REQUEST FOR PROPOSAL

SPECIFICATIONS

AND

CONTRACT AGREEMENT

FOR

FY20-500-32

FOG SEAL TREATMENTS

CITY OF MANCHESTER
DEPARTMENT OF PUBLIC WORKS
HILLSBOROUGH COUNTY
CITY OF MANCHESTER

New Hampshire

REQUEST FOR PROPOSAL
SPECIFICATIONS
and
CONTRACT AGREEMENT

for

FOG SEAL TREATMENTS

FY20-500-32

Prepared by

CITY OF MANCHESTER, NEW HAMPSHIRE
DEPARTMENT OF PUBLIC WORKS
HILLSBOROUGH COUNTY
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INVITATION FOR PROPOSALS

Sealed proposals will be received from prequalified contractors at the office of the Department of Public Works of the City of Manchester, New Hampshire before or at 2:00 P.M., prevailing time on the 5th day of March, 2020 for the following described services:

FOG SEAL TREATMENTS
FY20-500-32

The City of Manchester is accepting proposals the application of fog seal treatments to various City roadways

Certified Check/Bid Bond $10,000

Specifications may be seen at the office of the Department of Public Works, 475 Valley Street or viewed or at the following website:

http://www.manchesternh.gov/Departments/Purchasing/Bid-Opportunities-and-Results

All individuals, firms, partnerships or corporations intending to bid, must be prequalified for the project. Prequalification forms may be obtained at the Office of the Department of Public Works for five ($5.00) dollars or from the following website:

http://www.manchesternh.gov/purchasing.

Sealed Prequalification Statements will be received at the Office of the Department of Public Works until 5:00 P.M. prevailing time on Friday, February 7, 2020.

Bids must be completed in both words and numerals on regular proposal forms, which shall be submitted in a sealed envelope marked: "Proposal for "FOG SEAL TREATMENTS ", addressed and delivered to the Department of Public Works not later than the date and time mentioned above, at which time they will be publicly opened and read aloud.

Bids must be accompanied by a Certified Check or Bid Bond in the amount listed above, payable to: "Department of Public Works, City of Manchester, N.H." as security for the execution of the contract.

A Performance and Payment Bond each in the amount of 100 percent of the contract price will be required of the successful bidder.
The City of Manchester is an equal opportunity/affirmative action agency. All qualified bidders will receive consideration without regard to race, color, religion, creed, age, sex, or national origin. The City hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin, sex, age, or disability in consideration for an award.

The right is reserved to waive any informalities in or reject any or all proposals and to accept the bid that is deemed most favorable to the interest of the City of Manchester.

A $5.00 non-refundable mailing fee will be charged for specifications mailed to any contractor. Checks should be mailed to Department of Public Works, 475 Valley Street, Manchester, N.H. 03103.

Questions may be directed to David Winslow or Owen Friend-Gray or at 624-6444.

Department of Public Works, City of Manchester, N.H.

By: HIGHWAY COMMISSION

Toni Papas, Chairman

Patrick Robinson, Vice-Chairman       James Burkush, Clerk
Trixie Vasquez, Commissioner          Armand Forest, Commissioner

Kevin A. Sheppard, P.E.
Public Works Director
INSTRUCTIONS TO BIDDERS

GENERAL:

1. Bids will be received by the City of Manchester, New Hampshire at the place and until the time specified in the Invitation to Bid and then publicly read aloud for the information of bidders and others properly interested who may be present either in person or by representative. NO PROPOSALS WILL BE ACCEPTED AFTER TIME AND DATE SPECIFIED.

2. The following meanings are attached to the defined works when used in this document:

   a. The word "City" means City of Manchester, New Hampshire.
   b. The word "Bidder" means the person, firm, or corporation submitting a proposal on these specifications or any part thereof.
   c. The word "Contractor" means the person, firm, or corporation with whom the Contract is being made by carrying out the provisions of this Sealed Bid Invitation and the Contract.
   d. The words "firm price" shall mean a guarantee against price increase during the life of the Contract.

3. Strict compliance with the requirements of the Invitation to Proposal, terms and conditions, and the instructions printed is necessary. All blank spaces must be filled in. Signatures of the responsible owner/representative of the firm must be in ink. No reproductions/duplications/copies will be accepted.

4. Each proposal must give the full business address of Bidder and be signed by him with his usual signature. Proposals by partnerships must furnish the full names of all partners and must be signed with the partnership name by one of the members of the partnership or by an authorized representative, followed by the signature and title of the person signing. Proposals by corporations must be signed with the legal name of the corporation, followed by the state of incorporation and by the signature and title of president, secretary, or other person authorized to bind it in the matter. The name of each person signing shall also be typed or printed below the signature. A bid by a person who affixes to his signature the word "president", "secretary", "agent", or other title without disclosing his principal may be held to be the bid of the individual signing. When requested by the City, satisfactory evidence of the authority of the officer signing on behalf of the corporation shall be furnished. All Bids must be signed by an authorized, responsible officer or employee having the capacity to enter into contracts.
5. Proposals must be securely sealed in a suitable envelope, (facsimile or electronic submissions will not be accepted) addressed and marked on the outside as follows:

**FY20-500-32 - FOG SEAL TREATMENTS**

6. Bidders’ names and address must appear on the upper left hand corner of the sealed envelope.

7. The entire solicitation document is to be returned when submitting a Proposal, unless otherwise directed by the solicitation document. Failure to return all pages may result in a determination that the submittal is non-responsive.

**PLEASE NOTE: THE CITY OF MANCHESTER IS NOT RESPONSIBLE FOR PROPOSALS NOT PROPERLY MARKED.**

8. It will be the responsibility of the Bidder to see that their bid is received by the Department of Public Works as specified.

9. Each Proposal is received with the understanding that the acceptance in writing by the City of the Bidder to furnish any or all of the services described therein or as otherwise negotiated shall constitute a contract between the Bidder and the City.

10. A contract agreement that is customarily employed by the City will be used and will incorporate the original solicitation with all terms, condition and specifications of the sealed Proposal. A copy of the contract agreement is attached hereto.

11. Proposals may be withdrawn upon written or electronic request received from Bidders prior to the time affixed for opening. Negligence on the part of the Bidder in preparing the bid confers no right for the withdrawal of the Proposal after it has been opened.

12. The solicitation document maintained by the Department of Public Works, in the bid file folder, shall be considered the official copy. In the case of any inconsistency between Proposal documents submitted to the City, but not clearly listed on the exception page of the document or as an exception by the Bidder, the language of the official copy shall prevail. Furthermore, any exception or changes to the specifications made by the Bidder may be cause to disqualify your Proposal.

