Special Specification 8031
Cement Stabilized Base (Plant-Mixed) (Materials Only)

1. DESCRIPTION

Provide a uniformly mixed base material composed of flexible base, hydraulic cement, and water, mixed in an approved plant.

2. MATERIALS

Furnish uncontaminated materials of uniform quality that meet the requirements of the plans and specifications. Notify the Engineer of proposed sources of materials and of changes in material sources. When a source change occurs, provide the Engineer a new laboratory mixture design. The Engineer may sample and test materials at any time. Use Tex-100-E for material definitions.

2.1. **Cement**. Furnish hydraulic cement that meets the requirements of DMS-4600, "Hydraulic Cement," and the Department's *Hydraulic Cement Quality Monitoring Program* (HCQMP). Sources not on the HCQMP will require testing and approval before use.

2.2. **Flexible Base**. Furnish base material that meets the requirements of Item 247, "Flexible Base," for the type and grade shown on the plans, before the addition of cement.

2.3. **Water**. Furnish water that is free of industrial waste and other objectionable material.

2.4. **Mix Design**. Using the materials proposed for the project, the Engineer will determine the target cement content and optimum moisture content necessary to produce a stabilized mixture meeting the strength requirements shown in Table 1 for the class specified on the plans. The mix will be designed in accordance with Tex-120-E. The Contractor may propose a mix design developed in accordance with Tex-120-E. The Engineer will use Tex-120-E to verify the Contractor's proposed mix design before acceptance. The Engineer may use project materials sampled from the plant or the quarry, and sampled by the Engineer or the Contractor, as determined by the Engineer. Limit the amount of asphalt concrete pavement to no more than 50% of the mix unless otherwise shown on the plans or directed.

Table 1
Strength Requirements

Class	7-Day Unconfined Compressive Strength, Min psi
L	500
M	300
N	As shown on the plans

3. EQUIPMENT

Provide machinery, tools, and equipment necessary for proper execution of the work.

3.1. **Cement Storage Facility**. Store cement in closed, weatherproof containers.

3.2. **Mixing Plant**. Provide a stationary pugmill, weigh-batch, or continuous mixing plant as approved. Equip plants with automatic proportioning and metering devices that produce a uniform mixture of base material, cement, and water in the specified proportions.

3.3. **Trailer**. Provide equipment capable of spreading the cement-treated mixture in a uniform row pass.

4. PRODUCTION

Produce and haul the specified mixture in accordance with the requirements of this Item.

Start material delivery operations only when the air temperature is at least 35°F and rising or is at least 40°F. The temperature will be taken in the shade and away from artificial heat. Suspend operations when the Engineer determines that weather conditions are unsuitable.

4.1. **Mixing**. Thoroughly mix materials in the proportions designated on the mix design, in a mixing plant that meets the requirements of Section 276.3.2., "Mixing Plant." Mix at optimum moisture content, unless otherwise directed, until a homogeneous mixture is obtained. Do not add water to the mixture after mixing is completed unless directed. The Engineer may sample the mixture to verify strength in accordance with Tex-120-E and adjust cement content to achieve the target strength for work going forward.

4.2. **Production Operations**. Produce a new trial batch when the plant or plant location is changed. Take corrective action and receive approval to proceed after any production suspension for non-compliance to the specification.

4.3. **Hauling Operations**. Before use, clean all truck beds to ensure that the mixture will not become contaminated. When a release agent is necessary, use a release agent on the Department's MPL to coat the truck bed.

4.4. **Individual Loads of Cement-Stabilized Base**. The Engineer retains the right to reject individual truckloads of asphalt-stabilized base when it is evident that the material quality is unacceptable. When a load is rejected, the Contractor may request that the rejected load be tested. Make this request within 4 hours. of rejection. If Department test results are within the operational tolerances listed in Section 4.5, "Operational Tolerances," payment will be made for the load. If the Department test results are not within operational tolerances, no payment will be made for the load.

4.5. **Operational Tolerances**. The gradation of the aggregate must be within the master grading limits for the specified grade except that a tolerance of 2% is allowed on the sieve size for each mixture grade that shows 100% passing in Table 4. Ensure that the cement content does not vary by more than 0.5% from the design target.

5. MEASUREMENT

Cement-treated base will be measured by the ton or cubic yard as a composite mixture of cement, flexible base, and recycled materials.

5.1. Cement Stabilized Base will be Measured as follows:

5.2. **Cubic Yard in Vehicles**. Cement-treated base will be measured by the cubic yard in of uniform capacity at the point of delivery.

5.3. **Cubic Yard in Drop Off.** By the cubic yard in the final drop off position by the method of average end areas. The Department will stockpile materials for measurement.

5.4. **Ton**. Cement-treated base will be measured by the ton (dry weight) in vehicles as delivered on the road. The dry weight is determined by deducting the weight of the moisture in the material at the time of weighing from the gross weight of the material. The Engineer will determine the moisture content in the material in accordance with Tex-103-E from samples taken at the time of weighing.

When material is measured in trucks, the weight of the material will be determined on certified scales, or the Contractor must provide a set of standard platform truck scales at an approved location. Scales must conform to the requirements of Item 520, "Weighing and Measuring Equipment."

When material is measured by the ton, provide a conversion rate to cubic yards on each haul ticket.

6. PAYMENT

The materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for the types below.

Cement Stabilized Base (Pickup). Payment will be made for at the unit price bid for “Cement Treatment (Plant-Mix)” of the class (strength), flexible base type, and grade specified. For cubic yard measurement, “In Vehicle” will be specified. This price is full compensation for furnishing materials, assistance provided in sampling, loading provided vehicles, furnishing scales and labor for weighing and measuring, and equipment, labor, tools, and incidentals

Cement Stabilized Base (Delivery). Payment will be made for at the unit price bid for “Cement Treatment (Plant-Mix)” of the class (strength), flexible base type, and grade specified. For cubic yard measurement, “In Vehicle” or “Drop off” will be specified. This price is full compensation for furnishing materials, stockpiling, loading, hauling, delivery of materials to the stockpile, furnishing scales and labor for weighing and measuring, and equipment, labor, tools, and incidentals.