

BID FORM	MISSOURI DEPARTMENT OF TRANSPORTATION PROCUREMENT DEPARTMENT 2309 BARRETT STATION ROAD BALLWIN, MO 63021	REQUEST NO. D608-029-R6
		DATE August 7, 2007
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SEALED BIDS, SUBJECT TO THE CONDITIONS ON THE REVERSE SIDE HEREOF WILL BE RECEIVED AT THIS OFFICE UNTIL Tuesday, September 11th, 2007 @ 2:00 p.m. CST AND THEN PUBLICLY OPENED AND READ FOR FURNISHING THE FOLLOWING SUPPLIES OR SERVICES.	QUOTATIONS TO BE BASED F.O.B. MISSOURI DEPARTMENT OF TRANSPORTATION Various Locations To Be Coordinated With Contractor
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BUYER: Kristi Coppinger	BUYER TELEPHONE: 314-301-1439
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Item Number	SUPPLIES OR SERVICES	Quantity	Unit Price	Unit Price Extension	Delivery Time
1.	DMS Boards Per Attached Specifications	8			
2.	Integration Cost into MoDOT's Advanced Transportation Management System (ATMS) if DMS Driver is not already integrated with our system.	Lump Sum			
3.	Estimated 2008 DMS Requirements Year 2, (1 st Renewal Period)	17			
4.	Estimated 2009 DMS Requirements Year 3, (2 nd Renewal Period)	3			
TOTAL ORDER EXTENSION:					

Contract Period: This contract shall commence from the date of award until September 20, 2008 with up to (2) one-year renewal option periods. If the option for renewal is exercised by the Missouri Department of Transportation, successful bidder shall agree to all terms and conditions of this bid, all subsequent amendments, and renewal prices listed above. Renewal options are not automatic and are at the sole discretion of the Missouri Department of Transportation.

Note to Respondent: A vendor must be in compliance with the laws regarding conducting business in the State of Missouri. The compliance to conduct business in the state shall include but may not be limited to: Registration of business name, vendors MUST submit a bid/proposal that correctly and accurately identifies the company name that is registered to do business in the State of Missouri. The Missouri Department of Transportation reserves the right to reject any or all bids, and to accept or reject any items thereon and to waive technicalities. A responsible officer or employee must sign with the firm name and all bids. Obligations assumed by such signature must be fulfilled. No bids by telephone, telegram, or telefax will be accepted.

In compliance with the above invitation for bids, and subject to all conditions thereof, the undersigned offer and agrees to furnish and deliver any or all the items on which prices were quoted within 20 days after receipt of notification.

Date: _____	Firm Name: _____
Telephone No.: _____	Address: _____
Fax No.: _____	Company Officer Title: _____
Federal ID #: _____	Type/Print Name: _____

Additional Information/Instructions

- MoDOT, District 6, wishes to extend cooperative purchasing for other MoDOT Districts and Missouri governmental entities per the attached specifications. Please complete and submit “Cooperative Agreement Notice,” page 31.
- The Anti-Collusion Statement, page 32, and Bid Bond, page 33, must be completed and submitted along with other required bid documentation.
- It is understood that quantities shown are estimated and the Missouri Department of Transportation does not guarantee to purchase those quantities, estimations may increase or decrease during contract period.
- 2007 quantities will not be needed until January 2008.
- MoDOT is requiring a parts list for typical replacement components, including itemized pricing, please complete Parts List, page 3, and return with bid response.
- For each product specification, pages 4 – 30, please indicate if product “meets” or “does not meet” specification and submit with bid.
- Prices to remain firm through September 11, 2008.

VENDOR NOTES/COMMENTS

Controller Outside Specifications

FUNCTIONAL SPECIFICATION FOR DYNAMIC MESSAGE SIGN ASSEMBLY – CONTROLLER OUTSIDE OF HOUSING

Date: March 6, 2007

1. GENERAL

1.1. Description

This specification describes a walk-in, full matrix Dynamic Message Sign (DMS) assembly. The DMS assembly shall include the DMS, horizontal structural brackets, mounting hardware, electrical distribution, surge suppression and all miscellaneous hardware and incidental components (including internal cables) required to deliver a fully operational subsystem. The entire assembly shall be housed in a fully wired aluminum weatherproof enclosure.

The assembly also includes a sign controller to be mounted in a cabinet (provided by others) near the sign. In most cases, the cabinet will be mounted on the sign support structure.

All portions of the DMS display shall be clearly visible and legible from in-vehicle viewing distances between 200 ft (61 m) and 1000 ft (305 m) under normal roadway operating conditions. The DMS assembly shall be designed to operate in roadway configurations at least three travel lanes wide in the same direction.

All DMS equipment components, modular assemblies, and other materials located in the DMS housing shall be removable, transportable, and capable of being installed by a single technician utilizing a catwalk to an access door. Structural members and components thereof are not included in this requirement.

All components furnished under this functional specification shall be current production equipment and of recent manufacture. To ensure overall system compatibility, all DMS's shall be from the same manufacturer and production run.

1.2. Manufacturer Qualifications

The DMS manufacturer proposed to furnish displays and controllers for this project shall have been in business continuously for a minimum of five years prior to the date of bid opening. Further, the proposed manufacturer shall have furnished LED DMS systems for a minimum of three projects, each with at least five signs and controllers. Each of these signs and controllers shall have satisfactorily operated for a minimum of one year prior to the date of bid opening. The names, current addresses and phone numbers of individuals who can certify satisfactory operation of signs meeting the above stated requirements shall be provided with the initial material submittal.

1.3. Item Identification

Manufacturer model numbers shall be permanently affixed on all replaceable components. The manufacturer shall supply an Excel spreadsheet in the current MoDOT format containing the manufacturer's name, device type (i.e., DMS), Location Identifier, model number, part number and serial number as separate fields.

1.4. Environmental

Except where otherwise specified, all components of the DMS assembly shall meet the temperature, humidity, vibration, and electrical requirements of NEMA TS-2. The DMS components shall be capable of continuous operation in a salt-laden atmosphere without degradation of material surfaces or performance.

1.5. Mechanical

The total weight of the DMS assembly shall not exceed 4500 lb (2050 kg).

1.6. Electrical

The presence of ambient radio signals, magnetic or electromagnetic interference, including those from power lines, transformers, or motors within 1 ft (0.3 m) of any components of the system, shall not impair the performance of the system. The system shall not radiate any electrical or electromagnetic signals that could adversely affect any other electrical or electronic device.

All system electronics shall be 100 percent solid-state technology with the exception of the ventilation fans.

All high voltage (exceeding 24 Volts DC) components used in the sign shall be UL listed.

2. DYNAMIC MESSAGE SIGN COMPONENTS

2.1. DISPLAY ELEMENTS

2.1.1. Display

Each DMS shall be of the full matrix type. The matrix shall be a minimum of 36 pixels high (rows) by a minimum 105 pixels wide (columns). The pixels shall be spaced uniformly with the same spacing vertically and horizontally to the rows (i.e., no pitch or slant is allowed). The outside border around the DMS display shall be approximately 12 inches (305 mm).

2.1.2. Light Emitting Diodes

Display pixels shall incorporate amber LED technology. The discrete LED's shall have the following optical characteristics:

- Peak wavelength of 590 or 592 nanometers,
- For each sign, the range of brightness shall be such that the brightest LED used is no more than twice as bright as the dimmest LED used.
- Viewing cone of 17 degrees.
- The dominant wavelengths of all LEDs shall fall within a band 3.5 nm wide.

The shop drawing submittal for the sign shall include the manufacturer's procedure for ensuring that the requirements for uniform brightness and uniform color are met.

2.1.3. Display Modules

All module surfaces, which are visible from outside the DMS, excluding the LED pixels, shall be painted flat black in order to provide maximum display contrast and readability. There shall be a minimum of two pixels per module.

All serviceable components shall be modular, interchangeable, and removable from within the DMS enclosure. The DMS display shall be composed of identical and readily interchangeable display modules. Display modules shall be removable from the DMS with either simple hand tools or without any tools. All wiring interconnecting the individual display modules shall be modular harness assemblies with latching push-on/pull-off or twist on/off connectors.

The removal of any combination of one or more display modules shall not alter the structural integrity of the DMS assembly. Nor shall the removal of any combination of display modules affect the operation of the remaining operational modules in any way.

Pixels shall consist of two strings of LEDs and shall produce 40 Cd of luminous intensity at a drive current of 20 mA per string and a forward voltage drop of 24 volts or less.

LED's shall be soldered to circuit boards with through-hole type of circuit board mounting. Surface mounting of LED's will not be allowed.

To minimize the chance of LEDs being pushed out of alignment with the sign's optical axis, LED's must be mounted no more than 1/100 inch from the front side of the printed circuit board. The LED's must be mechanically protected, so that there is no contact with them when the module is gripped or dropped.

Display modules shall be attached to the support frame with captive fasteners in such a way that their position does not change when the sign is subjected to severe vibration.

The LED leads and the circuit board traces shall dissipate heat produced by the LEDs. Circuit traces that connect to the LEDs shall be two ounce copper plating or thicker. The width of traces that connect to those LED leads that carry heat from the LED chip shall be maximized.

Both sides of the board shall be protected with acrylic conformal coating. The coating on the front of the board is to seal the gap between the LEDs and the board, and shall be applied so as not to coat the LED housing above the gap. The LEDs may not be potted.

The peak current provided at maximum brightness must be 20 mA or, if adjustable, must be set at 20 mA when installed. If the maximum current is adjustable, the adjustment mechanism shall not permit values above 30 mA.

