Antrim County Road Commission

December 15, 2023

REQUEST FOR BIDS
HMA CRACK TREATMENT, CAPE SEAL, CHIP SEAL AND FOG SEAL

Sealed bids will be received until 1:00 PM, Monday, February 5, 2024 for the 2024 chip seal program, at which time they will be publicly opened and read. Bids shall be received at the office of the Antrim County Road Commission, PO Box 308, 319 E. Lincoln St, Mancelona, Michigan 49659-0308. Bids will be tabulated and a recommendation will be made to the Board of County Road Commissioners at their next regular meeting.

See enclosed list of roads and estimated quantities.

NOTE: The following roads will require a vacuum or mechanical street sweeper to pick up all loose stone. Sweeping stones to the shoulder will NOT be permitted. Payment for this shall be included in the bid price for other items.

1. **Cedar Ln**
2. **Briar Ln**
3. **Meadow Ln**
4. **Sandy Ln**
5. **Cedar Ct**
6. **Grass Lake Rd**
7. **3rd St**
8. **Lake St**
9. **Prospect St**

See enclosed Special Provisions for: Cape Seal 01/03/24; HMA Crack Treatment 01/24/19; Single and Double Chip Seal 04/30/12; and Fog Seal 04/30/12 for all specifications related to this bid.

Bid prices may be extended to other projects if it is mutually agreeable to both the Road Commission and the successful bidder.

All liability, worker's compensation and fleet insurances shall be as required in the current MDOT Standard Specifications for Construction.

The contractor shall hold harmless, indemnify and defend the Antrim County Road Commission, its employees, agents and officers from any and all claims arising from or out of and to the completion of the work. The Antrim Count Road Commission, its employees, agents and officers shall be named additional insured on all contractor's liability policies required to perform the work described in this proposal and the enclosed special provision.

The bidder's signature on this proposal shall constitute full knowledge and acceptance of the terms contained herein and the special provisions. The successful bidder shall enter into a contract with and provided by the Road Commission, a copy of which is enclosed for informational purposes only.

Label bid **"CHIP SEAL BID"** plainly on the outside of a sealed envelope.

The Antrim County Road Commission reserves the right to accept or reject any or all bids, to waive any irregularity or defect in a bid, or to accept that bid which in the opinion of the Road Commission is in the best interest of the county.

Burt R. Thompson, P.E.
Engineer-Manager
enclosures (6)

Antrim County Road Commission
2024 Chip Seal Bid

HMA Crack Treatment	**28.0** road bed miles @	$ _____ / mile
Cape Seal	**26,054** square yards @	$ _____ / syd
Single Chip Seal	**360,037** square yards @	$ _____ / syd
Fog Seal	**360,037** square yards @	$ _____ / syd

ACKNOWLEDGMENT

I acknowledge that I have thoroughly read all the pages of this document and if awarded the work will be done in full accordance with same.

_____	_____
Company name	Signature
_____	_____
Printed name	Title
_____	_____
Mailing address	City, State and zip
_____	_____
Date	Phone
_____	_____
Cell phone	Email

2024 Chip and Cape Seal Road List

Road	Termini	Project Description	Length (miles)	Syd
Forest Home Township			**11.29**	**169,508**
Orchard Hill Rd	Village line to Honey Hollow	CM 90, 25A slag, fog	2.03	26,229
John R Rodgers Rd	Orchard Hill to end	CM 90, 25A slag, fog	0.30	3,936
E Torch Lake Dr	Bellaire Hwy to north twp line	CM 90, 25A slag, fog	4.40	72,271
E Torch Lake Dr	Clam River to Bellaire Hwy	CM 90, 25A slag, fog	2.41	41,019
Cedar Ln	Bellaire Hwy to Briar Ln	Cape seal	0.28	3,249
Briar Ln	Cedar Ln to Grass Lake Rd	Cape seal	0.65	7,604
Meadow Ln	Cedar Ln to Briar Ln	Cape seal	0.42	4,916
Sandy Ln	Cedar Ln to Meadow Ln	Cape seal	0.37	4,342
Cedar Ct	Cedar Ln to end	Cape seal	0.08	1,384
Grass Lake Rd	Bellaire Hwy to end	Cape seal	0.35	4,559
Helena Township			**1.61**	**22,239**
Walling Rd	all	CM 90, 25A slag, fog	0.63	10,106
Alden Meadows	all	CM 90, 25A slag, fog	0.98	12,133
Milton Township			**5.89**	**75,076**
Campbell Rd	US 31 to WTLD	CM 90, 25A slag, fog	2.24	28,967
Waring/Powell Rds	Cairn to Campbell	CM 90, 25A slag, fog	1.97	24,313
Winters Rd - split with ER Twp	US 31 to Birch Lake	CM 90, 25A slag, fog	0.46	5,928
Winters Rd	Birch Lake to Cairn	CM 90, 25A slag, fog	0.97	12,564
Bussa Rd	Cherry to Elk Lake	CM 90, 25A slag, fog	0.24	3,303
Star Township			**0.62**	**8,042**
Olds Rd	Patterson to Snowridge	CM 90, 25A slag, fog	0.41	5,256
Snowridge Dr	Olds to Mills	CM 90, 25A slag, fog	0.22	2,787
Torch Lake Township			**8.59**	**111,226**
3rd St	All	CM 90, 25A slag, fog	0.18	2,217
Lake St	3rd to end	CM 90, 25A slag, fog	0.07	863
Prospect St	Public Dock to 3rd	CM 90, 25A slag, fog	0.07	863
Birchview Dr	Erickson to end	CM 90, 25A slag, fog	1.59	19,577
Creswell Rd	US 31 to end	CM 90, 25A slag, fog	1.40	18,113
McLachlan Rd	US 31 to W Torch Lake Dr	CM 90, 25A slag, fog	1.01	13,036
Kruger Rd	US 31 to end	CM 90, 25A slag, fog	0.45	7,262
Bay Colony Rd	US 31 to end	CM 90, 25A slag, fog	1.30	16,806
Hjelte Rd	US 31 to W Torch Lake Dr	CM 90, 25A slag, fog	1.16	15,033
Old Park Rd	Barnes Park Dr to end	CM 90, 25A slag, fog	0.13	1,665
Barnes Park Dr	US 31 to park	CM 90, 25A slag, fog	0.70	9,035
Mouton Rd	US 31 to end	CM 90, 25A slag, fog	0.52	6,756

