



STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
TECHNICAL SPECIFICATIONS FOR

ARROW BOARD, TRAILER MOUNTED, VERTICAL MAST

SERIES NO. 278-000
EQUIPMENT SPECIFICATION 278-000H

REV. 1/12/2023

GENERAL

This specification sets forth the minimum requirements for a solar powered arrow board trailer, with 25-light display panel, designed and made for temporary traffic control applications.

Equipment shall be new, a production model of current manufacture, and must meet all state and Federal safety and emission standards in effect at time of order.

REPRESENTATIVE SPECIFICATIONS

A Wanco WTSV-LSAC, with appropriate options and standard features, was used to develop these specifications and establish equivalency evaluation criteria.

Equipment of similar style, type, character, quality, features, and purpose conforming to the following detailed requirements/specifications will be considered. For evaluation purposes, bidders proposing an exception/equivalent option/feature to those specified herein, may be required to provide manufacturer/product information (catalogue sheets, detailed specifications, pictures, etc.). This information will be evaluated against the minimum requirements of this specification. Proposed submittals that are determined not to be equivalent to the established criteria will be rejected.

LOUISIANA AUTHORIZED DEALER(S)

Proposed item(s) must be from a manufacturer who has at least one (1) authorized dealer **within the State of Louisiana** where parts and service can be obtained. Authorized dealer(s) must have properly trained technicians plus all other resources necessary to perform warranty and repair services in complete accordance with the manufacturer's requirements. A letter certifying the ability to meet this requirement, inclusive of the company name(s) and address(es) of the Louisiana authorized dealer(s), should be supplied with the bid submittal and may be required prior to award.

DELIVERY & ACCEPTANCE

Vendor shall perform a test run of each unit to verify that all features and capabilities are operating properly at time of delivery. Documentation of testing may be required prior to acceptance by the Department.

Unit(s) must be delivered completely assembled (including all components, accessories, etc.) and ready for operation without any additional preparation including, but not limited to, ensuring all fluid levels are at their full mark, fuel tank(s) is full, all necessary lubrication has been performed, etc.

Any unit delivered under this specification is subject to rejection if there is evidence of poor workmanship, by either the vendor or the original manufacturer. Noted defects and/or nonconformance findings may be corrected by the vendor. Corrections must be completed and approved by the Equipment Engineer or his representative prior to final acceptance.



Unit(s) shall be delivered “**on the ground;**” DOTD will not unload nor provide any unloading equipment to the vendor/delivery driver in order to offload the unit(s).

NOTE: The Department will have space available for equipment to be unloaded.

EACH UNIT MUST BE SUPPLIED WITH THE FOLLOWING DOCUMENTATION AT TIME OF DELIVERY:

1. Notarized Bill of Sale
2. Original Certificate of Origin (MSO), (no photocopy)
3. Dealer's Service Policy
4. Owner's/Operator's Manual(s)
 - a. One (1) Hardcopy
 - b. One (1) Digital Copy
 - i. Acceptable Formats: PDF delivered via USB “Flash Drive”, or E-mail
5. Service Manual(s)
 - a. One (1) Hardcopy
 - b. One (1) Digital Copy
 - i. Acceptable Formats: PDF delivered via USB “Flash Drive”, or E-mail
6. Build Sheet(s) – as applicable
 - a. One (1) Hardcopy
 - b. Build sheets should be writing in plain language (not company specific codes) and include, at a minimum, all standard & optional features of the delivered unit.

NOTE: Invoices will not be processed for payment until the unit(s) have been inspected by the Equipment Engineer or their representative and deemed in compliance with the specifications.

BID SUBMITTALS

Any additions, deletions, or variations from the specifications should be noted in the "Bidder's Exceptions" page of this specification. Exceptions that are noted to be less than a minimum requirement will not be accepted.

Any additions, deletions or variations from the manufacturer's standard published specifications should be noted on the "Bidder's Exceptions" page of this specification. Unless otherwise noted, any items appearing in the manufacturer's standard published specifications furnished by the Bidder are assumed to be included in the Bidder's submittal.

Bidder should note on their submittal any installation(s) to the equipment that will be performed by the vendor instead of the manufacturer.

Failure to note any specification exceptions, manufacturer specification alterations, and/or vendor installations prior to award may result in rejection of the equipment at the time of delivery.

THE NUMBER OF DELIVERY DAYS AFTER RECEIPT OF ORDER (ARO) MAY BE USED AS A FACTOR IN THE AWARD.



EQUIPMENT SPECIFICATIONS

NOTICE TO BIDDERS

Bidder should review the detailed "Equipment Specification" completely and respond to the compliance question at the end of each section by marking "X", in the space provided, for "Yes" or "No". Mark "Yes" to indicate that the equipment bid meets the section exactly as specified. Mark "No" if there are exceptions to any part of that section. Exceptions/deviations to any part of the specification are to be detailed on the "Bidder's Exceptions" page of this specification.

