

1061 - ILLUMINATED OVERHEAD STREET NAME SIGNS

1061.1 GENERAL

a. Work

The Contractor shall furnish all labor, equipment and materials to install illuminated overhead street name signs and all equipment and wiring necessary for sign installation at the locations shown on the plans, in conformance with the details, and the material specifications included herein. Unless specifically noted otherwise, all equipment shall be new and similar to the best grade of this type of equipment, and shall be approved by the Engineer.

b. Plans

The plans that accompany these specifications shall be considered a part thereof. Whenever any part of the plans shall be in conflict with any other part or parts of the plans, or any part of these specifications shall be in conflict with any other part or parts of these specifications or any of the items proposed to be constructed shall appear to be impracticable, or impossible to construct, then the matter shall be immediately brought to the attention of the Engineer or his agent. The Engineer's decision in the matter shall be final, and the Contractor shall follow his directions to avoid any such conflict in the plans or specifications.

All incidental parts which are not shown on the plans or specified herein and which are necessary to complete illuminated overhead street name signs shall be furnished and installed as though such parts were shown on the plans or specified herein. All systems shall be complete and in operation to the satisfaction of the Engineer at the time of acceptance of the work

c. References

City of Overland Park specification for "Permanent Traffic Control Signing" is hereby referenced.

d. Sign Requirements

The sign shall require no tools to open sign or replace lens, be designed to withstand 110 mph wind, contain a radiant high temperature fail-safe circuit for LED to prevent premature burn out in extreme temperatures and be UL listed.

1061.2 MATERIALS

The material for illuminated overhead street name signs shall be in accordance with this specification.

a. Approved Materials List

All material for illuminated overhead street name signs used by the Contractor shall be from the City's approved list of vendors. It is important that users be completely knowledgeable of all application requirements and procedures prior to product application. It is the responsibility of the installer to contact the supplier of all illuminated overhead street name sign materials if questions regarding application procedures or conditions arise

b. Illuminated Overhead Street Name Sign

Sign Body

Each sign body shall be constructed from 5052 H32 .125" thick aluminum. Single face signs shall be one piece construction and all seams shall be continuously welded to ensure a water resistant seal. There shall be two pre-cut round holes in the top and the bottom of the sign housing for connection of the mounting brackets. Standard mounting pattern shall be a Tri-stud pattern on top and bottom of the sign body.

Sign lenses shall fit firmly inside door panels free from the use of clips, bolts, screws or brackets. 1/4" holes shall be incorporated in the bottom of the enclosure to prevent possible buildup of condensation. Signs with single street name text shall be 19" in height with a tapered body depth of 8" at the top to 5 3/8" at the bottom. Signs with two rows of street name sign text shall be 24" in height with a tapered body depth of 9 3/8" at the top to 5 3/8" at the bottom. The standard lengths of the signs shall be 4 feet, 6 feet or 8 feet. The exposed lens dimensions of the sign shall be in accordance with Table 1 below:

TABLE 1: LENS DIMENSIONS	
Sign Dimensions:	Lens Dimensions:
4 ft x 19"	44.5" x 15.125"
4 ft x 24"	44.5" x 20.125"
6 ft x 19"	68.5" x 15.125"
6 ft x 24"	68.5" x 20.125"
8 ft x 19"	92.5" x 15.125"
8 ft x 24"	92.5" x 20.125"

Gasketing

All signs shall use a UL approved neoprene gasket strip to provide a watertight seal between the body, lens and door.

Lens Requirements

Lenses shall be impact resistant, 0.118" thick UL approved clear polycarbonate. Sign film shall be ultraviolet (UV) resistant electro-cutttable (EC) film over a white translucent retroreflective sheeting conforming to ASTM D 4956-04 and proposed amendments to include ASTM Type XI micro-encapsulated, prismatic backing. Different sign film colors shall be available and specified at time of order. Reference should be made to the specification for "Permanent Traffic Control Signing" for additional material specifications on the sign sheeting and EC film.

Hardware

Door latches and keepers shall be turn-lock style devices made from stainless steel securing the door to the body. A full length continuous stainless steel piano hinge shall be used on the door to the body opening in a downward motion for ease of accessibility. The hinge shall be attached with stainless steel screws and nuts.

Provision for photoelectric cell mounting shall be available on all signs compatible with both Intermatic model K4221C and Tork 2001 which can control four signs per intersection. However, signs shall be ordered without photo electric cells unless specifically called out for in the plans.

Finish

The sign bodies and doors shall be polyester powder coated for durability using a satin black finish to the external aluminum surfaces. Other colors, other than black, may be specified as indicated in the plans.

