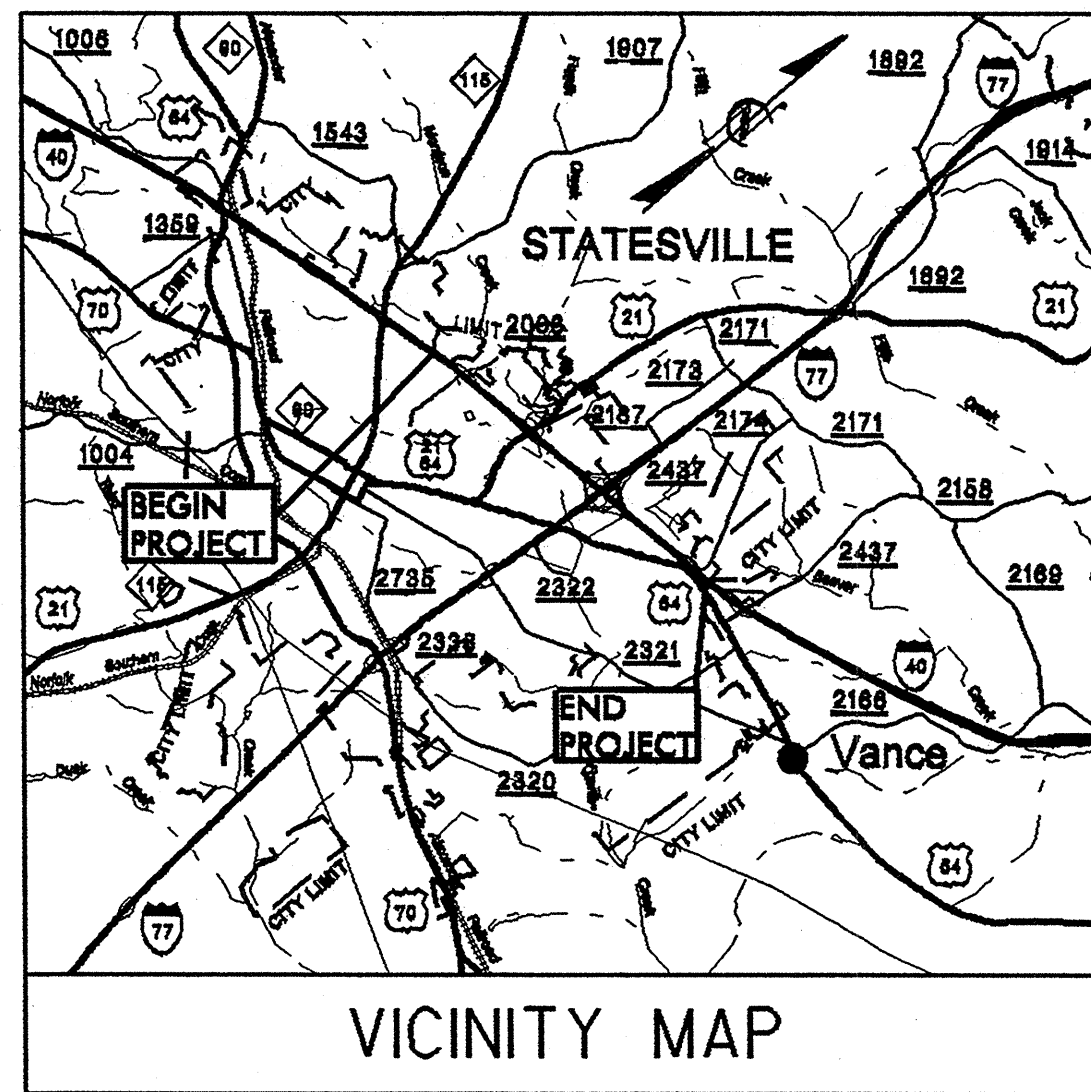


PROJECT: I-3819A



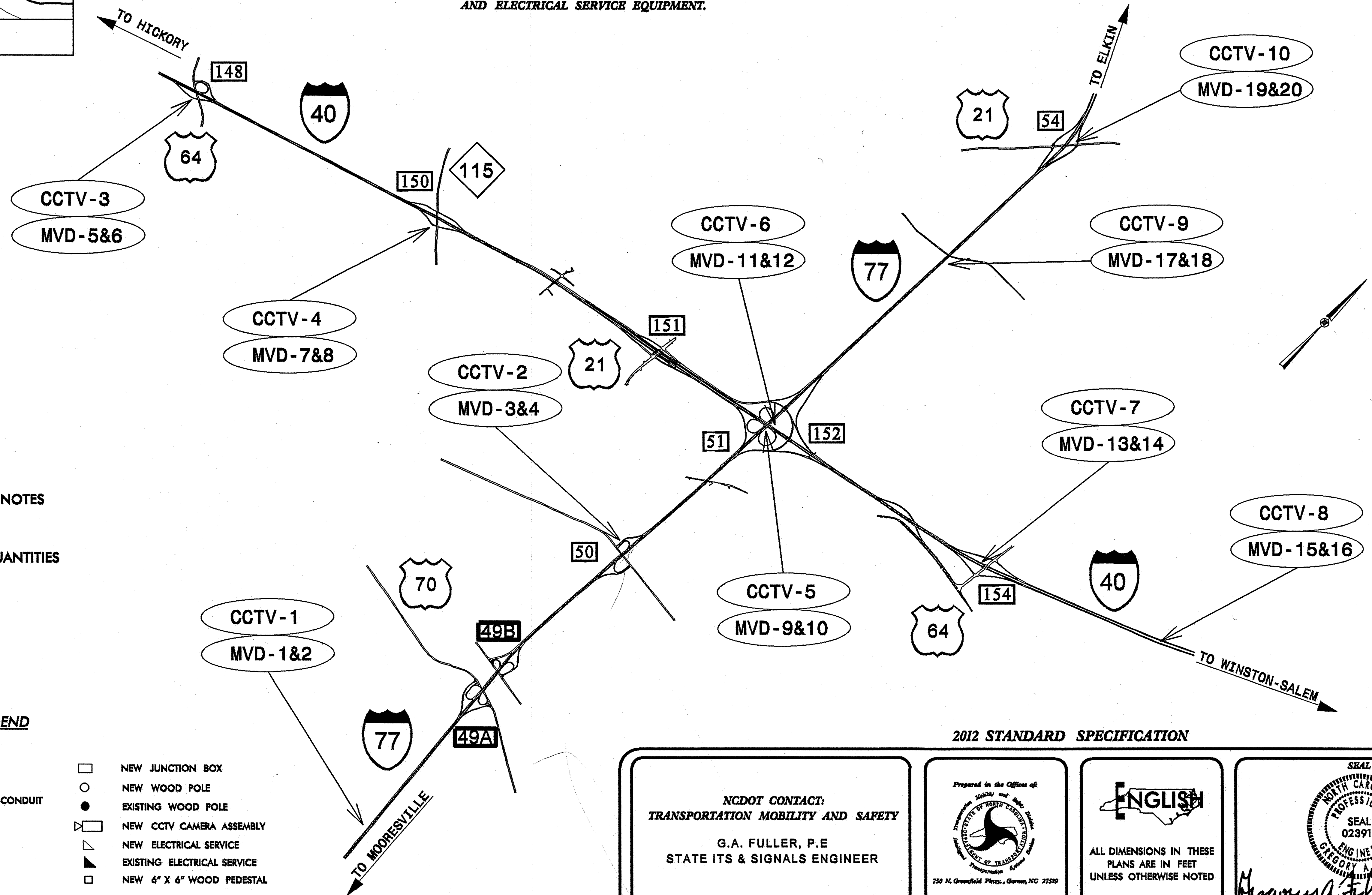
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

IREDELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.
N.C.	I-3819A	ITS-1
STATE PROJ. NO.	R.A. PROJ. NO.	DESCRIPTION
34192.1.2.3		PE
34192.2.1GV3		CONST.

ITS PLANS

THIS PROJECT CONSISTS OF FURNISHING AND INSTALLING EQUIPMENT AND MATERIALS FOR THE INSTALLATION OF CCTV CAMERAS AND MICROWAVE VEHICLE DETECTORS ALONG I-40 AND I-77 IN IREDELL COUNTY, NORTH CAROLINA. RELATED MATERIALS CONSIST OF CCTV CAMERA EQUIPMENT, CCTV LOWERING DEVICE, MICROWAVE VEHICLE DETECTION EQUIPMENT, WOOD POLES, AND ELECTRICAL SERVICE EQUIPMENT.



INDEX OF SHEETS

SHEET 1	TITLE SHEET
SHEET 2	CONSTRUCTION NOTES
SHEET 2A-2B	TYPICAL DETAILS
SHEET 3	SUMMARY OF QUANTITIES
SHEET 4 - 12	PLAN OVERVIEW

LEGEND

-----	NEW CONDUIT	□	NEW JUNCTION BOX
-----	EXISTING CONDUIT	○	NEW WOOD POLE
---DD---	NEW DIRECTIONAL DRILLED CONDUIT	●	EXISTING WOOD POLE
---T---	NEW GUARDRAIL	□	NEW CCTV CAMERA ASSEMBLY
---T---	EXISTING GUARDRAIL	▲	NEW ELECTRICAL SERVICE
□	EXISTING DMS	▲	EXISTING ELECTRICAL SERVICE
)))	NEW MVD ASSEMBLY	□	NEW 6" X 6" WOOD PEDESTAL

