

BID INVITATION

STANDARD CONDITIONS

M-04-195H

1. **ACCEPTANCE AND REJECTION:** The Arkansas State Highway and Transportation Department (AHTD) reserves the right to reject any or all bids, to accept bids in whole or in part (unless otherwise indicated by bidder), to waive any informalities in bids received, to accept bids on materials or equipment with variations from specifications where efficiency of operation will not be impaired, and to award bids to best serve the interest of the State.
2. **PRICES:** Unless otherwise stated in the Bid Invitation, the following will apply: (1) unit prices shall be bid, (2) prices should be stated in units of quantity specified (feet, each, lbs., etc.), (3) prices must be F.O.B. destination specified in bid, (4) prices must be firm and not subject to escalation, (5) bid must be firm for acceptance for 30 days from bid opening date. In case of errors in extension, unit prices shall govern. Discounts from bid price will not be considered in making awards.
3. **BID BONDS AND PERFORMANCE BONDS:** If required, a **Bid Bond** in the form of a cashier's check, certified check, or surety bond issued by a surety company, in an amount stated in the Bid Invitation, must accompany bid. **Personal and company checks are not acceptable as Bid Bonds.** Failure to submit a Bid Bond as required will cause a bid to be rejected. The Bid Bond will be forfeited as liquidated damages if the successful bidder fails to provide a required Performance Bond within the period stipulated by AHTD or fails to honor their bid. Cashier's checks and certified checks submitted as Bid Bonds will be returned to unsuccessful bidders; surety bonds will be retained. The successful bidder will be required to furnish a **Performance Bond** in an amount stated in the Bid Invitation and in the form of a cashier's check, certified check, or surety bond issued by a surety company, unless otherwise stated in the Bid Invitation, as a guarantee of delivery of goods/services in accordance with the specifications and within the time established in the bid. **Personal and company checks are not acceptable as Performance Bonds.** In some cases, a cashier's check or certified check submitted as a Bid Bond will be held as the Performance Bond of the successful bidder. Cashier's checks or certified checks submitted as Performance Bonds will be refunded shortly after payment has been made to the successful bidder for completion of all terms of the bid; surety bonds will be retained. Surety bonds must be issued by a surety company authorized to do business in Arkansas, and must be signed by a Resident Local Agent licensed by the Arkansas State Insurance Commissioner to represent that surety company. Resident Agent's Power-of-Attorney must accompany the surety bond. Certain bids involving labor will require Performance Bonds in the form of surety bonds only (no checks of any kind allowed). In such cases, the company issuing the surety bond must comply with all stipulations herein and must be named in the U. S. Treasury listing of companies holding Certificates of Authority as acceptable sureties on Federal Bonds and as acceptable reinsuring companies. Any excess between the face amount of the bond and the underwriting limitation of the bonding company shall be protected by reinsurance provided by an acceptable reinsuring company.
4. **TAXES:** The AHTD is not exempt from Arkansas State Sales and Use Taxes, or local option city/county sales taxes, when applicable, and bidders are responsible to the State Revenue Department for such taxes. These taxes should not be included in bid prices, but where required by law, will be paid by the AHTD as an addition thereto, and should be added to the billing to the AHTD. The AHTD is exempt from Federal Excise Taxes on all commodities except motor fuels; and excise taxes should not be included in bid prices except for motor fuels. Where applicable, tax exemption certificates will be furnished by the AHTD.
5. **"ALL OR NONE" BIDS:** Bidders who wish to bid "All or None" on two or more items shall so stipulate on the face of bid sheet; otherwise, bid may be awarded on an individual item basis.
6. **SPECIFICATIONS:** Complete specifications should be attached for any substitution or alternate offered, or where amplification is necessary. Bidder's name must be placed on all attachments to the bid.
7. **EXCEPTIONS TO SPECIFICATIONS:** Any exceptions to the bid specifications must be stated in the bid. Any exceptions to manufacturer's published literature must be stated in the bid, or it will be assumed that bidder is bidding exactly as stated in the literature.
8. **BRAND NAME REFERENCES:** All brand name references in bid specifications refer to that commodity or its equivalent, unless otherwise stated in Bid Invitation. Bidder should state brand or trade name of item being bid, if such name exists.
9. **FREIGHT:** All freight charges should be included in bid price. Any change in common carrier rates authorized by the Interstate Commerce Commission will be adjusted if such change occurs after the bid opening date. Receipted common carrier bills that reflect ICC authorized rate changes must be furnished.
10. **SAMPLES AND LITERATURE:** Samples or technical literature must be provided within 14 days of AHTD request unless AHTD extends time. Failure to provide samples or literature within this period may cause bid to be rejected. When required, samples of items must be furnished free of charge, prior to or after the opening of bids, and, if not destroyed, will be returned upon request at the bidder's expense. Each individual sample must be labeled with bidder's name and item number. Request for return of samples must be made within 10 days following submission of sample. Samples from successful bidders will be retained for comparison with items actually furnished. Demonstrations may be requested, when applicable.
11. **GUARANTY:** Unless otherwise indicated in Bid Invitation, it is understood and agreed that any item offered or shipped on this bid shall be newly manufactured, latest model and design, and in first class condition; and that all containers shall be new, suitable for storage or shipment and in compliance with all applicable laws relating to construction, packaging, labeling and registration.
12. **BACKORDERS OR DELAY IN DELIVERY:** Backorders or failure to deliver within the time required may constitute default. Vendor must give written notice to the AHTD, as soon as possible, of the reason for any delay and the expected delivery date. The AHTD has the right to extend delivery if reasons appear valid. If reason or delivery date is not acceptable, vendor is in default.
13. **DEFAULT:** All commodities furnished will be subject to inspection and acceptance by AHTD after delivery. Default in promised delivery or failure to meet specifications authorizes the AHTD to cancel award or any portion of same, to reasonably purchase commodities or services elsewhere and to charge full increase, if any, in cost and handling to defaulting vendor. Applicable bonds may be forfeited.
14. **ETHICS:** "It shall be a breach of ethical standards for a person to be retained, or to retain a person, to solicit or secure a State contract upon an agreement of understanding for a commission, percentage, brokerage, or contingent fee, except for retention of bona fide employees or bona fide established commercial selling agencies maintained by the contractor for the purpose of securing business." (Arkansas Code, Annotated, Section 19-11-708).

