**OJK-V 75 Oil Jacketed Kettle**

**Bidding Specifications**

**1.0 Intent**

It is the intent of this specification to provide for the purchase of one (1) new and unused Oil Jacketed Kettle to be used for the purpose of melting and applying rubberized material to seal cracks in road surfaces

The following specification is based upon a Stepp Mfg Oil Jacketed Kettle Model OJK-V 75D. The Public Works Department has evaluated different styles of crack sealing equipment and has determined that this product is best suited for the DPW needs in terms of quality and features. This specification shall not be interpreted as restrictive but rather as a measure of quality and performance against which all other crack sealing kettles will be compared.

In comparing proposals, comparison will not be confined to price only. The successful bidder will be one whose product is judged as best serving the interests of the DPW when price, product, quality and delivery are considered. The DPW also reserves the right to reject any or all bids or any part thereof, and to waive any minor technicalities. A contract will be awarded to the bidder submitting the lowest responsible bid meeting the requirements.

**2.0 Equivalent Product**

Bids will be accepted for consideration on any make or model that is equal or superior to the Oil Jacketed Kettle specified. Decisions of equivalency will be at the sole interpretation of the DPW. A blanket statement that equipment proposed will meet all requirements will not be sufficient to establish equivalence. An original manufacture’s brochure of the proposed product is to be submitted with proposal.

**3.0 Interpretations**

In order to be fair to all bidders, no oral interpretations will be given to any bidder, as to the meaning of the specification documents or any part thereof. Every request for such a consideration shall be made in writing. Based on such inquiry, the DPW may choose to issue an Addendum in accordance with local state laws.

**4.0 General**

The specification herein states the minimum requirements of the DPW. All bids must be regular in every respect. Unauthorized conditions, limitations, or provisions shall be cause for rejection. The DPW will consider as irregular or non-responsive any and all bids that are not prepared and submitted in accordance with the bid document and specification, or any bid lacking sufficient technical literature to enable the DPW to make a reasonable determination of compliance to the specification. It shall be the bidder’s responsibility to carefully examine each item of the specification. Failure to offer a completed bid or failure to respond to each section of the technical specification (COMPLY: YES NO) will cause the proposal to be rejected without review as non-responsive. All variances, exceptions and/or deviations shall be fully described in the appropriate section. Deceit in responding to the specification will be cause for rejection.

