CONTRACT DOCUMENTS

PUMP STATION REHABILITATION

PROJECT NO. GEO01-07

Town of Georgetown

Sussex County, Delaware

ISSUED FOR BIDDING

08/13/2024 2:01:54 PM

Prepared By:
Beacon Engineering, LLC
23318 Cedar Lane
Georgetown, Delaware 19947
Robert J. Palmer, P.E.
302.864.8825

Prepared For:
Town of Georgetown
39 The Circle
Georgetown, Delaware 19947
Mr. Eric Rust, Wastewater Superintendent
302.856.7391

BEACON ENGINEERING LLC

August 2024

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ADVERTISEMENT TO BID
August 2024

Sealed Bids will be received by the **Town of Georgetown**, 39 The Circle, Georgetown, Delaware 19947, until **12:00 p.m. on Tuesday, October 8, 2024**, for the general construction of the project known as **Pump Station Rehabilitation - GEO01-07**, at which time the Bids will be opened publicly and read aloud.

Work includes the following items of work:

- Demolition, removal, and replacement of pumps, base assemblies and lift out systems, piping, valves, fittings, emergency bypass assemblies, and appurtenances.
- Removal and replacement of existing electrical controls, systems, and appurtenances.
- Furnishing and installing ventilation systems where indicated.
- Removal and replacement of access hatches.
- Furnishing and installing portable hoist systems and appurtenances.
- Work specific to renovation of the Big Park Pump Station includes but is not limited to the removal and replacement of doors and windows, sandblasting and painting, replacement of lighting systems, replacement of heating systems, replacement of roofing system, pointing and repairing of brick façade, and other miscellaneous work.
- Removal and replacement of paving and landscaping where indicated.

The Contract Documents may be examined at the following location: Town of Georgetown, 39 The Circle, Georgetown, Delaware 19947. Contract Documents are available in PDF format at no charge by sending requests to lhudson@beaconengineeringllc.com. Bidders must obtain and review Contract Documents to be eligible to submit a Bid.

The right is reserved, as the interest of the Town of Georgetown may appear, to reject any and all Bids, to waive any informality or irregularity in Bids received, and to accept or reject any Items of any Bid as is most advantageous to the Town of Georgetown.

Each bid must be accompanied by a Bid Bond or Certified Check payable to the Town of Georgetown in the amount of five (5%) percent of the total amount of the bid.

Interested Bidders are encouraged to attend the Pre-Bid Meeting to be held on **Tuesday, September 24, 2024 at 10:00 a.m.**, at Town Hall, 39 The Circle, Georgetown, Delaware 19947. Attendance at the Pre-Bid Meeting is non mandatory.

The Town of Georgetown hereby notifies all that it will affirmatively ensure that in all Contracts it enters into, Minority Business Enterprises will be afforded full opportunity to submit BIDS, and will not be discriminated against on the grounds of race, creed, color, sex, or national origin in consideration of an Award.

By: Mr. Eugene S. Dvornick
Town Manager

SECTION 00120

INFORMATION FOR BIDDERS

Bids will be received by the Town of Georgetown (herein called, "Owner"), at 39 The Circle, Georgetown, Delaware 19947, at the date and time stated in the Invitation to Bidders.

Each Bid must be submitted in a sealed envelope, addressed to the Town of Georgetown, 39 The Circle, Georgetown, Delaware 19947, and plainly marked, "Pump Station Rehabilitation, Project No. GEO01-07." Each sealed envelope containing a Bid must contain a completed Bid Form. Also, the envelope should bear on the outside the Bidder's name, address, and license number, if applicable. If forwarded by mail, the sealed envelope containing the Bid must be enclosed in another envelope addressed to the Owner, "Town of Georgetown, 39 The Circle, Georgetown, Delaware 19947."

All Bids must be made on the required Bid Form. All blank spaces for Bid prices must be filled in, in ink or typewritten, and the Bid Form must be fully completed and executed when submitted. Two copies of the Bid Form and Bid Bond are required.

The Owner may waive any informalities or minor defects or reject any and all Bids. Any Bid may be withdrawn prior to the above scheduled time for the opening of Bids or authorized postponement thereof. Any Bid received after the time and date specified shall not be considered. No Bidder may withdraw a Bid within 90 days after the actual date of the opening thereof. Should there be reasons why the Contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the Owner and the Bidder.

Should cost exceed available funds or if Bids are tied, the Owner reserves the right to proceed with 1 or more of the following:

a. Delete all or a portion of an individual Bid Item (or Items), and award to the lowest base Bid. Bid Items will be amended by Change Order. Unit prices shall not be affected as Bid.
b. Appropriate additional funds.
c. Reject all Bids and repeat the Bid process in full.
d. Negotiate prices down with the low Bidder or tied Bidders by modification of project scope.

Bidders must satisfy themselves of the accuracy of the estimated quantities in the Bid schedule by examination of the site and a review of the Plans and Specifications, including Addenda. After Bids have been submitted, the Bidder shall not assert that there was a misunderstanding concerning the quantities of work or of the nature of the work to be done.

The Owner shall provide to Bidders, prior to Bidding, all information which is pertinent to, and delineates and describes, the land owned and rights-of-way acquired or to be acquired.

The Contract Documents contain the provisions required for the construction of the Project. Information obtained from an officer, agent or employee of the Owner or any other person shall not affect the risks or obligations assumed by the Contractor or relieve the Contractor from fulfilling any of the conditions of the Contract.

Each Bid must be accompanied by a Bid Bond payable to the Owner for five percent (5%) of the total amount of the Bid. As soon as the Bid prices have been compared, the Owner will return the Bonds

of all except the 3 lowest responsible Bidders. When the Agreement is executed, the Bonds of the 2 remaining unsuccessful Bidders will be returned. The Bid Bond of the successful Bidder will be retained until the Payment Bond and Performance Bond have been executed and approved, after which it will be returned. A certified check may be used in lieu of a Bid Bond.

A Performance Bond and a Payment Bond, each in the amount of one hundred percent (100%) of the Contract price, with a corporate surety approved by the Owner, will be required for the faithful performance of the Contract.

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

The party to whom the Contract is awarded will be required to execute the Agreement and obtain the Performance Bond, Payment Bond and insurance certificate within 10 calendar days from the date when Notice of Award is delivered to the Bidder. The Notice of Award shall be accompanied by the necessary Agreement and Bond forms. In case of failure of the Bidder to execute the Agreement, the Owner may consider the Bidder in default, in which case the Bid Bond accompanying the Proposal shall become the property of the Owner.

The Owner, within 10 days of receipt of acceptable Performance Bond, Payment Bond and Agreement signed by the party to whom the Agreement was awarded, shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the Owner not execute the Agreement within such period, the Bidder may, by WRITTEN NOTICE, withdraw the signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the Owner.

The Notice to Proceed shall be issued within 10 days of the execution of the Agreement by the Owner. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement between the Owner and Contractor. If the Notice to Proceed has not been issued within the 10 day period or within the period mutually agreed upon, the Contractor may terminate the Agreement without further liability on the part of either party.

The Owner may make such investigations as deemed necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. 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 Agreement and to complete the work contemplated therein.

A conditional or qualified Bid will not be accepted. Award will be made to the lowest responsible, responsive Bidder.

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout.

Each Bidder is responsible for inspecting the site and for reading and being thoroughly familiar with the Contract Documents. The failure or omission of any Bidder to do any of the foregoing shall in no way relieve any Bidder from any obligation in respect to its Bid.

The low Bidder shall supply the names and addresses of major material Suppliers and Subcontractors when required to do so by the Owner.

The Engineer is Beacon Engineering, LLC (BEACON). Contact information is 302.864.8825, or email lhudson@beaconengineeringllc.com.

END OF SECTION

SECTION 00300

BID FORM

Proposal of _____(hereafter called "Bidder"), organized and existing under the laws of the State of _____ doing business as _____*, to the Town of Georgetown (hereinafter called "Owner").

* - Insert 'a corporation', 'a partnership', 'a joint venture', or 'an individual' as applicable.

In compliance with the Invitation to Bidders, Bidder hereby proposes to perform the designated work for which this Bid or Bids is submitted for the **Pump Station Rehabilitation, Project No. GEO01-07**, in strict accordance with the Contract Documents, within the time set forth therein, and at the prices stated below.

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

Bidder hereby agrees to commence work under this Contract on or before a date to be specified in the Notice to Proceed and to fully complete the project within 120 consecutive calendar days thereafter. Bidder further agrees to pay as liquidated damages, one thousand dollars ($1000.00) per calendar day as defined in the General Conditions.

BIDDER acknowledges receipt of the following ADDENDUM(S):

_____

_____

BIDDER PLEASE NOTE:
The Town desires to maximize the level of competition and improve opportunity for all Bidders to participate in the proposed project. Therefore, the scope of work is hereby presented using multiple Bid schedules as defined below. **It is not required that a Bidder complete and submit pricing for all**

Bids (A, B and C), but a Bidder may elect to do so. A successful bid on a single Bid component does not guarantee selection of the same Bidder for all Bid components which were submitted. The Town may elect to award one or more Bids to one or more Bidders as is determined to be in the Town's best interests.

The Town of Georgetown reserves the right to accept or reject any or all Bids in any order that results in the greatest benefit to the Town. The Town may further withdraw some or all portions of any Bid Item shown below and described in the Contract Documents, or accept any or all Alternate Bid Items, in any order, as is in the Town's best interest. Deletion or withdrawal of a particular Bid Item or Items shall not affect the Bidder's adjusted, reduced bid amount. Bidder shall not assert that additional costs are warranted due to lost profits caused by elimination or reduction of any Bid Item, acceptance or rejection of any alternate Bid Item, or acceptance or rejection of a particular Bid. Awards will be made to the responsible and responsive Bidder with the lowest Base Bid, as to each Bid (A, B, C).

By submission of this Bid(s), Bidder certifies that he understands the bidding requirements set forth herein and is thoroughly familiar with the Contract Documents.

Bidder agrees to perform all the work described in the Contract Documents as to the following Bids(s) for the following unit prices or lump sum. If an Bid component (A, B or C) is not being bid on, it should be crossed through and initialed:

BID A:

Item No.	Description	Unit	Estimated Quantity	Unit Price	Total Cost
A1.	Mobilization (Maximum 5% of Total Bid)	LS	1		
A2.	Rehabilitation of the Health Unit Pump Station	LS	1		
A3.	Rehabilitation of the Three Bells Pump Station	LS	1		
A4.	Rehabilitation of the Meadows Pump Station	LS	1		
A5.	Bypass Pumping Operation	Day	30		
A6.	Excavation Below Subgrade & Gravel Refill	CY	30		
A7.	Miscellaneous Excavation, Backfill, and Test Pitting	CY	30		
A8.	Furnish & Place Select Backfill	CY	30		
A9.	Furnish & Place Miscellaneous Concrete	CY	10		

Total Bid A (Items A1-A9) $_____ Dollars

_____ Dollars

THE REST OF THIS PAGE IS BLANK

BID B:

Item No.	Description	Unit	Estimated Quantity	Unit Price	Total Cost
B1.	Mobilization (Maximum 5% of Total Bid)	LS	1		
B2.	Rehabilitation of the Big Park Pump Station	LS	1		
B3.	Bypass Pumping Operation	Day	20		
B4.	Excavation Below Subgrade & Gravel Refill	CY	10		
B5.	Miscellaneous Excavation, Backfill, and Test Pitting	CY	10		
B6.	Furnish & Place Select Backfill	CY	10		
B7.	Furnish & Place Miscellaneous Concrete	CY	10		

Total Bid B (Items B1-B7) $_____ Dollars

_____ Dollars

BID C:

Item No.	Description	Unit	Estimated Quantity	Unit Price	Total Cost
C1.	Mobilization (Maximum 5% of Total Bid)	LS	1		
C2.	Furnish & Install Ventilation System at the Gordy Street Pump Station	LS	1		
C3.	Furnish & Install Ventilation System at the Stevenson Lane Pump Station	LS	1		
C4.	Excavation Below Subgrade & Gravel Refill	CY	10		
C5.	Miscellaneous Excavation, Backfill, and Test Pitting	CY	10		
C6.	Furnish & Place Select Backfill	CY	10		
C7.	Furnish & Place Miscellaneous Concrete	CY	10		
ALTERNATE BID ITEMS - The Owner reserves the right to accept none, one, or more of the following Alternate Bid Items, in any order, as is in the Owner's best interests. Acceptance of any of these alternate bid items will be considered during the bid evaluation process. Alternate Bid Items will be considered part of the Total Bid, and therefore, part of the award process.					
Alt C1.	Furnish & Install New Equipment Cabinet and Control Panel at the Stevenson Lane Pump Station	LS	1		

Total Bid C (Items C1-C7) $_____ Dollars

_____ Dollars

Bidders Please Note: Alternate Bid Item Alt C1 is not part of the award process. Bid Item Alt C1 may or may not be accepted as is in the Town's best interest.

Upon receipt of written notice of the acceptance of this Bid, Bidder will execute the formal Contract attached within 10 days and deliver a Surety Bond or Bonds as required by the Information for Bidders. The bid security attached in the sum of five percent (5%) of the total **Pump Station Rehabilitation, Project No. GEO01-07,** Project Bid is to become the property of the Owner in the event the Contract and Bonds are not executed within the time above set forth, as liquidated damages for the delay and additional time expense to the Owner caused thereby.