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIFICATION 04-64-4116

FOR

SOLAR POWERED PORTABLE TRAFFIC SIGNAL
TRAILER MOUNTED

1. **General:** This specification is intended to cover a trailer mounted, self-contained, full size, battery operated and solar rechargeable, micro-processor controlled traffic signal unit which is capable of operating in a stand alone configuration without the use of cables or a radio link between lights. The signal heads shall be standard traffic heads with 12" diameter red, yellow and green LED lamps. Signal face plates shall be yellow.

Each unit shall consist of a towable trailer, signal mast and horizontal mast arm (boom), two (2) signal heads (one mounted on the horizontal boom and one mounted on the signal mast), a solar panel array, a controller cabinet which contains the controller and conflict monitor, and a battery case with charger.

2. **Controller:** The unit shall have a micro-processor based controller which can be programmed by means of a micro-terminal which is a plugable unit that interfaces with the control electronics and can then be removed after the programming is completed. A minimum of one (1) micro-terminal shall be furnished for every two (2) units purchased.
3. **Power Supply:** Primary power shall be solar based. The unit shall be designed to receive input power of 12 volts (+2.0 volts/-1.0 volt) from a bank of deep cycle marine style lead acid storage batteries with a minimum storage capacity of 2,000 amp hours at 77° ambient temperature. The maximum current drain from the battery bank shall be five (5) amps. The battery bank shall be recharged through the utilization of a solar panel array producing a minimum of 450 watts at a peak voltage of 17 volts. Additionally, the battery bank shall contain an auxiliary battery charger allowing batteries to be recharged within 72 hours utilizing existing commercial 120 volt AC electrical service. The unit shall be capable of continuous isolated battery operation (no sun) for a period of no less than 25 days at 77° ambient temperature, when starting from a fully charged battery pack. The solar charging system shall incorporate an automatic charge controller to prevent overcharging of the battery bank and disconnect the solar array during use of the auxiliary battery charger.
4. **Programming Modes:** The Portable Traffic Signal shall operate either with automatic or manual programming.
 - A. **Automatic:** In Automatic Programming Mode the user inputs traffic volume for each phase, speed limit, distance between lights and minimum speed. The micro-processor calculates and implements the optimum light timing. Up to nine (9) phases shall be available.
 - (1) **Traffic Volume:** Shall be programmable from 30 cars per hour to 600 cars per hour in 10 cars per hour increments for each phase.
 - (2) **Speed Limit:** Shall be programmable from 10 mph to 50 mph in not more than 5 mph increments.
 - (3) **Average Speed:** Shall be programmable from 10 mph to 80% of speed limit in not more than 1 mph increments.
 - (4) **Distance Between Lights:** Shall be programmable from 50 yards to 1,480 yards in not more than 10 yard increments
 - B. **Manual:** In Manual Programming Mode the user inputs red time and green time for each phase. Up to nine (9) phases shall be available.
 - (1) **Red Time:** Shall be programmable from 1 second to 250 seconds in not more than 1 second increments for each phase.
 - (2) **Green Time:** Shall be programmable from 3 seconds to 250 seconds in not more than 1 second increments for each phase.
5. **Per Day Time Splits:** Shall have a sub mode that divides the 24 hour day into a minimum of 5 time segments which can be used in any of the modes of operation and be under user selection. The traffic volume shall be user selectable for each segment of the day. The segments shall be programmable as follows: Segment 1 shall be programmable from 0000 hours to 2300 hours in 15 minute increments. Segment 2 shall be programmable from where Segment 1 left off to 2300 hours in 15 minute increments. This sequence shall repeat for the remaining segments except that programming of the last segment (Segment 5 if five time segments are used) shall run to 2359 hours.

