PROJECT: 34601.3.12

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.
N.C.	34601.3.12	ITS-1

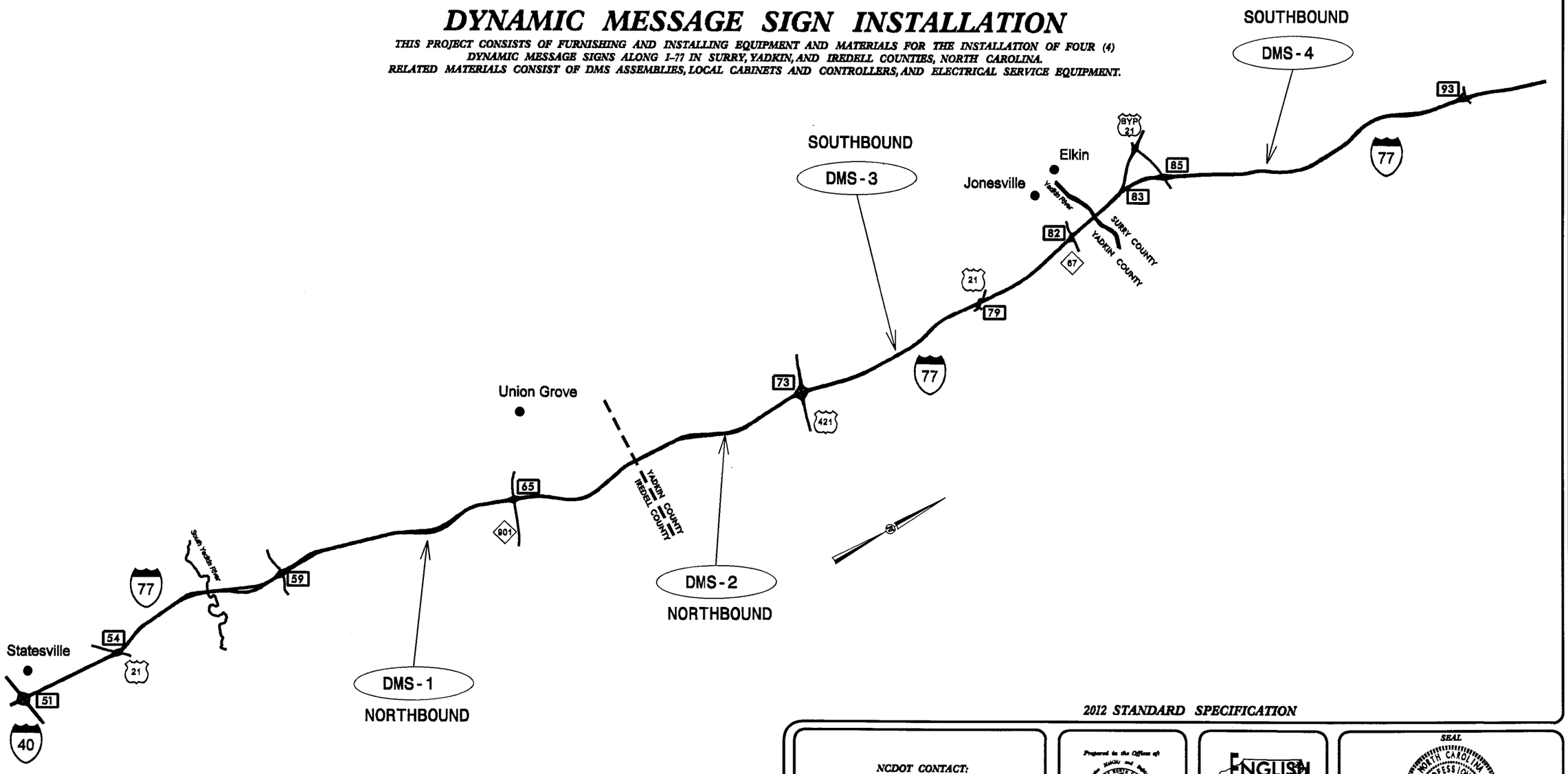
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
		P.E.
		CONST.

SURRY, YADKIN, AND IREDELL COUNTIES

PLANS FOR PROPOSED

DYNAMIC MESSAGE SIGN INSTALLATION

THIS PROJECT CONSISTS OF FURNISHING AND INSTALLING EQUIPMENT AND MATERIALS FOR THE INSTALLATION OF FOUR (4) DYNAMIC MESSAGE SIGNS ALONG I-77 IN SURRY, YADKIN, AND IREDELL COUNTIES, NORTH CAROLINA. RELATED MATERIALS CONSIST OF DMS ASSEMBLIES, LOCAL CABINETS AND CONTROLLERS, AND ELECTRICAL SERVICE EQUIPMENT.



2012 STANDARD SPECIFICATION

NCDOT CONTACT:
TRANSPORTATION MOBILITY AND SAFETY

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

Prepared in the Offices of:
NCDOT and Rigsby Associates
Department of Transportation
Division of Highways
Traffic Engineering Branch
Raleigh, North Carolina
750 N. Greensboro St. Suite 200, Carrboro, NC 27510

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 7/17/12

PROJECT REFERENCE NO.	SHEET NO.
34601.3.12	IT8-2

INDEX OF SHEETS

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
- EXISTING GUARDRAIL
- EXISTING PORTABLE CONCRETE BARRIER
- EXISTING ELECTRICAL SERVICE PEDESTAL
- EXISTING WOOD POLE
- EXISTING METAL POLE
- EXISTING ELECTRICAL SERVICE
- NEW ELECTRICAL SERVICE
- NEW JUNCTION BOX
- NEW SHOULDER MOUNT DMS PEDESTAL STRUCTURE

Prepared in the Office of:
N. C. DEPARTMENT OF TRANSPORTATION
Transportation Mobility and Safety Division
750 N. G.A. GREENfield Pkwy., Garner, NC 27529

DMS REPLACEMENT
INDEX OF SHEETS, ROADWAY STANDARD DRAWINGS, AND LEGEND
DIVISION 11 & 12

PLAN DATE:	JULY 2012	REVIEWED BY:	M.A. ASLAMI, PE
PREPARED BY:	G.A. GREEN	REVIEWED BY:	T.G. PARKER

REVISIONS	INIT.	DATE

SCALE: 0 — N/A

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER

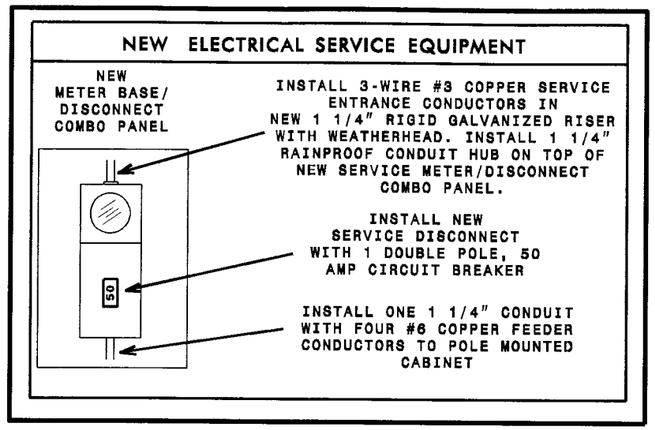
SIGNATURE: Gregory A. Fuller DATE: 7/17/12

