

WBS: 33879.2.76

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 JULY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
862.01	GUARDRAIL PLACEMENT
862.02	GUARDRAIL INSTALLATION
1101.01	WORK ZONE 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
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1180.01	SKINNY - DRUM
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL AND DELINEATION
1700.01	ELECTRICAL SERVICE OPTIONS
1715.01	UNDERGROUND CONDUIT
1716.01	JUNCTION BOXES
1725.01	INDUCTIVE DETECTIVE LOOPS
1740.01	METAL POLES
1742.01	METAL POLE FOUNDATIONS
1751.01	CONTROLLERS AND CABINETS - ELECTRICAL SERVICE GROUNDING
1751.02	CONTROLLERS AND CABINETS - ELECTRICAL SERVICE DETAILS
1752.01	CONTROLLERS AND CABINETS - POWER, GROUND AND AUXILIARY POWER SYSTEMS

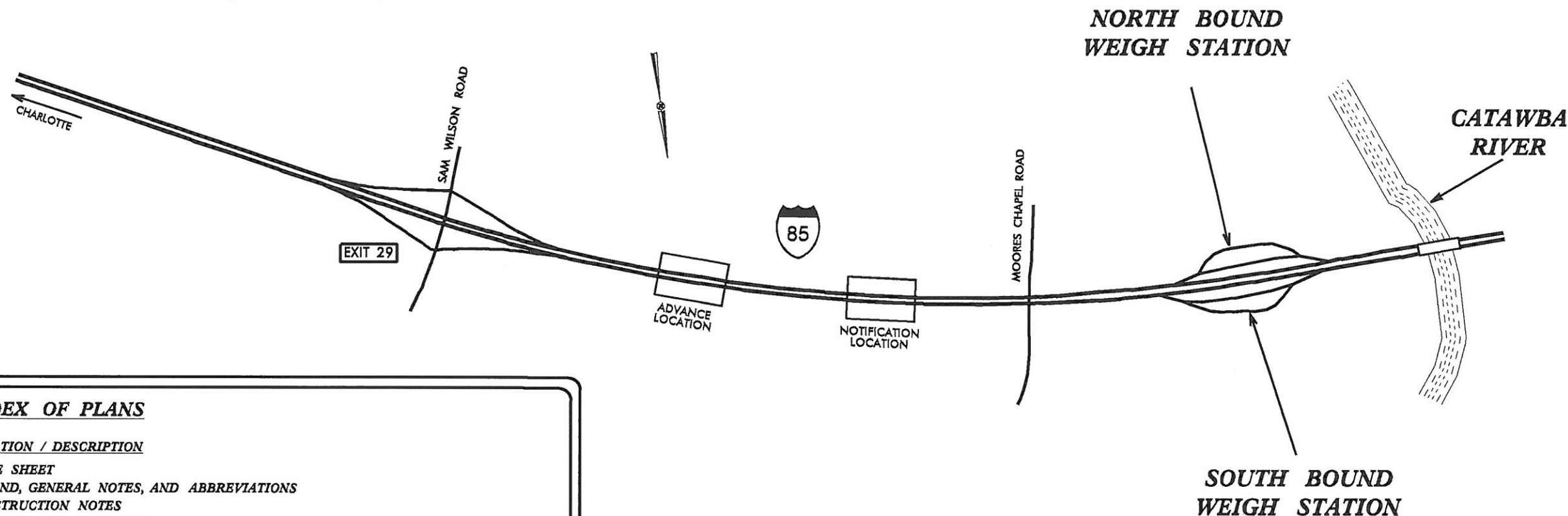
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

MECKLENBURG COUNTY

PLANS FOR PROPOSED I-85 SOUTHBOUND WEIGH STATION UPGRADE

THIS PROJECT CONSISTS OF FURNISHING AND INSTALLING EQUIPMENT AND MATERIALS FOR THE INSTALLATION OF A WEIGH IN MOTION SYSTEM, TRUCK BYPASS SYSTEM, AUTOMATED LICENSE PLATE READER, IMAGE CAPTURE CAMERA, AND LANE CONTROL NEAR CHARLOTTE, NORTH CAROLINA. RELATED MATERIALS CONSIST OF LOCAL CABINETS AND CONTROLLERS, WEIGH IN MOTION SENSORS, ALPR CAMERAS, SOFTWARE, INFRARED ILLUMINATORS, DMS, DATABASE INTERFACE, METAL POLES, METAL POLES WITH MAST ARMS, METAL POLE FOUNDATION, IMAGE CAPTURE CAMERA ASSEMBLY, LANE CONTROL SIGNS AND GUARDRAIL.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.
N.C.	33879.2.76	ITS-1
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION



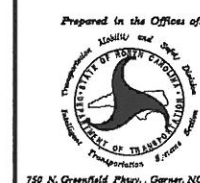
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ITS 12	LANE SORTING LOOPS AND LANE CONTROL SIGNS
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2012 STANDARD SPECIFICATIONS

NCDOT CONTACTS:
TRANSPORTATION MOBILITY AND SAFETY

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

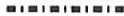













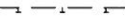


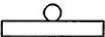



ALL DIMENSIONS IN THESE
PLANS ARE IN FEET
UNLESS OTHERWISE NOTED



Gregory A. Fuller 3/11/16

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

LEGEND		
PROPOSED		EXISTING
	TRENCHED CONDUIT	
	DIRECTIONAL DRILLED CONDUIT	
N/A	ELECTRICAL SERVICE	
	CAMERA POLE	N/A
	JUNCTION BOX	
	STANDARD INDUCTIVE LOOP DETECTOR	N/A
	CAMERA ASSEMBLY	N/A
	EQUIPMENT CABINET	N/A
	PIEZOELECTRIC QUARTZ SENSOR	N/A
	DRILL THROUGH SHOULDER FOR CONDUIT	N/A
	GUARDRAIL	
	METAL POLE WITH MAST ARM	
	DYNAMIC MESSAGE SIGN	


GENERAL NOTES

1. OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO INSTALLATION FOR ITEMS TO BE INSTALLED AS PART OF THIS PROJECT.
2. BURIED UTILITIES AND STRUCTURES: PIPELINES, STORM SEWERS, POWER CABLES, UTILITY CABLES, AND OTHER PUBLICLY AND PRIVATELY OWNED UNDERGROUND OBSTRUCTIONS MAY EXIST ADJACENT TO AND WITHIN THE ROADWAY RIGHT-OF-WAY WITHIN THE CONSTRUCTION LIMITS OF THIS PROJECT. INVESTIGATE THE LOCATION OF SUCH BURIED UTILITIES AND STRUCTURES WITH PUBLIC AND PRIVATE UTILITIES.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE OWNER OF ALL AFFECTED UTILITIES FOR WORK THAT MAY IMPACT ANY UTILITY FACILITY.
4. ALL WORK SHOWN ON THESE PLANS IS TO BE PERFORMED BY THE CONTRACTOR UNLESS IT IS SPECIFICALLY NOTED THAT THE WORK WILL BE PERFORMED BY OTHERS.

ABBREVIATIONS

AVI	AUTOMATIC VEHICLE IDENTIFICATION
ALPR	AUTOMATED LICENSE PLATE READER
HDPE	HIGH DENSITY POLYETHYLENE
L	LOOP DETECTOR
N.T.S.	NOT TO SCALE
WIM	WEIGH IN MOTION
PQS	PIEZOELECTRIC QUARTZ SENSOR
S	SENSOR
NCSHP	NORTH CAROLINA STATE HIGHWAY PATROL

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Prepared in the Office of:

350 N. Greenfield Blvd., Greensboro, NC 27420

LEGEND, GENERAL NOTES
AND
ABBREVIATIONS

DIVISION 10 WECLENBURG CO. NEAR CHARLOTTE


PLAN DATE: MARCH 2016 REVIEWED BY: S. C. YOW

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

REVISIONS

SCALE
0
N/A

SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
GREGORY J. FILLER
023919


3/3/16

CADD Filename:

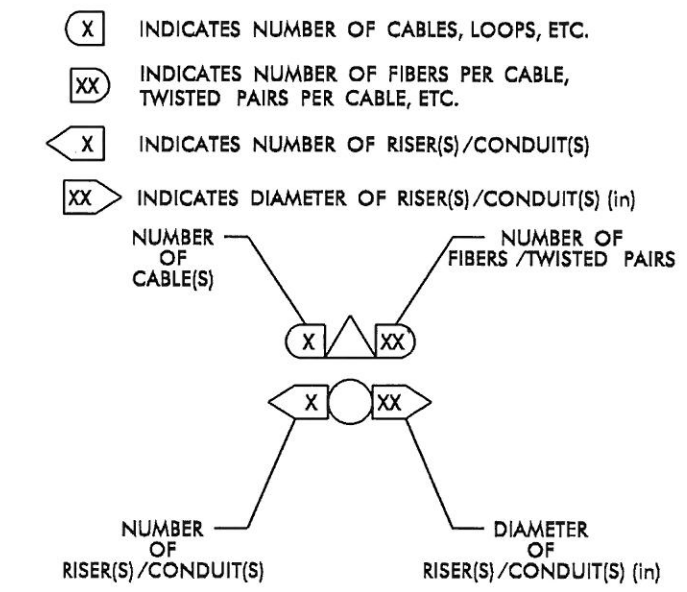
- 1 INSTALL REA, PE - 22, SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 2 INSTALL REA, PE - 38, (FIGURE - 8) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 3 INSTALL REA, PE - 39, (UNDERGROUND) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 3A INSTALL ALPR CABLE(S) *
- 3B INSTALL AVI CABLE(S) *
- 3C INSTALL WIMSORT SIGNAL CABLE(S) *
- 3D INSTALL PIEZOELECTRIC QUARTZ SENSOR CABLES *
- 3E INSTALL LOOP WIRE
- 3F INSTALL LEAD-IN CABLE
- 3G INSTALL CCTV VIDEO AND POWER CABLES *
- 3H INSTALL FOUR #8 COPPER FEEDER CONDUCTORS
- 3I INSTALL DMS CONTROL AND POWER CABLES
- 4 INSTALL SMFO CABLE
- 5 INSTALL MMFO CABLE
- 6 INSTALL FIBER OPTIC DROP CABLE
- 7 INSTALL TRACER WIRE
- 8 TRENCH
- 8A SAW CUT PAVEMENT
- 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
- 21A INSTALL CABLE(S) IN NEW CONDUIT STUB-OUTS
- 22 INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 23 INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)

- 24 INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET
- 25 INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
- 26 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 MODIFY EXISTING SPlice CENTER
- 31 INSTALL POLE MOUNTED CABINET
- 32 INSTALL BASE MOUNTED CABINET WITH EXTENDER
- 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 CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL WOOD POLE
- 43 REMOVE EXISTING WOOD POLE
- 44 INSTALL AERIAL GUY ASSEMBLY
- 45 INSTALL STANDARD GUY ASSEMBLY
- 46 INSTALL SIDEWALK GUY ASSEMBLY
- 47 INSTALL MESSENGER CABLE
- 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 50 FEET OF COMMUNICATIONS CABLE
- 54 INSTALL ISOLATION TRANSFORMER
- 55 INSTALL INDUSTRIAL ETHERNET SWITCH
- 56 INSTALL VIDEO ENCODER
- 56A INSTALL VIDEO DECODER
- 57 MODIFY EXISTING ELECTRICAL SERVICE

- 58 INSTALL NEW ELECTRICAL SERVICE
- 58A INSTALL EQUIPMENT CABINET DISCONNECT
- 59 INSTALL PIEZOELECTRIC QUARTZ SENSORS
- 60 INSTALL AUTOMATED LICENSE PLATE RECOGNITION SYSTEM
- 61 INSTALL AUTOMATED USDOT RECOGNITION SYSTEM
- 62 INSTALL IMAGE CAPTURE CCTV CAMERA ASSEMBLY
- 63 INSTALL STANDARD INDUCTIVE LOOP
- 64 INSTALL OVERHEIGHT DETECTOR ASSEMBLY WITH METAL POLE AND FOUNDATION
- 65 INSTALL STEEL POLE, MASTARM AND FOUNDATION
- 66 INSTALL LED LANE CONTROL SIGN
- 67 INSTALL TRANSPONDER/AVI READER
- 68 INSTALL DYNAMIC MESSAGE SIGN, STRUCTURE, AND FOUNDATION
- 69 INSTALL STEEL POLE FOUNDATION

* CABLES SHALL BE PER EQUIPMENT MANUFACTURER'S SPECIFICATIONS AND RATED FOR WET LOCATIONS.

CONSTRUCTION NOTE SYMBOLOGY KEY



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

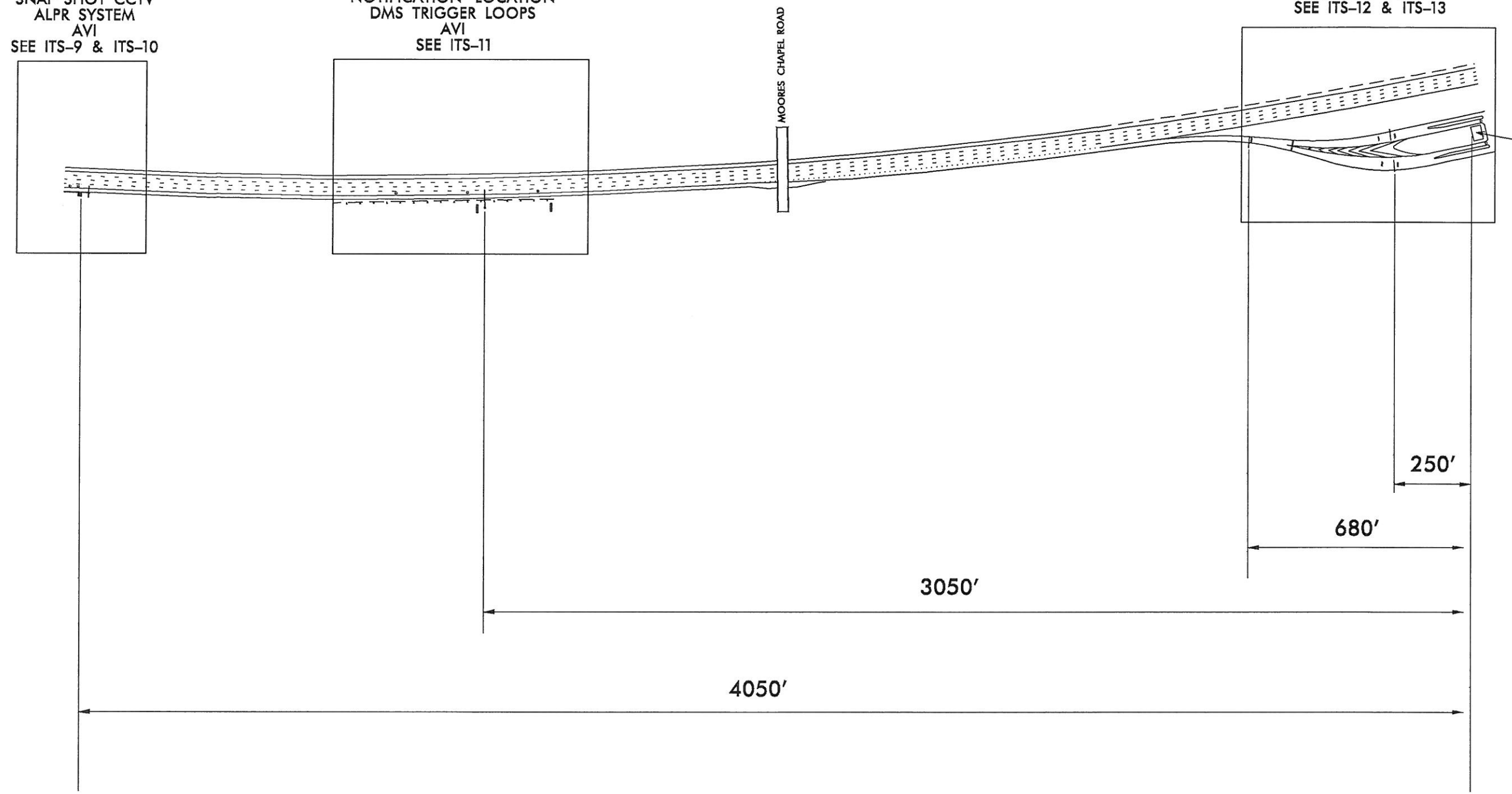
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	DIVISION 10 HECKLENBURG CO. NEAR CHARLOTTE				
	PLAN DATE: MARCH 2018	REVIEWED BY: S. C. YOW			
	PREPARED BY: G. A. GREEN	REVIEWED BY: T. G. PARKER	INIT.	DATE	
SCALE: 0 N/A		REVISIONS		CADD Filenames:	

ADVANCE LOCATION
WIM SYSTEM
SNAP SHOT CCTV
ALPR SYSTEM
AVI
SEE ITS-9 & ITS-10

NOTIFICATION LOCATION
DMS TRIGGER LOOPS
AVI
SEE ITS-11

STATIC SCALES
AND
BYPASS LANE
SEE ITS-12 & ITS-13


SCALE
HOUSE



NOTE:
DISTANCES SHOWN ARE TYPICAL AND MAY BE
FIELD ADJUSTED UPON APPROVAL BY THE ENGINEER.

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Prepared in the Office of:



750 N. Greenfield Place, Greensboro, NC 27402


PROJECT AREA
OVERVIEW

DIVISION 10 MECKLENBURG CO. NEAR CHARLOTTE

PLAN DATE: MARCH 2018	REVIEWED BY: S. C. YOW
PREPARED BY: G. A. GREEN	REVIEWED BY: T. G. PARKER
REVISIONS	INIT. DATE

SCALE: 0 N/A

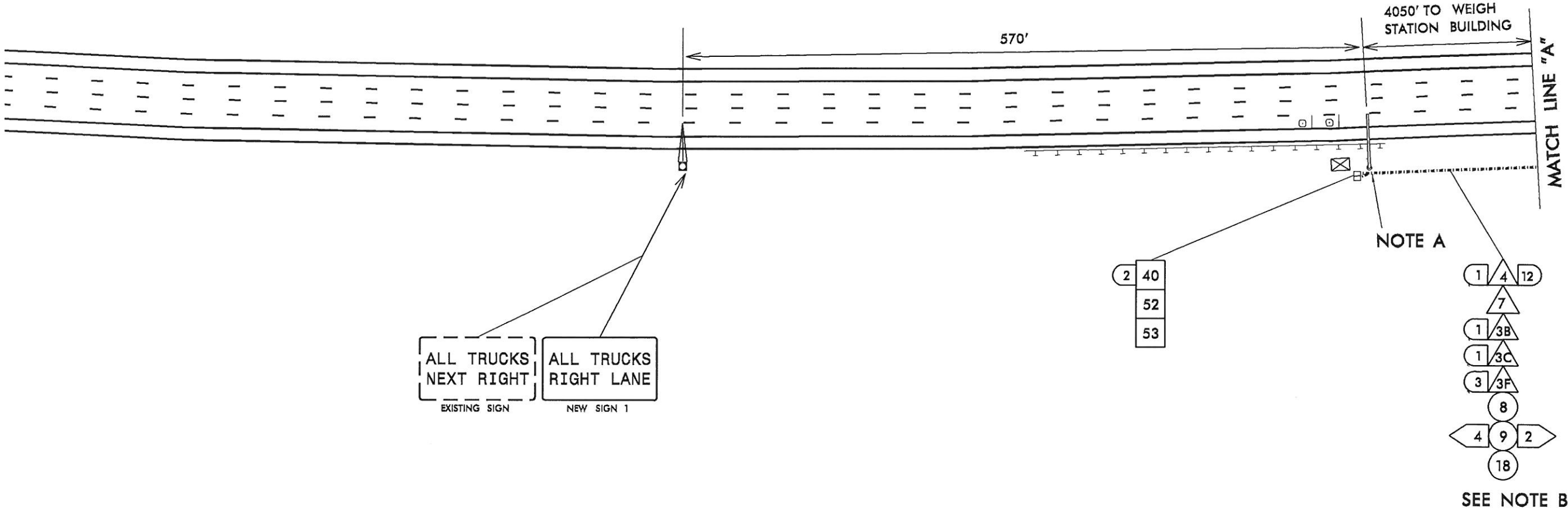
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3/8/16

SIGNATURE: *Gregory J. Fuller* DATE: 3/8/16


CADD FILE NAME:



NOTES:
A. INSTALL METAL POLE WITH MAST ARM SIX (6) FEET BEHIND NEW GUARDRAIL.
B. INSTALL FOUR (4) TWO (2) INCH CONDUITS. THREE (3) OF THE CONDUITS WILL BE USED FOR LOOP LEAD-IN, WIM, AND SORT SIGNAL CABLES. THE FIBER OPTIC CABLE(S) SHALL BE ISOLATED FROM ALL OTHER CABLES USING ONE 2 INCH CONDUIT AND SEPERATE JUNCTION BOXES.