ANTRIM COUNTY ROAD COMMISSION

SPECIAL PROVISION
FOR
Cape Seal

Description:

The work consists of furnishing all materials, equipment and labor necessary for the surface preparation and application of a single chip seal and a slurry seal (Cape Seal). This work shall conform to the requirements of Section 505 and 506 of the Michigan Department of Transportation 2020 Standard Specification for Construction except as modified herein.

Single Chip Seal Application:

A single chip seal shall be applied to the surface in accordance with the Antrim County Road Commission (ACRC) Special Provision for Seal,Single or Double Chip SLAG-NON FEDERAL 04-3-12.

Slurry Seal Application:

The slurry seal surface shall consist of a mixture of emulsified asphalt, mineral aggregate, and water, properly proportioned, mixed and spread evenly over the single chip seal surface as specified herein and as directed by the engineer. The cured slurry shall have a homogeneous appearance, fill all cracks, adhere firmly to the surface and have skid resistant texture.

1. APPLICABLE SPECIFICATIONS

    a. ASTM - American Society for Testing and Materials
    b. ISSA - International Slurry Surfacing Association.

2. AGGREGATE AND MINERAL FILLER

    a. ASTM D75 - Sampling Stone, Slag Gravel, Sand & Stone Block for use as Highway Materials.
    b. ASTM C136 - Sieve Analysis of Fine or Coarse Aggregate.
    c. ASTM C117 - Amount of Material Finer than No. 200 Sieve in Aggregate.
    d. ASTM D2419 - Plastic Fines in Graded Aggregate and Soils by use of the Sand Equivalent Test.

e. ASTM C128 - Specific Gravity and Absorption of Fine Aggregate.
f. ASTM C29 - Unit Weight of Aggregate.
g. ASTM C131 - Abrasion of Coarse Aggregate by use of the Los Angeles Machine.
h. ASTM C183 - Sampling Hydraulic Cement. ASTM D546 Sieve Analysis of Mineral Filler.
i. ASTM D242 - Mineral Filler for Bituminous Paving Mixtures.

3. EMULSIFIED ASPHALT

a. ASTM D140 - Sampling Bituminous Materials.
b. ASTM D244 - Testing Emulsified Asphalt.
c. ASTM D977 - Specifications for Anionic Emulsified Asphalt.
d. ASTM D2397 - Specifications for Cationic Emulsified Asphalt.
e. ASTM D2172 - Bitumen Content of Paving Mixture by Centrifuge.
f. ISSA T100 - Measurement of Wear of Slurry Seal Mixtures by Wet Tract Abrasion.

4. MATERIALS

a. ASPHALT EMULSION. The emulsified asphalt shall conform to the requirement of International Slurry Surfacing Association Specification, for type CSS-1H.

b. AGGREGATE. The mineral aggregate shall consist of natural or manufactured sand, slag, crusher fines, and others, or a combination thereof. Smooth-textured sand of less than 1.25 percent water absorption shall not exceed 50 percent of the total combined aggregate. The aggregate shall be clean and free from vegetable matter and other deleterious substances. When tested by ASTM D2419, the aggregate blend shall have a sand equivalent of not less than 45. When tested according to ASTM C88 the aggregate shall show a loss of not more than 15%. When tested according to ASTM C131 the aggregate shall show a loss of not more than 30%.