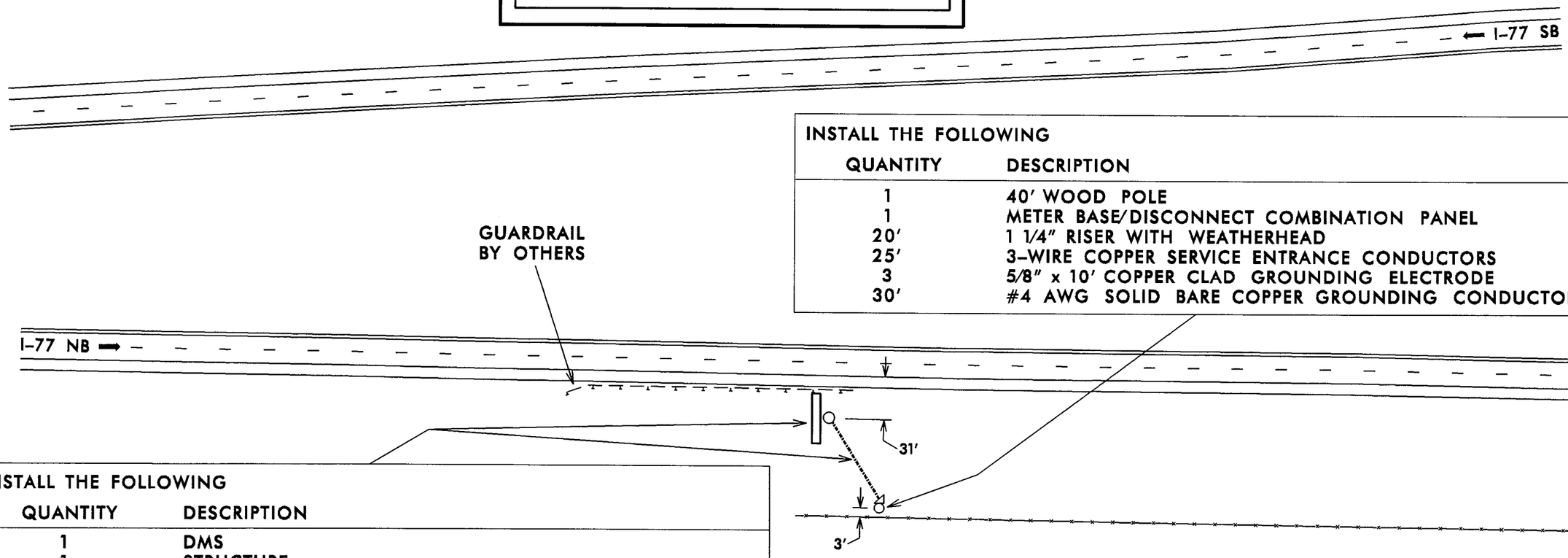
CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
34601.3.12	IT8-3

DMS-1 GPS COORDINATES

N 35° 58.131
W 80° 50.491





INSTALL THE FOLLOWING	
QUANTITY	DESCRIPTION
1	40' WOOD POLE
1	METER BASE/DISCONNECT COMBINATION PANEL
20'	1 1/4" RISER WITH WEATHERHEAD
25'	3-WIRE COPPER SERVICE ENTRANCE CONDUCTORS
3	5/8" x 10' COPPER CLAD GROUNDING ELECTRODE
30'	#4 AWG SOLID BARE COPPER GROUNDING CONDUCTOR

INSTALL THE FOLLOWING	
QUANTITY	DESCRIPTION
1	DMS
1	STRUCTURE
1	FOUNDATION
1	LADDER
100'	UNPAVED TRENCHING (2)(1 1/4")
110'	4-WIRE COPPER FEEDER CONDUCTORS
1	5/8" x 10' COPPER CLAD GROUNDING ELECTRODE
10'	#4 AWG SOLID BARE COPPER GROUNDING CONDUCTOR

NEAR MM 63

NOTES

1. INSTALL NEW DMS, WALKWAY, AND LADDER ON NEW DMS STRUCTURE.
2. INSTALL NEW DMS POLE MOUNTED CABINET ON NEW DMS STRUCTURE.
3. COMMUNICATIONS INSTALLED BY OTHERS.
4. INSTALL NEW GROUNDING SYSTEM AS SHOWN ON SHEET ITS-11 AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.

Prepared in the Offices of: NCDOT Traffic Engineering Branch

DMS INSTALLATION

DIVISION 12 IREDELL CO. SOUTH OF UNION GROVE

PLAN DATE: JULY 2012 REVIEWED BY: W.A. ASLAMI, PE

PREPARED BY: G.A. GREEN REVIEWED BY: T.G. PARKER

REVISIONS | INIT. | DATE

SCALE 0 N/A

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER

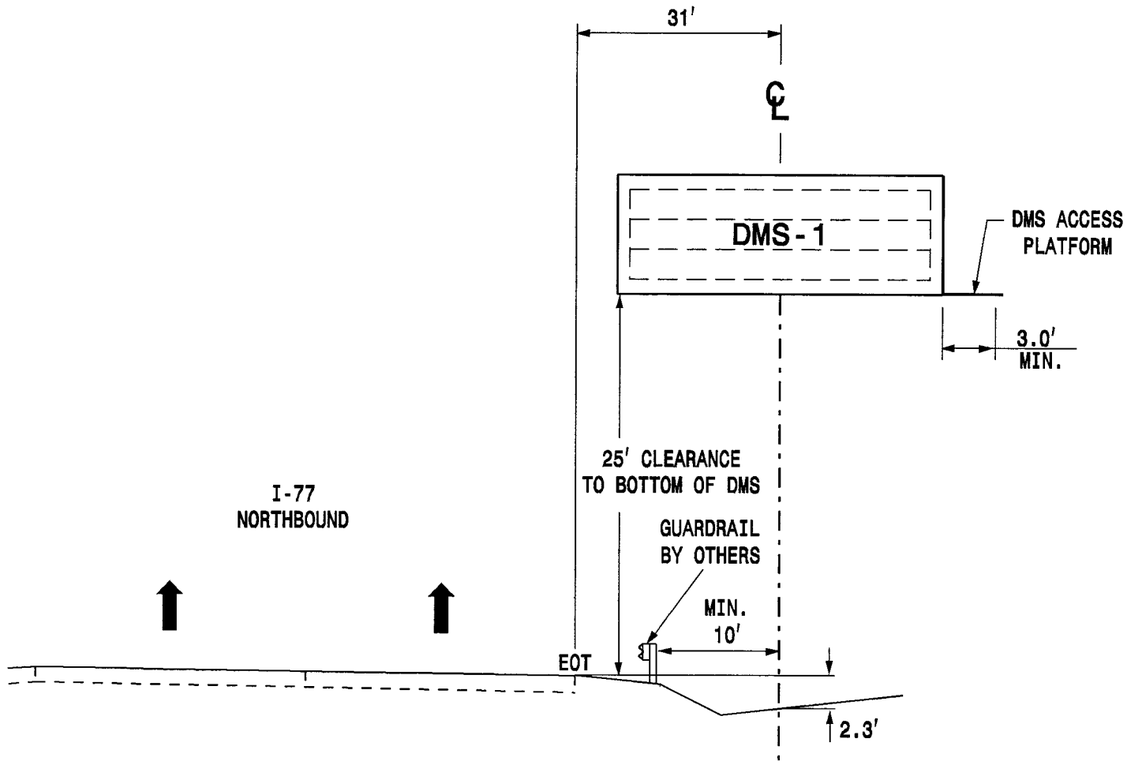
SIGNATURE Gregory A. Fuller DATE 7/17/12

CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
34601.3.12	ITS-4

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 FINISHED GROUND. 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 Office of:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Transportation Mobility and Safety Division
1561 Mail Service Center, Raleigh, NC 27699-1561
750 N. G.K. Greenfield Pkwy., Garner, NC 27529

DMS REPLACEMENT

DIVISION 12 IREDELL CO. SOUTH OF UNION GROVE

PLAN DATE:	JULY 2012	REVIEWED BY:	M.A. ASLAMI, PE
PREPARED BY:	G.A. GREEN	REVIEWED BY:	T.G. PARKER

REVISIONS	INIT.	DATE

SCALE 0 N/A

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER

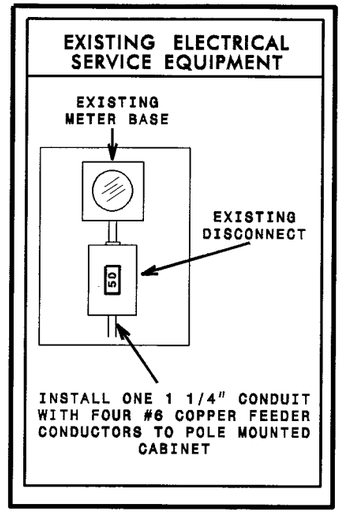
SIGNATURE Gregory A. Fuller DATE 7/17/12

CADD Filename:

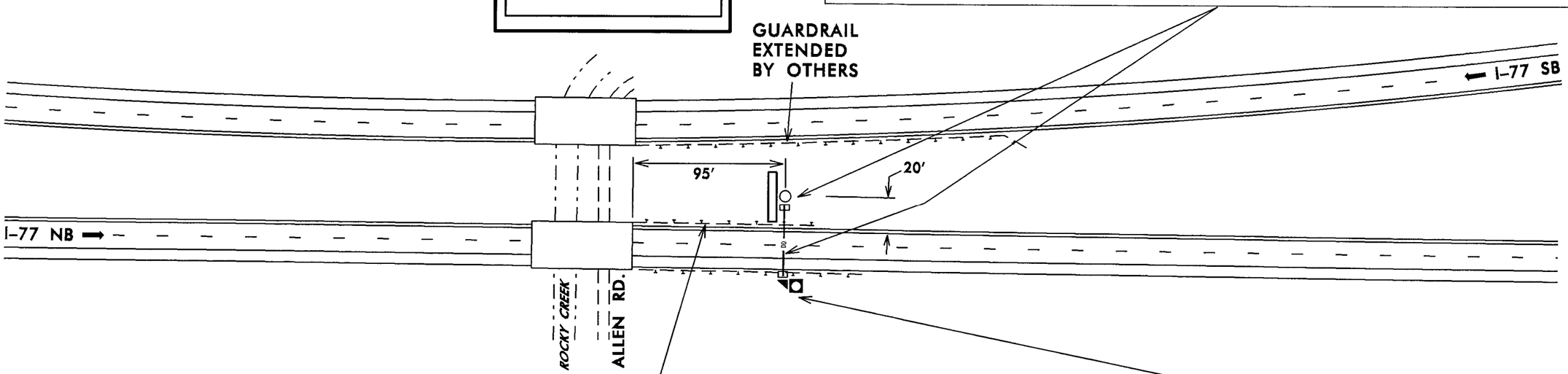
PROJECT REFERENCE NO.	SHEET NO.
34601.3.12	ITS-5

DMS-2 GPS COORDINATES

N 36° 05.387
W 80° 48.830



INSTALL THE FOLLOWING	
QUANTITY	DESCRIPTION
1	DMS
1	STRUCTURE
1	FOUNDATION
1	LADDER
1	EQUIPMENT CABINET DISCONNECT ON DMS STRUCTURE
65′	DIRECTIONAL DRILL (2)(1 1/4")
2	STANDARD SIZED JUNCTION BOXES
75′	4-WIRE COPPER FEEDER CONDUCTORS
1	5/8" x 10′ COPPER CLAD GROUNDING ELECTRODE
10′	#4 AWG SOLID BARE COPPER GROUNDING CONDUCTOR



INSTALL THE FOLLOWING	
QUANTITY	DESCRIPTION
3	5/8" x 10′ COPPER CLAD GROUNDING ELECTRODE
30′	#4 AWG SOLID BARE COPPER GROUNDING CONDUCTOR

NEAR MM 71

NOTES

1. INSTALL NEW DMS, WALKWAY, AND LADDER ON NEW DMS STRUCTURE.
2. INSTALL NEW DMS POLE MOUNTED CABINET ON NEW DMS STRUCTURE.
3. COMMUNICATIONS INSTALLED BY OTHERS.
4. INSTALL NEW GROUNDING SYSTEM AS SHOWN ON SHEET ITS-12 AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.

Prepared in the Office of: North Carolina Department of Transportation, Traffic Engineering Branch, 79 N. G.A. GREENfield Pkwy., Garner, NC 27529

