

FY-2018 ROADWAY RESURFACING

TECHNICAL SPECIFICATIONS AND CONTRACT DOCUMENTS



**TOWN OF DERRY
DEPARTMENT OF PUBLIC WORKS
14 Manning Street
Derry, NH 03038**

MARCH 2017



Bid Document No:

FY-2018 ROADWAY RESURFACING

TECHNICAL SPECIFICATIONS

AND

CONTRACT DOCUMENTS



TOWN OF DEERY
DEPARTMENT OF PUBLIC WORKS

14 MAR 19 2018
DEERY NY 13038

MARCH 2017



14 MAR 19 2018

POINTS OF EMPHASIS:

FY-2018 ROADWAY RESURFACING

MARCH 9, 2017 (10:00)

- SUPT. OF OPERATIONS: ALAN COTE
- ENGINEERING COORDINATOR: MARK L'HEUREUX
- ENG. TECHNICIAN/INSPECTOR: DAVE BLANCHARD

- PERFORMANCE AND PAYMENT BOND IN THE AMOUNT OF (100%) OF CONTRACT PRICE REQUIRED. INCLUDES A MAINTENANCE PERIOD OF ONE YEAR.
- CONTRACT PERIOD: **JULY 1, 2017 THROUGH JUNE 30, 2018**. OPTIONAL SECOND AND THIRD YEAR RENEWAL UPON TOWN/CONTRACTOR MUTUAL AGREEMENT.
- FINISH PAVEMENT DEADLINE: OCTOBER 15TH, BASE COURSE DEADLINE: NOVEMBER 15TH. APPROX. SPRING START UP AROUND APRIL 15, 2018.
- ASPHALT CEMENT ADJUSTMENT FOR MACHINE PAVING ONLY. NO ADJUSTMENT WILL BE APPLIED TO HAND WORK OR ASPHALT CURBING. (P. 61)
- NO FUEL ADJUSTMENT INCLUDED OR INTENDED.
- PNEUMATIC RUBBER TIRE ROLLER REQUIRED FOR SHIM AND BINDER PAVING.
- ITEM NO. 5, COLD PLANING: MANY ROADS OF DIFFERENT QUANTITIES AT VARIOUS LOCATIONS. BE AWARE OF SPECIFIC EQUIPMENT REQUIREMENTS. (P. 68)
- ITEM NO. 6, COLD PLANING ASPHALT CURB: NO PROJECTS SLATED BUT UNIT PRICES NEEDED FOR UNFORESEEN WORK.
- LIQUIDATED DAMAGES FOR DELAYS: \$1,750.00 PER CALENDAR DAY. (SEE SPECIAL CONDITIONS)
- NORMAL WORKING HOURS: MONDAY THRU FRIDAY 7:00 AM TO 4:00 PM.
- COMPETENT CONSTRUCTION SUPERINTENDENT OR FOREMAN ON ALL RECLAIM WORK. BE AWARE OF SPECIFIC EQUIPMENT REQUIREMENTS. (P. 69)
- BE AWARE THAT THE TOWN HAS THE ABILITY TO HOLD 10% RETAINAGE.
- THE TOWN RESERVES THE RIGHT TO ADD/DELETE WORK BASED ON APPROVED BUDGET AMOUNT.
- INFREQUENTLY, ROAD WORK MAY INVOLVE MINOR OR UNFORESEEN DRAINAGE OR ROAD BASE IMPROVEMENTS BY TOWN OR OTHERS PRIOR TO OR DURING MILLING, RECLAIMING OR PAVING.
- PROPER SIGNAGE AND FLAGGING FOR MINIMUM ONE LANE OF TRAFFIC AT ALL TIMES.
- TRAFFIC CONTROL AND ROAD MAINTENANCE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL WORK COMPLETED.

- **ADJUSTMENT OF UTILITY STRUCTURES:** TARPS ARE REQUIRED IN ALL SMH'S PRIOR TO ANY WORK, (NO DEBRIS TO FALL INTO TROUGH OR SHELF) ALL WATER GATE VALVES SHALL BE ACCESSABLE FOLLOWING WORK. PROPER COMPACTION TO BE USED AROUND STRUCTURES, (SM. PLATE OR JUMPING JACK) POINT AND SMOOTH ALL BRICK WORK, USE CUT OFF SAW TO CUT GB EXTENSIONS AS NECESSARY (DO NOT FRACTURE WITH HAMMER) CONTRACTOR TO CLEAN UP ALL DEBRIS FROM OPERATION INCLUDING STEEL PLATES. NEW SMH/DMH CB FRAMES AND GRATES SUPPLIED BY TOW AS NECESSARY.

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DIVISION 0 – BID REQUIREMENTS & CONTRACT DOCUMENTS

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**INVITATION TO BID
2017 ROADWAY RESURFACING**

Sealed bids will be received at the Public Works office, 14 Manning St, 2nd Floor, Derry, New Hampshire until 10:00 AM on **March 09, 2017** for the reclaiming, milling and resurfacing of various roadways throughout the Town.

Specifications and Bid forms may be obtained at the Derry Municipal Center, Second floor, 14 Manning Street, Derry, New Hampshire 03038.

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00100 - INFORMATION FOR BIDDERS

Bids will be received by the Town of Derry, New Hampshire, (hereinafter called the "OWNER"), at the Department of Public Works, 14 Manning Street, Derry, NH 03038, until **10:00 AM** local time, on **March 09, 2017** and then at said office publicly opened and read aloud.

Each Bid must be submitted in a sealed envelope addressed to:

Town of Derry
Department of Public Works
14 Manning Street
Derry, NH 03038

The envelope should bear on the outside the name of the Bidder, his address, and the name of the project (FY-2018 Roadway Resurfacing) for which the Bid is submitted. If forwarded by mail, the sealed envelope containing the Bid must be enclosed in another envelope addressed to the OWNER at:

Town of Derry
Department of Public Works
14 Manning Street
Derry, NH 03038

Instructions to Bidders:

1. All Bids must be made on the required Bid Form. All blank spaces for Bid prices must be filled in, in ink or typewritten, and the Bid form must be fully completed and executed when submitted. Only one copy of the Bid Form is required.

Officials of Corporations shall designate their official title; partners or sole owners shall so state, giving the name of all interested parties. All corrections or erasures shall be initialed by the person signing the bid.

Incorporated bidders agree to submit appropriate evidence of corporate officer's authority and corporate good standing to do business in New Hampshire prior to commencement of work.

2. A bidder shall not stipulate in his proposal any conditions not contained in the specifications. If any specifications are found to be discriminatory by nature, comparable materials or equipment will be considered. Also comparable equipment must be clearly identified on the proposal. Any proposal, which fails to comply with these instructions,

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may be rejected forthwith. All materials or equipment delivered or installed shall be new, unless otherwise specified, and of first quality.

3. Each Bidder is responsible for inspecting the site and for reading and being thoroughly familiar with the Contract Documents. Failure to do so will not relieve a successful Bidder from his obligation to furnish all material and labor necessary to carry out the provisions of the Contract Documents and to complete the contemplated Work for the compensation set forth in his Bid.
4. Sample or descriptive matter may be filed with the bid.
5. In submitting the proposals, the vendor agrees that acceptance of any or all bids by the Town of Derry within a reasonable time or period constitutes a contract. No delivery shall become due, or be accepted, unless, a purchase order shall first have been issued by the Town Administrator.
6. The Contract Documents contain the provisions required for the construction of the Project. Information obtained from an officer, agent, or employee of the OWNER or any other person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve him from fulfilling any of the conditions of the Contract.
7. The OWNER may waive any informalities or minor defects or reject any and all Bids. Any Bid may be withdrawn prior to the above scheduled time for the opening of Bids or authorized postponement thereof. Any Bid received after the time and date specified shall not be considered. No Bidder may withdraw a Bid within sixty (60) days after the actual date of the opening thereof. Should there be reasons why the Contract cannot be awarded within the specified period; the time may be extended by mutual agreement between the OWNER and the Bidder.
8. Bidders must satisfy themselves of the accuracy of the estimated quantities in the Bid Schedule by examination of the site and a review of the specifications including Addenda. After Bids have been submitted, the Bidder shall not assert that there was a misunderstanding concerning the quantities of Work or of the nature of the Work to be done.
9. A conditional or qualified Bid will not be accepted.
10. The Town reserves the right to reject any and all bids for any or all items covered in the bid request, to waive informalities or defects in bids or to accept such bids as it shall deem to be in the best interest of the Town to so do. In the event there is a discrepancy between the prices written in words and those written in figures, the prices written in words shall govern. No Bid will be considered which does not contain a price for every item tabulated in the Bid Form. Unit prices shall govern incorrectly extended total amounts.

The Contract will be awarded to the responsible and responsive Bidder submitting the lowest Base Bid. The **low bidder** will be selected on the basis of the lowest sum of the **Total Base Bid Price**.

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Bids will be evaluated for award on the basis of bid prices, performance record, experience, organization, financial stability and full economic analysis. Contractors may be required to submit with this bid an affidavit that the contractor has not within seven (7) years prior to the bid, invoked protection against creditors under any bankruptcy, insolvency or other such law.

11. A Performance Bond and a Payment Bond, each in the amount of one hundred (100) percent of the Contract Price, with a corporate surety approved by the OWNER, will be required for the faithful performance of the Contract to include a maintenance period for one year.

Attorney-in-fact who signs Payment Bonds and Performance Bonds must file with each Bond a certified and effective dated copy of their power of attorney.

12. The party to whom the Contract is awarded will be required to execute the Agreement and obtain the Performance Bond and Payment Bond within seven (7) calendar days from the date when Notice of Award is delivered to the Bidder. The Notice of Award shall be accompanied by the necessary Agreement and Bond forms. In case of failure of the Bidder to execute the Agreement, the OWNER may at his option consider the Bidder in default and award the contract to the next lowest bidder.
13. On **July 1, 2017** or within the seven (7) day period following, the OWNER in receipt of acceptable Performance Bond, Payment Bond and Agreement signed by the party to whom the Agreement was awarded shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the OWNER not execute the Agreement within such period, the Bidder may by WRITTEN NOTICE withdraw his signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the OWNER.
14. The Notice to Proceed shall be issued within seven (7) days of the execution of the Agreement by the OWNER. Should there be reasons why Notice to Proceed cannot be issued within such period; the time may be extended by mutual agreement between the OWNER and CONTRACTOR. If the Notice to Proceed has not been issued within the seven (7) day period or within the period mutually agreed upon, the CONTRACTOR may terminate the Agreement without further liability on the part of either party.
15. The successful bidder shall indemnify and save harmless the Town of Derry against all claims for royalties for patents or suit for infringement thereon which may be involved in the manufacture or use of the material or equipment to be furnished.
16. The contractor shall maintain in full force and effect: Comprehensive General Liability insurance written on occurrence form, with broad form coverage including completed operations, bodily injury liability, property damage liability, explosion, collapse, and underground hazards liability, and contractual liability coverage insuring the agreements contained herein. The minimum limits of liability carried on such insurance shall be \$1,000,000 each occurrence and, where applicable, in the aggregate combined single

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limit for bodily injury and property damage liability; \$1,000,000 annual aggregate personal injury liability.

Automobile liability insurance for owned, non-owned and hired vehicles, the minimum limit of liability carried on such insurance shall be \$1,000,000 each accident, combined single limit for bodily injury and property damage. The Policy shall also include Medical Payments of at least \$1,000 per person.

Any and all deductibles on the above-described insurance policies shall be assumed by and be for the account of and at the sole risk of the CONTRACTOR.

Insurance companies utilized must be admitted to do business in New Hampshire or be on the Insurance Commission's list of approved non-admitted companies and shall have a rating of (A) or better in the current edition of Best's Key Rating Guide.

17. All goods shall remain the property of the seller until delivered to and accepted by the Town.
18. The Town of Derry reserves the right to add to or delete any portion of this package.
19. Payments shall be based on actual quantities measured in the field in accordance with Section 01270 (measurement and payment), unless otherwise noted within each line item.
20. The terms of this paving contract shall commence July 1, 2017 and shall be in effect until June 30, 2018. The deadline for placement of finish course asphalt is October 15, 2017. The deadline for placement of base course asphalt is November 15, 2017. Start up for Spring 2018 is weather dependent at or around April 15, 2018.

Liquidated damages for delays shall be \$1,750 per calendar day. Liquidated damages shall be enacted if work is delayed or left incomplete as stipulated within the "Special Conditions". In addition to liquidated damages for failure to complete all work within the specified times, the Town reserves the Right to terminate the contract and assign another contractor to complete the work.

21. The Town reserves the right to allow for renewal of this agreement for two separate (1) year options as mutually agreed upon between the TOWN and the CONTRACTOR. Option year #1 would commence July 1, 2018 and be in effect until June 30, 2019. Option year #2 would commence July 1, 2019 and be in effect until June 30, 2020.
22. All work to be performed shall be done in a good and workmanlike manner and consistent with the specifications of this bid request or of any standard specification applicable thereto. Contractor acknowledges that it is familiar with and has made inquiry with regard to such standard specifications.
23. Acceptance of work shall be based upon substantial completion as viewed by the Town's Engineer. The Contractor shall have remedied any defects and resolved punch list items

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to Derry's satisfaction. All materials and labor shall be warranted against defects for (1) year, after reasonable notice to contractor or as otherwise specified in this bid request.

24. Normal working hours are Monday Thru Friday 7:00 AM to 4:00 PM. The contractor shall not work on weekends and holidays observed by the Town of Derry without prior approval of the Town.
25. Contractor shall indemnify and hold Derry harmless against any claim, by any third party arising from injury, damage, or any other occurrence arising from the work or on the premise on which work is to be performed, or which is under control of contractor, or from any act, omission, negligence or other cause attributable to the contractor, its agents, assigns and subcontractors and shall defend Derry against any such claim.
26. The terms of this bid request, together with contractor's bid and any attachments thereto shall constitute the contract between Derry and the contractor. No change orders or other amendments hereto shall vary the terms hereof without Derry's written acceptance.
27. Inquiries should be directed to Dave Blanchard, Engineering Technician at (603) 432-6144.

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00410 - BID

PROPOSAL of _____ (hereinafter called "Bidder"), organized and existing under the laws of the State of _____ doing business as _____ to the Town of Derry, New Hampshire (hereinafter called the "OWNER").

In compliance with your Advertisement for Bids, Bidder hereby proposes to perform all work for the FY-2018 Roadway Resurfacing in strict accordance with the Contract Documents, within the time set forth therein, and at the prices stated below.

By submission of this Bid, each Bidder certifies, and in the case of a joint Bid, each party thereto certifies as to his own organization, that this Bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this Bid with any other Bidder or with any competitor.

Bidder hereby agrees to commence Work under this contract on or before a date to be specified in the Notice to Proceed and to fully complete the work as stipulated in the "Special Conditions". Bidder further agrees to pay as liquidated damages, the sum of \$1,750.00 for each consecutive calendar day thereafter as provided in Section 18 of the General Conditions.

Bidder acknowledges receipt of the following ADDENDUM:

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00410 - BID FORM

The undersigned declares that the only persons or parties interested in this Bid as principals are as stated; that the Bid is made without any collusion with other persons, firms, or corporations; that he has carefully examined all of the Contract Documents as prepared; that he has informed himself fully in regard to all conditions pertaining to the work and the place where it is to be done, and from them the undersigned makes this Bid. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Bid Form is part.

The undersigned acknowledges receipt of Addenda numbered:

The undersigned proposes to perform the Work, furnish all materials, and complete the work in its entirety in accordance with Contract Plans and Specifications at the unit prices listed as follows:

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BID FORM

Notes:

1. All prices must be written in ink. Unit prices must be written in words as well as figures for the entire proposal. In case of discrepancy, the amount in words shall govern.
2. All prices given shall include items delineated in the Measurement and Payment Section, and in accordance with the Drawings, Specifications and Contract Documents.

Item No.	Description	Quantity	Unit	Unit Price	Total Price
1	Hot Bituminous Pavement-Machine Method (see p. 60 Asphalt Cement Adjustment) _____ dollars and _____ cents.	17,350	TON	\$ _____	\$ _____
2	Hot Bituminous Pavement-Hand Method _____ dollars and _____ cents.	170	TON	\$ _____	\$ _____
3	Hot Bituminous Asphalt Curbing _____ dollars and _____ cents.	5,500	LF	\$ _____	\$ _____
4	Furnish & Apply Tack Coat-Machine Method _____ dollars and _____ cents.	9,800	GAL	\$ _____	\$ _____
5	Cold Planing Bituminous Surfaces-Full Width _____ dollars and _____ cents.	71,750	SY	\$ _____	\$ _____
6	Cold Planing Bituminous Cape Cod Berm _____ dollars and _____ cents.	4,000	LF	\$ _____	\$ _____
7	Reclaim & Regrade Existing Roadways _____ dollars and _____ cents.	23,500	SY	\$ _____	\$ _____
8	Lower Water Gate Valve Boxes _____ dollars and _____ cents.	50	EA	\$ _____	\$ _____
9	Lower Sewer/Drain Manhole Frames & Covers _____ dollars and _____ cents.	50	EA	\$ _____	\$ _____

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BID FORM

Notes:

1. All prices must be written in ink. Unit prices must be written in words as well as figures for the entire proposal. In case of discrepancy, the amount in words shall govern.
2. All prices given shall include items delineated in the Measurement and Payment Section, and in accordance with the Drawings, Specifications and Contract Documents.

Item No.	Description	Quantity	Unit	Unit Price	Total Price
10	Lower Catch Basin Frames & Covers _____dollars and _____cents.	30	EA	\$ _____	\$ _____
11	Raise Water Gate Valve Boxes _____dollars and _____cents.	50	EA	\$ _____	\$ _____
12	Raise Sewer/Drain Manhole Frames & Covers _____dollars and _____cents.	60	EA	\$ _____	\$ _____
13	Raise Catch Basin Frames & Covers _____dollars and _____cents.	60	EA	\$ _____	\$ _____
14	Gravel Shoulder Machine Operation _____dollars and _____cents.	1,400	TON	\$ _____	\$ _____
15	Place or Remove Additional Crushed Gravel _____dollars and _____cents.	24	HR	\$ _____	\$ _____
16	Retroreflective Thermoplastic Pavement Marking, 4" line _____dollars and _____cents.	39,000	LF	\$ _____	\$ _____
17	Retroreflective Thermoplastic Pavement Marking, 12" line _____dollars and _____cents.	900	LF	\$ _____	\$ _____

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BID FORM

Notes:

1. All prices must be written in ink. Unit prices must be written in words as well as figures for the entire proposal. In case of discrepancy, the amount in words shall govern.
2. All prices given shall include items delineated in the Measurement and Payment Section, and in accordance with the Drawings, Specifications and Contract Documents.

Item No.	Description	Quantity	Unit	Unit Price	Total Price
18	Retroreflective Thermoplastic Pavement Marking, 18" line _____dollars and _____cents.	48	LF	\$ _____	\$ _____
19	Retroreflective Thermoplastic Pavement Marking, symbols or words as specified _____dollars and _____cents.	575	SF	\$ _____	\$ _____

TOTAL BASE BID: _____ dollars \$ _____
and _____ cents.

NOTE: It is understood that the various Unit Prices Bid will control in any Contract which may be awarded from this Proposal; that the estimated quantities above are approximate and used only for comparison of Bids, and are subject to increase or decrease as required and directed to properly complete the Contract Work.

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The undersigned agrees that, if he is selected as General Contractor, he will within seven days after presentation thereof by the awarding authority, execute a Contract in accordance with the terms of this general Bid and furnish a Performance Bond and also a Labor and Materials or Payment Bond, each of a Surety Company qualified to do business under the laws of the State of New Hampshire and satisfactory to the awarding authority and each in the sum of one hundred (100) percent of the Contract Price, the premiums for which are to be paid by the General Contractor and are included in the Contract Price.

By: _____
(Signature) Date

(Title)

(Name of General Bidder)

(Business Address)

(Town and State)

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00440 - NOTICE OF AWARD

Dated _____

TO: _____
(BIDDER)

ADDRESS: _____

OWNER'S PROJECT NO. _____
PROJECT: FY-2018 Roadway Resurfacing
OWNER'S CONTRACT NO. _____
CONTRACT FOR FY-2018 Roadway Resurfacing

You are notified that your Bid dated _____ for the above Contract has been considered. You are the apparent successful bidder and have been awarded a contract for:
FY-2018 Roadway Resurfacing

The Contract Price of your contract is: _____ Dollars (\$).

Three copies of each of the proposed Contract Documents accompany this Notice of Award.

You must comply with the following conditions precedent within seven days of the date of this Notice of Award:

1. You must deliver to the OWNER three fully executed counterparts of the Agreement including all the Contract Documents. Each of the Contract Documents must bear your signature.

