

**DELAWARE COUNTY
DELAWARE COUNTY ENGINEER'S OFFICE**

SUPPLEMENTAL SPECIFICATION 1209

BITUMINOUS COLD MIX

APRIL 6, 2011

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1209.01 Description. This work shall consist of constructing one or more courses of aggregate and bituminous material mixed in a central or traveling plant, spread and compacted on a prepared surface in accordance with these specifications and in reasonably close conformity with the line, grades, quantity per square meter (square yard) and typical sections specified or established by the Engineer.

The general plant mix specifications, 401, shall apply; deviations from these are as follows.

1209.02 Composition. Aggregate for the mixture shall be Nos. 57, 67 or 8 size as specified. Aggregate for choke shall be Nos. 8 or 9 size as specified.

For material mixed by travel plant, the quantity of bituminous material to be added to the aggregate is estimated and may be adjusted by the Engineer to produce a satisfactory mixture after samples of materials have been taken.

The estimated quantity of aggregate to be applied as choke on the surface of the compacted mixture may be adjusted by the Engineer to adequately fill the surface voids without excess.

Acceptance of the mixture will be based on observed uniformity of mixing and coating of the aggregate particles satisfactory to the Engineer.

1209.03 Materials. Bituminous material of the type and grade specified shall meet the applicable requirements of 702. When two or more grades of one type of bituminous material are specified, the grade to be used shall be determined by the Engineer.

Pavement samples may be taken as provided in 106.04.

Coating agents used at the option of the Contractor shall have the prior approval of the Director.

1209.04 Mixing Plants. Plants used in the preparation of the bituminous mixture may be either the stationary batch or continuous type or the traveling continuous type. Plants shall be approved by the Director prior to preparation of the mixtures.

Travel plants shall conform to the following requirements:

This unit shall be a self-powered and self-propelled plant consisting essentially of an aggregate hopper, bituminous storage tank, a twin pugmill continuous type mixer and a spreading and strike-off mechanism capable of spreading the mixture without the use of forms or side supports.

The self-propelled pugmill mixing unit shall be so designed that the aggregate will be uniformly coated with the bituminous material before it comes in contact with the pavement and the mixture will be spread directly on the pavement or base, finished to the proper crown and grade, ready for compaction.

The aggregate flow from the hopper to the mixing unit shall be regulated so that a uniform flow shall be maintained through an adjustable gate controlling the volume of aggregate delivered to the mixing unit at the rate specified.

The bituminous material shall be fed to the mixing unit by means of a positive displacement pump which may be operated at variable speeds to regulate the rate of flow so that the required application of bituminous material may be obtained. The heating system which will heat the bituminous material uniformly to the specified temperature at the point of entry to the mixing unit shall be an integral part of the assembly.

1209.05 Weather Limitations. Bituminous cold mix shall not be placed under any of the following conditions: (a) when the surface is wet, (b) when the air temperature is below 40° F, or (c) when weather conditions otherwise prevent proper handling, finishing, or curing of the mixture.

1209.06 Bituminous Material Preparation. Bituminous material shall be delivered to the mixer at a uniform temperature within the range specified in 702.00.

1209.07 Aggregate Preparation. Aggregate shall be delivered to the mixer at a temperature of not less than 40° F and in a surface dry condition, except as follows:

When asphalt emulsions are used in the mixture, aggregate surface moisture may be present and shall be maintained uniformly within such limits that an acceptable coating of bituminous material may be obtained.

The Contractor may elect to treat specified liquid grades of asphalt with a coating agent. When use of such an agent is approved by the Director, aggregate surface moisture may be present only to the extent that the treated bituminous material will form an acceptable coating during the mixing process.

1209.08 Mixing. Aggregate and bituminous material shall be proportioned and the mixing time shall be as directed to produce a mixture in which uniform distribution of the bituminous material and coating of the aggregate is obtained.

1209.09 Hauling. Trucks used for hauling the bituminous mixture shall conform to 401.11 except that covering the load will be required only in the event of rain.

1209.10 Bituminous Pavers. Bituminous pavers for placing central mixed material shall conform to 401.12. The spreading leveling and strike off equipment for the traveling plant shall conform to 1209.04.

1209.11 Rollers. Rollers shall conform to 401.13. A minimum of two rollers of the types listed shall be used except in small areas a single tandem roller may be used. The capacity of each roller shall be considered to be 30 tons of aggregate placed per hour for steel wheel rollers and 60 tons per hour for pneumatic tire rollers. For this work, pneumatic tire rollers shall have an average tire contact pressure of not less than 55 psi and the tire contact area requirement does not apply.

1209.12 Conditioning Existing Surface. The conditioning of existing surface shall be as specified in 401.14 except that painting or coating of contact surfaces shall not be required.

1209.13 Spreading and Finishing. The mixture shall be spread and finished in accordance with 401.15 except that the aggregate shall be placed at the weight per square meter (square yard) specified.

Immediately following the initial rolling, the choke aggregate shall be applied uniformly with adjustable, hopper equipped, revolving drum type spreaders at the specified rate or as directed by the Engineer.

Should a delay in choke application occur that would prevent adequate bonding, the Engineer may require a light application of the bituminous material used in the mix prior to the application of the choke aggregate.

1209.14 Compaction. Compaction of the mixture shall be in accordance with 401.16. Rolling may be delayed to avoid lateral displacement as directed by the Engineer. Final rolling shall be continued until the choke aggregate is thoroughly embedded and roller marks are eliminated.

1209.15 Joints. Joints shall be made as specified in 401.17.

1209.16 Spreading and Surface Tolerances. The spreading and surface tolerances shall be as specified in 401.19. The variation of the surface from the testing edge of the 10 foot straightedge shall not exceed 3/8 inch.

1209.17 Method of Measurement. Aggregate and bituminous material shall be measured in accordance with 109. Aggregate shall be measured by weight and converted to cubic yards in accordance with the following table.

Aggregate	Pounds Per Cubic Yard
Gravel	2600
Stone and heavy slag*	2400
Slag	2000

*Crushed slag with an average dry rodded weight on record at the Laboratory of 90 pounds per cubic foot or more.

When the mixture is prepared in a stationary plant, truck weight of the mixture shall be used to compute the aggregate weight by deducting the weight of bituminous material in the mixture.

1209.18 Basis of Payment. The accepted quantities of bituminous cold mix complete in place will be paid for at the contract price for:

Item	Description	Unit
1209	#67 Aggregate (___ lb/sy Cold Mix)	Ton
1209	MWS-150 Cold Mix Liquid (@__ Gal/Ton)	Gallon