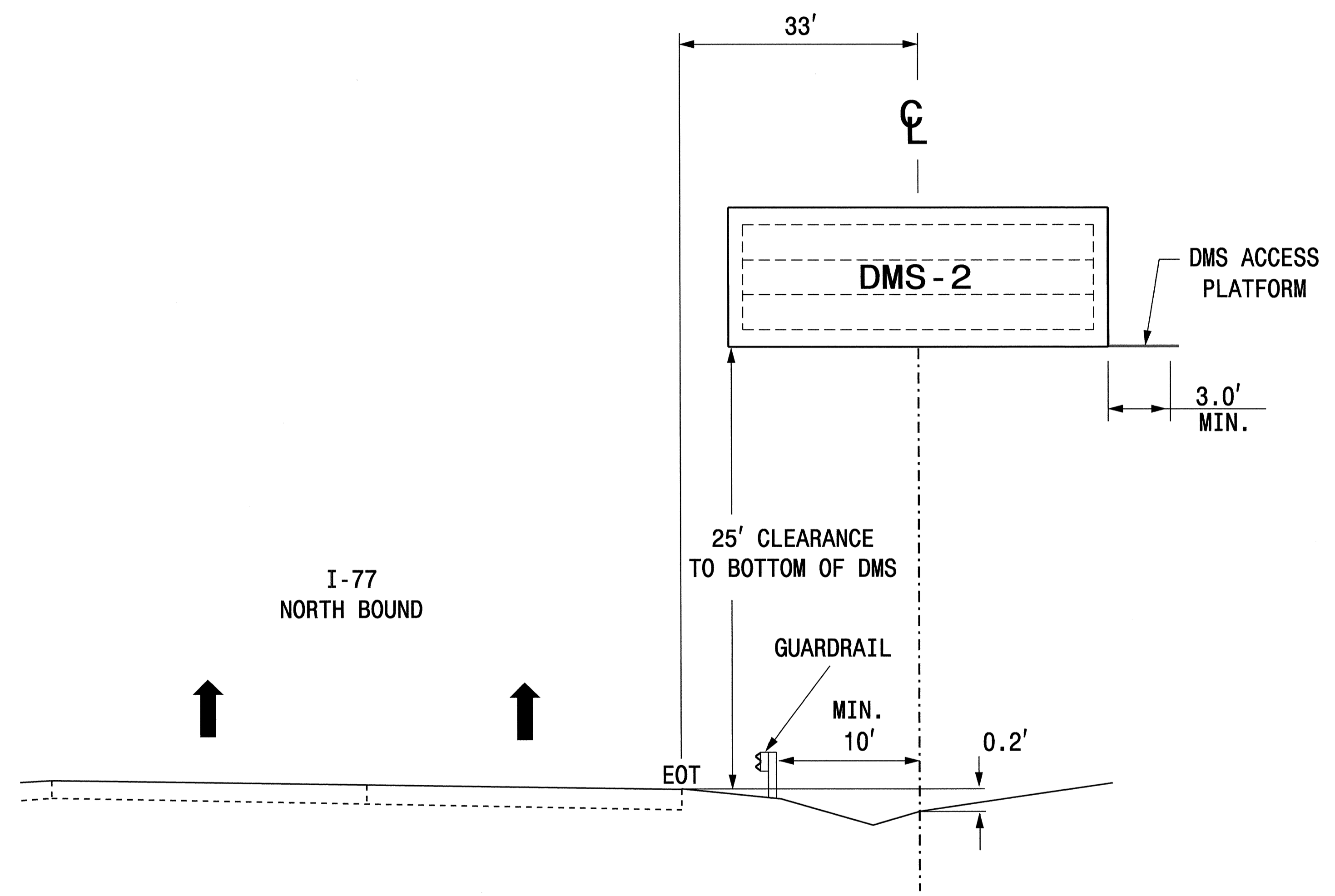
REGISTRY A. FULLER

Gregory A. Fuller

5-13-13

DATE

ESTIMATED DIMENSION : 27' X 10'
 MAXIMUM DEADLOAD OF 5200 LBS



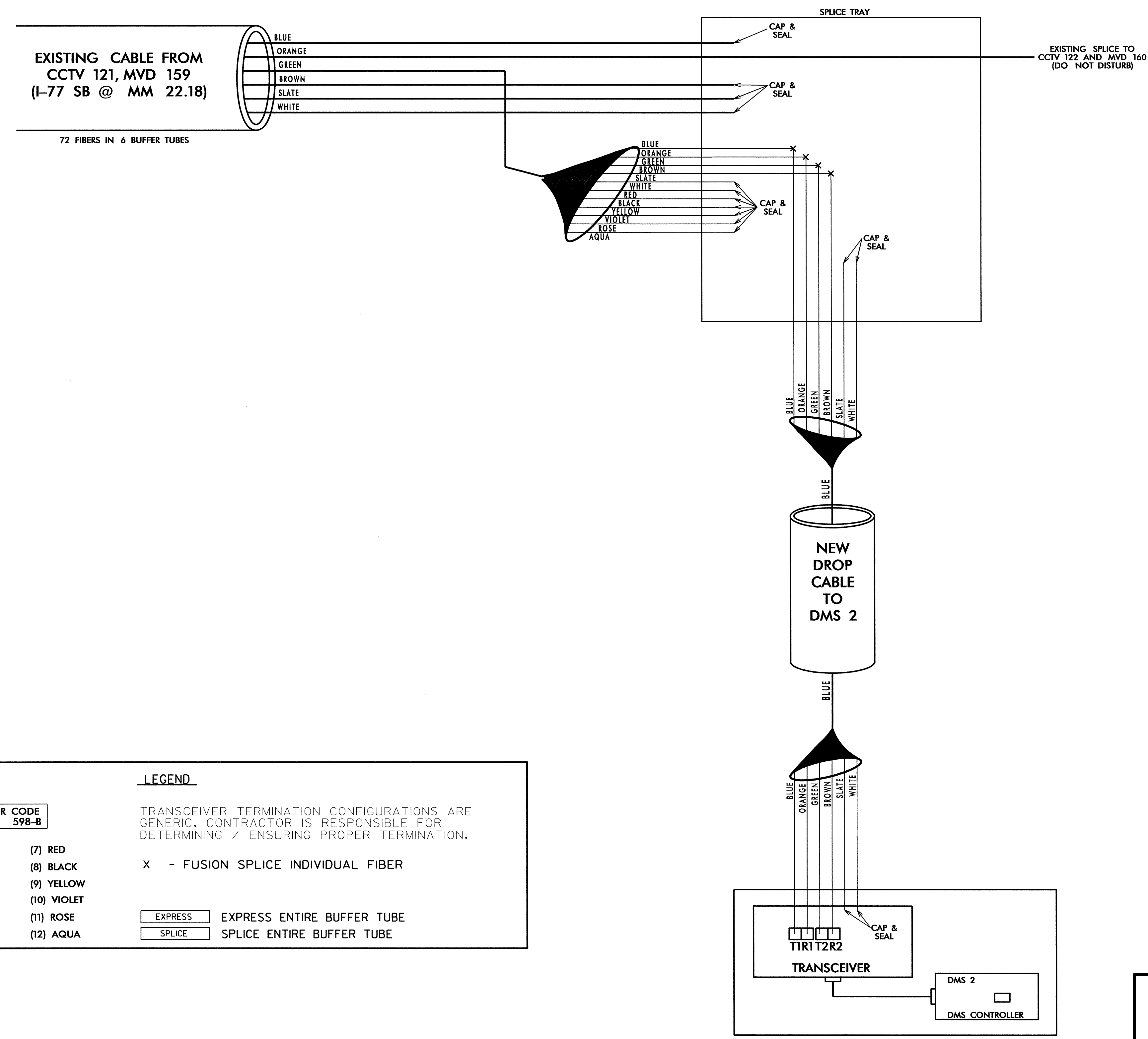
NOTES

1. PROVIDE A FIXED LADDER LEADING TO THE ACCESS PLATFORM.
2. 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.
3. INSTALL A CONCRETE LANDING PAD MEASURING A MINIMUM 4 INCHES DEEP, 24 INCHES WIDE, AND 36 INCHES LONG DIRECTLY BENEATH THE LADDER.
4. USE ACTUAL DIMENSIONS AND WEIGHT OF THE DMS TO COMPLETE THE DESIGN OF THE DMS STRUCTURE.
5. FIELD VERIFY ALL FOOTING ELEVATIONS AND GROUND SLOPES AT THE FOOTING 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 CABLES DURING CONSTRUCTION.

