# Event 8871 - Line (1) Specifications

**SPECIFICATIONS FOR CAB & CHASSIS ONLY, EXT. CAB, 4X4, FSP TRUCK**

**ACCEPTABLE BRANDS/MODELS: FORD F450 OR EQUAL.**

**SPECIAL INSTRUCTIONS**

All bidders are expected to quote upon a manufacturer's latest standard conventional model truck complete with all standard equipment plus any optional or special equipment required meeting these specifications. Specifications include an extended cab and chassis and all specified special equipment meeting all of these specifications.

Specifications require complete chassis pre-delivery service. It shall be the responsibility of the successful bidder to perform the pre-delivery service and inspect each unit for specification compliance prior to delivery to the state of Tennessee, Department of Transportation.

It will be the responsibility of the successful bidder to guarantee delivery within the quoted time and to require manufacturers or suppliers to complete the installation of auxiliary equipment in accordance with the quoted delivery time.

**DELIVERY REQUIREMENTS – 180 DAYS**

Delivery does not mean acceptance. As each unit is delivered, each unit will be inspected and must be 100% operational before payment is processed. If the unit is not 100% operational, successful bidder must make necessary adjustments/repairs before unit will be acceptable. TDOT regional garage superintendent at each FOB delivery location will be responsible for final inspection/approval.

**MILEAGE, ODOMETER READING**

The maximum mileage allowable for any vehicle to be considered acceptable shall be 300 miles including the pilot model. It shall be the responsibility of the successful bidder to make the required arrangements to insure that the

mileage/odometer reading does not exceed the maximum miles listed when the vehicles are delivered to the using agency for final acceptance.

**PILOT MODEL INSPECTION**

The Department of Transportation requires a pilot model fully assembled, operational and ready for service be made available. The pilot model shall be inspected and approved prior to production of the remaining units. Contact Bryan Sweeney at 615-741-4803 to schedule the pilot model inspection at a location agreed upon by both parties. Final inspection and acceptance of all other units shall be made at the FOB delivery locations. Pilot model shall be included in the mileage/odometer limitation of 300 miles.

**DOCUMENTS**

Owner's manual, warranty papers, extra key, invoice and manufacturer's statement of origin are to be furnished with each unit. Manufacturer's statement of origin shall be executed in the name of:

Tennessee Department of Transportation
505 Deaderick Street
Nashville, TN. 37243-0346

**2015 MODEL YEAR STANDARD STATE SPECIFICATIONS**

**TRUCK, EXTENDED CAB AND CHASSIS, 15000 LB. GVWR, 4X4 w/SPECIALIZED EQUIPMENT**

1. All standard equipment as listed by the manufacturer and/or as required for GVWR. GVWR shall govern over all components.
2. Cab Type: Ext. Cab
3. Cab to Axle: 60"
4. Wheelbase: 137" – 162"
5. GVWR: 16000 lbs. (minimum)
6. Electrical System: 12 volt, heavy-duty, maintenance free, dual 750 CCA minimum batteries, dual 125 amp alternators minimum. Auxiliary idle control for maintaining proper battery voltage while operating all

emergency lighting and equipment, dash mounted control switch is required. Daytime running lights required. (**NOTE**: If auxiliary idle control can be accessed through the cruise control, no dash mounted switch is required). Elevated idle control shall be pre-set at 1300 rpm)

