# TABLE OF CONTENTS

3.20	SLURRY SEAL 1		
	3.20.1 <u>GEI</u>	<u>NERAL</u> 1	1
	3.20.2 <u>MA</u>	<u>TERIALS</u> 1	1
	3.20.2.1	Aggregate	1
	3.20.2.2	Additives	1
	3.20.2.3	Asphalt	1
	3.20.2.4	Water 1	1
	3.20.3 <u>TES</u>	<u>STING</u> 1	1
	3.20.3.1	Materials Testing 1	1
	3.20.4 <u>MIX</u>	<u> K DESIGN AND TRIAL BATCH</u> 2	2
	3.20.4.1	Responsibility for Mix Design	2
	3.20.4.2	Requirements for Mix Design	2
	3.20.4.3	Approval of Mix Design and Trial Batch	2
	3.20.5 <u>CO</u>	NSTRUCTION	3
	3.20.5.1	Seasonal and Weather Limitations	3
	3.20.5.2	Equipment	3
	3.20	0.5.2.1 <u>Slurry Seal Machine</u>	3
	3.20	0.5.2.2 <u>Compaction Equipment</u>	3
	3.20.5.3	Surface Preparation	4
	3.20.5.4	Mixing	4
	3.20.5.5	Application	4
	3.20.5.6	Compaction	4
	3.20.5.7	Fog Coat Application	5
	3.20.5.8	Protection	5
	3.20.6 <u>ME</u>	ASUREMENT AND PAYMENT	5
	3.20.6.1	Supply of Aggregate	5
	3.20.6.2	Fog Coat	5

# 3.20 SLURRY SEAL

## 3.20.1 <u>GENERAL</u>

A slurry seal is a designed mixture of crushed aggregate, additives (as needed), emulsified asphalt, and water applied to a prepared pavement as a surface treatment, at locations and conforming to the lines and dimensions specified.

## 3.20.2 <u>MATERIALS</u>

## 3.20.2.1 Aggregate

The Contractor shall produce crushed aggregate in accordance with Specification 3.2, Aggregate Production and Stockpiling for the designation and class of material specified. The Contractor shall supply aggregate materials in accordance with Specification 5.2, Supply of Aggregate and haul aggregate materials in accordance with Specification 4.5, Hauling.

## 3.20.2.2 **Additives**

Additives, when required, shall be supplied by the Contractor. The Contractor shall arrange delivery, store and handle additives. Acceptable additives will be Portland Cement and other materials approved by the Consultant.

## 3.20.2.3 Asphalt

The Contractor shall supply asphalt material in accordance with Specification 5.7, Supply of Asphalt.

The asphalt binder used for slurry seal shall be either a QS-Kh or an SS-1H emulsified asphalt. The Contractor shall choose between the two.

The same asphalt chosen for the slurry seal binder shall be used for tack and fog coat applications.

## 3.20.2.4 Water

The Contractor shall supply suitable water.

## 3.20.3 <u>TESTING</u>

## 3.20.3.1 Materials Testing

Quality control and quality control testing are the responsibility of the Contractor throughout every stage of the work, from production of aggregates to the final accepted product. Tests performed by the Consultant will be quality assurance tests and will not be considered as quality control tests.

Quality assurance testing will be done by the Consultant to determine compliance with the specifications.

The standard test methods to be used for determining material characteristics are:

# TABLE 3.20.3.1TEST METHODS

	TEST DESCRIPTION METHOD	ALBERTA TRANSPORTATION DESIGNATION
1.	Sampling Slurry Seal Asphalt Mixes	ATT-60
2.	Asphalt Extraction	ATT-12
3.	Sieve Analysis	ATT-26

Testing of materials supplied will be done in accordance with the appropriate sections of Specification 3.2, Aggregate Production and Stockpiling, and Specification 5.7, Supply of Asphalt by Contractor.

## 3.20.4 MIX DESIGN AND TRIAL BATCH

## 3.20.4.1 **Responsibility for Mix Design**

Preparation and submission of mix designs for Consultant approval are the responsibility of the Contractor.

The Contractor shall use licensed professional Engineering services and a qualified, recognized testing laboratory to assess the aggregate material proposed for use and to carry out the design of the slurry mixture.

## 3.20.4.2 **Requirements for Mix Design**

The mix design shall follow ASTM D3910, Standard Practice for Design, Testing, and Construction of Slurry Seal. The wet track abrasion test loss shall not exceed 800 g/m<sup>2</sup>. The residual asphalt content shall be between 7.5% and 13.5%. The mix design shall also contain the following information:

- (a) gradation of aggregate to be used,
- (b) the design proportions of each component including additives,
- (c) other characteristics of the aggregate specified in Specification 3.2, Aggregate Production and Stockpiling,
- (d) all test results used in producing the mix design.

# 3.20.4.3 Approval of Mix Design and Trial Batch

The Consultant will require up to 3 working days, from the time of receipt of the mix design, for evaluation of the material characteristics. This mix design will be used for the trial batch.

The Contractor shall mix a trial batch using the mix design submitted and place it in an area of least traffic.

If the mix does not produce an acceptable product, additional trial batches shall be prepared and placed using modified mix designs which must be submitted for approval or modified machine calibrations or both until an acceptable product is produced.

If the trial batch is acceptable, the mix design used for that batch will become the approved mix design.

The Contractor shall cover unaccepted trial batches with a second application of slurry seal.