Prepared in the Offices of: 750 N. Greenfield Place, Garner, NC 27529	DMS INSTALLATION		SEAL SIGNATURE: <i>Gregory A. Fuller</i> DATE: 5-13-13
	DIVISION 10 MECKLENBURG CO. HUNTERSVILLE PLAN DATE: MAY 2013 REVIEWED BY: GREEN PREPARED BY: WARDLE REVIEWED BY: PARKER	REVISIONS INIT. DATE	

CAAD File name:

**EXISTING
SPLICE ENCLOSURE AT
CCTV 122, MVD 160
I-77 NB AT EXIT 23 (GILEAD RD)**



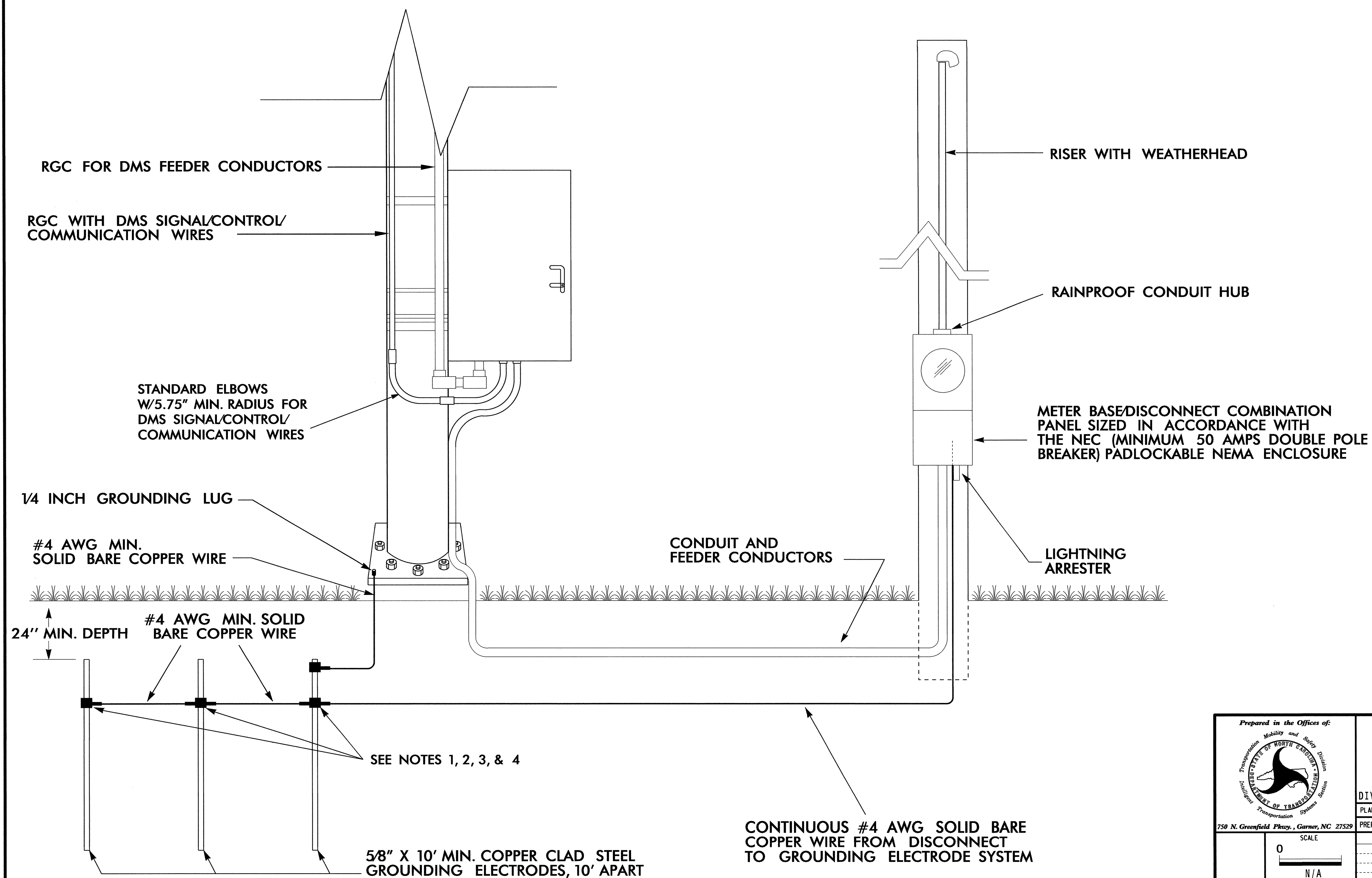
COLOR CODE TIA/EIA 598-B		LEGEND	
(1) BLUE	(7) RED	TRANSCEIVER TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING / ENSURING PROPER TERMINATION.	X - FUSION SPLICE INDIVIDUAL FIBER
(2) ORANGE	(8) BLACK		
(3) GREEN	(9) YELLOW		
(4) BROWN	(10) VIOLET		
(5) SLATE	(11) ROSE		
(6) WHITE	(12) AQUA		
		EXPRESS	EXPRESS ENTIRE BUFFER TUBE
		SPLICE	SPLICE ENTIRE BUFFER TUBE