7. Auxiliary up fitter switch(s) shall be a minimum of one (1) switch with a 30 amp circuit. Switch(s) shall be instrument panel mounted. Factory installation required.
8. Axles: To meet GVWR. Suspension package, heavy service option package, to include stabilizer bars and dual rear wheels. Axle ration preferred 4.30 to 1, limited slip differential. A minimum width of 92" is required.
9. Tires: Seven (7) manufacturer's standard all season steel belted radials. Shall meet the GVWR and be the same brand, size and capacity.
10. Wheels: seven (7) manufacturer's standard steel disc with stainless steel wheel simulators.
11. Engine: 6.7L turbo diesel, 300 hp, 660 lb. torque, heavy-duty cooling system capacity. Engine hour meter required.
12. Engine Block Heater: 110V minimum
13. Transmission and Transfer Case: Six (6) speed automatic. Two-speed manual transfer case with locking hubs.
14. Towing Package: Shall include trailer wiring to the rear of chassis for wiring trailer receptacle during body installation.
15. Steering: Power assisted
16. Brakes: Power assisted with four (4) wheel ABS. To be pre-wired with factory integrated trailer brakes and 4 and 7 pin trailer connection.
17. Fuel Tank: 26 gallons (minimum) ¼ fuel upon delivery
18. Cab Entrance Steps: Front and rear steps, durable steel construction, factory installed.
19. Cab Interior Features: **A**) Factory installed air conditioning; **B**) Factory installed high back cloth bucket seats (with driver arm rest – may be dealer installed); **C**) Rubber floor mat; **D**) AM/FM electronically tuned radio; **E**) Power windows and door locks; **F**) Cruise Control w/tilt wheel; **G**) Auxiliary power point for mobile phones; **H**) Delete factory console (space is needed to mount a communications console between the seats for mounting

multiple radios); **I**) Message Board controller; **J**) strobe light control, etc. **NOTE**: Console shall be Havis Shields Consolidator model #C-3201 or equal and shall include accessories for mounting radios and controllers. **NOTE**: Fuse blocks will not be placed in the compartment for radios. Any wires run into the console, siren box, will have enough slack wire to allow for adjustment of the console (forward, back, etc.). Radio console or storage area is for storage and radio mounts only. Up to 5 radios shall be mounted in the console.

20. Cab Exterior Features: Mirrors shall be trailer or camper type, power adjustable, heated. Convex mirrors shall be included. Headlights shall be dual beam (jewel effect).
21. Cab and Chassis Color: Lime yellow. Paint shall be base coat/clear coat.
22. Manuals: Manufacturer's standard
23. Warranty: Manufacturer's standard.

**ADDITIONAL EQUIPMENT TO BE INCLUDE WITH CAB & CHASSIS**

**FRONT PUSH BUMPER**

The cab and chassis shall be fitted with a Flora winch bumper with a 12000 lb. winch mounted out of site behind the bumper. All cables and/or rollers should be mounted recessed in the bumper so no damage will occur when pushing a vehicle. The push bumper shall be designed to be mounted on a full size 4-wheel drive truck. The push area shall be larger to accommodate the height difference. Color shall be gloss black. (**NOTE**: 12" minimum ground clearance as measured from the bottom edge of the bumper)

**JUMP START SYSTEM**

The cab and chassis shall e equipped with a pair of 25' jumper cables and two (2) polarized quick connect/disconnect receptacles. A receptacle shall be flush mounted in a convenient location on the front push bumper/grille guard structure. A second receptacle with required cable shall be furnished which shall

be mounted by TDOT at a later date. The front receptacle shall be mounted in such a manner as to provide maximum protection for the plug-in assembly while pushing a broken down vehicle or towing a trailer. The jump start system shall include a polarity indicator light. The light automatically indicates as incorrect battery hook-up. A set of side post terminal adapters shall be furnished with the system.

**WIRING AND CONNECTORS**

Color-coded wiring harness encased in plastic loom and secured to the body. Loom retained by mechanical fastening system. All wire connectors shall be 3M special terminals (heat shrink terminals and connectors). Example: Heat shrink brazed seam ring tongue terminals, heat shrink brazed seam locking fork terminals, heat shrink nylon fully insulated female disconnects, heat shrink nylon fully insulated butted seam male disconnects, heat shrink seamless butt connectors. All in-line taps shall be and any end connectors shall be waterproof. **NOTE**: All wires and connectors/harnesses are to be routed in such a manner as to not interfere or impede access to other components within the engine compartment (batteries, air cleaner, etc.). All color coded wiring is to be consistent from one truck to another. The necessary wiring schematics shall be provided. **NOTE**: Wiring will not tie into factory fuse block and fuses. Fuse blocks will not be placed in the compartment for radios. Any wires that run into the console, siren box will have enough slack wire to allow for adjustment of the console (forward, back, etc.). All wiring shall have quick connect connections to disconnect the bed from the truck (if necessary) and be waterproof.

