

FIBERGLASS REINFORCED CHIP SEAL SAM - STRESS ABSORBING MEMBRANE - FIBERMAT™ TYPE A

Scope:

This Special Provision covers the requirements for the application of a Stress Absorbing Membrane (Fibermat™ Type A). The goal of this layer is threefold; to provide a waterproof membrane that is embedded with fiberglass strands to delay, the effects of reflective cracking, and to be topped with a premium aggregate to provide a skid resistant wearing surface for traffic. The Stress Absorbing Membrane (Fibermat™ Type A) shall be applied on an existing hard surface. This membrane shall have the capability of absorbing stresses associated with asphalt cracking and designed to delay the effect of reflective cracking into the new asphalt overlay. The membrane layer shall consist of rapid-setting polymer-modified asphalt emulsion, discontinuous fiberglass strands and a single size aggregate. The membrane shall be applied in one continuous operation and be capable of allowing vehicle traffic to drive on the surface within one hour after application. The application operation shall be conducted in such a way that the material will be applied over the entire width of the roadway lane, to a maximum of 4.0 meters. The machine shall be able to apply different widths of material in one pass.

Job Mix Formula:

The materials shall adhere to OPSS 304, 1006 and 1103. The Job Mix formula, shall be submitted a minimum of 10 working days prior to application. The mix design shall be designed for the purpose of the application. The sources and suppliers of all materials must be included in the mix designs.

Samples of all materials shall be submitted to the Contract Administrator at the same time as the submission of the mix design.

Asphalt Binder:

The binder shall be rapid-setting polymer-modified emulsion CRS-2P, conforming to OPSS 1103. A Certificate of Conformance shall be included with the Job Mix Formula submission. As a guideline, the application rate of the emulsion shall range from 1.5 to 2.5 litres per square meter.

Aggregates:

The aggregate shall be Class 5 or equivalent, meeting the requirements of OPSS 1106. The maximum percentage of material passing the 0.075 mm sieve shall be 2.0%. The aggregate shall have a maximum nominal size of 6.75 mm. The gradation of the aggregate shall be determined by the application and the mix design. The application rate shall be 10 to 18 kg per square meter. The moisture content shall be minimal and not affect the performance of the product. Moisture content of the aggregate shall not be more than 5%.

Fiberglass fibers:

The fiberglass strands shall be discontinuous and have a minimum length of 50 mm and a maximum length of 100 mm. The guideline for the fiberglass content shall be between 60 and 120 grams/sq. meters. This content can vary depending on the mix design and the condition of the underlying pavement. All fibers shall be virgin fibers and be certified by a Professional Engineer to be acceptable for use in a SAM.

Equipment:

The application equipment shall be specifically designed and built to be capable of applying emulsion and the fiberglass fibers in a continuous and uniform manner onto the road surface at the specific rate of the mix design. The equipment shall be capable of applying the SAMI to a width of 4.0 meters. The equipment shall be constructed in a way that is capable of applying the emulsion in two separate operations and applying the fibers between each emulsion layer.

Prior to application, the Contractor shall supply evidence that the application machinery has been calibrated within the previous 7 calendar days. All application rates shall be controlled by electronic controllers.

Aggregate Spreader:

The aggregate spreader shall be self-propelled, designed and constructed to be capable of applying a continuous and uniform layer of aggregate at a specified rate. The aggregate shall be uniformly applied at the rate specified and suitable for the road.

Rollers:

Pneumatic-tired rollers shall be self propelled and meet all requirements of OPSS 304. All tires shall have a minimum inflation pressure of 350 kPa when cold. The contractor shall have a pressure gauge on site at all times.

Material Sampling:

The Contractor shall be prepared to supply, upon request of the Contract Administrator, on a daily basis and at any time, samples of any and all material, i.e. binder, aggregate and fiberglass to the Contract Administrator. All samples shall be obtained from the field operation. The samples shall be large enough to allow for confirmation of the material.

Quality Control:

The Contractor shall conduct quality control testing during the application process to ensure the application and all materials used in the work conform to the requirements of the contract and Mix Design. The Contractor will be responsible for any field adjustments necessary to ensure the materials, application process, work and/or finished product meet the requirements of the contract. Upon request, the Contractor shall supply the Contract Administrator copies of all test results. At the end of the application on any given street, the Contractor shall supply the Contract Administrator a letter stating that all materials and application meets the requirements of the contract and the Mix Design.

Vehicle Traffic:

The Contractor shall ensure that vehicle traffic will only be permitted to travel on the final or finished surface of the membrane. The Contractor shall be responsible for power sweeping of any loose material from the surface of the roadway of membrane surface.

Construction:

The application of the membrane shall only take place when the ambient temperature is higher than 15°C and during weather which aids the curing of the emulsion. The application of the membrane shall be carried out between May 15th and August 31st, of any given year, except with the written approval of the Contract Administrator. The operation shall not be conducted less than 1.5 hours prior to sunset. The existing asphalt pavement surface shall be clean and free of all debris and water. The application of the fibers shall be done between the two emulsion layers. Longitudinal joints shall be overlaid to ensure a continuous membrane.

Field tolerances to the mix design shall be a maximum of +/- 10% for the aggregate and +/- 5% for the binder and fiber.

Aggregate Spreading:

The distance between the distributor and the aggregate spreader shall be no more than 30 meters. Excess aggregate shall be removed by the contractor.

Rolling:

Immediately after the aggregate application, the aggregate shall be rolled with a minimum of one pneumatic roller. The entire surface shall receive a minimum of three passes. All rolling shall be completed within 200 meters of the aggregate spreader. The rollers shall operate at a speed that prevents aggregate pick-up, but at no time shall the rollers exceed 10 km/h.

Power Sweeping:

The finished aggregate surface may be power swept at the discretion of the Contract Administrator.

Quality of Finished Product:

The Stress Absorbing Membrane (Fibermat™ Type A) shall only be applied to a clean, dry surface. The final product shall be free of flushing, streaking, loss of aggregate, fibers or any other material within the mix. The material shall not delaminate from the pavement surface at any time.

Basis of Payment:

The contract price shall be full compensation for all labour, equipment, material and traffic control to apply the SAM. Payment shall be based on the square meter. All costs for repairing, removing, disposing and/or replacement of any unacceptable area shall be the responsibility of the Fibermat™ application contractor.

Measurement:

The measurement of the SAM shall be by the square meter. Upon request, the Contractor shall supply the Contract Administrator a detailed summary of the material quantities to verify the measured area and to ensure the proper application rates were used.