

**ITEM 010450**

- Item 0104501 - 6" FULL DEPTH PAVEMENT RECLAMATION**
- Item 0104502 - 7" FULL DEPTH PAVEMENT RECLAMATION**
- Item 0104503 - 8" FULL DEPTH PAVEMENT RECLAMATION**
- Item 0104504 - 9" FULL DEPTH PAVEMENT RECLAMATION**
- Item 0104505 - 10" FULL DEPTH PAVEMENT RECLAMATION**
- Item 0104506 - 11" FULL DEPTH PAVEMENT RECLAMATION**
- Item 0104507 - 12" FULL DEPTH PAVEMENT RECLAMATION**
- Item 0104508 - 13" FULL DEPTH PAVEMENT RECLAMATION**
- Item 0104509 - 14" FULL DEPTH PAVEMENT RECLAMATION**
- Item 0104510 - 15" FULL DEPTH PAVEMENT RECLAMATION**
- Item 0104511 - SUPPLEMENTAL AGGREGATE**

**DESCRIPTION**

Work under this item shall consist of establishment of reclaimed asphalt/aggregate base course utilizing the existing hot mix asphalt (HMA) pavement and granular base to provide a compacted recycled base course. The base course will be constructed by pulverizing and blending HMA and granular materials to a specified depth, grading, and compaction in conformance with these specifications. The work includes, but it is not limited to: (a) scarification and pulverization of the existing HMA and base; and (b) final grading and compaction of the reclaimed asphalt/aggregate base course. The intent is to provide a suitable base for the placement of HMA intermediate course(s) and HMA surface course. Final grading and compaction to provide a well-drained surface will be the responsibility of the Contractor. Note: in-place materials testing information for bidders may be included in the Information for Bidders section of this document. The contractor is advised to review these documents if they are provided. Those reclaimed pavement areas discovered during the reclaiming process that do not meet the specification for gradation will be blended with crushed stone or removed and replaced with specification materials.

It is the responsibility of the Contractor submitting proposals for the work to assure himself that the equipment and construction methods they intend to use are capable of complying with project specifications. Sufficient surface drainage must be provided at all times so that ponding does not occur on the reclaimed material.

**REFERENCED ITEMS**

010460, 0119901

**REQUIRED SUBMITTALS**

None

**MATERIALS**

It is anticipated that the majority of existing in-place materials will be used to create a homogenous mixture.

The material shall be processed in such a manner that the final gradation will meet the requirements set forth in the following table:

**TABLE 1.  
RECLAIMED ASPHALT/AGGREGATE BASE  
GRADATION TABLE**

Sieve Designation Inches	Percent Passing by Weight		
3-1/2"	100	-	-
1-1/2"	55		100
3/4"	-	-	-
1/4"	25		60
#10	15	-	45
#40	5	-	25
#100	0	-	10
#200	0	-	5

**Supplemental Aggregate**

The Contractor shall determine the size of aggregate necessary to be added to the recycled base course to achieve the desired gradation in Table 1. If the reclaimed material meets the requirements of Table 1 without the addition of material, no Supplemental Aggregate will be required. All materials used or blended with the reclaimed material shall be sound, tough, durable fragments of crushed stone or crushed gravel of uniform quality throughout. The crushed stone shall be free from access flat, elongated, soft or disintegrated pieces, mud, dirt, debris, organic or other injurious material. When tested by means of the Los Angeles abrasion machine using AASHTO method T-96, the crushed stone or crushed gravel shall not have a loss of more than 50 percent. The crushed gravel shall consist of particles with not less than 75% by weight of the portion retained on the No. 4 sieve having at least two fractured faces.

## **EQUIPMENT**

### **Pulverizing**

The Contractor shall provide a list of the specific equipment to be used in the performance of this work for approval by the Engineer.

The equipment shall include, but not to be limited to a pavement and base reclaimer capable of pulverizing material to meet gradation requirements and mixing to a minimum width of six (6) feet and a minimum depth of twelve (12) inches. If the standard conical carbide tipped teeth do not pulverize the HMA to the maximum sieve size stated in the table above, then the Engineer may specify that a chisel type tooth be provided.

Pavement scarifiers and hammer mills may be used to produce a recycled material meeting this specification. If this alternative process is used, the Contractor will be responsible for sampling and providing a certified sieve analysis for every 4000 square yards of reclaimed asphalt/aggregate base material indicating that it conforms to the specification requirements at his expense.

### **Compaction**

A 10-ton (minimum) static roller shall be used to achieve the specified density and compaction. The contractor is responsible for locating and protecting all utilities from damage caused by compaction. When conditions warrant, the contractor may be required to compact the material in the static mode. This does not relieve the contractor from achieving specification compaction. The equipment shall be maintained in satisfactory working condition at all times.