IN ORDER TO BE CONSIDERED FOR AWARD, BIDDER SHOULD RETURN THIS SPECIFICATION, COMPLETED IN FULL, WITH THEIR BID SUBMITTAL.

Note: All values listed below are minimums unless noted otherwise.

1. Trailer & Mast

1.1. Frame

- 1.1.1. All welded structural tube steel
- 1.1.2. Full wheel coverage fenders, bolted to trailer frame, removable and replaceable
- 1.1.3. Maximum trailer length 120"

Comply: ___ Yes ___ No

1.2. Tongue

- 1.2.1. Removable for shipping and for added theft protection
- 1.2.2. Secures win pins for easy removal without tools
- 1.2.3. Jack
 - 1.2.3.1. Swivels for transport
 - 1.2.3.2. 2000 lb. capacity
 - 1.2.3.3. Steel footpad
- 1.2.4. Standard 2-inch ball coupler
 - 1.2.4.1. SAE Class 2, 3500-lb. capacity
 - 1.2.4.2. Bolts to tongue, removable, and replaceable
- 1.2.5. Safety Chains
 - 1.2.5.1. Two high-test proof coil chain assemblies, ¼" minimum diameter
 - 1.2.5.2. Latching S-hooks

Comply: ___ Yes ___ No

1.3. Axle Assembly

- 1.3.1. 2000 lb. capacity
- 1.3.2. Double-eye leaf springs or torsion suspension

Comply: ___ Yes ___ No



EQUIPMENT SPECIFICATIONS

1.4. Tires & Wheels

- 1.4.1. ST205/75D15 steel-belted trailer type tires
- 1.4.2. Combined load rating must equal or exceed gross axle weight rating (GAWR)
- 1.4.3. Mounted on aluminum, galvanized, or corrosion resistant painted steel wheels

Comply: ___ Yes ___ No

1.5. Taillights

- 1.5.1. Sealed, LED, combination stop, turn taillights

Comply: ___ Yes ___ No

1.6. License Plate

- 1.6.1. Lighted license plate holder

Comply: ___ Yes ___ No

1.7. Leveling Jacks

- 1.7.1. Four leveling jacks, mounted on corners of trailer frame
 - 1.7.1.1. Steel footpad
- 1.7.2. Leveling jacks
 - 1.7.2.1. Swivels for transport
 - 1.7.2.2. Steel footpad

Comply: ___ Yes ___ No

1.8. Wiring

- 1.8.1. Wiring to connect tow vehicle and trailer for trailer taillights is installed inside drawbar, with pigtails and connectors at both ends
- 1.8.2. No crimping required
- 1.8.3. Trailer plug
 - 1.8.3.1. A sealed, molded, 4-square connector plugs into harness under trailer
- 1.8.4. Tow-vehicle plug
 - 1.8.4.1. Two-piece assembly with 4-flat molded connector on harness plugs into tow vehicle
 - 1.8.4.2. Meets SAE J1239
- 1.8.5. Protection
 - 1.8.5.1. All trailer wiring encased in UV protective loom and secured to trailer frame

Comply: ___ Yes ___ No

1.9. Mast

- 1.9.1. Display panel is raised and lowered on a telescoping mast
 - 1.9.1.1. Two sections of square steel tubing with the inner section telescoping inside the outer section
 - 1.9.1.2. Mast must rotate 360 degrees



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1.9.2. Winch

- 1.9.2.1. Hand-operated winch to raise and lower display panel by a single operator
- 1.9.2.2. 1200 lbs. capacity
- 1.9.2.3. Safety friction-brake prevents display panel from falling if operator loses grip on winch handle
- 1.9.2.4. 1/4" (6.35mm) diameter galvanized aircraft cable

1.9.3. Locks

- 1.9.3.1. Locking mechanism that prevents mast from falling if the winch or cable were to fail.
- 1.9.3.2. Locking mechanism that prevents mast from rotating
- 1.9.3.3. Locking mechanism that locks the mast and sign panel when fully lowered into travel position

Comply: ___ Yes ___ No

1.10. Wind Resistance

- 1.10.1. The arrow board must be able to withstand approx. 55mph calculated maximum sustained wind load before overturning while in the deployed position, supported by stabilizer legs/jacks with tires off the ground

Comply: ___ Yes ___ No

- 1.11. Paint: Manufacturer's standard oven-baked, safety-orange powder-coat finish to ensure durability and corrosion protection

Comply: ___ Yes ___ No

2. Sign Panel

2.1. Display Panel

- 2.1.1. MUTCD Type C, vertical mast
- 2.1.2. 12 selectable patterns
- 2.1.3. 25-light high-output LED display
- 2.1.4. Self-powered
- 2.1.5. Weather-resistant cabinet provides a rigid platform for LED lamps
- 2.1.6. 48" x 96"
- 2.1.7. Deployed height, approximately 84" from ground to bottom of display panel
- 2.1.8. Easily replaceable lamps and visors
 - 2.1.8.1. Lamps can be replaced quickly without tools or with minimal basic hand tools
- 2.1.9. Weatherproof wiring between solar panel, control box, and display panel, securely fastened to mast & frame
- 2.1.10. At least one (1) mile visibility

