Massac County Highway Department

Request for Proposal

Wednesday, February 7, 2024

Spray Injection Patching Machine

The Massac County Highway Department is seeking bids on a new trailer mounted, spray injection, pothole patching machine.

1) Sealed bids will be received in the office of the Massac County Engineer, 2736 North Avenue, Metropolis, Illinois, 62960, until 10:00 o'clock A.M. March 6, 2024, for furnishing equipment, and at that time be publicly opened and read.
2) Proposals shall be submitted on the form furnished by the County (pages 7-12 of this document. Additional copies may be obtained on the county website at *massaccountyil.gov/county-highway.* Changes to the Request for Proposal may be posted at any time to our website. It is the Vendors responsibility to check the website. Any addendum issued must be signed and submitted with your Proposal.
3) All proposals must be enclosed in a sealed envelope. The outside of the envelope must include the name and address of the proposer and clearly marked as follows:

   Attn: Massac County Highway Department
   Proposal: Spray Injection Patching Machine
   Bid Opening Date: Wednesday, March 6, 2024
4) It is the intent of these specifications to describe a spray injection pothole patcher in sufficient detail to secure bids on comparable equipment. State and Federal laws supersede any conflicting part of this specification. All parts not specifically mentioned, which are necessary to provide a complete pothole patcher, shall be included in the bid and shall conform in strength and quality of material and workmanship to what is usually provided to the trade in general. The pothole patcher shall be a current model under standard production by the manufacturer. Massac county highway department reserves the right to waive all technicalities and to choose the machine they feel will best serve its needs.
5) It will be the responsibility of the manufacturer/bidder to conform with the requirements unless deviations have been specifically cited by the bidder and written acceptance from the Massac County Highway Department made based on the **exception**.
6) The right is reserved to reject all proposals and to waive technicalities.

Amy Ferris, P.E.

Massac County Engineer

Specifications

1.0 Purpose:

Unit shall be trailer mounted and use the Spray Injection method to repair cracks, potholes, broad distressed areas, and shoulders at a minimum. The unit shall be capable of blowing water, dust or debris from the pothole or surface to be repaired. A tack coat of hot emulsion shall be applied by the unit on the cleaned area. Emulsion-coated aggregate must be injected into the repair area. The machine shall be capable of operating in temperatures down to 5 degrees Fahrenheit. The delivery of aggregate and emulsion to the patch shall not require augers, conveyors, or pumps to operate.

1.1 Bidder qualifications:

The equipment being proposed must be new and meet the needs of this specification without modification. The model must be currently advertised, have been in production for a min. of two years and have a working volume of not less than called for in this specification. Hybrid, one-off or prototype equipment is unacceptable. *Like-new equipment with low hours* may also be considered as long as all other requirements have been met.

1.2 Approved Equal:

These specifications are not intended to be restrictive but are meant to describe the kind and size of unit desired to be purchased in detail. If a bidder is basing the proposal on equipment other than what is specified in these bid documents and wishes the equipment to be considered as an "approved equal" they shall submit on a separate sheet, an item-by-item description of that which is proposed. The bidder's specifications must be complete and of sufficient detail to cover all items included in this bid specification and in a manner that allows a direct comparison. Any item not covered will be deemed as not meeting specifications. Such bidder shall also include, but not as a substitute for the above, any manufacturer's literature. In addition, if the bidder takes exception to any item, they shall note this and describe in detail the exception and how the proposal is an "approved equal". Failure to carry out the provisions noted herein may be deemed sufficient reason to reject the bidder's proposal. Check yes if demonstration has been performed prior to bid letting.

2.0 Basic Machine Requirements:

2.1 Spray Injection design with aggregate supplied from tow vehicle by gravity feed tube.

2.2 Trailer mounted and rated for highway class use.

2.3 Diesel powered with engine enclosure.

2.4 Electric blanket heated emulsion tank.

2.5 Emulsion working capacity of 250 gallons.

2.6 Overnight electric heating for maintaining emulsion temp.

2.7 Stop/ turn sealed lighting including clearance lights.

3.0 Emulsion heating and storage minimum requirements:

The emulsion tank shall be an ASME certified pressure vessel with no more than 250-gallon capacity. It shall be pressurized, insulated, and protected by fire-retardant outer skin. The tank is to be equipped with filler opening and T-bolt closure. It shall be electrically heated and thermostatically controlled. The tank heating system must be capable of operating continuously, regardless of whether the emulsion tank is empty or full, with no damage to the heating elements or other components. This allows an empty tank to be pre-heated. The tank shall have pressure relief.

3.1 Tank shall be a pressure vessel and ASME Certified.

3.2 Rating: 250-gallon capacity, 200PSI working pressure at 500 degrees.

3.3 Insulation: Min. R15 rated fiberglass insulation.

3.4 Outer Skin: Waterproof fire-retardant fiberglass construction.

3.5 Loading hatch: For Safety, filler opening will be a min. 12" and be equipped with t bolt closures.

3.6 Cleanout Valve: Min 3" drain valve will be installed at the bottom of the tank.

3.7 Heating source: Tank will be wrapped with 2 electric blankets for overnight heating. Min. 1500W x (2) 120VAC. A thermostat and overnight heating extension cord will be included. Heating probes will not be considered for alternate as they do not allow tank pre-heating and 100% use of emulsion tank volume.

3.8 Operating temperature: System must be capable of maintaining heat to allow operation of patcher in ambient temperatures as low as 5 degrees F.

4.0 Trailer/ Frame/Lighting:

The patching unit will be trailer mounted and capable of being towed at safe highway speeds when fully loaded. The frame shall include rectangle tube frame construction, braking system and highway approved lighting.

4.1 Trailer frame constructed of minimum ¼" gusseted steel tube.

4.2 Adjustable Hitch: A 3" towing ring that is adjustable in height from 15" to 30" high will be provided for lateral adjustability.

4.3 Fenders: Minimum 12-gauge horizontal surface steel fenders.

4.4 Jack: A swing-away weight appropriate adjustable side-winder screw jack must be provided.

4.5 Axle System: To ensure towing mobility in both forward and reverse directions, the trailer shall have a dual axle leaf spring system and be rated at a GAWR (Gross Axle Weight Rating) of 14,000 lbs.

4.6 Trailer Brakes: Electric brakes, emergency breakaway switch, radial tires, and two 3/8" x 4-foot-long safety chains with slip hooks will be included.

4.7 Lighting: Dual oval stop, tail, and turn lights will be included. Clearance lighting will also be included. A lighted license plate bracket will be attached to the fender.

4.8 Directional Arrow Board: A directional arrow board will be mounted at the back of the machine and be selectable for left/right or both traffic control.

4.9 Wiring Harness: The lighting harness will be woven loom with weatherproof connectors at all lights. A six way round plug will be included.

5.0 Aggregate Feed/Delivery System minimum requirements:

The pothole patching machine shall receive aggregate from the tow vehicle from a box in the tail gate (provided by supplier) to gravity feed the hopper box of the unit. No augers, conveyors, or any other mechanical devices shall be allowed. The hopper box on the trailer shall be designed to hold the aggregate before it enters the air stream created by the blower. It must have a safety screen to allow aggregates up to 2-1/2" in size to pass into the system without clogging. No machine will be considered without demonstrating this capability. The aggregate feed system must be capable of reliably delivering 1/4" - 3/8" aggregate within an engine RPM range of 1200 - 1800.

5.1 Hopper: Trailer mounted with integral screen with opening for slide gate.

5.2 Slide Gate: Air operated with min 4" stroke air ram.

5.3 Venturi: Designed to draw aggregate into air steam. Must have access panel.

5.4 Aggregate delivery tube: Min 3.5" ID schedule 40 pipe 10 ft. in length. Designed to be rotatable for maximum life.

5.5 Aggregate delivery hose: Aggregate hose will be min. 3.5" ID. Non-kinking, plastic wire reinforced rubber neoprene-lined hose with a min. length of 164".

5.6 Fatigue-Free Aggregate hose boom: The boom shall be a three-section device that allows the operator to move throughout its full radius using only very light force from one hand and shall be adjustable for height.

5.7 Operator Safety: The boom design must keep the boom and the operator well out of the adjoining lane and the operator must be capable of placing the nozzle tip on the center stripe of a multi-lane roadway without any portion of the boom, or the operator, intruding over the center stripe.

5.8 Emulsion Hose Heating: A 12-volt pump shall circulate heat transfer oil through a pipe inside the emulsion tank and min. 3/8" diameter lines the full length of the hose to the emulsion nozzle, then back. All parts including emulsion valves, hose, and nozzle will be heated by this hot fluid heating system.

5.9 Heated Vent- Flow Nozzle: The nozzle shall be designed so it diffuses/ slows down the air stream at the tip to minimize overspray. The emulsion nozzle will be slotted to create a single fan of emulsion to properly coat the aggregate. The nozzle will be low voltage DC heated to prevent material build up during cold weather operation.

7.0 Engine and cleanout minimum requirements:

The unit will be equipped with a diesel engine with spin-on type oil and fuel filters. It will be joined to the frame with rubber engine mounts to prevent vibration transfer. A management system will be located on the engine enclosure for ease of operation and maintenance.

7.1 Diesel Engine: The unit shall be equipped with a water cooled direct-injected, diesel engine. The engine will have spin on type oil and fuel filters. Rubber isolation engine mounts are required.

7.2 Engine Enclosure: The engine will be protected with an engine enclosure that is certified by the manufacturer. It will be lockable for security and provide noise reduction for operator Safety.

7.3 Engine Protection: Auto Shutdown protection will be provided for alternator, oil pressure coolant temperature. An hour meter and RPM gauge will be included.

7.4 Engine HP: The engine will be rated at no more than 74HP and be able to operate the delivery system to fill a patch with 1/4" stone @ 1100 RPM and 1 ½ "stone at no more than 1800 RPM.

7.5 Protection: Engine Cover will enclose engine, battery, and Air Compressor.

7.6 Controller: Engine controller must be accessible without having to open engine cover and contain the Hour Meter, RPM Gauge and shutdown for Oil, Water and Battery.

7.5 Fuel system: The unit will include a min. 18-gallon Diesel fuel tank.

7.6 Emulsion Flush System: A min. 13-gallon pressurized vessel will be included for flushing of emulsion lines and nozzle after use. It shall be equipped with a pressure relief valve set at 110 PSI.

7.7 Clean out box: A clean out container will be mounted to the frame of the machine. At end of shift, operator will place wand in container to flush emulsion lines and nozzle. No disassembly and soaking of any part of the emulsion system will be necessary. The entire nozzle cleanout procedure may not get emulsion or diesel on the operator. No system using a pump will be accepted.

8.0 Blower and Air Compressor minimum requirements:

The unit will incorporate a direct-driven High-Volume Low-Pressure Lobe type blower to operate the delivery system. No conveyor or auger type systems will be allowed due to higher wear parts and maintenance associated with those designs. An air compressor driven off the engine will also be required to pressurize the emulsion system. No pumps for emulsion delivery will be accepted.

8.1 Blower will be rated at min. 450 CFM@ 7psi@ 1500 RPM.

8.2 Lobe style blower direct driven off patcher engine.

8.3 Pop off valve set to 12 psi for protection.

8.4 Dual Stage heavy duty filter element on Blower intake.

8.5 Air muffler to reduce airflow noise required.

8.6 Compressor to be 15CFM min. Pressure relief set to 95psi.

8.7 No conveyors, augers or pumps will be used in the aggregate or emulsion delivery systems.

9.0 Safety:

Unit shall meet OSHA safety specifications and have a National Recognized Testing Laboratory Label affixed to the machine.

10.0 Warranty:

The manufacturer shall warranty the equipment for a period of one year. Engine must be covered for Major Components for a period of 2 years or 2000 hours. Bidder warranty policy must be included with bid submittal.

11.0 Pre-delivery service:

The unit shall be delivered complete and fully operational. It shall be properly serviced, free of leaks, and all mechanical adjustments made prior to delivery.

12.0 Technical service:

The services of a competent technician, thoroughly trained in the use, operation and servicing of the unit shall be available for consultation and guidance. Training on the operation, daily maintenance and servicing of the machine can be done in person or by videotapes.

13.0 Manuals:

One operator’s manual, one service manual and one parts manual shall be supplied with this unit.

Proposal

Massac County Highway Department

March 6, 2024 Letting

Spray Injection Patching Machine

To: **Massac County Highway Department**

Address: **2736 North Avenue, Metropolis, Illinois, 62960**

The undersigned agrees, if this bid is accepted within 30 days from the date of the bid opening, to furnish any or all equipment upon which prices are bid, at the respective unit prices.

_____ _____

Bidder Address

_____ _____

By Title

Option 1 New- Year/Make/Model (please include product information with bid package)

_____

Total Cost, delivered to Massac County Highway Depart _____

Approximate Delivery Date _____

Option 2 Like-new- Year/Make/Model/Hours (please include product information with bid package)

_____

Total Cost, delivered to Massac County Highway Depart _____

Approximate Delivery Date _____

	REQUIREMENT	YES	NO	NOTES/EXCEPTION
2.0	**Basic Machine Requirements:**			
2.1	Spray Injection design with aggregate supplied from tow vehicle by gravity feed tube.			
2.2	Trailer mounted and rated for highway class use.			
2.3	Diesel powered with engine enclosure.			
2.4	Electric blanket heated emulsion tank.			
2.5	Emulsion working capacity of 250 gallons.			
2.6	Overnight electric heating for maintaining emulsion temp.			
2.7	Stop/ turn sealed lighting including clearance lights.			
3.0	**Emulsion heating and storage minimum requirements:**			
3.1	Tank shall be a pressure vessel and ASME Certified.			
3.2	Rating: 250-gallon capacity, 200PSI working pressure at 500 degrees.			
3.3	Insulation: Min. R15 rated fiberglass insulation.			
3.4	Outer Skin: Waterproof fire-retardant fiberglass construction.			
3.5	Loading hatch: For Safety, filler opening will be a min. 12" and be equipped with t bolt closures.			
3.6	Cleanout Valve: Min 3" drain valve will be installed at the bottom of the tank.			
3.7	Heating source: Tank will be wrapped with 2 electric blankets for overnight heating. Min. 1500W x (2) 120VAC. A thermostat and overnight heating extension cord will be included. Heating probes will not be considered for alternate as they do not allow tank pre-heating and 100% use of emulsion tank volume.			
3.8	Operating temperature: System must be capable of maintaining heat to allow operation of patcher in ambient temperatures as low as 5 degrees F.			

	REQUIREMENT	YES	NO	NOTES/EXCEPTION
4.0	**Trailer/Frame/Lighting:**			
4.1	Trailer frame constructed of minimum ¼" gusseted steel tube			
4.2	Adjustable Hitch: A 3" towing ring that is adjustable in height from 15" to 30" high will be provided for lateral adjustability.			
4.3	Fenders: Minimum 12-gauge horizontal surface steel fenders.			
4.4	Jack: A swing-away weight appropriate adjustable side-winder screw jack must be provided.			
4.5	Axle System: To ensure towing mobility in both forward and reverse directions, the trailer shall have a dual axle leaf spring system and be rated at a GAWR (Gross Axle Weight Rating) of 14,000 lbs.			
4.6	Trailer Brakes: Electric brakes, emergency breakaway switch, radial tires, and two 3/8" x 4-foot-long safety chains with slip hooks will be included.			
4.7	Lighting: Dual oval stop, tail, and turn lights will be included. Clearance lighting will also be included. A lighted license plate bracket will be attached to the fender.			
4.8	Directional Arrow Board: A directional arrow board will be mounted at the back of the machine and be selectable for left/right or both traffic control.			
4.9	Wiring Harness: The lighting harness will be woven loom with weatherproof connectors at all lights. A six way round plug will be included.			

	REQUIREMENT	YES	NO	NOTES/EXCEPTION
5.0	**Aggregate Feed/Delivery System minimum requirements:**			
5.1	Hopper: Trailer mounted with integral screen with opening for slide gate.			
5.2	Slide Gate: Air operated with min 4" stroke air ram.			
5.3	Venturi: Designed to draw aggregate into air steam. Must have access panel.			
5.4	Aggregate delivery tube: Min 3.5" ID schedule 40 pipe 10 ft. in length. Designed to be rotatable for maximum life.			
5.5	Aggregate delivery hose: Aggregate hose will be min. 3.5" ID. Non-kinking, plastic wire reinforced rubber neoprene-lined hose with a min. length of 164".			
5.6	Fatigue-Free Aggregate hose boom: The boom shall be a three-section device that allows the operator to move throughout its full radius using only very light force from one hand and shall be adjustable for height.			
5.7	Operator Safety: The boom design must keep the boom and the operator well out of the adjoining lane and the operator must be capable of placing the nozzle tip on the center stripe of a multi-lane roadway without any portion of the boom, or the operator, intruding over the center stripe.			
5.8	Emulsion Hose Heating: A 12-volt pump shall circulate heat transfer oil through a pipe inside the emulsion tank and min. 3/8" diameter lines the full length of the hose to the emulsion nozzle, then back. All parts including emulsion valves, hose, and nozzle will be heated by this hot fluid heating system.			
5.9	Heated Vent- Flow Nozzle: The nozzle shall be designed so it diffuses/ slows down the air stream at the tip to minimize overspray. The emulsion nozzle will be slotted to create a single fan of emulsion to properly coat the aggregate. The nozzle will be low voltage DC heated to prevent material build up during cold weather operation.			

	REQUIREMENT	YES	NO	NOTES/EXCEPTION
7.0	**Engine and cleanout minimum requirements:**			
7.1	Diesel Engine: The unit shall be equipped with a water-cooled direct-injected, diesel engine. The engine will have spin on type oil and fuel filters. Rubber isolation engine mounts are required.			
7.2	Engine Enclosure: The engine will be protected with an engine enclosure that is certified by the manufacturer. It will be lockable for security and provide noise reduction for operator Safety.			
7.3	Engine Protection: Auto Shutdown protection will be provided for alternator, oil pressure coolant temperature. An hour meter and RPM gauge will be included.			
7.4	Engine HP: The engine will be rated at no more than 74HP and be able to operate the delivery system to fill a patch with 1/4" stone @ 1100 RPM and 1 ½ "stone at no more than 1800 RPM.			
7.5	Protection: Engine Cover will enclose engine, battery, and Air Compressor.			
7.6	Controller: Engine controller must be accessible without having to open engine cover and contain the Hour Meter, RPM Gauge and shutdown for Oil, Water and Battery.			
7.5	Fuel system: The unit will include a min. 18-gallon Diesel fuel tank.			
7.6	Emulsion Flush System: A min. 13-gallon pressurized vessel will be included for flushing of emulsion lines and nozzle after use. It shall be equipped with a pressure relief valve set at 110 PSI.			
7.7	Clean out box: A clean out container will be mounted to the frame of the machine. At end of shift, operator will place wand in container to flush emulsion lines and nozzle. No disassembly and soaking of any part of the emulsion system will be necessary. The entire nozzle cleanout procedure may not get emulsion or diesel on the operator. No system using a pump will be accepted.			

	REQUIREMENT	YES	NO	NOTES/EXCEPTION
8.0	**Blower and Air Compressor minimum requirements:**			
8.1	Blower will be rated at min. 450 CFM@ 7psi@ 1500 RPM.			
8.2	Lobe style blower direct driven off patcher engine.			
8.3	Pop off valve set to 12 psi for protection.			
8.4	Dual Stage heavy duty filter element on Blower intake.			
8.5	Air muffler to reduce airflow noise required.			
8.6	Compressor to be 15CFM min. Pressure relief set to 95psi.			
8.7	No conveyors, augers or pumps will be used in the aggregate or emulsion delivery systems.			
9.0	**Safety:** Meets OSHA safety specifications with National Recognized Testing Laboratory Label affixed to the machine.			
10.0	**Warranty:** The manufacturer shall warranty the equipment for a period of one year. Engine must be covered for Major Components for a period of 2 years or 2000 hours. Bidder warranty policy must be included with bid submittal.			
11.0	**Pre-delivery service:** The unit shall be delivered complete and fully operational. It shall be properly serviced, free of leaks, and all mechanical adjustments made prior to delivery.			
12.0	**Technical service:** The services of a competent technician, thoroughly trained in the use, operation and servicing of the unit shall be available for consultation and guidance. Training on the operation, daily maintenance and servicing of the machine can be done in person or by videotapes.			
13.0	**Manuals:** One operator's manual, one service manual and one parts manual shall be supplied with this unit.			