2012 STANDARD SPECIFICATION

<p>NCDOT CONTACT: TRANSPORTATION MOBILITY AND SAFETY</p> <p>G.A. FULLER, P.E. STATE ITS & SIGNALS ENGINEER</p>	<p>Prepared in the Office of:</p> <p>750 N. Greenfield Plaza, Greensboro, NC 27409</p>	<p>ENGLISH</p> <p>ALL DIMENSIONS IN THESE PLANS ARE IN FEET UNLESS OTHERWISE NOTED</p>	<p>SEAL</p> <p>Gregory A. Fuller 11/14/11</p>
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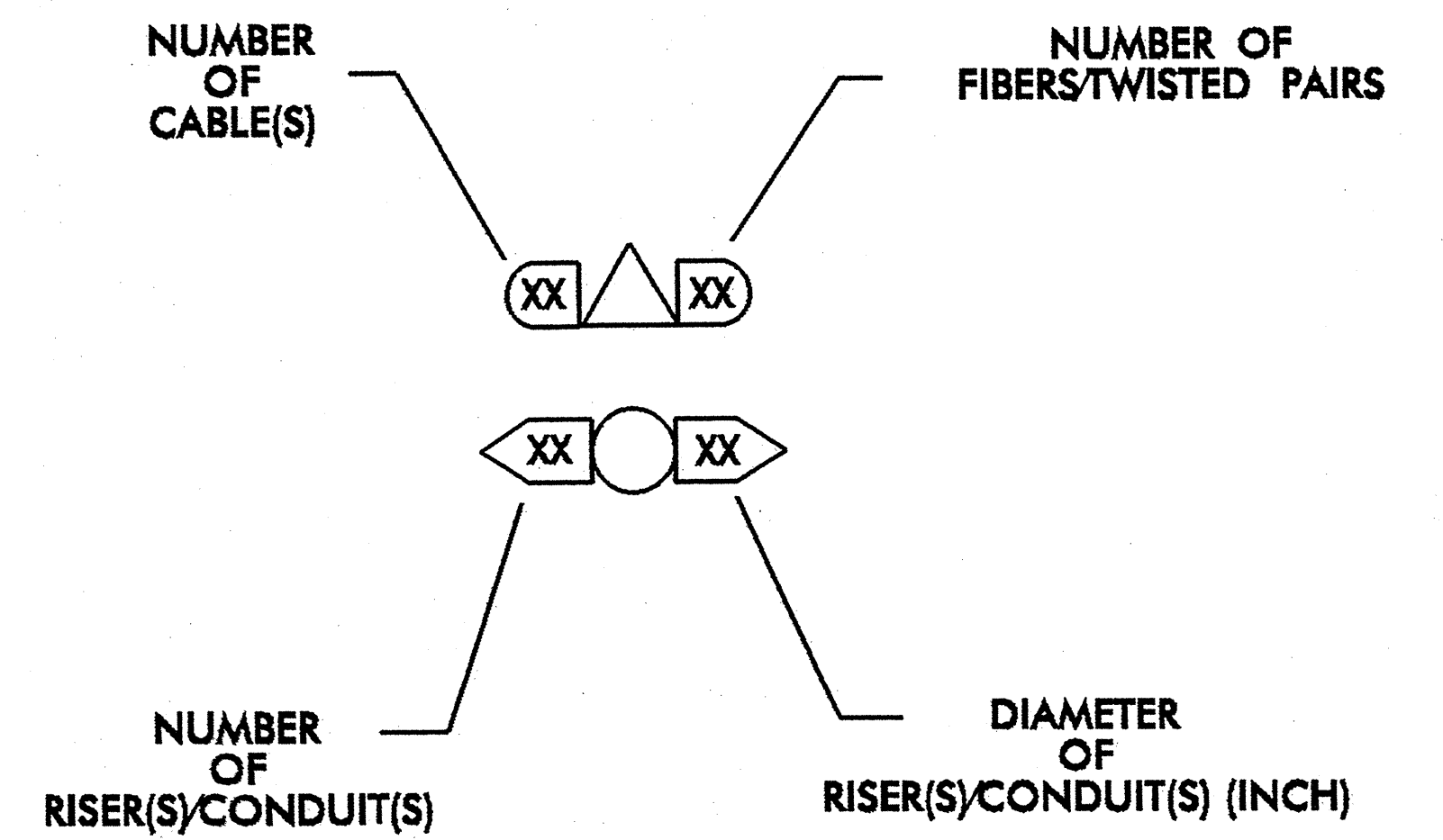
- 1 MVD CONTROL CABLES
- 2 3-WIRE #3 SERVICE ENTRANCE CONDUCTORS
- 3A 4-WIRE #4 COPPER FEEDER CONDUCTORS
- 3B 4-WIRE #6 COPPER FEEDER CONDUCTORS
- 3C 3-WIRE #8 COPPER FEEDER CONDUCTORS
- 3D 3-WIRE #10 COPPER FEEDER CONDUCTORS
- 3E 3-WIRE #12 COPPER FEEDER CONDUCTORS
- 4 INSTALL SMFO CABLE
- 5 INSTALL MMFO CABLE
- 6 INSTALL FIBER OPTIC DROP CABLE
- 7 INSTALL TRACER WIRE
- 8 TRENCH
- 9 INSTALL PVC CONDUIT
- 10 INSTALL RIGID, GALVANIZED STEEL CONDUIT
- 11 INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD
- 12 INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL
- 13 INSTALL OUTER-DUCT POLYETHYLENE CONDUIT
- 14 INSTALL POLYETHYLENE CONDUIT
- 15 DIRECTIONAL DRILL CONDUIT
- 16 BORE AND JACK CONDUIT
- 17 INSTALL CABLE(S) IN EXISTING CONDUIT
- 18 INSTALL CABLE(S) IN NEW CONDUIT
- 19 INSTALL CABLE(S) IN EXISTING RISER
- 20 INSTALL CABLE(S) IN NEW RISER
- 21 INSTALL CABLE(S) IN EXISTING CONDUIT STUBOUTS
- 22 INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 23 INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 24 INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET
- 25 INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
- 26 TERMINATE COMMUNICATIONS CABLE ON EXISTING TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
- 27 INSTALL NEW TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
- 28 INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS, AND FUSION SPLICE CABLE IN CABINET
- 29 INSTALL UNDERGROUND SPLICE ENCLOSURE
- 30 INSTALL AERIAL SPLICE ENCLOSURE

- 31 MODIFY EXISTING SPLICE ENCLOSURE
- 32 INSTALL BASE MOUNTED SPLICE CABINET
- 33 REMOVE EXISTING SPLICE CABINET
- 34 INSTALL CABINET FOUNDATION
- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL STANDARD JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL WOOD POLE
- 43 INSTALL 6" X 6" WOOD PEDESTAL
- 44 INSTALL AERIAL GUY ASSEMBLY
- 45 INSTALL STANDARD GUY ASSEMBLY
- 46 INSTALL SIDEWALK GUY ASSEMBLY
- 47 INSTALL MESSENGER CABLE
- 48 REMOVE EXISTING COMMUNICATIONS CABLE AND MESSENGER CABLE
- 49 REMOVE EXISTING COMMUNICATIONS CABLE
- 50 INSTALL TELEPHONE SERVICE
- 51 INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
- 52 INSTALL DELINEATOR MARKER
- 53 STORE 30 FEET OF COMMUNICATIONS CABLE
- 54 LASH CABLE(S) TO EXISTING SIGNAL/COMMUNICATIONS CABLE
- 55 LASH CABLE(S) TO EXISTING MESSENGER CABLE
- 56 LASH CABLE(S) TO NEW MESSENGER CABLE
- 57 INSTALL NEW EQUIPMENT CABINET DISCONNECT
- 58 INSTALL NEW ELECTRICAL SERVICE
- 59 MODIFY ELECTRICAL SERVICE
- 60 INSTALL MICROWAVE VEHICLE DETECTION ASSEMBLY

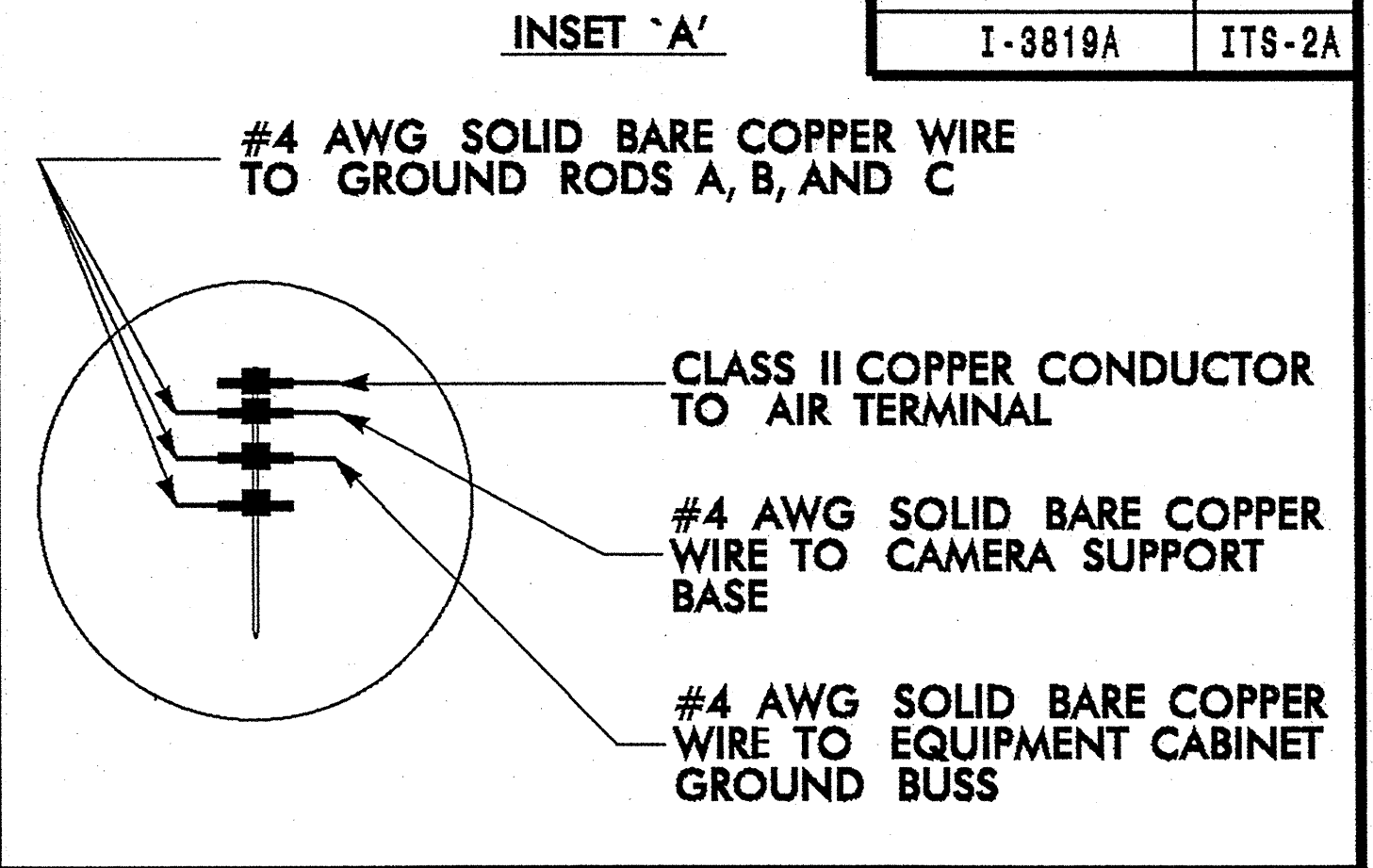
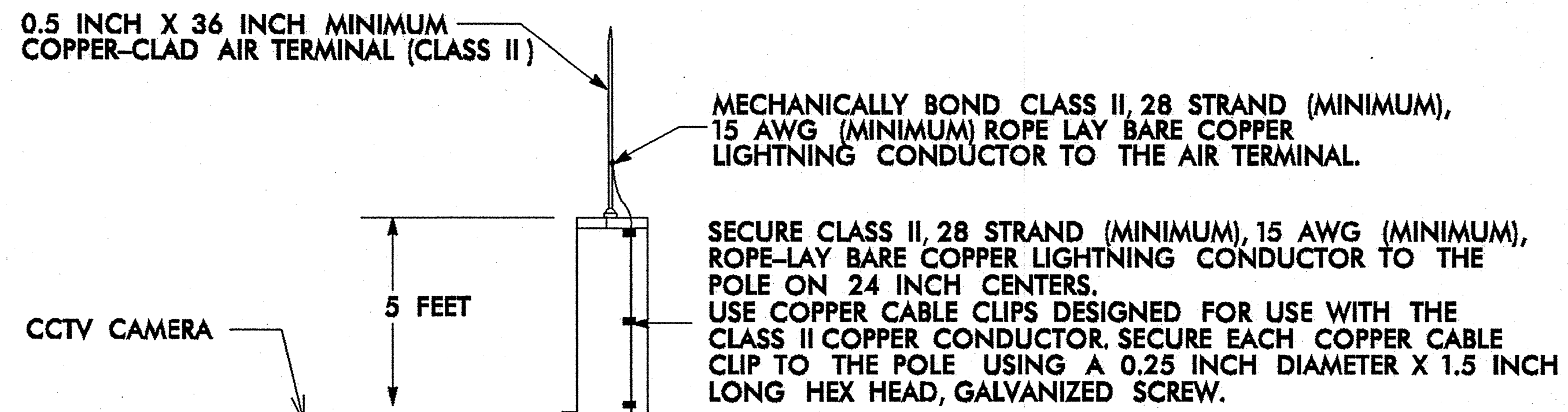
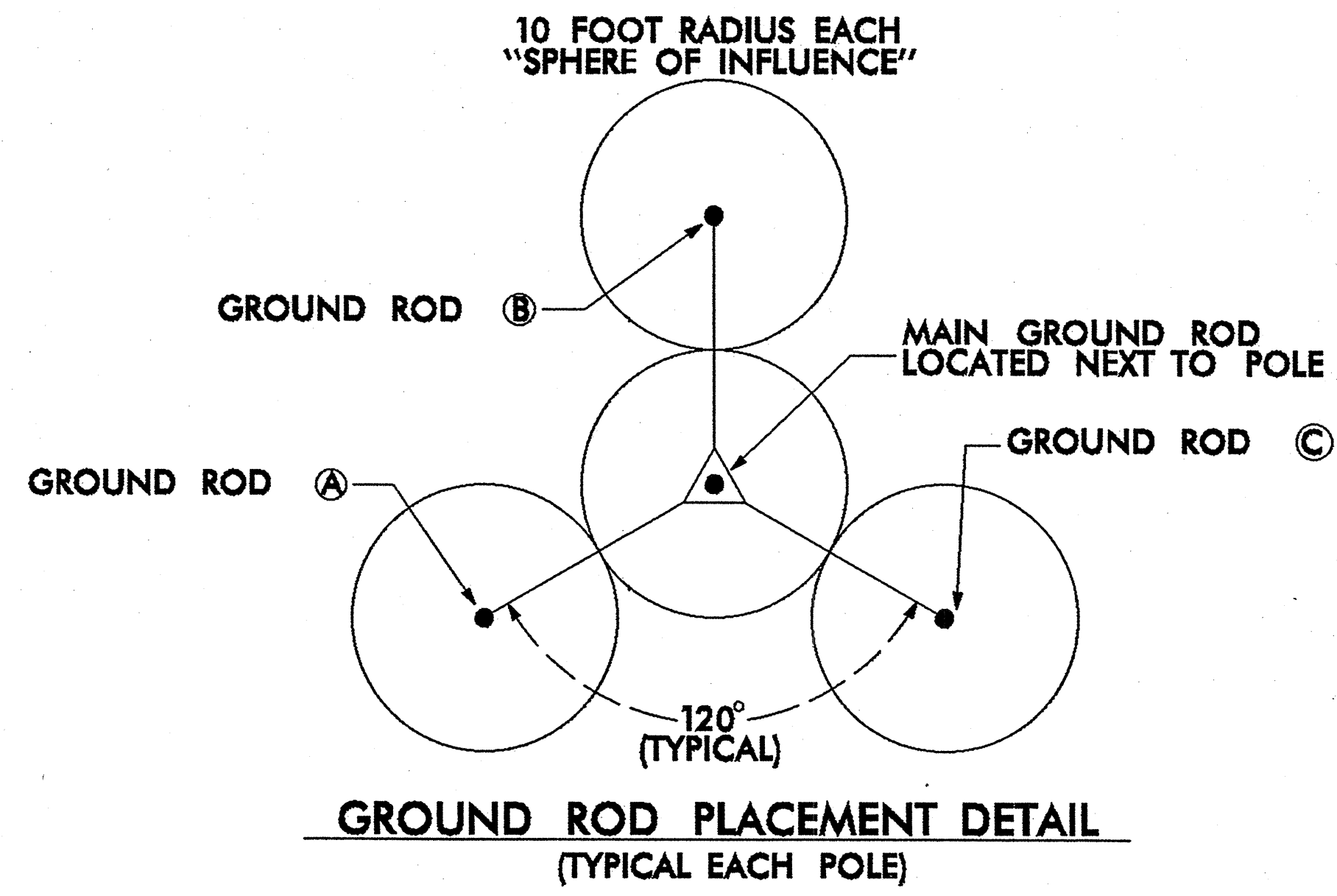
- 61 INSTALL POLE MOUNTED EQUIPMENT CABINET
- 62 INSTALL INDUSTRIAL ETHERNET SWITCH
- 63 INSTALL FIBER OPTIC TRANSCEIVER
- 64 INSTALL VIDEO ETHERNET ENCODER
- 65 INSTALL VIDEO ETHERNET DECODER
- 66 INSTALL CAMERA LOWERING DEVICE

