



CITY OF HOUSTON INVITATION TO BID

Issued: September 20, 2012

Bid Opening

Sealed bids, in duplicate, will be received by the City Secretary of the City of Houston, in the City Hall Annex, Public Level, 900 Bagby, Houston, Texas 77002 until **10:30 a.m. Thursday, October 11, 2012**, and all bids will be opened and publicly read in the City Council Chamber at 11:00 A.M. on that date for the purchase of:

**REMOTE ACTIVATED SCHOOL FLASHERS
FOR THE
PUBLIC WORKS & ENGINEERING DEPARTMENT
BID INVITATION NO. S32-S24183
NIGP CODE: 550-96**

Buyer

Veronica Douglas, CPPB is the Buyer for this solicitation and she may be reached at 832-393-8745. Any questions regarding this solicitation should be submitted in writing to 832-393-8760 (fax) or via e-mail at veronica.douglas@houstontx.gov

Electronic Bidding

In order to submit a bid for the items associated with this procurement, you must fill in the pricing information on the "PLACE BID" page.

Pre-Bid

A Pre-Bid Conference will be held for all Prospective Bidders in the Strategic Purchasing Division Conference Room 1, Basement, City Hall, 901 Bagby, Houston, Texas 77002 at 10:00 am on October 2, 2012.

All Prospective Bidders are urged to be present. It is the bidder's responsibility to ensure that they have secured and thoroughly reviewed all aspects of the bidding documents prior to the Pre-Bid Conference. **Any revisions to be incorporated into this bidding document arising from discussions before, during and subsequent to the pre-bid conference will be confirmed in writing by Letter(s) of Clarification prior to the bid due date. No verbal responses will otherwise alter the specifications, terms and conditions as stated herein.**

Bidding forms, specifications and all necessary information should be downloaded from the Internet at <https://purchasing.houstontx.gov>. By registering and downloading this bid document, all updates to this bid document will be automatically forwarded via e-mail to any registered bidder. This information may also be obtained from the office of the City Purchasing Agent, 901 Bagby, Basement, Houston, Texas 77002.

The place of the bid opening may be transferred in accordance with Paragraph B (5) of Section 15-3 of The Code of Ordinances, Houston, Texas. The bid opening meeting may be rescheduled in accordance with Paragraph B (6) of said Section 15-3.

The City reserves the right to reject any or all bids or to accept any bid or combination of bids deemed advantageous to it.

CITY EMPLOYEES ARE PROHIBITED FROM BIDDING ON THIS SOLICITATION IN ACCORDANCE WITH THE CODE OF ORDINANCES SECTION 15 - 1.

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SECTION A.



REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT BID INVITATION NO. S32-S24183

Honorable Mayor and City Council Members:

The undersigned hereby proposes to furnish and deliver remote activated school flashers, FOB destination point as listed on the electronic bid form and on the individual Purchase Orders, in accordance with the Net Prices and other conditions shown herein, and in accordance with the City's Specifications and General Terms and Condition Specifications. When issued, Letters of Clarification shall automatically become part of this bid document and shall supersede any previous specifications or provisions in conflict with the Letters of Clarification. It is the responsibility of the bidder to ensure that it has obtained such letters. By submitting a bid on this project, bidder shall be deemed to have received all Letters of Clarification and to have incorporated them into its bid. THE MANUFACTURER'S NAME, PRODUCT NAME AND PRODUCT NUMBER MUST BE DESIGNATED IN THE SPACE PROVIDED IF BIDDERS ARE BIDDING AN "OR EQUAL" ITEM.

The City may accept this bid offer by issuance of a Notice of Award Letter and/or a Purchase Order covering award of said bid to this Bidder at any time on or before the 120th day following the day this Official Bid Form is opened by the City. This offer shall be irrevocable for 120 days after the bid opening or for 90 days after City Council awards the bid, whichever comes last, but this period may be extended by written agreement of the parties.

The City of Houston reserves the option, after bids are opened, to increase or decrease the quantities listed, subject to the availability of funds, and/or make award by line item.

BIDDING AND AWARD:

It is the intent of the City to award, on the basis of overall low net bid meeting specifications for the entire award; however, the right is reserved to accept or reject in whole or in part any or all bids received and to make an award on the basis of individual item, combination of items or overall best bid, as it is deemed in the best interest of the City.

THIS IS A THIRTY-SIX (36) MONTH AWARD WITH TWO (2) ONE (1) YEAR OPTIONS TO EXTEND

FIRM PRICES ARE TO BE QUOTED FOR THE FIRST TWELVE (12) MONTH PERIOD

SPECIAL BIDDERS NOTE:

These bid documents are to be bid exactly as published or amended by any letter(s) of clarification that may be issued pertaining thereto.

LINE ITEM BIDS:

Only one item may be bid for each referenced line item. To bid the referenced line item and an alternate, bidder must submit a separate bid form for each alternate item(s) with its own original signature page. Multiple bids for the same line item on one bid form will be just cause to reject a bid from further consideration.

SECTION A. OFFICIAL BID FORM FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT:

LOBBYING AND OTHER FORMS OF INFLUENCE PROHIBITED:

Neither Bidder(s) nor any person acting on Bidder(s)'s behalf shall attempt to influence the outcome of the award by the offer, presentation or promise of gratuities, favors, or anything of value to any appointed or elected official or employee of the City of Houston, their families or staff members. All inquiries regarding the solicitation are to be directed to the designated City Buyer identified on the first page of the solicitation. Upon issuance of the solicitation through the pre-award phase and up to the award, aside from Bidder's formal response to the solicitation, communications publically made during the official pre-bid conference, written requests for clarification during the period officially designated for such purpose by the City Buyer, neither Bidder(s) nor persons acting on their behalf shall communicate with any appointed or elected official or employee of the City of Houston, their families or staff through written or oral means in an attempt to persuade or influence the outcome of the award or to obtain or deliver information intended to or which could reasonably result in an advantage to any Bidder. However, nothing in this paragraph shall prevent Bidder from making public statements to the City Council body convened for a regularly scheduled session after the official selection has been made and placed on the City Council agenda for action.

HIRE HOUSTON FIRST:

THIS PROCUREMENT IS SUBJECT TO THE HIRE HOUSTON FIRST PROGRAM, WHICH GIVES A PREFERENCE TO CERTAIN LOCAL BIDDERS IN AWARD OF THE PROCUREMENT. FOR MORE INFORMATION, GO TO:

<http://www.houstontx.gov/obo/hirehoustonfirst.html>

Designation as a City Business or Local Business

To be designated as a City or Local Business for the purposes of the Hire Houston First Program, as set out in Article XI of Chapter 15 of the Houston City Code, a bidder or proposer must submit the **Hire Houston First Application and Affidavit ("HHF Affidavit")** to the Director of the Mayor's Office of Business Opportunities and receive notice that the submission has been approved prior to award of a contract. Bidders are encouraged to secure a designation prior to submission of a bid or proposal if at all possible.

Download the HHF Affidavit from the Office of Business Opportunities Webpage at the City of Houston e-Government Website at the following location:

www.houstontx.gov/obo/moreforms/hirehoustonfirstaffidavit.pdf

Submit the completed application forms to: Mayor's Office of Business Opportunity, One Stop Business Center, 900 Bagby St., Public Level, Houston, TX 77002 or Applications may be submitted via e-mail to HHF-MOBO@houstontx.gov or faxed to 832.393.0952.

Award of a Procurement of \$100,000 or More for Purchase of Goods:

THE CITY WILL AWARD THIS PROCUREMENT TO A "CITY BUSINESS," AS THAT TERM IS DEFINED IN SECTION 15-176 OF THE CITY OF HOUSTON CODE OF ORDINANCES ("THE CODE")

- IF THE BID OF THE CITY BUSINESS IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 3% OF THE LOWEST BID RECEIVED, AND
- UNLESS THE USER DEPARTMENT DETERMINES THAT SUCH AN AWARD WOULD UNDULY INTERFERE WITH CONTRACT NEEDS, AS PROVIDED IN SECTION 15-181 OF THE CODE.

IF THERE IS NO BID OF A CITY BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER.

Award of Procurement under \$100,000 for Purchase of Goods:

THE CITY WILL AWARD THIS PROCUREMENT TO A "CITY BUSINESS," AS THAT TERM IS DEFINED IN SECTION 15-176 OF THE CITY OF HOUSTON CODE OF ORDINANCES ("THE CODE")

SECTION A. OFFICIAL BID FORM FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT, CONTINUED:

- IF THE BID OF THE CITY BUSINESS IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 5% OF THE LOWEST BID RECEIVED, AND
- UNLESS THE USER DEPARTMENT DETERMINES THAT SUCH AN AWARD WOULD UNDULY INTERFERE WITH CONTRACT NEEDS, AS PROVIDED IN SECTION 15-181 OF THE CODE.

IF THERE IS NO BID OF A CITY BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER

Award of Procurement that may be More or Less than \$100,000 for Purchase of Goods:

THE CITY WILL AWARD THIS PROCUREMENT TO A "CITY BUSINESS," AS THAT TERM IS DEFINED IN SECTION 15-176 OF THE CITY OF HOUSTON CODE OF ORDINANCES ("THE CODE")

- IF THE BID OF THE CITY BUSINESS IS LESS THAN \$100,000 AND IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 5% OF THE LOWEST BID RECEIVED, OR
- IF THE BID OF THE CITY BUSINESS IS MORE THAN \$100,000 AND IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 3% OF THE LOWEST BID RECEIVED, AND
- UNLESS THE USER DEPARTMENT DETERMINES THAT SUCH AN AWARD WOULD UNDULY INTERFERE WITH CONTRACT NEEDS, AS PROVIDED IN SECTION 15-181 OF THE CODE.

IF THERE IS NO BID OF A CITY BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER.

SECTION A. OFFICIAL BID FORM FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT, CONTINUED:

Documents/forms must be downloaded from the City's Website <https://houstontx.gov/purchasing/index.html>

Additional Required Forms to be Included with this Bid:

In addition to the electronic Bid Form and the Official Signature Page, the Forms listed in Table 1 **must be completed and submitted to the Office of the City Secretary on or before the date and time the bid is due:**

Table 1
Affidavit of Ownership.doc
Fair Campaign Ordinance.doc
Conflict of Interest Questionnaire.doc
Statement of Residency.doc
Bidders Attachments
Location of Bidders Inventory

Table 2 lists other documents and forms that should be viewed/downloaded from the City's website, but are not required to be submitted with the bid. The City will request these forms, as applicable, to be completed and submitted to the City by the recommended/successful bidder:

Table 2
EEOC
Formal Instructions for Bid Terms
MWBE
Sample Insurance Over \$50000
Formal Instructions for Bid Terms

SECTION B.
CITY OF HOUSTON
TECHNICAL SPECIFICATIONS
FOR
REMOTE ACTIVATED SCHOOL FLASHERS
FOR THE
PUBLIC WORKS & ENGINEERING DEPARTMENT

1.0 **GENERAL (PART 1):**

- 1.1 The purpose of this specification is to provide details of solar school zone flashing beacon field equipment for new installations and replacement parts for existing beacon stations. All items provided from this specification shall be compatible with existing City of Houston solar powered school zone field equipment.
- 1.2 Field equipment includes cabinets, battery chargers, batteries, solar panels, flashers, and other incidentals required for solar powered school zone field equipment.

