



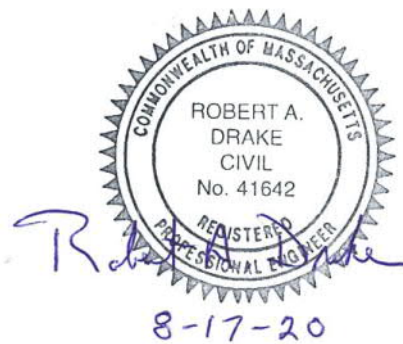
Town of Wareham, Massachusetts

Sea Street and Smith Avenue Sewer System Rehabilitation

Contract 2020-001

August 2020

**Bidding Requirements, Bond Forms, Contract Agreement,
Conditions of the Contract and Technical Specifications**



Professional Registration No.: 41642



BETA

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SECTION 00100

NOTICE TO BIDDERS
TOWN OF WAREHAM, MASSACHUSETTS
SEA STREET AND SMITH AVENUE SEWER SYSTEM REHABILITATION
CONTRACT NO. 2020-001

The Town of Wareham, Massachusetts, acting through its Water Pollution Control Facility, invites sealed bids for "**Town of Wareham, Massachusetts, Sea Street and Smith Avenue Sewer System Rehabilitation, Contract No. 2020-001**", in accordance with the Contract Documents prepared by BETA GROUP, INC., Consulting Engineers, 6 Blackstone Valley Place, Lincoln, RI 02865.

This project is subject to and the **General Bidder is required to comply with the Commonwealth of Massachusetts Sector Specific Workplace Safety Standards for Construction Sites to Address COVID-19 dated May 18, 2020 (or as amended)** included as an attachment to Section 01069, Health and Safety Requirements.

Bids will be received at the office of the: **Wareham Water Pollution Control Facility
6 Tonys Lane
Wareham, MA 02571**

until **10:00 A.M.** local time on **Thursday September 03, 2020**, at which time and place, said Bids will be publicly opened and read aloud.

The location, general characteristics, and principal details of the Work are indicated in a set of Contract Documents, entitled "**Town of Wareham, Massachusetts, Sea Street and Smith Avenue Sewer System Rehabilitation, Contract No. 2020-001**".

The work in this Contract includes, but is not limited to the rehabilitation of approximately **1,815** linear feet of sanitary sewers via cured-in-place pipe (CIPP) lining in the Town of Wareham, MA and the epoxy lining of approximately **12** sewer manholes.

Bids shall be on a Unit Price basis.

Bid Security: Certified, treasurer's or cashier's check or bid bond in the sum of five (5) percent of the Total Bid is required.

Contract Documents may be examined and obtained on the Town of Wareham's website at [www.wareham.ma.us/bids-rfps/contract 2020-001](http://www.wareham.ma.us/bids-rfps/contract_2020-001) on **August 19, 2020**.

A mandatory pre-bid conference advising bidders of bid conditions will be **held at Sea Street on Tuesday August 25, 2020 at 10:00 A.M. Commonwealth of Massachusetts Sector Specific Workplace Safety Standards for Construction Sites to Address COVID-19 shall apply.**

Direct all inquiries in writing to Guy Campinha, Director of Water Pollution Control Facility, Wareham, MA 02571, Phone #: (508) 295-6144, Fax #: (508) 291-0155, E-Mail Address: gcampinha@wareham.ma.us. The deadline for questions is **Thursday, August 27, 2020, at 4:00 P.M.**

All Bids for this project are subject to applicable bidding laws of Massachusetts, including General Laws Chapter 30, Section 39M as amended.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under this Contract as determined by the Department of Labor and Industries under provisions of the Massachusetts General Laws Chapter 149, Section 26-27D, inclusive, as amended.

No Bidder may withdraw his bid within Ninety (90) consecutive calendar days after the actual date of the opening thereof.

The successful Bidder must furnish 100 percent Performance and Labor and Materials Bonds.

The Owner, being considered the sole and only judge, reserves the right to waive any informalities in, or to reject, any or all bids, should the Owner deem it to be in the owner's best interest to do so.

Town of Wareham, Massachusetts,
Wareham Water Pollution Control Facility

SECTION 00200

INFORMATION FOR BIDDERS

- 1.01 Receipt and Opening of Bids
- 1.02 Location and Work to be Done
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- 1.29 Protection of Lives and Health
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1.01 RECEIPT AND OPENING OF BIDS

- A. The Town of Wareham, Massachusetts, herein called the Owner, acting through its Water Pollution Control Facility, invites sealed bids for "**Town of Wareham, Massachusetts, Sea Street and Smith Avenue Sewer System Rehabilitation, Contract No. 2020-001**" in accordance with the Contract Documents prepared by BETA Group, Inc., Consulting Engineers, 6 Blackstone Valley Place, Lincoln, RI 02865.

- B. Such Bids, submitted in sealed envelopes plainly marked in the upper left hand corner with the Bidder's name and address, plainly marked in the lower left hand corner with the date and time of opening, addressed to:

**Wareham Water Pollution Control Facility
6 Tony Lane
Wareham, MA 02571
Attn: Guy Campinha, Director of Water Pollution Control**

Endorsed: **"Sea Street and Smith Avenue Sewer System Rehabilitation,
Contract No. 2020-001".**

Delivered by: **10:00 A.M. local time on September 03, 2020**

Location: 6 Tonys Lane, Wareham, MA 02571,

at which time and place, said Bids will be publicly opened and read aloud.

- C. The Owner may consider informal, any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities in or reject any and all Bids. Conditional or qualified Bids will not be accepted. Any Bid received after the time and date specified shall not be considered. 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.

1.02 LOCATION AND WORK TO BE DONE

- A. The location, general characteristics, and principal details of the Work are indicated in a set of Contract Documents, entitled **"Town of Wareham, Massachusetts, Sea Street and Smith Avenue Sewer System Rehabilitation, Contract No. 2020-001"**.
- B. Details and Schedules bound in the Appendices, and the Documents listed above are sometimes referred to herein as the "Drawings".
- C. Additional drawings showing details in accordance with which the Work is to be done will be furnished from time to time by the Engineer, if found necessary, and shall then become part of the Drawings.
- D. The Contractor shall furnish all labor, services, materials, equipment, plant machinery, apparatus, appliances, tools, supplies and all other things necessary to perform all work required for the completion of each item of the Work and as herein specified.
- E. The Work to be done and paid for under any item shall not be limited to the exact extent mentioned or described, but shall include all incidental work necessary or customarily done for the completion of that item.

1.03 CONTRACT DOCUMENTS

- A. The Contract Documents, INFORMATION FOR BIDDERS, SPECIFICATIONS, and forms for BID, AGREEMENT, and BONDS, may be examined and obtained at the Town of Wareham's website at www.wareham.ma.us/bids-rfps/contract_2020-001 on **August 19, 2020**.

1.04 PAYMENT FOR DRAWINGS AND DOCUMENTS

- A. NOT APPLICABLE

1.05 QUESTIONS REGARDING DRAWINGS AND DOCUMENTS

- A. In general, no answer will be given to prospective bidders in reply to an oral question of the intent or meaning of the Drawings or other Contract Documents, or the equality or use of products or methods other than those designated or described on the Drawings or in the Specifications. Any information given to bidders other than by means of the Drawings and other Contract Documents, including Addenda, as described below, is given informally, for information and the convenience of the bidder only and is not guaranteed. The bidder agrees that such information shall not be used as the basis of nor shall the giving of any such information entitle the bidder to assert any claim or demand against the Owner or the Engineer on account thereof.
- B. To receive consideration, such questions shall be submitted in writing, faxed, or e-mailed to the **Mr. Guy Campinha, Director of Water Pollution Control Facility, Wareham Water Pollution Control Facility, 6 Tonys Lane, Wareham, MA 02571, Telephone No. (508) 295-6144, Fax No. (508) 291-0155, E-Mail: gcampinha@wareham.ma.us on or before August 27, 2020 at 4:00 P.M.** If the question involves the equality or use of products or methods, it must be accompanied by drawings, specifications or other data in sufficient detail to enable the Engineer to determine the equality or suitability of the product or method. In general, the Town of Wareham will neither approve nor disapprove particular products prior to the opening of Bids; such products will be considered when offered by the Contractor for incorporation into the Work.
- C. The Town of Wareham will set forth as Addenda, which shall become a part of the Contract Documents, such questions received as above provided as in his sole judgement are appropriate or necessary and his decision regarding each. At least five days prior to the receipt of Bids, he will send a copy of these Addenda to those prospective bidders known to have taken out sets of the Contract Documents.
- D. The Contractor agrees to use the products and methods designated or described in the Specifications as amended by the Addenda.

1.06 PRE-BID CONFERENCE

- A. A mandatory pre-bid conference advising bidders of bid conditions and Affirmative Action guidelines will be held on **Tuesday, August 25, 20120**, at **10:00 A.M.**, local time at **Sea Street, Wareham, MA 02571**.

1.07 BIDDERS TO INVESTIGATE

- A. Bidders are required to submit their Bids upon the following express conditions, which shall apply to and be deemed a part of every Bid received, viz.:

Bidders must satisfy themselves by personal examination of the Work and by such other means as they may wish, as to the actual conditions there existing, the character and requirements of the Work and difficulties attendant upon its execution, and the accuracy of all estimated quantities stated in the Bid.

1.08 INFORMATION NOT GUARANTEED

- A. All information given in the Contract Documents relating to subsurface and other conditions, natural phenomena, existing pipes and other structures is from the best sources at present available to the Owner. All such information is furnished only for the information and convenience of bidders and is not guaranteed.
- B. It is agreed and understood that the Owner does not warrant or guarantee that the subsurface or other conditions, natural phenomena, existing pipes or other structures encountered during construction will be the same as those indicated in the Contract Documents.
- C. It is agreed further and understood that no bidder or Contractor shall use or be entitled to use any of the information made available to him or obtained in any examination made by him in any manner as a basis of or ground for any claim or demand against the Owner or the Engineer, arising from or by reason of any variance which may exist between the information made available and the actual subsurface or other conditions, natural phenomena, existing pipes or other structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

1.09 CONDITIONS OF WORK

- A. Each bidder must inform himself fully of the conditions relating to the construction and labor under which the work is now or will be performed; failure to do so will not relieve the successful bidder of his obligation to furnish all materials and all labor necessary to carry out the provisions of the Contract Documents and to complete the contemplated Work for the consideration set forth in his bid. Insofar as possible, the Contractor, in the carrying out of his work, shall employ such methods or means as will not cause any interruption of or interference with: the operation of the existing sewer; traffic; use of existing facilities and utilities; locations of existing utilities and structures affecting the work or other similar conditions at the site; character of

equipment and facilities needed preliminary to and during prosecution of the work; requirements of owners and controlling authorities, having jurisdiction over the various lands, existing structures, facilities, and utilities; and all other conditions affecting the work to be done, and the labor and materials needed; and he shall make his bid in sole reliance thereon; and shall not, at any time after submission of a bid, assert that there was any misunderstanding in regard to the nature or amount of the work to be done.

1.10 BLANK FORM FOR BID

- A. Each bid must be submitted on the prescribed form, accompanied by the Bid Security and any other requested information. All blank spaces for bid prices must be filled in, in ink or typewritten, both in words and numerical figures, and be signed by the bidder with his business address and place of residence. Where both written words and numerical figures are given, the written words shall apply in the event of conflict. All bids shall be prepared in conformity with, and based upon and submitted subject to, all requirements of the Specifications and Drawings, together with all addenda thereto.
- B. Bidders shall not remove and submit the Bid pages separate from the volume of Contract Documents, but shall submit their Bids bound with the complete volume of attached Contract Documents, including all pages correctly assembled. All erasures or other changes in the Bid must be properly initialed by an authorized representative of the Bidder.

1.11 WITHDRAWAL OF BIDS

- A. Except as hereinafter in this subsection otherwise expressly provided, once his Bid is submitted and received by the Owner for consideration and comparison with other bids similarly submitted, the bidder agrees that he may not and will not withdraw it within Ninety (90) consecutive calendar days after the actual date of the opening of Bids.
- B. Upon proper written request and identification, Bids may be withdrawn only as follows:
 - 1. At any time prior to the designated time for the opening of Bids.
 - 2. Provided the Bid has not theretofore been accepted by the Owner, at any time subsequent to the expiration of the period during which the bidder has agreed not to withdraw his Bid.
- C. Unless a Bid is withdrawn as provided above, the bidder agrees that it shall be deemed open for acceptance until the AGREEMENT has been executed by both parties thereto or until the Owner notifies a bidder in writing that his Bid is rejected or that the Owner does not intend to accept it, or returns his Bid deposit. Notice of acceptance of a Bid shall not constitute rejection of any other Bid.

1.12 BID SECURITY

- A. Each bid must be accompanied by a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company and payable to the order of the Owner, or by a bid bond prepared on the form of BID BOND attached hereto duly executed and acknowledged by the bidder, as Principal, and by a surety company qualified to do business in the Commonwealth of Massachusetts and satisfactory to the Owner, as Surety. The check or bid bond shall be in the sum of five (5) percent of the total bid and shall be enclosed in the sealed envelope containing the Bid.
- B. Each such check or bid bond may be held by the Owner as security for the fulfillment of the bidder's agreements as hereinabove set forth and as set forth in the BID. Should the bidder fail to fulfill such agreements, his bid check shall become the property of the Owner or if a bid bond was furnished, the bid bond shall become payable to the Owner, as liquidated damages; otherwise, the bid check shall be returned to the bidder as hereinafter provided, or if the security is a bid bond, the bid bond shall become null and void.
- C. Bid checks will be returned to all except the three lowest bidders within five days, Sundays and legal holidays excluded, after the opening of Bids, and to the three lowest bidders within five days, Sunday and legal holidays excluded, after the Owner and the accepted bidder have executed the AGREEMENT. In the event that the AGREEMENT has not been executed by both the accepted bidder and the Owner within 90 consecutive calendar days after the opening of Bids, the bid check will be returned promptly upon demand of any bidder who has not been notified of the acceptance of his Bid.
- D. Bid checks accompanying Bids, which are rejected, will be returned within five days, Sundays and legal holidays excluded, after rejection.
- E. None of the three lowest Bids shall be deemed rejected, notwithstanding acceptance of any Bid, until the AGREEMENT has been executed by both the Owner and the accepted bidder.

1.13 INTERESTED PARTIES TO CONTRACT

- A. The undersigned declares; that the only person interested in this Bid as principals are named herein as such; that no official of the Owner and no person acting for or employed by the Owner is interested directly or indirectly in this Bid, or in any contract which may be made under it, or in any expected profits to arise therefrom; that this Bid is made in good faith, without fraud, collusion or connection with any other person bidding or refraining from bidding for the same work; that he has examined carefully the said instructions and all other documents bound herewith and the Contract Documents relating to the Contract covered by this Bid and hereby makes them part of this Bid; that he has informed himself fully in regard to all conditions pertaining to the work and place where it is to be done; and that he has

made his own examination and carefully checked his estimates for cost and from them makes this Bid.

1.14 ABILITY AND EXPERIENCE OF BIDDER

- A. No award will be made to any bidder who cannot satisfy the Owner that he has sufficient ability and experience in this class of work and sufficient capital and plant to enable him to prosecute and complete the Work successfully within the time named. The Engineer and the Owner may make such investigation as they deem necessary to determine the ability of the bidder to perform the work; and the bidder shall furnish to the Engineer and the Owner all such information and data for this purpose as the Engineer and the Owner may request.
- B. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein within the time stated. The Owner's decision or judgement on these matters shall be final, conclusive, and binding for all parties involved.
- C. Bidders shall have a minimum of 10 years of experience in installation of cured-in-place liners and shall have successfully completed projects of similar scope within the last 5 years. Contractor or subcontractors performing excavation work shall have a minimum of 10 years of experience in large utility construction projects for municipalities and demonstrate sufficient ability, experience and qualifications to perform the work, as determined by the Owner and Engineer.

1.15 BIDS

- A. The Owner reserves the right to waive any informalities in, or to reject any or all Bids which in its sole judgement are either incomplete, conditional, obscure, or not responsive or which contain additions not called for, erasures not properly initialed, alternative, or similar irregularities, or the Owner may waive such omissions, conditions, or irregularities as he may feel appropriate.
- B. Conditional bids will not be accepted. Bidder(s) will be disqualified if more than one proposal is received from an individual, firm, partnership, corporation or association, under the same or different names and such proposals will not be considered.
- C. The Owner reserves the right to reject any or all Bids, should the Owner deem it to be in the public interest to do so.

1.16 COMPARISON OF BIDS

- A. Bids will be compared on the basis of the experience and competence of the bidders and on the basis of the totals of the quantities listed in the proposal under the enumerated items at the unit prices or lump sums bid for these items. The Contract will be awarded to the lowest responsive, responsible and eligible bidder as

determined by the Owner and/or its authorized representatives or agents. However, the Owner may reject any and all bids if it is in the public interest to do so.

- B. The term, "Lowest responsive, responsible and eligible bidder", shall mean the bidder whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the Work; who shall certify that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work.
- C. Bids should be made on each separate item of work shown in the bid (proposal) with reasonable relation to the probable cost of doing the work included in such items. The Owner reserves the right to reject, wholly, any bid on which an item or items thereof are obviously unbalanced or appear to the Owner to be so unbalanced as to affect or to be liable to affect adversely any interests of the Owner. The attention of the bidder is called to the fact that unbalancing of bids may adversely affect the Contractor if certain portions for the Work are increased or decreased as provided in the Contract Documents.
- D. A bidder shall state the proposed price for the work by which the bids will be compared. This price is to cover all of the expenses incidental to the completion of the work in full conformity with the Contract, Specifications, and Drawings. In the event that there is a discrepancy between the unit prices and the extended totals, the unit prices shall govern. In the event that there is a discrepancy between the lump-sum or unit prices written in words and numerical figures, the prices written in words shall govern. No bid will be accepted which does not contain a unit price or lump sum as indicated for each of the applicable items enumerated in the proposal form.

1.17 ITEMS AND INDETERMINATE ITEMS

- A. The Work to be done under this Contract has been divided into parts or items to enable each bidder to bid on different portions of the work in accordance with his estimate of their cost and so that the actual quantity of work executed under each item may be paid for at the price bid for that particular item, even though such quantity is greater or less than the estimated quantity stated in the BID.
- B. The quantities listed in the bid (proposal) are approximate. The Owner does not expressly or by implication represent that the actual amounts of work will even approximately correspond therewith, but does call particular attention to the uncertainty in the quantities of the work involved which can not be predicted in advance. The work under certain items may be materially greater or less than those given in the Bid as may be necessary in the judgment of the Owner complete the work contemplated in the Contract. Attention is particularly called to the fact that the quantity of work to be done under some bid items may be largely dependent on subsurface ground conditions encountered and, therefore, the quantities of work to be done under the various items may vary substantially from the estimated quantities or may even be omitted.

- C. Certain items in the BID cover classes of work of doubtful necessity or work for which it is impractical to estimate approximate quantities. Such items have been marked "Indeterminate". Prices for certain of such items have been stipulated in advance by the Owner as stated in the BID.
- D. Only such quantities of the respective items of work actually performed and accepted will be paid for. An increase or decrease in quantity for any item shall not be regarded as grounds for an increase or decrease in the bid prices.

1.18 REDUCTION IN SCOPE OF WORK

- A. The Owner reserves the right to decrease the scope of the work to be done under this Contract and to omit any work in order to bring the cost within available funds. To this end, the Owner reserves the right to reduce the quantity of any items or omit all of any as set forth in the BID, either prior to executing the Contract or at any time during the progress of the Work. The Owner further reserves the right, at any time during the progress of the Work, to restore all or part of any items previously omitted or reduced. Exercise by the Owner of the above rights shall not constitute any ground or basis of claim for damages or for anticipated profits on the work omitted.

1.19 CONTRACT BONDS

- A. The Bidder whose Bid is accepted agrees to furnish the Contract Bonds in the forms which follow in Section 00600, titled CONTRACT BONDS, each in the sum of the full amount of the Bid and/or Contract Price as determined by the Engineer, and duly executed and acknowledged by the said bidder as Principal and by a surety company qualified to do business under the laws of Massachusetts and satisfactory to the Owner, as Surety, for the faithful performance of the contract and payment for labor and materials. The premiums for such Bonds shall be paid by the Contractor.
- B. Surety Companies executing the Contract Bonds must also appear on the U.S. Treasury Department's most current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (Amended) by the Audit Staff Bureau of Accounts.

1.20 POWER OF ATTORNEY

- A. Attorneys-in-fact who sign Bid Bonds or Contract Bonds must file with each Bond a certified and effectively dated copy of their power of attorney.

1.21 EXECUTION OF AGREEMENT

- A. The Bidder whose Bid is accepted will be required and agrees to duly execute the AGREEMENT and furnish the required CONTRACT BONDS within the time limit stated in the BID after notification that the AGREEMENT is ready for signature.

- B. The Bidder whose Bid is accepted upon his failure or refusal to duly execute the AGREEMENT and furnish the required CONTRACT BONDS within the time limit stated in the BID, shall forfeit to the Owner as liquidated damages for such failure or refusal, the surety deposited with his BID.

1.22 INSURANCE CERTIFICATES

- A. The Contractor will not be permitted to start any construction work until he has submitted certificates covering all insurances called for under that subsection of the AGREEMENT, titled "Insurance." The Contractor shall submit said certificates using the forms supplied by the Engineer under said subsection.

1.23 TIME FOR COMPLETION AND LIQUIDATED DAMAGES

- A. The bidder must agree to commence work on or before the date specified in the written "NOTICE TO PROCEED" issued by the Owner, and/or Engineer acting on behalf of the Owner, and to fully complete the project within the time specified in Table A of the Agreement, after the date specified in the written "NOTICE TO PROCEED" as stipulated in Table A of the AGREEMENT. The bidder must further agree to pay as liquidated damages to the Owner, the sum as specified in Table A of the Agreement for each consecutive calendar day thereafter as hereafter provided in the AGREEMENT.

1.24 LAWS AND REGULATIONS

- A. The bidder's attention is directed to the fact that all applicable Federal and State laws, municipal ordinances, and rules and regulations or authorities having jurisdiction over construction of the project, shall apply to the Contract throughout, and shall be deemed to be included in the Contract the same as though herein written out in full.

1.25 WORK ON STATE, MUNICIPAL, AND PRIVATE PROPERTY

- A. Particular attention is hereby directed to the fact that portions of the Work included under this Contract will be done within the limits of properties that are State-owned, municipal-owned, or privately owned. The Contractor shall be responsible for coordinating the prosecution of the Work of this Contract with the property owner and for providing work in accordance with any additional requirements as specified herein.

1.26 DATUM OR LEVELS

- A. The figures given in the Contract and Specifications or upon the Drawings after the word elevation, shall mean the distance in feet above mean sea level, the base of the State of Massachusetts North American Vertical Datum (NAVD) Mean Sea Level Datum of 1988.

1.27 STATE SALES AND USE TAX

- A. Materials and equipment purchased for installation under this Contract are exempt from the Massachusetts Sales Tax. The Contractor shall file for exemption on behalf of the Owner with the Commonwealth of Massachusetts Department of Taxation as required by law. The exemption from the Sales Tax shall be taken into account by the Contractor during bidding.

1.28 MANUFACTURER'S EXPERIENCE

- A. Wherever it may be written that an equipment manufacturer must have a specified period of experience with his product, equipment which does not meet the specified experience period may be considered by the Owner and/or Engineer if the equipment supplier or manufacturer is willing to provide a sufficient bond or cash deposit as determined by the Owner and/or Engineer for the duration of the specified time period which will guarantee full replacement of that equipment in the event of failure at no additional cost to the Owner.

1.29 PROTECTION OF LIVES AND HEALTH

- A. The project is subject to all of the Safety and Health Regulations as promulgated by the United States Department of Labor (Title 29, Part 1926/1910 CFR, 1985 revisions); the Contract Work Hours and Safety Standards Act (40 U.S.C. 327 et seq.) as supplemented by the Department of Labor Regulations (Title 29 CFR Part 5); and OSHA 2207, 1983 revisions; and all subsequent amendments thereto. Contractors are urged to make themselves familiar with the requirements of these regulations.
- B. This project is subject to and the General Bidder is required to comply with the Commonwealth of Massachusetts Sector Specific Workplace Safety Standards for Construction Sites to Address COVID-19 dated May 18, 2020 (or as amended) included as an attachment to Section 01069, Health and Safety Requirements.

1.30 NONDISCRIMINATION IN EMPLOYMENT

- A. Contracts for work under this bid (proposal) will obligate the Contractors and subcontractors not to discriminate in employment practices.
- B. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, handicap, or national origin. The Contractor shall take affirmative action to ensure that applicants are employed and the employees are treated during employment without regard to their race, color, religion, sex, age, handicap, or national origin. Such actions shall include, but not be limited to, the following: employment, upgrading; demotions, or transfers; recruitment or recruitment advertising, layoffs, or terminations; rates of pay or other forms of compensation; selection for training including apprenticeship; and participation in recreational and education activities. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notice to

- be provided setting forth the provisions of this non-discrimination clause. The Contractor will in all solicitations or advertisements for employees placed by or on behalf on the Contractor state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, handicap or national origin. The Contractor will cause the foregoing provisions to be inserted in all sub-contracts for any work covered by this Contract so that such provisions will be binding upon each sub-contractor and upon sub-contracts for standard commercial supplies or raw materials.
- C. The Contractor shall keep such records and submit such reports concerning the racial and ethnic origin of applicants for employment and employees as the Owner may require as consistent with Federal and State law. The Contractor agrees to comply with such rules, regulations, or guidelines as the State of Massachusetts may implement these requirements. The Contractor further warrants that he will comply with the President's Executive Order No. 11246 or any preceding similar Executive Order relating thereto.
 - D. Bidders and Contractors must, if required, submit a compliance report (EPA Form 5720-4) concerning their employment practices and policies in order to maintain their eligibility to receive award of the Contract.
 - E. Successful bidders and Contractors must, if required, submit a list of all Subcontractors who will perform work on the project, and written signed statements from authorized agents of labor pools with which they will or may deal with for employees on the work, together with any information to the effect that such labor pools' practices or policies are in conformity with said Executive Order that they will affirmatively cooperate in or offer no hindrance to the recruitment, employment, and equal treatment of employees seeking employment and performing work under this Contract; or a certification as to when such agents or labor pools have failed or refused to furnish them, prior to award of the Contract.
 - F. The successful bidder will be required to comply with Equal Opportunity Requirements and to abide by the prevailing wage rates for Public Work Projects for all employees on the job. It is the responsibility of Bidders to inform themselves as to the local labor conditions, overtime compensation, health and welfare contributions, labor supply and prospective changes or adjustment of wage rates. Information is available at the Department of Labor.

1.31 SEQUENCE OF OPERATIONS

- A. The Contractor must submit to the Engineer within fourteen (14) calendar days after execution of the Contractor Documents, a sequence of operations, giving detailed plans and schedules of his operation including any elements for by-pass pumping and/or flow diversion during the Work. Said sequence of operations shall be reviewed and must be approved by the Owner and Engineer prior to the start of the Work. The Owner reserves the right to limit or, if found necessary and/or required, delay

construction, or certain activities thereof, in certain areas of the Contract should the Owner deem it to be in the public's best interest to do so.

- B. The Contractor shall have no claim for additional compensation or damage on account of any such delays and/or required sequence of operations.
- C. The Contractor shall maintain uninterrupted utility services at all times, and plan his work accordingly.
- D. The Contractor shall coordinate his activities with any other contract and/or contractor to complete the Work as detailed on the Plans and Specifications.

END OF SECTION

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SECTION 00300

BID

To the Town of Wareham, Massachusetts, herein called the "Owner", for
"Sea Street and Smith Avenue Sewer System Rehabilitation, Contract No. 2020-001".

The Undersigned, as a bidder herein referred to as singular and masculine, declares as follows:

- (1) The only parties interested in this BID as Principals are named herein;
- (2) this BID is made without collusion with any other person, firm, or corporation;
- (3) no officer, agent, or employee of the Owner is directly or indirectly interested in this BID;
- (4) he has carefully examined the site of the proposed Work and fully informed and satisfied himself as to the conditions there existing, the character and requirements of the proposed Work, the difficulties attendant upon its execution and the accuracy of all estimated quantities stated in this BID, and he has carefully read and examined the Drawings, the annexed proposed AGREEMENT and the Specifications and other Contract Documents therein referred to and knows and understands the terms and provisions thereof;
- (5) he understands that information relative to subsurface and other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) has been furnished only for his information and convenience without any warranty or guarantee, expressed or implied, that the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered will be the same as those shown on the Drawings or in any of the other Contract Documents and he agrees that he shall not use or be entitled to use any such information made available to him through the Contract Documents or otherwise or obtained by him in his own examination of the site, as a basis of or ground for any claim against the Owner or the Engineer arising from or by reason of any variance which may exist between the aforesaid information made available to or acquired by him and the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered during the construction work, and he has made due allowance therefore in this BID;
- (6) and he understands that the quantities of work tabulated in this BID or indicated on the Drawings or in the Specifications or other Contract Documents are only approximate and are subject to increase or decrease as deemed necessary by the Engineer; and he agrees that, if this BID is accepted he will contract with the Owner, as provided in the copy of the Contract Documents deposited in the office of the Department of Public Works, this BID form being part of said Contract Documents, and that he will perform all the work and furnish all the materials and equipment, and provide all labor, services, plant, machinery, apparatus, appliances, tools, supplies and all other things required by the Contract Documents in the manner and within the time therein prescribed and according to the requirements of the Engineer as therein set forth, and that he will take in full

compensation therefore the total dollar amount tabulated from the actual measured quantities of said work and each unit or lump sum price stated in this BID as hereinafter set forth.

(Note: All entries in the entire BID must be made clearly and in ink; price bid must be written in both words and figures.)

| <u>Item Number</u> | <u>Estimated Quantity</u> | <u>Brief Description: unit or lump-sum price bid in both words and figures.</u> | <u>Total in Figures</u> |
|--------------------|---------------------------|---|-------------------------|
| 1A | 675 lin. ft. | Install 8-inch Cured-In-Place Pipe liner, per linear foot, _____dollars and _____cents (\$ _____) | \$ _____ |
| 1B | 490 lin. ft. | Install 10-inch Cured-In-Place Pipe liner, per linear foot, _____dollars and _____cents (\$ _____) | \$ _____ |
| 1C | 650 lin. ft. | Install 12-inch Cured-In-Place Pipe liner, per linear foot, _____dollars and _____cents (\$ _____) | \$ _____ |
| 2 | 115 vert. ft. | Epoxy line sewer manholes, per vertical foot, _____dollars and _____cents (\$ _____) | \$ _____ |
| 3 | 1 lump sum | Maintaining Existing Flow, per lump sum _____dollars and _____cents (\$ _____) | \$ _____ |
| 4 | 1 allowance | Uniformed Traffic Officers, allowance <u>Twenty Thousand</u> _____dollars and <u>Zero</u> cents (<u>\$ 20,000.00</u>) | <u>\$ 20,000.00</u> |

Miscellaneous

| <u>Number</u> | <u>Quantity</u> | <u>price bid in both words and figures.</u> | <u>Total in Figures</u> |
|---------------|-----------------|--|-------------------------|
| 5A | N/A N/A | Price adjustment for diesel fuel, (Base Price = \$1.561) | \$ <u> N/A </u> |
| 5B | N/A N/A | Price adjustment for gasoline, (Base Price = \$.532) | \$ <u> N/A </u> |
| 5C | N/A N/A | Price adjustment for portland cement, (Base Price = \$134.25) | \$ <u> N/A </u> |

*Indeterminate, quantity assumed for comparison of Bids.

TOTAL OF BID:

 Total of BID in figures \$

 Total of BID in words

The undersigned agrees that for extra work, if any, performed in accordance with the terms and provisions of the annexed form of AGREEMENT, he will accept compensation as stipulated therein as full payment for such extra work.

If the Bid is accepted by the OWNER, the undersigned agrees to commence work under this Contract on a date to be specified in a written "Notice to Proceed" by the Owner and complete the entire work provided to be done under this Contract within the time stipulated in Table "A" of the AGREEMENT. If this bid is accepted by the Owner, the undersigned, also agrees to comply with the provisions of Section 1.14 "Liquidated Damages" and Table A of the Agreement.

As provided in the INFORMATION FOR BIDDERS, the bidder hereby agrees that he will not withdraw this BID, within 90 consecutive calendar days after the actual date of the opening of Bids, and that, if the Owner shall accept this BID, the bidder will duly execute and acknowledge the AGREEMENT and furnish, duly executed and acknowledged, the required CONTRACT BONDS within fourteen (14) consecutive calendar days after notification that the AGREEMENT and other Contract Documents are ready for signature.

Should the bidder fail to execute any of his agreements as hereinabove set forth, the Owner shall have the right to retain as liquidated damages, the Bid Security attached in the sum of

(5 percent of Total Bid)

_____ Dollars,

(\$ _____) which shall become the Owner's property for the delay and additional expense to the Owner caused thereby. If a bid bond was given, it is agreed that the amount thereof shall be paid as liquidated damages to the Owner by the Surety. (Bidder must fill in this blank.)

The bidder hereby acknowledges the receipt of, and has included in this BID, the following Addenda:

(To be filled in by Bidder, if Addendums are issues.)

Addendum No. _____, dated _____

Addendum No. _____, dated _____

Addendum No. _____, dated _____

The bidder, by submittal of this BID, agrees with the Owner that the amount of the bid security deposited with this BID fairly and reasonably represents the amount of damages the Owner will suffer due to the failure of the bidder to fulfill his agreements as above provided.

(SEAL)

(Name of Bidder)

By _____
(Signature and title of authorized representative)

(Business address)

(City and State)

Date _____

The bidder is a corporation incorporated in the State (or Commonwealth) of _____ - a partnership - an individual. (Bidder must add and delete as necessary to make this sentence read correctly.)

(Note: If the bidder is a corporation, affix corporate seal and give below the names of its president, treasurer, and general manager, if any; if a partnership, give full names and residential addresses of all partners; and if an individual, give residential address, if different from business address.)

The required names and addresses of all persons interested in the foregoing Bid, as Principals, are as follows:

(Add supplementary page if necessary)

CERTIFICATE OF AUTHORIZATION
FOR
BIDDING REPRESENTATIVE

(Note: Bidder must complete for certification of authorized representative signing Bid.)

At a duly authorized meeting of the Board of Directors of the

_____ held on _____,
(Name of Corporation) (Date)

at which all the Directors were present or waived notice, it was voted that

_____ (Name of Authorized Representative) _____ (Title)

of this company shall be, and hereby is, authorized to execute bidding documents, contracts and bonds in the name and on behalf of said company, and to affix the corporate seal thereto, and such execution of any contract obligation in this company's name on its behalf of such

_____ under seal of the company shall be valid and binding upon this company.
(Title)

A true copy

ATTEST _____
(Clerk)

Place of Business _____

I hereby certify that I am the clerk of the _____
(Name of Corporation)

_____, that _____
(Name of Authorized Representative)

is the duly elected _____ of said company, and that the
(Title)

above vote has not been amended or rescinded and remains in full force and effect as of the date of this contract.

Corporate
Seal

(Clerk)

STATEMENT OF BIDDERS' QUALIFICATIONS

The following shall accompany the bid and is required as evidence of the bidder's qualifications to perform the work, as bid upon, in accordance with the contract drawings and specifications. This statement must be notarized. All questions must be answered. Additional data may be submitted on separate attached sheets.

- 1. Name of Bidder _____
- 2. Permanent Main Office Address _____
- 3. Official Mailing Address For This Contract _____
- 4. When Organized? _____
- 5. Where Incorporated, If a Corporation _____
- 6. Years Contracting under Present Name _____
- 7. List contracts on hand, and those completed similar in nature to this kind of project.

| Owner | Engineer | Contract | Description | Contract Amount | Completion Date |
|-------|----------|----------|-------------|-----------------|-----------------|
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |

- 8. List any work the firm has failed to complete, state where and why.

- 9. If you have ever defaulted on any contract, state where and why.

10. List full names and residences of all principals (i.e.: Officers, Directors, Partners, Owners) interested in this bid.

| <u>Name</u> | <u>Residence</u> | <u>Title</u> | <u>Firm</u> |
|-------------|------------------|--------------|-------------|
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |

11. State name(s) and qualifications of resident supervisor(s) for this project.

12. List major equipment available for this project and identify ownership or rental.

13. Will you furnish a detailed financial statement and other information, requested by the Owner?

14. List bank references for verifying financial ability of your company.

| <u>Name</u> | <u>Address</u> |
|-------------|----------------|
| _____ | _____ |
| _____ | _____ |

15. The undersigned hereby authorized and requests any person, firm or corporation, to furnish all information requested by the Owner and/or its designated agents relative to the recitals comprising this Statement of the Bidder's Qualifications.

Dated at _____ this _____ day of _____ 20__.

(Name of Bidder)

By: _____

(Title)

State of _____

County of _____

_____ being duly sworn in person, deposes and says

that he is _____ of _____,
(Title) (Name of Bidder)

that he is the firm's duly authorized agent to execute these contract documents, and that the answers to the foregoing questions and all statements therein contained are correct and true.

Subscribed and sworn to before me this _____ day of _____ 20__.

(SEAL)

(Notary Public)

(My Commission Expires)

STATEMENT OF PROPOSED SUBCONTRACTORS

The following shall accompany the bid and is required as evidence of the bidder's qualifications to perform the work as bid upon, in accordance with the contract drawings and specifications. The Bidder must state the names and appurtenant information of all major subcontractors he proposed to use to complete the work as bid upon. Additional data may be submitted on separate attached sheets.

If subcontractors are not to be used to complete the Work and/or any portion thereof, as herein bid upon, the Bidder must acknowledge by writing "NONE" _____.

Description of Work _____

Approximate percentage of Total Bid _____

Proposed Subcontractor, Name _____

Address _____

Description of Work _____

Approximate percentage of Total Bid _____

Proposed Subcontractor, Name _____

Address _____

Description of Work _____

Approximate percentage of Total Bid _____

Proposed Subcontractor, Name _____

Address _____

Bidder to insert description of work, percentage of Total BID, and subcontractors' names as may be required.

This is to certify that all names of the above-mentioned subcontractors are submitted with full knowledge and consent of the respective parties.

The Bidder warrants that none of the proposed subcontractors have any conflict of interest as respects this contract.

Date _____

Bidder

(Name of Bidder)

By

(Signature)

(Title)

(Business Address)

(City and State)

SECTION 00400

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned (Insert Name of Bidder)
_____, as Principal, and (Insert Name of Surety)
_____, as Surety, are hereby held
and firmly bound and obligated unto the **Town of Wareham, Massachusetts**, as Owner, in the
sum
of _____ Dollars (\$_____),
as liquidated damages for payment of which, well and truly to be made, we hereby jointly and
severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to the
Town of Wareham, Massachusetts a certain Bid attached hereto and hereby made a part
hereof, to enter into a contract in writing, hereinafter referred to as the "AGREEMENT" and/or
"Contract", for "**Sea Street and Smith Avenue Sewer System Rehabilitation, Contract No.
2020-001**".

NOW THEREFORE,

- (a) If said BID shall be rejected or withdrawn as provided in the INFORMATION FOR
BIDDERS attached hereto or, in the alternative,
- (b) If said BID shall be accepted and the Principal shall duly execute and deliver the form of
AGREEMENT attached hereto and shall furnish the specified bonds for the faithful
performance of the AGREEMENT and/or Contract and for the payment for labor and
materials furnished for the performance of the AGREEMENT and/or Contract,

then this obligation shall be void, otherwise it shall remain in full force and effect; it being
expressly understood and agreed that the liability of the Surety for any and all claims hereunder
in no event shall exceed the amount of this obligation.

The Surety, for value received, hereby agrees that the obligations of said Surety and its bond
shall in no way be impaired or affected by any extensions of the time with which such BID may
be accepted, and said Surety does hereby waive notice of any such extensions.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, have duly executed this bond on the _____ day of _____, 20 _____.

(SEAL)

(Name of Principal) L.S.

BY: _____
(Signature)

(Title)

(Name of Surety (Seal)

BY: _____
(Signature and Title)

BY: _____
Attorney-In-Fact

Sealed and delivered in
the presence of:

IMPORTANT: Surety Companies executing BONDS must appear on the U.S. Treasury Department's most current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts and be authorized to transact business in the state where the PROJECT is located.

If the Bond is signed on behalf of the Surety by an Attorney-In-Fact, there should be attached, a duly certified copy of his power of attorney showing his authority to sign such Bond.

SECTION 00500

CONTRACT AGREEMENT
TOWN OF WAREHAM, MASSACHUSETTS
SEA STREET AND SMITH AVENUE SEWER SYSTEM REHABILITATION
CONTRACT NO. 2020-001

THIS AGREEMENT, is executed this _____ day of _____ in the year Two Thousand and Eighteen (herein referred to as the "AGREEMENT") by and between the **Town of Wareham, Massachusetts**, party of the first part, and _____ (Name of Contractor) party of the second part.

WITNESSETH, that the parties to these presents, each in consideration of the undertakings, promises, and agreements on the part of the other herein contained, have undertaken, promised, and agreed and do hereby undertake, promise, and agree, the party of the first part for itself, its successors and assigns, and the party of the second part for himself and his heirs, executors, administrators, successors and assigns, as follows:

| | | | |
|------|---|------|--|
| 1.01 | Definitions | 1.29 | Abandonment of Work or Other Default |
| 1.02 | The Contract Documents | 1.30 | Prices for Work |
| 1.03 | Obligations and Liability of Contractor | 1.31 | Moneys May Be Retained |
| 1.04 | Authority of the Engineer | 1.32 | Formal Acceptance |
| 1.05 | Supervision of Work | 1.33 | Progress Estimates |
| 1.06 | Insurance | 1.34 | Partial Acceptance |
| 1.07 | Patents | 1.35 | Final Estimate and Payment |
| 1.08 | Compliance with Laws | 1.36 | Liens |
| 1.09 | Provisions Required by Law Deemed Inserted | 1.37 | Claims |
| 1.10 | Permits | 1.38 | Application of Moneys Retained |
| 1.11 | Not to Sublet or Assign | 1.39 | No Waiver |
| 1.12 | Delay by Owner | 1.40 | Liability of Owner |
| 1.13 | Time for Completion | 1.41 | Guarantee |
| 1.14 | Liquidated Damages | 1.42 | Project Audit |
| 1.15 | Night, Saturday, Sunday and Holiday Work | 1.43 | Return of Drawings |
| 1.16 | Employ Competent Persons | 1.44 | Cleaning Up |
| 1.17 | Employ Sufficient Labor and Equipment | 1.45 | Legal Address of Contractor |
| 1.18 | Intoxicating Liquors and/or Drugs | 1.46 | Headings |
| 1.19 | Access to Work | 1.47 | Modification or Termination |
| 1.20 | Examination of Work | 1.48 | Direct Labor cost |
| 1.21 | Defective Work, Etc. | 1.49 | Massachusetts Tax Laws |
| 1.22 | Protection Against Water and Storm | 1.50 | Minority Business |
| 1.23 | Right to Materials | 1.51 | Termination for Convenience |
| 1.24 | Changes | 1.52 | Equal Employment Opportunity... |
| 1.25 | Extra Work | 1.53 | Unlawful Conduct and Participation in Boycott |
| 1.26 | Extension of Time on Account of Extra Work | | |
| 1.27 | Changes Not to Affect Bonds | | |
| 1.28 | Claims for Damages | | |

1.01 DEFINITIONS

Wherever the words hereinafter defined or pronouns used in their stead occur in the Contract Documents, they shall have the following meaning indicated which shall be applicable to both the singular and plural thereof:

ADDENDA - Written or graphic instruments prior to the opening of Bids which Clarify, correct or change the Bidding Requirements or Contract Documents.

AGREEMENT - the written contract between Owner and Contractor covering the Work to be performed.

"AS DIRECTED," "AS ORDERED," "AS REQUESTED," "AS REQUIRED", "AS PERMITTED," or words of like import are used, it shall be understood that the direction, order, request, requirement, or permission of the Engineer is intended.

"APPROVED," "ACCEPTABLE," "SUITABLE," "SATISFACTORY," and words of like import shall mean approved by, acceptable to, suitable to, or satisfactory to the Engineer.

APPLICATION FOR PAYMENT - Form used by Contractor in requesting progress or final payments, format to be acceptable to the Engineer.

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

Bidder - Any person, firm or corporation submitting a bid for the work.

CHANGE ORDER - A document recommended by the Engineer, which is signed by the Contractor and Owner authorizing the addition, deletion or revision in the Work, or adjustment in the Contract Price or Contract Time, issued on or after the effective date of the Agreement.

CONTRACTOR - The person, firm or corporation with whom the Owner has entered into the Agreement.
Contract Bonds - Bid, Performance, and Labor and Materials Bonds and other instruments of security furnished by the Contractor and his surety in accordance with the Contract Documents.

CONTRACT DOCUMENTS - The Agreement, Addenda, Bid, Post Bid documentation submitted prior to the Notice Award, The Notice to Proceed, Bonds, General Conditions, Supplementary Conditions, The Specifications, the Drawings, all written Amendments,

Change Orders, Field Orders, and Engineers written interpretations and clarifications.

CONTRACT PRICE - The total monies payable to the Contractor under the terms and conditions of the Contract Documents.

CONTRACT TIME - The number of calendar days stated in the Contract Documents for the completion of the Work.

CONSTRUCTION SUPERINTENDENT - That person designated by the Contractor to carry out the provisions of the Contract.

DATUM or LEVELS - The figures given in the Contract and Specifications or upon the Drawings after the word elevation or abbreviation of it, shall mean the distance in feet above mean sea level, the base of the State in which the Work is located and the United States Geodetic Survey (U.S.G.S.).

DRAWINGS - The part of the Contract Drawings which show the characteristics and Scope of the Work to be performed and which have been prepared or approved by the Engineer.

EARTH - Wherever used as the name of an excavated material or material to be excavated, shall mean all kinds of material other than rock as defined in this section.

ELEVATION - The figures given on the Drawings or in the other Contract Documents after the word "elevation" or abbreviation of it shall mean the distance in feet above the datum adopted by the Engineer.

ENGINEER - The person, firm or corporation duly appointed by the Owner to undertake the duties and powers herein assigned to the Engineer, acting either directly or through duly authorized representatives. (For this Contract, **BETA Group, Inc.**)

FIELD ORDER - A written order issued by the Engineer which orders minor changes in the Work which do not involve a change in the Contract Price or an extension of the Contract time.

GENERAL REQUIREMENTS - Sections of Division 1 of the Specifications.

"HEREIN," "HEREINAFTER," "HEREUNDER," and words of like import shall be deemed to refer to the Contract Documents.

NOTICE OF AWARD - The written notice of the acceptance of the Bid from the Owner to the successful Bidder.

NOTICE TO PROCEED - Written communication issued by the Owner to the Contractor authorizing him to proceed with the Work and establishing the date of commencement of the Work.

OWNER - The public body or authority, corporation, association, firm or person with whom the Contractor has entered into the Agreement and for whom the Work is to be provided.

PROJECT or CONTRACT - The undertaking to be performed in the Contract Documents.

PROJECT REPRESENTATIVE - The authorized representative of the owner who is assigned to the project site or any part thereof.

ROCK - wherever used as the name of an excavated material to be excavated, shall mean only boulders and pieces of concrete and masonry exceeding 1 cu. yd. in volume, or igneous, sedimentary, metamorphic, and conglomerate rock which, in the opinion of the Engineer, requires, for its removal, drilling and blasting, wedging, sledging, barring, or breaking up with a power-operated tool. No soft or disintegrated rock which can be removed with a hand pick or power-operated excavator or shovel, no loose, shaken, or previously blasted rock or broken stone in rock fillings, or elsewhere, and no rock exterior to the maximum limits of measurement allowed, which may fall into the excavation, will be measured or allowed as "rock."

SHOP DRAWINGS - All drawings, diagrams, schedules and other data or information prepared for and submitted by the Contractor, to illustrate portions of the Work.

SPECIFICATIONS - The portions of the Contract documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

subcontractor - An individual, firm or corporation, approved by the Owner and Engineer having a direct contract with the Contractor or with any other Sub-Contractor for the performance of a part of the Work on the Project.

SUBSTANTIAL COMPLETION - Date certified by the Engineer when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner can occupy or utilize the Work or

designated portion thereof for which it was intended, as expressed in the Contract documents.

SUPPLEMENTARY CONDITIONS - The part of the Contract Documents which amends or supplements the General Conditions.

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.

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.

WORK - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents.

1.02 THE CONTRACT DOCUMENTS

A. The Contract Documents, as defined above, are sometimes herein referred to as the "Contract".

The Contract Documents are complementary, and what is called for by any one shall be as binding as if called for by all. In the event of any conflict or inconsistency between the provisions of the AGREEMENT and the provisions of any of the other Contract Documents, the provisions of the AGREEMENT shall prevail.

A. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the edition of the standard specification, manual, code or laws or regulations identified in the reference. In the event a particular edition is not identified, the reference shall mean the latest amended edition in effect at the time of receipt of the Bid. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall change the duties and responsibilities of the Owner, the Contractor or the Designer, or any of their consultants, agents or employees from those set forth in the Contract

Documents, nor shall it be effective to assign to the Engineer, or any of the Engineer's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the work or any duty or authority to undertake responsibility contrary to the provisions of the AGREEMENT.

1.03 OBLIGATIONS AND LIABILITY OF CONTRACTOR

A. The Contractor shall do all the work and perform and furnish all the labor, services, materials, equipment, plant, machinery, apparatus, appliances, tools, supplies and all other things (except as otherwise expressly provided herein) necessary and as herein specified for the proper performance and completion of the Work in the manner and within the time hereinafter specified, in strict accordance with the Drawings, Specifications and other Contract Documents, in conformity with the directions and to the satisfaction of the Engineer, and at the prices herein agreed upon therefor.

B. All parts of the Work and all fixtures, equipment, apparatus and other items indicated on the Drawings and not mentioned in the Specifications, or vice versa, and all work and material usual and necessary to make the work complete in all its parts, including all incidental work necessary to make it complete and satisfactory and ready for use and operation, whether or not they are indicated on the Drawings or mentioned in the Specifications, shall be furnished and executed the same as if they were called for both by the Drawings and by the Specifications.

C. The Contractor shall coordinate his operations with those of any other contractors who may be employed on other work of the Owner, shall avoid interference therewith, and shall cooperate in the arrangements for storage of materials and equipment.

D. The Contractor shall conduct his work so as to interfere as little as possible with private business and public travel. Wherever and whenever necessary or required, he shall maintain fences, furnish watchmen, maintain lights, and take such other precaution as may be necessary to protect life and property.

E. The Contractor shall indemnify and save harmless the Owner and the Engineer and their officers, agents, servants and employees, from and against any and all claims, demands, suits, proceedings, liabilities, judgments, awards, losses, damages, costs and expenses, including attorneys' fees, on account of

bodily injury, sickness, disease or death sustained by any person or persons or injury or damage to or destruction of any property, directly or indirectly arising out of, relating to or in connection with the Work, whether or not due or claimed to be due in whole or in part to the active, passive or concurrent negligence or fault of the Contractor, his officers, agents, servants or employees, any of his subcontractors, or any of their respective officers, agents, servants or employees and/or any other person or persons, and whether or not such claims, demands, suits or proceedings are just, unjust, groundless, false or fraudulent; and the Contractor shall and does hereby assume and agrees to pay for the defense of all such claims, demands, suits and proceedings, provided, however, that the Contractor shall not be required to indemnify the Engineer, his officers, agents, servants or employees, against any such damages occasioned solely by defects in maps, plans, drawings, designs or specifications prepared, acquired or used by the Engineer and/or solely by the negligence or fault of the Engineer; and provided further, that the Contractor shall not be required to indemnify the Owner, his officers, agents, servants or employees, against any such damages occasioned solely by acts or omissions of the Owner other than supervisory acts or omissions of the Owner in the Work.

F. The Contractor shall have complete responsibility for the Work and the protection thereof, and for preventing injuries to persons and damage to the Work and property and utilities on or about the Work, until final completion and final acceptance thereof. He shall in no way be relieved of his responsibility by and right of the Engineer to give permission or directions relating to any part of the Work, by any such permission or directions given, or by failure of the Engineer to give such permission or directions. The Contractor shall bear all costs, expenses, losses and damages on account of the quantity or character of the Work or the nature of the land (including but not limited to subsurface conditions) in or under or on which the Work is done being different from that indicated or shown in the Contract Documents or from what was estimated or expected, or on account of the weather, elements, or other causes.

G. The Contractor shall conduct his operations so as not to damage existing structures or work installed either by him or by other contractors. In case of any such damage resulting from his operations, he shall repair and make good as new the damaged portions at his own expense with the consent of the damaged party. In the event that consent is not given, the Contractor shall continue liable for the damage caused.

H. The Contractor shall be as fully responsible to the Owner for the acts and omissions of his subcontractors, their officers, agents, servants and employees as he is for his own acts and omissions and those of his own officers, agents, servants and employees.

