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The purpose of these specifications is to describe a double-boiler type melter applicator that is specifically designed for and shall be capable of heating and applying all grades of asphalt rubber sealant, fiber modified asphalt sealant and specification joint sealant without any further equipment modification. It may be used for the application of resinous, colored sealant and fillers. This unit shall be the manufacturer's current production model manufactured in the United States of America.

	<u>Comply</u>	<u>Does Not Comply</u>
1. GENERAL SPECIFICATIONS		
A. The machine shall be capable of starting at ambient temperature and bringing the sealant material up to application temperature in one hour at 70° F (21.1° C) ambient temperature.	_____	_____
B. All qualified bidders must have and maintain a complete inventory of replacement parts and have experienced factory-trained service personnel for this equipment.	_____	_____
C. A comprehensive safety manual and operational/maintenance CD shall be supplied with each unit.	_____	_____
D. A factory-trained person shall be made available for initial start-up and training in the operation of the melter.	_____	_____
E. Temperature indicating devices shall have intervals no greater than 1° F (2.8° C) and shall be calibrated as required to assure accuracy.	_____	_____
F. The melter shall have continuous sealant agitation and a mixing system to provide uniform viscosity and temperature of material being applied.	_____	_____
2. REQUIRED SAFETY FEATURES		
A. The unit shall have a safety shut-off on the lid that automatically stops the agitator when the lid is opened.	_____	_____
B. The applicator wand shall be equipped with an automatic shut-off feature that will stop the rotation of the sealant pump, sealant flow, and all line pressure when the handle is released or dropped.	_____	_____
C. The heat transfer oil shall adequately and efficiently bring the sealant material to application temperature without the use of a heat transfer oil circulation pump. This eliminates the potential exposure of personnel to pressurized hot heat transfer oil.	_____	_____
Other: _____	_____	_____

3. TOWING FRAME AND JACK

A. This unit shall be trailer mounted. The longitudinal side frames and tongue members of the trailer shall be on one continuous piece construction composed of hot rolled steel channel having the minimum dimensions of 5 inches (12.70 cm) web, 3/16 inch (.48 cm) thickness with 1.75 inch (4.5 cm) flanges.

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B. The configuration of the channel shall be cold formed with the flanges on the outside resulting in a one-piece frame member with no cross welding of or on the flanges to avoid any possibility of flange stress cracking.

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C. The tongue shall be equipped with an appropriate heavy-duty ball or pintle hitch and shall be adjustable in height above ground level from a minimum of 14 inches (35.6 cm), to a maximum of 32 inches (81.3 cm), permitting practically level towing with a wide range of towing vehicles. The towing hitch shall be bolted to the hitch plate for easy conversion to other type hitches.

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D. A screw-post tongue jack shall be furnished. It shall be heavy duty type with a capacity of 5,000 pounds (2,268 kg). It shall be side mounted and swing away for positive road clearance while under tow.

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Other: _____

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4. TRAILER RUNNING GEAR

A. The unit shall be equipped with a dual independent rubber torsional suspension having a safe load capacity of 3,500 pounds (1,587 kg), electric brakes, modular wheels and ST 205/75R 14-8 tubeless tires (Load Range C). Trailers with springs and shackles are unacceptable as they require more maintenance and reduce ground clearance.

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B. The unit shall have dual LED taillights, stoplights and turn signals. Lights shall be ICC approved. A license plate holder shall be attached to the driver's side taillight.

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C. All melter fluid tanks shall be positioned no lower than the deck level and mounted on top of the channel frame members to assure proper ground clearance. Units that have components that extend below the trailer frame are unacceptable.

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D. The unit shall also be equipped with two safety chains not less than 48 inches (121.9 cm) of .38 inch (.97 cm) coil proof chain attached to the tongue with a drilled type clevis pin on the end attached to the frame and screw type clevis pin on the opposite end.