NOTES:
1. FIBER INTERCONNECT CENTER RACKS ARE SCHEMATIC ONLY - ACTUAL EQUIPMENT FORM MAY VARY.

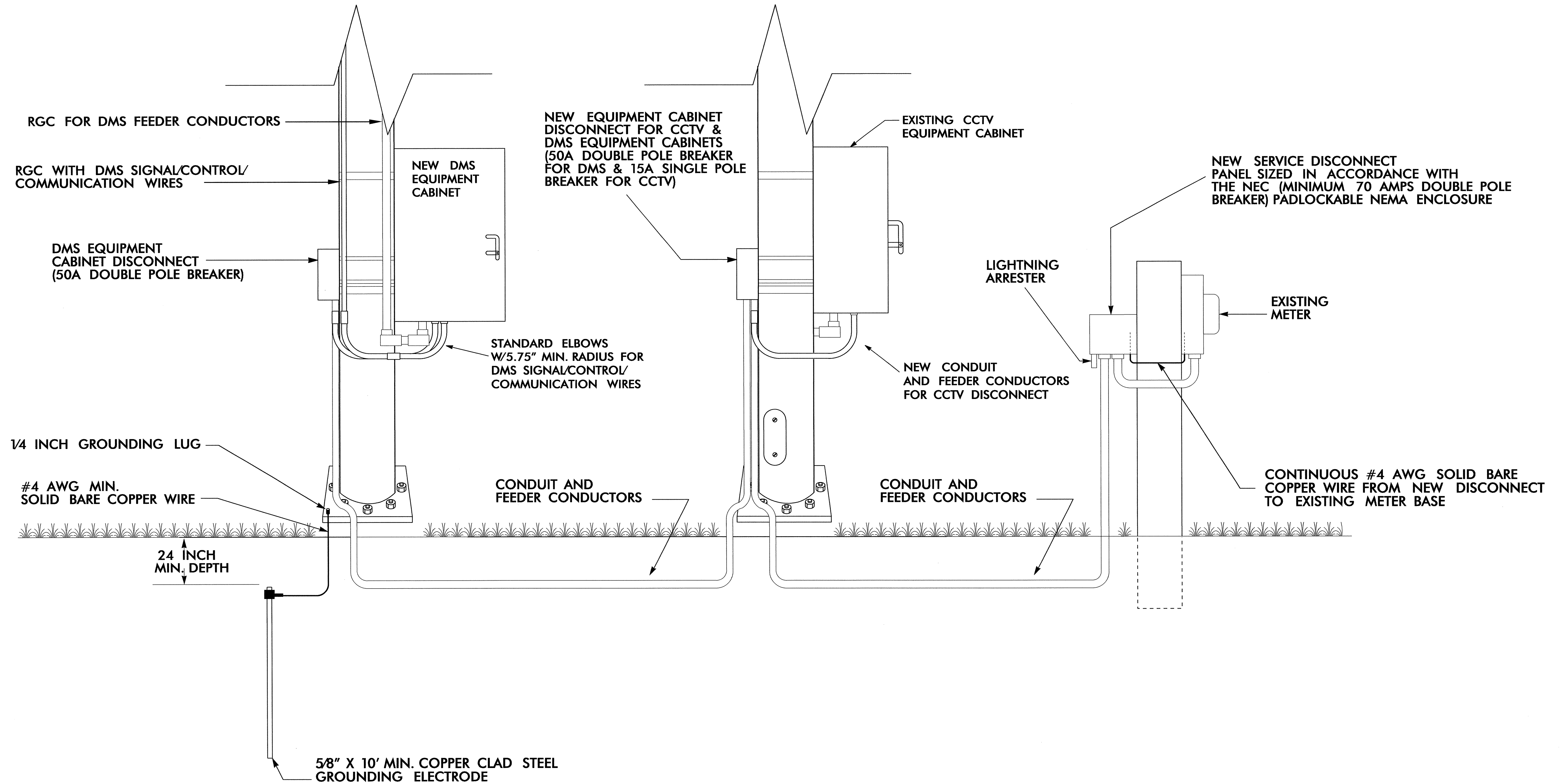
	SPLICE DETAILS		
	DIVISION 10 MECKLENBURG CO. HUNTERSVILLE PLAN DATE: MAY 2013 REVIEWED BY: GREEN PREPARED BY: WARDLE REVIEWED BY: PARKER		
SCALE 0 N/A	REVISIONS _____ _____ _____	INIT. DATE _____ _____ _____	SIGNATURE DATE 5/13/13

NOTES

1. INSTALL A MINIMUM OF THREE (3) GROUNDING ELECTRODES 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 SHOULD MEASURE TWENTY (20) OHMS OR LESS. ADDITIONAL GROUNDING ELECTRODES SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER TO MEET THIS REQUIREMENT.
3. EXOTHERMICALLY WELD ALL CONNECTIONS TO GROUND RODS.
4. INSTALL MARKER TAPE DIRECTLY ABOVE ALL GROUNDING ELECTRODES AND CONDUCTORS AT A DEPTH OF 12 INCHES.
5. REMOVE BONDING JUMPER IN EQUIPMENT CABINET IF INSTALLED BETWEEN AC NEUTRAL AND EQUIPMENT GROUND.
6. BOND ALL RIGID GALVANIZED STEEL CONDUITS ENTERING THE CABINET TO "EQUIPMENT GROUND".
7. INSTALL CONDUIT BETWEEN DISCONNECT AND CABINET.
8. ENSURE EQUIPMENT GROUND IS ELECTRICALLY BONDED TO CABINET.



