ADDENDUM NO. 1
to
Bidding Documents for:

Town of Wareham, MA
Installation of Low-Pressure Sewer Force Main
Contract 2022-001

The following changes and additional information are hereby made part of the Bidding Documents:

GENERAL

1. Attached are Project Meeting Minutes and the attendance list from the Pre-Bid Conference held on August 10th, 2022.

2. Attached are contractor questions and answers.

3. Addendum No. 1 includes revisions to specifications 00200, 00300, 01025 and 11306. It also includes revisions to plan sheets C-1 & CD-1.

SPECIFICATIONS

Specification Section 00200 – Information for Bidders
Delete Section 00200 in its entirety and insert the attached revised Section 00200. Changes are highlighted yellow.

Specification Section 00300 – Bid
Delete Section 00300 in its entirety and insert the attached revised Section 00300. Changes are highlighted yellow.

Specification Section 01025 – Measurement and Payment
Delete Section 01025 in its entirety and insert the attached revised Section 01025. Changes are highlighted yellow.

Specification Section 11306 – Prefabricated Submersible Grinder Pumping Stations
Delete Section 11306 in its entirety and insert the attached revised Section 11306. Changes are highlighted yellow.

CONTRACT DRAWINGS

Construction Plan Sheet C-1
Delete sheet C-1 in its entirety and insert the attached revised sheet C-1. Changes are shown with yellow callouts.

Construction Details Sheet CD-1
Delete sheet CD-1 in its entirety and insert the attached revised sheet CD-1. Changes are shown with yellow callouts.

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TOWN OF WAREHAM, MA
INSTALLATION OF LOW-PRESSURE SEWER FORCE MAIN
CONTRACT 2022-001

Pre-Bid Meeting
August 10, 2022 – 10:00A.M.

Discussion Items:

1. Bids are due by 10:00 AM on Thursday, August 18th, 2022 at the Town of Wareham's Water Pollution Control Facility, 6 Tony's Lane, Wareham, MA 02571 at 10:00 AM, bids will be opened and read aloud.

2. Bids must be accompanied by a Bid Bond in the amount of 5% of the Bid.

3. All questions concerning the Contract Documents must be submitted in **writing**, either by Mail or Email, to:

   Guy Campinha,
   Director of Water Pollution Control Facility,
   6 Tony's Lane,
   Wareham, MA 02571,
   E-Mail Address: gcampinha@wareham.ma.us

   All questions must be received by 4:00 PM on Friday August 12th, 2022.

   An addendum will be available to bidders via the Town's website (https://www.wareham.ma.us/bids-rfps) that will include minutes to this meeting, address questions, and identify any modifications.

4. All work under this contract shall be completed within **140** consecutive calendar days.

5. The Contractor shall submit a construction schedule within 14 days of the execution of the Contract.

6. The scope of work is as follows:
   - Installation of approximately 4,500 linear feet of 1-1/4" thru 4" low-pressure sewer main
   - Installation of 13 manholes
   - Installation of 117 grinder pump stations
   - All related civil site work more particularly indicated, shown or described in the Drawings and Specifications.

Special Conditions:

WORK HOURS

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.

GRINDER PUMP INSTALLATION

A. The Contractor shall locate, dig and expose the existing sewer service of every property and note size, material, horizontal location and elevation.

B. The Contractor shall install the proposed grinder pump in the vicinity of the existing sewer service at the proper elevation for easy connection in the future by others.

C. The Contractor shall note that there are dwellings with shared sewer services and there are also dwellings which are located behind other dwellings. Dwellings with shared services shall have duplex grinder pump stations installed.

D. The pump cores and control panels shall be purchased by the contractor, stored by the Town and installed by others in the future.

E. The electrical conduit, ventilation conduit and gravity sewer pipe shall be installed to 2 feet from the outside wall of the precast concrete pump station structure and capped for future connection by others.

TRAFFIC REQUIREMENTS

A. One lane of alternating residential and emergency traffic must be able to pass at all times.

B. Excavated sewer services must be plated at all times prior to backfilling.

C. Comply with the requirements of Section 01570.

EXCAVATIONS

A. Test Pits

1. Prior to the start of any construction, the Contractor must conduct test pits as shown on the Contract Drawings and at locations where conflicts between existing piping and/or utilities may occur.

2. Test pits to be conducted to field verify exact size, material, location, elevation, alignment (vertical and horizontal) of existing piping and utilities

3. The Contractor is to provide record of utility elevation, size, material, and alignment to the Engineer upon completion of the test pits. The Contractor shall notify the Engineer of any conflicts between the proposed piping and existing piping or utilities prior to starting installation of the proposed piping.

B. Hand Digging

1. Due to the potential of conflict between existing utility infrastructure and the proposed work within the municipal right-of-way, the Contractor may be required to hand dig in locations where conflict exists between the proposed piping and existing utilities. The Contractor should expect hand digging to be required and will not receive additional compensation for hand digging.

C. Excavation Support

1. The Contractor shall furnish and install, as required, temporary excavation support including sheeting, shoring, and bracing of shallow trench excavations as necessary to comply with applicable Safety Code; to accommodate traffic; to permit access to adjacent occupied properties; to protect adjacent buildings, pavements, structures and all existing utilities; to provide an opening of proper depth and width in which to install the proposed pipes and other underground structures; and to protect his workmen, employees of the Owner and Engineer, State and the public, from death or injury from bank failure, earth collapse or earth movement of any nature whatsoever.

WORK IN PRIVATE/EASEMENT AREAS

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.

PAVING

The contractor is required to pave trenches once a week on Fridays.

COORDINATION WITH POLICE & FIRE

The Contractor is required to coordinate his work daily with the Town of Wareham Police and Fire Departments.

Contractor Questions:

1. **Q:** Can you verify the connection types and model of gate valves to be used for Bid Items 2A, 2B, 2C, 2D, and 2E?

   A: Threaded stainless steel ball valves are acceptable for use inside low-pressure sewer manholes. See low-pressure structure details on plan sheet CD-1.

2. **Q:** Referencing the detail for a sewer service on sheet CD-1 calls for a stainless steel corporation coming off a tee. With the main line being HDPE should a tapping saddles be used?

   A: HDPE tees or tapping saddles may be used for the sewer services and stainless steel corporation stops can be installed on the service line in close proximity to the tee.

3. **Q:** Can you verify if the corps, curbs and check valves need to be stainless steel as well as acceptable manufactures? There is a list for water services but not the sewer services.

   A: Corporation stops and curb stop/check valve assemblies are to be stainless steel. Lateral Connection from Langley, BC is an acceptable manufacturer.

4. **Q:** We would like to ask if the pre bid meeting scheduled for 8/10/2022 is mandatory?

   A: No, the pre-bid meeting is not mandatory.

5. **Q:** Please confirm the size of the power supply conduit.

   A: One-inch schedule 40 PVC pipe is acceptable.

6. **Q:** Please confirm the size of the wet well vent and material type.

   A: Two-inch schedule 40 PVC pipe is acceptable.

7. **Q:** Please confirm where the sewer FM is to be sleeved I do not see this shown on the plans but called out on the bid form.

   A: See notes 1 and 2 on plan sheets C-1 thru C-12. "1. Proposed sewer force main to maintain 10 lf horizontal separation from water main where possible. Where proposed sewer force main is within 10 lf and at all water main crossings proposed water main shall be sleeved. 2. Proposed sewer service laterals that cross over existing water mains shall be sleeved from the proposed grinder pump to the proposed sewer force main."

8. **Q:** I am sure you are all aware about the supply chain issues we are experiencing. I was wondering if the Town will be working with us on time extensions if needed as I read the time seems too tight at 140 days?

   A: A time extension will be granted if documentation that demonstrates the delay is provided.

9. **Q:** Can Liberty Pumps be used in lieu of E-one?

   A: Full compliance with the contract documents is required.

10. **Q:** Can you provide a plan holders list for this project?

    A: There is no plan holders list. Bidders are required to check and download contract documents and addenda from the Town's website. https://www.wareham.ma.us/bids-rfps

11. **Q:** For Addendums that are issued: When acknowledging and addendum, does the actual paperwork associated with the addendum also need to be submitted with the bid? If so, if the bidder does not submit this paperwork with the bid proposal is the bid rejected?

    A: The actual addendum does not have to be submitted with the bid but it does have to be acknowledged that it was received in section 00300 page 12.

12. **Q:** Item 7 Test Pits – Does this item include the test pits required to locate existing house sewer services?

    A: Locating existing sewer service laterals is included in Bid Items 5A and 5B. Test pits shall be included in these 2 items as well.

13. **Q:** Item 14A Processed Aggregate (10-inch) – It was mentioned in the Pre-Bid conference that gravel base will match existing gravel base on the roadway. So is every trench to have a minimum of 10-inches? Also for the roads that are already graveled is this item used for those as well?

    A: Yes, every trench will have a minimum of 10-inches of processed aggregate. This item is used for trench paving (see paving detail on plan sheet CD-3). It will also be used for the top 10-inches of existing gravel roads as these roads will not receive trench paving.

14. **Q:** Item 19A Management of Soils – Can you explain what this item is for? And if possible, could there be an allowance set for this item?

    A: This item is used for the stockpiling and testing of any excess soil generated during the project to determine if there is any contamination. If contamination is present the soil will be disposed of properly under Item 19B.

15. **Q:** Items 22A thru 22D – Will there be escalation allowances set for these items? Or will the contractor just submit and escalation dollar amount based on the Base Price if needed?

    A: The Contractor shall track the escalation/de-escalation amounts on a monthly basis on the pay applications and at the close of the job the contractor or owner shall be paid based on the balance owed over the duration of the job at the close of the job.

16. **Q:** Contract completion days – With the volatile market and issues getting products in a timely matter, will the contract completion date be extended in these cases?

    A: See answer #8.

17. **Q:** Could you tell me the amps/volts needed for grinder pumps? Pump size?

    A: See specification 11306 section 2.04B for electrical requirements. See specification 11306 section 1.03 A 3 for pump specs. The pump shall be able to accommodate flows of 700 gallons per day.

18. **Q:** Page 00200-5 of the Specifications states: "Bidders shall not remove and submit the Bid pages separate from the volume of Contract Documents, but shall submit the Bids bound with the complete volume of attached Contract Documents, including all pages correctly assembled." There are several Divisions and Sub-Divisions within this document (as listed below). Are all these Divisions and Sub-Divisions to be included with our bid? (330 pages). If not, could you please specify which Divisions and Sub-Divisions should be included in our bid?

    A: The complete specification book (all 330 pages) shall be submitted including the bid.

Contractor Questions from Pre-Bid Meeting:

19. **Q:** Some manholes on the plan are called out with air releases, what are the manholes that are not called out as air releases?

    A: Manholes not called out as being air release manholes on the plans are cleanout manholes. See plan sheet CD-1 for manhole details.

20. **Q:** Please clarify the last sentence of Note 14 on plan sheet C-1. "Grinder pump cores, electrical, venting and connection to existing gravity service will be completed by others."

    A: The pumps are not to be installed inside the pump station tanks, the electrical conduit, vent pipe and gravity service pipe are to be installed as shown on the grinder pump station detail on plan sheet CD-1. Also see spec section 01015 part 1.03 for further detail.

TOWN OF WAREHAM, MASSACHUSETTS
INSTALLATION OF LOW-PRESURE SEWER FORCE MAIN
PRE-BID MEETING
August 10, 2022 @ 10:00 AM

SIGN-IN SHEET

Name	Company	E-Mail	Telephone	Fax
Bill Irwin	CJP and Sons	Irwin_williams@hotmail.com	508-335-7263	508-876-898
John Pinciaro	CJP & Sons			
MANNY CABRAL	FERREIRA CONST.	MCABRAL@FERREIRACONSTRUCTION.COM	401-602 9696	
Andrew Zarlenga	Ferreira Const	AZARlenga@Ferreira Construction.com	401-318-2092	
David Marinelli	C.C Const	DMarinelli@CCConstruction.Net	617-892-3780	
Don DiGiacomo	Dig It Const.	INFO@DIGITCON.NET	774-602-0279	
Guy S Campinha	Wareham	gcampinha@wareham-ma.us	508-758-4250	
RYAN GREENWAY	BETA GROUP	RGREENWAY@BETA-INC.COM	401-333-2382	
Bill McMahon	RBO	bmcmahon@robertbaur.com	508 509 4053	

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SECTION 00200

INFORMATION FOR BIDDERS

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**, **Installation of Low-Pressure Sewer Force Main**, **Contract No. 2022-001** 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 Tonys Lane
Wareham, MA 02571
Attn: Guy Campinha, Director of Water Pollution Control

Endorsed: "**Installation of Low-Pressure Sewer Force Main**, **Contract No. 2022-001**".

