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SPECIFICATION FOR MERCURY TRAILER/ THERMOPLASTIC MELTING SYSTEM

CUSTOMER: CITY OF AURORA, IL

CAPACITY:
Trailer: 14,000 GVWR; twin 7,000 lb. axle system

SIZE:
Overall length: 21'
Deck length: 15'
Deck width: 101"
Deck height: 33"
Tongue length: 5'

KETTLE CAPACITY:

Quantity	AIR JACKETED
2	1500 lbs LPG

DECK AND FRAME: The deck and frame shall be all steel construction. The deck shall be constructed with minimum 3" x 4.1-lb/ft steel channel cross-members. The deck shall be covered with 1/4" H.R. plate. The trailer frame rails shall be constructed with 6" steel channel. Stake pockets shall be provided, 10 on each side.

STEP: Platform access steps with forward grab rails shall be provided at the front, one on either side.

TIRES / WHEELS:
Four LT 235/80 R16 (Load Range "E") mounted on 8-lug wheels

COUPLER HITCH*: 2-5/16" ball type OR pintle type hitch
* Coupler is adjustable and includes safety chains.

TONGUE JACK: 5,000 lb. rated screw type jack firmly attached through tongue.

BRAKES: Electric brakes on both axles. Emergency breakaway switch and 12-volt battery provided to allow independent operation of brakes.

LIGHTS & ELECTRICAL: LED tail and running lights provided in accordance with Federal D.O.T. regulations with all wiring in protective conduit. License plate mounting bracket attached and six-way

male connecting plug with matching female plug provided. Wiring Harness shall be enclosed in continuous protective loom.

PAINT: Unless otherwise specified:

1. One Coat High Solids Primer
2. One Coat Acrylic Enamel Color: Trailer black and components shall be White except thermoplastic kettles which shall be painted with heat resistant paint designed for temperatures of up to 1200 degrees F.
3. Trailer deck shall be coated with polyurethane and rubber granule coating for durable, skid-resistance.

PROPANE GAS STORAGE AND HOOK-UP: Provisions shall be made for mounting two 100 lb. (customer supplied) and two 20 lb. LP gas tanks (customer supplied) on the forward section of the trailer deck. An upright cross assembly shall be provided to anchor the two 100 lb. tanks as well as the necessary piping, shut-off valves and flex lines.

STANDARD EQUIPMENT:

1. In lieu of the hydraulic crane, a side rail gate with 1200 lb. aluminum platform shall be supplied. The unit shall be mounted on left side of the trailer.
2. Applicator Tie Downs (applicators not included)
3. Room on the Deck for 1-Skid of Material
4. Water Cooler- First Aid
5. Face Shield
6. Leather Gloves
7. Leather Apron
8. Respirator
9. (2) 20 lb Fire Extinguisher w/ Bracket - (1) mounted in front of trailer unit and (1) at rear of trailer with easy access for operators.

(2) AIR-JACKETED THERMOPLASTIC MELTING KETTLE, PROPANE FIRED
(KETTLE IS DESCRIBED BELOW)

SKID MOUNTED 1500 POUND VERTICAL AIR JACKETED

GENERAL:

It is the intent of these specifications to describe the minimum requirements for a vertical mounted thermoplastic heating kettle equipped with a hydraulic driven agitator, an insulated air jacket surrounding the thermoplastic tank and heated by a diesel fired gun burner. All equipment/options are to be factory installed.

CAPACITY:

The internal thermoplastic tank of the kettle shall be cylindrical in shape, vertically mounted, have a minimum capacity of 1500 pounds, and shall be capable of heating block and granulated thermoplastic.

KETTLE:

The kettle shall have the following capabilities and be equipped as indicated.

Heated directly by an LPG burner with a minimum rating of 210,000 BTU, the burner shall be mounted on center vertically under kettle and shall have easy access on all sides for maintenance. The burner flame shall fire upwards toward the bottom of the material tank.

A ¾" 304 stainless steel deflector plate will be mounted between the burner flame and the material kettle bottom plate. The deflector plate shall be easily removable and require no tools for replacement, e.g. welder, torch or hand tools.

The burner shall be vented at the top of the kettle. Each vent shall be provided with a rain cap with draft protector to prevent rain from entering the heating chamber.

Heat transfer shall be by a 2" minimum heated air jacket surrounding the thermoplastic tank and shall be insulated by 2" thick ceramic mineral wool insulation contained within removable side panels. Insulation on panels shall not be exposed. Panels must be bolted to the top, bottom and sides of the steel frame work of the kettle and be easily removable for maintenance. Kettle top and bottom shall be insulated with 2" thick ceramic mineral wool insulation and not be exposed. A loose blanket of 2" insulation shall cover the kettle combustion chamber bottom.

A center heated air riser chamber shall allow hot burner air to heat thermoplastic from the center to the outside, effectively increasing the heat transfer area and decreasing the time of agitator startup when heating a kettle with cold material. Heated air riser chamber will extend up at least 40% of the height of the interior material chamber and contain the lower agitator support.