6. Standby Modes: Unit shall have the following standby modes that are programmable by the user:
 - A. Off: All lights are off.
 - B. Blink Yellow: The yellow light blinks at 60 times per minute.
 - C. Blink Red: The red light blinks at 60 times per minute.
 - D. Red: The red light is on continuously.
7. Self Diagnosis: When requested by the user, the unit shall be capable of checking the lamps (bulbs), battery voltage and the control electronics and then indicate whether or not each is operating properly. In the event of a lamp failure the unit will indicate which lamp has failed.
8. Starting Time Delay: After programming is complete, the user shall be able to select a time delay until the unit will start the program. The delay shall be selectable in 1 minute increments from 1 minute to 60 minutes. After the starting delay has been selected, the current time and the automatic starting time of the unit shall be displayed in military time.
9. Transition Time: The transition time (yellow time) shall be programmable by the user from 3 seconds to 6 seconds in 1 second increments.
10. Battery Time: After a maximum of five (5) hours of continuous operation on the same battery the unit shall be capable of calculating the remaining time of usable battery voltage and, upon program request by the user, display the remaining time in days and hours.
11. Accuracy: The accuracy of the timing of the unit relative to real time shall be 10 parts per million over one (1) year.
12. Manual Switch: Shall have a manual switch which is independent of the programming controls. This switch shall have off, on, blink red, blink yellow and manual control functions.
13. Program Protection: There shall be no loss of program data when battery is changed or removed.
14. Timing Control: Shall incorporate three (3) redundant timing circuits and abort to a blinking or continuous red if the three (3) timing circuits are not in synchronization. The micro-terminal shall have the capability to adjust the real time clock to hours, minutes and seconds.
15. Malfunction Protection: In the event of certain failure in the control electronics the controller shall diagnose the failure and abort to red blinking or continuous red.
16. Security: The unit shall have the following security measures:
 - A. Programmable Password: Operator programmable password using a minimum of four (4) digits.
 - B. Program Module Plug In/Out: The micro-terminal shall be easily removable so that it can be separated from the unit.
17. Manual Operation: The unit shall be capable of completely overriding all functions with a manual control. For this operation interconnection of the lights with cables or a radio link is permissible.
18. AC Operation: The unit shall be capable of operating from an AC voltage source of 117 volts AC +/-10%. This operation shall charge the deep cycle batteries while the unit is operating. With external 117 volts AC +/-10% power in place the solar charging system will not be activated.
19. Conflict Monitor: The unit shall incorporate a conflict monitor function which will detect the presence of conflicting signal indications and the absence of proper voltages. It shall also be capable of monitoring proper performance of the controller and also within itself.
20. Data Logger: The controller shall have the capability of storing maintenance and failure history of the signal for the previous 3,000 events. This data shall be electronically stored for at least one (1) year without the aid of external power.
21. Dimensions:
 - A. Width: 8', maximum.
 - B. Length: 15', maximum.
 - C. Operating Height: 22', maximum.
 - D. Transport Height: 8', maximum.

