

## **Attachment 4**

Technical Paper T-140

**Heating and Storing  
Asphalt at HMA  
Plants**

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Quantity (Gallons)	Heat Required (Btu)			
	5 Degree F Increase	10 Degree F Increase	15 Degree F Increase	25 Degree F Increase
1,000	20,000	40,000	60,000	100,000
5,000	100,000	200,000	300,000	500,000
6,750	135,000	270,000	405,000	675,000
10,000	200,000	400,000	600,000	1,000,000
15,000	300,000	600,000	900,000	1,500,000
20,000	400,000	800,000	1,200,000	2,000,000
25,000	500,000	1,000,000	1,500,000	2,500,000
30,000	600,000	1,200,000	1,800,000	3,000,000
35,000	700,000	1,400,000	2,100,000	3,500,000

Heat required = weight x specific heat x temperature difference. Weight = 8.0 pounds per gallon. Specific heat (degrees F) = 0.5 Btu per pound per degree F. Heat required does not include extra heat to make up for heat lost while heating.

**Heat Required To Raise Asphalt Temperatures**

Energy Needed	Raise Temperature 25 Degrees F	Maintain Temperature @ 300 Degrees F
Btu	4,127,810	1,127,810
Gallons No. 2 Fuel	31.3	8.5

Temperature is raised and maintained for 24 hours. Heat to raise temperature includes heat to make up for heat loss during the 24 hours.  
 30,000 gallons AC @ 8 pounds per gallon = 240,000 lbs.  
 Heat required to raise one pound of AC one degree = 0.5 Btu.  
 Heat required to raise 240,000 pounds of AC one degr = 120,000 Btu.  
 One gallon No. 2 fuel produces 132,000 Btu LHV.  
 Tank has 3-inch insulation.

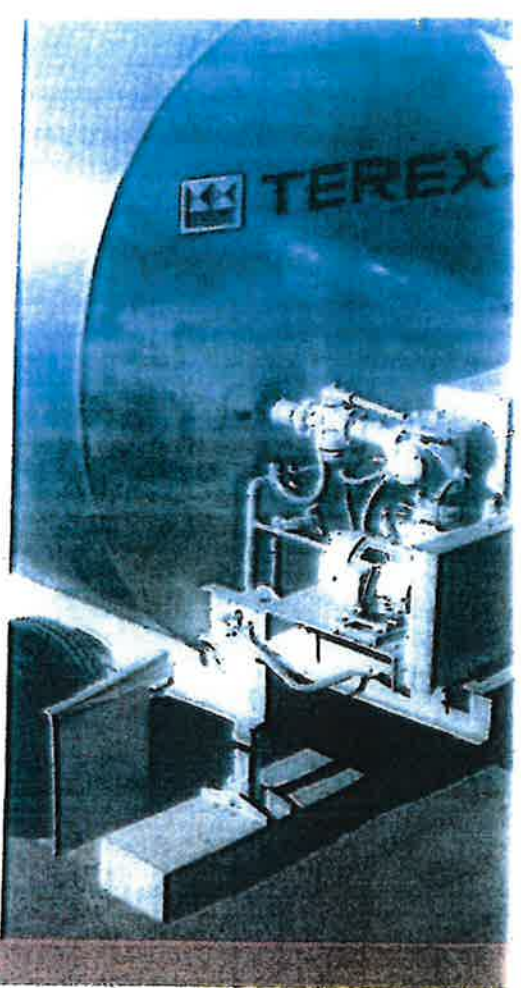
**Energy to Raise Temperature Vs. Maintain Temperature Over 24 Hours**



CT20P/CT25P/CT30P/CT35P ASPHALT HEATER/STORAGE SYSTEMS



# ASPHALT HEATER/STORAGE SYSTEMS



*(Right) A heavy-duty channel steel frame gives the system superior structural strength.*