2.0 **MEASUREMENT:**

Solar powered school zone field equipment shall be measured as described below:

- 2.1 Solar Flashing Beacon Assembly, Complete, In Place
This item will be measured on the basis of each assembly complete, in place, tested, and accepted. This item shall include one (1) pole with cap and base (school zone (SZ) cast aluminum), one (1) anchor, base screw (type-PB6363), one (1) cabinet assembly, two (2) beacons, one (1) solar panel, one (1) battery, one (1) battery charger, one (1) flasher, one (1) terminal strip (mounted on a SZ control panel), and (1) one "20 MPH When Flashing" 24"x48" sign with sign brackets and all conductors and incidentals necessary to provide a complete functional solar flashing beacon assembly.
- 2.2 Solar Flashing Beacon Assembly, Complete, Parts
This item shall include one (1) pole with cap, one (1) cast aluminum base, one (1) screw base anchor, one (1) cabinet assembly, two (2) beacons, one (1) solar panel, one (1) battery, one (1) battery charger, one (1) flasher, one (1) time switch, and one (1) terminal strip mounted on a SZ control panel, and one (1) "20 MPH When Flashing" 24"x48" sign. The mounting brackets, wiring, solar panel cable and all incidentals necessary to provide a complete assembly should be included. This item will be measured on the basis of each complete assembly furnished and accepted.
- 2.3 Flashing Beacon Cabinet Assembly
This item will be measured as each unit furnished and accepted.
- 2.4 Automatic Battery Charger
This item will be measured as each unit furnished and accepted.
- 2.5 Batteries, 12 VDC, Furnished
This item will be measured as each unit furnished and accepted.
- 2.6 Solar Panel Array, Furnished
This item will be measured as each unit furnished and accepted.
- 2.7 Signal Beacons, Furnished
This item will be measured as each pair of beacons furnished.
- 2.8 Solar Flashing Beacon Assembly with Time Switch, Complete, In Place
This item will be measured on the basis of each assembly complete, in place, tested, and accepted. This item shall include one (1) pole with cap and base, one (1) cabinet assembly, one (1) programmable flashing beacon time-switch, two (2) beacons, solar panel, battery, battery charger, flasher and terminal strips, and all conductors and incidentals necessary to provide a complete functional solar flashing beacon assembly.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

3.0 PAYMENT:

The work performed and materials furnished shall be measured as indicated under "measurement" and will be paid for at the unit price bid for each item, as specified on the bid form. This price shall be full compensation for excavating, backfilling, constructing, furnishing, installing, and testing solar powered school zone equipment. This price shall also be full compensation for concrete and reinforcing steel, electrical conductors, connections, grounding rods, galvanized pipe, fittings, pole caps, pole bases, straps, foundations (concrete or screw-in, as specified), anchor bolts, anchor plates (when required) and any other incidentals necessary to complete the work.

4.0 MATERIALS (PART II):

4.1 Cabinet Components

The cabinet door shall be constructed from 5052H32-sheet alloy and shall have a thickness of .125 inches. There shall be no vertical seams in the cabinet shell. All external welds shall be made using the heliarc method, whereas the wire welding method shall make internal welds. All welds shall be neatly formed and free from cracks, blowholes and other irregularities. The nominal outside dimensions shall be 26 inch (H) x 15.25 inch (W) x 15.75 inch (D). There shall also be a lip over-hang cross the top of the cabinet covering the top of the door to help in preventing moisture from getting into the cabinet. The cabinet will be designed to protect internal equipment from rain, dust, vandalism, and other conditions found in harsh environments.

4.2 The cabinet door opening shall be double flanged around all sides to form a uniform surface. This is to assure maximum contact with the door gasketing material.

4.3 All inside and outside edges of the cabinet shall be free of burrs.

4.4 All single position door restraints shall be provided to hold the door open at a maximum 90-degree angle. This is to prevent door movement in wind conditions.

4.5 Eight (8) louvered vents (4 per side) shall be provided for adequate ventilation of internal components.

4.6 Door and Hardware

4.6.1 The door will be a minimum of 80% of the front surface area and shall be hinged on the right side when facing the cabinet.

4.6.2 The door shall be furnished with a gasket ½" x 2" closed celled neoprene that shall form a weather tight seal between the cabinet flange and the door. A 3/8" x 5/8" retainer shall be used to hold the gasket in place.

4.6.3 The door gasketing shall be sprayed with silicone lubricant so that it does not adhere to the cabinet body-sealing surface.

4.6.4 The hinge shall be continuous and shall fasten to the cabinet and door by ¼-20 carriage bolts, washers and nylok nuts. The hinge will be made of .90 inch thick stainless steel and shall have a .25 inch diameter stainless steel hinge pin.

4.7 Latching Mechanism

The latching mechanism shall be a three-point draw type and shall have the following characteristics:

4.7.1 The center catch and cam shall be fabricated from .1875 inch thick steel and zinc plated.

4.7.2 The latching rods shall not make direct contact with the inside of the cabinet surface. Rather, this mechanical interface shall be made by nylon rollers on each of the latching rod ends.

4.7.3 The lock shall be a Corbin #2 lock. Two keys will be furnished with each lock.

4.0 MATERIALS (CONTINUED):

4.7 Latching Mechanism (continued):

- 4.7.4 On the front side of the door a cover shall be provided over the key slot to prevent debris from getting into the lock. This device shall be attached so that it can provide easy access for unlocking the cabinet.
- 4.7.5 The latching handle shall have a provision for padlocking in the closed position. The padlocking position shall be at the extreme end of the latching handle to preclude the use of pipe by vandals to force the locking mechanism open.

4.8 Operating Handle

The operating handle shall be furnished and shall have the following characteristics:

- 4.8.1 The handle will be stainless steel with a .750 inch diameter shank.
- 4.8.2 The latching handle shall have a provision for padlocking in the closed position. The padlocking position shall be in the bottom middle of the latching handle to preclude the use of pipe by vandals to force the locking mechanism open.
- 4.8.3 There shall be no exposed hardware of any type mounting the latching handle to the door.
- 4.8.4 The handle shall have a lock clasp to allow the securing of the cabinet with a padlock.

4.9 Cabinet Layout

4.9.1 Top Shelf

The top shelf shall be removable for easy access to battery on the bottom. The shelf shall have predrilled holes to attach the control panel. These holes will be ¼ inch in diameter and shall be centered 7 inches apart and 3 inches from the front of the shelf. The top shelf shall have a minimum depth of 9 inches and shall span the entire width of the cabinet. In the back center of the top shelf a half moon shape hole with a diameter of 2 inches shall be in place with ease of bringing cables up to the controller panel. The front lip of the shelf shall be turned up a minimum of ¼ inch and shall be free from sharp edges and burrs. In addition ¼ x ¾ inch bolts with wing nuts shall be supplied for attaching control panel to shelf. The top shelf shall be removable but made rigidly mounted with the use of simple tools.

- 4.9.2 The cabinet shall be provided with a battery shelf fabricated from 5052H32 aluminum having a thickness of .125 inches. The shelf shall be welded into the cabinet for maximum rigidity. A ½ inch of styrofoam shall be supplied to cover the bottom, sides, and back of the cabinet where the battery will sit.

4.9.3 Cabinet Finish

Unless otherwise specified, the outside surface of the cabinet shall have a smooth, uniform, polish aluminum finish.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

5.0 SOLAR PANEL:

The photovoltaic module shall provide 12 VDC and be capable of recharging the system to full capacity, after six (6) hours of continuous operation, in three (3) hours +/- .5 hours during optimum sun conditions in December. The minimum acceptable wattage output of the solar panel will be 100 watts. Solar array sizing calculations and the parameters used shall be required. Each solar cell shall be bypass diode protected to prevent power loss if a module is temporarily shaded. The crystalline silicon solar module shall consist of cells that are permanently encapsulated between a tempered glass cover and layers of ethylene vinyl acetate (EVA) pottant with a polyvinyl fluoride (PVF) and aluminum foil back sheet to provide a moisture free environment. Units without foil back sheets must have Underwriter Laboratory (UL) approval. The module frame shall be made from extruded aluminum alloy and adequately sized to attach the desired number and size of solar panels. The mounting bracket shall use tamper proof hardware to secure the PV module to the frame. An ultraviolet (UV) resistant, weatherproof junction box providing wire termination for up to #8 AWG wiring shall be provided with the PV module.

6.0 BATTERY FOR SOLAR POWERED FLASHING BEACONS:

6.1 The battery shall have a nominal voltage of 12 VDC. The battery shall be sized to allow four (4) days of autonomy and provide sufficient power to support remote communications at an increased power consumption rate of 1 ampere hour per day. The battery shall conform to the following criteria:

6.1.1 Operating temperature range
Discharge: -26 degrees F to + 140 degrees F.
Charge: -4 degrees F to +122 degrees F.

6.1.2 Vents: Pressure relief vents permanently attached.

6.1.3 Sealed construction: Will not spill or leak.

6.1.4 Flag terminals: Hold clearances for ¼" bolt.

6.2 Battery shall be housed in the cabinet specified in the above specification. The battery shall carry a two (2) year replacement warranty from date of delivery to the City of Houston and a prorated warranty up to five (5) years.

6.3 Programmable Control Unit

Programmable time-based control units, when required shall be as listed in the bid items.

7.0 BATTERY CHARGER:

7.1 The charging unit shall be 100% solid state and be designed for use as a battery charger in photovoltaic (solar) energy systems. The charger shall be mounted on the control panel.

7.2 The charger shall supply a maximum solar panel current to the battery until battery is fully charged (trickle charge will not be accepted). Battery voltage will be used to determine when charging is to resume. The resumption threshold shall compensate for temperature. The charge current must be tested at least one (1) time per hour.

7.3 The charger shall supply a charging current of up to 10 amps DC to the batteries.

7.4 The charger shall be a modular design and shall be easily replaced with the use of simple tools. There shall be no terminal strip connections on the charging unit. It must be a plug in design. Any meters being used shall be housed in the charging unit.

7.5 Metering devices used shall be for checking the battery voltage and solar panel input voltage. One meter built into the charging unit will be used for both operations, an external switching device shall be used to check both measurements.

7.6 No terminal strip connections are to be on the front of the control panel. All connections will be made on the back of the control panel.

7.7 Charger shall incorporate a low voltage disconnect that shall prevent battery damage due to extreme discharge.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

8.0 FLASHING UNIT:

- 8.1 The flashing unit shall be a modular design with a plug being utilized for connecting to the external flashing outputs. The external outputs shall be made on the back of the control panel. The flasher shall be easily replaced with the use of simple tools.
- 8.2 The flasher shall be a 12 volt DC charger and shall operate in a range +/- volts.
- 8.3 The flasher shall have a minimum of two circuits and shall be rated for a minimum of 50 watts per circuit.
- 8.4 The operating temperature range shall be from -20 C to + 75 C.
- 8.5 The flasher shall be capable of working both Halogen or LED lamp units.
- 8.6 The physical size of the flasher unit shall be no larger than 5.50" (L) x 3" (W) x 2" (D).
- 8.7 The housing shall be a minimum 18 gauge steel.
- 8.8 The flasher shall have a programmable flash rate from 50-70 flashes per minute.

9.0 SIGNAL BEACONS:

- 9.1 The school zone beacon assembly shall operate with two (2) signal beacons. The beacons shall flash alternately (bouncing ball type). The beacons (signal heads, visors and LED lamp units) and mounting hardware shall be supplied as part of this bid.
- 9.2 All flashing beacons shall be 12" polycarbonate yellow housings with tunnel visor hood and use band on mounting or approved equal. The housing, door and visor shall meet the applicable portions of the City of Houston Specification Section 16715, which can be viewed at <http://pwecms.cityofhouston.net/documents/forms/2011-standard-construction-specifications/details.html>
- 9.3 Lamp unit modules shall be LED (yellow) 12 VDC. All lamp unit modules shall meet the ITE VTCSH-LED circular signal supplement over the full temperature range of -40 degrees C to +74 degrees C, and shall meet or exceed the latest ITE uniformity specifications.
- 9.4 Signal beacon mounting hardware shall consist of supports for side-of-pole mounting of the signal head in a vertical position, shall be 1-1/2" standard pipe bracket arm, attached to the top of the signal head with pipe nipple, threaded cross fitting with adequate closure caps and collared/cast nipples and band-on pole plate. Pole plate shall be provided with a cable guide. The mounting assembly shall consist of one standard pipe section extending 12-3/4" from and at right angles to the axis of rotational adjustment of the signal head. The supports shall have running threads at least 1-1/4" long at the pole connection end. The signal head shall be adjustable, by rotation of the various signal faces about their vertical axis, throughout a radial angle of 360 degrees and shall be capable of being rigidly clamped in any position through the range of adjustment. The wiring from the signal head shall be able to be enclosed in the top support. A closure cap shall be provided for the bottom opening of the signal head housing.

10.0 TWO-WAY NETWORK PROGRAMMABLE TIME SWITCH:

- 10.1 The time switch shall be capable of two-way communications over an ethernet network. The communication methods are hereby referred to as the "two-way network" in this specification. The time switch must furnish power and pass programming data through a DB-9 port on the face of the unit. The time switch must include a feature to provide the capability of automatically resetting the time switch time-of-day from a GPS receiver in the absence of two-way communications. The time switch conversion shall also include program upload and download capability from a laptop computer or netbook using a serial cable.
- 10.2 The time switch unit shall have a two-way network transceiver that is able to receive programs and commands generated by a central computer and transmit its programming data back to the central computer upon demand.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

10.0 TWO-WAY NETWORK PROGRAMMABLE TIME SWITCH (CONTINUED):

10.3 The two-way network shall work as a wireless RS-232 connection for the time switch. When the two-way network receives a message it will pass the message to the time switch for decoding. All addressing, timing and on/off command decisions shall be made by the time switch and not by the two-way network.