The top of the display modules shall tilt forward seven degrees. The amount of the forward tilt may be adjustable, in which case the adjusting mechanism must be calibrated and each position labeled. The mechanism that adjusts the tilt must rely on pins or bolts, not friction, to hold the modules at the desired angle.

2.2. DISPLAY ELECTRONICS

2.2.1. Driver Circuitry

The driver circuitry shall be able to detect abnormal current values, including short circuits and open circuits, while a single pixel is being illuminated. The state of the LED's (on or off) in each pixel of the sign shall be read by the sign controller so it can report the actual message, including static, flashing and alternating messages, that is visibly displayed on the sign in a WYSIWYG format. This pixel read shall take place while a message is displayed on the sign without disturbing the message in any way and will include any half-out, full-out, half stuck on or fully stuck on pixels. Any flashing, flickering, blinking, dimming, or other disturbance of the message during this pixel status read shall be cause for rejection of the sign.

2.2.2. Brightness Control

Pulsed drive current shall be used at the maximum brightness level. Pulse Width Modulation (PWM) shall be used to dim the sign to achieve the proper brightness level for a given ambient light condition. As part of the shop drawing submittal, a complete schematic of the LED power and driver circuits shall be provided for review by the Engineer. Multiplexing of the LED's shall not be allowed.

The DMS shall have photocells that detect when the sun is directly in front of the DMS or directly behind it. Those photocells, or a separate photocell, shall also distinguish night from day. These photocells shall not be affected by man-made light sources, such as highway lighting and/or headlights. They shall be easily accessible for maintenance.

2.2.3. Temperature Control

The DMS shall be designed so that the air temperature on the backside of the display modules never exceeds 140 degrees F (60 degrees C). A thermostat located in the middle of the top line of display modules shall shut down the LED display if the temperature

rises above 140 degrees F (60 degrees C) and restore power when the temperature has dropped to 120 degrees F (50 degrees C). This shall be independent of the controller.

The sign shall also have one or more temperature sensors that report the sign temperature to the sign controller, which shall in turn report the temperature to the central software.

The sign shall have a remote bulb thermometer located just inside the door of the sign. The thermometer's temperature sensor shall be at the same location as the thermostat, so that a technician can readily determine whether the thermostat is operating properly.

2.2.4. DMS Power Supplies

The maximum operating temperature of all power supplies shall be at least 150 degrees F (65 degrees C). All regulated power supplies shall have a minimum power factor of 0.95.

The LED display modules shall be operated at low internal DC voltage not exceeding 24 Volts.

The power supplies shall be short circuit protected by DC power OFF, and shall reset automatically after 5 seconds of AC power OFF. The power supplies shall also be protected by a suitable inrush current allowance to be recommended by the manufacturer and approved by the Engineer.

The power supplies shall have an efficiency rating of at least 75 percent.

2.3. ENCLOSURE

The DMS enclosure shall be a weatherproof walk-in type enclosure that houses all electrical, communication, and electronic control devices necessary for the operation of the DMS. Permanent lifting angles or lugs shall be attached to the DMS enclosure for moving and mounting. A shelf or workbench shall be provided inside the enclosure for a notebook computer and related equipment.

2.3.1. Structural Performance

The structural design of the LED DMS enclosure shall conform to current AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals*. Additional design criteria are as follows:

- Wind Velocity = 80 mph (130 kilometers per hour)
- Gust Factor = 1.3

The performance and stability of the sign shall not be impaired due to vibration, wind, vacuum pressure, and/or other normally encountered forces created by the effects of traffic. The shop drawing submittal shall include structural design calculations for the enclosure, signed and stamped by a registered professional engineer in the state of Missouri.

Include calculations demonstrating that wind gusts cannot cause the glazing to detach from the sign nor to contact the display modules.

2.3.2. Dimensions

The nominal dimensions of the sign enclosure shall be approximately 26 ft (8 m) in width x 10 ft (3.1 m) in height x 3-½ ft (1.06 m) deep.

2.3.3. Material

The DMS enclosure shall be assembled from a continuously welded aluminum alloy 3003-H14 or 5052-H34 skin of at least 1/8 inch (3.5 mm thick). The enclosure shall not have sharp edges or corners and the inside and outside edges shall be free of burrs. Internal supports shall be of extruded aluminum alloy 6061-T6 members welded to form a support structure to provide rigidity and structural integrity. All metallic parts shall be corrosion resistant.

The DMS case and facial area shall be treated with a flat-black, factory-applied, Kynar fluoreopolymer resin based coating providing a minimum life span of 10 years. As part of the shop drawing submittal, the manufacturer may propose an alternate means of protecting the metal surfaces. Such alternates shall be subject to the approval of MoDOT.

2.3.4. Welding

The DMS housing shall be fabricated, welded and inspected in accordance with the requirements of ANSI/WS D1.2-90 Structural Welding Code-Aluminum (1990). Compliance with this requirement shall include, but is not limited to:

All manufacturing personnel who perform welding on the DMS housing shall be certified to AWS D1.2-90 for all weld types required for housing fabrication. The DMS manufacturer's submittal shall contain a copy of each welder's certification and the manufacturer's certified welding procedures.

DMS housing welding shall be inspected on a daily basis by a Certified Welding Inspector (CWI), who shall complete daily written reports on DMS welding progress, housing weld integrity, and any corrective action taken. These reports shall be archived by the DMS manufacturer and shall be available for immediate review upon request by the Engineer.

2.3.5. Access Door

Access to the interior of the sign enclosure shall be via a gasketed door measuring 75 inches (1905 mm) x 30 inches (762 mm) minimum. The door shall open outward onto a walkway and be located on the left or roadway side of the enclosure with the hinge toward the front or sign face of the sign.

Gaskets shall be provided on all door openings and shall be dust-tight. Gaskets shall be a minimum of ¼ inch (6 mm) thick closed cell neoprene and shall be permanently bonded to the metal. A gasket top channel shall be provided to support the top gasket on the door in order to prevent gasket gravitational fatigue.

The latching mechanism shall be a three-point draw roller type. The pushrods shall be turned edgewise at the outward supports and have a minimum cross section of ¼ inch (6 mm) thick x ¾ inch (19 mm) wide. The mechanism shall have handles inside and outside the sign. A door hasp shall be provided to secure the door and it shall accommodate a ¼ inch (19mm) shank lock.

The door shall be provided with a catch mechanism to hold the door open at 90 degrees in a 60 mph (100 kph) wind acting at an angle perpendicular to the plane of the door.

2.3.6. Walkway and Ladder

The DMS enclosure shall have an interior, nonskid walkway that extends the entire length of the sign enclosure. The walkway shall be free of obstructions and shall be at least 28 inch (711 mm) wide and provide minimum headroom of 75 inch (1905 mm) throughout the length of the enclosure. The interior walkway shall have removable panels for access to the space below the walkway.

The interior walkway shall be capable of supporting a concentrated load of 500 pounds per square foot at any location, and a total load of 1000 pounds within any 10-foot section of the walkway.

The DMS enclosure shall be equipped with a non-conductive ladder, which is suitable for safely servicing the upper lines of the sign, and shall automatically lock in place when in use. A latching system shall be provided which will allow the ladder to be securely stored within the sign enclosure when it is not in use.

2.3.7. Display Face

The front face of the DMS shall be made of clear polycarbonate panels of at least 3/16-inch thickness. The polycarbonate shall transmit at least 85 percent of the light emitted by the LED's. The manufacturer's technical data sheet for the material utilized for the front face shall be provided as part of the submittal package.

The polycarbonate manufacturer shall guarantee that:

The yellowness index (ASTM test D-1925) of the material shall remain below 5.0 for three years from the date of purchase, and below 10.0 for five years.

The light transmission (ASTM test D-1003) of the material shall not decrease more than three percent in three years from the date of purchase, nor more than seven percent in five years.

Each window shall be covered with a 0.04-inch, minimum thickness, black aluminum mask. The aluminum mask shall have the same finish as the rest of the front of the sign and shall provide openings directly in front of each pixel. Pixel openings shall be of sufficient size as to not interfere with LED light output.

2.3.8. Ventilation

The DMS enclosure ventilation shall include intake, exhaust, filtration, fan assembly and environmental control. Adequate ventilation shall be provided to allow climate control for DMS service technicians.

Vents shall be screened to keep out rodents and insects. The number and size of the vents shall be determined by the manufacturer to be of sufficient size to provide adequate ventilation. Intake vents shall use motorized louvers to prevent the entry of dirt and insects when the ventilation system does not require outside air. The exhaust vents shall be equipped with dampers for the same purpose. The intake vents shall be located to prevent the direct intake of truck exhaust.

A removable two-stage air filter system shall be installed behind each intake vent. The filter filtration area shall completely cover the vent opening area such that no incoming air bypasses the filter. Brackets shall support the filter at the vents and be located to facilitate easy replacement.

The DMS enclosure shall be equipped with electric fans with ball or roller bearings. The capacity of each fan and the number of fans shall be sufficient to insure adequate ventilation if one fan becomes inoperable. An analysis shall be presented in the submittal material, which shall document that the proposed system meets these requirements. The fans shall be mounted within the housing and vented. The number, placement, and size of the electric fans shall be determined by the manufacturer.

The fans shall be controlled by the DMS controller or a thermostat. If the fans are controlled by the DMS controller, there shall be parameters in the controller's database, which will specify the turn-on temperature and the shutdown temperature. Both parameters shall be in the range of 70 degrees (20 degrees C) to 120 degrees F (48 degrees C).

The DMS shall have a window defogging system that is turned on and off by the DMS controller or a thermostat. The system shall use heated air blown on the inside of the windows. Heating strips on the windows or frames shall not be acceptable. The defogging system shall be capable of removing all condensation from a completely fogged window within five minutes.