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	<u>Comply</u>	<u>Does Not Comply</u>
E. Total shipping weight is approximately 4,020 pounds (1,823 kg).	_____	_____
Other: _____ _____	_____	_____

5. HEATING TANK

A. The material heating tank shall be a minimum of 37 inches (93.98 cm) in diameter by 28.75 inches (73.02 cm) deep having a minimum capacity of 133.75 gallons (503.3 l) at ambient temperature. Oval or square sided tanks are unacceptable as they allow for uneven agitation resulting in a non-homogenous sealant and uneven heating of sealant.	_____	_____
B. The tank will have a rear discharge from the pump and a rear plugged outlet. A double boiler type jacket shall create a reservoir that shall hold a minimum of 34.8 gallons (129 l) and require no more than 40 gallons (152 l) of heat transfer oil at 70° F (21.1° C). (Note: At 500° F (260° C) the heating oil will expand approximately 18%).	_____	_____
C. The jacket shall wrap around 100% of the outside area of the circular material tank and bottom and allow for complete circulation of the heated transfer oil.	_____	_____
D. The tank and jacket shall be made of not less than 3/16 inch (.94 cm) rolled sheet steel.	_____	_____
E. There shall be one plug to allow the entire heat transfer oil system to be drained.	_____	_____
F. The heat transfer oil shall be of ISO grade 68.	_____	_____
Other: _____ _____	_____	_____

6. EXPANSION TANK

A. A sealed expansion tank shall be provided to minimize oil oxidation and prevent moisture condensation into the heat transfer oil. Overflow down tubes are unacceptable.	_____	_____
Other: _____ _____	_____	_____

7. HYDRAULIC SYSTEM

A. The hydraulic system shall incorporate a hydraulic pump to power the agitation, pumping, and compressor system. Belt driven hydraulics is unacceptable.	_____	_____
B. All valves shall be solenoid operated by toggle switch and wand handle switch.	_____	_____

	<u>Comply</u>	<u>Does Not Comply</u>
C. The controls will allow for bi-directional operation of the sealant pump and agitator.	_____	_____
D. A flow control valve will be mounted on the rear of the unit to allow the operator to adjust the pump operational speed.	_____	_____
E. The minimum 32 gallon (121 l) hydraulic tank will be equipped with an internal 10-micron full flow filter. The filter shall be equipped with a restriction indicator to indicate the need for service. A sight gauge level indicator equipped with a thermometer to measure oil temperature will be mounted on the tank and located where it is easily viewed.	_____	_____
F. The unit shall have a self-contained air to oil hydraulic cooler with an electric fan to maintain proper hydraulic oil temperatures.	_____	_____
Other: _____ _____	_____	_____

8. TANK INSULATION

A. The heating tank shall be insulated with a minimum of 1 inch (2.54 cm) thick high temperature ceramic insulation and covered by a 22 gauge (.07 cm) steel outer wrapper. Fiberglass and rock wool insulation are unacceptable due to their moisture retention properties resulting in a significant loss of their insulating value over an eighteen-month period.	_____	_____
Other: _____ _____	_____	_____

9. LOADING HATCH

A. A low profile opening for loading shall be required at the top of the material tank and shall be located on the curbside of the machine for operator safety. The loading height shall be a minimum of 50 inches (127 cm) and shall not exceed 59 inches (149 cm) for correct ergonomic lifting and fume exposure.	_____	_____
B. This will allow the operation of the equipment, including sealant loading, from curbside. Loading systems that require the operator to step onto the melter are unacceptable.	_____	_____
C. The opening shall have a minimum area of 252 square inches (1,625 square cm), while not exceeding 275 square inches (1,774 square cm) in order to prevent heat loss, and shall be hinged to allow placement of a block of sealant onto lid and closure of lid for easy, anti-splash loading.	_____	_____
D. The loading hatch shall be easily adaptable for the addition of a retrofit powered loading conveyor with anti-splash tower.	_____	_____
Other: _____ _____	_____	_____

<u>Comply</u>	<u>Does Not Comply</u>
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10. HEATING SYSTEM