Respectfully submitted:

_____ _____
Signature Address

_____ _____
Title Date

_____
License Number (if applicable)
SEAL - (if Bid is by a corporation)

NOTE: Successful Bidder(s) shall submit to the Engineer a list of Subcontractors and major suppliers noting work task and subcontract amounts within 5 days of the Bid opening.

END OF SECTION

SECTION 00370

BID BOND

KNOWN ALL MEN BY THESE PRESENTS, that we, the Undersigned _____

_____as Principal,

and _____as Surety, are hereby held and firmly bound unto the Town of Georgetown, as OWNER in the penal sum of _____($_____) for the payment of which, will and truly to be made, we hereby jointly and severally bind ourselves, successors and assignees. Signed, this _____ day of _____, 2024. The condition of the above obligation is such that whereas the Principal has submitted to The Town of Georgetown a certain BID, attached hereto and hereby made a part hereof to enter into a Contract in writing, for the Town of Georgetown, Pump Station Rehabilitation, Project No. GEO01-07.

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a Contract in the Form of Contract attachment hereto (properly completed in accordance with said BID) and shall furnish a BOND for faithful performance of said Contract, and for the payment of all persons performing labor furnishing materials in connection therewith, and shall in all respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way be impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any extension.

In WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____ (L.S.)
Principal

_____
Surety

By:_____

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

END OF SECTION

SECTION 00530

AGREEMENT

THIS AGREEMENT, made this _____ day of _____, 2024, by and between Town of Georgetown, hereinafter called "OWNER" and _____doing business as (an individual,) or (a partnership,) or (a corporation) hereinafter called "CONTRACTOR."

WITNESSETH; That for and in consideration of the payments and agreements herein after mentioned:

1. The CONTRACTOR will commence and complete the construction of Pump Station Rehabilitation, Project No. GEO01-07.

2. The CONTRACTOR will furnish all of the materials, supplies, tools, equipment, labor, and other services necessary for the construction and completion of the PROJECT described herein.

3. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS within 10 calendar days after the date of the NOTICE TO PROCEED, and shall complete the work within 120 calendar days unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS.

4. The CONTRACTOR agrees to perform all of the WORK described in the CONTRACT DOCUMENTS and comply with the terms therein for the estimated sum of _____ dollars ($_____).

5. The Term "CONTRACT DOCUMENTS" means and includes the following:

(A) Advertisement to Bid
(B) Information for Bidders
(C) Bid Form
(D) Bid Bond
(E) Agreement
(F) Performance Bond
(G) Payment Bond

(H) Notice of Award

(I) Notice to Proceed

(J) General Conditions

(K) Special Conditions

(L) Change Order

(M) Drawings prepared by Beacon Engineering, LLC (BEACON), dated June 2023.

(N) Specifications prepared by Beacon Engineering, LLC (BEACON), dated June 2023.

(O) ADDENDA: No._____Dated: _____
No._____Dated: _____
No._____Dated: _____

*(P) All other Division 0 documents contained within the Bid Documents.

6. The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the General Conditions such amounts as required by the CONTRACT DOCUMENTS.

7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

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

(SIGNATURE PAGE – NEXT PAGE.)

OWNER:

Town of Georgetown

BY: _____
(Signature)

NAME: Eugene S. Dvornick, Jr.
(Please Print)

TITLE: Town Manager

(SEAL)
ATTEST:

BY: _____
(Signature)

NAME: _____
(Please Print)

TITLE: _____

CONTRACTOR:

_____
(Company Name)

BY: _____
(Signature)

NAME: _____
(Please Print)

TITLE: _____

ADDRESS: _____

_____

(SEAL)
ATTEST:

BY: _____
(Signature)

NAME: _____
(Please Print)

TITLE: _____

END OF SECTION

SECTION 00531

PERFORMANCE BOND

KNOWN ALL PERSONS BY THESE PRESENT:

_____
(Name of Contractor)

_____
(Address of Contractor)

a _____, hereinafter called (Corporation, Partnership, or Individual)

Principal, and

_____
(Name of Surety)

_____
(Address of Surety)

hereinafter called SURETY, are held and firmly bound unto Town of Georgetown, 39 The Circle, Georgetown, Delaware 19947, hereinafter called OWNER, in the penal sum of _____ dollars ($_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assignees, jointly and severally, firmly by these presence.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____ 2024, a copy of which is hereto attached and made a part hereof for Pump Station Rehabilitation, Project No. GEO01-07.

NOW THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the SURETY and during the 1 year guarantee period, and if the PRINCIPAL shall satisfy all claims and demands incurred under such Contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.

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

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

IN WITNESS WHEREOF, this instrument is executed in 3 counterparts, each 1 of which shall be deemed an original, this the _____day of _____, 2024.

(SIGNATURE PAGE – NEXT PAGE.)

ATTEST:

_____
(Principal)

_____
(Principal Secretary)

BY: _____
(Signature)

NAME: _____
(Please Print)

ADDRESS: _____

_____

BY: _____
(Witness as to Principal - Signature)

NAME: _____
(Please Print)

ADDRESS: _____

_____

_____
(Surety Company)

BY: _____
(Attorney-in-Fact - Signature)

NAME: _____
(Please Print)

ADDRESS: _____

_____

(SEAL)
ATTEST: _____
(Witness as to Surety Signature)

NAME: _____
(Please Print)

ADDRESS: _____

_____

NOTE: Date of BOND must not be prior to date of Contract.

IF CONTRACTOR is partnership, all partners should execute BOND.

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

END OF SECTION

SECTION 00532

PAYMENT BOND

KNOWN ALL PERSONS BY THESE PRESENT:

_____
_
(Name of Contractor)

_____
_
(Address of Contractor)

a_____, hereinafter called (Corporation, Partnership, or Individual)

Principal, and

_____
(Name of Surety)

_____
(Address of Surety)

hereinafter called SURETY, are held and firmly bound unto Town of Georgetown, 39 The Circle, Georgetown, Delaware 19947, hereinafter called OWNER, in the penal sum of _____in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assignees, jointly and severally, firmly by these presence.

THE CONDITION OF THIS OBLIGATION is such that whereas, the PRINCIPAL entered into a certain contract with the OWNER, dated the _____day of_____ 2024, a copy of which is hereto attached and made a part hereof for the construction of Pump Station Rehabilitation, Project No. GEO01-07.

NOW, THEREFORE, if the PRINCIPAL shall promptly make payment to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extensions or modifications thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection of such and all insurance premiums on said WORK and for all labor, performed in such WORK whether by a SUBCONTRACTOR, or otherwise, then this obligation shall be void, otherwise to remain in full force and effect.

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

PROVIDED, FURTHER, that no final settlement between the OWNER and CONTRACTOR shall abridge the rights of any beneficiary hereunder, whose claim may be unsatisfied.

In WITNESS WHEREOF, this instrument is executed in 3 counterparts, each of which shall be deemed an original, this the _____day of _____, 2024.

(SIGNATURE PAGE – NEXT PAGE.)

(SEAL)
ATTEST:

_____
(Principal)

_____
(Principal Secretary)

BY: _____
(Signature)

NAME: _____
(Please Print)

ADDRESS: _____

_____

BY: _____
(Witness as to Principal - Signature)

NAME: _____
(Please Print)

ADDRESS: _____

_____

_____
(Surety Company)

BY: _____
(Attorney-in-Fact - Signature)

NAME: _____
(Please Print)

ADDRESS: _____

_____

(SEAL)
ATTEST: _____
(Witness as to Surety Signature)

NAME: _____
(Please Print)

ADDRESS: _____

_____

NOTE: Date of BOND must not be prior to date of Contract.

IF CONTRACTOR is partnership, all partners should execute BOND.

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

END OF SECTION

SECTION 00610

NOTICE OF AWARD

To: _____ Date: _____

_____ Project: Town of Georgetown Pump Station Rehabilitation

_____ Project No. GEO01-07

The OWNER has considered the Bid submitted by you for the above described work in response to its Advertisement to Bid, dated _____, 2024, and Information for Bidders.

You are hereby notified that your Bid has been accepted for the amount of _____ Dollars ($_____) for construction of Pump Station Rehabilitation, Project No. GEO01-07.

You are required by the Advertisement to Bid to execute the Agreement and furnish the required Contractor's Performance Bond, Payment Bond and Certificates of Insurance within 10 calendar days from the date of this Notice of Award.

If you fail to execute said Agreement and to furnish said Bonds within 10 days from the date of this Notice of Award, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned, and as a forfeiture of Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

Dated this _____day of_____, 2024.

Town of Georgetown
(Owner)

BY: _____

NAME/TITLE: Eugene S. Dvornick, Jr., Town Manager

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged.

by_____this the _____day of _____, 2024.

END OF SECTION

SECTION 00620

NOTICE TO PROCEED

To: _____ Date: _____

_____ Project: Town of Georgetown
Pump Station Rehabilitation

_____ Project No. GEO01-07

You are hereby notified to commence work in accordance with the Agreement, dated _____, 2024, on or before _____, 2024, and you are to complete the work within 120 consecutive calendar days thereafter. The date of completion of all work is therefore _____ _____, 2024.

Town of Georgetown
(Owner)

BY: _____
(Signature)

NAME/TITLE: Eugene S. Dvornick, Jr.
Town Manager

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____

_____this the _____of _____, 2024.

By: _____

Title: _____

Employer Identification Number: _____

END OF SECTION

SECTION 01001

GENERAL CONDITIONS

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SECTION 01001

GENERAL CONDITIONS

1. GENERAL

The Engineer is the firm of Beacon Engineering, LLC (BEACON) acting for the Owner as his duly authorized agent, said agent acting severally within the scope of duties contracted with the Owner.

Wherever the word Engineer appears in the Contract Documents, it is defined to mean the firm of Beacon Engineering, LLC (BEACON), 23318 Cedar Lane, Georgetown, Delaware, 19947.

Wherever the word Owner appears in the Contract Documents, it is defined to mean the Town of Georgetown, 39 The Circle, Georgetown, Delaware 19947.

It is the intent of the Specifications and Drawings to describe a complete project to be constructed in accordance with the Contract Documents. The Contract Documents comprise the entire Agreement between Owner and Contractor. They may be altered only by a modification.

The Contract Documents are complementary: what is called for by one is as binding as if called for by all. If the Contractor finds a conflict, error, or discrepancy in the Contract Documents, he shall call it to the Engineer's attention in writing at once, and before proceeding with the work affected thereby; however, he shall not be liable to the Owner or Engineer for his failure to discover any conflict, error, or discrepancy in the Specifications or Drawings. In resolving such conflicts, errors, and discrepancies the documents shall be given precedence in the following order: Agreement, Modifications, Addenda, General Conditions, Special Conditions, Information for Bidders, Specifications and Drawings. Figure dimensions on Drawings shall govern over scale dimensions, and detailed Drawings shall govern over General Drawings. Any work that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for. Work, materials, or equipment, described in words which so applied have a well-known technical or trade meaning, shall be deemed to refer to such recognized standards. The work to be done under these specifications is to cover the completed work shown on the plans or called for in the specifications and other contract documents. The Contractor shall furnish all implements, machinery, tools, equipment, material and labor necessary to the performance of the work and shall furnish and do everything necessary to make the work perfect, complete, neat and finished, and the Contractor shall leave all the work to be done under this Contract in

this condition at the time the work is finally inspected.

2. DEFINITIONS OF TERMS

A. Whenever in these Specifications, Proposals, Agreement, Bond and other Contract Documents, the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

"Owner" or "Town of Georgetown"
Town of Georgetown, located in Sussex County, Delaware.

"Engineer" and "Architect"
Consultant Engineer or Architect for Owner or his duly authorized representative. Wherever the word Engineer or Architect is referred to in these specifications it can be substituted with the word "Owner" and he can at all times assume the responsibilities of the Engineer or Architect. Throughout these documents the words Engineer and Architect may be used interchangeably, each having the full authority described for the Engineer or Architect.

"Resident Project Representative"
An authorized representative of the Owner or Engineer or Architect assigned to make any and all necessary observations of the work performed and materials and/or equipment furnished by the Contractor.

"Contractor"
Party responsible for constructing the work, acting directly or through his agents or employees.

"Subcontractor"
Any individual, firm or corporation who contracts with a contractor to perform part or all of the latter's contract.

"Shop Drawings"
Drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are prepared by the Contractor or any subcontractor, manufacturer, supplier or distributor, and which illustrate some portion of the work.

"Drawings"
All drawings or reproduction of drawings, pertaining to the work under the contract, which are furnished or approved by the Engineer.

"Specifications"
The definitions, descriptions, directions, provisions and requirements, contained herein, and all written supplements thereto, made or to be made, pertaining to the contract, and the materials, equipment, and workmanship to be furnished under the contract.

"Contract" or "Contract Documents"
All things contained in the specifications, drawings, proposals, agreement and bond, and therein referred to, are to be considered as one instrument forming the contract, also any and all supplemental agreements which could reasonably be required to complete the construction contemplated.

"Approved," "As Required," and Similar Expressions
Meaning shall be construed as "as approved by the Engineer" and "as required by the Engineer."

"Provide"
A direction to the Contractor to furnish all materials, equipment and labor and make payment for all of these necessary to complete the Contract.

"Work"
Any and all things agreed to be furnished or done by or on the part of the Contractor, and which are required in the construction and completion of the project herein contemplated. Includes also labor, material and equipment.

"Material" or "Materials"
Unless the context otherwise requires, these words or either of them, shall include equipment.

"Furnish"
A direction to the Contractor to supply and make payment for materials and equipment but not necessarily to install or pay workmen to install, or both, these items.