Mineral fillers such as Portland cement, limestone dust, fly ash, and others shall be considered as part of the blended aggregate and shall be used if required by the mix design. They shall meet the gradation requirements of ASTM D242.

The combined mineral aggregate shall conform to the following gradation when tested by the previously mentioned test.

SIEVE SIZE	PERCENT PASSING
3/8	100
No. 4	90-100
No. 8	65-90
No. 16	45-70
No. 30	30-50
No. 50	18-30
No. 100	10-21
No. 200	5-15

Theoretical Asphalt Content
% Dry Aggregate 7.5-13.5

This aggregate blend is used when it is desired to fill surface voids, correct severe surface conditions, and provide sealing and a minimum wearing surface. An application rate of 18 (plus or minus) 2 pounds per square yard based on dry aggregate weight is used when standard aggregates are utilized.

c. WATER. All water used with the slurry mixture shall be potable and free from harmful soluble salts.

d. LABORATORY TESTING. Sources of all materials shall be selected prior to the time the materials are required for use in the work. All samples shall be taken according to procedures previously mentioned. All materials shall be pretested in a qualified laboratory as to their suitability for use in slurry. The theoretical asphalt content shall be determined. The laboratory shall also determine if a mineral filler is required, and if so, how much should be used. Test samples shall be made and tested on Wet Track Abrasion Machine. A complete laboratory analysis and test report accompanied by abraded and unabraded slurry test samples shall be submitted by the Contractor before the job starts.

e. STOCKPILING OF AGGREGATES. Precautions shall be taken to ensure that stockpiles do not become contaminated with oversized rock, clay, silt, or excessive amounts of moisture. The stockpile shall be kept in areas that drain readily. Segregation of the aggregate will not be permitted. The Contractor shall be

responsible for securing the use of a yard site for stockpiling aggregates and other equipment.

f. STORAGE. The contractor shall provide suitable storage facilities for the asphalt emulsion. The container shall be equipped to prevent water from entering the emulsion. Suitable heat shall be provided if necessary to prevent freezing.

g. SAMPLING. Samples of materials and of the finished slurry surfaces shall be furnished by the Contractor as directed by the Engineer during progress of the work. Test reports may be requested from the Contractor as additional materials arrive.

h. DESIGN. The bidder shall submit to the Engineer a complete laboratory design made in a qualified laboratory before the work commences. A complete analysis of the materials and job Mix Formula proposed for use in the performance of the work shall be made in accordance with procedures outlined in the current issue of International Slurry Seal Association Technical Bulletin No. 111 as indicated by the engineer. The Engineer shall select from the data presented by the bidder the optimum design for the materials selected by the Contractor. The bidder shall follow the recommendations and calibrate their machines to apply the materials including mineral filler if called for by the mix design for better mix performance.

The Engineer may waive the design submittals provided the bidder has previously applied in this subdivision a satisfactorily designed and applied slurry with substantially the same materials proposed for this work. In any case, untried materials may not be introduced into this work without complete analysis and design of a Job Mix Formula for each new material approved by the Engineer.

5. EQUIPMENT. All equipment used in the performance of this work shall be maintained in a satisfactory working order at all times.

a. SLURRY MIXING EQUIPMENT. A minimum of two (2) continuous flow slurry machines, minimum capacity of eight (8) tons shall be provided. They shall be capable of delivering accurately a predetermined proportion of aggregate, water and asphalt emulsion to the mixing chamber and to discharge the thoroughly mixed product on a continuous basis. The aggregate shall be prewetted

immediately prior to mixing with the emulsion. The mixing unit of the mixing chamber shall be capable of thoroughly blending all ingredients together. No violent mixing shall be permitted. The mixing machine shall be equipped with an approved fines feeder that provides an accurate metering device or method to introduce a predetermined proportion of mineral filler into the mixer at the same time and location that the aggregate is fed. The feeder shall be used whenever added mineral filler is a part of the aggregate blend.

The mixing machine shall be equipped with a water pressure system and fog type spray bar adequate for complete fogging the surface preceding spreading equipment with a maximum application of 0.05 gallons per square yard.

b. CALIBRATION. Each material delivery function (a) fines feed, (b) aggregate feed, and (c) emulsion feed, shall be independently operated and monitored with digital counters capable of giving accumulated readings of the material usage on a daily basis.

   All instruments, gauges and meters shall be accurate within +5% of the operating range required. All instruments and controls shall be centrally mounted in a protected console and shall be readily accessible during operation to the Engineer or his designated representative.

