## Section 408. — COLD RECYCLED ASPHALT BASE COURSE (ADDED SECTION)

04/02/21 - FP-14

WFL Specification 04/02/21 4080010

Include the following when both of the following conditions are met:

Work is done under this Section, and;

Recycled asphalt is obtained under Section 413

Note: Include SCR 702.02.

Description

408.01

This work consists of constructing one or more courses of cold recycled asphalt base using recycled asphalt pavement obtained under Section 413 combined with water, emulsified asphalt, and lime or cement.

Material

408.02

Conform to the following Subsections:

Emulsified asphalt 702.02(d)

Fog Seal 406

Hydraulic Cement 701.01

Lime 702.05(c)

Water 725.01(c)

Emulsified asphalt grade is an engineered emulsified asphalt specifically designed to meet the mixture parameters stated in this section.

Construction Requirements

408.03 Proportioning

Obtain representative samples of the existing asphalt pavement by milling locations designated by the CO. Reduce oversize particles to a maximum of 1½ inch (37.5 millimeters).

Submit a mix design for approval at least 30 days before production that meets the design parameters of Table 408-1.

Submit the following with the mix design as applicable:

**(a)** Optimum emulsified asphalt binder content based on total mass of mixture;

**(b)** Source and grade of emulsified asphalt binder;

**(c)** Optimum moisture content for dispersion and compaction based on total mass of mixture;

**(d)** Recommended lime or cement content (if required);

**(e)** Up to 300-pound (135-kilogram) sample of existing pavement, if requested;

**(f)** Three, 1-gallon (4-liter) samples of emulsified asphalt binder, if requested; and

**(g)** 15-pound (7-kilogram) sample of lime, if requested.

Begin production only after the mix design is approved. Furnish a new mix design if there is a change in a material source or the mix design is rejected.

Table 408-1

Cold Recycled Asphalt Base Course Mix Requirements

|  |  |
| --- | --- |
| Parameters | Value |
| Indirect Tensile Strength, AASHTO T 283 (1)  Tensile Strength Dry, min. psi (kPa)  Tensile Strength Ratio (TSR), min. % | 70 (480)  70 |
| Raveling Test, ASTM D 7196, 4 hour cure at 50°F (10°C), 50% Humidity  Average weight loss | 5% (max.) |

1. Follow Section 7, even for laboratory-mixed, laboratory-compacted specimens. Compact the mixture to the design air voids. In lieu of subsection 7.5, cure samples for no less than 16 hours and no more than 48 hours at 140°F (60°C) until constant weight is achieved. In lieu of the target saturation levels of 10.3.5, use target levels of 55 to 75 percent saturation. Do not use the conditioning cycles in Section 10.3.7 and 10.3.8. Instead, condition the sample in a water bath at 77°F (25°C) for 24 hours.

408.04 Surface Preparation.

For in place mixing, clear, grub, and dispose of all vegetation and debris within 12 inches (300 millimeters) of the pavement to be recycled. Perform the work according to Section 201. Prepare the surface according to Subsection 302.05(a) Method 1.

408.05 Weather Limitations.

Place the cold recycled asphalt base on a dry, unfrozen surface when the air temperature in the shade is above 50 ºF (10 ºC) and the pavement surface temperature is above 40 ºF (5 ºC).

Do not place cold recycled asphalt base when fog, showers, rain, frost, or temperatures below 35 ºF (1.7 ºC) are anticipated within 24 hours following the placement of the mix.

408.06 Mixing.

Use stationary mixing plants and other approved equipment for producing the completed base course mixture.

Maintain emulsified asphalt temperature within the approved range.

Reduce oversize particles to a maximum size of 1½ inch (37.5 millimeters). Combine and dry mix the aggregate for a period sufficient to provide a uniform gradation. Add additives, water, and emulsified asphalt in the sequence and quantity provided by the manufacturer and the submitted mix design. Mix the material until particles are uniformly coated, the mixture has a uniform color, and particles are evenly distributed coarse to fine.

For central plant mixing, use equipment capable of continuous mixing of the milled materials with emulsified asphalt, water, and any additional additives to produce a uniform and homogenous mixture. Provide a mixer with a belt scale for continuous weighing of the milled and sized material and equipped with an interlocked computer controlled liquid metering device capable of automatically adjusting the flow of asphalt emulsion to the weight of milled material coming into the mixer. Provide proportioning equipment capable of applying emulsified asphalt and water to within plus or minus 0.2 percent of the required amount by weight of milled material. Provide proportioning equipment with a digital meter for monitoring the flow rate and total amount of milled material, emulsified asphalt, and water applied.

408.07 Spreading, Compacting, and Finishing.

Transport material according to Subsection 401.11. Spread the mixture according to Subsection 310.05(d).

Use pneumatic-tire rollers until no displacement is observed. Use steel-wheel rollers, either in static or low-amplitude vibratory mode to achieve final density and eliminate pneumatic-tire roller marks. Do not park or idle rollers on uncompacted material. Compact the mixture using the following equipment, sequence, and number of roller passes:

**(a)** Six to twelve roller passes with a self-propelled pneumatic-tired roller having smooth pneumatic tires staggered in position to provide overlap between the front and rear tires, with a minimum mass of 2000 pounds (910 kilograms) per wheel and a contact pressure of 80 pounds per square inch (550 kilopascals); and,

**(b)** Four to eight roller passes with a double-drum, vibratory roller having a minimum mass of 5.5 tons (5 metric tons) and equipped with frequency and amplitude controls; and,

**(c)** Four to six roller passes with a static steel-wheel roller with a minimum pressure of 250 pounds per square inch (1730 kilopascals).

### 408.08 Curing and Maintenance.

Keep traffic and construction equipment off of the recycled asphalt base for initial curing for at least 2 hours after completing compaction and until it is sufficiently stable to withstand raveling, marring, and permanent deformation.

After initial curing, place a fog seal on the surface of the recycled asphalt base according to Section 406 at a rate of 0.05 to 0.10 gallons per square yard (0.25 to 0.50 liters per square meter).

Route hauling and other construction equipment uniformly over the full width of the recycled asphalt base to minimize non-uniform compaction.

Maintain the recycled asphalt base to the correct line, grade, and cross-section. Provide additional rolling with a steel wheel roller to recompact and maintain a dense surface. Use a power broom to remove loose particles. If the recycled asphalt base loses stability, density, or finish, reprocess and recompact as necessary according to Subsection 408.07.

408.09 Acceptance**.**

Cement and lime will be evaluated under Subsections 106.02 and 106.03.

Emulsified asphalt binder will be evaluated under Subsections 106.03.

Construction of the cold recycled asphalt base course will be evaluated under Subsections 106.02 and 106.04. Cold recycled asphalt base density will be evaluated under Subsections 106.02 and 106.04.

Pavement smoothness will be evaluated under Subsections 106.02 and 106.04.

Measurement

408.10

Measure the Section 408 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

When measurement is by the ton, do not deduct for the emulsified asphalt, water, and cement or lime contained in the mixture.

Measure the square yard width horizontally to include the top of base width including designed widening. Measure the square yard length horizontally along the centerline of the roadway.

Measure fog seal under Section 406.

Payment

408.11

The accepted quantities will be paid at the contract price per unit of measurement for the Section 408 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.