Delivered by: **10:00 A.M. local time on Thursday August 18, 2022**

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 "**Installation of Low-Pressure Sewer Force Main**, **Contract No. 2022-001".**

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 https://www.wareham.ma.us/bids-rfps on **Wednesday August 3, 2022.**

B. The Contractor shall be responsible for retrieving and acknowledging all addenda that will be posted on the Town's website at https://www.wareham.ma.us/bids-rfps

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 Friday August 12, 2022 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 pre-bid conference advising bidders of bid conditions and Affirmative Action guidelines will be held on **Wednesday, August 10, 2022**, at **10:00 A.M.**, local time at the **Water Pollution Control Facility, 6 Tonys Lane, 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 of 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 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.

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
"**Installation of Low-Pressure Sewer Force Main, Contract No. 2022-001**".

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.)

Item Number	Estimated Quantity	Brief Description: unit or lump-sum price bid in both words and figures.	Total in Figures
1A	125 lin. ft.	Install 1-1/4-inch HDPE low-pressure sewer pipe, per linear foot, _____dollars and_____cents ($_____)	$_____
1B	150 lin. ft.	Install 1-1/2-inch HDPE low-pressure sewer pipe, per linear foot, _____dollars and_____cents ($_____)	$_____
1C	1,750 lin. ft.	Install 2-inch HDPE low-pressure sewer pipe, per linear foot, _____dollars and_____cents ($_____)	$_____
1D	1,600 lin. ft.	Install 3-inch HDPE low-pressure sewer pipe, per linear foot, _____dollars and_____cents ($_____)	$_____
1E	825 lin. ft.	Install 4-inch HDPE low-pressure sewer pipe, per linear foot, _____dollars and_____cents ($_____)	$_____
1F	1,000 lin. ft.	Install 2-inch schedule 40 PVC sleeving pipe for low-pressure sewer services, per linear foot, _____dollars and_____cents ($_____)	$_____

Item Number	Estimated Quantity	Brief Description: unit or lump-sum price bid in both words and figures.	Total in Figures
1G	1,450 lin. ft.	Install schedule 40 PVC sleeving pipe for low-pressure sewer main, all diameters, per linear foot, _____dollars and_____cents ($_____)	$_____
2A	2 valve	Install 1-1/4-inch stainless steel sewer ball valve, per valve, _____dollars and_____cents ($_____)	$_____
2B	2 valve	Install 1-1/2-inch stainless steel sewer ball valve, per valve, _____dollars and_____cents ($_____)	$_____
2C	6 valve	Install 2-inch stainless steel sewer ball valve, per valve, _____dollars and_____cents ($_____)	$_____
2D	6 valve	Install 3-inch stainless steel sewer ball valve, per valve, _____dollars and_____cents ($_____)	$_____
2E	9 valve	Install 4-inch stainless steel sewer ball valve, per valve, _____dollars and_____cents ($_____)	$_____
3A	5 manhole	Sewer main air release manhole, complete, per manhole, _____dollars and_____cents ($_____)	$_____

Item Number	Estimated Quantity	Brief Description: unit or lump-sum price bid in both words and figures.	Total in Figures
3B	8 manhole	Sewer main cleanout and flushing manhole, complete, per manhole, _____dollars and_____cents ($_____)	$_____
4A	120 stop	Sewer service corporation stop, per stop, _____dollars and_____cents ($_____)	$_____
4B	120 stop	Sewer service curb stop and check valve assembly, per stop, _____dollars and_____cents ($_____)	$_____
4C	1,550 lin. ft.	Sewer service HDPE pipe, per linear foot, _____dollars and_____cents ($_____)	$_____
5A	95 station	Simplex sewer grinder pump station, per pump station, _____dollars and_____cents ($_____)	$_____
5B	25 station	Duplex sewer grinder pump station, per pump station, _____dollars and_____cents ($_____)	$_____

Item Number	Estimated Quantity	Brief Description: unit or lump-sum price bid in both words and figures.	Total in Figures
5C	600 vert. foot	Sewer grinder pump station manhole wall & flat top, per vertical foot,	
		_____dollars	
		and_____cents ($_____)	$_____
5D	120 set	Sewer grinder pump station 36-inch diameter manhole frame & cover, per set,	
		_____dollars	
		and_____cents ($_____)	$_____
6A	140 lin. ft.	Install 1-1/2-inch polyethylene water service pipe, per linear foot,	
		_____dollars	
		and_____cents ($_____)	$_____
6B	1 each	Install 1-1/2-inch corporation stop, each,	
		_____dollars	
		and_____cents ($_____)	$_____
6C	1 each	Install 1-1/2-inch curb stop, each,	
		_____dollars	
		and_____cents ($_____)	$_____
6D	1 each	Abandon existing water gate box, each,	
		_____dollars	
		and_____cents ($_____)	$_____

Item Number	Estimated Quantity	Brief Description: unit or lump-sum price bid in both words and figures.	Total in Figures
6E	1 each	Abandon existing water service, each,	
		_____dollars	
		and_____cents ($_____)	$_____
7	300* cu. yd.	Earth excavation and backfill for test pits, per cubic yard,	
		_____dollars	
		and_____cents ($_____)	$_____
8	25* cu. yd.	Earth Excavation Below Normal Depth, per cubic yard,	
		_____dollars	
		and_____cents ($_____)	$_____
9	25* cu. yd	Rock Excavation and Disposal, per cubic yard,	
		_____dollars	
		and_____cents ($_____)	$_____
10	25* cu. yd.	Additional ¾-Inch Crushed Stone, per cubic yard,	
		_____dollars	
		and_____cents ($_____)	$_____
11	25* cu. yd.	Additional Gravel Borrow, per cubic yard,	
		_____dollars	
		and_____cents ($_____)	$_____

Item Number	Estimated Quantity	Brief Description: unit or lump-sum price bid in both words and figures.	Total in Figures
12	25* cu. yd.	Additional concrete, as directed, per cubic yard, _____dollars and_____cents ($_____)	$_____
13	25* cu. yd.	Additional control density fill, as directed, per cubic yard, _____dollars and_____cents ($_____)	$_____
14A	550 cu. yd.	Processed aggregate base course (10-inch), per cubic yard, _____dollars and_____cents ($_____)	$_____
14B	6,000 lin. ft.	Temporary trench width bituminous pavement (4-inch), per linear foot, _____dollars and_____cents ($_____)	$_____
14C	750 sq. yd.	Gravel borrow for driveway aprons (8-inch), per square yard, _____dollars and_____cents ($_____)	$_____
14D	150 sq. yd.	Remove and replace existing concrete driveway aprons (6-inch), per square yard, _____dollars and_____cents ($_____)	$_____

Item Number	Estimated Quantity	Brief Description: unit or lump-sum price bid in both words and figures.	Total in Figures
14E	600 sq. yd.	Remove and replace existing bituminous concrete driveway aprons (3-inch), per square yard,	
		_____dollars	
		and_____cents ($_____)	$_____
15	600 lin. ft.	Staked straw wattles, per linear foot,	
		_____dollars	
		and_____cents ($_____)	$_____
16	20 each	Catch basin erosion control protection, per each,	
		_____dollars	
		and_____cents ($_____)	$_____
17	5* each	Install tree protection, all sizes, per tree,	
		_____dollars	
		and_____cents ($_____)	$_____
18	1 Allowance	Utility relocation, allowance,	
		Twenty Thousand dollars	
		and Zero cents ($ 20,000.00)	$ 20,000.00
19A	1 L.S.	Management of soils/fill and suspect materials, lump sum	
		_____dollars	
		and_____cents ($_____)	$_____

Item Number	Estimated Quantity	Brief Description: unit or lump-sum price bid in both words and figures.	Total in Figures
19B	1 Allowance	Allowance for disposal of contaminated material, as directed, allowance Ten Thousand dollars and Zero cents ($ 10,000.00)	$ 10,000.00
20	1 Allowance	Uniformed traffic officers, allowance, Eighty Five Thousand dollars and Zero cents ($ 85,000.00)	$ 85,000.00
21	1 L.S.	Mobilization and demobilization, lump sum _____dollars and_____cents ($_____)	$_____
22A	N/A N/A	Price adjustment for liquid asphalt, (Base Price = $800.00)	$ N/A
22B	N/A N/A	Price adjustment for diesel fuel, (Base Price = $4.988)	$ N/A
22C	N/A N/A	Price adjustment for gasoline, (Base Price = $4.265)	$ N/A
22D	N/A N/A	Price adjustment for portland cement, (Base Price = $182.35)	$ N/A

*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 issued.)

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.

Name	Residence	Title	Firm

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.

Name	Address

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)

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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 REPLACEMENT

BID ITEM NO.	1A	INSTALL 1-1/4-INCH HDPE LOW PRESSURE SEWER PIPE
	1B	INSTALL 1-1/2-INCH HDPE LOW PRESSURE SEWER PIPE
	1C	INSTALL 2-INCH HDPE LOW PRESSURE SEWER PIPE
	1D	INSTALL 3-INCH HDPE LOW PRESSURE SEWER PIPE
	1E	INSTALL 4-INCH HDPE LOW PRESSURE SEWER PIPE
	1F	INSTALL 2-INCH SCHEDULE 40 PVC SLEEVING PIPE FOR LOW-PRESSURE SEWER SERVICES
	1G	INSTALL SCHEDULE 40 PVC SLEEVING PIPE FOR LOW-PRESSURE SEWER MAIN, ALL DIAMETERS

1. The lengths of low-pressure sewers and low-pressure sewer sleeving to be paid for under these Items shall be measured by the linear foot along the horizontal projection of the centerline of the completed low-pressure sewer or low-pressure sewer sleeving.

2. The unit prices for Items 1A thru 1E shall constitute full compensation for constructing low pressure sewers, complete, as indicated on the Drawings and as specified, including all incidental work not specifically included for payment under other Items.

3. The unit prices for Items 1F thru 1G shall constitute full compensation for constructing low-pressure sleeving pipe, complete, as indicated on the Drawings and as specified, including all incidental work not specifically included for payment under other Items.

4. The unit prices shall constitute full compensation for furnishing and installing low pressure sewers, for sizes and classes specified, for saw cutting existing pavement, furnishing and installing all any bends, caps and any other fittings, complete, as needed and directed by the Engineer to complete the work, removal and disposal of excavated bituminous concrete, concrete or reinforced concrete road base, if encountered, excavation and backfill, dewatering of groundwater, maintaining of existing sanitary flows, disposal of excess material, laying and jointing pipe, furnishing and installing pipe bedding, connections to the low pressure mains, dust control measures, disinfection, pressure testing, as indicated on the Drawings and as specified, and all work incidental thereto, and all work not specifically included for payment under other items.

5. The unit price shall also include restoration of all Items including fencing, loaming, seeding, and replacement of trees or plantings disturbed by the Contractor's operations, to

a condition at least equal to a condition which existed prior to construction, as directed by the Engineer, at no additional cost to the Owner.

6. The unit price for these items shall also constitute full compensation for public notification and coordination of service interruptions with private and public users, bypassing individual service connections if required, **providing a pre-construction and post condition video showing the pre and post condition of the work areas, traffic control requirements** and all other work incidental thereto and not specifically included for payment under other items.

BID ITEM NO.	2A	1-1/4-INCH STAINLESS STEEL SEWER BALL VALVE
	2B	1-1/2-INCH STAINLESS STEEL SEWER BALL VALVE
	2C	2-INCH STAINLESS STEEL SEWER BALL VALVE
	2D	3-INCH STAINLESS STEEL SEWER BALL VALVE
	2E	4-INCH STAINLESS STEEL SEWER BALL VALVE

1. The number of valves to be paid for under these Items shall be equal to the actual number of valves installed. The unit price shall constitute full compensation for furnishing and installing valves and valve boxes complete and as directed by the Engineer, and all work not specifically included for payment under other items.