CONSTRUCTION NOTE SYMBOLOGY KEY

- XX INDICATES NUMBER OF CABLES, LOOPS, ETC.
- XX INDICATES NUMBER OF FIBERS PER CABLE, TWISTED PAIRS PER CABLE, ETC.
- XX INDICATES NUMBER OF RISER(S)/CONDUIT(S)
- XX INDICATES DIAMETER OF RISER(S)/CONDUIT(S) (INCH)

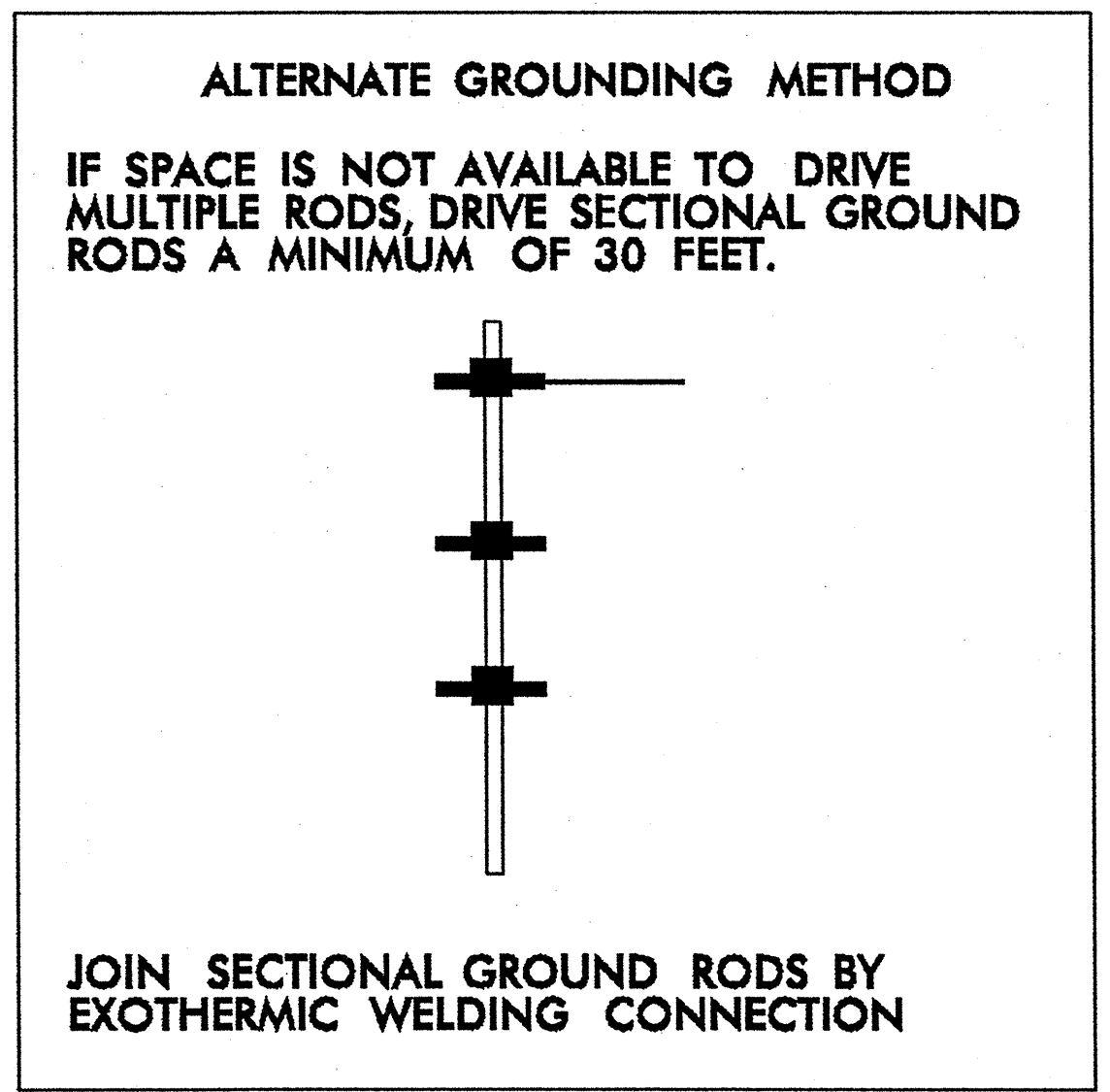
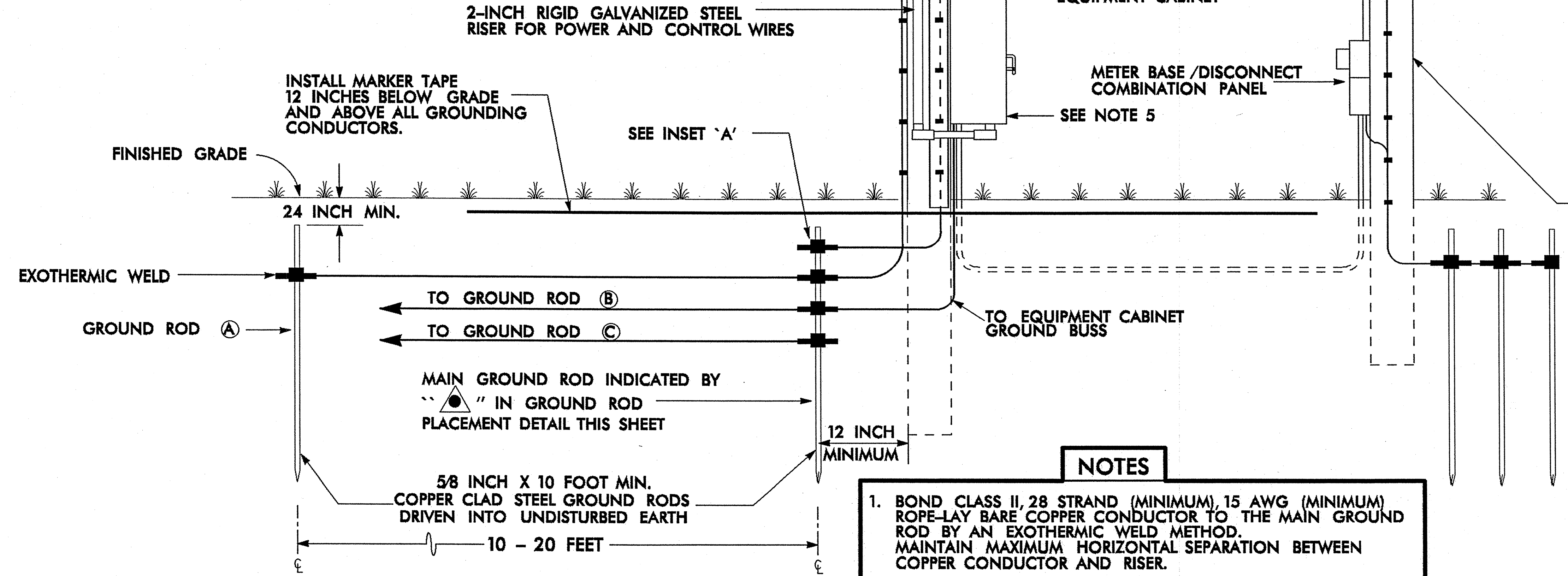


	CONSTRUCTION NOTES	
	PLAN DATE: NOVEMBER 2011 PREPARED BY: G.A. GREEN REVISIONS: _____ SCALE: 0 N/A	REVIEWED BY: W.A. ASLAMI, PE REVIEWED BY: T.B. PARKER INIT. DATE _____ _____
SIGNATURE: <i>Gregory A. Fuller</i> DATE: 11/14/11 SEAL: 023919		CADD FILE FORM: _____



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.



INSTALL ELECTRICAL SERVICE POLE NEAR RIGHT OF WAY OR AS DIRECTED BY THE ENGINEER.

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.

