STANDARD DRAWINGS FOR ALL METAL POLES
ZONE 2 – 130 mph (58 m/s)

ALL COUNTIES IN DIVISIONS 1, 2, AND 3 EXCEPT OUTER BANKS REGIONS IN DIVISION 1

https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx
1. THESE NOTES PROVIDE INFORMATION AND REQUIREMENTS FOR THE DESIGN, FABRICATION, AND INSTALLATION OF METAL STRAIN POLES. THEY ARE TO BE USED BY DESIGN ENGINEERS, CONTRACTORS, AND POLE MANUFACTURERS IN THE SPECIFICATION, FABRICATION, AND INSTALLATION OF METAL TRAFFIC SIGNAL Supports IN NORTH CAROLINA. THE NOTES ARE CATEGORIZED BY USE, AND THE CONTENTS CORRESPOND SPECIFICALLY TO NOTES THAT ARE SPECIFIC TO A PARTICULAR SITUATION, DESIGN DETAIL, OR REQUIREMENT. THEY ARE SHOWN ON THE APPLICABLE PAGE TO ENSURE INTENT AND UNDERSTANDING.

2. THE FOLLOWING STANDARDS DESIGN ARE BASED ON LIGHT AND HEAVY LOADING CASES, NO VARIATIONS, SUBSTITUTION OR MODIFICATION OF THE SPECIFIED POLES AND FOUNDATIONS WILL BE PERMITTED UNLESS IT IS APPROVED BY THE ITS AND SIGNALS UNIT.

3. THESE METAL POLE STANDARDS ARE MODIFIED TO THE MOST "FLEXIBILITY STANDARDS DESIGN" DATED JANUARY 2013. HEREINAFTER REFERRED AS THE STANDARD DESIGN AND TO THE MOST "STANDARDS SPECIFICATIONS FOR POLES AND FOUNDATIONS" DATED JANUARY 2007 HEREINAFTER REFERRED AS THE STANDARD SPECIFICATIONS. IF THERE IS A DISCREPANCY BETWEEN THE STANDARD DESIGN SPECIFICATIONS AND THIS STANDARDS, THEN THESE DRAWINGS AND PROJECT SPECIAL SPECIFICATIONS SHALL QUENCH.

4. PEO CASES PREPARED ON THE ITS AND SIGNALS QUALIFIED PRODUCTS LIST (QPL) WILL NOT REQUIRE MANUFACTURER'S CALCULATIONS. HOWEVER, CERTIFICATION OF COMPLIANCE WITH THE MANUFACTURER'S PREPARED SHOP DRAWINGS OR PEO WITH THE DEPARTMENT SHALL BE SUBMITTED TO THE ENGINEER. POE CASES ARE NOT ON THE QPL, ON VARIATIONS TO A CASE STANDARD HAS BEEN APPROVED, MANUFACTURER'S SHOP DRAWINGS SHALL BE REQUIRED.

**DESIGN CRITERIA**

1. THE METAL POLE DESIGN SHALL CONFORM TO THE "2015 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" AND LATEST APPROVED INTERIM SPECIFICATIONS. DESIGN NO. PRECENTERS AND APPLICATIONS IN ACCORDANCE WITH SECTION 3.1 OF THE 2015 AASHTO SPECIFICATIONS.

2. PEO POLES ARE NOT ACCEPTABLE, EXCEPT TO THIS DESIGN PARAMETER WILL BE DUE TO THE DECORATIVE POLES.

3. THESE METAL POLE STANDARDS ALLOW FOR SIGNAL HEADS TO BE PLACED ANYWHERE ALONG THE SPANWIRE, THE MOST CRITICAL LOCATIONS SHOWN IN THE TYPICAL INTERSECTION LOADING CASES SHOWN ON DRAWING Sig.SP4-10 (LOAD CASE AND DESIGN DETAILS SHEET) OF THESE METAL POLE STANDARDS. THE METAL POLE DESIGN SHALL CONFORM TO THE "2013 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" AND LATEST APPROVED INTERIM SPECIFICATIONS. DESIGN No. PRECENTERS AND APPLICATIONS IN ACCORDANCE WITH SECTION 3.1 OF THE 2015 AASHTO SPECIFICATIONS.

4. PROVIDE MATERIALS FOR STEEL METAL POLES THAT COMPLY WITH SECTION 1072 AND 1098 OF THE STANDARD METAL STRAIN POLES. THEY ARE TO BE USED BY DESIGN ENGINEERS, CONTRACTORS, AND POLE MANUFACTURERS IN THE SPECIFICATION, FABRICATION, AND INSTALLATION OF METAL TRAFFIC SIGNAL Supports IN NORTH CAROLINA. THE NOTES ARE CATEGORIZED BY USE, AND THE CONTENTS CORRESPOND SPECIFICALLY TO NOTES THAT ARE SPECIFIC TO A PARTICULAR SITUATION, DESIGN DETAIL, OR REQUIREMENT. THEY ARE SHOWN ON THE APPLICABLE PAGE TO ENSURE INTENT AND UNDERSTANDING.

**POLY MATERIALS**

1. PROVIDE MATERIALS FOR STEEL METAL POLES THAT COMPLY WITH SECTION 1072 AND 1098 OF THE STANDARD METAL STRAIN POLES AND FOR THE LATEST PROJECT SPECIAL PREVISIONS.