Prepared in the Offices of: 750 N. Greenfield Pkwy., Garner, NC 27529	DMS - 1		SEAL SIGNATURE: <i>Gregory A. Fuller</i> DATE: 5-13-13	
	NEW ELECTRICAL SERVICE AND GROUNDING DETAIL			
	DIVISION 12	IREDELL CO.		MOORESVILLE
	PLAN DATE: MAY 2013	REVIEWED BY: GREEN		
PREPARED BY: WARDLE	REVIEWED BY: PARKER			
SCALE		0		
N/A				

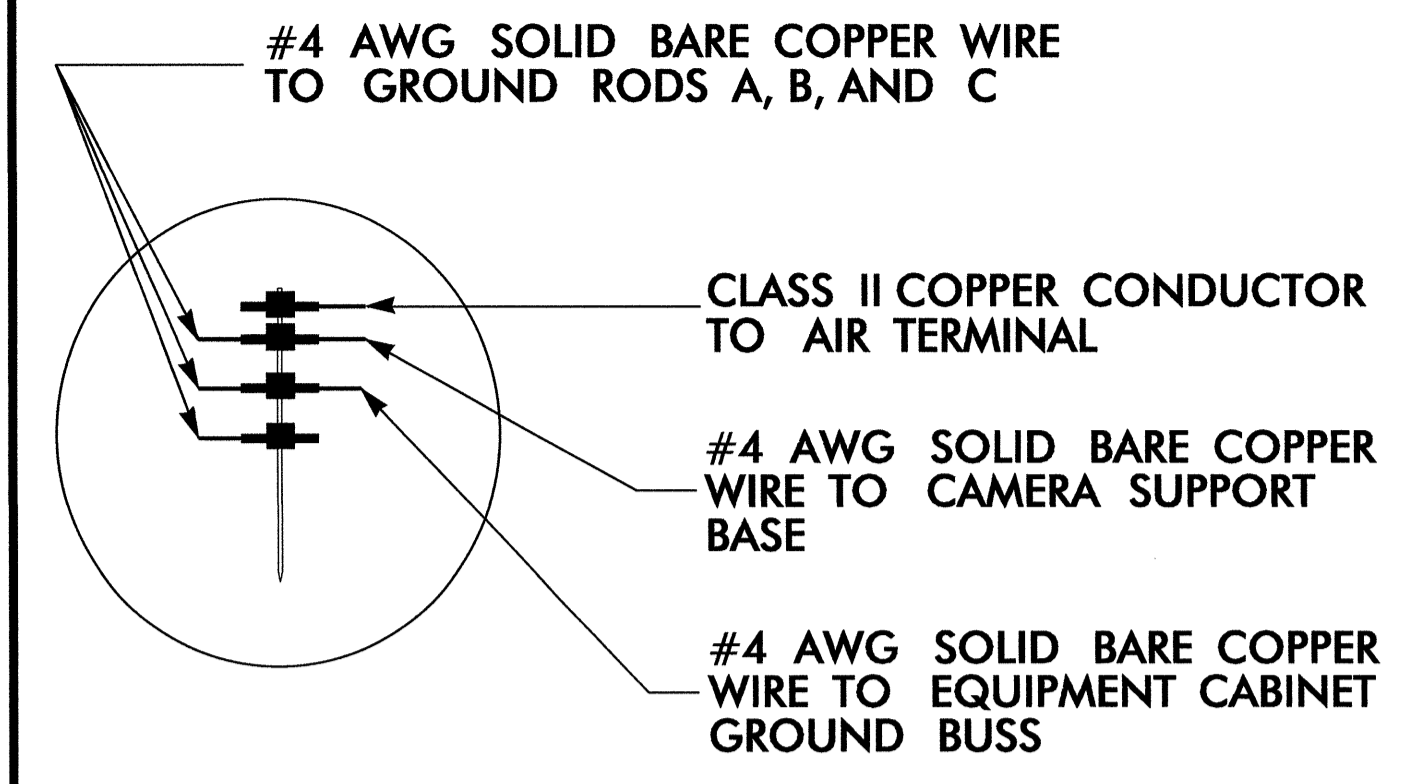


NOTES

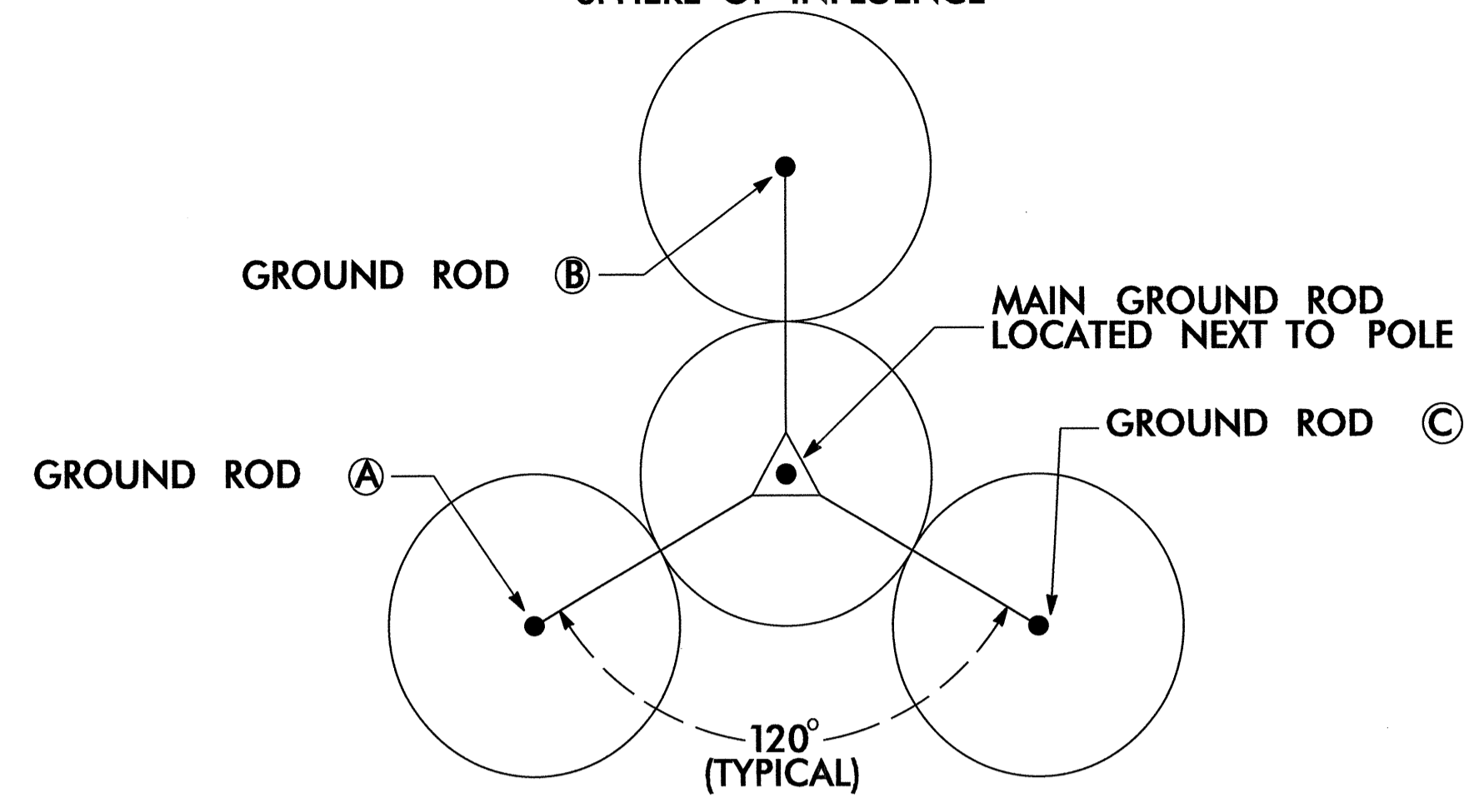
1. INSTALL A MINIMUM OF THREE (3) GROUNDING ELECTRODES SPACED A MINIMUM OF 10 FEET APART. ENSURE THAT EXISTING UNDERGROUND FACILITIES ARE NOT DAMAGED DURING INSTALLATION.
2. TEST GROUNDING SYSTEM USING AN APPROVED METHOD. SYSTEM SHOULD MEASURE TWENTY (20) OHMS OR LESS. ADDITIONAL GROUNDING ELECTRODES SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER TO MEET THIS REQUIREMENT.
3. EXOTHERMICALLY WELD ALL CONNECTIONS TO GROUND RODS.
4. INSTALL MARKER TAPE DIRECTLY ABOVE ALL GROUNDING ELECTRODES AND CONDUCTORS AT A DEPTH OF 12 INCHES.
5. REMOVE BONDING JUMPER IN EQUIPMENT CABINET IF INSTALLED BETWEEN AC NEUTRAL AND EQUIPMENT GROUND.
6. BOND ALL RIGID GALVANIZED STEEL CONDUITS ENTERING THE CABINET TO "EQUIPMENT GROUND".
7. INSTALL CONDUIT BETWEEN DISCONNECT AND CABINET.
8. ENSURE EQUIPMENT GROUND IS ELECTRICALLY BONDED TO CABINET.

	DMS-2 MODIFIED ELECTRICAL SERVICE AND GROUNDING DETAIL		
	DIVISION 10 MECKLENBURG CO. HUNTERSVILLE		
PLAN DATE: MAY 2013 REVIEWED BY: GREEN		PREPARED BY: WARDLE REVIEWED BY: PARKER	