I. Should the Contractor sustain any loss, damage or delay through any act or omission of any other contractor or any subcontractor of any such other contractor, the Contractor shall have no claim against the Owner therefor, other than for an extension of time, but shall have recourse solely to such other contractor or subcontractor.

J. If any other contractor or any subcontractor of any such other contractor shall suffer or claim to have suffered loss, damage or delay by reason of the acts or omissions of the contractor or of any of his subcontractors, the Contractor agrees to assume the defense against any such claim and to reimburse such other contractor or subcontractor for such loss or damage.

K. The Contractor agrees to and does hereby indemnify and save harmless the Owner from and against any and all claims by such other contractors or subcontractors alleging such loss, damage or delay from and against any and all claims, demands, suits, proceedings, liabilities, judgments, awards, losses, damages, costs and expenses, including attorneys' fees, arising out of, relating to or resulting from such claims.

L. The Contractor shall promptly pay all federal, state and local taxes which may be assessed against him in connection with the Work or his operations under the AGREEMENT and/or the other Contract Documents, including, but not limited to, taxes attributable to the purchase of material and equipment, to the performance of services, and the employment of persons in the prosecution of the Work.

M. Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material

1. The Owner shall be responsible for any Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site which was not shown or indicated in Drawings or Specification or identified in the Contract Documents to be within the scope of the Work and which may present a substantial danger to persons or property exposed thereto in connection with the Work at the site. The Owner shall not be responsible for any such materials brought to the

site by the Contractor, Subcontractors, Suppliers or anyone else for whom the Contractor is responsible.

2. To the fullest extent permitted by Laws and Regulations, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Engineer, Engineer's Consultants and the officers, directors, employees, agents other consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from such hazardous condition, provided that: (i) any such claim, cost, loss or damage is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) nothing in this subparagraph shall obligate the Owner to indemnify any person or entity from and against the consequences of that person's or entity's own negligence.

1.04 AUTHORITY OF THE ENGINEER

A. The Engineer shall be the sole judge of the intent and meaning of the Drawings and Specifications and his decisions thereon and his interpretation thereof shall be final, conclusive and binding on all parties.

B. The Engineer shall be the Owner's representative during the life of the Contract and he shall observe the Work in progress on behalf of the Owner. He shall have authority (1) to act on behalf of the Owner to the extent expressly provided in the Contract or otherwise in writing; (2) to determine the amount, quality, acceptability and fitness of all work, materials and equipment required by the Contract; and (3) to decide all questions which arise in relation to the Work, the execution thereof, and the fulfillment of the Contract.

C. The Contractor shall proceed without delay to perform the work as directed, instructed, determined or decided by the Engineer and shall comply promptly with such directions, instructions, determinations or decisions. If the Contractor has any objection thereto he may, within ten (10) days of having received any such direction, instruction, determination or decision, require that any such direction, instruction, determination or decision be put in writing and within ten (10) days after receipt of any such writing he may file a written protest with the Owner stating clearly and in detail his objections, the reasons therefor, and the nature and amount of additional compensation, if any, to which he claims he will be entitled thereby. A copy of such protest shall be filed with the Engineer at the same time it is filed with the Owner. Unless the Contractor requires that any such direction, instruction,

determination or decision be put in writing within ten (10) days of having received such direction, instruction, determination or decision and unless the Contractor files such written protest with the Owner and Engineer within such ten (10) day period, he shall be deemed to have waived all grounds for protest of such direction, instruction, determination, or decision and all claims for additional compensation or damages occasioned thereby, and shall further be deemed to have accepted such direction, instruction, determination, or decision as being fair, reasonable, and finally determinative of his obligations and rights under the Contract.

1.05 SUPERVISION OF WORK

A. The Contractor shall be solely responsible for supervision of the Work, shall give the work the constant attention necessary to ensure the expeditious and orderly progress thereof, and shall cooperate with the Engineer in every possible way.

B. At all times, the Contractor shall have his agent on the Work a competent superintendent capable of reading and thoroughly understanding the Drawings and Specifications, with full authority to execute the directions of the Engineer without delay and to supply promptly such labor, services, materials, equipment, plant, apparatus, appliances, tools, supplies and other items as may be required. Such superintendent shall not be removed from the Work without the prior written consent of the Engineer. If, in the opinion of the Engineer, the superintendent or any successor proves incompetent, the Contractor shall replace him with another person approved by the Engineer; such approval, however, shall in no way relieve or diminish the Contractor's responsibility for supervision of the Work.

C. Whenever the Contractor or his agent or superintendent is not present on any part of the Work where it may be necessary to give directions or instructions with respect to such work, such directions or instructions may be given by the Engineer to and shall be received and obeyed by the designated foreman or any other person in charge of the particular work involved.

1.06 INSURANCE

A. Before starting and until final completion and acceptance of the Work and expiration of the guarantee period provided for in the AGREEMENT the Contractor shall procure and maintain insurance of the

types specified in paragraphs (1) to (10), inclusive, below, and to the limits for this insurance specified in Table A at the end of this section. All insurance shall be obtained from companies satisfactory to the Owner and Engineer.

B. Insurance shall be in such forms as will protect the Contractor from all claims and liability for damages for bodily and personal injury, including accidental death, and for property damage, which may arise from operations under the Contract, whether such operations be by himself, his subcontractors, or by anyone directly or indirectly employed or engaged by him.

C. The **Town of Wareham**, Massachusetts (Owner) and the Engineer shall be named as an "additionally insured".

D. The following types of insurance shall be provided on all policies:

1. Workmen's Compensation and Employer's Liability Insurance.

2. Bodily Injury Insurance for operations and completed operations and Contractor's Protective Bodily Injury Insurance.

3. Property Damage Insurance for operations and completed operations and Contractor's Protective Property Damage Insurance, each including coverage for injury to or destruction of wires or pipes and similar property and appurtenant apparatus and the collapse of or structural injury to any building or structure except those on which work under the Contract is being done. Blasting and explosion coverage shall be obtained if there is a need for blasting under the Contract, and no blasting shall be performed until such insurance has been secured.

4. Bodily Injury Insurance covering the operation of all motor vehicles owned by the Contractor.

5. Personal Injury Insurance to cover claims for personal injury and including claims brought by employees.

6. Property Damage Insurance covering the operation of all motor vehicles owned by the Contractor.

7. Insurance to cover bodily injuries and property damage resulting from the use of motor vehicles not owned by the Contractor, while such vehicles are being operated in connection with the prosecution of the Work.

8. Contractual Liability Insurance covering the liability assumed by the Contractor under the fifth

paragraph of that subsection titled "Obligations and Liability of Contractor" of this AGREEMENT.

9. Owner's Protective Liability and Property Damage Insurance to protect the Owner and the Engineer against claims for Property damage and for bodily injuries, including accidental death, caused by the operations of the Contractor or his subcontractors on the Work. The policy shall indicate the Owner and the Engineer as the named insured. A copy of the policy shall be furnished to the Owner and a Certificate of Insurance shall be furnished to the Engineer.

10. Builders' Risk Insurance with an "All Risk" Installation Floater covering loss by fire and extended coverage in the completed value form in the amount of the total insurable value of all structures, materials, and equipment to be built and installed. The insurance shall be obtained from a company satisfactory to the Owner. The policy shall indicate Owner, the Contractor, all subcontractors, and the Engineer as the named insured with loss payable to the Owner as Trustee. The policy shall provide for a 30-day notice to the Owner of cancellation or restrictive amendment. A copy of the policy shall be furnished to the Owner and a Certificate of Insurance shall be furnished to the Engineer. The insurance shall be obtained before the work is started and shall be maintained until the date of completion of the work as stated in the final estimate, or until the Owner occupies or otherwise take possession of the structure, whichever occurs first.

E. All policies shall be so written that the Owner will be notified in writing of cancellation or restrictive amendment at least 30 days prior to the effective date of such cancellation or amendment.

F. Certificates from the Contractor's insurance carriers stating the coverage provided, the limits of liability, and expiration dates shall be filed in triplicate with the Owner before operations are begun. Such certificates shall be on the form furnished by the Owner.

G. Certificates from the Contractor naming the **Town of Wareham**, Massachusetts and the Engineer as additionally insured must be received by the Owner prior to initiating the work.

H. Renewal certificates must be furnished by the Contractor prior to the expiration date of any of the initial insurances.

I. No insurance required or furnished hereunder shall in any way relieve the Contractor of or diminish any of

his responsibilities, obligations and liabilities under the Contract.

1.07 PATENTS

A. The Contractor's attention is directed to the following "Patent Indemnity Clause" illustrating the format and/or required wording therefore which shall be used by all manufacturers and/or suppliers, as deemed necessary by the Owner and Engineer, as an Indemnification and Hold Harmless Agreement.

B. This Agreement shall be accepted and approved in form by the Owner and Engineer prior to the approval and/or installation of the product.

PATENT INDEMNIFICATION

"In consideration for their purchase and use of the (Name of product and/or equipment) manufactured by (name of Manufacturer) and for other good and valuable consideration, (Name of Manufacturer) agrees to defend and hold harmless (Name of Contractor), BETA Group, Inc., and the (Name of Owner), and their employees and agents, from and against any liability, loss, cost, expense or damage including reasonable attorneys' and accountants' fees incurred by these entities in defending or prosecuting any claim for such liability, loss, cost, expense or damage resulting or arising out of a claim that the use of the above mentioned product and/or equipment delivered hereunder directly infringes any United States Patent, provided that (Name of Manufacturer) is given authority, information, and assistance for the defense of such suit, and (Name of Manufacturer) shall pay all damages and costs assessed against the above named entities for the use of such produce and/or equipment provided, however, that this indemnification shall not apply to equipment of (Name of Contractor) design, and provided further that if the use of such product and/or equipment is enjoined in any suit, (Name of Manufacturer) shall at its own expense and its option either procure for (name of Contractor) the right to continue the normal use of such produce and/or equipment, replace said product and/or equipment, modify said equipment or refund the purchase price thereof; and provided further that (Name of Manufacturer) indemnity as to use shall not apply to infringement resulting from the use of the produce and/or equipment delivered hereunder in combination with other items where use of the product and/or equipment per se does not constitute infringement."

1.08 COMPLIANCE WITH LAWS

A. The Contractor shall keep himself fully informed of all existing and future federal, state, and local laws, ordinances, rules, and regulations affecting those engaged or employed on the Work, the materials and equipment used in the Work or the conduct of the Work, and of all orders, decrees and other requirements of bodies of tribunals having any jurisdiction or authority over the same. If any discrepancy or inconsistency is discovered in the Drawings, Specifications or other Contract Documents in relation to any such law, ordinance, rule, regulation, order, decree or other requirement, the Contractor shall forthwith report the same to the Engineer in writing. The Contractor shall at all times observe and comply with, and cause all his agents, with all such existing and future laws, ordinances, rules, regulations, orders, decrees and other requirements, and he shall protect, indemnify and save harmless the Owner, its officers, agents, servants and employees, from and against any and all claims, demands, suits, proceedings, liabilities, judgements, penalties, losses, damages, costs and expenses, including attorneys' fees, arising from or based upon any violation or claimed violation of any such law, ordinance, rule, regulation, order, decree or other requirement, whether committed by the Contractor or any of his agents, servants, employees or subcontractors.

1.09 PROVISIONS REQUIRED BY LAW DEEMED INSERTED

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

1.10 PERMITS

A. The Contractor shall, at his own expense, take out and maintain all necessary permits from the county, municipal, or other public authorities; shall give the notices required by law; and shall post all bonds and pay all fees and charges incident to the due and lawful prosecution of the Work.

1.11 NOT TO SUBLET OR ASSIGN

A. The Contractor shall constantly give his personal attention to the faithful prosecution of the Work, shall

keep the same under his personal control, shall not assign the Contract or sublet the Work or any part thereof without the previous written consent of the Owner, and shall not assign any of the moneys payable under the Contract, or his claim thereto, unless by and with the like written consent of the Owner and the Surety on the Contract Bonds. Any assignment or subletting in violation hereof shall be void and unenforceable.

B. The Contractor shall not sublet or assign work to a subcontractor(s), for a total in excess of fifty (50) percent of the Contract Price, without prior written approval of the Owner and Engineer.

C. The Contractor shall be fully responsible to the Owner for the acts and omissions of his subcontractors, suppliers, and of persons either directly or indirectly employed by them as he is for the acts and omissions of persons directly employed by him.

D. The Contractor shall cause appropriate provisions, and applicable State or Federal regulations, to be inserted in all subcontractors relative to the work to bind subcontractors to the Contractor by the terms of the 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.

E. The Contractor's attention is directed to the fact that nothing contained in this Contract shall create any contractual relation between any subcontractor and the Owner.

1.12 DELAY BY OWNER

A. The Owner may delay the beginning of the Work or any part thereof if the necessary lands or rights-of-way for such work shall not have been obtained. The Contractor shall have no claim for additional compensation or damages on account of such delay, but shall be entitled only to any extension of time as hereinafter provided.

1.13 TIME FOR COMPLETION

A. The rate of progress shall be such that the Work shall be performed and completed in accordance with the Contract before the expiration of the time limit stipulated in Table A at the end of this section, except as otherwise expressly provided herein.

B. It is agreed that the rate of progress herein required has been purposely made low enough to allow for the ordinary and foreseeable delays incident to construction work of this character. No extension of time will be given for ordinary or foreseeable delays, inclement weather, or accidents, and the occurrence of such will not relieve the Contractor from the necessity of maintaining this rate of progress and completing the Work within the stipulated time limit.

C. If delays are caused by acts of God, acts of Government, unavoidable strikes, extra work, or other cause or contingencies clearly beyond the control or responsibility of the Contractor, the Contractor may be entitled to additional time to perform and complete the Work, provided that the Contractor shall, within ten (10) days from the beginning of such delay notify the Owner in writing, with a copy to the Engineer, of the cause and particulars of the delay. Upon receipt of such notification, the Owner shall review and evaluate the cause and extent of the delay. If, under the terms of the AGREEMENT, the delay is properly excusable, the Owner will, in writing, appropriately extend the time for completion of the Work. (This paragraph will be interpreted to include delays in receipt of equipment provided that the Contractor placed his order and submitted shop drawings for such equipment promptly after execution of the Contract, that he has shown due diligence in following the progress of the order, and that the time required for delivery is in accordance with conditions generally prevailing in the industry.) The Contractor agrees that he shall not have or assert any claim for nor shall he be entitled to any additional compensation or damages on account of such delays.

D. The time in which the Work is to be performed and completed is of the essence of this AGREEMENT.

1.14 LIQUIDATED DAMAGES

A. In case the Contractor fails to complete the Work satisfactorily on or before the date of completion fixed herein or as duly extended as hereinbefore provided, the Contractor agrees that the Owner shall deduct from the payments due the Contractor each month the sum set forth in Table A at the end of this section for each calendar day of delay, which sum is agreed upon not as a penalty, but as fixed and liquidated damages for each day of such delay. If the payments due the Contractor are less than the amount of such liquidated damages, said damages shall be deducted from any other moneys due or to become due the Contractor, and, in case such damages shall exceed the amount of all moneys due or

to become due the Contractor, the Contractor or his Surety shall pay the balance to the Owner.

1.15 NIGHT, SATURDAY, SUNDAY AND HOLIDAY WORK

A. No work shall be done at night, on Saturday on Sunday or on a holiday except (1) usual protective work, such as pumping and the tending of lights, (2) work done in case of emergency threatening injury to persons or property, or (3) if all of the conditions set forth in the next paragraph below are met.

B. No work other than that included in (1) and (2) above shall be done at night except when (a) in the sole judgment of the Owner, the work will be of advantage to the Owner and can be performed satisfactorily at night, (b) the work will be done by a crew organized for regular and continuous night work, and (c) in the sole judgment of the Owner and Engineer, adequate noise prevention measures are incorporated into the Work by the Contractor to minimize any noise impact within the work area and (d) the Owner has given written permission for such night work. The Contractor is responsible for obtaining all permits and approvals required.

1.16 EMPLOY COMPETENT PERSONS

A. The Contractor shall employ only competent persons on the Work and shall not employ persons or means which may cause strikes, work stoppages or any disturbances by persons employed by the Contractor, any subcontractor, the Owner, the Engineer or any other contractor. Whenever the Engineer notifies the Contractor in writing that in his opinion any person on the Work is incompetent, unfaithful, disorderly, or otherwise unsatisfactory, or not employed in accordance with the provisions of the Contract, such person shall be discharged from the Work and shall not again be employed on it, except with the written consent of the Engineer.

1.17 EMPLOY SUFFICIENT LABOR AND EQUIPMENT

A. If in the sole judgment of the Engineer the Contractor is not employing sufficient labor, plant, equipment or other means to complete the Work within the time specified, the Engineer may, after giving written notice, require the Contractor to employ such additional labor, plant, equipment and other means as the Engineer deems necessary to enable the Work to progress properly.

1.18 INTOXICATING LIQUORS AND/OR DRUGS

A. The Contractor shall not sell and shall neither permit nor suffer the introduction and/or use of intoxicating liquors and/or drugs upon or about the Work.

1.19 ACCESS TO WORK

A. The Owner, the Engineer, and their officers, agents, servants and employees may at any and all times and for any and all purposes, enter upon the Work and the site thereof and the premises used by the Contractor, and the Contractor shall at all times provide safe and proper facilities therefor.

1.20 EXAMINATION OF WORK

A. The Engineer shall be furnished by the Contractor with every reasonable facility for examining and inspecting the Work and for ascertaining that the Work is being performed in accordance with the requirements and intent of the Contract, even to the extent of requiring the uncovering or taking down portions of furnished work by the Contractor.

B. Should the work thus uncovered or taken down prove satisfactory, the cost of uncovering or taking down and the replacement thereof shall be considered as extra work unless the original work was done in violation of the Contract in point of time or in the absence of the Engineer or his inspector and without his written authorization, which case said cost shall be borne by the Contractor. Should the work uncovered or taken down prove unsatisfactory, said cost shall likewise borne by the Contractor.

C. Examination of inspection of the Work shall not relieve the Contractor of any of his obligations to perform and complete the Work as required by the Contract.

1.21 DEFECTIVE WORK, ETC.

A. Until acceptance and during the applicable guarantee period thereafter, the Contractor shall promptly, without charge, repair, correct or replace work, equipment, materials, apparatus or parts thereof which are defective, damaged or unsuitable or which in any way fail to comply with or be in strict accordance with the provisions and requirements of the Contract or applicable guarantee and shall pay to the Owner all

resulting costs, expenses, losses or damages suffered by the Owner.

B. If any material, equipment, apparatus or other items brought upon the site for use or incorporation in the Work, or selected for the same, is rejected by the Engineer as unsuitable or not in conformity with the Specifications or any of the other Contract Documents, the Contractor shall forthwith remove such materials, equipment, apparatus and other items from the site of the Work and shall at his own cost and expense make good and replace the same and any material furnished by the Owner which shall be damaged or rendered defective by the handling or improper installation by the Contractor, his agents, servants, employees or subcontractors.

1.22 PROTECTION AGAINST WATER AND STORM

A. The Contractor shall take all precautions necessary to prevent damage to the Work by storms or by water entering the site of the Work directly or through the ground. In case of damage by storm or water, the Contractor shall at his own cost and expense make such repairs or replacements or rebuild such parts of the Work as the Engineer may require in order that the finished Work may be completed as required by the Contract.

1.23 RIGHT TO MATERIALS

A. Nothing in the Contract shall be construed as vesting in the Contractor any right of property in the materials, equipment, apparatus and other items furnished after they have been installed or incorporated in or attached or affixed to the Work or the site, but all such materials, equipment, apparatus and other items shall, upon being so installed, incorporated, attached or affixed, become the property of the Owner. Nothing in this subsection shall relieve the Contractor of his duty to protect and maintain all such materials, equipment, apparatus and other items.

1.24 CHANGES

A. The Owner, through the Engineer, may make changes in the Work and in the Drawings and Specifications therefor by making alterations therein, additions thereto or omissions therefrom. All work resulting from such changes shall be performed and furnished under the pursuant to the terms and conditions of the Contract. If such changes result in an increase or decrease in the Work to be done hereunder,

or increase or decrease the quantities thereof, adjustment in compensation shall be made therefor at the unit prices stipulated in the Contract for such work, except that if unit prices are not stipulated for such work, compensation for additional or increased work shall be made as provided hereinafter under the subsection titled "Extra Work"; and for eliminated or decreased work the Contractor shall allow the Owner a reasonable credit as determined by the Engineer.

B. Except in an emergency endangering life or property, no change shall be made unless in pursuance of a written order from the Engineer authorizing the change, and no claim for additional compensation shall be valid unless the change is so ordered.

C. The Contractor agrees that he shall neither have nor assert any claim for or be entitled to any additional compensation for damages or for loss of anticipated profits on work that is eliminated.

1.25 EXTRA WORK

A. The Contractor shall perform any extra work (work in connection with the Contract but not provided for herein) when and as ordered in writing by the Engineer, at the unit prices stipulated in the Contract for such work or, if none are so stipulated, whether (a) at the price agreed upon before such work is commenced and named in the written order for such work, or (b) if the Engineer so elects, for the reasonable cost of such work, as determined by the contractor and approved by the Engineer, plus a percentage of such cost, as set forth below. No extra work shall be paid for unless specifically ordered as such in writing by the Engineer.

B. The Contractor shall submit claim for any extra work within fourteen (14) calendar days of performing said extra work.

C. The cost of extra work done under (b) above shall include the reasonable cost to the Contractor of materials used and equipment installed, common and skilled labor, and foremen, and the fair rental of all machinery and equipment used on the extra work for the period of such use.

D. At the request of the Engineer, the Contractor shall furnish itemized statements for the cost of the extra work ordered as above and give the Engineer access to all records, accounts, bills and vouchers and correspondence relating thereto.

E. The Contractor may include in the cost of extra work the amounts of additional premiums, if any, (other than premiums on bonds) paid on the required insurance on account of such extra work, of Social Security or other direct assessments upon the Contractor's payroll by Federal or other properly authorized public agencies, and of other approved assessments when such assessments are not normally included in payments made by the Contractor directly to his employees, but in fact are, and are customarily recognized as, part of the cost of doing work.

F. The fair rental hourly rate for all machinery and equipment shall be based upon the most recent edition of "Rental Rate Blue Book" published by Equipment Watch or a similar publication approved by the Engineer. Hourly rental rates for machinery and equipment shall be developed by dividing the monthly Blue Book rates by 176 hours per month plus Estimated Hourly Operating Costs (FHWA rate). Rate Adjustment tables shall be utilized for equipment model year and region of operation. If said extra work requires the use of machinery or equipment not already on the site of the Work the cost of transportation, not exceeding a distance of 100 miles, of such machinery or equipment to and from the Work shall be added to the fair monthly rental; provided, however, that this shall not apply to machinery or equipment already required to be furnished under the terms of the Contract.

G. The Contractor shall not include in the cost of extra work any cost or rental of small tools, building, or any portion of the time of the Contractor, his superintendent, or his office and engineering staff.

H. To the cost of extra work done by the Contractor's own forces under (b) above (determined as stated above), the Contractor may add **15** percent to cover his overhead, use of capital, the premium on the Bonds as assessed upon the amount of this extra work, and profit.

I. In the case of extra work done under (b) by a subcontractor the subcontractor shall compute, as above, his cost for the extra work, to which he may add **15** percent as in the case of the Contractor. The Contractor shall be allowed an additional 5 percent of the subcontractor's initial cost for the extra work prior to the **15** percent adjustment, to cover the costs of the Contractor's overhead use of capital, the premium on the Bonds as assessed upon the amount of this work, and profit. Said subcontractor's cost must be reasonable and approved by the Engineer.

J. If extra work is done under (b) above, the Contractor and/or subcontractor shall keep daily records of such extra work. The daily record shall include the names of men employed, the nature of the work performed, and hours worked, materials and equipment incorporated, and machinery or equipment used, if any, in the prosecution of such extra work. This daily record, to constitute verification that the work was done, must be signed both by the Contractor's authorized representative and by the Engineer. A separate daily record shall be submitted for each Extra Work Order.

1.26 EXTENSION OF TIME ON ACCOUNT OF EXTRA WORK

A. When extra work is ordered near the completion of the Contract or at any time during the progress of the Work which unavoidably increases the time for the completion of the Work, and extension of time shall be granted as hereinbefore provided.

1.27 CHANGES NOT TO AFFECT BONDS

A. It is distinctly agreed and understood that any changes made in the Work or the Drawings or Specifications therefor (whether such changes increase or decrease the amount thereof or the time required for its performance) or any changes in the manner of time of payments made by the Owner to the Contractor, or any other modifications of the Contract, shall in no way annul, release, diminish or affect the liability of the Surety on the CONTRACT BONDS given by the Contractor, it being the intent hereof that notwithstanding such changes the liability of the Surety on said bonds continue and remain in full force and effect.

1.28 CLAIMS FOR DAMAGES

A. If the Contractor makes claim for any damages alleged to have been sustained by breach of contract or otherwise, he shall, within ten (10) days after occurrence of the alleged breach or within ten (10) days after such damages are alleged to have been sustained, whichever date is the earlier, file with the Engineer a written, itemized statement of the details of the alleged breach and the details and amount of the alleged damages. The Contractor agrees that unless such statement is made and filed as so required, his claim for damages shall be deemed waived, invalid and unenforceable, and that he shall not be entitled to any compensation for any such alleged damages. Within ten (10) days after the timely filing of such statement, the Engineer shall file with the Owner a copy of the

statement, together with his recommendations for action by the Owner.

B. The Contractor shall not be entitled to claim any additional compensation for damages by reason of any direction instruction, determination or decision of the Engineer, nor shall any such claims be considered, unless the Contractor shall have complied in all respects with the Article titled "Authority of the Engineer", including, but not limited to the filing of a written protest in the manner and within the time therein provided.

1.29 ABANDONMENT OF WORK OR OTHER DEFAULT

A. If the Work shall be abandoned, or any part thereof shall be sublet without previous written consent of the Owner, or the Contract or any moneys payable hereunder shall be assigned otherwise than as herein specified, or if at any time the Engineer shall be of the opinion, and shall so certify in writing, that the conditions herein specified as to rate of progress are not being complied with, or that the Work or any part thereof is being unnecessarily or unreasonably delayed, or that the Contractor has violated or is in default under any of the provisions of the Contract, or if the Contractor becomes bankrupt or insolvent or goes or is put into liquidation or dissolution, either voluntarily or involuntarily, or petitions for an arrangement or reorganization under the Bankruptcy Act, or makes a general assignment for the benefit of creditors or otherwise acknowledges insolvency, the happening of any of which shall be and constitute a default under the Contract, the Owner may notify the Contractor in writing, with a copy of such notice mailed to the Surety, to discontinue all Work or any part thereof; thereupon the Contractor shall discontinue such Work or such part thereof as the Owner may designate; and the Owner may, upon giving such notice, by contract or otherwise as it may determine, complete the Work or such part thereof and charge the entire cost and expense of so completing the Work or such part thereof to the Contractor. In addition to the said entire cost and expense of completing the Work, the Owner shall be entitled to reimbursement from the Contractor and the Contractor agrees to pay to the Owner any losses, damages, costs and expenses, including attorney's fees, sustained or incurred by the Owner by reason of any of the foregoing causes. For the purposes of such completion the Owner may for itself or for any Contractors employed by the Owner take possession of and use or cause to be used any and all materials, equipment, plant, machinery, appliances, tools,

supplies and such other items of every description that may be found or located at the site of the Work.

B. All costs, expenses, losses, damages, attorney's fees and any and all other charges incurred by the Owner under this subsection shall be charged against the Contractor and deducted and/or paid by the Owner out of any moneys due of payable or to become due or payable under the Contract to the Contractor; in computing the amounts chargeable to the Contractor the Owner shall not be held to a basis of the lowest prices for which the completion of the Work or any part thereof might have been accomplished, but all sums actually paid or obligated therefor to effect its prompt completion shall be charged to and against the account of the Contractor. In case the costs, expenses, losses, damages, attorney's fees and other charges together with all payments theretofore made to or for the account of the Contractor are less than the sum which would have been payable under the Contract if the Work had been properly performed and completed by the Contractor, the Contractor shall be entitled to receive the difference, and, in case such costs, expenses, losses, damages, attorneys' fees and other charges, together with all payments theretofore made to or for the account of the Contractor, shall exceed the said sum, the Contractor shall pay the amount of the excess to the Owner.

1.30 PRICES FOR WORK

A. The Owner shall pay and the Contractor shall receive the prices stipulated in the BID made a part hereof as full compensation for everything performed and furnished and for all risks and obligations undertaken by the Contractor under and as required by the Contract.

1.31 MONEYS MAY BE RETAINED

A. The Owner may at any time retain from any moneys which would otherwise be payable hereunder so much thereof as the Owner may deem necessary to complete the Work hereunder and to reimburse it for all costs, expenses, losses, damage and damages chargeable to the Contractor hereunder, in accordance with the States General Laws.

1.32 FORMAL ACCEPTANCE

A. This Agreement constitutes an entire contract for one whole and complete Work or result. Fixing of the date of completion and acceptance of the Work or a specified part thereof shall only be effective when

accomplished by a writing specifically so stating and signed by the Owner.

1.33 PROGRESS ESTIMATES

A. Once a month, except as hereinafter provided, the Engineer shall make an estimate in writing of the total amount and value of the work done to the first of the month by the Contractor. The Owner shall retain a percentage of such estimated value, as set forth in Table A at the end of this section, as part security for fulfillment of the Contract by the Contractor and shall deduct from the balance all previous payments made to the Contractor, all sums chargeable against the Contractor and all sums to be retained under the provisions of the Contract.

B. Estimates of lump-sum items shall be based on a schedule dividing each such item into its appropriate component parts together with a quantity and a unit price for each part so that the sum of the products of prices and quantities will equal the Contract price for the item. This schedule must be submitted by the Contractor for and must have the approval of the Engineer before the first estimate becomes due.

C. If the Engineer determines that the progress of the Work will be benefited by the delivery to the site of certain materials and equipment, when available, in advance of actual requirement therefor and if such materials and equipment are delivered and properly stored, protected and insured as determined by the Engineer, the cost to the Contractor or subcontractor as established by invoices or other suitable vouchers satisfactory to the Engineer, less the retained percentages as above provided, may be included in the progress estimates; provided always that there be duly executed and delivered by the Contractor to the Engineer at the same time a Bill of Sale in form satisfactory to the Owner, transferring and assigning to the Owner full ownership and title to such materials or equipment.

D. The Owner shall pay monthly to the Contractor in accordance with General Laws Chapter 30, Section 39, as amended:

1. Within fifteen (15) days (twenty-four (24) days in the case of the Commonwealth) after receipt from the Contractor, at the place designated by the Owner if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the Owner will make periodic payment to the Contractor for the work performed

during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the Contractor has title or to which a subcontractor has title and has authorized the Contractor to transfer title to the Owner, less (1) a retention based on its estimate of the fair value of its claims against the Contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section 39F and less (3) a retention not exceeding five percent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within 65 days after (a) the Contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one percent of original contract price, or (b) the Contractor substantially completes the work and the Owner takes possession for occupancy, whichever occurs first, the Owner shall pay the Contractor the entire balance due on the contract less (1) a retention based on its estimate of the fair value of its claims against the Contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section 39 F, or based on the record of payments by the Contractor to the subcontractors under this contract if such record of payment indicates that the Contractor has not paid subcontractors as provided in section 39 F. If the Owner fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate than charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until payment delivered or mailed to the Contractor; provided, that no interest shall be due, in any event, on the amount due on periodic estimate for final payment until 15 days (24 days in the case of the Commonwealth) after receipt of such a periodic estimate from the Contractor, at the place designated by the Owner if such a place is so designated. The Contractor agrees to pay to each subcontractor a portion of any such interest in accordance with the amount due each subcontractor.

2. Forthwith after the Contractor receives payment on account of a periodic estimate, the Contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the Contractor.

3. Not later than the 65th day after each subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the Owner as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the Owner shall pay that amount to the Contractor. The Contractor shall forthwith pay to the subcontractor the full amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the Contractor.

4. Each payment made by the Owner to the Contractor pursuant to subparagraphs (2) and (3) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the Contractor for the account of that subcontractor; and the Owner shall take reasonable steps to compel the Contractor to make each such payment to each such subcontractor. If the Owner has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the Contractor or which is to be included in a payment to the Contractor for payment to the subcontractor as provided in subparagraphs (2) and (3), the Owner shall act upon the demand as provided in this section.

5. If, within 70 days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the Contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the Contractor, less any amount retained by the Owner as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of that balance from the Owner. The demand shall be by a sworn statement delivered to or sent by certified mail to the Owner, and a copy shall be delivered to or sent by certified mail to the Contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the 70th day after the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the Owner and delivered or so mailed a copy to the Contractor, the Contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the Owner and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra

labor and materials furnished to the Contractor and of the amount due for each claim made by the Contractor against the subcontractor.

6. Within 15 days after receipt of the demand by the Owner, but in no event prior to the 17th day after substantial completion of the subcontract work, the Owner shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the Contractor, less any amount (i) retained by the Owner as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the Contractor in the sworn reply; provided, that the Owner shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (5). The Owner shall make further direct payments to the subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

7. The Owner shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (6) in an interest-bearing joint account in the names of the Contractor and the subcontractor in a bank in Massachusetts selected by the Owner or agreed upon by the Contractor and the subcontractor and shall notify the Contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the Contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.

8. All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (7) shall be made out of amounts payable to the Contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the Contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the Owner to the Contractor to the extent of such payment.

9. The Owner shall deduct from payments to a Contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (7), are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall

have a right in such deductions prior to any claims against such amounts by creditors of the Contractor.

10. If the subcontractor does not receive payment as provided in subparagraph (2) or if the Contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (2), the subcontractor may demand direct payment by following the procedure in subparagraph (5) and the Contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the Contractor. Thereafter the Owner shall proceed as provided in subparagraph (6), (7), (8), and (9).

11. "Subcontractor" as used in Section 1.34 shall mean a person who files a sub-bid and receives a subcontract as a result of that filed subbid or who is approved by the Owner in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the Contractor.

1.34 PARTIAL ACCEPTANCE

A. The Owner may, at any time in a written order to the Contractor (1) declare that he intends to use a specified part of the Work which in his opinion is sufficiently complete, in accordance with the Contract Documents, to permit its use; (2) enclose a tentative list of items remaining to be completed or corrected, and (3) fix the date of acceptance of that specified part of the Work.

B. Within 45 days after acceptance under this subsection, the Engineer shall make an estimate in writing of the amount and value of the part of the Work so accepted. The Owner shall pay said amount to the Contractor after deducting therefrom all previous payments, all charges against the Contractor as provided for hereunder, and all amounts to be retained under the provisions of the Contract, said payment to be made at the time of the next monthly progress estimate.

C. Acceptance by the Owner under this subsection shall not relieve the Contractor of any obligations under the Contract Documents except to the extent agreed upon in writing between the Owner and the Contractor.

D. The Owner shall have the right to exclude the Contractor from any part of the Work which has been accepted, but the Owner will allow the Contractor reasonable access thereto to complete or correct items on the tentative list.

1.35 FINAL ESTIMATE AND PAYMENT

A. As soon as practicable (but not more than sixty-five (65) days after final completion of the Work), the Engineer shall make a final estimate in writing of the quantity of Work done under the Contract and the amount earned by the Contractor.

B. The Owner shall pay to the Contractor the entire amount found by the Engineer to be earned and due hereunder after deducting therefrom all previous payments, all charges against the Contractor as provided for hereunder, and all amounts to be retained under the provisions of the Contract. Except as in this subsection otherwise provided, such payment shall be made not later than fifteen (15) days after but in no event before, the expiration of the time within which claims for labor performed or materials or equipment furnished must be filed under the applicable Lien Law, or, if such time is not specified by law, the expiration of thirty (30) days after the completion of the Engineer's final estimate.

C. All quantities shown on progress estimates and all prior payments shall be subject to correction in the final estimate and payment as determined by the Engineer.

D. 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 under or by virtue of this Agreement; and upon satisfactory completion of the work performed under this Agreement, as a condition before final payment under this Agreement or as a termination settlement under this Agreement the Contractor shall execute and deliver to the Owner a release of all claims against the Owner arising under or by virtue of, this Agreement, except claims which are specifically exempted by the Contractor to be set forth herein. Unless otherwise provided in this Agreement, by State law or otherwise expressly agreed to be the parties to this Agreement, any payment, including final payment under, this Agreement or settlement upon termination of this Agreement shall not constitute a waiver of the Owner's claims against the Contractor or his sureties under this Agreement or applicable Performance and Labor and Materials Bonds.

1.36 LIENS

A. If at any time any notices of lien are filed and labor performed or materials or equipment manufactured, furnished, or delivered to or for the Work, the Contractor shall, at its own cost and expense, promptly discharge, remove or otherwise dispose of the same, and until such discharge, removal or disposition, the Owner shall have the right to retain from any moneys payable hereunder an amount which, in its sole judgement, it deems necessary to satisfy such liens and pay the costs and expenses, including attorneys' fees, of defending any actions brought to enforce the same, or incurred in connection therewith or by reason thereof.

1.37 CLAIMS

A. If at any time there be any evidence of any claims for which the Contractor is or may be liable or responsible hereunder, the Contractor shall promptly settle or otherwise dispose of the same, and until such claims are settled or disposed of, the Owner may retain from any moneys which would otherwise be payable hereunder so much thereof as, in its sole judgement, it may deem necessary to settle or otherwise dispose of such claims and to pay the costs and expenses, including attorney's fees, of defending any actions brought to enforce such claims, or incurred in connection therewith or by reason thereof.

1.38 APPLICATION OF MONEYS RETAINED

A. The Owner may apply any moneys retained hereunder to reimburse itself for any and all costs, expenses, losses, damage and damages, liabilities, suits, judgements and awards incurred, suffered or sustained by the Owner and chargeable to the Contractor hereunder or as determined hereunder.

1.39 NO WAIVER

A. Neither the inspection by the Owner or the Engineer, nor any order, measurement, approval, determination, decision or certificate by the Engineer, nor any order by the Owner for the payment of money, nor any payment for or use, occupancy, possession or acceptance of the whole or any part of the Work by the Owner, nor any extension of time, nor any other act or omission of the Owner or of the Engineer shall constitute or be deemed to be an acceptance of any defective or improper work, materials, or equipment nor operate as a waiver of any requirement or provision of the Contract, nor of any remedy, power or right of or

herein reserved to the Owner, nor of any right to damages for breach of contract. Any and all rights and/or remedies provided for in the Contract are intended and shall be construed to be cumulative; and, in addition to each and every other right and remedy provided for herein or by law, the Owner shall be entitled as of right to a writ of injunction against any breach or threatened breach of the Contract by the Contractor, by his subcontractors or by any other person or persons.

1.40 LIABILITY OF OWNER

A. No person, firm or corporation, other than the Contractor who signed this Contract as such, shall have any interest herein or right hereunder. No claim shall be made or be valid either against the Owner or any agent of the Owner and neither the Owner nor any agent of the Owner shall be liable for or be held to pay any money, except as herein provided. The acceptance by the Contractor of the payment as fixed in the final estimate shall operate as and shall be a full and complete release of the Owner and of every agent of the Owner of and from any and all claims, demands, damages and liabilities of, by or to the Contractor for anything done or furnished for or arising out of or relating to or by reason of the Work or for or on account of any act or neglect of the Owner or of an agent of the Owner or of any other person, arising out of, relating to or by reason of the Work, except the claim against the Owner for the unpaid balance, if any there be, of the amounts retained as herein provided.

1.41 GUARANTEE

A. The Contractor guarantees that the Work and services to be performed under the Contract, and all workmanship, materials and equipment performed, furnished, used or installed in the construction of the same, shall be free from defects and flaws, and shall be performed and furnished in strict accordance with the Drawings, Specifications, and other Contract Documents, that the strength of all parts of all manufactured equipment shall be adequate and as specified and that the performance test requirements of the Contract shall be fulfilled. This guarantee shall be for a period of one year from and after the date of completion and acceptance of the Work as stated in the final estimate. If part of the Work is accepted in accordance with that subsection of this AGREEMENT titled "Partial Acceptance", the guarantee for that part of the Work shall be for a period of one year from the date fixed for such acceptance.

B. If at any time within the said period of guarantee any part of the Work requires repairing, correction or replacement, the Owner may notify the Contractor in writing to make the required repairs, correction, or replacements. If the Contractor neglects to commence making such repairs, correction, or replacements to the satisfaction of the Owner within three (3) days from the date of receipt of such notice, or having commenced fails to prosecute such Work with diligence, the Owner may employ other persons to make the same, and all direct and indirect costs of making said repairs, correction or replacements, including compensation for additional professional services, shall be paid by the Contractor.

1.42 PROJECT AUDIT

A. The Owner, the Engineer, and the Contractor shall maintain books, records, documents, and other evidence directly related to the performance on all work receiving funding under the executed Financial Assistance Agreement in accordance with generally accepted professional practice and appropriate accounting procedures and practices. The Owner, the Engineer, and the Contractor shall also maintain the financial information and data used by the Engineer and Contractor in the preparation or support of project invoices and associated progress reports.

1.43 RETURN OF DRAWINGS

A. All Drawings furnished by the Owner or the Engineer to the Contractor may be used only in connection with the prosecution of the Work and shall be returned by the Contractor upon completion of the Work.

1.44 CLEANING UP

A. The Contractor at all times shall keep the site of the Work free from rubbish and debris caused by his operations under the Contract. When the Work has been completed, the Contractor shall remove from the site of the Work all of his plant, machinery, tools, construction equipment, temporary work, and surplus materials so as to leave the Work and the site clean and ready for use.

1.45 LEGAL ADDRESS OF CONTRACTOR

A. The Contractor's business address and his office at or near the site of the Work are both hereby designated as places to which communications shall be delivered.

The depositing of any letter, notice, or other communication in a postpaid wrapper directed to the Contractor's business address in a post office box regularly maintained by the Post Office Department or the delivery at either designated address of any letter, notice, or other communication by mail or otherwise shall be deemed sufficient service thereof upon the Contractor, and the date of such service shall be the date of receipt. The first-named address may be charged at any time by an instrument in writing, executed and acknowledged by the Contractor delivered to the Engineer. Service of any notice, letter, or other communication upon the Contractor personally shall likewise be deemed sufficient service.

1.46 HEADINGS

A. The headings or titles of any section, subsection, paragraph, provision, or part of the Contract Documents shall not be deemed to limit or restrict the content, meaning or effect of such section, subsection, paragraph, provision or part.

1.47 MODIFICATION OR TERMINATION

A. Except as otherwise expressly provided herein, the Contract may not be modified or terminated except in writing signed by the parties hereto.

1.48 DIRECT LABOR COST

A. Direct labor cost percentage for change orders shall be ____ percent. (Direct labor cost percent shall be established following award and prior to execution of the Contract).

1.49 MASSACHUSETTS TAX LAWS

A. The Contractor shall provide a statement that indicates compliance with all the requirements of Massachusetts General Law Chapter 233.

1.50 MINORITY BUSINESS

N/A

1.51 TERMINATION FOR CONVENIENCE

A. This Agreement may be terminated by the Owner upon not less than seven days' written notice for the Owner's convenience. In the case of termination for convenience, the Owner shall be responsible for

amounts due the Contractor for work performed through the date of termination, provided that the Contractor shall submit a request for payment in accordance with the provisions hereof. The Contractor shall have no other claim for payments due with respect to such termination including any claim for lost profits with respect to the balance of the project.

1.52 EQUAL EMPLOYMENT OPPORTUNITY, ANTIDISCRIMINATION AND AFFIRMATIVE ACTION

A. The Contractor shall not discriminate against or exclude any person from participation herein on grounds of race, religion, color, sex, age, or national origin; and that it shall take affirmative actions to insure that applicants are employed, and that employees are treated during their employment, without regard to race, religion, color, sex, age, handicapped status, or national origin.

1.53 UNLAWFUL CONDUCT AND PARTICIPATION IN BOYCOTT

A. The Contractor shall not participate in or cooperate with an international boycott, as defined in Section 999 (b) (3) and (4) of the Internal Revenue Code of 1954, as amended, or engage in conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General Laws.

In witness whereof, the parties to this AGREEMENT have hereunto set their hands and seals, and have executed, or caused to be executed by their duly authorized officials, the AGREEMENT in Five (5) copies, each of which shall be deemed an original, as of the day and year first above-written.

OWNER: Town of Wareham
(Owner – Party of the First Part)

By _____
Derek Sullivan
Town Administrator

Contractor:
(Contractor – Party of the Second Part) (SEAL)

By _____ Contractor Name: _____

Name

Title

Address

Telephone

Approved as to Form:

Certified in accordance with
Chapter 44, Section 31C and
based upon Engineering estimates

Richard Bowen
Town Counsel

Judith Lauzon
Town Accountant

CERTIFICATE OF ACKNOWLEDGMENT OF CONTRACTOR IF A CORPORATION
For AGREEMENT

State of _____)
) ss
County _____)

on this _____ day of _____, 20 _____, before me personally

came _____ to me known, who being me duly
sworn, did depose and say as follows:

That he resides at _____
and is the _____
of _____

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

Notary Public (Seal)

My commission expires _____

CERTIFICATE OF OWNER'S LEGAL COUNSEL

I, the undersigned, _____ the duly authorized and acting legal representative of the _____, acting herein through its _____, do hereby certify as follows:

I have examined the foregoing contract and surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with the terms, conditions, and provisions thereof.

By: _____
(Signature)

Date: _____

(Name)

(Title)

(Address)

(City, State, Postal code)

TABLE A

| Agreement subsection reference | Item | Minimum limits |
|--------------------------------|--|---|
| 1.06 | Workman's Compensation and Employer's Liability Insurance | As required by the law of the Commonwealth of Massachusetts |
| 1.06 | Public Liability including Contractor's Protective, Completed Operations and Contractual Liability | <p>Bodily Injury</p> <hr/> <p>\$1,000,000 each occurrence \$3,000,000 aggregate</p> <p>Property Damage Including C.U.* Coverage</p> <hr/> <p>\$1,000,000 each occurrence \$3,000,000 aggregate</p> <hr/> <p>Blasting and explosion coverage shall be obtained if there is a need for blasting under the contract.</p> |
| 1.06 | Personal Injury Insurance | \$3,000,000 aggregate |
| 1.06 | Automobile Liability including coverage for owned, hired or borrowed vehicles | <p>Bodily Injury</p> <hr/> <p>\$1,000,000 each person \$3,000,000 each occurrence</p> <p>Property Damage</p> <hr/> <p>\$1,000,000 each occurrence</p> |

| | | |
|------|--|--|
| 1.06 | Owner's Protective Liability & Property Damage | <p>Bodily Injury</p> <hr/> <p>\$1,000,000 each occurrence \$3,000,000 aggregate</p> <p>Property Damage</p> <hr/> <p>\$1,000,000 each occurrence</p> <p>\$3,000,000 aggregate</p> |
| 1.06 | Builder's Risk Insurance | Total insurable value of all structures, materials, and equipment to be built and installed. |
| 1.13 | a) Time of Completion - Total Contract | Within 30 working days after the date specified in the Notice to Proceed |
| 1.14 | Liquidated Damages for each consecutive calendar day of delay in completion time | \$1,000.00 |
| 1.33 | Percentage of Progress Estimates to be Retained The retainage to be paid the Contractor in accordance with M.G.L. Ch. 30 Sec. 39G. | 5% |
| 1.33 | Amount of Minimum Progress Estimates | \$10,000 |

INSURANCE CERTIFICATE

SHEET 1 OF 2

Issued to

The Town of Wareham, Massachusetts

This is to certify that this Company, _____, (Name of Insurance Company) has enforced the following policies covering all work and operations of _____ (Name of Contractor), as the designate Contractor under a Contract with the **Town of Wareham, Massachusetts**, as the designated Owner, dated _____ **SEA STREET AND SMITH AVENUE SEWER SYSTEM REHABILITATION, CONTRACT NO. 2020-001.**

POLICY NUMBER

EFFECTIVE AND

KINDS OF INSURANCE

LIMITS

EXPIRATION DATE

Workmen's Compensation and Employers Liability and Harbor Workers Coverage *

Number: _____
Effective: _____
Expires: _____

Public Liability including Contractor's Protective Personal Injury, Completed Operations, and Contractual Liability**

Bodily Injury \$_____ each occurrence
Property Damage including C.U. \$_____ each occurrence

Number: _____
Effective: _____
Expires: _____

***Note:
Explosion Collapse and underground coverage is provided

Coverage***\$_____ aggregate
Personal Injury \$_____ aggregate

* Longshoremen's and Harbor Workers' Coverage may be deleted if not required by contract.

** Contractual Liability covers the liability assumed by the Contractor under the subsection entitled "Obligations and Liability of Contractor" of the AGREEMENT, as required by subsection entitled "Insurance" of the agreement.

*** Blasting coverage is not required.

INSURANCE CERTIFICATE

SHEET 2 OF 2

Issued to

The Town of Wareham, Massachusetts

Contract Reference: **Town of Wareham, Massachusetts**
Sea Street and Smith Avenue Sewer System Rehabilitation
Contract No. 2020-001

POLICY NUMBER

EFFECTIVE AND

KINDS OF INSURANCE

LIMITS

EXPIRATION DATE

| | | | |
|--|--------------------|--|---|
| Automobile Liability including Coverage for hired or borrowed vehicles | Bodily Injury | \$ _____ each person \$ _____ each occurrence | Number: _____ Effective: _____ Expires: _____ |
| | Property Damage | \$ _____ each occurrence | |

| | | | |
|---|--------------------|--|-----------------------------------|
| Owner's Protective Liability and Property Damage | Bodily Injury | \$ _____ each occurrence \$ _____ aggregate | Number: _____ Effective: _____ |
| | Property Damage | \$ _____ each occurrence \$ _____ aggregate | |

Note: A copy of the Owner's Protective Policy for the Owner is to be furnished with the completed certificates.

Town of Wareham, Massachusetts, and BETA Group, Inc., to be named as additional insured as applicable.

It is agreed that thirty (30) days notice of cancellation or restrictive amendment of said policies shall be mailed to Owner.

INSURANCE COMPANY

INSURANCE AGENCY

BY: _____
AUTHORIZED AGENT OR OFFICER

DATE: _____

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SECTION 00600

CONTRACT BONDS

PERFORMANCE BOND

(NOTE: This Bond is issued simultaneously with the attached Labor and Materials Bond in favor of the Owner.)

KNOW ALL MEN BY THESE PRESENTS:

That we, _____
(an individual, a partnership, a corporation)

duly organized under the Laws of the State (or Commonwealth) of _____,

and having a usual place of business at _____,

as Principal, and _____, a corporation duly organized
under the Laws of the State (or Commonwealth) of _____,

and duly authorized to do business in the Commonwealth of Massachusetts ,

and having a usual place of business at _____

as Surety, are holden and stand firmly bound and obligated unto **Town of Wareham, Massachusetts**, as obligee, in the sum of

_____ lawful money of the United States of America, to and for the true payment whereof we bind ourselves and, each of us, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal, be means of a written AGREEMENT (which together with the Contract Documents in said AGREEMENT referred to are collectively sometimes referred to as the "Contract") dated _____, has entered into a contract with the said obligee for **Sea Street and Smith Avenue Sewer System Rehabilitation, Contract No. 2020-001** in the **Town of Wareham, Massachusetts**, a copy of which agreement is attached hereto and by references made a part hereof.

NOW THEREFORE, THE CONDITION of this obligation is such that if the Principal shall well and truly keep and fully and faithfully perform all of the terms and conditions of said AGREEMENT and of the "Contract Documents" referred to in said AGREEMENT (which collectively are hereinafter and in said AGREEMENT sometimes referred to as the "Contract") and all modifications thereof on the Principal's part to be performed, this obligation shall be

void; otherwise it shall remain in full force and effect.

Whenever the said Principal shall be, and declared by the Owner to be, in default under the said Contract, the Owner having performed the Owner's obligations thereunder Surety, for value received, shall promptly remedy the default, or, at the option of the Owner, shall promptly.

- (a) Complete the said AGREEMENT and/or Contract in accordance with its terms and conditions, or
- (b) Obtain a bid or bids for submission to and the approval of the Owner for completing the said AGREEMENT and/or Contract and any modifications thereof in accordance with the terms and conditions thereof, and upon determination by the Owner and the Surety of the lowest responsible and acceptable bidder, arrange for a contract between such bidder and the Owner, and make available to the Owner as the work progresses (even though there should be default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less a sum that shall be equal to the difference between the Contract price as fixed and provided in said AGREEMENT and/or Contract or any modifications thereof to be paid thereunder to the Principal and the amount previously paid by the Owner to and/or for the account of and/or chargeable against the Principal, but not exceeding (including other costs and damages for which the Surety may be liable hereunder) the amount set forth in the first paragraph hereof.

