Missouri
Department
of Transportation

Pete K. Rahn, Director

105 West Capitol Avenue
P.O. Box 270
Jefferson City, MO 65102
(573) 751-2551
Fax (573) 751-6555
www.modot.org

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REQUEST FOR PROPOSALS

FIXED AUTOMATED SPRAY TECHNOLOGY SERVICES
D8PP-10052
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LIST OF ACRONYMS

MHTC	Missouri Highways and Transportation Commission
MoDOT	Missouri Department of Transportation
RFP	Request for Proposals
FAST	Fixed Automated Spray Technology
AADT	Average Annual Daily Traffic

INTRODUCTION

This Request For Proposals (**RFP**) seeks proposals from qualified organizations (**Offeror**) to furnish the described services to the Missouri Highways and Transportation Commission (**MHTC**). Eight (8) copies of each proposal must be mailed in a sealed envelope to Andy McNeill, Missouri Department of Transportation, M.P.O. Box 838, Springfield, MO 65801, or hand-delivered in a sealed envelope to the District 8 Purchasing Office in the Highway and Transportation Building at 3025 East Kearney Street, Springfield, Missouri. Proposals must be returned to the offices of District 8 Purchasing no later than 2:00 p.m., May 19, 2010.

MHTC reserves the right to reject any and all proposals for any reason whatsoever. Time is of the essence for responding to the RFP within the submission deadlines.

PROPOSAL

(1) The Offeror shall provide a fee proposal to MHTC on the **PRICE PAGE** in accordance with the terms of this RFP.

(2) The Offeror agrees to provide the services at the fees quoted, under the terms of this RFP.

_____

Authorized Signature of Offeror: _____

Date of Proposal:_____

Printed or Typed Name:_____

Mailing Address:_____

City:_____State:_____Zip:_____

Telephone:_____Fax:_____

Electronic Mail Address:_____

_____

ACCEPTANCE

This proposal is accepted by MHTC.

_____ _____

(Name and Title) Date

SECTION (1):

GENERAL DESCRIPTION AND BACKGROUND

(A) **Request for Proposal**: This document constitutes a RFP from qualified organizations to provide a Fixed Automated Spray Technology (FAST) system on specified bridges to MHTC and the Missouri Department of Transportation (**MoDOT**).

(B) **Background:** MoDOT is planning to install a FAST system on two bridges in Springfield, Missouri. These two bridges (A0714 and A0715) are located on Interstate Route 44 over Kearney Street (MO Route 744) and an old abandoned railroad located in the northwest quadrant of the city (see enclosed bridge location map, site photos, and bridge plans). The bridges are 64' apart, from centerline to centerline.

(1) Bridge #A0714 is located on westbound I-44. Structure is 406' long and 30' wide (inside face of curbs). The bridge has approximately 25' of clearance above Kearney Street. Average annual daily traffic (AADT) for 2008 was 15,500 cars per day. Future projected traffic for 2028 is 24,100 cars per day. Current average daily truck traffic is 44%.

(2) Bridge #A0715 is located on eastbound I-44. Structure is 444' long and 30' wide (inside face of curbs). The bridge has approximately the same vertical clearance as A0714 above Kearney Street. AADT for 2008 was 15,300. AADT for 2028 is projected to be 23,700. Current AADT truck traffic is 35%.

(C) **Fiscal Year**: The fiscal year runs from July 1-June 30.

(D) **Contract Period**: The contract period shall be from Notice to Proceed through June 15, 2011.

(E) **Clarifications of Requirements**: Any and all question regarding specifications, requirements, competitive procurement process, or other questions must be direct to Andy McNeill, Missouri Department of Transportation, M.P.O. Box 868, Springfield, MO 65801, (417)895-7645(phone) or Andrew.McNeill@modot.mo.gov (Email). All written questions must be addressed to Andy McNeill no later than **10:00 a.m., Local Time, April 27, 2010.** Once all the questions are gathered, MoDOT will issue an addendum and post the responses to all questions on-line for vendors to retrieve. Responses to the questions will be posted on MoDOT's website at: http://www.modot.mo.gov/business/contractor_resources/gs_bidding/D8/D8commodities.htm in the form of a written addendum. **It is anticipated this addendum will be issued on May 6, 2010.** It is the sole responsibility for all Offerors to check the website for any and all addendums throughout the procurement process.

(F) **RFP Schedule of Events**: The following RFP Schedule of Events represents MoDOT's best estimate of the schedule that shall be followed. Unless otherwise specified, the time of day for the following events shall be between 7:00 am and 4:00 pm , Local Time.
MoDOT reserves the right at its sole discretion to expand this schedule, as it deems necessary, without any notification except for the deadline date for submitting a bid.

Event	Date	Time
MoDOT Issues RFP	April 13, 2010	
Deadline for Written Comments	April 27, 2010	2:00 p.m.
Deadline for MoDOT Issuing Responses to Written Comments	May 6, 2010	
Deadline for Submitting a Proposal	May 19, 2010	2:00 p.m.
Recommendation of Award	June 4, 2010	2:00 pm
Contract Effective Date	April 15, 2010	
Project completion Date	August 20, 2010	

SECTION (2):
SCOPE OF WORK

(A) **Services:** The Offeror will provide to the District 8 Purchasing Department eight copies of a program proposal which will include the following:

(1) **Design Considerations :** The design, construction and installation of FAST Systems require specific professional design skills. These disciplines should be considered when selecting a successful vendor for FAST sites.

A. Architectural design

B. Structural design

C. Electrical design

D. Mechanical design

E. Environmental compliance

F. Weather and Surface instrumentation

(2) **General Description :** This RFP provides for the design, installation and testing of a FAST system for two existing structures (Bridge #'s A0714 and A0715). The Contractor shall be responsible for all additional conduit, hardware, storage tanks, pump house design and construction, plumbing, electrical wiring and connections for a fully operational state-of-the-art FAST system. MoDOT will provide electrical and communication service to within 150' of the pump house. It shall be the responsibility of the Contractor to review the attached plans and design the layout of the FAST system. Aesthetics are a key part in all MODOT construction projects and prior to construction, MODOT shall approve each component of the System design for compliance with aesthetic requirements. Design of the systems shall be the responsibility of the Contractor. The anti-icing system is a fixed automated system that allows automatic treatment of the traffic lanes and other targeted areas. The anti-icing system dispenses a liquid anti-icing agent by pumping the chemicals selected by MODOT through a series of controlled valves to nozzles mounted in the bridge rail and approach guardrail. The purpose of the system is to deliver anti-icing liquid to the roadway under a specified set of conditions. When those conditions are met, the system must be capable of activating automatically. Upon activation, a remote processing unit (RPU) controller opens valves in an automated sequence to spray the anti-icing liquid over the targeted area. This sequence is termed the anti-icing cycle. The anti-icing cycle shall be initiated automatically, requiring no human activation, based on information provided by non-invasive sensors located above the roadway or bridge deck. The anti-icing cycle shall also be capable of initiation by remote telephone call (or in some other, equivalent, manner) using data or voice transmission, by a remote pushbutton switch from a MODOT vehicle, by remote Internet or Computer activation offsite controlled by password and limited to only those given security clearance by the system owner, or by manual activation from the pump house. The system shall be capable of dispensing varying quantities of liquid anti-icing agent in variable spray sequences depending on road surface conditions at the site, for example, frost, black ice, snow, or freezing rain.

(3) **Specific Requirement:**

A. **FAST Components:** By definition, anti-icing systems operate in a harsh winter environment and have long periods of inactivity and must still be in a condition of readiness to meet mission critical demands. Therefore, the materials, components and control circuitry must meet stringent specifications and performance standards. The following criteria should be used to establish the minimum acceptable standards and each criterion must be met.

B. **Pump House:** The Contractor shall design and erect a pump house building at the site to house the chemical pump, electrical controller and anti-icing chemicals. The pump house shall be located below and between the bridges on the south side of Kearney Street--not within the I-44 median. Walls and roof shall be insulated to a rating of R-8 or greater. Any reinforcing steel in the structural walls and floors shall be epoxy-coated in accordance with section 710 of the Standard Specifications. The walls and ceilings shall be designed and constructed in a manner that will prevent any moisture or rodents from entering the building along the roof or walls. The building shall have adequate ventilation to prevent any buildup of toxic or flammable gases and adequate heating to prevent freezing of piping. The roof shall be capable of withstanding vertical loading as per the International Building Code (IBC), and the structure shall be capable of withstanding 100 mph wind loading or as required by IBC. The storage tanks should be sized as described in the storage section of this specification. The floor of the pump house shall be perfectly level at the tank locations and sloping to a sump. The floor shall be constructed to support the weight of the filled chemical tanks. The cast-in-place floor design shall serve as a containment area capable of handling 110% of the total chemical storage capacity and incorporate a liner, if required, to prevent leakage of chemical outside the structure. All construction joints shall utilize waterstop or equal as approved by MoDOT. All precast joints shall be caulked using a Silicone Sealant or equal approved by MoDOT. Precast panel units shall be securely fastened together with steel brackets with a minimum thickness of ¼ inch. All threaded fasteners shall be ½ inch minimum diameter Type 304 stainless steel bolts. Cast-in threaded anchors used for panel connections shall be compatible with stainless steel bolts, and shall be directly connected to panel forms before casting. No floating in of connection inserts is permitted. Piping supports shall be installed to support the interior piping and valves as approved by MoDOT. Galvanized materials shall not be allowed in the pump house unless approved by MoDOT. All exterior underground piping shall be schedule 80 PVC. Schedule 80 PVC shall be used in the pump house when allowed by pressure requirements. Where possible, all PVC fittings shall be solvent welded. Wall penetrations shall be as required for system operations and as described in the Anti-Icing Chemical Storage section.

Doors, louvers, frames and transoms shall be made of steel or approved equal and suited for exterior exposure. Anchors and hardware shall be Type 304 stainless steel. Doors, louvers, frames and all accessories and hardware shall be obtained from a single source and by a single manufacturer. The double steel doors shall be of heavy-duty industrial grade construction. Doors and frames shall be shop primed gray and field painted to match the architectural Coloring of the bridge. Color shall be as specified on the plans, in the Architectural Requirements or approved by MoDOT. Doors shall have a smooth gloss surface with a minimum value of 88 in accordance with ASTM D 523 – "Standard Test Method for Specular Gloss". The doors shall have an opening of adequate size to service and/or replace any equipment or storage tanks required for system operation. The

doors shall provide a minimum 6' width opening and a center mullion/stile for the doors will not be allowed. Doorframes and transoms shall conform to Steel Door Institute (SDI) specifications and shall be comparable in size and strength to 16-gauge hollow metal doorframe. Frame profile shall be an industry standard 5-3/4 inch deep with 2-inch wide face, double rabbeted with 5/8 inch high stop or as approved by MoDOT. Header to jamb joints shall be miter cut and assembled with stainless steel fasters. Frame and transom finish and color shall match doors and color shall be consistent throughout the entire frame thickness. Frames shall be one-piece upon assembly and shall be rigid in construction. Thresholds shall be standard saddle-type design 5-½ inch wide by ½ inch high, made from pultruded glass fiber reinforced polymer resin, with anti-slip grooves in the top surface. Thresholds shall be secured with stainless steel anchors. Weather stripping, sweeps and astragals shall be provided by the door manufacturer, and shall have aluminum mill finish with neoprene seals. Door hinges shall be stainless steel full mortise, ball bearing type with 4-½ by 4-½ inch template, applied with stainless steel fasteners. Closers shall be for severe service application. Locksets and latch sets shall be heavy-duty stainless steel ball type, grade 1 severe service. Exit device shall be stainless steel RIM 19-R series with keyed dogging device to keep the latch bolt retracted when engaged. The doors shall be provided with a flush bolt for securing one of the double doors. The doors shall be supplied with cored locks. The door manufacturer shall furnish hardware. Manufacturer's installation instructions shall be enclosed with hardware in the original box. The Contractor shall be ultimately responsible for proper installation of all hardware once received on the job site. If required, stair framing shall be fabricated from pultruded glass fiber reinforced polyester resin structural shapes. Stair treads shall be molded glass fiber reinforced polyester resin grating. Stair tread shall be capable of supporting a 300 lb concentrated load at midspan with no more than ¼ inch deflection. Resin shall be vinyl ester for chemical resistance. Color shall be safety yellow. Threaded fasteners shall be stainless steel bolts or expansion anchors.

The Contractor shall provide to MoDOT for review, design plans for the pump house that are sealed by a Missouri Registered Professional Engineer. Working drawings shall show equipment locations on a floor plan and views using revolved wall elevations. The plans shall be provided to MoDOT four weeks prior to commencement of construction of the pump house. The MoDOT Engineer will review and provide comments within two weeks after receipt of the plans.

The Contractor shall be responsible for any additional foundation investigation and foundation design for the pump house. A Missouri Registered Professional Engineer shall approve the foundation investigation and design.

Note: Alternate pump house construction may be considered as approved by MoDOT.
The cost for all structure excavation, trenching excavation, backfill and materials as shown in the drawings for installation of the pump house, underground piping and underground utilities shall not be paid for separately, but be included in the cost of the work.

C. **Power** All electrical and power requirements shall be designed, stamped and verified by a qualified electrical Engineer licensed in the State of Missouri. A single phase metered electrical service as required by system operation shall be installed by MoDOT to a service disconnect box outside the pump house for powering the FAST system, up to 150% of actual load. The contractor must supply and install a circuit breaker panel and

enclosure for service to the pump motor, and two services for the controller and a dual outlet wall socket. In addition to system requirements, power to support lighting and operation of 120-volt power tools shall be provided. Installation of electrical components for the pump house and anti-icing system shall be in accordance with the requirements of the National Electrical Code including clearances. The Contractor shall be responsible for coordinating with the local electrical utility in order to make all electrical connections between the pump house and the electrical source. The cost for utility runs and tie-ins shall not be paid for separately but included in the cost of the installation.

Note: Pump house shall be wired for back up power with a double throw safety switch such that a generator (provided by MoDOT) can temporarily power the system during a power outage.

D. **Telephone.** Telephone lines shall be provided by underground line to support pager communications and connection to a remote monitoring site. MODOT will provide phone lines to the exterior of the pump house. The Contractor shall provide the telephone lines from the source provided by MODOT. The Contractor shall be responsible for coordinating with the local telephone utility in order to make all connections between the pump house and the telephone source. The cost for utility runs and tie-ins shall not be paid for separately but included in the cost of the installation.

E. **Instrumentation.** Instrumentation in the pump house shall include but not be limited to:

1. **Pressure Gauges:** Analog type, industrial grade, all Type 316 stainless steel, minimum pressure range = 0 to 290.08 psi.

2. **Flow meter Transmitter:** senses flow rate in system and sends signal to RPU spray system controller. Flow meter shall be fabricated from durable non-corrosive materials. All metallic parts shall be Type 316 stainless steel. Minimum flow rate range = 0.98 to 19.7 feet per second.

3. **Pressure Switch Transducer:** senses pressure in system and sends signal to RPU spray system controller. All metallic parts shall be Type 316 stainless steel. Pressure range = 0 to 290.08 psi.

4. **Ultrasonic Level Sensor or Bubbler/Air Pressure Sensor:** device to detect the level of chemical in the storage tanks. The level sensor shall be connected to an alarm horn mounted on the exterior of the pump house to alert personnel filling the tanks when the tanks are full. The level sensor shall also send signals to a digital level display located in the housing for the chemical fill tube on the exterior of the pump house as well as to the remote sensing location.

Additional instrumentation shall be added, as required and approved by MODOT.

F. **Anti-Icing Chemical Storage:** Storage tanks for the anti-icing chemical shall be cylindrical tanks in a vertical configuration and of sufficient size and quantity to accommodate a minimum of 50 system activations at a rate of 40 gallons per lane mile. Storage tanks shall be sized to fit through available door entries. Each tank shall have an entry port through the top with a minimum dimension of 1.3 feet and with a removable cover. The tank shall be vented at the top. Vent openings shall be covered with type 304

stainless steel wire cloth with mesh opening size 0.5 inch by 0.6 inch, using 0.009 inch diameter wire. The tank shall be rated for a maximum fluid specific gravity of 1.5 or greater and shall be made from an approved polymer or glass fiber-reinforced epoxy material. Any metal components of the tank shall be type 316 stainless steel. Galvanized steel shall not be permitted.

A fill pipe through the wall shall be supplied with a 3-inch brass cam and groove male end with dust cap and retainer. The size shall be verified with MODOT maintenance prior to installation.

Either a locking dust cap or a locking cover mechanism shall be provided to secure the fill pipe from vandalism. All fill piping on the exterior of the pump house and through the wall shall be extra strong red brass. The Piping system shall function as shown in the plans or approved by MODOT. In addition to the exterior connection, a connection on the interior of the pump house shall also be provided with similar requirements. A strainer/filter shall be included in the fill piping as well as approved venting mechanisms. The strainer screen shall be non-corrosive and compatible with the anti-icing chemical with a mesh size of 1/8 inch and shall be easily accessible for cleaning and/or replacement. One spare screen and gasket shall be supplied. All Valves shall be PVC True Union type valves. Tanks shall be prevented from flotation or movement due to flooding. The system shall be designed to prevent siphoning or gravity draining of the storage tanks in the event of a pump or valve failure if the storage system is located above the spray discharge system.

G. **System Supply Pump:** The Contractor shall provide a pump of appropriate size to assure proper operation of the designed system. Pump and housing shall be type 316 stainless steel with seals and bearings appropriate for exposure to chloride-based chemicals, potassium acetate, calcium magnesium acetate or CMA, CMA with potassium or CMAK, and other anti-icing chemicals. Electric motor to be 220 volt, 60 Hz, appropriate for the system design and use in corrosive environments. Pump shall be capable of refilling any individual accumulator, if applicable, within the finished system within 10 seconds. The pump shall be located three (3) feet above the floor and supported on structural FRP (Fiber-Reinforced Plastic) supports. Wall and Pump connections to the support and the supports themselves shall be designed for static and dynamic loading. Wall support is preferred. The pump shall be self-priming or compatible with storage tank elevations to insure effective operation. Valves and piping shall be supplied for initial priming as required. A pressure relief valve shall be attached to the pump discharge with an over-pressure line routed back to the storage tanks. All pump designs and specifications used on this project shall be submitted to and approved by MODOT.

H. **Valve Units:** Valve units shall control the flow of anti-icing chemical from the main supply line or accumulator to each spray nozzle. Valve units shall consist of controlled solenoid valves or motorized driven ball valves and electronic control cards or system. Four extra valves shall be supplied for each bridge installation. Valves and control cards/system shall operate on a 110-volt system. Each control card/system shall have the capability to independently control the operation of multiple valves. The control cards/system shall allow each valve to be remotely activated using different spray programs from the controller. Each control card/system shall be addressable allowing individual control.

I. **Valve Boxes:** All valves shall be installed in NEMA compliant electrical enclosures that are pre-cast polymer concrete, stainless steel, or composite plastic and firmly attached to the bridge rail as approved by MODOT. For each line, the valve box located furthest

from the pump shall contain a valve for purging said line with clean water at the end of the season, or when switching chemicals. Purge valves shall also be located at low points in the system as necessary for purging of the system.

J. **Nozzles:** Curb or rail mounted nozzles shall be used on this project and shall be installed in such a manner that they will not be affected by snowplows clearing along the rail. All nozzles shall be removable for cleaning or replacement without the need for removing the entire nozzle assembly. Four extra nozzles shall be provided for each bridge installation. Nozzles shall be adjusted for cross slope of the roadway as required. A working drawing for the location and pattern of nozzles shall be submitted to MODOT for approval. The number and pattern of nozzles shall be designed for required coverage as shown on the bridge layout drawings. The number and pattern of nozzles shall be such that they provide the required coverage. This coverage shall include all traffic lanes. In determining the extent of coverage, the phenomenon of vehicle tracking of chemicals may be considered, subject to approval of MODOT. The maximum spacing for nozzles shall be specified in the system design and subject to approval by MoDOT.

K. **Pressure Piping:** The system shall be designed for anti-icing chemicals currently in use by MODOT (S.G. = 1.00-1.40) but shall have the flexibility to be adjusted for anti-icing chemicals of different specific gravities such as Calcium Chloride ($CaCl_2$), Magnesium Chloride ($MgCl_2$), Sodium Chloride (NaCl), Calcium Magnesium Acetate (CMA), Potassium Acetate (KAc), CMA/KAc blend (CMAK), Geomelt 55. All pressure fittings within the mechanical building shall be brass unless pressures allow the use of PVC valves. All PVC valves shall be True Union type and brass valves shall be supplied with unions on either side of the valve to aid in repair or replacement. Schedule 80 PVC shall be used in the building when allowed by pressure requirements. Chemical pressure piping shall be routed within a protective conduit system consisting of non-metallic conduit where embedded in concrete or buried in the ground. High pressure rubber carrier piping shall be housed in UV resistant schedule 40 PVC pipes that run up to and between the valve boxes. PVC shall be supported at no greater than 5’ intervals in order to provide a sag free piping system in exposed areas. Conduit pipes shall be secured to bridge members as approved by MODOT. Conduit and all fittings, connections, elbows, and mounting hardware shall be in accordance with the MODOT Specifications, and shall be sized as required for system operation. The system shall be designed to mitigate any problems due to water hammer. All valves and valve enclosures shall be labeled to match the piping schematic and operation table. Any mechanical or glued fittings not within the pump house shall be housed in accessible weatherproof boxes, vaults or manholes. Any vaults, manholes or boxes required by this specification shall not be paid for separately, but included in the cost of the installation.

L. **System Controller:** A microprocessor-based RPU controller shall control the anti-icing system with capacity for multiple spray nozzles and the ability to monitor pump functions, system pressure and flow characteristics, and tank fluid levels. The RPU spray system controller shall be able to interpret between various signals from surface and atmospheric sensors to initiate different spray programs to apply measured amounts of liquid anti-icing chemical to the roadway surface. The control of the application of anti-icing chemical shall be fully automated, with provisions for operator intervention and notification. The automated control system shall include atmospheric sensor capabilities and non-invasive pavement sensor technology. The RPU spray system controller shall be capable of storing and running multiple software programs for automatic spray activation

sequences. The RPU spray system controller shall vary the length of time each solenoid valve is opened, thus varying the quantity of liquid anti-icing agent that is applied to the roadway surface, and shall change the length of time for pauses between sprays, according to different conditions on the roadway surface. Fully automatic operation shall have manual override capability, with the options for manual pushbutton operation from the pump house, operation via telephone call with touch tone and/or voice recognition, pushbutton remote control device and computer activation from Window-based PC software. The system shall provide surge protection for the incoming telephone line. The RPU shall detect failures of system components and initiate automatic system shutdown in the event of a failure. The RPU spray system controller shall be contained within a waterproof stainless steel, plastic, fiberglass or aluminum housing with lockable lid.

M. **Logic Controller:** The System RPU or logic controller shall have a data logger and be NTCIP 9001 compatible for connection to future equipment. The controller shall have the capability to record time, pavement sensor data and times of system operation. The controller shall be able to automatically activate the system when the surface and atmospheric sensors indicate that the temperatures and moisture conditions are appropriate for activation. The system and its operation shall be capable of operating completely independent of the Department's existing or planned road weather information system network. The information (operation and monitoring) from the system sensors shall be available on a web-based system and shall be Microsoft Office compatible.

N. **Pushbutton Remote Control Device:** The Pushbutton Remote Control device shall be a programmable device similar to a garage door opener. The device shall be able to be set to a desired frequency chosen by MODOT. The device signal shall be strong enough to start the anti-icing system from 100 feet away from the pump house.

O. **Conduit for Sensor and Power Cable:** Sensor control cable and power cable shall be routed within a protective conduit system consisting of non-metallic conduit. Conduit and all fittings, connections, elbows, and mounting hardware shall be in accordance with MODOT Specifications, and shall be sized as required for system operation or applicable code. All conduit shall be supported so as to provide a neat, clean appearance with no sags.

P. **Anti-Icing Chemical:** The system shall be able to safely store and apply the commonly encountered liquid anti-icing chemicals. Those liquid chemicals include but are not limited to: Calcium Chloride ($CaCl_2$), Magnesium Chloride ($MgCl_2$), Potassium Acetate (KAc), Sodium Chloride (NaCl), Calcium Magnesium Acetate (CMA), CMA/KAc blend (CMAK), Geomelt 55.

Q. **Sensors:**

1. Sensors shall measure the surface state of the roadway including surface temperature, and depth and type of moisture. The sensors shall provide the following minimum pavement information:

(a) Surface Temperature Range -40°C to 80°C (-40F to 176°)
(b) Surface Temperature Accuracy ±0.25°C
(c) Wet Surface Condition

(d) Presence of Moisture on Surface
(e) Presence of Frost or Ice on Surface
(f) State of Surface Condition with temperature below 0°C (32°F)
(g) Surface Sensor performance shall not be degraded by weather conditions, traffic, or road contaminants.
(h) Wind speed and direction

2. The Non –invasive road surface sensors are to operate as follows:

(a) Shall accurately determine road surface condition and road surface temperature on the road surface from a distance of 6 ft to 50ft.
(b) Shall accurately determine road surface condition of an area with a diameter of 10" on the road surface from a distance of 30ft.
(c) Shall accurately determine road surface temperature of an area with a diameter of 30" on the road surface from a distance of 30ft with an accuracy of +/- 0.5 deg. F at or near 32 degrees F.
(d) Shall accurately determine road surface condition and road surface temperature of an area on the road surface when installed at an angle of between 30 deg and 85 deg. from the horizontal.
(e) Shall accurately determine road surface condition, road surface temperature (+/- 0.5 deg. F) and road surface friction of an area on the road surface when monitoring any type of road surface.
(f) Shall distinguish, measure and independently report the thickness of water, frost, snow and ice in any mixture of these on the road surface.
(g) Shall provide a water equivalent of snow up to 0.78 inches
(h) Shall calculate and report a level of grip that correlates with the coefficient of friction.
(i) Shall detect the onset of slippery conditions and shall detect ice layers as thin as 30 um
(j) Shall automatically measure lens contamination and warn when cleaning is necessary.
(k) Shall provide a road surface temperature resolution of +/- 0.2 F
(l) Shall provide a road surface temperature accuracy of 0.5F at ambient temperatures of 32F.
(m) Shall provide stable operation over a temperature range of -40C to +60C or -40F to 140F.
(n) All sensors will be compliant with Vibration Standard IEC 68-2-6 Global Outdoor, 2G.

(4) System Requirements

A. General:

1. **Ambient Environment.** The System shall be able to withstand temperatures in the range of –40° F to 149° F with no permanent loss of function or component failure. The pavement sensors and nozzles shall withstand temperatures up to 185° F.

2. **Operating Environment.** The System shall accurately apply liquid anti-icing chemicals to a pavement surface in the temperature range of –22° F to 41° F.

3. **Chemical Environment**. The System shall be able to safely store and apply the commonly encountered liquid anti-icing chemicals. Those liquid chemicals include but are not limited to: Calcium Chloride, Magnesium Chloride, Potassium Acetate, Sodium Chloride, Calcium Magnesium Acetate, Calcium Magnesium Acetate/Potassium Acetate blend, and Geomelt 55. The entire permanent anti-icing spray system components shall consist of materials that are resistant to corrosion from whatever chemical is selected by the Department for use in the system.

4. **Communications and Software.** The System communication software delivered shall meet standard communication protocol specifications (NTCIP). The System shall communicate functions such as automatic system operation and display, the system software programs in the controller, tank level, pressure and fluid flow control along with manual operation of the system.

5. **Operating System:** Latest Microsoft Business OS and minimum true 32-bit operating system or approved equivalent. MODOT shall approve operating system at the time of installation.

6. **Software/Firmware:** Software/Firmware manufacturer shall support bug fixes and maintenance upgrades for a minimum of one year after system acceptance.

7. **Software Licensing:** Contractor shall provide a minimum of 3 remote access licenses and one license for the software on the central computer or a web based system.

8. **Users**. The system shall permit a minimum of 3 simultaneous users with user-configurable and changeable web access.

9. **Security**. All communication to and from the RPU shall be verified by user name and password. The system shall provide two levels of password security, one with administrative configuration abilities, and the other user as read-only access. All passwords shall be stored in an encrypted format with no clear text. User Account names and passwords shall be user definable and changeable. The system shall support a minimum of two user accounts within the RPU.

10. **Regulatory Requirements**. The System shall comply with all applicable national, state, and local construction and safety codes.

11. The System provided shall be capable of two-way communication using all of the following methods:

    (a) **Computer Network**. The System provided shall be capable of networking with wide area networks via modem, network router, and frame relay, etc.

    (b) **Telephone Modem**. The System provided shall be capable of supporting conventional telephone modem operation. This capability shall include the ability to originate, or receive, calls to remote control sites.

(c) **Onsite Hook-up**. The System provided shall provide the capability for local on-site connection of a portable computer to the RPU spray controller and RWIS RPU using RS-232C serial interface protocol.

B. **Control Options:** The System provided shall provide for the control of the liquid chemical application with full automation. The system provided shall be capable of the following control modes:

1. **Fully Automated**. The System operation shall be automatic utilizing user defined parameters and the pavement and weather conditions indicated by the sensors.

2. **Manual Override.** The System provided shall allow for manual override of the automated mode locally, at the site, or remotely.

3. **Fully Manual.** The System provided shall respond only to a user generated command. Manual control options shall include the override ability by networked computers, modem, manual on-site locking pushbutton, or telephone.

C. **Detection and Remediation:** The System provided shall detect problems and compensate for these problems and notify the user of the problems by the following methods:

1. **Self-Check.** The System provided shall detect chemical leakage, low pressure or loss of fluid or pressure outside of design parameters during system operation within the entire spray system.

2. **Remediation.** The System delivered shall provide for a single push button reset of normal functions upon completed system repairs or inspections.

3. **User Notification.** The System shall automatically notify system user through the use of email and text messaging of detected problems including location of abnormalities and actions taken. The notification system shall include user definable and configurable alarms and notifications.

D. **Inventory Tracking and Control**: The System shall automatically provide tracking of material used by the anti-icing system. The system shall provide inventory control. The system shall detect and report liquid levels in the tank throughout the range from full tank to empty tank. The status of the tank level shall be reported to the user using the communications system. The system also shall have alarms for full tank, low level refilling required and low level-not sufficient chemical to operate the system. The system shall provide an alarm to the operator and an automatic shut-off to prevent system damage. All alarm levels shall be settable by system user.

E. **Operating Capabilities:**

1. The system shall have the following basic operating capabilities as a minimum:

(a) Automatic system tests or monitoring on a preprogrammed and/or timed basis. The system shall measure system pressure and quantity of liquid

flow and prevent system operation if parameters exist outside of acceptable operating conditions.

(b) The system shall monitor and alarm for tank levels of low and or empty.

(c) Ability to activate a warning device before the spraying operation commences.

(d) The system shall be capable of going through a system evaluation before activating the spraying operation. This system evaluation shall check for system leaks, low chemical reservoir levels, and other system defects and shall not activate the system if any of these conditions exist.

(e) Autonomous operations based on various weather parameters in the RWIS or non-invasive sensors.

2. The non-invasive sensor technology shall include the following:

(a) The sensor technology must insure that the sensor shall work with any anti-icing chemical, multiple chemicals, varying water depths, oils, dirt, and other remaining residuals on the road surface that can change the freezing point temperature. This includes any potential chemical applied on the surface by maintenance trucks.

(b) Sensor technology must allow the system to have total user flexibility in system operation.

3. Pavement and atmospheric sensors shall allow the following detection of the system:

(a) Able to operate with multiple chemicals, for example when exposed to various combinations of truck-applied chemicals;

(b) The System provided shall have user settable thresholds for adjusting automatic operation of the system:

(c) System activation when road moisture is at or near freezing via user settable thresholds;

(d) System activation when freeze point temperature sensors detect when pavement surface moisture is near freezing via user settable thresholds;

(e) System activation when chemical dilution is occurring via user settable thresholds;

(f) System activation and accurate freeze point temperature measurements even when multiple chemicals are used via user settable thresholds;

(g) Accurate system activation without calibration of pavement sensors with changing chemicals;

(h) Immediate system activation when falling snow or freezing precipitation is detected and surface temperatures is below user settable threshold;

(i) The ability to include other weather parameters in the system logic such as low pavement temperature lockout according to different anti-icing chemicals for minimum temperature, relative humidity, etc. or high wind lockout, via user settable thresholds.

4. The system shall have a minimum of 16 different spray programs available for activation of the various nozzles, separate timed sequences, or separate circuits. A circuit is defined as a pump, supply lines, valve units and controlling device. These programs shall be capable of operating a minimum of 240 valves. Programs shall be capable of spraying each nozzle through its electromagnetic valve for a specific length of time. Programs shall be capable of changing the length of pauses between nozzle spraying, selectable from 1 to 10,000 seconds.
Manual override of system operations shall be available from any of the manual options. The system shall include the following manual operating capabilities:

(a) Manual pushbutton at the site;

(b) Remote (line of site from the roadway) pushbutton from hand held device, similar to a garage door opener;

(c) Activation from telephone voice or data transmission;

(d) Computer activation from a state of the art Web Browser.

F. **Commissioning, Testing, and Training:** A qualified factory trained representative shall provide for the installation of the automatic anti-icing system including the start up, alignment, and testing of the entire system. The Contractor shall recommend and provide values for system defaults and reasons for their recommendation for MODOT evaluation, e.g. based on MODOT practices & weather conditions. Potable water supplied by MODOT shall be used to initially test the system for logic and leakage and to provide training. A qualified factory representative shall provide a minimum of two four-hour on-site training sessions at the times scheduled by MODOT. This training shall cover the operation, commissioning, seasonal decommissioning and maintenance of the automatic anti-icing system. The installation test shall simulate the full range of functions the anti-icing system is intended to provide. After initial testing and training is complete, the system shall be purged of the potable water and filled with anti-icing chemical supplied by MODOT and retested. At the end of the first operating season (Oct 1st to April 30th), the Contractor shall provide a hands-on training for the seasonal decommissioning of the system. The Contractor shall supply a Point of Contact(s) including Name, Phone # and E-mail Address for prompt resolution of problems encountered during the first fully operational season.

G. **Warranty:** The system shall be warranted to meet the manufactures specifications and for defects in material and workmanship for a period of one year starting on the date of Final system acceptance. Both material and labor shall be covered by this warranty. All warrantee repairs shall be completed within 96 hours of notification of a problem. In the

event that installation is done by MODOT, only components supplied by the vendor will require a warranty.

H. **Acceptance**: The FAST system will be evaluated and final acceptance will be given once the system is installed, and is deemed fully operational (following the successful initial commissioning and decommissioning of the system).

(5) Submittals:

A. The Contractor shall submit the following for review and approval:

1. Detailed design and installation working drawings for the complete anti-icing spray system with sufficient detail to allow review of all power and communications for compliance with the Specifications. Working drawings shall clearly indicate any and all deviations from the contract documents. The working drawings shall include specific details and exact locations of all system components (Nozzle Layout, Sensor Layout, etc.) including proprietary equipment.

2. Pump house Equipment Layouts as described in the pump house criteria

3. Compliance Traceability Matrix for all components including computer and electronic device hardware and software that give evidence of the compliance of each component or function with the requirements in these specifications and the vendors specifications.

4. Communications Infrastructure Plan showing routing of electronic communications between devices in the field, between devices and computers, between systems, and between the field computers/systems and remote users.

5. Installation schedule that shall outline the steps the Contractor intends to make to complete the contract. The installation schedule shall be revised and resubmitted if there is a significant change to the schedule.

6. Contractor qualifications and resumes in accordance with Section II – Contractor Qualifications.

7. Structural drawings and engineering design calculations for the pump house building prepared and sealed by a Professional Engineer registered in Missouri.

8. Electrical schematics and engineering design calculations and shop drawings forthe system prepared and sealed by a Professional Engineer registered in Missouri.

9. Mechanical schematics and pipe support locations and engineering design calculations and shop drawings for the system prepared and sealed by a Professional Engineer registered in Missouri.

10. Working drawings and product data for doors, louvers, frames and all accessories and hardware for the pump house.

11. Working drawings for sensor mounting pole and foundation.

12. Product data sheets and certificates of conformance with the Specifications, and Quality Assurance reports for the following system components:

(a) Spray nozzles;

(b) Non-Invasive Pavement sensors;

(c) Chemical pressure piping;

(d) Conduit for chemical pressure piping;

(e) Valves and valve controller;

(f) Pressurized accumulator tanks;

(g) Conduit for sensor control cable and RPU slave unit power cable;

(h) Anti-icing chemical storage tanks;

(i) Pump and motor;

(j) RPU spray system controller;

(k) RWIS RPU and all meteorological sensors;

(l) Modems;

(m) MODOT concrete, in accordance with section 501 of the Standard Specifications, for cast-in-place building foundation;

(n) Concrete, for precast building;

(o) Epoxy resin waterproofing for concrete surfaces;

(p) Deformed steel reinforcing bars, epoxy-coated;(q) 7-wire steel post-tensioning strand for precast building;

(r) Silicone sealant and bond breaking tape for building joints;

(s) Floor grating for building;

(t) Strainers;

(u) Electrical boxes;

(v) Valve boxes;

(w) Flush mount nozzle connection details;

(x) Doors, louvers, frames and accessories.

B. Operations and Maintenance Manual: The Contractor shall furnish an Operations and Maintenance Manual, or O&M Manual, for the anti-icing system. The O&M Manual shall include detailed operation and maintenance instructions for all systems and items of equipment provided under the contract. The O&M Manual shall be in the form of neatly formatted bound ring binders and electronic format in the form of CD-ROM disks. Prior to completion of the installation, and at least 90 days prior to final payment, the Contractor shall furnish for MODOT's review two O&M Manual draft copies. At least 30 days prior to final payment, the Contractor shall furnish for MODOT's use ten copies of the final O&M Manual. Before a final acceptance of the installation, MoDOT shall approve the final O&M Manual.

The O&M Manual shall consist of product data sheets, brochures, bulletins, charts, schedules, approved working drawings corrected to as-built conditions, assembly drawings, wiring diagrams, operation and maintenance information for equipment, and other information necessary for the Department to establish an effective operating maintenance program.

Oversized sheets and working drawings larger than 8.5 inches by 11 inches shall be neatly folded to that size with title block exposed along one edge, and bound or placed in pockets within the Manual. The O&M Manual shall include:

1. Title page giving the name and location of the facility, bridge plan numbers, and Project Numbers;

2. Performance curves for all pumps and equipment;

3. Approved working drawings of each component;

4. Approved product data sheets and dimensioned drawings of each piece of equipment, and details of all replacement parts;

5. Manufacturer's installation, operation, and maintenance instructions for each piece of equipment and complete listing of nameplate data;

6. Complete wiring diagrams of all individual pieces of equipment and systems including one line diagrams, schematic or elementary diagrams, and interconnection diagrams;

7. Complete piping and interconnection drawings;

8. Complete parts list with parts assembly drawing preferably by exploded view, names and addresses of spare parts suppliers, recommended list of spare parts to be kept on hand by the Department, and sample order forms for ordering spare parts. Lead time required for ordering spare parts shall be estimated;

9. Instructions with easily understood schematics or diagrams for disassembling and assembling the equipment for overhaul or repair.

Delivery of O&M Manual satisfactory to MODOT is an essential part of project delivery. Incomplete or inadequate manuals will be returned to the Contractor for correction and resubmission.

The Contractor shall not start construction or installation of any part of the anti-icing system until the complete design and installation working drawings and installation schedule have been received and reviewed, and written approval to begin construction has been issued by MODOT.

Such approval shall not relieve the Contractor of responsibility for results obtained by the use of these designs and drawings or any of the Contractor's other responsibilities under the contract.

(B) Administration of Program: The Offeror will consult MHTC's representative regarding any problems involved with the administration of the services provided pursuant to this RFP.

SECTION (3): AGREEMENT REQUIREMENTS

This RFP shall be governed by the following contract provisions. The award of this RFP is subject to a post-award contract. These same contract provisions will appear in the post-award contract. If the parties are unable to agree to terms in the post-award contract, MHTC shall reserve the right to cancel the award of the RFP and contract and select a different offeror.

(A) MHTC's Representative: MoDOT's District 8 Bridge Maintenance Engineer is designated as MHTC's representative for the purpose of administering the provisions of the Agreement as defined in Paragraph (E) of this section. MHTC's representative may designate by written notice other persons having the authority to act on behalf of MHTC in furtherance of the performance of the Agreement. The Offeror shall fully coordinate its activities for MHTC with those of the District 8 Maintenance Department. As the work of the Offeror progresses, advice and information on matters covered by the Agreement shall be made available by the Offeror to the District 8 Maintenance Department throughout the effective period of the Agreement.

(B) Release to Public: No material or reports prepared by the Offeror shall be released to the public without the prior consent of MHTC's representative.

(C) Assignment: The Offeror shall not assign or delegate any interest, and shall not transfer any interest in the services to be provided (whether by assignment, delegation, or novation) without the prior written consent of MHTC's representative.

(D) Status as Independent Contractor: The Offeror 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 MHTC or MoDOT. Therefore, the Offeror shall assume all legal and financial responsibility for taxes, FICA, employee fringe benefits, workers' compensation, employee insurance, minimum wage requirements, overtime, or other such benefits or obligations.

(E) Components of Agreement: The Agreement between MHTC and the Offeror shall consist of: the RFP and any written amendments thereto, the Standard Solicitation Provisions and General Terms and Conditions that are attached to this RFP, the proposal submitted by the Offeror in the response to the RFP and the post-award contract agreement signed between the parties. However, MHTC reserves the right to clarify any relationship in writing and such written clarification shall govern in case of conflict

with the applicable requirements stated in the RFP or the Offeror's proposal. The Offeror is cautioned that its proposal shall be subject to acceptance by MHTC without further clarification.

(F) Amendments: Any change in the Agreement, whether by modification or supplementation, must be accompanied by a formal contract amendment signed and approved by the duly authorized representative of the Offeror and MHTC.

(G) DBE/WBE Participation Encouraged:

(1) Bidders are encouraged to submit copies of existing affirmative action programs, if any. Bidders are also encouraged to directly hire minorities and women as direct employees of the bidder. MHTC reserves the right to consider the use of minority and female employee when making the award of the Agreement.

(2) Regardless of which persons or firms, if any, that the Offeror may use as subcontractors, subofferors, or suppliers of goods or services for the services to be provided, the Offeror ultimately remains responsible and liable to MHTC for the complete, accurate and professional quality/performance of these services.

(H) Nondiscrimination: The Offeror shall comply with all state and federal statutes applicable to the Offeror relating to nondiscrimination, including, but not limited to, Chapter 213, RSMo; Title VI and Title VII of Civil Rights Act of 1964 as amended (42 U.S.C. Sections 2000d and 2000e, *et seq.*); and with any provision of the "Americans with Disabilities Act" (42 U.S.C. Section 12101, *et seq*).

(I) Executive Order: The Offeror shall comply with all the provisions of Executive Order 07-13, issued by the Honorable Matt Blunt, Governor of Missouri, on the sixth (6^{th}) day of March, 2007. This Executive Order, which promulgates the State of Missouri's position to not tolerate persons who contract with the state engaging in or supporting illegal activities of employing individuals who are not eligible to work in the United States, is incorporated herein by reference and made a part of this Agreement.

(1) By signing this Agreement, the Offeror hereby certifies that any employee of the Offeror assigned to perform services under the contract is eligible and authorized to work in the United States in compliance with federal law.

(2) In the event the Offeror fails to comply with the provisions of the Executive Order 07-13, or in the event the Commission has reasonable cause to believe that the Offeror has knowingly employed individuals who are not eligible to work in the United States in violation of federal law, the Commission reserves the right to impose such contract sanctions as it may determine to be appropriate, including but not limited to contract cancellation, termination or suspension in whole or in part or both.

(J) Incorporation of Provisions: The Offeror shall include the provisions of Section (3), paragraph I of this Agreement in every subcontract. The Offeror shall take such action with respect to any subcontract as the Commission may direct as a means of enforcing such provisions, including sanctions for noncompliance**.**

(K) Prohibition of Employment Of Unauthorized Aliens: The Offeror must affirm its enrollment and participation in a federal work authorization program with respect to the employees proposed to work in connection with the services requested herein by:

(1) submitting a completed, notarized copy of EXHIBIT F, AFFIDAVIT OF WORK AUTHORIZATION and

(2) providing documentation affirming the Offeror's enrollment and participation in a federal work authorization program (see below) with respect to the employees proposed to work in connection with the services requested herein.

E-Verify is an example of a federal work authorization program. Acceptable enrollment and participation documentation consists of **completed** copy of the E-Verify Memorandum of Understanding (MOU). For vendors that are not already enrolled and participating in a federal work authorization program, E-Verify is available at http://www.dhs.gov/xprevprot/programs/gc_1185221678150.shtm.

(L) **Bankruptcy:** Upon filing for any bankruptcy or insolvency proceeding by or against the Offeror, whether voluntarily, or upon the appointment of a receiver, Offeror, or assignee, for the benefit of creditors, MHTC reserves the right and sole discretion to either cancel the Agreement or affirm the Agreement and hold the Offeror responsible for damages.

(M) **Law of Missouri to Govern:** The Agreement shall be construed according to the laws of the state of Missouri. The Offeror shall comply with all local, state and federal laws and regulations relating to the performance of the Agreement.

(N) **Cancellation:** MHTC may cancel the Agreement at any time by providing the Offeror with written notice of cancellation. Should MHTC exercise its right to cancel the Agreement for such reasons, cancellation will become effective upon the date specified in the notice of cancellation sent to the Offeror.

(O) **Venue:** No action may be brought by either party concerning any matter, thing or dispute arising out of or relating to the terms, performance, nonperformance or otherwise of the Agreement except in the Circuit Court of Cole County, Missouri. The parties agree that the Agreement is entered into at Jefferson City, Missouri, and substantial elements of its performance will take place at or be delivered to Jefferson City, Missouri, by reason of which the Offeror consents to venue of any action against it in Cole County, Missouri.

(P) **Ownership of Reports:** All documents, reports, exhibits, etc. produced by the Offeror at the direction of MHTC's representative and information supplied by MHTC's representative shall remain the property of MHTC.

(Q) **Confidentiality:** The Offeror shall not disclose to third parties confidential factual matters provided by MHTC's representative except as may be required by statute, ordinance, or order of court, or as authorized by MHTC's representative. The Offeror shall notify MHTC immediately of any request for such information.

(R) **Nonsolicitation:** The Offeror warrants that it has not employed or retained any company or person, other than a bona fide employee working for the Offeror, to solicit or secure the Agreement, and that it has not paid or agreed to pay any percentage, brokerage fee, gift, or any other consideration, contingent upon or resulting from the award or making of the Agreement. For breach or violation of this warranty, MHTC shall have the right to annul the Agreement without liability, or in its discretion, to deduct from the Agreement price or consideration, or otherwise recover the full amount of such fee, commission, percentage, brokerage fee, gift or contingent fee.

(S) **Conflict of Interest:** The Offeror covenants that it presently has no actual conflict of interest or appearance of conflict of interest and shall not acquire any interest, directly or indirectly, which would conflict in any manner or degree with the performance of the services under this Agreement. The Offeror further covenants that no person having any such known interest shall be employed or conveyed an interest, directly or indirectly, in this Agreement.

(T) **Maintain Papers:** The Offeror must maintain all working papers and records relating to the Agreement. These records must be made available at all reasonable times at no charge to MHTC and/or the Missouri State Auditor during the term of the Agreement and any extension thereof, and for three (3) years from the date of final payment made under the Agreement.

(1) MHTC's representative shall have the right to reproduce and/or use any products derived from the Offeror's work without payment of any royalties, fees, etc.

(2) MHTC's representative shall at all times have the right to audit any and all records pertaining to the services.

(U) **Indemnification:** 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.

(V) **Insurance:** Prior to contract signing, the Offeror may be asked about its ability to provide certificates of insurance which meet, or approach, the following coverages:

(1)	General Liability	Not less than $500,000 for any one person in a single accident or occurrence, and not less than $3,000,000 for all claims arising out of a single occurrence;
(2)	Automobile Liability	Not less than $500,000 for any one person in a single accident or occurrence, and not less than $3,000,000 for all claims arising out of a single occurrence;

(3) Missouri State Workmen's Compensation policy or equivalent in accordance with state law.

(W) **Proposal Guaranty and Contract Bond**

(1) Each bid 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.

(2) 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.

(3) 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.

(4) 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.

SECTION (4):
PROPOSAL SUBMISSION INFORMATION

(A) SUBMISSION OF PROPOSALS

(1) **Pricing and Signature:** Proposals should be priced, signed and returned (with necessary attachments) to Andy McNeill as provided in this RFP. Specifically, any form containing a signature line in this RFP and any amendments, pricing pages, etc., must be manually signed and returned as part of the proposal.

(2) **Submission of All Data Required:** The Offeror must respond to this RFP by submitting all data required in paragraph (B) below for its proposal to be evaluated and considered for award. Failure to submit such data shall be deemed sufficient cause for disqualification of a proposal from further consideration.

(3) **Public Inspection:** The Offeror is hereby advised that all proposals and the information contained in or related thereto shall be open to public inspection and that MHTC does not guarantee nor assume any responsibility whatsoever in the event that such information is used or copied by individual person(s) or organization. Therefore, the Offeror must submit its proposal based on such conditions without reservations.

(B) REQUIRED ELEMENTS OF PROPOSAL

(1) **Experience.** The proposal must clearly identify the Offeror’s experience in offering the services requested in this RFP during the past three (3) years. The description should include a list of the agencies which your institution has served or currently serves.

(2) **Personnel.** Please indicate the name, location, telephone number, fax number and email address of the primary contact person for the Offeror. Information presented in this section should highlight the previous Offeror experience, as well as any work with other state agencies or local governments in Missouri. Offeror must furnish a complete listing of each subOfferor, if any, and complete contact information for that subOfferor.

(3) References. Proposals should indicate the name, title and telephone number of at least three officials of clients within the past three years.

(C) EVALUATION CRITERIA AND PROCESS

(1) Evaluation Factors: Any agreement for equipment and services resulting from this RFP shall be awarded to the Offeror providing the best proposal to MHTC. After determining responsiveness, proposals will be evaluated in accordance with the following criteria:

	Maximum Points
Cost of Equipment	40
Non-proprietary Parts that are Readily Available	20
Technical Support and Warranty	15
Prior Experience and References	15
Proposed Method of Initial Training	10

A. Cost of Equipment, (40 points available): The objective evaluation of cost shall be conducted based upon a total amount of the cost of either Option 1 or Option 2 on the pricing pages to provide for the requirements of the RFP, which include but are not necessarily limited to, the equipment, shipping, minimum of one (1) year warranty, initial training, etc.

Utilizing the total cost determined from above, cost points shall be determined using a scale of 40 possible points and the following formula:

$$\frac{\text{Lowest Responsive Price}}{\text{Offeror's Price}} \times 40 = \text{Cost Points}$$

B. Non-proprietary Parts that are Readily Available (20 points available): The Offeror must provide a list of all mechanical components including nozzles, solenoid valves, pumps, and sensors. Offeror must provide information as to which parts are proprietary and which are non-proprietary as well as where parts may be obtained (list of suppliers).

Points shall be determined using a scale of 20 based on the following formula—the formula is based only on nozzles, solenoid valves, pumps, and sensors.

$$\frac{\text{\# Non-proprietary parts as listed above}}{4} \times 20 = \text{Non-proprietary Points}$$

C. Technical Support and Warranty (15 points available): The Offeror shall provide:

1. On-site technical assistance during initial commissioning, testing and decommissioning prior to the system becoming active for the first season.

2. Technical support # and contact information for assistance during normal business hours Monday through Friday, and an emergency contact # for 24 hour assistance.

3. Technical support shall be provided by phone during the initial warranty period and any subsequent warranty period.

4. Any system upgrades (software or hardware) shall be provided free of charge

D. Prior Experience and References (15 points available): Proposals should indicate the name, title and telephone number of at least three officials of clients within the past three years for equipment/services provided that are considered identical or similar in nature to those referenced in this RFP. This information may be shown on the form attached as "Exhibit B: Prior Experience Of Offeror" to this RFP or in a similar manner.

E. Proposed Method of Initial Training (10 points available): Effectiveness of the procedures used by the Offeror to conduct the initial training sessions for utilizing the equipment. The Offeror's proposal should include, but not necessarily be limited to, training manuals and handouts to be used, location requirements for training to take place, number of personnel that can be accommodated in each training session (the MHTC assumes a minimum of eight (8) trainees per session), the number of training sessions anticipated to be required and the time to complete such sessions, and any other information that will assist the MHTC in evaluating the quality of training to be provided by the Offeror.

(2) Historic Information: MHTC reserves the right to consider historic information and facts, whether gained from the Offeror's proposal, question and answer conferences, references, or other sources, in the evaluation process.

(3) Responsibility to Submit Information: The Offeror is cautioned that it is the Offeror's sole responsibility to submit information related to the evaluation categories and that MHTC's representative is under no obligation to solicit such information if it is not included with the Offeror's proposal. Failure of the Offeror to submit such information may cause an adverse impact on the evaluation of the Offeror's proposal.

(D) PRICING

(1) Fee Schedule: The Offeror must submit a proposed fee for all services defined in the Scope of Work. This fee must be shown on Section (5), Price Page, of this proposal which must be completed, signed and returned with the Offeror's proposal.

SECTION (5):
PRICE PAGE

FEE SCHEDULE: The Offeror shall indicate below all fees for providing services in accordance with the provisions and requirements stated herein for each series of bonds to be issued:

Description	Equipment Model and Cost
Option #1 Turn Key FAST System: Cost of Complete System (design/plans, parts & equipment (proprietary and non-proprietary), installation, testing, initial commissioning and de-commissioning (1st operating season).	
Option #2: Cost of Providing FAST System design/plans, proprietary parts, technical support, and initial commissioning and de-commissioning - **MoDOT will install FAST System.**	
Optional Item A – Extended Service Agreement No. 1 List the price for extending the initial one (1) year service agreement and warranty (which is included in the "Cost of Equipment") for an additional 12-month period.	
Optional Item B – Extended Service Agreement No. 2 List the price for extending the service agreement and warranty for a 2nd additional 12-month period.	

EXHIBIT A

PERSONNEL EXPERTISE SUMMARY

(Copy the Exhibit for additional personnel. Also attach resumes for key personnel)

Personnel	Background and Expertise of Personnel
1. _____ (Name) _____ (Title)	
2. _____ (Name) _____ (Title)	
3. _____ (Name) _____ (Title)	
4. _____ (Name) _____ (Title)	
5. _____ (Name) _____ (Title)	
6. _____ (Name) _____ (Title)	

EXHIBIT B

PRIOR EXPERIENCE OF OFFEROR

The Offeror will copy and complete this form for each reference being submitted as demonstration of the Offeror and subcontractor's prior experience. In addition, the Offeror is advised that if the contact person listed for the reference is unable to be reached during the evaluation, the listed experience may not be considered.

Offeror/Subcontractor Name:	
Reference Information (Prior Services Performed For:)	
Name of Reference Company:	
Address of Reference Company:	
Reference Contact Person Name:	
Contact Person Phone #	
Contact Person e-mail address:	
Dates of Prior Services:	
Dollar Value of Prior Services	
Description of Prior Services Performed	

As the contact person for the reference provided above, my signature below verifies that the information presented on this form is accurate. I am available for contact by the State of Missouri for additional discussions regarding my company's association with the Offeror referenced above:

_____ _____

Signature of ***Reference Contact Person noted above*** Date of Signature

Exhibit C

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 Fixed Automated Spray Technology 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 bid, 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.

Exhibit D

ANNUAL WORKER ELIGIBILITY VERIFICATION AFFIDAVIT

(for joint ventures, a separate affidavit is required for each business entity)

STATE OF _____)
) ss
COUNTY OF _____)

On the _____ day of _____, 20____, before me appeared _____, personally
Affiant name
known to me or proved to me on the basis of satisfactory evidence to be a person whose name is subscribed to this affidavit, who being by me duly sworn, stated as follows:

- I, the Affiant, am of sound mind, capable of making this affidavit, and personally certify the facts herein stated, as required by Section 285.530, RSMo, to enter into any contract agreement with the state to perform any job, task, employment, labor, personal services, or any other activity for which compensation is provided, expected, or due, including but not limited to all activities conducted by business entities.
- I, the Affiant, am the _____ of _____, and I am duly authorized, directed, and/or empowered to act officially and properly on behalf of this business entity.
  title business name
- I, the Affiant, hereby affirm and warrant that the aforementioned business entity is enrolled in a federal work authorization program operated by the United States Department of Homeland Security, and the aforementioned business entity shall participate in said program to verify the employment eligibility of newly hired employees working in connection with any services contracted by the Missouri Highways and Transportation Commission (MHTC). I have attached documentation to this affidavit to evidence enrollment/participation by the aforementioned business entity in a federal work authorization program, as required by Section 285.530, RSMo.
- I, the Affiant, also hereby affirm and warrant that the aforementioned business entity does not and shall not knowingly employ, in connection with any services contracted by MHTC, any alien who does not have the legal right or authorization under federal law to work in the United States, as defined in 8 U.S.C. § 1324a(h)(3).
- I, the Affiant, am aware and recognize that, unless certain contract and affidavit conditions are satisfied pursuant to Section 285.530, RSMo, the aforementioned business entity may be held liable under Sections 285.525 though 285.550, RSMo, for subcontractors that knowingly employ or continue to employ any unauthorized alien to work within the state of Missouri.
- I, the Affiant, acknowledge that I am signing this affidavit as a free act and deed of the aforementioned business entity and not under duress.

_____
Affiant Signature

Subscribed and sworn to before me in _____, _____, the day and year first above-written.
city (or county) state

_____
Notary Public

My commission expires:

[documentation of enrollment/participation in a federal work authorization program attached]

APPLICANT AFFIDAVIT FOR SOLE-PROPRIETORSHIP OR PARTNERSHIP
(a separate affidavit is required for each owner and general partner)

STATE OF _____)
) ss
COUNTY OF _____)

On this _____ day of _____, 20_____, before me appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instruments, who being by me duly sworn, deposed as follows:

My name is _____, and I am of sound mind, capable of making this affidavit, and personally certify the facts herein stated, as required by Section 208.009, RSMo, for failure to provide affirmative proof of lawful presence in the United States of America:

I am the _____ of _____, which is applying for a public benefit (grant, contract, and/or loan) administered/provided by the Missouri Highways and Transportation Commission (MHTC), acting by and through the Missouri Department of Transportation (MoDOT).

I am classified by the United States of America as: (check the applicable box)

- ❑ a United States citizen.
- ❑ an alien lawfully admitted for permanent residence.

I am aware that Missouri law provides that any person who obtains any public benefit by means of a willfully false statement or representation, or by willful concealment or failure to report any fact or event required to be reported, or by other fraudulent device, shall be guilty of the crime of stealing pursuant to Section 570.030, RSMo, which is a Class C felony for stolen public benefits valued between $500 and $25,000 (punishable by a term of imprisonment not to exceed 7 years and/or a fine not more than $5,000 – Sections 558.011 and 560.011, RSMo), and is a Class B felony for stolen public benefits valued at $25,000 or more (punishable by a term of imprisonment not less than 5 years and not to exceed 15 years – Section 558.011, RSMo).

I recognize that, upon proper submission of this sworn affidavit, I will only be eligible for temporary public benefits until such time as my lawful presence in the United States is determined, or as otherwise provided by Section 208.009, RSMo.

I understand that Missouri law requires MHTC/MoDOT to provide assistance in obtaining appropriate documentation to prove citizenship or lawful presence in the United States, and I agree to submit any requests for such assistance to MHTC/MoDOT in writing.

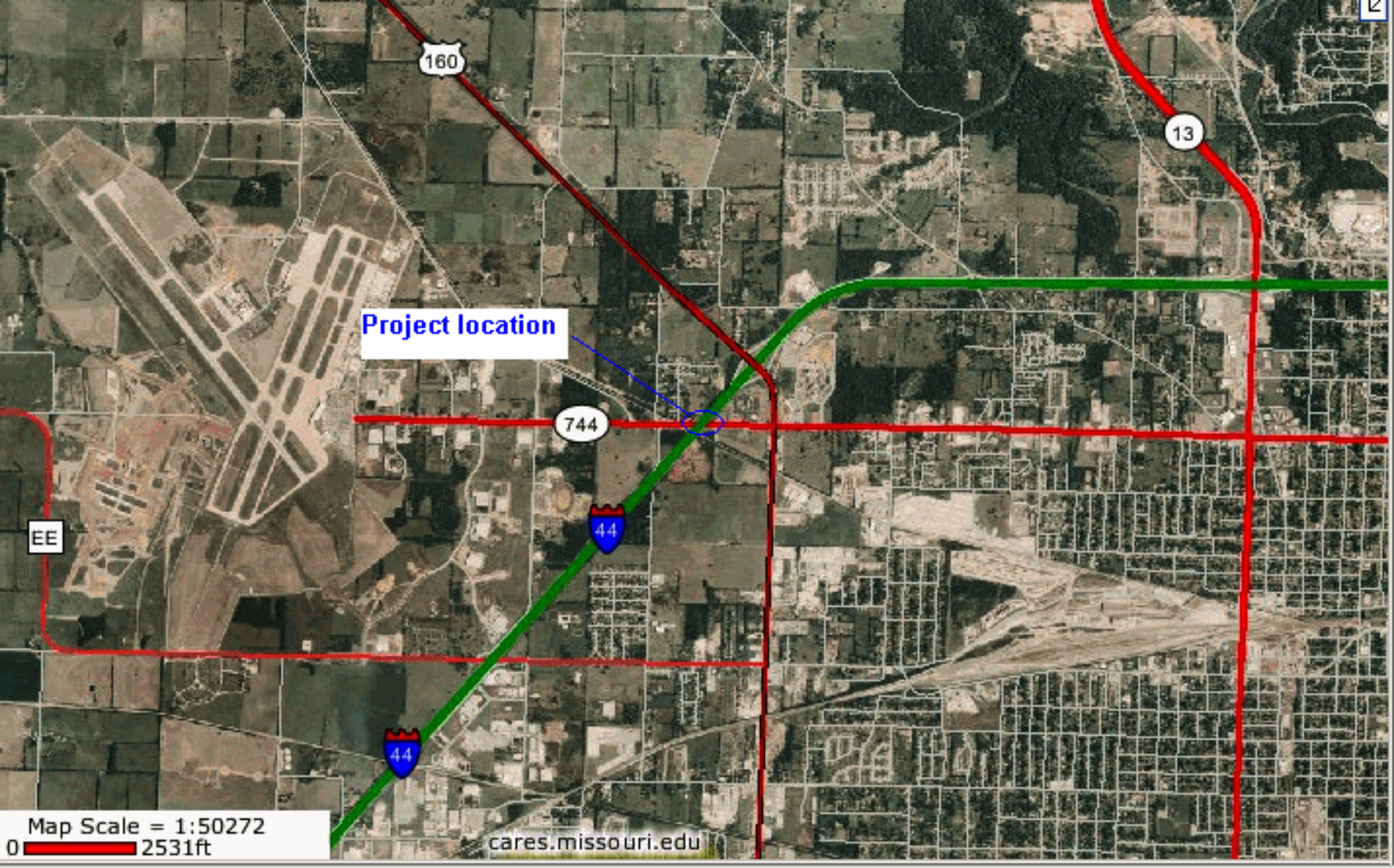
I acknowledge that I am signing this affidavit as a free act and deed and not under duress.

_____ _____
Affiant Signature Affiant's Social Security Number or Applicable Federal Identification Number

Subscribed and sworn to before me this _____ day of _____, 20_____.

_____
Notary Public

My commission expires:


160
13
Project location
744
EE
44
44
Map Scale = 1:50272
0
2531ft
cares.missouri.edu


WB 44 over Kearney St.
Bridge #A0714
EB 44 over Kearney St.
Bridge #A0715
Old Frisco RR line
(abandoned)
Kearney St
Elion Ave
Access Rd
Map Scale = 1:3416
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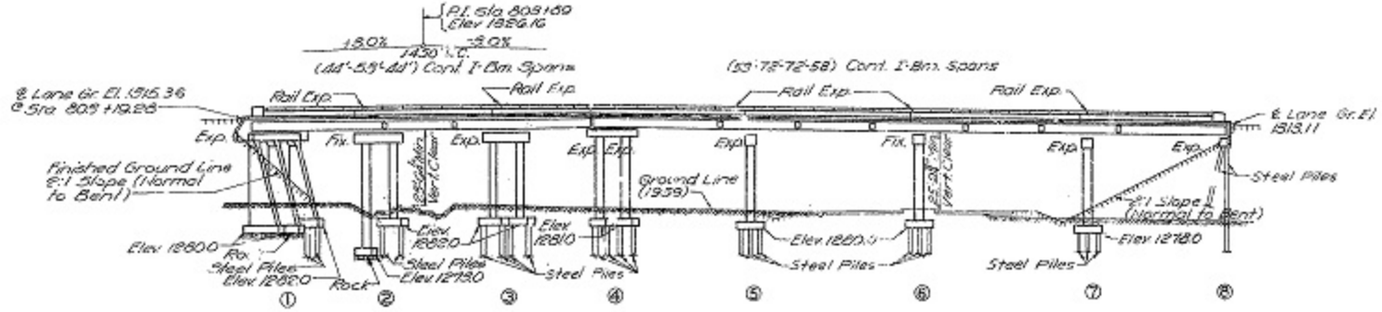
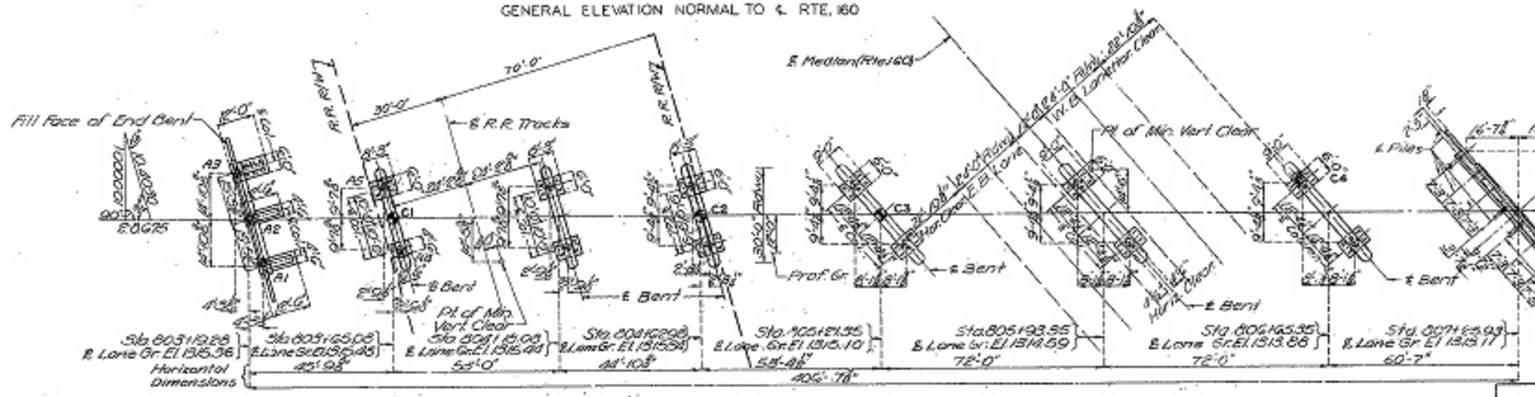
195ft
cares.missouri.edu

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	MO.	-	19 - 62		



GENERAL ELEVATION NORMAL TO ℄ RTE. 160



PLAN

Note: See Sheet No. 2 of 13 for Log of Soundings.

Note: Compacted roadway fill (full roadway width) shall be placed up to elevation of bottom of concrete beam in front of and not less than 25'-0" in back of end bent No. 8 before steel piles are driven for end bent No. 8.

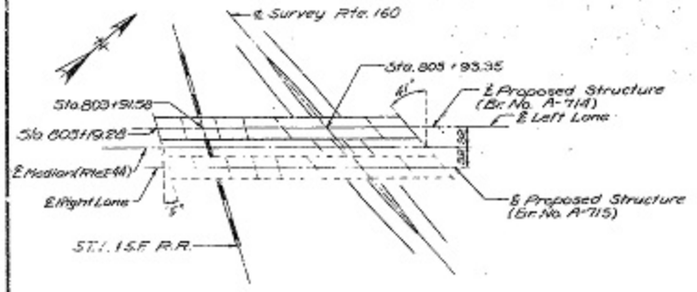
All piling shall be 10" bearing piles at 42" and shall conform with details and notes on sheet No. 3 of design plans. Estimated quantities shown on plans are based on the following lengths: 5@20'-0", 5@25'-0", 5@30'-0", 6@35'-0", 5@40'-0", 12@45'-0", 10@50'-0", 6@60'-0", 12@80'-0" and 8@105'-0". These indicated lengths are approximate only. Proper lengths to give required bearing and/or penetration will be authorized by the Engineer.

All piles shall be driven to or into solid rock, boulders, shale, or cemented gravel; or to not less than full length authorized and to sustain a load of at least 37 tons per pile.

All piles shall be driven with a power hammer.

All loose, shelly or disintegrated rock shall be removed and the footings placed on or into hard, solid undisturbed rock. If soft rock or shale is encountered, the footings shall be carried at least 18" into and cast against vertical faces of same.

Bearing of 78 Tons per square foot used in design of footings on rock.



LOCATION SKETCH

GENERAL NOTES:

Design Specifications A.A.S.H.O. - 1957
Loading M 60-S16-44 (15 #/sq. ft. Future Wearing Surface)
(Modified 24,000 # Tandem Axle)
Structural Steel Stress 18,000 #/sq. in.
Reinforcing Steel Stress 20,000 #/sq. in.
Concrete, Class B Stress 1,200 #/sq. in.
Concrete, Class B1 Stress 1,600 #/sq. in.
Superstructure concrete shall be Class B1 (Air Entrained)
Substructure concrete shall be Class B (Air Entrained)
Rivets 7/8" holes 1" except where otherwise noted.
Field connections except as noted in handrail details may be riveted or bolted with high strength bolts. Final pay weight for Fabricated Structural Steel will be based on the use of field rivets except for bolted connections specified for handrail.
Qualification of welding operators will be required.
Paint: Shop, none; Field, contact surfaces of bolted field connections (except where high strength bolts are used) one coat of red lead and surfaces inaccessible after erection three coats of red lead. All other exposed surfaces first coat red lead, second coat brown, third coat aluminum. Payment for cleaning and all painting will be made under unit price bid for Painting.
See Section 52.4.7 of Standard Specifications for required painting of steel piles.

A minimum vertical clearance of 22'-0" from top of rails and a minimum lateral clearance of 10'-0" from centerline of tracks shall be maintained over railroad tracks during construction.

Where joint filler is specified on the plans it shall conform with the requirements of Section 15.7.2.4 of the Standard Specifications.

Superstructure deck to be surface sealed. See Special Provisions.

FINISHED

ESTIMATED QUANTITIES

Item		Substr.	Superstr.	Total
Class 1 Excavation for Structures	Cu. Yds.	420		420
Steel Piles in Place	Lin. Ft.	3844		3844
Steel Pile Cut-offs	Lin. Ft.	231		231
Class B Concrete	Cu. Yds.	3238		3238
Class B1 Concrete	C. Yds.		458.6	458.6
Reinforcing Steel	Lbs.	56,680	116,970	173,650
Fabricated Structural Carbon Steel	Lbs.		347,920	347,920
Painting	Tons.		179.7	179.7
Bridge Rail (Single Tube Type)	Lin. Ft.		792	792

Note: All excavation for bridge will be paid for as Class 1 Excavation for Structures.

Weight of type D Bearings is included in weight of Fabricated Structural Carbon Steel.

B.M. Elev. 1290.16 N. 1 W. in root 20" W. Cherry 150' Rt. Sta. 806+00. U.S.G.S. Datum.

BRIDGE OVER ST. L. – SF R.R. & RTE. 160

STATE ROAD FROM RTE. 65 WEST OF SPRINGFIELD N.E. TO RTE. 160 ABOUT 4.0± MILES WEST OF SPRINGFIELD

PROJECT NO. I-IG-44-2(27)RTE. I-44) STA. 803+19.28 (LT. LANE)

GREENE COUNTY FINISHED

Submitted by Lee H. Beckett Date 1-6-1961

Approved by Roy M. Whitten Date 1-6-1961

FINISHED

STD. 54.00

A-714

529

Drawn SEP 1960 by W. K. & C.D.W.
Checked Dec. 1960 by D.J.G. & A.R.

Note: This drawing is not to scale. Follow dimensions.

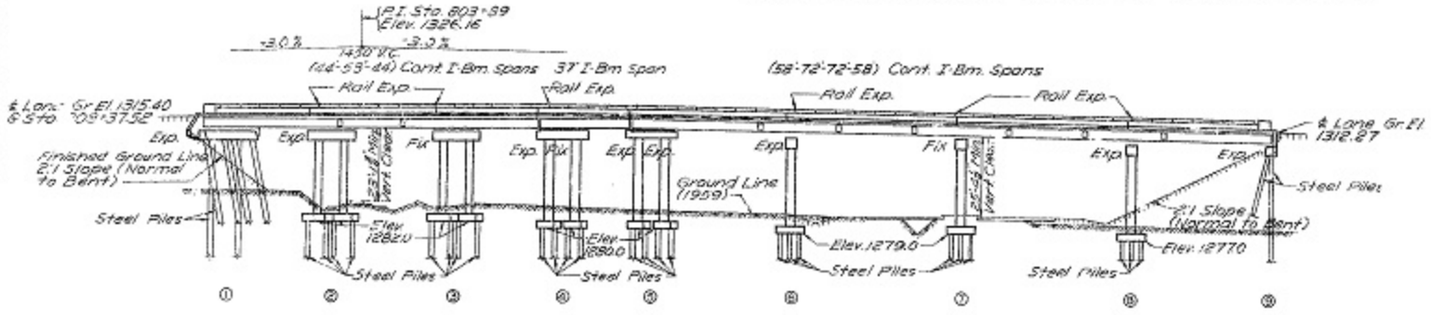
Sheet No. 1 of 13

SEE FINAL PLANS BROWN-LINES

ROLL #649

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	66	



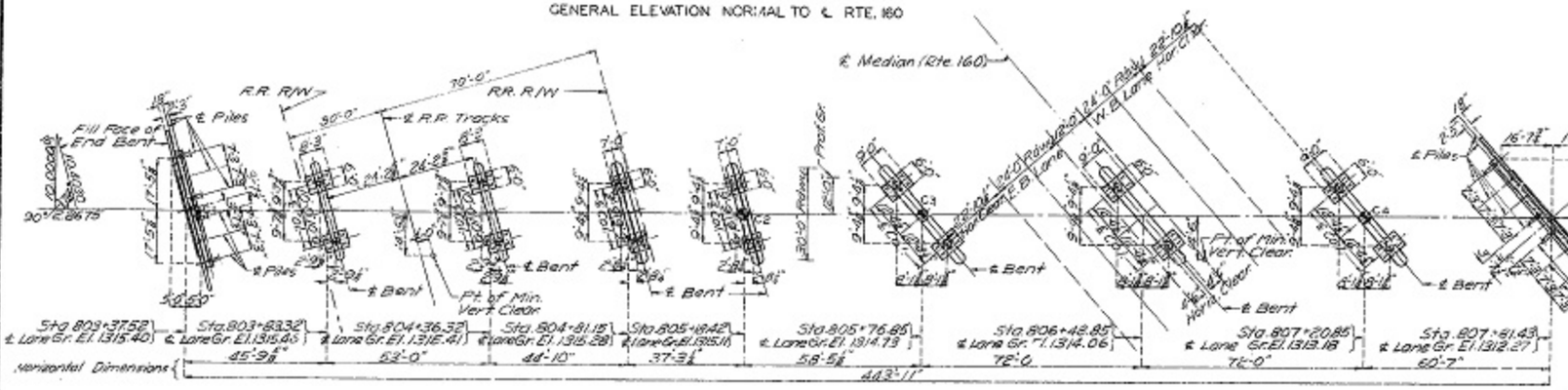
GENERAL ELEVATION NORMAL TO ℄ RTE. 160

Note: Compacted roadway fill (full roadway width) shall be placed up to elevation of bottom of concrete beam in front of end bent not less than 25'-0" in back of end bents Nos 1 and 9 before steel piles are driven for bents Nos 1 & 9.

All piling shall be 10" bearing piles at 42# and shall conform with details and notes on sheet No. 3 of design plans. Estimated quantities shown on plans are based on the following lengths: @ 25'-0", 58'-10'-0", @ 35'-0", 6@40'-0", 5@ 45'-0", 2@ 50'-0", 6@ 55'-0", 4@ 60'-0", & @ 75'-0" and 2@ 80'-0". These indicated lengths are approximate only. Proper lengths to give required bearing and/or penetration will be authorized by the Engineer.

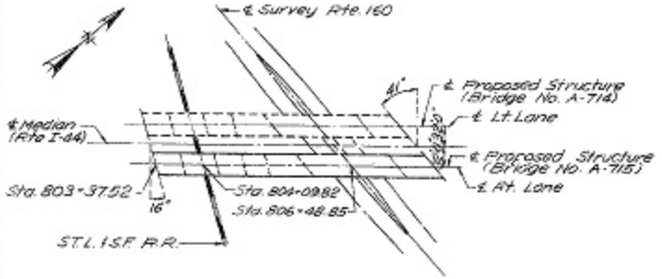
All piles shall be driven to or into solid rock, boulders, shale, or cemented gravel; or to not less than full length authorized and to sustain a load of at least 37 tons per pile.

All piles shall be driven with a power hammer.



PLAN

Note: See sheet No. 2 of 13 for Log of Soundings.



LOCATION SKETCH

GENERAL NOTES:

Design Specifications A.A.S.H.O. - 1957
Loading H20-S16.44 (15#/sq.ft. Future Wearing Surface)
(Modified 24,000# Tandem Axle)
Structural Steel Stress 18,000#/sq.in.
Reinforcing Steel Stress 20,000#/sq.in.
Concrete, Class A Stress 1,200#/sq.in.
Concrete, Class B1 Stress 1,600#/sq.in.
Superstructure concrete shall be Class B1 (Air Entrained)
Substructure concrete shall be Class B (Air Entrained)
Rivets 7/8"; holes 15/16" except where otherwise noted.
Field connections except as noted in handrail details may be riveted or bolted with high strength bolts. Final pay weight for Fabricated Structural Steel will be based on the use of field rivets except for bolted connections specified for handrail.
Qualification of welding operators will be required.
Paint: Shop, none; Field, contact surfaces of bolted field connections (except where high strength bolts are used) one coat of red lead and surfaces inaccessible after erection three coats of red lead. All other exposed surfaces first coat red lead, second coat brown, third coat aluminum. Payment for cleaning and all painting will be made under unit price bid for Painting.
See Section 52.4.7 of Standard Specifications for required painting of steel piles.

A minimum vertical clearance of 22'-0" from top of rails and a minimum lateral clearance of 10'-0" from centerline of tracks shall be maintained over railroad tracks during construction.

Where joint filler is specified on the plans it shall conform with the requirements of Section 1512.6 of the Standard Specifications.

Superstructure deck to be surface sealed. See Special Provisions.

ESTIMATED QUANTITIES

Item		Substr.	Superst.	Total
Class 1 Excavation for Structures	Cu. Yds.	310		310
Steel Piles in Place	Lin. Ft.	4,767		4,067
Steel Pile Cut-offs	Lin. Ft.	258		258
Class B Concrete	Cu. Yds.	302.2		302.2
Class B1 Concrete	Cu. Yds.		467.8	467.8
Reinforcing Steel	Lbs.	58,160	128,140	186,300
Fabricated Structural Carbon Steel	Lbs.		372,350	372,350
Grey Iron Alloy	Lbs.		790	790
Painting	Tons		186.2	186.2
Bridge Rail (Single Tube Type)	Lin. Ft.		863	863

Note: All excavation for bridge will be paid for as Class 1 Excavation for Structures.
Weight of Type D Bearings is included in weight of Fabricated Structural Carbon Steel.

B.M. Elev. 1290.14, N. f. W. in root 20" W. Cherry 150' Rt. Sta. 804+00. U.S.G.S. Datum.

BRIDGE OVER ST. L. – SF R.R. & RTE. 160

STATE ROAD FROM RTE. 66 WEST OF SPRINGFIELD N.E. TO RTE. 160

ABOUT 4.0 + MILES WEST OF SPRINGFIELD

PROJECT NO. I-HG-44(27)RTE. 44 **STA.** 803+37.52 (RT. LANE)

GREENE **COUNTY**

Submitted Leo F. Brackett 1-6-61

Approved Chas. H. Hilleton 1-6-61
State Highway Engineer

STD. 54.00
A-715

Drawn SEP 1960 by W.K.
Checked Dec. 1960 by D.J.G. & A.R.

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 1 of 13

SEE FINAL PLANS FOR PLAN LINES

ROLL #649

A0714 (WB)
10/15/2008
North Profile
looking SW

A0714 06-07-04

Profile of bridge looking W


A0714 06-07-04
Driving surface looking W

A0714 (WB)
10/15/2008
Roadway looking SW

A0715 06-07-04
Profile of bridge looking W

A0715 (EB)
10/15/2008
South Profile


A0715 06-07-04
Driving surface looking W