Comply: ___ Yes ___ No

2.2. Construction

- 2.2.1. Frame constructed of fully welded aluminum tube or channel
- 2.2.2. Front and rear panels constructed of aluminum sheet
- 2.2.3. Panels are riveted and screwed to frame



EQUIPMENT SPECIFICATIONS

2.2.4. Finish: Oven-baked powder coat, black

Comply: ___ Yes ___ No

2.3. Operation

2.3.1. Control box outputs have short circuit protection, helping prevent blown circuits

2.3.2. Meets latest edition of the Manual for Uniform Traffic Control Devices

Comply: ___ Yes ___ No

2.4. Power System

2.4.1. Energy-efficient operation results in long run times

2.4.2. Solar panels charge batteries automatically without intervention

2.4.3. Charging system shuts down when batteries are fully charged, preventing damage

2.4.4. Allows battery charging with solar panels or commercial power

2.4.5. Power system includes reverse polarity protection and low-voltage disconnect circuit

2.4.6. Controller has resettable fuses or circuit breakers

2.4.7. Solar charging system features solid state voltage regulator with charge indicator

Comply: ___ Yes ___ No

3. Lights

3.1. Visor

3.1.1. Each lamp is shrouded by a visor that enhances visibility by shading the lamp and preventing glare

3.1.2. High-impact ABS plastic

3.1.3. Four keyed slots enable visor to be removed from the display panel without removing screws

Comply: ___ Yes ___ No

4. Controller

4.1. Function

4.1.1. Allows operator to choose display pattern

4.1.2. Keeps the batteries fully charged while protecting them from deep discharge and overcharging

4.1.3. Maintains display flash-rate and controls automatic dimming

4.1.3.1. Flash rate: 30 – 40 per minute

Comply: ___ Yes ___ No

4.2. Control Panel

4.2.1. Master switch for turning arrow board display on and off

4.2.1.1. Off position integrated into the display pattern selection switch is acceptable

4.2.2. Display pattern selection

4.2.2.1. Rotary switch

4.2.2.2. Operator simply points the switch at the desired display pattern labeled on the switch



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- 4.2.2.3. Pattern silkscreened onto the front of the control panel
- 4.3. Concealed in display panel or lockable weather-proof enclosure
- 4.4. Twelve (12) Display Patterns (minimum)
 - 4.4.1. Flashing arrow, left or right
 - 4.4.2. Flashing double arrow
 - 4.4.3. Flashing four-corner warning
 - 4.4.4. Flashing caution-bar warning
 - 4.4.5. Sequential stem arrow, left or right
 - 4.4.6. Sequential walking arrow, left or right
 - 4.4.7. Sequential chevron arrows, left or right
 - 4.4.8. Alternating diamonds

Comply: ___Yes ___No

5. Power System

- 5.1. Batteries
 - 5.1.1. Leak- and spill-proof valve-regulated lead acid (VRLA)
 - 5.1.2. Features
 - 5.1.2.1. 100% maintenance-free
 - 5.1.2.2. Sealed and spill-proof
 - 5.1.2.3. Faster recharge and greater freeze resistance than conventional batteries
 - 5.1.2.4. Smaller and lighter-weight than conventional batteries
 - 5.1.2.5. Contains 80% less lead when compared to conventional batteries
 - 5.1.3. Voltage
 - 5.1.3.1. 12Vdc each
 - 5.1.4. Capacity
 - 5.1.4.1. 36 Ah total @ 12Vdc
 - 5.1.5. Located inside weather-proof, lockable enclosure mounted to the structural deck or concealed inside display panel

Comply: ___Yes ___No

5.2. Solar

- 5.2.1. One high-efficiency multi-crystal photovoltaic solar module
- 5.2.2. Power
 - 5.2.2.1. 40W
- 5.2.3. Regulation
 - 5.2.3.1. Solar panels regulated by arrow board controller
- 5.2.4. Security
 - 5.2.4.1. Solar panel bolted to mounting frame with security screws and special security nut

Comply: ___Yes ___No



BIDDER'S EXCEPTIONS

Instructions: Bidder should note all exceptions in space provided below. List the detail number from the aforementioned specification in the column to the left and the exception in the column to the right. Responses may be typed or hand-written. Handwritten responses must be legible. If additional space is needed, please print a duplicate copy of this sheet. "Bidder's Exceptions" page(s) should be returned with the bid submittal.

Examples:

1.6	Engine has 325 horsepower
1.18.3	Batteries have 2000 CCA combined.
2.2.8	Crossmembers are 4" channel on 12" centers.

Spec./Detail Reference	Exception
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