The Surety, for value received, agrees further that no changes in, omissions from, or alterations, modifications or additions to the terms and provisions of said AGREEMENT and/or Contract or the Work to be performed thereunder, and that no extensions of time given or changes made in the manner or time of making payments thereunder, shall in any way effect the Surety's obligations on this bond, and the Surety hereby waives notice of any such changes, omissions, alterations, modifications, additions or extensions.

No right of action shall accrue on this Bond to or for the use of any persons other than the Owner named herein or the heirs, executors, administrators, successors and assigns of the Owner.

IN WITNESS WHEREOF, we have hereunto set our hands and seals to _____
_____ counterparts of this bond, this _____ day of _____,
in the year Two Thousand and _____.

Principal (SEAL)

Principal (SEAL)

Principal (SEAL)

Surety (SEAL)

Surety (SEAL)

NOTE:

If the Principal (Contractor) is a partnership, the Bond should be signed by each of the partners.

If the Principal (Contractor) is a corporation, the Bond should be signed in its correct corporate name by its duly authorized officer or officers.

If this Bond is signed on behalf of the Surety by an attorney-in-fact, there should be attached to it a duly certified copy of his power of attorney showing his authority to sign such Bonds.

There should be executed an appropriate number of counterparts of the Bond corresponding to the number of counterparts of the AGREEMENT.

Date of Bond must not be prior to the date of Contract.

Important

Surety Companies executing BONDS must appear on the U.S. Treasury Department's most current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts and be authorized to transact business in the state where the PROJECT is located.

The attention of the Surety Companies and Principal executing this Performance Bond is Directed to the fact that said Bond shall remain in full effect throughout the life of any guaranty or warranty periods stipulated in the Contract Documents and/or Agreement.

LABOR AND MATERIALS BOND

(NOTE: This Bond is issued simultaneously with the attached Performance Bonds in favor of the Owner.)

KNOW ALL MEN BY THESE PRESENTS:

That we, _____ (an individual, a partnership, a corporation)

duly organized under the Laws of the State (or Commonwealth) of _____,

having a usual place of business at _____,

as Principal, and _____ a corporation duly organized

under the Laws of the State (or Commonwealth) of _____,

and duly authorized to do business in the Commonwealth of Massachusetts,

and having a usual place of business at _____,

as Surety, are holden and stand firmly bound and obligated unto the **Town of Wareham, Massachusetts**, as obligee, in the sum of

_____ lawful money of the United States of America, to and for the true payment whereof we bind ourselves and, each of us, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal, be means of a written AGREEMENT (which together with the Contract Documents in said AGREEMENT referred to are collectively sometimes referred to as the "Contract") dated _____, has entered into a contract with the said obligee for **Sea Street and Smith Avenue Sewer System Rehabilitation, Contract No. 2020-001** in the **Town of Wareham, Massachusetts**, a copy of which agreement is attached hereto and by references made a part hereof.

NOW, THEREFORE, THE CONDITION of this obligation is such, that if the Principal shall promptly make payments to all claimants as hereinafter defined, for all labor performed or furnished and for all materials and equipment furnished for or used in or in connection with the Work called for by said AGREEMENT and/or Contract and any modifications thereof, including lumber used but not incorporated in said Work, and for the rental or hire of vehicles, tools and other appliances and equipment furnished for or used in connection with said Work, this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

- (a) A claimant is defined as one having a direct contract with the Principal or with a subcontractor of the Principal for labor, materials and/or equipment used or reasonably required for use in the performance of the said Work, labor and materials being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental or equipment directly applicable to the said AGREEMENT and/or Contract and any modifications thereof.
- (b) The above named Principal and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials or equipment were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any costs or expenses of any such suit.
- (c) No suit or action shall be commenced hereunder by any claimant.

Unless claimant, other than one having a direct contract with the Principal, shall have given written notice to any two of the following: the Principal, the Owner, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials or equipment for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials or equipment were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, Owner or Surety at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the said Work is located, save that such service need not be made by a public officer;

After the expiration of one (1) year following the date on which the Principal ceased work on said AGREEMENT and/or Contract and any modifications thereof, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the State in which the said Work, or any part thereof, is situated, or in the United States District Court for the district in which the said Work, or any part thereof, is situated, and not elsewhere.

- (d) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics liens which may be filed of record against said AGREEMENT and/Contract or said Work, whether or not claim for the amount of such lien be presented under and against this bond.

The surety, for value received, agrees further that no changes in, omissions from, or alterations, modifications or additions to the terms and provisions of said AGREEMENT and/or Contract or the Work to be performed thereunder, and that no extensions of time given or changes made in the manner or time of making payments thereunder, shall in any way affect the Surety's obligations on this Bond, and the Surety hereby waives notice of any such changes, omissions, alterations, modifications, additions or extensions.

IN WITNESS WHEREOF, we have hereunto set our hands and seals to _____
_____ counterparts of this bond, this _____ day of _____,
in the year Two Thousand and _____.

Principal (SEAL)

Principal (SEAL)

Principal (SEAL)

Surety (SEAL)

Surety (SEAL)

NOTE:

If the Principal (Contractor) is a partnership, the Bond should be signed by each of the partners.

If the Principal (Contractor) is a corporation, the Bond should be signed in its correct corporate name by its duly authorized officer or officers.

If this Bond is signed on behalf of the Surety by an attorney-in-fact, there should be attached to it a duly certified copy of his power of attorney showing his authority to sign such Bonds.

There should be executed an approximate number of counterparts of the Bond corresponding to the number of counterparts of the AGREEMENT.

Date of Bond must not be prior to the date of Contract.

Important

Surety Companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

The attention of the Surety Companies and Principal executing this Labor and Materials Bond is directed to the fact that said Bond shall remain in full effect throughout the life of any guaranty or warranty periods stipulated in the Contract Documents and/or Agreement.

CERTIFICATE OF ACKNOWLEDGMENT OF CONTRACTOR IF A CORPORATION
For CONTRACT BONDS

State of _____)

) ss:

County of _____)

On this _____ day of _____, 20_____, before
me personally came _____ to me known, who being by me duly
sworn, did depose and say as follows:

That he resides at _____

and is the _____

of _____

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

Notary Public (Seal)

My commission expires _____

STATE TAX CERTIFICATE

Pursuant to M.G.L., Ch. 62C, sec. 49A, I certify under the penalties of perjury that I, to the best of my knowledge and belief, have filed all state tax returns and paid all state taxes required under law.

Social Security Number *
Or Federal Identification Number *

Signature of Individual or
Corporate Name

by: _____
Corporate Office (if applicable)

* Submission of a Social Security Number or a Federal Identification Number is voluntary.

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SECTION 00700

GENERAL CONDITIONS

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- 1.28 Reduction in Scope of Work

1.01 GENERAL PROVISIONS

A. The duties and obligations imposed by these General Conditions will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

B. Sections of Division 1, General Requirements govern the execution of the Work of all sections of the specifications.

C. The Specifications are written in imperative and streamlined form. This imperative language is directed to the Contractor, unless stated otherwise.

1.02 DEFINITIONS

A. Wherever the words as listed in subsection 1.01 of the AGREEMENT or pronouns used in their stead occur in the Contract Documents, they shall have the meanings as given in the AGREEMENT.

1.03 MATERIALS AND EQUIPMENT

A. General

1. Unless otherwise provided in the Contract Documents, only new materials and equipment shall be incorporated in the Work.

2. As soon as possible after execution of the AGREEMENT, submit to the Engineer the names and addresses of the manufacturers and suppliers of all materials and equipment proposed to be incorporated into the Work.

3. When shop and working drawings are required as specified below, submit, prior to the submission of such drawings, data in sufficient detail to enable the Engineer to determine whether the manufacturer and/or the supplier have the ability to furnish a product meeting the Specifications.

4. Submit data relating to the materials and equipment proposed to be incorporated into the Work in sufficient detail to enable the Engineer to identify and evaluate the particular product and to determine whether it conforms to the Contract requirements. Such data shall be submitted in a manner similar to that specified for submission of shop and working drawings.

B. Handling

1. Handle, haul, and distribute materials and all surplus materials on the different portions of the Work, required to complete the Work in accordance with the Contract Documents.

2. Provide suitable storage room for materials and equipment during the progress of the Work, and be responsible for the protection, loss of, or damage to materials and equipment furnished under this Contract, until the final completion and acceptance of the Work.

3. Pay all storage and demurrage charges by transportation companies and vendors.

C. Storage of Excavated Material

1. Place excavated materials and equipment to be incorporated in the Work so as not to injure any part of the Work or existing facilities and so that free access can be had at all times to all parts of the Work and to all public utility installations in the vicinity of the Work.

2. Materials shall be kept neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to public travel and adjoining owners, tenants and occupants.

D. Inspection

1. All materials and equipment furnished by the Contractor to be incorporated in the Work shall be subject to the inspection of the Engineer.

2. No material shall be processed or fabricated for the Work or delivered to the work site without prior concurrence of the Engineer.

3. Facilities and labor for the storage, handling, and inspection of all materials and equipment shall be furnished by the Contractor.

4. Defective materials and equipment shall be removed immediately from the site of the Work.

E. Inspection away from Site

1. If work to be done, away from the construction site, is to be inspected on behalf of the Owner during its fabrication, manufacture, or testing, or before shipment, the Contractor shall give notice to the Engineer of the place and time where such fabrication, manufacture, testing, or shipping is to be done. Such notice shall be in writing and delivered to the Engineer in ample time, as determined solely by the Engineer, so that the necessary arrangements for the inspection can be made.

F. Samples

1. Submit samples of materials for tests, as the Engineer deems necessary to demonstrate conformance with the Specifications. Such samples,

including concrete test cylinders, shall be furnished, taken, stored, packed, and shipped by the Contractor as directed by the Engineer.

2. Furnish suitable molds for making concrete test cylinders. Except as otherwise expressly specified, the Owner shall make arrangements for, and pay for, the tests.

3. Pack samples so as to reach their destination in good condition, and label to indicate the material represented, the name of the building or work and location for which the material is intended, and the name of the Contractor submitting the sample. To ensure consideration of samples, notify the Engineer by letter that the samples have been shipped and properly describe the samples in the letter. Send letter of notification separate from the samples.

4. Submit data and samples, or place his orders, sufficiently early to permit consideration, inspection and testing before the materials and equipment are needed for incorporation in the Work. The consequences for failure to do so shall be the Contractor's sole responsibility.

5. In order to demonstrate the proficiency of workmen, or to facilitate the choice among several textures, types, finishes, surfaces, etc., provide such samples of workmanship of wall, floor, finish, etc., as may be required.

6. After review of the samples, data, etc. the materials and equipment used for the Work shall in all respects conform therewith.

G. Shop Testing

1. When required, furnish to the Engineer in triplicate, sworn copies of manufacturer's shop or mill tests (or reports from independent testing laboratories) relative to materials, equipment performance ratings, and concrete data.

1.04 CONTRACTOR'S SHOP AND WORKING DRAWINGS

A. Submit shop drawings to the Engineer for review and approval.

B. All submittals will be identified as the Engineer may require and in the number of copies also as required by the Engineer.

C. The data shown on the Shop Drawings will be complete regarding quantities, dimensions, specified performance and design criteria, materials and other

data as particular to the Work that the Contractor proposes to provide.

1.05 OCCUPYING PRIVATE LAND

A. Entering or occupying with men, tools, materials, or equipment, any land outside the rights-of-way or property of the Owner (except after written consent from the proper parties) will not be permitted. A copy of the written consent shall be given to the Engineer.

1.06 INTERFERENCE WITH AND PROTECTION OF STREETS

A. Obtain permits from the governing authorities prior to obstructing any portion of a street, road, or private way. If any street, road or private way is rendered unsafe by the Contractor's operations, he shall make such repairs or provide such temporary ways or guards as ordered by the governing authorities.

B. Maintain streets, roads, private ways, and walks not closed in a passable and safe condition,

C. Provide at least 24 hours in advance, notice to the Owner, Police, Fire and School Departments in writing, with a copy to the Engineer, if the closure of a street or road is necessary. Cooperate with all Departments in the establishment of alternate routes and provide adequate detour signs, plainly marked and well lighted, in order to minimize confusion.

1.07 SAFETY

A. Take all precautions and provide safeguards to prevent personal injury and property damage. Provide protection for all persons including but not limited to employees and employees of other contractors and subcontractors; members of the public; and employees, agents and representatives of the Owner, the Engineer, and regulatory agencies that may be on or about the Work. Provide protection for all public and private property including but not limited to structures, pipes, and utilities, above and below ground.

B. Provide and maintain all safety equipment such as fences, barriers, signs, lights, walkways, guards and fire prevention and fire-fighting equipment.

C. Comply with all applicable Federal, State and local laws, ordinances, rules and regulations and lawful orders of all authorities having jurisdiction for the safety of persons and protection of property.

D. Designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This responsible person shall have the authority to take immediate action to correct unsafe or hazardous conditions and to enforce safety precautions and programs.

1.08 EXISTING FACILITIES

A. Dimensions of Existing Structures

1. Where the dimensions and locations of existing structures are of importance in the installation or connection of any part of the Work, verify such dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

B. Proposed Pipe Location

1. Exterior pipelines will be located substantially as indicated on the Drawings, but the right is reserved to the Owner, acting through the Engineer, to make such modifications in location as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings, etc., are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him for laying and jointing different or additional items where required.

2. Small interior piping is indicated diagrammatically on the Drawings, and the exact location is to be determined in the field. Piping shall be arranged in a neat, compact, and workmanlike manner, with a minimum of crossing and interlacing, so as not to interfere with equipment or access way, and, in general, without diagonal runs.

C. Interference with Existing Works

1. Conduct operations so as to interfere as little as possible with existing works. Develop a program, in cooperation with the Engineer and interested officials, which shall provide for the construction and putting into service of the new works in the most orderly manner possible. This program shall be adhered to except as deviations therefrom are expressly permitted. All work of connecting with, cutting into, and reconstructing existing pipes or structures shall be planned to interfere with the

operation of the existing facilities for the shortest time when the demands on the facilities best permit such interference, even though it may be necessary to work outside of normal working hours to meet these requirements. Electrical connections should be coordinated with the Owner so as to minimize disruption of normal plant operations. Before starting work which will interfere with the operation of existing facilities, perform preparatory work and see that all tools, materials and equipment are made ready and at hand.

2. Repair utilities damaged by the Contractors operations during the progress of the work, and be responsible for correcting all damages to existing utilities and structures at no additional expense to the Owner. Contact the proper utility or authority to correct or make any changes due to utility or other obstructions during the work but the entire responsibility and expense shall be with the Contractor.

3. Make such minor modifications in the work relating to existing structures as may be necessary, without additional compensation.

4. Submit no claim for additional compensation by reason of delay or inconvenience in adapting his operations to the need for continuous flow of sewage.

D. Existing Utilities or Connections

1. The location of existing underground pipes, conduits, and structures, as shown, has been collected from the best available sources. The Owner, together with its agents, does not imply nor guarantee the data and information in connection with underground pipes, conduits, structures and such other parts as to their completeness, nor their locations as indicated. The Contractor shall assume that there are existing water, sewer, gas and other utility connections to each and every building enroute, whether they appear on the drawings or not. An expense and/or delay occasioned by utilities and structures, or damage thereof, including those not shown, shall be the responsibility of the Contractor, at no additional expense to the Owner.

2. Above ground utilities may be present in the areas of the proposed Work. Take all necessary actions and/or precautions, including, but not limited to, utility company notification and necessary relocations (both temporary and permanent), to insure proper protection of those aboveground utilities and appurtenances to be affected by his operations. All costs associated with the aboveground utilities shall be paid by the Contractor at no additional expense to the Owner.

3. If and when encountered, existing utilities shall be properly supported and protected during the construction work and the Engineer shall be notified accordingly. The operation of existing utilities shall not be interrupted except with written permission of the operator and owner of such utilities. Allow ample time for all measures as may be required for the continuance of existing utility operations. Take extreme precautions to minimize disruption of utilities. Make prompt and full restitution for repairs by others for all disruptions caused by operations required to perform the Work.

4. Comply with all requirements of utility organizations involved.

E. Failure to Repair

1. Any emergency arising from the interruption of electric, telephone, gas, water, or sewer service due to the activities of the Contractor, shall be repaired by the Contractor as quickly as is possible.

2. If and when, in the opinion of the Owner, the Contractor is not initiating repair work as expeditiously as possible upon notification to do so, the Owner, may at his own option, make the necessary repairs using his own forces or those of others. The cost of such repairs shall be subtracted from the payments due to the Contractor.

F. Disturbance of Bounds

1. Replace all bounds disturbed during the construction operation, at no additional cost to the Owner. The bounds shall be relocated by a land surveyor approved by the Engineer and registered in the State that the Work is to be done.

1.09 WORK TO CONFORM

A. During its progress and on its completion, the Work shall conform to the lines, levels, and grades indicated on the Drawings or given by the Engineer and shall be built in strict accordance with the Contract Documents and the directions given from time to time by the Engineer.

B. All work done without instructions having been given therefore by the Engineer, without proper lines or levels, or performed during the absence of the Engineer, will not be estimated or paid for except when such work is authorized by the Engineer in writing. Work so done may be ordered uncovered or taken down, removed, and replaced at the Contractor's expense.

1.10 PLANNING AND PROGRESS SCHEDULES

A. 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.

B. Within 14 calendar days after the date of formal execution of the AGREEMENT, the Contractor shall prepare and submit to the Engineer (a) a written schedule fixing the dates on which additional drawings, if any, will be needed by the Contractor 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 from time to time during the progress of the Work.

1.11 PRECAUTIONS DURING ADVERSE WEATHER

A. During adverse weather and against the possibility thereof, take all necessary precautions so that the Work may be properly done and satisfactory in all respects. When required by the manufacturer of the material or equipment to be installed, protection shall be provided by use of tarpaulins, wood and building-paper shelters, or other suitable means.

B. During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Protected spaces shall be artificially heated by suitable means that will result in a moist or dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture will be warm throughout when used.

1.12 TEMPORARY HEAT

A. If temporary heat is required for the protection of the Work, provide and install suitable heating apparatus, provide adequate and proper fuel, and shall maintain heat as required.

B. Temporary heating apparatus shall be installed and operated in such manner that finished work will not be damaged.

1.13 ELECTRICAL ENERGY

A. Make all necessary applications and arrangements and pay all fees and charges for electrical energy for power and light necessary for the proper completion of the Work and during its entire progress. Provide and pay for all temporary wiring, switches, connections, and meters.

B. Provide sufficient electric lighting so that all work may be done in a workmanlike manner when there is not sufficient daylight.

1.14 CERTIFICATES OF CONFORMANCE

A. Furnish to the Engineer, in the manner as directed and prior to actual installation, notarized certificates of conformance for all materials to be furnished under this Contract. The notarized certificates of conformance shall state that the material to be furnished meets or exceeds all requirements specified under the Contract Documents. When so directed, the manufacturer's notarized certificates of conformance, certifying that the materials meet the requirements specified shall accompany each shipment of material. Unless otherwise specifically specified and/or directed by the Engineer, all testing of materials required under this Contract shall be provided by the Contractor at no additional expense to the Owner.

1.15 PATENTS

A. Pay, at no additional expense to the Owner, all applicable royalties and license fees associated with the materials and construction methods to be used under this Contract. Defend all suits or claims for infringements of any patent rights, and save the Owner and Engineer harmless from loss on account thereof, except that the Owner shall be responsible for any such loss when a particular process, design, or product of a particular manufacturer (s) is specifically specified with no option to the Contractor. However, if the Contractor has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Owner.

B. Refer to Specification Section 00500, 1.07, Patents, regarding the Contractor's responsibilities for any patent rights associated with the materials and construction methods to be used under this Contract.

1.16 "OR EQUAL" CLAUSE

A. Whenever a material or article required is specified or shown on the drawings by using the name of the proprietary product of a particular manufacturer or vendor, any material or article which will perform adequately, in the Engineer's sole judgment and/or opinion, the duties imposed by the general design may be considered equal and satisfactory providing the material or article so proposed is of equal substance. It shall not be purchased or installed without his written approval. In all cases new material shall be used in the project.

B. If more than one brand, name of material, device, or piece of equipment is shown or specified, each should be regarded as the equal of the other. Any other brand, make of material, device or equipment, which in the opinion of the OWNER and/or ENGINEER, is the recognized equal of that specified (considering quality, workmanship, and economy of operation), and is suitable for the purpose intended, may be accepted.

C. ENGINEER will be allowed a reasonable time within which to evaluate submittals for Substitute Items. ENGINEER will be the sole judge of acceptability. No "Or Equal" or Substitute Item will be ordered, installed or utilized without ENGINEER's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any "or equal" or substitute. ENGINEER will record time required by ENGINEER and ENGINEER's Consultants in evaluating substitutes proposed or submitted by CONTRACTOR and in making changes to the Contract Documents. Whether or not ENGINEER accepts a Substitute Item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluating each such proposed Substitute Item.

1.17 ADDITIONAL OR SUBSTITUTE BONDS

A. If at any time the Owner, for justifiable cause, shall be or become dissatisfied with any Surety or Sureties than upon the performance or payment bonds, the Contractor shall, within five (5) calendar 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 acceptable to the Owner. The Contractor shall pay the premiums on such bonds with no additional expense to the Owner. No further payments shall be deemed due nor will be made until the new Surety or Sureties shall have furnished such as acceptable bond to the Owner.

1.18 SEPARATE CONTRACTS

A. The Owner reserves the right to let other contracts in connection with the construction of the contemplated work of this project or contiguous projects of the Owner. The Contractor, therefore, will afford any such other contractors reasonable opportunity for the introductions and storage of their materials and the execution of their work, will properly connect and coordinate his work with theirs, and will not commit or permit any act which will interfere with the performance of their work.

B. Coordinate operations with those of other contractors. Cooperation will be required in the arrangement for the storage of materials and in the detailed execution of the work.

C. It is essential that all parties interested in the project cooperate to the end that the entire project will be brought to a successful conclusion as rapidly as possible, but the Owner cannot guarantee that no interference or delay will be caused thereby. Interference and delay resulting from such cooperation shall not be basis of claims against the Owner.

1.19 PAYROLLS OF CONTRACTOR AND SUBCONTRACTORS

A. The Contractor and each of his Subcontractors shall prepare his payrolls on forms prescribed and in accordance with instructions to be furnished by the Owner. Within seven (7) days after the regular payment date of the payroll, the Contractor shall deliver to the Owner, with copies to the Engineer, a certified legible copy or copies of each such payroll. Each such payroll shall contain the statement required by the Federal Regulations issued pursuant to the "Anti-Kickback Statute", (48 Stat. 948; 18 U.S.C. 874; 40 U.S.C. 276C).

B. Carrying any person on his payrolls not employed by him will not be permitted. Carrying employees of a subcontractor on his payrolls will not be permitted, but such employees must be carried on the payrolls of the employing subcontractor.

C. Each Contractor or Subcontractor shall preserve his weekly payroll records for a period of three (3) years from the date of completion of the Contract. The payroll records shall set out accurately and completely the name, occupational classification, and hourly wage rate of each employee, hours worked by him during the payroll period and full weekly wages earned by him, and deductions made from such weekly wages and the actual weekly wages paid to him. Such payroll records shall be made available at all times for inspection by the Owner or his authorized representatives, the Engineer or by agents of the United States Department of Labor.

1.20 PAYMENTS BY CONTRACTOR

A. Pay for all traffic control, safety, transportation and utility services not later than the 20th day of the calendar month following that in which services are rendered. Reimbursable costs for services rendered, as specified in the Contract Documents, shall not be incorporated into partial payment estimates until such time that the Contractor submits to the Engineer actual paid invoices from those in which services were rendered.

1.21 "DIG SAFE" LAW

A. Before proceeding with construction operations, the Contractor shall notify the State of Massachusetts Underground Plant Damage Prevention Systems (DIG SAFE at 1-888-344-7233), and shall make such supplemental investigations, including exploratory excavations, by hand digging, as he deems necessary to uncover and determine the exact locations of utilities and structures, and shall have no claims for damages due to encountering subsurface structures or utilities in locations other than that shown on the drawings, or which were made known to the Contractor prior to construction operations. The Contractor shall be responsible and liable for all damages to the existing utilities and structures.

1.22 FIRE PREVENTION AND PROTECTION

A. State and municipal rules and regulations with respect to fire prevention, fire-resistant construction and fire protection shall be strictly adhered to and all work and facilities necessary therefore shall be provided and maintained by the Contractor in an approved manner.

B. Provide fire protection equipment such as water tanks, hoses, pumps, extinguishers, and other materials, and apparatus, for the protection of the

contract work, and adjacent property. Trained personnel experienced in the operation of all fire protection equipment and apparatus shall be available on the site whenever work is in progress, and at such other times as may be necessary for the safety of the public and the work.

1.23 DUST CONTROL

A. Exercise every precaution and means to prevent and control dust arising out of all construction operations from becoming a nuisance to abutting property owners or surrounding neighborhoods. Pavements adjoining pipe trench shall be kept clean of excess materials wherever and whenever directed by the Engineer. Repeated daily dust control treatment shall be provided to satisfactorily prevent the spread of dust until permanent pavement repairs are made and until earth stockpiles have been removed, and all construction operations that might cause dust have been completed. No extra payment will be made for dust control measures, compensation shall be considered to be included in the prices stipulated for the appropriate items as listed in the Bid.

1.24 DISPOSAL OF DEBRIS

A. The materials from the demolition, and those used in the construction of the Work throughout the project, shall be deposited in such a manner so as to not endanger persons or the Work, and so that free access may be had at any time to all hydrants, gates and existing equipment in the vicinity of the work. The materials shall be kept trimmed-up so as to be of as little inconvenience as possible to the public travel and plant operations. All excavated materials not approved for backfill and fill, all surplus material, and all rock and boulders resulting from the excavations, shall be removed and satisfactorily disposed of off the site by the Contractor, at no additional expense to the Owner.

B. The materials being removed from the pipelines and manholes during the cleaning process shall be deposited in such a manner as to not endanger the public, plant personnel or persons performing the work. Such debris deposits may be of such nature, high in biological organic contents, or chemically aggressive that they will require proper disposal in a safe, health risk free, environment. Contact the Owner and Engineer and all agencies having jurisdiction thereof, for approval of debris disposal methods and locations of disposal, prior to disposing of any or all debris removed from pipe cleaning

methods. All debris shall be removed and satisfactorily disposed of off the work site, at no additional expense to the Owner.

1.25 NIGHT, SATURDAY, SUNDAY AND HOLIDAY WORK

A. No work shall be done at night or on Saturdays, or Sundays or holidays without the prior written approval of the Owner and Engineer.

1.26 LENGTH OF WORK DAY

A. The Owner retains the right to restrict the Contractor to an eight-hour workday. Such restrictions shall not be the basis for damages or claims against the Owner.

B. The Contractor's attentions is also directed to the fact that should it be deemed necessary to perform various items of work during off-peak flow or traffic hours, early morning or late night hours, then he shall notify the Engineer a minimum of 24 hours in advance as to his intentions and reasons for the change in work hours. The Contractor shall be responsible for properly contacting and informing all involved parties of such a change in work hours. The Contractor shall not be entitled to any additional compensation from the Owner for any expenses that may be incurred by change of working hours and/or scheduling.

1.27 HURRICANE PROTECTION

A. Should hurricane warnings be issued, the Contractor shall take every practicable precaution to minimize danger to persons, to the work and to adjacent property. These precautions shall include closing all openings; removing all loose materials, tools and/or equipment from exposed locations; and removing or securing scaffolding and other temporary work.

1.28 REDUCTION IN SCOPE OF WORK

A. The Owner reserves the right to decrease the scope of the work to be done under this Contract and to omit any work should the Owner deem it to be in the public interest to do so. To this end, the Owner reserves the right to reduce the quantity of any items or omit all of any as set forth in the BID, either prior to executing the contract or at any time during the progress of the work. The Owner further reserves the right, at anytime during the progress of the work, to restore all or part of any items previously omitted or reduced. Exercise by the Owner of the above rights shall not constitute any ground or basis of claim for damages or for anticipated profits on the work omitted.

END OF SECTION

SECTION 00800

SUPPLEMENTARY CONDITIONS

- 1.01 General
- 1.02 Limits of Normal Excavation
- 1.03 Bolts, Anchor Bolts, and Nuts
- 1.04 Covering Excavated Trench
- 1.05 Maintaining Trench Excavations
- 1.06 Disruption of Storm Drains
- 1.07 Precaution Against Hydraulic Uplift During Construction
- 1.08 Land, Easements and Rights-of-Way
- 1.09 Cleaning Finished Work

1.01 GENERAL

A. These Supplementary Conditions are requirements which amend or supplement the General Conditions specified elsewhere.

B. The duties and obligations imposed by these Supplementary Conditions will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

C. Assertion of any claim for any additional compensation or damages on account of and/or the fulfillment of these Supplementary Conditions will not be allowed.

1.02 LIMITS OF NORMAL EXCAVATION

A. In determining the quantities of excavation to which unit prices shall apply, the limits of normal width and depth of excavation shall be as described below, unless other limits are indicated in the Contract Documents.

B. For pipes in trench, the normal width of the trench shall be measured between vertical planes which are a distance apart equal to the sum of 18 inches plus 1-1/3 times the nominal inside diameter of the pipe. If the width so computed is less than 3.0 feet, a width of 3.0 feet shall be taken as the normal width for payment. The normal depth shall be measured to a distance of 0.5 feet below the bottom of the pipe in earth and 0.5 feet in rock, unless there be a cradle underneath the pipe, in which case the normal depth shall be measured to the underside of the cradle. The trench width for the cradle shall be assumed to be that specified above for pipes in the trench.

C. For concrete placed directly against undisturbed earth, the normal width and depth of the excavation for such concrete shall be measured to the neat lines of the concrete as indicated on the Drawings or as ordered.

D. For concrete placed against rock surfaces resulting from rock excavation, the normal width and depth of the excavation shall be measured to 4 inches outside the neat lines of the concrete as indicated on the Drawings or as ordered.

E. For other structures, except manholes as noted below, the normal width shall be measured between vertical planes 1.0 feet outside the neat lines of the several parts of the structure, except that the width at any elevation shall be measured as not less than the width at a lower elevation. The normal depth shall be measured to the underside of that part of the structure for which the excavation is made.

F. No additional width or depth of trenches excavated in earth or rock shall be allowed at standard circular manholes. The pay limit for rock removed outside proposed manholes shall commence one foot (1.0) outside the widest dimension of the structure or shall be the maximum connecting trench width, whichever is greater.

G. Wherever bell holes are required for jointing pipe, they shall be provided without additional compensation over and above that resulting from measurements as above described.

1.03 BOLTS, ANCHOR BOLTS AND NUTS

A. Furnish bolts, anchor bolts, nuts, washers, plates and bolt sleeves required by equipment to be installed under this Contract in accordance herewith. Anchor bolts shall have suitable washers and, where so required, their nuts shall be hexagonal.

B. Anchor bolts, nuts, washers, plates, and bolt sleeves shall be galvanized unless otherwise indicated or specified.

C. Expansion bolts shall have malleable iron and lead composition elements of the required number of units and size.

D. Unless otherwise specified, stud, tap, and machine bolts, and nuts shall conform to the

requirements of ASTM Standard Specification for Carbon Steel Externally and Internally Threaded Standard Fasteners, Designation A307. Hexagonal nuts of the same quality of metal as the bolts shall be used. All threads shall be clean cut and shall conform to ANSI Standard B1.1-1974 for Unified Inch Screw Threads (UN and UNR Thread Form).

E. Bolts, anchor bolts, nuts and washers, specified to be galvanized, shall be zinc coated, after being threaded, by the hot-dip process in conformity with the ASTM Standard Specification for Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strip, Designation A123, or the ASTM Standard Specifications for Zinc Coating (Hot Dip) on Iron and Steel Hardware, Designation A153, as is appropriate.

F. Bolts, anchor bolts, nuts, and washers specified to be stainless steel shall be Type 316 stainless steel unless otherwise indicated or specified.

G. Anchor bolts and expansion bolts shall be set accurately. If anchor bolts are set before the concrete has been placed, they shall be carefully held in suitable templates of acceptable design. Where indicated on the Drawings, specified, or required, anchor bolts shall be provided with square plates at least 4 inches by 4 inches by 3/8 inches or shall have square heads and washers and be set in the concrete forms with suitable pipe sleeves, or both. If anchor or expansion bolts are set after the concrete has been placed, all necessary drilling and grouting or caulking shall be done by the Contractor and care shall be taken not to damage the structure or finish by cracking, chipping, spalling, or otherwise during the drilling and caulking.

1.04 COVERING EXCAVATED TRENCH

A. In addition to the requirements in Section 00700 titled Interference with and Protection of Streets. Cover all open excavations when construction operations are suspended at the end of the day, or in excavated trenches where work is not actually in progress. Cover shall be capable of withstanding AASHTO H20-S16 loading. This cover shall consist of steel plates or some other satisfactory cover of adequate size and strength suitably held in place to keep all traffic out of excavations, all as verified in writing by the Contractor. The cover shall be laid over the excavation until it is backfilled.

1.05 MAINTAINING TRENCH EXCAVATIONS

A. The length of trench opened at any time, from point where ground is being broken to completed backfill, and also the amount of space in streets or public and private lands occupied by equipment, trench, and supplies, shall not exceed the length of space considered reasonably necessary and expedient by the Engineer. In determining the length of open trench or spaces for equipment, materials, supplies and other necessities, the Engineer will consider: the nature of the lands or streets where work is being done; types and methods of construction and equipment being used; inconvenience to the public or to private parties; possible dangers; and other proper matters. All work must be constructed with a minimum inconvenience and danger to the public and all other parties concerned.

B. Whenever any trench obstructs pedestrian and vehicular traffic in or to any public street, private driveway or property entrance, or on private property, take such means as may be necessary to maintain pedestrian and vehicular traffic and access. Until such time as the work may have attained sufficient strength to support backfill, or if for any other reason it is not expedient to backfill the trench immediately, construct and maintain suitable plank crossing and bridges to carry essential traffic in or to the street, driveway or property in question, as specified or directed.

C. Suitable signs, lights, and such items required by Police Authorities to direct traffic, shall be furnished and maintained by the Contractor at his own expense.

D. Keep streets and premises free from unnecessary obstructions, debris and all other materials. The Engineer may, at any time, order all equipment, materials, surplus from excavations, debris and all other materials lying outside that length of working space, promptly removed. Should the Contractor fail to remove such material within 24 hours after notice to remove the same, the Owner may cause any part or all of such materials to be removed by such persons as he may employ, at the Contractor's expense; and may deduct the costs thereof from payments which may be or may become, due to the Contractor under the Contract. In special cases, where public safety urgently demands it, the Owner may cause such materials to be removed at the Contractor's expense without prior notice.

1.06 DISRUPTION OF STORM DRAINS

A. Portions of the Work may be located in areas that are serviced by storm drains. Take extreme precaution to minimize disruption of the drains, and repair and/or make restitution for repairs by others for all disruptions caused by the construction operations.

1.07 PRECAUTION AGAINST HYDRAULIC UPLIFT DURING CONSTRUCTION

A. Protect all structures against hydraulic uplift until such structures have beneficially completed.

1.08 LAND, EASEMENTS, AND RIGHTS-OF-WAY

A. As indicated, a portion of the work may be located within easements and/or rights-of-way, obtained or which will be obtained by the Owner, through private property. On all other lands, the Contractor has no rights unless he obtains them from the proper parties as specified in Section 00700, Occupying Private Land.

B. Prior to issuance of the Notice to Proceed, the Owner shall obtain all land, easements and rights-of-way necessary for carrying out and for the completion of the work to be performed pursuant to the Contract Documents, unless otherwise mutually agreed.

C. The Owner shall provide to the Contractor information which delineates and describes the lands owned and rights-of-way acquired.

D. The Contractor shall provide at his own expense and without liability to the Owner any additional land and access thereto that the Contractor may desire for temporary construction facilities or for storage of materials.

E. If however, lands, easements or rights-of-way cannot be obtained before work on the project begins, the Contractor shall begin his work upon such land, easements or rights-of-way as have been previously acquired by the Owner, and no claims for damages whatsoever will be allowed by reason of its inability to procure the lands, easements, or rights-of-way for the said work, the Contractor shall not be entitled to make or assert a claim for damages by reason of the said delay, or to withdraw from the Contract except by consent of the Owner. Time for completion of work will be extended to such time as the Owner determines will compensate for the time

lost by such delay, such determination to set forth in writing.

1.09 CLEANING FINISHED WORK

A. After the work is completed, the pipes, manholes and structures shall be carefully cleaned free of debris and dirt, broken masonry, and mortar, and left in first class condition, ready to use. All temporary or excess materials shall be disposed of off-site and the work left broom clean, to the satisfaction of the Engineer.

END OF SECTION

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DIVISION 1

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work covered by the Contract, listing of Owner, Project location, Engineer. Sequence requirements, the Contractor's use of the premises and Owner's occupancy requirements.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work includes, but is not necessarily limited to the construction of approximately:
- Install approximately 1,815 linear feet of sanitary sewer CIPP liner
 - Epoxy line approximately 12 sewer manholes
 - Temporary by-pass of sanitary flows
 - Protection of wetlands
 - All related civil/site work as more particularly indicated, shown or described in the Drawings, Specifications, and other Contract Documents.

1.03 OWNER

- A. Town of Wareham, MA
Water Pollution Control Authority
Memorial Town Hall
54 Marion Road
Wareham, MA 02571
Telephone: (508)-291-3100
Contact: Guy Campinha, Director of Water Pollution Control Authority

1.04 PROJECT LOCATION

- A. Sea Street, Cottage Street, Pinehurst Drive, Ross Avenue, Warr Avenue, Smith Avenue area, Wareham, MA 02571.

1.05 ENGINEER

- A. BETA Group, Inc
6 Blackstone Valley Place
Lincoln, RI 02360
Robert Drake, P.E.
Telephone: (401)-333-2382
Email: rdrake@beta-inc.com

1.06 WORK SEQUENCE

- A. **The Contractor shall be required to complete all work within the 2020 calendar year. The Contractor shall be required to submit a proposed work schedule at the pre-construction, outlining his working operations to complete all work by December 31, 2020.** In order that Work may be conducted with minimum inconvenience to the public and, work under this Contract may be coordinated with other work which may be under construction or contemplated. The Engineer may determine the point or points and time or times when portions of work will commence or be carried on and may issue orders pertaining to the work sequence, relative to the rate of progress on several portions of the work.

1.07 CONTRACTOR USE OF PREMISES

- A. The Contractor's use of premises shall be within the limits shown on the Drawings and as defined in Section 00500 – Contract Agreement, for the performance of the Work.
- B. The Contractor shall maintain access to utilities and to the existing sanitary sewer, combined sewer and drainage systems at all times.
- C. The Contractor shall assume full responsibility for security of all materials and equipment on the site, including those of his subcontractor's.
- D. If directed by the Owner, the Contractor shall move any stored items that interfere with operations of the Owner.
- E. Obtain and pay for use of additional storage or work areas if needed to perform the Work.
- F. During the installation of temporary by-pass for handling of sanitary flows, the Contractor maybe required to remove, store and reset existing fencing. The Contractor shall be required to restore the existing fencing back to its original condition.

1.08 OWNER OCCUPANCY REQUIREMENTS

- A. The existing sanitary sewer, combined sewer and drainage systems, must remain in full service at all times, throughout the duration of the project. Contractor shall conduct his operations in accordance with Section 02149 - Maintaining Existing Flow.

END OF SECTION

SECTION 01015

SPECIAL CONDITIONS

PART 1 GENERAL

1.01 SUMMARY

1. Section Includes
 - a. Supplementary requirements governing work in private lands/easement areas and working hours.
2. Related sections
 - a. Section 00700 – General Conditions
 - b. Section 00800 – Supplementary Conditions
 - c. Section 01570 – Traffic Regulations

1.02 COVID-19

1. This project is subject to and the **General Bidder is required to comply with the Commonwealth of Massachusetts Sector Specific Workplace Safety Standards for Construction Sites to Address COVID-19 dated May 18, 2020 (or as amended)** included as an attachment to Section 01069, Health and Safety Requirements.

1.03 WORK HOURS

2. **The Contractor shall be required to complete all work within the 2020 calendar year. The Contractor shall be required to submit a proposed work schedule at the pre-construction, outlining his working operations to complete all work by December 31, 2020.**
3. Regular working hours are defined as 8 hours per day, Monday through Friday, excluding federal and state holidays, between the hours of 7:00 AM and 7:00 PM. The Contractor shall also abide by work hour restrictions set forth in or required under permits obtained by the Contractor or Owner in connection with the Project. Requests to work other than regular working hours shall be submitted to Engineer not less than 48 hours prior to any proposed weekend work or scheduled extended work weeks. Working outside regular working hours will be considered incidental and no extra costs will be provided.
4. The Sea Street work area along the marsh from Warr Avenue (manhole #1164) to Cottage Street (manhole #1158) and the Smith Avenue work area are tidally influenced from the Wareham River and manholes along/in the marsh area maybe under water at certain times. The Contractor is required to schedule his working operations accordingly.

1.04 POLICE WORK HOURS

1. The Contractor shall be required to provide police for this project and will be reimbursed under bid item #4. The Contractor shall be required to submit Police slips to the Engineer on a weekly basis.

The Uniformed Traffic Police Details for construction shall be arranged as necessary through the Contractor. The number of traffic details necessary for work at each location shall be pre-determined by the Engineer and the Town of Wareham. If the Contractor feels he may require more officers than pre-determined for a particular operation, he must make this request to the Engineer (verbally or in writing) prior to arranging the details, or incur the cost of the additional details.

The Contractor shall be responsible for cancellation of police details at minimum of 24 hours before schedule start time in the event that the work is cancelled. The Contractor will be held liable for all police detail expenses (4 hour minimum) resulting in failure to cancel police details in a timely manner.

1.05 CURED-IN-PLACE LINING

1. Due to the close proximity to wetlands, shellfish beds areas and other environmental concerns, the Cured-in-Place (CIP) liner **must be aquatic safe certified**. The aquatic safe certification must be submitted along with the bid, see Section 02766, Cured-in-Place Pipe Installation in Sewer Main for liner requirements. The monolithic system shall be continuously bonded to the interior of the pipeline.

1.06 TEMPORARY BY-PASS OF SEWERAGE FLOWS

1. The Contractor shall be required to submit detailed by-pass plans and schedule to the Town/Engineer for approval. The plans and schedule are required to assist the Town in informing the residents and other Town groups of the ongoing project. Night Work – The Contractor shall note that night work maybe required in or near tidally influenced areas. Working at night will be considered incidental and no extra costs will be provided. Pumper trucks will be required to control sewerage flows around the work area. The use of temporary by-pass piping will not be allowed.

1.07 WORK IN PRIVATE/EASEMENT AREAS

1. The Contractor shall note that there are several areas in which proposed work will be located in private/easement areas. The Town of Wareham will be responsible to obtain all necessary permits and/or permission to entry the private/easement areas. The Contractor shall be responsible to restore existing property to original conditions.

1.08 MANHOLES

1. The Contractor shall note that there maybe existing sewer manholes that are currently buried that are located within the limits of work. The Town of Wareham shall be responsible to locate and unbury the manholes prior to the scheduled CIPP lining of the sewer main.

2. The sewer manholes in the Sea Street area have watertight covers located several feet below grade. The manholes were recently raised to grade with traditional manhole covers in addition to the watertight covers. The Contractor may be required to pump out water trapped between the watertight cover and the traditional cover prior to starting his work operations.

1.09 TOWN CONSERVATION

1. The Contractor shall be required to submit detailed plans and schedule to the Town/Engineer describing this method(s) for accessing the site and protection of the environment during CIPP lining and spraying of manholes operations for approval. Plans will show/describe how the Contractor intends to bring/remove his equipment to appropriate manhole to perform his operations and how he intends to protect the surrounding environment including providing matts, ramps etc. Any changes requested by the Town/Engineer to the Contractor plans will be considered incidental and no extra payment will be provided.
2. Any disturbance to the environment including walls, driveways, trees and ell grass in the opinion of the Town/Engineer shall be repaired/replaced to its original condition at the Contractor's own expense.

1.10 TELEVISION INSPECTION OF SEWER MAINS

1. The Contractor is required to provide a before and after internal television inspection video of the CIPP lined sewer main under the appropriate Bid Item 1.
2. Existing video inspection logs of the existing Sea Street area sewer mains are located in the Appendix of these specifications. CCTV tapes and manhole inspection reports will be passed out at the mandatory pre-bid meeting. The tv inspection logs and manhole inspection reports are for informational purposes only.

END OF SECTION

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SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Measurement and payment criteria applicable to the Work performed under a unit price and/or lump sum payment method of Items listed in the BID.

B. RELATED SECTIONS

1. Section 00300 – Bid
2. Section 00500 – Contract Agreement

1.02 UNIT QUANTITIES SPECIFIED

A. Quantities and measurements indicated in SECTION 00300 are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Engineer shall determine payment.

B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit price contracted.

1.03 MEASUREMENTS OF QUANTITIES

A. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.

B. Measurement by Area: Measured by square dimension using mean length and width or radius.

C. Linear Measurement: Measured by linear dimension, along the horizontal projection of the centerline or mean chord.

D. At appropriate points in this text, specifications are given with respect to measuring or estimating certain quantities and the sums due for the same. Except as otherwise provided, the Engineer shall determine the appropriate method for measuring and computing each quantity, and for estimating the sums due for the various kinds of work and material, using such methods, tools and degrees of precision as are suitable for the particular measurement, Item or computation. When so requested by the Engineer, assistance in measuring or determining quantities, shall be provided by furnishing the help of unskilled laborers on the site, by furnishing copies of invoices, or by other means.

- E. For estimating quantities in which the computations of areas by analytic and geometric methods would be laborious, as determined by the Engineer, it is stipulated and agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas and may be used for this purpose.

1.04 UNIT PRICES

- A. Payment will be computed on the basis of the unit price bid in SECTION 00300 for each Item and the quantity of units completed. Unit prices are to include cost of all necessary materials, labor, equipment, overhead, profit and other applicable costs. (See Par. 1.06, this Section.)
- B. The Owner reserves the right to increase or decrease the scope of the Contract work by twenty-five percent (25%) of the original scope.

1.05 LUMP SUM PRICES

- A. Payment will be computed on the basis of the percentage of work completed on each Item in the contract BID as determined by the Engineer. Lump sum prices are to include the cost of all necessary materials, labor, equipment, overhead, profit and other applicable costs. (See Par. 1.06, this Section.)

1.06 PRICES INCLUDE

- A. The prices stated in the Proposal include full compensation not only for furnishing all the labor, equipment and material needed for, and for performing the work and building the structures contemplated by, the Contract, but also for assuming all risks of any kind for expenses arising by reason of the nature of the soil, ground water, or the action of the elements; for all excavation and backfilling; for the removal of and delay or damage occasioned by trees, stumps, tracks, pipes, ducts, timber, masonry or other obstacles; for removing, protecting, repairing, or restoring, without cost to the Owner, all pipes, ducts, drains, sewers, culverts, conduits, curbs, gutters, walks, fences, tracks, or other obstacles, road pavements and other ground surfacing whether shown on plans or not for draining, damming, pumping or otherwise handling and removing, without damage to the work or to other parties, and without needless nuisance, all water or sewage from whatever source which might affect the work or its progress, or be encountered in excavations made for the work; for furnishing, inserting and removing all sheeting, shoring staging, cofferdams, etc.; for all signs, fencing, lighting, watching, guarding, temporary surfacing, bridging, snow removal, etc., necessary to maintain and protect travel on streets, walks and private ways; for making all provisions necessary to maintain and protect buildings, fences, poles, trees, structures, pipes, ducts and other public or private property affected or endangered by the work; for the repair or replacement of such things if injured by neglect of such provisions for removing all surplus or rejected materials as may be directed; for replacing, repairing and maintaining the surfaces of streets, highways, public and private lands if and where disturbed by work performed under the Contract or by negligence in the performance of work under the Contract; for furnishing the requisite filling materials in case of any deficiency or lack of suitable materials; for

- obtaining all permits and licenses and complying with the requirements thereof, including the cost of furnishing any security needed in connection therewith; for any and all expense on account of the use of any patented device or process; for protection against inclement or cold weather; for all expenses incurred by or on account of the suspension; interruption or discontinuance of work; for the cost of the surety bond and adequate insurance; for all taxes, fees, union dues, etc., for which the Contractor may be or become liable, arising out of his operations incidental to the Contract; for providing equipment on the site and off site; for providing a field office and its appurtenances and for all general and incidental expenses; for tools, implements and equipment required to build and put into good working order all work contemplated by the Contract; for maintaining and guaranteeing the same as provided; and for fulfilling all obligations assumed by the Contractor under the Contract and its related documents.
- B. The Owner shall pay and the Contractor shall receive the prices stipulated in the BID made a part hereof as full compensation for everything performed and for all risks and obligations undertaken by the Contractor under and as required by the Contract.
 - C. The prices for those Items which involve excavation shall include compensation for disposal of surplus excavated material and handling water.
 - D. In all Items involving excavation, the price shall be based on doing the entire excavation in earth. Where rock is excavated, the price, therefore, shall be in addition to the cost of excavating earth and no deduction will be made in the amount for earth excavation.
 - E. The prices for all pipe Items (i.e. sewers, service connections, drains, etc.) shall constitute full compensation for furnishing, laying, jointing and testing; earth excavation, backfill and compaction; materials for bedding pipe as specified; and cleaning up.

1.07 PAYMENT

- A. In general, payment will be made for all Contract work satisfactorily completed through the end of the previous month. The payment will include any additional work which has been completed and approved and change order work agreed upon by the Owner and Contractor which has been completed and approved (See SECTION 00500).
- B. Each application for payment will indicate the total of a minimum percent retainage as defined in SECTION 00500, held by the Owner on the total of all work completed under the contract and approved for payment to-date.
- C. Monthly applications for payment may also indicate reduction or increase of the total Contract price when an approved change order results in a net reduction or net increase in the cost and quantity of work to be performed under the Contract.

- D. Special billings and charges against the Contract as credit or payment to the Owner, that are not for change order work, may be subtracted from monies due on any monthly application for payment but shall not serve to reduce the total Contract price.
- E. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Engineer multiplied by the unit price for work which is incorporated in or made necessary by the Work.

1.08 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

SEWER SYSTEM REHABILITATION

- BID ITEM NO. 1A INSTALL 8-INCH CURED-IN-PLACE PIPE LINER
- 1B INSTALL 10-INCH CURED-IN-PLACE PIPE LINER
- 1C INSTALL 12-INCH CURED-IN-PLACE PIPE LINER

1. The length of Cured-in-Place Pipe (CIPP) liner to be paid for under these items shall be by the linear foot along the horizontal projection of the completed liner as measured from centerline to centerline of manholes. The lengths of manhole inverts (as measured between the inside walls of the manholes) being deducted.
2. The unit price shall constitute full compensation for furnishing and installing the cured-in-place liner, reconstructing those pipes indicated by the installation of a resin-impregnated flexible felt tube inverted into the existing pipeline and cured, complete, as indicated on the drawings and as specified including cleaning of sewer main and manholes; removal and proper disposal of debris and sediment from inside the sewer main and manholes in conformance with federal, state and local regulations; cutting protruding service connections flush with the main pipe; **furnishing, installing, maintaining and removal of straw wattles; root removal; grouting, sealing and plugging leaks;** before and after internal TV/videotape investigations; reconnecting service laterals, cutting of liner in manholes; mobilization and demobilization; resident notification requirements; procuring and handling of liner samples, site and laboratory testing; bypassing of individual service connections if required due to high service flows as approved by Engineer; **sealing of service lateral connections; preparing and submitting detailed plans and schedule to the Town/Engineer describing his method accessing the site and protection of the environment during CIPP lining operations;** furnishing, installing and removal of mats, ramps and plats for protection of the environment during work operations; loaming and seeding and restoration of areas disturbed by the Contractor's operations; traffic control requirements; restoration of existing walls, driveways, trees and ell grass etc. disturbed during construction; applying for and obtaining all necessary permits to perform the work, and all other work incidental thereto and not specifically included for payment under other Items.
3. Water for the cleaning and curing process will be supplied to the Contractor by the Owner. The Contractor must contact the Owner prior to use of any water for this project.

BID ITEM NO. 2 EPOXY LINE SEWER MANHOLES

1. The height of sewer manholes to be epoxy lined to be paid for under this Item shall be equal to the actual, field measured vertical footage of sewer manholes epoxy lined, measured from the invert of the channel to the bottom of the manhole frame.
2. The unit price for this Item shall constitute full compensation for epoxy lining manholes as identified on the Drawings. Work shall include but shall not be limited to mobilization and demobilization; **preparing and submitting detailed plans and schedule to the Town/Engineer describing his method for accessing the site and protection of the environment during the spraying of manhole operations; removal of water between the watertight sealed manhole cover and the at grade manhole cover;** cleaning and preparing manhole as necessary, including but not limited to, bypass pumping and handling of existing sewer flows, removing and replacing unsound bricks, removing steps or rungs, cutting crowns of existing incoming/outgoing pipes flush with manhole as indicated on the Drawings, sealing and plugging leaks, application of liner from the bottom of the manhole frame down to and including the outgoing invert, testing and any retesting required of the rehabilitation of the manholes, complete, as specified or directed by the Engineer, and all other work incidental thereto and not specifically included for payment under other Items.