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| **General:**  The machine shall be the manufactures current production model, trailer mounted, and completely self-contained. It shall be capable of heating,melting, and applying all grades of rubberized asphalt crack sealer, joint sealants, and waterproofing compounds without the need for additional equipment. | **YES** | **NO** |
| The machine shall be capable of heating sealing material from ambient to application temperature in 60 minutes or less. |  |  |
| **Melting Chamber/Inner Tank:**  The melting chamber shall have a minimum rated capacity of 75 gallons. |  |  |
| Triple wall construction, inner hopper to be constructed of 10 gauge  material. |  |  |
| The design shall allow complete removal of the contents and agitation of the material until the tank is empty. |  |  |
| The tank is to be constructed of 10 gage material with a sump in the  lowest part of the tank to allow heating of a small amount of material and complete removal of the contents via the product pump. |  |  |
| The minimum heat transfer surface area within the tank shall be  4585 sq. in. |  |  |
| The over-all design of the machine is to be constructed to allow a  loading height not to exceed 53" measured from the ground. |  |  |
| A minimum 2 1/2 " draw-off cock with inside closing feature to eliminate valve freeze-up shall be located at rear of machine. |  |  |
| **Heat Transfer Jacket:**  The heat transfer oil jacket is to be constructed of 12 gauge material. |  |  |
| The oil jacket shall contain a minimum quantity of 25 gallons of heat  transfer oil. |  |  |
| A Center Heat Riser shall be installed to direct more heat into the center of the product tank. Heat transfer oil will be circulated in the Heat Riser by convective means. The Heat Riser shall be vented to the outside oil jacket to assure the Heat Riser remains full of heat transfer oil. |  |  |
| A cold seal expansion tank shall be provided to eliminate moisture condensation and reduce oil oxidation in the heat transfer oil. |  |  |
| There shall be a single threaded port in the oil jacket for the immersion type electrical overnight heating element. |  |  |
| **Insulation Jacket:**  The oil jacket shall be insulated with a minimum of 2" of Ceramic  Refractory insulation. The outer shell that covers the insulation shall  be fabricated from 12 gage steel (minimum). |  |  |
| **Combustion Chamber:**  The combustion chamber shall be engineered and constructed in a  configuration that assures the highest efficiency available based upon the BTU output of the burner. Baffling shall be used to direct the heat across the heating chamber and around the side walls for maximum efficiency. Heating fins shall be installed in the combustion chamber to maximize the heat transfer area. The area exposed to the burner shall be no less than 5468 sq. in. A minimum of 2" of ceramic refractory insulation will be used in the combustion chamber. |  |  |
| **CONTROLS:**  Shall be equipped with the Stepp AKC Advanced Kettle Control, can-buss PLC control system. It shall monitor and control all burner functions, pumping and agitation controls, kettle interlock safety systems, autoloader controls and operations, auger safety shutdown, and diagnostics for the burner control system. |  |  |
| AKC controls shall operate the automatic spark ignition and shall light the burner with the flip of a switch and include flame-out protection to shut off the fuel supply if the flame is blown out. |  |  |
| Shall have an easy-to-adjust thermostat with a setting range from 0-550 degrees F. |  |  |
| Shall have a large, color display for easy monitoring of the product temperature in the tank. |  |  |
| Once the operator sets the desired temperature, the burner operation and temperature controls shall be fully automated with this system. |  |  |
| Controls shall be located in a weather proof enclosure. Enclosure shall have a transparent cover so the temperatures can be monitored without the need to open the cover. The operator shall be able to read the product temperature when standing 6 feet from the machine. |  |  |
| **The AKC control shall be capable of the following functions:**  Pump: on/off, adjustable pump speed control, and pump speed indication. |  |  |
| Auger: on/off and forward/reverse |  |  |
| Wand and hose heat: on/off |  |  |
| Heat transfer oil: actual temperature and set temperature |  |  |
| Material: actual temperature and set temperature |  |  |
| Hose: actual temperature and set temperature |  |  |
| Pumping system interlock: shall not allow the operator to start the pump or auger until product and hose have reached 275 degrees F. |  |  |
| Burner control diagnostics: turns warning light on when component fails. |  |  |
| Burner lock out with warning: warning light flashes until temperature is reached. |  |  |
| US/metric conversion: user selectable US or metric temperature controls. |  |  |
| User adjustable lock out settings. |  |  |
| **Optional features the AKC operates:**  Exact flow wand control: controls pump speed from wand.  Autoloader: on/off. |  |  |
| Autoloader auto/manual: auto mode automatically dispenses a block into the kettle when one is pumped through the wand. |  |  |
| Pump hour meter: totalizes pump hours with autoloader option. |  |  |
| Block counter: totalizes the blocks used with autoloader option. |  |  |
| Material dispensed: totalizes gallons used with autoloader option. |  |  |
| Strobe light control |  |  |
| **DIESEL HEATING SYSTEM:**  Shall be equipped with one (1) ADC Beckett forced air diesel burner with an operating output of up to 210,000 BTU and a firing rate of 1.5 GPH. |  |  |
| Burner shall be completely self-contained with automatic ignition and safety shut off circuitry to stop the fuel flow if the flame goes out. |  |  |