13. Award will be made in the best interest of the City taking into consideration factors set forth in the City of Manchester Procurement Code. Upon making an award, or giving notice of intent to award, the City will place appropriate notice on the Purchasing Website: [www.manchesternh.gov/bids](http://www.manchesternh.gov/bids).
14. No oral interpretations will be made to any Bidder as to the meaning of the specifications or terms and conditions of this sealed Proposal. Every request for such interpretation or request for a change in the specifications or terms and conditions shall be made in writing, addressed and forwarded to:

Mr. David Winslow  
Email: dwinslow@manchesternh.gov  
Subject: FOG SEAL TREATMENTS

All questions must be received no later than 12:00 pm, Wednesday, February 26, 2020. Any questions received after that time will not be answered. Every interpretation made to a Bidder will be in the form of an addendum to the Sealed Proposal Invitation which, if issued, will then be posted on the website: www.manchesternh.gov/bids as an addendum no later than five (5) business days from when Bids are due. All such addenda shall become part of the complete Sealed Proposal Invitation. It is the Bidder’s responsibility to check the website prior to the submittal deadline to ensure that the Bidder has a complete, up-to-date Proposal package.

15. Proposals that are incomplete, not properly endorsed or signed, or otherwise contrary to these instructions may be rejected as informal by the City. The Proposal must be filled out completely and accurately.

16. Any changes and/or corrections shall be marked in red and initialed by the person making such corrections. Signatures of the responsible owner of the firm must be in ink.

17. Unless otherwise negotiated, no additional charges shall be passed to the City, including any applicable taxes, delivery or surcharges.

18. As the City is exempt from the payment of federal excise taxes, all prices quoted herein are not to include these taxes.

19. The services on which Proposals are submitted must be of such character, quality and/or performance equivalence that it will serve as that specified. In submitted Proposals on services other than as specified, Bidder shall furnish complete data and identification with respect to the alternate services they propose to furnish.

20. Consideration will be given to Proposals submitted on alternate services to the extent that such action is deemed to serve the best interests of the City. The Bidder must furnish any information (specifications or test results) which will help in determining whether an item is equal or superior to our bid standards. If the Bidder does not indicate that the services he proposes to furnish is other than specified, it will be construed to mean that the Bidder will furnish the exact services described.
21. Should the Contractor fail to meet the deadline set forth in specifications the City reserves the right to procure services from other sources and hold Contractor liable for any excess costs.

22. The apparent silence of these specifications and any supplemental specifications as to any detail or the omission from the specifications of a detailed description concerning any point shall be regarded as meaning that only the best commercial practices are to prevail and correct type, size and design are to be used. All interpretations of these specifications shall be made on the basis of this statement.

23. The Bidder certifies that no official or employee of the City or State of New Hampshire has a pecuniary interest in the bid or in the Contract that the Bidder offers to execute or in the expected profits to arise there from, and that this bid is made in good faith without fraud or collusion or connection with any other person submitting a bid.

24. The City reserves the right to waive any informality in any Proposal, to reject any and all Proposals wholly or in part, and to make awards in a manner deemed in the best interest of the City.

25. Bid security, in the form of a bid bond, deposit of cash, or certified check, bank cashier’s or bank official’s check drawn on a solvent bank, payable to the “City of Manchester” in the required amount (see specifications) must accompany each Proposal as a guarantee that if the Proposal is accepted a contract will be entered into. Such deposits of all Bidders will be held by the City until all Proposals submitted shall have been canvassed and the Proposals have either been rejected in whole or in part or the award of the contract has been made. The bid deposit of the successful Bidder will be held until a contract is duly executed. Bid deposits will be returned to unsuccessful bidders within two (2) weeks after execution of the contract. If the successful Bidder to whom a contract shall have been awarded refuses to execute the Contract and to furnish the insurance certificate and performance and/or payment bonds herein described within the ten (10) business days after award of the Contract, the amount of the bid deposit shall be forfeited to and retained by the City as liquidated damages for such neglect or refusal.

26. The successful Bidder will be required to furnish a bond or certified check on a solvent bank payable to the: “City of Manchester” in the required amount (see specifications) as a guarantee of the faithful performance thereof. The Bonding Company shall be authorized to conduct business in the State of New Hampshire by the State of New Hampshire’s Insurance Commissioner.

27. The successful Bidder will be required to furnish a payment bond or a certified check on a solvent bank payable to the “City of Manchester” in the required amount (see specification) as security for the payment of all labor performed or furnished, and for all materials used in the fulfillment of said contract. The
bonding company shall be authorized to conduct business in the State of New Hampshire by the State of New Hampshire.

28. The Bidder, if awarded an order or contract, agrees to defend, indemnify, and hold harmless the City from all damages to life and property arising out of the performance of this Contract due to the Bidder's negligence, that of his employees, subcontractors, etc., or due to the negligence of the City, its employees, representatives, agents, etc.

29. The City of Manchester may withhold acceptance of or reject any merchandise, material or product which is found, upon examination, not to meet the specification requirements. When rejected, it shall be removed by the Contractor within ten (10) days after notification of rejection.

30. Assignment of Contract: A contract shall not be assignable by the Contractor in whole or in part without the written consent of the Public Works Director or designee.

31. The Revised Statutes Annotated of the State of New Hampshire, the Charter of the City, and all City Ordinances insofar as they apply to the laws of competitive Bids, contracts and purchases are made a part hereto.

32. All deliveries of commodities hereunder shall comply in every respect with all applicable laws of the Federal Government and/or the State of New Hampshire.

33. The Bidder to whom a contract is awarded guarantees to the City that all warranties of merchantability and fitness for a particular purpose as provided for in New Hampshire 382A-2-314 and 2-314 shall remain in force and will not be disclaimed.

34. Payment Terms:
   a. The successful bidder shall keep accurate, document records of time, material and transportation allocable to the Contract. Related records will be available for audit purposes during normal business hours, as often as deemed necessary.
   b. Payments shall be made within 15-45 days of delivery and acceptance of contracted item(s)/services or upon receipt of a verified request for payment, whichever is later.
   c. Pay requests shall be on forms approved by the Department.
d. Requests for payment must be submitted to:

Mr. David L. Winslow  
Department of Public Works  
475 Valley Street  
Manchester, NH 03103  
Email: dwinslow@manchesternh.gov

35. The Public Works Director may terminate the contract for breach by the Contractor of any of the provisions of the contract by giving the Contractor ten (10) days’ notice by registered mail.

36. The City may terminate the Contract at any time by giving written notice to Contractor of such termination and specify the effective date thereof, at least ten (10) days before the effective date of such termination.

FAILURE TO COMPLY WITH THESE REQUIREMENTS COULD RESULT IN THE CANCELLATION OF AN ORDER OR CONTRACT
STANDARD SPECIFICATIONS
FOR ROAD, DRAIN & SEWER CONSTRUCTION

These specifications are intended to relay to developers, contractors and other builders and trades, information concerning the Department of Highways' requirements relative to all construction under its jurisdiction in the City of Manchester, NH.