   The bidder will submit calibration sheets for each machine to substantiate meter readings and aggregate openings (gal/count, #/count). Daily counter readings will be supplied to the inspector with yardage applied to verify application rates. If readings do not confirm correct application rates, recalibration on site will be required before additional work is applied.

c. SLURRY SPREADING EQUIPMENT. Attached to the mixer machine shall be a mechanical type squeegee box equipped with flexible material in contact with the surface to prevent loss of slurry from the box. It shall be maintained so as to prevent loss of slurry on varying grades and crown by rotating at center of box. There shall be a steering device and a flexible strike-off. The spreader box shall have an adjustable width from 8 to 12 feet. The box shall be kept clean, and build-up of asphalt and

aggregate on the box shall not be permitted. The use of burlap drags or other drags shall be approved by the Engineer.

d. CLEANING EQUIPMENT. Power brooms, power blowers, air compressors, water flushing equipment, and hand brooms shall be suitable for cleaning the surface and cracks of the old surfaces.

e. AUXILIARY EQUIPMENT. Hand squeegees, shovels and other equipment shall be provided as necessary to perform work.

6. PREPARATION OF SURFACE. Immediately prior to applying the slurry, the surface shall be cleaned of all loose material, silt pots, vegetation, and other objectionable material, which shall be done by owner. Any standard cleaning method used to clean pavements will be acceptable, except water flushing will not be permitted in areas where considerable cracks are present in the pavement surface. The Engineer shall give final approval of the surface.

7. COMPOSITION AND RATE OF APPLICATION OF THE SLURRY MIX. The amount of asphalt emulsion to be blended with the aggregate shall be determined by the laboratory report after final adjustment in the field. A minimum amount of water shall be added as necessary to obtain a fluid and homogeneous mixture. The Engineer shall give final approval to the design and rate of application used.

8. APPLICATION OF THE SLURRY SURFACES

a. GENERAL. The surface shall be fogged with water directly preceding the spreader. The slurry mixture shall be of the desired consistency when deposited on the surface and no additional elements shall be added. Total time of mixing shall not exceed four (4) minutes. A sufficient amount of slurry shall be carried in all parts of the spreader at all times so that complete coverage is obtained. No lumping, balling or unmixed aggregate shall be permitted. No segregation of the emulsion and aggregate fines shall be permitted. If the course aggregate settles to the bottom of the mix, the slurry will be removed from the pavement. No excessive breaking of the emulsion will be allowed in the spreader box. No streaks such as caused by oversized aggregate will be left in the finished pavement.

b. JOINTS. No excessive build up or unsightly appearance shall be permitted on longitudinal or transverse joints.

c. HAND WORK. Approved squeegees shall be used to spread slurry in accessible areas to the slurry mixer. Care shall be exercised in leaving no unsightly appearance from hand work.

d. CURING. Treated areas will be allowed to cure until such time as the Engineer permits their opening to traffic.

e. INTERSECTION. Care should be taken to achieve a clean straight line as directed by the Engineer by use of 15 pound roofing felt or equal. All roofing fell will be removed at completion of work.

9. WEATHER LIMITATION. The slurry seal surface shall not be applied if either the pavement or air temperature of 55 F or below and falling but may be applied with both the air and pavement temperature is 45 F or above and rising. The mixture should not be applied if high relative humidity prolongs the curing beyond a reasonable time.

10. TRAFFIC CONTROL. Suitable methods such as barricades, flagmen, pilot cars, etc., shall be used to protect the uncured slurry surface from all type of traffic, owner to do necessary barricading and/or flagging of traffic. Any damage to the uncured slurry will be the responsibility of the Contractor. The Engineer shall give final approval as to the method used. If damage occurs where suitable means have been made. The Contractor shall provide all equipment, labor, and materials to properly control traffic throughout the length of the project. All traffic control features shall be in accordance with the current Michigan Manual of Uniform Traffic Control Devices (MMUTCD) to protect the traveling public, their workforce and the work. Payment for maintaining traffic and minor traffic control devices shall be included in other pay items.

11. DELAYED ACCEPTANCE. The delayed acceptance will not occur until after 30 days from the time of placement of the slurry seal.

12. MEASUREMENT AND PAYMENT. Completed work, as measured, will be paid for at the contract unit price for the following contract items:

Pay Item	**Pay Unit**
Seal, Cape	Square Yard

Payment for the Seal, Cape includes all equipment, labor and all material for placement of a single application of liquid asphalt and coarse aggregate (Chip Seal) followed by a single application of liquid asphalt and fine aggregate mixture (Slurry Seal), traffic control, surface preparation, brooming, establishment of yield intervals, documentation and delayed acceptance inspection.

No adjustments in the unit price will be made for approved rate of liquid asphalt and/or coarse aggregate that is within the ranges identified in the application charts.

ANTRIM COUNTY ROAD COMMISSION

SPECIAL PROVISION
FOR
HOT MIX ASPHALT CRACK TREATMENT

Description. The work consists of treating cracks in hot mix asphalt (HMA) surfaces using either a saw or rout and seal process or an overband process.