BID ITEM NO.	3A	SEWER MAIN AIR RELEASE MANHOLE
	3B	SEWER MAIN CLEANOUT AND FLUSHING MANHOLE

1. The number of air release manholes installed shall be equal to the actual number of air release valves installed complete with manhole.

2. The number of cleanout and flushing manholes installed shall be equal to the actual number of cleanout manifolds installed complete with manhole.

3. The unit price shall constitute full compensation for furnishing and installing sewer main air release manholes and sewer main cleanout and flushing manholes complete as specified, and as shown on the Contract Drawings, including all materials fittings, adapters, tapping the pipe, access manhole including manhole base, riser, cone, frame and cover, excavating, excavation support, dewatering, bedding, filter fabric, backfill, compacting, and all work and materials required to complete the work as indicated on the Drawings and as specified.

BID ITEM NO.	4A	SEWER SERVICE CORPORATION STOP
	4B	SEWER SERVICE CURB STOP AND CHECK VALVE ASSEMBLY
	4C	SEWER SERVICE HDPE PIPE

1. The number of corporation stops to be paid for shall be equal to the actual number of corporation stops furnished and installed.

2. The unit price shall constitute full compensation for tapping the low-pressure sewer main, furnishing and installation corporation stops, complete, as indicated on the Drawings.

3. The number of curb stop and check valve assemblies to be paid for under shall be equal to the actual number of curb stop and check valve assemblies furnished and installed. The unit price shall include excavation, including removal and disposal of bituminous concrete, bedding, backfill and restoration of property to include loaming, seeding, and curbing (granite or concrete reset in concrete), bituminous berm and in-kind sidewalk restoration.

4. The unit price for curb stop and check valve assemblies with boxes for all sizes up to 2-inch diameter shall constitute full compensation for furnishing and installing curb stops, curb stop boxes, and all necessary restraint devices, as required, and directed by the Engineer to complete the work, and all work not specifically included for payment under other items.

5. The length of service HDPE pipe to be paid for under the appropriate Item shall be measured by the linear foot along the horizontal projection of the centerline of the completed connection, the lengths of valves or fittings shall not be deducted.

6. The unit price shall constitute full compensation for furnishing and installing service pipe from the corporation stop to the curb stop with fittings, saddles and adapters as necessary and shown on the Drawings, including connection to the existing service. Excavation, including saw cutting existing pavement, concrete or reinforced concrete road base, if encountered, removal and disposal of bituminous concrete, concrete or reinforced concrete road base, if encountered, dewatering, bedding, backfill and restoration of property to include loaming, seeding, curbing (granite or concrete reset in concrete), bituminous berm, all types of sidewalk reconstruction and dust control measures and all other incidental work not included under other Items.

BID ITEM NO. 5A SIMPLEX SEWER GRINDER PUMP STATION

1. The number of simplex sewer grinder pump stations to be paid for shall be equal to the actual number of simplex sewer grinder pump station furnished and installed.

2. The unit price for this Item shall constitute full compensation for furnishing all labor, materials, tools and equipment necessary, and for constructing simplex sewer grinder pump stations, complete, including but not limited to locating the existing sewer service lateral, site preparation, designing and implementing support of excavation and dewatering systems protection of existing structures and utilities. All excavation, test pits, disposal of surplus material, bedding, concrete slab construction, backfill, compaction, structural, mechanical, instrumentation and all associated appurtenant work, as indicated on the drawings and as specified, and including all incidental Items required to enable the station to function as specified and intended.

3. The unit price shall also include restoration of all Items including fencing, loaming, seeding, and replacement of trees or plantings disturbed by the Contractor's operations, to a condition at least equal to a condition which existed prior to construction, as directed by the Engineer, at no additional cost to the Owner.

BID ITEM NO. 5B DUPLEX SEWER GRINDER PUMP STATION

1. The number of duplex sewer grinder pump stations to be paid for shall be equal to the actual number of duplex sewer grinder pump station furnished and installed.

2. The unit price for this Item shall constitute full compensation for furnishing all labor, materials, tools and equipment necessary, and for constructing duplex sewer grinder pump stations, complete, including but not limited to locating the existing sewer service lateral, site preparation, designing and implementing support of excavation and dewatering systems protection of existing structures and utilities. All excavation, test pits, disposal of surplus material, bedding, concrete slab construction, backfill, compaction, structural, mechanical, instrumentation and all associated appurtenant work, as indicated on the drawings and as specified, and including all incidental Items required to enable the station to function as specified and intended.

3. The unit price shall also include restoration of all Items including fencing, loaming, seeding, and replacement of trees or plantings disturbed by the Contractor's operations, to a condition at least equal to a condition which existed prior to construction, as directed by the Engineer, at no additional cost to the Owner.

BID ITEM NO. 5C SEWER GRINDER PUMP STATION MANHOLE WALL & FLAT TOP

1. The quantity of sewer grinder pump station manhole wall and flat tops installed shall be measured by the vertical foot of manhole wall installed including the flat top cover.

2. The unit price for this Item shall constitute full compensation for furnishing and installing new manhole wall and flat top cover, complete as indicated on the Drawings and as specified or as otherwise directed by the Engineer, including all materials fittings, adapters, drilling or coring of manhole wall, excavating, excavation support, dewatering, bedding, filter fabric, backfill, compacting, and all work and materials required to complete the work as indicated on the Drawings and as specified.

BID ITEM NO. 5D SEWER GRINDER PUMP STATION 36-INCH DIAMETER MANHOLE FRAME & COVER

1. The quantity of sewer grinder pump station 36’inch diameter manhole frames and covers to be paid for under this Item shall be measured by the actual number of sets furnished and installed.

2. The unit price for this Item shall constitute full compensation for furnishing and installing the sets of frames and covers, complete as indicated on the Drawings and as specified.

WATER REPLACEMENT

BID ITEM NO. 6A INSTALL 1-1/2-INCH POLYETHYLENE WATER SERVICE PIPE

1. The length of service connections to be paid for under this Item shall be measured by the linear foot along the horizontal projection of the centerline of the completed connection, the lengths of valves or fittings shall not be deducted.

2. The unit price shall constitute full compensation for furnishing and installing polyethylene tubing service pipe at a minimum depth of 4-feet, unless otherwise directed by the Engineer, from the corporation stop to the curb stop with fittings and adapters as necessary and shown on the Drawings, including connection to the existing service. Excavation, including saw cutting existing pavement, removal and disposal of bituminous concrete, removal and disposal of existing water service, dewatering, bedding, backfill and restoration of property to include loaming, seeding and dust control measures and all other incidental work not included under other Items.

BID ITEM NO. 6B INSTALL 1-1/2-INCH CORPORATION STOP

1. The number of 1-1/2-inch corporation stops to be paid for under this Item shall be equal to the actual number of 1-1/2-inch corporation stops furnished and installed.

2. The unit price shall constitute full compensation for tapping the water main, furnishing and installation of required service connection saddles and corporation stops, complete, as indicated on the Drawings.

3. The unit price for this Item shall also include cleaning the exterior of existing and new water main requiring service connection saddles.

BID ITEM NO. 6C INSTALL 1-1/2-INCH CURB STOP

1. The number of 1-1/2-inch curb stops to be paid for under this Item shall be equal to the actual number of 1-1/2-inch curb stops furnished and installed. The unit price shall include excavation, including removal and disposal of bituminous concrete, bedding, backfill and restoration of property to include loaming and seeding.

2. The unit price for 1-1/2-inch curb stops shall constitute full compensation for furnishing and installing curb stops, curb stop boxes, and all necessary restraint devices, as required, and directed by the Engineer to complete the work, and all work not specifically included for payment under other items.

BID ITEM NO. 6D ABANDON EXISTING WATER GATE BOX

1. The number of abandoned existing water gate boxes to be paid for under this Item shall be equal to the actual number of existing water gate boxes abandoned.

2. The unit price shall constitute full compensation for removal and disposal of existing water gate boxes below grade, backfilling and compacting, finishing surface with material (asphalt, concrete, loam and seed, as appropriate) that matches the surrounding surface material and all other work necessary and as directed by the Engineer to complete the work, and all work not specifically included for payment under other items.

BID ITEM NO. 6E ABANDON EXISTING WATER SERVICE

1. The number of abandoned existing water services to be paid for under this Item shall be equal to the actual number of existing water services abandoned.

2. The unit price shall constitute full compensation for excavation of existing water corporation stops, deactivation of existing water corporation stops, cutting of existing water service piping, backfilling and compacting, finished surface with material (asphalt, concrete, loam and seed, as appropriate) that matches the surrounding surface material and all other work necessary and as directed by the Engineer to complete the work, and all work not specifically included for payment under other items.

EXCAVATION MATERIAL

BID ITEM NO. 7 EARTH EXCAVATION AND BACKFILL FOR TEST PITS

1. The quantity of earth excavation and backfill to be paid for under this Item shall be the number of cubic yards excavated and backfilled, measured to the extent of the work done as ordered by the Engineer or as indicated on the Drawings for test pits.

2. The unit price shall constitute full compensation for sawcutting existing bituminous concrete and reinforced concrete road base, removal and disposal of existing bituminous concrete and reinforced concrete road base, excavation, backfill and compaction for test pits including hand digging if required, and replacing the existing pavement as authorized by the Engineer.

3. The unit price shall also include collection and recording of data and existing conditions discovered and submitted to the Engineer as a result of the test pit.

4. The quantity identified in the Bid is an indeterminate quantity to be utilized for comparison of bids. The unit price for this Item shall be utilized for the entire project (i.e. base bid work and any bid alternate work included in the Contract) should the Item be required.

BID ITEM NO. 8 EARTH EXCAVATION BELOW NORMAL DEPTH

1. The quantity of earth excavation below normal depth (limit of normal excavation) to be included for payment under this Item shall be the number of cubic yards of unsuitable material excavated, as determined by the Engineer, measured to the depths and lengths ordered, and to the width between payment limits for normal excavation as indicated on the Drawings.

2. The unit price shall constitute full compensation for excavation below normal depth and proper disposal of unsuitable material. Replacement of excavated material shall be paid for under the appropriate material Item as directed by the Engineer.

3. The quantity identified in the Bid is an indeterminate quantity to be utilized for comparison of bids. The unit price for this Item shall be utilized for the entire project (i.e. base bid work and any bid alternate work included in the Contract) should the Item be required.

BID ITEM NO. 9 ROCK EXCAVATION AND DISPOSAL

1. Where rock is encountered, it shall be uncovered but not excavated until measurements have been made by the Engineer, unless in the opinion of the Engineer, satisfactory measurements can be made in some other manner.

2. The quantity of rock to be paid for under these Items shall be the number of cubic yards of rock, measured in place before excavation, within the trench width payment limits indicated on the Drawings, or limits of actual excavation, whichever is smaller, and as defined in the Specifications, unless rock excavation beyond such limits has been authorized by the Engineer, in which case, measurements shall be made to the authorized limits.

3. Excavated rock which in the opinion of the Engineer has not been properly disposed of shall not be included for payment.

4. The bidder shall include in his bid for items involving excavation, the cost of doing the entire excavation as earth, the price for these Items being intended to cover the difference between the cost of rock excavation and the cost of earth excavation. The unit price for these items shall be paid in addition to any payment made for earth excavation.

5. The unit price for these Items shall constitute full compensation for rock excavation and disposal, for all necessary backfilling, and for furnishing all additional material needed to replace removed rock for backfilling. All additional material to be used as backfill shall be suitable as determined by the Engineer in accordance with Specification Section 02200.

6. The quantity identified in the Bid is an indeterminate quantity to be utilized for comparison of bids. The unit price for this Item shall be utilized for the entire project (i.e. base bid work and any bid alternate work included in the Contract) should the Item be required.

ADDITIONAL MATERIALS

BID ITEM NO. 10 ADDITIONAL 3/4-INCH CRUSHED STONE

1. Crushed stone backfill below normal depth shall be paid for under this Item. The quantity of additional 3/4-inch crushed stone backfill below normal depth to be paid for shall be the same as that number of cubic yards of earth excavation below normal depth

measured for payment under the Item "Excavation Below Normal Depth", which said stone replaces.