To facilitate this end, the Standard Specifications have been divided into three parts as follows:

PART I -- PUBLIC IMPROVEMENTS, EXCAVATION AND PERMITTING

Part I of the Standard Specifications outlines the Department's requirements concerning public improvements included in site development and subdivision projects. These requirements shall also apply to off-site improvements conducted within streets, rights-of-way, easements or other public lands belonging to the City of Manchester, New Hampshire.

All work relative to the above shall be conducted according to Section V of this part and the Technical Specifications as outlined in Part III.

PART II -- CONTRACT GENERAL PROVISIONS

Part II of the Standard Specifications outlines the Department's contractual requirements concerning work for road, drain and sewer projects along with other related work. These requirements shall apply to all such work contracted by the City of Manchester, Department of Highways and shall be considered a part of all proposals.

PART III -- TECHNICAL SPECIFICATIONS

Part III of the Standard Specifications outlines the Department's detailed requirements concerning the control of material, rules of construction and basis of payment. Supplemental Specifications not yet considered standard and Special Provisions for explaining items of work unique to a specific project, will be included in the proposal forms prepared by the Department.

The sections included in this part along with any Supplemental Specifications and Special Provisions, shall be considered a part of all proposals.

A copy of the Standard Specifications can be found on the City’s website at:

http://www.manchesternh.gov/Departments/Highway/Permits-and-Records
BID SECURITY

The undersigned agrees to comply with the requirements as to the conditions of employment, wage rates and hours of labor set forth in the Form of "Contract Agreement". The undersigned hereby agrees to complete all the work shown or specified under this contract and as shown on the contract drawings as specified in the contract documents and he further agrees that the OWNER may retain from the moneys that are or which may become due an amount of two hundred dollars ($200.00) plus engineering charges for each and every calendar day (Sunday and holidays excluded) of time consumed in completing the work beyond the time conditions stipulated above or any extension of time that is duly authorized and such amount so to be retained, is hereby agreed to be liquidated damages accruing to the OWNER incident to such delay.

The undersigned agrees that if he is selected as CONTRACTOR, he will within ten (10) days, (Saturdays, Sundays and legal holidays excluded) after presentation thereof by the "Awarding Authority", execute a contract in the form attached hereto and furnish a Performance Bond and also a labor and materials or Payment Bond, each of a surety company registered and licensed to do business in the State of New Hampshire and satisfactory to the OWNER and each in the sum of at least one hundred percent (100%) of the contract price, the premiums for which are to be paid by the CONTRACTOR and are included in the bid price.

The undersigned understands that the OWNER reserves the right to reject any and all bids and to waive any informalities in the bidding.

________________________________________
Contractor's Signature

________________________________________
Title

________________________________________
Date
Certificate of Acknowledgment of Contractor, if a Corporation

State of ______________________,
    ss:
County  ______________________,

On this _____ day of ___________, 2020

before me personally came ___________________

to me known, who being duly sworn did say as follows:

that he resides at: ____________________________

and is the ____________________

of __________________________

the corporation described herein and which executed the foregoing instrument; that he
knows the corporate seal of said corporation; the seal affixed to the foregoing instrument
is such corporate seal and it was so affixed by order of the Board of Directors of said
corporation and by the like order, he signed thereto his name and official designation.

____________________________
     Notary Public (seal)

My commission expires:___________________________
PROPOSAL

FOG SEAL TREATMENTS

The City of Manchester acting through its Department of Public Works hereinafter called the "Awarding Authority", requests bids for the furnishing of all labor, equipment and materials required for the construction of the "FOG SEAL TREATMENTS" in accordance with the plans and specifications prepared by the City of Manchester, Department of Public Works.

The Bidder declares that the attached Proposal therein referred to has been carefully examined and is understood. It is proposed and agreed, if the bid is accepted, to Contract with the Owner to the required work in the manner set forth.

The undersigned as Bidder declares that the only person or parties interested in this proposal as principals are those named herein; that this Proposal is made without collusion with any other firm, that the undersigned has carefully examined the location of the proposed work, the proposed form of contract and the plans and specifications therein referred to, and the undersigned proposes and agrees if this Proposal is accepted, he will contract with the "Awarding Authority" to provide all the necessary labor, machinery, tools, apparatus and other means of construction to do all the work and furnish all the materials specified in the contract in the manner and time therein described and according to the requirements of the Engineer therein set forth and the undersigned will take full payment therefore, the following unit and total prices:

Total price of this Proposal (for comparison of bids) based on the estimated quantities is:

$_________________________

Total Price In Figures

CONTRACTOR: _________________________

BY: _________________________

TITLE: _________________________

It is agreed that the total price presented above is to be used solely for the comparison of bids to determine the apparent low bidder.

Addendums received ____________________________
PROPOSAL

The undersigned agrees that this Bid shall be good and may not be withdrawn for a period of one hundred fifty (150) calendar days after the scheduled closing time for receiving bids.

This Proposal includes Addenda No.: ________________________ ________________________

Contractor (Bidder) (seal)

By: ________________________
   (Signature and Title)

Address: ________________________

Being a (corporation incorporated)
   (under the laws of the   )
   (State of _______________)
   (Partnership,            )
   (Individual              )

Composed of Officers, partners, or owner, as follows:

_______________________________________

_______________________________________

_______________________________________

_______________________________________

_______________________________________
## INFORMATION REPORT

<table>
<thead>
<tr>
<th>PROJECT:</th>
<th>FOG SEAL TREATMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE BIDS OPENED:</td>
<td>At 2:00 P.M., March 5, 2020</td>
</tr>
<tr>
<td>PROJECT TYPE:</td>
<td>Application of fog seal treatments to various City roadways</td>
</tr>
<tr>
<td>CONTRACT PERIOD:</td>
<td>The contract period for this project shall be 12 months beginning at the date of notice to proceed.</td>
</tr>
<tr>
<td>PROPOSAL GUARANTEE:</td>
<td>$10,000.00</td>
</tr>
</tbody>
</table>
This proposal shall be filled in by the bidder in ink with the prices written in both works and numerals and the extensions shall be made by bidder. Amount in words will govern.