10.4 The time switch shall be capable of receiving and running the following programs via the two-way network:

10.4.1 Override Plan

An override plan is a one-day program with up to sixteen (16) program steps for controlling the output relay of the time switch. An override plan runs instead of the normal program until the override plan expires. The time switch shall immediately start running the override plan when it is received over the two-way network. The time switch shall revert back to its regular schedule at midnight of the same day or if a command is downloaded that cancels the override plan.

10.4.2 Time Set

The day-of-week, hour and minute of the time switch shall be set and reset over the two-way network. When a time set command is received, the time switch shall immediately adjust its internal clock accordingly.

10.4.3 Setup Time Switch

The time switch shall accept two-way network transmissions that will download all of the operating parameters to include day-of-week and time-of-day, day plans, default week plan and annual plan programming.

10.4.4 Day Plan Programming

10.4.4.1 Each time switch shall have ten (10) day plans. One (1) of the day plans shall be used for holidays throughout the school year. The other nine (9) day plans shall be capable of running 16 program steps per plan.

10.4.4.2 Each day plan program step shall include the following:
Time of day in hours, minutes, AM or PM
ON/OFF Commands: ON
OFF

10.4.4.3 One (1) day plan shall be reserved for programming a normal school day and the other eight (8) day plans are programmed for any school flasher schedule other than the normal school day such as an early out, Friday night football, summer school, etc.

11.0 DEFAULT WEEK PLAN:

11.1 The default week plan is a seven-day program that assigns one of the day plans to each day of the week. The basic default week plan has Saturday and Sunday running a day plan that keeps the beacons from flashing while Monday through Friday are programmed to run day plan 1 (1) which is the normal school day plan. The operator shall have the ability to program any of the day plans to any day of the week.

11.2 The time switch shall be capable of executing thirty-six (36) separate annual plans. The annual plan programming shall use the exception day method where the time switch automatically runs its default week plan until an annual plan program instructs it to run a different day plan.

11.3 Programming the annual plans shall be accomplished from the central computer. Each annual plan shall be programmed by entering a day plan number and the beginning date (month/date/year) and the ending date for which the time switch is to run that day plan. The time switch shall be capable of running a day plan as short as one (1) day or as long as six (6) months. It shall be possible to begin an annual plan in one calendar year and end that same annual plan in the next consecutive year.

11.4 It shall not be necessary to enter the annual plans in chronological order.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

12.0 ENCLOSURE:

- 12.1 The time switch shall be housed in an aluminum or stainless steel enclosure with a means for mounting to a suitable back plane. Mounting holes that provide clearance for at least a #10 screw are required. The mounting hole pattern of the enclosure shall be the same as existing time switches used by the agency to facilitate easy installation.
- 12.2 The time switch shall not exceed 3.7" (W) x 7.5" (H) x 1.55" (D). Interface to the power line and/or to the flasher cabinet shall be provided by means of a terminal block capable of terminating wire sizes up to #14 AWG. The AC power inputs, if any, shall be protected with a fuse and MOV, DC power with a fuse only. A separate terminal point shall be provided for each pole of the relay, AC line, AC neutral, ground, +12VDC and -12V common.

13.0 ELECTRICAL:

- 13.1 The time switch shall be capable of operating on either 12VDC +/-2VDC or an AC power source between 95 and 135VAC.
- 13.2 The AC and DC power supply must be an integral part of the time switch circuit board due to the fact that many flasher cabinets do not have AC power outlets.
- 13.3 A separate power supply module, similar to those used for calculators and battery chargers, is not acceptable.

14.0 POWER BACK-UP SYSTEM:

- 14.1 A means shall be provided to maintain timekeeping and all programming when the line power source (120VAC or 12VDC) is lost. This back-up system shall maintain timekeeping and all programming for not less than 60 days at 25C when fully charged and shall go on line automatically upon failure of the power source. Upon resumption of power source, the unit shall automatically resume normal operation with the relay output either energized or de-energized based on the last program being run.
- 14.2 When the time switch is operating on the back-up system, the indicators and relay output shall be off to conserve back-up power.

15.0 MANUEL OPERATION:

The time switch shall be equipped with a push button switch that will allow a technician to manually activate and/or deactivate the relay output. The relay shall remain in the manual position until the next program step.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

16.0 INDICATORS:

The time switch shall have a minimum of four (4) LED indicators to display the following:

- 16.1 When the time switch has power applied and is operating.
- 16.2 When the time switch is in the process of receiving a two-way network signal.
- 16.3 When the time switch has failed to receive a two-way network signal after midnight Saturday.
- 16.4 When the time switch is receiving signals from a GPS receiver.
- 16.5 When the time switch is receiving from a GPS receiver that is locked onto at least 3 satellites.
- 16.6 When the output relay is energized or de-energized.
- 16.7 When a setting error has been made using switch addressing.
- 16.8 When the group and location number set using the DIP switches.
- 16.9 When the program that the time switch is running.

17.0 TIME SWITCH ADDRESSING:

- 17.1 The group and location address in each time switch shall be programmable by DIP switches mounted on the printed circuit board.
- 17.2 It shall be possible to program a unique address on each time switch board by setting two DIP switches. One DIP switch shall be used to set the group address (01-99) and another DIP switch shall be used to set the location address (01-99). This unique address will allow the operator at the computer to program any time switch individually or as part of a complete group. An LED indicator shall continuously display the group and location number once the DIP address has been set.
- 17.3 Group and/or individual addressing programmed into the two-way network is not acceptable.

18.0 PROGRAM SEARCH BACK:

When the time switch is downloaded with a new program, day-of-week and/or time-of-day, it shall initiate a search back routine to determine if the relay output should be on or off at the time the download is complete.

19.0 GPS RECEIVER OPTION:

- 19.1 The time switch shall have the option of receiving global positioning satellite (GPS) signals from a receiver designed for this function. The GPS receiver shall reset the time-of-day in the time switch continuously when locked onto at least three (3) satellites and shall automatically adjust for time zones and daylight savings time.
- 19.2 The GPS receiver shall not exceed 1.2" (H) x 3.5" (W) when mounted on the top or side of a flasher cabinet. The GPS receiver shall connect to the time switch inside the flasher cabinet using a 48" wiring harness.
- 19.3 The GPS receiver shall be purchased separately from the time switch.

20.0 OUTPUT RELAY:

The time switch shall have a SPDT relay output rated at 15 amps resistive at 120VAC.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

21.0 PROGRAM UPLOAD AND DOWNLOAD:

Each time switch shall be supplied with a DB9 connector mounted on the front of the time switch. This connector shall be used to upload and download time switch programming over the two-way network or from a laptop or netbook computer.

22.0 CONNECTOR:

Each time switch shall be equipped with a circular CPC type connector. This connector shall be identical in style and pin assignment to the connector currently in use by the agency. This requirement will facilitate the direct replacement of time switches currently in use by the agency with the two-way network programmable time switch. It shall be the responsibility of each bidder to determine the connector style and pin assignment necessary to meet this requirement.

23.0 CRC ERROR CHECKING:

To eliminate the possibility of receiving a corrupted two-way network message, the time switch firmware shall include an algorithm that generates a "Cyclic Redundancy Check" (CRC) error-checking character set for each two-way network message received. If the time switch CRC character set does not match the CRC character set received over the two-way network, the time switch shall ignore the message and continue running its program. The bidder will be required to demonstrate the CRC error checking capability to the agency as specified in the test and acceptance section of this specification. The "check sum" method of error checking shall not be accepted.

24.0 COMMUNICATIONS SYSTEM SOFTWARE:

24.1 The information provided in this section sets the minimum acceptable requirements, materials, and workmanship for a Radio/Wi-Fi/LAN-Ethernet programmable time switch system that is activated using two-way Radio/Wi-Fi/LAN-Ethernet technology. The system shall be capable of uploading and downloading time switch programming from a central computer over any combination of 900MHz spread spectrum radio, wireless Wi-Fi and LAN-Ethernet (fiber optic or copper wire).

24.2 SOFTWARE AND COMPUTER CONFIGURATION:

24.2.1 The Radio/Wi-Fi/LAN-Ethernet programmable time switch system software shall be capable of operation on a central office computer running Windows™ 2000 or XP. The software shall be user friendly and intuitive in format and shall employ a "Windows" style interface and shall include suitable prompts and verifications as well as help screens.

24.2.2 The computer used for the Radio/Wi-Fi/LAN-Ethernet programmable time switch system shall be configured as follows:

- 24.2.2.1 PC running Windows™ 2000 or XP, Windows 7.
- 24.2.2.2 512MB RAM (recommended).
- 24.2.2.3 10MB hard drive space.
- 24.2.2.4 Monitor (1024 x 768) or better.
- 24.2.2.5 Mouse and printer (optional).
- 24.2.2.6 COM port for possible use by the radio transceiver.
- 24.2.2.7 LAN (Ethernet) connection (not required for systems using radio only).
- 24.2.2.8 UPS power supply (optional).

24.2.3 If a computer is to be delivered as part of the bid, it will be specified on the request for bid. The Radio/Wi-Fi/LAN-Ethernet programmable time switch system shall operate from any combination of 900MHz spread spectrum radios, wireless Wi-Fi and/or LAN-ethernet to form a wireless RS-232 network. The wireless RS-232 network shall have the capability of 2-way communication with any individual time switch. The wireless RS-232 network shall also have the capability of downloading information to all of the time switches for a particular school and to all time switches throughout the network.

24.0 COMMUNICATIONS SYSTEM SOFTWARE (CONTINUED):

24.3 MASTER GROUP PROGRAMMING:

The software shall be capable of programming up to 10 master groups. Each master group shall be comprised of 99 subgroups. Each subgroup shall be programmable to accommodate the daily, weekly and annual schedule of the flashing beacons around one (1) school or school zone. The system shall be capable of programming a total of 990 individual schools or school zones.

24.4 SUBGROUP PROGRAMMING:

24.4.1 The software shall be capable of programming up to 10 master groups each with up to 99 subgroups. A subgroup will be comprised of time switch locations that share common daily, weekly and annual programs, typically for controlling flashing beacons around one school or school zone. Each subgroup shall be capable of accommodating up to 99 different time switch location addresses. The programming of each subgroup shall include an alphanumeric name and group number that is selected by the user from a list of available subgroup numbers.

24.4.2 One (1) button shall be provided for adding a subgroup to a master group and a separate button shall be provided for editing a subgroup. The add feature shall allow the operator to enter a new subgroup name and select a subgroup number from a list of available subgroup numbers. The edit feature shall allow the operator to change an existing subgroup name, change a subgroup number, and delete a subgroup. If a subgroup is deleted or if the number of a subgroup has been changed, the deleted and changed numbers shall be added back to the list of available subgroup numbers. This feature will eliminate the possibility of inadvertently making a program change.

24.4.3 The software shall allow the operator to list the subgroups by name and by number. Print capability shall be provided when listing the subgroups by name or number.

24.5 LOCATION PROGRAMMING:

24.5.1 Each subgroup (see above) shall be capable of accommodating up to 99 different time switch location addresses. The programming of each location shall include the location name, location type, subgroup number and a unique location ID number. The software shall allow the operator to assign a unique location ID number. Each new location type shall be automatically added to a pull down list, eliminating the need to re-enter the same location type more than once.

24.5.2 One (1) button shall be provided for adding a location and a separate button shall be provided for editing a location. The add feature shall allow the operator to enter a new location name, location type, and select a location number from a list of available location numbers. The edit feature shall allow the operator to change an existing location name, location type, change a location number, and delete a location. If a location is deleted or if the number of a location has been changed, the deleted and changed numbers shall be added back to the list of available location numbers. This feature will eliminate the possibility of inadvertently making a program change.

24.5.3 The software shall allow the operator to list the locations by name, type and subgroup. Print capability shall be provided when listing the locations by name, type or subgroup.

24.6 DAY PLAN PROGRAMMING:

24.6.1 Each subgroup described above shall have up to twenty (20) day plans with 24 program steps per plan. Each day plan program step shall include the following:

Time of day:	Hours, Minutes, AM or PM
ON/OFF Commands:	ON
OFF	

24.6 DAY PLAN PROGRAMMING (CONTINUED):

- 24.6.2 A list of the program steps shall be displayed on the screen as the day plan program is being entered. The operator shall be able to access any of the program steps that are displayed for editing.
- 24.6.3 One of the day plans shall be reserved for programming a normal school day. The operator shall have the option of entering a name for each of the other day plans such as "early out", "football", "summer school", etc. This feature immediately identifies each day plan's function. The operator shall have the ability to edit or delete any day plan name. Each new day plan name shall be automatically added to a list, eliminating the need to enter the same name more than once.
- 24.6.4 Provisions shall be made to edit or delete any day plan step. It shall also be possible to copy the program from any day plan to any other day plan and copy from any subgroup to any other subgroup. The edit plan shall allow the operator the option to copy only current edited data from a subgroup to any other subgroup without copying the entire attach data/program from subgroup to subgroup. The operator will be prompted to accept current revised data or all data to be copied from subgroup to subgroup. Print capability shall be provided for any subgroup and day plan combination including the day plan name.
- 24.6.5 Over the Radio/Wi-Fi/LAN-Ethernet network, it shall be possible to manually send default week plans to any or all subgroups of time switches. It shall also be possible, over the Radio/Wi-Fi/LAN-Ethernet network, to manually re-send any alternate week plans that are currently running.
- 24.6.6 The day plan program screen shall include an "error check" button. When clicked, this button shall search all of the day plans for errors in the program. An error is defined as one of the following conditions:
- 24.6.6.1 ON command followed by an ON command.
 - 24.6.6.2 OFF command followed by an OFF command.
 - 24.6.6.3 A subgroup having more than one day plan with the same name.
- 24.6.7 The error check display will tell the operator the subgroup name, day plan number, a description of the error found and the step numbers where the error occurs.