BID ITEM NO. 3 MAINTAINING EXISITING FLOW

1. Maintaining existing flow of the existing sewerage system to be paid for under this Item shall be by lump sum. Payment shall be prorated based on the actual completed cured-in-place pipe liner installed and back in service.
2. The unit price for this Item shall constitute full compensation for furnishing, installing, maintaining and removing all of the materials, equipment and labor necessary to satisfactorily maintain existing flows of the sewer mains; dewatering sewer mains; Contractor shall be required to submit detailed by-pass plans and schedule to the Town/Engineer for approval. Any requested changes by the Town/Engineer shall be considered incidental and no extra costs will be provided; The plans and schedule are required to assist the Town in informing the residents and other Town groups of the ongoing project; Night Work – The Contractor shall note that night work maybe required in or near tidally influenced areas. Working at night will be considered incidental and no extra costs will be provided; Pumper trucks will be required to control sewerage flows around the work area; The use of temporary by-pass piping will not be allowed; furnishing, installing, maintaining and removal of ramps and matts, furnishing and installing loam and seed to disturbed areas, and all other work incidental thereto and not specifically included for payment under other Items.
3. The unit price shall also include full compensation for preparing detailed temporary by-pass plans to be submitted to the Town of Wareham/Engineer for review and approval.

BID ITEM NO. 4 UNIFORMED TRAFFIC OFFICERS ALLOWANCE

1. Under this item the Contractor shall be reimbursed for certain charges for the services rendered of uniformed traffic officers to provide traffic control as specified.
2. The allowance for this item established in the Bid is an estimated figure to facilitate the comparison of bids. The actual amount to be paid under this item shall constitute full compensation for wages paid, premiums on workers' compensation insurance, payment on account of social security and other direct assessments on payroll, and all other costs incidental to the employment of such uniformed officers.
3. Payment will be based on the actual paid invoiced amount from the Police Department without allowance for mark up, overhead or profit.
4. If the total cost for uniformed traffic officers is greater or less than the amount stated in the Bid, a debit or credit of the difference in cost shall be to the Owner.
5. Payment shall be made to the Police department no later than the 20th day of the month following that month in which services were rendered.

PRICE ADJUSTMENTS FOR DIESEL FUEL, GASOLINE, AND CONCRETE

BID ITEM NO. 5A PRICE ADJUSTMENT FOR DIESEL FUEL

1. This adjustment will be based on fuel usage factors for various items of work developed by the Highway Research Board in Circular 158, dated July 1974. These factors will be multiplied by the quantities of work done in each item during each monthly period and further multiplied by the variance in price from the Base Price to the Period Price.
2. The Base Price of Diesel Fuel will be the price as indicated in the Bid. The Period Price will be the average of prices charged to the State, including State Tax for the bulk purchases made during each month, as published on the Massachusetts Department of Transportation's (MassDOT) website.
3. This adjustment will be applicable to excavation eligible for payment, material items furnished through excavation related Items, all measurements as determined by the Engineer and based on a fuel factor of 0.29 gallons per cubic yard.
4. This adjustment will be affected only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.
5. No adjustment will be paid for work done beyond the extended completion date of the Contract.
6. Any adjustment (increase or decrease) to estimated quantities made to each item at

the time of final payment will have the fuel price adjustment figured at the average period price for the entire term of the project for the difference of quantity.

BID ITEM NO. 5B PRICE ADJUSTMENT FOR GASOLINE

1. This adjustment will be based on fuel usage factors for various items of work developed by the Highway Research Board in Circular 158, dated July 1974. These factors will be multiplied by the quantities of work done in each Item during each monthly period and further multiplied by the variance in price from the Base Price to the Period Price.
2. The Base Price of Gasoline will be the price as indicated in the Bid. The Period Price will be the average of prices charged to the State, including State Tax for the bulk purchases made during each month, as published on the Massachusetts Department of Transportation's (MassDOT) website.
3. This adjustment will be applicable to excavation eligible for payment, material items furnished through excavation related Items, all measurements as determined by the Engineer and based on a fuel factor of 0.15 gallons per cubic yard.
4. This adjustment will be affected only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.
5. No adjustment will be paid for work done beyond the extended completion date of the Contract.
6. Any adjustment (increase or decrease) to estimated quantities made to each item at the time of final payment will have the fuel price adjustment figured at the average period price for the entire term of the project for the difference of quantity.

BID ITEM NO. 5C PRICE ADJUSTMENT FOR PORTLAND CEMENT

1. The Price Adjustment will be based on the variance in price for the Portland cement component only from the Base Price to the Period Price. It shall not include transportation or other charges.
2. The Base Price of Portland Cement will be the price as indicated in the Bid. The Period Price of Portland cement will be determined by using the latest published price, in dollars per ton (U.S.), for Portland cement (Type I) quoted for Boston, U.S.A. in the Construction Economics section of ENR Engineering News-Record magazine, and republished on the Massachusetts Department of Transportation's (MassDOT) website.
3. The price adjustment applies only to the actual Portland cement content in the mix placed on the job in accordance with the Standard Specifications for Highways and Bridges, Division III, Section M4.02.01. No adjustments will be made for any cement replacement materials such as fly ash or ground granulated blast furnace slag.

4. The Contract Price of the Portland cement concrete mix will be paid under the respective item in the Contract. The price adjustment, as herein provided, upwards or downwards, will be made after the work has been performed, using the monthly period price for the month during which the work was performed and determined by multiplying the number of cubic yards of Portland cement concrete placed during each monthly period, as measured by the Engineer, times the Portland cement content percentage times the variance in price between the Base Price and Period Price of Portland cement.
5. This adjustment will be effected only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.
6. No adjustment will be paid for work done beyond the extended completion date of the Contract.

END OF SECTION

SECTION 01035

MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Procedures for making modifications to the Contract by change orders or other means.

B. Related Sections

1. Document 00500 - Agreement

1.02 CHANGE ORDERS

- A. In general Change Orders will be issued for modification of Contract documents which will incorporate changes in the Contract requirements, including additions or deletions in the Work; for unforeseen field conditions which will necessitate changes in the Work; changes in code provisions or other requirements of federal, state or local authority requiring changes in the Work; changes in the availability of products or for incorporating new products into the work and for changes directed by the Engineer for the benefit of the Owner.
- B. Authority to execute Change Orders shall be that of the Engineer and not of the Contractor. Changes Orders will, in general, originate by a "Change Order Proposal Request" or by issuance of a "Construction Change Authorization".
- C. Unless authorized by the Engineer, no work shall be performed that is involved in the change until a formal Change Order is issued.
- D. To initiate a Change Order, the Engineer will forward a Change Order proposal request describing the proposed changes and if required, include additional or revised drawings and specifications soliciting a formal quotation of cost and time to complete the proposed Change Order work. Upon reaching mutual agreement on the cost and time, the Engineer will sign his approval of the Change Order and submit it to the Contractor for his full signature of acceptance.

1.03 FIELD ORDERS

- A. The Engineer may, to avoid costly removal of, or alterations to, present on-going work, issue a Work Directive Change authorizing the Contractor to proceed, subject to later negotiation of the price of the change.

1.04 PRICE AGREEMENTS

- A. Prices agreed upon to cover the Change Orders may be either by mutual acceptance of a lump sum or by unit prices as stated in the Contract bid proposal or actual direct cost plus a percentage for overhead, profit and other expenses consistent with Section 00500 – Contract Agreement.
- B. Work done by a subcontractor entitles the General Contractor a percentage of the sum of the actual direct cost, not including the subcontractor's overhead and profit, consistent with Section 00500 – Contract Agreement.
- C. Method for computing the cost of the change shall be based on the net additional increase. No overhead and profit shall be deducted from prices for changes deleting work.
- D. The Change Order form document shall indicate the net adjustment (+/-) to the total Contract price as a result thereof including extension or reduction of time when applicable.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01040

COORDINATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for coordinating the various parts of Work under this Contract.

1.02 REQUIREMENTS

A. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements.

B. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion.

C. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

D. Coordinate work with all utility companies necessary for completion of work under this contract.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION NOT USED

END OF SECTION

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SECTION 01060

REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Building codes, Mechanical codes, and Electrical codes, Regulations, Permits and Fees applicable to the project.

1.02 PERMITS BY CONTRACTOR

- A. The Contractor shall secure all necessary permits from the state, city or town authorities having jurisdiction, for digging of trenches in the streets or highways and all other building and construction operations requiring permits.

1.03 CODES

- A. The Contractor shall conform to the requirements of and pay all fees imposed by local and State Building Authorities having jurisdiction over the Work. The Contractor is responsible to conform to all building, mechanical, electrical and plumbing code requirements.
- B. The Contractor shall conform to the latest requirements of the following codes:
 - 1. Federal, State and Municipal Laws
 - 2. Any prevailing rules and regulations pertaining to adequate protection and/or guarding of any moving parts or otherwise hazardous locations.

1.05 FEES

- A. The cost of all permits secured by the Contractor shall be borne by him and shall be considered as having been included in the price or prices stated in the Bid. Copies of all required permits shall be filed with the Engineer prior to starting work for which a permit is required.

END OF SECTION

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SECTION 01067

STATE OF MASSACHUSETTS AND LOCAL REQUIREMENTS

PART 1 - GENERAL

TABLE OF CONTENTS

- 1.01 Excerpts from Massachusetts Statutes
- 1.02 Minimum Wage Rates
- 1.03 Safety and Health

LIST OF ATTACHMENTS

- Massachusetts Minimum Wage Rates.

1.01 EXCERPTS FROM MASSACHUSETTS STATUTES

- A. In addition to the requirements as set forth under "Compliance with Laws" in the AGREEMENT, particular attention is directed to certain stipulations of Chapter 149 of the General Laws of Massachusetts, as amended to date as follows:

Section 25. "Every employee in public work shall lodge, board, and trade where and with whom he elects; and no person or his agents or employees under contract with the commonwealth, a county, city or town, or with a department, board, commission or officer acting therefore, for the doing of public work shall directly or indirectly require, as a condition of employment therein, that the employee shall lodge, board or trade at a particular place or with a particular person. This section shall be made a part of the contract for such employment."

Section 26. "In the employment of mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works by the commonwealth, or by a county, town or district, or by persons given to citizens of the commonwealth who have been residents of the commonwealth for at least six months at the commencement of their employment who are male veterans as defined in clause forty-three of section seven of chapter four and who are qualified to perform the work to which the employment relates;

and secondly, to citizens of the commonwealth generally who have been residents of the commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers then to citizens of the United States, and every contract for such work shall contain a provision to this effect."

Section 34. "Every contract, except for the purchase of, material or supplies, involving the employment of laborers, workmen, mechanics, foremen, or inspectors, to which the commonwealth or any county or any town, subject to section thirty, is a party, shall contain a stipulation that no laborer, workman, mechanic, foreman or inspector working within the commonwealth, in the employ of the contractor, subcontractor or other person doing or contracting to do the whole or a part of the work contemplated by the contract, shall be required or permitted to work more than eight hours in any one day or more than 48 hours in any one week, or more than six days in any one week, except in cases of emergency, or in case any town subject to section thirty-one is a party to such a contract, more than eight hours in any one day, except as aforesaid..."

Section 34A. "Every contract for the construction, alteration, maintenance, repair or demolition of or addition to, any public building or other public works for the commonwealth or any political subdivision thereof shall contain stipulations requiring that the contractor shall, before commencing performance of such contract, provide by insurance for the payment of compensation and the furnishing of other benefits under chapter one hundred and fifty-two to all persons to be employed under the contract, and that the contractor shall continue such insurance in full force and effect during the term of the contract. No officer or agent contracting in behalf of the commonwealth or any political subdivision thereof shall award such a contract until he has been furnished with sufficient proof of compliance with the aforesaid stipulations. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of contract and shall operate as an immediate termination thereof. No cancellation of such insurance, whether by the insurer or by the insured, shall be valid unless written notice thereof is given by the party proposing cancellation to the other party and to the officer or agent who awarded the contract at least fifteen days prior to the intended effective date thereof, which date shall be expressed in said notice. Notice of cancellation sent by the party proposing receipt of the addressee requested, shall be a sufficient notice..."

Section 34B. "Every contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public works for the commonwealth or any political subdivision thereof shall contain stipulations requiring that the contractor shall pay to any reserve police officer employed by him in any city or town the prevailing rate of wage paid to regular police officers employed by him in such city or town."

Attention is directed to Chapter 774 of the Acts of 1972 amending Section 39F of Chapter 30 to read as follows:

Section 39F. "(1) Every contract awarded shall contain the following subparagraphs and in each case those subparagraphs shall be binding between the general contractor and each subcontractor.

"(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(b) Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(c) Each payment made by the awarding authority to the general contractor pursuant to sub-paragraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of that subcontractor; and the awarding authority shall take reasonable steps to compel the general contractor to make each such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor for payment to the subcontractor as provided in subparagraphs (a) and (b), the awarding authority shall act upon the demand as provided in this section.

(d) If, within seventy days after the subcontractor has substantially completed the subcontractor work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of that balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered

or mailed prior to the seventieth day after the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontractor including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided, that the awarding authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment for a subcontractor and out of amounts which later become payable to the general contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of such payment.

(h) The awarding authority shall deduct from payments to a general contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor."

Attention is also directed to Chapter 774 of the Acts of 1972 further amending Chapter 30 by adding after Section 39M the following section:

Section 39M. (b) Specifications for such contracts, and specification for contracts awarded pursuant to the provisions of said sections forty-four A to forty-four L of said chapter one hundred and forty-nine, shall be written to provide for full competition for each item of material to be furnished under the contract; except, however, that said specifications may be otherwise written for sound reasons in the public interest stated in writing in the public records of the awarding authority or promptly given in writing by the awarding authority to anyone making a written request therefore, in either instance such writing to be prepared after reasonable investigation. Every such contract shall provide that an item equal to that named or described in the said specifications may be furnished; and an item shall be considered equal to the item so named or described if (1) it is at least equal in quality, durability, appearance, strength and design, (2) it will perform at least equally the function imposed by the general design for the public work being contracted for or the material being purchased, and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the said specifications. For each item of material the specifications shall provide for either a minimum of three named brands of material or a description of material which can be met by a minimum of three manufacturers or producers, and for the equal of any one of said named or described materials.

Section 39N. "Every contract subject to section forty-four A of chapter one hundred forty-nine or subject to section thirty-nine M of chapter thirty shall contain the following paragraph in its entirety and an awarding authority may adopt reasonable rules or regulations in conformity with that paragraph concerning the filing, investigation and settlement of such claims:

If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party

making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly."

Attention is also directed to Chapter 1164 of the Acts of 1973 further amending Chapter 30 by adding after Section 39N the following two sections:

Section 39O. "Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety...

"(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more due to a failure of the awarding authority shall make an adjustment in the contract but shall not include any profit to the general contractor on such increase; and provide further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than 20 days before the general contractor notified the awarding authority of the act or failure to act involved in the claim."

Section 39P. "Every contract subject to section thirty-nine M of this chapter or section forty-four A of chapter one hundred forty-nine which requires the awarding authority, any official, its architect or engineer to make a decision on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, shall require that the decision be made promptly and, in any event no later than thirty days after the written

submission for decision; but if such decision required extended investigation and study, the awarding authority, the official, architect or engineer shall, within thirty days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty day period and the data by which the decision will be made."

Attention is also directed to Chapter 30, Section 39R of the General Laws of Massachusetts as amended to date as follows:

Section 39R. (a) The words defined herein shall have the meaning stated below whenever they appear in this section:

(1) "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to section thirty-nine M of chapter thirty, sections forty-four A through forty-four H, inclusive, of chapter one hundred forty-nine and sections thirty B through thirty P, inclusive, of chapter seven.

(2) "Contract" means any contract awarded or executed pursuant to sections thirty B through thirty P, inclusive, of chapter seven and any contract awarded or executed pursuant to section thirty-nine M of chapter thirty, or sections forty-four A through forty-four H, inclusive, of chapter one hundred forty-nine, which is for an amount or estimated amount greater than one hundred thousand dollars.

(3) "Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memorandum invoices, computer printouts, tapes, discs, papers and other documents transcribed information of any type, whether expressed in ordinary or machine language.

(4) "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his/her residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the awarding authority.

(5) "Audit", when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted accounting principles and auditing standards for the purpose of expressing a certified opinion thereon, or, in the

alternative, a qualified opinion or a delineation to express an opinion for stated reasons.

(6) "Accountant's Report", when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which she/he has made and sets forth his/her opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefor shall be stated. An accountant's report shall include as a part thereof a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of a financial condition of the contractor.

(7) "Management", when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the contractor.

(8) Accounting terms, unless otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principals and auditing standards.

(b) Subsection (a) (2) hereof notwithstanding, every agreement or contract awarded or executed pursuant to sections 30B through 30P, inclusive, of chapter seven, and pursuant to section 39M of chapter 30 or to section 44A through 44H, inclusive, of chapter 149, shall provide that:

(1) The contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the contractor, and

(2) until the expiration of six years after final payment, the awarding authority, office of inspector general, and the deputy commissioner of capital planning and operations shall have the right to examine any books, documents, papers or records of the contractor or of his/her subcontractors that directly pertain to, and involve transactions relating to, the contractor or his/her subcontractors, and

(3) if the agreement is a contract as defined herein, the contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the awarding authority, including in his/her description the date of the change and reasons therefore, and shall accompany said description with a letter from the contractor's independent certified public accountant approving or otherwise commenting on the changes, and

(4) if the agreement is a contract as defined herein, the contractor has filed a statement of management on internal accounting controls as set forth in paragraph (c) below prior to the execution of the contract, and

(5) if the agreement is a contract as defined herein, the contractor has filed prior to the execution of the contracts and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in paragraph (d) below.

(c) Every contractor awarded a contract shall file with the awarding authority a statement of management as to whether the system of internal accounting controls of the contractor and its subsidiaries reasonably assures that:

(1) transactions are executed in accordance with management's general and specific authorization;

(2) transactions are recorded as necessary

i. to permit preparation of financial statements in conformity with generally accepted accounting principles, and

ii. To maintain accountability for assets;

(3) access to assets is permitted only in accordance with management's general or specific authorization; and

(4) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

Every contractor awarded a contract shall also file with the awarding authority a statement prepared and signed by an independent certified public accountant, stating that she/he has examined the statement of management on internal accounting controls, and expressing an opinion as to

(1) whether the representations of management in response to this paragraph and paragraph (b) above are consistent with the result of management's evaluation of the system of internal accounting controls; and

(2) whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.

(d) Every contractor awarded a contract by the commonwealth or by any political subdivision thereof shall annually file with the awarding authority during the term of the contract a financial statement prepared by an

independent certified public accountant on the basis of an audit by sub accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report.

(e) The office of inspector general, the deputy commissioner for capital planning and operations and any other awarding authority shall enforce the provisions of this section. The deputy commissioner of capital planning and operations may after providing an opportunity for the inspector general and other interested parties to comment, promulgate pursuant to the provisions of chapter thirty A such rules, regulations and guidelines as are necessary to effectuate the purposes of this section. Such rules, regulations and guidelines may be applicable to all awarding authorities. A contractor's failure to satisfy any of the requirements of this section may be grounds for disqualification pursuant to section forty-four C of Chapter one hundred forty-nine.

1.02 MINIMUM WAGE RATES

- A. Minimum Wage Rates as determined by the Commissioner of Department of Labor and Industries under the provision of the Massachusetts General Laws, Chapter 149, Sections 26 to 27D, as amended, apply to this project. It is the responsibility of the contractor, before bid opening, to request if necessary, any additional information of Minimum Wage Rates for those trades-people who may be employed for the proposed work under this contract. Minimum wage rates are included at the end of this section.

1.03 SAFETY AND HEALTH

- A. This project is subject to the Safety and Health regulation of the U.S. Department of Labor set forth in 29 CFR Part 1926, Commonwealth of Massachusetts Regulations CMR 454, and to the Massachusetts Department of Labor and Industries, Division of Industrial Safety "Rules and Regulations for the Prevention of Accidents in Construction operations (Chapter 454 CMR 10.00 et. seq.)". Contractors shall be familiar with the requirements of these regulations.

END OF SECTION



CHARLES D. BAKER
Governor

KARYN E. POLITO
Lt. Governor

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

Prevailing Wage Rates

As determined by the Director under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H

ROSALIN ACOSTA
Secretary
MICHAEL FLANAGAN
Director

Awarding Authority: Town of Wareham
Contract Number: 2020-001 **City/Town:** WAREHAM
Description of Work: The work in this Contract includes the rehabilitation of approximately 1,850 linear feet of sanitary sewer ranging in size from 8"-12" via cured-in-place (CIPP) lining and the rehab of 12 SMH's.
Job Location: Sea Street and Smith Avenue

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
 - An Awarding Authority must request an updated wage schedule from the Department of Labor Standards ("DLS") if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
 - The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
 - All apprentices working on the project are required to be registered with the Massachusetts Department of Labor Standards, Division of Apprentice Standards (DLS/DAS). Apprentice must keep his/her apprentice identification card on his/her person during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DLS/DAS regardless of whether or not they are registered with any other federal, state, local, or private agency must be paid the journeyworker's rate for the trade.**
 - The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F "rental of equipment" contracts.
 - Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at <http://www.mass.gov/dols/pw>.
 - Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
 - Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
 - Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
-

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| Construction | | | | | | |
| (2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 08/01/2020 | \$35.15 | \$12.91 | \$13.72 | \$0.00 | \$61.78 |
| | 12/01/2020 | \$35.15 | \$12.91 | \$14.82 | \$0.00 | \$62.88 |
| | 06/01/2021 | \$35.95 | \$12.91 | \$14.82 | \$0.00 | \$63.68 |
| | 08/01/2021 | \$35.95 | \$13.41 | \$14.82 | \$0.00 | \$64.18 |
| | 12/01/2021 | \$35.95 | \$13.41 | \$16.01 | \$0.00 | \$65.37 |
| (3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 08/01/2020 | \$35.22 | \$12.91 | \$13.72 | \$0.00 | \$61.85 |
| | 12/01/2020 | \$35.22 | \$12.91 | \$14.82 | \$0.00 | \$62.95 |
| | 06/01/2021 | \$36.02 | \$12.91 | \$14.82 | \$0.00 | \$63.75 |
| | 08/01/2021 | \$36.02 | \$13.41 | \$14.82 | \$0.00 | \$64.25 |
| | 12/01/2021 | \$36.02 | \$13.41 | \$16.01 | \$0.00 | \$65.44 |
| (4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 08/01/2020 | \$35.34 | \$12.91 | \$13.72 | \$0.00 | \$61.97 |
| | 12/01/2020 | \$35.34 | \$12.91 | \$14.82 | \$0.00 | \$63.07 |
| | 06/01/2021 | \$36.14 | \$12.91 | \$14.82 | \$0.00 | \$63.87 |
| | 08/01/2021 | \$36.14 | \$13.41 | \$14.82 | \$0.00 | \$64.37 |
| | 12/01/2021 | \$36.14 | \$13.41 | \$16.01 | \$0.00 | \$65.56 |
| ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i> | 08/01/2019 | \$102.78 | \$9.90 | \$21.15 | \$0.00 | \$133.83 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2020 | \$34.81 | \$8.60 | \$15.77 | \$0.00 | \$59.18 |
| | 12/01/2020 | \$35.70 | \$8.60 | \$15.77 | \$0.00 | \$60.07 |
| | 06/01/2021 | \$36.62 | \$8.60 | \$15.77 | \$0.00 | \$60.99 |
| | 12/01/2021 | \$37.53 | \$8.60 | \$15.77 | \$0.00 | \$61.90 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| ASBESTOS WORKER (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)</i> | 06/01/2020 | \$38.00 | \$12.50 | \$8.85 | \$0.00 | \$59.35 |
| | 12/01/2020 | \$39.00 | \$12.50 | \$8.85 | \$0.00 | \$60.35 |
| ASPHALT RAKER <i>LABORERS - ZONE 2</i> | 06/01/2020 | \$34.31 | \$8.60 | \$15.77 | \$0.00 | \$58.68 |
| | 12/01/2020 | \$35.20 | \$8.60 | \$15.77 | \$0.00 | \$59.57 |
| | 06/01/2021 | \$36.12 | \$8.60 | \$15.77 | \$0.00 | \$60.49 |
| | 12/01/2021 | \$37.03 | \$8.60 | \$15.77 | \$0.00 | \$61.40 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$49.33 | \$13.00 | \$15.70 | \$0.00 | \$78.03 |
| | 12/01/2020 | \$50.48 | \$13.00 | \$15.70 | \$0.00 | \$79.18 |
| | 06/01/2021 | \$51.58 | \$13.00 | \$15.70 | \$0.00 | \$80.28 |
| | 12/01/2021 | \$52.73 | \$13.00 | \$15.70 | \$0.00 | \$81.43 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$49.33 | \$13.00 | \$15.70 | \$0.00 | \$78.03 |
| | 12/01/2020 | \$50.48 | \$13.00 | \$15.70 | \$0.00 | \$79.18 |
| | 06/01/2021 | \$51.58 | \$13.00 | \$15.70 | \$0.00 | \$80.28 |
| | 12/01/2021 | \$52.73 | \$13.00 | \$15.70 | \$0.00 | \$81.43 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i> | 06/01/2020 | \$34.31 | \$8.60 | \$15.77 | \$0.00 | \$58.68 |
| | 12/01/2020 | \$35.20 | \$8.60 | \$15.77 | \$0.00 | \$59.57 |
| | 06/01/2021 | \$36.12 | \$8.60 | \$15.77 | \$0.00 | \$60.49 |
| | 12/01/2021 | \$37.03 | \$8.60 | \$15.77 | \$0.00 | \$61.40 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|--------|---------|---------------------------|------------|
| BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i> | 06/01/2020 | \$34.81 | \$8.60 | \$15.77 | \$0.00 | \$59.18 |
| | 12/01/2020 | \$35.70 | \$8.60 | \$15.77 | \$0.00 | \$60.07 |
| | 06/01/2021 | \$36.62 | \$8.60 | \$15.77 | \$0.00 | \$60.99 |
| | 12/01/2021 | \$37.53 | \$8.60 | \$15.77 | \$0.00 | \$61.90 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| BOILER MAKER <i>BOILERMAKERS LOCAL 29</i> | 01/01/2020 | \$46.10 | \$7.07 | \$17.98 | \$0.00 | \$71.15 |

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 65 | \$29.97 | \$7.07 | \$11.69 | \$0.00 | \$48.73 |
| 2 | 65 | \$29.97 | \$7.07 | \$11.69 | \$0.00 | \$48.73 |
| 3 | 70 | \$32.27 | \$7.07 | \$12.59 | \$0.00 | \$51.93 |
| 4 | 75 | \$34.58 | \$7.07 | \$13.49 | \$0.00 | \$55.14 |
| 5 | 80 | \$36.88 | \$7.07 | \$14.38 | \$0.00 | \$58.33 |
| 6 | 85 | \$39.19 | \$7.07 | \$15.29 | \$0.00 | \$61.55 |
| 7 | 90 | \$41.49 | \$7.07 | \$16.18 | \$0.00 | \$64.74 |
| 8 | 95 | \$43.80 | \$7.07 | \$17.09 | \$0.00 | \$67.96 |

Notes:

Apprentice to Journeyworker Ratio:1:4

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (NEW BEDFORD)</i> | 08/01/2020 | \$55.75 | \$10.75 | \$22.09 | \$0.00 | \$88.59 |
| | 02/01/2021 | \$56.39 | \$10.75 | \$22.09 | \$0.00 | \$89.23 |
| | 08/01/2021 | \$57.79 | \$10.75 | \$22.25 | \$0.00 | \$90.79 |
| | 02/01/2022 | \$58.38 | \$10.75 | \$22.25 | \$0.00 | \$91.38 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 New Bedford

Effective Date - 08/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$27.88 | \$10.75 | \$22.09 | \$0.00 | \$60.72 |
| 2 | 60 | \$33.45 | \$10.75 | \$22.09 | \$0.00 | \$66.29 |
| 3 | 70 | \$39.03 | \$10.75 | \$22.09 | \$0.00 | \$71.87 |
| 4 | 80 | \$44.60 | \$10.75 | \$22.09 | \$0.00 | \$77.44 |
| 5 | 90 | \$50.18 | \$10.75 | \$22.09 | \$0.00 | \$83.02 |

Effective Date - 02/01/2021

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$28.20 | \$10.75 | \$22.09 | \$0.00 | \$61.04 |
| 2 | 60 | \$33.83 | \$10.75 | \$22.09 | \$0.00 | \$66.67 |
| 3 | 70 | \$39.47 | \$10.75 | \$22.09 | \$0.00 | \$72.31 |
| 4 | 80 | \$45.11 | \$10.75 | \$22.09 | \$0.00 | \$77.95 |
| 5 | 90 | \$50.75 | \$10.75 | \$22.09 | \$0.00 | \$83.59 |

Notes:

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$48.81 | \$13.00 | \$15.70 | \$0.00 | \$77.51 |
| | 12/01/2020 | \$49.95 | \$13.00 | \$15.70 | \$0.00 | \$78.65 |
| | 06/01/2021 | \$51.04 | \$13.00 | \$15.70 | \$0.00 | \$79.74 |
| | 12/01/2021 | \$52.18 | \$13.00 | \$15.70 | \$0.00 | \$80.88 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i> | 06/01/2020 | \$40.30 | \$8.60 | \$17.24 | \$0.00 | \$66.14 |
| | 12/01/2020 | \$41.28 | \$8.60 | \$17.24 | \$0.00 | \$67.12 |
| | 06/01/2021 | \$42.30 | \$8.60 | \$17.24 | \$0.00 | \$68.14 |
| | 12/01/2021 | \$43.31 | \$8.60 | \$17.24 | \$0.00 | \$69.15 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i> | 06/01/2020 | \$39.15 | \$8.60 | \$17.24 | \$0.00 | \$64.99 |
| | 12/01/2020 | \$40.13 | \$8.60 | \$17.24 | \$0.00 | \$65.97 |
| | 06/01/2021 | \$41.15 | \$8.60 | \$17.24 | \$0.00 | \$66.99 |
| | 12/01/2021 | \$42.16 | \$8.60 | \$17.24 | \$0.00 | \$68.00 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i> | 06/01/2020 | \$39.15 | \$8.60 | \$17.24 | \$0.00 | \$64.99 |
| | 12/01/2020 | \$40.13 | \$8.60 | \$17.24 | \$0.00 | \$65.97 |
| | 06/01/2021 | \$41.15 | \$8.60 | \$17.24 | \$0.00 | \$66.99 |
| | 12/01/2021 | \$42.16 | \$8.60 | \$17.24 | \$0.00 | \$68.00 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2020 | \$34.31 | \$8.60 | \$15.77 | \$0.00 | \$58.68 |
| | 12/01/2020 | \$35.20 | \$8.60 | \$15.77 | \$0.00 | \$59.57 |
| | 06/01/2021 | \$36.12 | \$8.60 | \$15.77 | \$0.00 | \$60.49 |
| | 12/01/2021 | \$37.03 | \$8.60 | \$15.77 | \$0.00 | \$61.40 |

For apprentice rates see "Apprentice- LABORER"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|--------|---------|---------------------------|------------|
| CARPENTER | 03/01/2020 | \$42.50 | \$9.40 | \$18.95 | \$0.00 | \$70.85 |
| CARPENTERS -ZONE 2 (Eastern Massachusetts) | 09/01/2020 | \$43.15 | \$9.40 | \$18.95 | \$0.00 | \$71.50 |
| | 03/01/2021 | \$43.75 | \$9.40 | \$18.95 | \$0.00 | \$72.10 |
| | 09/01/2021 | \$44.40 | \$9.40 | \$18.95 | \$0.00 | \$72.75 |
| | 03/01/2022 | \$45.00 | \$9.40 | \$18.95 | \$0.00 | \$73.35 |
| | 09/01/2022 | \$45.65 | \$9.40 | \$18.95 | \$0.00 | \$74.00 |
| | 03/01/2023 | \$46.25 | \$9.40 | \$18.95 | \$0.00 | \$74.60 |

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 03/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$21.25 | \$9.40 | \$1.73 | \$0.00 | \$32.38 |
| 2 | 60 | \$25.50 | \$9.40 | \$1.73 | \$0.00 | \$36.63 |
| 3 | 70 | \$29.75 | \$9.40 | \$13.76 | \$0.00 | \$52.91 |
| 4 | 75 | \$31.88 | \$9.40 | \$13.76 | \$0.00 | \$55.04 |
| 5 | 80 | \$34.00 | \$9.40 | \$15.49 | \$0.00 | \$58.89 |
| 6 | 80 | \$34.00 | \$9.40 | \$15.49 | \$0.00 | \$58.89 |
| 7 | 90 | \$38.25 | \$9.40 | \$17.22 | \$0.00 | \$64.87 |
| 8 | 90 | \$38.25 | \$9.40 | \$17.22 | \$0.00 | \$64.87 |

Effective Date - 09/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$21.58 | \$9.40 | \$1.73 | \$0.00 | \$32.71 |
| 2 | 60 | \$25.89 | \$9.40 | \$1.73 | \$0.00 | \$37.02 |
| 3 | 70 | \$30.21 | \$9.40 | \$13.76 | \$0.00 | \$53.37 |
| 4 | 75 | \$32.36 | \$9.40 | \$13.76 | \$0.00 | \$55.52 |
| 5 | 80 | \$34.52 | \$9.40 | \$15.49 | \$0.00 | \$59.41 |
| 6 | 80 | \$34.52 | \$9.40 | \$15.49 | \$0.00 | \$59.41 |
| 7 | 90 | \$38.84 | \$9.40 | \$17.22 | \$0.00 | \$65.46 |
| 8 | 90 | \$38.84 | \$9.40 | \$17.22 | \$0.00 | \$65.46 |

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$30.26/ 3&4 \$36.18/ 5&6 \$54.64/ 7&8 \$60.62

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|---------------------------------|------------|---------|--------|--------|--------|---------|
| CARPENTER WOOD FRAME | 10/01/2019 | \$27.95 | \$7.07 | \$7.86 | \$0.00 | \$42.88 |
| CARPENTERS -ZONE 2 (Wood Frame) | | | | | | |

All Aspects of New Wood Frame Work

Apprentice - CARPENTER (Wood Frame) - Zone 2

Effective Date - 10/01/2019

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 60 | \$16.77 | \$7.07 | \$0.00 | \$0.00 | \$23.84 |
| 2 | 60 | \$16.77 | \$7.07 | \$0.00 | \$0.00 | \$23.84 |
| 3 | 65 | \$18.17 | \$7.07 | \$7.86 | \$0.00 | \$33.10 |
| 4 | 70 | \$19.57 | \$7.07 | \$7.86 | \$0.00 | \$34.50 |
| 5 | 75 | \$20.96 | \$7.07 | \$7.86 | \$0.00 | \$35.89 |
| 6 | 80 | \$22.36 | \$7.07 | \$7.86 | \$0.00 | \$37.29 |
| 7 | 85 | \$23.76 | \$7.07 | \$7.86 | \$0.00 | \$38.69 |
| 8 | 90 | \$25.16 | \$7.07 | \$7.86 | \$0.00 | \$40.09 |

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 \$19.65/ 3&4 \$27.19/ 5&6 \$34.50/ 7&8 \$37.29

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 (NEW BEDFORD) | 01/01/2020 | \$49.07 | \$12.75 | \$22.41 | \$0.62 | \$84.85 |
|--|------------|---------|---------|---------|--------|---------|

Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (New Bedford)

Effective Date - 01/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$24.54 | \$12.75 | \$15.41 | \$0.00 | \$52.70 |
| 2 | 60 | \$29.44 | \$12.75 | \$17.41 | \$0.62 | \$60.22 |
| 3 | 65 | \$31.90 | \$12.75 | \$18.41 | \$0.62 | \$63.68 |
| 4 | 70 | \$34.35 | \$12.75 | \$19.41 | \$0.62 | \$67.13 |
| 5 | 75 | \$36.80 | \$12.75 | \$20.41 | \$0.62 | \$70.58 |
| 6 | 80 | \$39.26 | \$12.75 | \$21.41 | \$0.62 | \$74.04 |
| 7 | 90 | \$44.16 | \$12.75 | \$22.41 | \$0.62 | \$79.94 |

Notes:

Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

Apprentice to Journeyworker Ratio:1:3

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| CHAIN SAW OPERATOR LABORERS - ZONE 2 | 06/01/2020 | \$34.31 | \$8.60 | \$15.77 | \$0.00 | \$58.68 |
| | 12/01/2020 | \$35.20 | \$8.60 | \$15.77 | \$0.00 | \$59.57 |
| | 06/01/2021 | \$36.12 | \$8.60 | \$15.77 | \$0.00 | \$60.49 |
| | 12/01/2021 | \$37.03 | \$8.60 | \$15.77 | \$0.00 | \$61.40 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES OPERATING ENGINEERS LOCAL 4 | 06/01/2020 | \$50.33 | \$13.00 | \$15.70 | \$0.00 | \$79.03 |
| | 12/01/2020 | \$51.48 | \$13.00 | \$15.70 | \$0.00 | \$80.18 |
| | 06/01/2021 | \$52.58 | \$13.00 | \$15.70 | \$0.00 | \$81.28 |
| | 12/01/2021 | \$53.73 | \$13.00 | \$15.70 | \$0.00 | \$82.43 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$32.72 | \$13.00 | \$15.70 | \$0.00 | \$61.42 |
| | 12/01/2020 | \$33.50 | \$13.00 | \$15.70 | \$0.00 | \$62.20 |
| | 06/01/2021 | \$34.25 | \$13.00 | \$15.70 | \$0.00 | \$62.95 |
| | 12/01/2021 | \$35.04 | \$13.00 | \$15.70 | \$0.00 | \$63.74 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i> | 07/01/2020 | \$51.51 | \$8.25 | \$22.40 | \$0.00 | \$82.16 |
| | 01/01/2021 | \$52.06 | \$8.25 | \$22.75 | \$0.00 | \$83.06 |

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$25.76 | \$8.25 | \$0.00 | \$0.00 | \$34.01 |
| 2 | 55 | \$28.33 | \$8.25 | \$6.05 | \$0.00 | \$42.63 |
| 3 | 60 | \$30.91 | \$8.25 | \$6.60 | \$0.00 | \$45.76 |
| 4 | 65 | \$33.48 | \$8.25 | \$7.15 | \$0.00 | \$48.88 |
| 5 | 70 | \$36.06 | \$8.25 | \$19.10 | \$0.00 | \$63.41 |
| 6 | 75 | \$38.63 | \$8.25 | \$19.65 | \$0.00 | \$66.53 |
| 7 | 80 | \$41.21 | \$8.25 | \$20.20 | \$0.00 | \$69.66 |
| 8 | 90 | \$46.36 | \$8.25 | \$21.30 | \$0.00 | \$75.91 |

Effective Date - 01/01/2021

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$26.03 | \$8.25 | \$0.00 | \$0.00 | \$34.28 |
| 2 | 55 | \$28.63 | \$8.25 | \$6.16 | \$0.00 | \$43.04 |
| 3 | 60 | \$31.24 | \$8.25 | \$6.72 | \$0.00 | \$46.21 |
| 4 | 65 | \$33.84 | \$8.25 | \$7.28 | \$0.00 | \$49.37 |
| 5 | 70 | \$36.44 | \$8.25 | \$19.39 | \$0.00 | \$64.08 |
| 6 | 75 | \$39.05 | \$8.25 | \$19.95 | \$0.00 | \$67.25 |
| 7 | 80 | \$41.65 | \$8.25 | \$20.51 | \$0.00 | \$70.41 |
| 8 | 90 | \$46.85 | \$8.25 | \$21.63 | \$0.00 | \$76.73 |

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| DEMO: ADZEMAN <i>LABORERS - ZONE 2</i> | 12/01/2019 | \$39.30 | \$8.10 | \$16.60 | \$0.00 | \$64.00 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| DEMO: BACKHOE/LOADER/HAMMER OPERATOR <i>LABORERS - ZONE 2</i> | 12/01/2019 | \$40.30 | \$8.10 | \$16.60 | \$0.00 | \$65.00 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| DEMO: BURNERS <i>LABORERS - ZONE 2</i> | 12/01/2019 | \$40.05 | \$8.10 | \$16.60 | \$0.00 | \$64.75 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 2</i> | 12/01/2019 | \$40.30 | \$8.10 | \$16.60 | \$0.00 | \$65.00 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i> | 12/01/2019 | \$40.05 | \$8.10 | \$16.60 | \$0.00 | \$64.75 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i> | 12/01/2019 | \$39.30 | \$8.10 | \$16.60 | \$0.00 | \$64.00 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$48.81 | \$13.00 | \$15.70 | \$0.00 | \$77.51 |
| | 12/01/2020 | \$49.95 | \$13.00 | \$15.70 | \$0.00 | \$78.65 |
| | 06/01/2021 | \$51.04 | \$13.00 | \$15.70 | \$0.00 | \$79.74 |
| | 12/01/2021 | \$52.18 | \$13.00 | \$15.70 | \$0.00 | \$80.88 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i> | 08/01/2019 | \$68.52 | \$9.90 | \$21.15 | \$0.00 | \$99.57 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i> | 08/01/2019 | \$48.94 | \$9.90 | \$21.15 | \$0.00 | \$79.99 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i> | 08/01/2019 | \$73.41 | \$9.90 | \$21.15 | \$0.00 | \$104.46 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i> | 08/01/2019 | \$102.78 | \$9.90 | \$21.15 | \$0.00 | \$133.83 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| ELECTRICIAN <i>ELECTRICIANS LOCAL 223</i> | 03/01/2020 | \$42.87 | \$10.40 | \$13.94 | \$0.00 | \$67.21 |

Apprentice - ELECTRICIAN - Local 223

Effective Date - 03/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 40 | \$17.15 | \$10.40 | \$0.51 | \$0.00 | \$28.06 |
| 2 | 42 | \$18.01 | \$10.40 | \$0.54 | \$0.00 | \$28.95 |
| 3 | 45 | \$19.29 | \$10.40 | \$0.58 | \$0.00 | \$30.27 |
| 4 | 48 | \$20.58 | \$10.40 | \$5.22 | \$0.00 | \$36.20 |
| 5 | 50 | \$21.44 | \$10.40 | \$5.26 | \$0.00 | \$37.10 |
| 6 | 55 | \$23.58 | \$10.40 | \$5.63 | \$0.00 | \$39.61 |
| 7 | 60 | \$25.72 | \$10.40 | \$5.93 | \$0.00 | \$42.05 |
| 8 | 65 | \$27.87 | \$10.40 | \$6.25 | \$0.00 | \$44.52 |
| 9 | 70 | \$30.01 | \$10.40 | \$6.54 | \$0.00 | \$46.95 |
| 10 | 75 | \$32.15 | \$10.40 | \$6.79 | \$0.00 | \$49.34 |

Notes:

Steps are 750 hours

Apprentice to Journeyworker Ratio:2:3***

| | | | | | | |
|--|------------|---------|---------|---------|--------|----------|
| ELEVATOR CONSTRUCTOR <i>ELEVATOR CONSTRUCTORS LOCAL 4</i> | 01/01/2020 | \$61.42 | \$15.73 | \$18.41 | \$0.00 | \$95.56 |
| | 01/01/2021 | \$63.47 | \$15.88 | \$19.31 | \$0.00 | \$98.66 |
| | 01/01/2022 | \$65.62 | \$16.03 | \$20.21 | \$0.00 | \$101.86 |

Apprentice - ELEVATOR CONSTRUCTOR - Local 4

Effective Date - 01/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$30.71 | \$15.73 | \$0.00 | \$0.00 | \$46.44 |
| 2 | 55 | \$33.78 | \$15.73 | \$18.41 | \$0.00 | \$67.92 |
| 3 | 65 | \$39.92 | \$15.73 | \$18.41 | \$0.00 | \$74.06 |
| 4 | 70 | \$42.99 | \$15.73 | \$18.41 | \$0.00 | \$77.13 |
| 5 | 80 | \$49.14 | \$15.73 | \$18.41 | \$0.00 | \$83.28 |

Effective Date - 01/01/2021

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$31.74 | \$15.88 | \$0.00 | \$0.00 | \$47.62 |
| 2 | 55 | \$34.91 | \$15.88 | \$19.31 | \$0.00 | \$70.10 |
| 3 | 65 | \$41.26 | \$15.88 | \$19.31 | \$0.00 | \$76.45 |
| 4 | 70 | \$44.43 | \$15.88 | \$19.31 | \$0.00 | \$79.62 |
| 5 | 80 | \$50.78 | \$15.88 | \$19.31 | \$0.00 | \$85.97 |

Notes:

Steps 1-2 are 6 mos.; Steps 3-5 are 1 year

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 4</i> | 01/01/2020 | \$42.99 | \$15.73 | \$18.41 | \$0.00 | \$77.13 |
| | 01/01/2021 | \$44.43 | \$15.88 | \$19.31 | \$0.00 | \$79.62 |
| | 01/01/2022 | \$45.93 | \$16.03 | \$20.21 | \$0.00 | \$82.17 |

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 2</i> | 06/01/2020 | \$34.31 | \$8.60 | \$15.77 | \$0.00 | \$58.68 |
| | 12/01/2020 | \$35.20 | \$8.60 | \$15.77 | \$0.00 | \$59.57 |
| | 06/01/2021 | \$36.12 | \$8.60 | \$15.77 | \$0.00 | \$60.49 |
| | 12/01/2021 | \$37.03 | \$8.60 | \$15.77 | \$0.00 | \$61.40 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i> | 05/01/2020 | \$44.73 | \$12.50 | \$15.70 | \$0.00 | \$72.93 |
| | 11/01/2020 | \$45.73 | \$12.50 | \$15.70 | \$0.00 | \$73.93 |
| | 05/01/2021 | \$46.88 | \$12.50 | \$15.70 | \$0.00 | \$75.08 |
| | 11/01/2021 | \$47.88 | \$12.50 | \$15.70 | \$0.00 | \$76.08 |
| | 05/01/2022 | \$49.03 | \$12.50 | \$15.70 | \$0.00 | \$77.23 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i> | 05/01/2020 | \$46.23 | \$12.50 | \$15.70 | \$0.00 | \$74.43 |
| | 11/01/2020 | \$47.24 | \$12.50 | \$15.70 | \$0.00 | \$75.44 |
| | 05/01/2021 | \$48.40 | \$12.50 | \$15.70 | \$0.00 | \$76.60 |
| | 11/01/2021 | \$49.41 | \$12.50 | \$15.70 | \$0.00 | \$77.61 |
| | 05/01/2022 | \$50.57 | \$12.50 | \$15.70 | \$0.00 | \$78.77 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i> | 05/01/2020 | \$22.64 | \$12.50 | \$15.70 | \$0.00 | \$50.84 |
| | 11/01/2020 | \$23.23 | \$12.50 | \$15.70 | \$0.00 | \$51.43 |
| | 05/01/2021 | \$23.91 | \$12.50 | \$15.70 | \$0.00 | \$52.11 |
| | 11/01/2021 | \$24.51 | \$12.50 | \$15.70 | \$0.00 | \$52.71 |
| | 05/01/2022 | \$25.18 | \$12.50 | \$15.70 | \$0.00 | \$53.38 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 223</i> | 03/01/2020 | \$42.87 | \$10.40 | \$13.94 | \$0.00 | \$67.21 |
| For apprentice rates see "Apprentice- ELECTRICIAN" | | | | | | |
| FIRE ALARM REPAIR / MAINTENANCE <i>/ COMMISSIONING ELECTRICIANS LOCAL 223</i> | 03/01/2020 | \$36.27 | \$10.40 | \$11.78 | \$0.00 | \$58.45 |
| For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN" | | | | | | |
| FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$40.30 | \$13.00 | \$15.70 | \$0.00 | \$69.00 |
| | 12/01/2020 | \$41.25 | \$13.00 | \$15.70 | \$0.00 | \$69.95 |
| | 06/01/2021 | \$42.16 | \$13.00 | \$15.70 | \$0.00 | \$70.86 |
| | 12/01/2021 | \$43.11 | \$13.00 | \$15.70 | \$0.00 | \$71.81 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| FLAGGER & SIGNALER <i>LABORERS - ZONE 2</i> | 06/01/2020 | \$23.50 | \$8.60 | \$15.77 | \$0.00 | \$47.87 |
| | 12/01/2020 | \$24.50 | \$8.60 | \$15.77 | \$0.00 | \$48.87 |
| | 06/01/2021 | \$24.50 | \$8.60 | \$15.77 | \$0.00 | \$48.87 |
| | 12/01/2021 | \$24.50 | \$8.60 | \$15.77 | \$0.00 | \$48.87 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i> | 03/01/2020 | \$47.05 | \$9.40 | \$19.25 | \$0.00 | \$75.70 |
| | 09/01/2020 | \$47.85 | \$9.40 | \$19.25 | \$0.00 | \$76.50 |
| | 03/01/2021 | \$48.65 | \$9.40 | \$19.25 | \$0.00 | \$77.30 |
| | 09/01/2021 | \$49.45 | \$9.40 | \$19.25 | \$0.00 | \$78.10 |
| | 03/01/2022 | \$50.25 | \$9.40 | \$19.25 | \$0.00 | \$78.90 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - FLOORCOVERER - Local 2168 Zone I

Effective Date - 03/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$23.53 | \$9.40 | \$1.79 | \$0.00 | \$34.72 |
| 2 | 55 | \$25.88 | \$9.40 | \$1.79 | \$0.00 | \$37.07 |
| 3 | 60 | \$28.23 | \$9.40 | \$13.88 | \$0.00 | \$51.51 |
| 4 | 65 | \$30.58 | \$9.40 | \$13.88 | \$0.00 | \$53.86 |
| 5 | 70 | \$32.94 | \$9.40 | \$15.67 | \$0.00 | \$58.01 |
| 6 | 75 | \$35.29 | \$9.40 | \$15.67 | \$0.00 | \$60.36 |
| 7 | 80 | \$37.64 | \$9.40 | \$17.46 | \$0.00 | \$64.50 |
| 8 | 85 | \$39.99 | \$9.40 | \$17.46 | \$0.00 | \$66.85 |

Effective Date - 09/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$23.93 | \$9.40 | \$1.79 | \$0.00 | \$35.12 |
| 2 | 55 | \$26.32 | \$9.40 | \$1.79 | \$0.00 | \$37.51 |
| 3 | 60 | \$28.71 | \$9.40 | \$13.88 | \$0.00 | \$51.99 |
| 4 | 65 | \$31.10 | \$9.40 | \$13.88 | \$0.00 | \$54.38 |
| 5 | 70 | \$33.50 | \$9.40 | \$15.67 | \$0.00 | \$58.57 |
| 6 | 75 | \$35.89 | \$9.40 | \$15.67 | \$0.00 | \$60.96 |
| 7 | 80 | \$38.28 | \$9.40 | \$17.46 | \$0.00 | \$65.14 |
| 8 | 85 | \$40.67 | \$9.40 | \$17.46 | \$0.00 | \$67.53 |

Notes: Steps are 750 hrs.
 % After 09/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)
 Step 1&2 \$32.36/ 3&4 \$38.80/ 5&6 \$58.01/ 7&8 \$64.50

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| FORK LIFT/CHERRY PICKER <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$49.33 | \$13.00 | \$15.70 | \$0.00 | \$78.03 |
| | 12/01/2020 | \$50.48 | \$13.00 | \$15.70 | \$0.00 | \$79.18 |
| | 06/01/2021 | \$51.58 | \$13.00 | \$15.70 | \$0.00 | \$80.28 |
| | 12/01/2021 | \$52.73 | \$13.00 | \$15.70 | \$0.00 | \$81.43 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$32.72 | \$13.00 | \$15.70 | \$0.00 | \$61.42 |
| | 12/01/2020 | \$33.50 | \$13.00 | \$15.70 | \$0.00 | \$62.20 |
| | 06/01/2021 | \$34.25 | \$13.00 | \$15.70 | \$0.00 | \$62.95 |
| | 12/01/2021 | \$35.04 | \$13.00 | \$15.70 | \$0.00 | \$63.74 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 1333</i> | 06/01/2020 | \$39.18 | \$10.80 | \$10.45 | \$0.00 | \$60.43 |
|--|------------|---------|---------|---------|--------|---------|

