Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois / 62764

January 24, 2017

CIRCULAR LETTER 2017-02

SPECIAL PROVISION FOR PULVERIZATION

COUNTY ENGINEERS / SUPERINTENDENTS OF HIGHWAYS
MUNICIPAL ENGINEERS / DIRECTORS OF PUBLIC WORKS / MAYORS
METROPOLITAN PLANNING ORGANIZATIONS – DIRECTORS
TOWNSHIP HIGHWAY COMMISSIONERS
CONSULTING ENGINEERS

The Bureau of Local Roads and Streets has developed the attached special provision for pulverization of existing bituminous layers and aggregate base layers on low volume roadways to be used as an aggregate base course. This special provision is the result of research and experimentation with the pulverization process through the FHWA's Experimental Features Program.

The special provision will be identified as LR 400-8 "Special Provision for Pulverization" and may be found on the IDOT website under the Local Roads Special Provisions and Special Details section.

The use of this special provision should be limited to low volume streets and roadways with an average daily traffic less than or equal to 400.

Questions regarding this circular letter may be directed to the Local Policy and Technology Unit at (217) 785-5048 or DOT.LocalPolicy@illinois.gov.

Sincerely,

Maureen E. Kastl, P.E.
Engineer of Local Roads and Streets

TW/
Attachment

cc: Mike Staggs, FHWA – Illinois Division
Joel Moore, Illinois Association of County Engineers
Joe Schatteman, Illinois Municipal League
Bryan Smith, Township Officials of Illinois
Christine Filbert, Township Highway Commissioners of Illinois

State of Illinois
Department of Transportation
Bureau of Local Roads and Streets

SPECIAL PROVISION for PULVERIZATION

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All references to Divisions, Sections or Articles in this Special Provision shall be construed to mean specific Divisions, Sections or Articles of the Standard Specifications for Road and Bridge Construction, adopted by the Department of Transportation.

Description. The pulverization process shall be limited to low volume streets and roadways with an average daily traffic less than or equal to 400. This work shall consist of pulverizing the bituminous layers and/or portions of the aggregate base material to a specified depth and maximum size. Additional aggregate or reclaimed asphalt pavement shall be blended in as required. The pulverized pavement will be graded and compacted and used as an Aggregate Base Course.

Materials. Materials shall be according to the following Articles of Division 1000 – Materials

Item	Article/Section
(a) Water	1002
(b) Coarse Aggregates	1004
(c) Reclaimed Asphalt Pavement (Note 1)	1031

Note 1. Reclaimed asphalt pavement (RAP) from Conglomerate ”D” Quality or better RAP stockpiles as specified in Article 1031.02 or from milling of the existing roadway may be used as shown on the plans. The RAP material shall not exceed the maximum size requirement of the cold pulverized material.

Equipment. Equipment shall be according to the following Articles of Division 1100 – Equipment

Item	Article/Section
(a) Self-Propelled Pneumatic-Tired Rollers (Note 1)	1101.01(c)
(b) Vibratory Roller (Note 2)	1101.01(g)
(c) Motor Grader	1101.05
(d) Aggregate Spreaders	1102.04
(e) Self-Propelled Vibratory Padfoot Roller (Note 3)	
(f) Self-Propelled Reclaimer (Note 4)	

Note 1. The self-propelled pneumatic-tired roller shall have a gross weight of not less than 25 tons (23 metric tons).

Note 2. The double drum vibratory steel roller shall have a gross weight of not less than 10 tons (9 metric tons).

Note 3. The self-propelled vibratory pad foot roller shall have 84 in. (2133 mm) wide drums and gross weight of not less than 10 tons (9 metric tons). A front mounted blade is recommended for back-dragging.