| Shall operate on 13.5 volt DC power without the need for additional adaptors or apparatus Power shall be supplied by the 12 volt alternator located on the engine. |  |  |
| Shall operate on #1 or #2 diesel fuel or kerosene, or #1 or #2 heating oil (ASTM D396). Fuel shall be supplied from a 23.5 gallon fuel tank. |  |  |
| **Trailer:**  The frame shall be constructed with a minimum 2" × 4"X 3/16” ectangular tubing Open channel shall not be used. Stress and bend points to be double reinforced |  |  |
| A single axle with a 3500 lb. rating shall be equipped with electric brakes and a break away switch. |  |  |
| The machine shall have heavy duty fenders, manufactured from 12  gage steel, able to support 500 lbs. without damage. |  |  |
| The OJK-V trailer shall be equipped with1-3500# leaf spring single  axle, unit shall have ST225/75R15 load range “D” radial tires, heavy  duty replaceable 12 gauge steel fenders, pintle hitch, adjustable from  18” to 26” and adjustable screw jack. |  |  |
| Safety chains shall be included. A minimum 5000 lb. capacity tongue  jack with swing away feature for road clearance shall be installed. |  |  |
| **PUMPING SYSTEM**  **ON DEMAND PUMP SAVER PUMPING SYSTEM:**  The product pump shall be a Height rotary gear positive displacement  pump with 20 gpm capacity with the actual output variable from  approximately 0 to 4.1 gpm for greater operator controllability and  extended service life. |  |  |
| The pump shall be driven by a reversible hydraulic motor with variable speed,4-way, pressure compensated, flow controls with approximately 0 to 190 rpm operating range. The reversible feature will purge the pump of material to facilitate cold start-up. The pump suction tube shall be located in a sump in the bottom of the tank to allow complete removal of the contents of the tank. |  |  |
| A 0-550 degree F dial type thermometer shall be installed to monitor the discharge temperature of the sealant from the product pump. |  |  |
| Pump shall be submerged in the tank, allowing it to heat with the product, thus eliminating the need to pre-heat the pump. |  |  |
| Pump shall be removable without the need for maintenance personnel to enter the tank. Shall be designed and mounted in such a way that clearance adjustments can be made from outside the tank without removing the pump. Any leakage from the pump packing shall drain back into the tank. |  |  |
| **PUMP SAVER:**  Product pump control system shall be standard equipment. The system shall automatically engage and disengage the product pump based upon demand for product at the application wand to eliminate unnecessary pump wear and increase safety for the operator by only pressurizing the hose system when applying material through the wand. |  |  |
| **Engine:**  The engine shall be a two cylinder, water cooled, Kubota® model  Z602-E diesel engine complete with air, fuel, and oil filters, electric  starter, alternator, muffler with rain cover, battery and lockable steel  battery box, hour meter, warning lights, engine cover, and all necessary controls. A glow plug system for cold weather starting shall be included.An automatic engine shut down system to prevent engine damage caused by low oil pressure or high engine coolant temperatures shall be included. |  |  |
| The engines available horse power shall be a minimum of 16 h.p. The digital engine management Deep Sea Control shall have a glow plug system for cold weather starting, an automatic engine shutdown to prevent engine damage caused by low oil pressure or high engine coolant temperatures. Shall also include an hour meter and volt meter. |  |  |
| **ENGINE ENCLOSURE:**  Shall be a lockable, weather protector, vandal proof, vented enclosure for the engine. Sound deadening insulation shall quiet the machine to 40% less noise. Enhances overall security and appearance of the machine. |  |  |
| **Agitator**:  The agitator shall be a full sweep type, and located in the vertical position in the center of the tank. The agitator shall be driven by a reversible hydraulic motor at approximately 25 rpm. With a variable  speed, 4-way, pressure compensated flow control allowing rotation in  either direction at speeds from approximately 0 to 25 rpm. |  |  |
| Shall be equipped with an Agitator disconnect (agitator safety shutdown)which protects the operator when loading chute is open . |  |  |
| **Hydraulic System:**  The hydraulic system shall include a crankshaft driven pump. The agitator will be equipped with a 4-way, pressure compensated flow control allowing rotation in either direction at variable speeds. The product pump shall use a 4-way, pressure compensated flow control allowing rotation in either direction at variable speeds. |  |  |
| Hydraulic Oil filtration shall be a suction strainer located in the reservoir and by a 10 micron "spin-on" type filter in the return line. All hydraulic lines to be a minimum of 5/8" high pressure steel tubing. Hoses are only to be used where required for component flexibility purposes. For extended component life, hydraulic system pressures shall not exceed 1500 psi. |  |  |
| **HEATED HOSE SYSTEM:**  A 3/4” smooth bore Teflon with internal stainless steel liner and external stainless steel braid, insulated hose, specially designed for use with heated petroleum products, shall be attached to a 1” i.d. insulated overhead delivery boom. |  |  |
| The material shall pass through the inside of the boom to the hose. The boom shall swivel on sealed ball bearings and be mounted at a height that shall allow the boom to safely pass over a 6’ 2” person. |  |  |
| The boom shall be mounted on the right rear corner of the machine to allow crack filling operations across two lanes. |  |  |