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - GLAZIER - Local 1333

Effective Date - 06/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$19.59 | \$10.80 | \$1.80 | \$0.00 | \$32.19 |
| 2 | 56 | \$22.04 | \$10.80 | \$1.80 | \$0.00 | \$34.64 |
| 3 | 63 | \$24.49 | \$10.80 | \$2.45 | \$0.00 | \$37.74 |
| 4 | 69 | \$26.94 | \$10.80 | \$2.45 | \$0.00 | \$40.19 |
| 5 | 75 | \$29.39 | \$10.80 | \$3.15 | \$0.00 | \$43.34 |
| 6 | 81 | \$31.83 | \$10.80 | \$3.15 | \$0.00 | \$45.78 |
| 7 | 88 | \$34.28 | \$10.80 | \$10.45 | \$0.00 | \$55.53 |
| 8 | 94 | \$36.73 | \$10.80 | \$10.45 | \$0.00 | \$57.98 |

Notes:

Apprentice to Journeyworker Ratio:1:3

| | | | | | | |
|-----------------------------------|------------|---------|---------|---------|--------|---------|
| HOISTING ENGINEER/CRANES/GRADALLS | 06/01/2020 | \$49.33 | \$13.00 | \$15.70 | \$0.00 | \$78.03 |
| OPERATING ENGINEERS LOCAL 4 | 12/01/2020 | \$50.48 | \$13.00 | \$15.70 | \$0.00 | \$79.18 |
| | 06/01/2021 | \$51.58 | \$13.00 | \$15.70 | \$0.00 | \$80.28 |
| | 12/01/2021 | \$52.73 | \$13.00 | \$15.70 | \$0.00 | \$81.43 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 06/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 55 | \$27.13 | \$13.00 | \$0.00 | \$0.00 | \$40.13 |
| 2 | 60 | \$29.60 | \$13.00 | \$15.70 | \$0.00 | \$58.30 |
| 3 | 65 | \$32.06 | \$13.00 | \$15.70 | \$0.00 | \$60.76 |
| 4 | 70 | \$34.53 | \$13.00 | \$15.70 | \$0.00 | \$63.23 |
| 5 | 75 | \$37.00 | \$13.00 | \$15.70 | \$0.00 | \$65.70 |
| 6 | 80 | \$39.46 | \$13.00 | \$15.70 | \$0.00 | \$68.16 |
| 7 | 85 | \$41.93 | \$13.00 | \$15.70 | \$0.00 | \$70.63 |
| 8 | 90 | \$44.40 | \$13.00 | \$15.70 | \$0.00 | \$73.10 |

Effective Date - 12/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 55 | \$27.76 | \$13.00 | \$0.00 | \$0.00 | \$40.76 |
| 2 | 60 | \$30.29 | \$13.00 | \$15.70 | \$0.00 | \$58.99 |
| 3 | 65 | \$32.81 | \$13.00 | \$15.70 | \$0.00 | \$61.51 |
| 4 | 70 | \$35.34 | \$13.00 | \$15.70 | \$0.00 | \$64.04 |
| 5 | 75 | \$37.86 | \$13.00 | \$15.70 | \$0.00 | \$66.56 |
| 6 | 80 | \$40.38 | \$13.00 | \$15.70 | \$0.00 | \$69.08 |
| 7 | 85 | \$42.91 | \$13.00 | \$15.70 | \$0.00 | \$71.61 |
| 8 | 90 | \$45.43 | \$13.00 | \$15.70 | \$0.00 | \$74.13 |

Notes:

Apprentice to Journeyworker Ratio:1:6

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - B | 04/01/2019 | \$34.71 | \$13.20 | \$16.55 | \$1.93 | \$66.39 |
|--|------------|---------|---------|---------|--------|---------|

For apprentice rates see "Apprentice- SHEET METAL WORKER"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 223 | 03/01/2020 | \$42.87 | \$10.40 | \$13.94 | \$0.00 | \$67.21 |
|--|------------|---------|---------|---------|--------|---------|

For apprentice rates see "Apprentice- ELECTRICIAN"

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - B | 04/01/2019 | \$34.71 | \$13.20 | \$16.55 | \$1.93 | \$66.39 |
|---|------------|---------|---------|---------|--------|---------|

For apprentice rates see "Apprentice- SHEET METAL WORKER"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| HVAC (TESTING AND BALANCING -WATER) PLUMBERS & PIPEFITTERS LOCAL 51 | 03/02/2020 | \$43.69 | \$10.00 | \$18.80 | \$0.00 | \$72.49 |
| | 08/31/2020 | \$45.84 | \$10.00 | \$18.80 | \$0.00 | \$74.64 |
| | 08/30/2021 | \$47.84 | \$10.00 | \$18.80 | \$0.00 | \$76.64 |

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| HVAC MECHANIC PLUMBERS & PIPEFITTERS LOCAL 51 | 03/02/2020 | \$43.69 | \$10.00 | \$18.80 | \$0.00 | \$72.49 |
| | 08/31/2020 | \$45.84 | \$10.00 | \$18.80 | \$0.00 | \$74.64 |
| | 08/30/2021 | \$47.84 | \$10.00 | \$18.80 | \$0.00 | \$76.64 |

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i> | 06/01/2020 | \$34.81 | \$8.60 | \$15.77 | \$0.00 | \$59.18 |
| | 12/01/2020 | \$35.70 | \$8.60 | \$15.77 | \$0.00 | \$60.07 |
| | 06/01/2021 | \$36.62 | \$8.60 | \$15.77 | \$0.00 | \$60.99 |
| | 12/01/2021 | \$37.53 | \$8.60 | \$15.77 | \$0.00 | \$61.90 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)</i> | 09/01/2019 | \$43.60 | \$12.80 | \$16.40 | \$0.00 | \$72.80 |

Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Southern MA

Effective Date - 09/01/2019

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$21.80 | \$12.80 | \$11.90 | \$0.00 | \$46.50 |
| 2 | 60 | \$26.16 | \$12.80 | \$12.80 | \$0.00 | \$51.76 |
| 3 | 70 | \$30.52 | \$12.80 | \$13.70 | \$0.00 | \$57.02 |
| 4 | 80 | \$34.88 | \$12.80 | \$14.60 | \$0.00 | \$62.28 |

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| IRONWORKER/WELDER <i>IRONWORKERS LOCAL 37</i> | 03/16/2020 | \$40.61 | \$7.70 | \$17.10 | \$0.00 | \$65.41 |
| | 09/16/2020 | \$41.51 | \$7.70 | \$17.10 | \$0.00 | \$66.31 |
| | 03/16/2021 | \$42.46 | \$7.70 | \$17.10 | \$0.00 | \$67.26 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - IRONWORKER - Local 37

Effective Date - 03/16/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 70 | \$28.43 | \$7.70 | \$17.10 | \$0.00 | \$53.23 |
| 2 | 75 | \$30.46 | \$7.70 | \$17.10 | \$0.00 | \$55.26 |
| 3 | 80 | \$32.49 | \$7.70 | \$17.10 | \$0.00 | \$57.29 |
| 4 | 85 | \$34.52 | \$7.70 | \$17.10 | \$0.00 | \$59.32 |
| 5 | 90 | \$36.55 | \$7.70 | \$17.10 | \$0.00 | \$61.35 |
| 6 | 95 | \$38.58 | \$7.70 | \$17.10 | \$0.00 | \$63.38 |

Effective Date - 09/16/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 70 | \$29.06 | \$7.70 | \$17.10 | \$0.00 | \$53.86 |
| 2 | 75 | \$31.13 | \$7.70 | \$17.10 | \$0.00 | \$55.93 |
| 3 | 80 | \$33.21 | \$7.70 | \$17.10 | \$0.00 | \$58.01 |
| 4 | 85 | \$35.28 | \$7.70 | \$17.10 | \$0.00 | \$60.08 |
| 5 | 90 | \$37.36 | \$7.70 | \$17.10 | \$0.00 | \$62.16 |
| 6 | 95 | \$39.43 | \$7.70 | \$17.10 | \$0.00 | \$64.23 |

Notes:

Apprentice to Journeyworker Ratio:1:4

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 2 | 06/01/2020 | \$34.31 | \$8.60 | \$15.77 | \$0.00 | \$58.68 |
| | 12/01/2020 | \$35.20 | \$8.60 | \$15.77 | \$0.00 | \$59.57 |
| | 06/01/2021 | \$36.12 | \$8.60 | \$15.77 | \$0.00 | \$60.49 |
| | 12/01/2021 | \$37.03 | \$8.60 | \$15.77 | \$0.00 | \$61.40 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|------------------------------|------------|---------|--------|---------|--------|---------|
| LABORER LABORERS - ZONE 2 | 06/01/2020 | \$34.06 | \$8.60 | \$15.77 | \$0.00 | \$58.43 |
| | 12/01/2020 | \$34.95 | \$8.60 | \$15.77 | \$0.00 | \$59.32 |
| | 06/01/2021 | \$35.87 | \$8.60 | \$15.77 | \$0.00 | \$60.24 |
| | 12/01/2021 | \$36.78 | \$8.60 | \$15.77 | \$0.00 | \$61.15 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LABORER - Zone 2

Effective Date - 06/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 60 | \$20.44 | \$8.60 | \$15.77 | \$0.00 | \$44.81 |
| 2 | 70 | \$23.84 | \$8.60 | \$15.77 | \$0.00 | \$48.21 |
| 3 | 80 | \$27.25 | \$8.60 | \$15.77 | \$0.00 | \$51.62 |
| 4 | 90 | \$30.65 | \$8.60 | \$15.77 | \$0.00 | \$55.02 |

Effective Date - 12/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 60 | \$20.97 | \$8.60 | \$15.77 | \$0.00 | \$45.34 |
| 2 | 70 | \$24.47 | \$8.60 | \$15.77 | \$0.00 | \$48.84 |
| 3 | 80 | \$27.96 | \$8.60 | \$15.77 | \$0.00 | \$52.33 |
| 4 | 90 | \$31.46 | \$8.60 | \$15.77 | \$0.00 | \$55.83 |

Notes:

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| LABORER: CARPENTER TENDER LABORERS - ZONE 2 | 06/01/2020 | \$34.06 | \$8.60 | \$15.77 | \$0.00 | \$58.43 |
| | 12/01/2020 | \$34.95 | \$8.60 | \$15.77 | \$0.00 | \$59.32 |
| | 06/01/2021 | \$35.87 | \$8.60 | \$15.77 | \$0.00 | \$60.24 |
| | 12/01/2021 | \$36.78 | \$8.60 | \$15.77 | \$0.00 | \$61.15 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| LABORER: CEMENT FINISHER TENDER LABORERS - ZONE 2 | 06/01/2020 | \$34.06 | \$8.60 | \$15.77 | \$0.00 | \$58.43 |
| | 12/01/2020 | \$34.95 | \$8.60 | \$15.77 | \$0.00 | \$59.32 |
| | 06/01/2021 | \$35.87 | \$8.60 | \$15.77 | \$0.00 | \$60.24 |
| | 12/01/2021 | \$36.78 | \$8.60 | \$15.77 | \$0.00 | \$61.15 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS - ZONE 2 | 06/01/2020 | \$34.15 | \$8.60 | \$15.83 | \$0.00 | \$58.58 |
|--|------------|---------|--------|---------|--------|---------|

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| LABORER: MASON TENDER LABORERS - ZONE 2 | 06/01/2020 | \$34.31 | \$8.60 | \$15.77 | \$0.00 | \$58.68 |
| | 12/01/2020 | \$35.20 | \$8.60 | \$15.77 | \$0.00 | \$59.57 |
| | 06/01/2021 | \$36.12 | \$8.60 | \$15.77 | \$0.00 | \$60.49 |
| | 12/01/2021 | \$37.03 | \$8.60 | \$15.77 | \$0.00 | \$61.40 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| LABORER: MULTI-TRADE TENDER LABORERS - ZONE 2 | 06/01/2020 | \$34.06 | \$8.60 | \$15.77 | \$0.00 | \$58.43 |
| | 12/01/2020 | \$34.95 | \$8.60 | \$15.77 | \$0.00 | \$59.32 |
| | 06/01/2021 | \$35.87 | \$8.60 | \$15.77 | \$0.00 | \$60.24 |
| | 12/01/2021 | \$36.78 | \$8.60 | \$15.77 | \$0.00 | \$61.15 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| LABORER: TREE REMOVER LABORERS - ZONE 2 | 06/01/2020 | \$34.06 | \$8.60 | \$15.77 | \$0.00 | \$58.43 |
| | 12/01/2020 | \$34.95 | \$8.60 | \$15.77 | \$0.00 | \$59.32 |
| | 06/01/2021 | \$35.87 | \$8.60 | \$15.77 | \$0.00 | \$60.24 |
| | 12/01/2021 | \$36.78 | \$8.60 | \$15.77 | \$0.00 | \$61.15 |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|----------------|----------------|-----------|--------|---------|---------------------------|------------|
|----------------|----------------|-----------|--------|---------|---------------------------|------------|

This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| LASER BEAM OPERATOR LABORERS - ZONE 2 | 06/01/2020 | \$34.31 | \$8.60 | \$15.77 | \$0.00 | \$58.68 |
| | 12/01/2020 | \$35.20 | \$8.60 | \$15.77 | \$0.00 | \$59.57 |
| | 06/01/2021 | \$36.12 | \$8.60 | \$15.77 | \$0.00 | \$60.49 |
| | 12/01/2021 | \$37.03 | \$8.60 | \$15.77 | \$0.00 | \$61.40 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| MARBLE & TILE FINISHERS BRICKLAYERS LOCAL 3 - MARBLE & TILE | 08/01/2020 | \$42.57 | \$10.75 | \$20.27 | \$0.00 | \$73.59 |
| | 02/01/2021 | \$43.08 | \$10.75 | \$20.27 | \$0.00 | \$74.10 |
| | 08/01/2021 | \$44.20 | \$10.75 | \$20.43 | \$0.00 | \$75.38 |
| | 02/01/2022 | \$44.67 | \$10.75 | \$20.43 | \$0.00 | \$75.85 |

Apprentice - MARBLE & TILE FINISHER - Local 3 Marble & Tile

Effective Date - 08/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$21.29 | \$10.75 | \$20.27 | \$0.00 | \$52.31 |
| 2 | 60 | \$25.54 | \$10.75 | \$20.27 | \$0.00 | \$56.56 |
| 3 | 70 | \$29.80 | \$10.75 | \$20.27 | \$0.00 | \$60.82 |
| 4 | 80 | \$34.06 | \$10.75 | \$20.27 | \$0.00 | \$65.08 |
| 5 | 90 | \$38.31 | \$10.75 | \$20.27 | \$0.00 | \$69.33 |

Effective Date - 02/01/2021

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$21.54 | \$10.75 | \$20.27 | \$0.00 | \$52.56 |
| 2 | 60 | \$25.85 | \$10.75 | \$20.27 | \$0.00 | \$56.87 |
| 3 | 70 | \$30.16 | \$10.75 | \$20.27 | \$0.00 | \$61.18 |
| 4 | 80 | \$34.46 | \$10.75 | \$20.27 | \$0.00 | \$65.48 |
| 5 | 90 | \$38.77 | \$10.75 | \$20.27 | \$0.00 | \$69.79 |

Notes:

Apprentice to Journeyworker Ratio:1:3

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| MARBLE MASONS, TILELAYERS & TERRAZZO MECH BRICKLAYERS LOCAL 3 - MARBLE & TILE | 08/01/2020 | \$55.77 | \$10.75 | \$22.08 | \$0.00 | \$88.60 |
| | 02/01/2021 | \$56.41 | \$10.75 | \$22.08 | \$0.00 | \$89.24 |
| | 08/01/2021 | \$57.81 | \$10.75 | \$22.24 | \$0.00 | \$90.80 |
| | 02/01/2022 | \$58.38 | \$10.75 | \$22.24 | \$0.00 | \$91.37 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile

Effective Date - 08/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$27.89 | \$10.75 | \$22.08 | \$0.00 | \$60.72 |
| 2 | 60 | \$33.46 | \$10.75 | \$22.08 | \$0.00 | \$66.29 |
| 3 | 70 | \$39.04 | \$10.75 | \$22.08 | \$0.00 | \$71.87 |
| 4 | 80 | \$44.62 | \$10.75 | \$22.08 | \$0.00 | \$77.45 |
| 5 | 90 | \$50.19 | \$10.75 | \$22.08 | \$0.00 | \$83.02 |

Effective Date - 02/01/2021

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$28.21 | \$10.75 | \$22.08 | \$0.00 | \$61.04 |
| 2 | 60 | \$33.85 | \$10.75 | \$22.08 | \$0.00 | \$66.68 |
| 3 | 70 | \$39.49 | \$10.75 | \$22.08 | \$0.00 | \$72.32 |
| 4 | 80 | \$45.13 | \$10.75 | \$22.08 | \$0.00 | \$77.96 |
| 5 | 90 | \$50.77 | \$10.75 | \$22.08 | \$0.00 | \$83.60 |

Notes:

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$48.81 | \$13.00 | \$15.70 | \$0.00 | \$77.51 |
| | 12/01/2020 | \$49.95 | \$13.00 | \$15.70 | \$0.00 | \$78.65 |
| | 06/01/2021 | \$51.04 | \$13.00 | \$15.70 | \$0.00 | \$79.74 |
| | 12/01/2021 | \$52.18 | \$13.00 | \$15.70 | \$0.00 | \$80.88 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$48.81 | \$13.00 | \$15.70 | \$0.00 | \$77.51 |
| | 12/01/2020 | \$49.95 | \$13.00 | \$15.70 | \$0.00 | \$78.65 |
| | 06/01/2021 | \$51.04 | \$13.00 | \$15.70 | \$0.00 | \$79.74 |
| | 12/01/2021 | \$52.18 | \$13.00 | \$15.70 | \$0.00 | \$80.88 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| MILLWRIGHT (Zone 2) <i>MILLWRIGHTS LOCAL 1121 - Zone 2</i> | 04/01/2019 | \$38.87 | \$9.90 | \$18.50 | \$0.00 | \$67.27 |
|---|------------|---------|--------|---------|--------|---------|

Apprentice - MILLWRIGHT - Local 1121 Zone 2

Effective Date - 04/01/2019

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 55 | \$21.38 | \$9.90 | \$5.31 | \$0.00 | \$36.59 |
| 2 | 65 | \$25.27 | \$9.90 | \$15.13 | \$0.00 | \$50.30 |
| 3 | 75 | \$29.15 | \$9.90 | \$16.10 | \$0.00 | \$55.15 |
| 4 | 85 | \$33.04 | \$9.90 | \$17.06 | \$0.00 | \$60.00 |

Notes:

Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| MORTAR MIXER <i>LABORERS - ZONE 2</i> | 06/01/2020 | \$34.31 | \$8.60 | \$15.77 | \$0.00 | \$58.68 |
| | 12/01/2020 | \$35.20 | \$8.60 | \$15.77 | \$0.00 | \$59.57 |
| | 06/01/2021 | \$36.12 | \$8.60 | \$15.77 | \$0.00 | \$60.49 |
| | 12/01/2021 | \$37.03 | \$8.60 | \$15.77 | \$0.00 | \$61.40 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| OILER (OTHER THAN TRUCK CRANES,GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$23.13 | \$13.00 | \$15.70 | \$0.00 | \$51.83 |
| | 12/01/2020 | \$23.70 | \$13.00 | \$15.70 | \$0.00 | \$52.40 |
| | 06/01/2021 | \$24.25 | \$13.00 | \$15.70 | \$0.00 | \$52.95 |
| | 12/01/2021 | \$24.83 | \$13.00 | \$15.70 | \$0.00 | \$53.53 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| OILER (TRUCK CRANES, GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$27.79 | \$13.00 | \$15.70 | \$0.00 | \$56.49 |
| | 12/01/2020 | \$28.47 | \$13.00 | \$15.70 | \$0.00 | \$57.17 |
| | 06/01/2021 | \$29.11 | \$13.00 | \$15.70 | \$0.00 | \$57.81 |
| | 12/01/2021 | \$29.79 | \$13.00 | \$15.70 | \$0.00 | \$58.49 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| OTHER POWER DRIVEN EQUIPMENT - CLASS II <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$48.81 | \$13.00 | \$15.70 | \$0.00 | \$77.51 |
| | 12/01/2020 | \$49.95 | \$13.00 | \$15.70 | \$0.00 | \$78.65 |
| | 06/01/2021 | \$51.04 | \$13.00 | \$15.70 | \$0.00 | \$79.74 |
| | 12/01/2021 | \$52.18 | \$13.00 | \$15.70 | \$0.00 | \$80.88 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 2</i> | 07/01/2020 | \$51.51 | \$8.25 | \$22.40 | \$0.00 | \$82.16 |
| | 01/01/2021 | \$52.06 | \$8.25 | \$22.75 | \$0.00 | \$83.06 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$25.76 | \$8.25 | \$0.00 | \$0.00 | \$34.01 |
| 2 | 55 | \$28.33 | \$8.25 | \$6.05 | \$0.00 | \$42.63 |
| 3 | 60 | \$30.91 | \$8.25 | \$6.60 | \$0.00 | \$45.76 |
| 4 | 65 | \$33.48 | \$8.25 | \$7.15 | \$0.00 | \$48.88 |
| 5 | 70 | \$36.06 | \$8.25 | \$19.10 | \$0.00 | \$63.41 |
| 6 | 75 | \$38.63 | \$8.25 | \$19.65 | \$0.00 | \$66.53 |
| 7 | 80 | \$41.21 | \$8.25 | \$20.20 | \$0.00 | \$69.66 |
| 8 | 90 | \$46.36 | \$8.25 | \$21.30 | \$0.00 | \$75.91 |

Effective Date - 01/01/2021

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$26.03 | \$8.25 | \$0.00 | \$0.00 | \$34.28 |
| 2 | 55 | \$28.63 | \$8.25 | \$6.16 | \$0.00 | \$43.04 |
| 3 | 60 | \$31.24 | \$8.25 | \$6.72 | \$0.00 | \$46.21 |
| 4 | 65 | \$33.84 | \$8.25 | \$7.28 | \$0.00 | \$49.37 |
| 5 | 70 | \$36.44 | \$8.25 | \$19.39 | \$0.00 | \$64.08 |
| 6 | 75 | \$39.05 | \$8.25 | \$19.95 | \$0.00 | \$67.25 |
| 7 | 80 | \$41.65 | \$8.25 | \$20.51 | \$0.00 | \$70.41 |
| 8 | 90 | \$46.85 | \$8.25 | \$21.63 | \$0.00 | \$76.73 |

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| PAINTER (SPRAY OR SANDBLAST, NEW) * | 07/01/2020 | \$41.21 | \$8.25 | \$22.40 | \$0.00 | \$71.86 |
| * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2 | 01/01/2021 | \$42.96 | \$8.25 | \$22.75 | \$0.00 | \$73.96 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New

Effective Date - 07/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$20.61 | \$8.25 | \$0.00 | \$0.00 | \$28.86 |
| 2 | 55 | \$22.67 | \$8.25 | \$6.05 | \$0.00 | \$36.97 |
| 3 | 60 | \$24.73 | \$8.25 | \$6.60 | \$0.00 | \$39.58 |
| 4 | 65 | \$26.79 | \$8.25 | \$7.15 | \$0.00 | \$42.19 |
| 5 | 70 | \$28.85 | \$8.25 | \$19.10 | \$0.00 | \$56.20 |
| 6 | 75 | \$30.91 | \$8.25 | \$19.65 | \$0.00 | \$58.81 |
| 7 | 80 | \$32.97 | \$8.25 | \$20.20 | \$0.00 | \$61.42 |
| 8 | 90 | \$37.09 | \$8.25 | \$21.30 | \$0.00 | \$66.64 |

Effective Date - 01/01/2021

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$21.48 | \$8.25 | \$0.00 | \$0.00 | \$29.73 |
| 2 | 55 | \$23.63 | \$8.25 | \$6.16 | \$0.00 | \$38.04 |
| 3 | 60 | \$25.78 | \$8.25 | \$6.72 | \$0.00 | \$40.75 |
| 4 | 65 | \$27.92 | \$8.25 | \$7.28 | \$0.00 | \$43.45 |
| 5 | 70 | \$30.07 | \$8.25 | \$19.39 | \$0.00 | \$57.71 |
| 6 | 75 | \$32.22 | \$8.25 | \$19.95 | \$0.00 | \$60.42 |
| 7 | 80 | \$34.37 | \$8.25 | \$20.51 | \$0.00 | \$63.13 |
| 8 | 90 | \$38.66 | \$8.25 | \$21.63 | \$0.00 | \$68.54 |

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|---------------------------------------|------------|---------|--------|---------|--------|---------|
| PAINTER (SPRAY OR SANDBLAST, REPAINT) | 07/01/2020 | \$40.47 | \$8.25 | \$22.40 | \$0.00 | \$71.12 |
| PAINTERS LOCAL 35 - ZONE 2 | 01/01/2021 | \$41.02 | \$8.25 | \$22.75 | \$0.00 | \$72.02 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint

Effective Date - 07/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$20.24 | \$8.25 | \$0.00 | \$0.00 | \$28.49 |
| 2 | 55 | \$22.26 | \$8.25 | \$6.05 | \$0.00 | \$36.56 |
| 3 | 60 | \$24.28 | \$8.25 | \$6.60 | \$0.00 | \$39.13 |
| 4 | 65 | \$26.31 | \$8.25 | \$7.15 | \$0.00 | \$41.71 |
| 5 | 70 | \$28.33 | \$8.25 | \$19.10 | \$0.00 | \$55.68 |
| 6 | 75 | \$30.35 | \$8.25 | \$19.65 | \$0.00 | \$58.25 |
| 7 | 80 | \$32.38 | \$8.25 | \$20.20 | \$0.00 | \$60.83 |
| 8 | 90 | \$36.42 | \$8.25 | \$21.30 | \$0.00 | \$65.97 |

Effective Date - 01/01/2021

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$20.51 | \$8.25 | \$0.00 | \$0.00 | \$28.76 |
| 2 | 55 | \$22.56 | \$8.25 | \$6.16 | \$0.00 | \$36.97 |
| 3 | 60 | \$24.61 | \$8.25 | \$6.72 | \$0.00 | \$39.58 |
| 4 | 65 | \$26.66 | \$8.25 | \$7.28 | \$0.00 | \$42.19 |
| 5 | 70 | \$28.71 | \$8.25 | \$19.39 | \$0.00 | \$56.35 |
| 6 | 75 | \$30.77 | \$8.25 | \$19.95 | \$0.00 | \$58.97 |
| 7 | 80 | \$32.82 | \$8.25 | \$20.51 | \$0.00 | \$61.58 |
| 8 | 90 | \$36.92 | \$8.25 | \$21.63 | \$0.00 | \$66.80 |

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| PAINTER (TRAFFIC MARKINGS) LABORERS - ZONE 2 | 06/01/2020 | \$34.06 | \$8.60 | \$15.77 | \$0.00 | \$58.43 |
| | 12/01/2020 | \$34.95 | \$8.60 | \$15.77 | \$0.00 | \$59.32 |
| | 06/01/2021 | \$35.87 | \$8.60 | \$15.77 | \$0.00 | \$60.24 |
| | 12/01/2021 | \$36.78 | \$8.60 | \$15.77 | \$0.00 | \$61.15 |

For Apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| PAINTER / TAPER (BRUSH, NEW) * | 07/01/2020 | \$41.01 | \$8.25 | \$22.40 | \$0.00 | \$71.66 |
| * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2 | 01/01/2021 | \$41.56 | \$8.25 | \$22.75 | \$0.00 | \$72.56 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 07/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$20.51 | \$8.25 | \$0.00 | \$0.00 | \$28.76 |
| 2 | 55 | \$22.56 | \$8.25 | \$6.05 | \$0.00 | \$36.86 |
| 3 | 60 | \$24.61 | \$8.25 | \$6.60 | \$0.00 | \$39.46 |
| 4 | 65 | \$26.66 | \$8.25 | \$7.15 | \$0.00 | \$42.06 |
| 5 | 70 | \$28.71 | \$8.25 | \$19.10 | \$0.00 | \$56.06 |
| 6 | 75 | \$30.76 | \$8.25 | \$19.65 | \$0.00 | \$58.66 |
| 7 | 80 | \$32.81 | \$8.25 | \$20.20 | \$0.00 | \$61.26 |
| 8 | 90 | \$36.91 | \$8.25 | \$21.30 | \$0.00 | \$66.46 |

Effective Date - 01/01/2021

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$20.78 | \$8.25 | \$0.00 | \$0.00 | \$29.03 |
| 2 | 55 | \$22.86 | \$8.25 | \$6.16 | \$0.00 | \$37.27 |
| 3 | 60 | \$24.94 | \$8.25 | \$6.72 | \$0.00 | \$39.91 |
| 4 | 65 | \$27.01 | \$8.25 | \$7.28 | \$0.00 | \$42.54 |
| 5 | 70 | \$29.09 | \$8.25 | \$19.39 | \$0.00 | \$56.73 |
| 6 | 75 | \$31.17 | \$8.25 | \$19.95 | \$0.00 | \$59.37 |
| 7 | 80 | \$33.25 | \$8.25 | \$20.51 | \$0.00 | \$62.01 |
| 8 | 90 | \$37.40 | \$8.25 | \$21.63 | \$0.00 | \$67.28 |

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|----------------------------------|------------|---------|--------|---------|--------|---------|
| PAINTER / TAPER (BRUSH, REPAINT) | 07/01/2020 | \$39.07 | \$8.25 | \$22.40 | \$0.00 | \$69.72 |
| PAINTERS LOCAL 35 - ZONE 2 | 01/01/2021 | \$39.62 | \$8.25 | \$22.75 | \$0.00 | \$70.62 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 07/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$19.54 | \$8.25 | \$0.00 | \$0.00 | \$27.79 |
| 2 | 55 | \$21.49 | \$8.25 | \$6.05 | \$0.00 | \$35.79 |
| 3 | 60 | \$23.44 | \$8.25 | \$6.60 | \$0.00 | \$38.29 |
| 4 | 65 | \$25.40 | \$8.25 | \$7.15 | \$0.00 | \$40.80 |
| 5 | 70 | \$27.35 | \$8.25 | \$19.10 | \$0.00 | \$54.70 |
| 6 | 75 | \$29.30 | \$8.25 | \$19.65 | \$0.00 | \$57.20 |
| 7 | 80 | \$31.26 | \$8.25 | \$20.20 | \$0.00 | \$59.71 |
| 8 | 90 | \$35.16 | \$8.25 | \$21.30 | \$0.00 | \$64.71 |

Effective Date - 01/01/2021

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$19.81 | \$8.25 | \$0.00 | \$0.00 | \$28.06 |
| 2 | 55 | \$21.79 | \$8.25 | \$6.16 | \$0.00 | \$36.20 |
| 3 | 60 | \$23.77 | \$8.25 | \$6.72 | \$0.00 | \$38.74 |
| 4 | 65 | \$25.75 | \$8.25 | \$7.28 | \$0.00 | \$41.28 |
| 5 | 70 | \$27.73 | \$8.25 | \$19.39 | \$0.00 | \$55.37 |
| 6 | 75 | \$29.72 | \$8.25 | \$19.95 | \$0.00 | \$57.92 |
| 7 | 80 | \$31.70 | \$8.25 | \$20.51 | \$0.00 | \$60.46 |
| 8 | 90 | \$35.66 | \$8.25 | \$21.63 | \$0.00 | \$65.54 |

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| PANEL & PICKUP TRUCKS DRIVER <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 08/01/2020 | \$34.98 | \$12.91 | \$13.72 | \$0.00 | \$61.61 |
| | 12/01/2020 | \$34.98 | \$12.91 | \$14.82 | \$0.00 | \$62.71 |
| | 06/01/2021 | \$35.78 | \$12.91 | \$14.82 | \$0.00 | \$63.51 |
| | 08/01/2021 | \$35.78 | \$13.41 | \$14.82 | \$0.00 | \$64.01 |
| | 12/01/2021 | \$35.78 | \$13.41 | \$16.01 | \$0.00 | \$65.20 |
| PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i> For apprentice rates see "Apprentice- PILE DRIVER" | 08/01/2019 | \$48.94 | \$9.90 | \$21.15 | \$0.00 | \$79.99 |
| PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i> | 08/01/2019 | \$48.94 | \$9.90 | \$21.15 | \$0.00 | \$79.99 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2019

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$24.47 | \$9.90 | \$21.15 | \$0.00 | \$55.52 |
| 2 | 60 | \$29.36 | \$9.90 | \$21.15 | \$0.00 | \$60.41 |
| 3 | 70 | \$34.26 | \$9.90 | \$21.15 | \$0.00 | \$65.31 |
| 4 | 75 | \$36.71 | \$9.90 | \$21.15 | \$0.00 | \$67.76 |
| 5 | 80 | \$39.15 | \$9.90 | \$21.15 | \$0.00 | \$70.20 |
| 6 | 80 | \$39.15 | \$9.90 | \$21.15 | \$0.00 | \$70.20 |
| 7 | 90 | \$44.05 | \$9.90 | \$21.15 | \$0.00 | \$75.10 |
| 8 | 90 | \$44.05 | \$9.90 | \$21.15 | \$0.00 | \$75.10 |

Notes:

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|-------------------|------------|---------|--------|---------|--------|---------|
| PIPELAYER | 06/01/2020 | \$34.31 | \$8.60 | \$15.77 | \$0.00 | \$58.68 |
| LABORERS - ZONE 2 | 12/01/2020 | \$35.20 | \$8.60 | \$15.77 | \$0.00 | \$59.57 |
| | 06/01/2021 | \$36.12 | \$8.60 | \$15.77 | \$0.00 | \$60.49 |
| | 12/01/2021 | \$37.03 | \$8.60 | \$15.77 | \$0.00 | \$61.40 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---------------------------------|------------|---------|---------|---------|--------|---------|
| PLUMBER & PIPEFITTER | 03/02/2020 | \$43.69 | \$10.00 | \$18.80 | \$0.00 | \$72.49 |
| PLUMBERS & PIPEFITTERS LOCAL 51 | 08/31/2020 | \$45.84 | \$10.00 | \$18.80 | \$0.00 | \$74.64 |
| | 08/30/2021 | \$47.84 | \$10.00 | \$18.80 | \$0.00 | \$76.64 |

Apprentice - PLUMBER/PIPEFITTER - Local 51

Effective Date - 03/02/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 40 | \$17.48 | \$10.00 | \$2.50 | \$0.00 | \$29.98 |
| 2 | 50 | \$21.85 | \$10.00 | \$2.50 | \$0.00 | \$34.35 |
| 3 | 60 | \$26.21 | \$10.00 | \$8.48 | \$0.00 | \$44.69 |
| 4 | 70 | \$30.58 | \$10.00 | \$13.56 | \$0.00 | \$54.14 |
| 5 | 80 | \$34.95 | \$10.00 | \$16.95 | \$0.00 | \$61.90 |

Effective Date - 08/31/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 40 | \$18.34 | \$10.00 | \$2.50 | \$0.00 | \$30.84 |
| 2 | 50 | \$22.92 | \$10.00 | \$2.50 | \$0.00 | \$35.42 |
| 3 | 60 | \$27.50 | \$10.00 | \$8.48 | \$0.00 | \$45.98 |
| 4 | 70 | \$32.09 | \$10.00 | \$13.56 | \$0.00 | \$55.65 |
| 5 | 80 | \$36.67 | \$10.00 | \$16.95 | \$0.00 | \$63.62 |

Notes:

Steps 2000hrs. Prior 9/1/05; 40/40/45/50/55/60/65/75/80/85

Apprentice to Journeyworker Ratio:1:3

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| PNEUMATIC CONTROLS (TEMP.) <i>PLUMBERS & PIPEFITTERS LOCAL 51</i> | 03/02/2020 | \$43.69 | \$10.00 | \$18.80 | \$0.00 | \$72.49 |
| | 08/31/2020 | \$45.84 | \$10.00 | \$18.80 | \$0.00 | \$74.64 |
| | 08/30/2021 | \$47.84 | \$10.00 | \$18.80 | \$0.00 | \$76.64 |

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2020 | \$34.31 | \$8.60 | \$15.77 | \$0.00 | \$58.68 |
| | 12/01/2020 | \$35.20 | \$8.60 | \$15.77 | \$0.00 | \$59.57 |
| | 06/01/2021 | \$36.12 | \$8.60 | \$15.77 | \$0.00 | \$60.49 |
| | 12/01/2021 | \$37.03 | \$8.60 | \$15.77 | \$0.00 | \$61.40 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i> | 06/01/2020 | \$35.06 | \$8.60 | \$15.77 | \$0.00 | \$59.43 |
| | 12/01/2020 | \$35.95 | \$8.60 | \$15.77 | \$0.00 | \$60.32 |
| | 06/01/2021 | \$36.87 | \$8.60 | \$15.77 | \$0.00 | \$61.24 |
| | 12/01/2021 | \$37.78 | \$8.60 | \$15.77 | \$0.00 | \$62.15 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$49.33 | \$13.00 | \$15.70 | \$0.00 | \$78.03 |
| | 12/01/2020 | \$50.48 | \$13.00 | \$15.70 | \$0.00 | \$79.18 |
| | 06/01/2021 | \$51.58 | \$13.00 | \$15.70 | \$0.00 | \$80.28 |
| | 12/01/2021 | \$52.73 | \$13.00 | \$15.70 | \$0.00 | \$81.43 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$49.33 | \$13.00 | \$15.70 | \$0.00 | \$78.03 |
| | 12/01/2020 | \$50.48 | \$13.00 | \$15.70 | \$0.00 | \$79.18 |
| | 06/01/2021 | \$51.58 | \$13.00 | \$15.70 | \$0.00 | \$80.28 |
| | 12/01/2021 | \$52.73 | \$13.00 | \$15.70 | \$0.00 | \$81.43 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$32.72 | \$13.00 | \$15.70 | \$0.00 | \$61.42 |
| | 12/01/2020 | \$33.50 | \$13.00 | \$15.70 | \$0.00 | \$62.20 |
| | 06/01/2021 | \$34.25 | \$13.00 | \$15.70 | \$0.00 | \$62.95 |
| | 12/01/2021 | \$35.04 | \$13.00 | \$15.70 | \$0.00 | \$63.74 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| READY-MIX CONCRETE DRIVER <i>TEAMSTERS 653 - Southeastern Concrete (Weymouth)</i> | 08/01/2020 | \$23.50 | \$12.41 | \$6.90 | \$0.00 | \$42.81 |
| | 05/01/2021 | \$24.00 | \$12.41 | \$6.90 | \$0.00 | \$43.31 |
| | 08/01/2021 | \$24.00 | \$12.91 | \$6.90 | \$0.00 | \$43.81 |
| | 05/01/2022 | \$24.50 | \$12.91 | \$6.90 | \$0.00 | \$44.31 |
| | 08/01/2022 | \$24.50 | \$13.41 | \$6.90 | \$0.00 | \$44.81 |
| | 05/01/2023 | \$25.00 | \$13.41 | \$6.90 | \$0.00 | \$45.31 |
| | 08/01/2023 | \$25.00 | \$13.91 | \$6.90 | \$0.00 | \$45.81 |
| RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$48.81 | \$13.00 | \$15.70 | \$0.00 | \$77.51 |
| | 12/01/2020 | \$49.95 | \$13.00 | \$15.70 | \$0.00 | \$78.65 |
| | 06/01/2021 | \$51.04 | \$13.00 | \$15.70 | \$0.00 | \$79.74 |
| | 12/01/2021 | \$52.18 | \$13.00 | \$15.70 | \$0.00 | \$80.88 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2020 | \$34.31 | \$8.60 | \$15.77 | \$0.00 | \$58.68 |
| | 12/01/2020 | \$35.20 | \$8.60 | \$15.77 | \$0.00 | \$59.57 |
| | 06/01/2021 | \$36.12 | \$8.60 | \$15.77 | \$0.00 | \$60.49 |
| | 12/01/2021 | \$37.03 | \$8.60 | \$15.77 | \$0.00 | \$61.40 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$48.81 | \$13.00 | \$15.70 | \$0.00 | \$77.51 |
| | 12/01/2020 | \$49.95 | \$13.00 | \$15.70 | \$0.00 | \$78.65 |
| | 06/01/2021 | \$51.04 | \$13.00 | \$15.70 | \$0.00 | \$79.74 |
| | 12/01/2021 | \$52.18 | \$13.00 | \$15.70 | \$0.00 | \$80.88 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| ROOFER (Inc.Roofer Waterproofing &Roofer Damproofg) <i>ROOFERS LOCAL 33</i> | 08/01/2020 | \$46.60 | \$11.75 | \$16.15 | \$0.00 | \$74.50 |
| | 02/01/2021 | \$48.03 | \$11.75 | \$16.15 | \$0.00 | \$75.93 |
| | 08/01/2021 | \$49.46 | \$11.75 | \$16.15 | \$0.00 | \$77.36 |
| | 02/01/2022 | \$50.89 | \$11.75 | \$16.15 | \$0.00 | \$78.79 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ROOFER - Local 33

Effective Date - 08/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$23.30 | \$11.75 | \$3.81 | \$0.00 | \$38.86 |
| 2 | 60 | \$27.96 | \$11.75 | \$16.15 | \$0.00 | \$55.86 |
| 3 | 65 | \$30.29 | \$11.75 | \$16.15 | \$0.00 | \$58.19 |
| 4 | 75 | \$34.95 | \$11.75 | \$16.15 | \$0.00 | \$62.85 |
| 5 | 85 | \$39.61 | \$11.75 | \$16.15 | \$0.00 | \$67.51 |

Effective Date - 02/01/2021

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$24.02 | \$11.75 | \$3.81 | \$0.00 | \$39.58 |
| 2 | 60 | \$28.82 | \$11.75 | \$16.15 | \$0.00 | \$56.72 |
| 3 | 65 | \$31.22 | \$11.75 | \$16.15 | \$0.00 | \$59.12 |
| 4 | 75 | \$36.02 | \$11.75 | \$16.15 | \$0.00 | \$63.92 |
| 5 | 85 | \$40.83 | \$11.75 | \$16.15 | \$0.00 | \$68.73 |

Notes: ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
 Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.
 (Hot Pitch Mechanics' receive \$1.00 hr. above ROOFER)

Apprentice to Journeyworker Ratio:**

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33 | 08/01/2020 | \$46.85 | \$11.75 | \$16.15 | \$0.00 | \$74.75 |
| | 02/01/2021 | \$48.28 | \$11.75 | \$16.15 | \$0.00 | \$76.18 |
| | 08/01/2021 | \$49.71 | \$11.75 | \$16.15 | \$0.00 | \$77.61 |
| | 02/01/2022 | \$51.14 | \$11.75 | \$16.15 | \$0.00 | \$79.04 |

For apprentice rates see "Apprentice- ROOFER"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - B | 04/01/2019 | \$34.71 | \$13.20 | \$16.55 | \$1.93 | \$66.39 |
|--|------------|---------|---------|---------|--------|---------|

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 17-B

Effective Date - 04/01/2019

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 40 | \$13.88 | \$13.20 | \$4.02 | \$0.95 | \$32.05 |
| 2 | 45 | \$15.62 | \$13.20 | \$4.52 | \$1.02 | \$34.36 |
| 3 | 50 | \$17.36 | \$13.20 | \$10.48 | \$1.26 | \$42.30 |
| 4 | 55 | \$19.09 | \$13.20 | \$10.48 | \$1.31 | \$44.08 |
| 5 | 60 | \$20.83 | \$13.20 | \$13.52 | \$1.43 | \$48.98 |
| 6 | 65 | \$22.56 | \$13.20 | \$13.78 | \$1.49 | \$51.03 |
| 7 | 70 | \$24.30 | \$13.20 | \$14.03 | \$1.55 | \$53.08 |
| 8 | 75 | \$26.03 | \$13.20 | \$14.28 | \$1.61 | \$55.12 |
| 9 | 80 | \$27.77 | \$13.20 | \$14.54 | \$1.67 | \$57.18 |
| 10 | 85 | \$29.50 | \$13.20 | \$14.79 | \$1.72 | \$59.21 |

Notes:

Apprentice to Journeyworker Ratio:1:3

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 08/01/2020 | \$35.44 | \$12.91 | \$13.72 | \$0.00 | \$62.07 |
| | 12/01/2020 | \$35.44 | \$12.91 | \$14.82 | \$0.00 | \$63.17 |
| | 06/01/2021 | \$36.24 | \$12.91 | \$14.82 | \$0.00 | \$63.97 |
| | 08/01/2021 | \$36.24 | \$13.41 | \$14.82 | \$0.00 | \$64.47 |
| | 12/01/2021 | \$36.24 | \$13.41 | \$16.01 | \$0.00 | \$65.66 |
| SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 08/01/2020 | \$35.73 | \$12.91 | \$13.72 | \$0.00 | \$62.36 |
| | 12/01/2020 | \$35.73 | \$12.91 | \$14.82 | \$0.00 | \$63.46 |
| | 06/01/2021 | \$36.53 | \$12.91 | \$14.82 | \$0.00 | \$64.26 |
| | 08/01/2021 | \$36.53 | \$13.41 | \$14.82 | \$0.00 | \$64.76 |
| | 12/01/2021 | \$36.53 | \$13.41 | \$16.01 | \$0.00 | \$65.95 |
| SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section B) Zone 2</i> | 03/01/2020 | \$54.74 | \$9.68 | \$20.55 | \$0.00 | \$84.97 |
| | 10/01/2020 | \$56.09 | \$9.68 | \$20.55 | \$0.00 | \$86.32 |
| | 03/01/2021 | \$57.44 | \$9.68 | \$20.55 | \$0.00 | \$87.67 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SPRINKLER FITTER - Local 550 (Section B) Zone 2

Effective Date - 03/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 35 | \$19.16 | \$9.68 | \$11.61 | \$0.00 | \$40.45 |
| 2 | 40 | \$21.90 | \$9.68 | \$12.30 | \$0.00 | \$43.88 |
| 3 | 45 | \$24.63 | \$9.68 | \$12.99 | \$0.00 | \$47.30 |
| 4 | 50 | \$27.37 | \$9.68 | \$13.73 | \$0.00 | \$50.78 |
| 5 | 55 | \$30.11 | \$9.68 | \$14.36 | \$0.00 | \$54.15 |
| 6 | 60 | \$32.84 | \$9.68 | \$15.05 | \$0.00 | \$57.57 |
| 7 | 65 | \$35.58 | \$9.68 | \$15.74 | \$0.00 | \$61.00 |
| 8 | 70 | \$38.32 | \$9.68 | \$16.43 | \$0.00 | \$64.43 |
| 9 | 75 | \$41.06 | \$9.68 | \$17.11 | \$0.00 | \$67.85 |
| 10 | 80 | \$43.79 | \$9.68 | \$17.80 | \$0.00 | \$71.27 |

Effective Date - 10/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 35 | \$19.63 | \$9.68 | \$11.61 | \$0.00 | \$40.92 |
| 2 | 40 | \$22.44 | \$9.68 | \$12.30 | \$0.00 | \$44.42 |
| 3 | 45 | \$25.24 | \$9.68 | \$12.99 | \$0.00 | \$47.91 |
| 4 | 50 | \$28.05 | \$9.68 | \$13.73 | \$0.00 | \$51.46 |
| 5 | 55 | \$30.85 | \$9.68 | \$14.36 | \$0.00 | \$54.89 |
| 6 | 60 | \$33.65 | \$9.68 | \$15.05 | \$0.00 | \$58.38 |
| 7 | 65 | \$36.46 | \$9.68 | \$15.74 | \$0.00 | \$61.88 |
| 8 | 70 | \$39.26 | \$9.68 | \$16.43 | \$0.00 | \$65.37 |
| 9 | 75 | \$42.07 | \$9.68 | \$17.11 | \$0.00 | \$68.86 |
| 10 | 80 | \$44.87 | \$9.68 | \$17.80 | \$0.00 | \$72.35 |

Notes: Apprentice entered prior 9/30/10:
40/45/50/55/60/65/70/75/80/85
Steps are 850 hours

Apprentice to Journeyworker Ratio:1:3

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| STEAM BOILER OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$48.81 | \$13.00 | \$15.70 | \$0.00 | \$77.51 |
| | 12/01/2020 | \$49.95 | \$13.00 | \$15.70 | \$0.00 | \$78.65 |
| | 06/01/2021 | \$51.04 | \$13.00 | \$15.70 | \$0.00 | \$79.74 |
| | 12/01/2021 | \$52.18 | \$13.00 | \$15.70 | \$0.00 | \$80.88 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$48.81 | \$13.00 | \$15.70 | \$0.00 | \$77.51 |
| | 12/01/2020 | \$49.95 | \$13.00 | \$15.70 | \$0.00 | \$78.65 |
| | 06/01/2021 | \$51.04 | \$13.00 | \$15.70 | \$0.00 | \$79.74 |
| | 12/01/2021 | \$52.18 | \$13.00 | \$15.70 | \$0.00 | \$80.88 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 223</i> | 03/01/2020 | \$36.27 | \$10.40 | \$11.78 | \$0.00 | \$58.45 |
|--|------------|---------|---------|---------|--------|---------|

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 223

Effective Date - 03/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 0 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |

Notes: See Electrician Apprentice Wages
Steps are 750hrs
Telecom Apprentice Wages shall be the same as the Electrician Apprentice Wages

Apprentice to Journeyworker Ratio:2:3***

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| TERRAZZO FINISHERS BRICKLAYERS LOCAL 3 - MARBLE & TILE | 08/01/2020 | \$54.69 | \$10.75 | \$22.09 | \$0.00 | \$87.53 |
| | 02/01/2021 | \$55.33 | \$10.75 | \$22.09 | \$0.00 | \$88.17 |
| | 08/01/2021 | \$56.73 | \$10.75 | \$22.25 | \$0.00 | \$89.73 |
| | 02/01/2022 | \$57.32 | \$10.75 | \$22.25 | \$0.00 | \$90.32 |

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 08/01/2020

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$27.35 | \$10.75 | \$22.09 | \$0.00 | \$60.19 |
| 2 | 60 | \$32.81 | \$10.75 | \$22.09 | \$0.00 | \$65.65 |
| 3 | 70 | \$38.28 | \$10.75 | \$22.09 | \$0.00 | \$71.12 |
| 4 | 80 | \$43.75 | \$10.75 | \$22.09 | \$0.00 | \$76.59 |
| 5 | 90 | \$49.22 | \$10.75 | \$22.09 | \$0.00 | \$82.06 |

Effective Date - 02/01/2021

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$27.67 | \$10.75 | \$22.09 | \$0.00 | \$60.51 |
| 2 | 60 | \$33.20 | \$10.75 | \$22.09 | \$0.00 | \$66.04 |
| 3 | 70 | \$38.73 | \$10.75 | \$22.09 | \$0.00 | \$71.57 |
| 4 | 80 | \$44.26 | \$10.75 | \$22.09 | \$0.00 | \$77.10 |
| 5 | 90 | \$49.80 | \$10.75 | \$22.09 | \$0.00 | \$82.64 |

Notes:

Apprentice to Journeyworker Ratio:1:3

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| TEST BORING DRILLER LABORERS - FOUNDATION AND MARINE | 06/01/2020 | \$40.55 | \$8.60 | \$17.24 | \$0.00 | \$66.39 |
| | 12/01/2020 | \$41.53 | \$8.60 | \$17.24 | \$0.00 | \$67.37 |
| | 06/01/2021 | \$42.55 | \$8.60 | \$17.24 | \$0.00 | \$68.39 |
| | 12/01/2021 | \$43.56 | \$8.60 | \$17.24 | \$0.00 | \$69.40 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| TEST BORING DRILLER HELPER LABORERS - FOUNDATION AND MARINE | 06/01/2020 | \$39.27 | \$8.60 | \$17.24 | \$0.00 | \$65.11 |
| | 12/01/2020 | \$40.25 | \$8.60 | \$17.24 | \$0.00 | \$66.09 |
| | 06/01/2021 | \$41.27 | \$8.60 | \$17.24 | \$0.00 | \$67.11 |
| | 12/01/2021 | \$42.28 | \$8.60 | \$17.24 | \$0.00 | \$68.12 |

For apprentice rates see "Apprentice- LABORER"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i> | 06/01/2020 | \$39.15 | \$8.60 | \$17.24 | \$0.00 | \$64.99 |
| | 12/01/2020 | \$40.13 | \$8.60 | \$17.24 | \$0.00 | \$65.97 |
| | 06/01/2021 | \$41.15 | \$8.60 | \$17.24 | \$0.00 | \$66.99 |
| | 12/01/2021 | \$42.16 | \$8.60 | \$17.24 | \$0.00 | \$68.00 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$48.81 | \$13.00 | \$15.70 | \$0.00 | \$77.51 |
| | 12/01/2020 | \$49.95 | \$13.00 | \$15.70 | \$0.00 | \$78.65 |
| | 06/01/2021 | \$51.04 | \$13.00 | \$15.70 | \$0.00 | \$79.74 |
| | 12/01/2021 | \$52.18 | \$13.00 | \$15.70 | \$0.00 | \$80.88 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 08/01/2020 | \$36.02 | \$12.91 | \$13.72 | \$0.00 | \$62.65 |
| | 12/01/2020 | \$36.02 | \$12.91 | \$14.82 | \$0.00 | \$63.75 |
| | 06/01/2021 | \$36.82 | \$12.91 | \$14.82 | \$0.00 | \$64.55 |
| | 08/01/2021 | \$36.82 | \$13.41 | \$14.82 | \$0.00 | \$65.05 |
| | 12/01/2021 | \$36.82 | \$13.41 | \$16.01 | \$0.00 | \$66.24 |
| TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i> | 06/01/2020 | \$51.38 | \$8.60 | \$17.69 | \$0.00 | \$77.67 |
| | 12/01/2020 | \$52.36 | \$8.60 | \$17.69 | \$0.00 | \$78.65 |
| | 06/01/2021 | \$53.38 | \$8.60 | \$17.69 | \$0.00 | \$79.67 |
| | 12/01/2021 | \$54.39 | \$8.60 | \$17.69 | \$0.00 | \$80.68 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i> | 06/01/2020 | \$53.38 | \$8.60 | \$17.69 | \$0.00 | \$79.67 |
| | 12/01/2020 | \$54.36 | \$8.60 | \$17.69 | \$0.00 | \$80.65 |
| | 06/01/2021 | \$55.38 | \$8.60 | \$17.69 | \$0.00 | \$81.67 |
| | 12/01/2021 | \$56.39 | \$8.60 | \$17.69 | \$0.00 | \$82.68 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i> | 06/01/2020 | \$43.45 | \$8.60 | \$17.69 | \$0.00 | \$69.74 |
| | 12/01/2020 | \$44.43 | \$8.60 | \$17.69 | \$0.00 | \$70.72 |
| | 06/01/2021 | \$45.45 | \$8.60 | \$17.69 | \$0.00 | \$71.74 |
| | 12/01/2021 | \$46.46 | \$8.60 | \$17.69 | \$0.00 | \$72.75 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i> | 06/01/2020 | \$45.45 | \$8.60 | \$17.69 | \$0.00 | \$71.74 |
| | 12/01/2020 | \$46.43 | \$8.60 | \$17.69 | \$0.00 | \$72.72 |
| | 06/01/2021 | \$47.45 | \$8.60 | \$17.69 | \$0.00 | \$73.74 |
| | 12/01/2021 | \$48.46 | \$8.60 | \$17.69 | \$0.00 | \$74.75 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 08/01/2020 | \$35.44 | \$12.91 | \$13.72 | \$0.00 | \$62.07 |
| | 12/01/2020 | \$35.44 | \$12.91 | \$14.82 | \$0.00 | \$63.17 |
| | 06/01/2021 | \$36.24 | \$12.91 | \$14.82 | \$0.00 | \$63.97 |
| | 08/01/2021 | \$36.24 | \$13.41 | \$14.82 | \$0.00 | \$64.47 |
| | 12/01/2021 | \$36.24 | \$13.41 | \$16.01 | \$0.00 | \$65.66 |
| WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2020 | \$34.31 | \$8.60 | \$15.77 | \$0.00 | \$58.68 |
| | 12/01/2020 | \$35.20 | \$8.60 | \$15.77 | \$0.00 | \$59.57 |
| | 06/01/2021 | \$36.12 | \$8.60 | \$15.77 | \$0.00 | \$60.49 |
| | 12/01/2021 | \$37.03 | \$8.60 | \$15.77 | \$0.00 | \$61.40 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2020 | \$49.33 | \$13.00 | \$15.70 | \$0.00 | \$78.03 |
| | 12/01/2020 | \$50.48 | \$13.00 | \$15.70 | \$0.00 | \$79.18 |
| | 06/01/2021 | \$51.58 | \$13.00 | \$15.70 | \$0.00 | \$80.28 |
| | 12/01/2021 | \$52.73 | \$13.00 | \$15.70 | \$0.00 | \$81.43 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| WATER METER INSTALLER <i>PLUMBERS & PIPEFITTERS LOCAL 51</i> | 03/02/2020 | \$43.69 | \$10.00 | \$18.80 | \$0.00 | \$72.49 |
| | 08/31/2020 | \$45.84 | \$10.00 | \$18.80 | \$0.00 | \$74.64 |
| | 08/30/2021 | \$47.84 | \$10.00 | \$18.80 | \$0.00 | \$76.64 |
| For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER" | | | | | | |

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)

Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

** Multiple ratios are listed in the comment field.

*** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.

**** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

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SECTION 01069

HEALTH & SAFETY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for providing a Health and Safety Plan and maintenance of health and safety while performing the Work.