2.4. ELECTRICAL SERVICE

2.4.1. Electrical Distribution Panel

The primary electrical service panel shall be rated for 120/240 VAC, single phase, 3 wire and 100 amperes maximum with a 2 pole main circuit breaker and a 1-pole circuit breaker for each branch circuit and a copper ground bus. The panel shall have an interrupt rating of not less than 10 KA. The panel shall be General Electric Model AQF1121AB or AQF1121AT or an equivalent approved by MoDOT. Separate circuits shall be provided for the utility outlets. 120 VAC load shall be balanced. Incoming terminals shall be capable of a conductor range from 8 AWG (10 mm²) to a 4/0 AWG (120 mm²).

2.4.2. Radio Interference and Surge Protection

Surge protection shall be provided on all ungrounded conductors leaving the sign housing. All devices shall be readily accessible for ease of replacement.

A two-stage surge protector and radio interference filter shall be on all incoming power lines. The two stages shall be electrically separate, so that the first stage protects all equipment using the power, while both the first and second stages protect electronic equipment. There shall be no maximum load for the first stage. The second stage shall be capable of protecting equipment drawing a total of 10 amps. The protector shall clamp both the main line and the main neutral at 250 volts, both relative to each other and relative to the cabinet ground. The response time shall be such that the actual voltage never exceeds 250 volts. The surge protector shall suppress surges of up to 20,000 amps (8 x 20 microsecond waveform). The clamping voltage shall change by no more than five percent after 20 such surges.

For each conductor used for communication and control, provide surge protection in the sign. Furnish a cable termination panel with surge protectors that match those in the sign, which the installation contractor can install in the cabinet along with the sign controller.

2.4.3. DMS Enclosure Interior Lighting

The DMS enclosure shall be equipped with a switch controlled set of at least five fluorescent light fixtures equipped with cold weather ballast (0 degrees F (-18 degrees C) minimum). The light switch shall be located near the entry door on the side opposite from the door hinges. The fixtures shall be complete with a guard. Each fixture shall have a 40-watt four-foot fluorescent lamp. The fixtures shall be equally spaced.

2.4.4. Utility Outlets

The DMS enclosure shall be equipped with three, 20 amp, 120 VAC duplex (NEMA 5-20R) receptacles. These outlets shall be protected by ground-fault, circuit-interrupters. Two receptacles shall be located approximately three feet (1 m) from each end, and one receptacle shall be located in the center of the DMS enclosure. These are in addition to any outlets used by the equipment provided by the sign manufacturer.

2.4.5. Conduit and Wiring

All lighting and receptacle circuits shall use at least 12 AWG (4 mm²) wiring enclosed in thin wall metallic conduit.

2.5. CONTROLLER

Furnish a sign controller for the installation contractor to install in an equipment cabinet near the sign. The sign controller installed in said cabinet shall provide full local control of the sign. The controller must have sufficient memory and processing power to perform all the functions described in the specifications, including full functionality of the service software. Sign controller shall be a 19-inch rack mountable and have a 15-inch maximum depth.

2.5.1. Watchdog Timer

The controller shall have a watchdog circuitry that automatically resets the controller when it locks up. There shall be a means for the controller to recognize and report the fact that it was reset by the watchdog timer.

2.5.2. Memory

The controller shall have nonvolatile memory in the form of plug-in PROM integrated circuits. This memory shall contain the software and test messages.

The controller shall also have changeable memory that retains the data in memory for a minimum of one year following a power failure. It shall contain the library of messages, the message display schedule and changeable operating parameters.

2.5.3. Clock

The controller shall have a time-of-year clock with a lithium battery backup. The battery shall keep the clock operating properly for at least 10 years without external power. The clock shall automatically adjust for daylight savings time and leap year through hardware, software or a combination of both. It shall be set by the sign controller's micro-processor. The clock shall be accurate to within 1 minute per month.

2.5.4. Communication Interfaces

Communication between the central computer and the sign shall be by UDP Internet Protocol over Ethernet, so the controller must be IP addressable with an Ethernet port for this purpose.

The controller shall also have at an EIA-232 communication port for communication with a technician's laptop computer connected directly to the controller. The port shall be capable of operation at all standard data rates up to 19,200 bits per second and shall be set to 9600 bits per second.

In addition, the controller shall have communication interfaces with the equipment in the sign, for such things as sign control, temperature monitoring, and brightness adjustment.

3. CONTROLLER SOFTWARE

3.1. Display Presentation

The DMS controller shall control the driver modules in such a way as to create the desired display on the sign.

Messages shall be communicated and stored using the Markup Language for Transportation Information (MULTI), as defined in the most recently adopted edition of the NTCIP Standard 1203, National Transportation Communications for ITS Protocol (NTCIP) Object Definitions for Dynamic Message Signs (DMS). The sign's method of operation must be consistent with that standard.

Space allocated to each character shall be proportional to the character's true width. Software shall handle such details as centering text on a line, right justification, left justification, and appropriate spacing of letters and words. Software shall also control flash, and alternating between pages of a two and three-page display.

There shall be a default value for each parameter supported. The manufacturer shall pre-load these default parameters with values approved by the Engineer.

3.2. Modes of operation

Signs shall be able to display a static message, a flashing message, or a multi-page message as described below.

- **Static message:** The message chosen shall be displayed constantly on the sign face until the sign controller is instructed to do otherwise.
- **Flashing message:** A selected portion of the chosen message shall be displayed and blanked alternately at durations controllable in one-second increments.
- **Multi-page messages:** The chosen message shall display up to three different pages (each page consisting of up to four lines of text) alternately at durations separately controllable in one-second increments.

3.3. Fonts

A user shall be able to create and display messages using at least four fonts, each stored in the controller. Two of the fonts shall be stored in the controller by the manufacturer. Provide a font comparable to that shown in Figure 7-1 of Federal Highway Administration pub-

lication # FHWA-TS-90-043. Also, provide a similar bold font. The user shall be able to create at least two additional fonts, download them to the controller, and store them there.

3.4. Display Selection

In the absence of instructions to the contrary from the control ports, the controller shall implement a display selected from those stored in its memory based upon date and time as specified in the schedule. It shall use a schedule stored in random access memory plus its time-of-year clock to select the proper display. The schedule system shall permit different schedules for different days of the week plus special schedules for special days, such as holidays.

The display of the scheduled message may be over-ridden by instructions sent from the control ports. A computer shall be able to cause the controller to implement a particular display selected from the messages stored in its memory, or a new display sent from the computer using MULTI. The computer shall also be able to edit or completely replace a message stored in the controller's memory, or revise the message schedule. In addition, it shall be able to cause the controller to report its schedule or the text of any message stored in its memory.

Software shall incorporate fail-safe procedures to check messages received and shall not change a message stored in memory, the display currently on the sign, the schedule stored in memory, or the current time unless the message is received correctly and constitutes a valid command.

3.5. Schedule Operation

The schedule is activated by activating a message (i.e., setting an object with the syntax of MessageActivationCode or MessageIDCode) with the dmsMessageMemoryType set to schedule(6), the dmsMessageNumber set to 1, and the dmsMessageCRC set to 0x00 00 (and a sufficiently high activation priority if it is a MessageActivationCode object).

During schedule operation, the run-time priority applies to the operation of the schedule and the run-time priority of the referenced message is ignored. Thus, the run-time priority is constant for all scheduled messages and the central system can set this priority by modifying the value of dmsRunTimePriority.6.1.

The values of dmsMessageMultiString.6.1, dmsMessageBeacon.6.1, and dmsMessage Pixel-Service6.1 are copied from the message called by the most recently called action and thus reflect the most recently called message that would be called by the scheduler whether or not the scheduler is running.

The activation priority of any scheduled message shall be 200 in the absence of a potential future object to specifically set this value.

One may activate the schedule for a defined duration by setting the duration in the activation code.

To get the scheduler to blank the sign, a blank message must be scheduled.

3.6. Brightness Control

Manual and automatic dimming modes shall be provided, enabling the user to select the desired mode of operation. The dimming system shall select one of several levels from the sensed ambient light. The set points for each of the ambient light levels shall be set by the user via software. A user shall be able to send a command via the control ports to select a specific brightness level or to direct the controller to select an appropriate brightness based on current lighting conditions.

For each brightness level, a technician shall be able to easily determine what fraction of the full brightness current is applied to the LED's. The technician must be able to set the current value for a given brightness level to any value between 25% and 100% of the maximum current in five percent increments, and must be able to easily change these settings via computer commands.

3.7. Communication

Controller hardware and software shall permit the communication with the central computer using polled operation, in which the sign controller informs the central computer of its current status in response to a query from the central computer. The sign controller never communicates except when polled.

The controller shall be able to receive commands simultaneously over both ports (one for the central computer and one for a laptop), process the commands in the order received, and respond to each command only via the port on which it was received.

3.8. Diagnostic Test

Upon command, the controller shall test all systems, including but not limited to the electrical operation of all drivers and check for over current and under current pixels, photocells, ventilation, and displays. It shall communicate the result to the computer that issued the command using an NTCIP compliant method.

3.9. Power Interruptions

The contents of the controller's memory shall be preserved by battery power during power interruptions, and the controller shall resume operation automatically when power is restored. Upon recovering from a power interruption, the controller shall report to the central computer that it has just recovered from a power interruption. It shall also consult a configuration parameter set by the user to determine whether to blank its display or to display the message that it would have been displaying if no power failure had occurred. There shall be

separate configuration parameters for long and short power failures, as well as a parameter specifying the maximum duration of a power failure classified as short.