Note 4. The self-propelled reclaimer shall be capable of fully pulverizing the existing pavement to the depth required, incorporating water, and mixing the materials to produce a homogeneous material. The minimum power of the self-propelled reclaimer shall be 500 hp (373 kW). The self-propelled reclaimer shall be capable of reclaiming not less than 8 ft (2.4 m) wide and up to 12 in. (305 mm) deep in each pass. The self-propelled reclaimer shall have a system for adding water with a full-width spray bar consisting of a positive displacement pump interlocked to the self-propelled reclaimer's ground speed so the amount of water being added is automatically adjusted with changes to the self-propelled reclaimer's ground speed. Individual valves on the spray bar shall be capable of being turned off as necessary to minimize water overlap on subsequent passes.

Pulverization, Shaping, and Compacting.

The existing bituminous layers and aggregate base material shall be pulverized, to the depth required, by the self-propelled reclaimer and shaped by the motor grader to the proposed crown according to the plans. If additional aggregate is required to meet the proposed grade line, this material shall be added prior to pulverization and thoroughly blended during the pulverization process. All of the pulverized material shall pass the 1-1/2 in. sieve. The pulverized and shaped material shall be compacted to the satisfaction of the Engineer. The moisture content shall be sufficient to prevent segregation of the pulverized materials. Water should be added as required by the Engineer to obtain compaction satisfactory to the Engineer.

Quality Control / Quality Assurance (QC/QA).

1) Quality Control by the Contractor. The Contractor shall perform or have performed the inspection and tests required to assure conformance of the contract requirements. Control includes the recognition of obvious defects and their immediate correction. This may require increased testing, communication of test results to the job site, modification of operations, suspension of the work, or other actions appropriate.

   The Engineer shall be immediately notified of any failing tests and subsequent remedial action. Passing tests shall be reported to the Engineer no later than the start of the next work day.

2) Quality Assurance by the Engineer. The Engineer will conduct independent assurance tests on split samples taken by the Contractor for quality control testing. In addition, the Engineer will witness the sampling and splitting of these samples and will immediately retain witnessed split samples for quality assurance testing.

3) Test Methods

a) Depth of Pulverization. The nominal depth measured at the centerline shall be required.

b) Maximum Particle Size. Sampling shall be done at three randomly located test holes across the width of the pulverized material per test site. Sampling / testing should be done immediately behind the self-propelled reclaimer machine. Caution should be used to avoid obtaining subgrade material with the pulverized material from the test holes. All of the pulverized material shall pass through a 1-1/2 in. sieve.

c) Compaction and Stability. A proof rolling test is to be conducted using a standard proof rolling vehicle to assess the quality of the road. The test vehicle for proof rolling shall consist of a tandem axle truck loaded to a minimum gross weight of 40,000 lb (18,100 kg). Proof rolling shall consist of 10 passes in each lane of the completed pulverized base course. Failure of the proof rolling test will be indicated by ruts in excess of one half inch (1/2 in). Any failures in the base that occur during the proof rolling shall be immediately repaired and shall be subjected to an additional five passes of the test vehicle after the initial 10 passes are completed. This process shall be repeated, if necessary, until all failed areas pass the proof rolling. A nuclear density test is permitted when the proof rolling test is not a viable option.

d) Frequency. The following list provides the minimum frequency for tests; however, the Engineer may increase the testing frequency if the construction process is experiencing problems or unknown conditions are encountered.

Depth of Pulverization	- QC 1 per 500 ft (150 m)
	- QA 1 per 1000 ft (300 m)
Maximum Particle Size	- QC 1 per 0.5 day production
	- QA 1 per 1.0 day production
Compaction and Stability	- QC 1 per 0.25 mile (0.4 km)
	- QA 1 per 1.0 mile (1.6 km)

Method of Measurement.

Pulverization will be measured in square yards (square meters) using the centerline length and width from outside to outside of completed pavement.

If additional Coarse Aggregate is required, it will be measured in tons (metric tons) according to the requirements of Article 311.08(b).

Basis of Payment.

The pulverization will be paid for at the contract unit price per square yard (square meter) for PULVERIZATION, of the thickness specified.

The coarse aggregate or reclaimed asphalt pavement will be paid for at the contract unit price per ton (metric ton) for AGGREGATE BASE REPAIR.