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00500 - AGREEMENT

THIS AGREEMENT, made this _____ day of _____, , by and between the **Town of Derry, New Hampshire** hereinafter called "OWNER" and _____ hereinafter called "CONTRACTOR"

WITNESSETH: That for and in consideration of the payments and agreement hereinafter mentioned:

1. The CONTRACTOR will commence and complete the construction project entitled, "FY-2018 Roadway Resurfacing."
2. CONTRACTOR will furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the Project described herein.
3. The CONTRACTOR will commence the work required by the Contract Documents on or before a date to be specified in the Notice to Proceed and will complete as stipulated within "Special Conditions" of the Contract Documents. The contractor shall pay as liquidated damages, the sum of \$1,750.00 for each consecutive calendar day following the occurrence of any delay, it being agreed that said sum is not a penalty but Liquidated Damages occurring to the OWNER incident to such delay.
4. The CONTRACTOR agrees to perform all of the WORK described in the Contract Documents and comply with the terms therein for the sum of _____, or as shown in the Bid Schedule.
5. The term "Contract Documents" means and includes the following:
 - a. Advertisement for Bids
 - b. Information for Bidders
 - c. Bid
 - d. Notice of Award
 - e. Agreement
 - f. Payment Bond

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- g. Performance Bond
- h. Notice to Proceed
- i. General Conditions
- j. Change Order
- k. Application and Certification for Payment
- l. Certificate of Substantial Completion
- m. Specifications, including the New Hampshire Department of Transportation Standard Specifications for Road and Bridge Construction, Latest Edition; Technical Specifications, prepared or issued by The Town of Derry, dated April 1993.
- n. Addenda:
 - No. _____, dated _____, 20 ____.
 - No. _____, dated _____, 20 ____.
 - No. _____, dated _____, 20 ____.
 - No. _____, dated _____, 20 ____.
 - No. _____, dated _____, 20 ____.
 - No. _____, dated _____, 20 ____.

- 6. The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the General Conditions such amounts as required by the Contract Documents.
- 7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their authorized officials, this Agreement in THREE (3) counterparts, each of which shall be deemed an original on the date first above written.

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Retainage from Progress Payments will be in accordance with the requirements stipulated in Article 24 of the General Conditions.

OWNER:

TOWN OF DERRY, NH

By: _____
(Signed) (Date)

Name: David Caron

Title: Town Administrator

(SEAL)

ATTEST: _____

Name: _____

Title: _____

CONTRACTOR: _____

By: _____
(Signed) (Date)

Name: _____

Title: _____

Address: _____

(SEAL)

ATTEST: _____

Name: _____

Title: _____

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00650 - NOTICE TO PROCEED

Dated July 0 , 2017

TO: _____
(CONTRACTOR)

ADDRESS: _____

OWNER'S PROJECT NO. _____

PROJECT: FY-2018 Roadway Resurfacing

OWNER'S CONTRACT NO. _____

CONTRACT FOR FY-2018 Roadway Resurfacing

You are notified that the Contract Time under the above contract will commence to run on July 1, 2017. By that date, you are to start performing your obligations under the Contract Documents. In accordance with paragraph 3 of the Agreement, this contract will remain in effect until June 30, 2018.

Before you may start any Work at the site, paragraph 27 of the General Conditions provides that you and Owner must each deliver to the other certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also before you may start any Work at the site, you must:

Town of Derry, NH

OWNER

(Authorized Signature)

Director of Public Works

(Title)

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00700 - GENERAL CONDITIONS

The following General Conditions shall be incorporated in the Contract Documents of all projects:

1. CONTRACT AND CONTRACT DOCUMENTS

The Plans, Information for Bidders, Bids, Advertisement for Bids; Bid Payment and Performance Bonds; Agreements, Change Orders; Notice to Proceed, Specifications and Addenda, hereinafter enumerated in Article 1 of the Supplemental General Conditions shall form part of this Contract and the provisions thereof shall be binding upon the parties hereto as if they were herein fully set forth. The table of contents, titles, headings, running headlines and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect, limit or cast light on the interpretation of the provisions to which they refer.

2. DEFINITIONS

2.1 Addenda - Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the Contract Documents, Drawings and Specifications, by additions, deletions, clarifications or corrections.

2.2 Bid - The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

2.3 Bidder - Any person, firm or corporation submitting a Bid for the Work.

2.4 Bonds - Bid, Performance, and Payment Bonds and other instruments of security, furnished by the CONTRACTOR and his surety in accordance with the Contract Documents.

2.5 Change Order - A written order to the CONTRACTOR authorizing an addition, deletion or revision in the Work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract Price or Contract Time.

2.6 Omitted.

2.7 Contract Documents - The Contract, including Advertisement for Bids, Information for Bidders, Bid, Bid Bond, Agreement, Payment Bond, Performance Bond, Notice of Award, Notice to Proceed, Change Order, Plans, Specifications, and Addenda.

2.8 CONTRACTOR - The person, firm or corporation with whom the OWNER has executed the Agreement.

2.9 ENGINEER/RESIDENT ENGINEER - The Town Engineer or duly authorized representative.

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2.10 Field Order - A written order effecting a change in the Work not involving an adjustment in the Contract Price or an extension of the Contract Time, issued by the ENGINEER to the CONTRACTOR during construction.

2.11 OWNER - The Town of Derry, NH.

2.12 Plans - The Contract Drawings, or exact reproductions thereof, which show the scope, character, dimensions and details of the Work and which have been prepared or approved by the ENGINEER.

2.13 Specifications - A part of the Contract Documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship. All pertinent and applicable provisions of the Standard Specifications for Road, Drain & Sewer Construction, Town of Derry, Department of Highways, Current Edition, as amended to date, shall be adopted by reference and will govern this Contract and attached Technical Specifications. Any reference, in this Standard Specification, to the State of New Hampshire or an agency of the State shall be replaced with reference to the Town of Derry.

2.14 Special Conditions - Revisions or additions to these General Conditions or Specifications applicable to an individual project.

2.15 Supplemental General Conditions - Additions or modifications to these General Conditions supplying detailed information required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in the Project.

2.16 Work - All labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in the Project.

This list of definitions may be extended as required by an individual project.

2.17 Contract Price - The total monies payable to the CONTRACTOR under the terms and conditions of the Contract Documents.

2.18 Contract Time - The number of calendar days stated in the Contract Documents for the completion of the Work.

2.19 Drawings - The part of the Contract Documents which show the characteristics and scope of the Work to be performed and which have been prepared or approved by the ENGINEER.

2.20 Notice of Award - The written notice of the acceptance of the Bid from the OWNER to the successful Bidder.

2.21 Project - The undertaking to be performed as provided in the Contract Documents.

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2.22 Blank.

2.23 Resident Project Representative - The authorized representative of the OWNER who is assigned to the Project site or any part thereof.

2.24 Shop Drawings - All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the CONTRACTOR, a Subcontractor, manufacturer, supplier or distributor, which illustrates how specific portions of the Work shall be fabricated or installed.

2.25 Subcontractor - An individual, firm or corporation having a direct contract with the CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

2.26 Substantial Completion - That date as certified by the ENGINEER when the construction of the Project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the Project or specified part can be utilized for the purposes for which it is intended.

2.27 Supplier - Any person or organization who supplies materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the site.

2.28 Written Notice - Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the Work.

3. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS

The CONTRACTOR will be furnished additional instructions and detail drawings as necessary to carry out the Work included in the Contract. The additional drawings and instructions thus supplied to the CONTRACTOR will coordinate with the Contract Documents and will be so prepared that they can be reasonably interpreted as part thereof. The CONTRACTOR shall carry out the Work in accordance with the additional detail drawings and instructions. The CONTRACTOR will prepare (a) a schedule, fixing the dates at which special detail drawings will be required, such drawings, if any, to be furnished by the ENGINEER in accordance with said schedule, and (b) a schedule fixing the respective dates for the submission of shop drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment, and the completion of the various parts of the Work, each such schedule to be subject to change from time to time in accordance with the progress of the Work.

4. SHOP OR SETTING DRAWINGS

4.1 All correspondence between the CONTRACTOR and the City shall be addressed to and mailed to the ENGINEER.

4.2 All shop drawings shall be submitted to the ENGINEER who will review them.

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4.3 The CONTRACTOR shall furnish six copies of the manufacturer's shop drawings, specific design data as required in the Standard and Technical Specifications, and technical literature covering all equipment and fabricated materials which he proposes to furnish under this Contract in sufficient detail to indicate full compliance with the Specifications. Shop drawings shall indicate the method of installing and the exact layout dimensions of the equipment or materials.

The specific items for which shop drawings are required are so identified within the pertinent sections of the Standard and Technical Specifications.

4.4 No equipment or materials shall be shipped until the manufacturer's shop drawings and Specifications or other identifying data, assuring compliance with these Specifications, are approved by the ENGINEER.

4.5 The CONTRACTOR shall check and verify all field measurements and shall be responsible for the prompt submission of all shop and working drawings so that there shall be no delay in the work.

4.6 Regardless of corrections made in or approval given to such drawings by the ENGINEER, the CONTRACTOR will nevertheless be responsible for the accuracy of such drawings and for their conformity to the Plans and Specifications. The CONTRACTOR shall notify the ENGINEER in writing of any deviations at the time he furnishes such drawings. He shall remain responsible for the accuracy of the drawings showing the deviations but not for the acceptance of the deviations from the original design shown in the Plans and Specifications.

Approval by the ENGINEER and the OWNER of any deviation in material, workmanship or equipment proposed subsequent to approval of the shop drawings or design data, shall be requested in writing by the CONTRACTOR.

5. MATERIALS, SERVICES, FACILITIES AND WORKMANSHIP

5.1 Except as otherwise specifically stated in the Contract Documents, the CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature whatsoever necessary to execute, complete, and deliver the Work within the specified time.

5.2 New Materials

Unless otherwise specifically provided for in these Specifications, all workmanship, materials and articles incorporated in the work shall be new and the best grade of the respective kinds for the purpose.

5.3 Materials

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Materials specified by reference to the number or symbol of specific standard, such as an ASTM Standard, a State or Federal Specification or other similar standard, shall comply with requirements in the last revision thereof and any amendment or supplement thereto in effect on the date of the Advertisement, except as limited to type, class or grade, or modified in such reference. The standards referred to shall have full force and effect as though printed herein.

6. CONTRACTOR'S WARRANTY OF TITLE TO MATERIALS

No material, supplies, or equipment to be installed or furnished under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale, lease purchase or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The CONTRACTOR shall warrant good title to all materials, supplies, and equipment installed or incorporated in the Work and upon completion of all Work, shall deliver the same together with all improvements and appurtenances constructed or placed thereon by him to the OWNER free from any claims, liens, or charges. Neither the CONTRACTOR nor any person, firm or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon any improvement or appurtenance thereon. Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any bond given by the CONTRACTOR for their protection or any rights under this paragraph shall be inserted in all subcontracts and material Contracts and notice of its provisions shall be given to all persons furnishing materials for the Work when no formal Contract is entered into for such materials.

7. INSPECTION AND TESTING MATERIALS

7.1 All materials and equipment used in the construction of the Project shall be subject to inspection and testing by the ENGINEER in accordance with accepted standards at any and all times during the Project construction and at any or all places where such manufacture is carried on.

7.2 The CONTRACTOR shall furnish promptly, upon timely request by the ENGINEER, all materials required to be tested. All tests made by the ENGINEER will be performed in such manner and sufficiently ahead of scheduled installation, as not to delay the Work of the CONTRACTOR unnecessarily. When required, testing of concrete, masonry, soils, pipe and pipe materials will be made in accordance with provisions in the appropriate part of the Specifications.

7.3 Materials required to be tested which are delivered to the job site shall not be incorporated into the Work until the tests have been completed and approval or acceptance given in writing by the ENGINEER.

7.4 Each sample submitted by the CONTRACTOR shall carry an identification label containing such information as is requested by the ENGINEER. It shall also include a statement that the samples are representative of the remaining materials to be used on the Project.

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7.5 Approval of any materials shall be general only and shall not constitute a waiver of the OWNER's right to demand full compliance with the Contract requirements.

7.6 The ENGINEER may, at his own discretion, undertake the inspection of materials at the source. In the event plant inspection is undertaken, the following conditions shall be met:

7.6.1 The ENGINEER shall have the cooperation and assistance of the CONTRACTOR and the producer with whom he has Contracted for materials.

7.6.2 The ENGINEER shall have full entry at all reasonable times to such parts of the plant as may concern the manufacture or production of the materials being furnished.

7.6.3 If specified, the CONTRACTOR shall arrange for an approved building for the use of the inspector; such building to be located conveniently near the plant, independent of any building used by the material producer, in which to house and use the equipment necessary to carry on the required tests. Cost for such arrangement shall be paid by the OWNER.

7.6.4 Adequate safety measures shall be provided and maintained at all times.

7.7 Except as otherwise specifically stated in the Contract and/or Technical Specifications, the costs of sampling and testing will be divided as follows:

7.7.1 The CONTRACTOR shall furnish the ENGINEER, without extra cost, all samples required for testing purposes. All sampling and testing including the number and selection of samples will be decided by the ENGINEER for his own information and use.

7.7.2 When testing of materials is specified in the appropriate section of the Specifications, the costs of same will be charged to and defrayed by the CONTRACTOR. Costs of equipment performance tests shall be borne by the CONTRACTOR, as detailed in the appropriate section of the Specifications.

7.7.3 When the CONTRACTOR proposes an item as equal to the item or items specified, reasonable tests may, or may not be required by the ENGINEER. If the ENGINEER requires tests of a proposed equal item, the CONTRACTOR will be required to assume all costs of such testing.

7.7.4 Normally, any item which fails to pass tests required by the ENGINEER or by the Specifications will be rejected and shall be removed from the project site. However, if, upon request of the CONTRACTOR, retesting or further tests are permitted by the ENGINEER, the CONTRACTOR shall assume all costs related to such re-testing or further tests.

7.7.5 Neither the OWNER nor the ENGINEER will in any way be charged for the manufacture's costs in supplying certificates of compliance.

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8. "OR EQUAL" CLAUSE, SUBSTITUTIONS, AND CONTRACTOR'S OPTIONS

8.1 Whenever a material, article, or piece of equipment is identified on the Plans or in the Specifications by reference to manufacturer's or vendor's names, trade names, catalogue numbers, etc., it is intended merely to establish a standard. Any material, article, or equipment of other manufacturers and vendors, which will perform satisfactorily the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed is, in the opinion of the ENGINEER, of equal quality and function. The ENGINEER will determine equality based on such information, tests, or other supporting data they may require of the CONTRACTOR.

8.2 Furthermore, upon acceptance and approval by the ENGINEER of an equal product, it shall remain the responsibility of the CONTRACTOR to coordinate installation of the item with all other items to be furnished to assure proper fitting together of all items. Similar responsibility applies to items which are left to the CONTRACTOR's option. Any additional cost of equal items and any additional cost incidental to the coordination and/or fitting together of such items shall be borne by the CONTRACTOR at no extra cost to the OWNER.

8.3 In the event that a specified or equal item is not available, or that delivery time is so long as to result in delays which are unacceptable to the OWNER, the CONTRACTOR may propose a substitute item of less than equal performance and quality. If this substitute is acceptable to the ENGINEER, any difference in purchase cost or costs incidental to the installation of such item will be negotiated between the parties to the Contract.

Neither equal nor substitute items shall be installed without written approval of the ENGINEER.

9. PATENTS

9.1 The CONTRACTOR shall hold and save the OWNER and its officers, agents, servants, and employees harmless from liability of any nature of kind, including cost and expenses for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the OWNER, unless otherwise specifically stipulated in the Contract Documents.

9.2 If the CONTRACTOR uses any design, device or materials in the construction methods for the Project covered by letters, patent or copyright, he shall provide for such use by suitable agreement with the owner of such patented or copyrighted design, device or material. It is mutually agreed and understood, that, without exception, the Contract Prices shall include all royalties or costs arising from the use of such design, device or materials, in any way involved in the Work.

The CONTRACTOR and/or his Sureties shall indemnify and save harmless the OWNER of the Project from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or materials or any trademark or copyright in

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connection with Work agreed to be performed under this Contract, and shall indemnify the OWNER for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during the prosecution of the Work or after completion of the Work.

10. SURVEYS

The CONTRACTOR shall be responsible for all centerline and structure offset survey layout in connection with this Project.

11. CONTRACTOR'S OBLIGATIONS

The CONTRACTOR shall and will, in good workmanlike manner, do and perform all work and furnish and pay for all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by the Contract, within the time stated in the Proposal in accordance with the Plans and Drawings covered by this Contract, and any and all supplemental plans and drawings, in accordance with the directions of the ENGINEER as given from time to time during the progress of the Work, whether or not he considers the direction in accordance with the terms of the Contract. He shall furnish, erect, maintain and remove such construction plant and such temporary works as may be required. The CONTRACTOR shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the Contract Documents, and shall do, carry on and complete the entire Work to the satisfaction of the ENGINEER and the OWNER.

12. WEATHER CONDITIONS

In the event of temporary suspension of work, or during inclement weather, or whenever the ENGINEER shall direct; the CONTRACTOR will, and will cause his Subcontractors to protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the ENGINEER, any work or material shall have been damaged or injured by reason of failure on the part of the CONTRACTOR or any of his Subcontractors to so protect his work, such materials shall be removed and replaced at the expense of the CONTRACTOR.

13. PROTECTION OF WORK AND PROPERTY - EMERGENCY

13.1 The CONTRACTOR shall at all times safely guard the OWNER's property from injury or loss in connection with this Contract. He shall at all times safely guard and protect his own work, and that of adjacent property, from damage. The CONTRACTOR shall replace or make good any such damage, loss or injury unless such be caused directly by errors contained in the Contract, or by the OWNER, or his duly authorized representatives.

13.2 The CONTRACTOR shall take all necessary precautions for the safety of employees on the work, and shall comply with all applicable provisions of Federal, State and Municipal safety laws and building codes to prevent accidents or injury to persons on, about or adjacent to the premises where the work is being performed. He shall erect

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and properly maintain at all times, as required by the conditions and progress of the work, all necessary safeguards for the protection of workmen and the public and shall post danger signs warning against the hazards created by such features of construction as protruding nails, hoists, well holes, elevator hatchways, scaffolding, window openings, stairways, trenches and other excavations, and falling materials, and he shall designate a responsible member of his organizations on the work, whose duty shall be the prevention of accidents. The name and position of any person so designated shall be available by phone during non-working hours.

13.3 In case of emergency which threatens loss or injury of property, and/or safety of life, the CONTRACTOR will be allowed to act, without previous instructions from the ENGINEER, in a diligent manner. He shall notify the ENGINEER immediately thereafter. Any claim for compensation by the CONTRACTOR due to such extra work shall be promptly submitted in writing to the ENGINEER for approval.

13.4 When the CONTRACTOR has not taken action but has notified the ENGINEER of an emergency threatening injury to persons or damage to the work or any adjoining property, he shall act as instructed or authorized by the ENGINEER.

13.4.1 The intention is not to relieve the CONTRACTOR from acting, but to provide for consultations between ENGINEER and CONTRACTOR in an emergency which permits time for such consultations.

13.5 The amount of reimbursement claimed by the CONTRACTOR on account of any emergency action shall be determined in the manner provided in Article 17 (extra work and change orders) of the General Conditions.

14. INSPECTION OF WORK FOR CONFORMANCE WITH PLANS AND SPECIFICATIONS

14.1 Inspection

For purposes already specified and for any other purpose, the OWNER, the ENGINEER and their agents and employees may enter upon the work and the premises used by the CONTRACTOR, and the CONTRACTOR shall provide safe and proper facilities therefor. The ENGINEER shall be furnished with every reasonable facility for ascertaining that the work is in accordance with the requirements and intention of this Contract, even to the extent of uncovering or taking down portions of finished work.

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14.2 Conformance

During its progress and on its completion, all work shall conform to the location, lines, levels, and grades indicated on the drawings or established on the site by the ENGINEER and shall be built in a thoroughly substantial and workmanlike manner, in accordance with the drawings and Specifications and the supplementary directions given from time to time by the ENGINEER. In no case will any work in excess of the requirements of the drawings and Specifications be paid for unless ordered in writing by the ENGINEER.

14.3 Unauthorized Work

14.3.1 Work not to Plans and Specifications: work considered by the ENGINEER to be outside of or different from the Plans and Specifications and done without instruction by the ENGINEER, or in wrong location, or done without proper lines or levels, may be ordered to be uncovered or dismantled.

14.3.2 Similarly such work performed in the absence of the ENGINEER or his agent, may be ordered to be uncovered or dismantled.

14.3.3 Should the work thus exposed or examined prove unsatisfactory, the uncovering or dismantling and the replacement of material and rebuilding of the work shall be at the expense of the CONTRACTOR.

14.3.4 Should the work thus exposed or examined prove satisfactory, the uncovering or dismantling and the replacement of material and rebuilding of the work shall be considered as "EXTRA WORK".

15. REPORTS, RECORDS, AND DATA

The CONTRACTOR shall submit to the OWNER such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the OWNER may request concerning work performed or to be performed under this Contract.

16. SUPERINTENDENCE BY CONTRACTOR

At the site of the work the CONTRACTOR shall employ a competent construction superintendent or foreman who shall have full authority to act for the CONTRACTOR. It is understood that such representative shall be acceptable to the ENGINEER and shall be one who can be continued in that capacity for the particular job involved unless he ceases to be on the CONTRACTOR's payroll.

17. EXTRA WORK AND CHANGE ORDERS

17.1 The ENGINEER may at any time by written order and without notice to the Sureties require the performance of such extra work or changes in the work as may be found necessary or desirable. The amount of compensation to be paid to the CONTRACTOR for any extra work so ordered shall be made in accordance with

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whichever of the following plans the ENGINEER elects: (1) a price agreed upon between the parties and stipulated in the order for the extra work, (2) a price based on the unit prices of the Contract, (3) a price determined by adding 15% to the "reasonable cost" to be determined by the ENGINEER in accordance with the following paragraph.

17.2 In arriving at the "reasonable cost" for the purposes of (3) above, the ENGINEER shall include the reasonable cost to the CONTRACTOR of all materials used, of all labor, both common and skilled, of foreman, trucks, and the fair-market rental rate for all machinery and equipment for the period employed directly on the work. The reasonable cost for extra work shall include the cost to the CONTRACTOR of any additional insurance that may be required covering public liability for injury to persons and property, the cost of Workmen's Compensation Insurance, Federal Social Security, and any other costs based on payrolls, and required by law. The cost of extra work shall not include any cost or rental of small tools, buildings, or any portion of the work, these items being considered covered by the fifteen per cent (15%) added to the reasonable cost. Furthermore, no allowance for use of capital or premium on the bond will be considered unless the extra work includes an extension of time approved and authorized by the OWNER.