## Featured Items

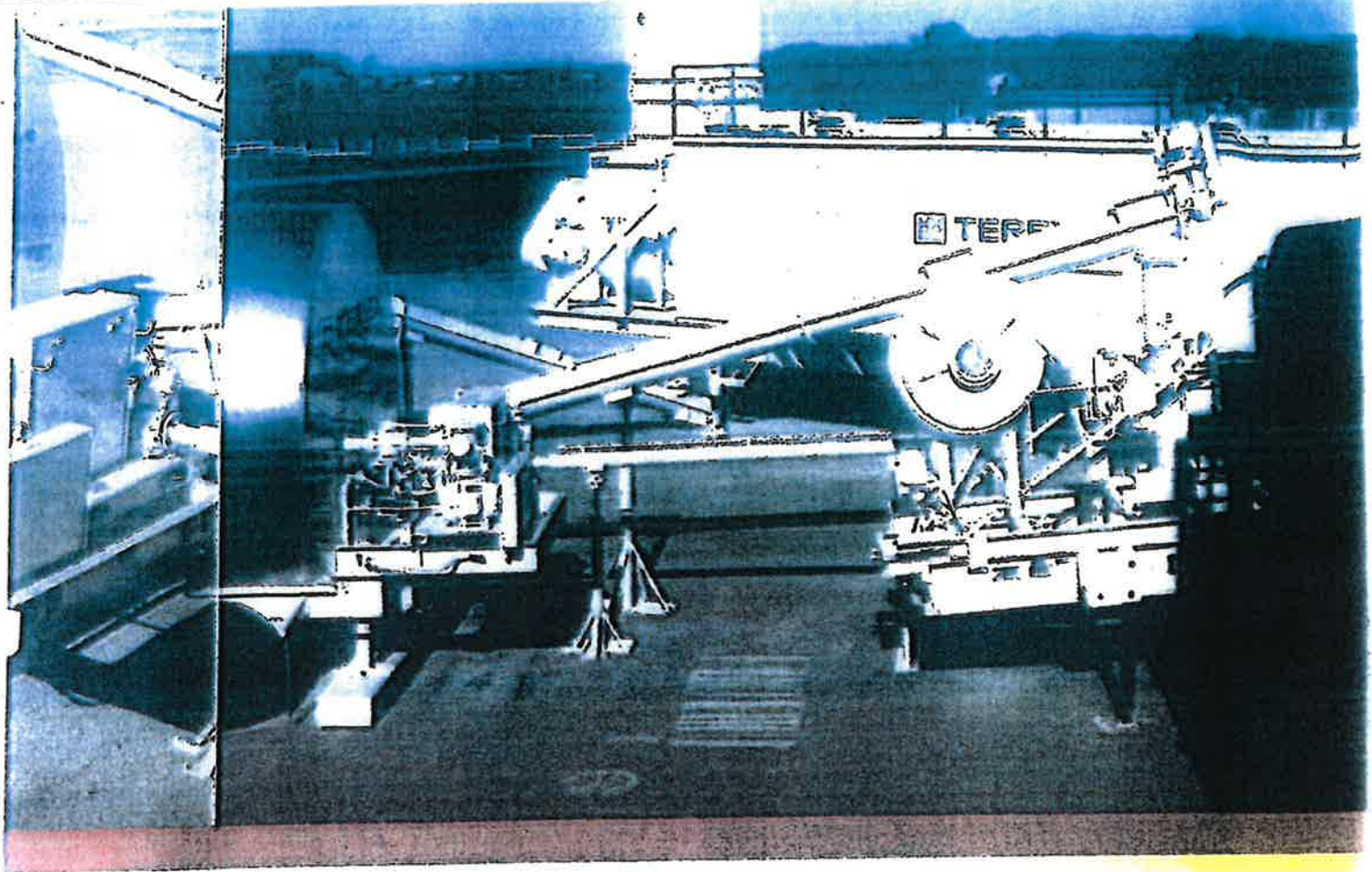
- Unitized design for quick set-up, ease of servicing and greater reliability
- Heavy-duty channel steel frame for superior structural support
- High-density glass fiber insulation for efficient heat retention
- Self-store blocking on portable units eliminates need for timber blocking and reduces set-up time
- 20,000 gal to 35,000 gal (75,700 L to 133,562 L) capacity