"General Conditions"
Provisions that establish and pertain to the legal responsibilities between the parties involved in the work, namely Owner, Engineer and Contractor.

"Surety"
The body corporate, approved by the Owner, which is bound with and for the Contractor who is primarily liable, and which engages to be responsible for his acceptable performance of the work for which he has contracted.

"Force Account"
Work, for which no price has been negotiated, that has been performed by the Contractor, by order of the Engineer, under emergency conditions. The order shall be confirmed in writing.

"Bidder"
Any individual, firm or corporation submitting a bid for the work contemplated, acting directly or through a duly authorized representative.

"Bid"
The approved prepared form on which the bidder is to submit or has submitted his bid for the work contemplated.

"Certified Check"
The check attached to a bid, drawn upon a solvent clearing house bank, and guaranteed by the bank to be good as to the signature and amount indicated on face. It is a substitute for a Bid Bond.

"Supplementary or Special Conditions"
Provisions specifically applicable to this work.

"General Requirements"
Instructions to the General Contractor relating to non-legal non-technical requirements for proper execution of the field work. These are instructions that cannot logically be placed anywhere else in the bidding documents.

"Acts of God"
A cataclysmic phenomenon of nature. Climatic and subsurface conditions of which may be abnormal for the area over all or part of the time span of the work, but which

do not preclude prosecution of the work with the proper use of specified methods and equipment, shall not be considered as acts of God.

"Bond" or "Contract Bond"

The form of security to be approved by the Owner, furnished by the Contractor and his Surety in accordance with the form attached hereto.

"Notice to Proceed"

A notice to the Contractor of the date on which he is to begin the execution of work for which he has a Contract.

B. The headings and subheadings printed in these Specifications are intended for convenience or reference only, and shall not be considered as having any particular bearing on the interpretation thereof.

C. The Drawings accompanying these Specifications shall be held and taken to be "attached" hereto, whether or not said Drawing is physically attached hereto.

D. Whenever, in the Specifications and upon the Drawings, the words Directed, Required, Permitted, Ordered, Designated, Prescribed and words of like import are used, it shall be understood that the directions, requirements, permission, order, designation, or prescription of the Engineer is intended and similarly the words Approved, Acceptable, Satisfactory, and words of like import shall mean "approved by, or acceptable or satisfactory to the Engineer unless otherwise expressly stated."

3. DRAWINGS AND SPECIFICATIONS

A. Wherever the words "directed," "required," "ordered," "approved," "acceptable," or others of like import appear in the Specifications, they shall mean as directed, required, ordered, approved or acceptable by or to the Owner and by or to the Engineer acting as the Owner's agent.

B. All reference to Federal or other standards appearing on the drawings or in the specifications shall mean the current edition. Where, in the specifications which follow, a standard is cited next to the name of a product or a test procedure, the product or test procedure shall conform to that standard.

C. Five (5) sets of drawings and specifications will be furnished the Contractor without charge. Additional sets will be furnished at cost stated in the advertisements for bid.

D. The Contractor shall maintain, at the job site, one complete set of drawings and specifications. The Contractor shall record on this set and keep current, all authorized changes and field adjustments. The set shall be kept available for inspection by representatives of the Owner and the Engineer, and shall finally be used to assist in the preparation of as-built drawings.

E. Locations of overhead and underground utilities shown on the drawings were derived from existing records and from field observations, in order to provide the Contractor with as much information as could reasonably be ascertained without actually excavating and exposing subsurface utilities. The Owner and the Engineer do not warrant or guarantee the complete accuracy of the information shown. Some utilities may not be shown, and the location of those shown may not be entirely accurate.

F. All incidental items of labor and materials not specifically delineated by the Contract Documents, but which are necessary to provide a fully operable facility, and which may reasonably be interpreted as being a part of the work, shall be accomplished by the Contractor without extra charge, the prices of which shall be included within the base bid items.

4. CONTRACT TIME

A. The proposal states the number of consecutive work days allowed from date of "Notice to Proceed" to date of completion of the entire project under this Contract. For each and every day that the Contractor is in default in completing the Contract, as defined in the General Conditions and the bid, he shall pay the Owner liquidated damages in the amount stated in the Bid Form.

B. The Owner reserves the right to take either or both of the following actions at any time, that in his judgment, it appears the scheduled completion date will not be met:

1. Require the Contractor to assign additional construction forces to the work.

2. Delete all or any portion of remaining work from this Contract and assign such work to another Contractor or accomplish same by any other method which may appear most advantageous.

These remedies are supplementary to all other provisions of the specifications and do not void such other provisions.

5. SUBCONTRACTING

A. The Contractor shall submit, prior to commencement of construction, for review by the Engineer and the Owner, a final list of Subcontractors, including subcontractor name, the portion of work which he is to do, his place of business, and any other information the Engineer may require, as well as materials and equipment suppliers with whom he intends to contract. If the Owner or the Engineer objects to any proposed Subcontractor, materials or equipment supplier, the Contractor shall furnish such data as may be required to secure the Owner's and Engineer's approval. If such approval is not then forthcoming, the Owner and the Contractor will negotiate the matter to a mutually acceptable conclusion, which negotiations may include a decrease or increase in contract price.

B. The Contractor shall not, either legally or equitably, assign any of the monies payable under the contract, or his claims thereto, unless by and with the like consent of the Engineer.

C. The Contractor shall not be released from any of his liabilities or obligations under this contract should any subcontractor or subcontractors fail to perform in a satisfactory manner the work undertaken by him or them.

6. CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE

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

A. Compensation and Employer's Liability Insurance
The Contractor shall take out and maintain during the life of the contract the statutory Workmen's Compensation and Employer's Liability Insurance for all his employees to be engaged in work on the project under the contract shall and, in case any such work is sublet, the Contractor shall require the subcontractor similarly to provide Workmen's Compensation and Employer's Liability Insurance for all the latter's employees to be engaged in such work.

B. General Public Liability and Property Damage Liability Insurance
The Contractor shall take out and maintain during the life of the contract General

Public Liability and Property Damage Liability Insurance to protect him and any Subcontractor performing work covered by the contract from claims for damages for personal injury, including accidental death, as well as from claims for property damage, which may arise from operations under the contract, whether such operations be by himself or by a Subcontractor, or by anyone directly or indirectly employed by either of them, and the amount of such insurance should not be less than:
General Public Liability Insurance, in an amount not less than One Million Dollars ($1,000,000) for injuries, including wrongful death to any one person, and subject to the same limit for two or more persons in an amount not less than One Million Dollars ($1,000,000) on account of one accident.

Property Damage Insurance, in an amount not less than Two Hundred Thousand Dollars ($200,000) for damages on account of any one accident, and in an amount not less than Five Hundred Thousand Dollars ($500,000) for damages on all accidents.

C. Special Hazards Insurance

In the event of the possibility of special hazards existing in the work contemplated, such hazards shall be covered by a rider to the policy or policies required under the subparagraph B in amounts not less than those stipulated under subparagraph B. If any special hazard is encountered during the performance of this contract, the Contractor shall, prior to performing any work involving the special hazard, immediately proceed with the procuring of this insurance.

D. Builder's Risk Insurance (Fire and Extended Coverage)

The Contractor shall have adequate fire and standard extended coverage, with a company or companies acceptable to the Owner, in force on the project.

The insurance should provide protection at all times against loss by the Owner and Contractor until final acceptance of the work. This provision with respect to Builder's Risk Insurance shall in no way relieve the Contractor of his obligation of completing the work covered by the Contract.

E. Automobile Bodily Injury Liability Insurance

Automobile Bodily Injury Liability Insurance in an amount not less than One Hundred Thousand Dollars ($100,000) for injuries, including death, to any one person and subject to the same limits for each person, in an amount not less than Three Thousand Dollars ($300,000) on account of any one accident.

F. Proof of Carriage of Insurance

The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations, effective dates, and date of expiration of policies. Such certificates shall contain substantially the following statement: "The insurance covered by this certification shall not be canceled or materially altered, except after thirty (30) day written notice has been received by the Owner".

7. SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

A. In order to protect the lives and health of his employees under the contract, the Contractor shall comply with all pertinent provisions of the Contract Work Hours and Safety Standards Act, as amended, commonly known as the Construction Safety Act as pertains to health and safety standards; and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work arising out of and in the course of employment on work under contract.

B. The Contractor, alone, shall be responsible for the safety, the adequacy of his work, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance or operation. The Contractor will comply, within the prices bid and without extra cost to the Owner, with all safety regulations or determinations issued by any agency of the Federal government including OSHA and the State of Delaware.

8. TESTS AND INSPECTIONS

A. If the Contract Documents, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested, or approved by some public body, the CONTRACTOR shall assume full responsibility, therefore, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection, testing, or approval.

B. ENGINEER and his representatives, representatives of OWNER, the Sussex Soil Conservation District, OSHA, DNREC and other agencies having jurisdiction will at reasonable times have access to the WORK. CONTRACTOR shall provide proper and safe facilities for such access, inspection, and observation of the Work and also for any inspection or testing within the prices bid thereof by others.

9. WORKING TIME

A. The Contractor will not be permitted to work on holidays observed by the Owner or the State of Delaware or on Saturdays or Sundays unless otherwise authorized by the Engineer in writing.

B. In case of an emergency, which may require that work be done on Saturdays, Sundays, or Holidays, the Contractor shall request permission of the Engineer to do so. If, in the opinion of the Engineer, the emergency is bonafide, he will grant permission to the Contractor to work such hours as may be necessary. Also, if in the opinion of the Engineer a bonafide emergency exists, he may direct the Contractor to work such hours as may be necessary whether or not the Contractor requests permission to do so.

C. The Contractor will be allowed to work eight (8) hours per day, Monday through Friday, except for holidays, 52 weeks per year between the hours of 8:00 A.M. and 5:00 P.M. No work beyond this window of time shall be permitted unless otherwise noted in writing by the Engineer.

D. Should the Contractor extend his work beyond these specified hours, unless otherwise agreed upon previously in writing, any and all cost of weekend, holiday, and/or overtime inspection incurred by the Contractor, Engineer, or Owner will be the sole obligation of the Contractor. Overtime cost for inspection will be backcharged to the Contractor at a rate of $50.00 x 1.5 = $75.00 per hour. Costs for overtime inspection will be deducted from monthly pay requests.

10. PROTECTION OF PROPERTY AND STRUCTURES

A. The Contractor shall, at his own expense, sustain in their places and protect from direct or indirect injury all pipes, wires, conduits, poles, tracks, walls, buildings, and other structures or property in the vicinity of his work whether above or below the ground, or that may appear in the trench. He shall at all times have sufficient quantity of timber and plank, chains, ropes, etc., on the site and shall use them as necessary for sheeting his excavations and for sustaining or supporting any structures that are uncovered, undermined, endangered, threatened, or weakened. The Contractor shall take all risks attending the presence of proximity of pipes, wires, conduits, poles, tracks, walls, buildings or other structures and property of every kind and description in or over his trenches or in the vicinity of his work whether above or below the

surface ground, and he shall be responsible for all damage and assume all expense for direct or indirect injury caused by his work to any of them or to any person or property by reason of injury to them, whether such structures are or are not shown on the drawings.

B. The Contractor shall take all necessary precautions to protect existing fences, property markers, driveways, curbing, sidewalk etc., including the replacement of any said items damaged through or as a result of the Contractor's operations to the satisfaction of the property owner and the Engineer. The Contractor shall coordinate and pay for replacement of property monuments damaged. This work shall be performed by a surveyor licensed in the State where the damage occurred.

C. All permanent construction will be within lands of the Owner, public Rights-of-Way or Rights-of-Way through private property acquired by the Owner and the Contractor shall confine his operations strictly within the limits of the Rights-of-Way and construction areas, unless he has written permission of the owner of the adjacent property to occupy additional ground. A copy of the written permission shall be placed on file with the Owner.

D. The Contractor shall not enter upon private property for any purpose without obtaining the property owner's permission, and he shall be responsible for the preservation of all public and private property, trees, shrubbery, monuments, and any and all natural or manmade objects, along and adjacent to the work and shall use every precaution necessary to prevent damage or injury to any and all property. The Contractor shall not willfully or maliciously injure or destroy trees or shrubs and shall not remove or cut them without proper written authority of the property owner. The Contractor shall be strictly responsible for any and all damage or injury of every kind and description which directly or indirectly may be done to any property or sustained by any persons during the prosecution of the work resulting from any wrong doing, misconduct, poor construction methods, or any negligence of himself or his agents and/or employees in his manner or method of executing said work or due to his non-execution of said work, even though such manner or method of said work be concurred in, permitted, or allowed by the Engineer or the Owner, its agents, and/or employees, or at any time due to defective work or materials. When or where any direct or indirect damage or injury is done to public or private property, by or on account of any act, construction method, omission, neglect or misconduct in the execution of the work, or in consequence of the non-execution thereof on the part of the Contractor, he shall restore, at his own expense, such property to a condition equal to that existing before

such damage or injury was done by repairing, rebuilding, or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner. In case of the failure on the part of the Contractor to restore such property or make good such damage or injury, the Engineer may, upon forty-eight (48) hours notice, proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary, and the cost thereof may be deducted from any money due or which may become due the Contractor under this Contract. No extension of the Contract time will be allowed for any work or restoration covered by these requirements.