Materials. Provide materials in accordance with subsection 502.02 of the 2012 Standard Specifications for Construction with the following modifications:

1. Delete subsection 502.02.B.1 of the 2012 Standard Specifications for Construction and replace with the following: “Performance graded asphalt binder PG 58 -28 or PG 68 -28.”

2. Add the following to the first sentence in subsection 502.02.B.2 of the 2012 Standard Specification for Construction: “and also meets ASTM D6690 Type II.”

Construction. Ensure all construction is in accordance with subsection 502.03 of the 2012 Standard Specifications for Construction with the following modifications:

1. Delete the second sentence of the second paragraph of subsection 502.03.D.2 of the 2012 Standard Specifications for Construction and replace with the following: “Apply overband 4 inches wide, ± 1/4 inch and from 1/8 inch to 3/16 inch thick.

2. Add the following to the end of subsection 502.03.D.2.c of the 2012 Standard Specifications for Construction: “Allow curing for a minimum of 7 days prior to placement of chip seal.”

Measurement and Payment.

Pay Item	Pay Unit
Overband Crack Fill, Roadbed	Roadbed Mile

ANTRIM COUNTY ROAD COMMISSION

SPECIAL PROVISION
FOR
Single and Double Chip Seal

Description:
The work consists of furnishing all materials, equipment and labor necessary for the surface preparation and application of a single chip seal. This work shall conform to the requirements of Section 505 of the Michigan Department of Transportation 2012 Standard Specification for Construction except as modified herein.

Equipment:
All equipment must meet the requirements under Section 505 of the Michigan Department of Transportation 2012 Standard Specifications for Construction, except as modified herein:

Pressure Distributor:
The pressure distributor shall have a computerized application rate and speed control device interconnected with the liquid asphalt pump such that the specified application rate will be supplied at any speed. This control shall have a radar ground sensing device that controls the application rate regardless of ground speed or spray bar width. The pressure distributor shall be capable of maintaining the asphalt at the specified temperature. The spray bar nozzles shall produce a uniform fan spray, and the shutoff shall be instantaneous with no dripping. Each pressure distributor shall be capable of maintaining the specified rate of application within +/- 0.015 gallons per square yard for each load.

Compacting Equipment:
Use a sufficient number of pneumatic-tired rollers weighing not less than 8 tons each.

Broom/Sweeper:
The use of a rotary-powered broom is required to remove the loose material from the surface to be treated and for removing loose aggregate after the work has been completed.

Pre-paving Meeting:
A pre-paving meeting will be held at a location designated by the Engineer before beginning work to discuss the following:

- Work schedule.
- Traffic control plan.
- Equipment calibration and adjustments.
- Condition of materials and equipment, including transport units.

- Mix design(s) including job-mix-formula (JMF); coarse aggregate gradation; application rate of asphalt emulsion and coarse aggregate (by stationing and course).
- Contractor's quality control plan (method of yield check, etc.).

General Placement Operations:

1. The Contractor shall establish 1000-foot intervals along the entire length of the project, prior to placing materials. The stations shall be clearly identified and maintained until project completion.
2. Keep all vehicles and equipment involved in the chip sealing operation as close to each other as practical. Keep the asphalt emulsion distributor within 100 feet of the chip spreader. Do not place cover aggregate on asphalt after it has cured.
3. Perform rolling within five minutes of placing the coarse aggregate and before the asphalt has begun to cure. Make a minimum of two complete passes over the coarse aggregate. A complete pass is one trip, forward and backward, over the same path. Overlap each pass by one-half the width of the roller. Use a minimum of two rollers and proceed in a longitudinal direction at a speed not greater than 5 mph.

Quality Control:
The following measures shall be taken by the Contractor to maintain quality control and uniformity. If the condition is identified that causes an unsatisfactory chip seal, all production work shall stop and corrective action must immediately be taken. The Contractor shall perform the corrective action at no additional cost to the contract. All truck demurrage will be the responsibility of the contractor.

1. **Liquid Asphalt.** The Contractor shall apply the liquid asphalt at a temperature between 260°F and 300°F.
2. **Visible Dust.** During normal traffic operations any dust that is a nuisance or slightly impairs visibility is unsatisfactory. The roadway must be wet broomed until the condition is eliminated.
3. **Loose Stone.** During normal traffic operations any stone picked off the surface by vehicles is unsatisfactory. The roadway must be wet broomed until the condition is eliminated.
4. **Bleeding or Tracking.** During normal traffic operations any bleeding or moderate tracking is unsatisfactory. The roadway must be sanded and swept clean. If the surface conditions call for further action, a heated aggregate meeting the physical properties of Table 2, shall be applied, rolled and broomed.
5. **Rough Joints.** Traverse and longitudinal construction joints from a chip seal application that creates a bump or poor riding joint is unsatisfactory. The bump shall be removed by grinding the surface and lightly applying a fog seal over the ground area.