**HEADLIGHT FLASHING SYSTEM**

The truck shall have a headlight flashing system installed. The flashing system shall be solid state relay driven, alternating flash design. System shall be capable of high beam override, allowing system interruption. System control housing shall be constructed of molded polycarbonate and all electronics encapsulated by epoxy. Housing shall be compact in design and have external flanges for

mounting. System shall have low current switching and be supplied with color coded harness, installation and wiring instructions. Dimensions: 3” H x 4 ¼” W x 1 ½” D, weight 10 oz. Whelen model 2150A or equal.

**PA SYSTEM**

The truck shall be equipped with a PA system. The PA system shall use a high efficiency, 200 watt RMS loudspeaker. The loudspeaker shall be designed for mounting on the top center of the front bumper behind the push guard and be compatible with the electronic PA system. The loudspeaker shall have a round aluminum horn and be compact in design. The PA amplifier shall be remote head design. The amplifier shall be capable of 200 watt output. The amplifier shall have air horn (hi-low tone), public address, two-way radio re-broadcast wail, yelp, and piercer. Control head and amplifier shall be pre-wired with mated, quick-disconnect plugs for easy installation (**NOTE**: Control mount to be mounted on top of the console in order for the operator to better see the buttons. Ram mount or equal) The PA system shall over-ride all other functions when the microphone is activated. Control head dimensions: 2” H x 4 ½” W x 2 ½” D. Remote amplifier dimensions: 2 3/8” H x 6” W x 5 ½” L. The remote amplifier shall be mounted in an area to avoid being struck by tools, etc. and control head mounted in the console area. Control switch to be programmed as follows: **1st** position is off; **2nd** position yellow lights on in back**; 3rd** position red lights on in the back; **4th** position all warning lights yellow, red, light bar, etc. System shall have a two (2) year warranty. PA control head and remote amp or equal. Siren speakers shall be mounted behind the push guard (speakers mounted under hood have gotten too hot. No sirens should be mounted under the hood according to NFPA). Federal BP-200 or equal.

**POWER CONTROL**

The front strobe light bar and rear/side LED head assemblies shall be operated by a nine (9) switch power control. The first three (3) positions are controlled by a slide switch. The slide switch shall operate left to right and have LED lamps to

indicate power to light bar. The other six (6) switches shall be push button by design. The power control shall have back lighted windows above the push button switches which allow clear legends to identify switch function. The power supply shall be rated to accommodate the light bar and strobe head assemblies. The power control shall have built-in 30 amp relays to operate each function. The power control shall be low profile in design and constructed of extruded aluminum for heat dissipation. The power control shall be mounted and wired into the truck console. Dimensions: 2" H x 6 1/6" W x 7 ¼" D – weight 1 lb. 12 oz. The power control functions shall be wired as follows:

Slide switch 1st position – Rear LED warning (comet flash)
Slide switch 2nd position – Side and rear LED warning (comet flash)
Slide switch 3rd position – All LED warning & front light bar (comet flash)
Push Button 1st position – LED (2) amber rear above stop-tail lights & LED (2) red front bumper mounted

Push Button 2nd position – Alternating headlight switch
Push Button 3rd position – Rear compartment lights
Push Button 4th position – Steady burn, front work lights
Push Button 5th position – Rear scene lights
Push Button 6th position – Emergency flood lights

All wiring to and from strobes, etc. shall be connected with mated pin plugs. This allows quick-disconnect without cutting any harnesses. Wiring shall be tied up with nylon harness clamps. No loose wiring. All wiring run through panels shall use rubber, wiring grommets. The power feed back to the body from the truck battery shall be 10 gauge wire. In-line, on the power feed, there shall be a butterfly circuit breaker mounted under the truck hood. The circuit breaker shall be rated up to 30 VDC, and 60 amp rating. The breaker shall be waterproof single pole, and capable of manual reset. The reset feature shall have a visible indicator to warn of a tripped condition. The 10 gauge wire shall be run to a bus bar for power distribution to light bar, power supply, etc. Whelen model PCCS9R1 power control or equal.