11. FORCE ACCOUNT WORK

A. The Contractor shall perform extra work, for which there is no quantity and price included in the Contract, whenever required to complete fully the work contemplated it is deemed necessary or desirable, by written authority of the Engineer, and such work shall be done in accordance with the specifications therefore or in the best workmanlike manner as directed. This extra work will be paid for on force account basis by written authority of the Engineer. All extra work done on force account basis, the use of which has been solely determined and authorized in writing by the Engineer, will be paid for in the following manner:

Labor: For all labor and foremen in direct charge of the specific project, the Contractor shall receive as shown on his weekly payroll the basic hourly wage, overtime and fringe benefits paid in case to the employee for each and every hour that said labor and foremen are actually engaged in such work, to which cost shall be added an amount equal to fifteen percent of the sum thereof. The Superintendent's or office personnel's time will not be allowed.

Material: For material accepted by the Engineer and used, the Contractor shall receive the actual cost of such materials delivered for the work, including transportation charges paid by him to which the cost of fifteen percent will be added.
Equipment: For any machinery or special equipment including fuel and lubricants, plus transportation costs, the use of which has been authorized by the Engineer, the Contractor shall receive the rental rate agreed upon in writing before such work is begun for the actual time that such equipment is in operation on the work, to which rental sum fifteen percent will be added. In addition to the above, the actual transportation costs for one move in and one move out may be allowed. When the Owner is obligated to pay for idle equipment the allowance shall be seventy-five

percent of the agreed on equipment rental rate. To compute hourly rates use eight hours per day, forty hours per week and one-hundred and seventy-six hours per month.
Subcontractors: For all work performed by subcontractors, the Contractor shall receive the rate billed to him by the subcontractor for each and every hour that said subcontractor is actually engaged in such work to which shall be added an amount equal to ten percentum (10%) of the sum.

Miscellaneous: No additional allowance shall be made for the General superintendence of the project and related transportation, the use of small tools, or other costs for which no specific allowance is herein provided.

B. The compensation as herein provided shall be received by the Contractor as payment in full for extra work done on a "force account" basis. The Contractor's representative and the Resident Project Representative (R.P.R.) shall compare records of extra work on a "force account" basis at the end of each day. Copies of these records shall be made in duplicate, upon the Engineer's "force account forms" and signed by both the R.P.R. and the Contractor's representative, one copy being forwarded respectively to the Engineer and to the Contractor. Claims for extra work performed on a "force account" basis shall be submitted to the Engineer, in triplicate, on certified forms properly executed, by the Contractor. Statements shall also include the value of all material used in such work, and said statements shall be filed not later than the fifteenth (15th) day of the month following that in which the work was actually performed, and shall include all charges which can be verified.

C. For extra work, as defined in this paragraph, the Contractor will be reimbursed for his expenditures for Workmen's Compensation Insurance, Public Liability Insurance, Social Security taxes and Unemployment Compensation covering the workers actually engaged upon such extra work. No percentage will be added to such payments, but the Contractor shall receive only the actual amount of money expended for such Workmen's Compensation Insurance, Public Liability Insurance, Social Security taxes and Unemployment Compensation. Such Payments shall be based upon the prevailing standard insurance rates supported by receipted vouchers from the insurance vendors and upon the actual amount of taxes paid for Social Security and Unemployment Compensation as evidenced by proper documents furnished by the Contractor.

12. PAYMENTS TO CONTRACTOR

A. The Contractor will be compensated monthly for only the materials in-place, complete, and will not be compensated for materials stored unless specifically listed at the Pre-Construction Conference. In the case of lump sum items, monthly compensation will be on the basis of the schedule of values to be agreed upon prior to beginning construction.

B. Each request for payment shall contain Contractor's certification that he has paid all subcontractors and material men in the same proportion for all work and materials supplied to them at his own receipts.

C. Prior to final payment, the Contractor shall furnish a complete release of liens form individually executed by all subcontractors and material men.

13. SCHEDULES, REPORTS AND RECORDS

A. All items of work which require measurement shall be measured concurrently, upon installation and before covering or backfilling, by the Owner's representative and the Contractor's representative. All items so measured will be recorded by both parties in a format which can be kept current until completion of the work.

B. Such measurement records shall be utilized to formulate and check partial and final requests for payment. Upon completion of the work, both sets of records shall be delivered to the Engineer for his use in the preparation of record drawings.

C. All measurements, to the maximum extent possible, shall be referenced to base dimensions and stationing shown on the drawings.

14. ELIMINATED ITEMS

Should any items contained in the Proposal be found unnecessary for the proper completion of the work contracted, the Engineer may, upon written order to the Contractor, eliminate such items from the contract and such action shall in no way invalidate the contract, and no payment will be made for the items so eliminated in making final payment to the Contractor except for such actual work as may have been done, and materials actually purchased prior to elimination of the scope of work.

15. CONTRACTOR'S LEGAL ADDRESS

A. The address given in the bid or proposal is hereby designated as the legal address of the Contractor. Such address may be changed at any time by notice in writing delivered to the Engineer. The delivering at such legal address or the depositing in any post office, in a postpaid, registered wrapper directed to the above-mentioned address of any notice, letter and other communication to the Contractor, shall be deemed to be a legal and sufficient service thereof upon the Contractor.

B. The delivering at or the mailing to the Contractor's business address (written notice of which address shall be given to the Engineer), or the delivering to the Contractor in person or to his authorized representative, of notices, letters and other communication shall also be deemed to be a legal and sufficient service thereof upon the Contractor.

16. ORDERING MATERIALS

A. Delivery schedules for all materials and/or equipment specified herein or shown on the drawings, or in any way affecting the work, shall be reported to the Engineer within ten (10) days of the notice to proceed. The Engineer shall be notified immediately if any materials or equipment are not obtainable, or promised delivery dates are such as to seriously impede the work. Substitute materials, if required, shall be subject to approval by the Engineer. To meet the contract time, Contractor may need to pay extra for expediting manufacture or delivery. The Contractor will be expected to include such costs within the base prices bid and to meet the project schedule.

B. Contractor shall frequently check on continued validity of delivery dates and shall advise the Engineer promptly of any change of delivery promises made by the suppliers. The Contractor shall expedite deliveries of materials controlling job progress.

C. Shop Drawings and orders shall be handled expeditiously by the Contractor to avoid delays in the work.

D. By submitting his bid, Contractor certifies that manufacturing and delivery schedules have been confirmed and validated and incorporated into his overall project schedule in a manner that will assure Contractor's control of the schedule and completion within the designated project period, and within the base prices bid.

17. BUILDING CODES

A. The contractor shall conform to the latest edition of International Building Code and NFPA 101 Life Safety Code. If the contractor discovers questionable deviation from these code requirements, the contractor is then required to notify the engineer for confirmation.

B. The contractor shall conform to safety standards as set forth by the "Manual of Accident Prevention in Construction by Associated General Contractors of America, Inc", and O.S.H.A.

18. LAWS TO BE OBSERVED

The Contractor shall observe and comply with federal, state, county, and local laws, ordinances, rules, regulations, decrees and orders that are in effect and applicable to the work during the time of construction; and he shall see that his subcontractors likewise meet this requirement. He shall indemnify, and hold harmless, the Owner and his representatives against claims and liabilities arising from Contractor and subcontractor violations of such laws, ordinances, rules, regulations, decrees, and orders, whether such violations be by the Contractor or any Subcontractor, or any of their agents and/or employees.

19. SUBSTITUTIONS

An offer of an article or material by the Contractor for an article of material specified, will raise the presumption that it is for the purpose of saving money. If, in such case, the articles or material is approved, the Owner shall be given credit as follows: the difference in the net cost to the Contractor of the article or material submitted and the price at which he could have obtained the lowest priced article or material specified. For convenience in checking the credit, if any, the Contractor shall submit these figures when the offer is made, and no article or materials will be considered without figures.

20. PERMIT REQUIREMENTS

Contractor shall perform all work shown on the drawings and required within these specifications in accordance with all authorities having jurisdiction and all applicable permits.

21. LOCATION OF EXISTING UTILITIES

A. The Contractor's attention is directed to the fact that the location of the existing utilities shown on the contract drawings are approximate only. It shall be the Contractor's responsibility to locate these utilities, by test pits in the vicinity of the utilities prior to actual construction, within the base bid prices.

B. The Contractor shall do all work, within the prices bid and without extra cost to the Owner, which is required to locate, protect, relocate, replace or repair all overhead and underground utilities shown or not shown on the drawings, as necessary for the construction of this project. He shall contact "Miss Utility" at 1-800-282-8555 and the Owner at least 48 hours prior to digging in the vicinity of existing underground utilities to have them located and marked.

C. The failure to show on the contract drawings any existing utilities shall not relieve the Contractor of his responsibility of determining the locations of these utilities, and any damage to the utilities or interruption of services shall be repaired by the Contractor according to Owner or utility company specifications. The Owner shall be notified of any damage to any utilities.

D. The Contractor shall, within the unit prices bid and without extra cost to the Owner, pay all charges levied by utility companies for work performed by their forces to locate, inspect, protect, relocate, replace or repair overhead or underground utilities as necessary for the construction of this project.

22. COOPERATION WITH OTHER CONTRACTORS

A. The Contractor shall cooperate with and so conduct his operations as not to interfere with or injure the work of other contractors or workmen employed by the Owner. He shall promptly make good, at his own expense, any injury or damage which may be done by him or his employees or agents on the work.

B. The Contractor shall suspend such part of the work herein specified, or shall carry on the same in such manner, as may be ordered by the Engineer when necessary to facilitate the work of such other contractors or workmen.

23. TEST BORING AND/OR SUBSURFACE CONDITIONS SHOWN ON DRAWINGS

A. Where test borings and/or subsurface conditions are provided they have been provided

for the information of all parties concerned; however, the Owner assumes no responsibility for the accuracy of such information, and should any bidder or Contractor rely on such information in preparing his bid or in the performance of the work, he does so at his own risk.

B. Whether or not subsurface conditions are shown the Contractor is not relieved of the responsibility of making his own investigations to determine the type of subsurface materials prior to bidding. Where the bid or proposal stipulates unit prices, the presence or absence of particular subsurface materials, or the increase or decrease in quantities of specific subsurface materials, shall not entitle the Contractor to additional compensation beyond the unit prices stipulated, wherein unclassified excavation is included as a part of the proposal items.

C. Should the Contractor encounter subsurface and/or latent conditions at the site materially differing from those shown on the plans or indicated in the specifications, he shall immediately give notice to the Engineer of such conditions before proceeding.

24. RECORD DRAWINGS

The Contractor shall keep 1 copy of the drawings at the site, in good order and provide mark-up to show all changes made during construction. These record drawings shall be available to the Engineer, and shall be delivered to him upon completion of the Contract. The Engineer will compare the contractor's mark-up to the inspector's and prepare final record drawings for the Owner.

25. CONTRACTOR RESPONSIBILITY TO COORDINATE ALL SERVICES

During construction, testing, start-up and initial operation, and during the one year guarantee period, Contractor is solely responsible for coordinating the efforts of all parties responsible for work under this Contract. Should problems arise, Contractor shall promptly perform all tests necessary to trouble shoot and identify the problems and assure repairs are made by the appropriate Subcontractors or suppliers as required to remedy any faults. Contractor shall respond to requests for services from the Owner or Engineer as soon as possible, but in no case, longer than 24 hours after receiving such request whenever a problem arises which affects the proper operation of the work. The fault or defect shall be remedied as soon as possible. The Contractor shall provide emergency substitute equipment at his expense, if necessary, to keep the system operational during troubleshooting or repairs and shall bear all costs associated with such efforts.

26. EROSION AND SEDIMENT CONTROL

The Contractor shall provide for safe disposal of run-off from construction areas in accordance with County and State erosion and sediment control requirements. Such requirements may be defined in the Contract Documents, issued by addendum or order during construction by the controlling agency, owner or engineer. The cost of erosion and sediment control measures shall be included in the appropriate unit prices bid.

27. PERMITS, FEES AND NOTICES

A. The Contractor shall pay taxes, royalties, and fees, and secure licenses that are required, during the time of the contract, by local, county, state and federal laws, ordinances, rules, codes and regulations for the legal performance of the contract.

B. The Contractor shall perform the work in accordance with notices issued by public authorities having jurisdiction over the work.

C. If the Contractor performs work, knowingly or ignorantly, contrary to requirements of local, county, state and federal laws, ordinances, rules, codes and regulations, he shall assume full responsibility therefore and shall bear all costs of suits, actions and damages resulting from his illegal work performed.

28. PATENTS

A. Whenever articles, materials, means, appliances, processes, compositions, combinations and things indicated by these specifications are covered by letters patent, the successful Bidder shall secure, before using or employing such articles, materials, means, appliances, processes, compositions, combinations or things, the assent, in writing, of the Owner or licensee of such letters patent and file the assent with the Engineer.

B. The said assent is to cover not only the use, employment and incorporation of said articles, materials, means, appliances, processes, compositions, combinations or things in the construction and completion of the work, but also the permanent use of said articles, materials, means, appliances, processes, compositions, combination or things, thereafter by or on behalf of the Owner in the operation and maintenance of the project for the purpose for which it is intended or adapted.

C. It is mutually agreed and understood that without exception, the Contract prices shall include all royalties or costs arising from the use of such design, device or materials in any way involved in the work.

29. DRAWINGS TO BE FOLLOWED

The approved plans, profiles, details and cross sections on file in the office of the Engineer will show the location, details and dimensions of the work contemplated, which shall be performed in strict accordance therewith and in accordance with the specifications. There shall be no deviation from the drawings and specifications on account of the exigencies of construction, unless approved and authorized in writing by the Engineer.