3.10. Test Messages

Test messages shall be stored in the controller's permanent memory. The test messages shall be functionally equivalent to the following:

- **All pixels on simultaneously.** This is to determine whether there are pixels or display modules that are not the same brightness as the rest.
- **Each module shows a unique display indicating which row and column it is in.** This test display is to determine whether any module is displaying what a different module should be displaying.
- **A display that alternates the two previous displays** at approximately ten second intervals. This is to enable an observer to identify which display module has a brightness problem.
- **A display that illuminates every pixel, one at a time,** in rapid succession. This is to be used in conjunction with the current sensors to automatically test each pixel for abnormal current consumption.
- **One display for each font,** showing every character composing the font.

The test messages shall include any other displays required to carry out the manufacturer's recommended procedures for maintenance and troubleshooting.

3.11. Watchdog Timer Interface

The software shall regularly reset the watchdog timer so that it does not inappropriately reset the controller. When it starts operating, the software shall check the status of the watchdog timer and, if the timer indicates that it reset the controller, the controller shall report that fact to the central computer.

3.12. Temperature Monitoring

Via the communication ports, a user shall be able to set a temperature threshold. When the highest temperature reported by the temperature sensors in the sign exceeds this threshold, the controller shall issue a temperature warning to the central computer.

3.13. NTCIP Requirements

The controller shall communicate using NTCIP. Supply full documentation of all manufacturer-specific objects supported by the sign controller. This shall be in the form of a CD-ROM containing ASCII versions of a MIB in ASN.1 format. The MIB shall contain accurate and meaningful description fields and supported ranges indicated in the syntax field of the

object-type macros. The Department shall have the right to use the documentation described above for system integration purposes, regardless of what parties are involved in the system integration effort.

The controller must adhere to the version of the following standards that is current at the time of bidding. A later version may be used if approved by the Engineer.

Information level:

The following objects defined in NTCIP 1201:

- All objects in the Global Configuration Node.
- The following objects in the Global Time Management Node: globalTime; global-DaylightSaving; maxTimeBaseScheduleEntries; timeBaseScheduleTable; maxDayPlans; maxDayPlanEvents; timeBaseDayPlanTable.
- All objects in the Report Parameters Node.
- All objects in the PMPP Object Node.

NTCIP 1203, including all mandatory objects of the following optional conformance groups:

- dms Sign Configuration
- Font Configuration
- MULTI Configuration
- Default Message
- MULTI Error
- Illumination/Brightness
- Scheduling
- Auxiliary I/O
- Sign Status
- Status Error
- Pixel Error Status

Software shall also implement the following optional objects as defined in NTCIP 1201:

- eventConfigLogOID
- eventConfigAction
- eventClassDescription

Software shall also implement the following optional objects as defined in NTCIP 1203:

- dmsIllumLightOutputStatus
- watchdog-Failure-Count
- tempMaxSignHousing

The standardized range is defined by the size, range, or enumerated listing indicated in the object's syntax and/or through description text in the object's description field of the relevant standard, every object required by these specifications shall support all values within its standardized range except:

OBJECT	MINIMUM PROJECT REQUIREMENTS
Max Time Base Schedule Entries	28
Max Day Plans	14
Max Day Plan Events	12
Max Event Log Configurations	50
Event Configuration Mode	2, 3, and 4
Max Event Log Size	200
Max Event Classes	16
Max Group Address	1
Number Fonts	4
Max. Font Characters	100
Number Action Table Entries	Equal to message capacity of sign

The module table required by Clause 2.2.3 of NTCIP 1201 shall contain at least one row with moduleType equal to 3 (software).

Displaying a blank sign shall be achieved in the same way that any message is displayed (i.e., by using an object that has a syntax of either MessageActivationCode or MessageIDCode). However, a new memory type, dmsMessageMemoryType equal to 'blank (7)', shall be created to support this operation. It shall function as follows:

- The dmsMessageNumber for this memory type shall be reflective of the RunTime Priority and shall be between 1 and 255, inclusive.
- The CRC for this memory type shall be 0x00 00 and the normal CRC algorithm shall not be applied to blank messages.

- The dmsMessageMultiString shall be an octet string of length 0.
- The activate priority for any MessageActivationCode using this type of memory shall be used as the actual activation priority.

The software shall implement the following tags (opening and closing where defined) of MULTI as defined in NTCIP 1203

- Fields for 12 hour time, day of month, month, and four digit year
- Flash
- Font
- Justification Line
- Justification Page
- Moving Text
- New Line
- New Page
- Page Time
- Hexadecimal Character

Application level: NTCIP Standard 1101, Conformance Level 1.

Transport level: NTCIP 2202.

Subnetwork level: NTCIP 2104

4. SIGN TESTING

All DMS components and assemblies furnished by the manufacturer shall be subject to testing and monitoring to determine conformance with all applicable requirements and to ensure proper operation of the equipment and subsystem. Test procedures shall be submitted to the MoDOT Engineer for review and approval prior to conducting any testing.

4.1. Factory Testing

The DMS subsystem factory test shall be held at the manufacturer's facility. The manufacturer shall provide all the necessary measurement devices, which can be utilized to verify that the assembly is compliant with the requirements.

4.2. Field Testing

Upon delivery of the sign to the jobsite, the manufacturer and a MoDOT representative shall conduct a visual inspection of the DMS to check for manufacturing and installation defects. The installation contractor may witness this testing if he or she chooses. The DMS shall be powered during this preliminary inspection. Provide a generator and all necessary power and communication cables. The test procedure shall be designed to uncover manufacturing and installation defects of all types. Among the aspects that must be tested are the following:

- All diagnostic routines provided by the manufacturer.
- Proper operation of every pixel, including uniform brightness at all brightness levels and proper current consumption.
- Proper wiring of the display modules, checked by displaying a text message that identifies the modules proper row and column positions.
- Appropriate brightness for day and night conditions, and brightness from the sun at its worst condition for the location.
- Absence of leaks. This can be demonstrated by operating the blowers with the doors and exhaust vents closed to pressurize the sign enclosure, and checking for air by-passing the door or windows.
- Proper aiming of the display modules.
- Proper entry of memorized messages.
- Proper operation of sign monitoring.
- Proper operation of temperature sensors, blowers, defogging system, and lights.
- Proper grounding.
- Correct warning of sensors and alarms to the controller's inputs.
- Proper remote access and control using the central and laptop software provided in this project.

5. CENTRAL SIGN CONTROL SOFTWARE

5.1. General

This software shall enable a user to easily monitor and control not only the signs purchased under this procurement.

MoDOT will provide the computers, complete with operating systems, for this software. Provide MoDOT with a specification for the computers and operating system that MoDOT should supply.

The central software should enable multiple users to monitor and control the signs from workstations. Provide software for one central server and six workstations. It shall be possible to perform the same functions at the server as at a workstation, and the screens seen by the users shall be the same. The server shall be able to receive and properly respond to simultaneous commands from its keyboard and the workstations.

5.2. Off Line Status

A user at the sign server or a workstation shall be able to take a sign off line, causing it to be ignored by the sign computer. This will be used when a malfunctioning sign is generating an excessive number of alarms. When a user attempts to control an off line sign, a message shall appear on his screen informing him that the sign is out of service. When a user takes a sign off line, the software shall ask the user to type in a comment of up to 100 characters explaining the action. The comment field may be left blank. The computer shall also record

the user's name, based on his password, and include the name and comment in the failure report described below.

5.3. Message Library

The sign server shall store a library of at least 999 messages on its hard disk. In addition to the message text, the file shall contain all the MULTI control codes needed for a sign to properly display the message

When adding a message to the library, a user shall specify the message name. If a message with the same name already exists in the library, the software shall notify the user and give him the options of replacing the existing file or selecting a new name for the message he has just created. A user shall also be able to delete library messages from within the program. The program shall ask the user to confirm each message deletion before actually deleting the file.

If the user is seeking a message to display, the software shall present a list so that the user can choose one. When the user makes his selection, the software shall display the entire message, exactly as it would appear on a sign, and shall ask the user to confirm that this is the message desired. The user shall then be able to post the message on one or more signs, edit the message, or do nothing with it.

5.4. Sign Control

Future signs may have different line lengths and heights (measured in pixels) than the signs provided in this project, and may have more or fewer lines. The software shall display messages as a matrix of dots that replicate the way the message will actually appear on a selected sign. The presentation should be based on the number of lines on the sign and the height and width (in pixels) of the lines, as stored in a database maintained by the sign computer. This type of display will be used during message creation and editing, as well as when displaying to a user the message currently on a sign. If the user is displaying a message from the library or creating a message without specifying what sign it will go on, the display shall be based on the characteristics of the signs provided in this project.

Upon creating or revising a message, the user shall be able to save it in the message library on the sign computer's hard disk or send it directly to one or more DMS controllers for storage or display.

When a user sends a message to one or more signs, the sign computer shall automatically check to be sure that the message will fit on the sign. This checking shall take into account the selected fonts and the size of the sign's display. If the message won't fit, the computer shall alert the user and not post the message.

If a user chooses to send the same message to multiple signs, the software shall present the user with a list of all signs, so that the user can check off which signs the new message goes to. The screen shall also give the user a choice of "All Signs". The list shall identify signs

by roadway and milepost. Using a single command, the user shall be able to cause the message to be stored in all the signs he specified, replacing those previously stored in the controllers. Similarly, the user shall be able to use a single command to have all the selected signs display the same message, or the same message number.

