DESCRIPTION

Under this item the CONTRACTOR shall furnish and install l2" Fiberoptic Pedestrian Signals.

DESIGN:

The unit shall consist of a matrix of fiberoptic bundles forming two displayed messages on a square background facing the same direction. One message shall read "WALK" and the other message shall read "DON'T WALK". Both messages shall have a minimum letter height of 4 - l/2" with a 5/8" stroke width.

The messages shall be clearly legible and shall attract the attention of pedestrians under all ambient lighting conditions varying from total darkness to bright sunlight at all distances from l0 feet to the width of the area to be crossed.

The messages shall be visible at full intensity anywhere within a 90 cone centered about the optical axis and perpendicular to the surface of the matrix display. When not energized, the signal shall be blanked out (unreadable) with no phantom image, regardless of solar intensity or direction.

The messages shall be bright in color against a flat black background. The displays shall be made from a single row of fiberoptic bundles with a nominal l/2 inch spacing between centers.

The light source shall be designed and constructed so that in case of an electrical or mechanical failure of the word "DON'T", the word "WALK" in the "DON'T WALK" message will remain dark. Each message shall be displayed separately and never concurrently.

MATERIALS AND CONSTRUCTION:

The signal shall consist of the following:

l) OPTICAL SYSTEM: The optics shall be glass-on-glass fiber with an 83% core to l7% cladding ratio. It shall have an average numerical aperture of .56 with a maximum transmission attenuation of 800 DB per kilometer. Each fiber shall have a .002 +/- .0002 inches diameter with an included acceptance angle of 68 degrees. All fiber ends shall be ground smooth and polished to an 8 micron finish minimum for maximum output and bundle-to-bundle consistency. Bundled fiber strands shall be kept free from the contamination of water and polishing agents. Maximum fiber breakage per fiber bundle shall not exceed 3%. A minimum of five spare fiberoptic output bundles shall be provided for each lamp and built into the unit. Output bundles located at the face of the sign shall have a minimum diameter of .048 inches for the "DON'T" and .068 inches for the "WALK" message. The input fiber bundle located at each light source shall have a maximum diameter of 3/4 inches. The output bundles shall be protected by a vandal resistant UV stable prismatic

polycarbonate lens 0.l25 inches thick. Individual fiberoptic bundles shall not be jacketed or encased.

Color filters shall be optical quality glass. The filters shall be color fast and in accordance with the I.T.E. Signal Color Specification for Chromaticity.

The prismatic polycarbonate lens shall be gasketed and mounted at a pre-focused distance in the door, away from the fiberoptic panel.

All optical fiber utilized in the production of the fiberoptic unit shall be tested for:

a. Core to clad fusion
b. Size
c. Roundness of fiber
d. Optical transmission
e. Brittleness

Results of these tests must be available upon request.

2) LIGHT SOURCE: One 42 watt l0.8 volt Type ENL lamp with a rated life expectancy of l0,000 hours shall be used as the light source for each display. The lamp shall be a multi-mirror reflector quartz halogen bulb operating at an approximate color temperature of 2900 K.

3) ELECTRICAL: Electrical connection shall be provided by a barrier-type terminal strip for connecting field wires.

Transformers shall be used to reduce the incoming l20 volts AC to l0.8 volts AC.

Transformers shall have Class A insulation impregnated with a double coating of epoxy resin so as to preclude intrusion of moisture and shall be rated at 48.5 volt-amps.

A separate transformer and bulb shall be used for each color to allow connection with existing controller wiring and conflict monitors.

4) HOUSING: The signal shall consist of a standard aluminum case. The lens material shall be polycarbonate with vandal resistant properties, or approved equivalent. Lens shall be clear lenticular screen mounted with a continuous molded neoprene gasket which completely encompasses the edge of the lens on the door. Lens assembly shall form a dust-tight and moisture-resistant seal.

Lamps shall be mounted horizontally to prevent their collecting water from condensation or possible gasket leaks.

All fiberoptic transformers and lamps shall be mounted on the door of the unit. All

screws, washers, nuts and bolts shall be corrosion-resistant. All components shall be readily accessible when the door is opened. The only tool required for maintenance or replacement of components shall be a standard screwdriver.

All head housings shall be made of cast aluminum alloy or one of the following compositions:

l. Aluminum Sand Castings. All aluminum sand castings shall be made of ingot, in accordance with ASTM B26, Alloy B443.0 or AC72A.

2. Aluminum Die Casting. All aluminum die castings shall be made of ingot, in accordance with ASTM B85, Alloys SC84A, SC84B, SGl00A, SBl00B or Sl2B.

All components shall be made of one of the following materials:

1. Malleable iron in accordance with ASTM A47.
2. Steel pipe in accordance with ASTM Al20.
3. Aluminum Sand Castings in accordance with ASTM B26, Alloy 356-T-6.
4. Aluminum Die Castings in accordance with ASTM B85, Alloy SC84B.
5. Aluminum pipe in accordance with ASTM B429.

Only virgin metal shall be used in making either sand castings or die castings, and where specified, the manufacturer shall furnish standard test bars, poured of the metal of which the castings are made, and a certified chemical analysis of the ingot from which the castings are made.

Wind Load. Heads, attachments and fittings shall be designed for a wind load pressure for at least a 90 MPH wind in accordance with AASHTO standard specifications for "Structural Supports for Highway Signs, Luminaires and Traffic Signals."

Painting. All heads, bracket arms, and mounting attachments shall have three coats of paint, each of which shall be baked after application. The first of prime coat shall be a zinc chromate paint. Materials specification section 704-04 of the New York State Department of Transportation. The second and third coats shall be yellow enamel unless otherwise specified.

Mounting. Heads shall be built for mounting on post tops or vertical pole bracket mounts.

Each housing shall be arranged with openings in the top and bottom so that it may be rotated about a vertical axis between waterproof supporting brackets or trunnions and shall be capable of being securely fastened at increments of not more than 7 degrees of rotation. The top and bottom of each housing shall have integrally cast locking rings or other provisions to provide positive interlocking and

indexing.

Doors. The door shall be of cast aluminum alloy and shall provide mounting for the lens and visor. Neoprene gasketing shall be provided between the body of the housing and the doors. The doors shall be suitably hinged and shall be forced tightly against the gasket and the housing by simple stainless steel locking devices. All other exterior hardware such as hinge pins, lens clips, etc. shall be of stainless steel. The locking device shall be capable of being operated without the use of tools. Hinges shall be arranged to allow convenient relamping. On the outside of the door, there shall be a rim encircling the lens opening to prevent any light leakage between optical systems.

Visors. The visor shall be separate and removable from the doors, held in place by stainless steel fastenings attached to the door in such a manner as to prevent the possibility of any light leakage between the door and hood which might be discernible from the side. Visors shall be of sheet aluminum, not less than .50 inches and shall be equipped with bayonet slots or other provision to permit snap-on attachment.

ENVIRONMENTAL CONDITIONS:

The unit shall be capable of continuous operation over a temperature range of -35 F to +l65 F (-37 C to +75 C) with a relative humidity of 95%.

METHOD OF MEASUREMENT:

The quantity to be paid for under this item will be the number of each unit installed in accordance with the plans and specifications.

BASIS OF PAYMENT:

The unit bid price will be for each installation and shall include the cost of furnishing all labor and equipment necessary to complete the work.

Payment will be made under:

Item No.	Item	Pay Unit
C686.8106	Fiberoptic Pedestrian Signals	EA