

**SPECIAL SPECIFICATION****3080****Rubblizing Existing Concrete Pavement**

1. **Description.** Rubblize and compact existing concrete pavement.
2. **Materials.**
  - A. **Aggregate.** Furnish aggregate of the type and grade shown on the plans and conforming to the requirements of Item 247, "Flexible Base."
  - B. **Hot-Mix Asphalt.** Furnish dense-graded hot-mix asphalt of the type shown on the plans and conforming to the requirements of Item 340, "Dense-Graded Hot-Mix Asphalt (Method)."
3. **Equipment.** Provide either a Type I or Type II rubblizer, unless otherwise shown on the plans, and necessary rollers for compacting the rubblized pavement.
  - A. **Type I Rubblizer.** A self-contained, self-propelled, resonant frequency breaker, capable of producing low-amplitude, 2,000 lb blows, at a rate not less than 44 Hz.
  - B. **Type II Rubblizer.** A self-contained, self-propelled, multiple-head breaker, with each hammer independently adjustable, and capable of rubblizing a width of up to 13 feet in one pass.
  - C. **Roller-Vibratory.** Drum (Type C), with a static weight  $\geq$  10 tons, meeting the requirements of Item 210.
  - D. **Roller-Medium Pneumatic.** Conforming to the requirements of Item 210, "ROLLING."
  - E. **Roller-Z Grid Vibratory.** When rubblizing with Type II equipment, provide a steel wheel, self-propelled vibratory roller, with a minimum weight of 10 tons, and a Z-pattern cladding bolted transversely to the surface of the drum.
4. **Construction.**
  - A. **Preparatory Work.** Prior to initiating rubblization, the following work must be complete:
    - Construct pavement drainage systems at least two weeks prior to rubblization.
    - Any existing material overlaying the concrete pavement must be removed.
    - Adjustments or additions to the pavement adjacent to the existing concrete must be brought to the elevation of the concrete pavement to be rubblized.
    - Before rubblizing a section, cut full-depth saw cut joints at any locations shown on plans, to protect facilities that will remain in place.
  - B. **Rubblization and Compaction.** Operate equipment in a manner that will not damage the base, underground utilities, drainage structures, and other facilities on

the project; in the event that damage to such features occurs, the Contractor shall be fully responsible for their repair.

Use a Type I or Type II rubblizer to completely de-bond any reinforcing steel and rubblize the existing concrete pavement. Other types of rubblizing equipment will only be used if shown on the plans or approved in writing. Above the reinforcing steel or upper one-half of the pavement (if un-reinforced), the equipment shall produce at least 75% of broken pieces less than 4 in. in size. At the surface of the rubblized layer, all pieces shall be less than 6 in. Below the reinforcing steel or in the lower half of the pavement, the maximum particle size shall be 12 in. Any large concrete pieces that do not meet the size requirements previously specified shall be removed and the area treated as follows:

- if the affected area is less than 10 ft<sup>2</sup>, the area may be patched with base.
- Areas greater than 10 ft<sup>2</sup> that do not meet the specified particle size shall be repaired with hot-mix asphalt, unless otherwise approved by the Engineer.

Reinforcing steel exposed and projecting from the surface after rubblization or compaction shall be cut off below the surface and removed.

1. **Type I Rubblization.** Begin at a free edge or previously broken edge and work transversely towards the other edge. In the event the rubblizer causes excessive deformation of the pavement, the Engineer may require high flotation tires with tire pressures less than 60 psi. Any displaced areas shall be considered non-conforming and treated as described above.

Compact by seating rubblized pavement with the following rolling pattern:

- 1 pass from a vibratory roller,
- followed by at least 1 pass with the pneumatic roller,
- followed by at least 2 more passes with the vibratory roller

The rolling pattern may be changed as directed.

2. **Type II Rubblization.** Unless otherwise directed, rubblize the entire lane width in 1 pass. Provide a screen to protect vehicles from flying particles as directed. Compact by seating the pavement with the following rolling pattern:
  - a minimum of 4 passes with the Z-grid vibratory roller,
  - followed by 4 passes with a vibratory roller,
  - then at least 2 passes from a pneumatic roller

The rolling pattern may be changed as directed.

- C. **Verification of Rubblization Process.** Before full production begins, the Engineer will select approximately 200 ft. of one lane width to verify the rubblization operation. The contractor shall rubblize the test section, using the section to adjust equipment. From within this test section, the Engineer and Contractor shall agree upon a test pit location. At the test pit, excavate a 4 ft. square test pit. The Engineer shall test the material to verify that the specified

particle size distribution has been achieved through the entire depth of pavement. Additional test pits may be required during the project to confirm ongoing compliance with the particle size specification. Test pit areas shall be patched as directed either with aggregate or hot-mix asphalt.

If the rubblized material from the test pit does not meet specifications, another test strip shall be conducted and tested. Should this pit also fail, rubblization operations shall be suspended until the Contractor demonstrates to the satisfaction of the Engineer that specifications can be met, at which time the Engineer shall allow the Contractor to conduct another test strip.

- D. Traffic.** Opening to Traffic shall not be allowed on the rubblized pavement, except at Engineer-approved access points. Minimize the rubblized pavement construction equipment travel.
  - E. Placement of Surfacing.** The Contractor shall coordinate construction activities so that the first overlay course is placed within 48 hours after completion of rubblization. If rain occurs after rubblization but before paving, paving shall not take place until the rubblized layer is dry and stable to the satisfaction of the Engineer.
- 5. Measurement.** This Item will be measured by the square yard of original concrete pavement. The limits of measurement will be as shown on plans.
- 6. Payment.** The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Rubblizing Existing Concrete Pavement.” This price is full compensation for rubblizing and compacting existing concrete pavement, saw-cutting required locations, cutting and removing exposed reinforcing steel, repairing unstable or non-conforming locations, conducting required test pits, and equipment, labor, tools, and incidentals.