

SPECIAL - ASPHALT CONCRETE SURFACE RECYCLING

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A. Description

This work shall consist of the development of a pavement mix design based upon the gradation and asphalt content of the existing pavement, preparing the surface, heating the pavement, applying rejuvenating agent and additives, adding necessary aggregate, and/or hot-mix asphalt, heating the aggregate, milling, mixing in heated drum mix plant, redistributing, leveling, laying and re-compacting the pavement surface to the desired density in accordance with these specifications and details shown on the plan.

B. Materials

The asphalt-rejuvenating agent shall be composed of petroleum resin oil base, with a record of satisfactory services as an asphalt-rejuvenating agent. Satisfactory service will be based on the proven capability of the material to increase the ductility, penetration and durability of the asphalt binder in the recycled asphalt to the specified levels. A letter of compliance shall accompany each shipment delivered to the project from the manufacturer that certifies the material conforms to the manufacturer specifications.

Aggregate added to the mix shall be a crushed carbonate stone and meet the quality requirements of CMS 703.05.

Hot-mix asphalt if needed, will be supplied and delivered by the City.

Joint Sealer to meet the requirements of CMS 705.04

C. Pavement Mix Design

No work shall begin until a mix design has been approved by the Engineer.

This mix design shall provide the application rate of rejuvenation agent in order to meet the specified penetration values and provide the application rate for additional aggregate and/or hot-mix asphalt to obtain the specified density.

All costs associated with the development of the mix design shall be considered incidental and are to be include in the unit price bid for Item Special – Asphalt Concrete Surface Recycling.

D. Equipment

The recycling equipment unit used for milling the existing asphalt concrete, adding the new material (rejuvenating agent, aggregate and/or hot-mix asphalt), mixing and paving the recycled mix in a continuous process shall be a self-contained, self-propelled unit designed for this purpose.

For the purpose of this contract, the self-containment requirement for the recycling unit shall mean once the existing asphalt pavement is milled, it remains contained in the recycling unit, immediately mixed with the new material and immediately placed for compaction. The recycled asphalt pavement shall not be exposed to atmospheric conditions except when placed for compaction.

The heating units shall be of sufficient capacity to heat the pavement material as necessary for efficient processing, but be designed as to minimize the damage to the asphalt binder. The heating system shall also have provisions for cooling the asphalt surface to 170°C (350°F).

The recycling unit shall be capable of loosening the heated asphalt pavement to the specified depth and cross slope in a uniform pattern, milling the existing asphalt, adding heated aggregate and/or hot-mix asphalt, and adding the heated rejuvenator into a heated drum mixing plant for a minimum of 30 seconds to ensure complete bending. The recycling unit shall then be capable of placing and leveling the recycled asphalt pavement in a condition for immediate recompaction. The rate of application of the rejuvenating agent and aggregate shall be automated to maintain the specified application rate in relation to the operating speed of the machine. Meters shall be incorporated into the distribution systems for recording the quantities of asphalt rejuvenating agent, additives and aggregates applied. The mixing shall take place in a heated rotating drum mix plant for at least 30 seconds in such a manner as to ensure complete blending. The recycling unit shall also have an adjustable, heated, vibratory screed capable of placing the mixture to the required cross-sections, profile and alignment controlled by a minimum of 25-foot ski.

Compaction equipment shall meet the requirements of 401.13.

E. Weather Limitation

Requirements of 401.06 shall be met; except the minimum surface temperature shall be 40°F and minimum air temperature shall be 50°F.

F. Existing Surface Preparation

The Contractor shall remove all raised pavement markers and all existing thermoplastic traffic pavement markings.

The existing pavement shall be thoroughly clean and dry prior to starting.

G. Construction

The existing pavement shall be heated to allow the loosening of material without excessive fracturing of the aggregate and allow for adequate recompacting. The pavement is then hot milled to the specified depth as measure by a depth probe behind the screed on a finished, uncompacted surface with an average of three (3) depth probe checks across the width of the pavement.

Heated, dried, aggregates and rejuvenator are applied in a uniform fashion and at the proper application rate, automated to the speed of the surface recycling machine, as determined to meet specification. It is then mixed for approximately 30 seconds. Heated mixing chamber temperature must be maintained at a minimum of 300°F in order to establish an environment for maximum blending and coating. The newly recycled material shall be placed at the minimum temperature 225°F at the screed. Surface texture shall be uniform and consistent with no segregation or excessive asphalt cement.

The amount of aggregate and additive added to the mix shall be monitored by yield calculations.

Temperatures processing limits shall be established. Exposure of the existing pavement to temperatures in excess of 350°F shall be limited to furnace heat transfer time only. Methods of cooling the pavement surface temperature to below 350°F must be employed in an outside of the furnace condition.

Compaction shall be performed in accordance with 401.16.

H. Traffic

Traffic shall not be allowed on the compacted pavement until it has cooled sufficiently to prevent dislodging of the aggregate. Any areas which are damaged by traffic shall be repaired at no additional cost to the City, as directed by the Engineer.

I. Finished Pavement

The finished pavement shall meet the following tolerances:

- The finished surface shall meet the surface requirements of 404.17 and 401.19.
- The modified binder shall have a Penetration Value (25°C, 100g, 5 sec.) of 45 to 65.
- The recycled pavement after compaction shall have a density (percent of Maximum Theoretical Density) of 92 to 96.

- The gradation of the recycled pavement shall be within ± 5 percent of the original pavement on the amount passing the 4.75 mm (No. 4) sieves.
- The gradation of the recycled pavement on all sieves, except for the 4.75 mm (No. 40) Sieve, shall be within the gradation bands of the original pavement type (i.e., 404, 446 Type 1H, 448 Types 1, etc.).

All costs associated with the testing or any other documentation necessary to verify these requirements shall be considered incidental and are to be included in the unit price bid for Item Special – Asphalt Concrete Surface Recycling.

J. Joint Sealant

The finished pavement shall be sealed at all joints, curbs and castings as per CMS 705.04

K. Adjacent Structures

All structures, trees and foliage adjacent to the recycling process shall be protected from damage. Any damage attributed to the recycling process shall be the sole responsibility of the contractor to repair or replace the damaged structure in kind. The Contractor is responsible to provide a thorough pre-construction video as specified in LS 2060.

L. Method of Measurement

The measured quantity of Asphalt Concrete Surface Recycling including surface preparation, heating, milling, adding new materials (including rejuvenating agent), rejuvenating, mixing and compacting shall be the actual number of square yards completed and accepted.

M. Basis of Payment

Payment for accepted quantities will be made at the contract price for:

Item	Unit	Description
Special	Square Yard	Asphalt Concrete Surface Recycling

END OF SECTION

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