**DOMELIGHT, CAB INTERIOR**

A 5” dome light shall be surface mounted on cab interior roof above the steering wheel to aid operator in low light conditions while preparing incident reports. Light shall be controlled with a push button or toggle switch mounted on light. Whelen CL25C or equal.

**CAB MOUNTED LED SPOTLIGHT**

Cab shall have a left post-mounted LED spotlight. Spotlight shall have fingertip switch, provide 360 degree continuous horizontal rotation and up to 120 degrees vertical adjustment, six (6) inch round halogen sealed beam lamp and provide 270,000 candlepower of light. Left hand application. Unity model #330 or equal.

**ROTATING LED CHANGEABLE MESSAGE BOARD – MINIMUM SPECIFICATIONS (NOTE: This rotating message board and all parts necessary for complete installation and operation shall be provided by the awarded bidder and delivered to the FOB location. TDOT garage personnel shall install the unit on the cab and chassis.)**

The body shall have a vehicle mounted rotating message board permanently affixed which is legible at a minimum distance of 650 ft. for 10” characters, 950 ft. for 16” characters and 1250 ft. for 20” characters in both day and night conditions. To include the rotating mount. The message sign outer cabinet shall be fabricated of aluminum.

1. The dimensions of the sign outer cabinet shall be approx. 75” x 41” x 5”.
2. The dimensions of the sign display shall be approx. 71.5” x 33.75”.
3. The display side of the message sign shall contain a clear window, which is an UV stabilized polycarbonate material designed to protect against the effects of weather.
4. The polycarbonate window material shall have a scratch resistant surface to reduce degradation of message legibility due to scratches building up on the window.
5. The overall weight of the sign cabinet shall not exceed approx. 112 lbs.

6. The sign enclosure shall be thermostatically controlled and be equipped with a fan and rain-tight vents. Intake and exhaust vents associated with this fan shall restrict water from entering the enclosure when the sign is in either the horizontal (stowed) or vertical (display) position, whether vehicle is stationary or moving.
7. The sign cabinet shall have no louvered vents.
8. The sign shall have an effective weather-sealing gasket between window and cabinet. Gasket shall provide shock resistance, minimizing window vibration, while preventing dust and water entry.
9. The back of the sign shall e powder coated white to reflect light and reduce heating in the cabinet.
10. LED color must be amber, nominally, 592 nm.
11. The sign shall automatically dim upon reduced levels of ambient light.
12. The sign shall have four (4) LED's per pixel.
13. The sign shall have a 24 pixel x 48 pixel display matrix (1,152 total pixels).
14. The removal of one character panel will not adversely affect any other part of the sign.
15. The sign must conform to MUTCD type B arrow board requirements.
16. The sign shall have the ability to display three (3) lines of text with eight (8) characters per line, each character shall have a nominal height of 10".
17. The sign shall have the ability to display two (2) lines of text with six (6) characters per line, each character shall have a nominal height of 16".
18. The sign shall have the ability to display one (1) line of text displaying four (4) characters, with a character height of at least 20".
19. The sign shall be capable of automatically centering the displayed message page horizontally.

20. The sign shall automatically center and default to the largest font size available, when a message is displayed.

21. The sign shall be capable of displaying the following symbols using the full height of the LED display: Four corner caution, left & right flashing arrow, flashing double arrow, left & right sequencing arrow, left & right chevron, and flashing double diamond caution.

22. The sign control board or CPU shall be contained within the sign cabinet. No external box or separate component shall be stored or mounted in the operator compartment of vehicle or other location that is exterior from the sign.

23. All user programmable messages shall be stored on the control board or CPU, not on the input device.

24. The keypad controller shall have the capability to save a backup of all user programmable messages stored on the sign control board.