CCTV CAMERA INSTALLATION FOR WOOD POLES WITH AERIAL ELECTRICAL SERVICE TYPICAL DETAIL

PLAN DATE: NOVEMBER 2011	REVIEWED BY: M.A. ASLANI, PE
PREPARED BY: G.A. GREEN	REVIEWED BY: T.G. PARKER
REVISIONS	INIT. DATE

SEAL
GREGORY A. FULLER
ENGINEER
STATE OF NORTH CAROLINA
LICENSE NO. 023919

SCALE

0

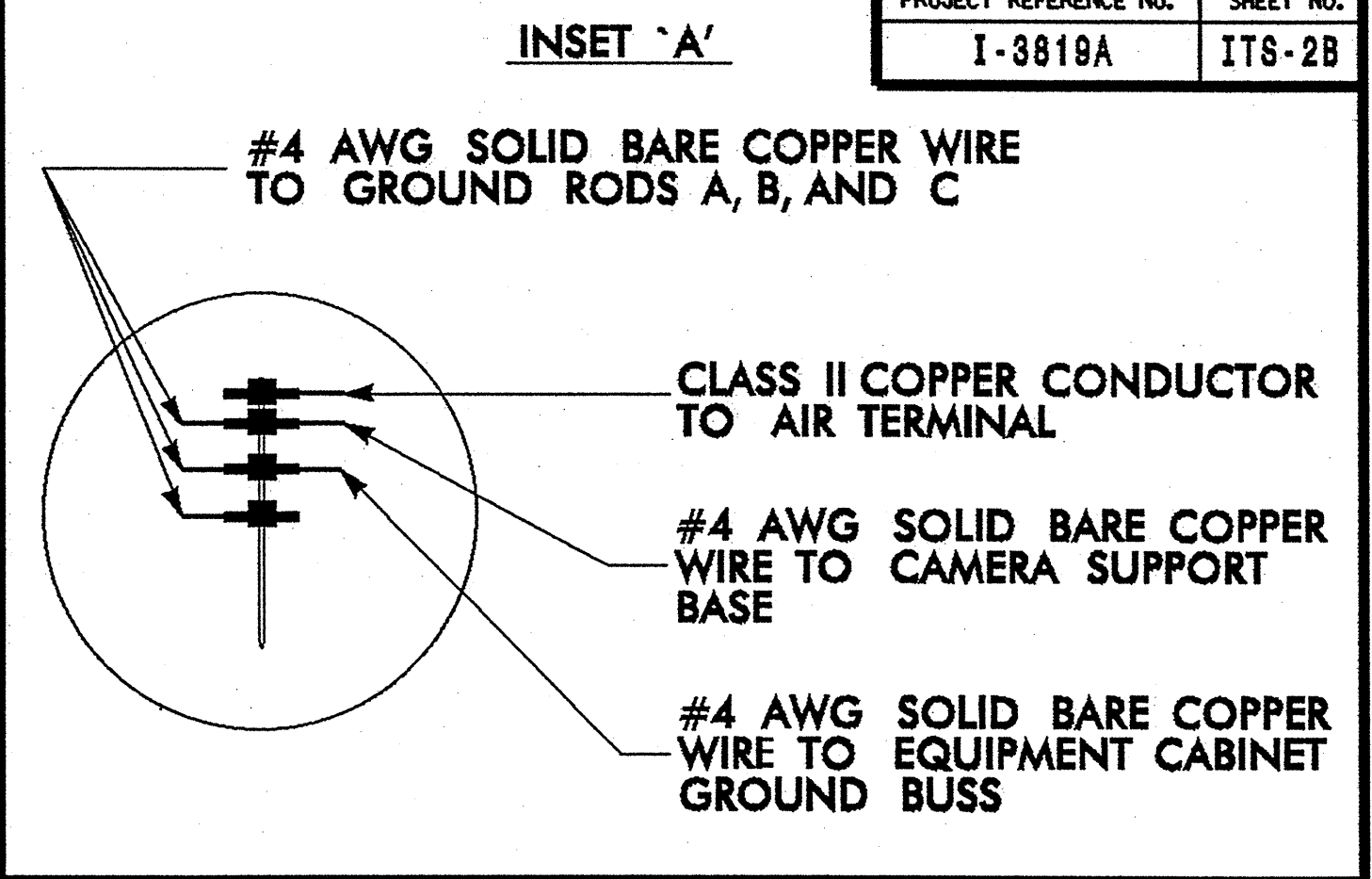
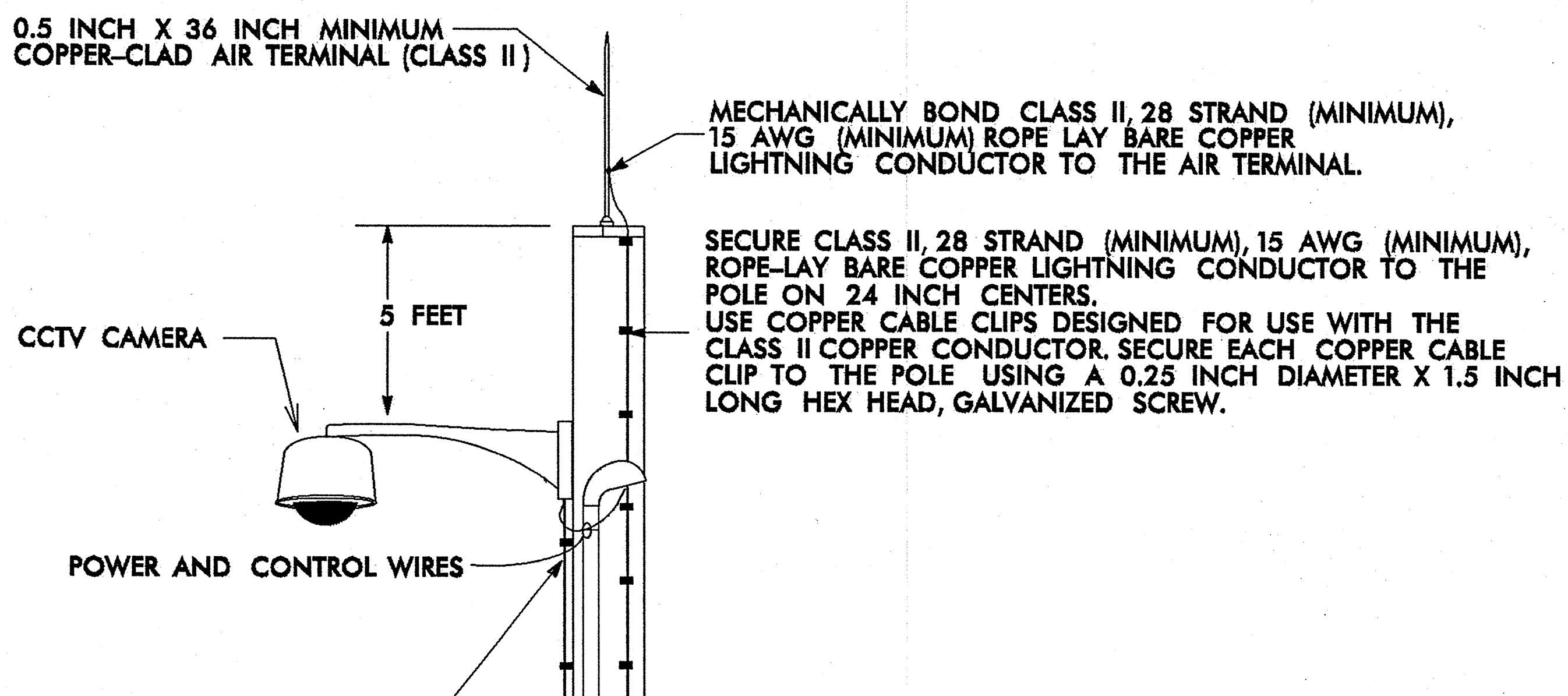
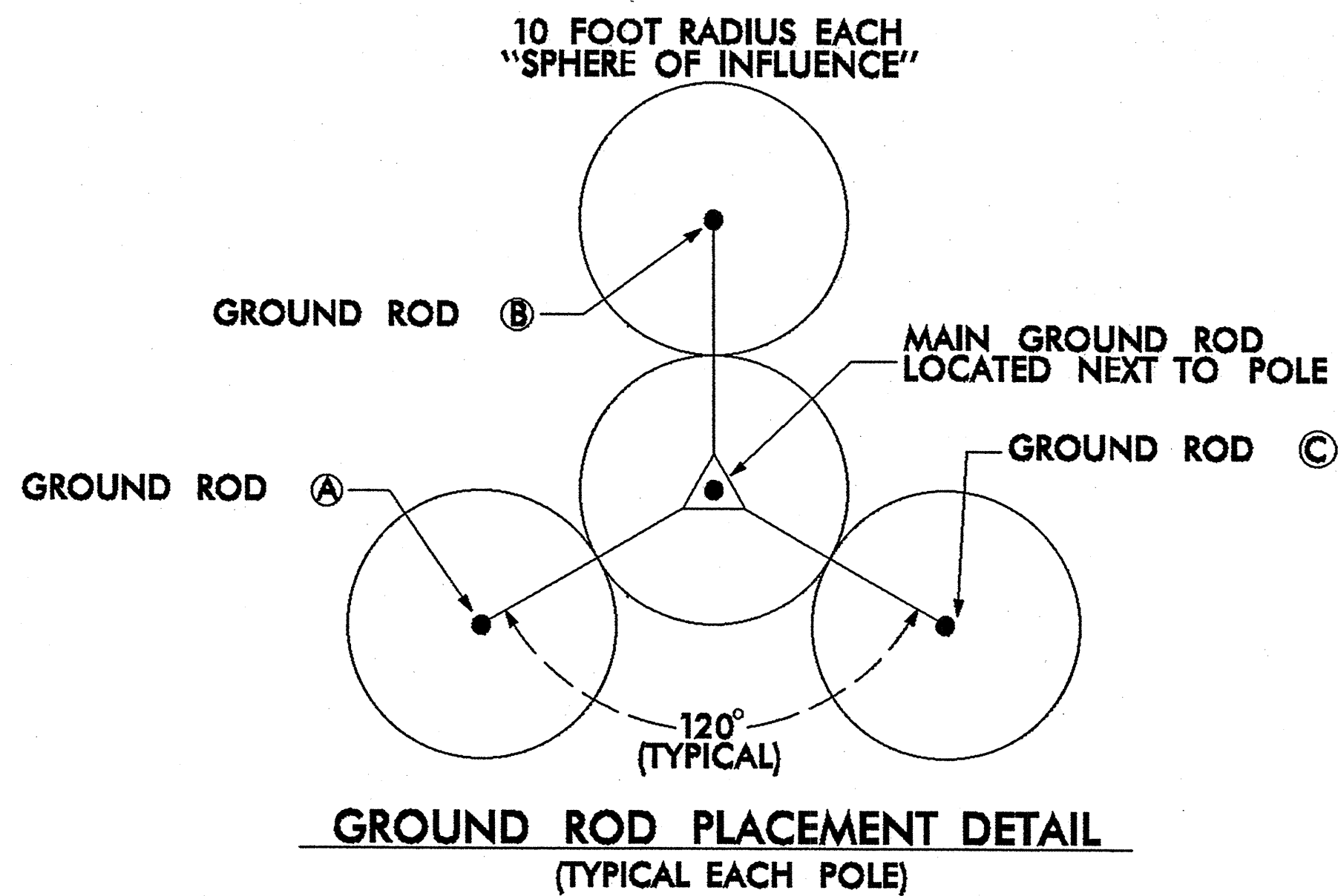
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SIGNATURE

