DESCRIPTION:
Under these items, the Contractor shall furnish and install signlight luminaires for overhead signs in accordance with the plans and specifications and as directed by the Engineer and in accordance with the trade names shown on the plans. Luminaires shall meet New York City Division of Street Lighting specifications, latest revision.

MATERIALS:
The signlight luminaire shall accommodate a 175-watt or 250-watt clear or coated metal halide lamp and ballast assembly. The luminaire shall operate satisfactorily with any mogul base metal halide lamp. It will operate in the required mounting position shown on the plans. The luminaire shall consist of a cast aluminum housing, doorframe and clear flat or prismatic tempered glass lens, two tenon clamps and tenon gasket assembly. The luminaire shall mount to the sign structure on a 2 inch schedule 40 (80 when specified by the engineer) pipe signlight bracket.

The luminaire must be UL listed and approved for wet locations under UL 1598 to operate as a signlight fixture outdoors, mounted with the glass lens facing the sign as shown on plans or as directed by the engineer.

All electrical equipment shall conform to the NEMA standards. All material and workmanship shall conform to the latest requirements of the "National Electrical Code," herein referred to as the "Code"; New York City Standards and Specifications; the rules of the New York State Public Service Commission; the standards of the ASTM; the ANSI; local power company rules and any local ordinances which may apply. Differences in standards or code requirements shall be resolved as determined by the Engineer.

In general, all aluminum castings shall be fabricated from a copper-free alloy such as 443 or 356 to eliminate the electrolytic deterioration due to weather, acid rain, and the corrosive effects of automobile hydrocarbon pollutants. The castings shall be cleaned and free from injurious defects and sharp edges. All screws, washers, nuts, latches and hinge pins shall be non-rusting stainless steel.

Luminaire housing. The luminaire housing and door assembly shall together form a watertight shell, and shall contain all the optical components, including a removable ballast drawer section.

The luminaire housing, doorframe, pipe entry gasket support casting, and two-piece pipe clamping assembly shall be cast from copper-free 443-alloy aluminum. The aluminum alloy must be malleable. Die cast housings are not acceptable. The low profile housing and doorframe shall have a minimum wall thickness of 5/32 inch. The doorframe assembly shall have two integral cast hinge assemblies that attach to mating hinges on the main housing with stainless steel pins. The housing shall have two heavy-duty stainless steel latches to secure the doorframe cover in the closed position. The fixture shall have the pawls for the latches cast into the doorframe. The door frame shall overlap the housing to insure positive gasket positioning and to prevent rain and dust from entering the housing.

The housing door shall be diecast aluminum and shall hold a tempered, heat and impact resistant,
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glass lens. It shall be gasketed and shall be hinged to the fixture housing. It shall be held in the closed position by two stainless steel and aluminum, spring loaded, quick-release latches, or two captive stainless steel screws. The doorframe is designed to open forward, and come to rest on the mounting bracket arm, allowing full access to electrical components. When the luminaire is mounted on top of a sign, the doorframe will fall away from the housing allowing unobscured access to the fixture for maintenance.

The luminaire shall mount to a 2 inch schedule 40 or 80 pipe tenon of the sign bracket using (2) heavy duty cast aluminum bracket clamps. These clamps secure the luminaire to the 2 inch pipe tenon using 4 stainless steel bolts and stainless steel lock washers. The luminaire housing must be used as an integral part of the clamping feature for the attachment of the signlight to the sign bracket. Externally mounted fitters will not be allowed.

The luminaire shall require a vibration test. The luminaire shall be subjected to a 3 G test between 10 and 50 hertz to test the structural integrity of the housing. The test shall be performed by an independent recognized testing laboratory. The luminaire, with the lamp and bracket assembly, shall be tested together to simulate a field condition installation. Manufacturers’ in house testing is not acceptable. The assembly shall be tested in three different planes to subject the system to omni directional forces of vibration. The results of the test shall be sent directly from the Lab to the City of New York Division of Street Lighting and to the Engineer.

The optical compartment shall contain the reflector assembly and shall be enclosed by the lens, door and housing. The reflector shall be constructed of sheet aluminum, finished with Alzak process and shall be shaped to provide proper sign lighting beam patterns. If the luminaire is mounted 12 inches below the sign panel and 4 feet in front of a sign panel up to 12 feet in height; or 5 feet in front of a sign panel over 12 feet high, the average maintained vertical luminance on the entire face of the sign shall be between 20 and 40 foot candles. The average maintained luminance levels shall be between 4.5 and 9 cd/sq-ft. The uniformity ratio of maximum to minimum illuminance or luminance levels shall not exceed 6:1; and the gradient ratio between any two adjacent 12 in X 12 in areas shall be less than 2:1. Total light depreciation factor shall be set at 0.50 and initial lamp lumens at 12200. There shall be no light spill below the horizontal of the luminaire.

The socket shall be mogul porcelain enclosed and shall properly position a high intensity discharge lamp to be used with the ballast specified.

The lamp will be a universal burning mogul base metal halide lamp. The wattage will be either 175 or 250, and manufactured by one of the following approved companies: Philips, GE, Osram Sylvania or Venture.

The ballast shall be high power factor (90+) constant wattage autotransformer for metal halide lamp, and shall consist of a selfcontained removable assembly that shall support the ballast, prepositioned lamp socket, and a polarized quickdisconnect power input plug.

The optical filter shall be positioned between the housing support casting and the main housing
allowing circulation of air through the optical assembly and shall effectively filter out external contaminants.

Aluminum conduit, junction boxes and flexible conduit shall be fastened to the signlight supports as indicated on the drawings.

Rigid Aluminum Conduit. Conduit shall be the size indicated on drawings, threaded type fabricated from 6063 alloy with T42 temper.