6. **Surface Patterns.** Any asymmetric appearance seen in the chip seal surface characterized by longitudinal groves or ridges in the surface is unsatisfactory. The spray bar and nozzles must be readjusted to eliminate the surface pattern problem.

Liquid Asphalt:
The Liquid Asphalt to be used shall be CM-90. The asphalt must meet the requirements stated in Table 1. The Contractor shall apply the Liquid Asphalt at a temperature between 260°F and 300°F, followed by a uniform application of coarse aggregate. The CM-90 placement rate shall be within a residual target range of 0.29 to 0.31 gallons per square yard (after correction for temperature expansion and distillate loss). Construct a 100-foot test strip at the residual target rate of 0.30 gallons per square yard followed by a uniform application of coarse aggregate and review the application. If this target rate is not the optimum application rate due to the gradation of the course aggregate or due to existing surface condition of the pavement, the Contractor shall notify the Engineer immediately and prior to any further application. Upon approval of adjustments to the application rate by the Engineer, the Contractor shall then document the new JMF rate(s) by stationing and resume the application at the new rate. The Contractor shall continue to monitor the new application rate and report any noticeable changes to the Engineer.

Target rate shall be adjusted appropriately for the second course of a Double Chip Seal.

All truck demurrage will be the responsibility of the contractor.

Table 1 – Chip Seal Matrix Modified Asphalt (CSMMA) – CM 90 Amend table 904-2

TESTS	Requirements
	CM 90
Modified Koppers Vacuum Viscosity, 25°C, P, ASTM D 4957	2,000 to 20,000
Flash Point, deg °C:	
Tag Flash Point, °C, min, ASTM D 3143-98	65.5
Water in Petroleum, ASTM D 95-05, %, max	1.0
Cut-Back Distillation, ASTM D 402-02	
Distillate, % by Vol of Total Distillate to 360° C	
To 225° C	0-2
To 260° C	0-5
To 315.5° C	10-65
Residue from Distillation to 360° C, min	90
Test on Residue from Distillation, ASTM D 402	
Penetration, 25° C, 100 g, 5 sec, ASTM D5-05a	90 to 150
Ductility at 25° C, cm, min, ASTM D 113	Report
Solubility in Trichloroethylene, %, min, ASTM D 2042-01	99.0
Softening Point, °C, min, ASTM D 36-95	76.7
Float Test, 60° C, sec, min, ASTM D 139-95	1200

Coarse Aggregate:
Cover material to be used will be 25A Slag. The aggregate shall be tested material or provided by a prequalified aggregate supplier. The 25A placement rate shall be within the range of 16 to 19 pounds per square yard with a target rate of 17 pounds per square yard. If the target rate is not the optimum application rate due to the gradation of the coarse aggregate or due to existing surface conditions of the pavement, the Contractor shall notify the Engineer immediately and prior to any further application. Upon approval of changes by the Engineer, the Contractor shall then document the new JMF rate(s) by stationing and resume the application at the new rate. The Contractor shall continue to monitor the new application rate and report any noticeable changes to the Engineer.

Maintaining Traffic:
The Contractor shall provide all equipment, labor, and materials to properly control traffic throughout the length of the project. All traffic control features shall be in accordance with the current Michigan Manual of Uniform Traffic Control Devices (MMUTCD) to protect the traveling public, their workforce and the work. Payment for maintaining traffic and minor traffic control devices shall be included in other pay items

Delayed Acceptance:
The delayed acceptance will not occur until after 30 days from the time of placement of the fog seal, if required, otherwise from the time of placement of the chip seal.

Measurement and Payment:
Completed work, as measured, will be paid for at the contract unit price for the following contract items:

Pay Item	**Pay Unit**
Seal, Single Chip	Square Yard
Seal, Double Chip	Square Yard

Payment for the Seal, Single Chip includes all equipment, labor and all material for placement of a single application of liquid asphalt and coarse aggregate, traffic control, surface preparation, brooming, establishment of yield intervals, documentation and delayed acceptance inspection.

Payment for the Seal, Double Chip includes all equipment, labor and all material for placement of a double application of liquid asphalt and coarse aggregate, traffic control, surface preparation, brooming, establishment of yield intervals, documentation and delayed acceptance inspection.

No adjustments in the unit price will be made for approved rate of liquid asphalt and/or coarse aggregate that is within the ranges identified in the Liquid Asphalt and Coarse Aggregate Application.

ANTRIM COUNTY ROAD COMMISSION

SPECIAL PROVISION
FOR
Fog Seal

Description:
The work consists of furnishing all materials, equipment and labor necessary for the surface preparation and application of a fog seal. This work shall conform to the requirements of Section 505 and 904 of the Michigan Department of Transportation 2012 Standard Specification for Construction except as stated within.