2. Additional crushed stone used for support of existing utilities or ordered by the Engineer to be used at other locations shall be paid for under this Item. The quantity to be paid for shall be the number of cubic yards measured in place after compaction, of additional crushed stone within the limits directed by the Engineer.

3. Crushed stone used for bedding pipe, to backfill authorized excavations, for any drainage purpose, or as indicated on the Drawings for work for which appropriate payment Items have been provided, shall not be measured for payment under this Item.

4. Crushed stone used to backfill rock excavations will not be measured for payment under this Item but shall be included as part of the unit price for "Rock Excavation and Disposal".

5. Crushed stone used to backfill and/or fill around and/or beneath the structures will not be measured for payment under this Item, but shall be included as part of the appropriate lump sum price for the structures.

6. The unit price shall constitute full compensation for furnishing, placing, and compacting crushed stone, as specified.

BID ITEM NO. 11 ADDITIONAL GRAVEL BORROW

1. Gravel borrow backfill below normal depth shall be paid for under this Item. The quantity of gravel borrow backfill below normal depth to be paid for shall be the same as the number of cubic yards of earth excavation below normal depth measured for payment under the Item "Excavation Below Normal Depth", which said gravel replaces.

2. Gravel borrow ordered by the Engineer for backfill of trenches above normal depth shall be paid for under this Item. The quantity of gravel used as backfill for trenches above normal depth shall be measured by the cubic yards to the depth and length ordered by the Engineer and to the width between payment limits for normal excavation as indicated on the Drawings. Gravel borrow outside the limits of normal excavation shall be furnished, placed, and compacted at the Contractor's expense, and no measurement will be made for such gravel.

3. Gravel borrow ordered to be used at other locations shall be measured after compaction and paid for under this Item as the number of cubic yards of gravel actually placed and compacted as directed.

4. Gravel borrow used to backfill rock excavations will not be measured for payment under this Item but shall be included as part of the unit price for "Rock Excavation and Disposal".

5. Gravel borrow used to backfill and/or fill around and/or beneath structures will not be measured for payment under this Item but shall be included as part of the appropriate lump sum price for the structures.

6. The unit price shall constitute full compensation for furnishing, placing, and compacting gravel borrow, as specified.

BID ITEM NO. 12 ADDITIONAL CONCRETE

1. The quantity of additional concrete to be measured for payment under this Item shall be the number of cubic yards placed as directed by the Engineer.

2. No measurement shall be made under this Item for concrete used as indicated on the Drawings for work for which appropriate payment Items have been provided or for concrete used to backfill unauthorized excavations.

3. The unit price shall constitute full compensation for furnishing and placing additional concrete regardless of class or strength, as directed by the Engineer and as specified.

BID ITEM NO. 13 ADDITIONAL CONTROL DENSITY FILL

1. The quantity of control density fill to be paid shall be the number of cubic yards of control density fill installed in place in the field.

2. The unit price shall constitute full compensation for removal and disposal of excavated material, and furnishing and placing of control density fill as required and directed by the Engineer.

3. The unit price shall constitute full compensation for furnishing, installing and necessary procedures, materials and equipment to protect until set-up, control density fill, as specified.

4. The unit price shall constitute full compensation for furnishing and installing the controlled density fill in all water pipes to be abandoned.

5. The quantity identified in the Bid is an indeterminate quantity to be utilized for comparison of bids. The unit price for this Item shall be utilized for the entire project (i.e. base bid work and any bid alternate work included in the Contract) should the Item be required.

PAVEMENT RESTORATION

1. The unit prices for pavement restoration shall constitute full compensation for saw cutting, removal and disposal of all existing pavement including any existing bituminous, concrete or reinforced concrete base, if encountered; excavation to the required depth; special compaction requirements; removal and disposal of any temporary pavement; casting and valve box adjustments, as directed; cutting and matching existing pavement; furnishing and applying required prime coats and emulsions; removal and replacement;

safety precautions including construction warning signs and barricades during the project; trench closing and openings ordered by the Engineer; obtaining all necessary roadway permits and/or approvals from state and local agencies; and constructing the pavement complete, including sidewalks and driveways, as specified and as indicated and not specifically included for payment under other Items.

2. The unit prices for pavement restoration shall also include the costs to remove and replace inductance loop vehicle detector wiring (traffic loops), and the cost to replace pavement markings which existed prior to construction as specified.

BID ITEM NO. 14A PROCESSED AGGREGATE BASE COURSE (10-INCH)

1. The quantity of processed aggregate base course to be paid for under this Item shall be equal to the amount of processed aggregate base course installed, measured by the cubic yard to the payment limits indicated on the Drawings.

2. The unit price shall constitute full compensation for furnishing and installing the processed aggregate base course, complete as specified and/or detailed on the Drawings.

3. Material taken from excavations deemed suitable by the Engineer, for use as processed aggregate base course shall not be included for payment under this Item.

BID ITEM NO. 14B TEMPORARY TRENCH WIDTH BITUMINOUS PAVEMENT (4-INCH)

1. The quantity of temporary trench width bituminous pavement (4-inch) to be paid for under this item shall be equal to the actual amount of bituminous pavement, furnished and installed, measured by the linear foot of pavement installed as indicated on the Drawings or as directed by the Engineer.

2. The unit price for permanent bituminous pavement restoration shall constitute full compensation for furnishing and installing the bituminous pavement, saw cutting, removal and disposal of any temporary and existing pavement, excavation to the required depth, additional bedding materials, special compaction requirements; grading and matching existing pavement; applying required prime coats and tack coats; hand work necessary for sidewalks; and constructing the pavement complete, as specified and as indicated and not specifically included for payment under other items.

3. Total tonnage slips must be submitted from the production plant.

4. The unit price shall also include soil compaction test every 500 feet or as directed by the Engineer. Soil Compaction tests shall be performed prior to the installation of the binder pavement course.

BID ITEM NO. 14C GRAVEL BORROW FOR DRIVEWAY APRONS (8-INCH)

1. The quantity of gravel borrow to be paid for under this Item shall be equal to the amount of gravel borrow installed, measured by the cubic yard to the payment limits indicated on the Drawings.

2. The unit price shall constitute full compensation for furnishing and installing the gravel borrow, complete as specified and/or detailed on the Drawings.

3. Material taken from excavations deemed suitable by the Engineer, for use as gravel borrow shall not be included for payment under this Item.

BID ITEM NO. 14D REMOVE AND REPLACE EXISTING CONCRETE DRIVEWAY APRONS (6-INCH)
14E REMOVE AND REPLACE EXISTING BITUMINOUS CONCRETE DRIVEWAY APRONS (3-INCH)

1. The quantity of concrete and bituminous concrete driveway aprons to be paid for under these Items shall be measured by the number of square yards of concrete and bituminous concrete actually placed in accordance with the Drawings and/or as directed by the Engineer.

2. The contractor shall match the depth of the existing driveway material up to a depth of 6-inches for concrete driveways and up to a depth of 3-inches for bituminous concrete driveways. The contractor will be paid on a prorated basis.

3. The unit price shall constitute full and complete compensation for all labor, materials and equipment, including expansion joint material, reinforcement, and all other incidentals required to finish the work, complete and accepted by the Engineer.

4. The unit price shall include saw cutting, removal and disposal of existing sidewalks, driveway aprons, trimming and fine grading gravel sub base, formwork, placing concrete and bituminous concrete, replacement of all signposts and resetting of curb boxes and castings all as required and not specifically included for payment under other items.

5. Processed aggregate base course will be paid for separately under the appropriate bid item.

MISCELLANEOUS

BID ITEM NO. 15 STAKED STRAW WATTLES

1. The quantity of staked straw wattles to be paid for under this Item shall be equal to the actual amount of staked straw wattles furnished and installed, measured by the linear foot along a horizontal projection of the centerline, complete, as indicated on the Drawings or as otherwise directed by the Engineer.

2. The unit price shall constitute full compensation for furnishing and supplying all labor,

materials and equipment for installing staked straw wattles, maintenance of straw wattles as shown and specified, removal and disposal of same, and restoration of property to its original condition.

3. There shall be no additional payment for replacement due to maintenance.

BID ITEM NO. 16 CATCH BASIN EROSION CONTROL PROTECTION

1. The quantity of catch basin erosion control protection to be paid for under this Item shall be equal to the actual amount of catch basins protected, complete, as indicated on the Drawings or as otherwise directed by the Engineer.

2. The unit price for this item shall constitute full compensation for furnishing, placing, and maintaining catch basin erosion control protection as indicated on the Drawings throughout the duration of this Contract.

3. The unit price shall also include removal and disposal thereof, complete or as otherwise ordered by the Engineer.

BID ITEM NO. 17 TREE PROTECTION

1. The quantity of tree protection to be paid for under this Item shall be the actual number of trees protected complete as indicated on the Drawings or as otherwise directed by the Engineer.

2. The unit price for this Item shall constitute full compensation for all labor and materials to protect trees as detailed on the Drawings complete.

3. The unit price shall also include the cost to remove and dispose of tree protection once construction is complete.

4. The quantity identified in the Bid is an indeterminate quantity to be utilized for comparison of bids. The unit price for this Item shall be utilized for the entire project (i.e. base bid work and any bid alternate work included in the Contract) should the Item be required

BID ITEM NO. 18 UTILITY RELOCATION ALLOWANCE

1. Under this Item, the Contractor shall be reimbursed for certain charges authorized by the Engineer for unforeseen utility relocations required and authorized by the Owner and Engineer.

2. The allowance for this Item established in the BID is an estimated figure to facilitate comparison of bids only. The actual amount to be paid under this Item shall constitute full compensation for wages paid premiums on workers' compensation insurance, payment on account for social security and other direct assessments on payroll, as may be required, and all other costs incidental to the services rendered.

3. The allowance for this Item shall NOT include any costs associated with services rendered for routine utility markings, repair damages incurred as a result of the Contractor's operations, relocations or dismantling and reassembling of utilities done at the Contractor's request and/or convenience, or any other unauthorized services rendered by utility companies. The purpose of this Item is strictly for the Contractor's reimbursement for those unforeseen services authorized by the Owner or Engineer prior to the work being performed.

4. The Contractor will be paid based on the actual PAID invoiced amount from the Utility Company in question as approved and authorized by the Owner/Engineer. If the total cost for such charges is greater or less than the allowance amount stated under this Item of the BID, a debit or credit of the difference in cost shall be to the Owner.

BID ITEM NO. 19A MANAGEMENT OF SOILS/FILL AND SUSPECT MATERIALS

1. Under this Item the Contractor shall be paid for management of soil/fill and suspect materials at the lump sum price stated in the Bid Schedule.

2. The lump sum price shall constitute full compensation for furnishing all labor, materials, tools, equipment, and incidentals required for soil/fill and suspect material; segregating, handling, staging, and characterization of all soil and fill material prior to final transport and disposal as well as the costs associated with characterizing the destination site as required to assess background conditions; all controls necessary to maintain compliance with regulatory requirements relative to handling contaminated soils and materials; submittal and approval of all required and specified Plans; characterization of all excavated soil and fill material handled; health and safety equipment; securing a staging area for stockpiling soil pending analytical testing, reuse, or disposal; protecting the stockpile areas. All costs related to transporting soils to and, if not disposed of offsite, from the staging area, if reused, shall be included for payment in this item; air monitoring; controlling the spread of airborne contaminants; all notifications, fees, permits, and taxes; and all other requirements specified in other sections of the Contract Documents; and all other requirements specified in other sections of the Contract Documents and any other work not covered by other Bid Items.

3. The Contractor will be eligible for payment for a portion of the lump sum price based on the Schedule of Values submitted in accordance with Section 00700, as approved by the Engineer.

BID ITEM NO. 19B ALLOWANCE FOR DISPOSAL OF CONTAMINATED MATERIAL

1. Under this item the Contractor shall be reimbursed for certain charges authorized by the Engineer for the services to remove, test, store and dispose of Contaminated soil.

2. The allowance for this item established in the Bid is an estimated figure to facilitate the comparison of bids only. 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, as may be required and all other costs incidental to the services rendered.