An agitator driven by a low speed high torque hydraulic motor rotating at approximately 30rpm will be provided. The agitator shall be equipped with three blades spaced, one at the bottom, one at the middle and one just below the full kettle capacity. Agitator blade to side of tank clearance shall be no more than a ¼". The agitator shaft will be 1 15/16" in diameter and supported by a four bolt flange style bearing at the top. The lower end of the agitator shaft will have a bolt on replaceable pilot shaft tip and be supported by a replaceable internal race bushing. The shaft will be coupled to the hydraulic motor with a slip shaft type drive coupling that allows vertical movement between agitator shaft and hydraulic motor to compensate for thermal expansion. Jaw or chain type couplings will not be allowed.

Direct reading thermometer to indicate the thermoplastic temperature shall be marked "Thermoplastic".

LPG burner is controlled by an adjustable digital temperature controller with temperature read-out. A safety shutoff shall be installed to shut off fuel and the burner in the event the burner does not ignite and maintain combustion or goes over temperature. Thermocouple probe for temperature control shall measure actual thermoplastic temperature for control of the burner.

Kettle top plate with agitator motor and bearing support shall bolt to the top of kettle; removal shall expose the full inside diameter of the melting chamber for easy cleaning when required. Top plate shall also contain safety loading chute, lift D-Ring and melting chamber hooded exhaust vent. Top of kettle shall be weather proof this includes loading chute and vent to prevent water from entering the melting chamber.

Loading hatch will be weather proof and of the safety type. The melting chamber will be covered whether the door is open for loading or closed. The loading door shall open down and out creating a shelf to rest material (block or granular) on prior to loading, the back half of loading door shall close off the melting chamber to minimize any splash back or flash from contacting the operator. When the loading door is closed it shall tip the material into the melting chamber and close off the melting chamber while doing so.

Discharge will be a 4" inch pipe set 50% below melting chamber bottom plate and shall allow full port drainage from kettle. A 4" knife valve will be fitted to start and stop the flow of molten material.

Fork lifting shoes 3" x 9" on 33" centers will be an integral part of the base of kettle.

A hinged inspection door with latch will be placed in the side of the kettle for inspection of the burner combustion area of the kettle. The door will be insulated; door opening dimensions will be 24" wide x 12" high. Opening will be bordered with steel sheet so no insulation is exposed.

RAILING:

Safety railing approximately 36" high shall surround the deck storage area. The railing shall be removable to facilitate material loading.

MISCELLANEOUS:

The heating kettle shall be provided with the following miscellaneous requirements.

Adequate guards to cover moving parts.

Placards, stencils and decals indicating potential hazards.

PAINT:

All exposed metal surfaces shall be primed with a rust and heat preventative and finished in a high heat resistant paint.

WORKMANSHIP:

The equipment and any accessories shall be a product of good workmanship and shall be free from any defects that will affect their appearance or serviceability.

GENERAL:

Each unit and any accessory shall be delivered completely assembled and ready to operate.

The component parts of the unit shall be new and of proper size and design to safely withstand the maximum stresses imposed.

All kettle materials will be constructed of mild steel unless otherwise noted within this specification.

HYDRAULIC POWER SOURCE (PROPANE ENGINE): An LP-fueled, 4-cycle, air-cooled Honda engine to operate the hydraulic pump system shall be supplied. The engine shall be equipped with an air cleaner, muffler, adjustable throttle, and battery charged electric start.

The unit shall have an engine driven hydraulic system to continuously mix the molten plastic, consisting of a high pressure hydraulic pump and direct drive hydraulic motor.

The hydraulic system shall include a three position control valve which shall provide for forward and reverse agitation as well as an open to tank position for easy start up. The hydraulic system shall include a reservoir, filter and proper relief valve to maintain and protect the system.

TECHNICAL MANUALS: Two sets of operator's manuals, service manuals, parts books, wiring diagrams and applicable technical information shall be supplied with each unit.

DELIVERY: The unit shall be shipped within 90 days of receipt of written purchase order, deposit, or required payment prior to shipment.

TECHNICAL SERVICE: A qualified, factory-authorized service representative shall be available for two (2) consecutive days to assure correct use of the unit.

SHIPPING: The customer will arrange for shipping to the customer's delivery location.

**ADDITIONAL EQUIPMENT
(PRICED SEPARATELY)**

THERMOPLASTIC PAVEMENT MARKING APPLICATOR WITH THERMOSTATIC CONTROL:

SCOPE: It is the intent of these specifications to describe the minimum requirements for a hand-propelled applicator suitable to extrude and premelt thermoplastic pavement markings with a temperature control system and can later be converted to combine a melting apparatus.