In addition to entering commands for immediate execution, a user may store commands in the sign computer for future execution. For example, the user may want to conduct a pixel test of every sign each night at 3:00 AM. A user shall be able to quickly and easily create, modify, suspend, or cancel a schedule of commands for the sign computer to issue to specified DMS controllers. The user shall be able to specify the same action at the same time for multiple signs, in the same way as was described in the preceding paragraph. A user shall also be able to schedule the printing of sign-related reports. A user shall not be able to schedule any command that he does not have the privilege to execute directly. The schedule shall show the name of the user who scheduled each command, based on his password. Actions that would be recorded in the event log if a user commanded them directly shall also be logged when they result from a scheduled command. The record shall include the user's name and an indication that the command was scheduled.

The software shall provide a single command that not only transmits a message to a sign (after confirming that it fits) but also causes the sign to immediately display that message on the sign (after confirming that the transmission was error free).

5.5. Status Monitoring

The sign server shall maintain an event log file on its hard disk with a record for each appearance or disappearance of an alarm from a DMS controller or sign. The file shall be in ASCII format with fixed-length fields separated by spaces, suitable for transfer to spreadsheet and data base management software. The record shall include the date, time, sign id, and nature of the change. If the alarm indicates a change in the sign display, the log shall include the exact text of the message, the device from which it was commanded, and, if commanded via the sign computer, the name of the person posting the message, based on his password. The log file shall include this same information each time a message is downloaded to a sign's memory from the sign computer.

The log shall also record each time a user at a workstation or the sign computer does the following:

- Changes the priority of a message.
- Changes the schedule.
- Changes a message in the library on the computer's hard disk.

The record shall include the user's name based on his password.

The log shall also record the beginning and end of communication failures. The sign computer shall deem a communication failure to have occurred if it does not get an error-free response to two consecutive commands to a controller. The computer shall deem a controller recovered if it responds properly to a command.

5.6. Reports

The system shall provide the following reports to the user's screen, a disk file named by the user, or to the printer, as specified by the user:

- **Equipment Failures.** Lists each sign that is currently malfunctioning, along with the time and date of failure and a phrase indicating the nature of the problem. Also lists each DMS controller that is off line, along with the date and time it was taken off line, the comment written by the user who took it off line, and the user's name based on his password.
- **Sign System Configuration.** Lists the current values of all configuration parameters stored in the sign computer, clearly labeled. It includes such things as communication line and drop assignments. It does not include operating parameters stored in the DMS controllers.
- **Individual Sign Configuration.** Lists the current values of all changeable parameters stored in a DMS controller, clearly labeled. It includes such things as temperature thresholds. This report shall cover all signs, or a particular sign, as specified by the user. The information displayed shall be uploaded from the DMS controllers at the time the report is requested. If the sign computer is unable to upload the data from a particular sign, it shall use the corresponding data on its hard disk, but shall indicate in the report that the data is from the hard disk and may not be current.
- **Current Sign Status.** Lists sign location, text of message currently displayed, whether it is an emergency message (new signs only), whether the message has priority status (new signs only), storage location of the message in the sign's memory, entity that caused the message to be displayed (new signs only), and controller status (failed, working, or off line) for each sign in the system. This report shall cover all signs, or a particular sign, as specified by the user. If the report covers multiple signs, the signs shall be grouped by roadway and listed in the order in which a motorist would see them.
- **Event Log.** Lists all information in the event log file, with each field clearly labeled. The user shall be able to specify that only events between certain times, or pertaining to a certain sign, or pertaining to a certain type of event, or any combination of the foregoing, shall be included in the report. Events shall be listed chronologically.
- **Message Library.** Lists the text of each frame of each message in the message library, along with the duration for which the frame is displayed. Also lists the message's file name and latest revision date. Each frame shall be displayed in the report in the same

way it would appear on a sign, with regard to text centering, bolding, and justification. Flashing text shall be underlined. Messages shall be grouped by subdirectory, and a user shall be able to specify that only certain subdirectories be included.

- **Sign Server Schedule.** Lists all information in the sign server's schedule, clearly labeled. The user shall be able to specify that only events between certain times, or pertaining to a certain sign, or pertaining to a certain type of event, or any combination of the foregoing, shall be included in the report. Events shall be listed chronologically.
- **Sign Memory.** Lists sign ID and location and the text of each message stored in the sign. The message portion of the report shall indicate the message's memory location number and shall display the text of each frame of the message, along with the duration for which the frame is displayed. Each frame shall be displayed in the report in the same way it would appear on a sign, with regard to text centering, bolding, and justification. Flashing text shall be underlined. All information shall be clearly labeled. The user shall be able to specify that the report cover only a particular sign, or all signs. The information displayed shall be uploaded from the DMS controllers at the time the report is requested. If the sign computer is unable to upload the data from a particular sign, it shall use the corresponding data on its hard disk, but shall indicate in the report that the data is from the hard disk and may not be current.
- **Bad Pixel Maps.** Consist of a matrix display indicating which display elements of a sign have failed, according to the DMS controller. The user shall be able to specify that the report cover only a particular sign or all signs with display problems. If the user specifies all signs with display problems, the report will cover all signs whose controllers are currently reporting malfunctioning drivers or display elements.

The time and date for which the information is current shall appear on every page of each printed report. All pages shall be numbered.

5.7. Alarms

The sign computer shall issue alarms by beeping and displaying a message clearly identifying the problem in a prominent box that pops up on the user's screen. The box shall disappear when the user clicks on it and the beeping shall stop. If the alarm is of the type called "recurring", the beeping and screen message recur every 15 minutes as long as the condition persists. The sign computer shall issue a single alarm for the following situations:

- A new sign failure.
- The sign computer is unable to change a sign's display as scheduled because the currently displayed message has priority status.

A sign computer shall issue a repetitive alarm if its hard disk is over 90 percent full.

5.8. Timekeeping

The software shall track and display the current date and time, and shall automatically adjust for standard and daylight savings time without operator intervention.

5.9. Password Protection

Only users who have proper authorization, as indicated by their passwords, shall be able to undertake the following actions:

- Place equipment on standby.
- Change sign messages, blank signs, and change message priority.
- Replace or delete messages stored in a DMS controller's memory.
- Display test patterns on a sign.
- Change or delete the sign computer's schedule.
- Modify the message library on the sign computer's hard disk.
- Change sign configuration parameters.
- Delete the event log.
- View passwords.
- Change passwords and privileges.

Users may be granted or denied permission to use each protected command independently. Via an encrypted lookup table, the server shall determine which of the protected commands a user may use.

The software shall ask the user for his password at the time the protected command is entered. The computer shall not carry out these commands unless the user has the proper privileges.

5.10. User Interface

The sign control software shall provide a graphical user interface with a GPS coordinate map of the signs. The user shall enter commands by selecting the sign icons and various menu options. The user shall make selections from menus and from lists of signs, messages, and options using a mouse. The interface shall be easy to use, minimizing memorization and opportunities for errors. The interface shall automatically check commands for out-of-range values and other errors. When it checks an error, it shall beep, reject the command or data, and provide the user with a clear explanation.

The software shall have the complete text of the software operator's manual stored on disk, readily available to the user.

5.11. Testing

The purpose of the sign computer software test is to demonstrate that the software operates reliably and is in full compliance with the specifications. The Contractor shall conduct the tests following the approved test plan but, if practical, shall also perform any supplemental tests requested by the MoDOT's representatives at the time of testing. To be accepted, the software must pass all the tests.

The test plan shall test every interface, feature, and function of the software, including features present but not required by these specifications. The testing shall demonstrate that the software does the following:

- Operates properly when six workstations are simultaneously sending the server commands and data at maximum speed, while the sign computer is also continuously communicating with the signs.
- Deals appropriately with communication errors and operator errors.

Test equipment and supplies needed for the testing are part of testing and will not be paid separately.

The testing shall not present a danger to motorists nor give them misleading information.

6. TECHNICIAN LAPTOP SOFTWARE

Provide laptop software that enables a technician to test all features and functions of the sign, and to set and change all of the sign's operating parameters. Provide MoDOT with the specifications for the computers to run this software. This software shall be delivered on a CD or diskette so that it can be installed on MoDOT's computers. Provide the appropriate license that may be required to use the software on up to 10 computers.

7. TRAINING

7.1. General

Training shall be provided for MoDOT's engineering, maintenance and operations staff at a facility provided by MoDOT. The training shall include all material and manuals required for each participant.

At least 30 days prior to commencement of the training courses, the manufacturer shall submit detailed course curriculums, time requirements, draft handouts, and resumes of instructors. MoDOT will review and request modifications of that material as appropriate. The courses shall be conducted at a MoDOT provided location, and at a time and date mutually agreed upon by MoDOT and the manufacturer. The training material generated for each course shall contain manuals and other handouts for each attendee, which shall serve not only as subject guidance, but also as quick reference material for future use by the students. All course material, in reproducible form, shall be delivered to the Engineer immediately following course completion.

7.2. Maintenance Training

The maintenance training shall be provided for a minimum of 8 hours for at least ten maintenance personnel with an electronics background. The training shall include operation instructions, theory of operation, circuit description, field adjustments, preventive maintenance procedures, troubleshooting, operation of diagnostic and configuration software (if applicable), and repair of components.

7.3. Engineering Training

The engineering training shall be provided for a minimum of 4 hours for at least ten engineering and operations personnel. The training shall include a complete demonstration of the operation and capabilities of the equipment

8. INSTALLATION SUPPORT

8.1. On-Site Training

Train the installation contractor for the unpacking, assembly, mounting to the sign truss, positioning, and connection to the fiber optic communication cable, or spread spectrum radio integration and testing of the DMS assembly. Tell the contractor what types of cables to run between the controller cabinet and the sign, and how they should be terminated. The contractor shall not perform any work until the manufacturer has certified the contractor as qualified. A MoDOT representative shall be present to observe the training

8.2. Support during Installation

Provide both on-site and remote factory support. Provide a technical assistance hot line from the hours of 8:00 AM to 5:00 PM CST Monday through Friday. Provide assistance to installation contractor on Acceptance Testing, including but not limited to viewing angle, tilt angle, and other sign performance specifications.