3. The quantity of contaminated material to be paid for under this Item shall be the actual number of tons of contaminated material disposed, as verified by the actual certified weight slips provided by the approved disposal facility. In the event that contaminated material is disposed at an approved disposal facility not having the ability to provide certified weight slips, tonnage shall be determined by volumetric measurement (in cubic yards) by the Engineer and converted to tonnage based on a conversion of 1.50 tons per cubic yard of material. The quantity of excess contaminated material disposed of shall be limited to the trench width payment limits indicated on the Drawings, or limits of actual excavation, whichever is smaller. Excess contaminated soils removed and disposed of outside the trench width payment limits will be determined by volumetric measurement (in cubic yards) by the Engineer and converted to tonnage based on a conversion of 1.50 tons per cubic yard of material, and subtracted from total tonnage for payment.

4. Payment will be based on the actual paid invoiced amount without allowance for mark up, overhead or profit.

BID ITEM NO. 20 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.

BID ITEM NO. 21 MOBILIZATION AND DEMOILIZATION

1. The lump sum price for this Item shall constitute full compensation for initiating the contract, exclusive of the cost of materials, for mobilizing all machinery, plant, tools, and other equipment necessary to carry on and complete the work.

2. The lump sum shall also include full compensation for furnishing the performance or surety bond and other securities required, all preliminary bidding and organizational expenses, necessary permits, construction of temporary roads, etc., and for all other

materials, supplies, tools, equipment, labor financing, supervision, temporary structures, field offices, sanitary conveniences, and any and all other expenses incurred in carrying out the work and furnishing the material, keeping records and making reports required, and assuming risks, which have not been included in the prices in other Items of the Proposal.

3. The lump sum price shall also include the cost of demobilization once the work, as detailed in the Drawings and Documents, is complete.

4. The lump sum price for this Item shall not exceed five percent (5%) of the total amount of this bid, with payment as follows:

    a. 50% when the Contractor has commenced Work on the Site in a diligent and continuous manner.

    b. 50% when the Contractor has completed all Work, removed all equipment and satisfied all requirements as detailed in the contract documents.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION NOT USED

END OF SECTION

SECTION 11306

PREFABRICATED SUBMERSIBLE GRINDER PUMPING STATIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes
   1. Furnishing complete, One Hundred and seventeen (117) factory-built and tested Wetwell/Drywell Grinder Pump Stations, each consisting of grinder pump suitably mounted in a basin constructed of high density polyethylene (HDPE).

B. Related Sections

   1. Section 01300 – Submittals
   2. Section 02200 - Earth Excavation, Backfill, Fill and Grading
   3. Section 02607 – Precast Concrete Manholes
   4. Section 03300 - Cast-In-Place Concrete

1.02 REFERENCES

A. American Concrete Institute
   1. ACI 318, Building Code Requirements for Structural Concrete
   2. ACI 350, Environmental Engineering Concrete Structures

B. Institute of Electrical and Electronics Engineers (IEEE)
   1. IEEE Std 100Standard Dictionary of Electrical Terms.
   2. IEEE Std 112Test Procedure for Polyphase Induction Motors.
   3. IEEE Std 242Protection of Industrial and Control Power Systems.

D. National Electric Code (NEC) / National Electrical Manufacturers Assoc. (NEMA)
   1. NEC, National Electrical Code.
   2. NEMA Std MG1Motors and Generators.

E. Miscellaneous References
   1. AISI, American Iron and Steel Institute.
   2. National Fire Protection Association (NFPA)
   3. Underwriters' Laboratories (UL)
   4. American Association of State Highway and Transportation Officials (AASHTO)

1.03 SYSTEM DESCRIPTION

A. Design Requirements
   1. The grinder pumping stations shall be designed for the continuous conveyance of raw, unscreened, domestic sanitary sewage thru automatic operation, for extended periods of time.
   2. The stations shall be designed for safe efficient operation in accordance with the details in these Contract Documents.
   3. Pumps shall be submersible sewage grinder pumps in accordance with this specification, and shall be capable of delivering 15 GPM against a rated total dynamic head of 0 feet (0 PSIG), 11 GPM against a rated total dynamic head of 92 feet (40 PSIG), and 7.8 GPM against a rated total dynamic head of 185 feet (80 PSIG). The pump(s) must also be capable of operating at negative total dynamic head without overloading the motor(s). Under no conditions shall in-line piping or valving be allowed to create a false apparent head.

B. Manufacturer

   1. Grinder pump stations, complete with all appurtenances, form an integral system, and as such, shall be supplied by one grinder pump station manufacturer. The **CONTRACTOR** shall be responsible for the satisfactory operation of the entire system. The equipment specified shall be a product of a company experienced in the design and manufacture of grinder pumps for specific use in low pressure sewage systems. The company shall submit detailed installation and user instructions for its product, submit evidence of an established service program including complete parts and service manuals, and be responsible for maintaining a continuing inventory of grinder pump replacement parts. The **MANUFACTURER** shall provide, upon request, a reference and contact list from ten of its largest contiguous grinder pump installations of the type of grinder pumps described within this specification.

   2. The **MANUFACTURER** of the grinder pump station shall be Environment One Corporation (or Proposed Alternate).

   3. Attention is directed to the fact that the drawings and overall system design are based on a particular piece of equipment from a particular manufacturer. These specifications are intended to provide guidelines for standard equipment of a recognized manufacturer who already meets all the requirements of this specification.

1.04 SUBMITTALS

A. Product Data and Shop Drawings
   1. In accordance with SECTION 01300, Submittals, provide the following:
      a. Detailed drawings and literature on all equipment including descriptions, diagrams, dimensions, materials, specifications, and drawings indicating compliance with the Contract Documents.

b. Catalog cut sheets reflecting characteristics for major items of equipment, pump characteristic curves showing the design duty point capacity (GPM), head (FT), and hydraulic brake horsepower (BHP). Electrical components used in the motor branch and liquid level control shall be fully described.
c. Layout of mechanical equipment and anchor bolt locations for station.
d. Pipe penetrations and station access clearances shall be dimensioned

B. Operations and Maintenance Manual
1. As a minimum, the manuals shall include:
a. Pumping System Equipment and Controls.
c. Electrical Components including motor and starting equipment data list.
d. Complete vendor list, stating addresses and telephone numbers.
2. All elements and components of the equipment or system shall be included in the manual inlcuding a description of how the equipment or complete system works. Additionally, where a number of components are furnished to provide a complete system, the operation of the components as they relate to the complete system shall be described.
3. Include all necessary instruction for the maintenance and operation of the equipment or system in accordance with the manufacturer's recommendations,
4. Each pump station manual must be completely approved prior to station delivery.

1.05 QUALITY ASSURANCE

A. Manufacturers Qualifications: The equipment furnished hereunder shall be the product of a company experienced in the design and manufacture of grinder pumps specifically designed for use in low pressure systems.

1. Manufacturers shall have at least 10 years of experience in the design and manufacture of units of identical size(s) and performance to the specified units.

2. Manufacturers shall have not less than 500 successful installations of low pressure sewer systems utilizing grinder pumps of like type to the grinder pumps specified herein. An installation is defined as a minimum of 25 pumps discharging into a common force main which forms a low pressure sewer system.

3. The **CONTRACTOR** (supplier) proposing alternate equipment shall also submit, as part of the bid schedule, an installation list with contact person(s), phone number(s) and date(s) of at least 10 installations of the type of pump specified herein that have been in operation for at least 10 years.

B. Codes and Standards

1. <u>UL and NEMA Compliance:</u> Provide electric motors and electrical components required as part of packaged pump station, which have been listed and labeled by Underwriters Laboratories and comply with NEMA standards.

2. NEC Compliance: Comply with NFPA 70 “National Electrical Code” as applicable to installation and electrical connections of ancillary electrical components of packaged pump stations.

3. NSF International: The grinder pump shall meet accepted standards for plumbing equipment for use in or near residences, shall be free from noise, odor, or health hazards, and shall have been tested by an independent laboratory to certify its capability to perform as specified in either individual or low pressure sewer system applications. As evidence of compliance with this requirement, the grinder pump shall bear the seal of NSF International.

1.06 WARRANTY

A. The grinder pump **MANUFACTURER** shall provide a part(s) and labor warranty on the complete station and accessories, including, but not limited to, the panel for a period of 24 months after notice of **OWNER’S** acceptance. Any manufacturing defects found during the warranty period will be reported to the **MANUFACTURER** by the **OWNER** and will be corrected by the **MANUFACTURER** at no cost to the **OWNER**.

B. A Warranty Performance Certification statement executed by the most senior executive officer of the grinder pump MANUFACTURER, shall certify a minimum of a 24-month warranty. The Warranty shall state that the MANUFACTURER will bear all costs to correct original equipment deficiency for the effective period of the warranty. All preventive maintenance type requirements shall be included in this form as exclusions. The pump station manufacturer shall warrant all equipment to be of quality construction, free of defects in material and workmanship.

C. The warranty shall become effective upon completion and acceptance of the Work as described in SECTION 00500 - AGREEMENT.

PART 2 PRODUCTS

2.01 TANK AND INTEGRAL ACCESSWAY

A. **The tank and integral accessway shall be as manufactured by eone systems - Model DH071, and shall be High Density Polyethylene Construction.** The tank shall be a Wetwell/Drywell design made of high density polyethylene, with a grade selected to provide the necessary environmental stress cracking resistance. Corrugated sections are to be made of a double wall construction with the internal wall being generally smooth to promote scouring. The corrugations of the outside wall are to be a minimum amplitude of 1-1/2" to provide necessary transverse stiffness. Any incidental sections of a single wall construction are to be 0.250” thick (minimum). All seams created during tank construction are to be thermally welded and factory tested for leak tightness. The tank wall and bottom must withstand the pressure exerted by saturated soil loading at maximum burial depth. All station

components must function normally when exposed to 150 percent of the maximum external soil and hydrostatic pressure.

B. The tank shall be furnished with one EPDM grommet fitting to accept a 4.50" OD DWV or Schedule 40 pipe. The tank capacities shall be as shown on the contract drawings.

C. The Drywell accessway shall be an integral extension of the Wetwell assembly and shall include a lockable cover assembly providing low profile mounting and watertight capability. The accessway design and construction shall enable field adjustment of the station height in increments of 4" or less without the use of any adhesives or sealants requiring cure time before installation can be completed.

D. The station shall have all necessary penetrations molded in and factory sealed. To ensure a leak free installation no field penetrations will be acceptable.

E. Discharge piping shall be constructed of 304 stainless steel. The discharge shall terminate outside the accessway bulkhead with a stainless steel, 1-1/4" Female NPT fitting. The discharge piping shall include a stainless steel ball valve rated for 235 psi WOG; PVC ball valves or brass ball/gate will not be accepted. The bulkhead penetration shall be factory installed and warranted by the manufacturer to be watertight.

F. The accessway shall include a single NEMA 6P Electrical Quick Disconnect (EQD) for all power and control functions, factory installed with accessway penetrations warranted by the manufacturer to be watertight. The EQD will be supplied with 32', 25' of useable Electrical Supply Cable (ESC) outside the station, to connect to the alarm panel. The ESC shall be installed in the basin by the manufacturer. Field assembly of the ESC into the basin is not acceptable because of potential workmanship issues. The EQD shall require no tools for connecting, seal against water before the electrical connection is made, and include radial seals to assure a watertight seal regardless of tightening torque. Plug-type connections of the power cable onto the pump housing will not be acceptable due to the potential for leaks and electrical shorts. A junction box shall not be permitted in the accessway due to the large number of potential leak points. The EQD shall be so designed to be conducive to field wiring as required. The accessway shall also include an integral 2-inch vent to prevent sewage gases from accumulating in the tank.

2.02 PREFABRICATED BALLAST SYSTEM

A. **PREFABRICATED BALLAST SYSTEM:** A prefabricated interlocking ballast block system shall be supplied and installed for all pump stations following the manufacturer's instructions.

B. The prefabricated interlocking ballast block system, sized according to the manufacturer's ballast requirements, shall be provided as a complete assembly for each grinder pump station.