<table>
<thead>
<tr>
<th>Bid Item Number</th>
<th>Estimated Quantity</th>
<th>Unit</th>
<th>Description (Bid Price in Words)</th>
<th>Unit Price (Bid in Figures)</th>
<th>Total Price (Bid in Figures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>409.11</td>
<td>10,000</td>
<td>SY</td>
<td>FOG SEAL SURFACE TREATMENT – CONVENTIONAL (0.5-0.075 GAL/SY) __________________________ dollars and __________________________ cents per SY.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>409.12</td>
<td>10,000</td>
<td>SY</td>
<td>FOG SEAL SURFACE TREATMENT – CONVENTIONAL (0.8-0.10 GAL/SY) __________________________ dollars and __________________________ cents per SY.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>409.13</td>
<td>10,000</td>
<td>SY</td>
<td>FOG SEAL SURFACE TREATMENT – CONVENTIONAL (0.11-0.135 GAL/SY) __________________________ dollars and __________________________ cents per SY.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>409.21</td>
<td>10,000</td>
<td>SY</td>
<td>FOG SEAL SURFACE TREATMENT – BIO-BASED (0.5-0.075 GAL/SY) __________________________ dollars and __________________________ cents per SY.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>409.22</td>
<td>10,000</td>
<td>SY</td>
<td>FOG SEAL SURFACE TREATMENT – BIO-BASED (0.8-0.10 GAL/SY) __________________________ dollars and __________________________ cents per SY.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>409.23</td>
<td>10,000</td>
<td>SY</td>
<td>FOG SEAL SURFACE TREATMENT – BIO-BASED (0.11-0.135 GAL/SY) __________________________ dollars and __________________________ cents per SY.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>409.4</td>
<td>6</td>
<td>DAY</td>
<td>FRICTION TESTING __________________________ dollars and __________________________ cents per DAY.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>409.51</td>
<td>4</td>
<td>DAY</td>
<td>CORING FOR ASPHALT TESTING __________________________ dollars and __________________________ cents per DAY.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>409.52</td>
<td>12</td>
<td>EA</td>
<td>RECOVERED ASPHALT BINDER VISCOSITY TEST __________________________ dollars and __________________________ cents per EA.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>618.109</td>
<td>1</td>
<td>ALL</td>
<td>UNIFORMED OFFICERS AND FLAGMEN Ten Thousand dollars and no cents. per ALL. $10,000.00 $10,000.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>L.S.</td>
<td>MOBILIZATION dollars and cents per L.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>---</td>
<td>------</td>
<td>----------------------------------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>692</td>
<td>1</td>
<td>L.S.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL BID (in Words)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
BID BOND
FOG SEAL TREATMENTS
FY20-500-32

The undersigned as bidder, understands and agrees that the quantities of work as given for each item in this Proposal are only approximate and are assumed solely for the comparison of proposals. They are not guaranteed to be accurate statements or estimates of the quantities of work to be performed under this contract and any departures therefrom, will not be accepted as valid grounds for any claim or loss of profits. In case of variation between unit prices and total prices stated by the bidder, the unit prices will be considered to be his bid.

The undersigned further agrees to comply with the requirements as to conditions of employment, wage rates and hours of labor set forth in the form of Contract Agreement.

The undersigned agrees that if he is selected as CONTRACTOR, he will, within ten (10) days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the awarding authority, execute a contract in the form attached hereto and furnish a Performance bond and also a labor and materials or Payment Bond, each of a surety company registered and licensed to do business in the State of New Hampshire satisfactory to the "Awarding Authority" and each in the sum of at least one hundred percent (100%) of the contract price, the premiums for which are to be paid by the Contractor and are included in the various unit prices bid.

Accompanying this Proposal under separate cover is Ten Thousand Dollars ($10,000.00) in the form of a Bid Bond, Cashier's Check or Certified Check* payable to the Department of Public Works of the City of Manchester.

The undersigned understands that the OWNER reserves the right to reject any and all bids and to waive any informalities in the bidding.

*Bidder will cross out words which do not apply.

____________________________________  __________________________
Contractor's Signature                     Date

____________________________________
Title
MICROSURFACING AND FOG SEAL TREATMENTS  
FY20-500-32

PROSECUTION OF THE WORK

Description of the Work:

This contract consists of the application of fog seal treatments to various City roadways.

Utilities:

There are utility installations in the project area belonging to, but not necessarily limited to, the following:

<table>
<thead>
<tr>
<th>Company</th>
<th>Address</th>
<th>Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comcast</td>
<td>751 E Industrial. Dr.</td>
<td>626-9900</td>
</tr>
<tr>
<td>Liberty Utilities</td>
<td>1260 Elm Street</td>
<td>625-4000</td>
</tr>
<tr>
<td>Manchester Fire Dept.</td>
<td>100 Merrimack St.</td>
<td>669-2256</td>
</tr>
<tr>
<td>Manch. Water Works</td>
<td>281 Lincoln St.</td>
<td>624-6494</td>
</tr>
<tr>
<td>Consolidated Comm.</td>
<td>100 Gay Street, 2nd Fl.</td>
<td>645-2700</td>
</tr>
<tr>
<td>Eversource</td>
<td>780 N. Commercial St.</td>
<td>1-800-662-7764</td>
</tr>
</tbody>
</table>

Prosecution:

It is understood that the Contractor will match his work schedule with that of the Department of Public Works and other utility companies as applicable.

Due to the limited funding for this work, the City reserves the right to delete any part of the work in order to keep expenditures within the limits of available funds.

Bidder shall be aware that the City of Manchester, Department of Public Works, Standard Specifications for Road, Drain and Sewer Construction (referred to as the “Standard Specifications”) were updated in January 2020. The current set of Standard Specifications may be found on the City’s website at:

http://www.manchesternh.gov/Departments/Public-Works

Contractor to provide all on site construction warning signage necessary for the duration of the projects including, but not limited to: Road Construction Ahead, Flag Person Ahead, Road Closed, Detour, etc. Placement and management of signs shall be incidental to the work. All construction signage shall conform to the current edition of the MUTCD.

Contractor’s attention is directed to the fact that Item 1000 - Miscellaneous Authorized Work is an allowance that shall be used for payment of work directed and authorized by the Engineer but not specifically covered by other items within the Contract. Prior to
commencement of work, the Contractor shall provide the Engineer a written estimate that includes material costs and hourly costs for equipment and labor. The price listed within the Bid Schedule shall not be altered by the bidder.

Contractor shall notify residents on affected streets a minimum of 72 hours prior to the start of work. The means and method of the notification shall be submitted to the Engineer for approval a minimum of three business days before implementing. This work shall be subsidiary to the Contract.

City can post no parking signs at project locations provided the Contractor notifies the Engineer a minimum of 48 hours prior.

When submitting for payment, the Contractor shall submit the request on the Department payment request form in Appendix A (electronic copy of file in Excel Format will be made available to Contractor). Pay Request shall include all backup information such as, traffic control invoices, material tonnage slips, etc. Submitted information shall also include an itemized cost breakdown for each street in the pay request.

Permits required from the Highway Department shall be furnished without charge. All other permits (City, State, Federal) shall be the responsibility of the Contractor. All work to be performed shall be in compliance with the City of Manchester Ordinances or as specified on the permit itself.

The cost for each Item shall cover all labor, materials, parts and other incidentals required to perform the work.

Contractor shall provide to the Engineer with the following information a minimum of 2 weeks in advance of anticipated start of fog sealing:

- Proposed schedule of work including anticipated start and end times during the normal work shift;
- Order of locations to be done;
- Traffic Control Plans for each location identifying any detours and lane closures needed;
- Name and contact number(s) of the responsible individual(s) in charge of crews that will be present during work;
- Any proposed night work (9:00PM to 7:00AM);

Prior to the start of work, the Contractor will provide the City with an insurance certificate with the City of Manchester and the Manchester Department of Public Works named as additional insured. The certificate shall meet all requirements of the Standard Specifications for Road, Drain and Sewer Construction of the Manchester Department of Public Works.
Traffic Control

Traffic control by uniformed officers shall be in accordance with Section 618 of the Standard Specifications, and will be paid as an allowance under the appropriate pay item.

