

#### Testing of Grounding System

The Contractor shall perform testing of the equipment grounding system in the presence of the Engineer in accordance with the Standard Specifications.

#### Mast Arms

Mast arm structures shall be galvanized steel and shall conform to the provisions of M8.18.4. Mast arm structures shall be fabricated by the manufacturer approved by MassHighway. Mast arm shall be monolever type. All signal heads on the mast arms shall be fixed mounted. Shoe bases shall be provided.

Shop drawings and longhand calculations shall be submitted for the shaft and arm. All shop drawings and calculations shall be stamped by a Professional Engineer registered in Massachusetts.

The foundation for the proposed Mast Arms shall be the cored pier footing type as described below.

#### Span Wire Assembly

Contractor shall furnish and install span wire assembly in conformance with the Departments standard details for span wire assembly. S-Hook shall be 1/2" A-36 steel rod.

#### Foundations

Foundations for mast arms and span wire poles shall be cored pier footings. The detailed design of the foundations to be used for the mast arms and span wire poles shall be as per standard detail sheets included in the contract documents, and results of borings performed by the Contractor at proposed mast arms and span wires poles locations. The cost of constructing the mast arm, signal posts, span wire poles, and controller cabinet foundations shall be paid under the Lump Sum unit price for Items 816.01, 816.02, and 816.03.

#### Signal Heads

All vehicular signal heads and pedestrian signal heads shall be aluminum and include polycarbonate lenses for resistance to vandalism. All signal heads on the mast arm shall be fixed mounted. All red amber and green signal indications shall be "LED" type.

Pedestrian signals shall be an approved "LED" type pedestrian signal head capable of displaying the international pedestrian symbol indications.

When in the judgment of the Engineer the visibility of proposed signal faces will be obstructed by trees and other vegetation, the Contractor shall clear the obstructions for proper sight distance. Any clearing necessary shall be done within the State, County or Town layout, as directed by the Engineer.

#### MATERIAL SPECIFICATION FOR LED SIGNAL MODULE (Revised 04/20/2001)

*Red, Yellow and Green LED Vehicle Signal Modules*