Additional rollers of the type and weight sufficient to compact the material to the required density may be utilized.

## **SAMPLING AND TESTING**

The Contractor shall notify the City when reclamation operations commence and when any necessary blended materials are incorporated.

A random sample of the reclaimed or blended/reclaimed material will be selected and tested in accordance with AASHTO T11 and T27 for conformance to the gradation requirements in Table 1. The optimum density of the material will be determined in accordance with the modified proctor test AASHTO T180.

A minimum of one sample per street, or for each 2400 square yards, may be selected

and tested by the Engineer prior to paving with hot mix asphalt. The Engineer reserves the right to require additional samples and testing prior to approval for paving.

Material failing to meet specification requirements shall be reworked and blended with crushed stone or removed and replaced with specification materials. The cost for any re sampling and testing due to material not meeting specifications shall be paid for by the Contractor.

## **CONSTRUCTION METHODS**

### **Lines & Grades**

The existing pavement shall be pulverized, processed, blended, and compacted to the lines and grades specified on the plans. The Contractor will be responsible for setting and maintaining grade stakes and elevations in accordance with the plans. During construction operations, the contractor shall maintain the grade of the reclaimed material in such manner that it drains to existing storm drains and does not puddle or pond. The cost of supplying/maintaining lines & grades shall be included in this item unless item #0119901 appears in the proposal. In this case, the cost for line & grade shall be included in bid item #0119901, Construction Stakeout.

### **Structures**

The Contractor shall be responsible for determining the exact location of structures and all obstructions that may effect the reclaiming operation, and the Contractor must also guarantee repair or replacement of any and all damaged structures when encountered. The Contractor must also prevent reclaimed material, silt, or runoff from plugging the drainage system.

The Contractor shall contact the respective utility companies and must be careful not to disturb or break existing manholes, catch basins, valve boxes and other castings, which may be located in the surface of the road. Utilities that have been properly marked then disturbed or broken by the Contractor will be repaired by the Contractor.

### **Processing**

If additional materials are required to improve the gradation, they shall be placed over the entire area and uniformly blended with the pulverized base prior to grading and compacting. The operation shall overlap the adjacent pass for a distance of not less than six (6) inches. The work shall cover the entire surface of the pavement as shown on the plans with uniform overlapping of each preceding

track or pass. The reclaiming operation shall be conducted so as not to permit the contamination of the asphalt/aggregate material with any shoulder debris, grass, leaves or dirt.

### **Weather Limitations**

Work on the base course shall not be permitted when temperatures are less than 35 degrees F nor when the sub grade is frozen or excessively wet. The Contractor at his cost shall repair any damage resulting to the reclaimed asphalt/aggregate base course for any reason, which is attributed to his negligence, as determined by the Engineer.

### **Thickness**

The Contractor shall demonstrate to the Engineer that the thickness of the compacted base course, as determined at intervals no more than 1,500 square yards, meets the dimensions as specified. When the thickness variations are greater than two inches (2") or less than one inch (1"), the Contractor shall make the necessary corrections to the quality of the material by additional blending and/or additional stone and blending as required to meet the specifications.

### **Grading & Compacting**

The material shall be uniformly graded and compacted to the lines and grades specified on the plans or as established by the Engineer. Areas of special cross slope shall be compacted by beginning at the lowest edge and proceeding towards the higher edge. The contractor will be required to have dust control equipment available on-site until such time that the reclaimed base has been properly compacted and paved.

### **Contamination**

Should the sub base/sub grade material become churned up or mixed with the reclaimed base course material at any time, the Contractor shall, without additional compensation, remove the contaminated mixture. The Contractor shall add new base material, if required, and reshape and re compact the base in accordance with these specifications. Base course material shall be added, compacted and bound as herein before specified, to match the surrounding surface.

### **Handling Reclaimed Material**

The Contractor shall be responsible for any work to temporarily move/windrow and/or excavate the reclaimed material. The work to move the reclaimed material

for purposes of establishing profile and cross-slope grades and exposing the underlying sub base or sub grade shall be included and paid for under bid item #010460. Item #010460 also includes moving the reclaimed material back into place and grading it to proposed line and grade after the sub grade has been excavated as required. The work associated with excavating, removing, and disposing of any sub base or sub grade materials that are unsuitable, as determined by the engineer, or as required by the plans shall be included and paid for under bid item #011130 – Unsuitable Earth Excavation & Backfill. The work to excavate, remove, and dispose of any reclaimed material which is in excess to that which is required for the satisfactory completion of the work, shall be included under this item.