1.02 PAYMENT PROCEDURES

- A. Provision for “Health & Safety Requirements” will not be paid separately, but shall be considered a subsidiary obligation of the Contractor, with costs thereof distributed among the contract unit prices for the other items of work.

1.03 REQUIREMENTS

- A. The Contractor is responsible to monitor working conditions at all times during construction and, if it is found to be necessary, to provide appropriate protective clothing, equipment and facilities for his personnel, and to establish workplace procedures to ensure their safety, and to enforce the use of these procedures, equipment and facilities in accordance with the following guidelines:
 - 1. Safety and Health Regulations Promulgated by the U.S. Department of Labor OSHA, 29 CFR 1910 - Occupational Safety and Health Standards, and 29 CFR 1920 - Safety and Health Regulations for Construction.
 - 2. U.S. Environmental Protection Agency Interim Standard Operating Safety Guidelines - Office of Emergency and Remedial Response - Hazardous Response Support Division, Rev. September 1982.
 - 3. U.S. Environmental Protection Agency Medical Monitoring Program Guidelines.
 - 4. This project is subject to and the **General Bidder is required to comply with the Commonwealth of Massachusetts Sector Specific Workplace Safety Standards for Construction Sites to Address COVID-19 dated May 18, 2020 (or as amended)** included as an attachment to this Section.
- B. The Contractor shall implement a Health and Safety protection program. The procedures for such implementation shall be submitted to the Engineer and Owner for approval. The procedures shall include provisions for stations allowing workers to wash and to put on and remove protective clothing, and stations for vehicles to be cleaned, if necessary, before leaving the site, air monitoring, and evaluation of areas where unsafe levels of gas has accumulated.

- C. The Contractor shall comply with all Federal, State, and local safety requirements related to the presence of combustible and nausea-inducing gases.
- D. In addition to the above requirements, the Contractor shall comply with the following requirements:
 - 1. All construction equipment on the site shall be equipped with vertical exhaust pipes or a sparkproof exhaust.
 - 2. Smoking shall not be permitted in any area where gases can accumulate, or in areas where geomembrane liners are being installed.
 - 3. Welding or open flames shall not be permitted in enclosed areas. In other areas in which a detectable concentration of methane is found, ground mats shall be used.
 - 4. Toxic gas indicators, a combustible gas indicator, and fire extinguishers shall be available at all times during operations. Periodic monitoring with portable monitoring devices shall be employed in areas susceptible to gas accumulation, with the Contractor furnishing daily to the Engineer, three (3) copies of a certified statement of their findings.
- E. During operations, whenever unsafe levels of landfill gases are detected, all work will cease in that area until acceptable levels are reached.

1.04 SHOP DRAWINGS

- A. Submit site specific Health and Safety Plan (HASP) that complies with all applicable OSHA requirements to the Engineer for review and acceptance within fifteen (15) working days of the Contractor's Notice to Proceed. Certified Industrial Hygienist must certify the Contractor's plan prior to submittal to and review by the Engineer. The Contractor is not to proceed with any subsurface site work without review and acceptance of the submitted Health and Safety Plan by the Engineer.

1.05 QUALITY ASSURANCE

- A. Engage an independent, qualified Health and Safety expert having experience in similar construction conditions, to monitor site conditions and recommend all necessary Health and Safety protection. This person shall be a Certified Industrial Hygienist (CIH). The Contractor shall follow such recommendations and shall provide such protection to his personnel, and personnel of the Owner and Engineer, as may be affected.

1.06 REGULATORY REQUIREMENTS

- A. Establish workplace procedures, enforce the use of these procedures, and the associated equipment and facilities in accordance with the following guidelines:

1. Safety and Health Regulations Promulgated by the U.S. Department of Labor OSHA, 29 CFR 1910 - Occupational Safety and Health Standards, and 29 CFR 1920 - Safety and Health Regulations for Construction.
2. Occupational Safety and Health Standards, 29 CFR 1926 - Safety and Health Regulations for Construction.
3. U.S. Environmental Protection Agency Medical Monitoring Program Guidelines.

1.07 SITE CONDITIONS

- A. The Contractor's attention is directed to the fact that the work includes CIPP Lining of sewer mains and epoxy spraying of manholes. In addition to confined space issues, hazardous gasses and oxygen depletion may be encountered in the existing sewer system where proposed work is to take place.
- B. The Contractor is also responsible for reviewing site specific investigation reports included in the Appendix of these specifications.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 PROTECTION

- A. If, at any time, the Owner or the Engineer is apprised of a safety hazard which demands immediate attention because of its high potential for harm to the public travel, persons on or about the work, or public or private property, the Owner or the Engineer shall have the right to order such safeguards to be erected and such precautions to be taken as necessary and the Contractor shall comply with such orders. If, under such circumstances, the Contractor does not or cannot immediately put the work into proper and approved condition, or if the Contractor or his representative is not upon the site so that he can be notified immediately of the insufficiency of safety precautions, then the Owner may put the work into such a condition that is shall be, in his opinion, in all respects safe, and the Contractor shall pay all expenses of such labor materials as may have been used for this purpose by him or by the Owner. The fact that the Owner or the Engineer does not observe a safety hazard or does not order the Contractor to take remedial measures shall in no way relieve the Contractor of the entire responsibility for any costs, loss or damage by any party sustained on account of the insufficiency of the safety precautions taken by him or by the Owner acting under authority of this Section.

- B. If the Contractor is alerted to the fact that conditions of high hazard are present or can be present at the site during the performance of the work. It is the responsibility of the Contractor to take appropriate safety precautions to meet whatever conditions of hazard may be present during the performance of the work, whether reasonably foreseeable or not. The safety conditions enumerated in the within Specifications are the minimum permissible and neither the Owner nor the Engineer make any representation that the safety standards provided herein will be adequate to meet all eventualities. The Contractor is therefore alerted to the fact that it shall be its responsibility to anticipate and provide such additional safety precautions, facilities, personnel and equipment as shall be necessary to protect life and property from whatsoever conditions of hazard are present or may be present.

END OF SECTION



SECTOR SPECIFIC WORKPLACE SAFETY STANDARDS FOR CONSTRUCTION SITES TO ADDRESS COVID-19

As of May 18, 2020

A. Enforcement and Oversight

- A site-specific COVID-19 Officer (who may also be the Health and Safety Officer) shall be designated for every site except as provided below for construction and remodeling in 1-3 family residences
- Except as provided below for construction and remodeling in 1-3 family residences, the Contractor's site-specific project COVID-19 Officer shall submit a written daily report to the Owner's Representative. The COVID-19 Officer shall certify that the contractor and all subcontractors are in full compliance with sections B to D, inclusive (the "COVID-19 Construction Safety Guidance")
- For large, complicated construction projects a city or town may additionally require the Owner to develop and submit a site-specific risk analysis and enhanced COVID-19 safety plan, which may include additional requirements to address risks specific to the project or type of project. The city or town shall review and approve such plan and may require such projects to pause construction until such a risk analysis and plan is submitted and approved. Once such an enhanced COVID-19 safety plan is approved, a violation of the plan shall be treated the same as a violation of the COVID-19 Construction Safety Guidance
- For all projects undertaken, managed or funded by a state agency or authority there shall be joint enforcement responsibility between the project's public Owner and the city or town where the project is located. The Owner of a public project has the lead responsibility for compliance and enforcement including frequent on-site inspections by an employee or contractor of the state agency or authority who is familiar with the COVID-19 Construction Safety Guidance and is authorized to enforce that guidance and shut down work at the site if violations are found. The Owner of the project is required to notify the municipality where the work is taking place whenever a site is shut down or of any violations of the COVID-19 Construction Safety Guidance and the resulting corrective action plan, as well as to provide copies of the COVID-19 Officer's written daily reports upon request. While the public Owner has the lead responsibility for enforcement, cities and towns retain the authority to take enforcement action against public projects found not in compliance with the COVID-19 Construction Safety Guidance, including the authority to order the project to shut down until a corrective action plan is developed, approved and implemented
- Cities and towns are authorized to enforce the COVID-19 Construction Safety Guidance using their public health staff, building inspectors or any other appropriate official or contractor

- Cities and towns may enforce the safety and distance protocols including, if multiple violations are found, requiring the Owner and / or Contractor to safely secure the site and pause construction activities until a corrective action plan is prepared, submitted and approved by the city or town
- The city or town may require the Owner of a large, complicated private project to pay for an independent, third party inspector or inspection firm (or to pay into a pool to pay for such inspections). The third party inspector shall be accountable solely to the city or town and shall be responsible for enforcement on behalf of the city or town. A city or town may require private projects to pause construction until such a third-party inspector has been secured

B. Employee Health Protection – ZERO Tolerance

ZERO TOLERANCE FOR SICK WORKERS REPORTING TO WORK. IF YOU ARE SICK, STAY HOME! IF YOU FEEL SICK, GO HOME! IF YOU SEE SOMEONE SICK, SEND THEM HOME!

If you are exhibiting any of the symptoms below, you are to report this to your supervisor (via phone, text or email) right away, and head home from the job site or stay home if already there

If you notice a co-worker showing signs or complaining about such symptoms, he or she should be directed to their supervisor (via phone, text or email) and asked to leave the project site immediately

COVID-19 Typical Symptoms:

- Fever
- Cough
- Shortness of Breath
- Sore Throat

Self-certify prior to shift

Prior to starting a shift, each employee will self-certify to their supervisor that they:

- Have no signs of a fever or a measured temperature above 100.3 degrees or greater, a cough or trouble breathing within the past 24 hours
- Have not had "close contact" with an individual diagnosed with COVID-19. "Close contact" means living in the same household as a person who has tested positive for COVID-19, caring for a person who has tested positive for COVID-19, being within 6 feet of a person who has tested positive for COVID-19 for about 15 minutes, or coming in direct contact with secretions (e.g., sharing utensils, being coughed on) from a person who has tested positive for COVID-19, while that person was symptomatic
- Have not been asked to self-isolate or quarantine by their doctor or a local public health official

Employees exhibiting symptoms or unable to self-certify should be directed to leave the work site and seek medical attention and applicable testing by their health care provider. They are not to return to the work site until cleared by a medical professional

General On-the-Job Guidance to Prevent Exposure & Limit the Transmission of the Virus

- No handshaking
- Wash hands often with soap for at least 20 seconds or use an alcohol-based hand sanitizer with at least 60% ethanol or 70% isopropanol
- Contractor and State Agency Field Offices are locked down to all but authorized personnel
- Each jobsite should develop cleaning and decontamination procedures that are posted and shared. These Procedures must cover all areas including trailers, gates, equipment, vehicles, etc. and shall be posted at all entry points to the sites, and throughout the project site.
- A "No Congregation" policy is in effect, individuals must implement social distancing by maintaining a minimum distance of 6-feet from other individuals
- Avoid face to face meetings – critical situations requiring in-person discussion must follow social distancing
- Conduct all meetings via conference calls, if possible. Do not convene meetings of more than 10 people. Recommend use of cell phones, texting, web meeting sites and conference calls for project discussion
- All individual work crew meetings / tailgate talks should be held outside and follow social distancing
- Please keep all crews a minimum of 6 feet apart at all times to eliminate the potential of cross contamination
- At each job briefing / tool box talk, employees are asked if they are experiencing any symptoms, and are sent home if they are
- Each jobsite should have laminated COVID-19 safety guidelines and handwashing instructions
- All restroom facilities / porta-potties should be cleaned and handwashing stations must be provided with soap, hand sanitizer and paper towels
- All surfaces should be regularly cleaned, including surfaces, door handles, laptops, etc.
- All common areas and meeting areas are to be regularly cleaned and disinfected at least once a day but preferably twice a day
- Be sure to use your own water bottle, and do not share
- To avoid external contamination, we recommend everyone bring food from home
- Please maintain Social Distancing separation during breaks and lunch

- Cover coughing or sneezing with a tissue, then throw the tissue in the trash and wash hands, if no tissue is available then cough into your elbow
- Avoid touching eyes, nose, and mouth with your hands
- To avoid sharing germs, please clean up after Yourself. DO NOT make others responsible for moving, unpacking and packing up your personal belongings
- If you or a family member is feeling ill, stay home!

Work Site Risk Prevention Practices

- At the start of each shift, confirm with all employees that they are healthy
- We will have a 100% glove policy from today going forward. All construction workers will be required to wear cut-resistant gloves or the equivalent
- Use of eye protection (safety goggles / face shields) is recommended
- In work conditions where required social distancing is impossible to achieve affected employees shall be supplied PPE including as appropriate a standard face mask, gloves, and eye protection
- All employees should drive to work site / parking area in a single occupant vehicle. Contractors / State staff should not ride together in the same vehicle
- When entering a machine or vehicle which you are not sure you were the last person to enter, make sure that you wipe down the interior and door handles with disinfectant prior to entry
- In instances where it is possible, workers should maintain separation of 6 feet from each other per CDC guidelines
- Multi person activities will be limited where feasible (two person lifting activities)
- Large gathering places on the site such as shacks and break areas will be eliminated and instead small break areas will be used with seating limited to ensure social distancing.
- Contact the cleaning person for your office trailer or office space and ensure they have proper COVID-19 sanitation processes. Increase their cleaning visits to daily
- Clean all high contact surfaces a minimum of twice a day in order to minimize the spread of germs in areas that people touch frequently. This includes but is not limited to desks, laptops and vehicles

Wash Stations

All site-specific projects with outside construction sites without ready access to an indoor bathroom MUST install Wash Stations.

- Install hand wash stations with hot water, if possible, and soap at fire hydrants or other water sources to be used for frequent handwashing for all onsite employees
- All onsite workers must help to maintain and keep stations clean
- If a worker notices soap or towels are running low or out, immediately notify supervisors

- Garbage barrels will be placed next to the hand wash station for disposal of tissues / towels

Do all you can to maintain your good health by: getting adequate sleep; eating a balanced, healthy diet, avoid alcohol; and consume plenty of fluids.

Please Note: This document is not intended to replace any formalized procedures currently in place with the General Contractor.

Where these guidance does not meet or exceed the standards put forth by the General Contractor, everyone shall abide by the most stringent procedure available.

A site-specific COVID-19 Officer (who may also be the Health and Safety Officer) shall be designated for every site.

The Contractor's site specific project COVID-19 Officer shall submit a written daily report to the Owner's Representative. The COVID-19 Officer shall certify that the contractor and all subcontractors are in full compliance with these guidelines.

Any issue of non-compliance with these guidelines shall be a basis for the suspension of work. The contractor will be required to submit a corrective action plan detailing each issue of non-conformance and a plan to rectify the issue(s). The contractor will not be allowed to resume work until the plan is approved by the Owner. Any additional issues of non-conformance may be subject to action against the contractor's prequalification and certification status.

Limiting Exposures

Workers should follow the General On-the-Job Guidance to Prevent Exposure & Limit the Transmission of the Virus of the COVID-19 Employee Health, protection, guidance and prevention guide.

In addition, Contractors should advise workers of best practice to limit exposures off the construction site.

When leaving a construction site for breaks, lunch, or other reasons are required to wash hands with soap for at least 20 seconds or use an alcohol-based hand sanitizer with at least 60% ethanol or 70% isopropanol before leaving the site and must maintain social distancing and wear face coverings if traveling to other locations off the construction site. Frequent use of handwashing or alcohol-based hand sanitizers should be encouraged and handwashing facilities and / or alcohol-based hand sanitizers should be made readily available at work sites.

C. Construction and Remodeling in 1-3 Family Residences

For construction and remodeling work in 1-3 family residential constructions, section B shall be modified as follows:

- The contractor does not need to designate a site-specific COVID-19 Officer (who may also be the Health and Safety Officer) for every site if there are 5 or less workers at the site at any given time. Instead, the contractor may designate a COVID-19 Officer for all such small sites in a given city or town who shall be in daily contact with each of the sites to ensure that the contractor and all subcontractors are in full compliance with this safety guidance. This COVID-19 safety officer shall prepare a written daily report covering all the small sites in each city or town and make a copy of that report available to a municipal official and / or the owner of the residence upon request
- If the project has restroom facilities / porta-potties they must be cleaned and handwashing stations must be provided with soap, hand sanitizer and paper towels. For outside construction sites without ready access to an indoor bathroom, the contractors must either install Wash Stations with hot water, if possible, and soap at fire hydrants or other water sources to be used for frequent handwashing for all onsite employees or provide each employee and subcontractor with a sufficient quantity of hand sanitizer to allow for frequent handwashing

D. Worker Infection Protocol

As stated above, there is a zero tolerance for sick workers reporting to work. Employees should be instructed that even those with mild symptoms of respiratory infection (cough, shortness of breath, sore throat) or fever should stay off work. Contractors shall take immediate steps to limit infections at the job site in the event that a worker discovered to have tested positive for COVID-19 or has COVID-19 related symptoms.

Although it is understood that contractors are enforcing Work Site Risk Prevention Practices including social distancing rules and use of PPE, consistent with guidelines it is also recognized that there may be occasions where someone who has tested positive for COVID-19 or who has COVID-19 symptoms has been present in a work area.

Prompt identification and isolation of potentially infectious individuals is a critical step in protecting workers, vendors, visitors, and others at a worksite.

Identification of Exposure

The Contractor shall direct workers with COVID-19 related symptoms to leave the jobsite immediately and contact their healthcare provider. The Massachusetts Department of Health (DPH) or a local board of health will make appropriate notifications to those who had direct prolonged contact with the COVID-19 positive workers.

The Contractor shall work with the local board of health to identify any potential job site exposures, including:

- Other workers, vendors, inspectors, or visitors to the work site with close contact to the individual
- Work areas such as supply cabinets and designated work stations or rooms
- Work tools and equipment
- Common areas such as break rooms and tables, vending machines, and sanitary facilities

Notification and Quarantine Requirements

As provided by law, the identity of the worker must be kept confidential

Upon learning of an infection, the contractor must immediately notify the designated COVID-19 safety officer, the site safety officer, and the owner

Sanitation Requirements

After a worker with COVID-19 related symptoms has been asked to leave the job site, the contractor shall take immediate steps to sanitize common areas and direct work places. This includes all on-site bathrooms facilities, any break facilities, and any other common areas on the job site that may have been in close contact with the infected worker.

Sanitation will be conducted with personnel, equipment, and material approved for COVID-19 sanitization.

Identified areas should remain isolated from workers until sanitation process has been completed and area is deemed safe for use.

Returning to Work

All impacted workers should follow CDC and DPH recommended steps concerning return to work. Workers who are considered close contacts to a COVID-19 case by public health authorities should not return for 14 days and are subject quarantine by public health.

Workers who leave during the work day due to COVID-19 symptoms and develop COVID-19 as confirmed by laboratory testing or diagnosis by a healthcare provider shall not return to the site until either released from isolation by healthcare provider or public health official.

In All Cases

- Keep all employee names confidential as required by law
- Other employees may be sent home while a workspace is being cleaned but will return to work after cleaning unless advised otherwise by a health care provider
- Other employees should be asked to contact their health provider if they have any questions
- Remind other employees to continue to practice proper sanitation and monitor for flu like symptoms

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SECTION 01090

REFERENCE STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Reference material, abbreviations, and terms used in the Construction Documents and establishes edition dates and complete titles for standards referenced elsewhere in the Specifications.

1.02 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Obtain copies of standards when required by Contract Documents.
- C. Maintain copy at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.
- D. Should specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- E. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.03 SCHEDULE OF REFERENCES

| | |
|--------|---|
| AA | Aluminum Association 818 Connecticut Ave. N.W. Washington, DC 20006 |
| AASHTO | American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001 |
| ACI | American Concrete Institute Box 19150 Reford Station Detroit, MI 48219 |
| AFBMA | Anti-Friction Bearing Manufacturers Association |

| | |
|--------|---|
| AGC | Associated General Contractors of America 1956 E Street, N.W. Washington, DC 20006 |
| AGM | American Gear Manufacturers Association |
| AI | Asphalt Institute Asphalt Institute Building College Park, MD 20740 |
| AISC | American Institute of Steel Construction 400 North Michigan Avenue Eighth Floor Chicago, IL 60611 |
| AISI | American Iron and Steel Institute 1000 16 th Street, N.W. Washington, DC 20036 |
| AMCA | Air Movement and Control Association 30 West University Drive Arlington Heights, IL 60004 |
| ANS | American National Standard |
| ANSI | American National Standards Institute 1430 Broadway New York, NY 10018 |
| API | American Petroleum Institute |
| ARI | Air-Conditioning and Refrigeration Institute 1501 Wilson Boulevard Arlington, VA 22209 |
| ASCE | American Society of Civil Engineers 345 East 47 th Street New York, NY 10017 |
| ASHRAE | American Society of Heating, Refrigerating and Air Conditioning Engineers 1791 Tullie Circle, N.E. Atlanta, GA 30329 |

| | |
|-----------|---|
| ASME | American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017 |
| ASPA | American Sod Producers Association 4415 West Harrison Street Hillside, IL 60162 |
| ASTM | American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103 |
| AWG | American or Brown and Sharpe Wire Gage |
| AWPA | American Wood-Preservers' Association 7735 Old Georgetown Road Bethesda, MD 20014 |
| AWS | American Welding Society |
| AWWA | American Water Works Association 6666 West Quincy Avenue Denver, CO 80235 |
| BIA | Brick Institute of America 11490 Commerce Park Drive Reston, VA 22091 |
| CS | Commercial Standard |
| EJCDC | Engineers' Joint Contract Document Committee American Consulting Engineers Council 1015 15 th Street, N.W. Washington, DC 20005 |
| FM | Factory Mutual System 1151 Boston-Providence Turnpike PO Box 688 Norwood, Massachusetts 02062 |
| Fed Spec. | Federal Specification General Services Administration Specification and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, DC 20407 |

| | |
|--------|--|
| IBR | Institute of Boiler and Radiator Manufacturers |
| ICBO | International Conference of Building Officials 5360 S. Workman Mill Road Whittier, CA 90601 |
| IPS | Iron Pipe Size |
| JIC | Joint Industry Conference Standards |
| MIL | Military Specification Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120 |
| NASSCO | National Association of Sewer Service Companies 101 Wymore Road, Suite 521 Altamonte, FL 32714 |
| NBS | National Bureau of Standards |
| NCMA | National Concrete Masonry Association PO Box 781 Herndon, VA 22070 |
| NCPWB | National Certified Pipe Welding Bureau |
| NEMA | National Electrical Manufacturers' Association 2101 'L' Street, N.W. Washington, DC 20037 |
| NFPA | National Fire Protection Association Battery March Park Quincy, MA 02269 |
| NPT | National Pipe Thread |
| OS&Y | Outside screw and yoke |
| PCA | Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077 |

| | |
|-------------|--|
| SMACNA | Sheet Metal and Air Conditioning Contractors' National Assoc. 8224 Old Court House Road Vienna, VA 22180 |
| Stl. WG | U.S. Steel Wire Washburn and Moen, American Steel and Wire or Roebling Gage |
| UL | Underwriters' Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062 |
| USS Gage | United States Standard Gage |
| 125-lb. ANS | American National Standard for Cast-Iron Pipe Flanges and Flange |
| 250-lb. ANS | Fittings, Designation B16.1-1975, for the appropriate class |

1.04 EDITION DATES

- A. Reference to publications and reference material shall be understood to mean the latest edition, unless stated otherwise.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

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SECTION 01200

PROJECT MEETINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for project meetings.

1.02 PRECONSTRUCTION CONFERENCE

- A. The Engineer will schedule and administer a pre-construction conference.
- B. The pre-construction conference will be scheduled and administered within fourteen (14) calendar days after the dated "Notice to Proceed". The Contractor shall be prepared to address such topics as projected construction schedules, major personnel, critical work areas, construction facilities and shop drawing submittals.

1.03 PROGRESS MEETINGS

- A. The Engineer will schedule and administer progress meetings and specially called meetings throughout the duration of the Work at minimum weekly intervals.
- B. The time and location of such meetings shall be designated by the Engineer and shall be convenient for all parties involved.
- C. The Engineer will, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies to participants, and those affected by decisions made.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

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SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for submission of schedules and shop drawings.

1.02 PROGRESS SCHEDULE

- A. Refer to Section 01310 Construction Progress Schedule for Critical Path Method (CPM) construction scheduling requirements.
- B. Special attention is directed to the requirement that the Contractor shall start the Work, as specified under this Contract, no later than thirty (30) calendar days after the execution of the Contract Documents, unless otherwise directed by the Owner. The Contractor shall comply with all pre-construction requirements as specified. The Owner reserves the right to delay the commencement of the Work or any part thereof if the specified requirements as determined by the Engineer have not been satisfied. The Owner further reserves the right to limit or, delay construction, or certain activities thereof, in certain areas of the Contract should the Owner deem it to be in the public's best interest and/or safety to do so.
- C. The Contractor shall contact the appropriate town or city authorities concerning any public or semi-public events that may occur during the construction period that may affect construction. The Contractor alone shall be responsible for arranging his construction sequence to conform to any restrictions these events may impose. No claims for extras will be allowed because of any delay, extra materials handling, extra excavation, etc. caused by the imposed restrictions. However, additional time may be granted for completion of the work to compensate for delays caused by said restrictions.

1.03 SHOP DRAWINGS

- A. Submit six (6) copies of all shop and working drawings of concrete reinforcement, structural details, piping layout, wiring, materials fabricated especially for the Contract, and materials and equipment for which such drawings are specifically requested.
- B. A maximum of two (2) submittals of each shop drawing will be reviewed by the Engineer. If more submittals are required due to the Contractor's neglect or failure to fulfill the requirements of the Contract plans and specifications, or to make

corrections or modifications required by the Engineer in the review of the first two submittals, the Engineer will review the submittal and the Contractor will be responsible for the cost of the review, as determined by the Owner based on the Engineer's documentation of time and rates for additional services established in the Engineering Agreement between the Owner and the Engineer.

- C. If resubmittals on shop and working drawings are required, the Engineer will retain three (3) copies and three (3) copies will be returned to the Contractor. When resubmittals are returned to the Engineer, six copies of the complete submittal shall again be required.
- D. Such drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When the dimensions are of particular importance, or when specified, the drawings shall be certified by the manufacturer or fabricator as correct for the Contract.
- E. When so specified or if considered by the Engineer to be acceptable, manufacturer's specifications, catalog data, descriptive matter, illustrations, etc., may be submitted in place of shop and working drawings.
- F. The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings to eliminate delay to the Work due to the absence of such drawings. All shop and working drawings must be submitted to the Engineer within thirty (30) calendar days prior to incorporation into the Work, unless otherwise permitted by the Engineer. **Prior to the submittal of any shop drawings, the Contractor shall submit a schedule of proposed shop drawing transmittals.** The schedule shall identify the subject matter of each transmittal, the corresponding specification section number and the proposed date of submission. Prior to and during the progress of the Work the schedule shall be revised and resubmitted as requested by the Engineer.
- G. No material or equipment shall be purchased or fabricated for the Contract until the required shop and working drawings have been submitted as hereinabove provided and reviewed for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by said drawings.
- H. Until the necessary review has been made, the Contractor shall not proceed with any portion of the Work (such as the construction of foundations) for which review is required.
- I. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from his subcontractors and returning reviewed drawings to them. All shop and working drawings shall be prepared on standard size, 24 inch by 36 inch sheets,

except those which are made by changing existing standard shop and working drawings. All drawings shall be clearly marked with the names of the Owner, Contractor, and building, equipment, or structure to which the drawing applies, and shall be suitable numbered. Submitted shop drawings shall be accompanied by a letter of transmittal, completed by the Contractor as approved by the Engineer.

- J. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer; other drawings shall be returned for correction.
- K. If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in his letter of transmittal.
- L. The review of shop and working drawings by the Engineer will be general only, and nothing contained in this Section shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of design and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance as specified. The Contractor shall be responsible for errors and omissions in shop drawings.
- M. Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires, appurtenances, or layouts etc., either existing or as detailed on the Drawings, he shall also submit details of the proposed modifications. If such equipment and modifications are accepted, the Contractor, at no additional cost to the Owner, shall do the work necessary to make such modifications.
- N. The Contractor shall furnish additional copies of shop drawings or catalog cuts when so requested.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

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SECTION 01310

CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

1. Requirements for computer generated construction scheduling and Narrative progress report.
2. No portion of this specification shall take precedent over SECTION 00500-Contract Agreement.

1.02 SUBMITTALS

A. Submit in accordance with SECTION 01300-Submittals

1. Schedule

- a. Within **14 days** following the execution of the Contract, the Contractor shall submit two color copies of a computer generated schedule and a list of activities to the Engineer. Following review by the Engineer and Owner the Contractor shall meet with the Engineer and Owner to discuss the review. The Contractor shall incorporate the Engineer's comments into the schedule and submit eight color copies of the revised schedule within 14 days following receipt of the Engineer's comments.

PART 2 PRODUCTS

2.01 SOFTWARE

- A. Computer based scheduling software used by the Contractor shall be the product of a recognized commercial computer software producer and shall be capable of meeting the requirements specified herein.

PART 3 EXECUTION

3.01 PREPARATION

A. General

1. The Contractor shall prepare his proposed schedule based on a breakdown of work tasks that he has developed.

2. The construction schedule and updates shall be prepared by the Contractor or the Contractor's qualified consultant.

B. Schedule

1. Each schedule shall be prefaced with the following summary data:
 - a. Contract name and number
 - b. Contractor's Name
 - c. Contract duration
 - d. The effective or starting date of the schedule
 - e. Revision date of the latest schedule.
2. The schedule shall be sequenced by start date and shall include the following minimum items:
 - a. Activity Name
 - b. Estimated duration
 - c. Activity description
 - d. Start date (calendar date)
 - e. Finish date (calendar date)
 - f. Major milestones
3. Separate milestones shall be included for Notice-to-Proceed and Project Completion Date.
4. Activities shall include major components of the work including submittals that might impact the proposed schedule, subcontractor work, testing, delivery and installation times, demobilization, project cleanup and closeout.
5. Each schedule submittal shall also include a list of activities in the order in which the activities will be performed, along with activity durations.
6. The schedule shall be based on a standard 5-day work week with allowance for holidays and adverse weather.
7. Engineer's approval of the schedule is advisory only and shall not relieve the Contractor of responsibility for accomplishing the work prior to the contract completion date. Omissions and errors in the approved schedule shall not excuse performance less than that required by the Contract. Approval by the Engineer in no way makes the Engineer an insurer of the schedule's success or liable for time or cost overruns flowing from its shortcomings. The Owner hereby disclaims any obligation or liability by reason of approval by its agent, the Engineer, of the schedule.

C. Narrative Progress Report

1. Include as a minimum:

- a. Summary of work completed during the previous period (since submission of last narrative progress report).
 - b. Explanation for variations between actual work completed in previous period and planned work as reported in last period.
 - c. Summary of work planned during the next period.
 - d. Current and anticipated delaying factors and their estimated impacts on other activities and milestones, both critical and non-critical.
 - e. Corrective actions taken or proposed.
2. A Narrative Progress Report shall be submitted monthly to the Engineer, at least 5 working days prior to the progress meeting.
 3. At the discretion of the Engineer, the Contractor may be required to submit a revised schedule showing completion to date and any changes to the previous schedule.

3.02 MONITORING SCHEDULE

- A. The approved construction schedule shall be used by the Contractor throughout the duration of the project for planning, organizing, and directing the Work, and for reporting progress of the Work
- B. The Contractor is solely responsible for monitoring schedule compliance. When a delay occurs, the Contractor shall immediately notify the Engineer in writing. Within one week of the notification, the Contractor shall submit for the Engineer's approval, a description of proposed actions to return the project to schedule.

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SECTION 01381

AUDIO VIDEO RECORDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for color audio video recording of all existing roadway and right-of-way conditions.

1.02 REQUIREMENTS

A. Pre Construction recording

1. Furnish to the Engineer an original and one copy of a continuous color audio video recording. Take recording prior to any construction activity.
2. Recordings to be of sufficient detail to accurately and clearly show the existing, preconstruction conditions of this entire area of the Work. Each recording to include an audio description of the area being video recorded.
3. Coverage shall include, but not limited to, all existing roadways, sidewalks, curbings, driveways, buildings, structures, above ground utilities, landscaping, trees, signage and other physical features located within the zone of influence of the Work. The coverage may be expanded if directed by Engineer.
4. All recordings will be done during daylight hours. No recording shall be performed if weather is not acceptable, such as rain, fog, etc.

- B. The Engineer reserves the right to reject any recordings because of poor quality.

- C. Any recordings rejected by the Engineer shall be rerecorded at no additional cost.

1.03 SUBMITTALS

- A. Provide references of similar projects for review by the Engineer, include owner contacts and telephone numbers.

1.04 QUALITY CONTROL

- A. The recording shall be performed by a qualified, established audio video recording firm knowledgeable in construction practices and inspection procedures.

PART 2 PRODUCTS

2.01 AUDIO VIDEO MEDIA

- A. Recording media shall be Digital Video Disk (DVD), single layer (4.7 GB capacity), DVD+R or DVD-R format. Contractor to ensure that recording is capable of playback on both commercial DVD players and computer DVD-ROM drives.

PART 3 EXECUTION

3.01 AUDIO AND VIDEO RECORDING

- A. Each recording shall begin with the Owner's name, Contract name and number, Contractor's name, date and location information such as street name, direction of travel, viewing side, etc.
- B. Information appearing on the recording must be continuous and run simultaneously by computer generated transparent digital information. No editing or overlaying of information at a later date will be acceptable.
- C. Digital information will be as follows:
 - 1. Day, date and time
- D. Time must be accurate to within 1/10 of a second and continuously generated.
- E. Written documentation must coincide with the information on the recording so as to make easy retrieval of locations sought for a later date.
- F. The video system shall have the capability to transfer individual frames of video electronically into hard copy prints or photographic negatives or digital image files in commonly accepted image file formats (e.g. .jpg, .tif, .etc.).
- G. Audio shall be recorded at the same time as the video recording. Special commentary will be given for unusual conditions of buildings, sidewalks and curbing, foundations, trees and shrubbery, etc.
- H. All DVD's shall bare labels with the following information:
 - 1. DVD Number
 - 2. Owner's Name
 - 3. Date of Recording
 - 4. Project Name and Number
 - 5. Location and Standing Limit of recording

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for Contractor's quality control of products, suppliers, manufacturers, services, site conditions, and workmanship, to produce Work of specified quality.

1.02 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Comply fully with manufacturers' instructions, including each step in sequence.
- B. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- D. Perform work by persons qualified to produce workmanship of specified quality.
- E. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.03 FIELD SAMPLES

- A. Install field samples at the site as required by individual specifications sections for review.
- B. Acceptable samples represent a quality level for the Work.
- C. Where field sample is specified to be removed, clear area only after field sample has been accepted by the Engineer.

1.04 CERTIFIED WELDERS

- A. Structural welds shall be made only by operators who have been qualified by tests, as prescribed in the "Standard Qualification Procedure" of the American Welders Society, to perform the type of work required.

- B. Pipe welds shall be made only by operators who have been qualified by the National Certified Pipe Welding Bureau and each operator's qualification record shall be submitted to the Engineer before any work is preformed.
- C. Shop welding shall be in accordance with the "Code for Welding in Building Construction".

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01410

TESTING LABORATORY SERVICES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Qualification, duties and responsibilities of testing laboratories.
2. Coordination and scheduling responsibilities of the Contractor.

B. Related Sections

1. Section 01600 - Materials and Equipment

1.02 PAYMENT PROCEDURES

A. Initial Testing

1. The Owner will pay for initial testing services required by the Engineer, unless otherwise included in a payment item as outlined in Section 01025.

B. Retesting

1. When initial tests indicate noncompliance with the Contract Documents, subsequent retesting occasioned by the noncompliance shall be performed by the same testing agency, and costs thereof will be deducted by the Owner from the Contract Sum.

C. Contractors Convenience Testing

1. Inspecting and testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. E329, Agencies Engaged in Construction Inspection and/or Testing

1.04 REQUIREMENTS

A. Work included:

1. Cooperate with the Owner's selected testing agency and all others responsible or testing and inspecting the Work.
2. Provide other testing and inspecting as specified to be furnished by the Contractor in this Section and/or elsewhere in the Contract Documents.
3. Where no testing requirements are described, but the Owner directs testing, the Contractor shall provide testing under the requirements of this Specification.

B. Work not included:

1. Selection of testing laboratory: The Owner will select a qualified independent testing laboratory.

1.05 QUALITY ASSURANCE

A. Qualifications

1. The testing laboratory will be qualified to the Owner's approval in accordance with ASTM E329.

B. Regulatory requirements

1. Testing, when required, will be in accordance with all pertinent codes and regulations and with selected standards of the American Society for Testing and Materials.
2. Regulatory Requirements Inspections and tests required by codes or ordinances, or by a plan approved authority, and which are made by a legally constituted authority, shall be the responsibility of and shall be paid for by the Contractor, unless otherwise provided in the Contract Documents.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01600 - Materials and Equipment.

- B. Promptly process and distribute, to the Engineer, required copies of test reports and instructions to assure necessary retesting and replacement of materials with the least possible delay in progress of the Work.

1.07 SCHEDULING

A. Establishing schedule

1. By advance discussion with the testing laboratory selected by the Owner, determine the time required for the laboratory to perform its tests and to issue each of its findings.
2. Provide all required time within the construction schedule.
3. Coordinate testing activity with the appropriate testing laboratory.

B. Revising schedule

1. When changes of construction schedule are necessary during construction, coordinate all such changes with the testing laboratory as required.

C. Adherence to schedule

1. When the testing laboratory is ready to test according to the established schedule, but is prevented from testing or taking specimens due to incompleteness of the Work, all extra charges for testing attributable to the delay may be back-charged to the Contractor and shall not be borne by the Owner.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Site Tests

1. Representatives of the testing laboratory shall have access to the Work at all times and at all locations where the Work is in progress. Provide facilities for such access to enable the laboratory to perform its functions properly.
2. All specimens and samples for testing, unless otherwise provided in the Contract Documents, shall be taken by the testing personnel. All sampling equipment and personnel will be provided by the testing laboratory. All deliveries of specimens and samples to the testing laboratory will be performed by the testing laboratory.

END OF SECTION

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SECTION 01560

TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for cleaning, maintenance of the site, barriers and fences required during construction.

1.02 CLEANING DURING CONSTRUCTION

- A. Unless otherwise specified under the various trade Sections of the Specifications, the General Contractor shall perform clean-up operations during construction as herein specified.
 - 1. Control accumulation of waste materials and rubbish; periodically dispose of off-site. Bear all costs, including fees resulting from disposal.
 - 2. Clean interior areas prior to start finish work and maintain areas free of dust and other contaminants during finishing operations.
 - 3. Maintain project in accordance with all local, State and Federal Regulatory Requirements.
 - 4. Store volatile wastes in covered metal containers, and remove from premises.
 - 5. Prevent accumulation of wastes that create hazardous conditions.
 - 6. Provide adequate ventilation during use of volatile or noxious substances
- B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - 1. Do not burn or bury rubbish and waste materials on site.
 - 2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - 3. Do not dispose of wastes into streams or waterways.
 - 4. Use only those materials which will not create hazards to health or property and which will not damage surfaces.
 - 5. Use only those cleaning materials and methods recommended by manufacturer of surface material to be cleaned.
 - 6. Execute cleaning to ensure that the buildings, the sites, and adjacent properties are maintained free from accumulations of waste materials and rubbish and wind blown debris, resulting from construction operations.

7. Provide on-site containers for collection of waste materials, debris, and rubbish.
8. Remove waste materials, debris, and rubbish from the site periodically and dispose of at legal disposal areas off the construction site.
9. Handle material in a controlled manner with as little handling as possible. Do not drop or throw materials from heights.
10. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not damage surrounding surfaces.
11. During its progress, the work and the adjacent areas affected thereby shall be kept cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.
12. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes, structures, work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the work, and the ditches, channels, drains, pipes, structures, and work, etc. shall, upon completion of the work, be left in a clean and neat condition.

1.03 DUST CONTROL

- A. Provide adequate means for the purpose of preventing dust caused by construction operations throughout the period of the construction contract.
- B. This provision does not supersede any specific requirements for methods of construction or applicable general conditions or performance obligations of the General Contractor.

1.04 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize amount of bare soil exposed at one time.
- C. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts for clays.
- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.05 NOISE CONTROL

- A. Develop and maintain a noise-abatement program and enforce strict discipline over all personnel to keep noise to a minimum.
- B. Execute construction work by methods and by use of equipment which will reduce excess noise.
 - 1. Equip air compressors with Silencers, and power equipment with mufflers.
 - 2. Manage vehicular traffic and scheduling to reduce noise.

1.06 POLLUTION CONTROL

- A. Special care shall be taken to prevent contamination or muddying up or interfering in any way with the stream flows, if any along the line of work. No waste matter of any kind will be allowed to discharge into the stream flows or impounded water of any pools or other bodies of water.

1.07 SURFACE WATER CONTROL

- A. Take all precautions to prevent damage to the work or equipment by high waters or by storms. The Engineer with the approval of the Owner may prohibit the carrying out of any work at any time when in his judgement, high water or storm conditions are unfavorable or not suitable, or at any time, regardless of the weather, when proper precautions are not being taken to safeguard previously constructed work or work in progress.
- B. In case of damage caused by the failure of the Contractor to take adequate precautions, the Contractor shall repair or replace equipment damaged and shall make such repairs or rebuild such parts of the damaged work, as the Engineer may require, at no additional expense to the Owner.

1.08 BARRIERS AND ENCLOSURES

- A. Fences and Barricades
 - 1. Provide and maintain temporary fences, barriers, lights, guardrails, and barricades as indicated in the Contract Documents, or as necessary to secure the Work and adjacent property, and protect persons and property.
 - 2. Obtain necessary approvals and permits and provide temporary expedients as necessary to accommodate tasks requiring items mentioned herein.
- B. Protection of Trees

1. The Contractor shall take care not to harm trees along the sides of roads or with in the existing facility in which the construction work is to be done or trees on adjacent lands except as indicated on the drawings or with the written permission of the Owner and any other owner of the trees involved. Care shall be taken not to cut tree roots so as to harm the growth of trees to remain.
2. If, in the opinion of the Engineer, any trees damaged during construction can be repaired, the Contractor shall satisfactorily repair same at no further cost to the Owner.
3. If, in the opinion of the Engineer, any tree damaged during construction cannot be repaired and should be removed, the Contractor shall satisfactorily remove and replace, in kind, same at no further cost to the Owner.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01570

TRAFFIC REGULATIONS
(MASSACHUSETTS)

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for traffic control for the duration of the Contract.

1.02 REFERENCES

- A. Manual of Uniform Traffic Control devices (MUTCD) 1988 Edition including all latest revisions.

1.03 PERFORMANCE REQUIREMENTS

- A. Contractor shall have the sole responsibility for the maintenance and protection of traffic.
- B. An authorized representative of the Contractor shall be available on a 24-hour basis for the duration of the Contract for the purpose of correcting construction related impediments or hazards.

1.04 SHOP DRAWINGS

- A. In accordance with SECTION 01300 – SUBMITTALS, submit a traffic plan delineating requirements of this section, the Contract Drawings, and the **Town of Wareham, MA**.
- B. Traffic control plans shall detail all typical work zones and detours.

1.05 SITE CONDITIONS

- A. Replace at no cost to the Owner pavement markings, legends and lane arrows removed or damaged by the construction operation.
- B. Restore temporary detours to original condition.
- C. Replace traffic signal loops damaged during construction within 72 hours.

1.06 SCHEDULING

- A. There shall be no time limitations on construction operations except those hours and locations where noise regulations may apply, as required for the maintenance of traffic as required by the **Town of Wareham, MA**, or as otherwise restricted in the Contract Documents.
- B. Keep closing of travel lanes to a minimum.
- C. Notify city departments 48 hours prior to construction operations on travel ways.
 - A. Police Department (508-295-1212)
 - B. Fire Department (508-295-2973)
 - C. Sewer Department (508-295-6144)

PART 2 PRODUCTS

2.01 TRAFFIC CONTROL DEVICES

- A. In accordance with the MUTCD.

PART 3 EXECUTION

3.01 INSTALLATION OF TRAFFIC CONTROL DEVICES

- A. In accordance with the MUTCD.

3.02 PROTECTION OF TRAFFIC

- A. Barricade trenches and roadway excavations at the end of each work period with temporary precast concrete barriers, properly lighted and marked to guide traffic to designated travel lane. Or other means acceptable to the Engineer and approved on the Traffic Plan.
- B. Maintain and protect traffic movements for the entire length of the project.
- C. Keep one lane of traffic open at all times except for brief stoppages dictated by the construction operation involving safety of vehicles in the travel lanes.
- D. Maintain access to business and private ways during construction operations.
- E. Furnish sufficient number of signs, temporary precast concrete barriers, warning lights, drums and traffic cones to warn traffic of construction and guide traffic through the construction area in accordance with the MUTCD.

3.03 TRAFFICMEN

- A. Provide service of uniformed trafficmen as required to complete construction as required by the Owner.

END OF SECTION

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SECTION 01600

MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for delivery, storage, handling and installation of systems, materials, manufactured units, equipment, components, and accessories used in the work.

B. Related Sections

1. Section 01300 - Submittals

1.02 DELIVERY

A. Refer to Specifications' Sections for requirements pertaining to delivery and handling of materials and equipment.

B. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturers' unopened containers or packaging, dry.

C. Provide equipment and personnel to handle products by methods to prevent soiling or damage.

D. Promptly inspect shipments to assure that products comply with requirements, that quantities are correct, and products are undamaged.

1.03 STORAGE AND PROTECTION

A. Refer to Specifications' Sections for requirements pertaining to storage and protection of materials and equipment.

B. Store products in accordance with manufacturers' instruction, with seals and labels intact and legible. Store sensitive products in weather tight enclosures; maintain within temperature and humidity ranges required by manufacturers' instructions.

C. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.

- D. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.
- E. Arrange storage to provide access for inspection. Periodically inspect to assure that products are undamaged, and are maintained under required conditions.

1.04 INSTALLATION STANDARDS

- A. Comply with Specifications and referenced standards as minimum requirements.
- B. Components required to be supplied in quantity within a Specification Section shall be the same, and shall be interchangeable.
- C. Do not use materials and equipment removed from existing structures, except as specifically required, or allowed, by the Contract Documents.
- D. Perform work by persons qualified to produce workmanship of specified quality.
- E. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.
- F. When work is specified to comply with manufacturers' instructions, submit copies as specified in Section 01300 - Submittals, distribute copies to persons involved, and maintain one set in field office.
- G. Perform work in accordance with details of instructions and specified requirements.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01700

CONTRACT CLOSE-OUT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for specific administrative procedures, record keeping, close-out submittals, and forms used at substantial and final completion of the Work.
- B. Contractor shall satisfy all administrative requirements within the Contract Documents and the Requirements listed in this section prior to Contract Close-out.

1.02 FINAL CLEANING

- A. On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.
- B. The Contractor shall restore or replace, when and as directed, any public or private property damage by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end, the Contractor shall do as required, all necessary highway or driveway, walk and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.
- C. Unless otherwise specified under the various Sections of the Specifications, the Contractor shall perform final cleaning operations as herein specified prior to final inspection.
- D. At completion of work, remove waste materials, rubbish tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave project clean and ready for occupancy.
- E. Cleaning shall include all surfaces, interior and exterior in which the Contractor and all Subcontractors have had access whether existing or new.

- F. Refer to Sections of the Specifications for cleaning of specific products or work.
- G. Use only those materials which will not create hazards to health or property and which will not damage surfaces.
- H. Use only those cleaning materials and methods that are recommended by the manufacturer of surfaces material to be cleaned.
- I. Employ experienced workmen, or professional cleaners, for final cleaning operations.

1.03 PROJECT RECORD DOCUMENTS

- A. Project Record Documents also referred here as As-Built Drawings shall consist of all the contract drawings.
- B. The Contractor and all Subcontractors shall be required to maintain one set of As-Built Drawings, as the work relates to their Sections of the Specifications, at the site.
- C. As-Built Drawings shall be stored and maintained in the General Contractor's field office apart from other documents used for construction. The As-Built Drawings shall be maintained in a clean, dry, and legible condition and shall not be used for construction purposes.
- D. As-Built Drawings shall be available at all time for inspection by the Engineer. All deficiencies noted shall be promptly corrected.
- E. At the end of each month and before payment for materials installed, the Contractor, and his Subcontractors, shall review As-Built Drawings for purpose of payment. If the changes in location of all installed elements are not shown on the as-built drawings and verified in the field, then the material shall not be considered as installed and payment will be withheld.
- F. At the completion of the contract, each Subcontractor shall submit to the Contractor a complete set of his respective As-Built Drawings indicating all changes. After checking the above drawings, the Contractor shall certify in writing on the title sheet of the drawings that they are complete and correct and shall submit the As-Built Drawings to the Engineer.

1.04 FINAL INSPECTION

- A. The Contractor shall submit written certification that:
 - 1. Project has been inspected for compliance with Contract Documents.