30. INTERPRETATION OF DRAWINGS

On all drawings, the figured dimensions shall govern in the case of discrepancy between the scales and figures. The Contractor shall take no advantage of any error or omission in the drawings or of any discrepancy between the drawings and specifications, and the Engineer will make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the specifications, and of the drawings as construed by him. In all cases of doubt as to the true meaning of the specifications and drawings, the decision of the Engineer will be final and conclusive.

31. ALTERATION OF DRAWINGS AND CHARACTER OF WORK

The Engineer reserves the right to make such alterations in the drawings and in the character of the work as necessary or desirable, or both, from time to time to complete the construction of the work, provided such alterations do not change materially the original drawings and specifications; and such alterations shall not be considered as a waiver of conditions of the contract, nor shall they invalidate any of the provisions thereof. Should such alterations in the drawings or in the character of work, or both, cause increased or decreased cost to the Contractor, a fair and equitable sum therefore, to be agreed upon in writing by the Contractor and Engineer before such work is begun, shall be added or deducted from the contract price. No allowance will be made for anticipated profits on the work omitted.

32. ENGINEER MAY INCREASE AND DECREASE QUANTITIES

A. Whenever the estimated quantities of work to be done and materials to be furnished on a unit price basis under this contract are shown in any of the documents including

the bid, they are given for use in comparing bids. The Engineer reserves the right to increase and decrease the amount or quantity of unit price items included in the bid wherever he deems it advisable or necessary to do so, and such increase or decrease shall in no way violate the contract.

B. The Contractor will be paid for the actual amount of quantity of authorized work done or materials furnished under any unit price item of the "Bid or Proposal", at the price bid and stipulated for such item. In case the amount or quantity of any item is increased as above provided, the Contractor shall not be entitled to any damages or increased compensation over and above the price bid for such items, and in case the amount or quantity of any item is diminished as above provided, the Contractor shall not have any claim for damages due to loss of anticipated profits or otherwise because of such diminution.

33. UNAUTHORIZED WORK

Work performed without Engineer's approval of lines and grades, work performed beyond the lines and grades shown on the drawings or as given, except as herein provided, and extra work performed without written authority, will be considered as unauthorized and at the expense of the Contractor. Such work will not be measured by the Engineer, nor will payment be made by the Owner. Work so performed may be ordered, by the Engineer removed and replaced at the Contractor's expense.

34. EXECUTION OF WORK

A. The Contractor shall begin the work to be performed under the contract at the time stated in the Notice to Proceed, provided by the Engineer to the Contractor. The place where the work is to be started will be stated either in this notice to proceed or will be designated on the ground. The work shall be executed from as many different points, in such part or parts and at such times as may be directed, and shall be conducted in such a manner and with sufficient materials, equipment and labor as is considered necessary to ensure its completion with the time set forth in the contract.

B. If the work should be discontinued because of unforeseen events, the Contractor shall immediately notify the Engineer. When the Contractor shall discontinue the work because of a planned stoppage, the stoppage shall not take place until the Engineer has authorized such stoppage; and work shall not be resumed until Contractor notifies Engineer 24 hours in advance of starting work again.

35. COOPERATION OF CONTRACTOR AND REPRESENTATIVE

The Contractor shall give the work his constant attention to facilitate the progress thereof and shall cooperate with the Engineer and Owner. The Contractor shall have at all times a competent and reliable English-speaking representative on the work, authorized to receive orders and act for him.

36. EMPLOYEES AND EQUIPMENT

A. Employees of the Contractor or persons connected with the Contractor shall be discharged upon request of the Engineer for any or all of the following reasons:

1. Directing profanity or abusive language, or both, at the Resident Project Representative, the Engineer, and other Owner's representatives.
2. Interfering with Resident Project Representative and other Owner's representatives in performance of their work.
3. Disobeying or evading, or both, instructions of the Engineer or Owner's representatives.
4. Carelessness or incompetency, or both.
5. Being objectionable to the Owner.

Discharged employees shall not be rehired without consent of the Engineer.

B. Contractor shall furnish, and maintain in safe working condition, equipment necessary to properly perform the work in the scheduled time.

37. SANITARY PROVISIONS

The Contractor shall provide and maintain in a neat and sanitary condition such sanitary conveniences and accommodations for the use of his employees as may be necessary to comply with the requirements and regulations of the Department of Health or of other bodies or tribunals having jurisdiction thereof. He shall commit no public nuisance. He shall construct or provide portable toilet facilities to provide natural light and ventilation, or artificial light and mechanical ventilation. He shall maintain toilets in a clean and sanitary condition. He shall provide toilet tissue in a suitable holder. The Contractor shall remove temporary toilets when construction is complete.

38. PUBLIC CONVENIENCE AND SAFETY

A. The Contractor shall conduct the work in a manner that will minimize obstruction to traffic in the area. The safety and convenience of the General public and of the residents and occupants of property along and adjacent to the work shall be provided in an adequate and satisfactory manner. The Contractor shall provide and maintain ingress and egress for all residences and places of business located along the construction route. So far as practical, materials shall not be stored upon the highway. When it is absolutely necessary to do so they shall be placed so as to cause as little obstruction to the traveling public as possible. Footways and portions of the highways and streams adjoining the work shall not be obstructed more than absolutely necessary. In no case shall any traveled thoroughfare be closed without permission of the Engineer.

B. If, in the opinion of the Engineer, it is necessary to keep the road or any portion of the road open to travel during the construction, the Contractor shall carry on his work in such a manner as to provide such means that travel will not be obstructed or endangered.

C. The Contractor shall provide and maintain in an acceptable condition such temporary roadways and bridges as may be necessary to accommodate the traffic using or diverted from a roadway where construction is taking place. He shall also provide and maintain in a safe condition temporary approaches to and crossings of intersecting roadways.

D. Fire hydrants on or adjacent to the work shall be kept accessible to fire apparatus at all times, and no obstructions shall be placed within 15 feet of hydrant. Work areas closed down for any length of time shall be left entirely accessible at all points to fire apparatus.

E. Gutters and storm drain inlets shall be kept unobstructed at all times.

F. The Contractor shall not disturb the surface of an existing sidewalk or road further in advance of the new construction that can be completed in a reasonable length of time as determined by the Engineer.

39. BARRICADES, DANGER, WARNING, AND DETOUR SIGNS

A. The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient lights, danger signals and signs provide a sufficient number of watchmen and take all necessary precautions for the protection of the work and safety of the public. Highways closed to vehicular and pedestrian traffic shall be protected by effective barricades, on which shall be placed acceptable warning signs. The Contractor shall detour vehicular and pedestrian traffic and shall furnish and maintain all detour signs required to direct vehicular and pedestrian traffic over the entire route of the detour. Costs for maintaining traffic shall become incidental to the bid terms of this contract and will not be paid for directly. At all times, the Contractor shall use every precaution possible to warn pedestrians and the traveling public as to the construction in progress.

B. Vehicular and pedestrian traffic may be detoured only over approved routes along existing roads upon vehicular and pedestrian approval of the State Highway Department, Owner and Engineer.

40. CONTRACTOR'S RESPONSIBILITY FOR WORK

A. Until the final acceptance of all the work as indicated in writing by the Engineer, the work shall be under the charge of and care of the Contractor. He shall take every precaution against destruction, injury, or damage to the work, or to any part thereof from any other cause whatsoever. The Contractor shall rebuild, repair, restore, and make good, at his own expense, all destruction, injuries, or damage to the work or any of the above causes before its final completion and acceptance shall be indicated in writing by the Engineer.

B. No inspection or supervision, no failure to inspect or supervise, nor the presence of any employees of the Engineer during the execution of the work, and no approval or acceptance of any part of the work herein contracted for, or of the materials and equipment used therein, shall relieve the Contractor of any of his obligations to fulfill his contract, or shall prevent the rejection of said work, materials, and equipment in whole or in part, at any time thereafter should said work, materials or equipment be found by the Engineer to be defective or not in accordance with the requirements of these Contract Documents.

41. USE OF A SECTION OF THE WORK

Whenever, in the opinion of the Engineer, a portion of the work is in acceptable condition for Owner's use, it may be used for its intended purpose; and such use shall not imply final acceptance of that portion of the work, nor waive any provisions of these Contract Documents.

42. TEST OF SAMPLES OF MATERIALS

Tests of materials shall be made at the Contractor's expense, by a certified testing laboratory, in accordance with the officially approved methods as described or designated. The Owner reserves the right to conduct verification testing at his own expense. The Contractor shall cooperate with and assist the Owner in conducting such testing and in taking samples and packing them for shipment to a laboratory.

43. QUALITY OF MATERIALS AND WORKMANSHIP

A. Materials and workmanship shall be of best possible quality and feasibility for the intended purpose, whether or not a brand name is specified. Materials shall be new and unused.

B. Representative preliminary samples of materials may be requested by the Engineer for examination or testing, or both. Materials, for which samples are submitted to Engineer, shall not be ordered by Contractor until Engineer furnishes written approval of said samples. Materials may be further inspected by the Engineer during preparation and construction of the work; and materials found to be substandard will be rejected.

C. Contractor shall submit to Engineer samples of alternate materials that require laboratory testing. Such materials shall not be incorporated into the work until Engineer states, in writing, that materials meet requirements of the specifications.

44. AUTHORITY OF ENGINEER

A. The Engineer shall, in all cases, determine the amount or quantity, quality and acceptability of the work and materials for which payment is made under this contract. He shall decide on all questions in relation to said work and the performance thereof. He shall, in all cases, decide on questions which arise relative to the fulfillment of the

contract, to the contract and to the obligations of the contract thereunder.

B. To prevent disputes and litigations, the Engineer will be the referee in questions between the Contractor and the Owner concerning the contract. Engineer's determination, decision, and/or estimate shall be final and conclusive upon the Contractor and shall also be a condition precedent to the right of the Contractor to receive monies under the contract.

45. AUTHORITY AND DUTIES OF RESIDENT PROJECT REPRESENTATIVE

Resident Project Representatives (R.P.R.'s) employed by the Owner or Engineer shall be authorized to observe all work done and materials furnished. Such observation may extend to all or any part of the work and to the preparation or manufacture of the materials to be used. An R.P.R. may be stationed on the work to report to the Engineer as to the progress of the work and the manner in which it is being performed; also to report whenever it appears that the materials furnished and work performed by the Contractor fail to fulfill the requirements of the specifications and contract. No inspection, or any failure to inspect, at any time or place, however, shall relieve the Contractor from his obligation to perform all the work strictly in accordance with the requirements of the specifications. The R.P.R. shall perform such other duties as are assigned to him. He shall not be authorized to revoke, alter, enlarge, relax or release any requirements of these specifications, nor to approve or accept any portion of work, nor to issue instruction contrary to the drawings and specifications. The R.P.R. shall in no case act as foreman or perform other duties for the Contractor, nor interfere with the management of the work by the latter.

46. INSPECTION OF MATERIALS AND WORK

The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether or not the work as performed is in accordance with the requirements and intent of the specifications and contract. If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove and/or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications without additional compensation. Should the work thus exposed or examined proved unacceptable, the removing, replacing and/or making good the parts removed shall be the Contractor's expense.

47. DEFECTIVE MATERIALS AND WORK

All materials not conforming to the requirements of these specifications shall be considered as defective, and all such materials whether in place or not, shall be rejected and shall be removed immediately from the work unless otherwise permitted. No materials which have been rejected, the defects of which have been corrected or removed, shall be used until approval has been given. All work which has been rejected or condemned shall be remedied, or if necessary, removed and replaced in an acceptable manner by the Contractor at his own expense.

48. FAILURE TO REMOVE AND RENEW DEFECTIVE MATERIALS AND WORK

Should the Contractor fail or refuse to remove and renew defective materials used or work performed previously or to make any necessary repairs in an acceptable manner, and in accordance with the requirements of these specifications, within the time indicated in writing, the Engineer shall have the authority to cause the unacceptable or defective materials or work to be removed and renewed or such repairs to be made at the Contractor's expense. Expenses incurred by the Owner in making these removals, renewals, or repairs, which the Contractor has failed or refused to make, shall be paid out of any monies due or which may become due the Contractor, or may be charged against the "Performance Bond" deposited. Continued failure or refusal on the part of the Contractor to make any or necessary repairs, removals and renewals promptly fully and in an acceptable manner, shall be sufficient cause for the Owner to declare the contract forfeited, in which case the Owner, at his option, may purchase tools, materials and equipment and employ labor, as may be required to perform the work. All costs and expenses incurred thereby shall be charged against the "Performance Bond" deposited. The performance of work by the Owner and/or others as specified shall not relieve the Contractor in any way from his responsibilities under this contract.

49. TEMPORARY SUSPENSION OF WORK

The Engineer shall have the authority to suspend the work, wholly or in part, for such period or periods as he may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for the suitable execution of the work, or for such time as is necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract. If it should become necessary to stop work for an indefinite period, the Contractor shall store all materials in such manner that they will not obstruct or impede the traveling public unnecessarily nor become damaged in any way, and he shall take every precaution to prevent destruction, damage or deterioration of the work

performed, provide suitable drainage by opening ditches, shoulder drains, etc., and erect temporary structures where necessary. The Contractor shall not suspend the work without authorization. Neither the failure of the Engineer to notify the Contractor to suspend the work on account of bad weather or other unfavorable conditions, nor permission by the Engineer to continue work during bad weather or other unfavorable conditions, shall be a cause for the acceptance of any work which does not comply in every respect with the contract and specifications.