The placement and use of construction signs and warning devices, cones, delineators, barricades etc. to close streets or vehicles lanes shall be considered incidental to the Contract.

Two Way Traffic

The Contractor will be required to maintain two way traffic on all streets at all times unless provisions have been made with the Highway Department. Detours onto adjacent parallel streets will be considered on a case by case basis.

Public Convenience and Property Protection

The Contractor shall be aware that he will be required to maintain access to all properties in the project area at all times or as otherwise directed by the City.

The City will be responsible for the proper and timely notification to local residents and businesses should any temporary interruption of their access or services be absolutely necessary.

Contract Documents

In the event of a conflict of interpretation in the Contract Documents, the following is the general order of precedence:

1. Special Contract Requirements*
2. Special Provisions
3. Supplemental General Conditions
4. General Conditions
5. Supplemental Specifications,
7. Drawings
*Includes Prosecution of Work, Traffic Control plan and Special Attentions.

Contract Period: The contract period for this project shall be 12 months, beginning at the date of notice to proceed
CONTRACT AGREEMENT

THIS AGREEMENT made this ___ th day of ________, 2020 by and between the City of Manchester, New Hampshire acting through its Department of Public Works, hereinafter called the party of the first part and __________________ their successors and assigns, part of the second part, hereinafter called the Contractor. Witnesseth, that the Contractor, for and in consideration of the payment or payments herein specified and agreed to by the party of the first part, hereby covenants and agrees to furnish and deliver all the materials and to do and perform all the work and labor in the construction of the FOG SEAL TREATMENTS, hereinafter called the project, in the City of Manchester, County of Hillsborough, State of New Hampshire at the unit prices bid by the said Contractor for the respective estimated quantities, aggregating approximately the sum of: $________________, and such other items as are mentioned in the original proposal, which proposal and prices named, together with the General Provisions and Technical Specifications and the Special Provisions accompanying the proposal, and made a part of this Contract and accepted as such, are also agreed by each party as being a part hereof, the said project being situated as follows:

- Application of Fog Seal Treatments to various City roadways

The Contractor further covenants and agrees that all of the said materials shall be furnished and delivered and all of said labor shall be done and performed in every respect to the satisfaction and approval of the Department of Public Works aforesaid, within 12 months from the date specified in the Notice to Proceed.

The successful Bidder at the time of the execution of the contract, must deposit with the Department of Public Works security in the form of a Performance Bond and a Payment Bond, each in the sum equal to 100 percent of the amount of the contract award. The form of the bonds shall be that provided by the Department and the surety shall be acceptable to the City.
IN WITNESS WHEREOF, the parties of this contract have hereunto set their hands and seals as of the day and year first above written.

CITY OF MANCHESTER
(SEAL)

The Honorable Mayor of the
CITY OF MANCHESTER

By__________________________
Joyce Craig

DIRECTOR OF PUBLIC WORKS

By__________________________
Kevin A Sheppard, P.E.

Signed and sealed in presence of:

________________________________________
Date

CONTRACTOR
(SEAL)

By: _____________________
Title: __________________

Federal I.D. No. _____________

Approved as to form and execution

__________________________
City Solicitor
NOTARIZATION

Certificate of Acknowledgment of Contractor, if a Corporation

State of New Hampshire,

ss:

County of Hillsborough,

On this ______ day of __________, 2020

before me personally came ______________________

to me known, who being duly sworn did say as follows:

that he resides at: ________________________________

and is the _______________ of __________________________________ the corporation
described herein and which executed the foregoing instrument; that he knows the corporate seal of said corporation; the seal affixed to the foregoing instrument is such corporate seal and it was so affixed by order of the Board of Directors of said corporation and by the like order, he signed thereto his name and official designation.

_____________________________
Notary Public (seal)

_____________________________
My commission expires:___________________________
STATEMENT OF UNDERSTANDING

Project Safety

WHEREAS this project is subject to all Safety and Health Regulations as promulgated by the U.S. Department of labor, it shall be a requirement that the Contractor designate a "Safety Officer" who's duty shall be to monitor the project on a daily basis in order to insure that all safety measures alluded to in the contract and otherwise pertinent to this project, are strictly adhered to. Special attention shall be paid to maintaining existing guide, regulatory and warning signs affecting the movement of traffic.

IT IS hereby agreed that responsibility for the above mentioned safety measures is solely that of the Contractor has been designated as the project "Safety Officer".

Date: __________, 2020

_________________________________
By: 

Title:
STATEMENT OF COMPLIANCE

Drug Testing Program

WHEREAS this project is subject to federal laws, rules and regulations, and WHEREAS all drivers of commercial vehicles over 26,000 pounds GVWR are required to have a Commercial Drivers License (CDL), it is hereby certified that the Alcohol and Drug Testing requirements for Commercial Motor Vehicle Drivers mandated by the Federal Highway Administration, United States Department of Transportation are being complied with.

Date: ________, 2020

______________________________________

By:

Title:
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we ______________________

_________________________ a ________________________________  hereinafter
called the "Principal" and _____________________ of _______________________, State
of _________________________ hereinafter called the "Surety", are held and firmly

bound

unto THE CITY OF MANCHESTER, NEW HAMPSHIRE, hereinafter called "Owner",
in the penal sum of (___________________________) in lawful money of the United
States, for the payment of which sum well and truly to be made, we bind ourselves, our
heirs, executors, administrators and successors, jointly and severally, firmly by these
presents.

THE CONDITIONS OF THIS OBLIGATION is such that WHEREAS, the Principal
enter into a certain contract with the Owner, dated the (Date) copy of which is hereto
attached and made a part of hereof for the construction of:

"FOG SEAL TREATMENTS " in accordance with drawings and specifications
prepared by the City of Manchester, N.H. which contract is by reference made a part
hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all
the undertakings, covenants, terms, conditions and agreements of said contract during the
original term thereof, and any extensions thereof which may be granted by the Owner,
with or without notice to the Surety, and if he shall satisfy all claims and demands
incurred under such contract, and shall fully indemnify and save harmless the Owner
from all costs and damages which it may suffer by reason of failure to do so, and shall
fully reimburse and repay the Owner for all outlay and expense which Owner may incur
in making good any default, then this obligation shall be void; otherwise to remain in full
force and effect.

PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and
agrees that no change, extension of time, alteration or addition to the terms of the contract
or to the work to be performed thereunder, or the specifications accompanying the same,
shall in any way affect its obligation on this bond, and it does hereby waive notice of any
such change, extension of time, alteration or addition to the terms of the contract or to do
the work or to the specifications.