17.3 In the case of extra work which is done by Subcontractors, whether these are under the specific Contract times provided herein, or otherwise if so approved by the ENGINEER, the 15% added to the reasonable cost of the work will be allowed only to the Subcontractor. On such work an additional percentage of the reasonable cost (before addition of the 15%) will be paid to the CONTRACTOR for his work in directing the operations of the Subcontractor, for administrative supervision, and for any overhead involved. Such percentage shall be in accordance with the following schedule:
Reasonable cost up to and including \$50,000 - 10%; \$50,000 to and including \$100,000 - 7.5%; greater than \$100,000 - 5%.

17.4 The ENGINEER may authorize minor changes or alterations in the work not involving extra cost and not inconsistent with the overall intent of the Contract Documents. These may be accomplished by a written Field Order. However, if the CONTRACTOR believes that any minor change or alteration authorized by the ENGINEER entitles him to an increase in the Contract Price, he may make a claim therefor as provided in Article 21.

18. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

18.1 It is hereby understood and mutually agreed, by and between the CONTRACTOR and the OWNER, that the date of beginning and the time for completion as specified in the Contract of the work to be done hereunder are ESSENTIAL CONDITIONS of this Contract; and it is further mutually understood and agreed that the work embraced in this Contract shall be commenced on a date to be specified in the "Notice to Proceed".

18.2 The CONTRACTOR agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such a rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the time for completion of the work described

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herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

18.3 If the said CONTRACTOR shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the OWNER, then the CONTRACTOR does hereby agree, as a part consideration for the awarding of this Contract, to pay to the OWNER the amount specified in the Contract, not as a penalty but as liquidated damages for such breach of Contract as hereinafter set forth, for each and every calendar day beyond that stipulated in the Contract for completing the work.

18.4 The said amount is fixed and agreed upon by and between the CONTRACTOR and the OWNER because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the OWNER would in such event sustain, and said amount is agreed to be the amount of damages which the OWNER would sustain and said amount shall be retained from time to time by the OWNER from current periodic estimates.

18.5 It is further agreed that time is of the essence of each and every portion of this Contract and of the Specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this Contract. Provided, that the CONTRACTOR shall not be charged with liquidated damages or any excess cost when the OWNER determines that the CONTRACTOR is without fault and the CONTRACTOR's reasons for the time extension are acceptable to the OWNER; Provided further, that the CONTRACTOR shall not be charged with liquidated damages of any excess cost when the delay in completion of the work is due:

18.5.1 To any preference, priority or allocation order duly issued by the Government;

18.5.2 To unforeseeable cause beyond the control and without the fault or negligence of the CONTRACTOR, including, but not restricted to, acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a Contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather;

18.5.3 To any delays of Subcontractors or suppliers occasioned by any of the causes specified in subsections (5.1) and (5.2) of this article:

18.6 Provided, further, that the CONTRACTOR shall, promptly notify the OWNER, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the CONTRACTOR within a reasonable time of its decision in the matter.

19. DEFECTIVE WORK

19.1 The CONTRACTOR shall promptly remove from the premises all materials and work condemned by the ENGINEER as failing to meet Contract requirements, whether

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incorporated in the work or not, and the CONTRACTOR shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the OWNER and shall bear the expenses of making good all work of other Contractors destroyed or damaged by such removal or replacement.

19.2 All removal and replacement work shall be done at the CONTRACTOR's expense. If the CONTRACTOR does not take action to remove such condemned work and materials within 30 days after written notice, the OWNER may remove them and store the material at the expense of the CONTRACTOR. If the CONTRACTOR does not pay the expense of such removal and storage within ten days time thereafter, the OWNER may, upon ten days written notice, sell such materials at auction or at private sale and shall pay to the CONTRACTOR any net proceeds thereof, after deducting all the costs and expenses that should have been borne by the CONTRACTOR.

20. SUBSURFACE CONDITIONS FOUND DIFFERENT

Should the CONTRACTOR encounter subsurface and/or latent conditions at the site materially differing from those shown on the Plans or indicated in the Specifications, he shall immediately give notice in writing or if verbally, with confirmation in writing as soon as possible, to the ENGINEER of such conditions before they are disturbed. The ENGINEER will thereupon promptly investigate the conditions, and if he finds that they materially differ from those shown on the Plans or indicated in the Specifications to the extent that changes in design are necessary or quantities differ considerably from those indicated in the plans and Specifications, he will at once make such changes as he may find necessary. Any increase or decrease of cost resulting from such changes shall be adjusted in the manner provided in Article 17. (extra work and change orders).

21. CLAIMS FOR EXTRA COST

21.1 No claim for extra work or cost shall be allowed unless the same was done in pursuance of a written order of the ENGINEER approved by the OWNER, as aforesaid, and the claim presented with the first estimate after the changed or extra work is done. When work is performed under the terms of Article 17, the CONTRACTOR shall furnish satisfactory bills, payrolls and vouchers covering all items of cost and when requested by the OWNER, give the OWNER access to accounts relating thereto.

21.2 If the CONTRACTOR claims that any instructions by drawings or otherwise issued after the date of the Contract involve extra cost under the Contract, he shall give the ENGINEER written notice thereof after the receipt of such instruction, but in any event before proceeding to execute the work, except emergency endangering life or property, and the procedures shall then be as provided for under Article 17, "Extra Work & Change Order". No such claim shall be valid unless so made.

22. RIGHT OF THE OWNER TO TERMINATE CONTRACT

22.1 In the event that any of the provisions of this Contract are violated by the CONTRACTOR, or by any of his Subcontractors, the OWNER may serve written notice upon the CONTRACTOR and the Surety of its intention to terminate the Contract, such

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notices to contain the reasons for such intention to terminate the Contract, and unless within ten (10) days after the serving of such notice upon the CONTRACTOR, such violation or delay shall cease and satisfactory arrangement for correction be made, the Contract shall, upon the expiration of said ten (10) days cease and terminate. In the event of any such termination, the OWNER shall immediately serve notice thereof upon the Surety and the CONTRACTOR and the Surety shall have the right to take over and perform the Contract; provided, however, that if the Surety does not commence performance thereof within ten (10) days from the date of the mailing to such Surety of notice of termination, the OWNER may take over the work and prosecute the same to completion by Contract or by force account for the account and at the expense of the CONTRACTOR and the CONTRACTOR and his Surety shall be liable to the OWNER for any excess cost occasioned the OWNER thereby, and in such event the OWNER may take possession of and utilize in completing the work, such materials, appliances, and plant as may be on the site of the work and necessary therefor.

22.2 If the CONTRACTOR should be adjudged a bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse or should fail, except in cases for which extensions of time are provided, to supply enough properly skilled workmen or materials, or if he should fail to make payments to Subcontractors or for material or labor, so as to affect the progress of the work, or persistently be guilty of a substantial violation of the Contract, then the OWNER, upon the written notice of the ENGINEER that sufficient cause exists to justify such action may, without prejudice to any other right or remedy and after giving the CONTRACTOR and his Surety seven days' written notice, terminate the employment of the CONTRACTOR and take possession of the premises and of all materials, tools, equipment and other facilities installed on the work and paid for by the OWNER, and finish the work by whatever, the CONTRACTOR, if notified to do so by the OWNER shall promptly remove any part or all of his equipment and supplies at the expense of the CONTRACTOR. If such expense shall exceed such unpaid balance, the CONTRACTOR shall pay the difference to the OWNER. The expense incurred through the OWNER as herein provided, and the damage incurred through the CONTRACTOR's default, shall be certified by the ENGINEER.

22.3 Where the Contract has been terminated by the OWNER, said termination shall not affect or terminate any of the rights by the OWNER as against the CONTRACTOR or his Surety then existing or which may thereafter accrue because of such default. Any retention or payments of monies by the OWNER due the CONTRACTOR under the terms of the Contract, shall not release the CONTRACTOR or his Surety from liability for his default.

23. CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES

23.1 Before starting the work and from time to time during its progress, as the ENGINEER may request, the CONTRACTOR shall submit to the ENGINEER a written description of the methods he plans to use in doing the work and the various steps he intends to take.

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23.2 Before the first partial payment is made, the CONTRACTOR shall prepare and submit to the ENGINEER (a) a written schedule fixing the date at which additional drawings, if any, will be required and (b) a written schedule fixing the respective dates for the start and completion of various parts of the work. Each such schedule shall be subject to review and change from time to time during the progress of the work.

24. PAYMENTS TO THE CONTRACTOR

24.1 Progress Payments

The OWNER will once each month make a progress payment to the CONTRACTOR on the basis of an estimate of the total amount of work done to the time of such estimate and the value thereof as prepared by the CONTRACTOR and approved by the ENGINEER. Disbursements shall be net 30 days from the ENGINEER'S approval of such progress payments.

24.2 Retainage by OWNER

The OWNER will retain an amount of the progress payment, each month, in accordance with the following procedures:

24.2.1 Until construction is complete, as determined by the ENGINEER, retainage shall be 10% of the monthly payments claimed. If roadway segments are completed including punch list/clean-up items, retainage may be waived at the discretion of the ENGINEER.

24.2.2 Upon substantial or final completion (see Article 25, Acceptance and Payment) the amount of retainage in escrow account will be reduced to 5% of the total amount due the CONTRACTOR plus an additional retainage based on the ENGINEER's estimate of the fair value of the punch list items of work, with specified amounts for each incomplete or defective item or work. As these items are completed or corrected, they shall be paid for out of the retainage in the escrow account until the entire Project is declared completed (see Article 25). The final 5% retainage shall be released only after the Project has been accepted by the OWNER.

24.3 Payment for Materials

In reviewing monthly estimates of the value of work done, the ENGINEER may accept in the estimate, prior to subtracting the retainage, the delivered cost of certain equipment and nonperishable material which have been delivered to the site and which are properly stored and protected from damage. With the estimate, the CONTRACTOR shall furnish the ENGINEER receipted invoices as evidence that the material has been delivered to the site. Prior to submitting the next monthly estimate, the CONTRACTOR shall provide the ENGINEER with paid invoices or other evidence that the materials have been paid for. If the CONTRACTOR fails to submit such evidence, the ENGINEER may then subtract the value of such materials or equipment, previously paid for by the OWNER, from the next monthly estimate. The type of equipment and material eligible for payment

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prior to being incorporated in the work will be at the ENGINEER's discretion. In general, larger items of material and equipment, and material and equipment made specifically for the subject job, will be eligible for payment.

24.4 Care and Protection of Materials and Work

All material and work covered by partial payments made shall thereupon become the sole property of the OWNER, but this provision shall not be construed as relieving the CONTRACTOR from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the OWNER to require the fulfillment of all the terms of the Contract.

24.5 OWNER's Right to Withhold Certain Amounts and Make Application Thereof.

The CONTRACTOR agrees that he will indemnify and save the OWNER harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. The CONTRACTOR shall, at the OWNER's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If the CONTRACTOR fails so to do, then the OWNER may, after having served written notice on the said CONTRACTOR either pay unpaid bills of which the OWNER has written notice, direct, or withhold from the CONTRACTOR's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the CONTRACTOR shall be resumed, in accordance with the terms of this Contract but in no event shall the provisions of the sentence be construed to impose any obligations upon the OWNER to either the CONTRACTOR or his Surety. In paying any unpaid bills of the CONTRACTOR, the OWNER shall be deemed the agent of the CONTRACTOR, and any payment so made by the OWNER shall be considered as a payment made under the Contract by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments made in good faith.

25. ACCEPTANCE AND PAYMENT

25.1 Substantial Completion and Payment Therefor

Substantial completion shall be that point at which the work has been completed to the extent that the OWNER may occupy and make use of the Project (or portion of the Project) for which it was intended. Upon substantial completion there may be minor items, such as seeding, landscaping, etc., yet to be completed or items of work to be corrected.

Upon receipt of written notice from the CONTRACTOR that the work is substantially complete, the ENGINEER will promptly make an inspection, and when he finds the work acceptable under the terms of the Contract and the Contract substantially completed, he

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will issue a dated certificate, and a punch list of all items to be completed or corrected, over his own signature, stating that the work required by this Contract has been substantially completed and is accepted by him under the terms and conditions thereof.

The entire balance due the CONTRACTOR less two percent retainage, and less a retention based on the ENGINEER's estimate of the fair value of the punch list items and the cost of completing or correcting such items of work with specified amounts for each incomplete or defective item of work, will be due and payable.

The general guarantee period for the work substantially completed shall begin on the date certified by the ENGINEER.

25.2 Final Completion and Payment Therefor

Final completion shall be that point at which all work on the Project or portion of the Project has been completed, all defective work has been corrected, and cleanup has been accomplished. Unless a certificate of substantial completion has been issued, the general guarantee period shall begin upon certification by the ENGINEER of final completion.

25.3 Final Acceptance

Following the termination of the general guarantee (see Article 38 herein) period for the entire Project which has been certified completed or substantially completed, the OWNER may make a final inspection of all or portions of the Project. When it is found that the work is still acceptable, and that no work has become defective under the terms of the Contract, the OWNER will accept the entire Project and make final payment, including therein any monies retained during the guarantee period.

25.4 If, however, the inspection discloses any work in whole or in part, as being unsatisfactory, the ENGINEER will give the CONTRACTOR the necessary instructions for correction of such work, and the CONTRACTOR shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection provided the work has been satisfactorily completed.

25.5 Before issuance of final payment, the CONTRACTOR, if required in the Special Conditions, shall certify in writing to the ENGINEER that all payrolls, materials bills, and other indebtedness connected with the work have been paid, or otherwise satisfied, except that in case of disputed indebtedness or liens, if the Contract does not include a Payment Bond, the CONTRACTOR may submit in lieu of certification of payment a Surety Bond in the amount of the disputed indebtedness or liens, guaranteeing payment of all such disputed amounts, including all related costs and interest in connection with said disputed indebtedness or liens which the OWNER may be compelled to pay upon adjudication.

25.6 If after the work has been substantially completed, full completion thereof is materially delayed through no fault of the CONTRACTOR, and the ENGINEER, so

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certifies, the OWNER may, upon certification of the ENGINEER, and without terminating the Contract, make payment of the balance due for that portion of the work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

25.7 The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release to the OWNER of all claims and all liability to the CONTRACTOR for all things done or furnished in connection with this work and for every act and neglect of the OWNER and others relating to or arising out of this work. No payment, however, final or otherwise, shall operate to release the CONTRACTOR or his Sureties from any obligations under this Contract of the Performance and Payment Bond.

26. PAYMENTS BY CONTRACTOR

The CONTRACTOR shall pay (a) for all transportation and utility services not later than the 20th day of the calendar month following that in which services are rendered, (b) for all materials, tools, and other expendable equipment to the extent of 90% of the cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools and equipment are delivered at the site of the Project, and the balance of the cost thereof not later than the 30th day following the completion of that part of the work in or on which such materials, tools, and equipment are incorporated or used, and (c) to each of his Subcontractors, not later than the 5th day following each payment to the CONTRACTOR, the respective amounts allowed the CONTRACTOR on account of the work performed by his Subcontractors to the extent of each Subcontractor's interest therein.

27. INSURANCE

The CONTRACTOR shall not commence work under this Contract until he has obtained all the insurance required under this article and such insurance has been approved by the OWNER, nor shall the CONTRACTOR allow any Subcontractor to commence work on his subcontract until the insurance required of the Subcontractor has been so obtained and approved.

27.1 Compensation Insurance

The CONTRACTOR shall procure and shall maintain during the life of this Contract Workmen's Compensation Insurance as required by applicable State law for all of his employees to be engaged in work at the site of the Project under this Contract and, in case of any such work, sublet, the CONTRACTOR shall require the Subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the CONTRACTOR's Workmen's Compensation Insurance. In case any class of employees engaged in hazardous work on the Project under this Contract is not protected under the Workmen's Compensation Statute, the CONTRACTOR shall provide and shall cause each Subcontractor to provide adequate employer's liability insurance for the protection of such of his employees as are not otherwise protected.

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27.2 CONTRACTOR's Public Liability and Property Damage Insurance and Vehicle Liability Insurance.

The CONTRACTOR shall procure and shall maintain during the life of this Contract CONTRACTOR's Public Liability Insurance, CONTRACTOR's Property Damage Insurance and Vehicle Liability Insurance in the amounts specified in the Supplemental General Conditions.

Public Liability and Property Damage. The CONTRACTOR shall secure and maintain during the life of the Contract such insurance policies as will protect himself, his subcontractors and the OWNER from claims for bodily injuries, death or property damage which may arise from operations under the Contract whether such operations be by himself or any Subcontractor or anyone employed by them directly or indirectly.

The minimum limits of liability of such insurance shall be as follows:

General (Comprehensive) Liability

Bodily Injury or Death - Each Person	\$ 1,000,000.
Bodily Injury or Death - Each Accident	2,000,000.
Property Damage - Each Accident	500,000.
Property Damage - Aggregate	1,000,000.

Automobile and Truck Liability

Bodily Injury of Death - Each Person	\$ 1,000,000.
Bodily Injury or Death - Each Person	2,000,000.
Property Damage - Each Accident	500,000.
Property Damage - Aggregate	500,000.

Builder's Risk. The CONTRACTOR shall provide Builder's Risk Insurance (fire and extended coverage) on all work in place and/or materials stored at the Site. This insurance shall provide coverage for the full cash value of all completed construction and /or material stored.

27.3 Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance

The CONTRACTOR shall either (1) require each of his Subcontractors to procure and to maintain during the life of his subcontract, Subcontractors' Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in this Supplemental General Condition, or, (2) insure the activities of his Subcontractors in his policy, specified in Article 27.2.

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27.4 Scope of Insurance and Special Hazards

The insurance required under Articles 27.2 and 27.3 shall provide adequate protection for the CONTRACTOR and his Subcontractors, respectively, against damage claims which may arise from operations under this Contract, whether such operations be by the insured or by anyone directly or indirectly employed by him and, also against any of the special hazards which may be encountered in the performance of this Contract as enumerated in the Supplemental General Conditions.

27.5 Proof of Coverage of Insurance

The CONTRACTOR shall furnish the OWNER with certificates showing the type, and amount, class of operations covered, effective dates and dates of expiration of policies. Such certificates shall also contain substantially the following statement: "The insurance covered by this certificate will not be canceled or materially altered, except after ten (10) days written notice has been received by the OWNER".

27.6 Builder's Risk Insurance (Fire and Extended Coverage)

Until the Project is completed and accepted by the OWNER, the CONTRACTOR is required to maintain Builder's Risk type Insurance (fire and extended coverage) on a 100 percent (100%) completed value basis on the insurable portion of the Project for the benefit of the OWNER, the CONTRACTOR, and Subcontractors as their interests may appear.

27.7 OWNER's Protective Liability Insurance

The CONTRACTOR shall take out and furnish to the OWNER and maintain during the life of this Contract complete OWNER's Protective Liability Insurance in amounts as specified in Article 27.2 above, for Bodily Injury Liability Insurance and for Property Damage Liability Insurance.

The ENGINEER is to be included as an insuree under the OWNER's protective liability insurance.

Proof of Coverage. The CONTRACTOR shall furnish the OWNER and ENGINEER with satisfactory proof of coverage of the insurance required in the form of appropriate certificates or copies of the policies.

28. CONTRACT SECURITY

28.1 The CONTRACTOR shall furnish a Performance Bond in an amount at least equal to one hundred percent (100%) of the Contract Prices as security for the faithful performance of this Contract and also a Payment Bond in an amount not less than one hundred (100%) of the Contract Price or in a sum not less than that prescribed by State, or local law, as security for the payment of all persons performing labor on the project

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under this Contract. The Performance Bond and the Payment Bond may be in one or in separate instruments in accordance with local law.

28.2 RSA 447:16 of the State of New Hampshire requires that the aforementioned bonds be insured through a resident agent licensed to do business in the State of New Hampshire.

29. ADDITIONAL OR SUBSTITUTE BOND

If at any time the OWNER for justifiable cause shall be or become dissatisfied with any Surety or Sureties, for the Performance or Payment Bonds, the CONTRACTOR shall within five (5) days after notice from the OWNER so to do, substitute an acceptable bond (or bonds) in such form and sum and signed by such other Surety or Sureties as may be satisfactory to the OWNER. No further payments shall be deemed due nor shall be made until the new Surety or Sureties shall have furnished such an acceptable bond to the OWNER.

30. ASSIGNMENTS

The CONTRACTOR shall not assign the whole or part of this Contract or any monies due or to become due hereunder without written consent of the OWNER. In case the CONTRACTOR assigns all or any part of any monies due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to the CONTRACTOR shall be subject to prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the work called for in this Contract.

31. MUTUAL RESPONSIBILITY OF CONTRACTORS

If, through acts of neglect on the part of the CONTRACTOR, any other CONTRACTOR or any Subcontractor shall suffer loss or damage on the work, the CONTRACTOR agrees to settle with such other CONTRACTOR or Subcontractor by agreement or arbitration if such other CONTRACTOR or Subcontractors will so settle. If such other CONTRACTOR or Subcontractors shall assert any claim against the OWNER or account of any damage alleged to have been sustained, the OWNER shall notify the CONTRACTOR, who shall indemnify and save harmless the OWNER against any such claim.

32. SUBCONTRACTING

32.1 The CONTRACTOR may utilize the services of specialty Subcontractors on those parts of the work which, under normal Contracting practices, are performed by specialty Subcontractors.