DOCUMENT NOT CONSIDERED FINAL
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Prepared in the Office of:



750 N. Greenfield Pkwy., Garner, NC 27529

COMMUNICATIONS CABLE
AND CONDUIT ROUTING

DIVISION 10 WECKLENBURG CO. NEAR CHARLOTTE

PLAN DATE: MARCH 2018 REVIEWED BY: S. C. YOW

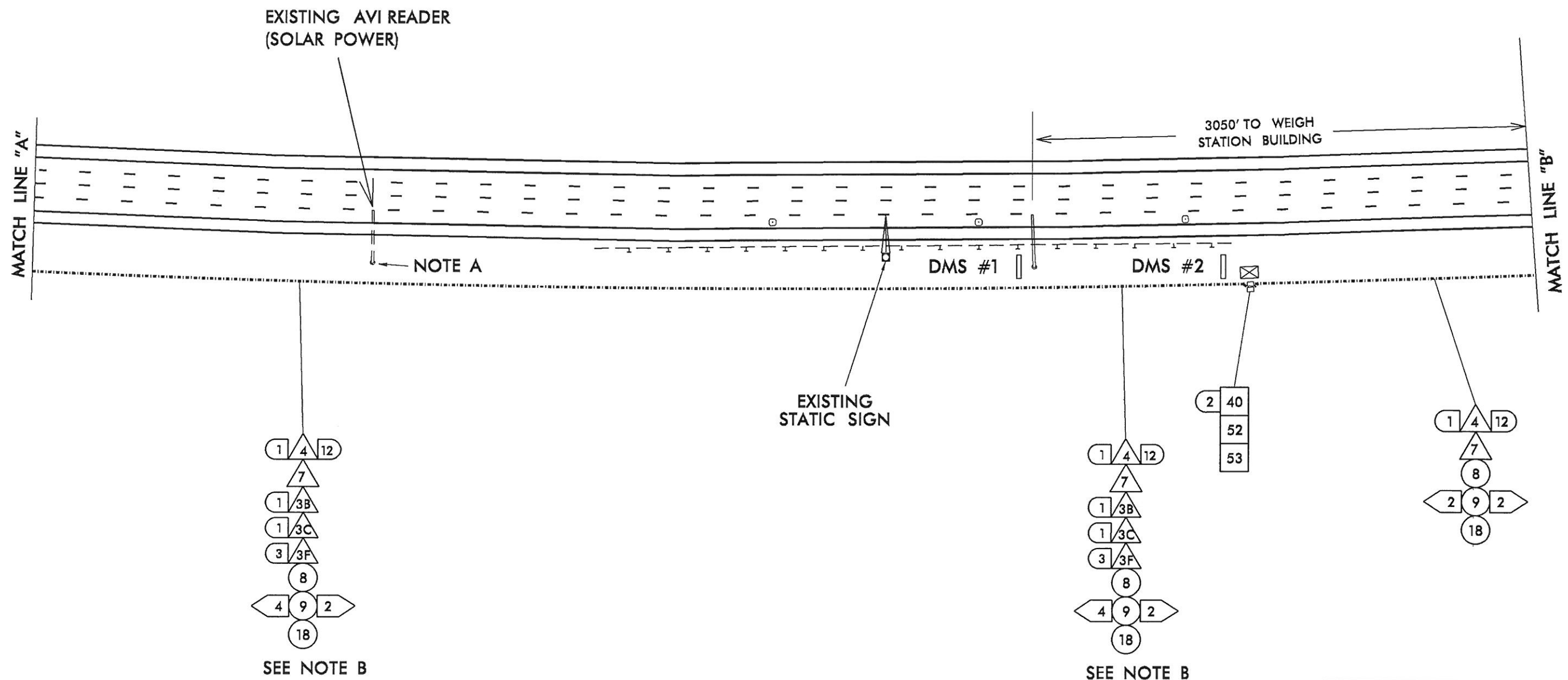
PREPARED BY: O. A. GREEN REVIEWED BY: T. G. PARKER

REVISIONS INIT. DATE

SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
023919
GREGORY A. FILL

Gregory A. Fill 3/8/16



CADD File: *ITS-5*

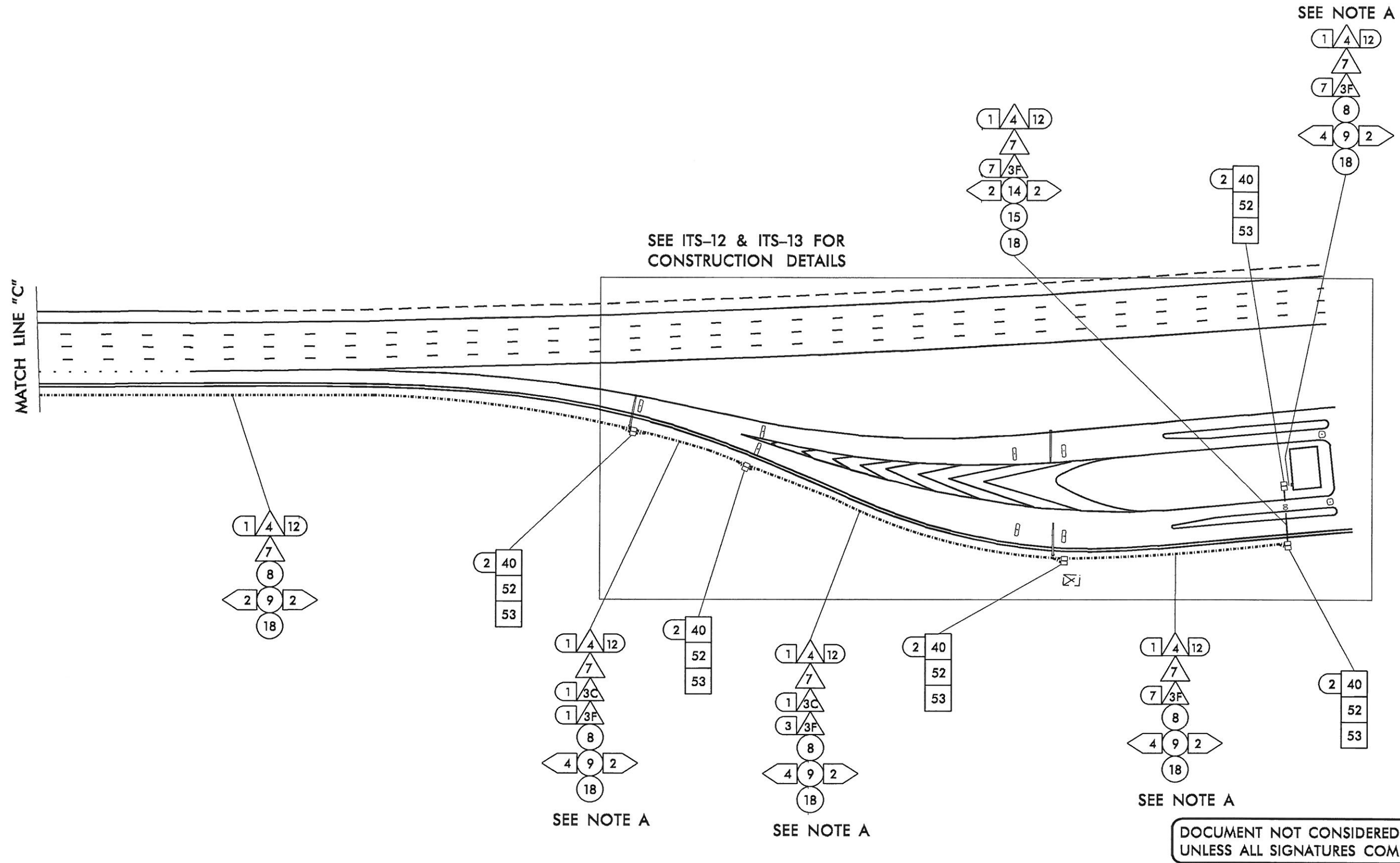


NOTES:

- A. REMOVE METAL POLE WITH MAST ARM, TRANSPONDER/AVI READER, AND SOLAR POWER EQUIPMENT. RELOCATE TO LOCATION SHOWN ON ITS-9 & ITS-10.
- B. INSTALL FOUR (4) TWO (2) INCH CONDUITS. THREE (3) OF THE CONDUITS WILL BE USED FOR LOOP LEAD-IN, WIM, AND SORT SIGNAL CABLES. THE FIBER OPTIC CABLE(S) SHALL BE ISOLATED FROM ALL OTHER CABLES USING ONE (1) TWO (2) INCH CONDUIT AND SEPERATE JUNCTION BOXES.
- C. INSTALL METAL POLE WITH MAST ARM SIX (6) FEET BEHIND EXISTING GUARDRAIL.


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 750 N. Greenfield Plaza, Garner, NC 27529	COMMUNICATIONS CABLE AND CONDUIT ROUTING		 SEAL 023919 GREGORY A. FULLER ENGINEER NORTH CAROLINA
	DIVISION 10 WECLENBURG CO. NEAR CHARLOTTE		
	PLAN DATE: MARCH 2018	REVIEWED BY: S. C. YOW	
	PREPARED BY: G. A. GREEN	REVIEWED BY: T. G. PARKER	
REVISIONS		INIT.	DATE
SCALE 0 N/A			
		SIGNATURE Gregory A. Fuller DATE 3/8/16	



NOTES:
A. INSTALL FOUR (4) TWO (2) INCH CONDUITS. THREE (3) OF THE CONDUITS WILL BE USED FOR LOOP LEAD-IN, WIM, AND SORT SIGNAL CABLES. THE FIBER OPTIC CABLE(S) SHALL BE ISOLATED FROM ALL OTHER CABLES USING ONE (1) TWO (2) INCH CONDUIT AND SEPERATE JUNCTION BOXES.

Prepared in the Office of:




259 N. Greenfield Plaza, Garner, NC 27529

COMMUNICATIONS CABLE AND CONDUIT ROUTING

DIVISION 10 WECKLENBURG CO. NEAR CHARLOTTE

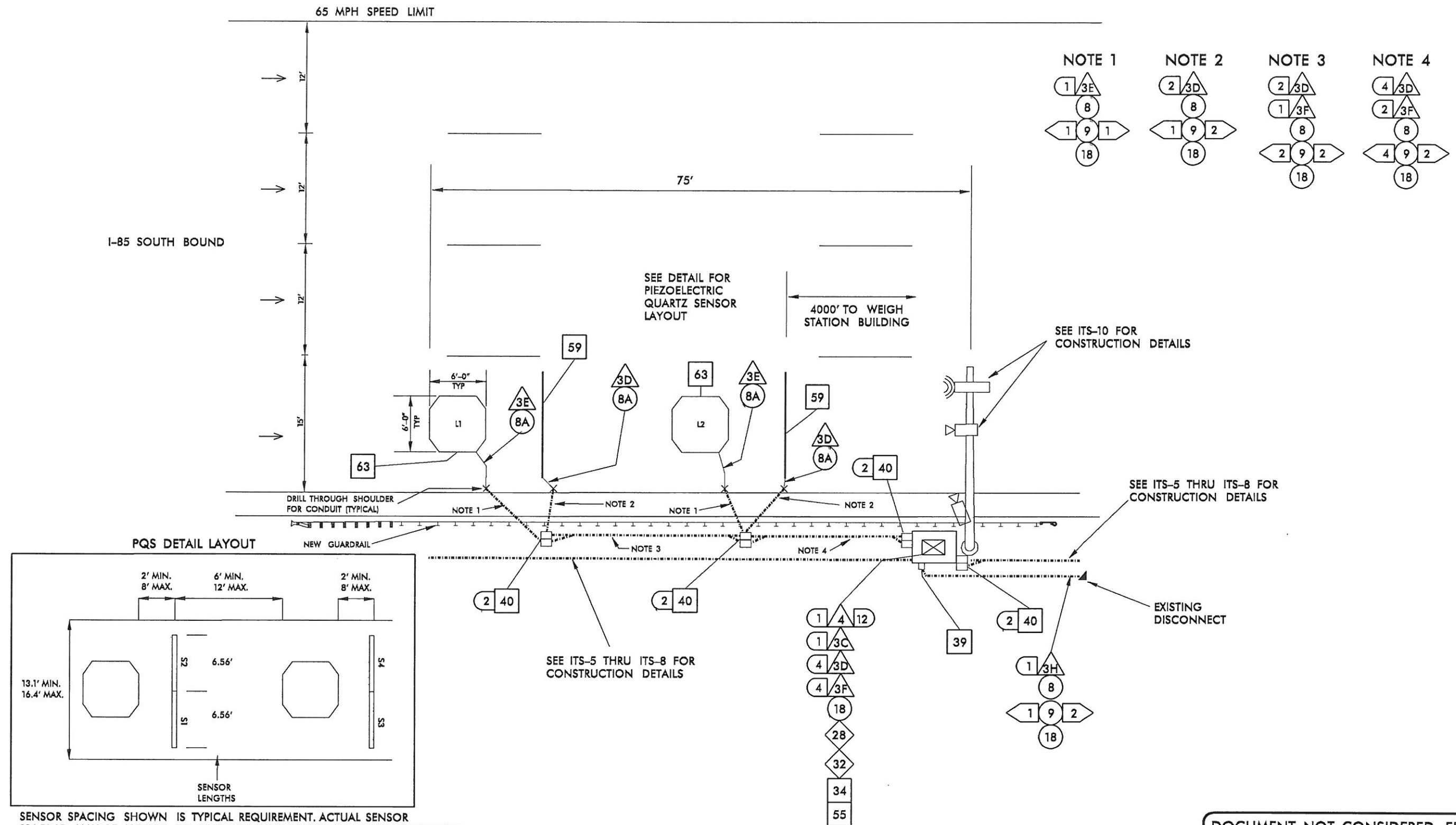
PLAN DATE: MARCH 2018	REVIEWED BY: S. G. YOW
PREPARED BY: G. A. GREEN	REVIEWED BY: T. G. PARKER
REVISIONS	INIT. DATE

SEAL



Gregory A. Fuller 3/8/16

CADD File Name:





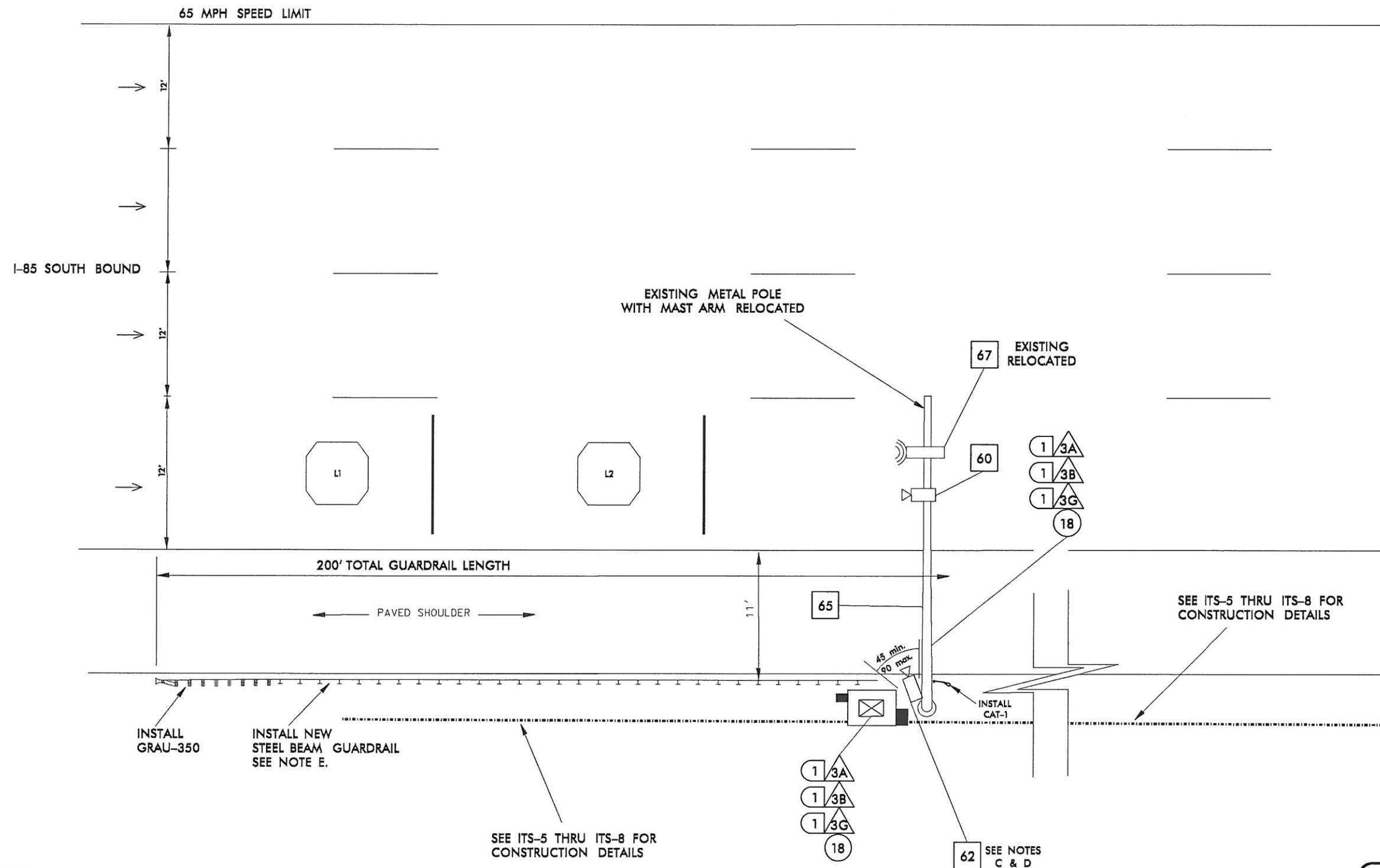
SENSOR SPACING SHOWN IS TYPICAL REQUIREMENT. ACTUAL SENSOR SPACING MAY BE ALTERED TO SUIT SITE CONDITIONS AND MANUFACTURER'S SPECIFICATIONS UPON APPROVAL BY THE ENGINEER.