PROVIDED FURTHER, that no final settlement between the Owner and the Contractor
shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.
IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts, each one of which shall be deemed and original, this the ____ day of _________________ 2020.

ATTEST: ____________________________________________
                       Principal

_______________________(S)
(Principal)

_______________________(Seal)                            By______________________(S)

________________________
Witness as to Principal

________________________
Address

ATTEST: ____________________________________________
                       Surety

_______________________(S)
(SURETY)                      By_____________________(s)
                       Attorney-in-Fact

(SEAL)
_______________________(S)
Witness to Surety

__________________________ (Address)

__________________________
Address

Note: Date of Bond must not be prior to date of Contract.
PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That __________________________________________

_________________________________ as Principal, hereinafter called Principal, and
_________________________________ as surety, hereinafter called Surety, are held and firmly
bound unto THE CITY OF MANCHESTER, NEW HAMPSHIRE, as obligee, hereinafter
called Owner, for the use and benefit of claimants as herein below defined, in the amount
of (______________________________________________) for the payment whereof
Principal and Surety bind themselves, their heirs, executors, administrators, successors
and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement, dated ___________, 2020 entered into a
contract with Owner for the construction of

"FOG SEAL TREATMENTS" in accordance with drawings and specifications
prepared by the City of Manchester, N.H. which contract is by reference made a part
hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms,
subcontractors, and corporations furnishing materials for or performing labor in the
prosecution of the work, provided for in such contract, and any authorized extension or
modification thereof, including all amounts due for materials, lubricants, oil, gasoline,
coal and coke, repairs on machinery, equipment and tools consumed or used in
connection with the construction of such work, and all insurance premiums on said work,
and for all labor, performed in such work, whether by subcontractor or otherwise, then
this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and
agrees that no change, extension of time, alteration or addition to the terms of the contract
or to the work to be performed thereunder, or the specifications accompanying the same
shall in any way affect its obligation on this bond, and it does hereby waive notice of any
such change, extension of time, alteration or addition to the terms of the contract or to do
the work or the specifications.

PROVIDED FURTHER, that no final settlement between the Owner and the Contractor
shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts, each one
of which shall be deemed and original, this ___ day of ________________, 2020.

ATTEST: _______________________________ Principal
SUPPLEMENTAL SPECIFICATION
SECTION 409 – FOG SEAL

Remove Section SECTION 409 – FOG SEAL from Standard Specifications

Replace with:

SECTION 409 – FOG SEAL

Description

1.1 Work Shall consist of the application of rejuvenating asphalt emulsion (fog seal) to seal fine cracks in the pavement surface and reduce oxidation.

Materials

2.1 Conventional Fog Seal

2.1.1 Shall be an asphalt emulsion, CMS-1PF, and contain a polymer. The emulsion shall be certified as meeting this specification from the manufacturer, and shall not be diluted prior to application.

Table 409 - 1 Material Properties – Conventional Fog Seal

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Procedure (AASHTO)</th>
<th>Specification (min)</th>
<th>Specification (max)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emulsion Properties</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viscosity, Saybolt-Furol, @ 77°F, SFS</td>
<td>T59</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Storage, 24 hour, %</td>
<td>T59</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Oil Distillate, %</td>
<td>T59</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Sieve Test, %</td>
<td>T59</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Residue by Distillation, % by weight</td>
<td>T59</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td><strong>Residue Properties From Distillation</strong></td>
<td>T59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penetration @ 4C, 200g weight, 60 sec Residue by Distillation, % by weight</td>
<td>T49</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td><strong>Residue Properties From Low Temp Evaporation</strong></td>
<td>PP72-11, Procedure B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic Shear, G*/sin @ 640C, kPa</td>
<td>T315</td>
<td>Report Only</td>
<td></td>
</tr>
<tr>
<td><strong>Polymer Properties</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swelling in rejuvenating agent, % max weight increase: 48 hrs</td>
<td>ASTM D471 (2)</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>Tensile Strength (psi)</td>
<td>ASTM D412a (3)</td>
<td>800</td>
<td></td>
</tr>
<tr>
<td>Glass Transition Temperature (Tg) – Midpoint by DSC (°C)</td>
<td>ASTM D7426 (4)</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
Latex Density at 23°C (g/cm³)  
ASTM D6937 (5)  1.00  1.05

Latex pH  
ASTM E70 (6)  6.0  8.0

**Test on Rejuvenating Agent**

<table>
<thead>
<tr>
<th>Property</th>
<th>Method</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash Point, COC, °F</td>
<td>T48</td>
<td>380</td>
<td></td>
</tr>
<tr>
<td>Viscosity, 140°F, CST</td>
<td>201</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td>Saturate, % by wt</td>
<td>ASTM D2007</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Asphaltenes</td>
<td>ASTM D2007</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>

**Test on Residue**

<table>
<thead>
<tr>
<th>Property</th>
<th>Method</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Change, %</td>
<td></td>
<td>6.5</td>
</tr>
<tr>
<td>Viscosity Ratio</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

(1) Exception to AASHTO T59: Bring the temperature on the lower thermometer slowly to 350°F plus or minus 10°F. Maintain this temperature for 20 minutes. Complete the total distillation in 60 plus or minus 5 minutes.

(2) Polymer Testing, Resistance to Swelling: Using a syringe, place 0.8 gm of latex into a 18 mm diameter DSR mold. Allow the sample to dry at ambient lab conditions (air conditioned) on the bench for 72 hours. Sample should be easily removable from the mold. Take the “button” out of the mold and place the sample into a forced air oven at 40°C (104°F) for 48 hours (on release paper). If at the end of the ambient dry, the sample sticks to the mold, place it into the oven and check it after 1-2 hours. After 48 hours, cool and weigh the sample to the nearest 0.0001 gram and record the weight. Put ½ inch of Rejuvenating Agent into a 3 oz penetration tin. Place the “button” on the Rejuvenating Agent, and add another ½ inch of Rejuvenating Agent, so that the “button” is covered. Put the cap on the penetration tin and place it into the 40°C oven for 48 hours. Remove the “button” from the Rejuvenating Agent, blot surface of the “button” to remove excess Rejuvenating Agent, cool the “button” to room temperature and weigh it. Calculate weight gain of the “button”, express as a %.

(3) To prepare the polymer film, dilute the waterborne polymer to 40% Total Solids Content and pour 57 g into a Teflon or silicone release mold of dimensions 7” X 7” X ¼”. Allow to dry at 23°C (73 °F) and 50% RH (controlled conditions) for 7 – 10 days total time, during which time the film should be flipped around once, preferable after 3 or 4 days. The film should be transparent in the end. To drive out any residual water, place the film in an oven at 50°C for 30 min. Dried film thickness should be 25 mil +/- 5 mils. Discard films <20mil. Cut out dumbbell-shaped test specimens of dimension 75 mm total length, 25 mm mid-section (L) and 4 mm width of mid-section. Grip in Instron machine with gap size 1 inch, use 8 inch/min cross-head speed.