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| A. The heat transfer oil is heated by one 12-volt 250,000 BTU high efficiency forced air diesel fired burner directly at the bottom of the heat transfer oil tank | _____ | _____ |
| B. The burner shall fire into a burner combustion box. The box will be insulated by a high temperature flexible insulation that is resistant to damage from the vibration and over road travel. Rigid insulation is unacceptable. | _____ | _____ |
| C. Total area exposed to the burner shall be a minimum of 5,244 square inches (33,832 square cm). The material tank shall have a minimum of 4,267 square inches (27,529 square cm) of contact with the heat transfer oil. No other mechanical circulation of the heat transfer oil by pump shall be accepted. This provides for a melt rate of 1,064 pounds (482.6 kg) per hour. | _____ | _____ |
| D. The burner shall be lit by a constant duty high voltage transformer powering an electric spark ignitor. This ignitor shall work in conjunction with a sensor that detects a lack of burn or ignition and shuts down the fuel supply. | _____ | _____ |
| E. The thermostat control is located on the curbside of the machine for operator safety. | _____ | _____ |
| Other: _____
_____ | _____ | _____ |

11. INTERGRATED CONTROL SYSTEM

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|---|-------|-------|
| A. The melter applicator shall have a thermostatic control device that will automatically regulate hot oil, material, and hose temperature. | _____ | _____ |
| B. The control shall have a digital readout for temperatures of hot oil, material, and hose. | _____ | _____ |
| C. The thermostat shall control burner ignition for a temperature range from a low of 200° F (93.3° C) up to a high of 425° F (218.3° C) for a wide variety of sealants. | _____ | _____ |
| D. The temperature controls shall be in a single weatherproof control box. | _____ | _____ |
| E. The controls shall be activated by a single power switch, which will then turn each function on at the proper time. | _____ | _____ |
| F. The control will have fully integrated electric over hydraulic lockout for the agitation system, which prevents the agitator from being powered until the material temperature reaches 275°F (135°C). This prevents hydraulic system damage caused by overheating of hydraulic oil and reduces wear. | _____ | _____ |

	<u>Comply</u>	<u>Does Not Comply</u>
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G. The control shall have a fully integrated electric over hydraulic lockout for the pumping system, which will prevent the pump from being powered until the hose temperature reaches 325°F (162.8°C). This prevents hydraulic system damage caused by overheating of hydraulic oil and reduces wear.

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H. This control box shall also contain the engine ignition controls, hour meter and any engine gauges.

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Other: _____

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12. DRIVE AND DRIVE CONTROLS

A. The motive force to the agitator and material pump shall be hydraulic motors driven by a hydraulic pump.

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B. The drive controls governing the rotational speed of the material pump shall be controlled by adjustable hydraulic valves.

	_____	_____
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C. The material pump will have infinite speed control and is electrically actuated by a toggle switch on the control panel or a switch on the hand wand.

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Other: _____

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13. AGITATION

A. The sealant material shall be mixed by a hydraulically driven, full sweep vertical agitator with two opposing horizontal paddles and vertical risers attached to the ends. This feature ensures that material remains in complete suspension and that the hot material stays in the lower area of the tank and does not get splashed or thrown to the upper areas of the tank.

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B. The agitation system shall be chain driven from the hydraulic motor to the agitator.

	_____	_____
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C. The agitator rotates in both directions.

	_____	_____
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D. For additional safety the agitator will shut off automatically when the loading hatch is opened.

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Other: _____

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14. BI-DIRECTIONAL VARIABLE SPEED PUMPING UNIT

A. A hardened steel gear pump is located in the center of the material tank attached to the bottom of the tank.

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B. Pumping of material is controlled by a switch on the hand wand and output is controlled hydraulically.