9. DELIVERY

The bid price shall include delivery and off loading to the ground at a location in Missouri to be specified by the installation contractor. Coordinate the delivery time and location with both the contractor and the MoDOT Engineer.

10. DOCUMENTATION AND GUARANTEE

10.1. Documentation and Drawings

Provide twelve sets of complete shop drawings, catalog cuts, schematics and operations/maintenance manuals for each component for evaluation. A software manual in both paper and electronic format shall be provided with each set, which also describes the required protocol for ATMS software vendor. A section of each set of the maintenance manuals shall include complete subcomponent parts listing.

10.2. Guarantees

The complete DMS assembly shall carry a two-year guarantee from the date of acceptance against any imperfections in workmanship or materials. The central software shall also carry a two-year guarantee against defects. Provide free telephone technical assistance for software users during this period.

Any repairs made by the manufacturer or representative shall be documented and returned with units when warranty repaired. This documentation shall disclose exact repairs and identify the parts replaced by part number and serial number. All warranty repairs shall be completed within 30 days of delivery of the equipment to the designated repair depot.

11. METHOD OF MEASUREMENT

- Measurement of dynamic message signs, including all specified equipment, documentation, delivery, and testing, would be made per each.
- Measurement of the test sign, including all specified equipment, documentation, delivery, and testing, would be made per each.
- Measurement of the central sign control software, including all specified documentation and testing, will be made per lump sum.
- Measurement of the technician laptop software, including all specified equipment, documentation, and testing, would be made per lump sum.
- Measurement of maintenance training, including all specified documentation, will be made per class-hour.
- Measurement of engineering training, including all specified documentation, will be made per class-hour
- Measurement of installation support will be made per sign installed.

12. BASIS OF PAYMENT

Accepted dynamic message signs will be paid for at the unit or lump sum price for each of the pay items included in the contract. No direct payment will be made for any incidental items necessary to complete the work unless specifically provided as a pay item in the contract.

COOPERATIVE AGREEMENT NOTICE

The Department is interested in assisting Missouri governmental entities, etc. in purchasing equipment, various materials and supplies that meet the Highway and Transportation Department specifications.

Each bidder is asked to indicate below whether they would be willing to offer DMS Boards listed in "Request For Bid" D608-029-R6 for sale to these local political entities at the same bid price offered to this Department.

It is understood the Department will not issue purchase orders, accept delivery nor make payment for these items ordered by any of these agencies. It is further understood the price is based on the DMS Boards meeting the Department specifications. Any added options, deletions, or extra freight costs would be negotiated between the local agency and the successful vendor.

Indicate below whether your company is willing to offer such cooperative purchasing for Missouri counties, cities or other political entities.

YES _____ NO _____

If the price varies throughout the state on Department bids because of different delivery destinations, please indicate the price f.o.b. your location that would be offered as described.

F.O.B. Location _____

Indicate the deadline date that orders will be accepted. _____

COMPANY NAME _____

ADDRESS _____

PHONE NUMBER _____

SIGNATURE _____

TITLE _____

DATE _____

(Each vendor should complete the appropriate sections of their form and submit with their bid.)

ANTI-COLLUSION STATEMENT

STATE OF _____)
)
COUNTY OF _____) SS.

_____ being first
duly sworn, deposes and says that he is _____
Title of Person Signing
of _____
Name of Bidder

that all statements made and facts set out in the bid for the above project are true and correct; and that the bidder (The person, firm, association, or corporation making said bid) has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such bid or any contract which may result from its acceptance.

Affiant further certifies that bidder is not financially interested in, or financially affiliated with, any other bidder for the above project.

By _____
By _____
By _____

Sworn to before me this _____ day of _____, 20_____.

Notary Public

My Commission Expires _____

DMS Boards

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____

_____ ,
as Principal and _____, as Surety are held and firmly bound
unto the **STATE OF MISSOURI** (acting by and through the **Missouri Highways and Transportation Commission**) in the penal sum of:
Dollars

(\$ _____) to be paid to the **State of Missouri or to the Missouri Highways and Transportation Commission**, to be credited to the State Road Fund, the Principal and Surety binding themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

Sealed with our seals and dated this _____

THE CONDITION OF THIS OBLIGATION is such that:

WHEREAS, the Principal is submitting herewith a bid to the Missouri Highways and Transportation Commission for furnishing DMS Boards as set out in the bid to which this bond is attached.

NOW THEREFORE, if the Missouri Highways and Transportation Commission shall accept the bid of the Principal and if said Principal shall properly execute and deliver to the Missouri Highways and Transportation Commission the contract and contract bond in compliance with the requirements of the proposal, the specifications and the provisions of law, to the satisfaction of the Highways and Transportation Commission, then this obligation shall be void and of no effect, otherwise to remain in full force and effect.

In the event the said Principal shall, in the judgment of the Missouri Highways and Transportation Commission, fail to comply with any requirement as set forth in the preceding paragraph, then the State of Missouri acting through the Missouri Highways and Transportation Commission shall immediately and forthwith be entitled to recover the full penal sum above set out, together with court costs, attorney's fees and any other expense of recovery.

(SEAL) _____
Principal

By _____
Signature

(SEAL) _____
Surety

By _____
Attorney-in-Fact

NOTE: This bond must be executed by the PRINCIPAL and by a CORPORATE SURETY authorized to conduct surety business in the State of Missouri.

Missouri Highways and Transportation Commission
Standard Bid/Proposal Provisions, General Terms and Conditions and Special Terms and Conditions

STANDARD SOLICITATION PROVISIONS

- a. The Missouri Department of Transportation (MoDOT) reserves the right to reject any or all bids/quotes/proposals, and to accept or reject any items thereon, and to waive technicalities. In case of error in the extension of prices in the bid/quote/proposal, unit prices will govern.
- b. All bids/quotes/proposals must be signed with the firm name and by a responsible officer or employee. Obligations assumed by such signature must be fulfilled.
- c. By virtue of statutory authority, a preference will be given to materials, products, supplies, provisions and all other articles produced, manufactured, made or grown, within the State of Missouri.
- d. Time of delivery is a part of the consideration and, if not otherwise stated in the solicitation documents, must be stated in definite terms by the Bidder/Offeror and must be adhered to. If time varies on different items, the Bidder/Offeror shall so state.
- e. If providing bids/quotes/proposals for commodities, the Bidder/Offeror will state brand or make on each item. If bidding or proposing other than the make, model or brand specified, the manufacturer's name, model number or catalog number must be given.
- f. **For bids/proposals of \$25,000 or more**, no bids/proposals by telephone, telegram or telefax will be accepted. If provided, these bids/proposals should be returned in the MoDOT solicitation return envelope.
- g. If a solicitation return envelope is provided by MoDOT, the bid/quote/proposal should be returned in the envelope provided with the Bid/RFQ/RFP Request Number plainly indicated thereon.
- h. The date specified for the returning of bids/quotes/proposals is a firm deadline and all bids/quotes/proposals must be received at the designated office by that time. The Department does not recognize the U.S. Mail, Railway Express Agency, Air Express, or any other organization, as its agent for purposes of accepting proposals. All proposals arriving at the designated office after the deadline specified will be rejected.

GENERAL TERMS AND CONDITIONS

General Performance

- a. This work is to be performed under the general supervision and direction of the Missouri Department of Transportation (MoDOT) and, if awarded any portion of the work, the Contractor agrees to furnish at his own expense all labor and equipment required to complete the work, it being expressly understood that this solicitation is for completed work based upon the price(s) specified and is not a solicitation for rental of equipment or employment of labor by MoDOT, and MoDOT is to have no direction or control over the employees used by the Contractor in performance of the work.

Deliveries

- a. Unless otherwise specified on the solicitation documents or purchase order, suppliers shall give at least 24 hours advance notice of each delivery. Delivery will only be received between the hours of 8:00 a.m. to 3:00 p.m., Monday through Friday. Material arriving after 3:00 p.m. will not be unloaded until the following workday. No material will be received on Saturday, Sunday or state holidays.
- b. If the prices bid herein include the delivery cost of the material, the Contractor agrees to pay all transportation charges on the material as FOB - Destination. Freight costs must be included in the unit price bid and not listed as a separate line item.
- c. Any demurrage is to be paid by the Contractor direct to the railroad or carrier.

Nondiscrimination

- a. The Contractor shall comply with the Regulations relative to nondiscrimination in federally-assisted programs of the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
- b. All solicitations either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of the Contractor's obligations under this contract and the Regulations, will be relative to nondiscrimination on the grounds of race, color, or national origin.
 - 1) Sanctions for Noncompliance: In the event of the Contractor's noncompliance with the nondiscrimination provisions of this contract, MoDOT shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:
 - i. withholding of payments to the Contractor under the contract until the Contractor complies, and/or,
 - ii. cancellation, termination or suspension of the contract, in whole or in part.

