



Revision Date: 09/2020

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 5 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. 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:	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	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	LED sealed lighting including stop/turn and clearance lights.		

<b>3.0</b>	<b>Emulsion Heating and Storage System Minimum Requirements:</b>	<b>Yes</b>	<b>No</b>
3.1	Tank construction must be an ASME certified pressure vessel.		
3.2	Tank with 250 gallon capacity, tested to 195 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	Emulsion shall be heated by a circulating oil loop during operation, 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.		

<b>4.0</b>	<b>Trailer Minimum Requirements:</b>	<b>Yes</b>	<b>No</b>
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 LED lighting.		
4.2	The frame is to be constructed of minimum 1/4" 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 weight appropriate adjustable screw jack must be provided.		
4.6	To insure towing mobility in both forward and reverse directions, the patcher shall have a dual leaf spring axle system and be rated at a GAWR (Gross Axle Weight Rating) of 12000 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	LED stop, tail, and turn lights will be included. Clearance lighting will also be LED. A lighted license plate bracket will be attached to the rear frame.		
4.9	Rear of machine shall have five strobe lights in alternating white & amber flash pattern with an amber beacon light.		

4.10	The lighting harness will be split loom with weather proof connectors at all lights. A seven (7) pin flat RV round plug will be included for tow vehicle connection.		
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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 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 Vent-Flo 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.		

6.0	Engine, Fuel and Clean-out System Minimum Requirements:	Yes	No
6.1	The patcher unit will be equipped with Tier 4 Final 74HP minimum 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 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.		
6.4	Auto Shutdown protection will be provided for oil pressure and coolant temperature. Engine voltage, operating hours, and RPM will also be displayed.		
6.5	The Tier 4 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 1-1/2" stone at no more than 1800 RPM.		
6.6	Engine Cover will enclose engine, battery and air compressor.		

6.7	The unit will include a minimum 18 gallon diesel fuel tank.		
6.8	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.		
6.9	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:	Yes	No
7.1	The unit will incorporate a direct driven high volume, low pressure roots type blower connected to the engine to operate the aggregate 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 auxiliary engine will also be required to pressurize the emulsion system. No pumps for emulsion delivery will be accepted.		
7.2	Lobe style blower shall be driven directly off of engine flywheel using a coupling designed for use with mobile internal combustion engines. Coupling shall have sacrificial rubber element.		
7.3	Blower will be rated at min. 450 CFM @ 7psi @ 1500 RPM		
7.4	Spring loaded "pop off" relief valve shall be set to 12 psi for aggregate blower protection.		
7.5	Blower shall use a 45 ft <sup>2</sup> air filter mounted directly above blower. Air filter shall be dual stage and utilize a 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 difficult.		
7.6	System will incorporate silencer to reduce noise associated with high volume blower airflow.		
7.7	Engine air compressor shall have 13 CFM capacity with pressure relief set to 95psi and be driven directly off engine.		
7.8	All pneumatic rams, valves, and air dryer shall be Parker brand and come with a 5 year product replacement warranty.		
7.9	No conveyors, augers or pumps will be used in the aggregate or emulsion delivery systems.		

8.0	Paint and Safety Decals Minimum Requirements:	Yes	No
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:	Yes	No
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
	300 gallon emulsion tank modification		
	Spare tire trailer mounted.		

	Tool box.		
	10lb. fire extinguisher.		
	Directional LED arrow board.		
	30" x 60" LED arrow board.		
	Vandalism package.		
	Water flush package.		
	Extra tail gate box install kit.		
	Tank contents gauge.		
	Low voltage DC Nozzle Heating Blanket.		
	Cracksealer Attachment.		