(4) Use between 3 – 30 mg dry polymer. Instrument used is TA Q200D Differential Scanning Calorimeter (DSC). Heating rate is 20°C/min.

(5) Replace “Emulsified Asphalt” with “Latex” in text of test method. The testing temperature used should be 25 +/- 3°C. The calculation in Section 7 should be as follows:

\[ D = (W_f - W_t) \times 0.1 \]

\[ S.G. = D/8.337 \]

Where:  \( W_f \) = Weight of filled cup (g),  \( W_t \) = Weight of empty cup (g)

(6) A pH meter with automatic temperature measurement should be used in the evaluation with a calomel cell assembly or combination electrode. Calibration should be made using the procedure with the pH meter, according to ASTM method, prior to testing the pH of the latex. In Section 9, the procedure for measuring pH of the latex should be as follows:

- Place the electrode and probe into the dispersion that is to be measured and swirl the sample cup or beaker gently. (You may also use the probe in a stirring motion.)
- Wait for the reading to stabilize (usually less than a minute) and read/record this value. Note the temperature if not utilizing an ATC probe.
- Take the Electrode and ATC probes from the sample and rinse thoroughly with deionized water. Pat dry and place back into appropriate solution recommended by electrode manufacturer for storage.
2.2 **Bio-Based Fog Seal**

**2.2.1** Bio-Based Fog Seal shall be Delta Mist™ as manufactured by Collaborative Aggregates LLC, 100 Research Drive, Wilmington MA 01887 or approved equal.

**2.2.2** Bio-Based Fog Seal shall a penetrating asphalt spray rejuvenator liquid that is non-toxic, considered “environmentally green”, composed of plant oils and restorative chemistry in concentrated form or uniformly emulsified with water.

**2.2.3** Material shall be able to penetrate the aged binder and reverse the oxidation through a carrier matrix which solvates aged binder to allow the antioxidant properties of the suspended small molecules to react with the oxidized components and return the binder’s physical properties to meet or exceed near virgin binder performance specifications. The material shall be proven to perform on the ability to decrease the viscosity of the binder material, to reduce the rate of loss of fines and to retard crack propagation.

**2.2.4** At no time is any dilution or altering the rejuvenating agent permitted once it leaves the refinery or manufacturer. Materials shall follow all manufacturers recommended storage controls with regards to temperature (never frozen or overheated), agitation, and exposures to UV light. The manufacturer and/or contractor shall ensure that the products are free of defect and within the products shelf-life.

**2.2.5** The surface applied material shall neither permanently damage nor obscure retroreflective paint markings. The surface applied penetrating rejuvenator shall cure/dry clear without permanently minimizing the reflectivity of the pavement markings.

2.3 **Aggregate**

**2.3.1** The aggregate material shall be a dry, clean, dust and dirt-free, sound, durable, angular shaped manufactured specialty sand, such as that used as an abrasive (i.e., trade name “Black Beauty”), with a Mohs hardness of 6 to 8. The Contractor shall submit manufacturer’s technical data and a manufacturer’s certification indicating that the specialty sand meets the requirements of the specification to the Engineer prior to start of construction. The sand must be approved for use by the Engineer and shall meet the following gradation limits.
Table 409-2 Aggregate Gradation

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percentage Retained</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 8 (2.38 mm)</td>
<td>0</td>
</tr>
<tr>
<td>No. 16 (1.19 mm)</td>
<td>0-10</td>
</tr>
<tr>
<td>No. 20 (0.84 mm)</td>
<td>0-25</td>
</tr>
<tr>
<td>No. 30 (0.60 mm)</td>
<td>15-50</td>
</tr>
<tr>
<td>No. 40 (0.42 mm)</td>
<td>20-45</td>
</tr>
<tr>
<td>No. 50 (0.30 mm)</td>
<td>5-35</td>
</tr>
<tr>
<td>No. 70 (0.21 mm)</td>
<td>0-5</td>
</tr>
<tr>
<td>No. 200 (0.07 mm)</td>
<td>0-2</td>
</tr>
</tbody>
</table>

Equipment

3.1 **Pressure distributor.** The fog seal shall be applied with a computer rate-controlled distributor. The equipment shall be in good working order and contain no contaminants or diluents in the tank. Spreader bar tips must be clean, free of burrs, and of a size to maintain an even distribution of the emulsion. Any type of tip or pressure source is suitable that will maintain predetermined flow rates and constant pressure during the application process with application speeds under eight (8) miles per hour or seven hundred (700’) feet per minute. Before use the equipment must be tested under pressure for leaks to ensure it is in good working order.

The distributor truck shall be equipped with a 12’foot minimum, spreader bar with individual nozzle control. The distributor truck shall be capable of specific application rates in the range of 0.05 to 0.25 gallons per square yard. These rates shall be computer-controlled rather than mechanical. The distributor truck shall have an easily accessible thermometer that constantly monitors the temperature of the emulsion, and have an operable mechanical tank gauge that can be used to cross-check the computer accuracy.

A distributor truck shall be provided, if necessary, equipped to effectively heat and mix the material to the required temperature prior to application. Heating and mixing shall be done in accordance with the manufacturer’s recommendations. Care shall be taken not to overheat or over-mix the material.

The distributor shall be equipped to hand-spray the fog seal in areas identified either on the plans or by the Engineer, or not accessible to the distributor truck itself.

3.2 **Aggregate spreader.** The asphalt distributor truck shall be equipped with an aggregate spreader mounted to the distributor truck that can apply sand to the emulsion in a single pass operation without driving through the wet emulsion. The aggregate spreader shall be equipped with a variable control system capable of uniformly distributing the sand at the specified rate at varying application widths and speeds. The sander shall have
a minimum hopper capacity of at least 3,000 pounds of sand. Push-type hand sanders will be allowed for use around lights, signs and other obstructions.

**Construction Requirements**

4.1 **Surface Preparation.** The Contractor shall clean the pavement surface prior to placement with a power broom or road sweeper. Clean any muddy or dirty areas by flushing with water. Allow surface to dry completely prior to applying.

4.2 **Test Strip**

4.2.1 Test Strip shall be performed in order to determine the optimum rate to achieve coating without runoff or delayed curing times. Typical application ranges are 0.05 to 0.135 gallons per square yard (as specified by the manufacturer based on roadway asphalt age) and 0.5 pounds per square yard for the aggregate.

4.3 **Application**

4.3.1 Fog seal shall be applied at the target rate(s) established during the test strip. Conventional Fog Seal shall be between 120° to 160°F before application and be kept within this range during construction. Reheating shall be done when the material is allowed to cool below 110°F. Reheating shall be done at a rate of no more than 25°F per hour. Bio Based Fog Seal shall be heated per manufacturers recommendations.

4.3.2 If target application rates are not the optimum application rates to achieve proper coating, or if the break time is too long or too short, the Engineer shall be immediately notified the Engineer. Contractor shall adjust and document the new application rate.