Gregory A. Fuller

DATE

11/24/11

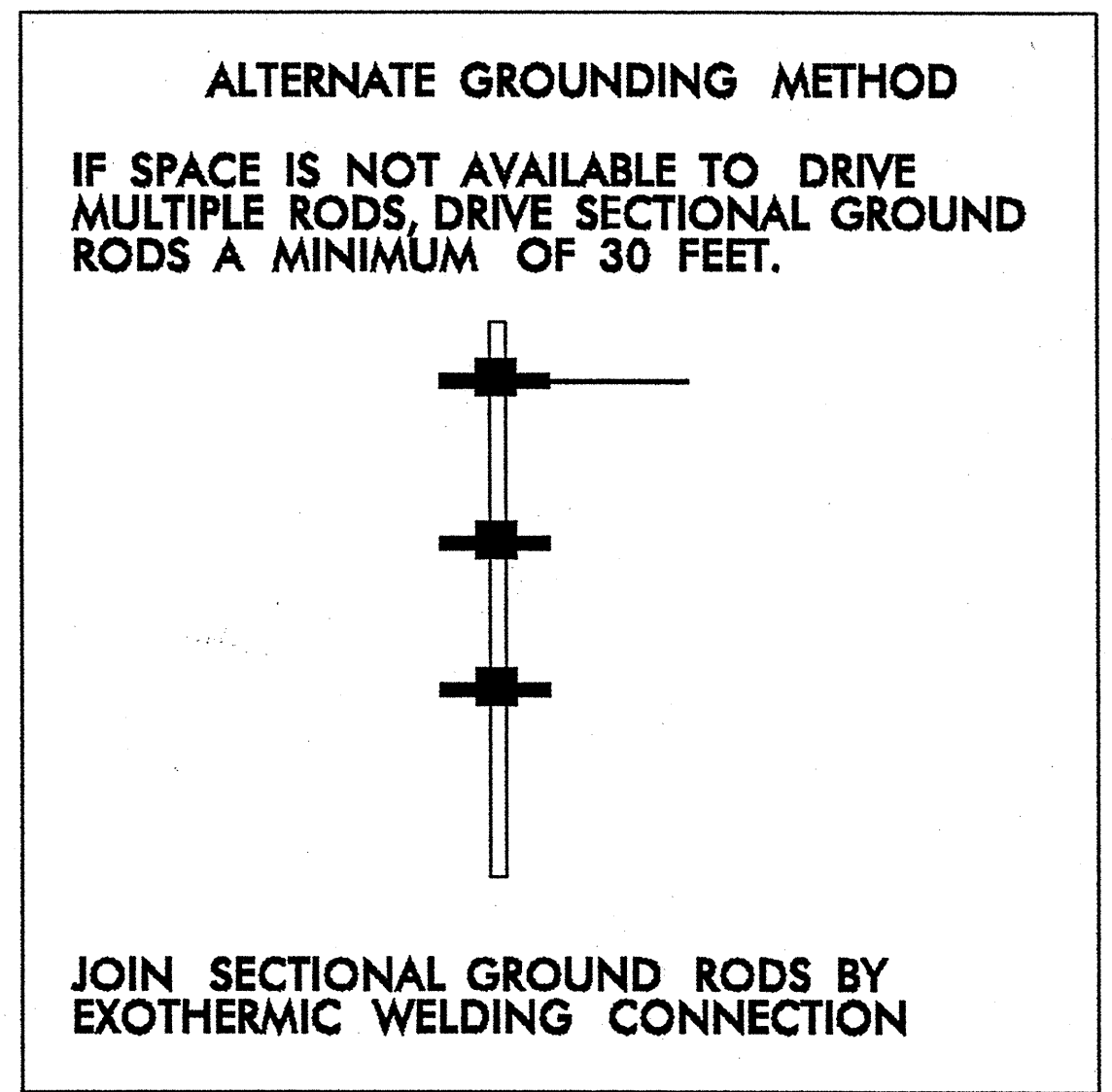
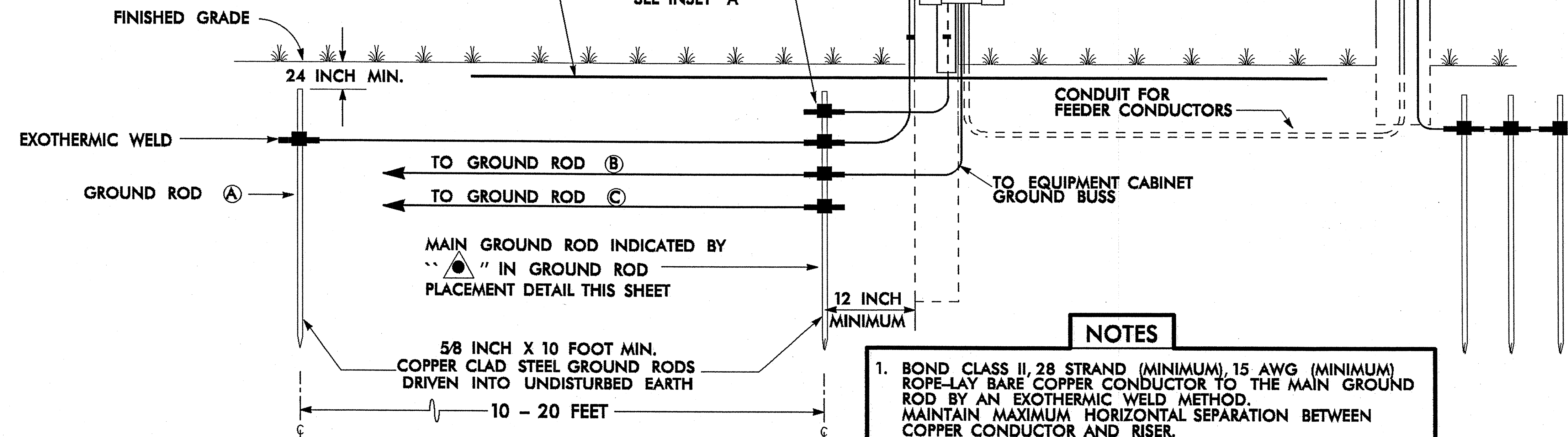


BOND #4 AWG SOLID BARE COPPER WIRE TO CAMERA SUPPORT BASE BY AN ALUMINUM TO COPPER #2 - #14 AWG LUG. ATTACH TO CAMERA BASE WITH A STAINLESS STEEL SELF TAPPING SCREW. REMOVE PAINT OR PROTECTIVE COATING WHERE ATTACHING LUG ONLY.

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 BUSS.

CCTV CAMERA INSTALLATION FOR WOOD PEDESTAL WITH UNDERGROUND ELECTRICAL SERVICE TYPICAL DETAIL

PLAN DATE: NOVEMBER 2011	REVIEWED BY: N.A. ASLAMI, PE
PREPARED BY: G.A. GREEN	REVIEWED BY: T.G. PARKER
REVISIONS	INIT. DATE

750 N. Greenfield Place, Garner, NC 27529

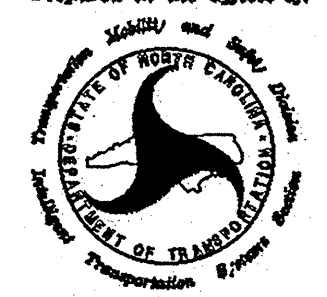

SCALE: 0 N/A

SIGNATURE: Gregory Fuller 11/14/11

DATE: 11/14/11

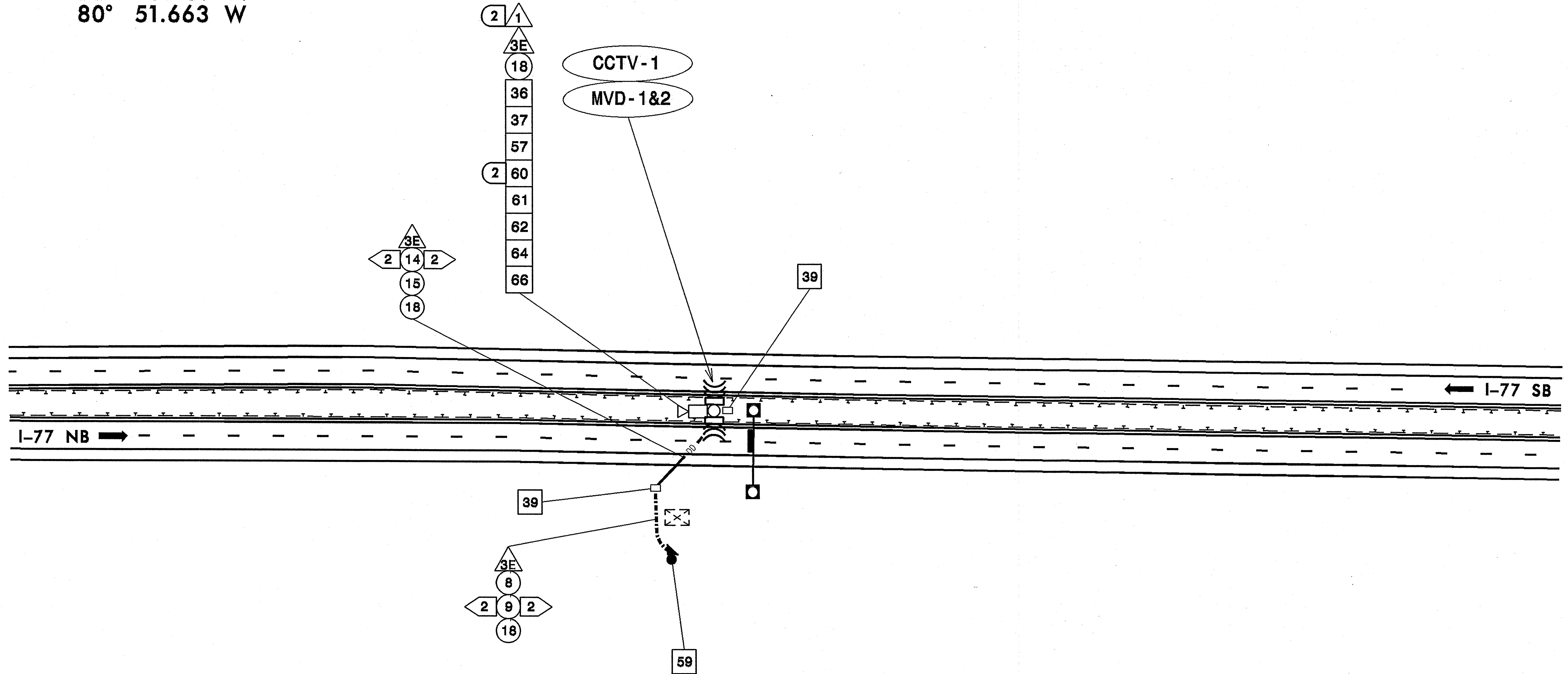
QUANTITIES

PROJECT REFERENCE NO.	SHEET NO.
I-3810A	ITS-3

 Prepared in the Office of: 750 N. Greenfield Place, Garner, NC 27829	QUANTITIES		
	DIVISION 12 IREDELL CO.		
SCALE	REVISIONS	INIT.	DATE
0 N/A			
PREPARED BY: G.A. GREEN		REVIEWED BY: T.G. PARKER	
PLAN DATE: NOVEMBER 2011		REVIEWED BY: M.A. ASLAMI, PE	
SIGNATURE		DATE	
CADD Filename:			

CCTV-1 GPS COORDINATES

35° 45.207 N
80° 51.663 W



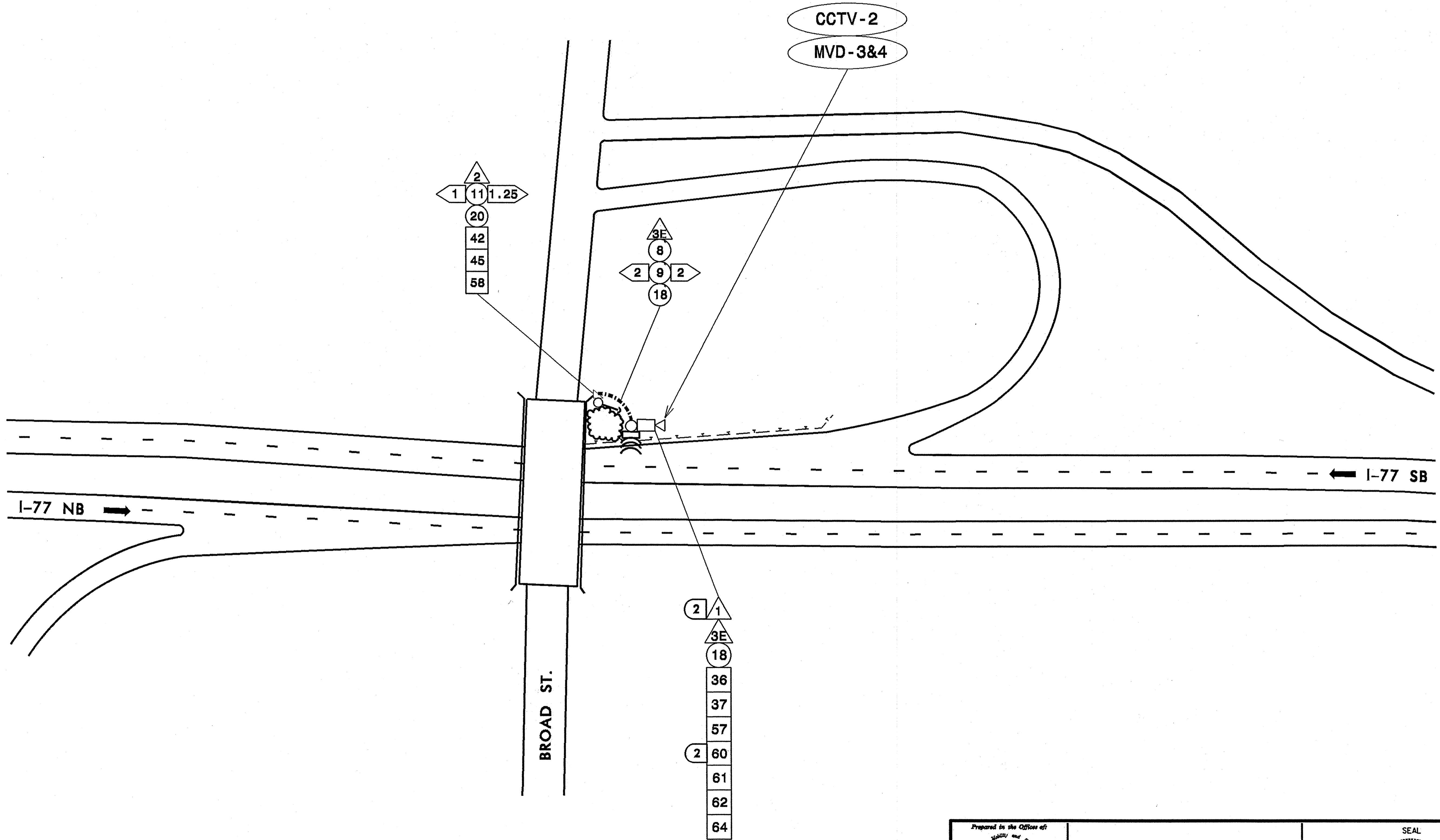
NOTES

1. INSTALL CCTV CAMERA WOOD POLE TEN (10) FEET SOUTH OF EXISTING DMS STRUCTURE AND SIX (6) FEET BEHIND SOUTHBOUND GUARDRAIL.
2. COMMUNICATIONS WITH THE MRTMC WILL BE INSTALLED BY OTHERS.