C. Alternate ballast material that does not provide sufficient structural bond to the pump chamber to support the uplift forces of the pump chamber and the downward earth backfill forces shall be deemed unacceptable.

D. The block forms shall be blow molded of HDPE resins of high molecular weight, high density polyethylene copolymer and be factory-cast with concrete. The Concrete shall have a compressive strength per ASTM C39, C109 of 5,000 psi at 7 days and 6,000 psi at 28 days.

E. The block forms must also be able to be easily disassembled in the event the chamber must be moved without causing damage to the grinder pump chamber.

2.03 CORE UNIT

A. **CORE UNIT:** The grinder pump station shall have a cartridge type, easily removable core assembly consisting of pump, motor, grinder, all motor controls, check valve, anti-siphon valve, level controls, electrical quick disconnect and wiring. The core unit shall be installed in the basin by the manufacturer. Field assembly of the pump and controls into the basin is not acceptable because of potential workmanship issues and increased installation time. In some cases, stations taller than 96" may be shipped on their side without the cores assembled in the basin for freight purposes but this is the only exception. The core unit shall seal to the tank deck with a stainless steel latch assembly. The latch assembly must be actuated utilizing a single quick release mechanism requiring no more than a half turn of a wrench. The watertight integrity of each core unit shall be established by a 100 percent factory test at a minimum of 5 PSIG.

B. The grinder pump core, including level sensor assembly, shall have two lifting hooks complete with lift-out harness connected to its top housing to facilitate easy core removal when necessary. All mechanical and electrical connections must provide easy disconnect capability for core unit removal and installation. Each EQD half must include a water-tight cover to protect the internal electrical pins while the EQD is unplugged.

2.04 PUMPING SYSTEM

A. **PUMP:** The pump shall be a custom designed, integral, vertical rotor, motor driven, solids handling pump of the **progressing cavity type** with a single mechanical seal. Double radial O-ring seals are required at all casting joints to minimize corrosion and create a protective barrier. All pump castings shall be cast iron, fully epoxy coated to 8-10 mil Nominal dry thickness, wet applied. The rotor shall be through-hardened, highly polished, precipitation hardened stainless steel. The stator shall be of a

specifically compounded ethylene propylene synthetic elastomer. This material shall be suitable for domestic wastewater service. Its physical properties shall include high tear and abrasion resistance, grease resistance, water and detergent resistance, temperature stability, excellent aging properties, and outstanding wear resistance. Buna-N is not acceptable as a stator material because it does not exhibit the properties as outlined above and required for wastewater service.

B. **GRINDER:** The grinder shall be placed immediately below the pumping elements and shall be direct-driven by a single, one-piece motor shaft. The grinder impeller (cutter wheel) assembly shall be securely fastened to the pump motor shaft by means of a threaded connection attaching the grinder impeller to the motor shaft. Attachment by means of pins or keys will not be acceptable. The grinder impeller shall be a one-piece, 4140 cutter wheel of the rotating type with inductively hardened cutter teeth. The cutter teeth shall be inductively hardened to Rockwell 50 – 60c for abrasion resistance. The shredder ring shall be of the stationary type and the material shall be white cast iron. The teeth shall be ground into the material to achieve effective grinding. The shredder ring shall have a staggered tooth pattern with only one edge engaged at a time, maximizing the cutting torque. These materials have been chosen for their capacity to perform in the intended environment as they are materials with wear and corrosive resistant properties.

This assembly shall be dynamically balanced and operate without objectionable noise or vibration over the entire range of recommended operating pressures. The grinder shall be constructed so as to minimize clogging and jamming under all normal operating conditions including starting. Sufficient vortex action shall be created to scour the tank free of deposits or sludge banks which would impair the operation of the pump. These requirements shall be accomplished by the following, in conjunction with the pump:

1. The grinder shall be positioned in such a way that solids are fed in an upward flow direction.
2. The maximum flow rate through the cutting mechanism must not exceed 4 feet per second. This is a critical design element to minimize jamming and as such must be adhered to.
3. The inlet shroud shall have a diameter of no less than 5 inches. Inlet shrouds that are less than 5 inches in diameter will not be accepted due to their inability to maintain the specified 4 feet per second maximum inlet velocity which by design prevents unnecessary jamming of the cutter mechanism and minimizes blinding of the pump by large objects that block the inlet shroud.
4. The impeller mechanism must rotate at a nominal speed of no greater than 1800 rpm.

The grinder shall be capable of reducing all components in normal domestic sewage, including a reasonable amount of “foreign objects,” such as paper, wood, plastic, glass, wipes, rubber and the like, to finely-divided particles which will pass freely

through the passages of the pump and the 1-1/4" diameter stainless steel discharge piping.

C. **MOTOR:** The motor shall be a 1 HP, 1725 RPM, 240 Volt 60 Hertz, 1 Phase, capacitor start, ball bearing, air-cooled induction type with Class F installation, low starting current not to exceed 30 amperes and high starting torque of 8.4 foot pounds. The motor shall be press-fit into the casting for better heat transfer and longer winding life. Inherent protection against running overloads or locked rotor conditions for the pump motor shall be provided by the use of an automatic-reset, integral thermal overload protector incorporated into the motor. This motor protector combination shall have been specifically investigated and listed by Underwriters Laboratories, Inc., for the application. Non-capacitor start motors or permanent split capacitor motors will not be accepted because of their reduced starting torque and consequent diminished grinding capability. The wet portion of the motor armature must be 300 Series stainless. To reduce the potential of environmental concerns, the expense of handling and disposing of oil, and the associated maintenance costs, oil-filled motors will not be accepted.

D. **MECHANICAL SEAL**: The pump/core shall be provided with a mechanical shaft seal to prevent leakage between the motor and pump. The seal shall have a stationary ceramic seat and carbon rotating surface with faces precision lapped and held in position by a stainless steel spring.

E. **CHECK VALVE**: The pump discharge shall be equipped with a factory installed, gravity operated, flapper-type integral check valve built into the stainless steel discharge piping. The check valve will provide a full-ported passageway when open, and shall introduce a friction loss of less than 6 inches of water at maximum rated flow. Moving parts will be made of a 300 Series stainless steel and fabric reinforced synthetic elastomer to ensure corrosion resistance, dimensional stability, and fatigue strength. A nonmetallic hinge shall be an integral part of the flapper assembly providing a maximum degree of freedom to assure seating even at a very low back-pressure. The valve body shall be an injection molded part made of an engineered thermoplastic resin. The valve shall be rated for continuous operating pressure of 235 psi. Ball-type check valves are unacceptable due to their limited sealing capacity in slurry applications.

F. **ANTI-SIPHON VALVE**: The pump discharge shall be equipped with a factory-installed, gravity-operated, flapper-type integral anti-siphon valve built into the stainless steel discharge piping. Moving parts will be made of 300 Series stainless steel and fabric-reinforced synthetic elastomer to ensure corrosion resistance, dimensional stability, and fatigue strength. A nonmetallic hinge shall be an integral part of the flapper assembly, providing a maximum degree of freedom to ensure proper operation even at a very low pressure. The valve body shall be injection-molded from an engineered thermoplastic resin. Holes or ports in the discharge piping are not acceptable anti-siphon devices due to their tendency to clog from the solids in

the slurry being pumped. The anti-siphon port diameter shall be no less than 60% of the inside diameter of the pump discharge piping.

G. **CONTROLS**: Motor starting controls shall be located in the cast iron enclosure of the core unit secured by stainless steel fasteners. All motor control components shall be mounted on a readily replaceable bracket for ease of field service.

Locating the motor starting controls in a plastic enclosure is not acceptable. The wastewater level sensing controls shall be housed in a separate enclosure from motor starting controls. The level sensor housing must be sealed via a radial type seal; solvents or glues are not acceptable. The level sensing control housing must be integrally attached to pump assembly so that it may be removed from the station with the pump and in such a way as to minimize the potential for the accumulation of grease and debris accumulation, etc. The level sensing housing must be a high-impact thermoplastic copolymer over-molded with a thermo plastic elastomer. The use of PVC for the level sensing housing is not acceptable.

Non-fouling wastewater level controls for controlling pump operation shall be accomplished by monitoring the pressure changes in an integral air column connected to a pressure switch. The air column shall be integrally molded from a thermoplastic elastomer suitable for use in wastewater and with excellent impact resistance. The air column shall have only a single connection between the water level being monitored and the pressure switch. Any connections are to be sealed radially with redundant O-rings. The level detection device shall have no moving parts in direct contact with the wastewater and shall be integral to the pump core assembly in a single, readily-exchanged unit. Depressing the push to run button must operate the pump even with the level sensor housing removed from the pump.

All fasteners throughout the assembly shall be 300 Series stainless steel. High-level sensing will be accomplished in the manner detailed above by a separate air column sensor and pressure switch of the same type. Closure of the high-level sensing device will energize an alarm circuit as well as a redundant pump-on circuit. For increased reliability, pump ON/OFF and high-level alarm functions shall not be controlled by the same switch. Float switches of any kind, including float trees, will not be accepted due to the periodic need to maintain (rinsing, cleaning) such devices and their tendency to malfunction because of incorrect wiring, tangling, grease buildup, and mechanical cord fatigue. To assure reliable operation of the pressure switches, each core shall be equipped with a factory installed equalizer diaphragm that compensates for any atmospheric pressure or temperature changes. Tube or piping runs outside of the station tank or into tank-mounted junction boxes providing pressure switch equalization will not be permitted due to their susceptibility to condensation, kinking, pinching, and insect infestation. The grinder pump will be furnished with a 6 conductor 14-gauge, type SJOW cable, pre-wired and watertight to meet UL requirements with a **FACTORY INSTALLED** NEMA 6P EQD half attached to it.

The level sensor assembly must be easily removed from the pump assembly for service or replacement. A pump push-to-run feature will be provided for field trouble shooting. The push-to-run feature must operate the pump even if the level sensor assembly has been removed from the pump assembly.

2.05 ALARM PANEL

A. Each grinder pump station shall include a NEMA 4X, UL-listed alarm panel suitable for wall or pole mounting. The NEMA 4X enclosure shall be manufactured of thermoplastic polyester to ensure corrosion resistance. The enclosure shall include a hinged, lockable cover with padlock, preventing access to electrical components, and creating a secured safety front to allow access only to authorized personnel. The enclosure shall not exceed 10.5" W x 14" H x 7" D, or 12.5" W x 16" H x 7.5" D if certain options are included.

B. The alarm panel shall contain one 15-amp, double-pole circuit breaker for the pump core's power circuit and one 15-amp, single-pole circuit breaker for the alarm circuit. The panel shall contain a push-to-run feature, an internal run indicator, and a complete alarm circuit. All circuit boards in the alarm panel are to be protected with a conformal coating on both sides and the AC power circuit shall include an auto resetting fuse.

C. The alarm panel shall include the following features: external audible and visual alarm; push-to-run switch; push-to-silence switch; redundant pump start; and high level alarm capability. The alarm sequence is to be as follows when the pump and alarm breakers are on:

1. When liquid level in the sewage wet-well rises above the alarm level, the contacts on the alarm pressure switch activate, audible and visual alarms are activated, and the redundant pump starting system is energized.
2. The audible alarm may be silenced by means of the externally mounted, push-to-silence button.
3. Visual alarm remains illuminated until the sewage level in the wet-well drops below the "off" setting of the alarm pressure switch.

D. The visual alarm lamp shall be inside a red, oblong lens at least 3.75" L x 2.38" W x 1.5" H. Visual alarm shall be mounted to the top of the enclosure in such a manner as to maintain NEMA 4X rating. The audible alarm shall be externally mounted on the bottom of the enclosure, capable of 93 dB @ 2 feet. The audible alarm shall be capable of being deactivated by depressing a push-type switch that is encapsulated in a weatherproof silicone boot and mounted on the bottom of the enclosure (push-to-silence button).