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NOTES:

- A. EXISTING FIBER OPTIC CABLE AND CONDUIT SYSTEM RUNS FROM THE WEIGH STATION BUILDING TO THE EXISTING "OPEN/CLOSED" SIGN. IN ADDITION, THERE IS AN EXISTING QUEUE DETECTION SYSTEM AND OVERHEAD LIGHTING CIRCUITS ON THE RAMP. BEFORE BEGINNING ANY UNDERGROUND WORK CONTACT THE DIVISION TRAFFIC ENGINEER (SEAN EPPERSON) AT (704) 983-4400 TO LOCATE THE EXISTING UNDERGROUND COMPONENTS.
- B. PIEZOELECTRIC QUARTZ SENSOR AND INDUCTIVE LOOP SAW SLOTS, INCLUDING TAIL AND LEAD-IN SECTIONS, MUST BE DRY CUT.

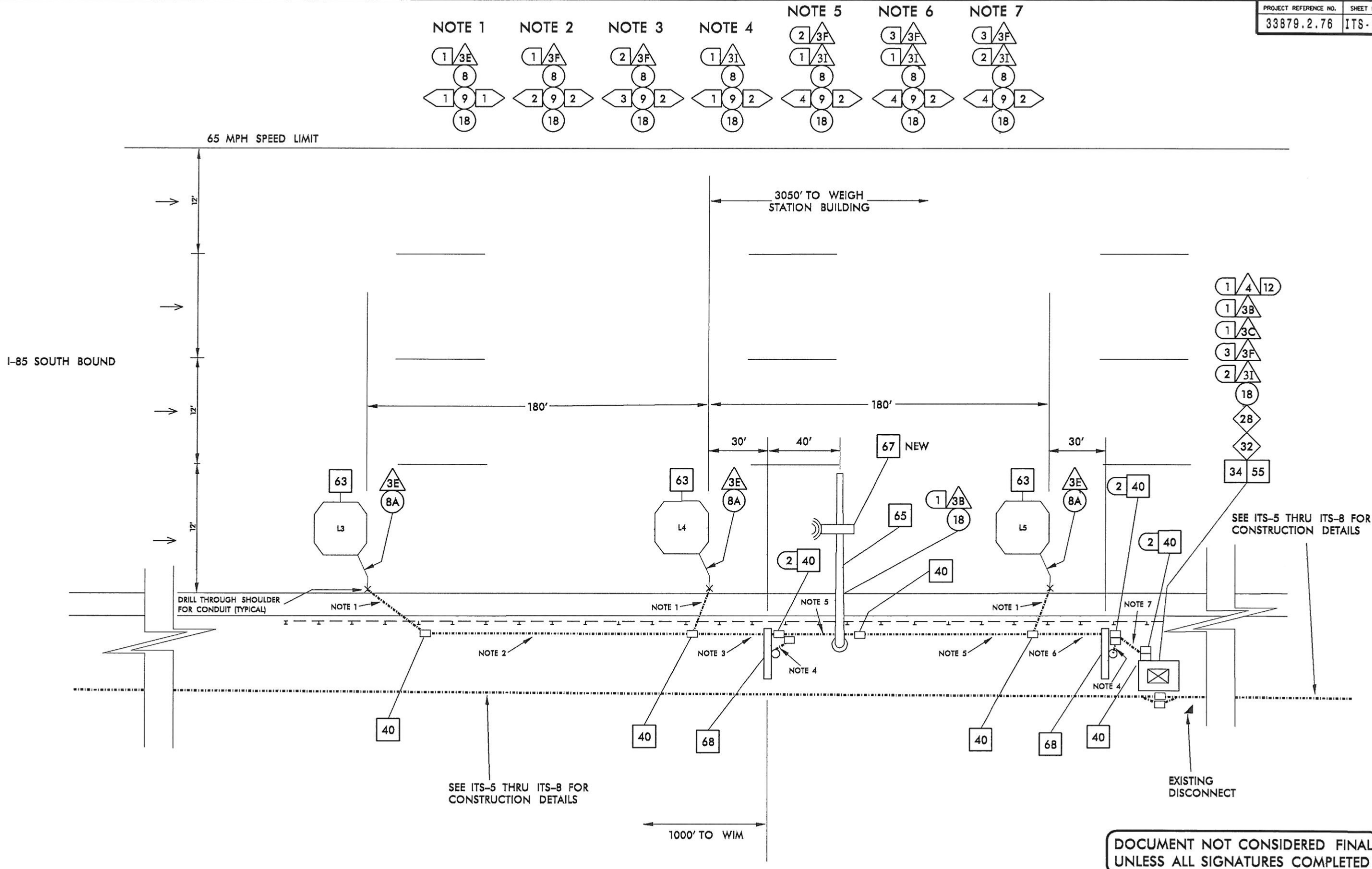
 750 N. Greenfield Plaza, Garner, NC 27529	ADVANCE LOCATION		 SEAL 023919 GREGORY A. GREEN ENGINEER NORTH CAROLINA
	DIVISION 10 MECKLENBURG CO. NEAR CHARLOTTE		
	PLAN DATE: MARCH 2018	REVIEWED BY: S. C. YOW	
	PREPARED BY: G. A. GREEN	REVIEWED BY: T. G. PARKER	
SCALE: N/A		INITIALS: _____	DATE: 3/8/16
CADD File Name: _____		DATE: _____	



- NOTES:
- EXISTING FIBER OPTIC CABLE AND CONDUIT SYSTEM RUNS FROM THE WEIGH STATION BUILDING TO THE EXISTING "OPEN/CLOSED" SIGN. IN ADDITION, THERE IS AN EXISTING QUEUE DETECTION SYSTEM AND OVERHEAD LIGHTING CIRCUITS ON THE RAMP. BEFORE BEGINNING ANY UNDERGROUND WORK CONTACT THE DIVISION TRAFFIC ENGINEER (SEAN EPPERSON) AT (704) 983-4400 TO LOCATE THE EXISTING UNDERGROUND COMPONENTS.
 - PIEZOELECTRIC QUARTZ SENSOR AND INDUCTIVE LOOP SAW SLOTS, INCLUDING TAIL AND LEAD-IN SECTIONS, MUST BE DRY CUT.
 - TRIGGER LOOPS FOR THE IMAGE CAPTURE CCTV AND ALPR CAMERAS SHALL BE IN-LINE WITH THE UPSTREAM EDGE OF THE CAMERA FIELD OF VIEW.
 - IMAGE CAPTURE TO BE TRIGGERED BY THE LEADING EDGE OF THE LOOP.
 - THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER BEFORE ORDERING GUARDRAIL MATERIAL.

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<p>Prepared in the Office of: Transportation Planning and Design 250 N. Greenfield Place, Greensboro, NC 27229</p>	<p>IMAGE CAPTURE CCTV, TRANSPONDER READER, ALPR SYSTEM, AND GUARDRAIL</p>		<p>SEAL</p> <p>3/8/16</p>
	<p>DIVISION 10 NECKLENBURG CO. NEAR CHARLOTTE</p>		
	<p>PLAN DATE: MARCH 2016</p>	<p>REVIEWED BY: S. G. YOW</p>	
	<p>PREPARED BY: G. A. GREEN</p>	<p>REVIEWED BY: T. G. PARKER</p>	
<p>SCALE: N/A</p>	<p>REVISIONS</p>	<p>INIT. DATE</p>	<p>CADD FILE NAME:</p>

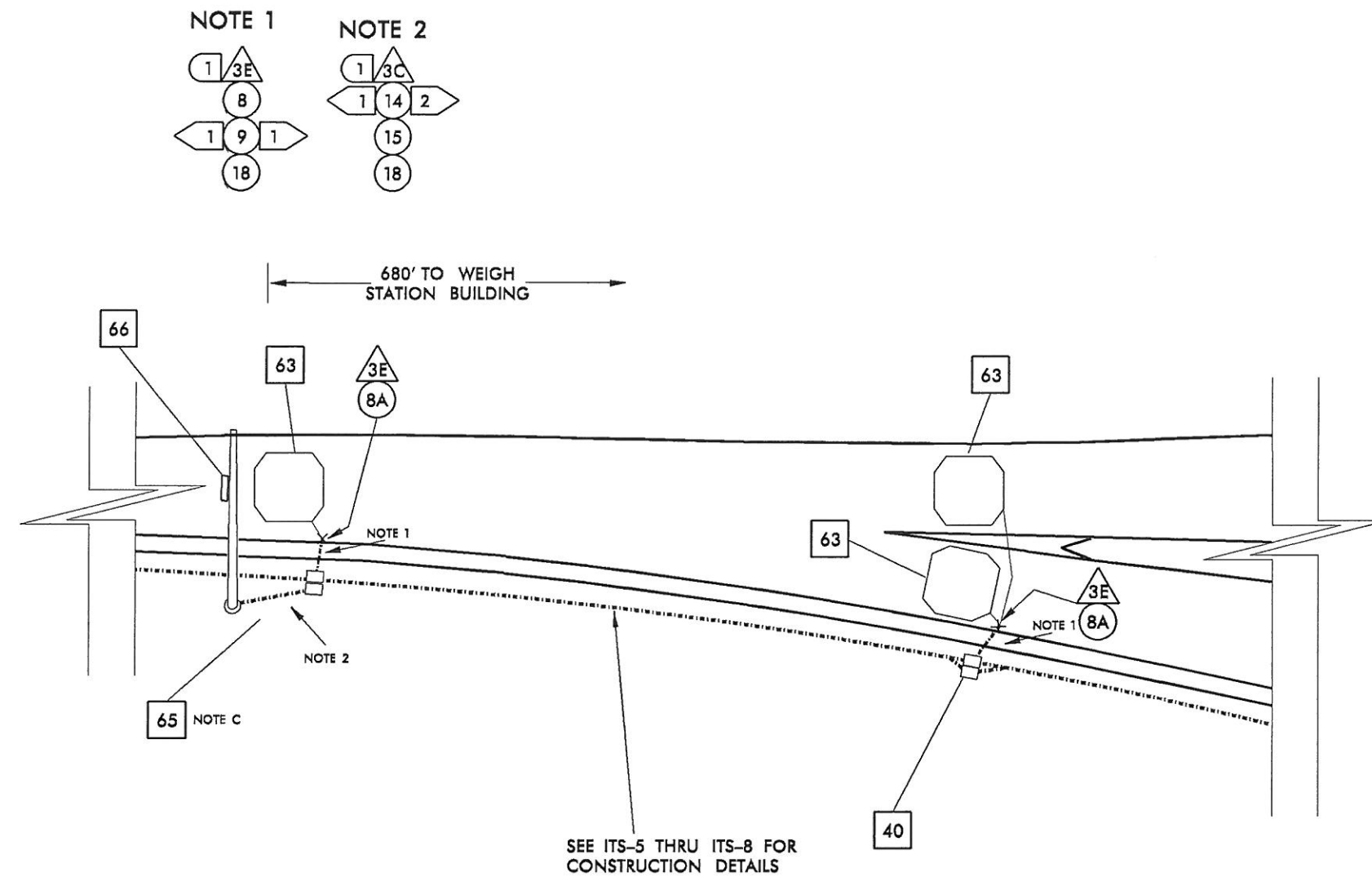


NOTES:

- EXISTING FIBER OPTIC CABLE AND CONDUIT SYSTEM RUNS FROM THE WEIGH STATION BUILDING TO THE EXISTING "OPEN/CLOSED" SIGN. IN ADDITION, THERE IS AN EXISTING QUEUE DETECTION SYSTEM AND OVERHEAD LIGHTING CIRCUITS ON THE RAMP. BEFORE BEGINNING ANY UNDERGROUND WORK CONTACT THE DIVISION TRAFFIC ENGINEER (SEAN EPPERSON) AT (704) 983-4400 TO LOCATE THE EXISTING UNDERGROUND COMPONENTS.
- INDUCTIVE LOOP SAW SLOTS, INCLUDING TAIL AND LEAD-IN SECTIONS, CAN BE WET CUT AT THIS LOCATION.

<p>Prepared in the Office of:</p> <p>750 N. Greenfield Pkwy., Garner, NC 27529</p>	<p>NOTIFICATION LOCATION, AVI READER, & DYNAMIC MESSAGE SIGNS</p>		<p>SEAL</p> <p>DATE: 3/8/16</p>
	<p>DIVISION 10 MECKLENBURG CO. NEAR CHARLOTTE</p>		
	<p>PLAN DATE: MARCH 2018</p>	<p>REVIEWED BY: S. C. YOW</p>	
	<p>PREPARED BY: G. A. GREEN</p>	<p>REVIEWED BY: T. G. PARKER</p>	
<p>SCALE: N/A</p>	<p>REVISIONS</p>		<p>INIT. DATE</p>

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- NOTES:
- A. EXISTING FIBER OPTIC CABLE AND CONDUIT SYSTEM RUNS FROM THE WEIGH STATION BUILDING TO THE EXISTING "OPEN/CLOSED" SIGN. IN ADDITION, THERE IS AN EXISTING QUEUE DETECTION SYSTEM AND OVERHEAD LIGHTING CIRCUITS ON THE RAMP. BEFORE BEGINNING ANY UNDERGROUND WORK CONTACT THE DIVISION TRAFFIC ENGINEER (SEAN EPPERSON) AT (704) 983-4400 TO LOCATE THE EXISTING UNDERGROUND COMPONENTS.
- B. INDUCTIVE LOOP SAW SLOTS, INCLUDING TAIL AND LEAD-IN SECTIONS, CAN BE WET CUT AT THIS LOCATION.
- C. INTEGRATE THE NEW ADVANCE SORTER IN EXISTING SORTER CABINET.

Prepared in the Office of:
Transportation, Safety, and Public Goods
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE

0

N/A

ADVANCE LANE SORTER

DIVISION 10 MECKLENBURG CO. NEAR CHARLOTTE

PLAN DATE: MARCH 2018REVIEWED BY: S. C. YOW

PREPARED BY: G. A. GREENREVIEWED BY: T. G. PARKER

REVISIONS

INIT. DATE

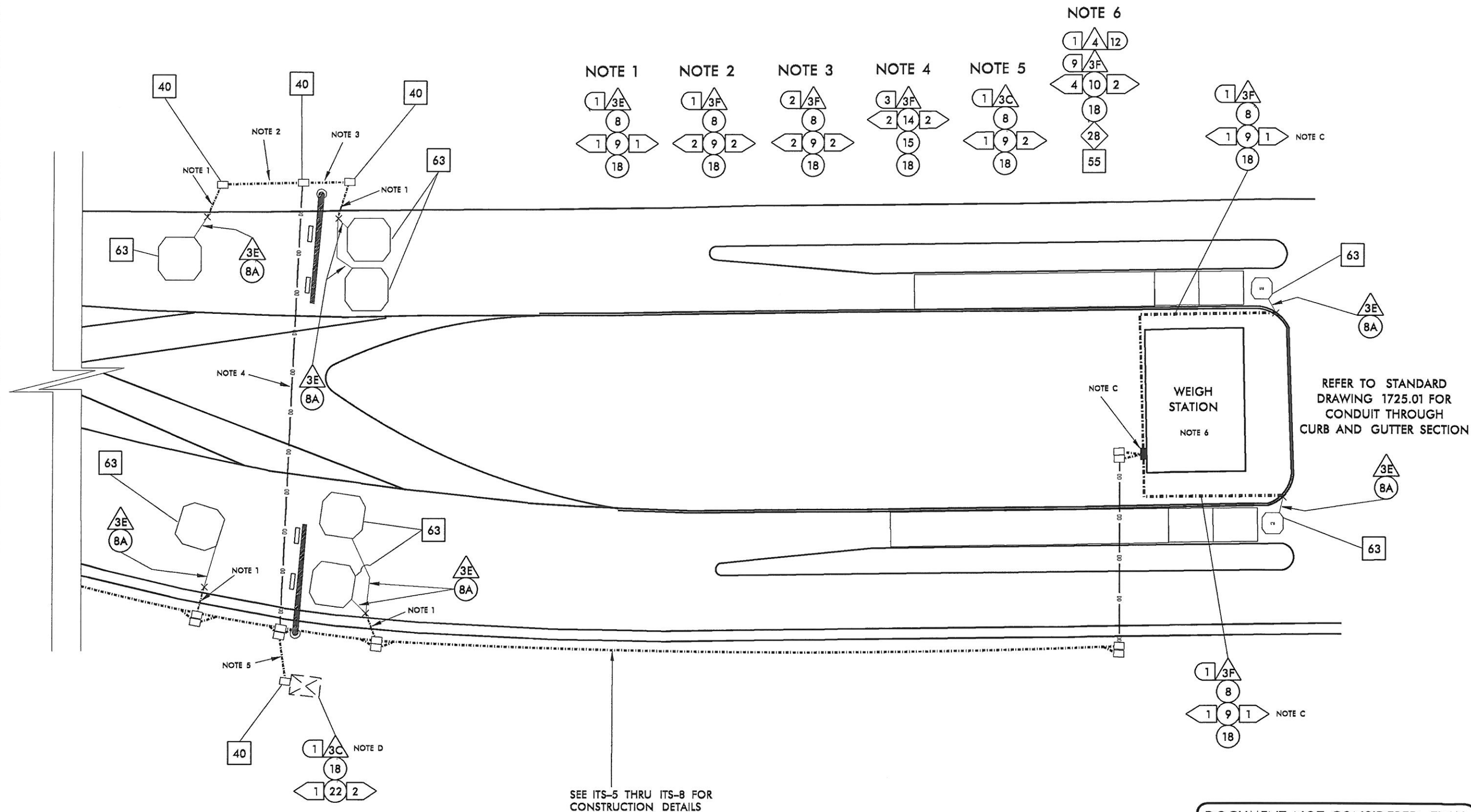
SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
023919
ENGINEER
GREGORY J. FULLER

Signature

3/8/16

DATE

CADD FILE NO.:



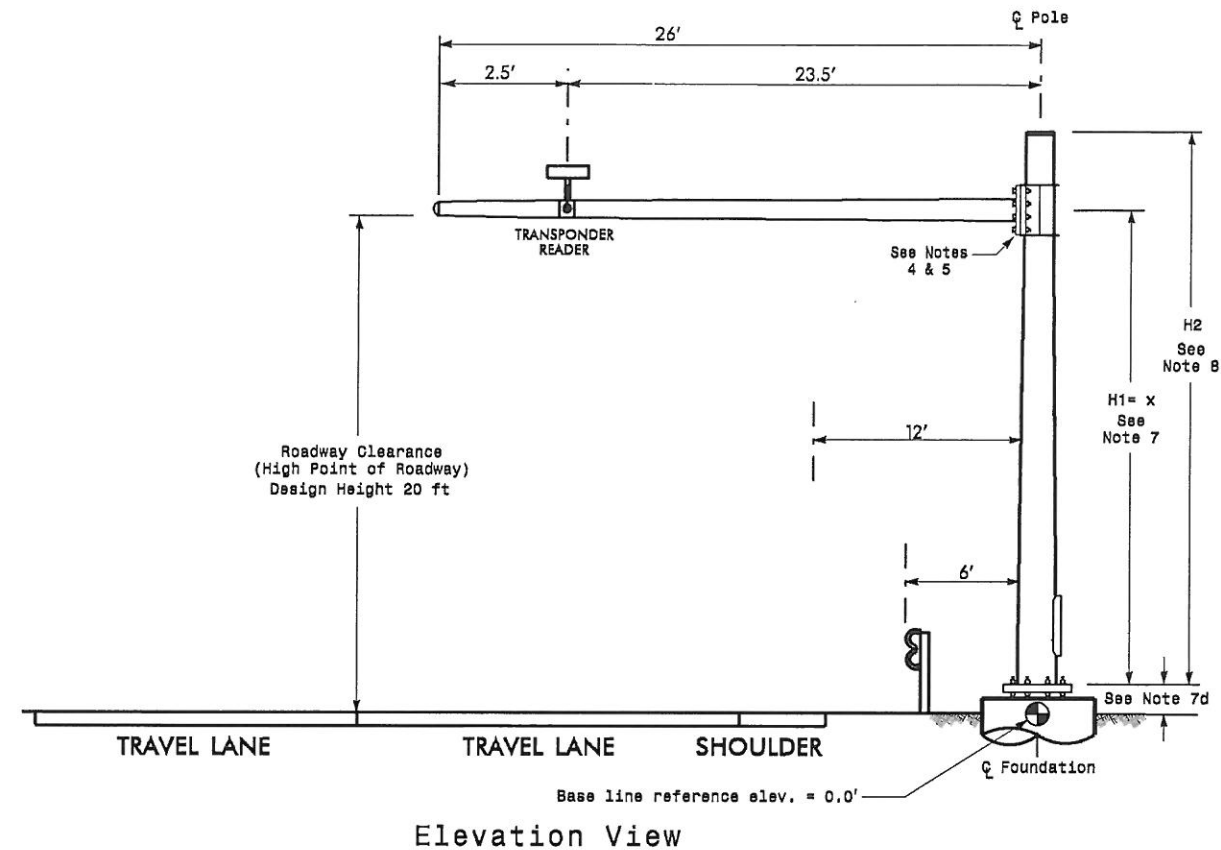
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UNLESS ALL SIGNATURES COMPLETED

NOTES:

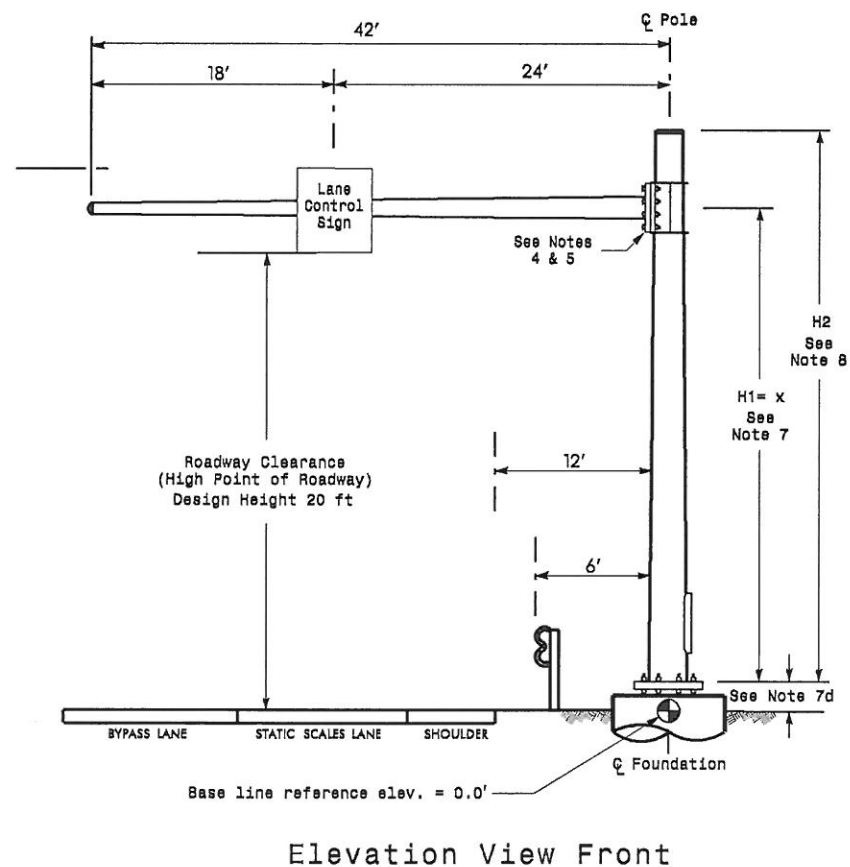
- EXISTING FIBER OPTIC CABLE AND CONDUIT SYSTEM RUNS FROM THE WEIGH STATION BUILDING TO THE EXISTING "OPEN/CLOSED" SIGN. IN ADDITION, THERE IS AN EXISTING QUEUE DETECTION SYSTEM AND OVERHEAD LIGHTING CIRCUITS ON THE RAMP. BEFORE BEGINNING ANY UNDERGROUND WORK CONTACT THE DIVISION TRAFFIC ENGINEER (SEAN EPPERSON) AT (704) 983-4400 TO LOCATE THE EXISTING UNDERGROUND COMPONENTS.
- INDUCTIVE LOOP SAW SLOTS, INCLUDING TAIL AND LEAD-IN SECTIONS, CAN BE WET CUT AT THIS LOCATION.
- SAW CUT EXISTING SIDEWALK. TRANSITION FROM 1" PVC CONDUIT TO THE BOTTOM OF OPEN CUT SLOT AND INSTALL LOOP SEALANT. TRANSITION FROM 1" PVC TO THE BOTTOM OF THE EXISTING WALL MOUNTED CABINET WITH 12" NON-METALLIC FLEXIBLE CONDUIT.
- INTEGRATE THE NEW ADVANCE SORTER IN EXISTING SORTER CABINET.

<p>Prepared in the Office of:</p> <p>750 N. Greenfield Pkwy., Greensboro, NC 27409</p>	<p>SCALES/BYPASS SORTER AND SCALE HOUSE</p>		<p>SEAL</p> <p>3/8/16</p>
	<p>DIVISION 10 WECKLENBURG CO. NEAR CHARLOTTE</p>		
	<p>PLAN DATE: MARCH 2018</p>	<p>REVIEWED BY: S. C. YOW</p>	
	<p>PREPARED BY: G. A. GREEN</p>	<p>REVIEWED BY: T. G. PARKER</p>	
<p>SCALE: N/A</p>	<p>REVISIONS:</p>	<p>INIT. DATE</p>	<p>CADD FILED BY:</p>

Design Loading for METAL POLE NO. 1 with Folding Mast Arm



Design Loading for METAL POLE NO. 2



METAL POLE No. 1 and 2

PROJECT REFERENCE NO.
33879.2.76

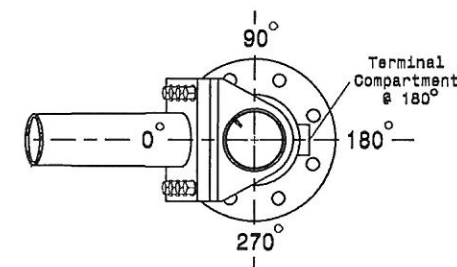
SHEET NO.
ITS-14

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	SIZE	WEIGHT
	TRANSPONDER READER	6.5" W x 4.5" L x 4.0" D	7 LBS
	LICENSE PLATE READER CAMERA	13.0" W x 6.0" L x 5.5" D	6 LBS
	INFRARED ILLUMINATOR	3.0" W x 3.0" L x 3.0" D	5 LBS
	LANE CONTROL SIGN	28.5" W x 28.5" L x 4.0" D	155 LBS

SPECIAL NOTES

- The contractor is responsible for determining the mast arm attachment height (H1). Ensure that the mast arm attachment height will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval.
- ALPRs and Infrared Illuminators are shown on top of the mast arm for illustration purposes. If the contractor elects to install these devices under the mast arm then, the 20 Ft. roadway clearance applies to the lowest device.



POLE RADIAL ORIENTATION

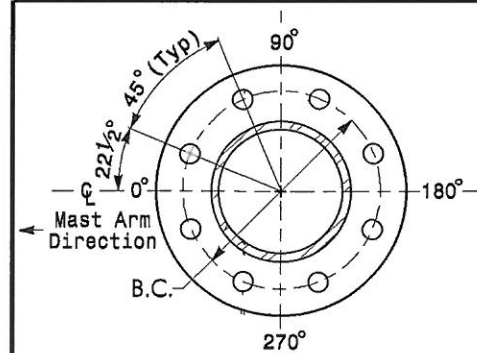
NOTES

Design Reference Material

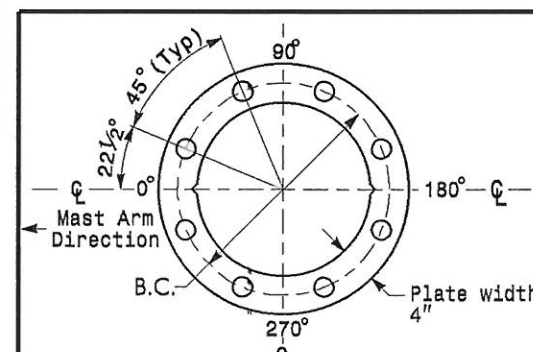
- Design the metal pole structure and foundation in accordance with:
 - The 6th Edition, 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2012 NCDOT "Standard Specifications for Roads and Structures". The latest addenda to these specifications can be found in the ITS and Signals project special provisions.
 - The 2012 NCDOT Roadway Standard Drawings.
 - The project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

Design Requirements

- Design the metal pole structure using the loading conditions shown in the elevation views. These are anticipated worst case "Design loads".
- Design all metal pole supports using stress ratios that do not exceed 1.0.
- The camber design for mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 80 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
 - Attachments to the mast arm are rigid mounted and vertically centered on the arm.
 - The roadway clearance height for design is as shown in the elevation views.
 - The top of the pole base plate is .75 feet above the ground elevation.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
 - Mast arm attachment height (H1) plus 2 feet, or
 - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the ITS & Signals Structural Engineer for assistance at (919) 773-2800.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the attached equipment over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.



8 BOLT BASE PLATE DETAIL
See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT
LOCK PLATE DETAIL
For 8 Bolt Base Plate

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NCDOT Wind Zone 4 (90 mph)

 Prepared in the Office of: Transportation Planning 759 N. Greenfield Plaza, Cary, NC 27529	METAL POLE WITH MAST ARM		SEAL S. C. YOW ENGINEER 028094
	DIVISION 10 WECLENBURG CO. NEAR CHARLOTTE		
	PLAN DATE: MARCH 2016	REVIEWED BY: S. C. YOW	
	PREPARED BY: G. A. GREEN	REVIEWED BY: C. F. ANDREWS	
SCALE: N/A 	REVISIONS:	INJT. DATE:	SIGNATURE: DATE: 3.7.16

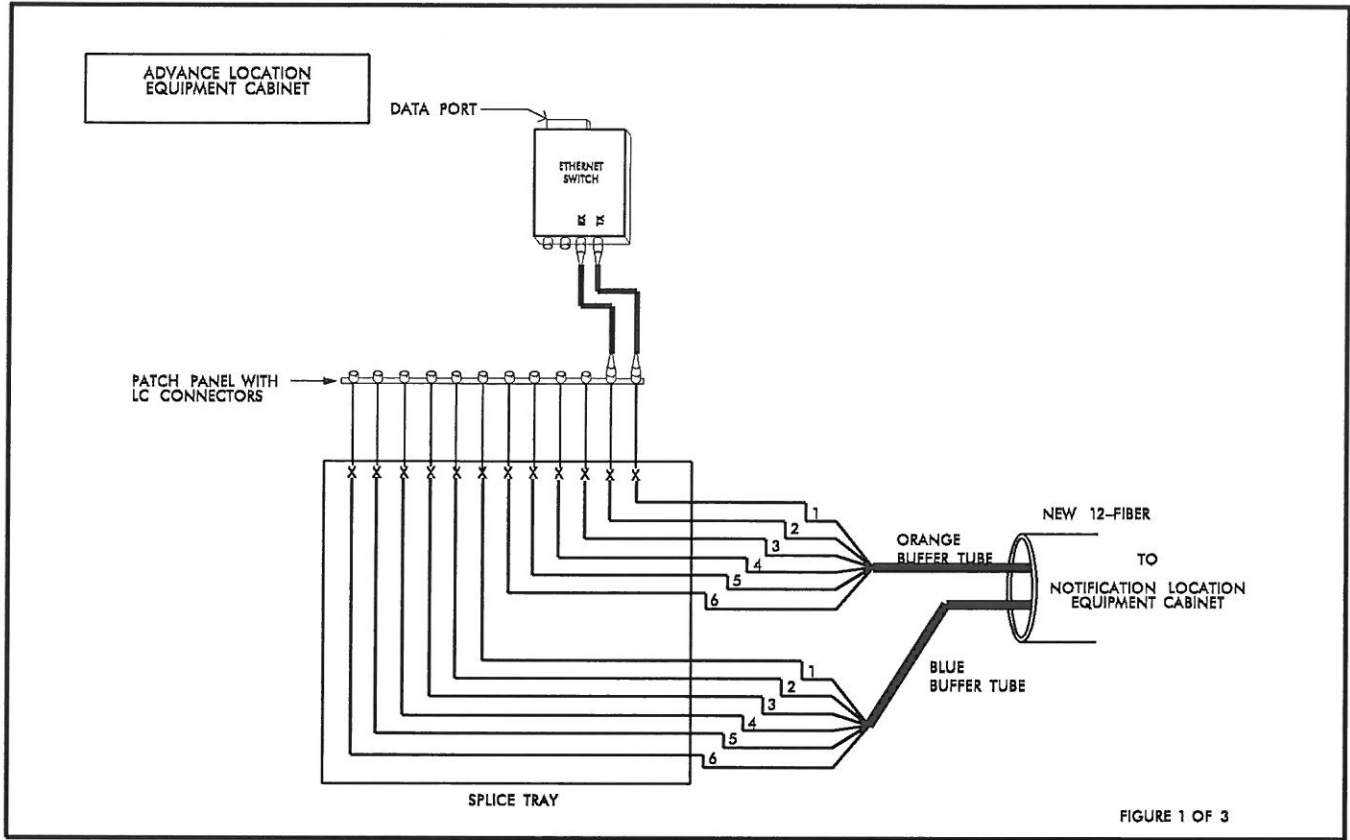


FIGURE 1 OF 3

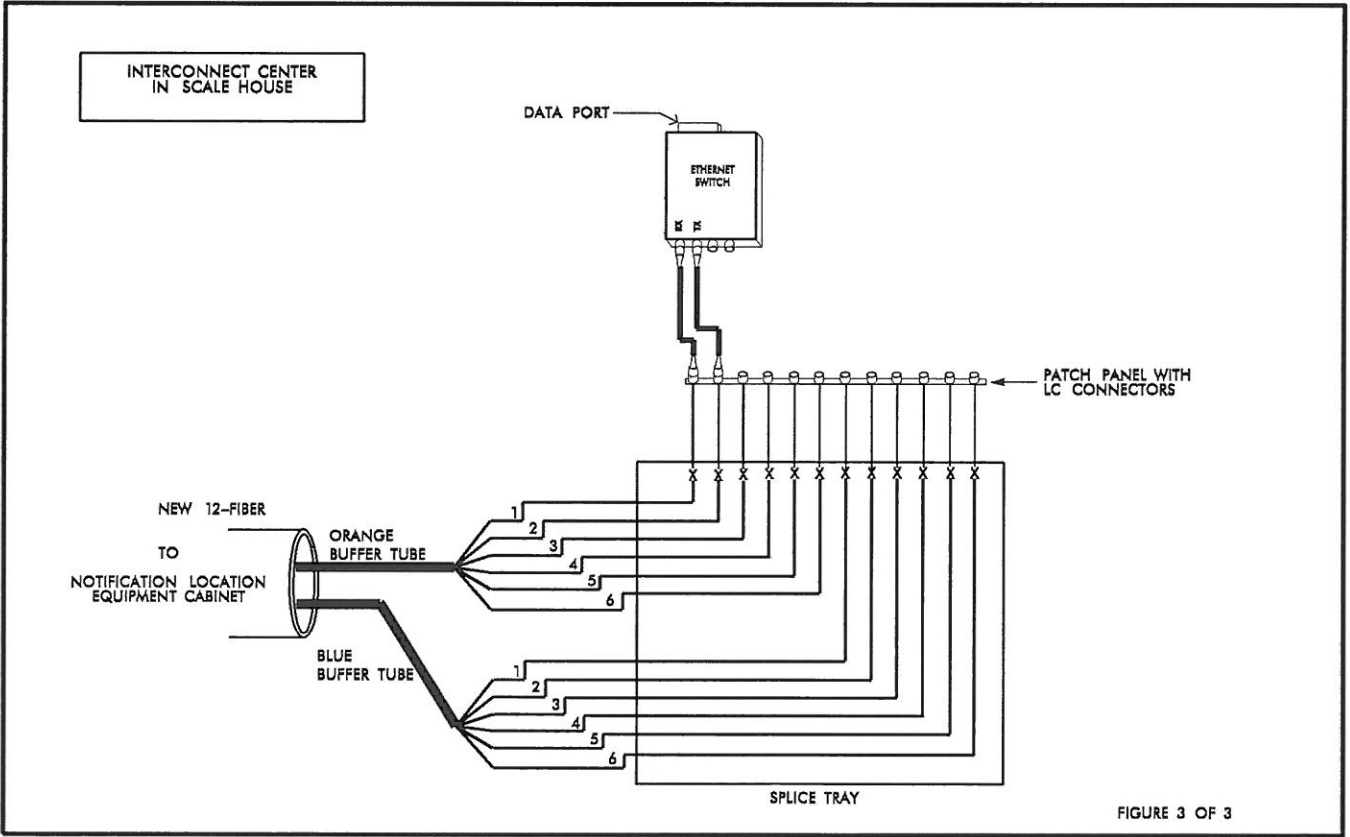


FIGURE 3 OF 3

- LEGEND
X = FUSION SPLICE
C = CAP
- COLOR CODE
TIA/EIA 598-A
- | | |
|------------|-------------|
| (1) BLUE | (7) RED |
| (2) ORANGE | (8) BLACK |
| (3) GREEN | (9) YELLOW |
| (4) BROWN | (10) VIOLET |
| (5) SLATE | (11) ROSE |
| (6) WHITE | (12) AQUA |