	CCTV & MVD INSTALLATIONS	
	DIVISION 12 IREDELL CO.	
PREPARED BY: G.A. GREEN SCALE: 0 N/A	PLAN DATE: NOVEMBER 2011 REVISIONS:	REVIEWED BY: W.A. ASLAMI, PE T.G. PARKER INIT. DATE
Signature: <i>Gregory A. Fuller</i> 11/14/11 CAD/DATE:		SEAL: 023919 ENGINEER: GREGORY A. FULLER

CCTV-2 GPS COORDINATES

35° 47.486 N
80° 51.765 W



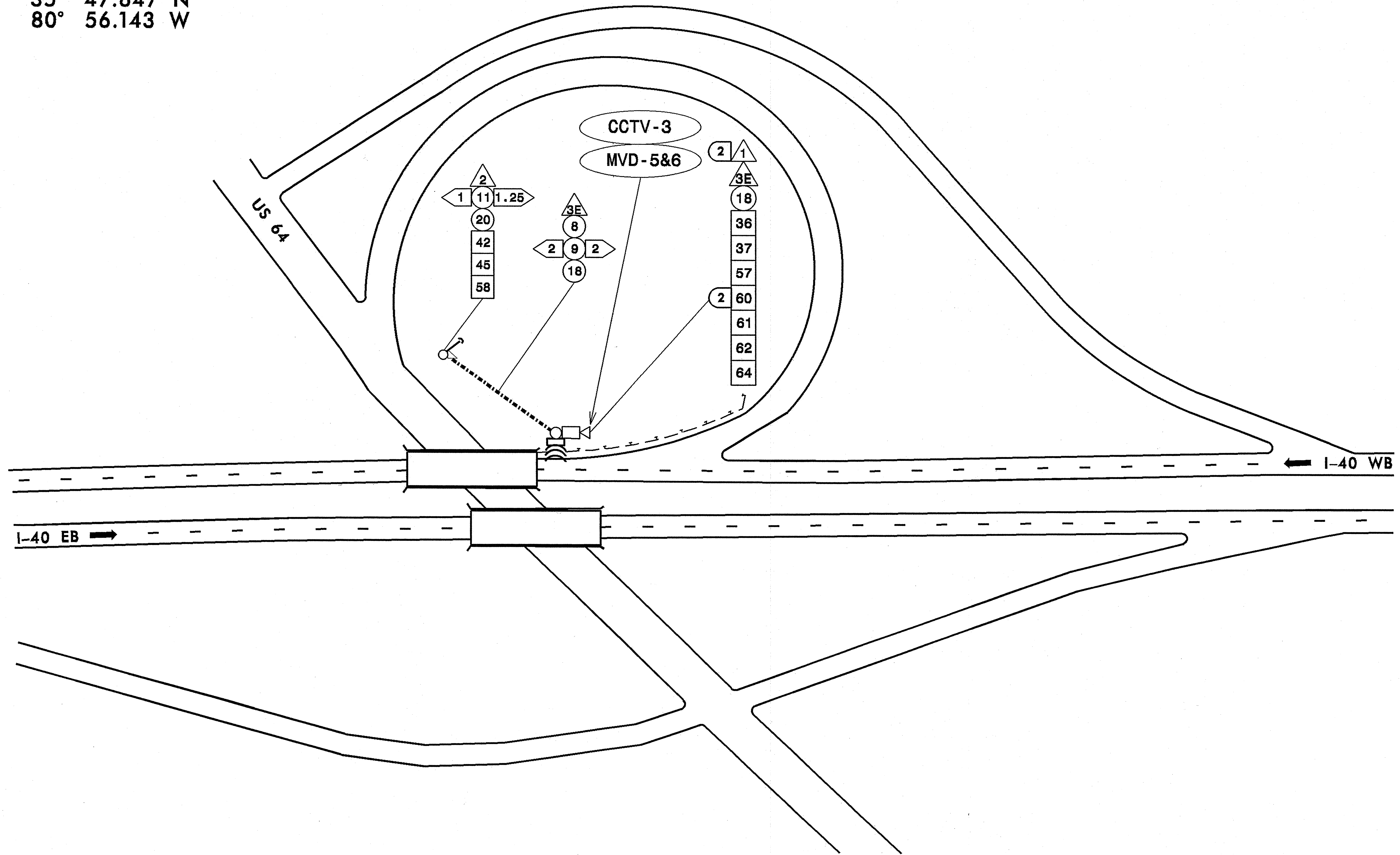
NOTES

1. INSTALL CCTV CAMERA WOOD POLE FIFTY (50) FEET NORTH OF BRIDGE DECK AND SIX (6) FEET BEHIND GUARDRAIL.
2. COMMUNICATIONS WITH THE MRTMC WILL BE INSTALLED BY OTHERS.

	CCTV & MVD INSTALLATIONS		
	DIVISION 12 IREDELL CO. PLAN DATE: NOVEMBER 2011 REVIEWED BY: W.A. ASLAMI, PE	PREPARED BY: G.A. GREEN REVIEWED BY: T.G. PARKER	
SCALE: 0 N/A	REVISIONS:	INIT.:	DATE:

CCTV-3 GPS COORDINATES

35° 47.647 N
80° 56.143 W



NOTES

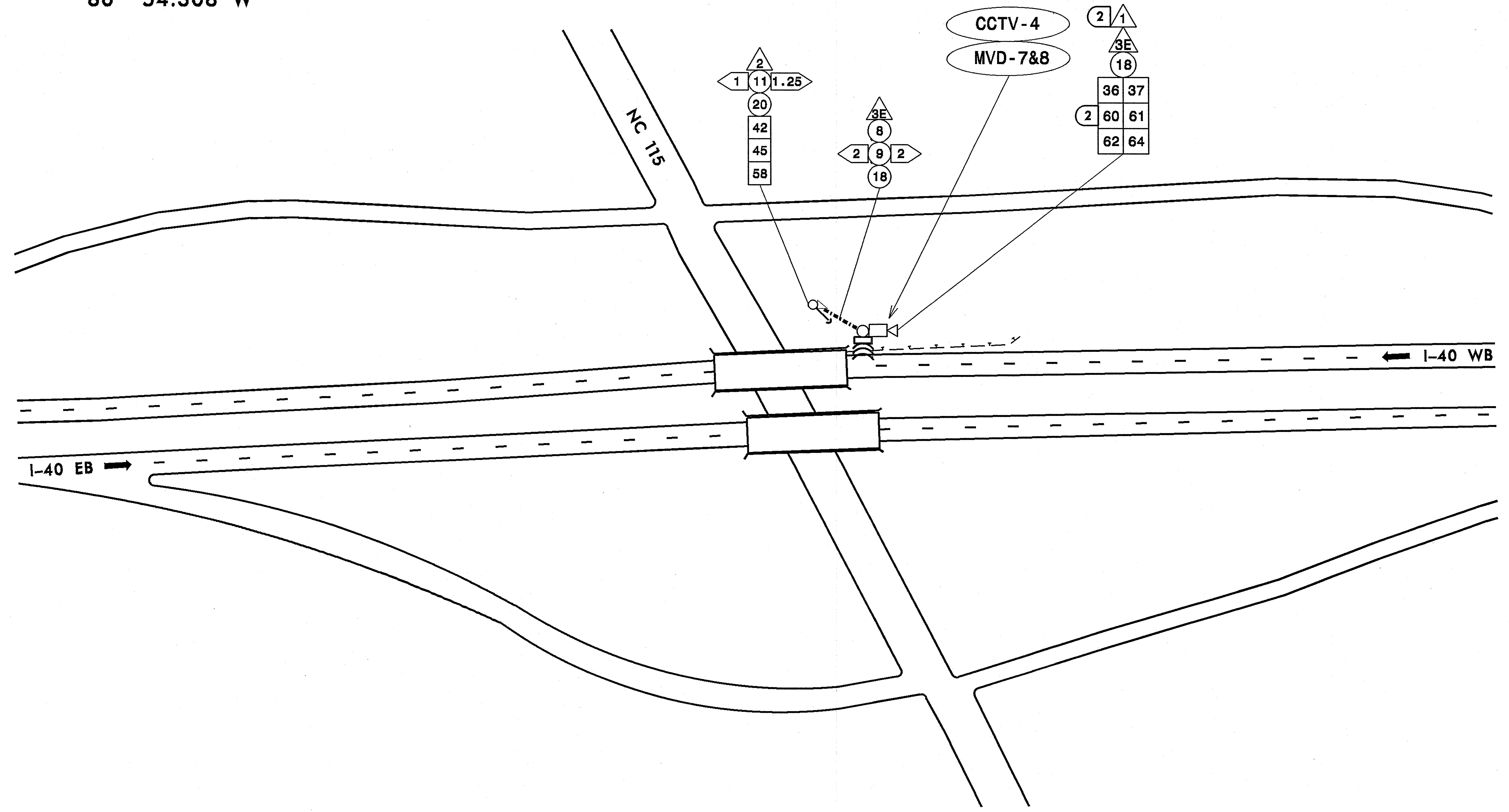
1. INSTALL CCTV CAMERA WOOD POLE EIGHTEEN (18) FEET FROM BRIDGE WALL AND SIX (6) FEET BEHIND GUARDRAIL.
2. COMMUNICATIONS WITH THE MRTMC WILL BE INSTALLED BY OTHERS.

	CCTV & MVD INSTALLATIONS		
	DIVISION 12 IREDELL CO. PLAN DATE: NOVEMBER 2011 PREPARED BY: G.A. GREEN REVISIONS: _____ SCALE: 0 N/A		

11/14/11
 DATE

CCTV-4 GPS COORDINATES

35° 48.107 N
80° 54.308 W



NOTES

1. INSTALL CCTV CAMERA WOOD POLE TWENTY (20) FEET FROM BRIDGE WALL AND SIX (6) FEET BEHIND GUARDRAIL.
2. COMMUNICATIONS WITH THE MRTMC WILL BE INSTALLED BY OTHERS.