Contract/Purchase Order

- a. By submitting a bid/quote/proposal, the Bidder/Offeror agrees to furnish any and all equipment, supplies and/or services specified in the solicitation documents, at the prices quoted, pursuant to all requirements and specifications contained therein.
- b. A binding contract shall consist of: (1) the solicitation documents, amendments thereto, and/or Best and Final Offer (BAFO) request(s) with any changes/additions, (2) the Contractor's proposal and/or submitted pricing, and (3) the MHTC's acceptance of the proposal and/or bid by purchase order or post-award contract.
- c. A notice of award does not constitute an authorization for shipment of equipment or supplies or a directive to proceed with services. Before providing equipment, supplies and/or services, the Contractor must receive a properly authorized purchase order and/or notice to proceed.
- d. The contract expresses the complete agreement of the parties and performance shall be governed solely by the specifications and requirements contained therein. Any change, whether by modification and/or supplementation, must be accomplished by a formal contract amendment signed and approved by and between the duly authorized representative of the Contractor and the duly authorized representative of the MHTC, by a modified pur-

Missouri Highways and Transportation Commission
Standard Bid/Proposal Provisions, General Terms and Conditions and Special Terms and Conditions

chase order prior to the effective date of such modification. The Contractor expressly and explicitly understands and agrees that no other method and/or no other document, including correspondence, acts, and oral communications by or from any person, shall be used or construed as an amendment or modification.

Subcontracting

- a. It is specifically understood that no portion of the material or any interest in the contract, shall be subcontracted, transferred, assigned or otherwise disposed of, except with the written consent of MoDOT. Request for permission to subcontract or otherwise dispose of any part of the work shall be in writing to MoDOT and accompanied by documentation showing that the organization which will perform the work is particularly experienced and equipped for such work.
- b. Consent to subcontract or otherwise dispose of any portion of the work shall not be construed to relieve the Contractor of any responsibility for the production and delivery of the contracted work and the completion of the work within the specified time.
- c. All payments for work performed by a subcontractor shall be made to the Contractor to whom the contract was awarded and the purchase order issued.

Invoicing and Payment

- a. MoDOT is exempt from paying Missouri Sales Tax, Missouri Use Tax and Federal Excise Tax. However, the Contractor may themselves be responsible for the payment of taxes on materials they purchase to fulfill the contract. A Federal Excise Tax Exemption Certificate will be furnished to the successful Bidder/Offeror upon request.
- b. Each invoice should be itemized in accordance with items listed on the purchase order and/or contract. The statewide financial management system has been designed to capture certain receipt and payment information. Therefore, each invoice submitted must reference the purchase order number and must be itemized in accordance with items listed on the purchase order. Failure to comply with this requirement may delay processing of invoices for payment.
- c. Unless otherwise provided for in the solicitation documents, payment for all equipment, supplies, and/or services required herein shall be made in arrears. The Missouri Highways and Transportation Commission (MHTC) shall not make any advance deposits.
- d. The MHTC assumes no obligation for equipment, supplies, and/or services shipped or provided in excess of the quantity ordered. Any authorized quantity is subject to the MHTC's rejection and shall be returned at the Contractor's expense.
- e. The MHTC reserves the right to purchase goods and services using the state-purchasing card.

Applicable Laws and Regulations

- a. The contract shall be construed according to the laws of the State of Missouri. The Contractor shall comply with all local, state, and federal laws and regulations related to the performance of the contract.
- b. The Contractor must be registered and maintain good standing with the Secretary of State of the State of Missouri and other regulatory agencies, as may be required by law or regulations. Prior to the issuance of a purchase order and/or notice to proceed, the Contractor may be required to submit to MoDOT a copy of their current Authority Certificate from the Secretary of State of the State of Missouri.
 - 1) Prior to the issuance of a purchase order and/or notice to proceed, all **out-of-state** Contractors **providing services** within the state of Missouri must submit to MoDOT a copy of their current Transient Employer Certificate from the Department of Revenue, in addition to a copy of their current Authority Certificate from the Secretary of State of the State of Missouri.
- c. The contractor shall only utilize personnel authorized to work in the United States in accordance with applicable federal and state laws and Executive Order 07-13 for work performed in the United States.
- d. The exclusive venue for any legal proceeding relating to or arising, out of the contract shall be in the Circuit Court of Cole County, Missouri.

Preferences

- a. In the evaluation of bids/quotes/proposals, preferences shall be applied in accordance with Chapter 34 RSMo. Contractors should apply the same preferences in selecting subcontractors.
- b. By virtue of statutory authority, RSMo. 34.076 and 34.350 to 34.359, a preference will be given to materials, products, supplies, provisions and all other articles produced, manufactured, made or grown within the State of Missouri. Such preference shall be given when quality is equal or better and delivered price is the same or less.
 - 1) If attached, the document entitled "**PREFERENCE IN PURCHASING PRODUCTS**" should be completed and returned with the solicitation documents.
 - 2) If attached, the document entitled "**MISSOURI DOMESTIC PRODUCTS PROCUREMENT ACT**" should be completed and returned with the solicitation documents. **Applies if bid is Twenty-Five Thousand Dollars (\$25,000.00) or more.**
- c. In the event of a tie of low bids, the MHTC reserves the right to establish the method to be used in determining the award

Remedies and Rights

- a. No provision in the contract shall be construed, expressly or implied, as a waiver by the MHTC of any existing or future right and/or remedy available by law in the event of any claim by the MHTC of the Contractor's default or breach of contract.
- b. The Contractor agrees and understands that the contract shall constitute an assignment by the Contractor to the MHTC of all rights, title and interest

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in and to all causes of action that the Contractor may have under the antitrust laws of the United States or State of Missouri for which causes of action have accrued or will accrue as the result of or in relation to the particular equipment, supplies, and/or services purchased or produced by the Contractor in the fulfillment of the contract with the MHTC.

- c. In the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request MoDOT to enter into such litigation to protect the interests of the MHTC, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

Cancellation of Contract

- a. The MHTC may cancel the contract at any time for a material breach of contractual obligations or for convenience by providing the Contractor with written notice of cancellation. Should the MHTC exercise its right to cancel the contract for such reasons, cancellation will become effective upon the date specified in the notice of cancellation sent to the Contractor.
- b. If the MHTC cancels the contract for breach, the MHTC reserves the right to obtain the equipment, supplies, and/or services to be provided pursuant to the contract from other sources and upon such terms and in such manner as the MHTC deems appropriate and charge the Contractor for any additional costs incurred thereby.

Bankruptcy or Insolvency

- a. Upon filing for any bankruptcy or insolvency proceeding by or against the Contractor, whether voluntary or involuntary, or upon the appointment of a receiver, trustee, or assigned the benefit or creditors, the Contractor must notify MoDOT immediately. Upon learning of any such actions, the MHTC reserves the right, at its sole discretion, to either cancel the contract or affirm the contract and hold the Contractor responsible for damages.

Inventions, Patents, and Copyrights

- a. The Contractor shall defend, protect, and hold harmless the MHTC, its officers, agents, and employees against all suits of law or in equity resulting from patent and copyright infringement concerning the Contractor's performance or products produced under the terms of the contract.

Inspection and Acceptance

- a. No equipment, supplies, and/or services received by MoDOT pursuant to a contract shall be deemed accepted until MoDOT has had reasonable opportunity to inspect said equipment, supplies, and/or services.
- b. All equipment, supplies, and/or services which do not comply with the specifications and/or requirements or which are otherwise unacceptable or defective may be rejected. In addition, all equipment, supplies, and/or services which are discovered to be defective or which do not conform to any warranty of the Contractor upon inspection (or at any later time if the defects contained were not reasonably ascertainable upon the initial inspection) may be rejected.
- c. The MHTC reserves the right to return any such rejected shipment at the Contractor's expense for full credit or replacement and to specify a reasonable date by which replacements must be received.
- d. The MHTC's right to reject any unacceptable equipment, supplies, and/or services shall not exclude any other legal, equitable or contractual remedies the MHTC may have.

Warranty

- a. The Contractor expressly warrants that all equipment, supplies, and/or services provided shall: (1) conform to each and every specification, drawing, sample or other description which was furnished to or adopted by MoDOT, (2) be fit and sufficient for the purpose expressed in the solicitation documents, (3) be merchantable, (4) be of good materials and workmanship, and (5) be free from defect.
- b. Such warranty shall survive delivery and shall not be deemed waived either by reason of the MHTC's acceptance of or payment for said equipment, supplies, and/or services.

Status of Independent Contractor

- a. The Contractor represents itself to be an independent Contractor offering such services to the general public and shall not represent itself or its employees to be an employee of the MHTC. Therefore, the Contractor shall assume all legal and financial responsibility for taxes, FICA, employee fringe benefits, workers' compensation, employee insurance, minimum wage requirements, overtime, etc., and agrees to indemnify, save and hold the MHTC, its officers, agents and employees harmless from and against any and all losses (including attorney fees) and damage of any kind related to such matters.

Indemnification

- a. The Offeror shall defend, indemnify and hold harmless the Commission, including its members and department employees, from any claim or liability whether based on a claim for damages to real or personal property or to a person for any matter relating to or arising out of the Offeror's performance of its obligations under this Agreement.

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SPECIAL TERMS AND CONDITIONS

Insurance

- a. The Contractor shall purchase and maintain such insurance as will protect him from claims under workmen's compensation acts and other employee benefit acts, from claims for damages because of bodily injury, including death, and from claims for damages to property which may arise out of or result from the Contractor's operations under this Contract, whether such operations be by himself or by any Subcontractor or anyone directly or indirectly employed by any of them.
- b. This insurance shall be written for not less than any limits of liability specified as part of this contract, or required by law, whichever is the greater, and shall include contractual liability insurance as applicable to the Contractor's obligations under this contract. Unless otherwise specified, insurance limits shall be as follows:
 - 1) Workmen's Compensation: Workers Compensation Insurance, including "Occupational Disease Act" requirements, must be maintained **if** required by law.
 - 2) Public Liability (includes property damage and personal injury):
 - i. Not less than \$400,000 for any one person in a single accident or occurrence.
 - ii. Not less than \$2,500,000 for all claims arising out of a single occurrence.
 - 3) Special Hazard Insurance: As required.
 - 4) Builder's Risk: Not less than the full Contract amount.

Required Specifications

- a. All materials, equipment, and/or services bid upon must comply with the enclosed MoDOT Specification and any other provisions outlined in the solicitation documents.

Proposal/Bid Guaranty/Contract Bond

- a. Each proposal shall be accompanied by a Bid Bond, Certified Check, Cashier's Check or Bank Money Order payable to the Director of Revenue – Credit State Road Fund for an amount equal to Five Percent (5%) of the amount of the BID submitted. This is to act as a guarantee that the bidder, if awarded the contract, will furnish an acceptable performance and payment bond (Contract Bond) or a cashier's check, a bank money order or a certified check made payable to "Director of Revenue--Credit State Road Fund" in an amount equal to One Hundred (100%) of the contract price.
- b. If a BID BOND is used (in lieu of a certified check, cashier's check, or bank money order), it must be in the form provided and executed by the bidder as principal and by a surety company authorized to do business in the State of Missouri as surety. The agent executing the same on behalf of the surety company must attach a current Power of Attorney setting forth his authority to execute the bond involved.
- c. Certified Checks, Cashier's Checks or Bank Money Orders of unsuccessful bidders will be returned as soon as the award is made. The checks or bank money orders of the successful bidder(s) will be retained until the contract is executed and a satisfactory Performance and Payment (Contract Bond) is furnished. Bid Bonds will not be returned except on specific request of the bidder.

Information and Reports

- a. The Contractor shall provide all information and reports required by the Regulations, or Directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Missouri Department of Transportation or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations or Directives. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information the Contractor shall so certify to the Missouri Department of Transportation, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.

Award

- a. Award of this bid/quote/proposal will be made on an "All Or Nothing" basis using the "lowest and best" principle of award.

Failure to Execute Contract

- a. Failure to execute the contract and file acceptable performance payment (Contract Bond) or cashier's check, bank money order or certified check within **15 days** after the contract has been mailed to the bidder shall be just cause for the cancellation of the award and the forfeiture of the proposal guaranty. Award may then be made to the next lowest responsible bidder, or the work may be re-advertised and performed under contract or otherwise, as the Commission may decide. No contract shall be considered effective until it has been executed by all parties thereto.

Notice to Proceed

- a. Within **30 days** after the execution of the contract, a "**Notice to Proceed**" will be issued by the Department. A purchase order will be attached to the "Notice to Proceed," which will specify the date or dates that the Contractor can start delivery, roadway or stockpile delivery and will also include the completion dates. These dates will be in accordance with the dates shown in the proposal.

Delivery – Additional Requirements

- a. The Contractor shall furnish the Missouri Department of Transportation with a planned delivery schedule at least 16 hours before starting delivery.
 - 1) Notification should be during the normal workday preceding the day on which the Contractor desires to initiate delivery.
 - 2) It will be necessary for a representative of the Missouri Department of Transportation to be present when the material is delivered.
 - 3) No material will be accepted that has been dumped in the absence of the department's aggregate materials checker.

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- b. Unless otherwise specified in the proposal, deliveries will be a minimum of **500 Tons Per Day**. No deliveries will be made during the period from **30 minutes before sundown to sunrise**. No deliveries will be made on **Saturdays, Sundays and holidays** unless specifically authorized by the engineer.
- c. The following days shall be construed as **official holidays** under the terms of the contract:

January 1	New Year's Day
Third Monday in January	Martin Luther King, Jr.'s Birthday
February 12	Lincoln's Birthday
Third Monday in February	Washington's Birthday
May 8	Truman's Birthday
Last Monday in May	Memorial Day
July 4	Independence Day
First Monday in September	Labor Day
Second Monday in October	Columbus Day
November 11	Veteran's Day
Fourth Thursday in November	Thanksgiving Day
December 25	Christmas Day

- d. When any of the above **holidays falls** on a **Sunday**, the holiday will be observed on the following **Monday**; when any of the above **holidays falls** on a **Saturday**, the **holiday** will be observed on the immediately preceding **Friday**.
- e. Contractor will not be required to provide dozers, loaders, motor graders, or other equipment for shaping of stockpiles, constructing ramps or runways, or leveling of the top of a completed lift, unless otherwise noted herein.

Incentive for Accelerated Delivery

- a. If, prior to the delivery deadline, the Contractor's average daily delivery rate **exceed 1,250 tons** for the total award, the Contractor will be paid an incentive for accelerated delivery in the amount of **2%** of the weighted average bid price per ton for the total tons delivered exceeding **1,250 tons per day**.

EXAMPLE:

Total Tons of Award	20,000 tons
Total Value of Award	\$107,200
Number of Days for Delivery from 2 sources at same time	5 days
Total number of delivery days	2 x 5 = 10 days
Average bid price per ton = \$107,200	20,000 tons = \$5.36 per ton
Average daily delivery rate = 20,000 tons	10 days = 2,000 tons per day
Daily tonnage Supplier due Incentive Pay = 2,000 tons - 1,250 tons = 750 tons per day	
Total tons delivered exceeding daily min. rate = 750 tons x 10 = 7,500 tons	

INCENTIVE PAY = 0.02 x \$5.36/Ton x 7,500 Tons = \$ 804.00

- b. Delivery from two sources on the same day to one or more maintenance sites will be counted as two days of delivery. Delivery from three sources on the same day to one or more maintenance sites will be counted as three days of delivery, etc.
- c. The average daily delivery rate is the total tons per award to a supplier divided by the number of days used to deliver the material. The weighted average bid price per ton is the total value of the award divided by the total tons per award.
- d. No incentive for accelerated delivery will be paid to a Contractor who is being charged liquidated damages on any item in the same award.

Legal Weights

- a. Provisions of the Missouri Statutes relative to legal weights in regard to axle and gross weights, gross weights in relation to axle spacing and Supplementary Bridge limits all contained in **Sections 304.180 and 304.190 RSMo** are understood and will be abided by. The Department will not accept loads, which exceed legal weights.
- b. It is understood and agreed that the Missouri Department of Transportation may prohibit the use of large trucks hauling heavy loads of material over low type bituminous roads and during adverse weather conditions.

Increase or Decrease Quantities

- a. The Highways and Transportation Commission reserves the right to increase or decrease the quantity of material twenty-five percent (25%), subject to the maximum quantity specified by the bidder in his proposal.
- b. The quantity finally ordered by the Commission will be furnished by the bidder at the same unit price per ton.

Basis of Measurement for Payment

- a. For truck delivery, the quantities for basis of payment are to be determined as provided in **Section 310.4** of the **Missouri Standard Specifications for Highway Construction, Edition of 2004**, and any revisions thereto.
 - 1) Measurement will be to the nearest **100 lbs.** for each load when the measurement is by weight.
 - 2) Moisture tests will be rounded off to the nearest **0.5 percent** for purposes of computing the deduction for excess moisture.

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Temporary Suspension of Work

- a. The **District Engineer** shall have authority to suspend work wholly or in part for such period or periods as may be deemed necessary when weather or other conditions are such that in the opinion of the engineer, the work may be done at a later time with advantage to the Department or for failure on the part of the Contractor to comply with any of the provisions of the Contract.
- b. If the Department suspends the work for its own advantages and not because of the Contractor's failure to comply with the Contract, the Contractor will be allowed an equal number of calendar days after the completion date for the completion of the work. The Department may at its discretion give the Contractor an extension of time for completing the work where the Contractor incurs delays for causes beyond his control.
- c. Normal rainfall is not considered a cause qualifying for an extension of time. Claim for extension of time for all causes must be submitted by the Contractor in writing within **30 Days** after the claimed cause for the delay has ceased to exist.

Cancellation of Contract

- a. If the Contractor/supplier fails to carry out the performance of the work with sufficient workmen and equipment to insure the completion of the delivery within the time specified or becomes insolvent or is adjudicated a bankrupt or commits any act of bankruptcy or insolvency or allows any final judgment to stand against him for a period of ten (10) days, the Missouri Department of Transportation may give notice in writing by registered mail to the Contractor/supplier and the surety of such delay, neglect or default.
- b. If, within ten (10) days after such notice the Contractor/supplier does not proceed to remedy to the satisfaction of the Department's representatives the faults specified in said notice, or the surety does not proceed to take over the deliveries, the Department shall have full power and authority, without impairing the obligation of the Contractor/supplier under the contract or the surety under the bond, to take over the completion of the work and arrange for the shipment of any materials necessary to complete the work and the Contractor/supplier and the surety will be responsible for any additional costs incurred by the Department in obtaining the completion of the deliveries.

Liquidated Damages

- a. In the event the successful Contractor fails to deliver the material within the time specified, the Department and the public will sustain damages because of such delay in delivery, the exact extent of which would be difficult to ascertain, and in order to liquidate such damage in advance it is agreed that the **sum of one-hundred dollars (\$100.00) per day, per item**, for each assessable calendar day on which the delivery has not been completed, is reasonable and the best estimate which the parties can arrive at as liquidated damages, and it is therefore agreed that said amount will be withheld from payments due the Contractor or otherwise collected from the Contractor as liquidated damages.
- b. **Saturdays, Sundays, holidays and days whereas the Department has suspended work** shall not be assessable days.

Environmental Issues

- a. Attention of the bidder is invited to the **Land Reclamation Act, Chapter 444, Laws of 1971, (House Bill 519)** and the necessity for compliance if applicable.
- b. The Contractor shall take necessary precautions and shall schedule and conduct his operations so as to avoid or minimize siltation of streams while removing gravel there from.
- c. The material to be supplied under the contract will comply with the quality and gradation requirements of the **Missouri Standard Specifications for Highway Construction, Edition of 2004**, and any revisions thereto, unless modified by these specifications.