E. The entire alarm panel, as manufactured shall be listed by Underwriters Laboratories, Inc.and including any of the following options

1. **Generator Receptacle and Auto Transfer –** The alarm panel shall include a 20 amp, 250 VAC generator receptacle with a spring-loaded, gasketed cover suitably mounted to provide access for connection of an external generator while maintaining a NEMA 4X rating. An automatic transfer switch shall be provided, which automatically switches from AC power to generator power. Power shall be provided to that alarm panel through the generator receptacle whenever power is present at the receptacle, allowing the audible and visual alarms to function normally in generator mode. When power is no longer applied to the generator receptacle, the panel is automatically switched back to the AC Mains power. (No manual switching within the panel enclosure is necessary to switch from generator power back to AC Mains, so the mode cannot be inadvertently left in the generator position after pumping down the station in generator mode as is the case with a manual transfer switch).

2. **Wireless Cellular Based Communication Package –** The system uses a cellular transmitter to communicate operating parameters, trouble conditions and high level alarm. Each panel shall be equipped with hardware that interfaces with the panel's circuit board assembly to obtain historical operating data and current system status. This information shall then be transmitted to a host system that utilizes an interactive website interface for end users to access the information.

   A secure user ID and password shall be used to provide access to the website. The website shall quickly identify sites that may be experiencing trouble and shall be able to generate reports including: running tallies of usage, flow rates, potential infiltration, predictive maintenance indicators and asset mapping/management. The website shall also provide a means to configure alerts corresponding to the various trouble conditions that can be sent to users via secure e-mail, SMS text, phone or an existing telemetry system. These alerts can be sent to any number of recipients.

   Accessible data shall include:
   - •Pump Runtime
   - •Pump Cycles
   - •Min, Max, Avg. and Last Runtime
   - •Min, Max, Avg. Operating Voltage, Wattage and Amperage
   - •Trouble Events
     - ○High Level Alarm
     - ○Brownout (low voltage)

- Overvoltage
- Run Dry (low wattage)
- Overpressure (high wattage)
- Excessive Runtime

- Alarm Circuit Fault
- Watt meter Fault
- Watt based Flow Rate Data
- Loss of Duplex Communication (between pumps, duplex stations only)

The system shall be equipped with a battery that will allow one message to be sent out in the event of a power loss.

The communication package shall be a factory prewired unit within the panel enclosure including the compact cellular transmitter, power supply and antenna. Panels with this option must be within range of the associated cellular network.

2.06 SPARE PARTS

A. **MANUFACTURER** will supply one spare grinder pump core for every 50 grinder pump stations installed, complete with all operational controls, level sensors, check valve, anti-siphon valve, pump/motor unit, and grinder.

PART 3 EXECUTION

3.01 FACTORY TEST

A. Each grinder pump shall be submerged and operated for 1.5 minutes (minimum). Included in this procedure will be the testing of all ancillary components such as, the anti-siphon valve, check valve, discharge assembly and each unit's dedicated level controls and motor controls. All factory tests shall incorporate each of the above listed items. Actual appurtenances and controls which will be installed in the field shall be particular to the tested pump only. A common set of appurtenances and controls for all pumps is not acceptable. Certified test results shall be available upon request showing the operation of each grinder pump at two different points on its curve. Additional validation tests include: integral level control performance, continuity to ground and acoustic tests of the rotating components.

The **ENGINEER** reserves the right to inspect such testing procedures with representatives of the **OWNER,** at the **GRINDER PUMP MANUFACTURER'S** facility.

3.02 EXAMINATION

B. **DELIVERY**: All grinder pump units will be delivered to the job site 100 percent completely assembled, including testing, ready for installation. Field installation of the pump in tanks under 96 inches is not allowed. Field installation of the level sensor into the tank is not allowed. Grinder pump stations will be individually mounted on wooden pallets.

C. Contractor shall off-load equipment at installation site using equipment of sufficient size and design to prevent injury or damage. Station manufacturer shall provide written instruction for proper handling. Immediately after off-loading, contractor shall inspect complete pump station and appurtenances for shipping damage or missing parts. Any damage or discrepancy shall be noted in written claim with shipper prior to accepting delivery. Validate all station serial numbers and parts lists with shipping documentation. Notify the manufacturers representative of any unacceptable conditions noted with shipper.

3.02 STORAGE

A. Prior to installation, remove core unit from each tank basin and store in a location specified by the Owner.

B. Store Alarm Panels for each station in a location specified by the Owner.

3.03 INSTALLATION

A. Install pump station as located on the Contract Drawings. Installation must be in accordance with written instructions supplied by the manufacturer at time of delivery.

B. Excavation and Backfill in accordance with SECTION 02200

1. Earth works are specified under appropriate sections of Division 2, but are to be done as a part of the work under this Section, including any necessary sheeting and bracing. The Contractor shall be responsible for handling groundwater to provide firm, dry undisturbed subgrade for the structures, shall prevent water rising on new concrete within 24 hours after placing, and shall guard against flotation or other damage resulting from groundwater or flooding.

C. The diameter of the excavated hole must be large enough to allow for the concrete anchor. A 6" inch (minimum) layer of naturally rounded aggregate, clean and free flowing, with particle size of not less than 1/8" or more than 3/4" shall be used as bedding material under each unit. A concrete anti-flotation collar, as detailed on the drawings, and sized according to the manufacturer's instructions, shall be required and shall be pre-cast to the grinder pump or poured in place. Each grinder pump station with its pre-cast anti-flotation collar shall have a minimum of three lifting eyes

for loading and unloading purposes. If the concrete is poured in place, the unit shall be leveled, and filled with water, to the bottom of the inlet, to help prevent the unit from shifting while the concrete is being poured. The concrete must be manually vibrated to ensure there are no voids. If it is necessary to pour the concrete to a level higher than the inlet piping, an 8" sleeve is required over the inlet prior to the concrete being poured.

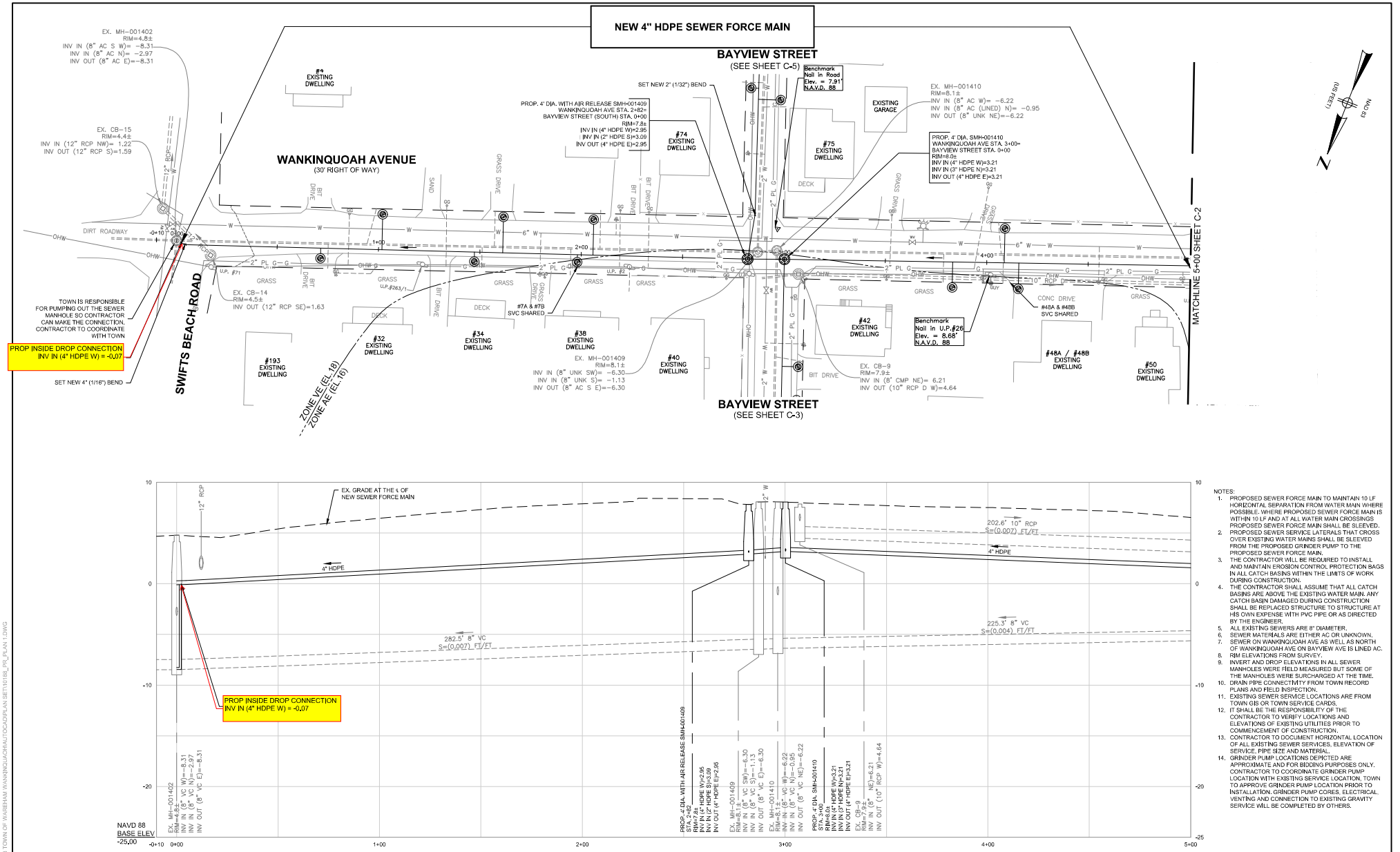
D. The **CONTRACTOR** will provide and install a 4-foot piece of 4-inch SCH 40 PVC pipe with water tight cap, to stub-out the inlet for the property owners' installation contractor, as depicted on the contract drawings.

E. The grinder pump station shall be installed at a minimum depth from grade to the top of the 1 1/4" discharge line, to assure maximum frost protection.

3.04 CLEANING

A. Prior to acceptance, inspect interior and exterior of pump station for dirt, debris and damage. Clean or repair accordingly. Remove from the job site all tools, surplus materials, scrap and debris.

END OF SECTION



NOTES:

1. PROPOSED SEWER FORCE MAIN TO MAINTAIN 10 LF HORIZONTAL SEPARATION FROM WATER MAIN WHERE POSSIBLE. WHERE PROPOSED SEWER FORCE MAIN IS WITHIN 10 LF AND AT ALL WATER MAIN CROSSINGS PROPOSED SEWER FORCE MAIN SHALL BE SLEEVED.
2. PROPOSED SEWER SERVICE LATERALS THAT CROSS OVER EXISTING WATER MAINS SHALL BE SLEEVED FROM THE PROPOSED GRINDER PUMP TO THE PROPOSED SEWER FORCE MAIN.
3. THE CONTRACTOR WILL BE REQUIRED TO INSTALL AND MAINTAIN EROSION CONTROL PROTECTION BAGS IN ALL CATCH BASINS WITHIN THE LIMITS OF WORK DURING CONSTRUCTION.
4. THE CONTRACTOR SHALL ASSUME THAT ALL CATCH BASINS ARE ABOVE THE EXISTING WATER MAIN. ANY CATCH BASIN DAMAGED DURING CONSTRUCTION SHALL BE REPLACED STRUCTURE TO STRUCTURE AT HIS OWN EXPENSE WITH PVC PIPE OR AS DIRECTED BY THE ENGINEER.
5. ALL EXISTING SEWERS ARE 8" DIAMETER.
6. SEWER MATERIALS ARE EITHER AC OR UNKNOWN.
7. SEWER ON WANKINQUOAH AVE AS WELL AS NORTH OF WANKINQUOAH AVE ON BAYVIEW AVE IS LINED AC.
8. RIM ELEVATIONS FROM SURVEY.
9. INVERT AND DROP ELEVATIONS IN ALL SEWER MANHOLES WERE FIELD MEASURED BUT SOME OF THE MANHOLES WERE SURCHARGED AT THE TIME.
10. DRAIN PIPE CONNECTIVITY FROM TOWN RECORD PLANS AND FIELD INSPECTION.
11. EXISTING SEWER SERVICE LOCATIONS ARE FROM TOWN GIS OR TOWN SERVICE CARDS.
12. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.
13. CONTRACTOR TO DOCUMENT HORIZONTAL LOCATION OF ALL EXISTING SEWER SERVICES, ELEVATION OF SERVICE, PIPE SIZE AND MATERIAL.
14. GRINDER PUMP LOCATIONS DEPICTED ARE APPROXIMATE AND FOR BIDDING PURPOSES ONLY. CONTRACTOR TO COORDINATE GRINDER PUMP LOCATION WITH EXISTING SERVICE LOCATION. TOWN TO APPROVE GRINDER PUMP LOCATION PRIOR TO INSTALLATION. GRINDER PUMP CORES, ELECTRICAL, VENTING AND CONNECTION TO EXISTING GRAVITY SERVICE WILL BE COMPLETED BY OTHERS.