DMS INSTALLATION

DIVISION 11 YADKIN CO. NORTH OF UNION GROVE

PLAN DATE:	JULY 2012	REVIEWED BY:	W.A. ASLAMI, PE
PREPARED BY:	G.A. GREEN	REVIEWED BY:	T.G. PARKER

REVISIONS	INIT.	DATE

SCALE: 0 N/A

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER

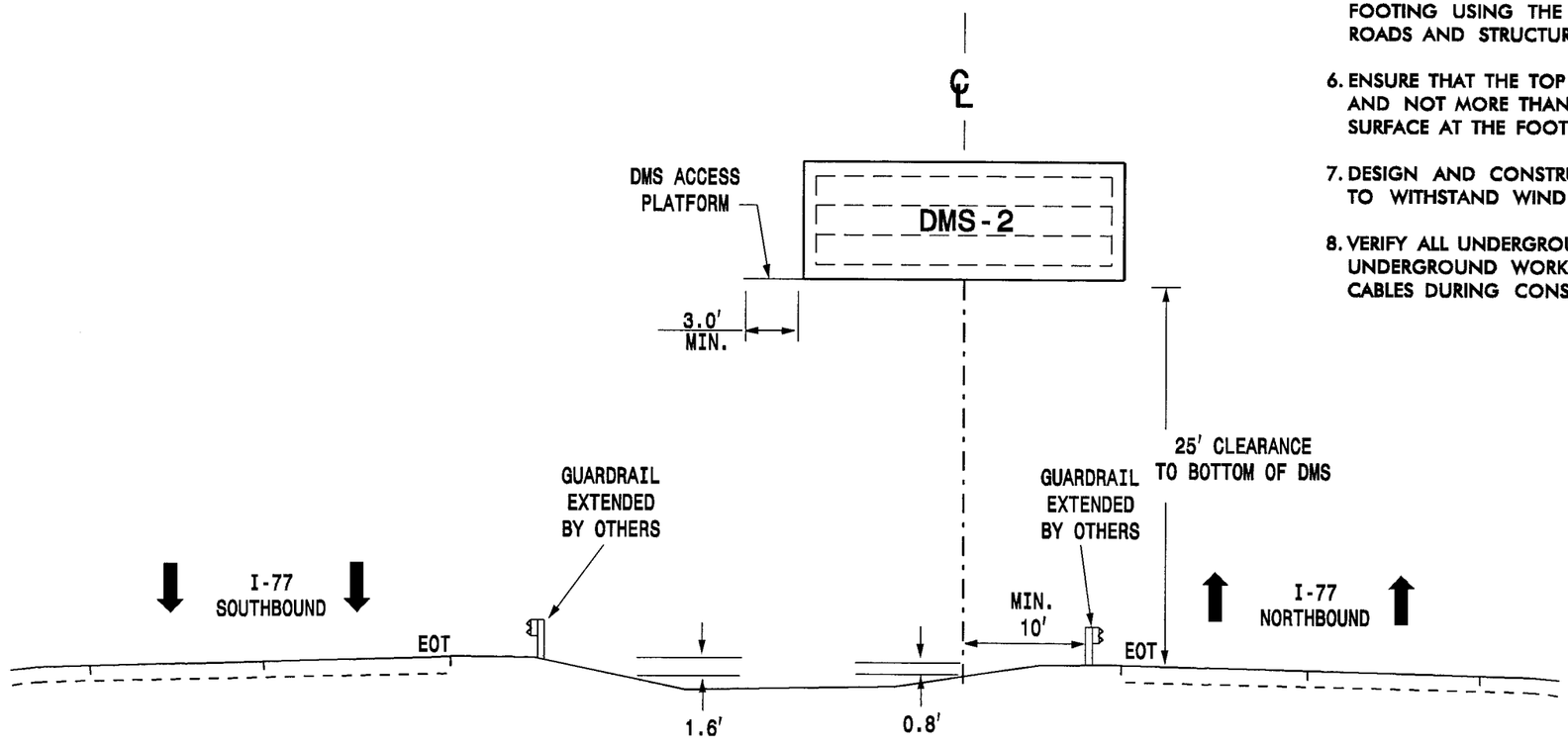
SIGNATURE Gregory A. Fuller DATE 7/17/12

CADD File Name:

PROJECT REFERENCE NO.	SHEET NO.
34601.3.12	ITS-6

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 FINISHED GROUND. 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 Office of:
G.A. GREEN and Associates, P.A., Garner, NC 27529

DMS REPLACEMENT

DIVISION 11 YADKIN CO. NORTH OF UNION GROVE

PLAN DATE:	JULY 2012	REVIEWED BY:	M.A. ASLAMI, PE
PREPARED BY:	G.A. GREEN	REVIEWED BY:	T.G. PARKER

REVISIONS	INIT.	DATE

SCALE 0 N/A

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER

Gregory A. Fuller 7/17/12
SIGNATURE DATE

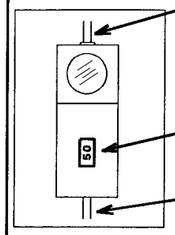
CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
34801.3.12	ITS-7

DMS-3 GPS COORDINATES

N 36° 10.855
W 80° 48.753

NEW ELECTRICAL SERVICE EQUIPMENT

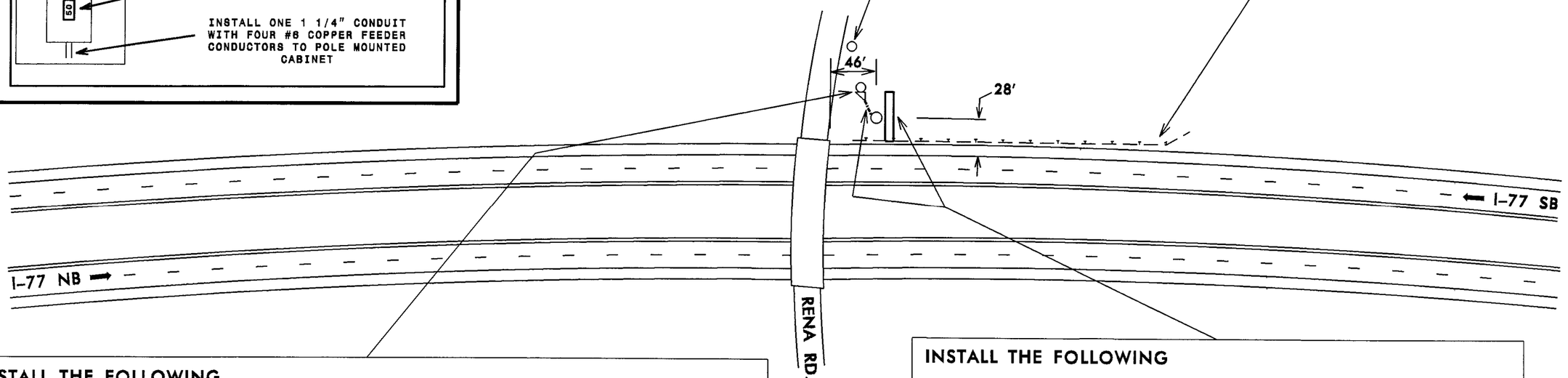


INSTALL 3-WIRE #3 COPPER SERVICE ENTRANCE CONDUCTORS IN NEW 1 1/4" RIGID GALVANIZED RISER WITH WEATHERHEAD. INSTALL 1 1/4" RAINPROOF CONDUIT HUB ON TOP OF NEW SERVICE METER/DISCONNECT COMBO PANEL.

INSTALL NEW SERVICE DISCONNECT WITH 1 DOUBLE POLE, 50 AMP CIRCUIT BREAKER

INSTALL ONE 1 1/4" CONDUIT WITH FOUR #8 COPPER FEEDER CONDUCTORS TO POLE MOUNTED CABINET

INSTALL THE FOLLOWING	
QUANTITY	DESCRIPTION
1	40' WOOD POLE



INSTALL THE FOLLOWING	
QUANTITY	DESCRIPTION
1	40' WOOD POLE
1	METER BASE/DISCONNECT COMBINATION PANEL
20'	1 1/4" RISER WITH WEATHERHEAD
25'	3-WIRE COPPER SERVICE ENTRANCE CONDUCTORS
3	5/8" x 10' COPPER CLAD GROUNDING ELECTRODE
30'	#4 AWG SOLID BARE COPPER GROUNDING CONDUCTOR

INSTALL THE FOLLOWING	
QUANTITY	DESCRIPTION
1	DMS
1	STRUCTURE
1	FOUNDATION
1	LADDER
25'	UNPAVED TRENCHING (2)(1 1/4")
35'	4-WIRE COPPER FEEDER CONDUCTORS

NEAR MM 77

NOTES
1. INSTALL NEW DMS, WALKWAY, AND LADDER ON NEW DMS STRUCTURE.
2. INSTALL NEW DMS POLE MOUNTED CABINET ON NEW DMS STRUCTURE.
3. COMMUNICATIONS INSTALLED BY OTHERS.
4. INSTALL NEW GROUNDING SYSTEM AS SHOWN ON SHEET ITS-13 AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.