25.0 DEFAULT WEEK PLAN PROGRAMMING:

Each subgroup shall have a default week plan. The default week plan is the normal Monday through Friday school program for a subgroup. The system shall automatically program Saturday and Sunday to "no day plan" and Monday through Friday to the "normal day plan". The operator shall have the ability to change any day from the "normal day plan" to any other "day plan" programmed for that subgroup.

26.0 ANNUAL PLAN PROGRAMMING:

- 26.1 The software shall be capable of executing an unlimited number of holiday plans, day plans, and vacation plans. A holiday plan shall be used for single days where the time switches are not to operate (i.e. school holiday). A day plan shall be used for days where the time switches are to operate according to a day plan other than the normal day plan (i.e. early out). A vacation plan shall be used for multiple days where the time switches are not to operate (i.e. summer vacation, winter vacation, spring break, etc.).
- 26.2 The software shall display a 15-month calendar on the screen without having to scroll. The calendar shall start with the current month set in Windows. Each holiday plan and day plan shall be programmed by selecting a day from the calendar. Each vacation plan shall be programmed by selecting individual start and end days from the calendar.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

26.0 ANNUAL PLAN PROGRAMMING (CONTINUED):

- 26.3 In addition to the calendar display, the annual programming screen shall provide a list of all of the master groups and the subgroups for each master group programmed into the system. When the operator selects a subgroup, the screen shall display the following information specific to that subgroup:
- 26.3.1 Holiday plan
 - 26.3.2 Vacation plan
 - 26.3.3 All day plans with their assigned names
- 26.4 It shall not be possible to select a day prior to the date set on the computer or program more than one (1) holiday plan and/or day plan for the same day.
- 26.5 When a day on the calendar is programmed for a holiday plan, that day shall be highlighted with the letter "H" displayed. When a day on the calendar is programmed for a day plan, that day shall be highlighted with the day plan number displayed.
- 26.6 The operator shall select the start and end days of a vacation plan from the calendar displayed on the screen. When the start and end days of a vacation plan are programmed on the calendar, the individual days shall be highlighted with the letter "V" displayed.
- 26.7 A provision shall be provided that will allow the operator to view only the highlighted days on the calendar that are programmed for a holiday plan, vacation plan, or a day plan. A button shall be provided that will allow the operator to view all highlighted days simultaneously.
- 26.8 It shall be possible for day plans to be programmed during the days programmed for a vacation plan. This feature will allow the flashing beacons to operate during summer school or other school functions that may occur during the school vacation.
- 26.9 Over the Radio/Wi-Fi/LAN-Ethernet network, the holiday plan, day plan, and vacation plan programs shall cause the software to automatically download the appropriate programming to all affected time switches.
- 26.10 The software shall automatically delete all holiday plans, day plans, and vacation plans whose date has passed.
- 26.11 It shall be possible for the operator to copy all programming to include locations, day plans, holiday plans, and vacation plans from one subgroup to any of the other subgroups in the system.
- 26.12 It shall be possible for the operator to copy only the holiday and vacation plan programming from one subgroup to any of the other subgroups in the system.

27.0 DISPLAY TODAY'S PLAN:

- 27.1 The display today's plan screen shall show the month, day, year, all subgroups by name, day plan, vacation plan, or override plan in effect for each subgroup and the daily program. It shall be possible for the operator to view the daily program for any day in the future by selecting the month, day, and year from a calendar displayed on the screen. It shall be possible for the operator to sort the daily program display by time of day and by subgroup name. The operator shall have the capability of re-sending week plan and vacation plan commands.
- 27.2 Print capability shall be provided for any plan displayed on this screen.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

28.0 OVERRIDE PROGRAM:

- 28.1 The main menu shall include a program override button that when clicked will allow the operator to create a special program and download that program to selected subgroup(s) or location(s) of Radio/Wi-Fi/LAN-Ethernet programmable time switch(s) in the field via the paging network. The Radio/Wi-Fi/LAN-Ethernet programmable time switch(s) will run the override program until midnight of the same day and then revert to the program previously running. This feature will allow the agency to download a special program to account for daily operational changes due to inclement weather, special holidays, or other unforeseen events.
- 28.2 Over the Radio/Wi-Fi/LAN-Ethernet network, the system shall be capable of downloading an override program to a single location within a subgroup of time switches, each individual subgroup of time switches, any number of selected subgroups of time switches, or all subgroups of time switches.
- 28.3 Once the operator has sent an override command, the system shall provide a means for selecting any subgroup running an override program, review that override program, and re-send or cancel the override command. When a Radio/Wi-Fi/LAN-Ethernet programmable time switch receives a cancel override command, it will revert to the program that was running prior to receiving the override command.

29.0 MANUAL CONTROL:

- 29.1 Over the Radio/Wi-Fi/LAN-Ethernet network, it shall be possible to manually control any set of location time switch(s), or an entire subgroup of time switches, or all subgroups of time switches from the computer. The operator shall have the ability to build a manual control list of up to six (6) subgroup/location/ON or OFF commands. Once this manual control list is complete, the operator shall click a button to download all manual commands over the Radio/Wi-Fi/LAN-Ethernet network. In order for the operator to confirm that the manual command has been successfully transmitted, the manual control screen shall display all commands received by the time switch(s).
- 29.2 The time switches affected by this operation shall remain in the manual state until the next program step of the default week plan or override plan, whichever is running.

30.0 AUTOMATIC AND MANUAL DATA ARCHIVE:

- 30.1 At midnight each day, the software shall determine if any changes were made to the program that day. If program changes were made, the software shall create an archive file to back up the data.
- 30.2 The software shall have an archive screen that shows a list of all of the previously archived files. A button shall be provided that will allow the operator to manually create an archive file to back up the data currently in the system. The operator shall be able to click on any previous archive file and load that program data into the system.
- 30.3 The name of each archive file shall include the month, day, year, hour, and minute that the archive file was made.

31.0 LOCATE ALL TIME SWITCHES:

- 31.1 With the click of a button, the operator shall be able to initiate a search to locate all time switches in the field. Each time switch shall be displayed with its corresponding communication path as follows:
 - 31.1.1 Radio network through the computer com port
 - 31.1.2 Radio network connected through a LAN (wireless or wired) network
 - 31.1.3 IP through a Wi-Fi network
 - 31.1.4 IP through a LAN (fiber optic or copper wire) network

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

31.0 LOCATE ALL TIME SWITCHES (CONTINUED):

31.2 The system shall also display errors that result from the search as follows:

31.2.1 When any time switches are missing (radio and IP)

31.2.2 When more than one time switch has the same address (IP only)

31.2.3 When a time switch is located that is not included in the system database (IP only)

31.3 The system shall identify each location as a week or annual programmable time switch.

32.0 TIME/DAY UPDATE AND WEEK PLAN COMMANDS:

32.1 With one (1) Radio/Wi-Fi/LAN-Ethernet transmission, the software shall have the capability of downloading the current day-of-week and time-of-day to all time switches over the Radio/Wi-Fi/LAN-Ethernet network. This time/day update shall be initiated automatically and shall be broadcast three (3) times at two (2) minute intervals every Sunday. The operator shall set the hour and minute on Sunday morning to automatically broadcast the three (3) time updates. Additionally, the operator shall have the option of manually transmitting the time/day update to all time switches at any time.

32.2 After the three (3) time/day updates are sent on Sunday, the system will automatically download any alternate week plan programs to the time switches over the Radio/Wi-Fi/LAN-Ethernet network.

33.0 VALIDATION OF TIME SWITCH PROGRAMMING:

33.1 To insure that each time switch is running the correct program, the software shall automatically poll each time switch for errors (see error detection). An error shall be either 1) The Radio/Wi-Fi/LAN-Ethernet connection with the time switch failed or 2) The Radio/Wi-Fi/LAN-Ethernet connection passed but the program in the time switch did not match the program in the computer.

33.2 When errors are detected, the software will automatically retry to download the correct program and revalidate each time switch listed as having an error. The retry process will repeat every 30 minutes throughout Sunday in an effort to automatically clear all errors in all time switches.

34.0 ERROR DETECTION:

34.1 The system software shall have the ability to detect errors with any Radio/Wi-Fi/LAN-Ethernet time switch in the field. The error shall be either 1) The Radio/Wi-Fi/LAN-Ethernet connection with the time switch failed. Or 2) The Radio/Wi-Fi/LAN-Ethernet connection passed but the program in the time switch did not match the program in the computer. An error button shall appear on the main menu of the software when one or more errors are detected. Clicking this button shall display a screen with all errors listed. Each error listed on this screen shall include the following information:

34.1.1 Type of error detected.

34.1.2 Location name and number, group name and number.

34.1.3 Time, day, and date the error was detected.

34.2 Computer program for the location to include:

34.2.1 Default week plan, alternate week plan, and override plan.

34.3 From the error screen the operator shall have the ability to revalidate any error, reprogram any time switch listed, erase any individual error and erase all errors.

35.0 ERROR NOTIFICATION SYSTEM:

35.1 If the software detects an error from any Radio/Wi-Fi/LAN-Ethernet time switch in the field, a coded signal shall be transmitted automatically over the radio network that will activate an error notification system. The error notification system shall be comprised of one or more locations with a radio time switch that is configured as an error notification unit. When the error notification system is activated, all of the error notification units shall energize their output relays to turn on a light. The purpose of the light is to alert all technicians that an error has been detected that requires attention.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

35.0 ERROR NOTIFICATION SYSTEM (CONTINUED):

35.2 When all errors have been cleared by the technician, the software shall automatically transmit a coded signal to deactivate the error notification system. The error notification system shall operate independent from all group and/or all location manual control commands to activate or deactivate the school beacons.

36.0 BEACON STATUS:

36.1 The software shall provide the status of the school zone beacons:

- 36.1.1 School zone beacons – ON
- 36.1.2 School zone beacons – OFF
- 36.1.3 Communication failure to beacons

37.0 LOG FILES:

37.1 The software shall create a log file for different functions. The log files are as follows:

- 37.1.1 Error Log – Logs every error detected by the system.
- 37.1.2 Transmit Log – Logs the data for every transmission from the computer.
- 37.1.3 System Log – Logs the time and date each time the software is launched and shut down.
- 37.1.4 Validate Log – Logs the results each time the software tries to validate a time switch program.

37.2 These logs shall be easily assessable by the operator. The operator shall be able to select one or more log to be displayed on the screen. The operator shall be able to list the logs files recorded from any of the following time durations: last 24 hours, last 2 days, last 7 days, last 14 days, last 30 days, last 3 months, last 6 months, and last 9 months.

38.0 VALIDATE TIME SWITCHING PROGRAM:

38.1 To insure that each time switch is running the correct program, the operator shall be able to manually activate a routine from a validate screen that will poll each time switch to validate the program. The validate screen shall list all time switches in the system by location name and number and by group name and number. When the validate process starts, the software will poll each time switch for errors (see error detection). An error shall be either 1) The Radio/Wi-Fi/LAN-Ethernet connection with the time switch failed or 2) The Radio/Wi-Fi/LAN-Ethernet connection passed but the program in the time switch did not match the program in the computer.

38.2 The validate screen shall allow the operator to disable any time switch from the validate process and to start and stop the validate process.

39.0 EXITING THE PROGRAM:

The operator shall have to execute at least three (3) buttons in order for the program to be shut down. At the last screen in this process, the computer shall display a distinct warning that the system will not operate if the program is exited. The operator shall have the option of completing the shut down procedure or returning to the program.

40.0 PASSWORD FOR EXITING THE PROGRAM:

The operator shall have the option of activating and deactivating a password feature. When activated, the password will be necessary to exit out of the program. The operator shall be able to change the password at any time.