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY: CD
DESIGNED BY: RG
CHECKED BY: RD

REGISTERED PROFESSIONAL: ROBERT A. DRAKE, CIVIL, No. 41642, COMMONWEALTH OF MASSACHUSETTS, 8/5/22

PREPARED BY: BETA www.BETA-Inc.com

SUBCONSULTANT

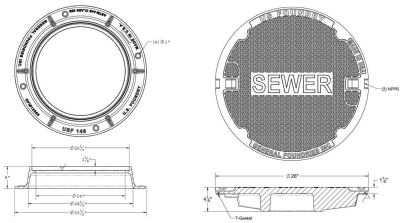
SCALE: HOR. SCALE IN FEET: 1"=20'; 20 0 20 40; VER. SCALE IN FEET: 1"=4'; 4 0 4 8
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

TITLE

TOWN OF WAREHAM, MASSACHUSETTS
INSTALLATION OF LOW-PRESSURE SEWER FORCE MAIN
PROPOSED LOW PRESSURE SEWER FORCE MAIN
WANKINQUOAH AVE PLAN & PROFILE STA. (0+00 TO 5+00)

BETA JOB NO. 10188
ISSUE DATE 8/3/2022
SHEET NO. C-1

8/2/2022 4:48 PM J:\21\10188 TOWN OF WAREHAM WANKINQUOAH\AUTOCAD\PLAN SET\10188_PRL_PLAN 1.DWG

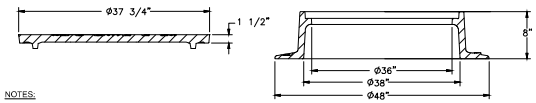


NOTES:

1. FRAME AND COVER SET FOR SEWER MANHOLES SHALL BE MODEL NOS. 8021904 / 8013697 AS MANUFACTURED BY GENERAL FOUNDRIES INC OR APPROVED EQUAL.
2. COVER CASTING SHALL CONFORM TO THE MUNICIPAL STANDARD (AS SHOWN) UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
3. COVER LETTERING DETAIL APPLIES TO ALL COVER SIZES AND WATERTIGHT MANHOLE COVERS IN ACCORDANCE WITH NOTES IN TYPICAL MANHOLE DETAIL..
4. FOR SHALLOW STRUCTURES 6" HIGH FRAMES MAY BE SUBSTITUTED FOR STANDARD 8" HIGH FRAMES FOR SHALLOW-PROFILE STRUCTURES AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. NO FRAMES LESS THAN 6" HIGH SHALL BE ALLOWED.
5. FRAME AND COVER SHALL BE SET IN FULL BED OF MORTAR ON A MINIMUM OF TWO COURSES OF BRICK.

26-INCH SEWER MANHOLE FRAME AND COVER (FOR CLEANOUT AND AIR RELEASE STRUCTURES)

NOT TO SCALE

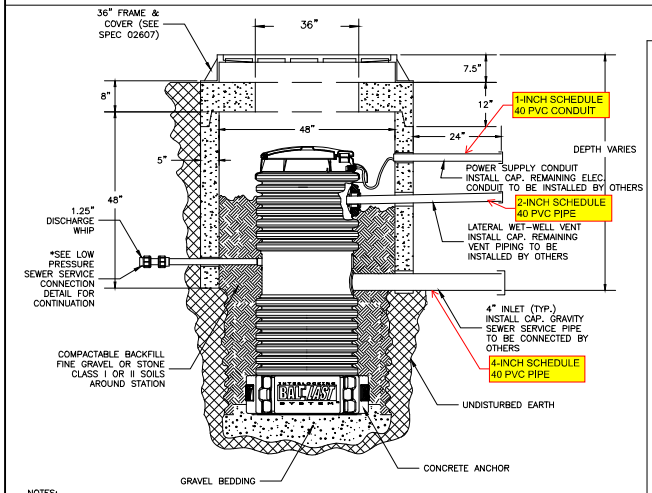


NOTES:

1. FRAME AND COVER SET FOR SEWER MANHOLES SHALL BE MODEL NOS. 13681 AS MANUFACTURED BY GENERAL FOUNDRIES INC OR APPROVED EQUAL.
2. COVER CASTING SHALL CONFORM TO THE MUNICIPAL STANDARD (AS SHOWN) UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
3. COVER LETTERING DETAIL APPLIES TO ALL COVER SIZES AND WATERTIGHT MANHOLE COVERS IN ACCORDANCE WITH NOTES IN TYPICAL MANHOLE DETAIL..

36-INCH SEWER MANHOLE FRAME AND COVER (FOR GRINDER PUMP STRUCTURES)

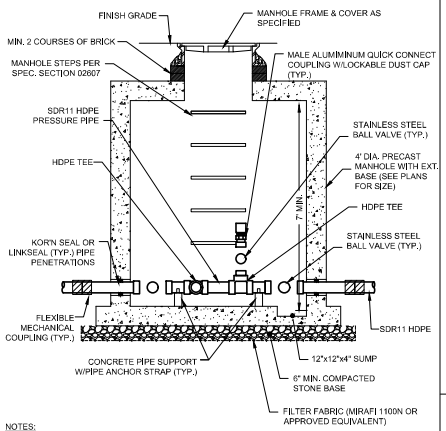
NOT TO SCALE



NOTES:
1. PUMP STATION TANK, STRUCTURE, CASTING, SERVICE PIPING, PIPE STUBS TO BE INSTALLED BY CONTRACTOR. PUMP CORES AND ALARM PANEL TO BE PURCHASED BY CONTRACTOR BUT INSTALLED BY OTHERS.
2. ALL EXISTING SHARED SEWER SERVICES ARE TO BE DUPLEX GRINDER PUMP STATIONS.

GRINDER PUMP STATION DETAIL

NOT TO SCALE

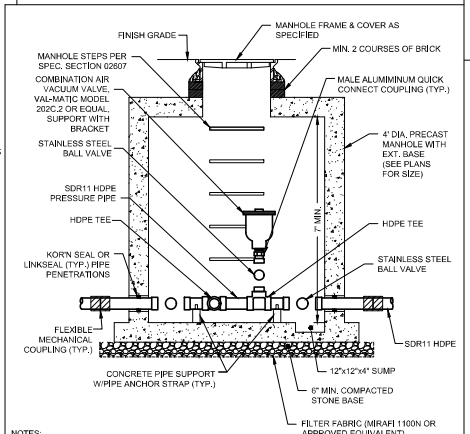


NOTES:

1. LOCATE FLUSHING QUICK CONNECT IN MANHOLE COVER OPENING.

LOW PRESSURE IN-LINE (3-WAY) CLEANOUT STRUCTURE SECTION VIEW

NOT TO SCALE

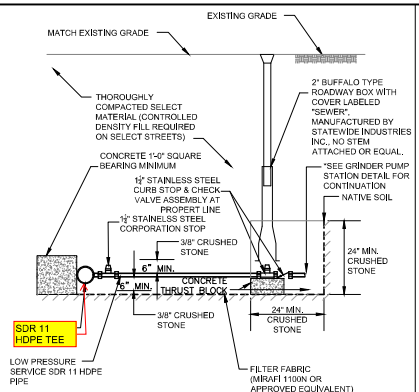


NOTES:

1. LOCATE COMBINATION AIR VALVE/FLUSHING QUICK CONNECT IN MANHOLE COVER OPENING.

LOW PRESSURE IN-LINE (3-WAY) CLEANOUT / COMBINATION AIR VALVE STRUCTURE SECTION VIEW

NOT TO SCALE



NOTES:

1. IF SERVICE PIPE LENGTH IS LESS THAN 5' LONG DO NOT INSTALL CORPORATION STOP

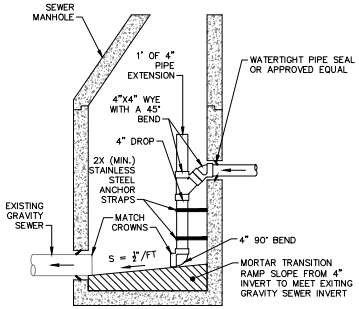
LOW PRESSURE SEWER SERVICE CONNECTION

NOT TO SCALE

TRENCH WIDTH Ws OR Wu		
DIAMETER OF PIPE D	Wu UNSHEETED	Ws SHEETED
12" AND SMALLER	3'-0"	4'-2"
15"	3'-2"	4'-4"
18"	3'-5"	4'-8"
21"	3'-10"	5'-0"
24"	4'-2"	5'-4"

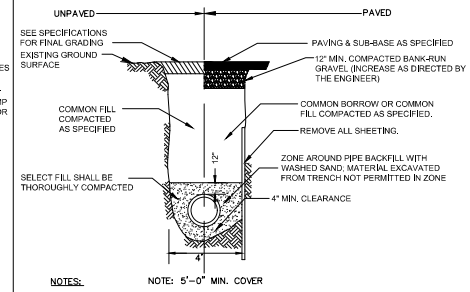
TRENCH WIDTH TABLE

NOT TO SCALE



LOW PRESSURE SEWER DISCHARGE TO GRAVITY SEWER MANHOLE WITH INSIDE DROP

NOT TO SCALE

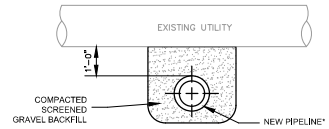


NOTES:

1. FOAM INSULATION TO BE USED IN TRENCH OVER BEDDED PIPE, IF LESS THAN 5' OF COVER TO PROTECT FROM FROST.

FORCE MAIN TRENCH DETAIL

NOT TO SCALE

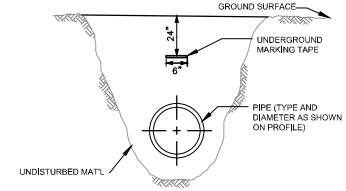


* ONE FULL LENGTH OF PIPE CENTERED UNDER EXISTING PIPE OTHER THAN SEWERS

NOTE: DETAIL APPLICABLE FOR PIPE SECTIONS EXPOSED DURING CONSTRUCTION

TYPICAL SECTION AT EXISTING UTILITIES

NOT TO SCALE



NOTES:

1. MARKING TAPE TO BE INSTALLED OVER ALL PIPELINES AND CONDUITS INSTALLED UNDER THIS CONTRACT.
2. MARKING TAPE FOR NON-FERROUS PIPE OR CONDUITS TO BE DETECTABLE, MAGNETIC TYPE.
3. MARKING TAPE FOR FERROUS PIPE OF CONDUITS TO BE NON-DETECTABLE, NON-MAGNETIC TYPE.
4. MARKING TAPE IS TO BE 6-INCHES WIDE AND INSTALLED DIRECTLY ABOVE THE PIPE OR CONDUIT APPROXIMATELY 24-INCHES BELOW THE PROPOSED FINISHED GRADE.

UNDERGROUND UTILITY MARKING TAPE DETAIL

NOT TO SCALE

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY: CD
DESIGNED BY: RG
CHECKED BY: RD

REGISTERED PROFESSIONAL: COMMONWEALTH OF MASSACHUSETTS, ROBERT A. DRAKE, CIVIL, No. 41642, REGISTERED PROFESSIONAL ENGINEER, 8/5/22

PREPARED BY: BETA, www.BETA-Inc.com

SUBCONSULTANT

SCALE: NONE

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

TITLE: TOWN OF WAREHAM, MASSACHUSETTS
INSTALLATION OF LOW-PRESSURE SEWER FORCE MAIN
CONSTRUCTION DETAILS 1

BETA JOB NO. 10188
ISSUE DATE 8/3/2022
SHEET NO. CD-1

8/2/2022 4:51 PM J:\21\10188 TOWN OF WAREHAM WANNQUA\MOTOCAD\PLAN SET\DETAILS.DWG