| A safety stop shall be installed to prevent the boom from swinging to the left or right traffic lane when the safety stop is engaged. |  |  |
| The design of the boom shall allow the use of a less expensive, shorter hose length of 12’ while maintaining a work area of no less than 21’. Shall also prevent the hose from contacting the ground, eliminating abrasion damage. |  |  |
| Hose and boom shall be equipped with individual, internal electric heating elements designed to melt the crack sealant from within. |  |  |
| The heating system shall operate at no more than 28 volts DC to eliminate the risk of hazardous electrical shock. Shall be capable of heating the crack sealant in the hose and boom from ambient temperature (60 degrees F) to application temperature in 30 minutes or less. This system shall eliminate the need for hose heating components and hose flushing procedures. |  |  |
| The hose and boom heating system shall add no more than 12 oz. to the total weight of the hose. |  |  |
| The heating elements shall be a separate component and not part of the hose or boom. For economic replacements, the hose and heating components shall be individually replaceable. |  |  |
| **APPLICATION WAND:**  A 48” x 1/2” i.d. insulated application wand with insulated handles shall be included. The wand shall be trigger controlled to start and stop the flow of sealant. The wand valve shall be located at the application end of the wand to immediately stop the flow of the product without excessive dripping when the valve is shut off. |  |  |
| The wand shall be equipped with an internal electric heating element designed to melt the crack sealant from within the wand. |  |  |
| The wand heating system shall operate at no more than 28 volts DC to eliminate the risk of hazardous electrical shock. Shall be capable of heating the crack sealant in the wand from ambient temperature (60 degrees F) to application temperature in less than 30 minutes. This system shall eliminate the need for heating components and flushing procedures. |  |  |
| The wand heating system shall add no more than 10 oz. to the total weight of the wand. The wand heating system shall be a separate component and not part of the wand or hose. The wand heating components shall be individually replaceable. The wand shall be attached to the hose with a quick-disconnect 360 degree swivel. |  |  |
| **LIGHTS:**  Combination stop, turn, and clearance lights with license plate bracket wired in protective loom with 7 pin RV connector. Shall be a 2 light LED system. |  |  |
| **PAINT:**  Surfaces of the unit will be properly prepared and primed per standard industry practices. Shall have a two (2) part PPG polyurethane paint. |  |  |
| **WARRANTY:**  Shall be one year on parts, materials, and workmanship. Product pumps and hoses that handle heated materials shall have a 12 month pro-rated warranty. Component parts such as engines, hydraulic components, tires, etc., shall be covered by the component manufacturer’s warranty. |  |  |
| **OPTIONAL FEATURES** |  |  |
| **HEATED OVERHEAD WITH 8’ HOSE AND WAND:**  8’ hose in lieu of 12’ hose. Lighter weight but only has 16’ work area. |  |  |
| **Exact Flow Wand:**  Optional exact flow wand shall consist of a rheostat mounted on the wand To change the speed of the product pump while pumping product. |  |  |
| **Wand Shoe:**  2” U shaped, 4” U shaped, 3” Disk, 1/4 “ saw cut or 3/8” straight tip. |  |  |
| **AIR COMPRESSOR:**  Shall be installed on machine to aid the cleaning of debris from the crack. Shall include 50’ of hose and cold air lance with hose rack. |  |  |
| Compressor shall be direct coupled (no belts) to a Kubota V3300 diesel engine. Engine shall be rated at 44.1HP at 2600 RPM. |  |  |
| Engine, compressor, and all other components shall be enclosed in a common cabinet with lockable service doors and include noise reduction insulation. |  |  |
| Compressor shall be a Rotorcomp ECO3-NK compact encapsulated, oil injected rotary screw compressor with positive displacement. Compressor shall produce 100CFM with 100PSI. Compressor package shall include intake valve, oil cooler, high temp shutdown, oil filter, minimum pressure valve, separator head, pressure gauge, and shuttle valve to maintain constant engine. |  |  |
| **AUTOLOADER:**  Conveyor shall be mounted on top of the machine with one end extending out over the hitch of the kettle, accessible for loading blocks of material from the bed of the towing vehicle. The other end of the conveyor feeds blocks of material into the kettle through a splash proof hatch. The system is designed for automatic operation once loaded. This shall eliminate the need for personnel to be in a dangerous position in the bed of the towing vehicle while it is in motion. Once the conveyor is loaded, it will automatically advance to place additional material into the kettle at a rate equal to that of the machine being dispensed. |  |  |
| **FIRE EXTINGUISHER:**  10 lb. ABC dry chemical fire extinguisher. |  |  |
| **STROBE LIGHT:**  12 volt powered. Controlled from operators control panel. Strobe mounted on the top rear of unit. |  |  |
| **SPARE TIRE:**  Spare tire with holder mounted to frame of unit. |  |  |
| **ELECTRIC OVERNIGHT HEATER:**  Available to reduce startup time and maintain heated material at temperatures. Provides low temperature heat that will not scorch material. |  |  |
| **ARROWBOARD:**  12 volt powered directional arrowboard. Controlled from operators control box. Mounted on rear of unit. |  |  |

**Exceptions & Deviations**

Bidder shall fully describe every variance, exception, and/or deviation. List the item number here and fully explain any items in non-compliance with specification. Additional sheets may be used if required.

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