

SECTION 16750

ACCESSIBLE PEDESTRIAN PUSH BUTTON STATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Accessible Pedestrian Push Button Station Assembly with control unit and mounting hardware. The assembly shall be the 2-Wire Navigator Push Button Station and 2-Wire Navigator Central Control Unit (CCU) as manufactured by Polara Engineering, Inc.

1.02 MEASUREMENT AND PAYMENT

- A. Unit Prices.
 - 1. Accessible Pedestrian Push Button Stations will be measured by each push button assembly and necessary central control unit.
 - 2. Payment for the work performed and materials furnished in accordance with this item will be paid for at the unit price bid for "Accessible Pedestrian Push Button Station." The price shall be full compensation for furnishing, assembling, installing, made fully operational and testing the unit, as well as all mounting attachments, labor, tools, equipment, and incidentals necessary to complete the work.

PART 2 PRODUCTS

2.01 MATERIALS

Provide new materials that comply with the details shown on the plans and the requirements of this specification.

2.02 ACCESSIBLE PEDESTRIAN PUSH BUTTON STATION

- A. The assembly and manufacturing process for all internal electronic components shall be adequately supported to withstand mechanical shock and vibration from high winds and other sources.
- B. Weather-proof speaker protected by vandal proof screen.
- C. Central Control Unit (CCU) for the pushbutton detector unit that resides in the Traffic Signal Controller Cabinet capable of controlling a minimum of 12 units using no more

than one pair of wires for each phase. The CCU must be capable of controlling up to 4 phases and all inputs and outputs shall have Transient Voltage Protection.

1. Pedestrian Walk / Don't Walk inputs: optically isolated 80-150 Volts AC/DC 5 mA maximum.
 2. General purpose outputs and pedestrian outputs: optically isolated 36 Volts AC/DC peak 0.3A solid state fused contact closure.
 3. Fault Output: normally open and closed relay contacts 125 Volts AC/DC 1A maximum.
 4. A, B, C, D PBS power outputs: nominal 22 Volts DC, short circuit protected – auto recovering.
 5. General Purpose Inputs: 10-36 Volts AC/DC peak 10 mA maximum, optically isolated.
 6. Environmental: operating and storage -30°F (-34°C) to 165°F (74°C) 0-100% humidity non-condensing.
- D. Each unit will contain a vibrating tactile arrow to provide a tactile representation of the status of the WALK indication. The arrow shall contrast with the background.
- E. Confirmation of button push via latching LED, sound, and vibrotactile bounce.
- F. Vibrating tactile arrow shall be able to be adjusted for directional indication.
- G. Pedestrian push buttons shall be at least 2 inches in diameter or width, contrast visually with the housing, and require 5 lbf (poundforce) maximum force.
- H. The pushbutton assembly shall be die-cast aluminum, powder coated from aluminum alloy 319 or equivalent.
- I. The unit shall be fabricated free of voids, pits, dents, molding sand and excessive foundry grinding marks. All design radii shall be smooth and intact. Exterior surface finish shall be smooth and cosmetically acceptable by being free of molding fins, cracks and other exterior blemishes.
- J. Assembly color shall be yellow.
- K. Mounting bolts shall be brass or stainless steel.

- L. Push button unit shall have an actuation indication which will activate upon depression of the push button. If actuation indication is a light then it shall remain on until the next walk cycle.
- M. All push button assemblies shall be mounted to the poles by drilling and tapping. Stainless Steel ¼ - 20 bolts shall be used to mount the push button assemblies to poles. Self-tapping screws shall not be used. Stainless steel strapping shall not be allowed.
- N. Attached crossing signs shall be 9" x 15" R10-3e, as per the Texas Manual on Uniform Traffic Control Devices (TMUTCD).
- O. The back panel portion of the push button assembly shall be designed to accommodate pole diameters from 4" to 14".

2.03 AUDIBLE INDICATIONS

- A. A push button locator tone shall sound at each push button.
- B. Locator tones should be audible 6 to 12 feet from the push button or to the building line, whichever is less.
- C. Locator tones shall have a duration of 0.15 seconds or less, and shall repeat at 1-second intervals.
- D. Automatic volume adjustments in response to ambient traffic sound level shall be provided up to a maximum of 89 dB. Locator tone and verbal messages shall be no more than 5 dB louder than ambient sound.
- E. All sounds must automatically adjust to ambient noise levels over a 60 dB range.
- F. Standard locating tone during Don't Walk (and clearance if desired) and cuckoo, chirp, or standard voice message during walk.
- G. Standard locating tone, custom sound, or verbal countdown during PED clearance.
- H. Most sounds can have minimum and maximum volume independently set.
- I. Extended button push can turn on, boost, volumes, and/or mute all sounds except those on activated crosswalk.
- J. The tone or voice volume, measured at 36 inches from the APS, should be 2dB minimum and 5 dB maximum above the ambient noise.