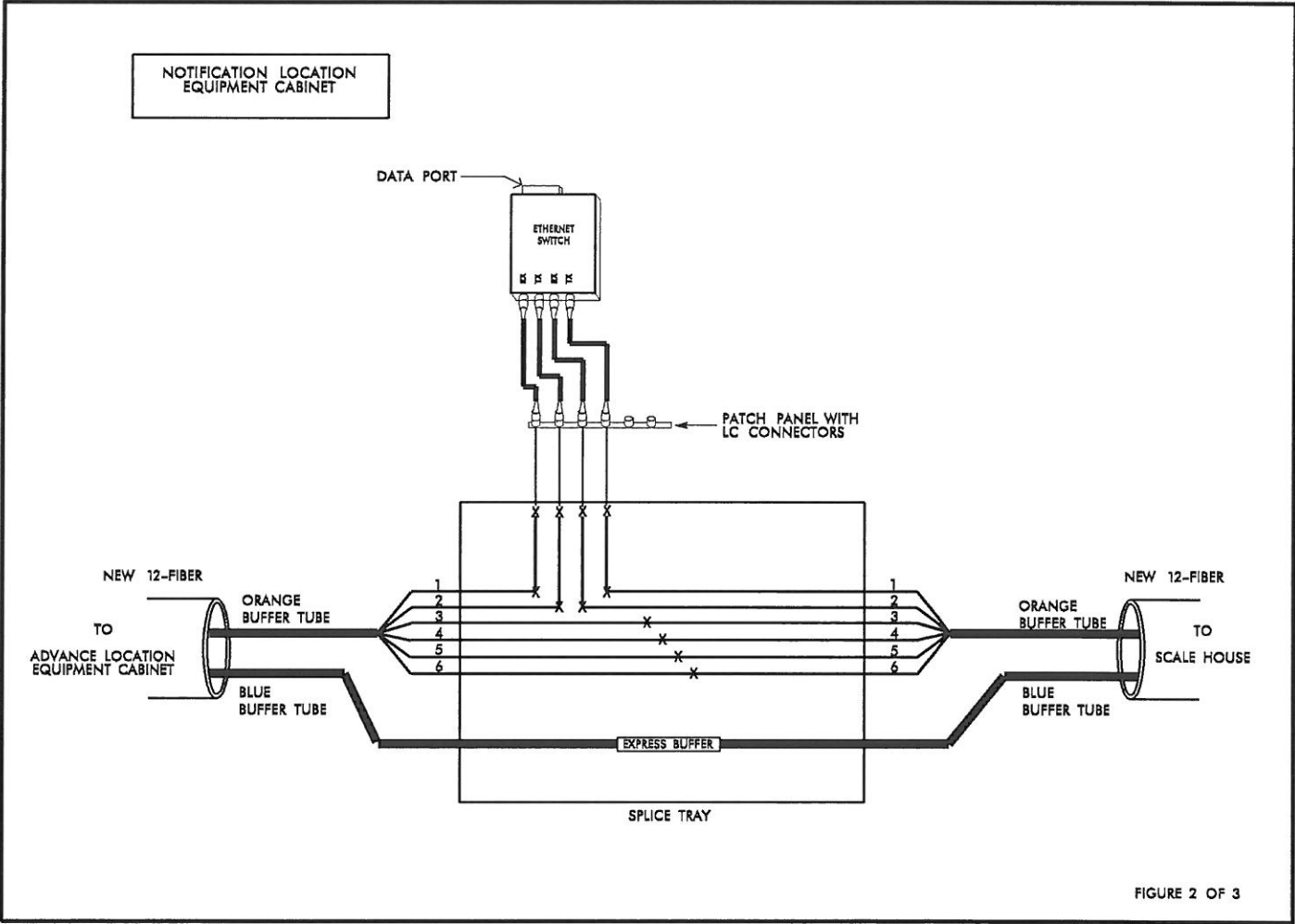


FIGURE 2 OF 3

- NOTES:
1. ETHERNET TERMINATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR ENSURING PROPER TERMINATIONS.
 2. COIL AND STORE ALL UNUSED FIBERS IN SPLICE TRAY.
 3. COIL AND STORE ALL UNUSED BUFFER TUBES IN SPLICE TRAY.

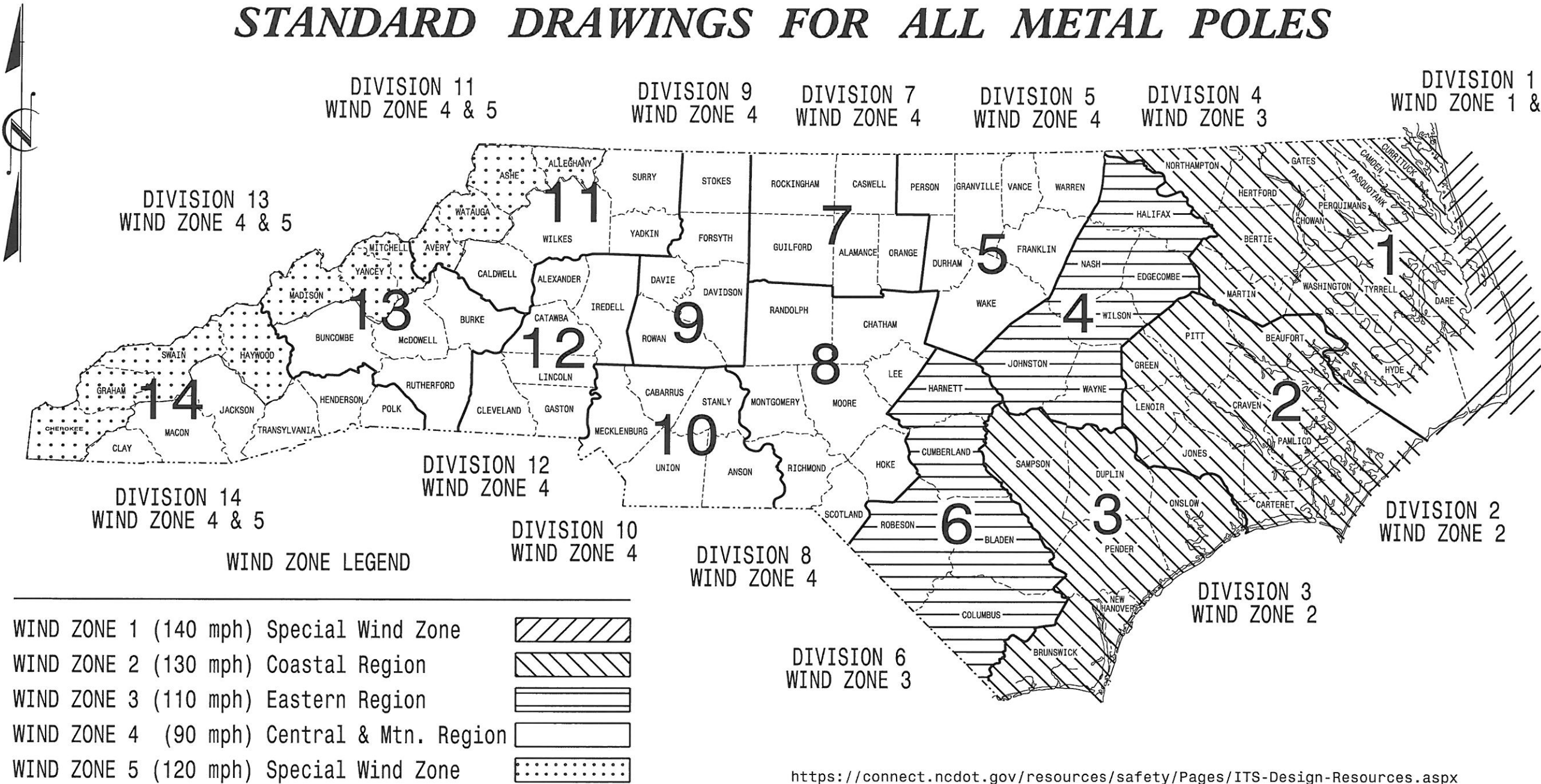
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

 750 N. Greenfield Pkwy., Garner, NC 27529	SPlice DETAIL		 3/8/16	
	DIVISION 10 WECKLENBURG CO. NEAR CHARLOTTE			
	PLAN DATE: MARCH 2016	REVIEWED BY: S. C. YOW		
	PREPARED BY: G. A. GREEN	REVIEWED BY: T. G. PARKER		
SCALE: 0 N/A	REVISIONS	INIT.	DATE	CADD FILED

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT I.D. NO.	SHEET NO.
	Sig.M1

STANDARD DRAWINGS FOR ALL METAL POLES



Prepared in the Offices of:



Designed in conformance
with the latest
2015 Interim to the
6th Edition 2013

AASHTO

Standard Specifications for
Structural Supports for
Highway Signs, Luminaires,
and Traffic Signals

INDEX OF PLANS

DRAWING NUMBER	DESCRIPTION
Sig. M 1	Statewide Wind Zone Map
Sig. M 2	Typical Fabrication Details-All Metal Poles
Sig. M 3	Typical Fabrication Details-Strain Poles
Sig. M 4	Typical Fabrication Details-Mast Arm Poles
Sig. M 5	Typical Fabrication Details-Mast Arm Connection
Sig. M 6	Typical Fabrication Details-Strain Pole Attachments
Sig. M 7	Construction Details-Foundations
Sig. M 8	Standard Strain Pole Foundation-All Soil Conditions

NCDOT CONTACTS:

MOBILITY AND SAFETY DIVISION - ITS AND SIGNALS UNIT

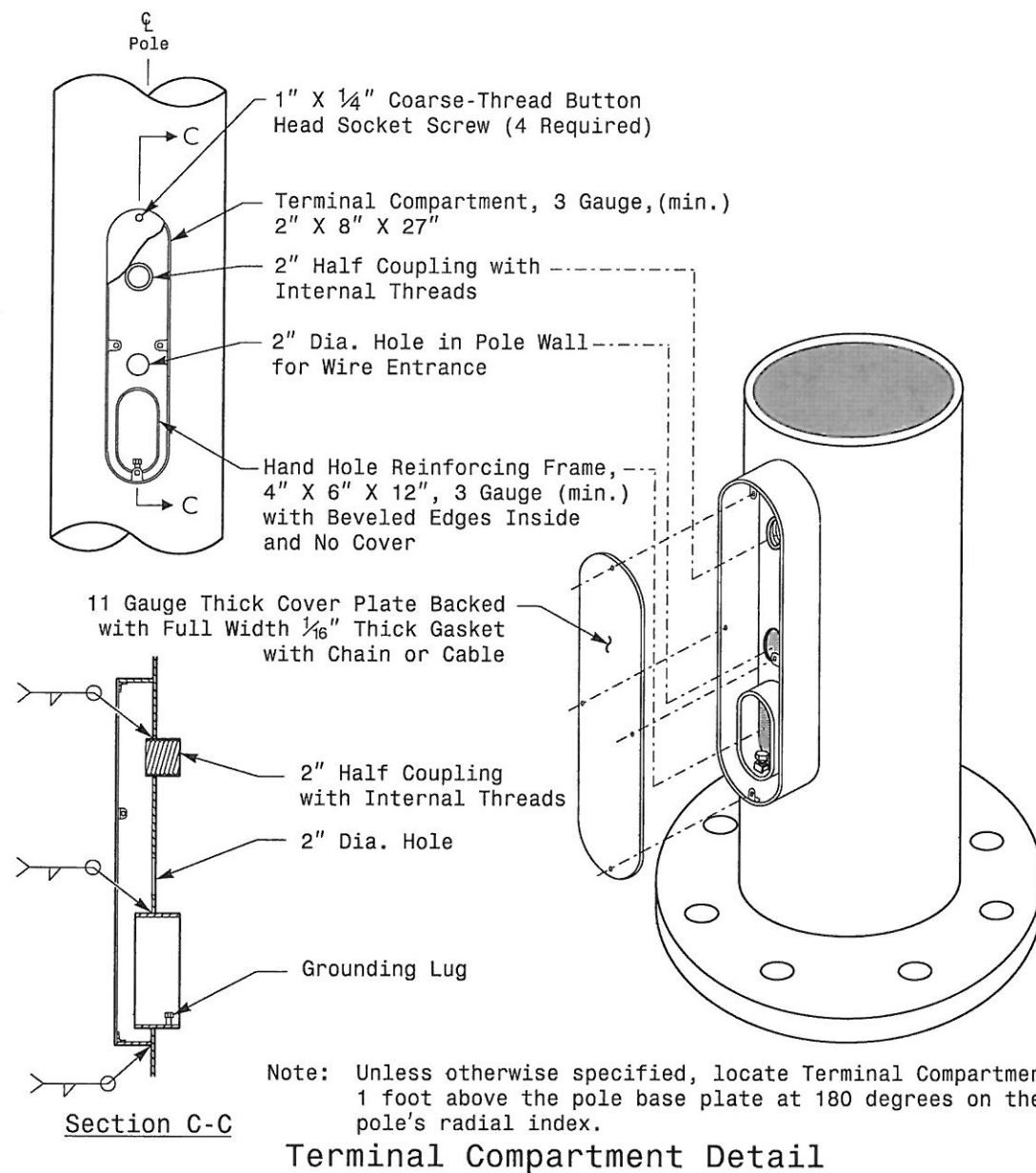
G. A. FULLER, P.E. - STATE ITS AND SIGNALS ENGINEER
G. G. MURR, JR., P.E. - STATE SIGNALS ENGINEER
D. C. SARKAR, P.E. - ITS AND SIGNALS SENIOR STRUCTURAL ENGINEER
C. F. ANDREWS - ITS AND SIGNALS JOURNEY STRUCTURAL ENGINEER

SEAL



DocuSigned by:
Debesh C. Sarkar
2/17/2016
DATE

17-FCB-2016-16-02
Signal Design Section Eastern Regional Sheets 016-2014 Sig.M2 Std. Fabrication Details - All Poles.dgn
Jgallaway



MFG _____	MFG. DATE: MM/YY _____
SHAFT D/T/L/Y _____	
ARM-A D/T/L/Y _____	
ARM-B D/T/L/Y _____	
A.B. DIA./B.C./L/Y _____	
NCDOT SIG. INV. NO. _____	
NCDOT POLE NO. _____	

Shaft I.D. Tag
(Provide on Shaft of Strain Poles and Mast Arm Poles Shaft)

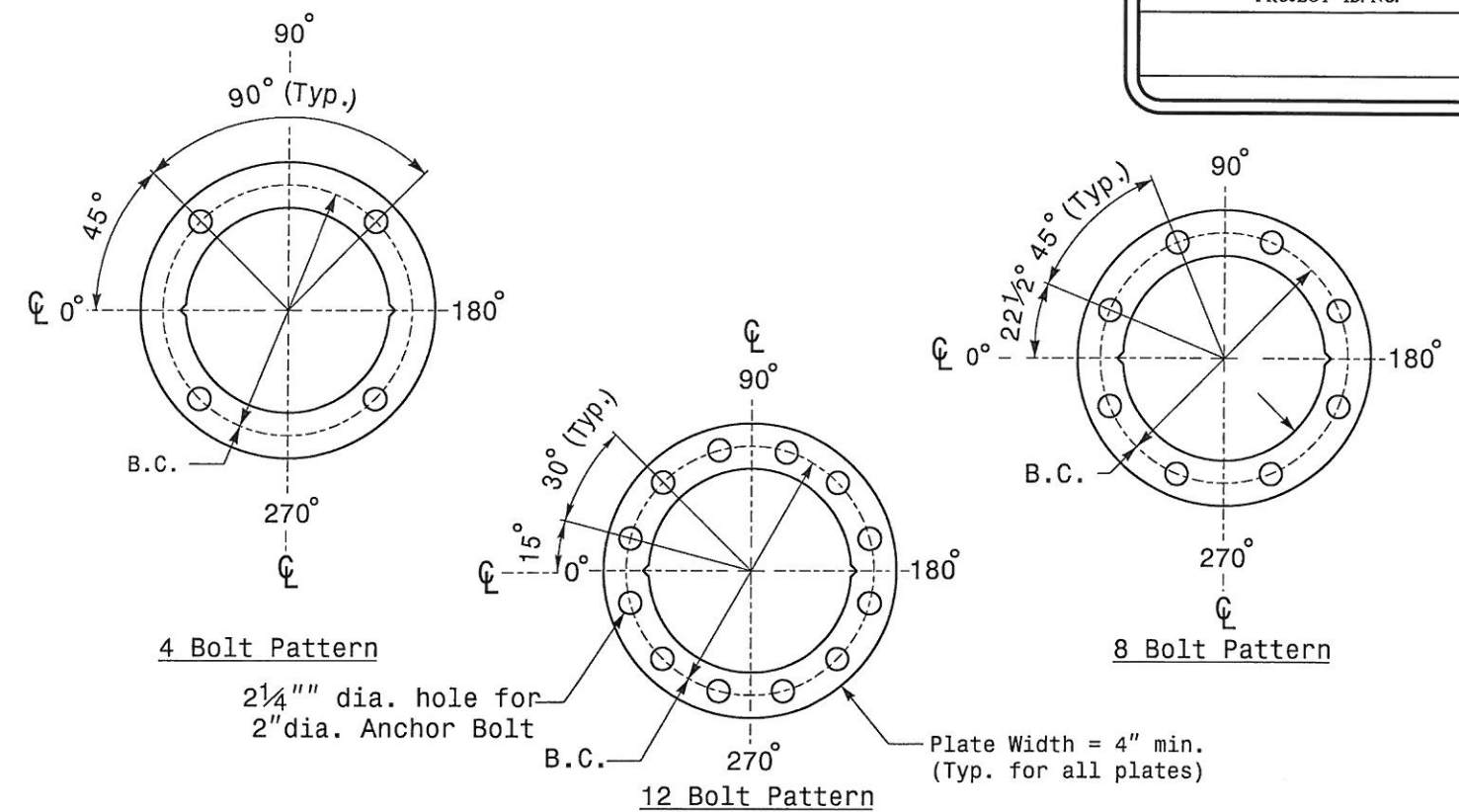
Notes:

- 1) D= Diameter, T= Thickness, L= Length, Y= Yield Strength
- 2) A.B. = Anchor Bolt
- 3) B.C. = Bolt Circle of Anchor Bolts
- 4) If Custom Design, use "NCDOT STANDARD" line for Signal Inv. Number and pole I.D. number
- 5) See drawing M3 and M4 for mounting positions of I.D. tags.

Identification Tag Details

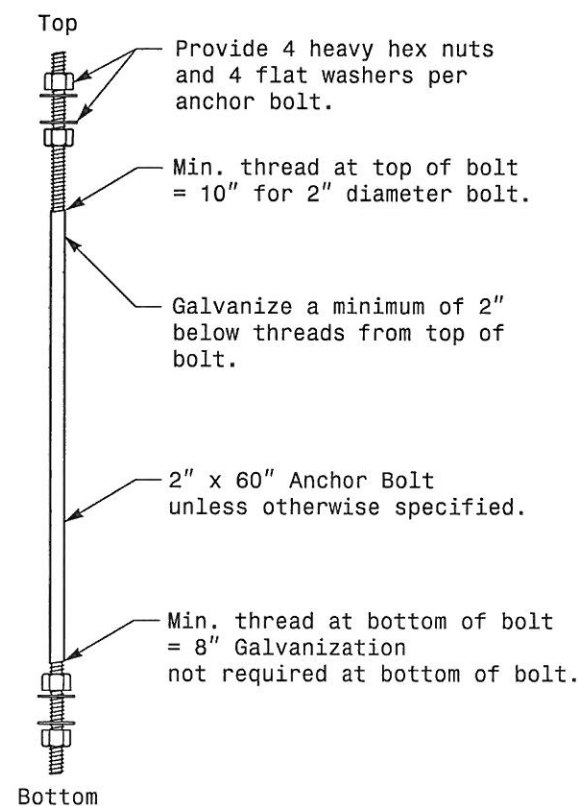
MFG _____	MFG. DATE: MM/YY _____
SECTION D/T/L/Y _____	
NCDOT SIG. INV. NO. _____	
NCDOT POLE NO. _____	

Arm I.D. Tag
(Provide on each section of a multi-section mast arm.)