Empty Weight	Material Capacity	Dimensions
270 lbs.	250 lbs.	48"x39"x31"

INSTALLATION PERFORMANCE: The unit shall be capable of properly installing every type of thermoplastic pavement marking application (longlines, skips, messages, arrows, etc.).

MATERIAL HOLDING TANK: The tank shall be all aluminum construction and must have a one-quarter inch thick oval bottom and one-quarter inch thick straight wall sides (a vertical pot is not acceptable). The outer rectangular aluminum skin shall be insulated and have ten heat vents to allow for proper ventilation of burner gases. There shall be two hinged rectangular doors covering the material holding tank. A removable screen shall be provided to filter out foreign material during molten thermoplastic kettle transfer.

EXTERIOR CONSTRUCTION: The unit shall be all aluminum construction where the front houses the material holding tank and the rear a 20-pound LPG fuel tank with proper safety heat controls. The fuel tank compartment shall be open to allow for maximum air circulation. The fuel bottle shall be held securely by means of an upper clamp. There shall be four lifting rings located on the machine to allow for ease and safe lifting of the empty machine. A door in the outer skin shall allow for access to the burner chamber for lighting.

The applicator shall ride on three wide airless tires, mounted in such a fashion as to allow one operator easy drag-free propulsion. Both the front and rear axles of the machine shall be made of stainless steel. The rear wheel shall be an independent caster wheel with foot-petal brake and manual locking mechanism.

HAND CONTROLS: A handle, located on the left side, shall enable the operator to keep material agitated during operation. Two lever handles shall be located alongside on the right and easily controlled with a single hand, the outside lever opens and closes material valve and the inside lever activates the extrusion die and bead dispenser.

A single speed and parking brake, located just below the propulsion handle, shall be provided to prevent the applicator from moving while being refilled and to slow its speed when traveling down steep terrain.

HEATING SYSTEM: An electric push-button, "AAA" battery powered, pilot lighting system for the jet burners for the material holding tank and the die shield radiant heater shall be located under the temperature control panel.

Two jet ring burners, with a minimum total of 30,000 BTU rating per hour, for maintaining thermoplastic material at proper melting and application temperatures. They shall be mounted in a compartment under the material holding tank, with the pilot easily accessed behind an observation door to enhance operation safety. The material temperature shall be controlled by means of an automatic temperature control system, mounted on the aft wall facing the operator, designed to melt and maintain material

temperatures between 400F and 450F, monitored by a thermocouple that is positioned in the material holding tank.

An aluminum heat and windshield shall be mounted on the applicator's right to cover the extrusion die. It shall contain a single, 11-inch by 7-inch, radiant heater to direct heat on the die and material valve. The side of the shield shall fully swing open for easy access to the extrusion die. Open flame heating directly attached to die is unacceptable.

Each heater shall have an independent gas line and regulator to provide maximum fuel economy and operation safety.

POINTER SYSTEM: The applicator shall be equipped with a heavy-duty pointer system indicating the location of applying the thermoplastic pavement marking. The pointer shall be adjustable left or right and freely swivel up and down under spring tension, holding any position without requiring hand adjustment or bolting.

EXTRUSION DIE SYSTEM: The heat shield must contain a knob-control height adjustable spring-activated extrusion die hanger bar. The extrusion die shall automatically interlock and disconnect from the heat shield without the need of a separate bolt or connecting rod. The connected extrusion die shall be completely height and angle adjustable by means of a hand-rotating knob located on top of the heat shield. A properly secured and adjusted die shall be capable of accomplishing a true, straight thermoplastic line.

The heat shield shall accommodate various width extrusion dies from 4" to 12". The extrusion die shall receive material from the molasses valve while in the user's direct view. The lines will be squarely started and stopped by means of a swing door operated by dual, fast closure, heat shielded springs. The die shall contain tungsten carbide protected runners to ensure long wearing on road surfaces.

The die shall open to the width of the line and to a minimum of 7/8 inch away from the die trough, exposing the road surface for maximum application adhesion and speed.

All die parts shall be high temperature and rust resistant metal. Dies are not furnished with the applicator and must be purchased separately. A full assortment of 4", 6", 8", and 12" width dies are available.

BEAD DISPENSING SYSTEM: The applicator shall be equipped with one stationary variable width bead dispenser, aligned directly behind the die, capable of evenly dispensing through a front driven, rotating stainless steel knurled shaft, six pounds of glass spheres per hundred square feet over and within 6 inches of the deposition of the molten thermoplastic extruded line notwithstanding the speed of the thermoplastic application. This bead dispenser shall be quickly adjustable to apply a 4", 6", 8", 10" or 12" width even distribution of glass spheres. In order to prevent wasted bead droppings, the knurled shaft shall not rotate one half inch wider than the thermoplastic line width

The bead reservoir shall be aluminum constructed to hold a minimum of 50 pounds of glass spheres.

GENERAL: An instruction manual/parts book for the applicator shall be supplied. When delivered, the unit shall be completely assembled and ready to operate except for fuel bottle and fuel.