- K. Cuckoo - 1250 Hz and 1000 Hz.
- L. Chirp - 2700 Hz and 1700 Hz.
- M. Substituting Cuckoo and Chirp sounds with "walk" and "don't walk" audible sounds is optional.
- N. Push button locator tone different from cuckoo or chirp.
- O. Extended button press which can be used to request a louder WALK signal and locator tone for subsequent clearance interval.
- P. System shall allow for independent volume control for locate tones, clearance, and walk tones.
- Q. All sounds shall be synchronized to reduce sound clutter.
- R. Custom message and sound options definable by customer include:
 - 1. Custom locating tone
 - 2. Informational Message
 - 3. Custom walk sounds/message
 - 4. Custom clearance sound
 - 5. Multiple languages (up to three, selectable by user)
 - 6. Street name in Braille on the sign

2.04 ENVIRONMENTAL REQUIREMENTS

- A. The Accessible Pedestrian Push Button Station Assembly (pole unit and central control unit) shall be rated for use in the ambient operating temperature range of -40°C to +65°C (-40°F to +150°F).
- B. Push button shall be rated for minimum of 20 million operations with >2 lb. actuation force.

2.05 ELECTRICAL REQUIREMENTS

The Accessible Pedestrian Push Button Station Assembly shall operate over a

voltage range of 95 to 130 VAC, 60 Hz. E. TRANSIENT

2.06 VOLTAGE PROTECTION

The on-board circuitry of a module shall include voltage surge protection, to withstand high-repetition noise transients and low-repetition high-energy transients.

2.07 INPUT PROTECTION

At the point of entry to the module for each input, provide two 0.5-Ohm, 10-watt wire-wound power resistors with 0.2 micro Henries inductance (one on the AC+ Line & one on the AC- Line). Provide one 20 Joule surge arrester between AC+ to AC-. A 0.68 microfarad capacitor must be placed between AC+ & AC- (between the resistor & arrester).

2.01 POWER FAILURES

Whenever there is a loss of power to the "Walk" or "Don't Walk" for a period greater than 2.0 seconds, the sound shall be deactivated.

PART 3 WARRANTY

3.01 A minimum guarantee for both materials and workmanship shall be provided for the products bid as specified. The guarantee (warranty) period shall begin the day the City officially accepts the item. Any guarantee work is to be completed within 15 days after receipt of notice of material deficiencies.

A. WARRANTY AND GUARANTEES

1. All material, workmanship and labor furnished shall be covered by Supplier(s)/Manufacturer(s) guarantee and/or warranty for a minimum period of thirty-six (36) months. Warranty period shall begin the day the item is received by the City of Houston, either as new order or warranty repair. Bidder shall also be required to have resources to complete any required warranty work within fifteen (15) days after receipt of found defective item. The City of Houston's preference is for all non-warranty service to be charged a singular flat-rate. Successful bidder will include flat rate repair cost, if available in bid document for all non-warranty covered repairs. If flat rate repair charge is not available, then Supplier(s)/Manufacturer(s) will provide current hourly labor rate, along with any associated minimum charges that may apply.
2. Successful bidder shall bear all expenses connected with return of any material which the City deems necessary to return for adjustments during guarantee

period. Said work shall be done by manufacturer's representative at no cost to the City.

3. The City of Houston may perform random sample testing on all shipments. Random sample testing will be completed within 45 days after delivery. The number of modules tested shall be determined by the quantity of each shipment. The Traffic Operations Division shall determine the sampling parameters to be used for the random testing. Acceptance or rejection of the shipment shall conform to ANSI/ASQC Z1.4 for random sampled shipments.
4. The City of Houston reserves the right to withhold payments which may be due, should it be discovered that material does not meet specifications and/or claims of bidder.
5. Supplier(s)/Manufacturer(s) shall make all engineering data, diagrams, software changes or improvements, which increases performance of equipment purchased under this bid, available to the City of Houston at no additional cost during guarantee period.
6. Supplier(s)/Manufacturer(s) shall have field engineers or technicians available on request to assure satisfactory initial operation, and to consult with City's Traffic Engineer, or his representative, on any special circuitry that may be required in certain applications.

END OF SECTION