SCALE: 0 N/A		REVISIONS INIT. DATE	
		SIGNATURE: <i>Gregory A. Fuller</i> DATE: 5-13-13	

INSET 'A'



10 FOOT RADIUS EACH "SPHERE OF INFLUENCE"



GROUND ROD PLACEMENT DETAIL (TYPICAL EACH POLE)

0.5 INCH X 36 INCH MINIMUM COPPER-CLAD AIR TERMINAL (CLASS II)

MECHANICALLY BOND CLASS II, 28 STRAND (MINIMUM), 15 AWG (MINIMUM) ROPE LAY BARE COPPER LIGHTNING CONDUCTOR TO THE AIR TERMINAL.

SECURE CLASS II, 28 STRAND (MINIMUM), 15 AWG (MINIMUM), ROPE-LAY BARE COPPER LIGHTNING CONDUCTOR TO THE POLE ON 24 INCH CENTERS. USE COPPER CABLE CLIPS DESIGNED FOR USE WITH THE CLASS II COPPER CONDUCTOR. SECURE EACH COPPER CABLE CLIP TO THE POLE USING A 0.25 INCH DIAMETER X 1.5 INCH LONG HEX HEAD, GALVANIZED SCREW.

CCTV CAMERA

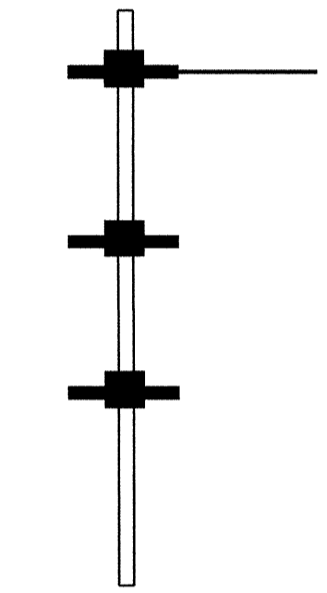
5 FEET

POWER AND CONTROL WIRES

METER BASE/DISCONNECT COMBINATION PANEL SIZED IN ACCORDANCE WITH THE NEC (MINIMUM 15 AMPS SINGLE POLE BREAKER) PADLOCKABLE NEMA ENCLOSURE

6" X 6" TREATED WOOD POST

ALTERNATE GROUNDING METHOD IF SPACE IS NOT AVAILABLE TO DRIVE MULTIPLE RODS, DRIVE SECTIONAL GROUND RODS A MINIMUM OF 30 FEET.



BOND #4 AWG SOLID BARE COPPER WIRE TO CAMERA SUPPORT BASE BY AN ALUMINUM TO COPPER #2 - #14 AWG LUG. ATTACH TO CAMERA BASE WITH A STAINLESS STEEL SELF TAPPING SCREW. REMOVE PAINT OR PROTECTIVE COATING WHERE ATTACHING LUG ONLY.

INSTALL 2-INCH PVC U-GUARD OVER COPPER CONDUCTOR FROM GROUND LEVEL TO 10 FEET (MINIMUM) ABOVE THE GROUND.