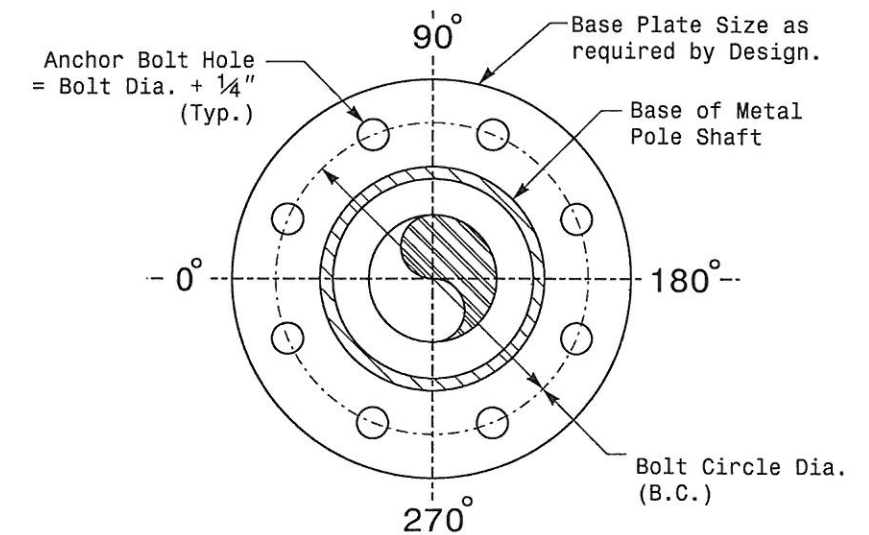


Construct Templates and Plates from 1/4" min. thick Steel. Galvanizing is not required.

Base Plate Template and Anchor Bolt Lock Plate Details



Anchor Bolt Detail



Note: Base plate may be circular, octagonal, square or rectangular in shape.

Typical Base Plate Detail



Typical Fabrication Details
For
All Metal Poles

PLAN DATE: FEBRUARY 2016 DESIGNED BY: C.F. ANDREWS

PREPARED BY: N. BITTING REVIEWED BY: D.C. SARKAR

REVISIONS INIT. DATE

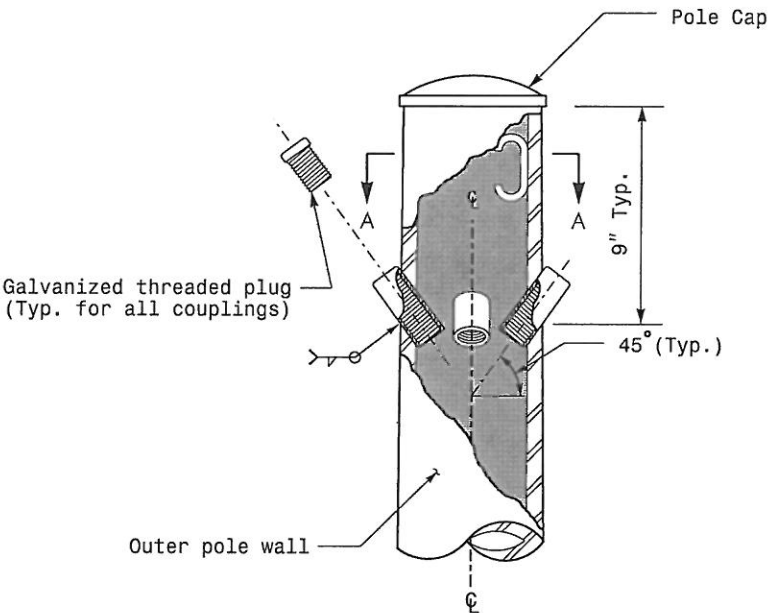
SEAL



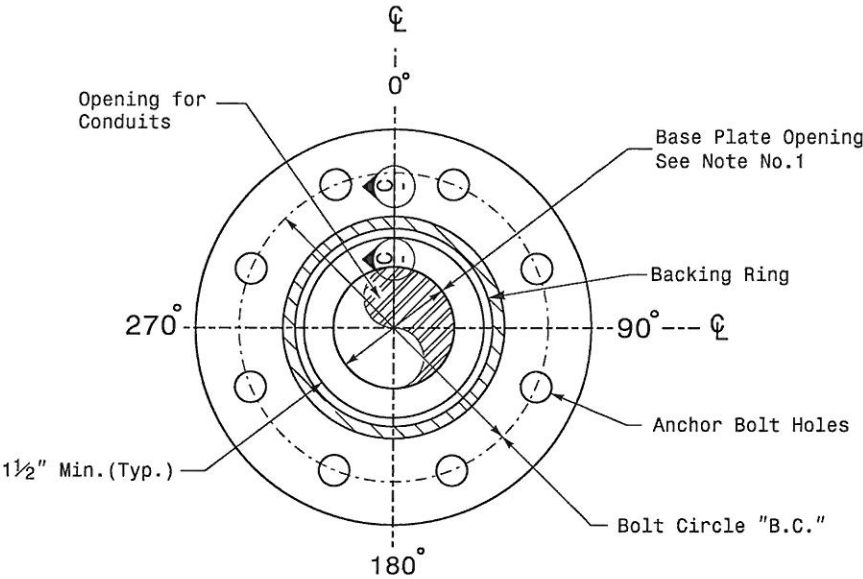
DocuSigned by
Debesh C. Sarkar
44E8E32E147E4C4...

2/17/2016
DATE

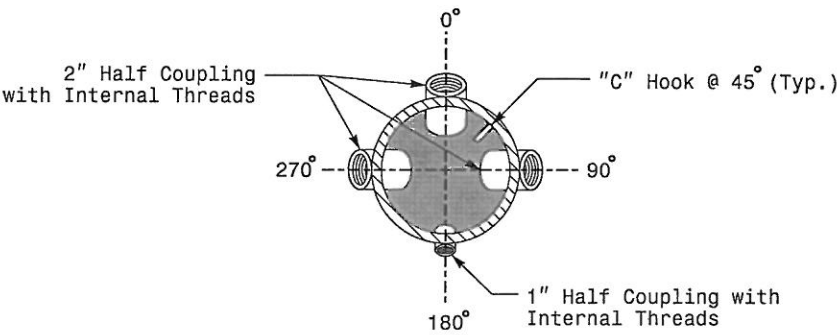
Note:
1. Opening in pole base plate shall be equal to pole base inside diameter minus $3\frac{1}{2}$ " but shall not be less than $8\frac{1}{2}$ ".



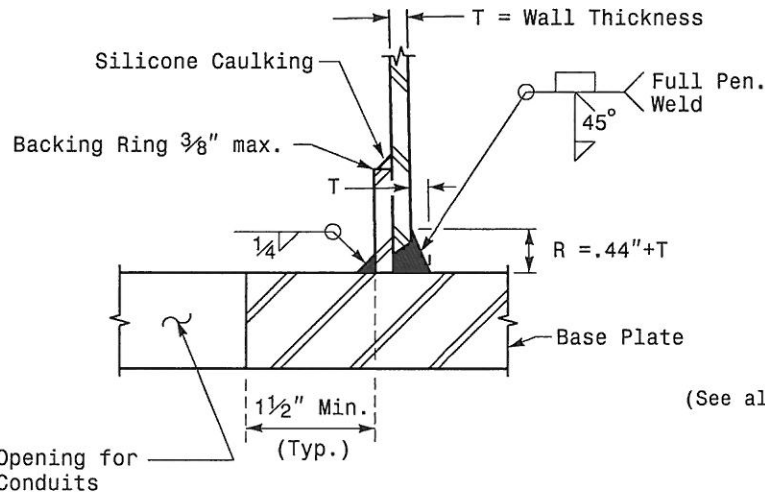
Cable Entrances at Top of Pole



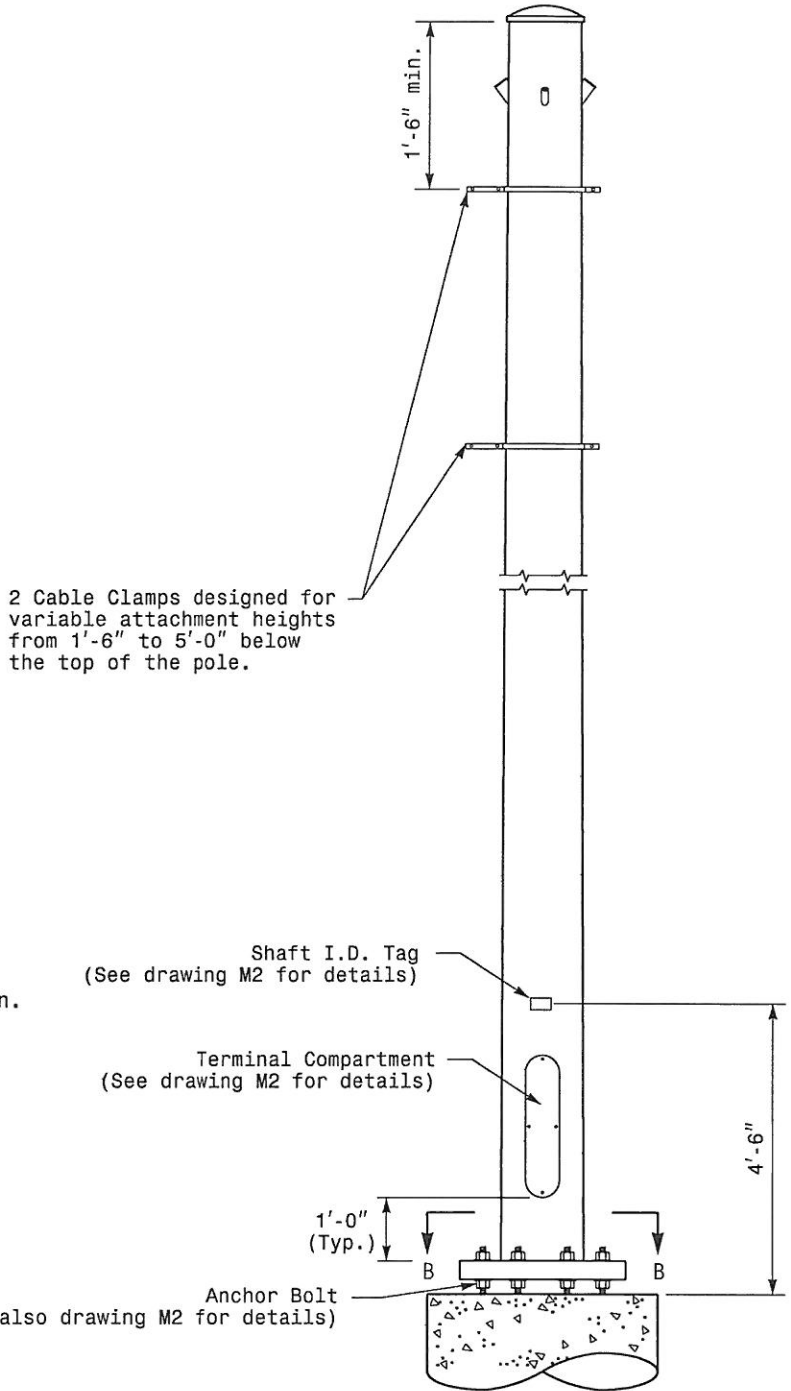
Section B-B
Pole Base Plate Details
(8 and 12 Bolt Pattern)



Section A-A
Radial Orientation for Factory Installed
Accessories at Top of Pole



Section C-C
(Pole Attachment to Base Plate)
Full-Penetration
Groove Weld Detail



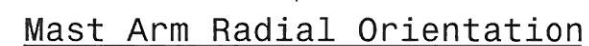
Monotube Strain Pole

	Typical Fabrication Details For Strain Poles		
	PLAN DATE: FEBRUARY 2016 DESIGNED BY: K. C. DURIGON PREPARED BY: N. BITTING REVIEWED BY: D. C. SARKAR INITIALS: DATE:	REVISIONS:	
SCALE: 0 NA NONE			SIGNATURE: D. C. SARKAR 44E8E32E147E4C4...

1. Opening in pole base plate shall be equal to pole base inside diameter minus $3\frac{1}{2}$ " but shall not be less than $8\frac{1}{2}$ ".

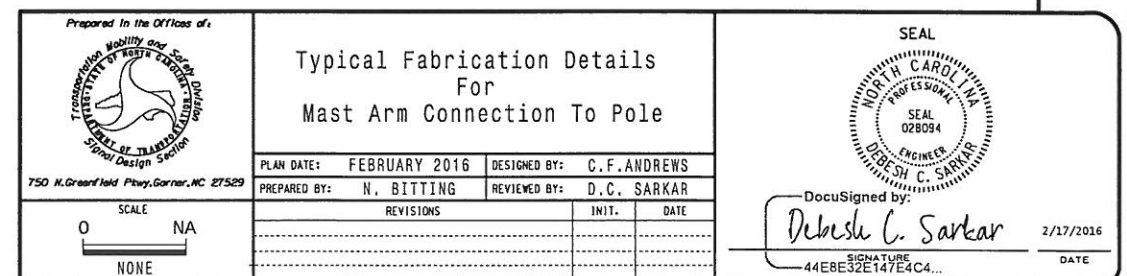


Arm I.D.Tag mounting _____
location (See drawing M2)



17-FEB-2016 16:05
S:\TAS\1175 Signal\Sigal Design Section\Eastern Region\W Sheet\w2016\2014 Sig.M4 Std. Fabrication Details-Most Arm Poles.dgn
Igal Tsayman

PROJECT ID. NO.	SHEET NO.
	Sig.M5



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 golloway



WBS: 33879.2.76

I:\MSR-2016-0851\PROJECTS\Mecklenburg Weigh Station\WBS33879.2.76.dgn
5/26/2016 10:01 AM JG Martinez

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN
MECKLENBURG COUNTY

LOCATION: I-85 SOUTHBOUND WEIGH STATION UPGRADE

PROJECT REFERENCE NO.	SHEET NO.
WBS: 33879.2.76	SGN-01
APPROVED:  DESIGNED BY: 085507AB07TCDC DATE: 3/11/2016	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES 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
901.10	TYPE 'A' SIGNS
901.70	SIGN STRINGERS AND SUPPORT SPACING
901.80	SIGN MOUNTING DETAILS - FOR TYPE A AND TYPE B SIGNS
903.10	GROUND MOUNTED SIGN SUPPORTS
904.10	ORIENTATION OF GROUND MOUNTED SIGNS

GENERAL NOTES

- . SIGNS FURNISHED BY STATE
- . CONFIRM IN WRITING AT LEAST 4 MONTHS IN ADVANCE, THE ACTUAL DATE THE DEPARTMENT FURNISHED SIGNS WILL BE REQUIRED.
- . WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
- . DO NOT BEGIN FABRICATION FOR TYPES A & B SIGNS MOUNTED ON OVERHEAD STRUCTURES OR STEEL SUPPORTS UNTIL "S" DIMENSIONS HAVE BEEN FIELD VERIFIED.
- . SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4048000000	902	REINFORCED CONCRETE SIGN FOUNDATION	2	C.Y.
4066000000	903	SUPPORTS, SIMPLE STEEL BEAM	745	LB.
4109000000	904	SIGN ERECTION, TYPE A (OVERHEAD)	1	EA.
4110000000	904	SIGN ERECTION, TYPE B (GROUND MOUNTED)	2	EA.
4234000000	907	DISPOSAL OF SIGN, A OR B (OVERHEAD)	1	EA.

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2-4	SUPPORT INFORMATION
SIGN-5	SIGN DESIGNS
SIGN-6	SIGNING PLAN SHEET

PLAN PREPARED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

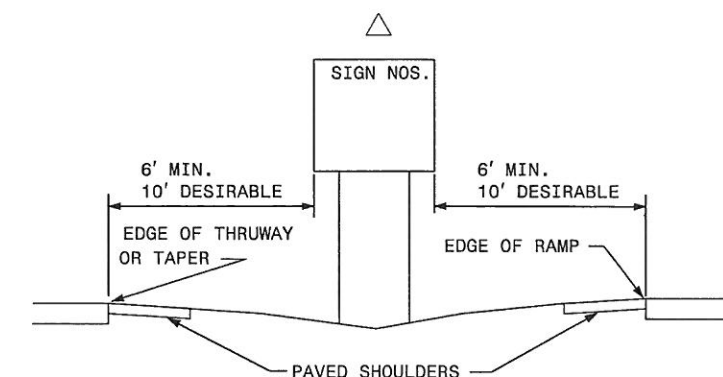
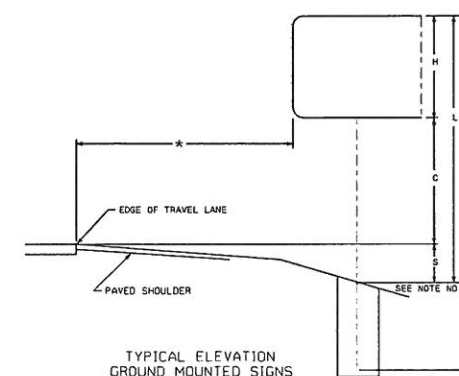
K. L. JORDAN SIGNING & DELINEATION REGIONAL ENGINEER
J. G. MARTINEZ SIGNING & DELINEATION PROJECT DESIGN ENGINEER



SIGN NO.	SIGN TYPE	SIGN SIZE (in.) w x h	ROADWAY STATION	NO. OF SUP.	BEAM SECTION	SUPPORT TYPE BA or S	ATTACH METHOD	MOUNTING METHOD	HORIZ. CLR. (ft.)	LENGTH (ft)			LEFT SUPPORT (ft)			CENTER SUPPORT (ft)			RIGHT SUPPORT (ft)			FOOTING DIAMETER (ft.)	FOOTING DEPTH (ft.)	B/A SUPPORT WEIGHTS (lbs.)	SIMPLE SUPPORT WEIGHTS (lbs.)	REINF. FTGS. (c.y.)	PLAIN FTGS. (c.y.)	FIELD VERIFIED SEE NOTE (mm/dd/yy)						
										SNS HT (ft.)	MTG HT (ft.)	EMBED- MENT	S	L	TOTAL LENGTH	S	L	TOTAL LENGTH	S	L	TOTAL LENGTH													
DMS1	B	97 X44	SEE ITS-06	2	W6x9	S	N/A	N/A	20.00	3.67	7.00	3.5	5.00	15.67	19.17	0.00	0.00	0.00	8.00	18.67	22.17	1.5	4	0.00	372.00	0.52	0.00							
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---								
DMS2	B	97 X44	SEE ITS-06	2	W6x9	S	N/A	N/A	20.00	3.67	7.00	3.5	5.00	15.67	19.17	0.00	0.00	0.00	8.00	18.67	22.17	1.50	4	0.00	372.00	0.52	0.00							
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---								
																							TOTAL 0.00				TOTAL 744.00		TOTAL 1.05		TOTAL 0.00			
USE:																							0				745		2		0			

NOTES

1. DIMENSION "S" REPRESENTS AN INCREASE (+), OR A DECREASE (-) IN POLE LENGTH, RELATIVE TO THE ELEVATION OF THE EDGE OF PAVEMENT.
2. FIELD VERIFICATIONS SHALL BE REQUIRED FOR ALL SUPPORTS, SEE (*) ARTICLE 903-3. FABRICATORS SHALL BE AISC CERTIFIED IN CATEGORY 1, SEE (*) ARTICLE 1072-1. (*) = N.C.D.O.T. STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES
3. PLAN LOCATIONS FOR EXISTING UTILITIES ARE BASED ON THE BEST AVAILABLE INFORMATION AND, THEREFORE MAY NOT BE PRECISELY ACCURATE. THEREFORE, IT IS INCUMBENT UPON THE CONTRACTOR TO DETERMINE THE EXACT LOCATION OF UTILITIES BEFORE BEGINNING WORK IN A LOCATION.