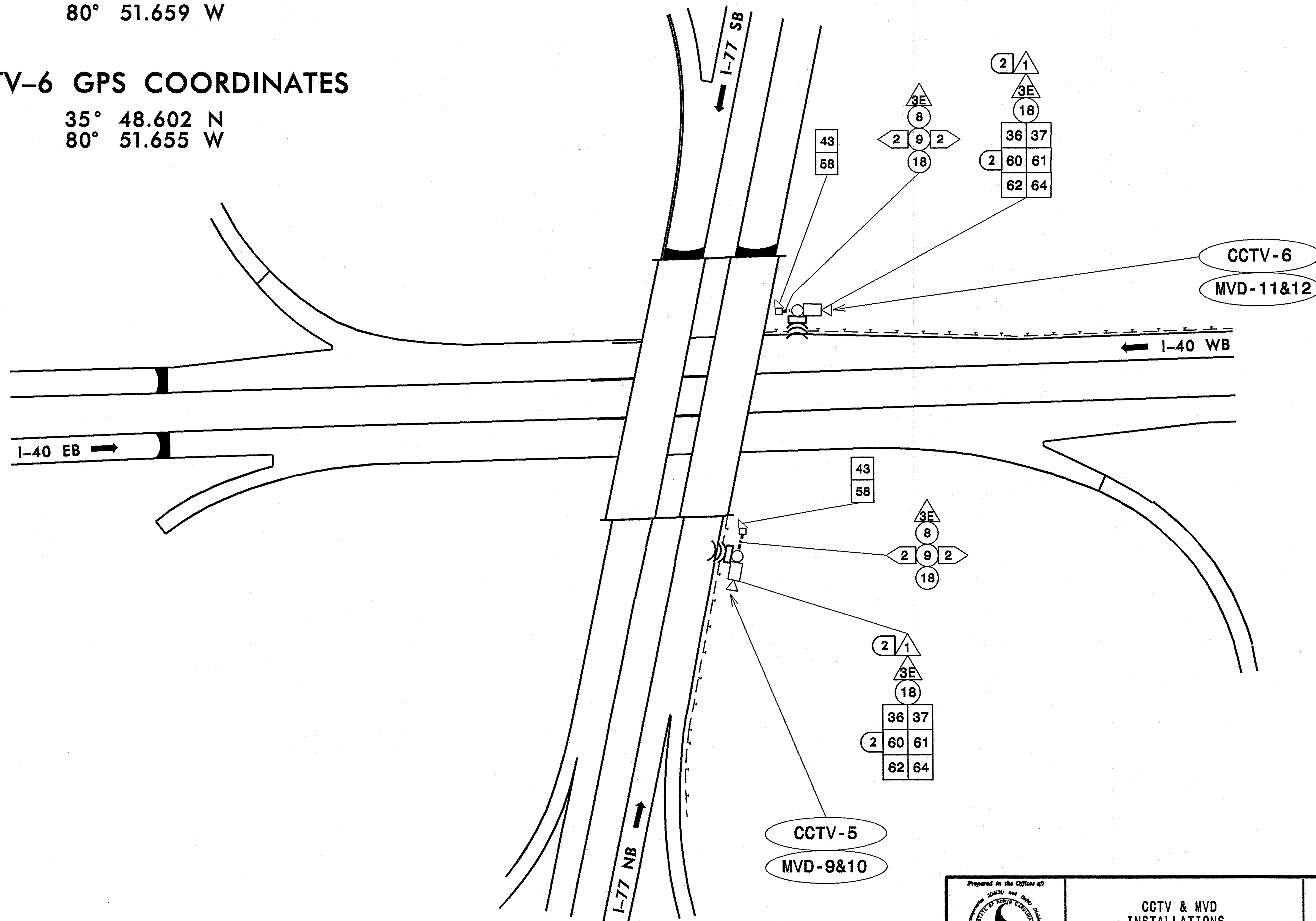
	CCTV & MVD INSTALLATIONS		
	DIVISION 12 IREDELL CO.		
Prepared in the Office of Gregory A. Fuller 250 N. Greenfield Place, Garner, NC 27529	PLAN DATE: NOVEMBER 2011 PREPARED BY: G.A. GREEN	REVIEWED BY: M.A. ASLAMI, PE REVIEWED BY: T.G. PARKER	SCALE: 0 N/A REVISIONS: _____ INIT.: _____ DATE: _____
Signature: <i>Gregory A. Fuller</i>			DATE: 11/14/11

CCTV-5 GPS COORDINATES

35° 48.565 N
80° 51.659 W

CCTV-6 GPS COORDINATES

35° 48.602 N
80° 51.655 W



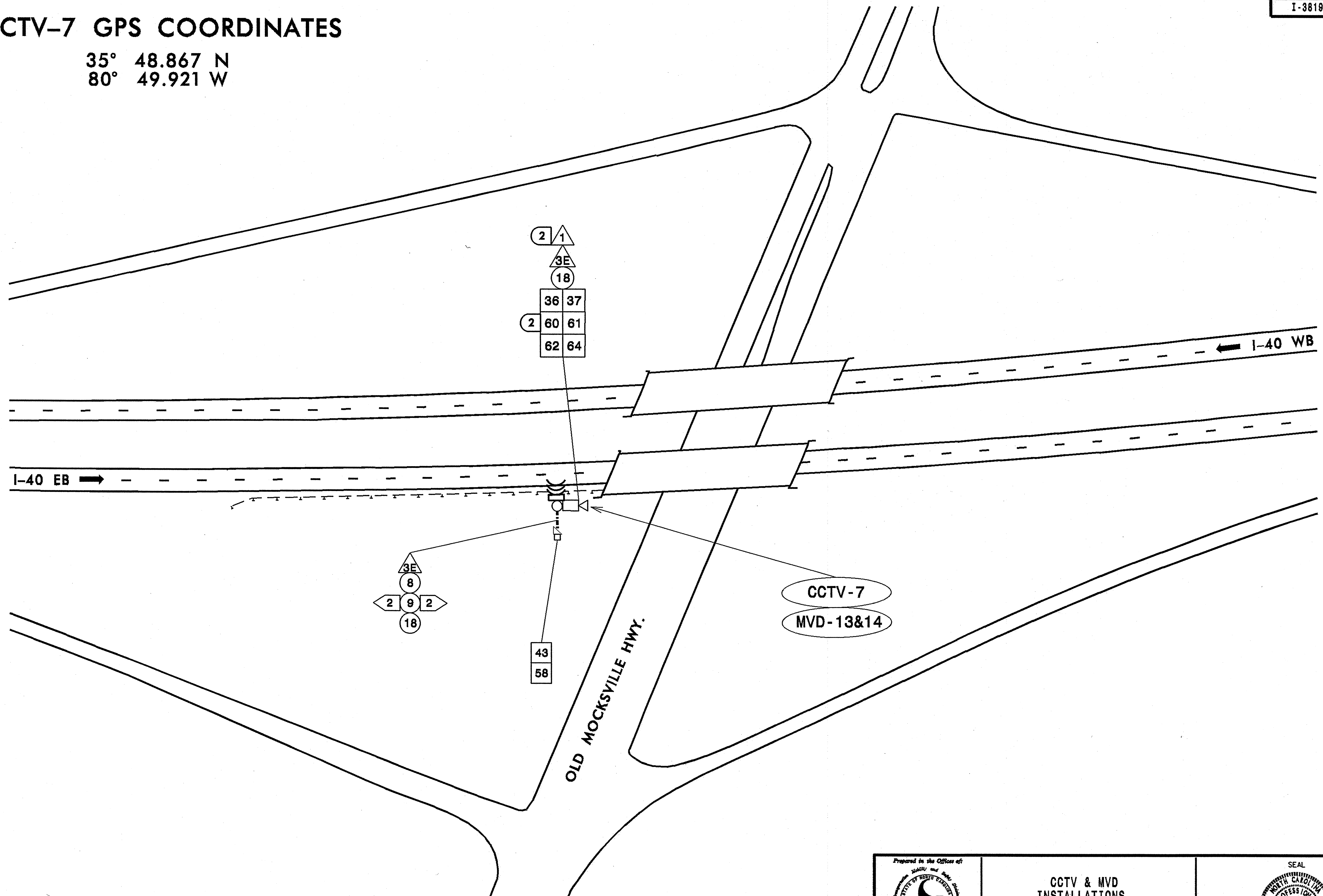
NOTES

1. INSTALL CCTV CAMERA WOOD POLE FOR CCTV-5 TWENTY (20) FEET FROM BRIDGE WALL AND SIX (6) FEET BEHIND GUARDRAIL. INSTALL CCTV CAMERA WOOD POLE FOR CCTV-6 TWENTY (20) FEET FROM BRIDGE DECK AND SIX (6) FEET BEHIND GUARDRAIL.
2. COMMUNICATIONS WITH THE MRTMC WILL BE INSTALLED BY OTHERS.

<p>Prepared in the Office of: GREGORY A. FULLER 150 N. Greenfield Plaza, Garner, NC 27529</p>	CCTV & MVD INSTALLATIONS		
	DIVISION 12 IREDELL CO. PLAN DATE: NOVEMBER 2011 PREPARED BY: G.A. GREEN REVISIONS: _____ INIT. DATE: _____		
REVIEWED BY: M.A. ASLAMI, PE REVIEWED BY: T.G. PARKER		SIGNATURE: <i>Gregory A. Fuller</i> DATE: 11/24/11	

CCTV-7 GPS COORDINATES

35° 48.867 N
80° 49.921 W



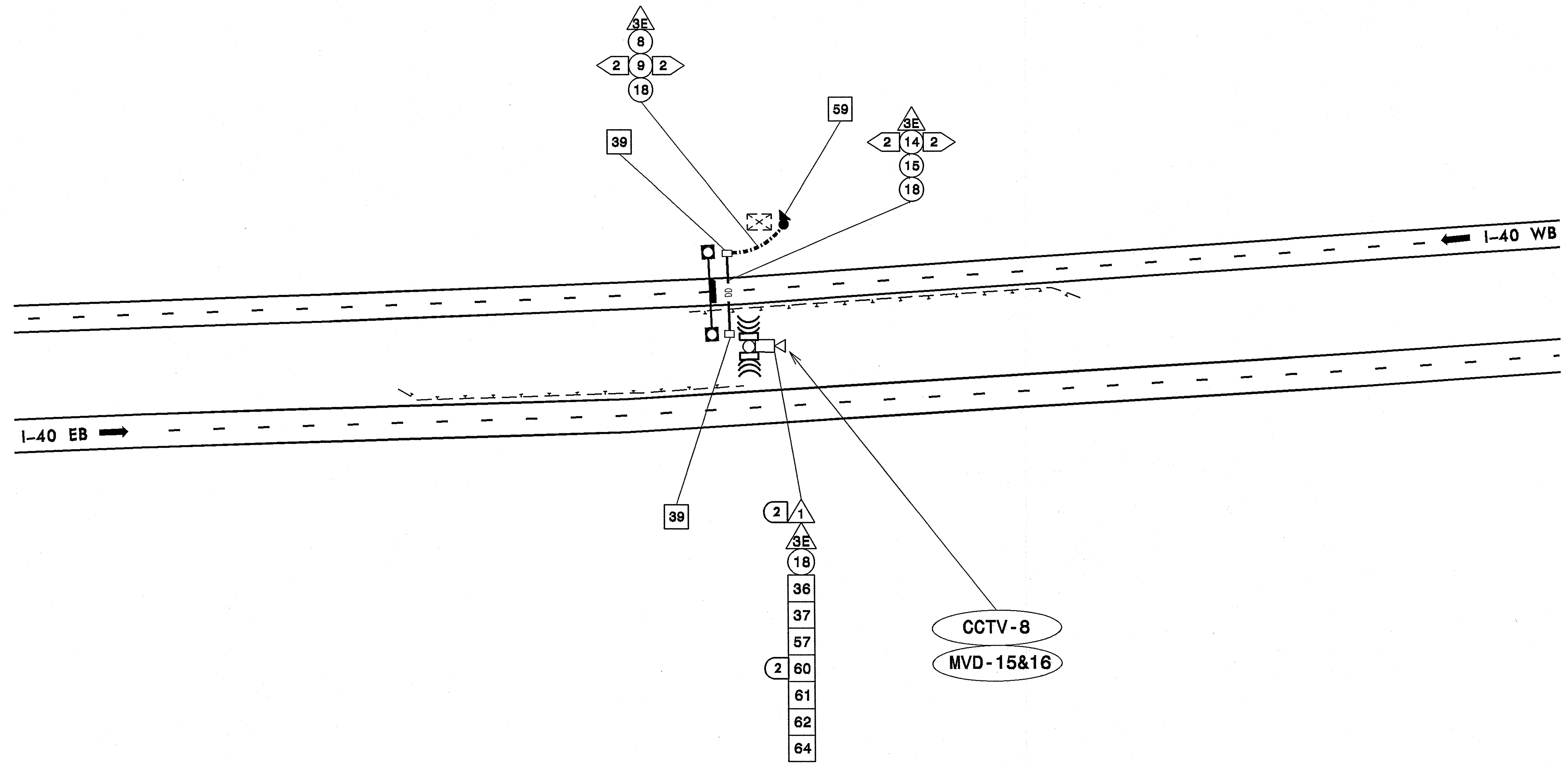
NOTES

1. INSTALL CCTV CAMERA WOOD POLE TWENTY FIVE (25) FEET FROM BRIDGE WALL AND TEN (10) FEET BEHIND GUARDRAIL.
2. COMMUNICATIONS WITH THE MRTMC WILL BE INSTALLED BY OTHERS.