41.0 COMMUNICATIONS SETUP:

The communications setup of the software shall allow the operator to select the COMM port for the radio transceiver from a pull down menu.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

42.0 VIEW TIME SWITCH PROGRAM:

- 42.1 The operator shall have the option of selecting any time switch from a list.
- 42.2 The operator shall have the ability to read the data from any time switch in the field. The software shall have a screen listing all of the groups and locations. The operator shall highlight any time switch location and click to read the data programmed in that time switch. The data shall be as follows:
 - 42.2.1 Actual day-of-week and time-of-day snapshot
 - 42.2.2 Default week plan
 - 42.2.3 Alternate week plan (if running)
 - 42.2.4 Override plan (if running)
 - 42.2.5 Actual status of relay (ON or OFF)

43.0 SET-UP TIME SWITCH:

- 43.1 The system shall have the capability of programming any time switch (week or annual) over the Radio/Wi-Fi/LAN-Ethernet network. The setup time switch program will compile the commands necessary to program any week or annual time switch with the following:
 - 43.1.1 Current day-of-week and time-of-day
 - 43.1.2 Default week plan for the subgroup selected
 - 43.1.3 Alternate week plan currently running for subgroup (if selected)
 - 43.1.4 Special week plan to run the remainder of the week.
- 43.2 If a special week plan is to be downloaded, the operator shall build this plan from the day plans programmed into the subgroup selected.
- 43.3 The operator shall have the option of sending the setup program to the time switch over the Radio/Wi-Fi/LAN-Ethernet network or downloading the setup program directly to a time switch through a COM port on the computer. If downloading directly to a time switch, the operator shall select the computer COM port to be used for the download from a list of available COM ports.

44.0 WEEKLY OR ANNUAL TIME SWITCH PROGRAMMING:

The system shall have the capability of uploading and downloading programming to weekly and annual time switches. The system may be comprised of all weekly time switches, all annual time switches or a combination of weekly and annual time switches. The software shall send the correct command regardless of whether the time switch is of weekly or annual design.

45.0 CRC ERROR CHECKING:

To eliminate the possibility of a weekly time switch in the field receiving a corrupted transmission, the software shall include an algorithm that generates a four (4) character, "cyclic redundancy check" (CRC) error-checking character set. If a transmission contains programming for multiple weekly time switches, a unique CRC shall be generated for each weekly time switch program sent. The bidder will be required to demonstrate the CRC error checking capability to the agency as specified in the test and acceptance section of this specification. The "check sum" method of error checking shall not be accepted.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

46.0 PDA DEVICE SUPPORT (PALM OS AND WINDOWS MOBILE):

The software shall create a database for Palm OS PDA's and Windows Mobile PDA's. The database for both devices shall include all programming available in the central computer.

47.0 PRINT SETUP:

The system shall have the capability of printing all programmed data. The operator shall be able to switch between a word format and a spreadsheet format for the printout.

48.0 HELP SCREENS:

The software shall include help screens that will assist the operator in the set-up and operation of the system software. A separate help button shall be displayed on each appropriate screen.

49.0 COMMUNICATIONS:

49.1 WiMax shall be the method of communications for all school zone flashers. The time switch shall be ethernet compatible for two-way communications. Each solar powered beacon assembly, shall include the following:

49.1.1 WiMax Radio/Antenna

WiMax radio materials shall meet the requirements of City of Houston Spec. Section 16738 which can be viewed at <http://pwecms.cityofhouston.net/documents/forms/2011-standard-construction-specifications/details.html>. The antenna shall be mounted on top of the flasher pole. All cable shall be routed inside the pole to the cabinet.

49.1.2 Power Over Ethernet (POE) Power Source

The POE shall be a DC to DC converter that takes a 12-volt battery power supply and converts it to a regulated 48-volts. It shall be capable of applying the 48-volt DC to CAT5 cable. It shall meet the following:

- 49.1.2.1 IEE 802.3af.
- 49.1.2.2 Dual inputs for connecting two power sources.
- 49.1.2.3 Integrated 10/100 MB POE Inserter.
- 49.1.2.4 Power up to 24W.
- 49.1.2.5 Low self consumption of power, equal or less than 1W.
- 49.1.2.6 Compact in size.
- 49.1.2.7 Be able to operate in high temperatures, up to 140-degrees F.
- 49.1.2.8 RJ45 data connections.
- 49.1.2.9 Wire terminal for DC input connection.

49.1.3 All incidentals, including ethernet cables, copper cables, connectors, etc.

50.0 POLE ASSEMBLY:

50.1 The pedestal pole assembly is required for support of the solar powered school zone field equipment. Refer to figures 1, 2 and 3 included in this specification for details of assembly items.

50.2 Pole shaft shall be one piece galvanized steel pipe.

50.3 Screw-in type anchor assembly shall meet the requirements of TxDOT Special Specification Item 4003 and details shown in figure 3 of this specification.

50.4 Breakaway pole base shall be the type as shown in figure 1 of this specification.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

PART III - EXECUTION/CONSTRUCTION

51.0 CABINET MOUNTING:

The cabinet shall be arranged for side of pole mounting. Two (2) sets of holes shall be predrilled to accommodate two Pelco SE 1100 or equal mounting brackets. The top set shall accommodate the wire inlet to the cabinet. These mounting brackets shall be supplied as part of the complete cabinet package.

52.0 CONTROL PANEL:

The control panel shall be 12 inches high by 14 inches wide and have a 4 inch lip at the bottom for the purpose of fastening to the upper shelf. The panel will set up for the charging unit and flashing unit to mount on the panel, also mounted on the panel will be the time switch.

53.0 SOLAR PANEL MOUNTING HARDWARE:

The photovoltaic (PV) module mounting assembly shall be constructed of galvanized steel (ASTM A-153 Class A) or aluminum of adequate design and strength to provide a means of securely attaching the PV module frame to a pole at a permanent angle of 45 to 50 degrees. The pole mounting hardware shall accommodate a steel 4.5-inch O.D. pole, with the bracket at an inscribed angular position about the pole. Mounting hardware may mount on the side of the pole or on the top of the pole as long as the bracket is of adequate strength to withstand the weight and wind stresses.

54.0 PHYSICAL AND ELECTRICAL INTERFACE:

54.1 A physical and electrical interface needs to be maintained for the connection of the pager unit. This interface will need to be a terminal strip on the rear of the control panel. This terminal strip will be where the harness will hook up for the pager unit. The terminal strip will need to be clearly labeled DC+, DC-, Earth Ground, Relay N/O, or Relay Common.

54.2 A physical and electrical interface will have to be maintained between the solar panel, batteries, and signals. Both can be utilized on one (1) terminal block to save space. All labeling shall be silk-screened.

55.0 TESTING AND ACCEPTANCE:

55.1 Solar Powered School Zone Beacons Assemblies

Shall meet or exceed all applicable Texas Manual on Uniform Traffic Control Devices and/or Institute Transportation Engineers (ITE) standards as well as these specifications. In addition to testing of pre-shipment samples, complete testing of school zone beacon assemblies may be required at any time prior to acceptance. Institute Transportation Engineers specified signal lamp intensity shall be maintained.

55.2 Two-Way Network Programmable Time Switch

The apparent low bidder shall be required to supply a complete working system to the agency for testing and evaluation. This working system shall include a computer preloaded with the software, a two-way network for the computer, six-field time switch units, a laptop computer, and any other equipment or supplies necessary for the agency to adequately test and evaluate the system. The bidder shall setup the computer and the six-field time switch units at a location identified by the City of Houston. The bidder will successfully demonstrate the CRC error-checking feature to the City of Houston personnel by simulating a time switch receiving a normal message and a corrupted message. The bidder will train City of Houston personnel on how to program and operate the two-way network programmable time switch system. The test and evaluation will take up to 60 calendar days at which time the equipment may be picked up by the bidder or shipped to the bidder freight collect. Upon telephone or written notification, the bidder must deliver this equipment to the agency within 14 calendar days. Failure to comply with the above requirement will render the bid non-responsive.

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

55.0 TESTING AND ACCEPTANCE (Continued):

55.3 Communications System Software

The apparent low bidder shall be required to supply a complete working system to the agency for testing and evaluation. This working system shall include a computer preloaded with the software, six-field time switch units and any other equipment or supplies necessary for the agency to adequately test and evaluate the system. The bidder shall set up the computer, the computer transceiver and the six-field time switch units at a location identified by the agency. The bidder will successfully demonstrate the CRC error-checking feature to the agency personnel by simulating a weekly programmable time switch receiving normal commands and corrupted commands. The bidder will train agency personnel on how to program and operate the Radio/Wi-Fi/LAN-Ethernet programmable time switch system. The test and evaluation will take up to 60 calendar days, at which time the equipment may be picked up by the bidder or shipped to the bidder freight collect. Upon telephone or written notification, the bidder must deliver this equipment to the agency within 14 calendar days. Failure to comply with the above requirement will render the bid non-responsive.

56.0 TRAINING:

Training requirements are listed below. The City shall furnish the training classroom and the Project Manager shall schedule the training sessions.

56.1 Assembly:

One (8) hour training class on field assembly training shall be provided as requested by the City Project Manager for the City's installation contractors and City of Houston's Department of Public Works & Engineering Traffic Management and Maintenance Division personnel. The instructional training shall be for up to twenty (20) persons at the request of the Project Manager.

56.2 Maintenance:

One training class consisting of eight (8) hours of maintenance training shall be provided for up to twenty (20) persons, as requested by the City Project Manager.

57.0 CERTIFICATION:

The supplier's representative shall provide to the City's Project Manager, in writing, confirmation that the City's installation contractors have been trained to successfully assemble, program and operate the beacon assemblies in accordance with manufacturer's specifications and operating manual.

58.0 DOCUMENTATION:

Each solar powered school zone assembly both complete and as parts, shall be provided with the following documentation:

58.1 Complete accurate schematic diagrams.

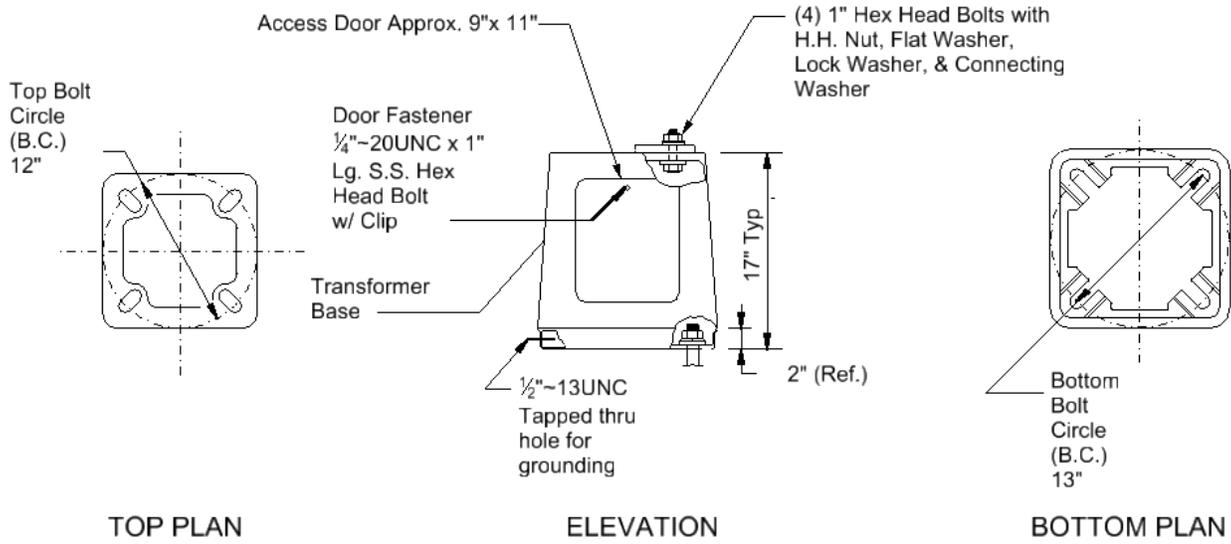
58.2 Complete parts list including names and part numbers for vendors and for parts not identified by universal numbers.

58.3 Operating and maintenance manual including simple programming instructions and a programming guide.

59.0 WARRANTY:

All equipment, except batteries, shall be warranted free from defects in material and workmanship for three (3) years from date delivered to the City of Houston warehouse. Batteries shall be warranted as specified in the battery for solar powered flashing beacons section of this specification.