**POLE FABRICATION**

1. ALL OTHER STEEL HARDWARE MATERIAL REQUIRED NOT SPECIFIED ABOVE SHALL COMPLY WITH SECTIONS 1072 AND 1098 OF THE STANDARD SPECIFICATIONS.

2. POE ASSEMBLIES SHALL BE PERMANENTLY TOSS OR ENGRAVED WITH THE FOLLOWING:

- POE MANUFACTURER'S NAME
- MANUFACTURER'S DATE
- POE NO.
- HIGHWAY DEPARTMENT OF STEEL

3. FOR MANUFACTURING THE METAL POE THE FOLLOWING CRITERIA MUST BE ADHERED TO:

- THE METAL POE SHALL NOT BE SPACED WITHIN 5 FEET FROM BASE WITHIN 2 FEET FROM ANY CONNECTION.
- ALL WELDS SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF THE AWS D1.1 STRUCTURAL WELDING CODE-
- THICKNESS AND GRADE OF STEEL
- WASHERS - USE AASHTO M293 MATERIAL OR EQUIVALENT.
- NUTS - USE AASHTO M291 GRADE 2H, DH, OR DH3 MATERIAL OR APPROVED EQUIVALENT.
- ANCHOR BOLTS - USE AASHTO M203 MATERIAL, OR EQUIVALENT.

4. PROVIDE 3- 3" FACTORY DRILLED HOLES THROUGH THE POLE WALL FOR WIRE ENTRANCE ACCESS TO THE TERMINAL SLEEVE INSIDE THE TERMINAL COMPARTMENT. THE HOLES SHALL BE IN THE CENTER OF THE TERMINAL COMPARTMENT 10 DEGREES ON THE POLE (NORTH INDEX LOCATED AT 25° AND 28° FROM THE BASE OF THE POLE). SEE DRAWING Sig.SP4 (POLY FABRICATION DETAILS) OF THESE METAL POE STANDARDS FOR GRAPHIC DETAILS.

5. THE METAL POE SHALL BE FABRICATED WITH 3" THREADED HALF COUPLINGS AND 1-1" THREADED HALF COUPLING INSTALLED BY FROM THE TOP OF THE POLE TO RECEIVE THE WEATHERHEADS FOR SIGNAL Mnt ENTRANCE TO THE POLE, THE 1-1" COUPLING SHALL BE MOUNTED AT MINIMUM OF 64 INCHES ANGLE FROM HORIZONTAL TO PROPERLY INSTALL THE WEATHERHEADS. THE 1/2" COUPLING FOR ELECTRICAL SERVICE ENTRANCE SHALL BE LOCATED AT A DEGREES ON THE POLE (NORTH INDEX LOCATED AT 25° AND 28° FROM THE BASE OF THE POLE). SEE DRAWING Sig.SP4 (POLY FABRICATION DETAILS) OF THESE METAL POE STANDARDS FOR GRAPHIC DETAILS.

6. PROVIDE A FACTORY STANDARD "C" HOE FOR CABLE SUPPORT WELD INSIDE THE TOP OF THE POE AT 25° DEGREES IN THE POLE RADIAL INDEX. USE IN ACCORDANCE WITH THE DRAWING AS (POLY FABRICATION DETAILS) OF THESE METAL POE STANDARDS FOR GRAPHIC DETAILS.

7. ALL OTHER NON-STRUCTURAL DETAILS AND REQUIREMENTS, REFER TO APPLICABLE SECTIONS OF THESE STANDARDS, THE TRAFFIC SIGNAL PLANS AND SPECIFICATIONS.

8. AT THE TIME OF SUBMISSION FROM THE FACTORY, ENSURE THE POE IS PACKED SO THAT WATER CAN NOT GET INSIDE THE POE.

9. ENSURE ALL POE ACCESSORIES FOR EACH POE IN A SEPARATE WATERPROOF CONTAINER WITH A LABEL THAT IDENTIFIES THE SPECIFIC POE AND DESCRIBES THE CONTENTS.

https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANDARD NOTES FOR METAL STRAIN POLES

SOIL TESTING AND STANDARD POLE FOUNDATIONS

1. The foundation size for poles in these metal pole standards is determined by conducting a subsurface soil investigation. For details of the subsurface investigation, and proper selection of foundation size, refer to and comply with the "Metal Pole Foundation Design Specifications for Highway Projects" special provision which is to be considered an integral part of these metal pole standards. The soil testing and standard pole foundations are designed in conformance to the previously determined soil type and "N" value, select the appropriate column in the chart, select the pole loadcase shown on the chart. The correct depth of the foundation is the value that is shown where the column and the line intersect. Foundation installation details are shown on the foundation identification tag, and comply with the provisions of this section 1742 of the standard specifications for installation.

2. The foundation depth for poles in these metal pole standards is determined by conducting a subsurface soil investigation. For details of the subsurface investigation, and proper selection of foundation size, refer to and comply with the "Metal Pole Foundation Design Specifications for Highway Projects" special provision which is to be considered an integral part of these metal pole standards. The soil testing and standard pole foundations are designed in conformance to the previously determined soil type and "N" value, select the appropriate column in the chart, select the pole loadcase shown on the chart. The correct depth of the foundation is the value that is shown where the column and the line intersect. Foundation installation details are shown on the foundation identification tag, and comply with the provisions of this section 1742 of the standard specifications for installation.

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

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