	_____	_____
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	<u>Comply</u>	<u>Does Not Comply</u>
C. The pump and agitator drive shaft stands vertically attached to two motors on the top surface of the tank.	_____	_____
D. One motor rotates an axial tube having radial mixing blades at the chamber bottom.	_____	_____
E. The second motor drives a coaxial shaft running through the tube to the pump.	_____	_____
F. Sealant pumping shall be on demand.	_____	_____
G. When pumping stops, all line pressure and sealant flow shall stop.	_____	_____
H. No external plumbing or recirculation back into the tank is acceptable.	_____	_____
I. No internal or external valves shall be used in the pumping and sealant delivery system.	_____	_____
J. The pump shall be capable of delivering sealant at a rate that exceeds the melt rate of the unit.	_____	_____
Other: _____	_____	_____

15. ACTIVE PUMP PROTECTION

A. The pump shall be completely encircled by a protective screen.	_____	_____
B. The screen shall not allow anything larger than 1/2 inch (1.27 cm) in size to pass from the sealant tank into the pump suction port.	_____	_____
C. The screen shall continuously rotate 360° around the pump whenever the sealant agitator is engaged.	_____	_____
D. The active screen will protect the pump from foreign object damage and will self-clean as it rotates around the sealant pump and suction port.	_____	_____
Other: _____	_____	_____

16. SEALANT HOSE AND APPLICATOR WAND

A. Both the hose and wand are heated by 24 VAC voltage electric current and are temperature regulated.	_____	_____
B. The combination length between the hose and wand shall not be less than 22 feet (6.70 m).	_____	_____
C. Due to weight and safety considerations, an oil-jacketed hose is unacceptable.	_____	_____
D. The hose shall be specifically manufactured for handling liquid asphalt products up to 500° F (260° C) at 500 psi (34.47 bar) working pressure.	_____	_____

	<u>Comply</u>	<u>Does Not Comply</u>
E. Hose shall not be less than 18 feet (5.48 m) in length.	_____	_____
F. For maximum operator safety it shall be made of stainless steel braid with a 3/4 inch (1.91 cm) inside diameter and shall be Teflon lined. Further, it shall be heavily insulated to prevent hot material from leaking out.	_____	_____
G. Total diameter of the hose shall be not greater than 2 ¼ inch (5.72 cm). The total weight of the hose shall not exceed 20 pounds (9.07 kg).	_____	_____
H. The hose is to be wrapped with a minimum of three electrical wires with terminal ends. The wires will be capable of heating the hose to 400°F (204° C) in less than 45 minutes and have variable temperature control capability.	_____	_____
I. The hand wand shall not be less than 4 feet (1.22 m) in length.	_____	_____
J. The hand wand shall be constructed of steel with sufficient strength to withstand normal day-to-day operation.	_____	_____
K. Material flow is controlled by a trigger switch.	_____	_____
L. For greater operator mobility, the connection between the wand and hose shall be through a 360° swivel.	_____	_____
M. There shall be no obstruction or valves between the material pump and the wand end.	_____	_____
N. The hose is supported by a 6 ft. boom (1.83 m), which swivels side to side on dual pillow block bearings.	_____	_____
O. The boom is centered at the rear of the machine.	_____	_____
Other: _____	_____	_____

17. ENGINE

The unit shall be equipped with a diesel engine complying with the following specifications:

- Electric Start
- Three Cylinder 41.6 HP (31.02 kw) @ 2800 RPM
- 3.54" (90 mm) Stroke
- Constant Speed Mechanical Governor
- 91.5 Cubic Inch (1.5 l) Displacement
- Full Flow Oil Filter
- 3.31" (84 mm) Bore
- 19 to 1 Compression Ratio
- Water Cooled
- The engine speed is preset at the factory for optimal alternator output to power the heated wand and hose.
- Engine Shutdown Package (low oil pressure & high temperature)

Other: _____

18. FUEL CAPACITY

- A. The melter shall have a 32 gallon (121 l) diesel fuel tank for operation of the entire unit.
- B. The unit will be capable of operating for a minimum of 12 hours on one tank of fuel.
- C. The tank shall be equipped with full length sight gauges for fuel level indication protected in a steel cover.

Other: _____

19. AIR COMPRESSOR

- A. The melter shall be equipped with a 70 cfm @ 125 PSI (1982 l/m @ 8.62 Bar), rotary vane air compressor.
- B. The compressor shall be driven hydraulically. Belt drive compressors are non-conforming.
- C. Air pressure shall be controlled by a continual intake valve modulation, which adjusts air flow to increase or decrease depending on user demand.
- D. The compressor has an integral toroidal cooler to maintain proper oil temperature.
- E. There shall be a high temperature shut down.
- F. 50 foot of 3/8" air hose with Chicago quick couplers on each end and a storage rack shall be supplied.