FIGURE 1



BREAKAWAY BASE DETAILS

FIGURE 2

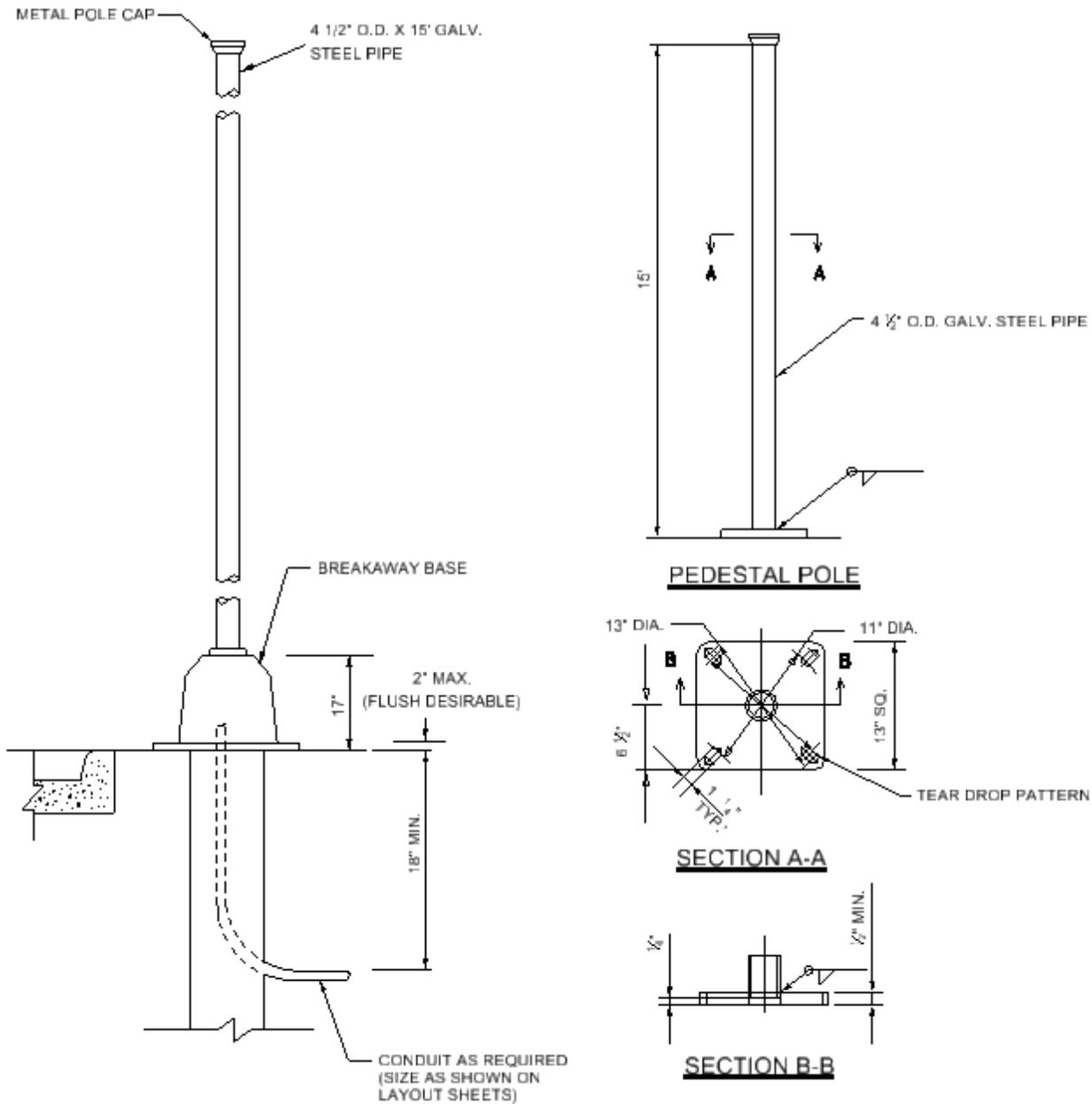
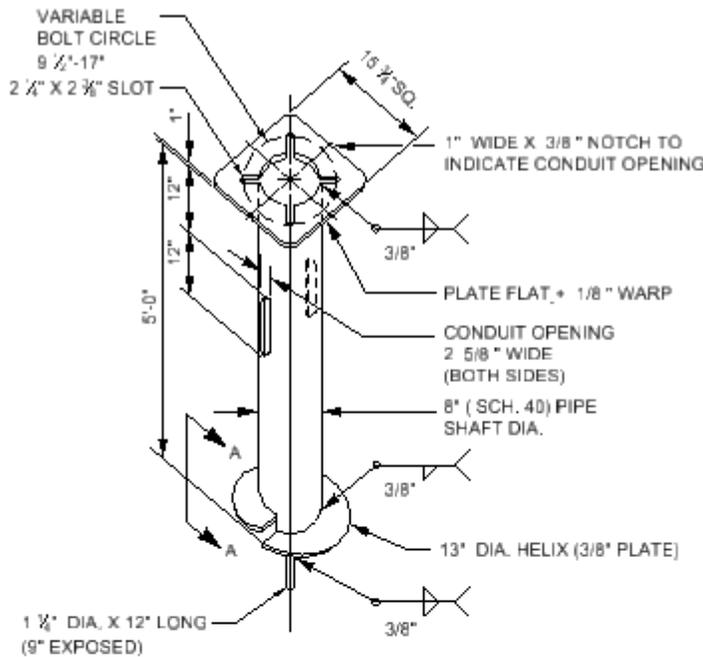
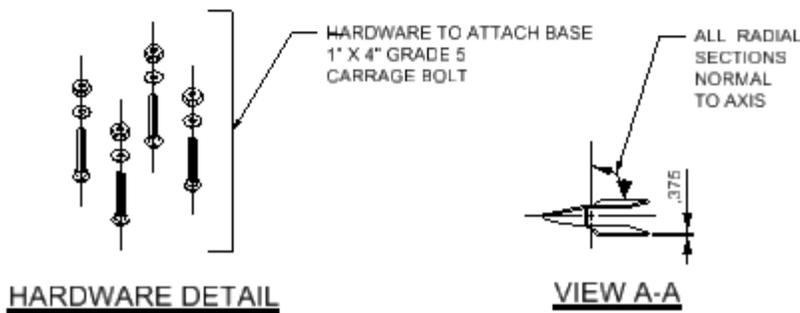


FIGURE 3



SCREW ANCHOR FOUNDATION DETAIL



HARDWARE DETAIL

VIEW A-A

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

60.0 ON SITE INSPECTION:

The Public Works & Engineering Department reserves the right to make on-site inspections (when required) to bidders and potential awarded suppliers to determine if they actually meet published specifications.

61.0 POST AWARD MEETING:

Once the award is approved by City Council, Public Works & Engineering will schedule a post award meeting with the successful supplier(s) and Public Works & Engineering end users. This meeting will discuss procurement policies, supplier invoicing, supplier payment and all other matters related to administration of the award.

62.0 COMPLIANCE:

62.1 The Department of Public Works & Engineering reserves the right to monitor this award for compliance to ensure legal obligations are fulfilled and that an acceptable level of services are provided.

62.2 Monitoring may take the form of, but is not necessarily limited to:

62.2.1 Site visits

62.2.2 Review of deliveries received for accuracy and timeliness

62.2.3 Review of supplier's invoices for accuracy

62.3 The responsibility for monitoring compliance rests with the Contract Compliance Section, Management Support Branch of the Office of the Director, Department of Public Works & Engineering.

63.0 PRICE ADJUSTMENT:

63.1 Direct Cost:

In this section means Supplier's cost from the manufacturer of any item or if Supplier is the manufacturer, the cost of raw materials required to manufacture the item, plus costs of transportation from manufacturer to Supplier and Supplier to the City.

63.2 Price Decreases:

63.2.1 If the Supplier's Direct Cost **decreases** at any time during the full term of this award, Supplier shall **immediately** pass the decrease on to the City and lower its prices by the amount of the decrease in Direct Cost.

63.2.2 Supplier shall notify the City Purchasing Agent of price decreases in the same way as for price increases set out below. The price decrease shall become effective upon City Purchasing Agent's receipt of Supplier's notice.

63.3 Price Increases:

63.3.1 Suppliers may request a price increase after **12** months from the bid opening date of the bid received by the City Secretary of the City of Houston. Subsequent price increases may be requested **12** months from the date of the previous approved price increase. The amount of the first increase shall not exceed actual documented increase in Supplier's Direct Cost and shall not ever be more than **10%** above the previous bid price. The amount of the subsequent price increase shall also not exceed this percentage.

63.3.2 To request a price increase, Supplier must submit a letter setting the amount of the increase, along with an itemized list of any increased prices, showing the Supplier's current price, revised price, the actual dollar difference and the percentage of the price increase by line item. Documentation from the Supplier's supplier(s) showing the actual dollar increase to the Supplier must accompany this request. Such documentation from the Supplier's supplier must clearly show the dollar increase incurred by the Supplier on the applicable solicitation per item bid. The letter and documentation shall be sent to the following address:

TECHNICAL SPECIFICATIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT, CONTINUED:

63.0 PRICE ADJUSTMENT (Continued):

63.3 Price Increases (continued):

**City Purchasing Agent
City of Houston
P.O. Box 1562
Houston, Texas 77251**

- 63.3.3 If the City Purchasing Agent approves the price increase, he or she shall notify Supplier in writing; no price increase will be effective until Supplier receives this notice. If the City Purchasing Agent does not approve Supplier's price increase, Supplier may terminate its performance upon **sixty (60) days** advance written notice to the City Purchasing Agent. Termination of performance is Supplier's only remedy if the City Purchasing Agent does not approve the price increase.
- 63.3.4 If, at any time after approving a price increase, the City Purchasing Agent determines that the City can obtain the same item at a lower price from a different source without violating the State bid laws, the City may then purchase the item from the lower price source without any obligation to the Supplier.

BIDDER'S QUESTIONNAIRE

In order to receive bid award consideration, the bidder must be able to demonstrate that they are currently providing or have had at least one contract, as a prime supplier, for delivering remote activated school flashers that are similar in size and scope to this solicitation. The reference(s) should be included in the space provided below. Please attach another piece of paper if necessary. If references are not included with the bid, the bidder shall be required to provide such references to the City of Houston within five working days from receipt of a written request from the City of Houston to do so. **Bidder's capability and experience shall be a factor in determining the supplier's responsibility. Bidder must have references documenting that it has delivered remote activated school flashers.**

1. Name: _____
Address: _____
City & State: _____
Name & Phone Number of Contact: _____ Years of Services: _____

2. Name: _____
Address: _____
City & State: _____
Name & Phone Number of Contact: _____ Years of Services: _____

3. Name: _____
Address: _____
City & State: _____
Name & Phone Number of Contact: _____ Years of Services: _____

SECTION C.
CITY OF HOUSTON
GENERAL TERMS AND CONDITIONS
FOR
REMOTE ACTIVATED SCHOOL FLASHERS
FOR THE
PUBLIC WORKS & ENGINEERING DEPARTMENT

1.0 TERM OF AWARD:

- 1.1 The term of the award shall be for a thirty-six (36) month period beginning on the date specified in the Notice of Award letter. During this period, purchase orders will be issued for items as needed. Any conflict between the terms and conditions as specified herein and said purchase orders; the term and conditions of the solicitation shall govern. The Supplier will not provide any goods/services without first having received an official City of Houston purchase order. While it is the intent to procure goods/services by issuing an Official City of Houston Purchase Order, there will be instances when a Purchasing Card (P-Card) or Petty Cash may be used. **The City requires that the prices awarded be honored on all purchases.**
- 1.2 It is emphasized that the City of Houston does not guarantee to purchase any specific quantity of any item listed; rather, the quantities may vary depending upon the actual needs of the user departments. Supplier shall remain obligated to the City under all clauses of this award that expressly or by their nature extend beyond and survive the expiration or termination of the award, including but not limited to warranties and indemnity provisions hereof.
- 1.3 "Upon written notice to the Supplier from the City Purchasing Agent or his designee, the term of this award shall be extended on the same terms and conditions on a month-to-month basis until (1) approval of a new award or (2) spending authority has been reached, whichever occurs first."

2.0 OPTIONAL EXTENSION:

This award may be extended for two additional one (1) year periods upon acceptance of the Supplier and thirty (30) days prior written notice from the City Purchasing Agent. A price increase subject to the provisions of this award may be requested by the Supplier for approval by the City Purchasing Agent at this time. If the price increase is approved by the City Purchasing Agent or if no price increase is requested, a letter of extension will be issued by the City Purchasing Agent for the Supplier's acceptance under the same terms and conditions as the existing award.

3.0 SUPPLIER'S DUTY TO PAY:

Supplier shall make timely payments to all persons and entities supplying labor, materials or equipment for the performance of this award. Supplier agrees to protect, defend, and indemnify the City from any claims or liability arising out of Supplier's failure to make such payments. (Disputes relating to payment of MWBE subcontractors shall be submitted to arbitration in the same manner as any other disputes under the MWBE subcontract. Failure of the Supplier to comply with the decisions of the arbitrator may, at the sole discretion of the City, be deemed a material breach leading to termination of this award).