50. ANNULMENT OF CONTRACT

A. Contract may be annulled if Contractor defaults in any or all of the following ways:

1. Failure to begin work at time specified.
2. Failure to perform the work with sufficient number of workers.
3. Failure to provide sufficient materials to ensure prompt completion of the work, except where extension of time is granted.
4. Failure to perform the work suitably.
5. Failure to remove materials of rejected work.
6. Failure to correct rejected work.
7. Failure to execute the work in manner acceptable to Engineer.
8. Becoming bankrupt or insolvent, or both.
9. Allowing a final judgment against him unsatisfied for 48 hours.
10. Making an assignment for the benefit of creditors.
11. Failure to pay subcontractors for labor.
12. Failure to pay for materials supplied.
13. Persistently disregarding laws, rules, ordinances, regulations, and codes applicable to the work.
14. Disregarding Engineer's instructions.
15. Failure to comply, within ten (10) days after Contractor's receipt (by certified mail, with return receipt requested) of Engineer's notice of default and Engineer's orders to properly execute the work.
16. Lapse of Contractor's insurance.
17. Failure to discharge persons per General Condition No. 36.

B. Engineer may act to annul the contract, because of any or all of Contractor's defaults, in the following manner:

1. Give written notice to Contractor and/or his surety of details of Contractor's

default.

2. Issue certificate to Owner describing Contractor's default.

C. Owner, upon receipt of such certificate (preceding paragraph), has full power and authority to terminate Contractor's employment and to take possession of the premises; materials, appliances and equipment of the work on the premises. Certificate shall further empower Owner to enter into an agreement for completion of said contract according to the terms and provisions thereof, or to utilize other methods shall be deemed expedient for completion of the contract in accordance with the drawings and specifications.

D. The Owner shall have the right to take the following actions because of any or all of the defaults hereinbefore described:

1. Withhold without paying interest, such sums of money due Contractor until Owner's claims have been protected.
2. Deduct monies due the Contractor equal to amount required to pay Owner's expenses for Owner's completing the work of the contract.
3. Pay the defaulted Contractor an amount equal to the difference between actual cost of Owner's completing the contract and the sum which would have been paid Contractor had he not defaulted, if the cost to complete the work is less than amount owed the defaulted Contractor.
4. Collect from the defaulted Contractor and/or surety an amount equal to the difference between actual cost of Owner's completing the contract and the sum which would have been paid the Contractor had he not defaulted, if the cost to complete the work is more than the amount owed the defaulted Contractor.

51. MEASUREMENT OF QUANTITIES

A. All work completed under the contract shall be measured by the Engineer or the Resident Project Representative according to United States Standard Measures.

B. In computing tonnage, certified freight weigh-bills or certified weight-slips will be utilized. Other quantities will be determined according to recognized engineering practices approved by the Engineer or as defined on the drawings.

52. PAYMENT FOR MATERIALS WHEN PAYMENT IS NOT MADE BY CONTRACTOR

A. When persons furnishing labor or material, or both submit notice of completion and conditional acceptance of work, 10 days after such completion and conditional acceptance, Contractor shall furnish the Engineer evidence that payment has been made for such labor and material. If such evidence is not produced, amounts of claims may be retained from monies due the Contractor until claims are satisfied or until notices are withdrawn.

B. The Owner or the Engineer may also, with the written consent of the Contractor, use monies retained or due the Contractor to pay labor and material costs for the work, provided claims have been filed in the office of the Engineer.

53. NO ESTOPPEL OR WAIVER OF LEGAL RIGHTS

The Owner or the Engineer, shall not be precluded or estopped by any measurement, estimate or certificate, made or given by him, or by any agent or employee of the Owner, under any provision or provisions of the contract, at any time, either before or after the completion and acceptance of the work and payment therefore pursuant to any measurement, estimate or certificate, from showing the true and correct amount and character of the work performed and materials furnished by the Contractor or from showing at any time that any measurement, estimate, or certificate is untrue or incorrectly made in any particular, or that the work or materials or any part thereof do not conform in fact to specifications and contract, and the Engineer shall have the right to reject the whole or any part of the aforesaid work or materials, should the said measurement, estimate, certificate or payment be found or be known to be inconsistent with the terms of the contract, or otherwise improperly given, and the Owner shall not be precluded and estopped, notwithstanding any such measurement, estimate, certificate and payment in accordance therewith from demanding and recovering from the Contractor and his Surety such damages as it may be sustained by reason for his failure to comply with the terms of the specifications and contract. Neither the acceptance by the Owner, or the Engineer, or any agent or employee of the Owner nor any certificate by the Owner for payment of money, nor any payment for, nor acceptance or use of the whole or any part of the work by the Owner, or the Engineer nor any extension of time, nor any possession taken by the Owner or its employees, shall operate as a waiver of any breach of the contract be held to be a waiver of any other of subsequent breach.

54. CLAIMS FOR EXTRA COMPENSATION

A. Should the Contractor be of the opinion, at any time or times, that he is entitled to any additional compensation whatsoever (over and above the compensation stipulated in these Contract Documents or for quantities and/or amounts over and above the quantities and/or amounts allowed or approved by the Engineer) for damages, losses, costs and/or expenses alleged to have been sustained, suffered, or incurred by him in connection with the project herein contemplated, he shall, in each occurrence, within five (5) days after such alleged damages, losses, costs and/or expenses shall have been sustained, suffered or incurred, make a written claim therefore to the Engineer on or before the fifteenth day of the calendar month succeeding that in which damages, losses, costs and/or expenses shall have been sustained, suffered, or incurred the Contractor shall file with the Engineer a written, itemized statement and/or expenses. Unless such claims and statements shall been thus made and filed, in each such instance, the Contractor's claim for such additional compensation shall be held and taken to be invalidated, and he shall not be entitled to any compensation on account of such alleged damages, losses, costs and/or expenses.

B. The provisions of these General Conditions shall be held and taken to constitute a condition precedent to the right of the Contractor to recover; they shall also apply to all claims by the Contractor in any way relating to the complete project, and even though the claims and/or work involved may be regarded as "outside the contract".

C. It is understood and agreed, however, that nothing in these General Conditions contained shall be held or taken to enlarge in any way the rights of the Contractor or the obligations of the Owner under these Contract Documents.

55. EXTRA WORK RELATING TO CONTRACT

No order for extra work, nor the doing of any work, at any time or place shall in any manner or to any extent relieve the Contractor or the Surety of his bond from any of their obligations under the Contract Documents; all extra work orders being given and all extra work being done, under and in accordance with the contract; and to be considered a part of the same and subject, to each and every one of the terms and requirements of the contract documents, and fully covered by the bond furnished by the Contractor.

56. SCOPE OF PAYMENTS

The Contractor shall receive and accept the compensation, as provided in the Bid or Proposal, in full payment for furnishing all materials, labor, tools, and equipment and for performing all work contemplated and embraced under the contract, also for all loss or damage arising out of the nature of the work, or from the action of the elements, or from any unforeseen difficulties or obstructions, which may arise or be encountered during the execution of the work, until its final acceptance by the Owner, and for all risks of every description connected with the execution of the work; also, for all expenses incurred by, or in consequence of the suspension or discontinuance of the execution of the work as herein specified, and for any actual or alleged infringement of patent, trademark or copyright and for completing the work and the whole thereof, in an acceptable manner according to the drawings and specifications. The payment of any current or final estimate, or of any retained percentage, shall in no way or in no degree prejudice or affect the obligation of the Contractor, at his own cost and expense, to renew, or replace any defects and imperfections in the construction of the work or in the strength of or quality of materials used in or about the construction of the work under contract and its appurtenances, as well as all damage due or attributable to such defects, which defects, imperfections or damages shall be discovered on or before the final inspection and acceptance of the work, and of which defects, imperfections or damages the Engineer shall be the judge, and the said Contractor shall be liable to the Owner for failure to do so.

57. PARTIAL PAYMENTS

A. The Contractor may make monthly estimates in the approved format, once each month, of the materials in place complete, and the amount of work performed in accordance with the Contract, during the preceding month or period, and the value thereof figured at the unit price of the Contract. In the case of lump sum items, the estimate will be on the basis of the schedule of values to be agreed upon, as hereinafter provided for. Partial payment requests shall be submitted in 5 copies to the Engineer on an approved form. Contractor shall attach a Schedule of values, showing percent completion, to each partial payment estimate. The Engineer shall respond within ten (10) days and state his approval or request revisions. The Owner shall pay the Contractor the approved amount within thirty (30) days of presentation to him of an approved partial or final payment estimate. Payment estimates are considered "approved" when signed off on by the Engineer, the Owner, and the Contractor.

B. From the total of the amounts estimated will be deducted a retainage. The retainage

shall not be less than an amount equal to 10 percent of an approved partial payment estimate until 50 percent of the work has been completed. If the job is proceeding satisfactorily at 50 percent (50%) completion, further partial payments shall be made in full; however, previously retained amounts shall not be paid until the construction is substantially completed.

C. A schedule of values of the various parts of the work to be done under lump sum items, shall be agreed upon by the Contractor and the Engineer. Prior to the first monthly payment requisition, the Contractor shall submit for approval, a proposed breakdown into construction categories of his lump sum bid price. This breakdown shall add up to the full 100 percent (100%) value of his lump sum price, and all parts of it shall be covered by the Performance Bond. The approved breakdown shall be used for the purpose of arriving at a basis for monthly estimates.

D. One half the Mobilization will be paid to the Contractor at the time of first partial payment. The remainder will be proportioned according to work completed and paid as work progresses. Mobilization shall not exceed five percent (5%) of the base price bid.

E. Each request for partial payment shall contain Contractor's certification that he has paid all Subcontractors and Materials men in the same proportion for all work and materials supplied by them at his own receipts.

F. The Contractor will be compensated monthly only for the materials in-place complete and will not be compensated for materials stored. In the case of lump sum items, monthly compensation will be on the basis of the schedule of values to be agreed upon prior to beginning construction.

58. PAYMENTS MAY BE WITHHELD

Payments may at any time be withheld if the work is not proceeding in accordance with the contract, or if, in the judgment of the Engineer, the Contractor is not complying with the requirements of the Contract Documents.

59. CONDITIONAL ACCEPTANCE OR SUBSTANTIAL COMPLETION

Whenever, in the opinion of the Engineer, the Contractor shall have the work substantially complete and in an acceptable manner in accordance with the terms of the contract, the

Contractor shall arrange for an inspection of the entire work by the Engineer, and upon completion of all repairs or renewals which may appear at the time to be necessary, in the judgment of the Engineer, he shall certify to the Owner in writing as to said acceptance. The aforesaid certificate shall be held and taken to evidence the conditional acceptance of the work completed by the Owner as of the date thereof. The Owner shall continue to reserve and retain five (5) percentum of the whole value of the work as shown by the said certificate of conditional acceptance, over and above any and all other reservations and/or deductions which the Owner is, by the terms of the Contract Documents or otherwise, entitled or required to make and retain, and shall hold the said five (5) percentum for a period of one (1) month from and after the date of such certificate of conditional acceptance. The Owner shall be authorized to apply the whole or any part of said five (5) percentum so retained, to any and all costs of repairs and renewals of the work and appurtenances which may become necessary, in the judgment of the Engineer, during such period of one (1) month on account of any failure or defects in said work and appurtenances if due to improper work done or materials furnished by the Contractor, and if the Contractor shall fail to make or initiate such repairs or renewals within twenty-four (24) hours after receiving notice from the Owner to do so. The time of project completion shall apply to contractor obtaining "Conditional Acceptance" of all work completed involved in contracts.

60. UNLIMITED LIABILITY OF CONTRACTOR

It is understood and agreed that any and all of the duties, liabilities and/or obligations imposed upon or assumed by the Contractor and the Surety, or either of them, by or under the Contract Documents, shall be taken and construed to be cumulative, and that the mention of any specific duty, liability or obligation imposed upon or assumed by the Contractor and/or Surety under the Contract Documents shall not be taken or construed as a limitation or restriction upon any or all of the other duties, liabilities and/or obligations imposed upon or assumed by the Contractor and/or Surety by or under the Contract Documents.

61. CUMULATIVE REMEDIES

All remedies provided in the Contract Documents shall be taken and construed to be cumulative; that is, in addition to any and all other remedies provided therein and to any remedies in law or equity which the Owner would have in any case.

62. FAILURE TO COMPLETE WORK ON TIME

Permitting the Contractor to continue and finish the work or any part of it after the time

established in the contract for its completion or after the date of which the time for completion may have been extended shall not operate as a waiver by the Owner of any of its right under this contract, and shall not relieve the surety from its obligation.

63. PROJECT MEETINGS

A. The Engineer may keep minutes of project meetings and will distribute copies to all parties present at meeting or listed on a permanent list of concerned parties.

B. Except as noted below for preconstruction meeting, progress meetings will be scheduled on a regular basis by the Engineer.

C. The Engineer may call additional progress meetings at critical times in the project.

D. The Contractor shall schedule the presence of active and critical suppliers, subcontractors, and management personnel at these meetings.

E. Representatives of the Contractor's suppliers and subcontractors shall be persons familiar with the details of the work. They shall be persons authorized to make commitments on matters of work progress, delivery dates, size of labor force, cost and other matters as necessary to expedite the work.

F. To the maximum extent practical, meetings will be held at the job site or Town Hall.

G. A preconstruction meeting will be scheduled within ten (10) days after the Owner has issued the notice to proceed order.

H. Contractor shall provide attendance by authorized representatives of the Contractor and all major subcontractors.

64. GUARANTEE MAINTENANCE BOND

A. Prior to final payment, the Contractor's will be required to furnish the Owner with a one year Guarantee Certificate and a Guarantee Maintenance Bond in the amount of one hundred percent of the total bid. The bond must be effective for the one year guarantee period beginning on the date of final acceptance by the Owner.