## Tank

Tank is mounted on a fully continuous heavy-duty 15 in (381 mm) – 33.0# steel channel frame that runs the entire tank length. Tank shell is 3/4 in (6.4 mm) thick and is double-welded with 6 in (152 mm) channel internal supports for superior structural strength. Tank heads are 5 1/4 in (128.6 mm) thick, reinforced with 6 in (152 mm) channels.

One 24 in x 24 in (610 mm x 610 mm) inspection manhole on top of tank with external and internal ladder provides easy access to inside of tank. 4 in (102 mm) internal overflow pipe discharges through bottom of tank. Asphalt thermometer with dry well and 2 in (51 mm) valved drain connection.

For on-site versatility, the pump packages can be located at the front or rear of the tank. 3 in (76 mm) – 150# flanged asphalt supply connection with internal submerged fill pipe to bottom of tank. 3 in (76 mm) – 150# flanged asphalt return connection with internal submerged return pipe to the bottom of tank with anti-siphon device. 3 in (76 mm) – 150# flanged asphalt fill connection has internal line with anti-siphon device. 2 in (51 mm) NPT drain connection at bottom of tank with valve.



### Heating System

Hot-oil coil: 45 linear ft (13.72 m) of 2 in (50.8 mm) Schedule 40 pipe with 180 degree LR return elbows per 1,000 gal (3,785.34 L) of storage. Split in two loops to provide optimum heat transfer rate. Located on the bottom, extends the length of tank for even heat distribution.

Automatic temperature control: mounted, piped and wired. Adjustable, indicator-type temperature controller with weatherproof housing. Hot-oil solenoid valve on return side. Wired together with seal-tight connectors.

Thermometer: 2 1/4 in (63.5 mm) dial, 50-450°F (10-232.2°C) with 1/2 in (305 mm) stem mounted in drywell.

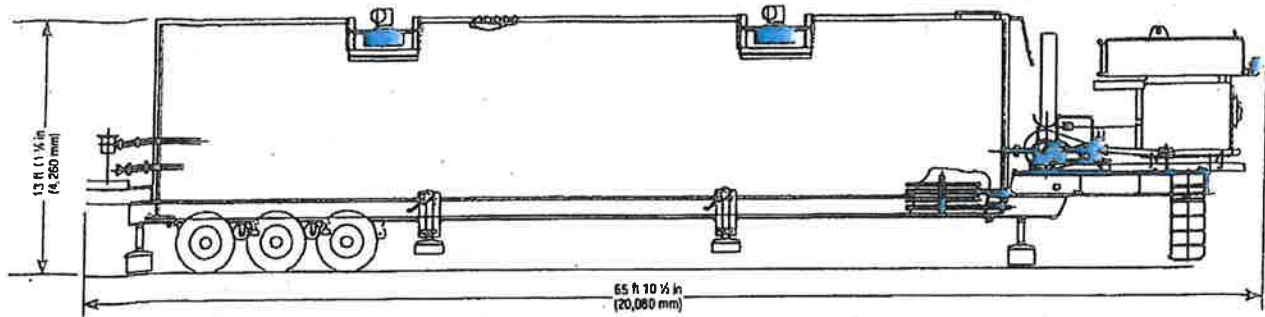
### Portability

Portable models include a 420 gal (1,589.6 L) internal fuel tank that is integrally designed into the gooseneck. The entire area on top of the gooseneck is available to mount hot-oil heater pumps or other accessories. Dual tandem axle and suspension system with 11:00 x 22.5 in (508 mm) tires, 5th-wheel kingpin, air brake system, mud flaps and DOT lighting system. Special configurations of axle placement are available. Portable models have one pair of landing jacks installed in front frame with one heavy-duty support pad. Ideal for disconnecting trailer from tractor. CT35P has a triple axle and suspension system.