22. Clearance: The minimum clearance of the horizontal boom mounted traffic signal shall be 17' from the bottom of the signal to the road surface. The horizontal boom and light shall be capable of 180° swing to allow two (2) trailer mounted portable traffic signal units to be positioned on the same side of the work zone. The second signal head (to be mounted on the vertical signal mast) shall have a minimum clearance of 8' from the bottom of the green light to the road surface.
23. Environmental Conditions:
 - A. Temperature Range:
 - (1) Non-Operating: -50° F. to 200° F.
 - (2) Operating: -30° F to 165° F.
 - B. Vibration: The unit shall survive all vibration in any axis normally encountered during transportation.
 - C. Humidity: The unit shall be capable of operating in any humidity up to 100%.
 - D. Wind: The unit shall be capable of operating in wind up to 80 mph.
24. Vehicle traffic control signal heads shall conform to the following specifications:
 - A. Federal Manual on Uniform Traffic Control Devices (MUTCD)
 - B. Vehicle Traffic Control Signal Head Standard (Institute of Transportation Engineers).
 - C. Standard Publication No. TS1 NEMA (National Electrical Manufacturers Association).
25. Interchangeability: When multiple units are purchased, all mechanical and electrical components shall be interchangeable with each other.
26. Trailer: Unit shall be mounted on a two (2) wheel trailer equipped with spring type or torsional type suspension, as regularly furnished by manufacturer for transporting traffic signals and equipment necessary for operation. Shall have steel disc wheels equipped with pneumatic tires with load carrying capacity to handle unit at highway speeds. Shall have towing extension with jack stand for leveling of unit. Shall be equipped with four (4) leveling jacks (one jack on each corner). Shall have safety chains with hooks and a 3" pintle eye for attaching to towing vehicle. Shall have combination tail lights, stop lights and turn signals. A trailer wiring connector complete with six pole round trailer connector shall be provided.

