

**North Carolina Department of Transportation
Division of Highways
Traffic Engineering and Safety Systems Branch**

**STANDARD PRACTICE
for
Selection of Metal Poles at Signalized Intersections**

The purpose of this standard practice is to provide guidance in the selection of metal poles at signalized intersections.

It will be the standard practice of the Department to use metal poles with mast arms at signalized locations that have an expected design life exceeding the break-even point of wood poles versus metal poles with foundations for the wind region of the location, and that meet one of the following criteria:

- in coastal high wind locations;
- in mountainous high wind locations; or
- at locations where permanent out-of-pavement vehicle detection will be used.

For locations that do not meet the criteria stated above, metal poles with foundations may be installed:

- at locations where constructibility problems such as right-of-way constraints, utilities interference, or long signal support spans (roadways with five or more lanes) have been identified;
- at locations where the requesting agency will reimburse the Department the engineering, material, and construction cost differences between wood and metal pole supports with foundations; or
- at locations where the requesting agency demonstrates, to the satisfaction of the Department, site specific cost benefits for metal pole supports with foundations over wood pole supports (due to utility relocation costs, life cycle cost, etc).

Locations not specified in the above categories or locations where joint-use utility poles are to be provided will generally continue to use wood pole supports.

CRITERIA

Wind regions for this Standard Practice were established using the 50-year mean recurrence interval basic wind speed map from the 2003 Interim to the 4th Edition AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. Wind speeds specific to the categorization of counties and the application of this Standard Practice within these wind regions are defined herein.

- Coastal High Wind Region:
Coastal high wind region locations may experience sustained wind speeds of 130 mph or greater. Locations within this region are those defined as east of the 120 mph AASHTO isotach line.

Effective: 12-04-01 (Original)
10-08-03 (1st Revision)
03-01-07 (2nd Revision)

For the purpose of this Standard Practice, the following counties reside completely in the coastal wind region and have been identified as coastal high wind locations:

- Carteret, Dare, Hyde, New Hanover, Pamlico, and Tyrrell counties.

For the purpose of this Standard Practice, the following counties reside partially in the coastal wind region and have been identified as partial coastal high wind locations. These counties should use metal poles with mast arms, but may use wood poles if the signalized intersection is located in the western part of the county:

- Beaufort, Brunswick, Camden, Craven, Currituck, Jones, Onslow, Pender, and Washington counties.

- **Mountainous High Wind Region:**

The mountainous high wind region may experience sustained wind speeds higher than indicated by the AASHTO wind map and is located within a region defined by AASHTO as a “Special Wind Zone.”

For the purpose of this Standard Practice, the following counties have been identified as mountainous high wind locations:

- Ashe, Avery, Graham, Haywood, Madison, Mitchell, Swain, Watagua, and Yancey counties.

Existing Traffic Signals with Wood Pole Supports

For existing signalized intersections with wood pole supports at locations meeting the practice statement and that are scheduled for upgrades, metal pole with mast arms are the preferred option when the signal supports are impacted by the upgrade.

If decorative type structures are desired, the requesting agency will be required to reimburse the engineering, material, and construction cost differences between the standard assemblies and the decorative assemblies unless the decorative assemblies are deemed necessary by the Department to meet existing aesthetic appearance of nearby intersections.

Where constructibility issues pose an undue hardship for the selection of mast arms, metal poles with spanwire may be used as an alternative.

Existing Traffic Signals with Metal Pole Supports

If an existing signalized location is planned for significant modification due to roadway construction and already has metal poles with mast arms or decorative type structural assemblies, the Department will provide for replacement-in-kind with no reimbursement required from a municipality or other governmental agency.

If decorative type structures do not exist and are desired, the requesting agency will be required to reimburse the engineering, material and construction cost differences between the standard assemblies and the decorative assemblies unless the decorative assemblies are deemed necessary by the Department to meet existing aesthetic appearance of nearby intersections.

Where constructibility issues pose an undue hardship for the selection of mast arms, metal poles with spanwire may be used as an alternative.

New Traffic Signals

For new signalized intersections at locations meeting the practice statement, metal poles with mast arms are the preferred option. The standard assemblies will require no reimbursement from a municipality or other governmental agency.

If decorative type structures are desired, the requesting agency will be required to reimburse the engineering, material, and construction cost differences between the standard assemblies and the decorative assemblies unless the decorative assemblies are deemed necessary by the Department to meet existing aesthetic appearance of nearby intersections.

Where constructibility issues pose an undue hardship for the selection of mast arms, metal poles with spanwire may be used as an alternative.

Other Considerations

Consideration may be given to provide for metal poles with either spanwire or mast arms based on the general characteristics of existing signalized locations within close proximity to the proposed location such as those within an urbanized area that has been or is scheduled to be part of a streetscape improvement project.

For signalized locations not meeting the practice statement, metal pole assemblies may be provided if deemed appropriate by the Department or if paid for by the requesting agency. Each case will require approval and concurrence of the Division Engineer and the State Traffic Engineer or their designated representatives to satisfy these criteria.

At the request of the Division Engineer or their designated representative, wood poles may be used in lieu of metal poles.

It is not the intent of this standard practice to prohibit the use of temporary wood pole supports that may be necessary for the expeditious installation of a traffic signal or the timely replacement of damaged signal supports. In the event of damage to a traffic signal installation (including the supporting structures), the Department may seek reimbursement from the party responsible for the damage.