2. Equipment and systems have been tested in the presence of the manufacturer's representative and are operational and satisfactory.
3. Project is completed, and ready for final inspection.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

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SECTION 01800

MAINTENANCE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for maintaining work completed under this Contract.

1.02 MAINTENANCE PERIOD

- A. The general maintenance period for all construction or materials under this Contract shall be one (1) year subsequent to the date of the acceptance of the work by the Owner, or as provided by other sections of this Specification.
- B. If the Owner puts any structure or equipment to use prior to acceptance of all work under the Contract, the maintenance period for such structures or equipment shall be calculated from the time use begins.
- C. Contractor agrees to replace the material which does not conform to the Contract requirements, and to repair any damage of material or work without cost to the Owner, to satisfaction of Engineer, in conformance with Contract Documents provided orders for replacement and/or repairs are received in writing by the Contractor within the one year period.
- D. This Section shall in no way limit the duration of the Contractor's responsibility for the correction of any defect due to workmanship or materials provided by the Contractor which are not in compliance with the Contract Documents.

1.03 ABUSE OF WORK

- A. Contractor is not obligated to perform work of replacement or repair that he may prove is required because of abuse by parties other than the Contractor, after the date the Owner puts to continuous use the work requiring replacements or repair, or after date the Owner has approved the Certificate of Completion.

1.04 EMERGENCY REPAIRS

- A. If the Owner deems necessary, the Owner shall order replacement or repairs be undertaken within 24 hours.
- B. If the Contractor delays or fails to make the ordered replacement or repairs within the time specified, the Owner shall have the right to make such replacements or repairs

and the expense shall be deducted from moneys due the Contractor, or moneys of the Contractor retained by the Owner.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

DIVISION 2

SECTION 02149

MAINTAINING EXISTING FLOW

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements to maintain existing flow and implement and complete all flow diversions and/or bypass pumping required to complete the Work indicated on the Drawings.

1.02 PERFORMANCE REQUIREMENTS

- A. It is essential to the operation of the existing sewerage system that there be no interruption of the wastewater flow throughout the duration of this project. An interruption shall be considered, but may not be limited to, any condition that in the sole opinion of the Engineer adversely affects or alters operation of the existing sewage system and/or any other portion or component of the existing collection system including the associated flows; allows the level of sewage flow to increase, rise, collect, surcharge and/or overflow existing facilities in any manner; or results in any operational or permit violations being issued to the Owner.
- B. The Contractor shall provide, maintain, and operate temporary facilities such as dams, bulkheads, pumping equipment (both primary and backup units as required) conduits, electrical power, and all other labor and equipment to intercept and maintain the existing sewage flow before it reaches the point where it would interfere with his work, carry it past his work, and return it to the existing facilities beyond his work.
- C. The Contractor's attention is directed to the fact that the existing wastewater flow may be affected by high groundwater and rainfall. Increases in normal flow should be expected during periods of wet weather. The Contractor shall therefore take all precautions necessary including monitoring weather forecasts to fully accommodate, control and sufficiently handle the increases in flow during periods of wet weather and/or storms as well as periods of normal flow.
- D. The Engineer may prohibit the carrying out of any work at any time when in his sole judgment, increased flow conditions are unfavorable or not suitable, or at any time, regardless of the existing flows, when proper precautions are not being taken to safeguard the existing sewerage system, previously constructed work, work in progress and/or the general public.
- E. In case of damage caused by the failure of the Contractor to take adequate precautions, the Contractor shall repair or replace equipment damaged and shall make such repairs or rebuild such parts of the damaged work, as the Owner may require, at no additional expense to the Owner.

1.03 SUBMITTALS

A. In accordance with SECTION 01300 submit the following:

1. Detailed plans and descriptions outlining all provisions and precautions to be taken regarding the control and handling of existing sewage flows.
 2. Include such items as schedules, locations, elevations, capacities of equipment, materials, traffic maintenance plans, and all other incidental items necessary and/or required by the Owner to insure proper protection of the facilities and compliance with the requirements herein specified.
 3. Qualifications as described herein.
 4. Detailed proposal for noise prevention measures for review.
 5. Shop drawings for all pumping, piping, and appurtenances for type and size of equipment required to perform the flow diversion and/or bypass pumping work as required herein.
- B. The Engineer reserves the right to limit and/or otherwise restrict the Contractor's overall proposal and/or operations without claim from the Contractor should the Engineer deem it to be in the Owner's or public's best interest to do so.

1.04 QUALITY ASSURANCE

A. Qualifications

1. The design, installation and operation of the temporary pumping system shall be the Contractor's responsibility. The Contractor shall employ the services of a vendor who can demonstrate to the Engineer that he specializes in the design and operation of temporary bypass pumping systems. The vendor shall provide at least five (5) references of projects of similar size and complexity in wastewater applications performed by his firm within the past three years within New England. The bypass system shall meet the requirements of codes and regulatory agencies having jurisdiction.
 2. The vendor shall demonstrate the bypass pumping equipment is automated and is capable of functioning without the assistance of an operator.
 3. The vendor shall demonstrate the pumping equipment can operate for an extended period of time running dry. After this period of time, the pump shall have the capability of pulling a 25" Hg vacuum without adjustment or repair.
 4. The vendor shall demonstrate sufficient service resources and repair parts in stock to fulfill service or repair of rental equipment within one hour of a service call, twenty-four hours per day, seven days per week.
 5. Temporary components of the bypass system including pumps, pipe, hose, valves, and fittings shall be provided by one bypass vendor. Hydraulic calculations and drawings required by the submittals shall be provided by the bypass vendor and stamped and certified by a Professional Engineer licensed in the State of the installation.
- B. Pre-Installation Meeting
1. Contractor to schedule and attend a pre-installation meeting with the vendor, Owner and Engineer prior to installation of by-pass system.

PART 2 PRODUCTS

2.01 EQUIPMENT

- A. At a minimum, all equipment shall be supplied in duplicate for emergency situations. Provide adequate on-line backup facilities so that no interruption in service is encountered. Equipment and installation are subject to the approval of the Owner and the Engineer.
- B. Pumping System(s)
1. All pumping units (primary and secondary) and appurtenances shall be sized properly to handle the flows encountered including increased flows due to wet weather.
 2. Pumps shall be centrifugal, end suction, fully automatic self-priming pumps that do not require the use of foot-valves, vacuum pumps, diaphragm pumps, or isolation valves in the priming system. The pumps may be electric or diesel powered. Pumps must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows and shall immediately develop 25" Hg vacuum without adjustment or repair or employ level control devices to regulate on/off or variable speed of the pump. Pumps shall be CD low noise units as manufactured by Godwin Pump of America, Inc, or approved equal. All pumping units and appurtenances shall be sized in accordance with the design parameters provided. Pumps shall not be connected by a common suction manifold.
 3. Seals shall be high pressure, mechanical self-adjusting type with silicon carbide faces capable of withstanding suction pressures to 100 psi running. The mechanical seal shall be cooled and lubricated in an oil bath reservoir, requiring no maintenance or adjustment. Pump shall be capable of running dry, with no damage, for extended periods of time. All metal parts shall be of stainless steel. Elastomers shall be Viton.
 4. The Contractor shall provide the necessary start/stop controls for each pump.
 5. The Contractor shall be responsible to meet noise requirements in specified elsewhere in this section. All diesel driven primary and standby pumps shall be sound attenuated. The use of Critical Silenced Canopy pumps or acoustical Whisper Pac enclosures for sound attenuation are required.
- C. Piping System(s)
1. All piping systems (primary and secondary) and appurtenance shall be sized properly to handle the flows encountered including increased flows due to wet weather.
- D. Power Generating Facilities
1. Include power generating facilities capable of providing all power necessary to operate any primary and secondary pumping systems. Use of Owner's standby facilities will not be allowed.
 2. Maintain facility to be ready for use if required.
- E. Noise Prevention

1. Noise prevention measures for all equipment shall be used to insure minimum noise impact or surrounding areas.
2. Measures may include but shall not be limited to enclosures, insulation, electric pumping units, and hospital grade silencers or mufflers.
3. Noise levels shall be maintained such that increase shall not exceed 10 dBA over background at the nearest property line.
4. Should at any time prior to or during the performance of above mentioned work, the Engineer determines the noise prevention measures being used are not adequate, the Contractor shall at no additional cost to the Owner suspend all work until acceptable measures are incorporated.

PART 3 EXECUTION

3.01 PUBLIC SAFETY AND CONVENIENCE

A. General

1. The Contractor shall at all times keep the streets, highways, roads, driveways, parking lots, private walks, and public sidewalks open for pedestrian and vehicular traffic unless otherwise authorized by the Owner/Engineer.

B. Public Travel Ways

1. Any authorized temporary closure of any streets, highways or roads shall be coordinated with the local Fire, Police and/or Department of Public Works as required by the municipality.

C. Municipal, Commercial and Private Property

1. Any authorized, temporary closure of any municipal, commercial or private driveway or access route will require the Contractor provide 48 hour notice to abutters of the temporary restriction of access to their property. The Contractor will make every attempt to schedule his work with as little inconvenience to the property owner as possible

3.02 INSTALLATION

- A. Keep the Engineer advised at all times of any changes made to the overall operation(s) to accommodate field conditions.
- B. Flow diversions and/or bypass pumping shall be maintained at all times as long as it is necessary to maintain the flow through the limits of the project during construction.
- C. Maintain auxiliary and/or emergency equipment at the site to continue flow division and/or by-pass pumping operations in the event of a breakdown and/or loss of normal power.
- D. The Contractor shall be responsible for the proper functioning and operation of the backup pumping units. Back-up pump(s) shall be on-line, isolated from the primary system by a valve.
- E. No work shall begin until all provisions and requirements of this Section have been reviewed and approved by the Engineer.

- F. The Engineer reserves the right to limit and/or otherwise restrict the Contractor's overall activities and/or operations at any time without claim should the Engineer deem it to be in the Owner's or public's best interest to do so.

END OF SECTION

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SECTION 02610

MANHOLE REHABILITATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for the following work.
 - a. Replacing missing, loose, or broken brick masonry and mortar joints, and patching all holes, voids, and spalled areas.
 - b. Replacing all unsound, damaged, or missing manhole steps, as directed.
 - c. Sealing of the manhole to eliminate infiltration.
 - d. Replacing manhole frame and cover, as directed.
 - e. Adjusting manhole frames and covers.
 - f. Applying coating materials.

B. Related Sections

1. Section 02149 - Maintaining Existing Flows
2. Section 09882 - Epoxy Lining System

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO)

1. AASHTO M91 - Red Sewer Brick Only Grade SS.

B. American Society for Testing and Materials (ASTM)

1. ASTM C32 - Specification for Sewer and Manhole Brick (Made from clay or shale). Grade SS
2. ASTM C94 - Specification for Ready-Mixed Concrete.
3. ASTM C144 - Specification for Aggregate for Masonry Mortar.
4. ASTM C150 - Specification for Portland Cement.
5. ASTM C207 - Specification for Hydrated Lime for Masonry Purposes.

C. National Association of Sewer Service Companies (NASSCO)

1. NASSCO Recommended Specifications for Sewer Collection System Rehabilitation.

1.03 SUBMITTALS

A. Submit in shop drawings accordance with Specification Section 01300.

1. Product Data: Provide data on grouting, plugging, patching, coating and lining materials; manhole steps; mortar components; manhole frames and covers, as applicable; and sewer brick.
2. Mortar design mix.
3. Manufacturer's preparation/mixing/installation/application instructions for grouting, plugging, patching, coating and lining materials.
4. Outline of the procedures proposed for the accomplishment of work. Include a detailed description of the means and methods, and equipment to be used for each operation.

1.04 QUALITY ASSURANCE

- A. The materials used to plug, patch, coat and line manholes shall comprise of a system specifically recommended by the epoxy coating manufacturer as specified in Section 09882.
- B. All materials shall be compatible for sanitary sewer manhole rehabilitation.
- C. Perform general work in accordance with NASSCO Recommended Specifications for Sewer Collection System Rehabilitation.

1.05 QUALIFICATIONS

- A. Installer: Company specializing in performing the work described in this Section shall demonstrate by documentation to the Engineer a minimum of five (5) years documented experience. The installer shall be a fully licensed applicator by the applicable manufacturer. The installer shall also be required to furnish a minimum of five (5) references where selected products have been successfully utilized under similar conditions.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01600 and in strict accordance with the manufacturer's recommendations/instructions.
- B. Maintain packaged materials clean, dry and protected against dampness, freezing, foreign matter and/or any other compromising conditions.

PART 2 PRODUCTS

2.01 MATERIALS

A. Brick

1. Sound, hard, and uniformly burned brick, regular and uniform in shape and size, of compact texture, and satisfactory to the Engineer. Brick shall comply with ASTM C32 and AASHTO M91 for sewer brick type S.S.
2. Rejected brick shall be immediately removed from the work.

B. Mortar for Brickwork

1. Composed of portland cement, hydrated lime, and sand in which the volume of sand shall not exceed three times the sum of the volume of cement and lime. The proportions of cement and lime shall be 4:1.
2. Cement shall be Type II Portland cement conforming to ASTM C150.
3. Hydrated lime shall be Type S conforming to ASTM C207. Hydrated lime shall be "Mortaseal" manufactured by US Gypsum, "4X Hydrate" manufactured by the New England Lime Company or an acceptable equivalent product.
4. Sand shall conform to ASTM C144.

C. Manhole Steps

1. Steel reinforced copolymer, polypropylene plastic with flexible "fins" designed to flex on insertion into manhole wall but to catch and hold upon any attempt to pull them out. Manhole steps shall be as manufactured by M.A. Industries Inc., Peachtree City, GA or an acceptable equivalent product.

D. Manhole Frames and Covers

1. Owners standard or as detailed on the Drawings.

E. Patching Material

1. Patching material shall be a rapid-setting, 100% solids epoxy mastic repair material compatible with the epoxy coating system specified in Section 09882.
2. Material shall be mixed and applied in strict accordance with the manufacturer's recommendations.

F. Infiltration Control Material

1. Infiltration control material shall be a rapid-setting, high-early-strength, material specifically formulated for leak control applications, stopping infiltrating groundwater and making repairs in concrete, brick, or other masonry constructed structures. Material shall be mixed and applied in strict accordance with the

manufacturer's recommendations and be compatible with the epoxy coating system specified in Section 09882.

G. Chemical Grouting Material

1. Chemical Sealing Materials shall be made of Acrylamide base gel and shall meet or exceed the following requirements:
 - a. A minimum of 10% acrylamide base material by weight in the total sealant mix, higher concentration (%) of acrylamide base material may be used to increase strength or offset dilution during injection.
 - b. The ability to tolerate some dilution and react in moving water during injection.
 - c. A viscosity of approximately 2 centipose, which can be increased with additives.
 - d. A constant viscosity during reaction period.
 - e. A controllable reaction time from 10 seconds to 1 hour.
 - f. A reaction (curing), which produces a homogeneous, chemically non biodegradable gel.
 - g. The ability to increase mix viscosity, density and gel strength by the use of additives.
2. The Chemical sealing materials shall be AV100 Grout by Avanti International, Webster, TX, or an acceptable equivalent product.

H. Liner Material

1. In accordance with Section 09882.

PART 3 EXECUTION

3.01 REHABILITATION WORK

- A. Rehabilitate manholes as indicated and as specified herein.
- B. Rehabilitation includes sealing manholes to eliminate infiltration.
- C. Manhole sealing includes the following:
 1. Cleaning; surface preparation; stopping active leaks, applying patching/grouting materials as applicable to all holes or voids around steps, joints, or pipes and all spalled areas; and replacing missing bricks and re-pointing all missing and loose mortar joints.
 2. Applying epoxy coating system to invert, bench, walls cone, corbel and chimney.
- D. All brickwork, including invert repair shall be completed to allow for required minimum curing times prior to the installation of the epoxy lining system, as specified in Specification Section 09882.

3.02 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Beginning of installation means acceptance of existing surfaces.

3.03 PREPARATION

- A. Bypass sewage flow to allow performance of the work. Provide the necessary pumps, conduits, and other equipment to divert the flow of sewage around the manhole in which work is to be performed. Handling existing sewage flows and bypass pumping shall be in accordance with Specification Section 02149, unless otherwise approved by the Engineer.
- B. Prepare surfaces in accordance with repair materials and coating manufacturer's instructions.
- C. Clean all concrete and masonry surfaces to be rehabilitated. Completely remove all sewage residue, grease, oil, laitance, coatings, loose bricks, mortar, unsound concrete and other foreign materials. Remove all cracked or disintegrated material to expose a sound subbase.
- D. All cracks not subject to movement and greater than 1/16 inch wide shall be routed out to a minimum width and depth of 1/2 inch.
- E. Remove and dispose of all solids and semi-solids resulting from the preparation operations in accordance with Specification Section 00700, 1.24, B.
- F. The primary means of cleaning the manhole shall be water blasting using high-pressure water only. Other methods such as dry sandblasting, acid-wash, concrete cleaners, degreasers or mechanical means may be required to properly clean the surface. All surfaces on which these other methods are used shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products.
- G. Water blast equipment shall utilize a minimum pressure of 5,000 psi and be capable of providing up to 10,000 psi of pressure when required. Muriatic acid (hydrochloric acid) solution, if used, shall be one part acid to ten parts water and shall be applied by spraying from above the manhole.
- H. After surface preparation and prior to application of repair materials and coatings, infiltration shall be stopped by either plugging, chemical grout sealing, or channeled through "bleed" pipes installed at the bottom of the manhole.

3.04 CHEMICAL GROUT SEALING

- A. At each point of leakage within the manhole structure a hole shall be drilled from within the manhole and shall extend through the entire wall. In cases where there are multiple leaks around the circumference of the manhole, fewer holes may be drilled, providing all leakage is stopped from these holes.
- B. Install grout ports or sealant injection devices in these previously drilled holes in such a way as to provide a watertight seal between the holes and the injection device.
- C. Inject chemical grout into the installed ports under pressure using equipment appropriate for the particular application. The injection equipment shall consist of chemical pumps, chemical containers, injection packers, hoses, valves, and all necessary equipment required to seal manholes. The chemical injection pumps shall be equipped with pressure meters that will provide for monitoring pressure during injection of the chemical grout.
- D. Continue injection of grout until material refusal is recorded on the pressure gage of the pumping unit.
- E. Care shall be taken during the pumping operation to avoid excessive pressures that may damage the manhole structure.
- F. Upon completion of the injection remove the ports and fill the remaining holes with patching compound.

3.05 BLEED PIPES

- A. Drill holes and install "bleed" pipes around the bottom of the manhole wall to act as relief ports for water to flow from other active leaks to allow performance of the work.
- B. Remove bleed pipes and seal holes after all other manhole sealing work is complete.

3.06 INFILTRATION MATERIAL

- A. Apply plugging compound in accordance with manufacturer's instructions.

3.07 PATCHING MATERIAL

- A. All material shall be mixed and applied in accordance with the manufacturers instructions.
- B. Installation to be performed by mechanics skilled in the application of the particular type of system.

- C. Prior to application, dampen area to be patched. Pack material into the area to be patched, troweling the minimum amount required to achieve a level finish. Allow adequate curing time.

3.08 BRICKWORK

- A. Only clean bricks shall be used. Bricks shall be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.
- B. Each brick shall be laid in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and shall be thoroughly bonded as directed.

3.09 MANHOLE STEPS

- A. Remove all unsound and damaged steps as directed by the Engineer.
- B. Drill holes to allow minimum of 3-inch embedment into the manhole wall or until the fins designed to catch are fully embedded.
- C. Clean holes by suitable means to remove all foreign matter such as dirt, oil, and grease.
- D. Fill all holes and voids with non-shrink grout. Work grout into space to eliminate voids.

3.10 MANHOLE FRAMES AND COVERS

- A. Remove and dispose of the cast-in-place concrete collar around the existing frame. Material in the exposed area shall be dug out to a depth sufficient to permit the required repairs.
- B. Remove the existing manhole frame and cover, and if specified herein and/or directed by the Engineer for full replacement, dispose of the existing frame and cover as directed. It shall be the responsibility of the Contractor, at no additional cost to the Owner, to repair any damage to the manhole chimney or corbel caused by the removal of the existing manhole frame and the reinstallation/replacement of the same.
- C. Repair and/or replace damaged or unsound bricks or concrete grading rings a minimum of 12" (min.) below the frame, as necessary.
- D. Frames shall be set concentric with the top of the masonry and fastened as indicated. A thick ring of mortar extending to the outer edge of the masonry shall be placed all around and on the top of the bottom flange. The mortar shall be smoothly finished and have a slight slope to shed water away from the frame.

- E. Manhole covers shall be left in-place within the installed frames on completion of other work at the manholes.

3.11 INVERT REPAIR

- A. After preparation has been completed, remove all loose material and wash wall again.
- B. Any bench, invert or service line repairs shall be made at this time using the quick setting patching material (article 2.01) and shall be used per manufacturer's recommendations.
- C. Invert repair shall be performed on all inverts with visible damage or infiltration. After blocking flow through the manhole and thoroughly cleaning the invert, the quick setting patch material (article 2.01) shall be applied to the invert in an expeditious manner. The finished invert shall be smooth and free of ridges. The flow may be re-established in the manhole within 30 minutes after placement of the material.

3.12 APPLICATION OF EPOXY COATING SYSTEM

- A. In accordance with Section 09882.

3.13 FINAL ACCEPTANCE

- A. After the specified types of rehabilitation work have been completed, visually inspect each manhole in the presence of the Engineer for full compliance with the Specifications including watertightness against leakage. Repair all visible leaks and defects observed during inspection. Final acceptance of the completed work shall be determined solely on an acceptable concurrence by the Owner/Engineer.
- B. The Owner/Engineer reserves the right to re-inspect the rehabilitated manholes at any time during the warranty period. During such inspections should there be any leakage and/or other defects found in the work the Contractor shall fully correct the elements of work in question as determined by the Owner/Engineer within thirty (30) days at no additional cost to the Owner.

END OF SECTION

SECTION 02763

PIPELINE CLEANING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for cleaning and TV inspection of sewer pipes.

B. Water for Construction

1. Drawing water from hydrants shall be coordinated with the **Water Department**.
 - a. The installation of a backflow preventer and meter is required at the water source. The Contractor shall pay water department directly for water usage. The Contractor shall include costs for water in the appropriate bid item.

C. Related Sections

1. Section 01570 - Traffic Regulation and Permits
2. Section 02149 - Maintaining Existing Flow
3. Section 02764 - Television Inspection
4. Section 02769 – Disposal of Materials

1.02 REFERENCES

A. National Association of Sewer Service Companies

1. NASSCO Recommended Specifications for Sewer Collection System Rehabilitation.

1.03 CLEANING AND DISPOSAL REQUIREMENTS

A. The Contractor's attention is directed to the requirements set forth by the Commonwealth of Massachusetts, Department of Environmental Protection (MADEP) regarding "Special Wastes" and the proper disposal thereof. All waste materials and debris, as designated by the Owner and/or Engineer including but not limited to any pump station, sewers and associated structures, or any portions thereof, including but not limited to sludge, grit sediment, dirt, sand, rock, grease, roots and other liquid, solid or slime-solid material contained therein, shall be considered, "Special Wastes".

B. Remove dirt, grease, rocks, sand, iron tuberculation and other materials and obstructions from the pipeline.

- C. Pipeline Cleaning shall be performed by hydraulically propelled or high velocity jet cleaning equipment. Selection of equipment shall be based on such field conditions as access availability and type of debris to be removed.
- D. Clean pipeline to restore a minimum of 95 percent of the original carrying capacity of the pipe, and suitably to permit lining of the pipeline.
- E. The Contractor is required to test and dispose of any waste material removed from the pipeline in accordance with State and Federal requirements. Testing of waste material will be at the Contractor's expense.
- F. The Contractor shall notify the Engineer of the proposed disposal location and requirements of that disposal facility to allow disposal of waste material.
- G. The Contractor is required to store any waste material until all testing requirements of the proposed facility have been met and shall submit copies of all test results to the Engineer.

1.04 SUBMITTALS

- A. Submit in accordance with Specification Section 01300.

- 1. Provide detailed plans and descriptions outlining cleaning and television inspection procedures and all provisions and precautions regarding the handling of existing sewage flows.

1.05 QUALITY ASSURANCE

- A. Perform general work in accordance with NASSCO recommended specifications for sewer collection system rehabilitation.

1.06 QUALIFICATIONS

- A. Company specializing in performing the work of this section with minimum of three (3) years experience.

1.07 TRAFFIC CONTROL

- A. In accordance with Specification Section 01570.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION

3.01 CLEANING PROCEDURES

A. Sewer Cleaning

1. The designated pipelines shall be cleaned using hydraulically propelled or high velocity jet cleaning equipment.
2. Selection of the equipment used shall be based on the conditions of the lines at the time the work commences.
3. Equipment and methods selected shall be satisfactory to the Engineer.
4. Equipment selected for cleaning shall be capable of removing dirt, grease, rocks, sand, iron tuberculation and other deleterious materials and obstruction from the pipelines.

B. Material Removal

1. Sludge, dirt, sand rocks, grease and other solid or semi-solid material resulting from the cleaning operation shall be removed at the downstream manhole of the section which could cause line stoppages.

C. Disposal of Materials

1. Solids or semi-solids resulting from the cleaning operations shall be removed from the site and disposed in accordance with Specification Section 02769.

D. Cleaning Precautions

1. During all pipeline cleaning operations, satisfactory precautions shall be taken to protect the pipelines from damage that might be inflicted by the improper use of cleaning equipment.
2. Whenever hydraulically propelled cleaning tools, which depend upon water pressure to provide their cleaning force or any tools which retard the flow of water in the pipeline are used, precautions shall be taken to ensure that the water pressure created does not cause any damage or flooding to public or private property.
3. The flow of sewage in the sewer lines shall be utilized to provide necessary pressures by hydraulic cleaning devices whenever possible.
4. When additional quantities of water from fire hydrants are necessary to avoid delay in normal working procedures, the water shall be conserved and not used unnecessarily.
5. No fire hydrant shall be obstructed in case of a fire in the area served by the hydrant nor shall a hydrant be used for the purpose described unless a vacuum break is provided.

E. Root Removal:

1. Any visible roots shall be removed as required by the Engineer.
2. Roots shall be removed in all sections by mechanical methods.
3. Chemical root treatment shall also be used as approved by the Engineer.
 - a. Herbicide to be EPA approved.
 - b. Herbicide must be integral part of chemical sealant material.
 - c. Application to be done in accordance with manufacturers written instructions.
 - d. Any surrounding vegetation damaged due to Contractors operation shall be replaced at no expense to the Owner.

F. Pumping and flow bypassing

1. The Contractor shall supply the necessary pumps, conduits and other equipment to divert the flow of sewage around the pipeline section in which work is to be performed.
2. Handling existing sewage flows and bypass pumping shall be in accordance with Specification Section 02149.

G. Flow Control Precautions

1. Whenever flows in a sewer line are blocked, plugged or bypassed, sufficient precautions must be taken to protect the sewer lines from damage that might be inflicted by excessive sewer surcharging.
2. Further, precautions must be taken to ensure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.
3. Coordination with private property owners is required.

3.02 FIELD QUALITY CONTROL

- A. After cleaning, the sewer pipes shall be visually inspected by means of closed-circuit television. The inspection shall be recorded on DVD's and printed TV inspection logs in accordance with Specification Section 02764.
- B. After videotaping the cleaned pipeline any pipe not sufficiently cleaned shall be cleaned again to obtain satisfactory results at no additional cost to the Owner.
- C. Provide two digital video disks (DVDs), one original and one copy to document conditions following completion of the cleaning process.

END OF SECTION

SECTION 02764

TELEVISION INSPECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for television inspection of pipelines.

B. Related Sections

1. Section 01570 - Traffic Regulations
2. Section 02149 - Maintaining Existing Sewage Flow
3. Section 02763 – Pipeline Cleaning

1.02 REFERENCES

A. National Association of Sewer Service Companies

1. NASSCO Recommended Specifications for Sewer Collection System Rehabilitation.

1.03 SUBMITTALS

A. In accordance with Specification Section 01300, submit the following:

1. Outline of the procedures proposed to accomplish the work. Include a detailed description of the methods and equipment to be used for each operation. Outline TV inspection procedures and all provisions and precautions regarding the handling of existing sewage flows.

1.04 QUALITY ASSURANCE

A. Perform general work in accordance with NASSCO Recommended Specifications for Sewer Collection System Rehabilitation.

B. Utilize Pipeline Assessment and Certification Program (PACP) certified inspectors and PACP coding methods for all CCTV inspections.

1. Provide evidence of PACP certification for all operators working on the project prior to commencement of the Work.

1.05 QUALIFICATIONS

A. Company specializing in performing the work of this section with minimum five (5) years documented experience.

- B. Field Technicians must maintain current certifications for OSHA regulation, 29CFR1910 for Confined Space.

PART 2 PRODUCTS

2.01 DELIVERABLES

A. TV Inspection Logs:

1. Printed location records clearly showing the location, in relation to an adjacent manhole of each infiltration point observed during inspection and other points of significance such as locations of building sewers, unusual conditions, roots, storm sewer connections, broken pipe, presence of scale and corrosion, deposits, areas which exhibit loss of capacity, or other defects and other discernible features.
2. Logs shall be software generated, complete with the following information,
 - a. Upstream and downstream manhole identification numbers.
 - b. Address location.
 - c. Technicians name.
 - d. Inspection date/time and weather conditions.
 - e. DVD number.
 - f. Use of pipe (sanitary, storm, combined).
 - g. Type, shape, dimensions and material of pipe.

B. DVD Recordings:

1. Color video and audio record documenting TV inspection of conditions subsequent to cleaning.
2. The purpose of recording shall be to supply a visual and audio record of problem areas of the lines that may be replayed.
3. Video recording playback shall be at the same speed that it was recorded. Slow motion or stop-motion playback features may be supplied at the option of the Contractor.
4. Title to the tape shall remain with the Contractor; however, the Owner reserves the right to purchase any additional DVD's at the completion of the project.
5. Provide two (2) sets of DVD's complete in the required format.

C. PACP and Hansen/Neztek compliant software for documenting the inspection is to be used.

1. Viewing software to be WinCan, or approved equal.

PART 3 EXECUTION

3.01 PREPARATION

- A. Control traffic in accordance with Specification Section 01570.
- B. Bypass sewage flow to allow performance of work. Handling existing sewage flows and bypass pumping shall be as specified in Specification Section 02149.
- C. Clean sewer lines in accordance with Specification Section 02763.

3.02 TV INSPECTION

- A. TV inspect sewer pipes following initial cleaning and following rehabilitation work prior to putting the line back in service.
- B. After cleaning, the sewer pipes shall be visually inspected by means of color closed-circuit television. The inspection shall be recorded on DVD and printed TV inspection logs.
- C. Equipment:
 - 1. Television Camera to be specifically designed and constructed for such inspection; equipped with a light to allow a clear picture of the entire periphery of the pipe; operative in 100 percent humidity conditions; and equipped with manual or power winch, TV cable, powered rewinds or other devices that do not obstruct the camera view to move the camera through the line.
 - 2. Camera shall be moved through the line in either direction at a moderate rate, stopping when necessary to permit proper documentation of the sewer's condition. In no case will the television camera be pulled at a speed greater than 30 feet per minute. At areas of interest, the camera shall be capable of rotating its lens 360-degrees to obtain a clearer, more direct viewing angle. Manual winches, power winches, TV cable, and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line.
 - 3. Camera, television monitor, recording device and all other components of the video system shall be capable of producing picture quality acceptable to the Engineer.
 - 4. TV inspection equipment shall be equipped with a meter device to locate defects by measurement. Marking on the cable, or the like, which would require interpolation for depth of manhole, will not be allowed. Accuracy of the distance meter shall be acceptable to the Engineer.
 - 5. When manually operated winches are used to pull the television camera through the line, telephones or other suitable means of communication shall be set up

between the two manholes of the section being inspected to ensure good communication between members of the crew.

- D. If, during the inspection operation, the television camera will not pass through the entire manhole section, set up equipment so that the inspection can be performed from the opposite manhole.

3.03 FIELD QUALITY CONTROL

A. TV Inspection Records

1. Complete records shall be kept of TV inspection performed in each manhole section. The records shall identify the following information:
 - a. Identification of the manhole section tested.
 - b. Location (footage) of problem.
 - c. Defect classifications shall be PACP compliant.
2. Record on DVD all footage inside the sewer pipe. All DVD's and necessary playback equipment shall be readily accessible for review by the Engineer during the project.
3. TV inspection logs shall include the numbering or identification system utilized on the Contract Drawings or the Owners data base in the event Drawings are not provided.

END OF SECTION

SECTION 02766

CURED-IN-PLACE PIPE (CIPP) INSTALLATION IN SEWER MAIN

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Requirements for reconstruction of pipelines by installation of resin impregnated flexible felt tube either inverted into the existing pipeline utilizing hydrostatic head and curing by circulating hot water to cure the resin composite or pulling the resin impregnated flexible felt tube into the existing pipeline utilizing a winch and cable or other approved method and using steam pressure to cure the resin composite.
2. The resin composite shall be cured into a hard, impermeable, structurally sound, continuous, tight fitting, water tight pipe within a pipe.
3. This specification covers work, materials, equipment and tools including specially developed application equipment as required for installation and testing of the unique cured in place pipe lining system – Warren Environmental Cured In Place Liner System (hereafter referred to as “WES-Cured In Place Liner”) or approved equal.
4. The use of specialized application equipment combined with rigorous surface preparation requirements shall be used to apply the WES –Cured in Place Liner products without the use of solvents.
5. Product application requirements and procedures described include surface preparation, mixing, application, material handling and storage, qualification of Applicator and application quality control.

B. Water for Construction

1. The Owner shall supply all water required by the Contractor for the CIPP curing process. The Contractor must coordinate acceptable supply locations and contact the Owner in advance prior to use of any water for the Project.
2. Drawing water from hydrants shall be coordinated with the Water Department.
 - a. The installation of a backflow preventer and meter is required at the water source. The Contractor shall pay Water Department directly for water usage.

C. Related Sections

1. Section 02149 - Maintaining Existing Flow
2. Section 02763 - Pipeline Cleaning
3. Section 02764 - Television Inspection

1.02 DESIGN REQUIREMENTS

- A. The cured-in-place pipe (CIPP) shall be designed for a Fully Deteriorated design condition in which it is assumed that the existing host pipe provides no structural support. The CIPP shall be designed to carry soil, groundwater, and other superimposed loads.
- B. The CIPP thickness shall be designed in accordance with ASTM F1216 under the following conditions:
 - 1. Fully deteriorated gravity pipe: Pipe diameters and material type per Contract Drawings
 - 2. Height of ground water above invert: Assume at ground surface level
 - 3. Height of soil above top of pipe: Per Contract Drawings
 - 4. Live load: AASHTO HS-20
 - 5. Soil Density: 120 lbs/cubic foot
 - 6. Ovality: 2% to 8%, as applicable per Contract application
- C. The CIPP design will assume no bonding to the original pipe.
- D. Hydraulic Capacity - The hydraulic cross-section of the original pipe shall be maintained as a much as possible. The completed CIPP shall provide a minimum of the full flow capacity of the original pipe before rehabilitation.

1.03 SUBMITTALS

- A. All submittals shall be submitted in accordance to the applicable portions of these specifications.
- B. Qualification and Performance Responsibility of Applicator:
 - 1. The Applicator shall apply the system and be responsible for the complete performance of the system, including cured in place liner materials, application and quality control.
 - 2. Applicator shall provide documentation as follows:
 - a. A list of at least 3 past clients, including names and telephone numbers, to verify previous satisfactory performance on projects of similar or greater size and difficulty factor in the last 5 years.
 - b. The cured in place liner manufacturer shall provide at least five previous installations of the product including installation dates, description of work performed, contact names and telephone numbers.

1.04 SAFETY REQUIREMENTS

- A. Perform all work in strict accordance with applicable OSHA standards. Particular attention is drawn to those safety requirements involving working with scaffolding and entering confined spaces.

1.05 SCHEDULING

A. Notification

1. Notify all wastewater generators serviced by the sewer main being lined and when the sewer will be offline.
2. Notification to such generators shall be done one week and again at 24-hours prior to the scheduled installation of the liner.
3. Notification shall be done in writing and include contact telephone number.
4. Coordinate schedule with the Owner/Engineer.

1.06 WARRANTY

- A. During the one (1) year Warrantee Period any defects, which may or has affected the integrity and/or strength of the pipe shall be fully repaired at the Contractor's expense, in a manner approved by the Owner/Engineer.

1.07 QUALITY ASSURANCE

- A. Applicator shall initiate and enforce quality control procedures consistent with applicable industry standards together with Warren Environmental, Inc. and the Engineer's recommendations.
- B. Applicator shall use an adequate number of skilled workmen who are thoroughly trained and experienced in the necessary crafts. These workmen shall be completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section. The job Foreman shall have a minimum of seven years experience.
- C. Applicator shall use approved specialty equipment adequate in size, capacity and number sufficient to accomplish the work of this Section in a timely manner.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Materials are to be kept dry, protected from weather and stored under cover and stored between 50 deg F and 90 deg F. Do not store near flame, heat or strong oxidants.
- B. Protective cured in place liner materials are to be handled according to their material safety data sheets.
- C. Warren 501-04 does not require refrigeration

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Inversion or pull-in-place process and materials shall be by Warren Environmental, Inc., P.O. Box 1206, Carver, MA 02330 Telephone (508)947-8539.; or approved equal.

2.02 MATERIALS

A. Warren Environmental Cured in Place Liner – a unique structural fiberglass woven biaxial weave impregnated with an 100% solids, non-toxic, solventless epoxy resin laminar system as applied with the patent protected process of Warren Environmental, Inc. which can be pulled into place or inverted in order to accommodate bends or an increase or decrease in pipe size, and exhibiting the following characteristics.

Epoxy System Characteristics:

| | |
|------------------------|-----------------------|
| Product type | amine cured epoxy |
| Color | Clear |
| Solids Content (vol %) | 100 |
| Compressive Strength | ASTM D695 16,903 psi |
| Tensile Strength | ASTM D638 6,223 psi |
| Tensile Elongation | ASTM D638 4.7% |
| Flexural Strength | ASTM D790 8,731 psi |
| Flexural Modulus | ASTM D790 482,688 psi |
| Shore D Hardness | 88 |

Safe for Aquatic Life FormsASTM E729 Acute Marine Toxicology

Epoxy System Characteristics with 1 ply S Glass:

| | |
|--------------------------|-------------------------|
| Sample Thickness Average | .07" |
| Tensile Strength | ASTM D638 19,416 psi |
| Tensile Elongation | ASTM D638 12.4% |
| Flexural Strength | ASTM D790 43,191 psi |
| Flexural Modulus | ASTM D790 1,172,939 psi |
| Shore D Hardness | 88 |

Fiberglass Biaxial Liner Characteristics:

| Angle | Axial Modulus | Transverse Modulus | Shear Modulus | Axial Tensile Strength | Transverse Tensile Strength |
|-------|---------------|--------------------|---------------|------------------------|-----------------------------|
| 15 | 4.91 | 1.27 | 1.02 | 125.12 | 6.29 |
| 20 | 4.51 | 1.34 | 1.13 | 96.73 | 6.97 |
| 25 | 4.07 | 1.46 | 1.23 | 68.34 | 7.65 |
| 30 | 3.60 | 1.62 | 1.34 | 46.75 | 8.84 |
| 35 | 3.13 | 1.81 | 1.43 | 32.47 | 10.54 |
| 40 | 2.73 | 2.04 | 1.49 | 23.12 | 13.09 |
| 45 | 2.35 | 2.35 | 1.50 | 17.00 | 17.00 |
| 50 | 2.04 | 2.73 | 1.49 | 13.09 | 23.12 |
| 55 | 1.81 | 3.13 | 1.43 | 10.54 | 32.47 |
| 60 | 1.62 | 3.60 | 1.34 | 8.84 | 46.74 |
| 65 | 1.46 | 4.07 | 1.23 | 7.65 | 68.34 |
| 70 | 1.34 | 4.51 | 1.13 | 6.97 | 96.73 |

B. The monolithic surfacing system shall be continuously bonded to the interior of the pipeline.

C. Due to the close proximity to wetlands and shellfish, the cured in place liner must be aquatic safe certified.

D. The finished system thickness shall be in accordance with the manufacturers design but not less than 250 mils. The cured surfacing shall be monolithic with proper sealing connections to all unsurfaced areas and shall be placed and cured in one application in conformance with the recommendations of the monolithic surfacing system manufacturer.

E. When cured, the lining system shall form a continuous, tight-fitting, hard, impermeable surfacing that is suitable for sewer system service and chemically resistant to any chemicals, bacteria or vapors normally found in domestic sewage or recycled plant water.

F. The system shall effectively seal the interior surfaces of the pipe line and prevent any penetration or leakage from the pipe.

G. The system shall be compatible with the thermal conditions of the existing sewer pipe line system.

2.03 CURED IN PLACE LINER APPLICATION EQUIPMENT

A. Specially designed water or steam inversion equipment for use in the cured in place liner inversion application of the specified system approved for use by the cured in place lining system manufacturer as developed by Warren Environmental, Inc. Or Equal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. All pipes to be lined shall be readily accessible to Applicator.
- B. Appropriate actions shall be taken to comply with local, state and federal regulatory and other applicable agencies with regard to environment, health and safety.
- C. Active flows shall be dammed, plugged or diverted as required to ensure that the liquid flow is maintained outside of the pipe.
- D. Installation of the cured in place liner shall not commence until the pipeline has been inspected by closed circuit TV and properly prepared for lining in accordance with the product supplier's recommendations.
- E. Verify all lengths between manholes, sewer depths and service connection locations prior to insertion of the liner.

3.02 PREPARATION

- A. Applicator shall inspect all surfaces specified to receive the cured in place liner system prior to surface preparation. Applicator shall notify Owner of any noticeable disparity in the surfaces that may interfere with the proper preparation or application of the cured in place lining system.
- B. Surface preparation method(s) shall be based upon the conditions of the substrate and the requirements of the cured in place lining system to be applied.
- C. On concrete pipelines quick setting high strength concrete surfacing agents with latex or curing agent additives cannot be used. Proper surface preparation procedures must be followed to ensure adequate bond strength to any surface to be coated. New cement must cure at least 30 days prior to coating.
- D. Existing coatings should be removed or thoroughly abraded to provide adequate surface profile for mechanical bond by the new system. Applicator is to maintain strict adherence to the cured in place lining system manufacturer's recommendations with regard to proper surface preparation and compatibility with existing coatings.
- E. Surfaces that require additional cleaning or profiling will be prepared by abrasive blast to rough the surface sufficient to obtain and ensure adequate bonding of the system. A minimum surface profile of 1-1.5 mils must be achieved to assure proper adhesion. Detergent water cleaning and hot water blasting may be necessary to remove oils and grease from the substrate. Whichever methods are used, they shall be performed in a manner that provides a uniform, sound clean surface that is not excessively damaged.
- F. All standing water must be removed from the pipe.
- G. Cleaning Pipelines shall be in accordance with Specification Section 02763 with the following additional requirements.

1. Remove all internal debris from the pipeline prior to inserting the liner utilizing any one or combination of rodding machines, high velocity water jet machines, hydraulically propelled machines, etc.
 2. Selection of the equipment used shall be based on the condition of the existing pipeline at the time the work commences.
 3. Methods to be approved by the Owner/Engineer.
 4. Debris resulting from the cleaning operation shall be removed from the downstream manhole of the section being cleaned.
 5. Passing debris from one manhole section to another will not be permitted.
 6. The Contractor shall remove all debris from site during the cleaning operation.
 7. Based on closed circuit television inspection, the Owner/Engineer shall be the sole judge for any final acceptance of the completed pipeline cleaning. Specific areas of pipeline, which have not been cleaned to the satisfaction of the Owner/Engineer shall be re-cleaned and re-inspected as necessary at the Contractor's expense.
- B. Inspection shall be in accordance with Specification Section 02764 with the following additional requirements.
1. Using a "pan & tilt" camera, closed circuit television inspections shall be performed by experienced personnel trained in locating breaks, obstacles and service connections, using equipment specifically designed for this purpose.
 2. Perform a "Before" CIPP liner installation inspection of the pipeline to locate any conditions which may prevent proper CIPP installation into the existing pipeline, and locate and document all existing sewer service lateral connections for future reinstatement.
 3. Perform an "After" CIPP liner installation inspection to inspect the final pipeline condition and confirm the reestablishment of all sewer service connections. Log the location of conditions requiring correction.
 4. Provide Two (2) copies of the DVD's and TV inspection logs to the Owner and the Engineer for record and future reference.
- C. Pumping and flow bypassing
1. Supply the necessary pumps, conduits and other equipment to divert the flow of sewage around the pipeline section in which work is to be performed.
 2. Handling existing sewage flows and bypass pumping shall be in accordance with Specification Section 02149.
- D. Flow Control Precautions
1. Whenever flows in a sewer line are blocked, plugged or bypassed, sufficient precautions must be taken to protect the sewer lines from damage that might be inflicted by excessive sewer surcharging.

2. Further, precautions must be taken to ensure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.
3. Coordination with private property owners is required.

E. Line Obstructions

1. Clear lines of obstructions such as solids, dropped debris, protruding service connections, pieces of pipe, or other obstructions that may prevent normal installation at no additional cost to the Owner.

3.03 INSTALLATION

A. Staging Area

1. Designate location where the tube will be resin impregnated prior to installation.

B. Inspection

1. Allow Owner/Engineer to inspect all operations involved with television inspections, as well as installing and curing the liner.

C. Installation

1. All surfaces shall be sufficiently smooth and even, to ensure good flow handling characteristics when complete.
2. Liner will be installed via water or air inversion, or pulled into place depending on jobsite conditions.
3. Liner must be restrained during the inversion process and held at constant pressure
4. Pulled in Place liners will be inflated using a continuous calibration hose provided by the CIPP system Manufacturer

D. Curing

1. After installation is complete, apply steam or heated water for the curing process.
2. Fit the heat source with suitable sensors to monitor the temperature of the curing medium. Fit another sensor between the impregnated tube and the pipe invert at the termination to monitor curing temperature.
3. Uniformly raise the temperature to a level required to effectively cure the resin as determined by the resin/catalyst system employed.
4. Liner must be cured at constant 200 degrees Fahrenheit for 3 hours with steam or hot water or a combination of the two
5. Maintain temperature of the curing medium in tube to the temperature required in accordance to the resin manufacturer's instructions.

6. Initial cure deemed complete when inspection shows exposed portions of the tube to be hard and sound and remote temperature sensor indicates temperature is of a magnitude to realize a cure in the resin.
7. Continue cure period as recommended by the resin manufacturer, as modified for the installation process.

E. Cool Down

1. Cool hardened pipe in accordance with resin manufacturer's requirements.

F. Finish

1. Cut new pipe at suitable location in manhole.
2. The finished pipe shall be continuous and watertight over the total length of the run, and be free from defects, foreign inclusions, dry spots, pin holes, lifts and delaminations.
3. Remove and replace defective areas.

G. Sealing Pipe at Manhole

1. If due to existing broken or misaligned pipe at the manhole wall, the new pipe fails to make a tight seal, a seal shall be applied using a resin mixture compatible with the pipe.

3.04 SEWER SERVICE LATERAL CONNECTIONS

- A. After the new pipe has been cured-in-place, reestablish all existing active service lateral connections to no less than 95% of the existing pipe diameter at the locations recorded on the DVD's and TV inspection logs.
- B. Reestablish service lateral connections without excavation, and in the case of non man entry pipes, from the interior of the pipe by means of a television camera and remote controlled cutter specifically designed for this purpose.
- C. Openings shall be rough cut then edges ground smooth, conforming to the existing opening.

3.05 FIELD QUALITY CONTROL

A. Site Tests

- 1) A final visual inspection shall be made by closed circuit TV inspection.
- 2) Any deficiencies in the finished system shall be marked and repaired according to the procedures set forth herein by Applicator.

- B. The system may be put back into operational service as soon as the final inspection has taken place.

C. Final Inspection and Acceptance

1. Provide the Owner and Engineer each with two (2) properly labeled DVD's and corresponding TV inspection logs containing a complete record of the televised internal pipe inspection demonstrating Contract compliance of the completed work, corrected conditions and reestablished sewer service lateral connections.

3.06 CLEANING AND SITE RESTORATION

- A. Upon acceptance of the CIPP installation and any testing associated therewith, restore the project area affected during the operation to a condition at least equal to that which existing prior to the work. Trash and loose debris shall not be permitted to accumulate at the project site. All items shall be regularly removed and disposed of at an approved site in accordance with applicable regulatory agencies.

END OF SECTION

SECTION 02769

DISPOSAL OF MATERIALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for disposal of materials resulting from the cleaning of sewer pipes.

1.02 SUBMITTALS

- A. In accordance with Specification Section 01300, submit the following
 1. Outline of the procedures proposed to accomplish the work.
 2. Include a detailed description of disposal methods and locations of disposal.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION

3.01 DISPOSAL PROCEDURES

- A. Material encountered in the cleaning of sewer lines is considered “Special Waste” by the Commonwealth of Massachusetts, Department of Environmental Protection (MADEP). The materials include sludge, sand, grit, debris, etc.
- B. The Contractor is required to test and dispose of any waste material removed from pipeline, manholes, etc. within the project area in accordance with State and Federal requirements. Testing of waste material will be at the Contractor’s expense.
- C. The materials being removed from the pipelines and manholes during the cleaning process shall be deposited in such a manner as to not endanger the public, plant personnel or persons performing the work. Such debris deposits may be of such nature, high in biological organic contents, or chemically aggressive that they will require proper disposal in a safe, health risk free, environment. The Contractor shall contact the Owner and Engineer and all agencies having jurisdiction thereof, for approval of debris disposal methods and locations of disposal, prior to disposing of any or all debris removed from pipe cleaning methods. All solids or semi-solids resulting from the cleaning operations shall be removed and satisfactorily disposed of off-site at the Contractor’s expense. **No temporary storage will be allowed in Town.**

- D. Debris must be transported in a watertight vehicle. The Contractor must ensure that no water leaks from the vehicle in any manner during the transportation. The Contractor is solely responsible for any cleanup of debris on route to disposal at a licensed disposal facility. The Contractor is also responsible for the payment of any fines that are incurred as a result of any incident which occurs during the transportation and/or disposal of the contents of the vehicle.

- E. Disposal must be at a licensed facility that is regulated to accept and properly dispose of the debris that is normally expected to be in a wastewater collection system.

END OF SECTION

SECTION 02930

LOAMING AND SEEDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for loaming, fertilizing, seeding, and related work in areas disturbed in the process of performing the Work under this contract.

1.02 SUBMITTALS

- A. In accordance with SECTION 01300 submit the following:

- 1. Submit with seed, certificates confirming seed mixture, purity, germinating value, and crop year identification.
- 2. Submit test samples of loam.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Fertilizer:

- 1. Delivered mixed as specified in standard size, unopened containers showing weight, analysis, and name of manufacturer.
- 2. Store in weather proof place.

- B. Seed:

- 1. Delivered in original unopened containers with mixture listed.

PART 2 PRODUCTS

2.01 LOAM

- A. Fertile, natural topsoil, typical of locality, without admixture of subsoil, refuse or other foreign materials, and obtained from well-drained arable site. Mixture of sand, silt and clay particles in approximately equal proportions. Free of stumps, roots, heavy or stiff clay, stones large than 1 inch in diameter, lumps, coarse sand, noxious weeds, sticks, brush or other deleterious matter.
- B. Not less than 4 percent nor more than 20 percent organic matter as determined by loss on ignition of oven-dried samples.
- C. Loam test samples dried to constant weight at temperature of 230 degrees. F., plus or minus nine degrees.

- D. Use loam, having prior vegetative growth that did not contain toxic amounts of either acid or alkaline elements.

2.02 LIME, FERTILIZER AND SEED

- A. Ground agricultural limestone containing not less than 85 percent of total carbonates.
- B. Complete fertilizer, at least 50 percent of nitrogen derived from natural organic sources of ureaform and containing following percentages by weight:

Nitrogen 10% Phosphorus 10% Potash 10%

- C. Turf grass seed, clean, high in germinating value and latest year's crop mixture as follows:

| Name | Minimum Proportion by Weight | Percent Purity | Percent Germination |
|---------------------------|------------------------------------|-------------------|------------------------|
| Kentucky bluegrass | 20% | 87% | 85% |
| Merion Kentucky bluegrass | 20% | 87% | 85% |
| Red Chewings fescue | 45% | 98% | 85% |
| Italian rye | 15% | 98% | 90% |

PART 3 EXECUTION

3.01 GENERAL

- A. Supply suitable quantities of water, hose and appurtenances.

3.02 LOAM

- A. Spread loam on areas to 6-inch depth after compaction, fine grade and compact.