2-INCH RIGID GALVANIZED STEEL RISER FOR POWER AND CONTROL WIRES

POLE MOUNT EQUIPMENT CABINET

48" HEIGHT (CENTER COMBO PANEL)

INSTALL MARKER TAPE 12 INCHES BELOW GRADE AND ABOVE ALL GROUNDING CONDUCTORS.

SEE INSET 'A'

SEE NOTE 5 CONDUIT AND FEEDER CONDUCTORS

FINISHED GRADE

24 INCH MIN.

CONDUIT FOR FEEDER

36" DEPTH

LIGHTNING ARRESTER

EXOTHERMIC WELD

TO GROUND ROD (B)

TO GROUND ROD (C)

TO EQUIPMENT CABINET GROUND BUSS

GROUND ROD (A)

MAIN GROUND ROD INDICATED BY "●" IN GROUND ROD PLACEMENT DETAIL THIS SHEET

CONTINUOUS #4 AWG SOLID BARE COPPER WIRE FROM DISCONNECT TO GROUNDING ELECTRODE SYSTEM

12 INCH MINIMUM

5/8 INCH X 10 FOOT MIN. COPPER CLAD STEEL GROUND RODS DRIVEN INTO UNDISTURBED EARTH

10 FEET

NOTES

1. BOND CLASS II, 28 STRAND (MINIMUM), 15 AWG (MINIMUM) ROPE-LAY BARE COPPER CONDUCTOR TO THE MAIN GROUND ROD BY AN EXOTHERMIC WELD METHOD. MAINTAIN MAXIMUM HORIZONTAL SEPARATION BETWEEN COPPER CONDUCTOR AND RISER.
2. EXOTHERMICALLY WELD ALL CONNECTIONS TO GROUND RODS.
3. THE CONTRACTOR MAY, UPON APPROVAL OF THE ENGINEER, INSTALL A 30-FOOT SECTIONAL GROUND ROD FOR INSTANCES WHEN CONDITIONS WILL NOT ALLOW FOR THE INSTALLATION OF THE 3 - RADIAL GROUND RODS.
4. INSTALL MARKER TAPE DIRECTLY ABOVE ALL GROUNDING ELECTRODES AND CONDUCTORS AT A DEPTH OF 12 INCHES.
5. REMOVE BONDING JUMPER BETWEEN EQUIPMENT CABINET GROUND BUSS AND NEUTRAL BUSS.

Prepared in the Offices of:

 750 N. Greenfield Plaza, Cary, NC 27509

CCTV-1
 NEW ELECTRICAL SERVICE AND GROUNDING DETAIL
 DIVISION 10 MECKLENBURG CO. DAVIDSON
 PLAN DATE: MAY 2013 REVIEWED BY: GREEN
 PREPARED BY: WARDLE REVIEWED BY: PARKER