The trailer shall be designed to allow one (1) vehicle to legally tow two (2) trailer units in tandem and the hardware, wiring, etc. required to accomplish this shall be furnished.
27. Weight: The total weight of the Trailer Mounted Portable Traffic Signal less the batteries shall not exceed 1,800 pounds.
28. Paint: The signal heads shall be a polycarbonate head approved under ITE specification "Vehicle Traffic Control Signal Heads" and have yellow face plates. All exterior metal surfaces of the trailer, power supply housing, supports, etc. shall be cleaned, primed and finished with Arkansas State Highway and Transportation Department Omaha Orange, Sherwin-Williams No. F1E 4143 Kem Transport Enamel, or equal.
29. Manuals: Successful bidder shall furnish Operator's Manual, Parts Book, Troubleshooting Guide and Wiring Diagrams with each unit delivered and one (1) copy each of Operator's Manual, Parts Book, Troubleshooting Guide and Wiring Diagrams to Equipment and Procurement Division, P.O. Box 2261, Little Rock, AR 72203 (11302 W. Baseline Road, Little Rock, AR 72209, if shipping UPS, FedEx, etc.).

The successful bidder may provide Shop Repair Manuals and Parts Manuals on computer media (CD ROM, Floppy Disks, etc.) in lieu of printed manuals.
30. Training: A qualified representative shall provide a minimum of one (1) day of instruction to AHTD personnel in the operation of units purchased under this specification.
31. Warranty: Units purchased under this specification shall be warranted against defects in material and workmanship for a minimum period of twelve (12) months (365 days) from date unit is placed in operation by AHTD.
 - A. Warranty shall include all parts, labor and transportation costs to the location of equipment.
 - B. If equipment cannot be repaired on location, warranty shall include cost of transport to the facility where the repair work will be done.

- C. It will be the responsibility of the successful bidder to insure that repairs are completed in a timely manner.
- D. Recent prior failure to provide warranty-work, parts, replacement parts or service, in a timely manner, for equipment from the same manufacturer or dealer shall be grounds for the rejection of any submitted bid, or for the denial of any otherwise qualified low bidder, whether such failure is attributable to the manufacturer or the dealer of the equipment. For the purposes of this paragraph "timely manner" means a period of time not exceeding thirty (30) calendar days to provide requested warranty-work, parts, replacement parts, or service. For the purposes of this paragraph "manufacturer" means the original manufacturer of the equipment and its successor or successors, regardless of number, and whether acquired by sale, merger, or otherwise. For the purposes of this paragraph "replacement part" means a part redesigned by a manufacturer to correct a design or engineering defect and which replacement part is capable of providing dependable performance in normal operation conditions for its normal service life without failure. Such bid or bids may be rejected by the Department until such failure or failures have been remedied to the satisfaction of the Department and until such manufacturer or dealer is providing such warranty-work, parts, replacement parts, and service in a timely manner.
32. **Current Model:** Units furnished under this specification shall be the latest improved model in current production, as offered to commercial trade, built for the U.S. market, and shall be of quality workmanship and material. Machines manufactured for foreign markets will not be accepted. All equipment offered under this specification shall be new. Used, reconditioned, shopworn, demonstrator, prototype or discontinued models are not acceptable. Manufacturers of the units supplied must have been in the business of producing operational units for at least two years and must have recently sold similar units to domestic governmental agencies. The model furnished must have been in production for a minimum of one year, or be the latest version of a previous model. Bidder/s may be required to submit documentation substantiating the aforementioned requirements. A list of user references may also be required.
33. Unit shall be assembled, adjusted and made ready for continuous operation at time of delivery.
- All parts, accessories and tools necessary for satisfactory operation of unit shall be furnished whether or not they are specifically mentioned in this specification (including standard equipment as regularly furnished by manufacturer as shown on printed literature and specifications - unless specifically excluded by this specification).
34. Bidder shall maintain a representative inventory of replacement parts and service facilities for servicing equipment bid on.
35. **Demonstration:** The Arkansas State Highway & Transportation Department reserves the right to require a demonstration, under actual working conditions, of equipment bid under this specification before award is made. The demonstration would be performed (free of any charge) by the bidder or an authorized representative at a mutually acceptable location. If requested, the bidder should be prepared to demonstrate the equipment within thirty (30) days after notification. Failure of the bidder to perform a satisfactory demonstration within the specified time may be grounds for rejection of the bid.