## 3.20.5 <u>CONSTRUCTION</u>

## 3.20.5.1 Seasonal and Weather Limitations

The placement of slurry seal shall be limited to the period from May 1 to September 15. Slurry seal shall not be placed when, in the opinion of the Consultant, damage to the finished product may occur for any reason.

The slurry seal shall not be applied when:

- (a) The atmospheric temperature at the construction area is less than 10 degrees Celsius, or
- (b) The weather is misty or rainy, or
- (c) Precipitation is a threat for the construction area within twelve hours as forecast by Environment Canada for the vicinity, or
- (d) An atmospheric temperature at the construction area of less than 5 degrees Celsius is predicted by Environment Canada within twenty-four hours.

#### 3.20.5.2 **Equipment**

#### 3.20.5.2.1 Slurry Seal Machine

Slurry seal shall be mixed in continuous flow travelling pugmill mixers capable of delivering predetermined proportions of emulsion, water and aggregate. Each mixer shall be equipped with feeders that provide accurate metering devices or methods of introducing predetermined amounts of additives when the aggregate is fed. Calibrated controls for aggregate and asphalt emulsion, capable of proportioning accurately, shall be provided.

The spreader box shall be capable of spreading a mat up to 3.7 metres wide, and shall have flexible squeegee strike-off strips on each side maintaining contact with the surface to be sealed. The flexible strike-off strips shall make close contact with the surface and shall be adjustable to the various slopes of the surface to be sealed. The box shall contain baffles or other suitable means to help in lateral distribution of slurry and to provide uniform application.

## 3.20.5.2.2 Compaction Equipment

The slurry seal shall be rolled with a vibratory, double drum, steel roller weighing at least 10 tonnes.

# 3.20.5.3 Surface Preparation

The Contractor shall remove all surface painted markings in areas where slurry seal is to be applied. The method and equipment used by the Contractor shall be such that no structural damage is caused to the existing pavement.

Repair of existing surfaces, including crack filling, prior to sealing will be identified by the Consultant and the required repairs shall be carried out by the Contractor.

The pavement surface to be slurry sealed shall be swept and all dirt, dust, and other objectionable matter removed.

Tack coat shall be applied in accordance with Specification 3.19, Prime, Tack and Fog Coats.

# 3.20.5.4 Mixing

The Contractor shall thoroughly mix the slurry seal in a slurry seal machine. If a mineral filler is used it shall be blended into the mixture. A minimum amount of additional water may be added to obtain a fluid, homogeneous mixture.

# 3.20.5.5 Application

After the tack coat has cured sufficiently, the surface to be sealed shall be wetted immediately before application of the slurry seal.

The surface shall be damp, but no standing free water will be permitted.

Slurry seal shall be deposited in a continuous flow from the pugmill mixer into a controlled spreader box. The spreader unit shall proceed at a rate of not more than 55 metres per minute.

Slurry seal shall be applied in the direction of the longitudinal axis of the area to be sealed unless otherwise directed by the Consultant. The application shall be uniform and homogenous with no uncovered areas, ridges or loose aggregate.

Hand squeegees shall be used to spread slurry seal in areas not accessible to the mixer. The Contractor shall protect manholes, valve boxes and bridge expansion joints from application of slurry seal during spreading operations. Spillage shall be removed with hand tools before initial set of the mix.

If the slurry seal is to be applied in two layers, compaction and fog coating of the first layer is not required and the first layer shall be allowed to cure before application of the second layer.

# 3.20.5.6 Compaction

Compaction by rolling shall commence as soon after application as possible and when pickup of the slurry material by the roller is at a minimum. A fog spray of water shall be applied to the roller drums, as necessary, to prevent pickup. The compacted surface shall be free of ridges, oversize rocks and bond failures.

# 3.20.5.7 Fog Coat Application

After compaction and prior to painting of applicable surface markings, the Contractor shall apply a fog coat seal to the entire slurry seal surface in accordance with Specification 3.19, Prime, Tack and Fog Coats.

# 3.20.5.8 Protection

The completed slurry seal shall be kept free of all traffic until it has cured sufficiently to prevent pickup of aggregate particles.

# 3.20.6 MEASUREMENT AND PAYMENT

Slurry Seal will be measured in square metres. Payment will be made at the unit price bid per square metre for "Slurry Seal". This payment will be full compensation for designing the mix; supplying and processing the aggregate; supplying the asphalt binder, water, and additives; surface preparation except for the removal of painted lines; processing, hauling and placing the mixture; supplying and applying fog coat; and quality control.

Payment for preparing trial batches of slurry for evaluating the proper proportions of the various ingredients will not be made directly, but will be included in the unit price bid for "Slurry Seal". If the trial batch is acceptable as applied, it will be measured and paid for at the unit price. If it is unacceptable and covered by a second application, no payment will be made for the trial batch applied.

If the contract stipulates a double layer application each layer will be measured and paid for at the unit price bid for "Slurry Seal".

If a second layer of slurry is required as a result of failure of the first layer, no payment will be made for the failed layer.

Payment for removal of painted lines and markings will be made at the lump sum price bid for "Removal of Painted Markings".

# 3.20.6.1 Supply of Aggregate

Contrary to Specification 5.2, Supply of Aggregate separate payment for the supply of aggregate will not be made.

# 3.20.6.2 Fog Coat

Contrary to Specification 3.19, Prime, Tack and Fog Coats, separate payment for the application of fog coat will not be made.