4.0 INTER-LOCAL AGREEMENTS:

Under the same terms and conditions hereunder, the award may be expanded to other government entities through inter-local agreements between the City of Houston and the respective government entity that encompass all or part of the products provided under this award. Separate agreements will be drawn to reflect the needs of each participating entity.

5.0 INVOICING:

- 5.1 In order to expedite payment all invoices must be submitted in triplicate, itemized as to quantity, part number, description, and applicable discount (if any) in the same order and form as in the City of Houston Purchase Order. Variations will only delay payment. In addition, invoices must show the name of the Department, Division or Section to which the merchandise was delivered, and the City of Houston Purchase Order Number.

GENERAL TERMS AND CONDITIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT, CONTINUED:

5.0 INVOICING (CONTINUED):

- 5.2 All delivery tickets must have a description of the commodity delivered.
- 5.3 Mail invoices to the Accounts Payable Section of the department and to the address, as noted on individual purchase orders.
- 5.4 Delivery tickets and packing slips shall contain the same information as the invoice.
- 5.5 All packing slips and delivery tickets must be signed by the receiving employee and must show his/her City employee number.

6.0 PAYMENT:

Payment is due thirty (30) days after the City has approved the invoice or after the City has accepted the goods, whichever occurs later.

7.0 CONTAMINATED MATERIALS:

Each Supplier shall be required to identify their source of supply. No material will be accepted from a hazardous or toxic waste site, regardless of whether the site has been identified by either a Local, State or Federal Agency. No contaminated, toxic, hazardous waste products or heavy metal product shall be contained in these deliveries. If any material supplied to the City is found to be contaminated or contain heavy metal products, it will be the responsibility of the Supplier to remove and replace the contaminated product at their expense and at no cost to the City. The City has the option to solicit the removal of any contaminated material and charge back the Supplier any and all costs involved.

8.0 INSPECTIONS AND AUDITS:

- 8.1 The City reserves all rights to review all payments made to Suppliers by auditing at a later date. Subject to such audit, any overpayments may be recovered from the Supplier.
- 8.2 Representatives of the City have the right to examine the books of all subcontractors and/or suppliers supplying goods and/or services under the prime award insofar as those books and records relate to performance under the prime award.
- 8.3 City representatives may have the right to perform, or have performed, (1) audits of Supplier's books and records, and (2) inspections of all places where work is undertaken in connection with this award. Supplier shall keep its books and records available for this purpose for at least three years after this award terminates. This provision does not affect the applicable statute of limitations.

9.0 SILENCE OF SPECIFICATIONS:

The apparent silence of these specifications as to any detail, or the apparent omission from it 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.

10.0 SPECIFIED EQUIPMENT, OR EQUIVALENT:

- 10.1 Wherever in the specifications any materials or processes are indicated or specified by patent of proprietary name and/or by name of manufacturer, such specifications shall be deemed to be used for the purpose of facilitating descriptions of the performance, materials and/or processes desired and shall be deemed to be followed by the words, "or equivalent", if not so stated in the specifications herein.
- 10.2 The burden of proof shall rest with the Bidder, in the course of a technical evaluation, to prove that the proposed item(s) are equivalent to the performance, materials, processes, or articles specified. **DETERMINATION AS TO WHETHER THE ITEM(S) BID IS /ARE EQUIVALENT TO THOSE SPECIFIED SHALL REST SOLELY WITH THE CITY PURCHASING AGENT AND THE RECEIVING DEPARTMENT.**

GENERAL TERMS AND CONDITIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT, CONTINUED:

11.0 DELIVERIES:

- 11.1 The Supplier agrees to make deliveries only upon receipt of duly signed and approved Purchase Orders issued by the City of Houston City Purchasing Agent or designee. Delivery made without such Purchase Order shall be at Supplier's risk and shall leave the City the option of canceling any award implied or expressed herein.
- 11.2 Unless otherwise stated in the Bid Form or Specifications, deliveries must consist only of new and unused merchandise.
- 11.3 Full tare must be allowed and no charges made for packages.
- 11.4 In the event that the deliveries of the supplies covered in the solicitation are not made within the number of days specified, or in the event that the supplies delivered are rejected, and are not removed and replaced within the number of days specified in the official notice of rejection, the City reserves the right to terminate. The defaulting Supplier will be deemed non-responsible and will be disqualified from bidding on the solicitation if it is re-let by the City within ninety (90) days of such termination.
- 11.5 The Bidder must demonstrate its ability to secure and deliver any item within five (5) working days. Forty-eight (48) hour delivery services may be required in some instances; therefore, the Bidder must be able to provide such service.

12.0 SHIPPING TERMS:

Prices shall be F.O.B. Destination to the delivery location designated herein or on a purchase order. The Supplier shall retain title and control of all goods until they are delivered and award of coverage has been completed. All risk of transportation and all related charges shall be the responsibility of the Supplier. The Supplier shall file all claims for visible or concealed damage. The City will notify the Supplier promptly of any damaged goods and shall assist the Supplier in arranging for inspection.

13.0 MATERIALS:

The items furnished shall be the latest product in production to commercial trade, and shall be of the highest quality as to materials used. The Supplier furnishing these items shall be experienced in the production 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.

14.0 RESTOCKING (EXCHANGES AND RETURNS):

There will be no restocking charge to the City for return or exchange of any item purchased under the terms of this award. If the City wishes to return items purchased under this award, the Supplier agrees to exchange, these items for other items, with no additional charge incurred. Items must be returned to Supplier within thirty (30) days from date of delivery. If there is a difference in price in the items exchanged, the Supplier shall invoice the City for increase price or provide the City with a credit or cash refund for any decrease in price. On items returned, a credit or cash refund will be issued by the Supplier to the City. This return and exchange option shall extend for thirty (30) days following the expiration date of the award. All items returned by the City must be unused and in the same merchantable condition as when received. **Items that are special ordered and/or stocked by the Supplier at the specific request of the City may be returned only upon approval of the Supplier.**

15.0 ADDITIONS & DELETIONS:

The City, by written notice from the City Purchasing Agent to the Supplier, at any time during the term of this award, may add or delete like or similar equipment, supplies, locations and/or services to the list of equipment, supplies, locations, and/or services to be provided. Any such written notice shall take effect on the date stated in the notice from the City. Similar equipment, supplies, services, or locations added to the award shall be in accordance with the solicitation specification/scope of services, and the charges or rates for items added shall be the same as specified on the bid form. In the event additional equipment, supplies, locations and/or services are not identical to the item(s) already awarded, the charges therefore will then be the Supplier's normal and customary charges or rates for the equipment, supplies, locations and/or services classified on the bid form.

GENERAL TERMS AND CONDITIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT, CONTINUED:

16.0 FORCE MAJEURE:

- 16.1 Timely performance by both parties is essential to the award. However, neither party is liable for delays or other failures to perform its obligations to the extent the delay or failure is caused by Force Majeure. Force Majeure means fires, floods, explosions, and other acts of God, war, terrorist acts, riots, court orders, and the acts of superior governmental or military authority.
- 16.2 This relief is not applicable unless the affected party does the following:
- 16.2.1 uses due diligence to remove the Force Majeure as quickly as possible; and
 - 16.2.2 provides the other party with prompt written notice of the cause and its anticipated effect.
- 16.3 The City may perform or solicit functions itself during periods of Force Majeure. Such performance does not constitute a default or breach of this award by the City.
- 16.4 If the Force Majeure continues for more than 30 days, the City Purchasing Agent or Director upon written authorization by the City Purchasing Agent may terminate this award by giving 30 days' written notice to Supplier. This termination is not a default or breach. SUPPLIER WAIVES ANY CLAIM IT MAY HAVE FOR FINANCIAL LOSSES OR OTHER DAMAGES RESULTING FROM THE TERMINATION EXCEPT FOR AMOUNTS DUE AT THE TIME OF THE TERMINATION.

17.0 SAMPLES:

- 17.1 If requested by the City, the two (2) apparent low Bidders will be required to submit samples of the items proposed within fourteen (14) days of such request. The samples will be used to determine if the proposed items meet the specifications stated herein.
- 17.2 **If the Bidder fails to provide samples within the fourteen (14) day period, as required, the City may reject your bid and not consider it for further evaluation.**
- 17.3 These samples, if not subject to destructive testing, will be returned to the supplying Supplier. A notice will be mailed to the Supplier when samples are ready to be released by the City. Supplier will have fourteen (14) days to redeem the samples. If samples are not redeemed within this time period the City cannot be responsible for condition or loss of the subject items.

18.0 WARRANTY:

A minimum warranty of twelve (12) months from Supplier and the manufacturer's warranty will be furnished on materials and workmanship shall be provided. The warranty period shall begin the day the City officially accepts the item. Any warranty work is to be completed within five (5) working days after receipt of item.

19.0 RELEASE:

PRIME SUPPLIER AGREES TO AND SHALL RELEASE THE CITY, ITS AGENTS, EMPLOYEES, OFFICERS, AND LEGAL REPRESENTATIVES (COLLECTIVELY THE "CITY") FROM ALL LIABILITY FOR INJURY, DEATH, DAMAGE, OR LOSS TO PERSONS OR PROPERTY SUSTAINED IN CONNECTION WITH OR INCIDENTAL TO PERFORMANCE UNDER THIS AGREEMENT, EVEN IF THE INJURY, DEATH, DAMAGE, OR LOSS IS CAUSED BY THE CITY'S SOLE OR CONCURRENT NEGLIGENCE AND/OR THE CITY'S STRICT PRODUCTS LIABILITY OR STRICT STATUTORY LIABILITY.

GENERAL TERMS AND CONDITIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT, CONTINUED:

20.0 INDEMNIFICATION:

20.1 PRIME SUPPLIER AGREES TO AND SHALL DEFEND, INDEMNIFY, AND HOLD THE CITY, ITS AGENTS, EMPLOYEES, OFFICERS, AND LEGAL REPRESENTATIVES (COLLECTIVELY THE "CITY") HARMLESS FOR ALL CLAIMS, CAUSES OF ACTION, LIABILITIES, FINES, AND EXPENSES (INCLUDING, WITHOUT LIMITATION, ATTORNEYS' FEES, COURT COSTS, AND ALL OTHER DEFENSE COSTS AND INTEREST) FOR INJURY, DEATH, DAMAGE, OR LOSS TO PERSONS OR PROPERTY SUSTAINED IN CONNECTION WITH OR INCIDENTAL TO PERFORMANCE UNDER THIS AGREEMENT INCLUDING, WITHOUT LIMITATION, THOSE CAUSED BY:

- (1) PRIME SUPPLIER'S AND/OR ITS AGENTS', EMPLOYEES', OFFICERS', DIRECTORS', CONTRACTORS', OR SUBCONTRACTORS' (COLLECTIVELY IN NUMBERED PARAGRAPHS 1-3, "PRIME SUPPLIER") ACTUAL OR ALLEGED NEGLIGENCE OR INTENTIONAL ACTS OR OMISSIONS;
- (2) THE CITY'S AND PRIME SUPPLIER'S ACTUAL OR ALLEGED CONCURRENT NEGLIGENCE, WHETHER PRIME SUPPLIER IS IMMUNE FROM LIABILITY OR NOT; AND
- (3) THE CITY'S AND PRIME SUPPLIER'S ACTUAL OR ALLEGED STRICT PRODUCTS LIABILITY OR STRICT STATUTORY LIABILITY, WHETHER PRIME SUPPLIER IS IMMUNE FROM LIABILITY OR NOT.

20.2 PRIME SUPPLIER SHALL DEFEND, INDEMNIFY, AND HOLD THE CITY HARMLESS DURING THE TERM OF THIS AGREEMENT AND FOR FOUR YEARS AFTER THE AGREEMENT TERMINATES. PRIME SUPPLIER'S INDEMNIFICATION IS LIMITED TO \$500,000 PER OCCURRENCE. PRIME SUPPLIER SHALL NOT INDEMNIFY THE CITY FOR THE CITY'S SOLE NEGLIGENCE.

20.3 INDEMNIFICATION PROCEDURES:

- (1) Notice of Claims. If the City or Prime Supplier receives notice of any claim or circumstances which could give rise to an indemnified loss, the receiving party shall give written notice to the other party within 10 days. The notice must include the following:
 - (a) a description of the indemnification event in reasonable detail,
 - (b) the basis on which indemnification may be due, and
 - (c) the anticipated amount of the indemnified loss.