TYPE "A" AND TYPE "B" GROUND MOUNTED SIGNS

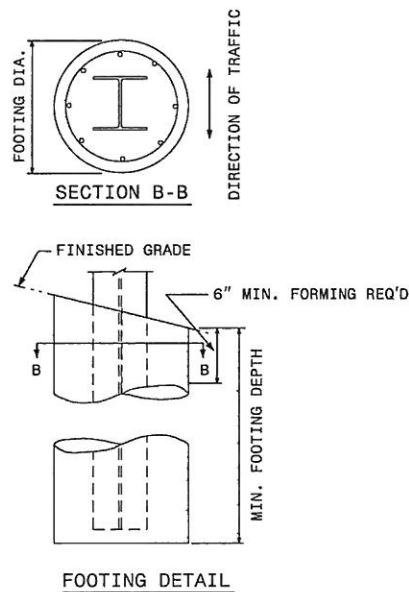
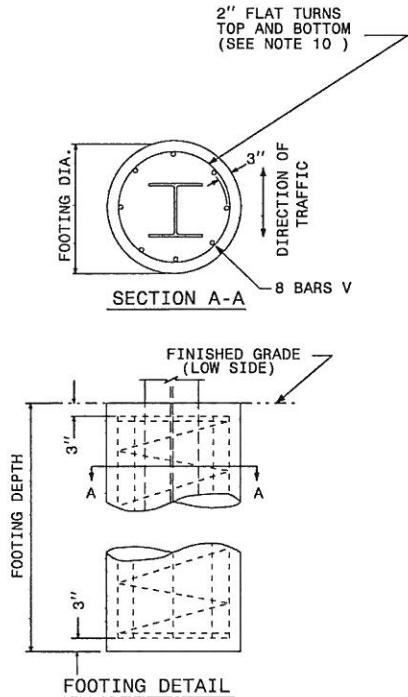
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3/11/2016 08:52
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STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
GROUND MOUNTED SIGN SUPPORTS

SHEET 2 OF 3
903D10

	SLIP BASE PLATE DATA								KEEPER PLATE DATA								HINGE CONNECTION DATA										BREAK AWAY SUPPORT WEIGHT CONSTANT LBS.
BEAM SHAPE	BOLT SIZE	A ₁	B ₁	C ₁	D ₁	E ₁	T ₁	R ₁	A ₂	B ₂	C ₂	D ₂	E ₂	R ₂	T ₂	BOLT SIZE	F	G	H	I	J	K	L	R ₃	T ₃		
S3X5.7	½"DIA.X ¾"	7"	4"	1"	¾"	2½"	1"	⅝ ₃₂ "	7"	4"	1"	¾"	2½"	⅝ ₃₂ "	28 GAUGE	½"DIA.X1¾"	2¼"	3½"	4"	½"	1"	½"	2"	⅝ ₃₂ "	¾"	18	
S4X7.7	½"DIA.X ¾"	8"	4"	1"	¾"	2½"	1"	⅝ ₃₂ "	8"	4"	1"	¾"	2½"	⅝ ₃₂ "	28 GAUGE	½"DIA.X1¾"	2⅝ ₈ "	3½"	4"	½"	1"	½"	2"	⅝ ₃₂ "	¾"	20	
W6X9	½"DIA.X ¾"	10"	5"	1"	¾"	3½"	1"	⅝ ₃₂ "	10"	5"	1"	¾"	3½"	⅝ ₃₂ "	28 GAUGE	½"DIA.X1¾"	4"	3½"	4"	¾"	1"	½"	2"	⅝ ₃₂ "	¾"	32	
W6X12	⅝ ₈ "DIA.X 4"	11"	5"	1¼"	⅞"	3¼"	1¼"	1 ₃₂ ¹ "	11"	5"	1¼"	⅞"	3¼"	1 ₃₂ ¹ "	28 GAUGE	⅝ ₈ "DIA.X 2"	4"	4"	4½"	¾"	1⅝ ₈ "	⅝ ₈ "	2¼"	1 ₃₂ ¹ "	¾"	39	
W6X16	⅝ ₈ "DIA.X 4½"	12"	6"	1¼"	⅞"	4¼"	1½"	1 ₃₂ ¹ "	12"	6"	1¼"	⅞"	4¼"	1 ₃₂ ¹ "	28 GAUGE	⅝ ₈ "DIA.X2¼"	4"	4"	4½"	¾"	1⅝ ₈ "	⅝ ₈ "	2¼"	1 ₃₂ ¹ "	½"	47	
W8X18	⅝ ₈ "DIA.X 4½"	13½"	6½"	1¼"	⅞"	4¾"	1½"	1 ₃₂ ¹ "	13½"	6½"	1¼"	⅞"	4¾"	1 ₃₂ ¹ "	28 GAUGE	⅝ ₈ "DIA.X2¼"	5¼"	4"	4½"	1"	1⅝ ₈ "	⅝ ₈ "	2¼"	1 ₃₂ ¹ "	½"	70	
W8X21	¾"DIA.X 4½"	14"	7"	1½"	1"	5"	1½"	1 ₃₂ ³ "	14"	7"	1½"	1"	5"	1 ₃₂ ³ "	28 GAUGE	¾"DIA.X2½"	5¼"	6"	7"	1"	1¾"	¾"	3½"	1 ₃₂ ³ "	½"	73	
W10X22	¾"DIA.X 4½"	16"	8"	1½"	1"	6"	1½"	1 ₃₂ ³ "	16"	8"	1½"	1"	6"	1 ₃₂ ³ "	28 GAUGE	¾"DIA.X2½"	5¾"	6"	7"	1"	1¾"	¾"	3½"	1 ₃₂ ³ "	½"	119	
W10X26	¾"DIA.X 5½"	16½"	8"	1½"	1"	6"	1¾"	1 ₃₂ ³ "	16½"	8"	1½"	1"	6"	1 ₃₂ ³ "	28 GAUGE	¾"DIA.X2¾"	5¾"	6"	7"	1"	1¾"	¾"	3½"	1 ₃₂ ³ "	⅝ ₈ "	140	
W12X26	¾"DIA.X 5½"	18½"	9"	1½"	1"	7"	1¾"	1 ₃₂ ³ "	18½"	9"	1½"	1"	7"	1 ₃₂ ³ "	28 GAUGE	¾"DIA.X2¾"	6½"	6"	7"	1"	1¾"	¾"	3½"	1 ₃₂ ³ "	⅝ ₈ "	176	
W14X30	1"DIA.X 6"	22"	9"	2"	1½"	6"	2"	1 ₃₂ ⁷ "	22"	9"	2"	1½"	6"	1 ₃₂ ⁷ "	28 GAUGE	1"DIA.X 3"	6¾"	7"	8"	1¼"	2"	1"	4"	1 ₃₂ ⁷ "	⅝ ₈ "	205	
W16X31	1"DIA.X 6"	24"	9"	2"	1½"	6"	2"	1 ₃₂ ⁷ "	24"	9"	2"	1½"	6"	1 ₃₂ ⁷ "	28 GAUGE	1"DIA.X 3"	5½"	7"	8"	1¼"	2"	1"	4"	1 ₃₂ ⁷ "	¾"	223	
W18X35	1"DIA.X 6"	25"	9"	2"	1½"	6"	2"	1 ₃₂ ⁷ "	25"	9"	2"	1½"	6"	1 ₃₂ ⁷ "	28 GAUGE	1"DIA.X 3"	6"	7"	8"	1¼"	2"	1"	4"	1 ₃₂ ⁷ "	¾"	243	
W18X40	1"DIA.X 6½"	26"	9"	2"	1½"	6"	2¼"	1 ₃₂ ⁷ "	26"	9"	2"	1½"	6"	1 ₃₂ ⁷ "	28 GAUGE	1"DIA.X3½"	6"	7"	8"	1¼"	2"	1"	4"	1 ₃₂ ⁷ "	⅞"	278	
W21X44	1"DIA.X 7"	29"	9"	2"	1½"	6"	2½"	1 ₃₂ ⁷ "	29"	9"	2"	1½"	6"	1 ₃₂ ⁷ "	28 GAUGE	1"DIA.X3½"	6½"	7"	8"	1¼"	2"	1"	4"	1 ₃₂ ⁷ "	⅞"	310	



FOUNDATION DATA *		
FOOTING DIAMETER	REINFORCEMENT	SPIRAL BAR
1'-6"	8 # 6 BARS	#3 BAR, 6" PITCH
2'	8 # 7 BARS	#3 BAR, 6" PITCH
2'-6"	8 # 9 BARS	#3 BAR, 6" PITCH
3'	8 # 11 BARS	#3 BAR, 6" PITCH
3'-6"	8 # 12 BARS	#3 BAR, 6" PITCH
4'	8 # 14 BARS	#3 BAR, 6" PITCH

* FOUNDATION DIMENSIONS ARE SHOWN IN PLANS

STATE OF
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RALEIGH, N.C.


ENGLISH DETAIL DRAWING FOR
GROUND MOUNTED SIGN SUPPORTS


SHEET 2 OF 3
903D10

REVISED SIGNING
ROADWAY STANDARD DRAWING

PROJECT REFERENCE NO.
WBS: 33879.2.76

SHEET NO.
SGN-03

APPROVED: 
DESIGNED BY: Ron King
DATE: 3/11/2016

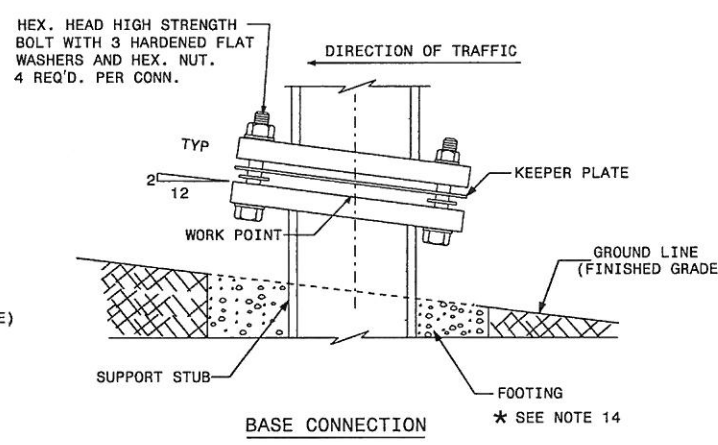
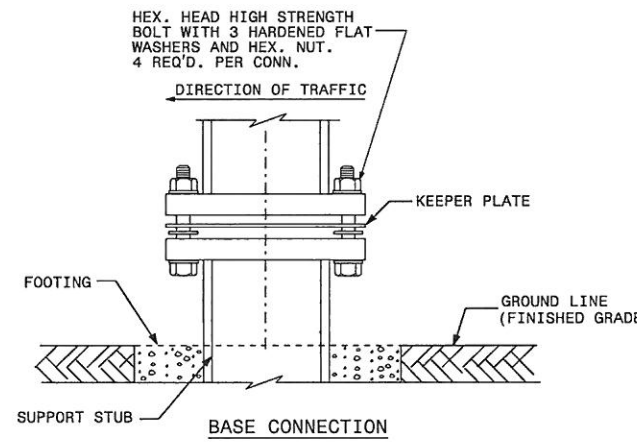
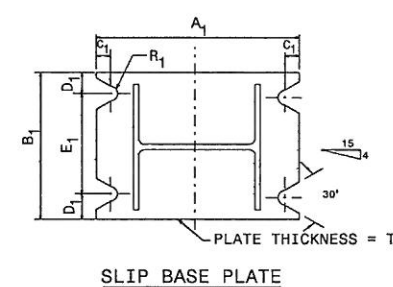
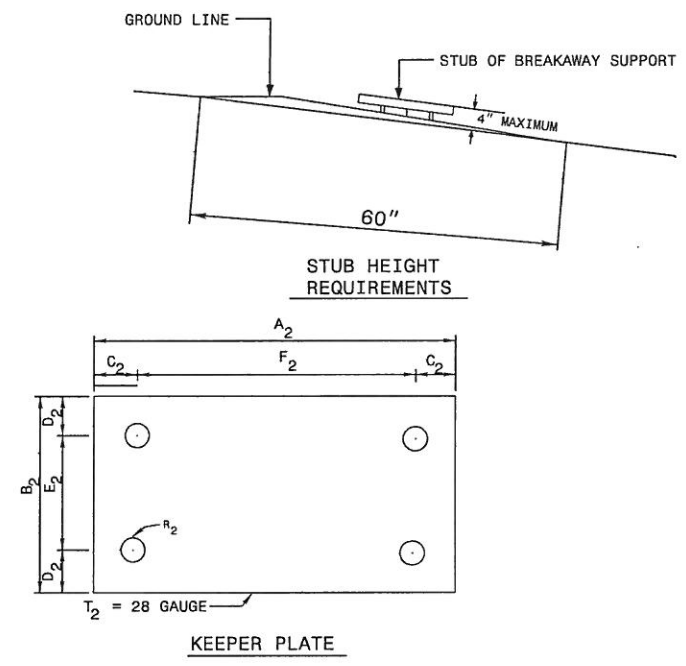
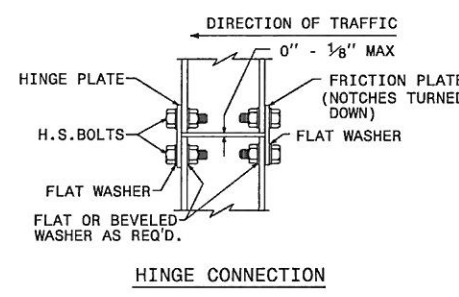
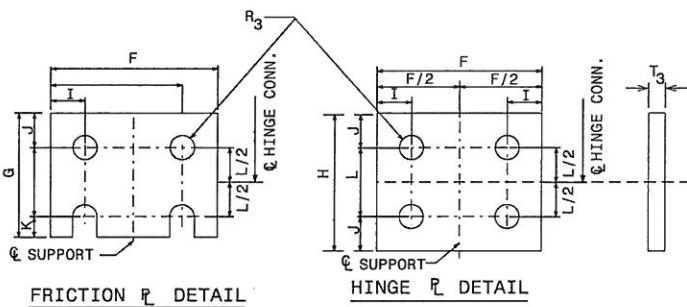
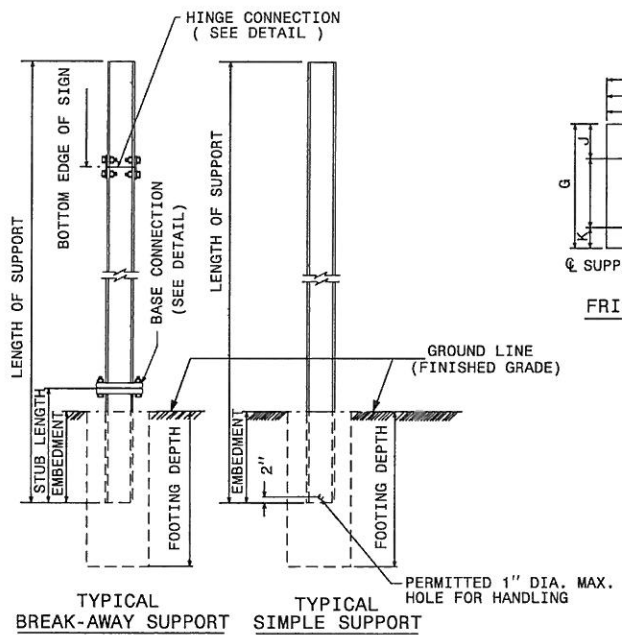
SEAL


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12
ENGLISH STANDARD DRAWING FOR
GROUND MOUNTED SIGN SUPPORTS
SHEET 1 OF 3
903D10





SEE SHEET 2 OF 3 FOR
BASE CONNECTION DATA
HINGE CONNECTION DATA
& FOUNDATION DATA.
SEE SHEET 3 OF 3 FOR
GENERAL NOTES.

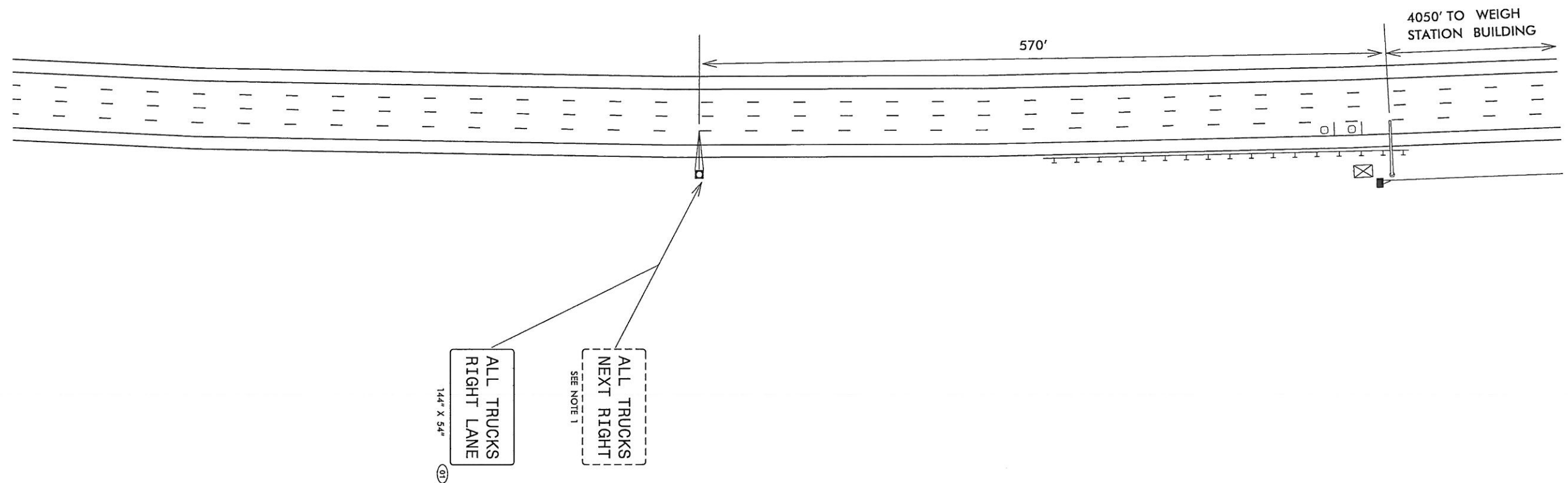
STATE OF
NORTH CAROLINA
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12
ENGLISH STANDARD DRAWING FOR
GROUND MOUNTED SIGN SUPPORTS
SHEET 1 OF 3
903D10

REVISED SIGNING
ROADWAY STANDARD DRAWING

PROJECT REFERENCE NO.	SHEET NO.
WBS: 33879.2.76	SGN-04
APPROVED: <i>Ron King</i> 00000748770400 3/11/2016	
DATE: 3/11/2016	
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TIP NO.	SHEET NO.
WBS: 33879.2.76	SIGN-06
APPROVED: <i>Ron King</i>	
DATE: 3/11/2016	
SEAL	
	
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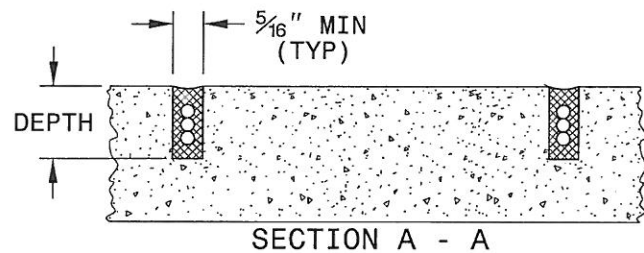
PROJECT NOTES

- 1 DISPOSAL OF SIGN, A OR B (OVERHEAD)

PROPOSED SIGNS

SAW SLOT DEPTH CHART

DEPTH (IN)	NO. OF WIRE TURNS				
	2	3	4	5	6
CONCRETE	2.0	2.0	2.5	2.5	3.0
ASPHALT	2.0	2.5	3.0	3.0	3.0



LOOP WIRE TWISTING METHOD

INCORRECT WAY TO TWIST WIRE



CORRECT WAY TO TWIST WIRE



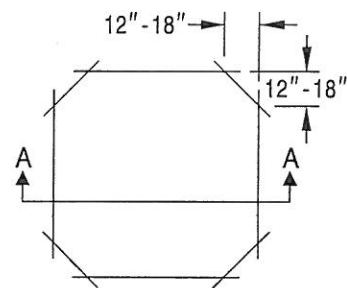
NOTES

1. OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
2. MAINTAIN 12" SPACING BETWEEN LOOP WIRE TAIL SECTIONS.
3. WIRE LOOPS CONNECTED TO THE SAME DETECTOR CHANNEL IN SERIES.
4. LOCATE LOOPS IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS OR APPROVED BY ENGINEER.