B. It is understood and agreed that in the event the Contractor fails to correct, or repair

any work under the Contract which may be found to be improper or imperfect, or otherwise fails to fulfill the terms of the Guarantee, the Owner may purchase materials, tools, and equipment, and employ labor, or let a Contract as required to perform the necessary corrective work covered in the Guarantee. All cost and expenses incurred thereby by the Owner shall be charged against the Guarantee Bond.

C. An extension of the Performance Bond for the guarantee period in lieu of the Guarantee Bond is acceptable with the proper documentation from the Surety.

65. STORAGE OF MATERIALS

Materials shall be stored so as to insure the preservation of their quality and fitness for the work. When considered necessary, they shall be placed on wooden platforms or other hard clean surfaces, and not on the ground, and shall be placed under cover when directed. Stored materials shall be located so as to facilitate prompt inspection. Lawns, grass plots, or other private property shall not be used for storage purposes without written permission of the owner or lessee.

66. SURVEYS AND CONSTRUCTION STAKE-OUT

A. Work done by the Contractor without his having first established proper line and grade, or work done by him to incorrect line and grade, may be ordered removed and replaced at no increase in contract price.

B. The Contractor shall furnish the Engineer, at least five (5) days prior to the start of construction, two (2) record copies of line and grade stake-out data. The furnishing of such record data, despite any action or lack thereof on the part of the Engineer relative to the data furnished, shall in no way release the Contractor from his responsibility for the completeness and accuracy of stake-out work necessary for construction.

C. All survey and stake-out work shall be done by a qualified surveyor registered in the State of Delaware. The Contractor is responsible for stake-out of all facilities required by this contract within the prices bid.

D. All proposed work shall be field located by the Contractor prior to the start of construction. Notice shall be given to the Engineer to observe the location and make any adjustments deemed necessary.

67. NOTIFICATION OF WORK REQUIRED

A. Inspection will be conducted by the Engineer on a full time basis for certain items of work performed below grade and above grade.

B. The Contractor is responsible to notify the Engineer at least forty-eight (48) hours prior to performing certain phases of work so that the Engineer can make available the resident project representative.

These items of work include all work that is below grade or will be concealed, testing, etc. and other items of work identified in writing to the Contractor. Contractor shall not proceed with these phases of work until providing proper notice unless directed to proceed in writing by the Engineer.

C. Failure of the Contractor to properly notify the Engineer before proceeding with work specified shall constitute grounds for non-acceptance of the work or uncovering buried work for inspection by the Engineer or RPR and subsequent testing, backfill and restoration. All such costs will be borne by the Contractor. Backfill and restoration shall be in accordance with the specifications and plans.

D. The Contractor shall not be entitled to additional compensation or the extensions for delays caused by the Engineer or RPR as a result of improper notification by the Contractor.

E. Notification shall be by phone call to the Engineer between 8:00 A.M. and 5:00 P.M. Monday through Friday, except holidays. Contractor to confirm that Engineer receives notification within allotted time frame if notification is made via second party or fax.

F. Failure of the Engineer to provide an RPR during the specified phases of work in no way relieves the Contractor of his responsibilities to meet fully the specifications and requirements of this Contract.

68. EXTRA WORK

The Contractor shall perform extra work, for which there is no quantity and price included in the contract, whenever to complete fully the work contemplated it is deemed necessary or desirable, by written authority of the Engineer, and such work shall be done in accordance with the specifications therefore or in the best workmanlike manner as directed. This extra

work will be paid for at the unit price in the bid, or if no unit price is in the bid, at a lump sum to be agreed upon previously, in writing, by the Contractor and the Engineer, or, where the lump sum method of payment is impractical, the Engineer may order the contractor to do such work on a "Force Account" basis.

69. GUARANTEE

The Contractor hereby guarantees all of the work performed under this contract for a period of one year, unless otherwise noted, after final acceptance by the Owner and the Engineer. The guarantee shall be as follows:

A. Against all faulty or imperfect materials and against all imperfect, careless and/or unskilled workmanship, as evidenced by, improperly compacted backfill, cracked sidewalks, curbs and pavements, failure of structures, etc.

B. The Contractor agrees to replace with proper workmanship and materials, and to correct or repair, without cost to the Owner, any work which may be found to be improper or imperfect.

C. The guarantee obligations assumed by the Contractor under these Contract Documents shall not be held or taken to be in any way impaired because of the specifications, indication or approval by or on behalf of the Owner of any articles, materials, means, combinations or things used or to be used in the construction, performance and completion of the work, or any part thereof.

D. No use or acceptance by the Owner of the work or any part thereof, nor any failure to use the same, nor any repairs, adjustments, replacements or corrections made by the Owner due to the Contractor's failure to comply with any of his obligations under the Contract Documents, shall impair in any way the guarantee obligations assumed by the Contractor under these Contract Documents.

70. MAINTENANCE, REPAIRS, ETC., AFTER COMPLETION

The Contractor, entirely at his own cost and expense, shall maintain all portions of the work included in this contract to meet the requirements of these specifications for and during the period one (1) month from and after the date of the conditional acceptance of the entire work by the Owner, and, in addition, shall at his entire cost and expense, make all repairs and replacements ordered by the Engineer, at any time or times, during said one (1) month period,

on account of any failures or defects in said work, equipment, controls and appurtenances due to improper work done or materials furnished by the Contractor.

71. EXTENSION OF TIME

A. If the Contractor finds that it will be impossible for him to complete the work on or before the completion date fixed on the contract, he shall, ten (10) days prior to said date, submit a written request to the Engineer for an extension of time for completion of the contract. He shall set forth fully therein the reasons which he believes would justify the Engineer to grant his request, and shall set forth a revised detailed progress schedule which shall provide that the remaining work shall be completed on or before the extended completion date therein requested. If the Engineer finds that the work was delayed on account of unusual conditions beyond the control of the Contractor, or that the quantities of work done or to be done are sufficiently in excess of the estimated quantities to warrant additional time, he will, with or without notice to the surety, grant an extension of time for completion to such date as appears to him to be reasonable and proper. This date shall thereafter be as binding upon the Contractor and surety as if it appeared in the contract originally.

B. If any delay is caused to the Contractor by specific orders of the Engineer to stop work or by the failure of the Engineer to provide necessary instruction for carrying on the work or the Owner to provide necessary right-of-way, such delay will entitle the Contractor to an equivalent suspension of the liquidated damage. No increase in General Conditions or superintendent's costs will be allowed during the period.

C. When the satisfactory execution and completion of the contract requires more work or materials in greater amounts than set forth in the contract, in a manner that impacts the critical path schedule, the Contractor shall be entitled to an extension of time. When the Contractor is thus delayed by conditions beyond his control, the contract time shall be extended equal to the number of calendar days he has been delayed. No increase in General Conditions or superintendent's costs will be allowed during the period.

END OF SECTION

SECTION 01002

SPECIAL CONDITIONS

1.1 TEMPORARY TRAFFIC CONTROLS

Contractor shall provide temporary traffic controls as directed by the DelDOT Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways, Section 6, Temporary Traffic Control, as amended.

1.2 EXISTING CONDITIONS

Upon execution of the Agreement and receipt of Performance Bond and Payment Bond by the Owner, the contractor shall accept the existing conditions of the site as is and shall make no claim for additional compensation for any irregularities encountered during construction.

1.3 QUANTITIES OF ESTIMATE

Whenever the estimated quantities of work to be done and materials to be furnished on a unit price basis under this contract are shown in any of the documents including the bid, they are given for use in comparing bids, and the right is expressly reserved, except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by the Owner to complete the work contemplated by this contract, and such increase or diminution shall in no way invalidate this contract, nor shall any such increase or diminution give cause for claims or liability for damages.

1.4 PERMITS

A. All work shall be completed within the Corporate Limits of the Town of Georgetown.

B. The following permits have been obtained for the proposed scope of work:

i. DelDOT Utility Construction Permit – Three Bells Pump Station
ii. DelDOT Utility Construction Permit – Meadows Pump Station
iii. Sussex Conservation District – Exemption (no work area exceeds 5,000 SF of land disturbance)
iv. DNREC Surface Water Discharge Section – Exemption (project consists of a removal and replacement of existing components.

1.5 STAGING AREA

A. Contractor shall be responsible for seeking approval from the Sussex Conservation District for approval of a Standard Plan for Sediment & Stormwater Management that is associated with the use any off-site staging area.

B. The following Town controlled staging areas are available for the Contractor's use. Note that a Standard Sediment & Stormwater Plan approval is NOT required for the use of these areas.

i. Public Works Department Yard – Town Lane
ii. Water Treatment Plant – Stevenson Lane
iii. Wastewater Reclamation Facility – 24027 Cedar Lane

C. The Contractor shall provide the Owner with written documentation documenting property owner consent where temporary construction easements and/or offsite staging areas are obtained.

1.6 MAINTAINING ACCESS TO EXISTING PROPERTY

At the end of each work day, the Contractor shall, at his own expense, make all necessary efforts to ensure access to property owner's entrances remain safe and clear of all construction materials and equipment.

1.7 STORED MATERIALS

A. Stored Materials shall be considered for payment for this project. Equipment and materials to be purchased and paid prior to installation in the completed system shall be defined as stored materials. To be eligible for payment under this provision, the Contractor shall provide the following:

1. Insurance policy naming the Town of Georgetown as the insured for the actual cost of materials stored for this project. Policy shall insure the full replacement cost of any materials damaged, misplaced, lost, stolen, etc. or otherwise deemed to be unusable for the intended purpose.
2. Photo evidence of materials of which the Contractor has received delivery.
3. Copies of all invoices and release of liens for stored materials.
4. Affidavit that all materials are stored in a secure location in accordance with the Contract Documents and Manufacturers' recommendations. As a minimum, materials shall be stored indoors.
5. Town shall be provided with unrestricted access to storage location and shall be entitled to retrieve stored materials at its sole discretion.

B. Payment for stored materials shall be subject to the retainage requirements of this project.

END OF SECTION

SECTION 01006

MAINTENANCE OF TRAFFIC

PART 1 GENERAL OF TRAFFIC

1.1 DESCRIPTION

A. Maintain traffic within limits of the project work areas for the duration of the construction period, including any temporary suspensions of work. Provide facilities for access to residences along the project. Furnish, install and maintain traffic control and safety devices during construction. Maintenance of Traffic includes all facilities, devices, and operations as required for safety and convenience of the public within the work zone.

B. Worksite Traffic Supervisor

1. The Contractor shall provide a work site safety supervisor for the duration of the project.
2. The Worksite Traffic Supervisor shall be responsible for submitting Maintenance of Traffic Plans for each work zone of the project to the Owner for approval.
3. The Worksite Traffic Supervisor shall be responsible for initiating, installing, and maintaining all temporary traffic control devices. Provide all equipment and materials needed to set up, take down, and maintain traffic control and handle traffic situations.

C. The Worksite Traffic Supervisor shall perform the duties, including but not limited to, the following:

1. Onsite direction of all temporary traffic control on the project.
2. Is onsite during all set up and take down, and performs a drive through or walk through inspection immediately after set up.
3. Is onsite during all nighttime operations ensuring proper temporary traffic control.
4. Immediately corrects all safety deficiencies and corrects minor deficiencies that are not immediate safety hazards within 24 hours.
5. Advise the project personnel of the schedule of these inspections and give them opportunity to join in the inspection as deemed necessary. Pedestrians are to be accommodated with a safe, accessible travel path around work sites separated from mainline traffic in compliance with the Americans with Disabilities Act (ADA) Standards for Transportation Facilities. Maintain existing or detour bicycle facilities satisfactorily throughout the project limits. Existing properties in work areas are to be provided with adequate entrances for vehicular and pedestrian traffic.

6. All flaggers must be trained and aware of the requirements of the Delaware Manual of Uniform Traffic Control Devices (MUTCD).

D. Traffic Control Devices shall conform with the requirements of the Delaware Manual of Uniform Traffic Control Devices. Temporary traffic control devices shall be installed and maintained per the Owner approved contractor's Maintenance of Traffic Plan.

E. Driveway Maintenance

1. General: Ensure that each residence has safe, stable, and reasonable access.
2. Construction Methods: Place, level, manipulate, compact, and maintain the material, to the extent appropriate, for the intended use.

END OF SECTION

SECTION 01007

NIGHTTIME WORK

PART 1 GENERAL

1.1 NIGHTTIME WORK OPERATIONS

A. No nighttime work shall commence without prior written authorization, in advance, by the Owner.

B. The time of start and time of completing the nighttime shift shall be coordinated in advance between the Contractor Superintendent, Contractor Worksite Traffic Supervisor, Engineer, and the Owner.

C. The Work Site Traffic Supervisor shall obtain advance confirmation from the Owner of the following items:

1. Safe and reasonable access for vehicular, pedestrian, and bike traffic.
2. Required lighting and signage
3. Maintenance of Traffic provisions
4. Noise mitigation measures

D. The contractor shall leave the nighttime work zone on time and leave the area in a restored, safe, and clean condition.

END OF SECTION

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 DESCRIPTION

A. Construction of the Pump Station Rehabilitation, Project No. GEO01-07, Town of Georgetown, Sussex County, Delaware includes all work designated in the Contract Documents including the Specifications and as shown on the Drawings. In case of conflict between contract plans and specifications, the Contractor shall request a determination from the Engineer as to which shall govern. The Contractor shall furnish all implements, machinery, tools, equipment, material, and labor necessary to the performance of the work and shall furnish and do everything necessary to make the work perfect, complete, neat and finished, and the Contractor shall maintain all the work to be done under this Contract in this condition at the time the work is finally inspected.