32.2 The CONTRACTOR shall not award any work to any Subcontractor without prior written approval of the OWNER.

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32.3 The CONTRACTOR shall be as fully responsible to the OWNER for the acts and omissions of his Subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

32.4 The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind Subcontractors to the CONTRACTOR by the terms of the General Conditions and other Contract Documents insofar as applicable to the work of Subcontractors and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the Contract Documents.

32.5 Nothing contained in this Contract shall create any Contractual relation between any Subcontractor and the OWNER.

33. AUTHORITY OF RESIDENT ENGINEER AND HIS REPRESENTATIVES

33.1 The RESIDENT ENGINEER will have the authority to suspend the work wholly or in part for such periods as he may deem necessary due to the failure of the CONTRACTOR to correct conditions unsafe for the workmen or the general public; for failure to carry out provisions of the Contract; for failure to carry out orders; for conditions considered unsuitable for the prosecution of the work, including unfit weather; or for any other condition or reason deemed to be in the public interest.

The purpose of the above articles is not in any way to relieve the CONTRACTOR of his responsibilities for the safety of workmen or general public in the execution of the Work. Attention is drawn to Article 13 of these Conditions which refers to the safety obligations of the CONTRACTOR. The ENGINEER, acting on behalf of the OWNER, has the authority to enforce corrective action for work not in accordance with the Specifications or for conditions which he finds unsafe.

The RESIDENT ENGINEER shall give all orders and directions contemplated under this Contract and Specifications, relative to the execution of the work. The RESIDENT ENGINEER shall determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for under this Contract and shall decide all questions which may arise in relation to said work and the construction thereof. The RESIDENT ENGINEER's estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided. In case any question shall arise between the parties hereto relative to said Contract or Specifications, the determination or decision of the RESIDENT ENGINEER shall be a condition precedent to the right of the CONTRACTOR to receive any money or payment for work under this Contract affected in any manner or to any extent by such question.

In addition, the ENGINEER, acting on behalf of the Owners is to ensure that the Work is in accordance with the Contract Documents; he is not held responsible, however, for the methods of construction, sequences, schedules and procedures in the execution of the Work. The ENGINEER does have the opportunity under 33.1 to reject the method of construction, work plan schedule, procedures, as he thinks appropriate.

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The RESIDENT ENGINEER shall decide the meaning and intent of any portion of the Specifications and of any Plans or Drawings where the same may be found obscure or be in dispute. Any differences or conflicts in regard to their work which may arise between the CONTRACTOR under this Contract and other Contractors performing work for the OWNER shall be adjusted and determined by the RESIDENT ENGINEER.

33.2 The RESIDENT ENGINEER may appoint such assistants and representatives as he desires, and they shall be granted full access to the work under the Contract. They have the authority to give directions pertaining to the work or to the safety and convenience of the public, to approve or reject materials, to suspend any work that is being improperly performed, to make measurements of quantities, to keep records of costs, and otherwise represent the ENGINEER. The CONTRACTOR may, however, appeal from their decision to the ENGINEER himself, but any work done pending settlement is at the CONTRACTOR's own risk.

Except as permitted and instructed by the ENGINEER, the assistants and representatives are not authorized to revoke, alter, enlarge, relax or release any requirements of these Specifications, nor to issue instructions contrary to the Plans and Specifications. They are not authorized to act as superintendents or foremen for the CONTRACTOR, or to interfere with the management of the work by the CONTRACTOR. Any advice which the assistants or representatives of the ENGINEER may give the CONTRACTOR shall not be construed as binding the ENGINEER or the OWNER in any way, nor releasing the CONTRACTOR from the fulfillment of the terms of the Contract.

All transactions between the CONTRACTOR and the representative of the ENGINEER which are liable to protest or where payments are involved shall be made in writing.

34. STATED ALLOWANCES

The CONTRACTOR shall include in his proposal any cash allowances stated in the Supplemental General Conditions. The CONTRACTOR shall purchase the "Allowed Materials" as directed by the OWNER on the basis of the lowest and best bid of at least three competitive bids. If the actual price for purchasing the "Allowed Materials" is more or less than the "Cash Allowance", the Contract Price shall be adjusted accordingly. The Adjustment in Contract Price shall be made on the basis of the purchase price without additional charges for overhead, profit, insurance or any other incidental expenses. The cost of installation of the "Allowed Materials" shall be included in the applicable sections of the Contract Specifications covering this work.

35. USE OF PREMISES, REMOVAL OF DEBRIS, SANITARY CONDITIONS

The CONTRACTOR expressly undertakes at his own expense:

- to take every precaution against injuries to persons or damage to property;
- to store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other Contractors;

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- to place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work;
- to clean up frequently all refuse, rubbish, scrap materials, and debris caused by his operations, to the end that at all times the site of the work shall present a neat, orderly and workmanlike appearance;
- before final payment to remove all surplus material, falsework, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations, and to put the site in a neat orderly condition;
- to effect all cutting, fitting or patching of his work required to make the same to conform to the Plans and Specifications and, except with the consent of the ENGINEER, not to cut or otherwise alter the work of any other Contractor;
- to provide and maintain in a neat, sanitary condition such toilet accommodations for the use of his employees as may be necessary to comply with the requirements of the State and local Boards of Health, or of other bodies or authorities having jurisdiction.

36. QUANTITIES OF ESTIMATE

Wherever the estimated quantities of work to be done and materials to be furnished under this Contract are shown in any of the documents including the proposal, they are given for use in comparing bids and their right is especially reserved except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by the OWNER to complete the work contemplated by the Contract, and such increase or diminution shall in no way vitiate this Contract, nor shall any such increase or diminution give cause for claims or liability for damages.

37. LANDS AND RIGHTS-OF-WAYS

37.1 Prior to the start of construction, the OWNER will obtain all lands and rights-of-way necessary for carrying out and completing the work to be performed under this Contract.

37.2 The CONTRACTOR shall not (except after written consent from the proper parties) enter or occupy with men, tools, materials, or equipment, any land outside the rights-of-way or property of the OWNER. A copy of the written consent shall be given to the ENGINEER.

38. GENERAL GUARANTEE

Neither the final certificate of payment nor any provision in the Contract Documents, nor partial or entire occupancy of the premises by the OWNER, shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the CONTRACTOR of liability in respect to any express warranties or responsibility for faulty

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materials or workmanship. The CONTRACTOR shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which appears within the warranty period one year from the certified date of completion or substantial completion of the work unless a longer period is specified. The OWNER will give notice of observed defects with reasonable promptness.

39. ERRORS AND INCONSISTENCIES IN CONTRACT DOCUMENTS

39.1 Any provisions in any of the Contract Documents which may be in conflict with the paragraphs in these General Conditions shall be subject to the following order of precedence for interpretation.

39.1.1 Supplementary General Conditions will govern General Conditions.

39.1.2 Standard and Technical Specifications will govern Supplementary Conditions and General Conditions.

39.1.3 Technical Specifications will govern Standard Specifications.

39.1.4 Plans will govern Standard and Technical Specifications, Supplementary Conditions and General Conditions.

39.1.5 Special Conditions will govern, Plans, Standard and Technical Specifications, Supplementary Conditions and General Conditions.

39.2 The CONTRACTOR shall take no advantage of any apparent error or omission in the Plans or Specifications. In the event the CONTRACTOR discovers such an error or omission, he shall immediately notify the ENGINEER. The ENGINEER will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the Plans and Specifications.

40. NOTICE AND SERVICE THEREOF

Any notice to the CONTRACTOR from the OWNER relative to any part of this Contract will be in writing and will be considered delivered and the service thereof completed, when said notice is mailed, by certified or registered mail, to the said CONTRACTOR at his last given address, or delivered in-person to the said CONTRACTOR or his authorized representative on the work.

41. REQUIRED PROVISIONS DEEMED INSERTED

Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not currently inserted, then upon the application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

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42. SAFETY AND HEALTH REGULATIONS

This Project is subject to all of the Safety and Health Regulation (CFR 29, Part 1926, and all subsequent amendments) as promulgated by the U.S. Department of Labor on June 24, 1974. Contractors are urged to become familiar with the requirements of these regulations.

43. EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this Contract, the CONTRACTOR agrees as follows:

43.1 The CONTRACTOR will not discriminate against any employee or applicant for employment because of race, creed, color, national origin, or sex. The CONTRACTOR will take affirmative action to ensure that applicants are employed and that employees are treated during employment, without regard to their race, creed, color national origin, or sex. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

43.2 The CONTRACTOR will, in all solicitations or advertisements for employees placed by or on behalf of the CONTRACTOR, state that all qualified applicants will receive consideration for employment, without regard to race, creed, color, national origin, or sex.

43.3 In the event of the CONTRACTOR's noncompliance with the nondiscrimination clauses of this Contract or with any if such rules, regulations, or order, this Contract may be canceled, terminated, or suspended in whole or in part.

44. INTEREST OF FEDERAL, STATE OR LOCAL OFFICIALS

No Federal, State or Local official, shall be admitted to any share or part of this Contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this Contract if made with a corporation for its general benefit.

45. OTHER PROHIBITED INTERESTS

No official of the OWNER who is authorized in such capacity and on behalf of the OWNER to negotiate, make, accept or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction or material supply Contract or any subcontract in connection with the construction of the Project, shall become directly or indirectly interested personally in this Contract or in any part hereof. No officer, employee, architect, attorney, ENGINEER or inspector of or for the OWNER who is authorized in such capacity and on behalf of the OWNER to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the Project, shall become directly or indirectly interested personally in this

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Contract or in any part thereof, any material supply Contract, subcontract, insurance contract, or any other contract pertaining to the Project.

46. USE AND OCCUPANCY PRIOR TO FINAL ACCEPTANCE BY OWNER (BENEFICIAL OCCUPANCY)

46.1 General

Use and occupancy of a portion or unit of the Project, upon substantial completion of that portion or unit, and before final acceptance of the entire Project, shall be a condition of this Contract with the following provisions:

46.1.1 The OWNER will make his request to the CONTRACTOR in writing.

46.1.2 There must be no significant interference with the CONTRACTOR's operations or performance of duties under the Contract.

46.1.3 The ENGINEER, upon request of the OWNER and agreement by the CONTRACTOR that the portion or unit is substantially complete, will make an inspection of the subject part of the Project to confirm its status of completion. The ENGINEER will then follow the procedures described in Section 25, "Acceptance and Payment".

46.1.4 Consent of the surety and endorsement of the insurance carrier must be obtained prior to use and/or occupancy by the OWNER. Furthermore, in the case of building occupation, the OWNER will secure the necessary insurance coverage on the building.

46.1.5 The OWNER will have the right to exclude the CONTRACTOR from the subject portion of the Project after the date stipulated in the ENGINEER's Certificate but will allow the CONTRACTOR reasonable access to complete or correct the items on the ENGINEER's punch list.

47. PHOTOGRAPHS OF THE PROJECT

If required by the OWNER, the CONTRACTOR shall furnish photographs of the Project.

48. SUSPENSION OF WORK

The OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to the CONTRACTOR and the ENGINEER which shall fix the date on which Work shall be resumed. The CONTRACTOR will resume the Work on the date so fixed. The CONTRACTOR will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if he makes a claim therefor as provided in Articles 18 and 21.

49. TRAFFIC CONTROL AND SIGNING REQUIREMENTS

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49.1 The CONTRACTOR shall be solely responsible for safety and convenience of the general public, and shall take all steps necessary towards this end.

50. PRE-CONSTRUCTION CONFERENCE

The CONTRACTOR shall not commence work until a conference has been held at which representatives of the CONTRACTOR, Design ENGINEER and OWNER are present. The pre-construction conference will be arranged by the OWNER.

51. MAINTENANCE DURING CONSTRUCTION

51.1 The CONTRACTOR shall maintain the work during construction and until the Project is accepted. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces, to the end that roads or structures are kept in satisfactory condition at all times.

51.2 All cost of maintenance work during construction and before the Project is accepted shall be included in the unit prices bid on the various pay items and the CONTRACTOR will not be paid an additional amount for such work.

51.3 If the CONTRACTOR, at any time, fails to comply with the provisions above, the ENGINEER may direct the CONTRACTOR to do so. If the CONTRACTOR fails to remedy unsatisfactory maintenance within the time specified in any such order, the ENGINEER may immediately cause the Project to be maintained and the entire cost of this maintenance will be deducted from money due or to become due the CONTRACTOR on this Contract.

52. COOPERATION WITH UTILITIES

52.1 The CONTRACTOR is solely responsible for locating, protecting and maintaining all utilities in the Project area in service during construction.

52.2 It is **the Contractor's responsibility to notify DIGSAFE** prior to any excavation. The Town does not represent the locations of any underground utilities, including water, sewer and drainage, noted on the plans to be completely accurate. It is the contractors responsibility to field verify all locations and dig test pits where and when necessary at no additional expense to the Town.

52.3 Water lines, gas lines, telephone cables, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cable ways, signals, and all other utility appurtenances within the limits of the proposed construction which are to be relocated or adjusted are to be moved by the owners of such utilities at their expense, except as may otherwise be provided for in the Plans.

52.4 It is understood and agreed that the CONTRACTOR has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the Plans and as evident on the site, and that no additional

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compensation will be allowed for any delays, inconvenience, or damage sustained by him due to any interference from such utility appurtenances or the operation of moving them.

52.5 The CONTRACTOR shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, that duplication of rearrangement work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

52.6 In the event of interruption to water or utility services as a result of accidental breakage or as a result of being exposed or unsupported, the CONTRACTOR shall promptly notify the proper authority and shall cooperate with the said authority in the restoration of services. If water service is interrupted, repair work shall be continuous until the service is restored. No work shall be undertaken around fire hydrants until provisions for continued service has been approved by the local fire authority. If any utility service is interrupted for more than 4 hours, the CONTRACTOR shall make provisions for temporary service at his own expense until service is resumed.

52.7 All cost associated with protection of existing utilities during construction will be the responsibility of the CONTRACTOR.

53. WORK PERFORMED AT NIGHT AND ON SATURDAYS, SUNDAYS AND HOLIDAYS

53.1 No work will be permitted at night or on Saturdays, Sundays, or holidays except as approved in writing by the ENGINEER or as specified in the plans/bid documents, and provided such work is not in violation of a local ordinance. When working at night, the CONTRACTOR shall provide flood lighting sufficient to insure the same degree of accuracy of workmanship and the same conditions regarding safety as would be achieved in daylight.

53.2 Whenever Memorial Day or Fourth-of July is observed on a Friday or a Monday and during the weekend of Labor Day, the CONTRACTOR may be required to suspend work for the three calendar days. Prior to the close of work, the Project shall be placed in the best possible condition for the comfort and safety of the traveling public, and arrangements shall be made for responsible personnel to maintain the Project in the above conditions.

54. LAWS TO BE OBSERVED

The CONTRACTOR shall keep fully informed of all Federal and State laws, all local laws, ordinances, and regulations, and all orders and decrees of bodies of tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees: and shall protect and indemnify the State and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his employees.

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55. PERMITS

55.1 Permits and licenses of a temporary nature necessary for the prosecution of the work shall be secured and paid for by the CONTRACTOR. Permits, licenses and easements for permanent structures or permanent changes in existing facilities will be secured and paid for by the OWNER, unless otherwise specified in the Supplemental General Conditions. The CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the CONTRACTOR observes that the Drawings and Specifications are at variance therewith, he shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided for in the Contract under Extra Work and Change Orders.

Some, but not necessarily all, of such required permits are as follow:

55.2 Highway Excavation

Any individual, firm, or corporation wishing to make an opening in the highway must secure a permit from the New Hampshire Department of Transportation.

55.3 Burning Permit

If burning of debris and brush is permitted by the ENGINEER, local and State authorities, the CONTRACTOR shall obtain all required permits form Forest and/or Fire control authorities.

55.4 Control of Pollution Due to Construction

55.4.1 During construction, the CONTRACTOR shall take precautions sufficient to avoid the leaching or runoff of polluting substances such as silt, clay, fuels, oils, bitumens, calcium chloride and any other polluting materials which are unsightly or which may be harmful to humans, fish, or other life, into groundwaters and surface waters of the State.

55.4.2 In waters used for public water supply or used for trout, salmon, or other game or forage fish spawning or nursery, control measures must be adequate to assure that turbidity in the receiving water will be increased not more than 10 standard turbidity units (s.t.u.) in the absence of other more restrictive locally-established limitations.. In no case shall the classification for the surface water be violated.

55.4.3 In water used for other purposes, the turbidity must not exceed 25 s.t.u..

56. INDEMNIFICATION

56.1 The CONTRACTOR will indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages,

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losses and expenses including attorney's fees arising out of or resulting from the performance of the Work, provided that any such claims, damage, loss or expense is attributable to bodily injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the CONTRACTOR, and Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

56.2 In any and all claims against the OWNER or the ENGINEER, or any of their agents or employees, by any employee of the CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation of the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any Subcontractor under Workmen's Compensation Acts, disability benefit acts or other employee benefits acts.

56.3 The obligation of the CONTRACTOR under this paragraph shall not extend to the liability of the ENGINEER, his agents or employees arising out of the preparation or approval of maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications.

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00905 - CHANGE ORDER

Order Number: _____

Date: _____

Agreement Date: _____

PROJECT: FY-2018 Roadway Resurfacing

OWNER: Town of Derry, NH

CONTRACTOR: _____

The following changes are hereby made to the Contract Documents:

Justification:

Change to Contract Price:

Original Contract Price: \$ _____

Current Contract Price adjusted by previous Change Order: \$ _____

The change to Contract Price due to this Change Order: \$ _____

The new Contract Price including this Change Order will be: \$ _____

Change to Contract Time:

The Contract Time will be (increased) (decreased) by _____ calendar days.

The date for completion of all Work will be _____ (Date).

Approvals Required:

Requested by: _____

Recommended by: _____

Ordered by: _____

Accepted by: _____

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00920 - APPLICATION FOR PAYMENT

NO. _____

To: _____ (OWNER)

From: _____ (CONTRACTOR)

Contract: _____

Project: _____

OWNER's Contract No. _____ ENGINEER's Project No.: _____

For Work accomplished through the date of: _____

1. Original Contract Price:		\$	_____
2. Net change by Change Orders and Written Amendments (+ or -)		\$	_____
3. Current Contract Price (1 plus 2)		\$	0.00
4. Total completed and stored to date:		\$	_____
5. Retainage (per Agreement):			
_____ % of completed Work	\$	_____	
_____ % of stored material:	\$	_____	
Total Retainage:		\$	0.00
6. Total completed and stored to date less retainage (4 minus 5):		\$	0.00
7. Less previous Application for Payments:		\$	_____
8. DUE THIS APPLICATION (6 MINUS 7):		\$	0.00

Accompanying Documentation:

CONTRACTOR'S Certification:

The undersigned CONTRACTOR certifies that (1) all previous progress payments received from OWNER on account of Work done under the Contract referred to above have been applied on account to discharge CONTRACTOR's legitimate obligations incurred in connection with Work covered by prior Applications for Payment numbered 1 through _____ inclusive; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to OWNER at time

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of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to OWNER indemnifying OWNER against any such Lien, security interest or encumbrance; and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and not defective.

Dated _____
_____ **CONTRACTOR**

By: _____

State of _____
County of _____
Subscribed and sworn to before me this _____
day of _____ , _____

Notary Public
My Commission
expires: _____

Payment of the above AMOUNT DUE THIS APPLICATION is _____.

Dated _____
_____ **ENGINEER**

By: _____

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00930 - CERTIFICATE OF SUBSTANTIAL COMPLETION

OWNER's Project No.: _____ ENGINEER's Project No: _____

Project: _____

CONTRACTOR: _____

Contract For: FY-2018 Roadway Resurfacing Contract Date: _____

This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

To:

OWNER

and to:

CONTRACTOR

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR and ENGINEER, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on

DATE OF SUBSTANTIAL COMPLETION

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by CONTRACTOR within _____ calendar days of the above date of Substantial Completion.

The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as follows:

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RESPONSIBILITIES:

OWNER: _____

CONTRACTOR: _____

The following documents are attached to and made a part of this Certificate:

This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR's obligation to complete the Work in accordance with the Contract Documents.

Executed by ENGINEER on _____, 20_____

ENGINEER
By: _____

CONTRACTOR accepts this Certificate of Substantial Completion on _____ 20_____

CONTRACTOR
By: _____

OWNER accepts this Certificate of Substantial Completion on _____ 20_____

OWNER
By: _____

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DIVISION 1 – GENERAL REQUIREMENTS

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01110 – SPECIAL CONDITIONS

1. EXISTING UTILITIES

The Town of Derry is not affiliated with DIG SAFE and must be notified separately for marking out of water and sewer related utilities and the same waiting period applies. The location of the existing utilities shown on the Drawings is approximate and is based on the best available information. It shall be the responsibility of the CONTRACTOR to locate all questionable utilities in the field and determine whether or not reclaiming activities should be limited. Any utilities damaged by the CONTRACTOR'S activities shall be repaired immediately by the CONTRACTOR at no cost to the OWNER.

2. ROAD OPEN TO THROUGH TRAFFIC

At the end of each day's or night's work, the CONTRACTOR shall open all traffic lanes. One full-width vehicle lane shall be maintained open for through-traffic at all times throughout the Contract period. When work is not in process, all lanes shall be open to traffic. All equipment and materials stored within the ROW shall be secured with lighted barriers, snow fence, etc. as proposed by the CONTRACTOR. Responsibility for site safety and security is the sole responsibility of the CONTRACTOR.

