

NOTES

### DESIGN REFERENCE MATERIAL

- 1. Design the traffic signal structure and foundation in accordance with:
- The 1st Edition 2015 AASHTO LRFD "Standard Specifications for Structural Supports for Highway
- Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions. • The 2024 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to
- the specifications can be found in the traffic signal project special provisions.
- The 2024 NCDOT Roadway Standard Drawings.
- The traffic signal project plans and special provisions.
- The NCDOT "MetalPole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

#### DESIGN REQUIREMENTS

#### 2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.

- 3. Design all signal supports using force ratios that do not exceed 0.9.
- 4. The camber design for the 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.
- 5. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design
- 6. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- 7. The mast arm attachment height (H1) shown is based on the following design assumptions: a. Mast arm slope and detlection are not considered in determining the arm attachment height as they are assumed to offset each other.
- b. Signalheads are rigidly mounted and vertically centered on the mast arm.
- c. The roadway clearance height for design is as shown in the elevation views.
- d. The top of the pole base plate is 0.75 feet above the ground elevation. e. Refer to the Elevation Data Chart for the elevation differences between the proposed
- foundation ground leveland the high point of the roadway. 8. 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.
- 9. 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 Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- 10. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signalheads over the roadway.
- 11. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.



## NCDOT Wind Zone 5 (110 mph)



N/A

SR 3175 (Stallings Road) Pedestrian Hybrid Beacon South of SR 3174 (Idlewild Road)

Division 10 Mecklenburg County Stallings PLAN DATE: February 2025 REVIEWED BY: KP Baumann PREPARED BY: SP Pennington REVIEWED BY: REVISIONS INIT. DATE

CARO 044434 SIG. INVENTORY NO. 10-2589

SIGNATURES COMPLETED

SEAL

Design Loading for METAL POLE NO. 5 © Pole ☐ Street Name See Notes 4 & 5 H2 Note 8 H1=19.2 Maximum 25.6 ft. Note 7 Roadway Clearance Design Height 17 ft Minimum 16.5 ft. See Note 7e -High Point of Roadway Surface-© Foundation Base line reference elev. = 0.0'

# 20' ☐ Street Name See Notes \_ 4 & 5 Note 8 H1=18.1 Maximum 25.6 ft. Note 7 Roadway Clearance Design Height 17 ft Minimum 16.5 ft.

-High Point of Roadway Surface-

See Note 7d

Foundation

See Note 7e

Base line reference elev. = 0.0

**Elevation View** 

Elevation View

Design Loading for METAL POLE NO. 6

Terminal Compartment POLE RADIAL ORIENTATION

SPECIAL NOTE

The contractor is responsible for verifying that the mast arm attachment height (H1)

will provide the "Design Height" clearance

shop drawings for approval. Verify

project survey data.

Elevation Differences for:

Elevation difference at High point of roadway surface

Elevation difference at Edge of travelway or face of curb

Baseline reference point at

© Foundation @ ground level

from the roadway before submitting final

Elevation Data for Mast Arm

Attachment (H1)

Pole 6

0.0 ft.

-0.4 ft.

-0.3 ft.

Pole 5

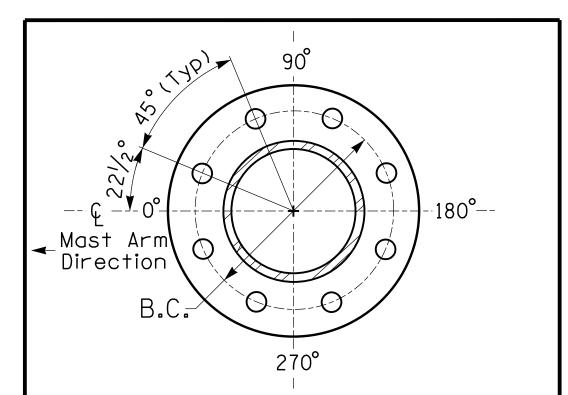
0.0 ft.

+0.7 ft.

+1.3 ft.

elevation data below which was obtained

by field measurement or from available



8 BOLT BASE PLATE DETAIL

See Note 6

Mast Ar Direction BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL

For 8 Bolt Base Plate