Electrical Requirements

(a) General

Each sign type shall consist of an electrical/electronics package consisting of a power supply, Light Engine, and fuse. The power supply shall be a 120-240V self sensing unit to operate. All LED's shall be mounted onto a circuit board which is mounted onto a 0.125" thick aluminum heat sink. Individual Light Engine electrical characteristics shall be:

	LED
Ballast (P/s) Model	OT75/120-277/24E
Dimensions	9.5" L x 1.63" W x 1.18" H
Connections	Input: 9" (18AWG solid wire) black & white Output: 9" (18AWG solid wire) red+ & blue
Nominal Input Voltage (VAC)	120-277
Nominal Input Current (Amps)	.75@120v / .32@277v

Input Watts	90@120
Power Factor @ 120v	0.99
Max Output Power (W)	75w
Max Line Ripple (V)	+-.0.2v
Location Rating	Dry & Damp
Input Frequency (Hz)	50/60
Ambient Temp Range	-25°C through +60°C
Max Case Temp	90°C
UL Class	Class 2, UL 1310, UL48
Light Engine(s) (Bulbs) driven	≤ 8 Rebel LED Light strips

(b) LED Light Engine

The LED drive current shall be regulated using a pulse width modulated 24v DC drive and limited to approximately 300ma through the LED chain at normal room temperature providing for a stable light intensity under varying voltage conditions.

LED's within the light engine shall be series wired for increased efficiency and incorporate fault tolerant design. An LED bypass shall isolate a failure to that particular LED and will allow the remaining LED's to operate normally. The constant current regulator shall readjust the drive current to prevent overdriving the remaining operable LED's in the chain. LED strips shall be two feet in length containing six LED's per strip and replaceable by removing three Phillips screws.

Thermal monitoring shall provide temperature protection to the LED chain. As the heat sink temperature increases, the LED drive current shall be reduced along with LED intensity, helping to limit the junction temperature and contributing to the long LED lifespan. The current reduction shall follow a non-linear curve that is high temperature biased (greatest reduction occurs at the higher temperature). Thermal regulation of the drive current shall begin at ~ 40°C and continue until a complete shutdown occurs at ~ 100°C. An onboard display LED shall indicate when an overheat shutdown is present. Recovery shall occur automatically with a reduction in the heat sink temperature

(c) AC Loading Matrix

The AC loading matrix for all sign types shall be as follows:

		Sign Type	LED		
		Sign Faces	Single		
		Sign Width	4	6	8
		# Light Engines	2	3	4
Power Engine	V AC	Min / Max	120		
	Freq Hz	Min / Max	50		
	Temp Deg C	Min / Max	-20		
AC Load @ 120v AC		Amp Typical	0.2	0.3	0.3
		Watt Typical	21	28	36

(d) Warranty

Manufacturer shall certify that each sign meets these specifications. Further the manufacturer shall warrant the product for minimum of 3 years and shall warrant the light engine for a minimum of 5 years

c. Cable

Electrical cable from the sign to the point of connection to the energized electrical system shall be 14 gauge three conductor (1-3c #14 AWG) stranded copper conductors. The cable shall be for operation on a 600 volt maximum and suitable for use at conductor temperatures not exceeding 75 degrees C in accordance with IMSA 19-1. The three bare copper conductors shall be color coded green, black and white with polyethylene insulation and shall be wrapped with mylar within a black PVC outer jacket. The

cable shall have the full manufacturer's line code printed on the outer jacket consisting of manufacturer's name or UL E-file, IMSA specification number, the year of manufacturer and the footage.

d. Mounting Brackets

An approved cable mount system shall be used to mount the illuminated overhead street name signs to signal pole mast arms. It shall consist of a high tensile aluminum alloy clamp kit, 5/16"-18 U-bolts, 1 1/2" Schedule 10 aluminum tube (length based on sign height) and saddle, and high strength galvanized aircraft cable and stainless steel swaged fittings. It shall be supplied complete with all necessary attaching hardware including 5/16"-18 x 1" stainless steel hex head bolt, hex nut, split lock washer and flat washer.

1061.3 CONSTRUCTION REQUIREMENTS

The illuminated overhead street name sign and components shall be installed in accordance with manufacturer's requirements to provide a complete and operational system.

a. Illuminated Overhead Street Name Sign Installation

Illuminated overhead street name signs shall be attached to traffic signal mast arms with two approved sign brackets as indicated in the standard details. Overhead street name signs shall generally be located on the mast arm between the vertical pole shaft and the first through vehicle signal head on the mast arm, according to the standard details. The location of the overhead street name sign and the vehicle pre-emption device or radar detection units shall be coordinated during construction such that the pre-emption device and/or the radar detection unit is not located behind the sign.

The sign shall be rigid mounted with the sign centered approximately vertically on the mast arm, not mounted hanging below it, and leveled horizontally.

b. Wiring

Color codes shall be followed so that the black insulated conductor connects to the black power terminal, white to white, and green to green located in the electrical access panel on the sign housing. The contractor shall drill a hole in the bottom of the mast arm and insert a rubber grommet to protect the cable from cuts and abrasions during the pulling operation. The cable shall run continuously through the mast arm and the signal pole to the designated connection point as indicated in the plans. A cable drip loop shall be provided at the point where the cable enters the bottom of the mast arm. Signs shall be connected to street lighting circuits with breakaway fused and un-fused fuse holders and multi-tap connectors as indicated in the standard details.

1061.4 MEASUREMENT AND PAYMENT

No separate measurement for Illuminated Overhead Street Name Signs shall be made. No separate measurement will be made for the removal of or reinstallation of existing signs during construction prior to installing new signs.

No separate payment shall be made for "Illuminated Overhead Street Name Signs". All work shall be considered subsidiary to "Traffic Signal" bid item, which shall be full compensation for all materials, labor, equipment and incidentals necessary to complete the work.