3. STORM WATER MANAGEMENT-LIQUIDATED DAMAGES

The CONTRACTOR shall place erosion control filters around catch basins and drainage inlets as directed by the ENGINEER. The CONTRACTOR shall Reclaim and Pave Roadway sections within any given five day work week (Monday through Friday) to minimize the impact of rain events causing excess ponding leading to potential safety hazards. Typically, reclaim & grading shall be initiated in the beginning of the work week and paving shall be completed by weeks end (Friday). Liquidated damages of \$1,750.00 per day shall be enforced if paving is postponed beyond the work week in which reclaiming was completed and or the Town must dispatch equipment, labor, and materials to remediate any damage resulting from the CONTRACTOR'S unresponsiveness. The CONTRACTOR must raise catch basin frames & grates immediately following placement of base course pavement. Similarly, cold plane milling operations (including utility structure adjustment) shall be initiated in the beginning of the work week and shim paving shall be completed by weeks end (Friday)

4. FINAL PREPARATION PRIOR TO PAVING

The grader must be available to make a final pass on reclaimed roads just prior paving (same day as paving) to eliminate any disturbances caused by traffic from the previous day. Sweeping operations prior to placement of top course pavement must be completed on the same day also.

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5. PROPOSED ROADWAY SEGMENTS

All roadway segments proposed for resurfacing under this agreement may vary extensively in width, length, thickness, traffic volume, number of utilities, etc. but it shall be the responsibility of the CONTRACTOR to meet the specific requirements to expedite the work. The following is an approximate list of proposed segments for **Mill, Shim & Overlay:**

- 1) ADAMS POND RD (portion of)
- 2) BIRCH ST (portion of)
- 3) FORDWAY (portion of)
- 4) HEATHER LN
- 5) OVERLEDGE DR (portion of)
- 6) OVERLEDGE DR EXT
- 7) PEABODY RD
- 8) PEABODY RD ANNEX
- 9) PERLEY RD
- 10) SAWYER CT
- 11) STORER CT
- 12) TSIENNETO RD (portion of)
- 13) TWILIGHT PATH

All proposed mill, shim & overlays above must be scheduled for completion between July 1, 2017 and October 15, 2017.

The following is an approximate list of proposed segments for **Reclamation:**

- 1) BRADY AVE
- 2) HUMPHREY RD
- 3) LORRI RD

All proposed reclaims above must be scheduled for completion between July 1, 2017 and November 1, 2017. Top course pavement for these sections shall be scheduled for the Spring of 2018.

The following is an approximate list of proposed segments for **Shim & Overlay:**

- 1) MADDEN HILL RD
- 2) OVERLEDGE DR (portion of)

NOTE: The Town of Derry reserves the right to add or delete sections listed herein based on approved budget amounts.

6. CHARACTER OF THE CONTRACTOR'S SUPERINTENDENT AND WORKERS

A. The CONTRACTOR'S superintendent shall conduct himself in a professional, cooperative, and responsible manner. If, in the opinion of the ENGINEER, the superintendent does not conduct him/herself in a manner that is professional and courteous, the ENGINEER may recommend to the OWNER to relieve the superintendent of his/her

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responsibilities and have him/her removed from the project. Upon written notice from the OWNER to the CONTRACTOR the superintendent shall immediately be relieved of his/her responsibilities and removed from the project. If a superintendent change is to be made, work shall be terminated until qualifications of a new superintendent have been submitted and approved by the OWNER and ENGINEER. The superintendent that was removed from the site shall not be allowed to work on any other portion of work in this Contract without written approval of the ENGINEER.

B. Any person employed by the CONTRACTOR or any subcontractor who, in the opinion of the ENGINEER, does not conduct him/herself in a proper and professional manner or is intemperate or disorderly shall, at written request of the ENGINEER, be removed immediately by the CONTRACTOR or subcontractor employing such person, and shall not be allowed to work on any other portion of work in this Contract without written approval of the ENGINEER.

7. OCCUPYING PRIVATE PROPERTY

The CONTRACTOR shall not enter upon nor occupy with men, equipment or materials any property outside of the public highways or Town easements, unless written consent of the owner is obtained prior to entry.

8. SITE SECURITY

The CONTRACTOR shall be required to place temporary barriers or fencing (snow fence, fluorescent orange security fencing, etc.) around all storage yards at all times and around all equipment during non-working hours.

9. ADJUSTMENT OF STRUCTURES

All structures must be adjusted manually. NO grade rings for gate boxes and sewer/drain manhole frame and cover sets are permitted. Once structures are lowered, the CONTRACTOR shall be responsible for maintaining these areas as necessary.

10. DETERMINING TIME ALLOTMENTS FOR ITEMIZED HOURLY RATES

The itemized bid form contains an item that is specific units by the hour. Quantities for this item shall be mutually agreed upon at the end of each work day between the CONTRACTOR and the ENGINEER. The ENGINEER shall make the final determination on whether a section of road warrants additional work outside normal grading operations which typically will accommodate 6 inches of additional gravel in some areas or 6 inches subtraction of gravel in other areas. Additional gravel shall be purchased through a separate agreement from the CONTRACTOR.

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11. ASPHALT CEMENT ADJUSTMENT

Bid item No. 1, Hot Bituminous Pavement – **Machine Method Only** (containing asphalt cement) will be subject to a price adjustment. This adjustment will take effect when the monthly price for asphalt cement as furnished by the State of New Hampshire, Dept. of Transportation, (NHDOT) Bureau of Materials and Research differs from the base bid price. The adjustment clause shall be in effect throughout the duration of the contract.

The price adjustment will be based on the NHDOT approved job mix formula(s) percent of virgin asphalt cement in the materials incorporated in the work as per section 401 of the 2016 Standard Specifications.

The base price of asphalt cement for this Contract is: \$390.00 per ton.

The **monthly price** of asphalt cement will be furnished by the NHDOT, Bureau of Materials and Research on the first business day following the 14th calendar day of each month.

The contract price of Hot Bituminous Pavement – **Machine Method Only** will be paid under the respective item in the contract. The price adjustment, as provided herein, upwards or downwards, will be made at the end of each month in which the work was accomplished as follows:

A contract adjustment will be made under Bid Item No. 1 based on; (monthly price minus the base price) x (Approved Mix Design percent of virgin asphalt cement) x (tons of pavement used).

The price adjustment will be based on the percent of virgin asphalt cement stated in the NHDOT Approved Mix Design containing the maximum percentage of reclaimed asphalt pavement.

All work performed within a calendar month shall be adjusted according to the monthly price adjustment furnished on or around the 14th day of each month.

END OF SECTION

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01270 - MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Payment items.
- B. Work requirements per payment item.
- C. Measurement requirements per payment item.
- D. General overall conditions and stipulations for contract measurement and payment of items on Bid Schedule.
- E. Measurement and payment criteria applicable to specific items listed in the Bid Schedule.

1.02 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to work of this section.
- B. All related specification sections shall be used in conjunction with this Section.

1.03 PROCEDURES

- A. For unit price items, the CONTRACTOR shall be paid for the actual amount of work accepted during the period of construction. After the Work is completed and before final payment is made therefore, the ENGINEER shall make final measurements to determine the quantities of the various items of work accepted as the basis for final payment.
- B. For lump sum items, the CONTRACTOR shall submit a Schedule of Values detailing the breakdown of work and associated cost for each item. The CONTRACTOR shall be paid on the basis of actual work accepted as outlined in the Schedule of Values until the work item is completed. Upon completion of the item, 100% of the lump sum price may be paid, less retained amounts.
- C. For allowances, the CONTRACTOR shall be paid for the actual work accepted during the period of construction. The specified Contract Unit Price shall be considered as fair compensation for completing the work as specified. Upon completion of construction, if the actual quantities show either an increase or decrease from the quantities given in the Bid, the specified Contract Unit Price will still prevail, regardless of the actual final quantities.

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- D. All units of measurement shall be standard United States convention as applied to the specific items of work by tradition and as interpreted by the ENGINEER.
- E. At the end of each day's work, the CONTRACTOR'S superintendent or other authorized representative of the CONTRACTOR may meet with the ENGINEER and determine the quantities of unit price and/or lump sum price work completed during the work day.
- F. Once each month, the CONTRACTOR may make Application for Payment for work completed to date minus retainage. The Application shall be submitted to the ENGINEER on a form provided by the ENGINEER. Once the Application for Payment has been reviewed, the ENGINEER shall submit his recommendation for payment to the OWNER. These completed forms will provide the basis upon which payment will be made to the CONTRACTOR.

1.04 SCOPE OF PAYMENT

- A. Payments to the CONTRACTOR will be made for the actual quantities of the Contract items performed and accepted in accordance with the Contract Documents. Upon completion of construction, if these actual quantities show either an increase or decrease from the quantities given in the Bid, the contract unit prices will still prevail, except as provided in the General Conditions, Modifications to the General Conditions and Supplementary Conditions.
- B. The payment of any Application for Payment or of any retained percentage, except by and under the approved final invoice, shall in no way relieve the CONTRACTOR of his obligation to repair or replace any defective parts of the construction or to be responsible for all damage due to such defects during the construction period or the one-year correction period.
- C. All contract prices listed on the Bid Schedule will be full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of Work; overhead and profit; necessary to complete the Work as specified in the Contract Documents.
- D. The items listed below, refer to and are the same pay items listed in the Bid Schedule. They constitute all of the pay items for the completion of the Work. No direct or separate payment will be made for providing miscellaneous temporary or accessory works, services, field offices, layout surveys, job signs, sanitary requirements, testing, safety devices, approval and record drawings, water supplies, power, maintaining traffic, removal of waste, watchmen, bonds, insurance, and all other requirements of the General Conditions and Division One - General Requirements. Compensation for all such services, equipment, and materials shall be included in the prices stipulated for the lump sum and unit price items listed herein.
- E. Each lump sum and unit bid price will be deemed to include an amount considered

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by the Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

- F. Restoration is not a separate pay item, but is considered to be an integral part of the work under the contract, and all contract bid prices include the cost of restoration necessitated by the work related to that bid item. Restoration includes existing structures and property, paving, stabilized roads, and any property or structure which is altered, removed or damaged during construction activities. Cleanup is in integral part of restoration.

1.05 PARTIAL PAYMENTS

- A. Partial payments shall be made monthly as the work progresses. All partial invoices and payments shall be subject to correction in the final Application for Payment.

1.06 PAYMENT FOR MATERIAL DELIVERED

- A. When requested by the CONTRACTOR, and at the discretion of the OWNER, payment may be made for all or part of the value of acceptable, non-perishable materials and equipment which are to be incorporated into the Work, which have not been used and which have been delivered to the construction site, and placed in storage places acceptable to the OWNER. The Application for Payment shall be accompanied by such data, satisfactory to the OWNER, that will establish the OWNER'S interest therein, including insurance. Each subsequent Application for Payment shall include an affidavit of the CONTRACTOR stating that all previous progress payments received on account of the Work have been applied to discharge in full all of the CONTRACTOR'S obligations reflected in prior Applications for Payment. The OWNER shall have the right to deduct from the next progress payment, an amount equal to payment for said material and/or equipment if reasonable and adequate proof is not submitted.
- B. Materials and equipment, when so paid for by the OWNER, shall become the property of the OWNER and in the event of default on the part of the CONTRACTOR, the OWNER may use or cause to be used, these materials and equipment in the construction of the Work. The CONTRACTOR shall be responsible for any damage to, or loss of, these materials and equipment. The amount thus applied by the OWNER shall reduce the estimated amounts due the CONTRACTOR as the material is incorporated into the Work.
- C. No partial payments shall be made for fuels, supplies, lumber, false work or other expendable or temporary materials, or on temporary structures of any kind which are not a permanent part of the Contract.

PART 2 PRODUCTS - (NOT USED)

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PART 3 EXECUTION

3.01 The following descriptions correspond to the bid items provided on the bid form. The work included for each item is described as well as how the work is to be measured and paid for.

A. BID ITEM NO. 1 – HOT BITUMINOUS PAVEMENT MACHINE METHOD (ALL COURSES)

1. **General:** The price bid under this Item shall be considered as fair compensation for all labor, equipment, tools and materials necessary to complete the work associated with the construction of hot bituminous pavement machine method (base, shim or finish courses). The unit price shall include, but not be limited to, furnishing, placing to the thickness specified, compacting, finish grading and testing of bituminous pavement to the existing limits shown, and all other incidental work required as follows:
 - **Sweeping:** Prior to any paving, all roads shall be swept clean by a mechanical sweeper possessing a self contained dust pan that collects the debris using a wet process-NO OPEN BRUSHING PERMITTED.
 - **Signage:** Provide traffic control plans to facilitate detours, road closure, or single-lane access through the work zone. Furnish and erect temporary and permanent construction signs as shown on plans or directed by the ENGINEER. Furnish and erect road construction and detour signs and barricades as required for work zone construction. (Sign package shall be relocated, erected, and dismantled daily as necessary).
 - **Traffic Control Personnel:** The CONTRACTOR shall provide all the uniformed traffic control flaggers necessary to complete the paving operation as directed by the ENGINEER.
 - **Cold Planing Joints:** The CONTRACTOR shall provide all the labor & equipment necessary to complete all tapered transitions through cold planing of all side streets and adjacent driveways as directed by the ENGINEER. The trimmer or cold planer shall have a minimum cutting width of (18) inches. A sweeping operation shall accompany this work.
 - **Tack Coat:** The CONTRACTOR shall apply tack coat manually to all street and driveway tie-ins as directed by the ENGINEER.
 - **Typical thickness:** Base Course= 2-1/2" Top Course= 1-1/2"
2. **Measurement:** Measurement for payment of hot bituminous asphalt pavement will be made on a per-ton basis. Tonnage shall be determined from certified weight slips, submitted by the CONTRACTOR, for all hot bituminous delivered to the site.
3. **Payment:** Payment for the hot bituminous pavement machine method shall be made at the Contract Unit Price bid per ton under this item.

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B. BID ITEM NO. 2 – HOT BITUMINOUS PAVEMENT HAND METHOD (ALL COURSES)

1. General: The price bid under this Item shall be considered as fair compensation for all labor, equipment, tools and materials necessary to complete the work associated with the construction of hot bituminous pavement hand method (base, shim or finish courses). The unit price shall include, but not be limited to, furnishing, placing to the thickness specified, compacting, finish grading and testing of bituminous pavement to the existing limits shown, and all other incidental work required as follows:
 - Sweeping: Prior to any paving, all roads shall be swept clean and all debris to be removed and disposed of by the CONTRACTOR.
 - Signage: Provide traffic control plans to facilitate detours, road closure, or single-lane access through the work zone. Furnish and erect temporary and permanent construction signs as shown on plans or directed by the ENGINEER. Furnish and erect road construction and detour signs and barricades as required for work zone construction. (Sign package shall be relocated, erected, and dismantled daily as necessary).
 - Traffic Control Personnel: The CONTRACTOR shall provide all the uniformed traffic control flaggers necessary to complete the paving operation as directed by the ENGINEER.
 - Cold Planing Joints: The CONTRACTOR shall provide all the labor & equipment necessary to complete all tapered transitions through cold planing of all side streets and adjacent driveways as directed by the ENGINEER. A sweeping operation shall accompany this work.
 - Tack Coat: The CONTRACTOR shall apply tack coat manually to all street and driveway tie-ins as directed by the ENGINEER.
 - Compaction: Minimum One Ton roller shall be utilized.
 - Typical Thickness: Base Course= 2-1/2" Top Course= 1-1/2"
2. Measurement: Measurement for payment of hot bituminous asphalt pavement will be made on a per-ton basis. Tonnage shall be determined from certified weight slips, submitted by the CONTRACTOR, for all hot bituminous delivered to the site.
3. Payment: Payment for the hot bituminous pavement hand method shall be made at the Contract Unit Price bid per ton under this item.

C. BID ITEM NO. 3 – HOT BITUMINOUS ASPHALT CURBING

1. General: The price bid under this Item shall be considered as fair compensation for all labor, equipment, tools and materials necessary to complete the work associated with the construction of hot bituminous cape cod curbing. The unit price shall include, but not be limited to, furnishing, string line layout, placing to the thickness specified, compacting, finish grading and

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testing of bituminous pavement to the existing limits shown, and all other incidental work required as follows:

- Sweeping: Prior to any paving, all roads shall be swept clean and all debris to be removed and disposed of by the CONTRACTOR.
- Signage: Provide traffic control plans to facilitate detours, road closure, or single-lane access through the work zone. Furnish and erect temporary and permanent construction signs as shown on plans or directed by the ENGINEER. Furnish and erect road construction and detour signs and barricades as required for work zone construction. (Sign package shall be relocated, erected, and dismantled daily as necessary).
- Traffic Control Personnel: The CONTRACTOR shall provide all the uniformed traffic control flaggers necessary to complete the paving operation as directed by the ENGINEER.
- Tack Coat: The CONTRACTOR shall apply tack coat manually to all street and driveway tie-ins as directed by the ENGINEER.
- Driveway Raking: The CONTRACTOR shall rake out sections of curb passing through driveways as directed by the ENGINEER (no more than a (2) two inch lip will be left).

2. Measurement: Measurement for payment of hot bituminous asphalt curbing will be made by the linear foot.
3. Payment: Payment for hot bituminous asphalt curbing shall be made at the Contract Unit Price as bid per linear foot under this item.

D. BID ITEM NO. 4 – FURNISH & APPLY TACK COAT-MACHINE METHOD

1. General: The price bid under this Item shall be considered as fair compensation for all labor, equipment, tools and materials necessary to complete the work associated with the application of hot bituminous tack coat by truck mounted asphalt distributor tanker (machine method spray bar). The unit price shall include, but not be limited to, furnishing, spraying to the coverage specified, and all other incidental work required to complete application of tack coating.
2. Measurement: Measurement for payment of hot bituminous tack coat will be made on a per-gallon basis. Number of gallons shall be determined from certified volume slips, submitted by the CONTRACTOR, for all hot bituminous tack coat delivered to the site.
3. Payment: Payment for the hot bituminous tack coat machine method shall be made at the Contract Unit Price bid per gallon under this item.

E. BID ITEM NO. 5 – COLD PLANING BITUMINOUS SURFACES (FULL WIDTH)

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1. General: The price bid under this Item shall be considered as fair compensation for all labor, equipment, (minimum 80,000 lb. heavy duty asphalt milling machine with 700 HP engine, 86" cutter drum width, 190 teeth/drum "micro mill" and a 12" plunge depth), tools and materials necessary to complete the work associated with the full width cold planing of bituminous roadways. The unit price shall include, but not be limited to, milling pavement to a specified depth and limit as directed by the ENGINEER, and all other incidental work required as follows:
 - Signage: Provide traffic control plans to facilitate detours, road closure, or single-lane access through the work zone. Furnish and erect temporary and permanent construction signs as shown on plans or directed by the ENGINEER. Furnish and erect road construction and detour signs and barricades as required for work zone construction. (Sign package shall be relocated, erected, and dismantled daily as necessary).
 - Traffic Control Personnel: The CONTRACTOR shall provide all the uniformed traffic control flaggers necessary to complete the cold planning operation as directed by the ENGINEER.
 - Sweeping: Following all full width cold planing, all roads shall be swept clean by a mechanical sweeper possessing a self contained dust pan that collects the debris using a wet process-NO OPEN BRUSHING PERMITTED.
 - Cold Planing Joints: The CONTRACTOR shall provide all the labor & equipment necessary to complete all tapered transitions through cold planing of all side streets and adjacent driveways as directed by the ENGINEER. The trimmer or cold planer shall have a minimum cutting width of (18) inches. A sweeping operation shall accompany this work.
 - Millings: All millings to be transported offsite by the CONTRACTOR. Occasionally the town may request a limited amount of millings trucked to the Transfer Station, Transfer Lane, at no additional cost to the town.
2. Measurement: Measurement for payment of full width cold planing shall be measured by the area in square yards.
3. Payment: Payment for full width cold planing shall be made at the Contract Unit Price bid per square yard under this item.

F. BID ITEM NO. 6 – COLD PLANING BITUMINOUS "CAPE COD" CURBING

1. General: The price bid under this Item shall be considered as fair compensation for all labor, equipment, (minimum 80,000 lb. heavy duty asphalt milling machine with 700 HP engine, 86" cutter drum width, 190 teeth/drum "micro mill" and a 12" plunge depth), tools and materials necessary to complete the work associated with the full width cold planing of bituminous cape cod curb. The unit price shall include, but not be limited to, milling asphalt curb to a

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specified depth and limit as directed by the ENGINEER, and all other incidental work required as follows:

- Signage: Provide traffic control plans to facilitate detours, road closure, or single-lane access through the work zone. Furnish and erect temporary and permanent construction signs as shown on plans or directed by the ENGINEER. Furnish and erect road construction and detour signs and barricades as required for work zone construction. (Sign package shall be relocated, erected, and dismantled daily as necessary).
 - Traffic Control Personnel: The CONTRACTOR shall provide all the uniformed traffic control flaggers necessary to complete the cold planing operation as directed by the ENGINEER.
 - Sweeping: Following all curb cold planing, all roads shall be swept clean by a mechanical sweeper possessing a self contained dust pan that collects the debris using a wet process-NO OPEN BRUSHING PERMITTED.
 - Millings: All millings to be transported offsite by the CONTRACTOR. Occasionally the town may request a limited amount of millings trucked to the Transfer Station, Transfer Lane, at no additional cost to the town.
2. Measurement: Measurement for payment of asphalt curb cold planing shall be measured by the linear foot.
 3. Payment: Payment for asphalt curb cold planing shall be made at the Contract Unit Price bid per linear foot under this item.