Watertight NEMA-4 compliant CAST ALUMINUM SPLICE BOX shall be cast from 443-alloy copper-free aluminum. The box will be shot blasted, and powder coat finished, inside and out, matching the sign light luminaire. The box shall have an integral grounding lug and screw.

Cable. Cable shall meet the requirements for material only as specified under Subsection 723-70.

Flexible Conduit. Shall meet the requirements of Subsection 723-24.

Fused Connectors. The connectors shall be fabricated from a molded rubber receptacle housing, molded rubber plug housing and metal fuse holder fittings. The design shall be such that the assembled connector is waterproof and suitable for direct burial. With the fuse installed, the fuse shall remain in the plug housing (load side) when disconnecting. Fuses shall be the size indicated on drawings.

Photometric testing shall be conducted in accordance with the Illuminating Engineering Society's published test procedure for roadway lighting. Total efficiency of the luminaire shall not be less than 65%. A certified photometric test shall be performed by an independent and recognized testing laboratory and submitted for approval. The luminaire shall be so designed as to avoid reflecting radiant energy into the arc tube, in order to minimize the increase of lamp operating voltage. A reflector ray tracing must be submitted for approval.

The luminaire shall have a means of identification permanently attached to allow for identification of size of unit from street level. The identification shall consist of a black number "17" for 175 MH or "25" for 250 MH on a silver background.

All external surfaces of the luminaire shall be finished with a TGIC gloss polyester powder to ensure an environmentally correct coating as required by the EPA and OSHA. The gloss polyester finish helps to reduce the adhesion of dirt and contaminants to the surface of the housing. The finish shall withstand salt-water spray, exhaust emissions and acid rain. The standard colors shall be platinum Gray or Bronze tone

One sample luminaire shall be submitted for approval, together with certified independent lab photometric tests, vibration test and a reflector ray trace, before the remainder of the luminaires are delivered.

The mounting bracket shall be fabricated from ASTM A53, 2 inch schedule 40, or 80, steel pipe.
The bracket shall be fabricated in such a way that, when it is mechanically attached to the sign structure, the lamp center of the luminaire will be 12 inches below (or above) and 48 inches (60 inches for panels over 12 feet high) horizontally away from the sign. One end of the bracket will get inserted into the luminaire for attachment to the bracket fixtures integral clamping system. The bracket also acts as the conduit for wire entry into the luminaire.

The sign light bracket shall be formed into a 90-degree bend on a 12 inch radius without deforming the pipe. The pipe must be bent on a machine capable of keeping the pipe concentric on the bent section of pipe. This concentricity maintains the structural strength of the pipe. An electrical conduit bender is not acceptable. The bracket shall be hot dipped galvanized, inside and out, after forming and welding. The bracket will be attached to the sign structure at the chords. Four 5/8-inch U-bolts prefabricated to the chord diameter shall be used to secure the pipe arm to the sign structure. The U-bolts are roll threaded on both ends no more than 4 inches. Two stainless steel strap clamps at least 3/8 inch thick x 1-1/2 inch wide shall form around the 2 inch pipe at each chord and secure the pipe to the chords of the sign structure with the U-bolts. (For mounting onto single arm cantilever sign structures, the U-bolts shall be replaced by two stainless steel strap clamps at least 3/8 inch thick x 1-1/2 inch wide, formed around the single cantilever arm and attached to the two, 2 inch clamps by four, 1/2-inch stainless steel bolts.) Washers, lock washers and nuts shall secure the clamping of the sign bracket to the sign structure. A 1/2-inch stainless steel bolt shall be installed into the sign bracket by drilling and tapping a hole through the pre-punched hole in the pipe strap clamp to prevent the bracket from slipping and/or rotating. (Similarly, a 1/2-inch stainless steel bolt shall also be installed into the single cantilever arm through each clamp for mounting onto single arm cantilever sign structures, to prevent the bracket from rotating around the arm.)

CONSTRUCTION DETAILS:
Before starting work, the Contractor shall fully inform the Engineer of the method of erection and types of equipment proposed to be used, which shall be subject to the approval of the Engineer. This approval shall not be considered as relieving the Contractor of the responsibility for the safety of the methods or equipment or for damage to the structures due to overloading.

The signlight luminaires shall be installed in accordance with the details shown on the plans.

Immediately prior to erection all materials shall be inspected for damage which is attributable to improper transportation, handling or storage procedures. Damaged materials which are determined by the Engineer as unfit for use shall be rejected.

After the installation of the luminaires and wiring is completed, the Contractor shall conduct a continuity, ground, and functional test in accordance with the requirements of Subsection 670 3.16. The functional test shall verify that the illumination requirements of this specification are achieved.

METHOD OF MEASUREMENT:
The work shall be measured by the number of signlight luminaires and/or mounting brackets furnished and installed as shown on the plans or directed by the Engineer.
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BASIS OF PAYMENT:
The unit price bid for each signlight luminaire shall include the cost of the luminaire, complete with ballast and lamp, and all labor, materials, equipment and incidentals necessary to complete the work. The unit price bid for each mounting bracket shall include the cost of the universal mounting bracket, required aluminum conduit, aluminum fittings, aluminum junction box, inlet wiring, fuses, fused connectors, splicing, connecting, fixture adjustment and all labor, materials, equipment and incidentals necessary to complete the work. Any damage to existing materials, through carelessness on the part of the Contractor, shall be repaired/replaced at the Contractor's expense.

Progress payments will be made in the following manner:

Seventy five percent of the bid price of each luminaire will be paid after it is installed and ready for testing.

Twenty five percent of the bid price will be paid after testing has indicated that the assembly is ready for operation; or after the assembly has been put into operation, if the sign lighting is to be energized under this contract.

The bracket will be paid for in its entirety upon satisfactory installation

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