SECTION 32 01 16.72 – ASPHALT PAVEMENT RECYCLING

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. This Section pertains to the recycling of the existing site pavement base and wearing surface materials, mixing of cement with these materials, adding moisture to this mixture and compacting these materials to form a pavement base in accordance with these specifications.

B. The work performed hereunder shall include the furnishing of all labor, materials, equipment and incidentals necessary to thoroughly mill, grind and mix the existing flexible base material and asphalt wearing surface to a uniform gradation. Additional flexible base material of the type specified may be required to obtain the desired thickness.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Drawings and general provisions of the Contract, including A-procurement and Contracting Requirements, Division 00 and Division 01 apply to this section.

B. Section 31 32 13.19 Lime Stabilization

C. Section 31 32 13.26 Lime Fly Ash or Fly-Ash Stabilization

D. Section 31 32 13.16 Cement Stabilization

E. Section 31 25 13 Erosion and Sedimentation Control

F. Section 32 12 16 Asphalt Concrete Paving

G. Section 32 13 13 Concrete Paving

1.3 PERMITS

A. Prior to commencement of work, the Contractor shall be responsible for obtaining, at his own expense, all construction permits necessary to complete the project according to the plans and specifications.

1.4 APPLICABLE PUBLICATIONS

A. The following specifications of the latest issue listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent required by the references thereto.

1. Texas Department of Transportation (TxDOT), 2004 Standard Specifications for Construction of Highways, Streets and Bridges (TxDOT).

    a. Item 247 Flexible Base

2. American Society for Testing and Materials (ASTM).

    a. D 698-07el Standard Test Methods for Laboratory Company Characteristics of Soil Using Standard Efforts (12,400 ft-lbf/ft3 (600kN-m/m2).

b. D 1556-07 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

1.5 DEFINITIONS

A. Subgrade: The uppermost surface of an excavation, including excavation for trenches, or the top surface of a fill or backfill immediately below base course, pavement, or topsoil materials.

B. Backfill: Soil material or controlled low-strength material used to fill an excavation.

C. Base Course: The layer placed between the subgrade and surface pavement in a paving system.

D. Geotechnical Engineer: Person or company contracted by the owner and/or through the architect to provide testing and onsite Geotechnical services during the construction schedule.

1.6 QUALITY ASSURANCE

A. Testing of materials and installed work

1. Materials and installed work require testing to show that the specifications for the materials and work have been met. The Owner may, at his expense, take random tests on materials and installed work. The Contractor shall allow free access to material stockpiles and facilities at all times. In fill areas each lift must be tested and approved before proceeding on the next lift. Contractor shall give 24 hour notice when testing is required. Tests, not specifically indicated to be done at Owner's expense including the retesting of rejected materials and installed work, shall be done at the Contractor's expense.

2. The Contractor shall provide testing to verify that the specified density for the stabilized base material. The Contractor must also submit tests agreed to by the Contractor, Owner, Engineer and Contractor’s testing lab, verifying that the specified amount of cement (minimum 6% by weight) has been added to the base material, and that a 7-day unconfined compressive strength of 300 psi has been achieved.

1.7 PROJECT/SITE CONDITIONS

A. Protection of existing utilities and adjacent work

1. Prior to earthwork operations, existing utilities, facilities and permanent objects to remain shall be located and adequately protected. When working near public and private utility company lines Contractor shall contact the local utility coordinating committee or the utility company involved to locate their lines.

2. If unknown and uncharted utilities are encountered during excavation, promptly notify Owner and the governing utility company when determinable and wait for instructions.

3. If it is ascertained by Owner that such utility line has been abandoned, properly cap line at a depth approved by Owner or remove line as directed.

4. If such unknown utilities are encountered and work is continued without contacting the Owner for instructions, and damage is caused to said utilities, Contractor shall repair, at his own expense, such damage to the satisfaction of the Owner and the Utility Company.

B. Upon completion of the grinding, milling and mixing operation, the material shall be stabilized by the incorporation of Portland Cement at a minimum of 6% by weight to achieve a 7-day unconfined compressive strength of 300 psi.

PART 2 - MATERIALS

2.1 WATER

A. Water used for mixing or curing shall be reasonably clean and free of oil, salt, acid, alkali, sugar, vegetable matter or other substances injurious to the finished product.

B. Water sources other than the local municipal domestic water supply must be approved by the Owner.

1. If onsite reclaimed water sources are used, tanks and apprentices must be clearly marked with the words “non-potable” water.

2.2 CRUSHED LIMESTONE

A. Additional Crushed Limestone required per section 3.3.B below shall conform to the following requirements:

1. Table 1 in TxDOT Item 247.2.A Aggregate for Grade 2 when constructing roadways and Grade 3 when constructing parking lots.