G. BID ITEM NO. 7 – RECLAIM & REGRADE EXISTING ROADWAYS

1. General: The price bid under this item shall be considered as fair compensation for all labor, equipment (minimum 75,000 lb. 700 HP Reclaim machine with 20" plunge depth and a 58" cutter drum), tools and materials necessary for scarifying and pulverizing the existing bituminous pavement and base material. Said unit price shall also include uniformly grading and compacting the reclaimed asphalt and base in a manner that will promote positive drainage along curb lines to drainage receptacles and all other incidental work required as follows:
 - Signage: Provide traffic control plans to facilitate detours, road closure, or single-lane access through the work zone. Furnish and erect temporary and permanent construction signs as shown on plans or directed by the ENGINEER. Furnish and erect road construction and detour signs and barricades as required for work zone construction. (Sign package shall be relocated, erected, and dismantled daily as necessary).
 - Traffic Control Personnel: The CONTRACTOR shall provide all the uniformed traffic control flaggers necessary to complete the reclamation operation as directed by the ENGINEER.
 - Reclamation: Reclamation operations must be capable of

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reclaiming a minimum of 7000 square yards of bituminous pavement per day where thickness is 8 inches or less. A vibratory sheeps foot roller with a minimum weight of 10 tons shall follow behind the reclaimer-grader as part of the process.

- Superintendence & Layout: The CONTRACTOR shall be represented by a competent Superintendent as specified within these contract documents. The CONTRACTOR shall place centerline offset stakes at 50 or 100 foot intervals along the entire roadway route, noting centerline, edge of pavement, and roadway width at each location and establish a minimum of 2 offset stakes for each utility structure.
 - Grading & Compaction: A computerized grader with a moldboard of no less than 14 feet shall re-establish a typical 2% crown or other as directed by the Town's ENGINEER. Material shall be removed or added to properly match into side streets and driveways or as directed by the ENGINEER. A vibratory drum roller with a minimum weight of 10 tons shall follow behind the grader in unison with a water truck to achieve minimum 95% compaction.
 - Dust Control: A water truck shall be available on site following reclamation right up until paving is completed for dust control & compaction purposes.
 - Tie-ins: Roadway limits, side streets and driveways shall be saw cut and machine/hand prepped as directed by the ENGINEER.
2. Measurement: Measurement for payment of full width reclamation & grading shall be measured by the area in square yards.
 3. Payment: Payment for full width reclamation & grading shall be made at the Contract Unit Price as bid per square yard under this item.

H. BID ITEM NO. 8, 11 – ADJUSTING WATER GATE VALVE BOXES

1. General: The price bid under this item shall be considered as full compensation for all labor, equipment, tools and materials necessary to complete work associated with the lowering and raising of water gate valve boxes. The unit price shall include, but not be limited to, excavation, adjusting or removing the top riser section, protective screen or cap to prevent material from falling into box, saw cutting as necessary, providing a new riser section or extension as necessary, compaction and adjustment to proper final grade and including gravel and hot bituminous base course pavement required to complete the installation and restore the area as directed by the ENGINEER and specified herein. Include signage and traffic control as necessary and directed by the ENGINEER.
2. Measurement: Measurement for payment for adjusting water gate valve boxes shall be for each adjustment.

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3. **Payment:** Payment for adjusting water gate valve boxes shall be made at the Contract Unit Price per each adjustment as bid under this item.
- I. **BID ITEM NO. 9, 12 – ADJUSTING SEWER/DRAIN MANHOLE FRAMES & COVERS**
1. **General:** The price bid under this item shall be considered as full compensation for all labor, equipment, tools and materials necessary to complete work associated with the lowering and raising of sewer or drain manhole frames & covers. The unit price shall include, but not be limited to, excavation, removal of existing brick & mortar, placement of new brick and mortar, temporary placement of H-20 steel plates, protective screen or tarp over entire invert to prevent material from causing obstructions, compaction and adjustment to proper final grade, and including gravel and hot bituminous base course pavement required to complete the installation and restore the area as directed by the ENGINEER and specified herein. Include signage and traffic control as necessary and as directed by the ENGINEER.
 2. **Measurement:** Measurement for payment for adjusting sewer and drain manhole frames & covers shall be for each adjustment.
 3. **Payment:** Payment for adjusting sewer and drain manhole frames & covers shall be made at the Contract Unit Price per each adjustment as bid under this item.
- J. **BID ITEM NO. 10, 13 – ADJUSTING CATCH BASIN FRAMES & GRATES**
1. **General:** The price bid under this item shall be considered as full compensation for all labor, equipment, tools and materials necessary to complete the work associated with the lowering and raising of catch basin frames & grates. The unit price shall include, but not be limited to, excavation, removal of existing brick & mortar, placement of new brick and mortar, temporary placement of H-20 steel plates, protective screen or tarp over entire invert to prevent material from causing obstructions, compaction and adjustment to proper final grade, including gravel and hot bituminous base course pavement required to complete the installation and restore the area as directed by the ENGINEER and specified herein. Include signage and traffic control as necessary and as directed by the ENGINEER.
 2. **Measurement:** Measurement for payment for adjusting catch basin frames & grates shall be for each adjustment.
 3. **Payment:** Payment for adjusting catch basin frames & grates shall be made at the Contract Unit Price per each adjustment as bid under this item.

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K. BID ITEM NO. 14, – GRAVEL SHOULDER MACHINE OPERATION

1. General: The price bid under this item shall be considered as fair compensation for all labor, equipment, tools and materials necessary for placing gravel shoulder through a mechanized continuous flow operation. Said unit price shall also include uniformly grading and compacting the gravel shoulder in a manor that will promote positive drainage and all other incidental work required as follows:
 - Signage: Provide traffic control plans to facilitate detours, road closure, or single-lane access through the work zone. Furnish and erect temporary and permanent construction signs as shown on plans or directed by the ENGINEER. Furnish and erect road construction and detour signs and barricades as required for work zone construction. (Sign package shall be relocated, erected, and dismantled daily as necessary).
 - Traffic Control Personnel: The CONTRACTOR shall provide all the uniformed traffic control flaggers necessary to complete the gravel shoulder machine operation as directed by the ENGINEER.
 - Gravel Shoulder Operation: Gravel shoulder operations shall include a loader mounted conveyor system with a minimum spreading capacity of 500 tons per hour, 10 ton single drum vibratory roller and mechanical sweeper as noted herein. Crushed gravel material for shoulder leveling shall be as per NHDOT Standard Specifications for Road and Bridge Construction - 2010, Section 304.2.6.
2. Measurement: Measurement for payment of mechanized placement of gravel shoulder will be made on a per-ton basis. Tonnage shall be determined from certified weight slips, submitted by the CONTRACTOR, for all crushed gravel delivered to the site.
3. Payment: Payment for mechanized placement of gravel shoulder shall be made at the Contract Unit Price bid per ton under this item.

L. BID ITEM NO. 15 – PLACE OR REMOVE ADDITIONAL CRUSHED GRAVEL

1. General: The price bid under this item shall be considered as fair compensation for all labor, equipment, tools and materials necessary for placement of additional crushed gravel or removal of excess material following the reclamation process as directed by the ENGINEER. Said unit price shall also include uniformly grading and compacting additional material, trucking of additional material, crushed gravel material, the removal of excess material through grading, loading & trucking, and all other incidental work required as follows:
 - Signage: Provide traffic control plans to facilitate detours, road closure, or single-lane access through the work zone. Furnish and erect temporary and permanent construction signs as shown on

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plans or directed by the ENGINEER. Furnish and erect road construction and detour signs and barricades as required for work zone construction. (Sign package shall be relocated, erected, and dismantled daily as necessary).

- **Traffic Control Personnel:** The CONTRACTOR shall provide all the uniformed traffic control flaggers necessary to complete the crushed gravel operation as directed by the ENGINEER.
- **Superintendence & Layout:** The CONTRACTOR shall be represented by a competent Superintendent as specified within these contract documents. The CONTRACTOR shall place centerline offset stakes at 50 or 100 foot intervals along the entire roadway route, noting centerline, edge of pavement, and roadway width at each location and establish a minimum of 2 offset stakes for each utility structure.
- **Grading & Compaction:** A computerized grader with a moldboard of no less than 14 feet shall re-establish a typical 2% crown or other as directed by the Town's ENGINEER. Material shall be removed or added to properly match into side streets and driveways or as directed by the ENGINEER. A vibratory drum roller with a minimum weight of 10 tons shall follow behind the grader in unison with a water truck to achieve minimum 95% compaction.
- **Additional Equipment & Gravel:** In addition to normal reclamation activities above, a front end loader and minimum 3 trucks shall be required to place additional gravel or remove excess stockpiled by the grader.

2. **Measurement:** Measurement for payment of additional crushed gravel or removal of excess material shall be measured by the time in hours outside of normal reclaiming operations.
3. **Payment:** Payment for additional crushed gravel or removal of excess material shall be made at the Contract Unit Price bid per hour under this item.

M. BID ITEM NO. 16,17,18,19 – FURNISH & APPLY RETROREFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS

1. **General:** The price bid under this Item shall be considered as fair compensation for all labor, equipment, tools and materials necessary to complete the work associated with the application of thermoplastic pavement markings to the road surface in a molten state by screed/extrusion method with a surface application of glass beads. The unit price shall include, but not be limited to, furnishing, placing and curing to the thickness specified at the proposed limits and quantities, and all other incidental work required as follows:
 - **Surface Condition:** Prior to any application, the CONTRACTOR shall ensure the road surface is dry and entirely free from dirt, sand, grease, oil, or other matter which would prevent effective adhesion

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- of the thermoplastic material to the pavement.
- Signage: Provide traffic control plans to facilitate detours, road closure, or single-lane access through the work zone. Furnish and erect temporary and permanent construction signs as shown on plans or directed by the ENGINEER. Furnish and erect road construction and detour signs and barricades as required for work zone construction. (Sign package shall be relocated, erected, and dismantled daily as necessary).
 - Traffic Control Personnel: The CONTRACTOR shall provide all the uniformed traffic control flaggers necessary to complete the pavement marking operation as directed by the ENGINEER.
 - Unless otherwise stated, application and installation of Retroreflective Thermoplastic Pavement Markings shall follow the specifications of NHDOT Standard Specifications for Road and Bridge Construction – 2010, Section 632.3.4.
2. Measurement: Measurement for payment of retroreflective thermoplastic pavement marking will be made by the linear foot for line type and width. Symbols or words will be measured by the square foot based on NHDOT established areas as shown on NHDOT Standard plan PM-12.
3. Payment: Payment for retroreflective thermoplastic pavement marking shall be made at the Contract Unit Price bid per linear foot and sq. foot under this item.

END OF SECTION

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01340 - SUBMITTALS

PART 1 GENERAL

1.01 REQUIREMENTS

- A. Procedures for Submittals.
- B. Schedule of Submittals.

1.02 SHOP DRAWINGS

- A. The CONTRACTOR shall use and legibly complete the transmittal form included at the end of this Section.
- B. Title each shop drawing with Contract Work name and number; identify each element of drawings by reference to sheet number, detail and schedule of Contract Documents.
- C. Identify field dimensions; show relation to adjacent or critical features or Work or materials.
- D. Minimum Sheet Size: 8-1/2 x 11 inches.
- E. Number Required: Six (6) copies of each page or sheet assembled in separate sets.

1.03 PRODUCT DATA

- A. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification Section and Article number. Show reference standards, performance characteristics, and capacities; wiring and piping diagrams and controls; component parts; materials of construction; finishes; dimensions; and required clearances. Provide Material Safety Data Sheets required by OSHA for all chemicals to be supplied under this Contract. Submittals made without the required transmittal form which clearly identifies the respective specification section number for which the submittal is being made will be returned without review. It is the CONTRACTOR'S responsibility to provide legible submittals.
- B. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the Work.

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Delete information not applicable.

1.04 CONTRACTOR REVIEW

- A. The CONTRACTOR shall be responsible to preparing, coordinating, and reviewing all submittals prior to delivery to ENGINEER.
- B. Review submittals prior to transmittal; determine and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirements of Contract Documents.
- C. Coordinate submittals with requirements of Work and Contract Documents.
- D. Sign and date each sheet of shop drawings and product data and each sample label to certify compliance with requirements of Contract Documents. Notify ENGINEER in writing at time of submittal, of any deviations from requirements of Contract Documents.
- E. Do not fabricate or ship products or begin work which requires submittals until return of submittal that ENGINEER has reviewed and approved.
- F. CONTRACTOR shall check and verify all field measurements and shall be responsible for prompt submission of all shop and working drawings so that there shall be no delay in Work.

1.05 SUBMITTALS

- A. Transmit submittals which required submittal form included herewith, in accordance with the Progress Schedule and in such sequence as to avoid delay in the Work.
- B. Apply CONTRACTOR'S stamp, signed certifying to review, verification of products, field dimensions and field construction criteria, and coordination of information with requirements of Work and Contract Documents.
- C. Coordinate submittals into logical groupings to facilitate interrelation of associated items, which require correlation for efficient function or for installation.
- D. Submit six (6) copies of shop drawings; three (3) of which will be retained by ENGINEER upon review; the other three (3) will be returned to the CONTRACTOR.
- E. Submit six (6) copies of product data: three (3) of which will be retained by ENGINEER upon review; the other three (3) will be returned to the CONTRACTOR.

1.06 RESUBMITTALS

- A. Make resubmittals under procedures specified for initial submittals; identify changes made since previous submittal.

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- B. The ENGINEER will review each submittal and the first resubmittal without cost to the CONTRACTOR. The CONTRACTOR shall reimburse the OWNER for all subsequent resubmittal reviews.

1.07 ENGINEER REVIEW

- A. ENGINEER will respond to submittals with reasonable promptness.
- B. Submittals reviewed will be returned stamped as follows:

APPROVED
APPROVED AS CORRECTED
REVISE AND RESUBMIT
NOT APPROVED

Approval is only for conformance with the design concept of the Project and compliance with the information given in the Contract Documents. Contractor is responsible for dimensions to be confirmed and correlated at the job site; for information that pertains solely to the fabrication processes or to techniques of construction; and for coordination of the work of all trades.

By: _____ Date: _____

1.08 DISTRIBUTION

- A. Duplicate and distribute reproductions or shop drawings, copies of product data; and samples, which bear ENGINEER'S stamp to job site file, Record Documents file, subcontractors, suppliers, other affected contractors, and other entities requiring information.

1.09 SCHEDULE OF SUBMITTALS

- A. Shop drawings, product data and sample submittals shall be made in a timely and logical fashion taking into account work scheduling and job progress.
- B. The ENGINEER shall schedule a review of each submittal at no cost to the CONTRACTOR. The CONTRACTOR shall reimburse the OWNER for all reasonable costs associated with the ENGINEER'S review of any subsequent resubmittal.

1.10 REVIEW QUALIFICATION

- A. Regardless of corrections made or acceptance of such drawings by the ENGINEER, the CONTRACTOR will nevertheless be responsible for the accuracy of such

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drawings and for their conformity to the Contract Documents. The CONTRACTOR shall notify the ENGINEER in writing of any deviations at the time he furnishes such drawings.

PART 2 PRODUCTS – (NOT USED)

PART 3 EXECUTION – (NOT USED)

END OF SECTION

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01560 - TEMPORARY CONTROLS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Providing and maintaining methods, equipment, and temporary construction, as necessary to provide controls over environmental conditions at the construction site and related areas under CONTRACTOR'S control. Removal of physical evidence of temporary facilities at completion of the Work.**
- B. DUST CONTROL**
 - A. Provide positive methods and apply dust control materials such as calcium chloride or water to minimize raising dust from construction operations, and provide positive means to prevent dust from dispersing into the atmosphere.**
 - B. The CONTRACTOR shall sweep the road as directed by the ENGINEER before any calcium chloride is applied. The CONTRACTOR shall have calcium chloride on site at all times.**

1.03 WATER CONTROL

- A. Provide methods to control surface water to prevent damage to the Work, the site, or adjoining properties. Control fill, grading and ditching to direct surface drainage away from excavations, pits, tunnels and other construction areas; and to direct drainage to proper disposal.**
- B. Discharge of all dewatering to be controlled to avoid sedimentation of natural drainage ways and wetlands.**
- C. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas in accordance with local, state and federal regulations.**

C. DEBRIS CONTROL

- A. Maintain all areas under CONTRACTOR'S control free of debris.**
- B. Initiate and maintain a specific program to prevent accumulation of debris at construction site, storage and parking areas, or along access roads and haul routes.**
 - 1. Provide containers for deposit of debris.**

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2. Prohibit overloading of trucks to prevent spillages on access and haul routes. Provide periodic inspection of traffic areas and enforce requirements.
 3. Schedule weekly collection and disposal of debris to prevent accumulation.
- C. Schedule periodic collection and disposal of debris. Provide additional collections and disposal of debris whenever the periodic schedule is inadequate to prevent accumulation.
 - D. If the ENGINEER determines that the site is not adequately free of extraneous debris, the ENGINEER may order the CONTRACTOR to clean the site or have the site cleaned by others, the cost of which shall be borne by the CONTRACTOR.

1.05 POLLUTION CONTROL

- A. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations.
- B. Provide equipment and personnel to perform emergency measures required to contain any spillages, and to remove contaminated soils or liquids. Excavate and dispose of any contaminated earth in accordance with local, state and federal regulations, and replace with suitable compacted fill and topsoil.
- C. Take all appropriate measures to prevent harmful substances from entering surface waters and groundwater. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.
- D. Provide systems for control of atmospheric pollutants.
 1. Prevent toxic concentrations of chemicals.
 2. Prevent harmful dispersal of pollutants into the atmosphere.

1.06 EROSION CONTROL

- A. Plan and execute construction and earth work by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.
 1. Minimize areas of exposed bare soil.
 2. Provide temporary control measures such as berms, dikes and drains.

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- B. Construct fills and waste areas by selective placement to eliminate surface silts or clays, which will erode.
- C. Periodically inspect earthwork to detect any evidence of the start of erosion. Apply corrective measures as required to control erosion.
- D. Construct sediment basins, diversion ditches, hay bale dikes or such other erosion control devices to control runoff from any area subject to erosion during construction. All such precautionary measures including, but not limited to, construction of sediment basins, diversion ditches, benches, berms or hay bale dikes or laying fiber matting on slopes until vegetation is established, shall be at no extra cost to the OWNER.
- E. Comply with all local, state and federal permits and requirements.
- F. The CONTRACTOR shall keep all trenches stabilized during non-working hours. The CONTRACTOR shall place approved crushed gravel in the trench every night. The CONTRACTOR shall furnish and install crushed stone or other approved material in the trench to stabilize it as directed by the ENGINEER.

1.07 TRAFFIC SAFETY

- A. Schedule construction and place excavated material so that vehicular and pedestrian traffic may be maintained at all times. The CONTRACTOR shall be responsible for obtaining required state and local highway opening/curb cut permits prior to commencing construction of work in a highway.
- D. Traffic shall be protected by barriers, warning and advance warning signs. The placement and materials shall be in general compliance with the U.S. Department of Transportation's Manual on Uniform Traffic Control Devices, latest edition, and be subject to the approval of the OWNER and ENGINEER. If the CONTRACTOR'S operations cause traffic hazards, he shall repair the road surface, provide temporary ways, erect barricades or fences and/or take other safety measures in accordance with local, state and federal regulations.
- C. The trench shall be backfilled with approved common fill and crushed gravel every night, as directed by the ENGINEER. Place crushed gravel to a depth of eighteen (18) inches below the bottom of the pavement.

1.08 STORAGE AND PROTECTION

- A. Material
 - 1. All loose granular material, pipes and commonly used material shall be stored off of the roadway but within the right-of-way of the roadway. Lighted

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barriers shall be placed around the said material to make them visible to vehicular traffic.

E. Equipment

1. All equipment shall be stored off of the roadway but within the right-of-way of the roadway. Lighted barriers shall be placed around the vehicles to make them visible to vehicular traffic.

PART 2 PRODUCT – (NOT USED)

PART 3 EXECUTION – (NOT USED)

END OF SECTION

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01710 - FINAL CLEAN-UP

PART 1 GENERAL

1.01 REQUIREMENTS

- A. Final clean-up of Work.
- B. Executing final clean-up prior to inspection for Substantial Completion of the Work.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS

- A. Use materials which will not create hazards to health or property, and which will not damage surfaces.
- B. Use only materials and methods recommended by manufacturer of material being cleaned.

PART 3 EXECUTION

3.01 CLEANING

- A. In addition to removal of debris and cleaning specified in other sections, clean interior and exterior exposed-to-view surfaces.
- B. Remove temporary protection and labels not required to remain.
- C. Clean finishes free of dust, stains, films and other foreign substances.
- D. Remove waste, foreign matter, and debris from roofs, gutters, area ways, and drainage systems.
- E. Remove waste, debris, and surplus materials from site. Clean grounds; remove stains, spills, and foreign substances from paved areas and sweep clean. Rake clean other exterior surfaces.

END OF SECTION

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DIVISION 2 – TECHNICAL SPECIFICATIONS

ROADWAY SPECIFICATIONS

DERRY, NEW HAMPSHIRE

APRIL 1993

**Including Amendments and Revisions to
February 2017**

DEPARTMENT OF PUBLIC WORKS

MICHAEL FOWLER, P.E., DIRECTOR

ALAN COTE, SUPERINTENDENT OF OPERATIONS

SECTION 100

DEFINITIONS AND TERMS

1.01- Meaning of Terms:

Wherever in these specifications the following terms or pronouns in place of them, are used, the intent and meaning shall be interpreted as follows:

TOWN: The Town of Derry, New Hampshire

DEPARTMENT: The Director of the Department of Public Works acting directly or through an authorized representative, such representative acting within the scope of the particular duties entrusted to him.