	CCTV & MVD INSTALLATIONS	
	DIVISION 12 IREDELL CO.	
PLAN DATE: NOVEMBER 2011 PREPARED BY: G.A. GREEN	REVIEWED BY: M.A. ASLAMI, PE REVIEWED BY: T.G. PARKER	SCALE: N/A REVISIONS:
750 N. Greenfield Place, Garner, NC 27829 	REVISIONS:	SIGNATURE: <i>Gregory A. Fuller</i> DATE: 11/24/11

CCTV-8 GPS COORDINATES

35° 49.278 N
80° 48.688 W



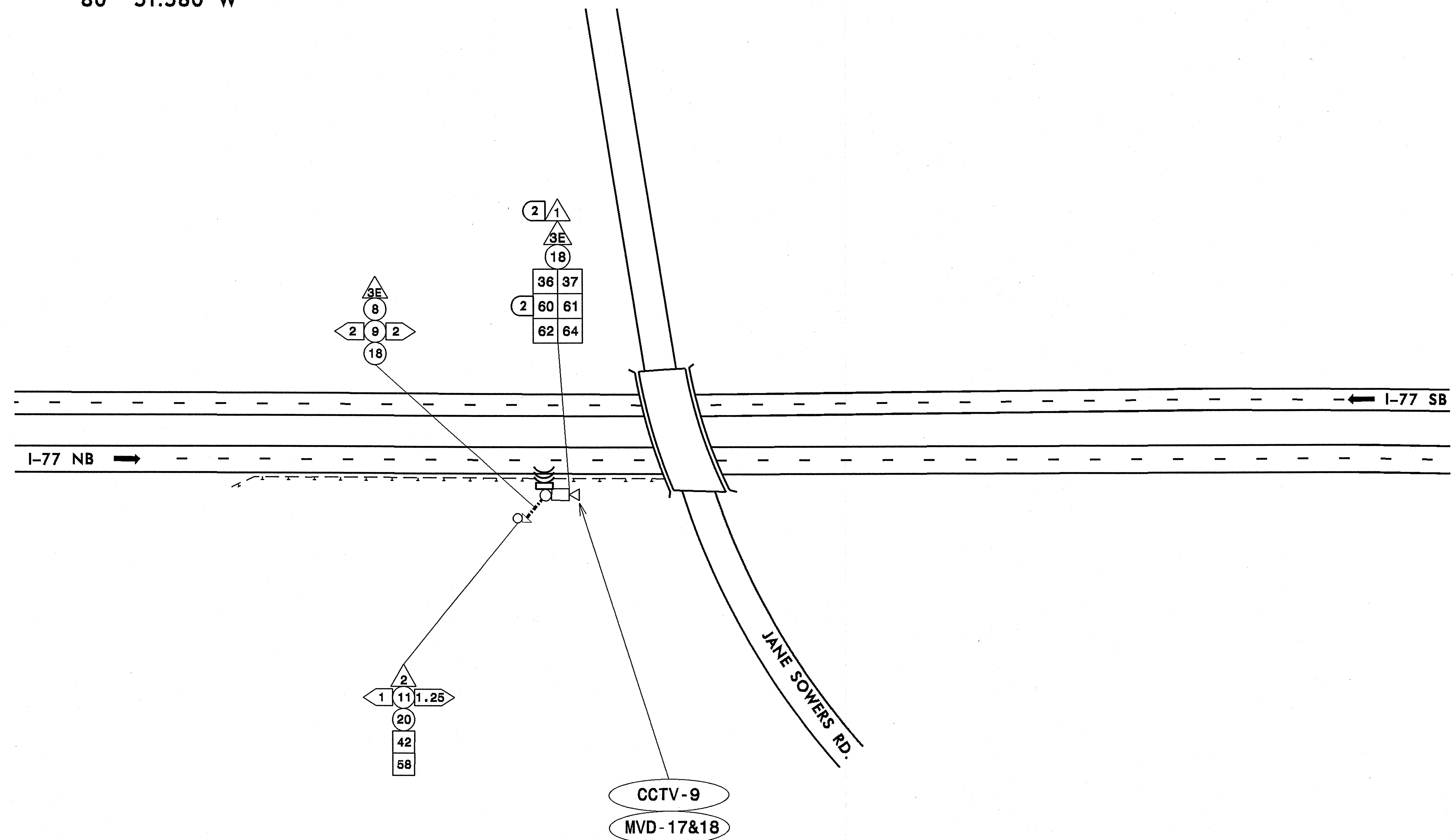
NOTES

1. INSTALL CCTV CAMERA WOOD POLE TEN (10) FEET EAST OF EXISTING DMS STRUCTURE AND FOURTEEN (14) FEET BEHIND EASTBOUND GUARDRAIL.
2. COMMUNICATIONS WITH THE MRTMC WILL BE INSTALLED BY OTHERS.

	CCTV & MVD INSTALLATIONS		
	DIVISION 12 IREDELL CO.		
Prepared in the Office of: Mobility and Safety UNIVERSITY OF SOUTH FLORIDA DEPARTMENT OF TRANSPORTATION 250 N. Greenfield Hwy., Gaines, FL 32629	PLAN DATE: NOVEMBER 2011 PREPARED BY: G.A. GREEN	REVIEWED BY: M.A. ASLAMI, PE REVIEWED BY: T.G. PARKER	SEAL PROFESSIONAL ENGINEER GREGORY A. FULLER No. 023919 State of Florida Signature: <i>Gregory A. Fuller</i> DATE: 11/14/11
SCALE 0 N/A	REVISIONS _____ _____ _____	INIT. DATE _____ _____ _____	CAD FILE:

CCTV-9 GPS COORDINATES

35° 50.014 N
80° 51.580 W



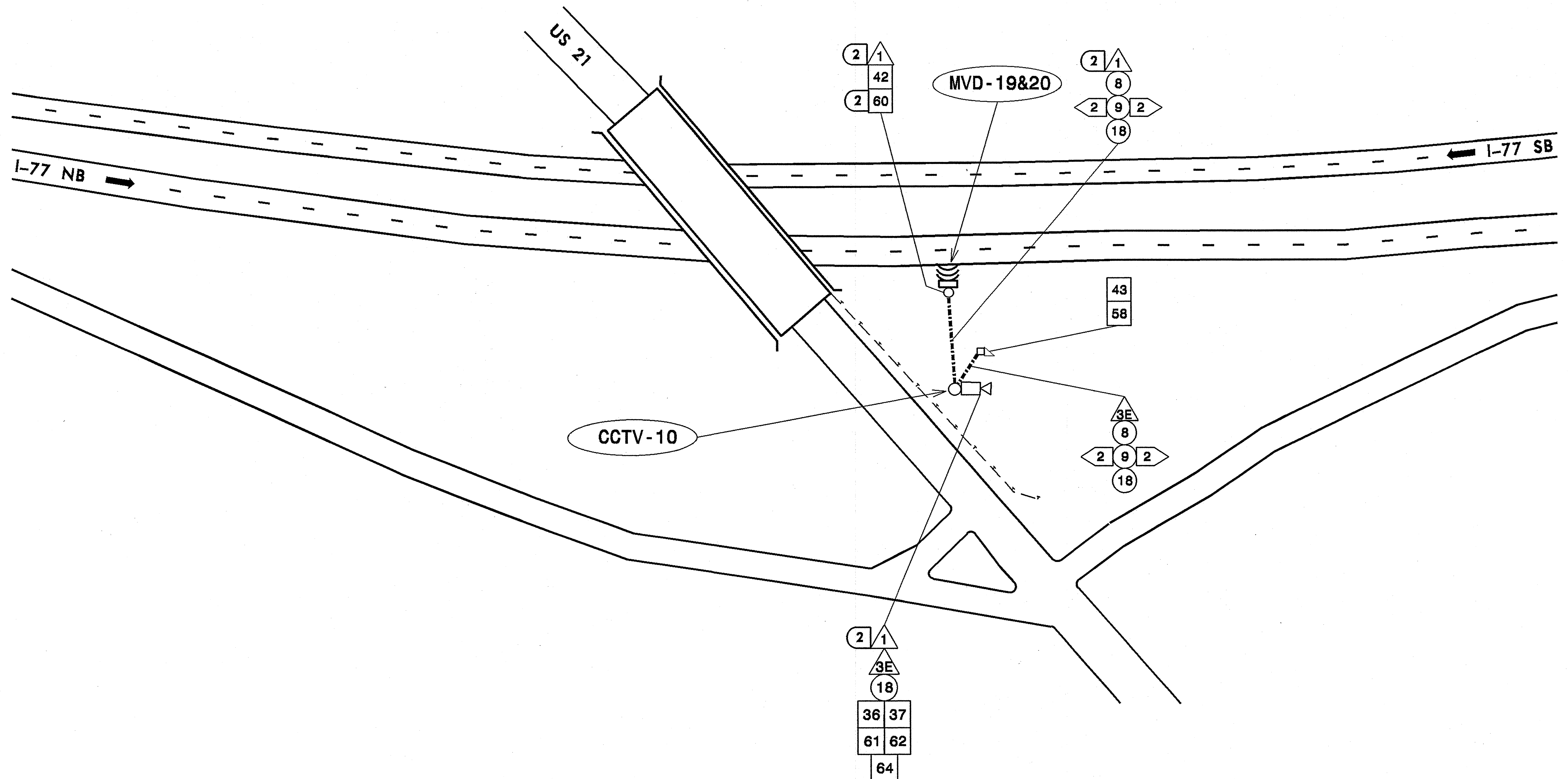
NOTES

1. INSTALL CCTV CAMERA WOOD POLE THIRTY (30) FEET FROM BRIDGE DECK AND SIX (6) FEET BEHIND GUARDRAIL.
2. COMMUNICATIONS WITH THE MRTMC WILL BE INSTALLED BY OTHERS.

	CCTV & MVD INSTALLATIONS		
	DIVISION 12 IREDELL CO.		
PLAN DATE: NOVEMBER 2011	REVIEWED BY: M.A. ASLAMI, PE		Signature: <i>Gregory A. Fuller</i> 11/14/11
PREPARED BY: G.A. GREEN	REVIEWED BY: T.G. PARKER		
SCALE: 0 N/A	REVISIONS	INIT. DATE	CADD FILE:

CCTV-10 GPS COORDINATES

35° 50.979 N
80° 51.518 W



NOTES

1. INSTALL CCTV CAMERA WOOD POLE SIXTY FIVE (65) FEET FROM BRIDGE WALL AND TEN (10) FEET BEHIND GUARDRAIL. INSTALL MVD WOOD POLE EIGHTY (80) FEET NORTH OF BRIDGE DECK AND THIRTY (30) FEET FROM EDGE OF TRAVEL LANE.
2. COMMUNICATIONS WITH THE MRTMC WILL BE INSTALLED BY OTHERS.

	CCTV & MVD INSTALLATIONS		
	DIVISION 12 IREDELL CO.		
Prepared by the Office of: <small>150 N. Greenfield Blvd., Cary, NC 27529</small>	PLAN DATE: NOVEMBER 2011 PREPARED BY: G.A. GREEN	REVIEWED BY: M.A. ASLAMI, PE REVIEWED BY: T.G. PARKER	SEAL PROFESSIONAL ENGINEER GREGORY A. FULLER No. 023919
SCALE 0 N/A	REVISIONS	INIT. DATE	SIGNATURE: <i>Gregory A. Fuller</i> 11/4/11 DATE