2. Test results: Maximum Liquid Limit = 40; Maximum Plasticity Index = 12

3. Materials must be Crushed stone produced and graded from oversize quarried aggregate that originates from a single, naturally occurring source. Do not use gravel or multiple sources.

PART 3 - EXECUTION

3.1 GENERAL

A. The equipment to be provided for the recycling and stabilization of the material specified herein shall include but not be limited to the following:

B. Recycling Unit: The recycling unit shall be a self propelled unit consisting of a variable speed rotor equipped with a minimum of 100 removable cutting teeth. The rotor shall have a minimum cutting width of 72 inches and a minimum cutting depth of 9 inches.

C. Compaction Equipment: The compaction equipment used to compact the stabilized material shall consist of approved rollers including pneumatic, steel wheel, and vibratory sheepsfoot of sufficient compactive effort to attain the required density requirements.

D. Water Placement Equipment: The equipment used to add water to the mixed material shall include spray bars or other distribution devices which will insure even distribution of water

across the surface of the mixture. The equipment shall have adequate capacity to distribute the water during one application.

3.2 EROSION PROTECTION

A. There shall be at all times adequate protection to newly graded areas to prevent soil erosion as provided in Section 31 25 13, Erosion and Sedimentation Control.

B. Soil erosion that occurs prior to acceptance of the work shall be repaired at no expense to the Owner.

3.3 CONSTRUCTION METHOD

A. Prior to the start of the milling/mixing operations the pavement surface shall be cleaned of any loose materials and any and all vegetation. This shall be accomplished by blading and sweeping.

B. All asphalt and base material where specified shall be removed and relocated to a stockpile area. Additional base material consisting of crushed limestone per section 2.2 above as required shall be added to the stockpiled mix. The limestone material shall be thoroughly mixed with the stockpiled material to a uniform gradation throughout the mixture.

C. The completely mixed composite base material shall then be relocated to its original location after the subgrade has been lime stabilized per Section 31 32 13.19 “Lime Stabilization.” Water shall be added during this operation until the optimum moisture content has been reached. The water shall be introduced into the mixture and shall be uniformly mixed throughout the material.

D. The base material shall be compacted as described in TxDOT ITEM 247 Flexible Base per article 247.4.C Compaction using Density Controls.

E. Degree of finish:

1. The surface of the completed pavement will be checked longitudinally and transversely for smoothness with a 10 foot straightedge.

2. The surface shall not vary more than 1/4" in 16 feet. Correct by loosening, adding or removing material, reshaping and recompacting in accordance with part C above.

F. Base course shall be allowed to cure until the moisture content is at least 2 percentage points below optimum before applying the next successive course or prime coat.

G. Contractor shall take special care in working in the area of underground electrical conduit for parking lot lights.

3.4 TESTING AND INSPECTION

A. Contractor shall notify Owner's testing laboratory 24 hours in advance of beginning any earth work operations and coordinate testing schedules to meet these specifications.

B. All imported fill material shall be approved prior to importing.

C. Contractor shall provide certifications from the Owner approved testing laboratory that the specified quantity of cement has been provided.

D. Payment of any and all pay requests will not be made until specified tests are submitted to the Owner.

3.5 DUST ABATEMENT

A. The Contractor shall comply with applicable Federal, State, and local laws and regulations concerning the prevention and control of dust pollution.

B. During the performance of the work required by these specifications or any operations appurtenant thereto, whether on right-of-way provided by the Owner or elsewhere, the Contractor shall furnish all the labor, equipment, materials, and means required, and shall carry out proper and efficient measures wherever and as often as necessary to reduce the dust nuisance, and to prevent dust which has originated from his operations from damaging crops, orchards, cultivated fields, and dwellings, or causing a nuisance to persons. The Contractor will be held liable for any damage resulting from dust originating from his operations under these specifications.

C. Dust Control shall be accomplished by one of the following methods:

1. Whenever ordered by the Owner, the Contractor shall furnish and distribute over the traveled road surfaces, which have not yet been fully restored, an application of Calcium Chloride. The material used shall be Regular Flake Calcium Chloride having a minimum chemical content of Calcium Chloride of 77%. Unless otherwise specified or ordered by the Owner, rate of application shall be three (3) pounds per square yard of surface covered.

2. Whenever ordered by the Owner, the Contractor shall apply on traveled road surfaces "Bituminous Surface Treatment" in accordance with the current Texas Standard Specifications for Construction of Highways, Streets and Bridges.

D. The cost of sprinkling or of other methods of reducing formation of dust shall be included in the prices bid in the schedule for other items of work.

END OF SECTION