

**Detailed Specification for:  
Spray Injection Patching Machine Trailer Mounted**

1.0	Purpose:	Yes	No
1.1	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 0 degrees Fahrenheit. The delivery of aggregate and emulsion to the patch shall not require augers, conveyors or pumps to operate.		
1.2	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 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.		
1.3	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.		
2.0	Basic Machine Requirements:	Yes	No
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	Tier 4 Diesel powered minimum 74HP 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 Sysmtem Minimum Requirements:	Yes	No
3.1	Tank construction must be an ASME certified pressure vessel.		
3.2	Tank with 250 gallon capacity, tested to 150 psi at ambient temperature.		
3.3	Minimum R15 rated fiberglass insulation.		
3.4	Waterproof fire retardant fiberglass tank wrap over insulation.		
3.5	12" minimum loading hatch equipped with "T" bolt closures.		
3.6	Minimum 3" drain valve installed on bottom of tank.		

- 3.7 In operation emulsion shall be heated by a circulating oil loop running continuously along emulsion path from tank to nozzle. Circulating oil shall be heated by the auxiliary engine coolant via a plate type heat exchanger.
- 3.8 Overnight heating shall be done with two electric heat blankets wrapped under the tank (1500W minimum each). 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.
- 3.9 Heating system must be capable of operating continuously whether tank is empty or full without damage to the heating system and controls.
- 3.10 Must have thermostatic control switch.
- 3.11 Empty tank must be capable of being pre-heated prior to filling without damage to tank heating system or shock to emulsion.
- 3.12 System must be capable of maintaining heat so as to allow operation of patcher in ambient temperatures as low as 5 degrees F.


**4.0 Patcher Frame Minimum Requirements:**

Yes No

- 4.1 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.
- 4.2 The frame is to be constructed of minimum ¼" gusseted steel tube for safety and strength.
- 4.3 A 3" towing ring that is adjustable in height from 15" to 30" high will be provided.
- 4.4 Minimum 12 gauge horizontal surface steel fenders.
- 4.5 A swing-away, side handel, weight appropriate adjustable screw jack must be provided.
- 4.6 To insure 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 12,000 lbs.
- 4.7 Electric brakes, emergency breakaway switch, radial tires, and two 3/8" x 3 foot long safety chains with slip hooks will be included.
- 4.8 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 rear frame.
- 4.9 A directional arrow board will be mounted at the back of the machine and be selectable for left/right or both traffic control.
- 4.10 The lighting harness will be woven loom with weather proof connectors at all lights. A 7 way RV Blade type plug for tow vehicle connection.


**5.0 Aggregate Delivery System Minimum Requirements:**

Yes No

- 5.1 The pothole patching machine shall receive aggregate from the integrated hopper. No augers, 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.
- 5.2 Hopper for aggregate is trailer mounted with integral screen above opening for slide gate.
- 5.3 Slide gate air operated with minimum 4" stroke air ram.
- 5.4 Venturi designed to draw aggregate into air stream.
- 5.5 Aggregate delivery pipe with minimum 3.5" ID pipe 10' in length. Designed to be easily rotated for maximum air life.
- 5.6 Aggregate delivery hose will be a minimum 3.5" ID non kinking, wire reinforced neoprene-lined rubber hose with an overall length of 192".
- 5.7 Fatigue-free aggregate hose 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.
- 5.8 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.
- 5.9 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.
- 5.10 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.


**6.0 Engine Fuel and Cleanout System Minimum Requirements:**

- 6.1 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.
- 6.2 The unit will be equipped with a water cooled direct injected, 74 HP Tier 4 diesel engine. The engine will have spin-on type oil and fuel filters. Rubber isolation engine mounts are required.
- 6.3 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.

Yes	No

6.4

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

6.5

The engine will be rated at no less than 74HP Tier 4 and be able to operate the delivery system to fill a patch with 1/4" stone @ 1100 RPM and 1 1/2 " stone at no more than 1800 RPM.

6.6

Engine Cover will enclose engine, battery and Air Compressor.

6.7

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.

6.8

The unit will include a min. 18 gallon Diesel fuel tank.

6.9

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.

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.

#### 7.0 Blower and Air Compressor Minimum Requirements:

7.1

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.

7.2

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

7.3

Lobe style blower direct driven off patcher engine.

7.4

Pop off valve set to 12 psi for protection of dual lobe blower.

7.5

Dual Stage heavy duty filter element on Blower intake.

7.6

Silencer to reduce airflow noise from blower system is required.

7.7

Compressor to be 13 CFM minimum. Pressure relief set to 95psi

7.8

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

#### 8.0 Paint and Safety Decals Minimum Requirements:

8.1

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

#### 9.0 Warranty:

9.1

The manufacturer shall warranty the equipment for a period of one year. Auxiliary engine must be covered for major components for a period of 2 years or 2000 hours. All pneumatic rams, valves, and air dryer shall be Parker brand and come with a 5 year product replacement warranty. Bidder warranty policy must be included with bid submittal.

#### 10.0 Included Options: (if box is "X" items must be included)


Yes No


Yes No

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Yes No

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Yes No

