SECTION 16750
ACCESSIBLE PEDESTRIAN SIGNAL

PART 1 - GENERAL

Furnish accessible pedestrian signals (APS) that conform to the Manual on Uniform Traffic Control Devices (MUTCD). The APS shall consist of an interactive pedestrian pushbutton with speaker, an informational sign, a solid state electronic control board, wiring, and mounting hardware. The APS shall meet the requirements of the Manual on Uniform Traffic Control Devices (MUTCD) (Section 4).

1.01 MATERIALS

The items furnished and installed under this contract shall be new, unused of the latest product in production to commercial trade, and shall be of the highest quality as to materials used and workmanship. Manufacturer(s) furnishing these items shall be experienced in design and construction of such items and shall furnish evidence of having supplied similar items which have been in successful operation. The bidder shall be an established supplier of the items bid.

1.02 UNIT IDENTIFICATION

Units shall be clearly marked on the outside surface of the unit, in an easily identifiable location, in a permanent manner showing information required for warranty and long term performance. Information to be shown shall include manufacturer name, date of manufacture, electric power requirements, model type, and serial number

1.03 SILENCE OF SPECIFICATIONS

The apparent silence of these specifications as to any detail, or the apparent omission from them of a detailed description concerning any point, shall be regarded as meaning that only the best commercial practice is to prevail and that only material and workmanship of the finest quality are to be used. All interpretations of these specifications shall be made on the basis of this statement. The bidder shall be an established supplier of the items bid.

1.04 TEST EQUIPMENT

Supplier(s)/manufacturer(s) shall furnish with their bid a complete description and cost of any special test equipment that is necessary to install, operate, or maintain its equipment.

1.05 TRAINING

Supplier(s)/manufacturer(s) shall conduct technical training seminars for personnel at City of Houston facilities (two sessions within the first year of service). These seminars shall provide informational and instructional guidance

to the installation, maintenance, operation, and repair of equipment furnished under this bid.

1.06 UNIT PRICES

A. Measurement

This item will be measured as by each accessible pedestrian signal unit complete in place.

B. Payment

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid at the unit price bid for "Accessible Pedestrian Signal". This price shall be full compensation for furnishing, assembling, installing, and testing the APS, and for all mounting attachments, labor, tools, equipment, and incidentals necessary to complete the work.

PART 2 - PRODUCTS

Upon request, one schematic wiring diagram and installation manual shall be provided with APS.

2.01 MATERIALS

Manufacturer(s)/supplier(s) furnishing these items shall be experienced in design and construction of such items and shall furnish evidence of having supplied similar items, which have been in successful operation for not less than three years. The bidder shall be an established supplier of the item bid.

A. Accessible Pedestrian Signal

1. 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.
2. Weather-proof speaker protected by vandal proof screen.
3. Central control unit (CCU) for the pushbutton detector unit that resides in the Traffic Signal Controller Cabinet capable of controlling a minimum of 8 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 have Transient Voltage Protection.
4. 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
5. Vibrating tactile arrow shall be able to be adjusted for directional indication.
6. Pedestrian pushbuttons shall be at least 2 inches in diameter or width, contrast visually with the housing, and require 5 lbf (pound-force) maximum force.

7. The pushbutton assembly shall be cast from aluminum alloy 319 or equivalent.
8. 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.
9. Assembly colors shall be available in black, green, or yellow.
10. Mounting bolts shall be brass or stainless steel.
11. Pushbutton unit shall have an actuation indication which will activate upon depression of the pushbutton. If actuation indication is a light then it shall remain on until the next walk cycle.
12. All pushbutton assemblies shall be mounted to the poles by drilling and tapping. Stainless Steel ¼- 20 bolts shall be used to mount the pushbutton assemblies to poles. Self-tapping screws shall not be used. Stainless steel strapping shall not be allowed.
13. Attached crossing signs shall be 9" X12" R10-3b or R10-4b as per the Texas Manual on Uniform Traffic Control Devices (TxMUTCD).
14. The back panel portion of the pushbutton assembly shall be designed to accommodate pole diameters from 4" to 14".

B. Audible Indications

1. A pushbutton locator tone shall sound at each pushbutton.
2. Locator tones should be audible 6 to 12 feet from the pushbutton or to the building line, whichever is less.
3. 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.
4. All sounds must automatically adjust to ambient noise levels over a 60 dB range.
5. The tone or voice volume, measured at 36 inches from the APS, should be 2dB minimum and 5 dB maximum above the ambient noise.
6. Cuckoo – 1250 Hz and 1000 Hz
7. Chirp – 2700 Hz and 1700 Hz
8. Substituting Cuckoo and Chirp sounds with "walk" and "don't walk" audible sounds is optional.
9. Pushbutton locator tone different from cuckoo or chirp
10. Extended button press which can be used to request a louder WALK signal and locator tone for subsequent clearance interval.
11. System shall allow for independent volume control for locate tones, clearance, and walk tones.
12. All sounds shall be synchronized to reduce sound clutter.

C. ENVIRONMENTAL REQUIREMENTS

1. The APS (pole unit and central control unit) shall be rated for use in the ambient operating temperature range of -34°C to +74°C (-29°F to +165°F).
2. Pushbutton shall be rated for 100+million operations with >2 lb. actuation force.

D. ELECTRICAL REQUIREMENTS

The APS shall operate over a voltage range of 95 to 130 VAC, 60 Hz.

E. TRANSIENT 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.

F. INPUT PROTECTION (optional)

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 & on the AC- Line). Provide one 20 Joule surge arrestor between AC+ to AC-. A 0.68 microfarad capacitor must be placed between AC+ & AC – (between the resistor & arrestor).

G. 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 by the Contractor 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 SPECIFICATION