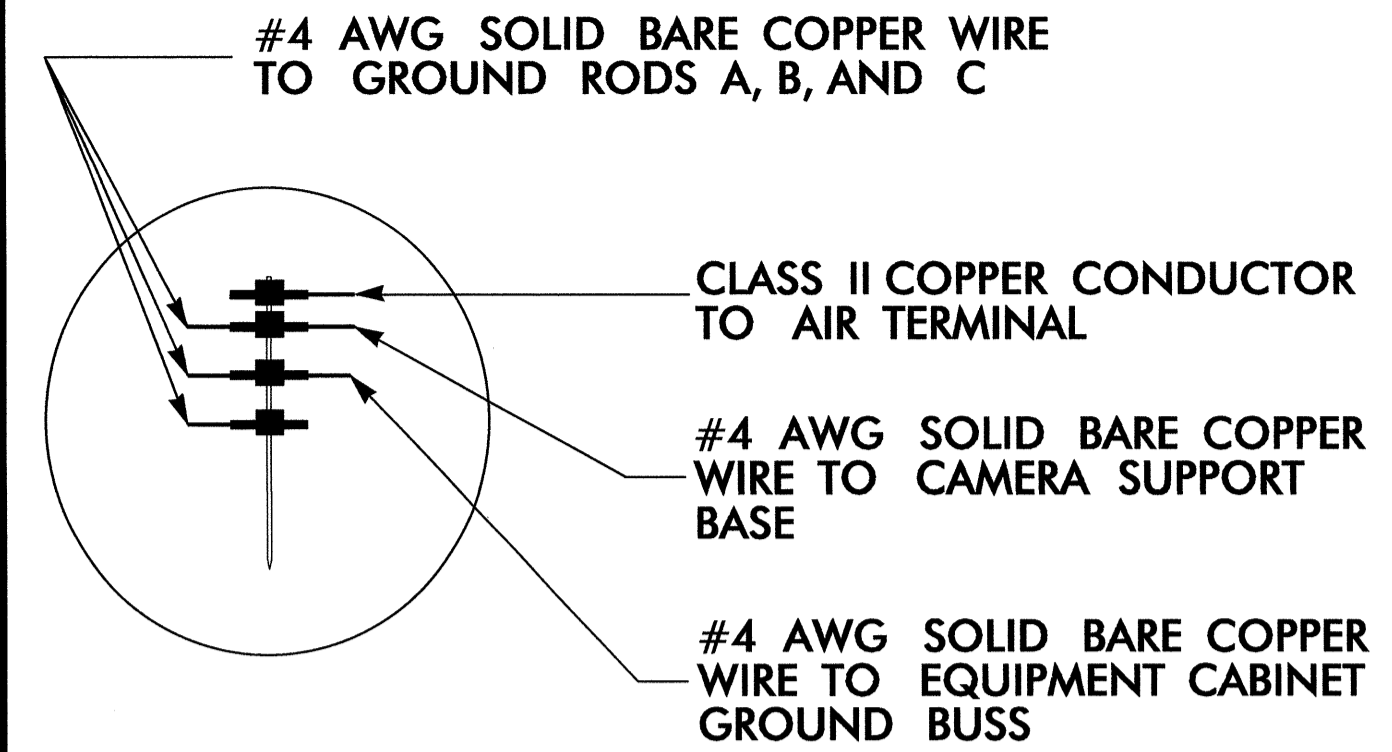
REVISIONS	INIT.	DATE

SCALE: 0 N/A

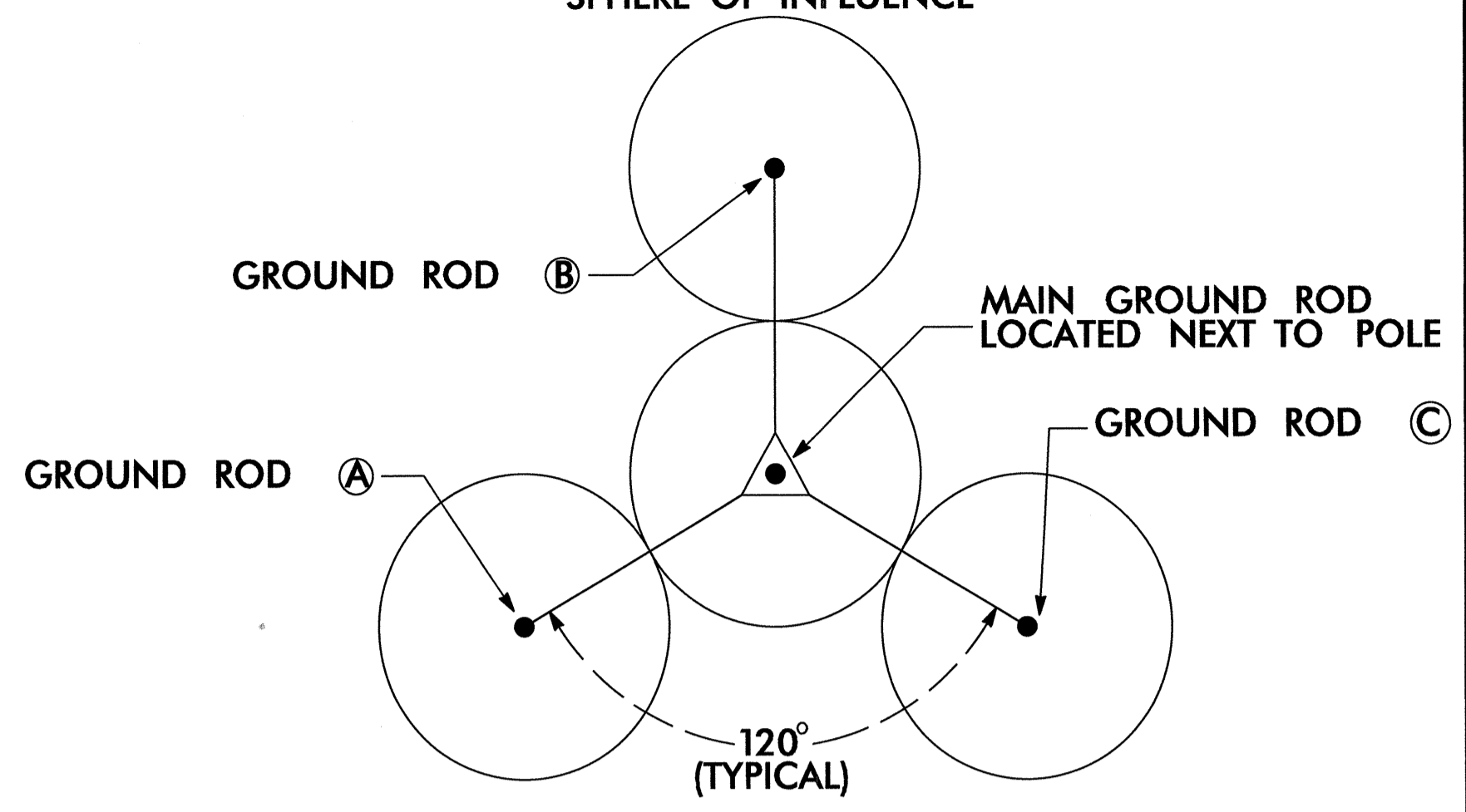
SEAL

 SIGNATURE: Gregory A. Fuller DATE: 5-13-13
 CADD FILE NAME:

INSET 'A'



10 FOOT RADIUS EACH "SPHERE OF INFLUENCE"

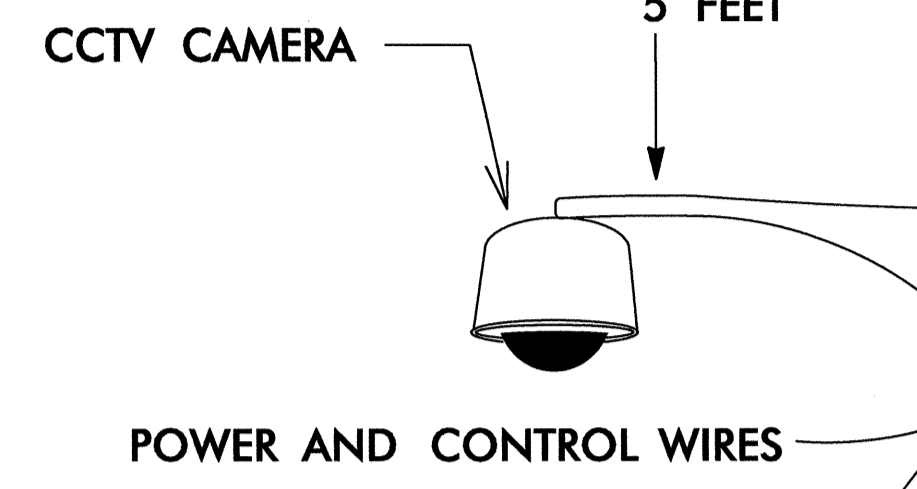


GROUND ROD PLACEMENT DETAIL (TYPICAL EACH POLE)

0.5 INCH X 36 INCH MINIMUM COPPER-CLAD AIR TERMINAL (CLASS II)

MECHANICALLY BOND CLASS II, 28 STRAND (MINIMUM), 15 AWG (MINIMUM) ROPE LAY BARE COPPER LIGHTNING CONDUCTOR TO THE AIR TERMINAL.

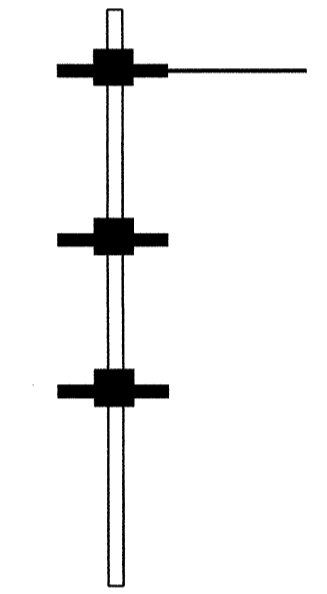
SECURE CLASS II, 28 STRAND (MINIMUM), 15 AWG (MINIMUM), ROPE-LAY BARE COPPER LIGHTNING CONDUCTOR TO THE POLE ON 24 INCH CENTERS. USE COPPER CABLE CLIPS DESIGNED FOR USE WITH THE CLASS II COPPER CONDUCTOR. SECURE EACH COPPER CABLE CLIP TO THE POLE USING A 0.25 INCH DIAMETER X 1.5 INCH LONG HEX HEAD, GALVANIZED SCREW.