<u>Comply</u>	<u>Does Not Comply</u>
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Other: _____

20. PAINT

- A. All painted surfaces shall be coated with Dupont two-part epoxy paint applied by Dupont certified painters.

Other: _____

21. TRAINING

- A. An authorized, factory representative will be made available for a full day of training at a facility designated by the bidding agency.
- B. At this training session a complete operational, mechanical and safety overview will occur.
- C. Both safety and operational manuals will be viewed and discussed with all concerned personnel.
- D. Additionally, the representative will be available at that time for "on the job" safety and field training.

Other: _____

22. SAFETY AND TRAINING MANUALS

- A. A written Safety Manual will be provided to the bidding agency.

23. PARTS

- A. Bidders must show proof that a large stock of parts for the model of equipment upon which he is bidding is maintained at his facility.

24. AWARD

- A. Equipment is for use by the Highway Department and must meet the requirements of that agency as interpreted by the Highway Commissioner.
- B. Prior to award, the Purchasing Agency may require a visit to the supplier's facility to assure supplier has plant capacity to manufacturer and deliver equipment on time as required.
- C. If it is determined that the supplier cannot supply as requested, this is just cause for cancellation.

25. WARRANTY

- A. The manufacturer shall warranty the equipment for one year or as otherwise noted in the manufacturer's standard warranty policy.

<u>Comply</u>	<u>Does Not Comply</u>
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26. QUALIFICATIONS OF BIDDERS

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|--|-------|-------|
| A. No bid will be considered unless the bidder can meet the following conditions: | _____ | _____ |
| B. Bidder must have a parts/service location and keeps a sufficient stock of parts on hand at all times. | _____ | _____ |
| C. The equipment offered is the stock model chassis that meets the requirements of the specifications without material changes or modifications. | _____ | _____ |
| D. The model is regularly advertised and sold by the manufacturer. | _____ | _____ |
| E. The bidder has been engaged in the sale and support of this make and model of equipment for at least twenty-four months. | _____ | _____ |

OPTIONS REQUIRED (X if to be included)

(Customer to insert quantity for each option required)

- _____ 2 5/16 inch Ball Hitch
- _____ 2 1/2 inch Pintle Hitch
- _____ 3 inch Pintle Hitch
- _____ Sealant Tip Adapter
- _____ V-shaped Squeegee (Qty.____)
- _____ 3 inch Applicator Disk
- _____ 1/2 inch Round Sealing Tip
- _____ Extra Electric Hose
- _____ Hot Air Lance
- _____ Lockable Battery Cover
- _____ Extra Hydraulic Filter
- _____ Auto Loader
- _____ Lockable Engine Cover
- _____ Fire Extinguisher Mounted on the Trailer Frame
- _____ Mast Mounted Strobe Light, Class II. _____ Mast Mounted Strobe Light, Class I/CA Title 13
- _____ Tool Box
- _____ Overnight heater
- _____ Custom Paint
- _____ Hitch Extension, 28"
- _____ Hitch Extension, 39"
- _____ Shot Timer Kit
- _____ Foot Pedal Kit

APPROVED EQUAL

The approved make and model for this specification is a Crafc0 SS125DC 70 CFM. Bidders offering to supply equipment other than the approved make and model must supply a detailed description of the equipment being offered. Bidders offering to supply equipment other than the approved make and model shall also supply a list of references who have successfully heated, mixed and applied Crafc0 sealants through the equipment being offered. For purposes of comparison a separate list of all deviations to this specification must be attached to your bid document.

Prior to bid award an on-site demonstration of the equipment offered may be requested. All bidders offering other than the approved model listed will be required to provide an on-site demonstration at the agency's location within 7 days of request to verify that their unit complies with all specification requirements before their bid will be considered. Failure to carry out the provisions noted herein is deemed sufficient reason to reject the bidder's proposal.