

ITEM 402.94 06 M - HEATER SCARIFICATION OF ASPHALT CONCRETE
ITEM 618.94 06 M - RECYCLING AGENT

DESCRIPTION

Heater scarification is a continuous multi-step process in which the existing hot mix asphalt (HMA) pavement surface is recycled using specialized equipment. The HMA pavement surface is heated causing the asphalt to soften. The softened asphalt surface is then immediately scarified and milled to a specified depth as detailed in the Contract. The reclaimed asphalt pavement is then mixed with a recycling agent that rejuvenates the asphalt. The recycled mix is then reshaped and compacted back onto the roadway. All work under this item shall be in accordance with the Standard Specification and as detailed.

MATERIALS

Recycling Agent. Use the RA1 petroleum based recycling agent specifically designed for use as a rejuvenator meeting the requirements outlined in Table 1 – Recycling Agent. Certified test results and documented quantities will be supplied to the Engineer for each shipment of recycling agent. Acceptance of this material will be based on the Manufacturer’s certification stating conformance to the test results below or ASTM D4552, Standard Practice for Classifying Hot-Mix Recycling Agents.

TABLE 1 – RECYCLING AGENT

Test Requirement	Test Method	Minimum	Maximum
Viscosity, 60° C, cSt	T 201	50	175
Flash Point, CSC, °C	T 48	215	-
Saturates, wt., %	D 2007	-	30
Test on Residue from RTFO, 163° C:			
Viscosity Ratio	T 240	-	3
Weight Change, ±, %		-	4
Specific Gravity	T 228	Report	

Mixture Design. Use the pavement cores supplied by the Department to determine the amount of recycling agent to be mixed with the recycle asphalt pavement. The penetration value of the recovered asphalt cement is required to be between 80 and 100 as determined using AASHTO T 49, Penetration of Bituminous Materials. Supply the information on the amount of recycling agent to be added, original penetration values of the cores, and the penetrating values based on the mix designs test results to the Engineer for approval at least 10 days prior to the commencement of work.

Equipment.

Heating Unit – The combustion chamber shall be insulated and totally enclosed. Sufficient heat shall be generated to soften the asphalt pavement to the depth required to achieve specified performance without overheating the existing pavement. The burner assembly will be designed so that it can be raised or lowered by a single control and will be adjustable between 2.4 and 4.3 meters in width. The entire heating unit will be enclosed and vented to contain the heat and prevent damage to adjacent properties and landscape.

Heater Scarification Unit – The heater scarification unit is a self-contained machine designed to reprocess only the upper layers of the existing HMA pavement. This unit is self-propelled will be capable of operating at speeds of 7 to 15 meter per minute while uniformly heating and scarifying the existing HMA

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pavement to a minimum depth of 25 mm. The temperature of this unit will be held at a minimum of 110° C and will not exceed 145° C.

Scarifying Unit – The scarifying unit will contain at least 2 rows of spring loaded tines that are adjustable in width of 2.4 to 4.3 meters in increment of 25 mm. This unit will also be able to conform to the pavement contours to insure a uniform penetration of the tines and prevent damage to utility structures.

Spray Unit – Immediately behind the scarifying unit, an application of the recycling agent will be applied to the reclaimed asphalt pavement. The size of the nozzle located on the spray bar and pump will be a determined by the approved rate of application and the forward speed of the heater scarification unit. The storage tank for the recycling agent will be thermostatically controlled to maintain an even temperature of 16° C. The spray unit shall be equipped with an electronic digital measuring system to constantly monitor the quantity of recycling agent being applied. This unit requires calibration that will be approved by the RME.

Screed Unit – The hot scarified material shall be uniformly distributed to the desired longitudinal and transverse section by the use of an attached vibratory screed. The screed must be equipped with an adjustable crown control and each end of the screed must have hand wheel adjusting screws.

Compaction Equipment – Use rollers meeting the requirements of §402-3.04, Rollers, of the Standard Specifications.

Calibration – The digital measuring system located on the spray unit will be calibrated prior to the start of work in the presence of a Department representative. The calibration method used will be approved by the RME. A minimum of two weeks advance notice is required when scheduling this calibration. Approved calibrations will be valid for 90 days unless the equipment was adjusted or repaired prior to this time limit. Work will not progress until the calibration has been completed and verified.

CONSTRUCTION DETAILS

§402-3, Construction Details, applies except, as modified below:

The heater scarification unit will be operated in a manner to prevent scorching or overheating the existing HMA pavement. The existing HMA pavement will be evenly heated, scarified, and reworked to the widths and depths specified in the Contract documents. It is important that the heater scarification unit remain at a constant temperature and speed to insure that the scarified pavement is properly tined, mixed, and uniformly distributed behind the machine. The attached, heated, vibratory screed will redistribute the recycled mix to the proper thickness, slope, and crown as detailed in the Contract documents. Compaction of this material will be in accordance with §402-3.07, D., 80 Series Compaction Method.

METHOD OF MEASUREMENT

Heater Scarification – The quantity to be paid will be measured by the number of square meters of pavement surface recycled as described in this specification.

Recycling Agent – The quantity to be paid for will include the number of liters, measured at a temperature of 16° C, and incorporated in the work as detailed in this specification.

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BASIS OF PAYMENT

Heater Scarification - The unit price bid per square meter for this item will include the cost of furnishing all labor, tools, equipment, and incidentals necessary to complete the work including cleaning existing pavement, all heating and scarifying, mixing, paving, and compaction of the recycled materials. In no case will a deduction be made for minor unworkable areas due to catch basins or manholes.

Recycling Agent – The unit price bid per liter for this item will include the cost of furnishing, heating, and applying the recycling agent.

<u>Item No.</u>	<u>Item Description</u>	<u>Pay Unit</u>
402.99 06 M	Heater Scarification of Asphalt Concrete	Square Meter
618.99 06 M	Recycling Agent	Liter