INSTALL NEW BREAKER IN EXISTING DISCONNECT PANEL SIZED IN ACCORDANCE WITH THE NEC (MINIMUM 15 AMPS SINGLE POLE BREAKER) PADLOCKABLE NEMA ENCLOSURE

EXISTING SIGNAL CABINET ELECTRICAL SERVICE

ALTERNATE GROUNDING METHOD
IF SPACE IS NOT AVAILABLE TO DRIVE MULTIPLE RODS, DRIVE SECTIONAL GROUND RODS A MINIMUM OF 30 FEET.



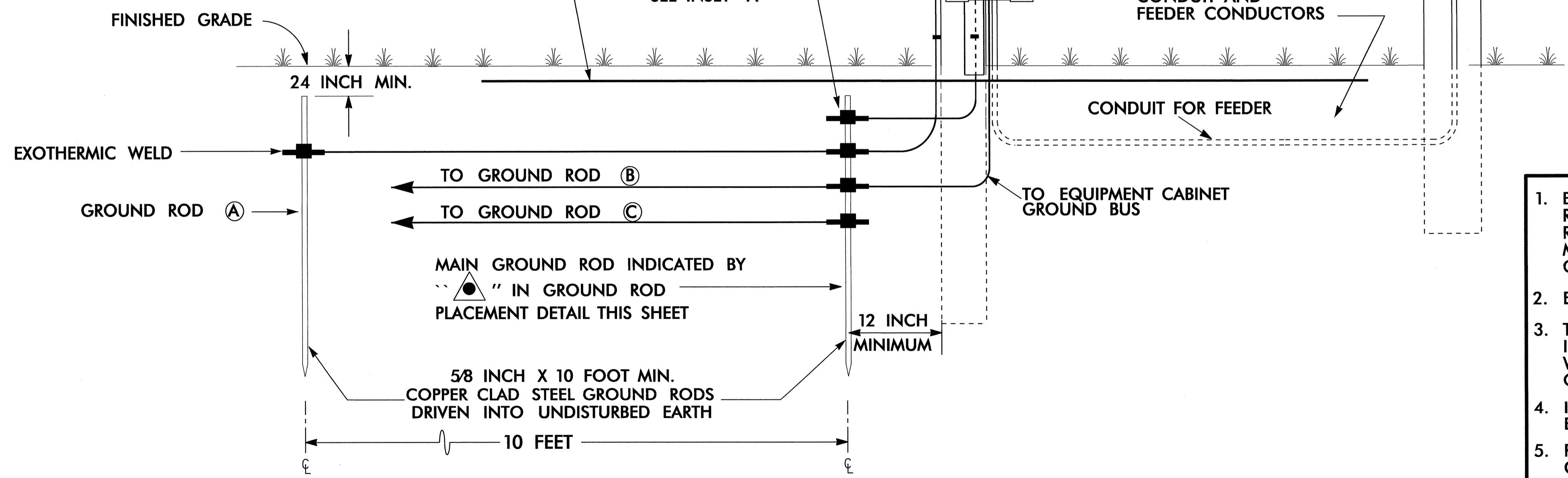
JOIN SECTIONAL GROUND RODS BY EXOTHERMIC WELDING CONNECTION

BOND #4 AWG SOLID BARE COPPER WIRE TO CAMERA SUPPORT BASE BY AN ALUMINUM TO COPPER #2 - #14 AWG LUG. ATTACH TO CAMERA BASE WITH A STAINLESS STEEL SELF TAPPING SCREW. REMOVE PAINT OR PROTECTIVE COATING WHERE ATTACHING LUG ONLY.

INSTALL 2-INCH PVC U-GUARD OVER COPPER CONDUCTOR FROM GROUND LEVEL TO 10 FEET (MINIMUM) ABOVE THE GROUND.

2-INCH RIGID GALVANIZED STEEL RISER FOR POWER AND CONTROL WIRES

INSTALL MARKER TAPE 12 INCHES BELOW GRADE AND ABOVE ALL GROUNDING CONDUCTORS.



NOTES

1. BOND CLASS II, 28 STRAND (MINIMUM), 15 AWG (MINIMUM) ROPE-LAY BARE COPPER CONDUCTOR TO THE MAIN GROUND ROD BY AN EXOTHERMIC WELD METHOD. MAINTAIN MAXIMUM HORIZONTAL SEPARATION BETWEEN COPPER CONDUCTOR AND RISER.
2. EXOTHERMICALLY WELD ALL CONNECTIONS TO GROUND RODS.
3. THE CONTRACTOR MAY, UPON APPROVAL OF THE ENGINEER, INSTALL A 30-FOOT SECTIONAL GROUND ROD FOR INSTANCES WHEN CONDITIONS WILL NOT ALLOW FOR THE INSTALLATION OF THE 3 - RADIAL GROUND RODS.
4. INSTALL MARKER TAPE DIRECTLY ABOVE ALL GROUNDING ELECTRODES AND CONDUCTORS AT A DEPTH OF 12 INCHES.
5. REMOVE BONDING JUMPER BETWEEN EQUIPMENT CABINET GROUND BUSS AND NEUTRAL BUS.

Prepared in the Offices of:

TRANSPORTATION MOBILITY AND SAFETY DIVISION
DEPARTMENT OF TRANSPORTATION
250 N. Greenfield Place, Garner, NC 27529

CCTV-2
EXISTING ELECTRICAL SERVICE AND GROUNDING DETAIL

DIVISION 10	MECKLENBURG CO.	CORNELIUS
PLAN DATE: MAY 2013	REVIEWED BY: GREEN	
PREPARED BY: WARDLE	REVIEWED BY: PARKER	
REVISIONS	INIT.	DATE

SEAL

GREGORY A. FULLER
ENGINEER

Signature: *Gregory A. Fuller*
DATE: 5/13/13