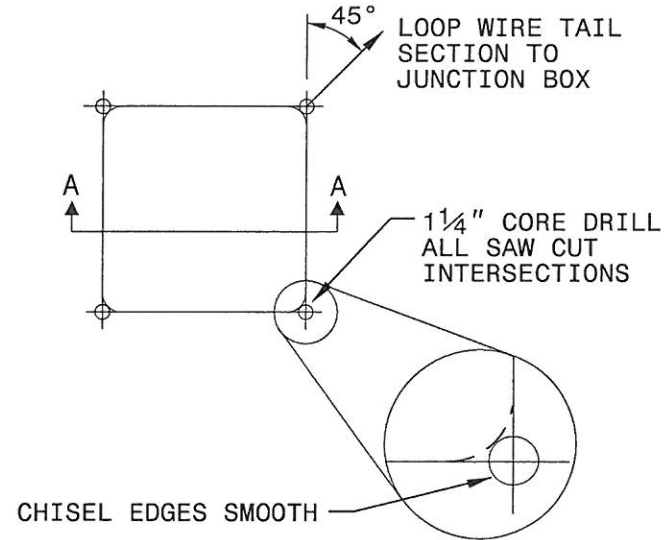
CONVENTIONAL 4-SIDED LOOP

SAW CUT OPTIONS

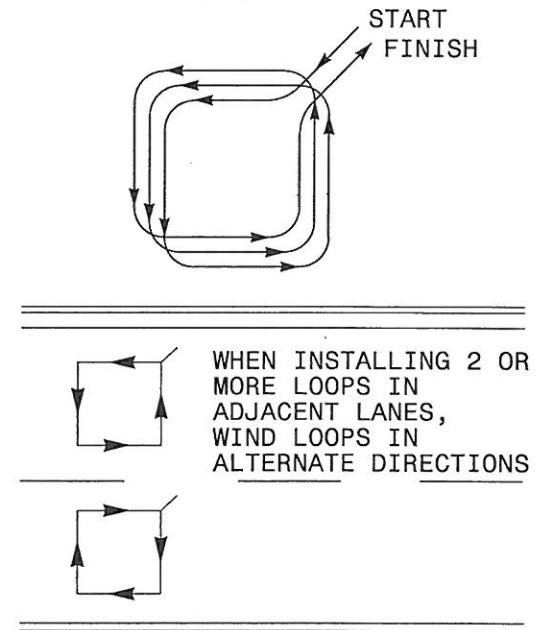
OPTION 1



OPTION 2
(POOR PAVEMENT)



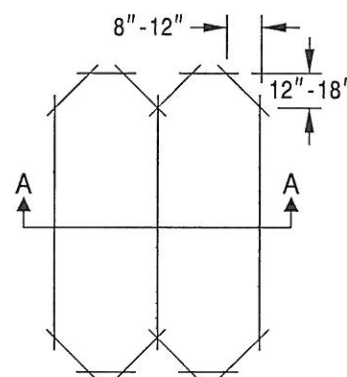
LOOP WINDING METHOD



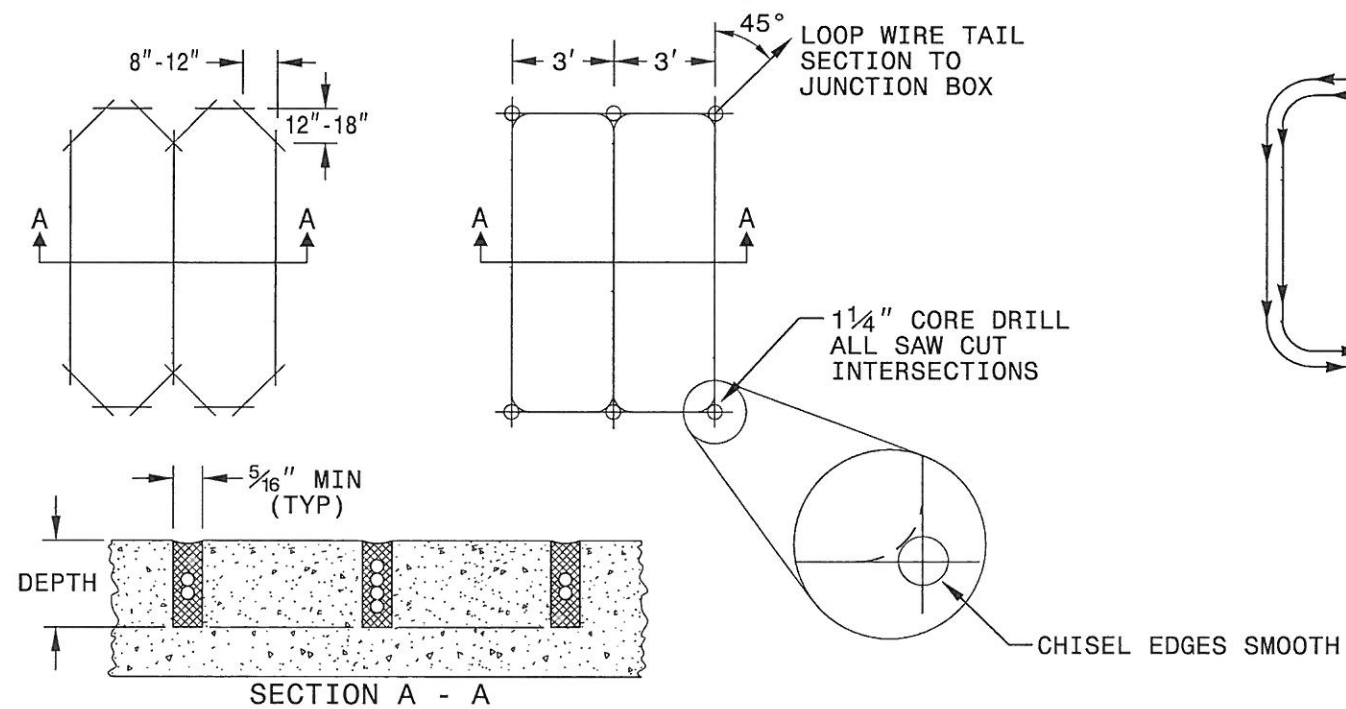
QUADRUPOLE LOOP

SAW CUT OPTIONS

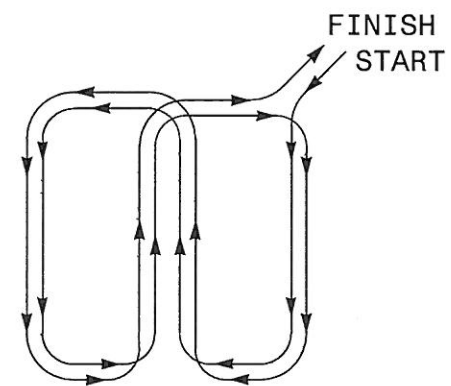
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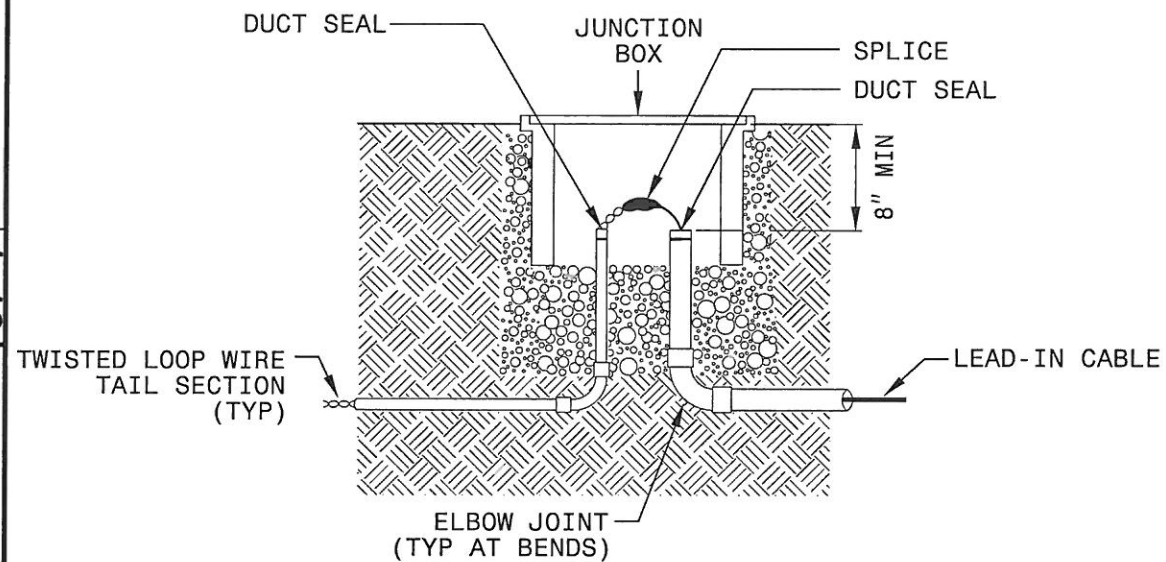
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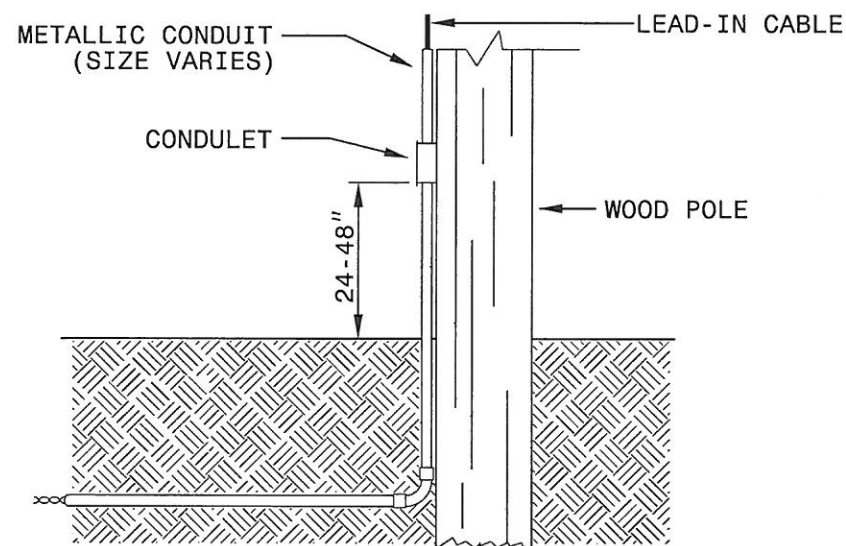
DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

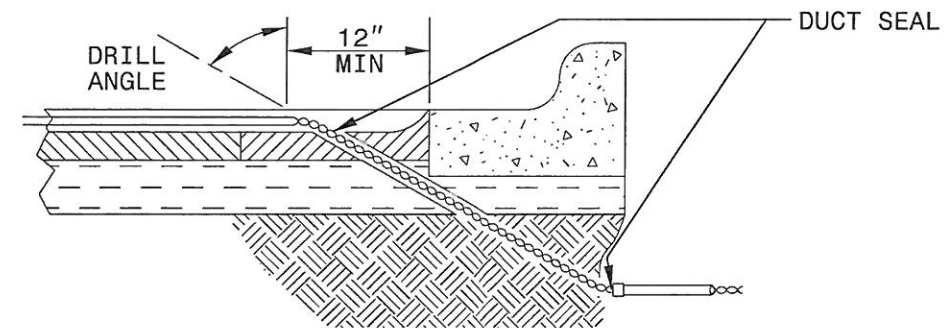


NOTE

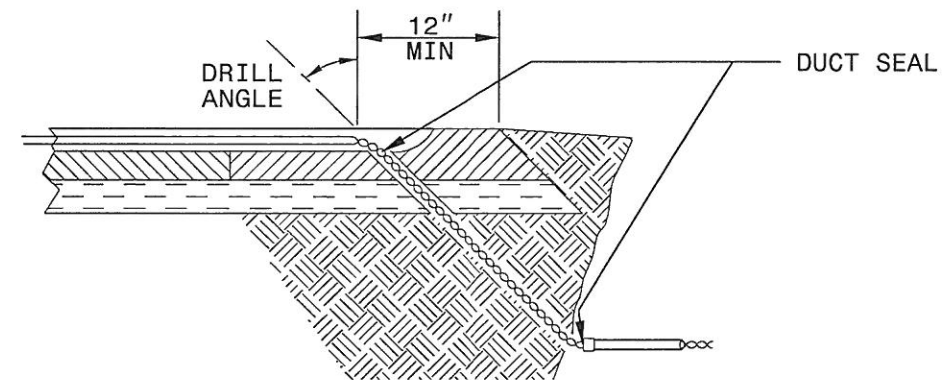
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

LOOP WIRE PAVEMENT EDGE DETAILS

LOOP WIRE AT CURB & GUTTER SECTION



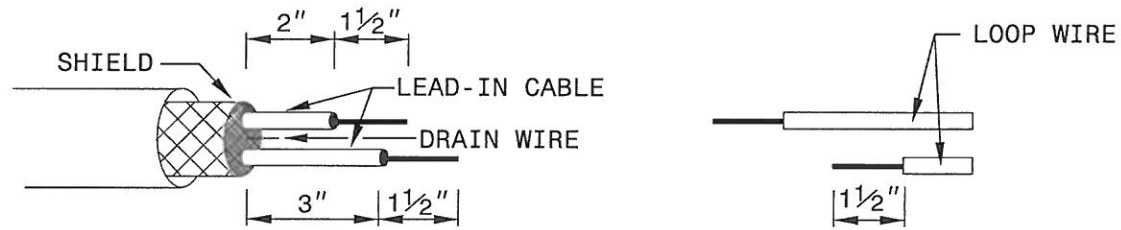
LOOP WIRE AT PAVEMENT SECTION



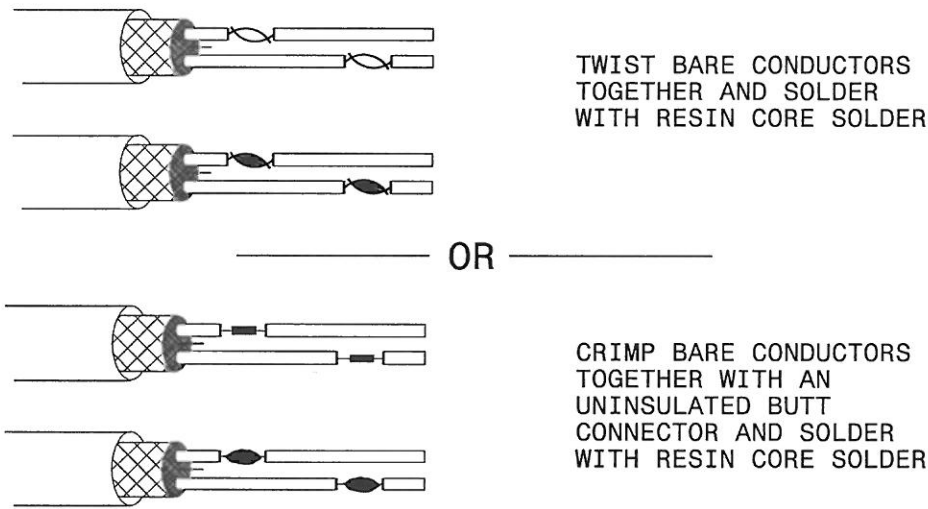
NOTES

1. DO NOT EXCAVATE UNDER CURB AND GUTTER SECTIONS FOR CONDUIT INSTALLATION.
2. TWIST LOOP WIRE TAIL SECTIONS FROM WHERE LOOP WIRE TAIL LEAVES SAW CUT TO JUNCTION BOX, INCLUDING THROUGH CONDUIT.
3. BEFORE SEALING LOOPS, INSTALL DUCT SEAL WHERE LOOP WIRE TAIL SECTION LEAVES SAW CUT IN PAVEMENT AND AT ENTRANCE OF CONDUIT TO JUNCTION BOX.

STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE



STEP 2. CONNECT AND SOLDER

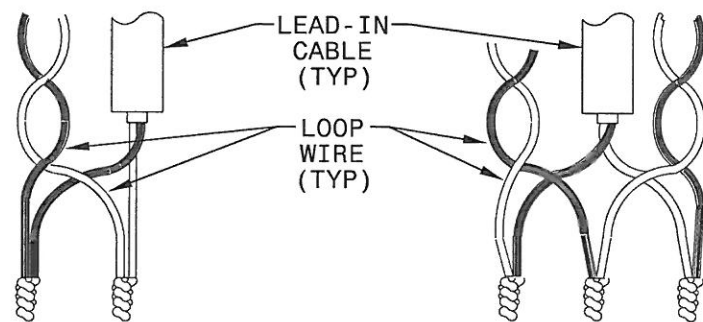


BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

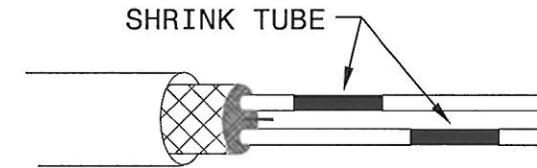
LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS

SINGLE CONNECTION

SERIES CONNECTION



STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



STEP 4. ENVIRONMENTALLY PROTECT SPLICE