Equipment:
All equipment must meet the requirements under Section 505 of the Michigan Department of Transportation 2012 Standard Specifications for Construction, except as modified herein:

Pressure Distributor:
The pressure distributor shall have a computerized application rate and speed control device interconnected with the asphalt emulsion pump such that the specified application rate will be supplied at any speed. This control shall have a radar ground sensing device that controls the application rate regardless of ground speed or spray bar width. The pressure distributor shall be capable of maintaining the asphalt at the specified temperature. The spray bar nozzles shall produce a uniform fan spray, and the shutoff shall be instantaneous with no dripping. Each pressure distributor shall be capable of maintaining the specified rate of application within +/- 0.015 gallons per square yard for each load.

General Placement Operations:

1. Fog seal completed chip seal areas, after brooming and before placement of permanent pavement markings. Allow chip seal to cure a minimum 24 hours before fog sealing. Remove the protective covers from the temporary pavement marker tab after the placement of the fog seal. Removal of the protective covers shall be done within a lane closure. Allow a minimum of 3 days before placing permanent pavement markings.
2. Fog seal shall not be applied when the air temperature is below 60° F. The fog seal shall be applied to a clean, dry pavement surface. Do not apply fog seal when precipitation is imminent. If precipitation occurs, prior to the emulsion breaking, the effected areas shall be reapplied at the Contractors expense.
3. The fog seal shall be applied so that there is a minimum of a 1 foot overlap at the centerline of the roadway.
4. Traffic shall not be allowed on the fog seal until the emulsion has fully cured.
5. The fog seal Emulsified Asphalt shall be applied at the temperature recommended by the Supplier.

Fog Seal Application Rate:
The fog seal shall be an Emulsified Asphalt, SS-1h (at 50% dilution) as specified in Table 904-4 of the Michigan Department of Transportation 2012 Standard Specifications for Construction. A Cationic Emulsified Asphalt, CSS-1h (at 50% dilution) as specified in Table 904-5 is also acceptable. The SS-1h shall be spread at a target rate between 0.12 and 0.15 gallons per square yard. Construct a 100-foot test strip at the target rate of 0.135 gallons per square yard and review the application. If this target rate is not the optimum application rate due to the gradation of the course aggregate or due to existing surface condition of the pavement, the Contractor shall notify the Engineer immediately and prior to any further application. Upon approval of adjustments to the application rate by the Engineer, the Contractor shall then document the new JMF rates(s) by stationing and resume the application at the new rate. The Contractor shall continue to monitor the new application rate and report any noticeable changes the Engineer. All truck demurrage will be the responsibility of the Contractor.

Submittals:
Upon completion the Contractor shall provide an inspector's daily report for each day work was performed containing the following information:

- Control Section / project number / Road Name
- Date / air temperature / pavement temperature / humidity
- Asphalt Emulsion temperature
- Beginning and ending stations
- Yield checks on asphalt emulsion
- Length / Width / Total Square Yards
- Contractor's Signature

Provide the following additional materials documentation:

- Asphalt Emulsion: per current acceptance procedures.
- Bill of lading or delivery tickets for asphalt emulsion

The above submittals shall be placed in order by date in a folder with the certification statement in the back.

Protection of Motor Vehicles:
The Contractor is responsible for claims of damage to vehicles until the roadways and shoulders have been swept free of lose aggregate, the Fog Seal has been applied and the permanent pavement markings have been applied.

Maintaining Traffic:
The Contractor shall provide all equipment, labor, and materials to properly control traffic throughout the length of the project. All traffic control features shall be in

accordance with the current Michigan Manual of Uniform Traffic Control Devices (MMUTCD) to protect the traveling public, their workforce and the work. Payment for Traffic Control shall be included in the pay item for Fog Seal.

Delayed Acceptance:
A minimum of 30 days after placement of the fog seal, the Engineer will inspect the project with the Contractor for surface flushing, surface patterns, or loss of stone. If these deficiencies are found, corrective work is required.

Complete all corrective work within seven working days of the review, or by an agreed upon date. All costs associated with completing this corrective work, to the satisfaction of the Engineer, will be borne by the Contractor.

Measurement and Payment:
Completed work, as measured, will be paid for at the contract unit price for the following contract items:

Pay Item	**Pay Unit**
Fog Seal	Square Yard

Payment for the Fog Seal includes all equipment, labor, testing and materials for placement of an Emulsified Asphalt, SS-1h (at 50% dilution), traffic control, surface preparation, brooming, establishment of yield intervals, documentation and delayed acceptance inspection.

No adjustments in the unit price will be made for an approved rate of Emulsified Asphalt, SS-1h (at 50% dilution) that is within the ranges identified in Fog Seal application rate.

The contract unit price shall be payment in full for all labor and equipment needed to accomplish the work.