3.03 LIME, FERTILIZER AND SEEDING

- A. Apply lime by mechanical means at rate of 3000 pounds per acre.
- B. Apply fertilizer at rate of 1200 pounds per acre.
- C. Remove weeds or replace loam and reestablish finish grades, if any delays in seeding lawn areas and weeds grow on surface or loam is washed out prior to sowing seed and

without additional compensation. Sow seed at rate of 175 pounds per acre on calm day, by mechanical means. "Hydro-Seeding" not permitted unless otherwise permitted or required by Engineer. Sow one-half of seed in one direction, and other half at right angles to original direction. Rake seed lightly into loam, to depth of not more than 1/4 inch and compact by means of an acceptable lawn roller weighing 100 to 150 pounds per linear foot of width.

- D. Water lawn areas adequately at time of sowing and daily thereafter with fine spray, and continue throughout maintenance and protection period.
- E. Seed during approximate time periods of April 1 to May 15 and August 15 to October 1, and only when weather and soil conditions are suitable for such work, unless otherwise permitted.

3.04 MAINTENANCE OF SEEDED AREAS

- A. Maintain lawn areas and other seed areas at maximum height of 2-1/2 inches by mowing at least three times. Weed thoroughly once and maintained until time of final acceptance. Reseed and refertilize with original mixtures, watering or whatever is necessary to establish over entire area of lawn and other seeded areas a close stand of grasses specified, and reasonably free of weeds and undesirable coarse native grasses.
- B. Begin maintenance immediately after each portion of lawn is seeded and continue for minimum of 45 days.
- C. Repair or replace all seeded areas which, in judgment of Engineer, have not survived and grown in satisfactory manner, for a period of one year after acceptance.
- D. Seeding replacement, same seed mixture as specified and furnished and installed as specified.

3.05 TEMPORARY COVER CROP

- A. Sow a temporary cover crop of buckwheat, domestic rye grass or other acceptable seed if there is insufficient time in the planting season to complete seeding, fertilizing, and permanent seeding at the option of Contractor or order of Engineer. Cut and water cover crop as necessary until the beginning of the following planting season, at which time it shall be plowed or harrowed into soil, the areas shall be fertilized and permanent seed crop sown as specified.

END OF SECTION

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DIVISION 3

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for furnishing and installing forms, reinforcing steel, concrete and expansion and/or construction joints

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)

1. A185, Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
2. A615, Specification for deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
3. C31, Practice for Making and Curing Concrete Test Cylinders in the Field.
4. C33, Specification for Concrete Aggregates.
5. C39, Test Method for Compressive Strength of Cylindrical Concrete Specimens.
6. C42, Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
7. C94, Specification for ready Mixed Concrete.
8. C143, Test Method for Slump of Hydraulic Cement Concrete.
9. C150, Specification for Portland Cement.
10. C172, Practice for Sampling Freshly Mixed Concrete.
11. C231, Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
12. C260, Test Method for Air-Entraining Admixtures for Concrete.
13. C494, Specification for Chemical Admixtures for Concrete.
14. C920, Specification for Elastomeric Joint sealants.
15. D994, Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)
16. D1056, Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.
17. D1751, Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

- B. American Concrete Institute (ACI):

1. ACI 301, Specification for Structural Concrete for Buildings.
2. ACI 304, Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete.
3. ACI 305, Recommended Practice for Hot Weather Concreting.
4. ACI 306, Recommended Practice for Cold Weather Concreting.
5. ACI 315, Building Code Requirements for Reinforced Concrete.

6. ACI 347, Guide to Formwork for Concrete.
- C. Concrete Reinforcing Steel Institute (CRSI):
 1. Manual of Standard Practice.

1.03 SUBMITTALS

- A. Submit Shop Drawings in accordance with SECTION 01300 for the following:
 1. Reinforcing Steel
 - a. Furnish in detail and completeness that all fabrication and placement at the site can be accomplished without the use of contract drawings for reference.
 - b. Include number of pieces, sizes, and grade of reinforcing steel, accessories, and any other information required for fabrication and placement.
 - c. Show joint layout and design
 - d. Check structural and site drawings for anchor bolts, anchors, inserts, conduits, sleeves, and any other items which are required to be embedded in concrete, and make necessary provisions as required so that reinforcing steel will not interfere with the placement of such embedded items.
 2. Concrete mix designs.
 3. Grout manufacturer/design mix (if included in this section)
 4. Manufacturer's data for ancillary materials such as joint fillers and sealants, epoxy bonding compound.

1.04 QUALITY ASSURANCE

- A. Selection of testing laboratory in accordance with SECTION 01410.
- B. Sample and Test Concrete as follows:
 1. Test Specimens: Make, cure and have tested, a minimum of one set of four test specimens from the concrete of each day's pour and for each fifty cubic yards of concrete cast in accordance with ASTM C172, C31 and C39. One cylinder shall be broken after seven days and three cylinders after twenty-eight day.
 2. Slump: A slump test shall be made for each truckload of concrete in accordance with ASTM C143. Slumps greater than design mix limit will be grounds for rejection of the concrete.
 3. Air Content: An air content test shall be made from each day's pour of concrete by the pressure method in accordance with ASTM C231. Air contents above or below the limits specified will be grounds for rejection of the concrete.
 4. In the event the compressive strength of the cylinders, when tested, is below the specified minimum, the Engineer may require test cores of the hardened structure to be taken by the Testing Laboratory in accordance with ASTM C42. If such test indicates that the core specimen is below the required strength, the concrete in question shall be removed and replaced without cost to the Owner. Any other work damaged as a result of this concrete removal shall be replaced with new materials to the satisfaction of the Engineer at no additional cost to the Owner. The cost of coring will be deducted from the contract amount. Where the Testing Laboratory has taken core cylinders and the concrete proves to be satisfactory,

core holes shall be filled in a manner satisfactory to the Engineer at no additional cost to the Owner.

5. The Contractor shall coordinate the date and location of tests with the Engineer before any concrete work is started.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Reinforcing steel.

1. Transport to the site, store, and cover in a manner which will ensure that no damage shall occur to it from moisture, dirt, grease, or any other cause that might impair bond to concrete or chip protective epoxy coating.
2. Store on the site at all times, a supply of approved reinforcing steel to ensure that there will be no delay of the work.
3. Identification of steel shall be maintained after bundles are broken.

PART 2 PRODUCTS

2.01 MATERIALS

A. Portland Cement.

1. In accordance with ASTM C150, Type II of U.S. manufacture.
2. Only one brand of cement shall be used on the project.

B. Aggregates.

1. Fine aggregate, in accordance with ASTM C33, clean and graded from 1/4 inch to fines.
2. Coarse aggregate, in accordance with ASTM C33, clean and graded from 1/4 inch to maximum sizes hereinafter specified.

C. Air Entraining Agent.

1. In accordance with ASTM C260.

D. Water Reducing Agent.

1. In accordance with ASTM C494 Type A.

E. Microsilica Admixture.

1. Packaged in easily dispersing form.

F. Water.

1. Clean and potable,
2. Free of impurities detrimental to concrete.

G. Reinforcing Bars.

1. New, deformed billet steel bars, in accordance with ASTM A615, Grade 60.

H. Welded Wire Fabric

1. In accordance with ASTM A185.

I. Accessories.

1. Reinforcement accessories, consisting of spacers, chairs, ties, and similar items shall be provided as required for spacing, assembling, and supporting reinforcement in place.
2. All accessories shall be dielectric coated steel or approved plastic accessories, conforming to the applicable requirements of the CRSI Standards.

J. Tie wire.

1. 16 gauge or heavier black annealed wire.

K. Form Ties and Spreaders.

1. Standard metal form clamp assemble and plastic cone, of type acting as spreaders and leaving no metal within 1 inch of concrete face.
2. Provide form tie with water stop for all walls to be in contact with earth or liquid.
3. Inner tie rod shall be left in concrete when forms are removed.
4. No wire ties or wood spreaders will be permitted. Use ½" x 1" C.T. plastic cones for sinkages.

L. Form Coatings.

1. Non-grain raising and non-staining type that will not leave residual matter on surface of concrete or adversely affect proper bonding of subsequent application of other material applied to concrete surface.
2. "Nox-Crete Form Coating" as manufactured by Nox-Crete Company, or approved equal.
3. Coatings containing mineral oils or the non-drying ingredients will not be permitted.

M. Grout.

1. High-strength, non-shrink grout with saltwater resistance.
2. Five Star Special Grout 120 or equivalent.

2.02 CONCRETE STRENGTHS AND PROPORTIONS

- A. Cast-in-place concrete shall have the minimum compressive strength at 28 days as indicated on the Drawings.
- B. The exact proportions for the mix, including amounts admixture (if any), and water, shall be determined by the concrete supplier.
- C. The proportions of aggregate to cement for any concrete shall be such as to produce a mixture which will work readily into the corners and angles of the forms and around reinforcement with the method of placing employed not he work, but without permitting the materials to segregate or excess free water to collect on the surface.
- D. Air-Entrainment: The air content in all concrete shall be maintained at 5 to 7 percent.

2.03 PREMOLDED JOINT FILLER

A. Bituminous Type.

1. In accordance with ASTM D994 or D1751.

B. Sponge Rubber Type.

1. Neoprene, closed-cell, expanded in accordance with ASTM D1056, Type 2C5, with a compression deflection, 25 percent deflection (limits), 17 to 24 psi (119 to 168 kPa) minimum.

2.04 POURABLE JOINT FILLERS

A. Filler for Nonpotable Water Structures

1. Specific Gravity: Greater than 1.0 for cured, in-place filler.
2. Vertical and Sloped Joints: Furnish gun grade material that will remain as placed in joints and will not run down slope.
3. Suitable for continuous immersion and exposure to liquid being contained in the structure.

2.05 JOINT SEALANTS

A. In slabs.

1. In accordance with ASTM C920 for poured 2-component polyurethane sealant.
2. Sikaflex-2c, as manufactured by Sika Corporation or approved equivalent.

B. In walls.

1. Type II, Class A, compound conforming to Interim Federal Specification TT-S-00227E (3) (COM-NBS) for Sealing Compound; Elastomeric Type, Multi-Component (for Caulking, Sealing, and Glazing in Buildings and Other Structures).
2. Sikaflex-1a, as manufactured by Sika Corporation or approved equivalent.

2.06 EPOXY BONDING COMPOUND

- ### A. The epoxy bonding compound shall be a three-component, solvent-free, moisture-tolerant, epoxy modified, cementitious product specifically formulated as a bonding agent and anti-corrosion coating. The product shall have suitable contact time, fluidity, and application temperature for this type of application.

PART 3 EXECUTION

3.01 FORMWORK

A. Falsework for Forms

1. Build and maintain necessary false work for the forms.

B. Construction of Forms

1. General
 - a. Construct in accordance with ACI 347.
 - b. Construct of sound material, to the correct shape and dimensions, mortar tight, of sufficient strength, and so braced and tied together that the movement of men, equipment, materials, or placing and vibrating the concrete will not throw them out of line or position.
2. Embedded Items
 - a. Make provisions for pipes, sleeves, anchors, inserts, reglets, anchor slots, nailers, water stops, and other features.
 - b. Do not embed wood, other than necessary nailing blocks, in concrete.
 - c. Extended complete cooperation to suppliers of embedded items in their installation.
 - d. Secure information for embedded items from other trades as required.
 - e. Securely anchored embedded items in correct location and alignment prior to placing concrete.
3. Openings for Items Passing Through Concrete
 - a. Establish exact locations, sizes, and other conditions required for openings and attachment of work specified under other sections.
 - b. Coordination work of this nature in order that there will be no unnecessary cutting and patching of concrete.
 - c. Cutting and repairing of concrete as a result of failure to provide for such openings shall be paid for by the Contractor at no additional expense to the Owner.

C. Removing Forms and False work

1. Forms shall not be removed for at least 72 hours after concrete has been placed.
2. Forms shall not be removed until the concrete has attained sufficient strength to insure stability.

3.02 REINFORCING STEEL

A. General

1. Place reinforcing steel in accordance with the drawings and approved shop drawings and the applicable requirements of the CRSI, Manual of Practice.
2. Install reinforcement accurately and secure against movement, particularly under the weight of workmen and the placement of concrete.

B. Reinforcing Steel Supports

1. Support bars on approved plastic or dielectric-coated metal chairs or spacers, accurately placed and securely fastened to forms or steel reinforcement in place.
2. Supply additional bars, whether specifically shown on the drawings or not, where necessary to securely fasten reinforcement in place.
3. Support legs of accessories in forms without embedding in form surface.
4. Spacing of chairs and accessories shall conform to CRSI, Manual of Standard Practice. Accurately space hoops and stirrups and wire to the reinforcement.
5. Permit no loose wood inside forms.

6. Lifting of welded wire fabric into proper position while concrete is being poured rather than supporting fabric on chairs will not be permitted.

C. Placing and Tying

1. Set in place, space, and rigidly and securely tie or wire with tie wire at all splices and at all crossing points and intersections in the positions shown, or as directed.
2. Rebending of bars on the job to accommodate existing conditions will not be permitted without the written approval of the Engineer.
3. Points ends of wire ties away from forms.

D. Spacing

1. Minimum center to center distance between parallel bars shall be in accordance with the details on the drawings, or, where not shown, the clear spacing shall be 2 times the bar diameter but in no case less than 1½ inches or less than 1½ times the maximum size aggregate.

E. Splices

1. Maximum 50% of steel spliced occurring within lap length.
2. Top bars shall be 1.3 times values given in 3.01.D.5.c.
3. Splice lengths.
 - a. #6 bars and smaller: 50-bar diameter
 - b. #7 bars and larger: 60-bar diameter

F. Concrete Covering

1. In accordance with ACI 315, except where shown otherwise on drawings.

3.03 CONCRETE

A. Mixing of Concrete

1. All concrete shall be ready-mixed concrete, and shall be mixed and delivered in accordance with ASTM C 94. The batch plant of the concrete producer shall be certified for compliance with the standards established by the National Ready-Mixed Concrete Association.
2. In the event concrete is mixed at a central batching plant, the delivery shall be arranged so that intervals between batches are kept to a minimum, and in any event not more than thirty (30) minutes. Trucks shall be in first class condition and kept in constant rotation during delivery.
3. Concrete shall be placed within 90 minutes after cement has been mixed with aggregate or 45 minutes after addition of water and admixtures.
4. No admixtures, except those mentioned in paragraph 2.01 shall be used. Calcium chloride will not be permitted.
5. Truck delivery slips of all concrete delivered to the job shall indicate the quantity and quality of concrete, additives, date and time of batching and delivery, and the location of placement. Delivery slips shall be forwarded to the Engineer at the end of each pour.

B. Cold Weather Concreting.

1. In accordance with ACI 306.

2. Concrete shall not be mixed or placed when the temperature is below 40 degrees F, or when conditions indicate that the temperature will fall below 40 degrees F within 72 hours unless precautions are taken to protect the concrete.
 3. Concrete temperature shall be maintained, when deposited, at not less than 60 degrees F. Reinforcement, forms, and ground which concrete will contact must be completely free of frost.
 4. Concrete and formwork must be kept at a temperature of not less than 50 degrees F. for not less than 96 hours after placing.
 5. Calcium chloride shall not be used.
- C. Hot Weather Concreting.
1. In accordance with ACI 305.
 2. The maximum temperature of the concrete, when deposited, shall be 85 degrees F. If the weather causes the placing temperature to exceed 85 degrees F., the mix shall be cooled by methods approved by the Engineer.
 3. No concrete shall be deposited when the air temperature is greater than 90 degrees F.
- D. Conveying and Placing Concrete.
1. In accordance with ACI 304.
 2. Notification: Before placing concrete, forms shall be thoroughly inspected. All chips, dirt, etc., shall be removed, all temporary bracing and cleats taken out, all openings for pipes, etc., properly boxed, all forms properly secured in their correct position and made tight, all reinforcement, anchors, and embedded items secured in their proper places. Concrete which may be on the forms or reinforcement, and which is set and dry, shall be cleaned off, and the forms and steel washed off before proceeding. Remove all foreign matter from forms and excavations.
 3. Water shall be removed from place of deposit before concrete is placed unless otherwise permitted by the Engineer. Any flow of water into an excavation shall be diverted through proper side drains into a sump, or shall be removed by other approved methods which will avoid washing away the freshly deposited concrete.
 4. Soil on which concrete will be poured shall be thoroughly wetted (except in freezing weather).
 5. Anchors and Embedded Items: Anchors, bolts, sleeves, inserts, wood blocking, and any other items to be embedded in concrete shall be accurately secured in position before the concrete is placed. Aluminum shall not be embedded in concrete.
 6. Handling and Depositing
 - a. Before any concrete is placed, notify all whose work is in any way connected with or influenced by the concrete work, and give them reasonable time to complete all portions of their work that must be completed before concrete is deposited.
 - b. Immediately before concrete is placed, inspect all forms to insure that they are in proper position, sufficiently rigid, thoroughly clean, properly oiled and free from foreign materials, and that all reinforcement is in proper position.
 - c. Concreting, once started, shall be carried on as a continuous operation until the section of approved size and shape is completed.

- d. Concrete shall be conveyed as rapidly as practicable from the mixer to the place of final deposit by methods that prevent the separation or loss of ingredients. It shall be deposited, as nearly as practicable, in its final position to avoid rehandling or flowing.
 - e. Concrete shall not be dropped freely where reinforcement will cause segregation, nor shall it be dropped freely more than six (6) feet. Concrete shall be deposited to maintain a plastic surface approximately horizontal.
 - f. Concrete that has partially hardened shall not be deposited in the work.
7. Pumping
- a. Concrete may be placed by pumping if first approved in writing by the Engineer for the location proposed.
 - b. Equipment for pumping shall be of such size and design as to ensure a practically continuous flow of concrete at the delivery end without separation of materials.
 - c. The concrete mix shall be designed to the same requirements as herein before specified, and may be richer in lubricating components in order to allow proper pumping.
 - d. Concrete shall not be pumped through aluminum pipes.
8. Vibrating and Compacting
- a. All concrete shall be thoroughly consolidated and compacted by suitable means during the operation of placing, and shall be thoroughly worked around reinforcement, embedded items, and into the corners of the forms. All concrete against forms shall be thoroughly spaded. Internal vibrators shall be used under experienced supervision, and shall be kept out of contact with reinforcement and wood forms. Vibrators shall not be used in a manner that forces mortar between individual form members.
 - b. Vibrators shall be flexible electric type or approved compressed air type, adequately powered and capable of transmitting to the concrete not less than seven thousand (7,000) impulses per minute. Vibration shall be sufficiently intense to cause the concrete to flow or settle readily into place without separation of the ingredients. A sufficient number of vibrators shall be employed so that complete compaction is secured throughout the entire volume of each layer of concrete. At least one (1) vibrator shall be kept in readiness as a spare for emergency use. Vibrators shall be such that the concrete becomes uniformly plastic with their use.
 - c. Vibration shall be close to the forms but shall not be continued at one spot to the extent that large areas of grout are formed or the heavier aggregates are caused to settle. Care shall be taken to not disturb concrete that has its initial set.
 - d. Where conditions make compacting difficult, or where the reinforcement is congested, batches of mortar containing the same proportions of cement to sand as used in the concrete shall first be deposited in the forms, to a depth of at least one inch.
 - e. The responsibility for providing fully filled out, smooth, clean, and properly aligned surfaces free from objectionable pockets shall rest entirely with the Contractor.

3.04 CONSTRUCTION JOINTS

- A. Construction joints shall be located a maximum of 40 feet apart. If, for any reason, the contractor feels a change is necessary, he shall prepare a placing plan and submit it to the Engineer for approval.
- B. Where a joint is to be made, the surface of the concrete shall be sandblasted or thoroughly picked, thoroughly cleaned, and all laitance removed. In addition to the foregoing, joints shall be thoroughly wetted, but not saturated, and slushed with a coat of grout immediately before the placing of new concrete.
- C. Approved keys shall be used at all joints, unless detailed otherwise.
- D. Forms shall be retightened before placing of concrete is continued. There shall be an interval of at least 48 hours between adjacent pours.
- E. Bonding Concrete at Construction Joints
 - 1. To new concrete construction joints:
 - a. Thoroughly clean and saturate joint with water.
 - b. Cover horizontal wall surfaces as specified in this Section, and immediately place concrete.
 - c. Limit concrete lift placed immediately on top of bonding compound to 12 inches thick.
 - d. Thoroughly vibrate to mix and consolidate bonding compound and concrete together.
- F. Bonding new concrete to old concrete:
 - 1. Mechanically roughen existing concrete surfaces to a clean, rough surface using appropriate mechanical means to remove the existing concrete surface, and provide a minimum roughness profile of ¼-inch.
 - 2. Saturate surface with water for 24 hours, cover with epoxy bonding compound and place concrete as specified for new concrete.
- G. Expansion Joints
 - 1. Expansion joints shall be located as shown on contract drawings.
 - 2. The joint shall include a joint filler, a bond breaker and joint sealant and installed as indicated on contract drawings.
- H. Joint Sealants.
 - 1. Prepare surface in accordance with manufacturers directions.
 - 2. Apply primer as recommended by sealant manufacturer.
 - 3. Install sealant with the proper tools and methods as directed by the sealant manufacturer.
- I. Patching
 - 1. Immediately after stripping forms, patch minor defects, form-tie holes, honeycombed areas, etc., before concrete is thoroughly dry.

2. Repair gravel pockets by cutting out to solid surface, form key, and thoroughly wet before placing patching mortar consisting of 1 part cement to 2 parts fine sand; compact into place and neatly finish. Honeycombed areas or gravel pockets which, in the Engineer's opinion are too large and unsatisfactory for mortar patching as described above, shall be cut out to solid surface, keyed, and packed solids with matching concrete to produce firm bond and surface.
3. The Contractor shall do all the cutting as required by himself or other trades. All such work shall be of the minimum size required. No excessive cutting will be permitted, or shall any structural members or reinforcement be cut.
4. The Contractor shall do all patching after work by other trades has been installed, where required, using Portland Cement Mortar 1:2 mix.

J. Protection and Curing

1. Protect concrete from injurious action of the elements and defacement of any nature during construction operations.
2. Keep concrete in a thoroughly moist condition from the time it is placed until it has cured, for at least (7) days.
3. Carefully protect exposed concrete corners from damage.
4. Allow no slabs to become dry at any time until curing operations are complete. In general, slabs shall be cured with non-staining curing paper, hosing or fog spray; vertical surfaces shall be curing with Burlene or fog spray or an approved curing compound.
5. Protect fresh concrete from drying winds, rain, damage, or spoiling. Curing paper shall be lapped 4 inches minimum at joints and sealed with waterproof tape.

K. Concrete Finishes

1. Unexposed Surfaces: All unexposed surfaces shall have any form finish, at the Contractor's option.
2. Wearing Surface Finish: Float the surface by hand using a wooden or magnesium float. Finish with a flexible bristle broom. Permit surface to harden sufficiently to retain the scoring or ridges. Broom transverse to traffic or at right angles to the slope of the slab.
3. Addition of Material: The addition of cement, sand, water, or mortar to slab surfaces while finishing concrete is strictly prohibited.

L. Defective Work

1. The following concrete work shall be considered defective and may be ordered by the Engineer to be removed and replaced at Contractor's expense:
 - a. Incorrectly formed.
 - b. Not plumb or level.
 - c. Not specified strength.
 - d. Containing rock pockets, voids, honeycomb, or cold joints.
 - e. Containing wood or foreign matter.
 - f. Otherwise not in accordance with the intent of the Drawings and Specifications.

END OF SECTION

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DIVISION 9

SECTION 09882

EPOXY LINING SYSTEM

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Requirements for work, materials, equipment, tools, and application equipment for installation and testing of a monolithic lining system.
2. Requirements for specialized application equipment and rigorous surface preparation requirements used to apply the surfacing system without the use of solvents.
3. Product application requirements and procedures, including surface preparation, mixing, application, material handling and storage, qualification of Application Contractor and application quality control.

B. Related Sections:

1. Section 02149 - Maintaining Existing Flow
2. Section 02610 - Manhole Rehabilitation

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents.
2. D638 - Standard Test Method for Tensile Properties of Plastics.
3. D695 - Standard Test Method for Compressive Properties of Rigid Plastics.
4. D790 - Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
5. D2240 - Standard Test Method for Rubber Property - Durometer Hardness, Type D.
6. D2584 - Standard Test Method for Ignition Loss of Cured Reinforced Resins.
7. D4414 - Standard Practice for Measurement of Wet Film Thickness by Notch Gages
8. D4541 - Standard Test Method for Pull-off Strength of Coatings Using a Portable Adhesion Tester.

B. NACE - The published standards of National Association of Corrosion Engineers (NACE International), Houston, TX.

1.03 SUBMITTALS

A. In accordance with Section 01300, submit the following:

1. Product data and manufacturer's application instructions.

2. Samples
 - a. Colors as required.
3. Quality Assurance Submittal:
 - a. Submit documentation stating the Application Contractor is an approved installer and licensed by the epoxy system manufacturer and specialized equipment supplier.
 - b. Submit documentation stating the Application Contractor's experience, listing at least 5 past clients to verify previous satisfactory performance on projects of similar or greater size and difficulty factor. Submitted documentation shall include the project type, total value of the contract, date of project completion, as well as Owner and Engineer contact information, including names, addresses, and telephone numbers.
 - c. Submit documentation from the monolithic surfacing manufacturer listing at least 5 previous installations of the product including installation dates, description of work performed, contact names and telephone numbers.
 - d. Manufacture's certification that the epoxy coating materials are in compliance with specified requirements.
 - e. Material Safety Data Sheets (MSDS): Furnish data sheets for epoxy coating materials.

1.04 QUALITY ASSURANCE

- A. Application Contractor must be established in the epoxy lining industry, have at least 5 years of experience in the epoxy lining of structures, and have coated a minimum of 6,000 structures. The Application Contractor cannot share the experience of the manufacturer.
- B. Application Contractor shall initiate and enforce quality control procedures consistent with applicable ASTM and NACE standards together with pull testing and vacuum testing to assure a high quality project.
- C. Application Contractor shall use an adequate number of skilled workmen who are thoroughly trained and experienced in the necessary crafts. These workmen shall be completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section. The supervisor and foreman must have a minimum of 5 years experience in epoxy restoration via plural component spray application with 100% solid epoxy.
- D. Application Contractor shall use approved specialty equipment adequate in size, capacity and number sufficient to accomplish the work of this Section in a timely manner.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Packing, Shipping, Handling, and Unloading
 1. In accordance with manufacturer's recommendations.

2. Protective coating materials are to be handled according to their material safety data sheets.
- B. Acceptance at Site
1. Products to be delivered to site in sealed, labeled and unopened containers.
 2. Labels to include Name, type, code, coverage, surface preparation, drying time, color, clean up procedure, and mixing and reducing instructions.
 3. Remove unacceptable products immediately.
- C. Storage and Protection
1. Materials are to be kept dry, protected from weather, stored under cover, and stored between 50 deg F and 90 deg F. Do not store near flame, heat or strong oxidants.

PART 2 PRODUCTS

2.01 MANUFACTURERS AND EQUIPMENT SUPPLIERS

- A. Epoxy lining materials and appropriate application equipment shall be by Warren Environmental, Inc., Carver, MA; A.W. Chesterton Company, Woburn, MA, Duromar, Hingham, MA; Belzona Inc., Miami, Fl or approved equal. Cementitious or polyurea materials will not be allowed.

2.02 REPAIR MATERIALS

- A. Repair materials must be accepted and approved by the specifying engineer and must be compatible with the specified epoxy system. No cementitious repair materials will be allowed. Only 100% solids epoxy mastic repair materials shall be used to profile or build out deteriorated walls.

2.03 STRUCTURAL EPOXY LINING AND REPAIR SYSTEM

- A. A non-toxic, 100% solids, solventless epoxy resin system as applied according to the manufacturer's requirements, and a non-toxic, 100% solids epoxy mastic repair resin system applied by hand and/or trowel, exhibiting the following characteristics:

| | |
|---------------------------|---|
| Product | Structural Epoxy |
| Product type | cycloaliphatic cured novalac-epoxy resin |
| Color | White (resin coating) / Light Grey (mastic) |
| Solids Content (vol %) | 100% |
| Mix Ratio | 1:2 |
| Compressive Strength | ASTM D695 11,000 p.s.i. |
| Flatwise Tensile Strength | |
| Of Sandwich Constructions | ASTM C297 2,608 p.s.i. |
| Tensile Strength | ASTM D638 6,000 p.s.i. |
| Tensile Elongation | ASTM D638 4% |
| Flexural Strength | ASTM D790 11,000 p.s.i. |
| Flexural Modulus | ASTM D790 500,000 p.s.i. |
| Bond Strength – Concrete | ASTM D4541 Concrete Failure |

| | |
|-----------------------------|-----------------------------------|
| Bond Strength – Brick | ASTM D4541 Brick Failure |
| Chemical Resistance to: | |
| Sulfuric Acid, 70% | ASTM D543 Immersion Service |
| Sodium Hydroxide, 20% | ASTM D543 Immersion Service |
| Safe for Aquatic Life Forms | ASTM E729 Acute Marine Toxicology |

- B. The monolithic lining system shall be continuously bonded to all brick, mortar, concrete, chemical sealant, grout, pipe and other surfaces inside the structure according to ASTM D4541. Coating thickness shall be a minimum 250 mils.
- C. The cured epoxy will be monolithic with proper sealing to all internal connections and shall be placed and cured in 1 application in conformance with the recommendations of the structural epoxy system manufacturer. The Contractor shall be required to apply a minimum of 250 mils in a single coat. Recommended thickness of the applied epoxy can vary due to substrate conditions and will be applied per the recommendations of the coating manufacturer as approved by the Engineer.
- D. When cured, the system shall form a continuous, tight-fitting, hard, impermeable surfacing that is suitable for sewer system service and chemically resistant to any chemicals, bacteria or vapors normally found in domestic or industrial sewage
- E. The system shall effectively seal the interior surfaces of the structure and prevent any penetration or leakage of groundwater (infiltration).
- F. The system shall be compatible with the thermal conditions of the existing sewer structure.

2.04 STRUCTURAL EPOXY APPLICATION EQUIPMENT

- A. Heated, plural component, specially designed equipment for use in the spray or spincast application of the specified system approved for use and as designed and developed by the structural epoxy manufacturer. The product may also be hand troweled.

PART 3 EXECUTION

3.01 PRE-COAT INSPECTION

- A. All structures to be coated shall be readily accessible to the Application Contractor.
- B. Appropriate actions shall be taken to comply with local, state and federal regulatory and other applicable agencies with regard to environment, health and safety.
- C. Active flows shall be diverted with flow through plugs or bypass pumped, in accordance with Section 02149 of the Specifications, as required to ensure that the liquid flow is maintained off the surfaces to be lined.

- D. Installation of the protective coating shall not commence until the concrete substrate has properly cured a minimum cure of 28 days for new concrete.

3.02 SURFACE PREPARATION

- A. Application Contractor shall inspect all surfaces specified to receive the monolithic surfacing system prior to surface preparation. Application Contractor shall notify Engineer of any noticeable disparity in the surfaces that may interfere with the proper preparation or application of the monolithic surfacing system.
- B. All concrete/brick that is not sound or has been damaged by chemical exposure shall be removed to a sound concrete surface. All contaminants including: oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, or other contaminants must be removed.
- C. Surface preparation method(s) shall be based upon the conditions of the substrate and the requirements of the monolithic surfacing system to be applied.
- D. Quick setting high strength concrete with latex or curing agent additives cannot be used to re-profile the surface to be epoxy lined. Proper surface preparation procedures must be followed to ensure adequate bond strength to any surface to be coated. New cement must cure at least 30 days prior to coating.
- E. Existing coatings should be removed or thoroughly abraded to provide adequate surface profile for mechanical bond by the new system. Application Contractor is to maintain strict adherence to the monolithic surfacing system manufacturer's recommendations with regard to proper surface preparation and compatibility with restoration and structural liner materials.
- F. Surfaces to receive protective coating shall be cleaned and abraded to produce a sound surface with adequate profile and porosity to provide a strong bond between the epoxy surfacing system and the substrate. The first procedure upon entering each structure will be to blast all specified surfaces by low pressure water cleaning. When all loose and /or contaminated debris has been removed, the surface shall be water blasted by the use of a hand held wand again. The wash water shall include a dilute solution of chlorine to diminish bacterial growth and to kill any bacteria residing on or in the surface. The surface will be tested at this point to ensure that the pH is within acceptable limits (not to exceed 8.5). These tests will be performed with litmus paper on various areas within the structure.
- G. Surfaces that require additional cleaning or profiling will be prepared by abrasive blast or water blasting at 4,000 to 10,000 psi in order to rough the surface sufficient to obtain and ensure adequate bonding of the system. A minimum surface profile of 8-10 mils must be achieved to assure proper adhesion. Detergent water cleaning and hot water blasting may be necessary to remove oils and grease from the concrete or brick. Whichever methods are used, they shall be performed in a manner that provides a uniform, sound clean surface that is not excessively damaged.

- H. Active water infiltration shall be stopped by using approved cementitious water plug or hydroactive grout that is compatible and suitable for topcoating with the specified epoxy surfacing system. Latex base products cannot be used, - NO exception.
- I. All surfaces shall be inspected during and after preparation and prior to application of the monolithic surfacing system. Any evidence of remaining contamination or residuals shall be removed by additional water or abrasive blast, or other approved method before proceeding with application of the monolithic surfacing system.

3.03 APPLICATION OF REPAIR MATERIALS

- A. Areas where reinforcing steel has been exposed or removed shall be repaired by replacing spent rebar with new rebar to match existing. All new rebar will be embedded in 1 ½ inch of epoxy mastic.
- B. Repair materials shall meet the specifications of this Section. The materials shall be trowel or spray applied utilizing proper equipment on to specified surfaces. The material thickness shall be specified by the Engineer according to Owner's requirements and manufacturer's recommendations.
- C. All surfaces shall be inspected during and after preparation and prior to application of the monolithic surfacing system. Any evidence of remaining contamination or latence shall be removed by additional water or abrasive blast, or other approved method before proceeding with application of the monolithic surfacing system.
- D. Approved repair materials, shall be trowelled to provide a smooth surface with an average profile equivalent to coarse sandpaper to receive the protective coating. No bugholes or honeycomb surfaces should remain after the final trowel procedure of the repair epoxy mortar.
- E. The repair materials shall be permitted to cure according to manufacturer recommendations. Curing compounds may not be used unless approved by the monolithic surfacing system manufacturer for compatibility with the specified system.
- F. Application procedure of the repair materials, if not performed by the monolithic surfacing system applicator, should be observed by the Applicator's representative to ensure proper finishing for suitability to receive the specified epoxy liner.
- G. All surfaces shall be sufficiently smooth and even, to ensure good flow handling characteristics when coated with epoxy materials.
- H. The epoxy coatings shall be placed and cured in one (1) application or approved by the Engineer.

3.04 STRUCTURAL EPOXY REHABILITATION SYSTEM

- A. Application procedures shall conform to the recommendations of the structural epoxy manufacturer, including material handling, mixing, and environmental controls during application, safety, and equipment.

- B. The equipment shall be specially designed to accurately ratio and apply the specified materials and shall be regularly maintained and in proper working order.
- C. The specified materials must be applied by an approved installer.
- D. All specified surfaces will be lined with the structural epoxy system to provide a minimum total thickness of 250 mils for rehab structures and 125 mils for new concrete. The epoxy liner shall be monolithic with proper sealing of connections to all unsurfaced areas and shall be placed and cured in one applications. The Contractor shall be required to apply a minimum of 250 mils in a single coat.

3.05 TESTING AND INSPECTION

- A. A wet film thickness gauge, such as those available through Paul N. Gardner Company, Inc. meeting ASTM D4414, shall be used to ensure a monolithic coating and uniform thickness during application.
- B. After the system has set hard to the touch it shall be inspected by the Engineer verifying the following:
 - 1. The Engineer will measure the system-cured thickness from a specimen retrieved by the Application Contractor. Retrieval can be made by physically cutting through the epoxy liner (by drilling or coring) or a suitable non-destructive type of thickness measurement may also be used, (e.g. ultrasonic).
 - 2. Groundwater infiltration of the system shall be zero.
 - 3. All pipe connections shall be open and clear.
 - 4. No cracks, voids, pinholes, uncured spots, dry spots, lifts, delamination or other type defects shall be evident in the system.
- C. All lined surfaces will be tested with high-voltage holiday detection equipment. The spark tester shall be initially set at 100 volts per 1 mil (25 microns) of film thickness applied but may be adjusted as necessary to detect the pinhole. All detected pinholes shall be marked and repaired by abrading the lined surface with grit disk paper or other hand tooling method. After abrading and cleaning, additional system material can be hand applied to the repair area. All touch-up/repair procedures shall follow the monolithic surfacing system manufacturer's recommendations.
- D. Measurement of bond strength of the system to the substrate can be made at regular intervals and along different sections of the structure (i.e. corbel, wall, and bench). Bond strength can be measured in accordance with ASTM D4541. Any areas detected to have inadequate (less than 300 p.s.i. or 80% substrate failure to concrete) bond strength shall be evaluated by the Engineer. Further bond tests may be performed in that area to determine the extent of potentially deficient bonded area and repairs shall be made by the Application Contractor in strict accordance with the manufacturer's recommendations.
- E. A final visual inspection shall be made by the Engineer and the Application Contractor. Any deficiencies in the finished system shall be marked and repaired according to the procedures set forth herein by the Application Contractor.

- F. The system may be put back into operational service as soon as the final inspection has taken place.
- G. After two days cure time, the structures can be vacuum tested and repaired, if necessary, at the contractor's expense.

3.06 CLEANING

- A. Trash and loose debris shall not be permitted to accumulate at the project site. All items shall be regularly removed and disposed of at an approved site in accordance with applicable regulatory agencies.

END OF SECTION

APPENDIX A

CCTV PIPE INSPECTION LOGS

P.O. Box 34
Bridgewater, MA 02324

| | | |
|---|---|--------------------------------------|
| Owner: Wareham, Massachusetts | Client: Water Pollution Control Facility | Inspector: Don Allsopp |
| Street/No.: Pinehurst Beach | Area: | Video I.D.: 2019-06-06_184401 |
| Location Details: Easement/Beach | SMH #1163 to SMH #1165 | Pipe I.D.: 02+70 to 00+00 |

| | | | |
|-------------------------------------|----------------------|--------------------------------|------------------------------|
| Starting Manhole: 02+70 | Invert: 112" | Ending Manhole: 00+00 | Invert: |
| Utility Type: Sanitary Sewer | Size: 10 inch | Shape: Circular | Material: DIP |
| Joint Length: 18 ft | Pipe Length: | Survey Length: 260.1 ft | |
| Date: 06-06-2019 | Time: | Flow Control: None | Pre-cleaning: Jetting |
| Survey Direction: Downstream | Notes: | | |

0.0 ft Access Point, Manhole 02+70

6.0 ft Deposits, Encrustation
Repeated defect

23.0 ft surface coating deteriorating, flaking
Repeated defect

205.0 ft Water Level, Sag begins

259.6 ft Water Level, Sag increases

260.1 ft Camera under water
Inspection Abandoned



| | | |
|---|---|-------------------------------------|
| Owner: Wareham, Massachusetts | Client: Water Pollution Control Facility | Inspector: Don Allsopp |
| Street/No. Pinehurst Beach | Area: | Video I.D. 2019-06-05_165412 |
| Location Details: Easement/Beach | SMH #1162 to SMH #1163 | Pipe I.D. 03+65 to 02+70 |

| | | | |
|-------------------------------------|-----------------------------|-------------------------------|------------------------------|
| Starting Manhole: 03+65 | Invert: 108" | Ending Manhole: 02+70 | Invert: 112" |
| Utility Type: Sanitary Sewer | Size: 8 inch | Shape: Circular | Material: DIP |
| Joint Length: 18 ft | Pipe Length: 89.2 ft | Survey Length: 89.2 ft | |
| Date: 06-05-2019 | Time: | Flow Control: None | Pre-cleaning: Jetting |
| Survey Direction: Downstream | Notes: | | |

0.0 ft Access Point, Manhole 03+65

15.5 ft Deposits, corrosion at joint
Repeated defect

49.3 ft surface coating deteriorating, flaking
Repeated defect

89.2 ft Access Point, Manhole 02+70

Inspection Complete



P.O. Box 34
 Bridgewater, MA 02324

| | | |
|---|---|-------------------------------------|
| Owner: Wareham, Massachusetts | Client: Water Pollution Control Facility | Inspector: Don Allsopp |
| Street/No. Pinehurst Beach | Area: | Video I.D. 2019-06-05_162546 |
| Location Details: Easement/Beach | SMH #1162 to SMH #1161 | Pipe I.D. 02+70 to 00+00 |

| | | | |
|-------------------------------------|------------------------------|--------------------------------|------------------------------|
| Starting Manhole: 03+65 | Invert: 108" | Ending Manhole: 05+00 | Invert: |
| Utility Type: Sanitary Sewer | Size: 8 inch | Shape: Circular | Material: DIP |
| Joint Length: 18 ft | Pipe Length: 127.5 ft | Survey Length: 127.5 ft | |
| Date: 06-05-2019 | Time: | Flow Control: None | Pre-cleaning: Jetting |
| Survey Direction: Upstream | Notes: | | |

- 0.0 ft Access Point, Manhole 03+65
- 0.0 ft Water Level, Sag starts at manhole
- 20.0 ft Deposits, encrustation
Repeated defect
- 37.8 ft Water Level, Sag ends
- 127.5 ft Access Piont, Manhole 05+00

Inspection Complete



P.O. Box 34
Bridgewater, MA 02324

| | | |
|---|---|-------------------------------------|
| Owner: Wareham, Massachusetts | Client: Water Pollution Control Facility | Inspector: Don Allsopp |
| Street/No. Pinehurst Beach | Area: | Video I.D. 2019-06-04_203007 |
| Location Details: Easement/Beach | SMH #1161 TO SMH #1160 | Pipe I.D. 06+25 to 05+00 |

| | | | |
|-------------------------------------|------------------------------|--------------------------------|------------------------------|
| Starting Manhole: 05+00 | Invert: 96" | Ending Manhole: 06+25 | Invert: |
| Utility Type: Sanitary Sewer | Size: 8 inch | Shape: Circular | Material: DIP |
| Joint Length: 18 ft | Pipe Length: 121.1 ft | Survey Length: 121.1 ft | |
| Date: 06-04-2019 | Time: | Flow Control: None | Pre-cleaning: Jetting |
| Survey Direction: Upstream | Notes: | | |

- 0.0 ft Access Point, Manhole 05+00
- 18.0 ft Deposits, Encrustation, corrosion at joints
Repeated defect
- 121.1 ft Access Point, Manhole 06+25
- Inspection Complete



P.O. Box 34
 Bridgewater, MA 02324

| | | |
|---|---|-------------------------------------|
| Owner: Wareham, Massachusetts | Client: Water Pollution Control Facility | Inspector: Don Allsopp |
| Street/No. Pinehurst Beach | Area: | Video I.D. 2019-06-04_132536 |
| Location Details: Easement/Beach | SMH #1159 TO SMH #1160 | Pipe I.D. 06+95 to 06+25 |

| | | | |
|-------------------------------------|-----------------------------|-------------------------------|------------------------------|
| Starting Manhole: 06+95 | Invert: | Ending Manhole: 06+25 | Invert: |
| Utility Type: Sanitary Sewer | Size: 8 inch | Shape: Circular | Material: DIP |
| Joint Length: 18 ft | Pipe Length: 63.2 ft | Survey Length: 63.2 ft | |
| Date: 06-04-2019 | Time: | Flow Control: None | Pre-cleaning: Jetting |
| Survey Direction: Downstream | Notes: | | |

0.0 ft Access Point, Manhole 06+95

0.1 ft Deposits, Encrustation
 Repeated defect

18.0 ft surface coating deteriorating, flaking
 Corrosion at joint
 Repeated defect

63.2 ft Access Point, Manhole 06+25

Inspection Complete



P.O. Box 34
Bridgewater, MA 02324

| | | |
|---|---|-------------------------------------|
| Owner: Wareham, Massachusetts | Client: Water Pollution Control Facility | Inspector: Don Allsopp |
| Street/No. Pinehurst Beach | Area: | Video I.D. 2019-06-04_131529 |
| Location Details: Easement/Beach | SMH #1158 TO SMH #1159 | Pipe I.D. 07+40 to 06+95 |

| | | | |
|-------------------------------------|-----------------------------|-------------------------------|------------------------------|
| Starting Manhole: 07+40 | Invert: 64" | Ending Manhole: 06+95 | Invert: |
| Utility Type: Sanitary Sewer | Size: 8 inch | Shape: Circular | Material: DIP |
| Joint Length: 18 ft | Pipe Length: 37.5 ft | Survey Length: 37.5 ft | |
| Date: 06-04-2019 | Time: | Flow Control: None | Pre-cleaning: Jetting |
| Survey Direction: Downstream | Notes: | | |

- 0.0 ft Access Point, Manhole 07+40
- 06.6 ft Deposits, Encrustation, Corrosion at joints
Repeated defect
- 37.5 ft Access Point, Manhole 06+95
- Inspection Complete

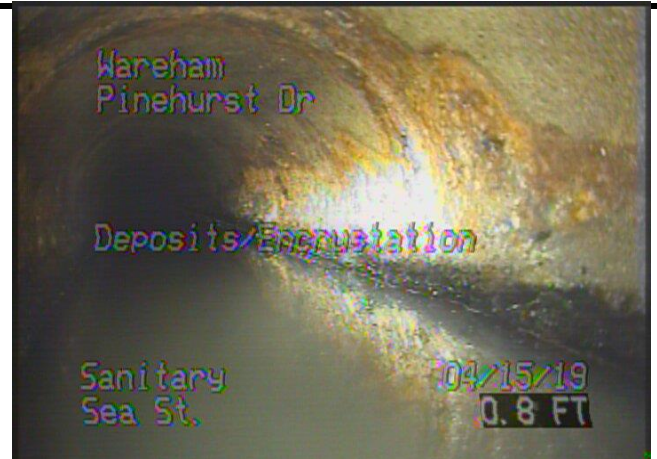


P.O. Box 34
Bridgewater, MA 02324

| | | |
|--------------------------------------|---|--|
| Owner: Wareham, Massachusetts | Client: Water Pollution Control Facility | Inspector: Don Allsopp |
| Street/No. Pinehurst Drive | Area: | Video I.D. 2019-04-15_121551 |
| Location Details: Easement | SMH #1091 TO SMH #1165 | Pipe I.D. Pinehurst Dr - Sea St |

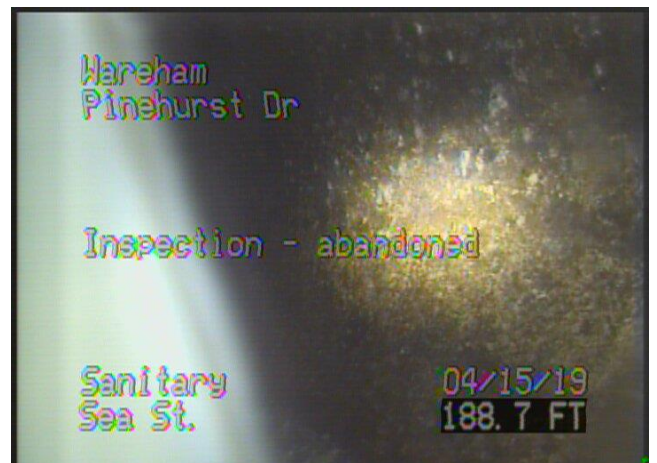
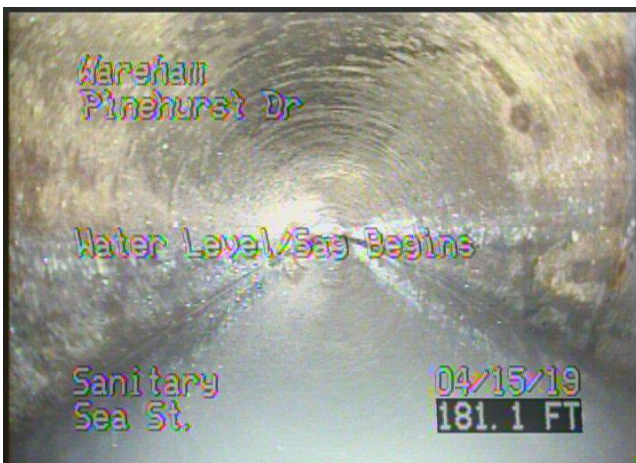
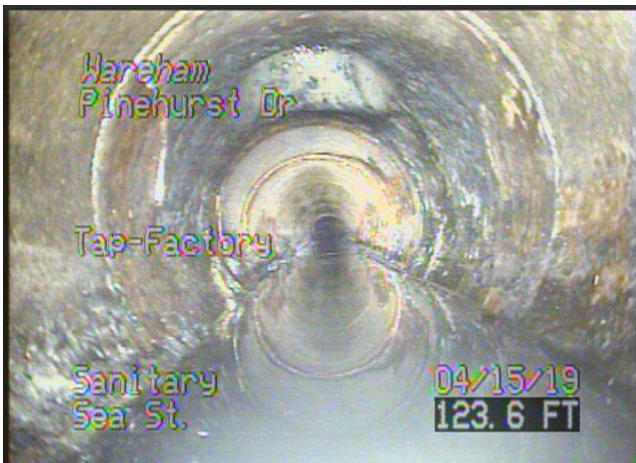
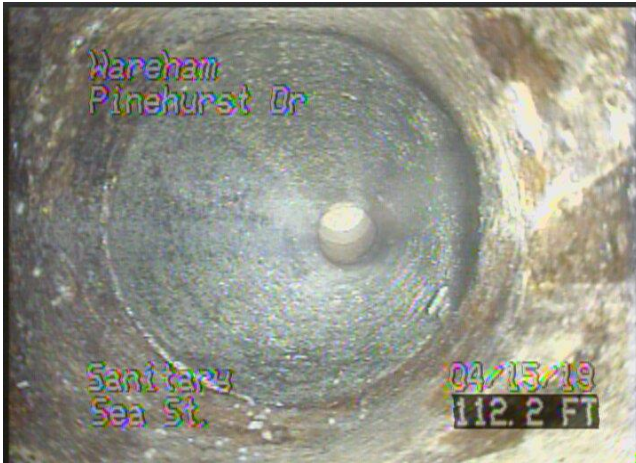
| | | | |
|--|------------------------------|--------------------------------|------------------------------|
| Starting Manhole: Pinehurst Dr. | Invert: 218" | Ending Manhole: Sea St. | Invert: |
| Utility Type: Sanitary Sewer | Size: 10 inch | Shape: Circular | Material: DIP |
| Joint Length: 18 ft | Pipe Length: 205.0 ft | Survey Length: 188.7 ft | |
| Date: 04-15-2019 | Time: | Flow Control: None | Pre-cleaning: Jetting |
| Survey Direction: Upstream | Notes: | | |

- 0.0 ft Access Point, Manhole at Pinehurst Dr. & Sea St.
- 0.8 ft Deposits, Encrustation
Repeated Defect
- 37.0 ft Flaking
- 59.8 ft Tap, Factory (12:00)
- 112.2 ft Tap, Factory (12:00)
- 123.6 ft Tap, Factory (12:00)
- 181.1 ft Pipe Bends Down
Water Level, Sag Begins
- 188.7 ft Inspection Abandoned
- 205.0 ft Access Point, Buried Manhole at the end of Sea St.



Page 2, Additional Photos

| | | | | | |
|-------------------|------------------------|------------|------------------------|-----------------|------------|
| Owner: | Wareham, Massachusetts | Street: | Pinehurst Dr. | Date: | 04-15-2019 |
| Starting Manhole: | Pinehurst Dr. | Pipe I.D.: | Pinehurst Dr - Sea St. | Ending Manhole: | Sea St. |



| | | |
|--------------------------------------|---|-------------------------------------|
| Owner: Wareham, Massachusetts | Client: Water Pollution Control Facility | Inspector: Don Allsopp |
| Street/No. Warr Ave. | Area: | Video I.D. 2019-04-15_141214 |
| Location Details: Easement | SMH #1164 TO SMH #1165 | Pipe I.D. Warr Ave - Sea St |

| | | | |
|-------------------------------------|---|--------------------------------|---------------------------|
| Starting Manhole: Warr Ave | Invert: 115" | Ending Manhole: Sea St. | Invert: |
| Utility Type: Sanitary Sewer | Size: 8 inch | Shape: Circular | Material: DIP |
| Joint Length: 20 ft | Pipe Length: 192.6 ft | Survey Length: 192.6 ft | |
| Date: 04-15-2019 | Time: | Flow Control: None | Pre-cleaning: None |
| Survey Direction: Downstream | Notes: Manhole is off the road at the end of Warr Ave. | | |

- 0.0 ft Access Point, Manhole at the end of Warr Ave.
- 84.9 ft Flaking
- 157.0 ft Deposits, Encrustation
- 175.9 ft Pipe Bends Right & Down
- 192.6 ft Access Point, Buried Manhole at the end of Sea St.
Inspection Complete