4.3.3 Streaking of the asphalt emulsion on the road surface will not be accepted. If the streaking is occurring, all operations shall cease until the Contractor corrects the issue and the Engineer is satisfied that streaking has been eliminated.

4.3.4 During the application Contractor shall ensure there are no deficiencies resulting from poor workmanship, flushing, tracking from equipment, surface patterns, and sweeping.

4.3.5 Contractor shall insure all required areas have been treated, minimum overlap on longitudinal joints and construction joints has been achieved.

4.4 **Weather Limitations.** Place the fog seal when both the pavement and atmospheric temperature is 50°F and rising. Do not place fog seal if the pavement surface is wet, rain is forecasted within 24 hours of placement, impending weather conditions do not allow for proper curing, or if temperatures are forecasted below 32°F within 24 hours.
4.5 **Pavement Temperature.** Fog seal shall not be applied if existing pavement temperature is 140°F or above.

4.6 **Finished Appearance.** Any material splashed or sprayed onto exposed surfaces of curbs, sidewalks or other masonry structures shall be removed by sandblasting or other approved means at the Contractor's expense.

4.7 **Performance Testing.** At the direction of the Engineer, the Contractor shall perform the following testing:

**Viscosity Testing**

4.7.1 Contractor shall cut six-inch diameter cores at selected sites. Core locations shall be determined by the Engineer per methods outlined in AASHTO T47.

4.7.2 At each sampling location, three (3) cores of the untreated pavement must be taken before the rejuvenation product is placed and three (3) cores of the treated pavement after application of the rejuvenation product must be taken. The before and after cores must be taken within the same paving lane and within one foot of each other. All pavement cores taken by the Contractor must be six (6) in in diameter. The Contractor must repair any sample holes resulting from the removal of pavement cores the same day with suitable materials and methods as approved by the Engineer.

4.7.3 Untreated cores shall be taken 24-96 hours prior to applying the penetrating asphalt spray rejuvenator. Cores taken from treated pavement shall be taken within 30-45 days following application.

4.7.3.1 When cutting cores, the Engineer reserves the right to have the Contractor, at no additional cost, cut additional cores for the Department’s own testing.

4.7.4 The viscosity of the asphalt shall be tested on the treated and untreated cores. Viscosity of the existing asphalt binder shall be reduced by a minimum of 25% for a pavement two years or less in age and reduced by a minimum of 40% for a pavement greater than two years in age as determined by dynamic shear rheometer (DSR) method for asphalt testing in accordance with AASHTO T315-05 and FAA P-632 procedures. This analysis shall apply to the extracted asphalt binder of the cores, in the upper 3/8 inch of pavement.

4.7.5 Test results on cores taken shall be reported to the Engineer by the testing firm. Report shall indicate test results on each sample batch and whether the requirements per the specification have been met.
Friction Testing

4.7.6 Contractor shall provide surface friction test before and after application. Testing shall be done with an approved continuous friction measuring device. Contractor shall notify Engineer if SN values less than 50 are obtained on roadways prior to treatment. Contractor shall provide friction testing results evidencing between 24 and 96 hours after application of the fog seal that friction is increasing at a rate to obtain similar friction value of the pavement surface prior to application. If conditions should fall below the agencies minimum threshold the addition of a granular grit and/or or other approved method at the Contractor’s expense shall be required. Round-a-bouts and locations that will have more aggressive turning maneuvers may need to be avoided or constructed in a manner that would prevent motoring public and motorcyclist loss of friction.

Method of Measurement

5.1 Fog seal will be measured by the square yards of material applied to the nearest 0.1 of a square yard for type of fog seal and the rate specified.

5.2 Testing will be for friction of roadway surfaces shall be per day of testing. Day for this instance shall consist of a minimum of 8 hours.

5.3 Coring of roadways to obtain samples shall be measured by the day. Day for this instance shall consist of a minimum of 8 hours.

5.4 Testing will be measured by each test performed.

Basis of Payment

6.1 The accepted quantity of each type of fog seal will be paid for at the contract unit price per square yard complete in place including all costs for preparation, application and cleanup.

6.2 No additional compensation shall be made for additional work required to apply asphalt emulsion to areas outside the normal operating width of the distributor.

6.3 Friction testing of project roadways to obtain friction values will be paid at the contract unit price per day of friction testing. The appropriate fraction of a day will be paid for any day less than 8 hours. No additional compensation will be made for a day in excess of 8 hours.

6.4 Coring of project roadways to obtain samples required will be paid at the contract unit price per day of coring. The appropriate fraction of a day will be paid for any day less than 8 hours. No additional compensation will be made for a day in excess of 8 hours.
6.5 The accepted quantities of viscosity tests performed per the specification on the recovered asphalt shall be paid for each test performed.

6.6 Traffic Control, when not provided as separate pay item, shall be considered subsidiary.

**Pay Items and Units, Section 409 – Fog Seal**

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<tr>
<th>Pay Item Code</th>
<th>Pay Item Description</th>
<th>Units</th>
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<tr>
<td>409.11</td>
<td>Fog Seal Surface Treatment – Conventional (0.05-0.075 GAL/SY)</td>
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<td>Fog Seal Surface Treatment – Conventional (0.08-0.10 GAL/SY)</td>
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<td>Fog Seal Surface Treatment – Conventional (0.11-0.135 GAL/SY)</td>
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<td>409.51</td>
<td>Coring for Asphalt Testing</td>
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<td>409.52</td>
<td>Recovered Asphalt Binder Viscosity Test</td>
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APPENDIX
# Contract Name

CONTRACTOR: Contractor  
One Any Way  
Town, NH 00000

PAY REQUEST #: Number  
DATE OF REQUEST  Date

FOR PERIOD:  
Date A  
TO  
Date B

| 1. Original Contract Amount ........................................ |  
|-------------------------------------------------------------|---|
| 2. Net Amount Changed by Change Orders.......................... | $0.00|
| 3. Contract Total To Date (Line 1+Line 2) ........................ | $0.00|
| 4. Total Work Complete to Date.................................. | $0.00|

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<th>5. Retainage 5% RETAINAGE</th>
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<tr>
<td>a) Retainage to Date (Line 4 x % retainage) $ -</td>
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<tr>
<td>b) Total Retainage Released to Date $ -</td>
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<tr>
<td>c) Remaining Retainage (Line 5a - Line 5b) $ -</td>
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<tr>
<td>d) Retainage Withheld this Pay Period $ -</td>
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| 6. Total Amount Earned, Less Retainage (Line 4 - Line 5c) ...... $ - |
| 7. Total Previous Payments Made .................................. |

| 8. Current Amount Due (Line 6-Line 7) ................................ $ - |

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Contractor:  
By: _______________  Date: ____________

Project Manager:  
By: _______________  Date: ____________
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<th>ITEM DESCRIPTION</th>
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**TOTAL CONTRACT PRICE:**

**TOTAL TO DATE:** $0.00