Prepared in the Office of:
North Carolina Department of Transportation
Traffic Engineering Branch
1590 Mail Service Center, Raleigh, NC 27699-1590

DMS INSTALLATION

DIVISION 11 YADKIN CO. SOUTH OF ELKIN
PLAN DATE: JULY 2012 REVIEWED BY: W.A. ASLAMI, PE
PREPARED BY: G.A. GREEN REVIEWED BY: T.G. PARKER

REVISIONS	INIT.	DATE

SCALE: 0 N/A

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER

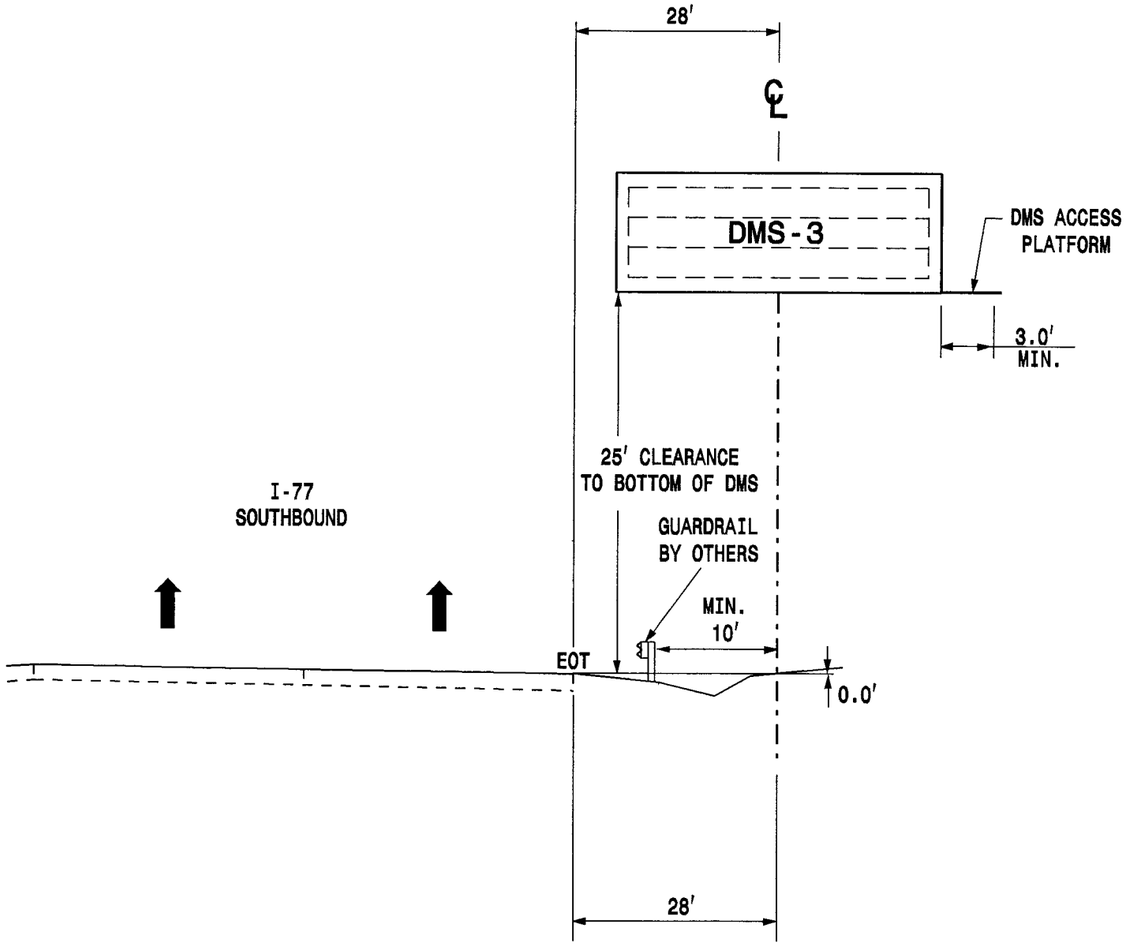
Gregory A. Fuller 7/17/12
SIGNATURE DATE

CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
34601.3.12	ITS-8

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 FINISHED GROUND. 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:

N.C. DEPARTMENT OF TRANSPORTATION
Transportation Mobility and Safety Division
1548 Mail Service Center, Raleigh, NC 27699-1548

DMS REPLACEMENT

DIVISION 11 YADKIN CO. SOUTH OF ELKIN

PLAN DATE:	JULY 2012	REVIEWED BY:	N.A. ASLAMI, PE
PREPARED BY:	G.A. GREEN	REVIEWED BY:	T.G. PARKER

REVISIONS	INIT.	DATE

SCALE 0 N/A

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER

SIGNATURE Gregory A. Fuller DATE 7/17/12

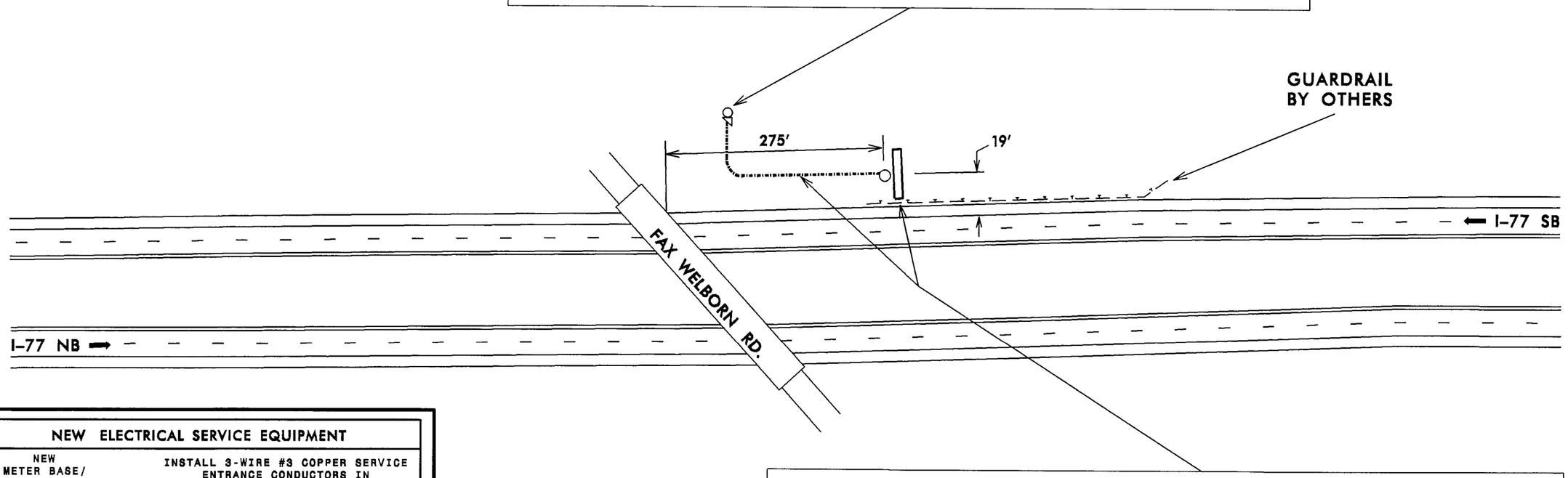
CADD Filename:

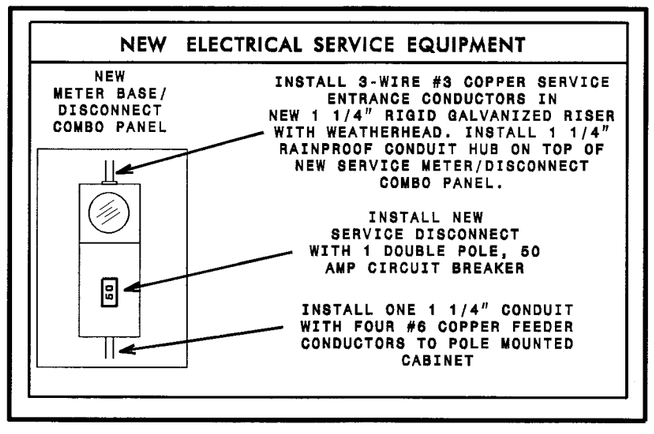
PROJECT REFERENCE NO.	SHEET NO.
34601.3.12	ITS-9

DMS-4 GPS COORDINATES

N 36° 18.115
W 80° 48.552

INSTALL THE FOLLOWING	
QUANTITY	DESCRIPTION
1	40′ WOOD POLE
1	METER BASE/DISCONNECT COMBINATION PANEL
20′	1 1/4" RISER WITH WEATHERHEAD
25′	3-WIRE COPPER SERVICE ENTRANCE CONDUCTORS
3	5/8" x 10′ COPPER CLAD GROUNDING ELECTRODE
30′	#4 AWG SOLID BARE COPPER GROUNDING CONDUCTOR





INSTALL THE FOLLOWING	
QUANTITY	DESCRIPTION
1	DMS
1	STRUCTURE
1	FOUNDATION
1	LADDER
1	EQUIPMENT CABINET DISCONNECT ON DMS STRUCTURE
185′	UNPAVED TRENCHING (2)(1 1/4")
195′	4-WIRE COPPER FEEDER CONDUCTORS
1	5/8" x 10′ COPPER CLAD GROUNDING ELECTRODE
10′	#4 AWG SOLID BARE COPPER GROUNDING CONDUCTOR

NEAR MM 87

NOTES

1. INSTALL NEW DMS, WALKWAY, AND LADDER ON NEW DMS STRUCTURE.
2. INSTALL NEW DMS POLE MOUNTED CABINET ON NEW DMS STRUCTURE.
3. COMMUNICATIONS INSTALLED BY OTHERS.
4. INSTALL NEW GROUNDING SYSTEM AS SHOWN ON SHEET ITS-11 AND AS DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.

Prepared in the Office of:
Mason and Hanby Atkins
Transportation Engineers & Planners
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Transportation Building
1130 N. O.A. GREENfield Pkwy., Garner, NC 27529

DMS INSTALLATION

DIVISION 11 SURRY CO. NORTH OF ELKIN

PLAN DATE:	JULY 2012	REVIEWED BY:	M.A. ASLAMI, PE
PREPARED BY:	G.A. GREEN	REVIEWED BY:	T.G. PARKER

REVISIONS	INIT.	DATE

SCALE 0 N/A

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER

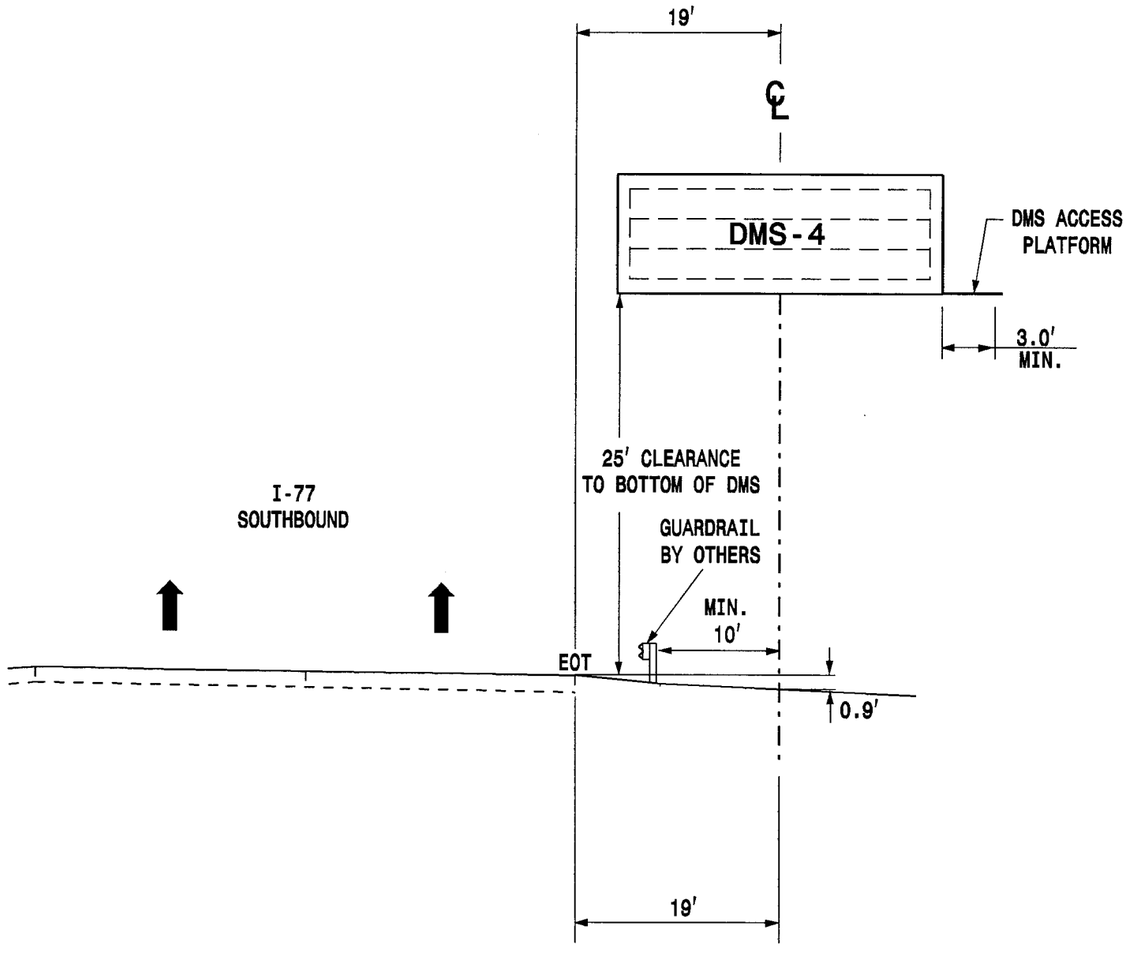
SIGNATURE Gregory A. Fuller 7/17/12 DATE

CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
34601.3.12	ITS-10

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 FINISHED GROUND. 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:
N. C. DEPARTMENT OF TRANSPORTATION
G.A. GREEN, 7th Hwy., Garner, NC 27

DMS REPLACEMENT

DIVISION 11 SURRY CO. NORTH OF ELKIN

PLAN DATE:	JULY 2012	REVIEWED BY:	W.A. ASLAMI, PE
PREPARED BY:	G.A. GREEN	REVIEWED BY:	T.G. PARKER

REVISIONS	INIT.	DATE

SCALE 0 N/A

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER

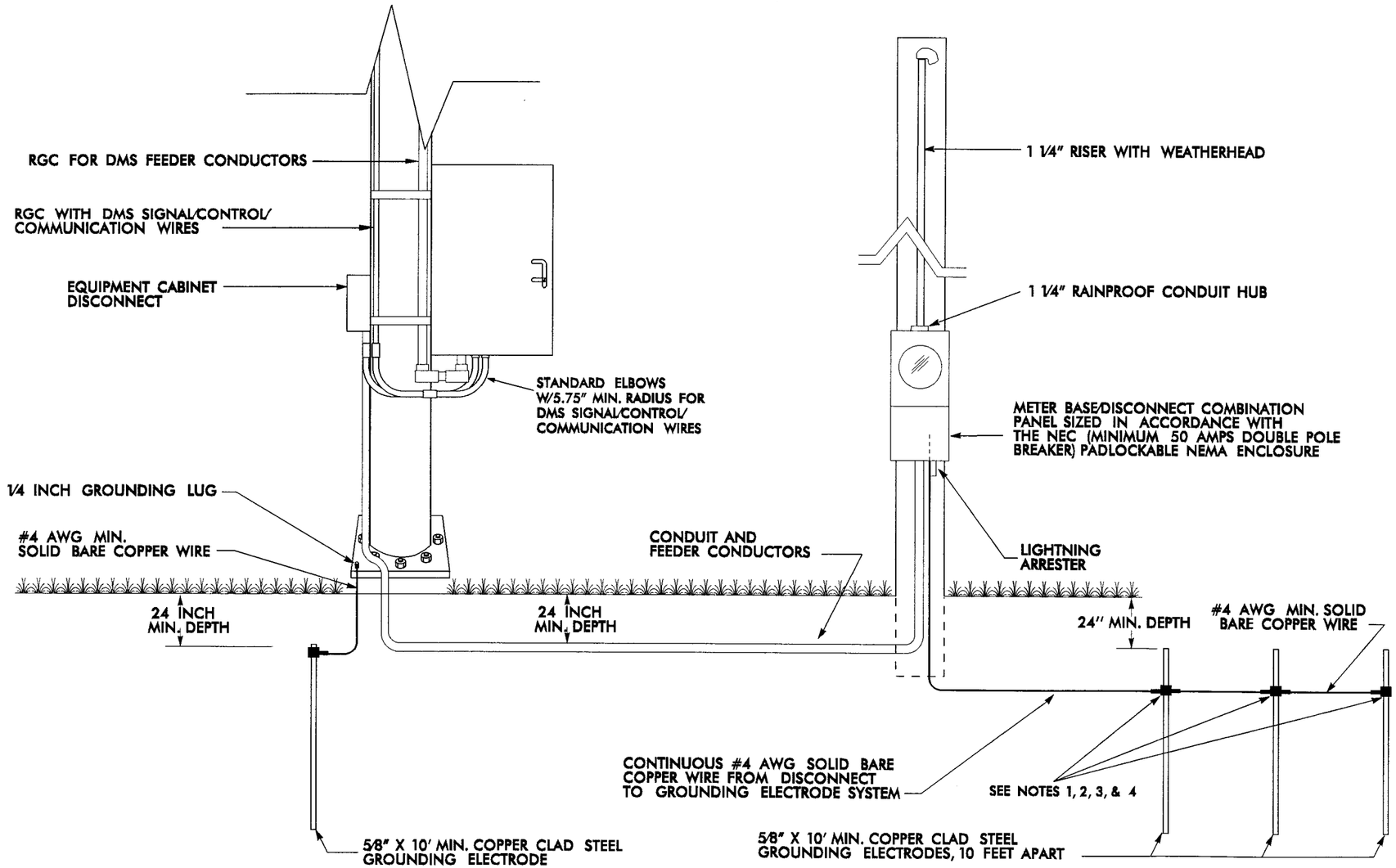
SIGNATURE Gregory A. Fuller DATE 7/17/12

CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
34601.3.12	ITS-11

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.



DYNAMIC MESSAGE SIGNS 1 & 4
NEW ELECTRICAL SERVICE AND GROUNDING DETAIL

PLAN DATE: JULY 2012	REVIEWED BY: M.A. ASLAMI, PE
PREPARED BY: G.A. GREEN	REVIEWED BY: T.B. PARKER

REVISIONS	INIT.	DATE

Prepared in the Office of:
North Carolina Department of Transportation
Division of Highways
Traffic Engineering Branch
1 N. G.A. Greenfield Pkwy., Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER

SCALE: 0 N/A

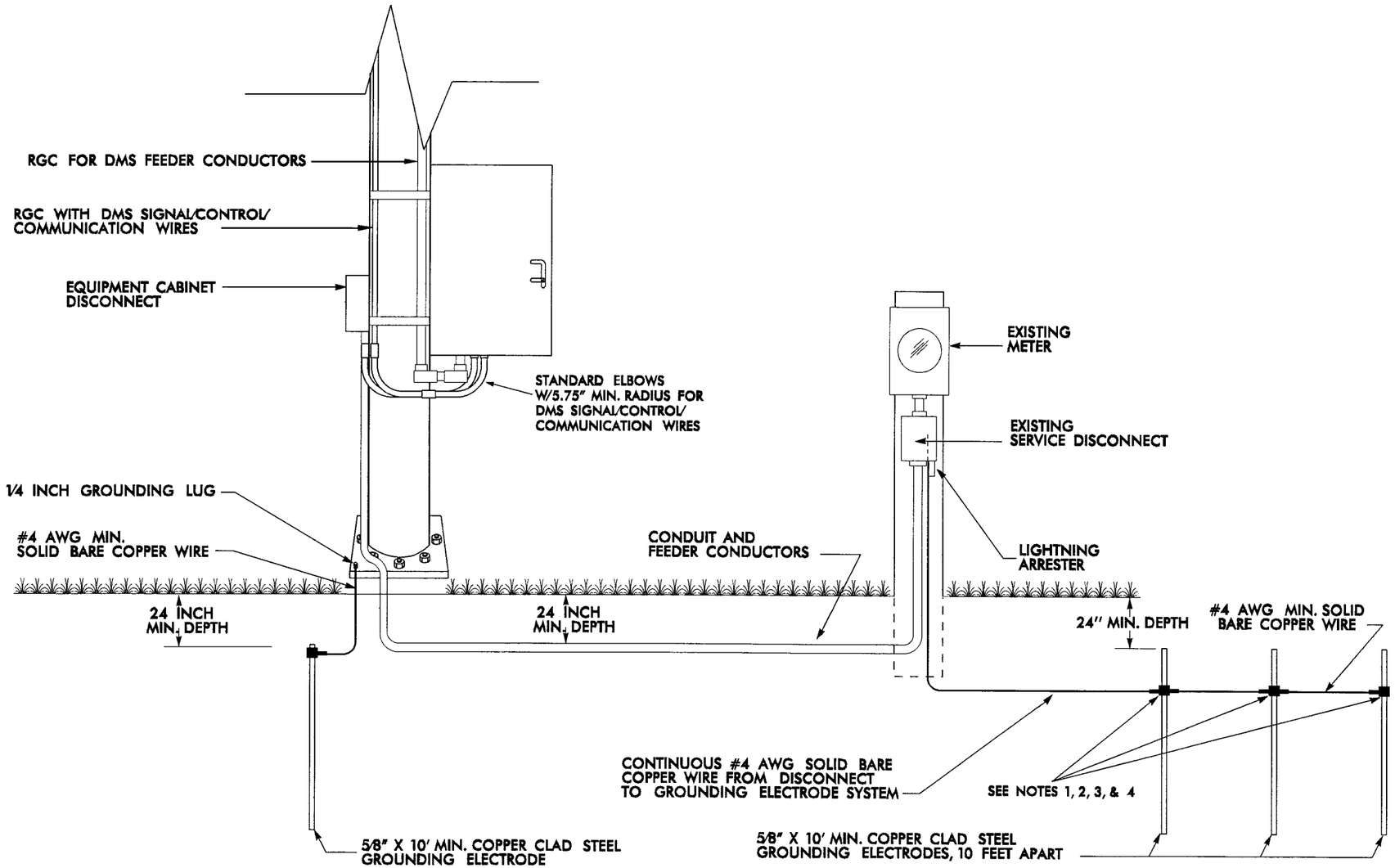
CADD Filename:

Gregory A. Fuller 7/17/12
SIGNATURE DATE

PROJECT REFERENCE NO.	SHEET NO.
34601.3.12	ITS-12

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.



DYNAMIC MESSAGE SIGN 2
EXISTING ELECTRICAL SERVICE AND GROUNDING DETAIL

PLAN DATE: JULY 2012	REVIEWED BY: M.A. ASLAMI, PE
PREPARED BY: G.A. GREEN	REVIEWED BY: T.G. PARKER

REVISIONS	INIT.	DATE

Prepared in the Office of:
North Carolina Department of Transportation
Traffic Engineering Branch
1710 N. Ga. Green Field Pkwy., Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER

SCALE: 0 N/A

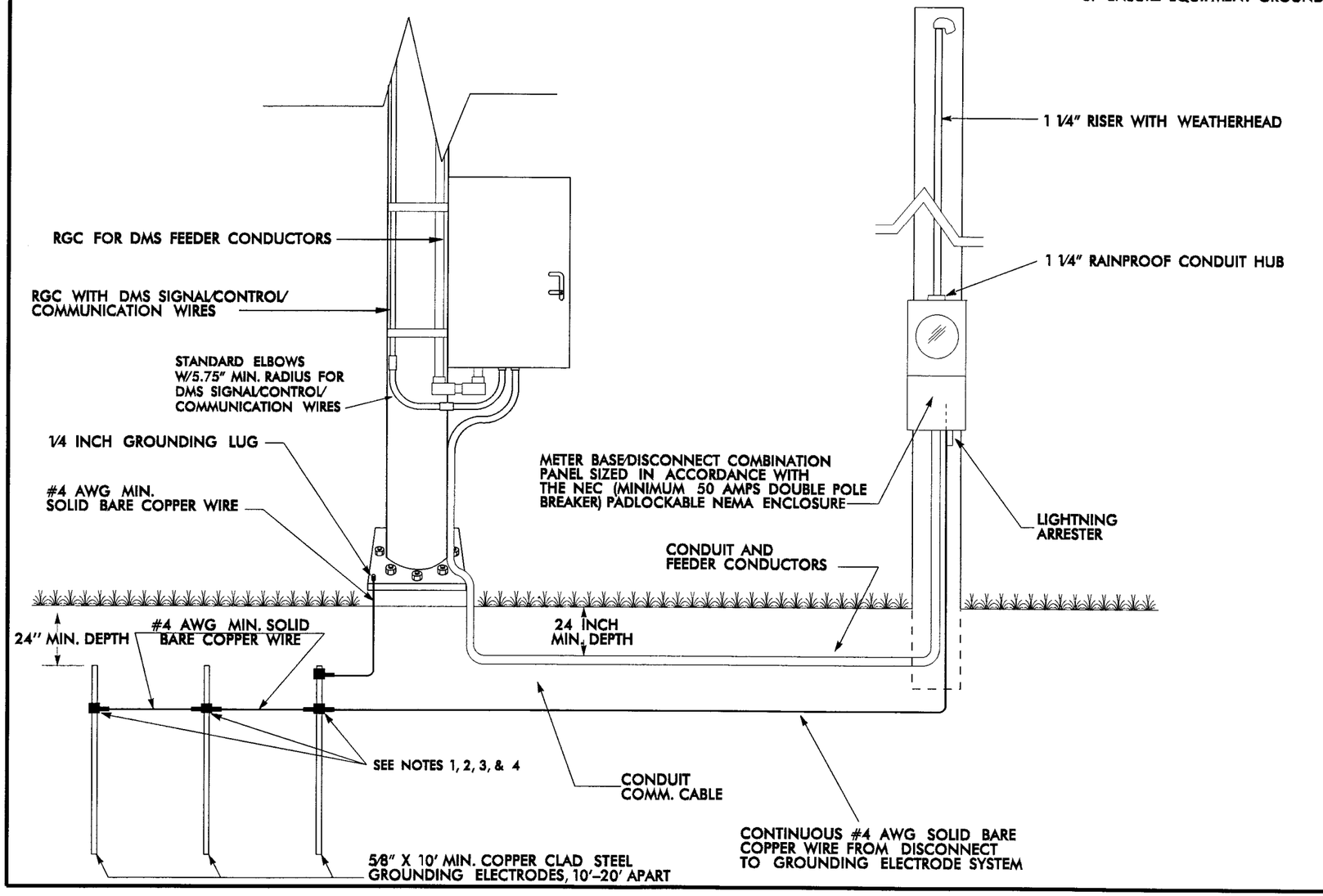
SIGNATURE: Gregory A. Fuller DATE: 7/17/12

CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
34601.3.12	ITS-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.



DYNAMIC MESSAGE SIGN 3
NEW ELECTRICAL SERVICE
AND GROUNDING DETAIL

PLAN DATE: JULY 2012	REVIEWED BY: W.A. ASLAMI, PE
PREPARED BY: G.A. GREEN	REVIEWED BY: T.G. PARKER

REVISIONS	INIT.	DATE

Prepared in the Office of:

749 N. G.A. Green Field Pkwy., Garner, NC 27529

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER

SCALE: 0 N/A

SIGNATURE: Gregory A. Fuller 7/17/12

DATE

CADD File Name: