

Attachment A: Basic Specifications for a Spray Injection Patching Truck

1.0 Purpose:

Unit shall be truck mounted with a rear mounted boom 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 bid must be new, current year production and meet the needs of this specification without modification. The model must be currently advertised, have been in production for a minimum 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.

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 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.

YES	NO

2.0 Basic Machine Requirements:

	YES	NO
2.1 Spray Injection design with aggregate supplied from hopper by gravity feed.		
2.2 Chassis mounted and rated for highway class use.		
2.3 Self contained diesel powered engine with 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 Air delivery system with no augers or conveyors.		

EXCEPTIONS:

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3.0 Emulsion heating and storage system:

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 a 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 a pressure relief.

YES	NO

3.1 Emulsion heating and storage minimum requirements:

	YES	NO
3.1.1 Construction: The tank must be a pressure vessel and ASME certified.		
3.1.2 Rating: 250 gallon capacity, tested to 195 PSI at ambient temperature.		
3.1.3 Insulation: Minimum R15 rated fiberglass insulation.		
3.1.4 Outer Skin: Waterproof fire retardant fiberglass construction.		
3.1.5 Loading Hatch: For safety, filler opening will be a minimum 12" and be equipped with t bolt closures.		
3.1.6 Cleanout Valve: Minimum 3" drain valve will be installed at the bottom of the tank.		
3.1.7 Heating Source: Tank will be wrapped with 2 electric blankets for overnight heating. Minimum 1500W x (2) 120V AC. 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.		
3.1.8 Operating Temperature: System must be capable of maintaining heat so as to allow operation of patcher in ambient temperatures as low as 5 degrees F.		

EXCEPTIONS:

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4.0 Patcher Frame/Lighting:

The patching unit will be chassis mounted and designed to fit a 33,000 GVW standard chassis truck.

YES	NO

4.1 Patcher Frame minimum requirements:

	YES	NO
4.1.1 Construction: The frame is to be constructed of minimum 10" gusseted steel channel for safety and strength.		
4.1.2 Integrated Aggregate Hopper: 6 yard min. capacity with minimum 9 ft. x 7 ft. rectangular top opening to allow easy loading from a front end loader bucket.		
4.1.3 Hopper Vibrator: A hopper vibrator will be included and wired to operate from operator wand.		
4.1.4 Fenders: Rear steel fenders with attached mud flaps shall be included.		
4.1.5 Chassis Mounting: The Patcher frame shall be secured to the truck chassis with U bolts.		
4.1.6 Patcher Lights: The Patcher will feature stop/turn/tail lights on rear of unit. These lights shall be tied into chassis signals. Clearance lights shall be mounted at widest points. All lights will be LED type.		
4.1.7 Strobe Lights: Patcher will feature two separate Class 2 LED amber strobe beacons mounted at top of Patcher for 360 degree visibility.		
4.1.8 Rear Warning Lights: The Patcher shall feature five surface mounted Class 2 LED strobe lights spaced equidistant horizontally across the rear of the Patcher. There shall be three amber strobe lights with white strobe lights placed in between. Lights shall be sequenced to alternate flashing between amber and white. Like colors shall be sequenced together to flash in unison.		

EXCEPTIONS:

5.0 Aggregate Feed/Delivery System:

The pothole patching machine shall receive aggregate from the integrated hopper. No augers,

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conveyors, or any other mechanical devices shall be allowed. It must have the ability to pass aggregate up to 2-1/2" in size without clogging or manual adjustment. 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.

YES	NO

5.1 Delivery System minimum requirements:

5.1 Delivery System minimum requirements:	YES	NO
5.1.1 Hopper: Integrated 6 yd. rectangular in shape with 9ft x 7ft. opening.		
5.1.2 Dual Slide Gates: Dual gates (one for operation and one for service to separate hopper from venturi). Air operated with min 4" stroke air ram.		
5.1.3 Venturi: Designed to draw aggregate into air stream. Must have access panel.		
5.1.4 Venturi Service: Must be able to clean or replace venturi with aggregate in hopper while standing comfortably at ground level.		
5.1.5 Aggregate Delivery Tube: Min 3.5" ID schedule 40 pipe 10 ft. in length. Designed to be rotatable for maximum life.		
5.1.5 Aggregate Delivery Hose: Aggregate hose will be min. 3.5" ID. Non-kinking, wire reinforced rubber neoprene-lined hose with a minimum length of 192".		
5.1.6 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.		
5.1.7 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.		
5.1.8 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.		

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5.1.9 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 may be warmed with an optional separate low voltage DC heating blanket to prevent material build up during cold weather operation.

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EXCEPTIONS:

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7.0 Engine Fuel and Cleanout System:

The unit will be equipped 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.

YES	NO

7.1 Engine and Cleanout minimum requirements:

	YES	NO
<p>7.1.1 Diesel Engine: The unit will 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.</p>		
<p>7.1.2 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.</p>		
<p>7.1.3 Engine Protection: Auto Shutdown protection will be provided for oil pressure coolant temperature.</p>		
<p>7.1.4 Engine HP: The TIER IV Final 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.</p>		
<p>7.1.5 Protection: Engine cover will enclose engine, battery and air compressor.</p>		
<p>7.1.6 Controller: Engine controller must be accessible without having to open engine cover and contain the hour meter, tachometer, system voltage, oil pressure, and coolant temperature.</p>		

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7.1.5 Fuel System: The unit will include a minimum 18 gallon diesel fuel tank.		
7.1.6 Emulsion Flush System: A minimum 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.		
7.1.7 Clean Out Box: A clean out box will be mounted to the frame of the machine. At end of shift, operator will place wand in box to flush emulsion lines and nozzle. No disassembly and soaking of any part of the emulsion system will be necessary. The entire nozzle clean out procedure may not get emulsion or diesel on the operator. No system using a pump will be accepted.		

EXCEPTIONS:

8.0 Blower and Air Compressor:

The unit will incorporate a direct driven High Volume Low Pressure roots 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.

YES	NO

8.1 Blower and Compressor minimum requirements:

	YES	NO
9.1.1 Blower: Will be a roots type with dual lobes measuring 6" diameter and 8" long delivering a minimum of 450 CFM @ 7psi @ 1500 RPM.		
9.1.2 Relief Valve: Spring loaded relief valve shall be set to 12 psi for blower protection.		
9.1.3 Blower Coupling: Blower shall be driven directly off of engine flywheel using a coupling designed for use with internal combustion engines. Coupling shall have sacrificial rubber element.		
9.1.4 Filtration: Blower shall use a 45 ft ² air filter mounted directly above		

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blower. Air filter shall utilize foam prefilter. Filter change shall be accomplished without tools. No part of the patcher should be over the filter housing so as to make access easy.		
9.1.5 Silencer: System will incorporate silencer to reduce noise associated with high volume airflow.		
9.1.6 Air Compressor: Air compressor shall have 13 CFM capacity and be directly driven off of the Patcher engine. No use of high pressure air from the braking system of the truck chassis shall be permitted due to potential safety issues.		
9.1.7 Material Transfer: No conveyors, augers or pumps will be used in the aggregate or emulsion delivery systems. No exceptions!		
9.1.8 Compressed Air Components: All pneumatic rams, valves, and air dryer shall be Parker brand and come with a 5 year product replacement warranty.		

EXCEPTIONS:

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9.0 Paint and Safety Decals:

The unit shall be painted Omaha Orange Sherwin Williams acrylic paint. It will be equipped with required safety decals and signage.

YES	NO
<input type="checkbox"/>	<input type="checkbox"/>

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.

YES	NO
<input type="checkbox"/>	<input type="checkbox"/>