25. The sign cabinet shall be easily accessible, without the aid of tools, for general maintenance and repair.

**KEYPAD HANDHELD CONTROLLER**

1. The handheld terminal must be a Keypad Control unit. All programming, message selecting and viewing must be performed on this device.

2. A laptop or PC shall not be required to perform any sign functions including creating new messages, message editing, or message selection.

3. There shall be 40 user programmable messages.

4. Each message shall be able to display up to three (3) pages, or flashes of information.

5. The messages shall be organized into 5 groups of 8 messages. The user must have the ability to make each message group.

6. The user shall navigate through groups using the left/right arrow buttons and through messages within a group using the up/down arrow buttons on the keypad controller.

7. A single button press will instantly display any of the 8 messages programmed within the selected group using the corresponding number on the keypad.

8. There shall be a message library of 92 messages available for editing messages.

9. The message library shall be divided into 3 categories: Paint Striping, Incident Response, and General Maintenance.

10. The sign shall be capable of linking up to 4 messages, displaying up to 12 pages in sequence.

11. Keypad must have a supervisor password protection option for message editing.

12. Keypad Controller must have 5 buttons dedicated and marked for displaying symbols with a single button press. The 5 symbol buttons must be: 4 corner caution, left arrow, right arrow, left chevron and right chevron.

13. Approx. Keypad dimensions: 9” x 5” x 1.5”.

14. Approx. dimensions of display screen: 2” x 3”.

15. The Keypad Controller must have a display screen that previews all three pages of a message prior to being displayed on the sign.

16. The Keypad Controller shall have the capability of uploading and saving user programmable messages, which are stored on the sign control board.

17. The Keypad Controller shall have the capability of downloading saved user programmable messages into other, identical vehicle mounted sign models, for the purposes of standardizing messages in the fleet.

18. The Keypad Controller shall have the capability to connect and operate other vehicle mounted sign models within the fleet, without any additional setup or programming.

**LOW PROFILE UPPER MOUNT**

(Upper portion of support structure mechanism that holds and rotates the sign from a horizontal to vertical position that can be adapted to various structures attached to a vehicle)

1. A 12 volt linear actuator rated at 500 lbs. dynamic load and 3000 lbs. of static load shall be installed on the support structure that will automatically rotate the message sign from horizontal (stow) to vertical (display) position.

2. The support structure must rotate the message sign from horizontal (stow) to vertical (display) position within 14 seconds, while the vehicle is traveling at 65 mph.

3. The upper mount and sign, in a horizontal (stowed) position, shall be no taller than 13”.

4. The upper mount support structure shall be constructed of tubular and plate steel with a black protective powder coated finish.

5. Drawings are requested showing the layout of the upper mount support structure arrangement (submitted with bid).

6. When in the horizontal (stow) position, the sign must be resting on a bumper or rest to support the sign and minimize vibration. A 90 degree tilt mount that hangs and does not have a support is not acceptable.

7. All cables, harnesses, plugs and connectors required making the installed equipment operational in a vehicle configuration shall be provided.

**LOWER MOUNT**

(Lower portion support structure that attaches the upper mount to the bed of the truck)

1. Drawings are requested showing the layout of the lower mount support structure arrangement (submitted with bid).
2. Uprights and supports shall be constructed of tubular and plate steel with a black protective powder coated finish.
3. Mounting support structure shall be suitable for use on a vehicle allowing the sign to be visible above the cab at a minimum of 7 ft. from the ground to the bottom of the sign. All necessary hardware needed to attach the mounting support structure to the vehicle shall be provided for installation by the awarded vendor.
4. To maximize utility of vehicle bed space, mount shall be installable directly behind the cab.

**PARTS AND SERVICE**

Manufacturer's franchised authorized dealer must have parts and service facility within four (4) hours of FOB delivery location to be considered for an award. This must be a full service franchised dealership which includes: **1**) Sales management; **2**) Field representatives; **3**) Manufacturer's required specialized tools; **4**) Fully equipped service trucks; **5**) factory trained technicians