AGREEMENT FOR SERVICES

THIS AGREEMENT shall be deemed effective on _____, between the Antrim County Road Commission, a Michigan municipal corporation, whose address is 319 E. Lincoln St., P.O. Box 308, Mancelona, Michigan 49659 (Road Commission) and _____, whose address is _____ (Contractor).

Recitals

A. The Road Commission desires to engage the services of Contractor to perform construction services in compliance with the proposal submitted by Contractor, dated _____ and attached hereto as Exhibit A. (Project)

B. Contractor has the time, skills, and desire to complete the Project under the terms and conditions of this Agreement.

C. The parties, therefore, desire to specify their respective rights and obligations in this Agreement.

Agreement

NOW THEREFORE, in consideration of the mutual promises contained herein, the parties hereby agree as follows:

1. Engagement of Services. The Road Commission hereby engages Contractor to perform construction services in compliance with the proposal submitted by Contractor, dated _____ and attached hereto and incorporated herein by reference as Exhibit A. (Project)

2. Duties. Contractor shall perform the construction services necessary to complete the Project in a workmanlike manner. The work to be performed under this Agreement shall begin no later than _____, and shall be fully completed by no later than _____.

3. Acceptance of Work. Upon completion of the work to be performed under this Agreement, the Road Commission shall inspect the work and shall accept the work in writing when the Road Commission is satisfied the Project was performed as required under this Agreement.

4. Warranty of Workmanship. Contractor hereby warrants to the Road Commission that the work to be performed under this Agreement shall be free of defects in labor and materials for a period of one (1) year from the date the Road Commission accepts the work under paragraph 3 above. If a defect in labor or materials arises in connection with the work performed under this Agreement, the Road Commission shall notify Contractor of the defect in writing. Contractor shall then at its sole expense correct or repair the defect in a timely manner.

5. Manufacturers' Warranties. Upon completion of the work performed under this Agreement, Contractor shall transfer any manufacturers' warranties covering the material installed to the Road Commission.

6. Payment. The Road Commission shall pay Contractor following the Road Commission's written acceptance of the work as provided in paragraph 3 above a total of $_____.

7. Independent Contractor. The parties hereby acknowledge and agree that Contractor is performing the services contemplated by this Agreement as an independent contractor and is not acting as an employee or agent of the Road Commission. As a result of Contractor' status as an independent contractor, the Road Commission shall not be responsible for any state or federal income tax withholdings and shall not be responsible for providing worker's compensation insurance coverage for Contractor or any of its employees.

8. Insurance. Throughout the time work is being performed under this Agreement, Contractor shall obtain and maintain public liability insurance in the sum of not less than ONE MILLION and 00/100 DOLLARS ($1,000,000.00) for damages relating to any one person or for damages relating to any one occurrence. This insurance policy shall name the Road Commission as an additional named insured and shall contain a provision that the policy cannot be terminated, canceled, or substantially altered without thirty (30) days written notice to the Road Commission. Contractor shall provide notice of compliance with this insurance provision before beginning the work to be performed under this Agreement.

9. Indemnification. Contractor shall indemnify and hold harmless the Road Commission, its officers, board members, assigns, agents, servants, employees, and insurance companies from any and all damages, legal fees or expenses, losses, claims and actions which may arise out of performing the services contemplated by this Agreement.

10. No Assignment without Written Consent. Contractor shall not assign this Agreement to any other person or entity without first obtaining the written consent of the Road Commission.

11. Termination. The Road Commission may terminate this Agreement by giving to Contractor seven (7) days written notice of the intent to terminate this Agreement. In the event this Agreement is terminated as provided herein, Contractor shall only be paid the pro rata compensation based on the percentage of work completed as required in this Agreement to the date of termination.

12. Notice. Any notice required under this Agreement by either party shall be in writing to the party to be so notified and sent by certified mail, return receipt requested, to such address as noted herein, unless such address is changed and both parties have been notified consistent with this paragraph.

13. Governing Law. The parties agree that the validity, construction, enforcement and interpretation of this Agreement shall be governed by the laws of the State of Michigan.

14. Amendments. This Agreement may be amended by the mutual consent of both parties that is documented in writing and signed by both parties.

15. Entire Agreement. The Agreement contains the entire Agreement of the parties hereto and supersedes all prior agreements and understandings, oral or written, if any, between the parties.

16. Severability. The invalidity or unenforceability of any provision of this Agreement shall not affect the other provisions, and this Agreement shall be construed as if such invalid or unenforceable provision were omitted.

IN WITNESS WHEREOF, the parties have executed this Agreement to be effective the day and year first above written.

ANTRIM COUNTY ROAD COMMISSION, a Michigan municipal corporation

By: _____
Burt R. Thompson, P.E.

Its: Engineer–Manager

Dated: _____

_____
Contractor

Dated: _____