This notice does not estop or prevent the City from later asserting a different basis for indemnification or a different amount of indemnified loss than that indicated in the initial notice. If the City does not provide this notice within the 10 day period, it does not waive any right to indemnification except to the extent that Prime Supplier is prejudiced, suffers loss, or incurs expense because of the delay.

(2) Defense of Claims

- (a) Assumption of Defense. Prime Supplier may assume the defense of the claim at its own expense with counsel chosen by it that is reasonably satisfactory to the City. Prime Supplier shall then control the defense and any negotiations to settle the claim. Within 10 days after receiving written notice of the indemnification request, Prime Supplier must advise the City as to whether or not it will defend the claim. If Prime Supplier does not assume the defense, the City shall assume and control the defense, and all defense expenses constitute an indemnification loss.
- (b) Continued Participation. If Prime Supplier elects to defend the claim, the City may retain separate counsel to participate in (but not control) the defense and to participate in (but not control) any settlement negotiations. Prime Supplier may settle the claim without the consent or agreement of the City, unless it (i) would result in injunctive relief or other equitable remedies or otherwise require the City to comply with restrictions or limitations that adversely affect the City, (ii) would require the City to pay amounts that Supplier does not fund in full, (iii) would not result in the City's full and complete release from all liability to the plaintiffs or claimants who are parties to or otherwise bound by the settlement.

GENERAL TERMS AND CONDITIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT, CONTINUED:

21.0 WORKER'S COMPENSATION INSURANCE:

On any City award with a labor component or any award where Supplier delivery people make deliveries for City sites, Worker's Compensation Insurance as shown in the Insurance Section is required.

22.0 INSURANCE:

22.1 If performance of this award requires Supplier to provide labor in addition to supplies, labor and materials, the Supplier shall have and maintain in effect insurance coverage and furnish certificates of insurance showing the City as an additional insured, in duplicate form, prior to the beginning of the award. The City shall be named as an additional insured on all such policies except Worker's Compensation. **The issuer of any policy shall have a Certificate of Authority to transact insurance business in the State of Texas or have a Best's rating of at least B+ and a Best's Financial Size Category of Class VI or better, according to the most current edition of Best's Key Rating Guide, Property-Casualty United States.** Comprehensive General Liability including Contractual Liability and Automobile Liability insurance shall be in at least the following amounts: Automobile Liability Insurance for autos furnished or used in the course of performance of this award including Owned, Non-owned, and Hired Auto coverage (Any Auto coverage may be substituted for Owned, Non-owned and Hired Auto coverage.) If no autos are owned by Supplier, coverage may be limited to Non-owned and Hired Autos. If Owned Auto coverage cannot be purchased by Supplier, Scheduled Auto coverage may be substituted for Owned Auto coverage. EACH AUTO USED IN PERFORMANCE OF THIS AWARD MUST BE COVERED IN THE LIMITS SPECIFIED - \$1,000,000.00 Combined Single Limit.

22.2 Worker's Compensation including Broad Form All States endorsement shall be in statutory amount.

22.3 All insurance policies required by this award shall require by endorsement, that the insurance carrier waive any rights of subrogation against the City, and that it shall give thirty (30) days written notice to the City before they may be cancelled. Within such thirty (30) day period Supplier, covenants that it will provide other suitable policies in lieu of those about to be cancelled so as to maintain in effect the coverage required under the provisions hereof. Failure or refusal of the Supplier to obtain and keep in force the above-required insurance coverage shall authorize the City, at its option, to terminate this award at once.

22.4 ONLY UNALTERED ORIGINAL INSURANCE CERTIFICATES, EXCLUDING ANY ALTERATION AND INITIALS REGARDING CANCELLATION WHICH IS MADE TO MEET CITY REQUIREMENTS, AS ENDORSED BY THE UNDERWRITER ARE ACCEPTABLE. PHOTOCOPIES ARE UNACCEPTABLE.

23.0 SUCCESSORS AND ASSIGNMENTS:

Supplier may not assign this award or dispose of substantially all of its assets without the written consent of the City Purchasing Agent. Supplier's failure to obtain such consent shall be an event of default, authorizing the Purchasing Agent to terminate this award according to its terms.

24.0 MINORITY AND WOMEN BUSINESS ENTERPRISES:

24.1 Contractor shall comply with the City's Minority and Women Business Enterprise ("MWBE") programs as set out in Chapter 15, Article V of the City of Houston Code of Ordinances. Contractor shall make good faith efforts to award subcontracts or supply agreements in at least **11%** of the value of this Agreement to MWBEs. Contractor acknowledges that it has reviewed the requirements for good faith efforts on file with the City's Office of Business Opportunities ("OBO") and will comply with them.

24.2 Contractor shall require written subcontracts with all MWBE subcontractors and shall submit all disputes with MWBEs to binding arbitration to be conducted in Houston, Texas if directed to do so by the OBO Director. MWBE subcontracts must contain the terms set out in "Section A, Table 2".

GENERAL TERMS AND CONDITIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT, CONTINUED:

25.0 TAXES:

The City is exempt from the Federal Excise and Transportation Tax, and the limited Sales and Use Tax. Unless the Bid Form or Specifications specifically indicate otherwise, the price bid must be net exclusive of above-mentioned taxes, and will be so construed. A Supplier desiring refunds of, or exemptions from, taxes paid on merchandise accepted by the City, must submit the proper forms, and the City Purchasing Agent, if satisfied as to the facts, will approve or issue the necessary certificates.

26.0 AWARD:

26.1 The City reserves the right to consider and make awards of bids on articles of similar nature that will in all respects serve the purpose for which the purchase is being made. The City reserves the right to be the sole judge as to whether such articles will serve the purpose.

26.2 Unless otherwise specified, the City reserves the right to accept or reject in whole or in part any bid submitted or to waive any informality for the best interest of the City.

27.0 REJECTIONS:

27.1 Articles not in accordance with samples and specifications must be removed by the Supplier and at his expense. All disputes concerning quality of supplies delivered under this invitation to bid will be determined by the City Purchasing Agent or designated representative.

27.2 All articles enumerated in the invitation to bid shall be subject to inspection on delivery by an officer designated for the purpose and if found inferior to the quality called for, or not equal in value to the Department's samples, or deficient in weight, measurements, workmanship or otherwise, this fact shall be certified to the City Purchasing Agent who shall have the right to reject the whole or any part of the same.

28.0 BRAND NAME:

Any manufacturer's names, trade names, brand names, or catalog numbers used in the specifications are for the purpose of describing and establishing the general quality level, design and performance desired. Such references are not intended to limit or restrict bidding by other Suppliers, but are intended to approximate the quality design or performance, which is desired. Any bid, which proposes like quality, design or performance, will be considered. Equivalent products will be considered, provided a complete description and product literature is provided. Unless a specific exception is made, assumption will be that the item is bid exactly as specified on the Invitation to Bid.

29.0 CHANGE ORDER:

29.1 At any time during the term of the award, the City Purchasing Agent or Director upon written authorization by the City Purchasing Agent may issue a Change Order to increase or decrease the scope of services or change plans and specifications, as he or she may find necessary to accomplish the general purposes of this award. The Supplier shall furnish the services or deliverables in the Change Order in accordance with the requirements of this award plus any special provisions, specifications, or special instructions issued to execute the extra work.

29.2 The City Purchasing Agent or Director upon written authorization by the City Purchasing Agent will issue the Change Order in substantially the following form:

CHANGE ORDER

TO: [Name of Supplier]
FROM: City of Houston, Texas (the "City")
DATE: [Date of Notice]
SUBJECT: Change Order under the award between the City and [Name of Supplier]

Subject to all terms and conditions of the award, the City requests that Supplier provide the following:

GENERAL TERMS AND CONDITIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT, CONTINUED:

29.0 CHANGE ORDER (CONTINUED):

[Here describe the additions to or changes to the equipment or services and the Change Order Charges applicable to each.]

Signed:

[Signature of City Purchasing Agent or Director upon written notice to the City Purchasing Agent]

- 29.3 The City Purchasing Agent or Director upon written authorization by the City Purchasing Agent may issue more than one Change Order, subject to the following limitations:
- 29.3.1 Council expressly authorizes the City Purchasing Agent or Director upon written authorization by the City Purchasing Agent, to approve a Change Order of up to \$50,000. A Change Order of more than \$50,000 over the approved awarded amount must be approved by the City Council.
- 29.3.2 If a Change Order describes items that Supplier is otherwise required to provide under this award, the City is not obligated to pay any additional money to Supplier.
- 29.3.3 The total of all Change Orders issued under this section may not increase the original award amount by more than 25%.
- 29.4 Whenever the Supplier receives a Change Order, Supplier shall furnish all material, equipment, and personnel necessary to perform the work described in the Change Order. Supplier shall complete the work within the time prescribed. If no time for completion is prescribed, Supplier shall complete the work within a reasonable time. If the work described in any Change Order causes an unavoidable delay in any other work Supplier is required to perform, Supplier may request a time extension for the completion of the work. The City Purchasing Agent's or Director's decision regarding a time extension is final.
- 29.5 A product or service provided under a Change Order is subject to inspection, acceptance, or rejection in the same manner as the work described in the original award and is subject to the terms and conditions of the original award as if it had originally been a part of the award.

30.0 TERMINATION OF AWARD:

- 30.1 By the City for Convenience:

The City Purchasing Agent may terminate this award at any time upon 30-calendar days notice in writing to the Supplier. Upon receipt of such notice, Supplier shall, unless the notice directs otherwise, discontinue all services in connection with the performance of the award and shall proceed to cancel promptly all existing orders and awards insofar as such orders and awards are chargeable to this award. As soon as practicable after the receipt of notice of termination, the Supplier shall submit a statement to the appropriate department(s) showing in detail the services performed or items delivered under this award to date of termination. The City agrees to compensate the Supplier for that portion of the prescribed charges for which the services were actually performed or items delivered and not previously paid.

- 30.2 By the City for Default by Supplier:

30.2.1 In the event that the materials and/or services furnished by the Supplier do not conform to the standard set forth herein, or if the deliveries and servicing of this award do not conform to the requirements detailed herein, the City through a written notice from the Purchasing Agent to the Supplier describing such default may as its options:

- (a) Terminate the award for default and the City shall have no further obligation.
- (b) Allow the Supplier to cure default within a reasonable time as specified in the notice. The City, at its sole option, may extend the proposed date of termination to a later date. If prior to the proposed date of termination, Supplier cures such default to the City's satisfaction, then the proposed termination shall be ineffective. If Supplier fails to cure such default prior to the proposed date of termination, then the City may terminate its performance as of such date and have no further obligation under the award.

GENERAL TERMS AND CONDITIONS FOR REMOTE ACTIVATED SCHOOL FLASHERS FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT, CONTINUED:

30.0 TERMINATION OF AWARD (CONTINUED):

30.2.2 In the event of failure to deliver any or all of the items or to perform required services, the City may cover its loss by reasonably procuring from another source the items not delivered or the services not performed. Supplier shall be responsible for and shall pay to the City immediately upon demand the difference in price between that offered by the Supplier and that which the City was forced to pay for covering Supplier's failure to deliver or perform services.

30.3 By the Supplier for Default by City:

30.3.1 Default by the City shall occur if the City fails to perform or observe the terms and conditions of the award required to be performed or observed by the City, and the Supplier gives notice in writing to the City within 30 calendar days of the act or omission claimed by the Supplier to constitute default on the part of the City.

30.3.2 Upon receipt of such notice in writing from the Supplier, however, the City shall have 30 calendar days to cure such default. The Supplier, at its sole option, may extend the proposed date of termination to a later date.

30.3.3 If City cures such default prior to the proposed date of termination, the proposed termination shall be ineffective. If the City fails to cure such default prior to the proposed date of termination, then the Supplier may terminate its performance as of such date.

31.0 PATENTS:

The Supplier agrees to indemnify and save harmless the City, the City Purchasing Agent and assistants from all suits and actions of every nature and description brought against them or any of them, for or on account of the use of patented appliances, products or processes, and he shall pay all royalties and charges which are legal and equitable. Evidence of such payment or satisfaction shall be submitted, upon request of the City Purchasing Agent, as a necessary requirement in connection with the final estimate for payment in which such patented appliance, products or processes are used.

32.0 SUPPLIER DEBT:

If Supplier, at any time during the term of this award, incurs a debt, as the word is defined in section 15-122 of the Houston City code of ordinances, it shall immediately notify the City Controller in writing. If the City Controller becomes aware that Supplier has incurred a debt, the Controller shall immediately notify Supplier in writing. If Supplier does not pay the debt within 30 days of either such notification, the City Controller may deduct funds in an amount equal to the debt from any payments owed to Supplier under this award, and Supplier waives any recourse therefore.