ENGINEERS: The Engineering Technician in charge of Construction Inspections for the Town of Derry, New Hampshire or authorized agent or officer.

CONTRACTOR: Any individual, firm or corporation employed by a developer to complete work in a subdivision or contracted by the Town of Derry, New Hampshire.

MATERIAL: Any substances proposed to be used in connection with the construction of any integral part and/or any appurtenant part and/or any incidental part of the proposed project.

SPECIFICATIONS: The directions provisions and requirements contained herein, designated as the Bituminous specifications together with all written agreements made or to be made pertaining to the method and manner or performing the work, or the quantities and qualities of materials to be furnished under these provisions.

WORK: All performance, including the furnishing of materials, labor, tools, equipment and incidentals, required of the Contractor under the terms of these provisions.

THE WORDS: "As directed", "as permitted," "as required" or words of like effect shall mean that the direction, permission or requirement of the Director is intended, and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean approved by or acceptable or satisfactory to the Director unless otherwise provided herein.

The words "necessary" "suitable", or "equal" or words of like import shall mean necessary, suitable or equal in the opinion of the Director. The words "complete in place" shall mean the inclusion of all work, including incidentals, mentioned or implied in the Specifications and on the plans, or work that may reasonably be inferred as necessary to the proper execution of the item, unless payment for any portion of the work is otherwise specifically provided for.

1.02 - Abbreviations

AAN - American Association of Nurserymen

AAR - Association of American Railroads

AASHTO - American Association of State Highway and Transportation Officials:
Whenever the following abbreviations are used in these specifications or on the plans,
they are to be construed the same as the respective expressions represented:

ACI -American Concrete Institute

AGC - Associated General Contractors of America

AIA - American Institute of Architects

AISC- American Institute of Steel Construction

ANSI - American National Standards Institute

AREA - American Railway Engineering Association

ASCE - American Society of Civil Engineering

ASLA - American Society of Landscape Architects

ASME - American Society of Mechanical Engineers

ASTM - American Society for Testing and Materials

AWPA - American Wood-Preservers Association

AWWA - American Water Works Association

AWS - American Welding Society

DOT/FHWA - Department of Transportation, Federal Highway
Administration

FSS - Federal Specifications and Standards, General Services
Administration

MUTCD - Manual on Uniform Traffic Control Devices

NEMA - National Electrical Manufacturers Association

NHDOT - New Hampshire Department of Transportation

SECTION 200

MAINTENANCE OF TRAFFIC

2.01 General

A. This work shall include all operations necessary to maintain traffic flow, and to maintain access to all properties adjacent to the work. The work shall include, but not be limited to; use of Uniform Traffic Control and Flaggers, Police Officer details if deemed necessary, furnishing, erecting, moving and dismantling barricades, signs, and temporary lighting, to inform the general public of hazards existing near the site of work.

B. The **CONTRACTOR** shall facilitate the passage of school buses and provide safe access to all school bus stops, and notify the Police Chief, Fire Chief, and School Superintendent at least 72 hours in advance where the **CONTRACTOR** intends to work and the location of all detours.

2.02 Materials

A. Road construction approach signs shall be built, erected, and located in accordance with New Hampshire Department of Transportation Standard Specifications (latest edition). Cost for all sign packages and barricades required shall be borne by the **CONTRACTOR**.

B. Traffic paddles and flagger's equipment shall conform to those described in the MUTCD or New Hampshire Traffic Control Hand Book, as appropriate.

C. Traffic Control personnel shall use two-way radio communication at all times when two Traffic Control people are used.

2.03 Personnel

A. Uniformed Officers shall be attired with regulation duty uniforms, headgear, reflective vests, and an exposed badge. Flaggers shall be attired with the latest accepted standard for uniformed traffic flagger work wear. (see item C. below)

B. Uniformed Officers and flaggers shall possess the following qualifications: at least average intelligence and alertness, good sight and hearing, courteous but firm manner, neat and presentable appearance, pleasing personality, and a sense of responsibility.

C. Uniformed Officers and flaggers shall have been given specific instructions by the **CONTRACTOR** as to their duties and responsibilities, but to the public and to their fellow workers on the job. They shall direct traffic in accordance with section 618 of the NHDOT Standard Specifications for Road and Bridge Construction entitled "Uniformed Officers and Flaggers."

D. Uniformed Officers and flaggers shall not be paid under a separate pay item but shall be absorbed under various pay items.

2.04 Execution

- A. At the preconstruction meeting, the **CONTRACTOR** shall submit a traffic control plan to the Town for approval. The Traffic Control Plan shall be approved prior to any construction.
- B. Except where permitted by the **TOWN** as part of an approved detour plan, all streets where work is being performed shall be left in a passable condition at night.
- C. No open trenches shall be left open overnight. Excavations shall be backfilled and compacted, as specified for temporary trench pavement, including all roadway base course gravels.
- D. The **CONTRACTOR** shall spread water or calcium chloride for Dust Control as directed by the Engineer.
- E. The **CONTRACTOR** shall provide a field supervisor or equivalent to rectify problems within traveled ways; if they develop. The field supervisor or equivalent shall be available 24 hours per day, seven days per week during the time of the contract. The field supervisor or equivalent shall have the appropriate equipment, tools and materials available to immediately resolve any problems which represent a safety hazard to the residents of the **TOWN**.
- F. The Chief of Police shall retain the authority to suspend all or part of the **CONTRACTOR'S** operation as he may deem necessary in the interest of public safety. the **CONTRACTOR** shall make no claim for additional compensation or time on account of such suspension.

SECTION 300

RECLAMATION AND REGRADING

3.01 General

A. Furnish all labor, materials, tools, and equipment necessary to recycle existing pavement into a processed gravel and regrade according to plans or as specified by the Engineer.

3.02 Equipment

A. The **CONTRACTOR** shall comply with all equipment requirements set forth in the Town of Derry Roadway Resurfacing Technical Specifications (latest edition) to effectively pulverize, crush, mix, and blend pavements and gravel base materials to specification in place.

3.03 Execution

A. Prior to the start of Pavement Reclamation, all water and gas gates are to be lowered to a minimum depth of one foot from existing grade. All manhole and catch basin frames, grates, and covers are to be removed. The structures are to be covered with a minimum half inch (1/2") thick steel plate which shall overhang the structure opening by a minimum of one foot to ensure adequate strength to accommodate truck and construction equipment loadings. The **CONTRACTOR** shall keep accurate records of locations of all utilities and structures. The voids remaining after utility gates or drainage structures are lowered are to be filled with crushed gravel material conforming to Town standards.

B. The minimum depth of existing gravel to be incorporated in the rehabilitative process shall be four (4") inches.

C. As the pavement recycling takes place, a grader shall follow regarding the material as directed by the Engineer and compacted to a uniform density of not less than 95 percent. One way traffic shall be maintained during the operation unless otherwise directed by the Engineer.

D. It is the **CONTRACTOR'S** responsibility to ensure that the equipment construction methods intended to be used comply with the following gradation requirements:

<u>SIEVE SIZE</u>	<u>PERCENT PASSING BY WEIGHT</u>
3"	100
2-1/2"	100
1-1/2"	70-100
3/4"	50-95
No. 4	30-75

No. 50
No. 200

8-30
0-12

E. The processed asphalt stabilized base shall be tested for smoothness and accuracy of grade and if any portions are found to lack required smoothness or accuracy, such portion shall be re-scarified, reshaped, recompact, and otherwise manipulated as the engineer may direct, until the required smoothness and accuracy are obtained. The finish surface shall have a tolerance of 1/2" plus or minus to the grades shown on the plans or as directed.

F. The **CONTRACOR** may need to make field adjustments in lieu of plans due to discrepancies with abutting properties and roadways. While making adjustments, a uniform crown must be maintained along the center line of the road or as directed by the Engineer. Slopes from crown to edge of pavement or curb line shall be a minimum 2% and maximum of 4% as directed by the Engineer.

SECTION 400

HOT BITUMINOUS CONCRETE PAVEMENT

4.01 General

A. Furnish all labor, materials, tools and equipment necessary to construct one or more courses of bituminous mixture constructed on the prepared foundation in accordance with these Specifications and the specific requirements of the type under contract, and in reasonably close conformity with the lines, grades, thicknesses, and typical cross sections of the existing road, within the tolerances specified.

B. All pavement thickness specified herein shall be the thickness required after compaction.

4.02 Quality Assurance

A. Reference Standards

1. AASHTO T-245
2. ASTM D-698
3. ASTM D-1557

B. Tests and inspections will be made as required or when directed by the ENGINEER as described below.

4.03 Materials

A. All hot bituminous concrete pavement shall meet the material requirements of Section 401-Plant Mix Pavements-General, Descriptions 1.1 through 2.12.1 of the "Standard Specifications for Roads and Bridge Construction" of the New Hampshire Department of Transportation, latest edition.

4.04 EXECUTION

A. PLACING:

1. Prior to placing of any mix, a pre-paving conference shall be held to discuss and approve the paving schedule, source of mix, type and amount of equipment to be used, sequence of paving pattern, rate of mix supply, traffic control, and general continuity of the operation. Special attention shall be made to the paving pattern

sequence to minimize cold joints. The field supervisors of the above mentioned operations shall attend this meeting.

2. The **CONTRACTOR** shall notify the Engineer at least three working days in advance of paving operations to allow sufficient time to schedule required site inspection and testing. All paving and compaction equipment shall be approved and on site prior to start up each day.

B. WEATHER LIMITATIONS:

1. Mixtures shall be placed only when the underlying surface is dry, frost free and the surface temperature is above 40° F for courses greater than 1-1/2 inches in compacted depth and above 50°F for courses 1-1/2 inches in compacted depth. The Engineer may permit, in case of sudden rain, the placing of mixture then in transit from the plant, if laid on a base free from pools of water, provided motorist visibility is not impaired and all other specifications are met. No load shall be sent out so late in the day that spreading and compaction cannot be completed during the daylight, unless night work is specified. If rapid surface cooling of the laid down mix is occurring due to wind, the Engineer may suspend operations for the day. Wearing course shall not be scheduled for placement after October 15th of any year without written approval by the Engineer. If it is determined to be in the best interest of the TOWN to schedule placement after October 15th, the above specified weather and surface conditions shall remain in effect.
2. Any material delivered to the spreader having a temperature lower than 250°F shall not be used.

A. EXISTING PAVEMENT PREPARATION:

1. (Pavement Milling and Trimming) At the beginning and end of the project or project section, the existing pavement shall be removed to a sufficient depth through a milling process to allow the placing of the new pavement and construction of a transverse keyway joint. The underlying course shall be clean and free from foreign materials and loose bituminous patches and must present a dry, unyielding surface.
2. (Sweeping) Existing pavement or previously laid courses shall be thoroughly dry and free from all dust, dirt, and loose material. Sweeping with a power broom, supplemented by hand sweeping, may be necessary.
3. (Tack Coat) Surfaces of any of the base courses which have been exposed for a considerable length of time such as over the winter, when ordered, shall be covered by a tack coat of emulsified asphalt. Contact surfaces of drainage and utility castings and joints as ordered shall be painted with a thick coating of suitable bituminous material.

D. Expansion joints and all other joints or cracks in existing portland cement concrete pavement containing filler and being wide enough to permit raking shall have any filler removed to a depth of at least 1 inch below the surface of the concrete. The joints and cracks shall then be completely filled with an approved bitumen mixture of other satisfactory nonextruding material.

E. All courses shall be spread and finished to the required thickness by approved type, self-contained, self-propelled spreading and finishing machines (pavers). Pavers shall be provided with the adjustable, activated speed or strike-off assembly, and shall be capable of spreading the mixtures with a finish that is smooth, true to the required cross section, uniform in density and texture, and free from hollows, tears, gouges, corrugations, and other irregularities. Broadcasting behind the paver shall be held to a minimum. Pavers shall be capable of spreading and finishing courses of the required thicknesses and lane widths. Horizontally oscillating strike-off assemblies will not be approved.

F. The activated screed or strike-off assembly shall operate by cutting, crowding, vibrating, or other practicable action without tearing, shoving, or gouging the mixture. The activated portion of the speed shall extend the full width of the mixture being placed in the traveled way. Outside of the traveled way, such as on shoulders, tapers, areas adjacent to curbs, and at other locations as permitted, nonactivated extensions to the screed will be allowed. The paver shall be equipped with a screed heater which shall be used when starting a cold machine along with maintaining a suitable screed temperature when needed.

G. The paver hopper gates shall be adjusted to pass the correct amount of mix to the spreading screws so that the screws will operate more or less continuously. The height of material shall be maintained at a constant level in front of the screed, to a point where approximately half of the auger shall be visible at all times.

I. The forward speed of the paver shall be adjusted to the rate of the supply of materials so that the paver will be operated without having to make any but emergency stops. The **CONTRACTOR** shall make arrangements to synchronize the rate of paving with the rate of delivery of materials.

H. When practical, in order to maintain a hot longitudinal joint, pavers shall be used in echelon when placing the surface course in adjacent lanes.

I. When patching existing pavement, the material shall be placed on the prepared clean underlying surface at the locations designated, and spread to produce a smooth and uniform patch. The patch materials shall be thoroughly compacted and shall match the line and grade of the adjacent pavement.

J. When hot bituminous bridge pavement is to be placed over barrier membrane, the placing temperature shall be as specified in the Specifications. Unless otherwise permitted, the 1-inch base course shall be placed within 5 days after the membrane has been completed. The use of a paver to place the base course will be permitted when the paver is mounted on rubber tires and provided that no damage is done to the membrane,

either by the paver or by trucks. Otherwise, the base course shall be placed by hand. During warm weather, the above paving shall be done during the cool periods of the day. A paver shall be used to place the top 1 1/2-inch wearing course.

K. Where pavement is placed adjacent to structural members such as expansion joints, the material in the top course shall be placed so that the compacted grade of the pavement is 1/4 to 1/2 of an inch above the grade of the structural member.

L. Relatively small areas not accessible to the paver may be spread by hand, but extreme care shall be taken to create a surface texture similar to the machine work. Surface material shall be spread by lutes and not by rakes.

M. Unless otherwise authorized, the final wearing course shall not be placed until after guardrail posts have been set and general cleanup has been completed.

4.05 COMPACTION METHODS

A. Immediately after the bituminous mixture has been spread, struck off and the surface irregularities adjusted and it is in the proper condition, it shall be thoroughly and uniformly compacted by rolling. The initial rolling shall be done with a articulated vibratory tandem wheel roller of at least 10 tons in weight. Rollers must be in good mechanical condition, free from excessive backlash, faulty steering mechanism, or worn parts. The make and model number shall be properly marked on each roller. The roller shall overlap the previous roller pass by one-half the width of the roll.

B. Following the initial rolling, the base and shim courses shall be rolled with an approved pneumatic tired roller. This roller shall be self-propelled and shall be equipped with smooth tires of equal size and diameter. The wheels shall be so spaced that one pass of a 2 axle roller will accomplish one complete coverage. No overlap is required for pneumatic tire rollers. The wheels shall not wobble and they shall be equipped with pads that will keep the tires wet. The roller shall have an operating weight of not less than 2000 pounds per wheel. All tires shall be maintained at a uniform pressure between 55 and 90 psi tolerance between tires. A suitable tire pressure gauge shall be readily available.

C. Following the intermediate rolling with a pneumatic tired roller, the courses shall be finish rolled with a 2-axle roller. Finished rollers shall be 3-5 tons in weight.

D. All wheeled rollers shall move at a slow, but uniform speed with the drive roll nearest the paver except on a steep grade that may necessitate reversing this procedure. Rollers shall not operate at speeds in excess of 6 MPH, 528 feet per minute. When paving multiple lanes simultaneously, or when paving widths in excess of 16 feet, the **CONTRACTOR** shall furnish additional rollers as requested.

4.06 COMPACTION REQUIREMENTS

A. Unless otherwise directed, rolling shall begin at the side and proceed parallel to the road centerline, gradually progressing to the crown of the road. When paving in echelon or abutting a previously placed lane, the longitudinal joint shall be rolled first followed by the regular rolling procedure. On super elevated curves, the rolling shall begin at the low side and progress to the high side by overlapping of passes parallel to the centerline. All turning of the roller shall be completed on a pavement which has had a least one roller pass. Base and binder courses shall be rolled until all roller marks are eliminated and a minimum density of 95% of laboratory specimens, prepared in accordance with AASHTO T-245 has been obtained.

B. Any displacement occurring as a result of reversing the direction of a roller, or from other causes, shall be corrected at once by the use of lutes and the addition of fresh mixture when required. Care shall be exercised in rolling not to displace the line and grade of the edges of the bituminous mixture.

C. To prevent adhesion of the mixture to the rollers, the wheels shall be kept properly moistened with water or water mixed with very small quantities of detergent or other approved material. Excess liquid will not be permitted. All steel rollers shall be equipped with adjustable wheel scrapers.

D. Along forms, curbs, headers, and similar structures, and other places not accessible to a normal full-sized roller, sidewalk rollers weighing at least 2,000 pounds shall be used. Where rollers are impracticable, the mixture shall be thoroughly compacted with heated or lightly oiled mechanical asphalt plate compactors.

4.07 JOINTS

A. The first lane placed shall be true to line and grade and shall be trimmed by hand to a string line if necessary to obtain a true longitudinal joint. Material not trimmed away shall be packed against the land by means of lutes, leaving a uniform joint with a vertical or nearly vertical face. Outside joints in subsequent lanes shall be similarly trued, as directed. Unless otherwise shown on the Plans the longitudinal wearing course joint shall be in the center of the pavement and joints of other courses shall be offset approximately 6 inches.

B. The material being placed next to a previously placed lane shall be tightly crowded against the face of the abutting lane. The finishing machine shall be positioned so that in spreading, the material will overlap the edge of the first lane by 1 to 2 inches and shall be left sufficiently high to match the first laid lane after compaction. The overlapped material shall be crowded to the joint with a lute prior to rolling.

C. Placing of the course shall be as nearly continuously as possible, keeping the number of transverse joints at a minimum while still being able to make a hot longitudinal joint.

D. If a bulkhead is not used to form the transverse joint, the previously laid material shall be cut back to expose the full depth of the course. The joint face shall be coated with approved bituminous material before the fresh mixture is placed against it. Extreme care shall be taken to insure that no unevenness occurs at the joint. If unsatisfactory riding qualities are obtained at the transverse joint in the wearing course, the **ENGINEER** may order the use of heat to warm and loosen the surface in order to take away material or add new material.

E. If it is necessary to leave a longitudinal joint until it becomes cold such as where the lanes are left not squared off at the end of the day's work or where a third lane is to be paved at a later date, the joint face shall be coated with approved bituminous material before the fresh mixture is placed.

4.08 TEST REQUIREMENTS

A. The **CONTRACTOR** shall furnish and have available a 10-foot metal straight edge at the paver at all times during paving operations. All courses shall be tested with the straight edge laid parallel to the centerline and any variations from a true profile exceeding 3/16 of an inch shall be satisfactorily eliminated. The finished surface of the pavement shall be uniform in appearance, free from irregularities in contour and shall present a smooth-riding surface.

4.09 FINISHED APPEARANCE

A. Any bituminous material remaining on exposed surfaces of curbs, sidewalks, or other masonry structures shall be removed at the **CONTRACTOR's** expense.

4.10 GUARANTEE

A. Until the expiration of the guarantee period, the **CONTRACTOR** shall maintain permanently placed surfaces under this **CONTRACT**. Should an area that the **CONTRACTOR** has paved settle, he shall remove the entire pavement in this area. The **CONTRACTOR** shall add necessary subbase materials as specified herein before to the depth of the applicable surface course. The **CONTRACTOR** shall replace the surface course as herein before specified.

SECTION 500**SIDEWALKS****5.01 - General**

A. This work shall consist of constructing bituminous concrete sidewalks as shown on the plans or as ordered.

5.02 – Material

A. Base course materials shall conform to **SECTION 700** herein.

B. Hot bituminous pavement shall meet the material requirements of **SECTION 400** herein except that the composition of mixtures shall conform to the limits of Table 1.

5.03 – Execution**A. SUBGRADE & BASE COURSE PREPARATION**

1. All stumps and large roots within the limits of the sidewalk shall be completely removed to a depth of 3 feet below subgrade unless a greater or lesser depth is specified on the plans. All loam and other organic materials shall be removed prior to placement of select materials.
2. The subgrade shall be carefully graded and compacted. The base course material shall be spread and rolled to a smooth surface and to the required cross-section.
3. The foundation shall be a minimum of six (6) inches of crushed gravel as specified above or on the plans. New sidewalks shall be a minimum of five (5) feet in width and meet existing sidewalk widths as directed by the Town's Engineer. Unless specified otherwise on the plans, sidewalks shall slope 1/4 inch per foot from back edge of sidewalk towards roadway.

B. PAVING

1. The wearing surface shall be laid in two courses, a 2 inch bottom course and a 1 inch top course, thickness measured after compaction. The material and application shall conform to the Specifications outlined for roadway surfacing.
2. Each course shall be rolled with a roller weighing between 500 lb and 2,000 lb. The finished surface shall be uniform in appearance, free from irregularities, and shall present a smooth surface. The edges shall be trimmed as directed.

SECTION 600

CURBING

6.01 - General

A. This work shall consist of constructing or resetting curbs as shown on the plans or as ordered.

6.02 - Materials

A. Curb shall be new granite, salvaged granite, or bituminous, as indicated in the proposal.

B. Granite shall be hard, durable, reasonably uniform in appearance, and free from weak seams. Solid quartz or feldspar veins will not be cause for rejection. Surfaces of each stone shall be finished in accordance with the requirements of Table 1. All comparable curbs on the project shall have similar finishes.