## **FINISHING**

### **Tolerances**

The final surface of the reclaimed asphalt/aggregate base course shall be fine graded so that, after final compaction and just prior to placement of the HMA courses, the surface elevation shall not vary more than one-half (1/2) inch above or below the design line and grade at any location. If after approval, the base course becomes displaced or disturbed in any way for any reason, the Contractor shall repair the damage then re grade the base. All repaired sections shall be re compacted until they meet the requirements of this specification.

### **Compaction**

The reclaimed asphalt/aggregate base material will be thoroughly compacted with a roller(s) to produce a minimum of ninety-five (95) percent compaction and uniform base density when compared to the Proctor Test, (ASTM D-1557, C.), of the reclaimed base materials. The in-place field density shall be determined in accordance with ASTM D1556, D2167, or ASTM D2922. If the specified density is not attained, the entire area shall be reworked and/or re compacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Water may need to be applied to ensure optimum moisture content during compaction and to aid in achieving maximum compaction.

### **Excess Material**

If excess material exists after formation to the specified grades and cross-slope, the Contractor shall legally dispose of the excess material in a manner acceptable the Department of Environmental Protection (DEP), Department of Transportation (DOT), Town and other regulatory departments.

## **UNSUITABLE MATERIAL**

### **Dust Control**

This section requires controlling dust generated as a result of work under this item. The contractor is responsible for controlling dust at all times, including nonworking hours, weekends, nights, and holidays. Dust control procedures shall be conducted when particulate matter concentrations exceed the National Air Quality Standard of 150  $\mu\text{g}/\text{m}^3$  on a 24 hour average basis or as designated by the Engineer. Dust suppression wetting agents shall be water soluble, nontoxic, non reactive, nonvolatile, and non foaming. Wet suppression may consist of applications of water or a wetting agent in solution with water. Wet suppression equipment shall consist of sprinkler pipelines, tanks, tank trucks, or other devices capable of providing regulated flow, uniform spray, and positive shut-off. Calcium chloride shall be used to control dust instead of wet suppression when freezing condition exist. Calcium chloride shall be uniformly applied by a mechanical spreader at 1.5 lbs per square yard or as directed by the Engineer.

Dust control operations do not relieve the contractor of compaction requirements.

### **Cobbles**

Any exposed cobbles greater than three and one half (3-1/2") inches in diameter within the reconstituted area shall be "culled-out" and wasted. Payment for this work shall be incidental to this bid item and it will be the responsibility of the Contractor to dispose of the cobbles properly.

### **Silty Sands and Clays**

Existing unsuitable material shall be removed to the lines and grades established by the Engineer and replaced with salvaged reclaimed asphalt/aggregate conforming to TABLE 1, or a material approved by the Engineer.

## **INFORMATION FOR BIDDERS**

Test holes and/or soil samples may have been performed on the material to be reclaimed under this item. If test information is available, it shall be provided in the "Information to Bidders" section of the contract documents.

## **METHOD OF MEASUREMENT**

Full Depth Pavement Reclamation shall be measured by the actual number of square

yards completed to the limits specified on the plans or as directed by the Engineer. The lowering and the plating of gates and structures will be considered incidental to the work and no additional compensation will be allowed. If the Contractor chooses to lower and plate the gates and structures, then he will be responsible to restore them to the elevations shown on the plans prior to paving.

Supplemental Aggregate shall be measured by the number of tons of Supplemental Aggregate used. Recorded truck scale weights will be used to determine the basis for the tonnage. Certified weight tickets shall be provided to the Engineer for each delivery.

**BASIS OF PAYMENT**

(DEPTH) FULL DEPTH PAVEMENT RECLAMATION as measured above will be paid for at the contract unit price bid per square yard. This price shall include all compensation for crushing, pulverizing, blending, spreading, grading, removing excess reclaimed material, compacting, and dust control. The unit price shall also include full compensation for all labor, tools, equipment, materials, disposal of excess base and unsuitable materials, and all incidental work necessary to complete the work as specified.

Payment shall be made at the contract unit price per ton for SUPPLEMENTAL AGGREGATE used.

<b><u>BID ITEM NO.</u></b>	<b><u>DESCRIPTION</u></b>	<b><u>UNIT</u></b>
0104501	6" Full Depth Pavement Reclamation	S.Y.
0104502	7" Full Depth Pavement Reclamation	S.Y.
0104503	8" Full Depth Pavement Reclamation	S.Y.
0104504	9" Full Depth Pavement Reclamation	S.Y.
0104505	10" Full Depth Pavement Reclamation	S.Y.
0104506	11" Full Depth Pavement Reclamation	S.Y.
0104507	12" Full Depth Pavement Reclamation	S.Y.
0104508	13" Full Depth Pavement Reclamation	S.Y.
0104509	14" Full Depth Pavement Reclamation	S.Y.
0104510	15" Full Depth Pavement Reclamation	S.Y.
0104511	Supplemental Aggregate	Ton