### Standard Equipment

Self-store blocking assemblies eliminate the need for screw jacks and timber blocking. Blocking assemblies consist of crank-type landing jacks and steel-beam cribbing. The steel cribbing assembly provides ample stability for storage, parking and set-up. Adjustments to the tank leveling are easily accomplished, even after the plant has been put into operation.

# BT20P/BT25P/BT30P/BT35P SPECIFICATIONS



Dimensions	
<b>BT20P</b>	
Storage	18,033 gal (68,262 L)
Height	13 ft 11 1/4 in (4,260 mm)
Width	11 ft 6 in (3,510 mm)
Length	49 ft 10 1/2 in (15,200 mm)
<b>BT25P</b>	
Storage	22,598 gal (85,543 L)
Height	13 ft 11 1/4 in (4,260 mm)
Width	11 ft 6 in (3,510 mm)
Length	57 ft 10 1/2 in (17,640 mm)
<b>BT30P</b>	
Storage	27,162 gal (102,819 L)
Height	13 ft 11 1/4 in (4,260 mm)
Width	11 ft 6 in (3,510 mm)
Length	65 ft 10 1/2 in (20,080 mm)
<b>BT35P</b>	
Storage	31,721 gal (120,078 L)
Height	13 ft 11 1/4 in (4,260 mm)
Width	11 ft 6 in (3,510 mm)
Length	73 ft 10 1/2 in (22,120 mm)

**Important Note:** All electrical specifications used herein refer to U. S. standards of voltage and frequency. Any electrical equipment that is factory-installed will be compatible with power availability requirements of any customer's country.

Optional Equipment
3 in (76 mm) transport unloading pump, 200 gal/min (757.08 L) hot oil jacketed positive displacement pump with integral relief valve and 15 hp (11 kW) TEPC electric motor with V-belt drive, for primary tank.
Piping, valving and jacketed lines to interconnect 3 in (76 mm) unloading pump to additional storage tanks.
3 in (76 mm) hot-oil jacketed asphalt piping between tank and plant pump, and plant pump to drain including pipe support and flex line hoses.
Piping, valving and jacketed lines to interconnect 2 in (51 mm) or 3 in (76 mm) plant pump to additional storage tanks.
Interconnecting hot-oil jacketed asphalt piping between compartments or additional asphalt tanks.
Dual-compartment tank. Includes internal, double-wall, insulated bulkhead, often used to provide asphalt and drum burner fuel storage in a single unit.

Features
Mounting of hot-oil heater on gooseneck and pipe to store hot oil.
Asphalt level indicators.
Hot-oil heater mounted on gooseneck and pipe to tank hot-oil and fuel connections.
Top-entry vertical agitator with axial-flow impellers with 5 hp (3.75 kW) drive.
Mounting of 3 in (76 mm) transport unloading pump package on gooseneck and connect jacketed pipe with flex line jumpers to 3 in (76 mm) fill inlet in tank head.
Mounting of plant pump package on rear skid extension and connect jacketed pipe with flex line jumpers to 3 in (76 mm) suction outlet and 3 in (76 mm) bypass return connection. This allows the tank to be backed into locations.
Third axle
Mixer (2 ea)

Effective Date: October 2009. Product specifications and prices are subject to change without notice or obligation. The photographs and/or drawings in this document are for illustrative purposes only. Refer to the appropriate Operator's Manual for instructions on the proper use of this equipment. Failure to follow the appropriate Operator's Manual when using our equipment or to otherwise act irresponsibly may result in serious injury or death. The only warranty applicable to our equipment is the standard written warranty applicable to the particular product and sale and Terex makes no other warranty, express or implied. Products and services listed may be trademarks, service marks or trade names of Terex Corporation and/or its subsidiaries in the USA and other countries. All rights are reserved. Terex is a registered trademark of Terex Corporation in the USA and many other countries. Copyright 2009 Terex Corporation.

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