back cover assembled in a gasketed or silicon sealed unit.

Optical and Light Output Requirements

The minimum luminous intensity values and light output shall be maintained within the rated input voltage of 117 volts AC. Red and Green LED signal modules shall not be allowed to fall short of the minimum intensity values at any of the 44 measuring points of the standard when the lamp is turned on cold for measurements and after a 30 minute warm-up time period at 100% duty cycle. Yellow LED signal modules shall not be allowed to fall short of the minimum intensity values for green modules as described above, at any of the 44 measuring points of the standard.

Electrical

The maximum wattage for red and green 300-mm balls shall be 20 Watts and 10 Watts for the 300-mm red and green arrows. The maximum wattage for 300-mm yellow balls shall be 24 Watts and 12 Watts for the 300-mm yellow arrows.

The LED sources shall not be powered above 70% of the manufacturer's specified rated load. This shall be clearly shown in layman's terms through calculations, schematics, catalogue cuts, etc.

Red LED sources shall be AlInGaP (Aluminum Indium Gallium Phosphide) type shown clearly in a catalogue cut or similar literature.

Yellow LED sources shall be AlInGaP (Aluminum Indium Gallium Phosphide) type shown clearly in a catalogue cut or similar literature.

Green LED sources shall be InGaN (Indium Gallium Nitride) type shown clearly in a catalogue cut or similar literature.

Warranty — MFG Info

The LED signal module will be replaced or repaired by the manufacturer if it exhibits a failure due to workmanship or material defects within the first 60 months of field operation.

The LED signal module will be replaced or repaired by the manufacturer if it exhibits either a greater than 40 percent light output degradation or a fall below the minimum intensity levels within the first 36 months of field operation.

Shop Drawings

Shop drawings shall be provided within 30 days of execution of the contract.

As-Built Traffic Layout Plans

The Contractor shall furnish any changes made during construction to the Design Engineer on the traffic signal layout plans and data sheets, including detectors, conduits, pull boxes, complete with as-built timing and sequence, major item list, power-pole number and meter number. The Design Engineer shall submit As-built Layout plans of the completed traffic system as AutoCAD V14 files, with standard MassHighway signal inventory format.

Maintenance of Existing Traffic Signal System