C. When the slope curb item description does not indicate a specific height, the size of the stone shall be as shown on the standard entitled "Granite Slope Curb". The setting reveal (the vertical height of the exposed face when set) shall be (4 in) or as shown on the plans.

D. Salvaged granite curbing shall be dressed to obtain joints of the same width as specified for new curb.

**TABLE 1
FINISHED SURFACES AND TOLERANCES,
FOR GRANITE CURBING**

TYPE	AREA	FINISHED SURFACE	TOLERANCE(INCHES)	
STRAIGHT OR CURVED	Top	Five (5) inches wide or as otherwise shown, sawn true plan.	(+1/8)	(-1/8)
		Front and back arris lines pitched straight and parallel.	(+1/8)	(-1/8)
	Front face	Right angle to top, approximately true plane. No drill holes showing in top ten (10) inches.	(+1)	(-1)

TABLE 1 (CONTINUED)

TYPE	AREA	FINISHED SURFACE	TOLERANCE(INCHES)	
	Back face: Exposed	Plane parallel with front face. Straight split to (1-1/2) inch below exposed surface. No larger than (1/4) inch segment of drill holes showing in arris lines.	(+1)	(-1)
	Concealed	Plane parallel with from exposed surface.	(+1-1/2)	(-1-1/2)
	Bottom	Approximately parallel to top. Minimum width: (3) inches.	See plans.	
	Ends: Exposed Portion	Square with planes of top and face.		
	Joints: Exposed Concealed	Optimum width: (1) inch To break back no more than four (4) inches.	(+3/4)	(-3/4)
	Lengths of stones	3 to 10 feet with 50 percent of sections to be 5 feet or greater, or as noted on the plans.		
SLOPE AND END STONE	Arris lines:	Straight and true on top, from and ends. Drill holes not deeper than (1/4) inch allowed in arris lines.	(+1/4)	(-1/4)
	Front face	Right angle to top, approximately true plane. No drill holes showing in top ten (10) inches.	(+1)	(-1)

TABLE 1 (CONTINUED)

TYPE	AREA	FINISHED SURFACE	TOLERANCE(INCHES)	
Faces:	Exposed part	Planes; no drill holes in faces longer than (8) inches or deeper than (1/4) inch.	(+1)	(-1)
	Concealed part	Drill holes not objectionable.		
Ends:		Square with face except as indicated.		
Joints		On tangent, maximum approximately true plane. No drill holes showing in top ten (10) inches.	(+1)	(-1)
		On curves with 15 foot radius and under, use radial joints or curved as shown on the plans. Optimum width: (1) inch	(+1)	(-1)
	Lengths of stones	Min. and max. specified lengths. to be 5 feet or greater, or as noted on the plans.	See plans.	

E. Bituminous curb shall meet the requirements of **SECTION 400** herein except that the composition of the mixture shall conform to the limits of Table 2. The mixture shall extrude properly with a uniform, smooth appearance.

F. Polyester fibers, as approved by the Bureau of Materials and Research, shall be uniformly incorporated in the dry mix in the proportion of approximately 1/4 percent of the total batch weight.

TABLE 2
REQUIRED GRADING FOR BITUMINOUS CURB

<u>Sieve Size</u>	<u>Percent Passing By Weight</u>
3/4"	100
1/2"	85 - 100
3/8"	15 - 45
No. 4	0 - 5
No. 10	0 - 5
No. 40	0 - 5
No. 200	0 - 5
<hr/>	
Asphalt Cement, percent of Mix	7.0-9.0

G. Cement mortar shall be an approved non-shrink, non-metallic grout mixed as recommended by the manufacturer. The non-shrink, non-metallic grout shall be an approved product for such use as shown on the List of Approved Products as maintained by the Bureau of Materials & Research. When the bedding is more than 19 mm (3/4 in) in height, a 9.5mm (3/8 in) washed stone may be mixed into the mortar at the maximum of 1 part stone to 4 parts dry mortar.

6.03 – Execution

A. GRANITE CURB, NEW AND RESET

1. Excavation for curb shall be made to the required depth, and the base upon which the curb is to be set shall be compacted to a firm even surface.
2. Installation of curbing shall be so that the front top arris line conforms to the line and grade required. All spaces under the curbing shall be filled with material conforming to the requirements for roadway base course. This material shall be thoroughly tamped.
3. Joints shall be of the width indicated in Table 1. They shall be pointed with mortar and the exposed portions finished with a jointer.
4. Curbing to be salvaged and reset shall be carefully removed and stored. The **CONTRACTOR** shall replace any curbing damaged or lost because of his negligence. All exposed portions of reset curbing shall be cleaned by sand blasting or as specified on the plans.
5. Backfilling shall be accomplished immediately after the curb is set and jointed. Backfill shall be of approved material, placed and thoroughly tamped.
6. Concrete Class B in accordance with NHDOT specifications may be substituted for aggregate base course and hot bituminous base courses in the curb patch on

the roadway side of granite curb. Concrete thickness shall be not less than that of the adjacent pavement.

7. Bridge curb shall be set on a mortar bed of non-shrink, non-metallic grout. The front face shall be plumb and the top shall conform to the required line and grade. All joints shall be grouted and the exposed portions finished with a jointer. Long and short lengths of curb shall be laid alternately unless otherwise ordered.

B. BITUMINOUS CURB

1. Prior to placing the curbing, the surface of the pavement shall be cleaned as directed and painted with a tack coat of bituminous material when ordered.
2. The curbing shall be placed by means of an approved extruding curb paver. The curbing shall be compacted to a minimum density of 90 percent of a laboratory compacted sample of the same mix. A tight bond shall be obtained between the prepared course and the curb and between necessary curb joints.

SECTION 700**UNDERDRAINS****7.01 - General**

Furnish all labor, materials, tools, and equipment necessary to lay and join all underdrain pipe and fittings as noted on the plans or as directed by the Town's Engineer. Pipe, common structure excavation, stone cushion & backfill, and support membrane shall be included in this work

7.02 - Materials

A. Smooth-wall perforated polyvinyl chloride pipe shall conform to AASHTO M 278. Perforated polyvinyl chloride profile wall pipe shall conform to AASHTO M 304.

B. Corrugated polyethylene drainage tubing (6 in) in diameter shall conform to AASHTO M 252, with Class 2 perforations except that the required pipe stiffness shall be a minimum of (60 psi). Perforated corrugated polyethylene pipe of nominal sizes 300 to 900 mm (12 to 36 in) diameter shall conform to AASHTO M 294, with Class 1 perforations. Lengths for all sizes shall not exceed 6 m (20 ft).

C. Crushed stone cushion shall be graded as specified in **SECTION 1000**.

D. Support membrane shall be nonwoven and conform to 593.2.1.

7.03 - Execution

A. Trenches shall be excavated to the dimensions and grade shown on the plans or as directed by the Town's Engineer.

B. Nonwoven support membrane shall be installed so as to minimize the number of fabric seams within the trench section. Seams shall be constructed by overlapping the fabric at least (12) inches and folding to create a joint which will ensure that soil infiltration will be retarded.

C. Aggregate shall be placed within the typical section as shown in a manner that will maintain the fabric integrity. Punctures created by aggregate, equipment, tools or improper handling shall be patched by placing fabric at least (12) inches beyond the puncture limits on the outside of the typical section.

D. Perforated pipe shall normally be placed with the perforations down, and sections shall be securely joined with the appropriate couplings or fittings.

E. When rock is encountered, sharp projections of solid rock shall be removed within the typical section, primarily at the bottom of the trench.

F. Backfill shall be placed and tamped in the areas outside and adjacent to the aggregate underdrain so that the shape of the typical is maintained. Sharp pieces of rock shall not be placed immediately adjacent to the fabric.

G. Pipes shall be laid with 45 degree bends where changes in direction are indicated on the plans.

H. Except at structures, up grade ends of all underdrain pipe installations shall be closed with suitable plugs to prevent entry of soil material.

I. Underdrains shall tie into catch basins or drain manholes as noted on the plans or as directed by the Town's Engineer.

SECTION 800**CULVERTS AND STORM DRAINS****8.01 - General**

Furnish all labor, materials, tools, and equipment necessary to lay and join all high-density polyethylene (HDPE) pipe and fittings as shown on the Drawings or as specified herein.

8.02 - Materials

A. Pipe and Fittings: The pipe shall be made of high density, high molecular weight polyethylene pipe material meeting the requirements of Type III, Class C, Category 5, Grade P34, as defined in ASTM D-1248-84 Standard Specification of Polyethylene Plastic Molding and Extrusion Materials. Clean rework material generated by the manufacturer's own production may be used so long as the pipe and fittings produced meet all the requirements of this specification.

B. All HDPE pipe and fittings shall be delivered, stored and handled in such a way as to prevent damage to the pipe.

C. Gaskets: Rubber gaskets shall comply in all respects with the physical requirements specified in the non-pressure requirements of ASTM Specification F-477. They shall be molded or produced from an extruded shape approved by the manufacturer and spliced into circular form.

D. Lubricant: The lubricant used for assembly shall have no detrimental effect on the gasket or on the pipe.

8.03 - Execution

A. Each pipe unit shall be inspected before being installed. Any pipe unit or fitting discovered to be defective either before or after installation shall be removed and replaced with a second unit.

B. Pipe shall be laid accurately to line and grade using laser beam techniques or other approved methods as shown on the Drawings.

1. A minimum (6) inches of crushed stone bedding material as specified in section 1000 herein shall be placed to provide uniform and adequate longitudinal support under the pipe. Additional crushed stone material shall be placed to half the diameter of the pipe ensuring proper horizontal alignment.

2. Sand as specified by Section 1000 herein shall be placed (12) inches above the top of the pipe through the entire width of the trench.

3. Special care shall be taken to ensure that the first 2 to 3 feet of backfill over top of the initial backfill is placed carefully rather than dropped onto pipe to avoid damaging the pipe from impact during placement.
4. There shall be at least 30 inches of cover over top of the pipe before the trench is wheel-loaded and at least 48 inches of cover before using mobile trench compactor of the hydro-hammer or impactor type.

C. Pipe shall be laid with the spigot ends pointing in the direction of flow. Joints shall be made up in accordance with the approved factory recommendations.

D. All pipe and fittings shall be cleared of all debris, dirt, etc., before being installed and shall be kept clean until accepted in the completed work. Suitable coupling holes shall be provided so that after placement only the barrel of the pipe receives bearing pressure from the supporting material.

E. At all times when pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs or by other approved means. If water is in the trench when work is to be resumed, the plug shall not be removed until all suitable provisions have been made to prevent water, earth or other materials from entering the pipe.

F. The **CONTRACTOR** shall take all necessary precautions to prevent flotation of the pipe in the trench. Pipelines shall not be used as conductors for trench drainage during construction.

8.04 – Final Inspection

A. Before acceptance of the completed drain lines, all pipes will be inspected by shining a light between manholes; and any imperfections such as cracks, displaced joints, objectionable variations from line or grade, or leaks shall be repaired.

SECTION 900**CATCH BASINS, DROP INLETS, AND MANHOLES****9.01 - General**

A. This work shall consist of constructing or reconstructing catch basins, drop inlets, and manholes; and furnishing and placing grates or manhole covers, all as shown on the plans or as ordered.

9.02 - Materials

A. Precast concrete sections shall conform to the ASTM Standard Specification, Designation C478 with the following additional requirements:

1. The manholes shall be constructed of precast reinforced concrete manhole sections conforming to AASHTO M 199M. The concrete shall be 4000 psi concrete (Class AA). The sections shall be a minimum of four feet inside diameter. Cones, bases and rings shall be precast sections of similar construction.
2. Sumps shall be a minimum of 2 feet in depth. The top section shall be an eccentric conical section with thickened upper walls with the smallest inside diameter equal to (30) inches or a flat top section equal to (30) inches in diameter to receive the catch basin, frame and cover.
3. The wall sections shall be not less than (5) inches thick. Manhole bottoms shall have a bottom at least (6) inches thick.
4. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on the inside of the barrel. Acceptance of the sections will be on the basis of material tests and inspection of the completed product.

B. Drop inlet drainage basins (DIDB) shall be a minimum of two feet inside diameter with an eighteen-inch minimum sump (as manufactured by Phoenix Precast or equivalent).

C. The brick shall be sound, hard, and uniformly burned, consistent in shape and size, and of compact texture. Bricks shall comply with ASTM Serial Designation C32, Grade MS.

D. Cement mortar for manholes shall consist of one part of Portland Cement Type II and two parts of fine sand with water added to produce the proper consistency for the type of joint.

E. All castings for manhole covers and frames shall be class 30 conforming to the ASTM Standard Specification for Gray Iron Castings, designation A48. Allowances shall be made in the patterns so that specified thickness shall not be reduced. All lids which "Rock" and do not lie solid after construction is finished, shall be rejected and shall be replaced by adequate lids. No plugging, burning-in, or fillings will be allowed. Covers shall fit the frames in any position.

F. All frames and covers shall have an H-20 (8 Ton) loading rating. The total weight of each frame and cover shall be less than 400 pounds. The opening inside diameter shall be 30 inches and the minimum total height shall be (6) inches. The cover shall have the letter "D" or the word "DRAIN" in (3) inch letters cast into the top surface.

D. Catch Basin frames and grates shall be cast iron Type A as specified by the NH Dept of Transportation Standard Drawings.

9.03 - Execution

A. All catch basins, drop inlets, and drain manholes shall be constructed at the locations and to the elevations and dimensions shown of the drawings, precast reinforced concrete sections shall be set vertical with sections in true alignment. Excavation and Backfill shall conform to Section 1000 herein.

B1. Crushed stone shall be placed as specified in section 6.05 herein and shall be placed 12" below the base of the structure. (12" of sand shall be used in areas comprised of ledge).

2. The select material below the base shall be perfectly level through the limits of the structure prior to setting it. If the base is not level, it shall be removed from the trench and the material will be regraded and recompactd using appropriate equipment. Lifting one side of the base and manually placing material underneath it, will not be permitted.

C. Pipes entering structures shall be set securely at the correct line and grade.

D. All holes in sections used for their handling shall be plugged with rubber plugs made specifically for this purpose or with mortar. The mortar shall be one part cement to 1 ½ parts sand, mixed slightly damp to the touch (just short of "balling") hammered into the holes until it is dense and an excess of paste appears on the surface, and then finished smooth and flush with the adjoining surfaces.

E. All drain manhole frames and covers shall be set flush to existing or proposed pavement as directed by the Engineer. Frames shall be set concentric with the top of the precast section on a maximum of 5 courses of brick in a full bed of mortar so that the space between the top of the manhole section and bottom flange of the frame shall be completely filled and made watertight. Place a ring of mortar extending to the outer edge of the concrete section as indicated on the drawings.

F. Upon completion, each structure shall be cleaned of silt debris, or other matter of any kind and shall be kept clean until Acceptance of the Work.



SECTION 1000**TRENCH EXCAVATION AND BACKFILL****10.01 - General**

A. Furnish all labor, materials, equipment and incidentals necessary for trenching of utilities and appurtenances, including backfill, test pits, and disposal of surplus materials.

10.02 - Location of Utilities

A. It shall be the **CONTRACTOR**'s sole responsibility to contact Dig Safe prior to construction.

B1. Prior to construction, the Town shall mark out locations of existing water, sewer and drainage utilities based on best available information. This shall not in any way relieve the **CONTRACTOR** from damages to the existing utilities.

2. The **CONTRACTOR** shall be responsible for maintaining and recording all utility locations during construction. The **CONTRACTOR** shall pay all expenses for any relocating of existing utilities performed by the **TOWN**.

10.03 - Trench Excavating

A1. The **CONTRACTOR** shall make excavations in such manner and to such widths as will give suitable room for laying, jointing, and bedding the pipe, furnish and place, sheeting as necessary, and for dewatering and maintaining the trench in a dry condition.

2. It is the **CONTRACTOR**'s responsibility to satisfy all Federal State and local regulations such as those of OSHA.

B1. In general, trenches shall be excavated to an elevation of one foot below the elevations specified on the drawings. Excavations for structures such as manholes shall be 1 foot below the base or as specified on the plans.

2. The allowable trench width shall be 2.0 feet greater than the normal pipe size or a minimum of 3 feet, whichever is greater. Excavations around structures shall extend enough to adequately compact using mechanical tampers.

C1. All pavement is to be cut prior to excavation. The **CONTRACTOR** shall at all times exercise care not to excavate outside the trench limiting lines as shown on the drawings. No extra allowance will be given for backfilling, rock removal, paving, or other work resulting from excavation beyond these lines.

2. If the **CONTRACTOR** excavates below grade through error for his own convenience, or through failure to properly de-water the trench, or disturbs the sub-grade before de-watering is sufficiently complete, he may be directed by the **ENGINEER** to excavate

below grade, which case the work of excavating below grade and furnishing and placing the refill shall be formed at his own expense.

D1. If in the opinion of the **ENGINEER**, the material at or below the normal grade of the bottom of the trench is unsuitable for foundation, it shall be removed to the depth directed by the **ENGINEER** and replaced by an approved second gravel.

2. Surplus material excavated from trench and abandoned pipe and utilities, broken pavement, masonry, reinforced concrete, and other materials encountered in the excavation and not suitable for landfill, becomes the property of the **CONTRACTOR** and must be disposed of appropriately.

E. The **CONTRACTOR** shall furnish all labor, materials, equipment, and incidentals required to repair any existing utilities damaged during construction. Any assistance rendered to the **CONTRACTOR** by the **TOWN** in isolating or repairing damaged utilities, shall be appropriately deducted from the Contract Bid Price.

10.04 - Trench Ledge Excavation and Disposal

A1. Rock excavation shall consist of all solid rock which cannot be removed without blasting or ripping. It shall consist of boulders and parts of masonry structures when found to measure 1 cubic yard or more.

2. Material which can be loosened and removed such as loose or fractured rock, frozen materials, shale, hardpan, and the like and material which is outside of the limits of measurements allowed shall not be measured or classified as rock excavation.

3. Where rock is encountered, it shall be uncovered but not excavated until measurements have been made by the **ENGINEER**. All ledge within the trench limitations will be removed and disposed of off the site by the **CONTRACTOR**. All ledge excavated from the trench will be replaced with suitable material approved by the **ENGINEER**.

B. All blasting operations shall be conducted in full compliance with all the laws of the state, with all local ordinances, and with all possible care so as to avoid injury to person and property.

1. The **CONTRACTOR** shall perform a **pre-blast survey** of the area where blasting is required. He shall record existing conditions in written form, sketches, photographs, video tapes, or any other form. All nearby buildings, foundations, driveways, roadways, and other existing structures shall be inspected for cracks, loose masonry, and other conditions which might be attributable to blasting at a later date. A copy of said survey shall be provided to the **ENGINEER** before blasting commences.

2. The **CONTRACTOR** shall record the location, depth, and size of each hole. A copy of the said **blasting record** shall be provided to the **ENGINEER** at the conclusion of blasting rock.
3. No blasting will be permitted under or adjacent to any street, roads, or highway unless permission has been received in writing from the authority having jurisdiction.
4. Conform to all municipal, State, Federal, and other ordinances and codes relating to the storage and hauling of explosives. Particular attention is called to adherence to requirements of the electric, gas, and other utilities which may be located in the project area.
5. Damages and costs of whatever nature resulting from the work specified herein shall be borne solely by the **CONTRACTOR**.

10.05 - Selected Materials For Pipe Embedment

A. From the bottom of the trench to a minimum of 12 inches above the pipe crown, shall be referred to as the pipe embedment. Select material shall be 3/4" crush stone or as indicated on the drawings. The selected material shall be hand tamped around the pipe so that each section shall have a firm bearing throughout it's entire length.

B1. Selected materials shall conform to the following standards:

2. Sand - Shall be free from stone or any organic matter.

<u>Sieve Size</u>	<u>Percent Passing By Weight</u>
3"	100
No. 4	70 - 100
No. 200	0 - 12

3. Bank Run Gravel - shall be graded such that the maximum size of stone particles shall not exceed 3/4 of the completed depth of the layer being placed. In no case shall the stone size be larger than 6 inches.

<u>Sieve Size</u>	<u>Percent Passing By Weight</u>
6"	100
No. 4	25 - 70
No. 200	0 - 12

4. Crushed Gravel - At least 50 percent of the material retained on the 1 inch sieve shall have a fractured face.

<u>Sieve Size</u>	<u>Percent Passing By Weight</u>
3"	100
2"	95 - 100
1"	55 - 85
No. 4	27 - 25
No. 200	0 - 12

5. Crushed Stone - Crushed stone shall consist of clean durable ledge and rock. It shall be free from thin elongated pieces.

<u>Sieve Size</u>	<u>Percent Passing By Weight</u>
1"	100
3/4"	85 - 100
1/2"	15 - 45
No. 4	0 - 5
No. 10	0 - 5
No. 50	0 - 5
No. 200	0 - 5

10.06 - Backfill

A. The material above the pipe embedment zone shall be selected backfill or common fill as specified on the plans. All trenches within the limits of a roadway, shoulder, sidewalk, or other paved areas shall be thoroughly compacted by hand or mechanical means in layers not to exceed twelve (12) inches. Each backfill layer shall be at 95% of its optimum density.

B. All backfill material shall be free from all organic matter and debris. No stone or rock fragments larger than 6" shall be deposited in the backfill.

C. Any trench areas improperly backfilled or having excessive settlement, shall be reopened to the depth required, then refilled, compacted, restored to the required grade, mounded over and smoothed or repaved as necessary.

Mr/ 4-5-02,
Dgb/2-16-17