B. The work shall be done in full conformance with all codes, rules and regulations of the Town of Georgetown, Sussex County, the State of Delaware, and federal regulations pertaining to this project.

C. The work under this contract includes, but is not limited to the following:

1. Assured continued operation of the existing sewer collection system, including the existing forcemains.
2. Renovation of existing pump stations, including electrical work and backup generators.
3. All accessory and incidental work necessary to complete the project and provide a fully operational system.

1.2 CONSTRUCTION SEQUENCE

A. The project shall be scheduled in such a manner as to minimize downtime at the pump stations and gravity sewer systems served by pump stations during construction renovation. Construction shall be performed while the existing pump stations are in operation to the extent feasible. Where maintaining operation of an existing pump station is infeasible, bypass pumping shall be provided at the unit price bid. While the Contractor is not expected to maintain or operate the individual existing pump stations, the Contractor is responsible to provide all necessary bypass or temporary piping, pumping or other maintenance of flows, temporary electrical service, and temporary structures as required at the pump stations so the existing flows can be properly managed and in accordance with WPCC Operation permits.

B. The Contractor shall schedule his work and make all provisions necessary such that there will be no discharge of sewage during construction due to construction activity. The construction schedule submitted by the Contractor shall clearly indicate the schedule of construction activities that may interfere with the operation of the existing pump stations. Activities so indicated shall be outlined in detail to indicate the procedure to be followed and the equipment to be used to prevent overflows, backups, untreated discharge, or other adverse operating conditions. All such schedules and methods are subject to approval by the Engineer. The Engineer may require changes to any methods or schedules at any time as required to minimize impacts to users.

1.3 CONSTRUCTION PHASING

The following outline of construction phasing is proposed to allow continuous utility service.

A. Submit long-lead-time shop drawings to Engineer within 30 days of Notice to Proceed. At a minimum this shall include pump station pumps, generators, pipe, valves, fittings, pre-cast concrete valve vaults, access hatches, ventilation equipment, portable hoist assemblies, and all electrical equipment and control panels. Contractor shall make every effort to assure shop drawings and equipment submittals are complete at first submission.

B. Contractor shall construct temporary fencing, establish staging areas, and provide temporary facilities for labor pool. Sediment and erosion control procedures shall be followed from this point onward.

C. Work shall begin subsequent to mobilization and may be completed at any time during the project in a manner to prevent disturbances to pump stations and treatment plant operations.

D. Once communications and staging area are secure, contractor shall begin by performing all site work necessary to prepare the site for the pump station rehabilitation work including clearing, grubbing, curb removal, sidewalk removal, pavement removal and grading. Make every effort to utilize existing onsite soil materials. Provide additional soil materials as needed and authorized by the Engineer to establish grades. Do not waste any soil materials without the engineer's approval.

E. Below grade electrical
F. connections, pipes, valves, fittings, and appurtenances shall be laid as indicated on the plans. Install emergency bypass assemblies and isolation valves as required to conduct selective demolition. Other work to be completed at this time are subsurface items whose ease of installation would be facilitated by access to the item while bypass of the wet well is in operation.

G. Initiate bypass pumping system. Install air plug in wetwell influent main and maintain plug in a water tight condition for the duration of the bypass pumping operation. Field verify that no service connections are present between the bypass manhole and air plug by CCTV inspection. All service connections between the air plug and bypass intercept manhole shall be maintained in serviceable and usable order without backup or damage to service or property served.

H. Remove, salvage where directed, or dispose at an approved offsite location, all pumps, piping, base fittings, equipment and wetwell internals, electric panels, fuel tanks and generators, and access hatches as indicated. Clean and remove all deleterious materials from wetwell.

I. Install base fittings, pumps, piping, valves, fittings, ventilation ducts, trash basket assemblies, etc.

J. Install control panels, electrical conduits, and wiring.

K. Test operation of pump station and place station in service as soon as possible. Assist operator with running the completed pump stations for not less than two (2) days of satisfactory operation.

L. Bypass pumping shall be terminated immediately following the testing and placing of replacement pumps in service.

M. Install water service and reduced pressure backflow prevention equipment and housing.

N. Install new access hatch and concrete housekeeping pads.

O. Install ventilation equipment.

P. The order the work is performed shall be at the discretion of the contractor but shall be completed in such a manner as to prevent repeat processes for a single event, extension of the bypass pumping operation any longer than absolutely necessary to facilitate the work, and prevent any disturbance to the pump stations or treatment plant operations.

1.4 CONTRACTOR USE OF PREMISES

A. The Contractor shall work to coordinate construction activities with the treatment plant operator so that the operation and maintenance of the plant will not be disrupted.

B. Materials and equipment shall be stored by the Contractor. Obtain permission for use of additional off-site storage if needed. Obtain any permits required for off-site areas.

1.5 BY-PASS CONSTRUCTION

A. The locations for by-passes and by-pass pumping shall be approved by the Engineer who may from time to time require an alteration by the Contractor. The rate of pumping for by-passes shall be regulated by the Contractor as directed by the Engineer or Owner and as may be required to enhance flow. By-passes shall be maintained on a 24 hour basis if and as required to maintain proper flow including attendance and/or automatic alarms.

B. The following manholes are assumed to be used for housing bypass pumping equipment:

a. Health Unit – SMH 14-1. No services are anticipated.
b. Three Bells – SMH 13-1. At least 1 service is anticipated.
c. Meadows – SMH 11-1. No services are anticipated.
d. Big Park – SMH 4-18. No services are anticipated.
e. Gordy Street – No bypass pumping is anticipated for this scope of work.
f. Stevenson Lane – No bypass pumping is anticipated for this scope of work.

C. Provide additional temporary by-passes as needed to enable continuation of construction and operation of pump stations.

1.6 OTHER REQUIREMENTS

A. Periodically, the Contractor shall pump out and dispose of solids accumulated in the pipes, manholes and basins as required by the operator during the construction period and within 48 hours of such request to enhance flow during construction.

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 SCOPE

A. Payment for the material furnished and work done under the contract will be made as herein below stipulated for the amount of labor, equipment and materials supplied for work done under authorization of the Engineer and in accordance with the price bid. Contractor shall not be entitled to receive additional compensation for anything furnished or done except for extra work as shall be required by written order.

B. It is intended that all work shown on the contract drawings and included in the specification is to be paid for under the prices bid. Items specifically described in the specifications or shown on the drawings shall be interpreted as meaning that the cost of any such work contemplated by the contract documents shall be included in the price bid.

C. The descriptions of work scope provided below for each bid item are provided to the contractor for his use in preparing his bid and for assistance with preparation of the schedule of values for lump sum bid items. This information should not be taken as a complete, comprehensive list that describes the work in every particular, and the contractor is not relieved from reading and being completely familiar with the contract documents. In addition, absence or omission of a particular segment of work from this section or from the bid form shall not entitle the contractor to an increase in cost, provided the work omitted is shown on the drawings, or called for in the contract documents.

PART 2 - DESCRIPTION - BASE BID ITEMS

2.1 BID ITEM FOR MOBILIZATION (BID ITEMS A1, B1, & C1)

A. Mobilization shall consist of initiating the contract, and may include the following as are required at the beginning of the project: setting up field offices, shops, storage areas, sanitary and other facilities as required by the specifications, by local or state law, or by regulation, providing stabilized access to the project site, obtaining necessary permits and licenses and payment of fees, stake out, signs and providing required insurance and bonds.

B. No measurement will be made.

C. Payment for mobilization will be made at the lump sum price bid. The lump sum price bid in the proposal shall be limited to a maximum of five percent (5%) of the base bid. Furthermore, the maximum amount of the lump sum price bid for mobilization that is

requisitioned on the Construction Requisition No. 1 shall not exceed fifty percent (50%) of the lump sum price bid and each succeeding requisition shall be limited to a maximum of ten percent (10%) of the lump price bid until the entire lump sum price less retainage has been requisitioned.

2.2 BID ITEM FOR REHABILITATION OF HEALTH UNIT, THREE BELLS, AND MEADOWS PUMP STATIONS (BID ITEMS A2 – A4)

A. The lump sum price bid shall include all materials, labor and equipment for the rehabilitation of the existing pumping station indicated on the bid form, including all excavation, select backfill, grading, soil stabilization, surface restoration, sheeting, shoring, bracing, dewatering, disposal of water, gravel bedding, cast-in-place concrete slabs, traffic control, sediment and erosion control, pumps, ventilation system, cleaning of wet well, transducer, pump controls, piping, emergency bypass, water service including water meter, curb box, and reduced pressure zone backflow preventer, yard hydrant, connection to existing wet well and forcemain, selective demolition and disposal as indicated, modification to existing structures and new piping, fittings, valves, adaptors, repair sleeves, appurtenances and accessories, equipment, specials, incidentals, mechanical and electrical, relocation, modification or replacement of electrical service, emergency generator connection to existing primary and secondary power supplies and all associated work and fees, startup, testing, and all else necessary and required for a complete installation and fully satisfactory operation as shown on the drawings and as specified in the contract documents. Also included is compliance with General & Special Conditions or Provisions, Federal, State and Local requirements, and applicable items of paragraph 2.4 of this section.

B. No measurement will be made.

C. Payment for all work in connection with this item shall be made at the appropriate lump sum price bid for rehabilitation of the pump station complete. Partial payments will be based on a Schedule of Values prepared by the Contractor and approved by the Engineer.

2.3 BID ITEM FOR REHABILITATION OF THE BIG PARK PUMP STATION (BID ITEM B2)

A. The lump sum price bid shall include all materials, labor and equipment for the rehabilitation of the Big Park Pumping Station including all excavation, select backfill, grading, soil stabilization, surface restoration, sheeting, shoring, bracing, dewatering, disposal of water, gravel bedding, traffic control, sediment and erosion control, replacement of existing roofing system, removal and replacement of doors and windows, surface preparation and painting of existing building interior, repair of exterior brick façade as specified, cleaning of wet well, pumps, ventilation system, stilling well and transducer, pump controls, piping, emergency bypass, water service including water meter, curb box, and reduced pressure zone backflow preventer, yard hydrant, connection to existing wet well and forcemain, selective demolition and

disposal as indicated, modification to existing structures and new piping, fittings, valves, adaptors, repair sleeves, appurtenances and accessories, equipment, specials, incidentals, mechanical and electrical, new lighting, new unit heater, modification or replacement of electrical service, and all associated work and fees, startup, testing, and all else necessary and required for a complete installation and fully satisfactory operation as shown on the drawings and as specified in the contract documents. Also included is compliance with General & Special Conditions or Provisions, Federal, State and Local requirements, and applicable items of paragraph 2.4 of this section.

B. No measurement will be made.

C. Payment for all work in connection with this item shall be made at the appropriate lump sum price bid for rehabilitation of the pump station complete. Partial payments will be based on a Schedule of Values prepared by the Contractor and approved by the Engineer.

2.4 BID ITEM FOR FURNISHING AND INSTALLING VENTILATION SYSTEM AT THE GORDY STREET PUMP STATION & STEVENSON LANE PUMP STATION (BID ITEMS C2 & C3)

A. The lump sum price bid for furnishing and installing ventilation system at the Gordy Street Pump Station & Stevenson Lane Pump Station shall include and cover all labor, materials, and equipment required such as, excavation, backfill, compaction, and site stabilization; reinforced cast-in-place concrete housekeeping pad; ventilation and odor control system and duct work; modification of existing wetwell to install duct work as shown on the drawings; supporting, bracing and protecting existing work to remain; electrical connections; and all else necessary and required for a complete installation and fully satisfactory operation as shown on the drawings and specified in the contract documents.

B. No measurement will be made.

C. Payment for all work in connection with this item shall be made at the appropriate lump sum price bid. Partial payments will be based on a Schedule of Values prepared by the Contractor and approved by the Engineer.

2.5 BID ITEM FOR BYPASS PUMPING OPERATION (BID ITEMS A5 & B3)

A. The unit price bid for bypass pumping operation shall include, but not be limited to, all labor, materials and equipment for furnishing and setting up all equipment and materials necessary to control flow and pump sanitary sewage around the work including the bypass pumping of sewage from main line pipe and laterals; energy required for power equipment; temporary installation of bypass pipes under or over the pavement of cross streets as may be required for traffic; repaving of cross streets after removal of temporary bypass pipes; notifications and coordination with affected property owners, construction facilities and temporary controls; traffic control to

maintain at least one lane of the roadway to vehicular traffic at all times and all other necessary equipment, work, and materials required to accomplish sewage bypassing until completion of the rehabilitation process in accordance with the Plans and Specifications.

B. Measurement will be made on a daily basis consisting of a 24-hour day in tenths of day increments based upon the authorized time period for which bypass pumping is operational.

C. Payment will be made at the unit price bid per tenth of day increment authorized. No payment will be made for bypass pumping associated with Contractor convenience or delays caused or created by operations of the Contractor resulting from unapproved deviations from the construction schedule, delay of material deliveries, or in the Engineer's opinion otherwise being unprepared to efficiently conduct the work.

2.6 BID ITEM FOR EXCAVATION BELOW SUBGRADE AND GRAVEL REFILL (BID ITEMS A6, B4, & C4)

A. The price bid for excavation below subgrade and gravel refill shall include and cover the furnishing of all equipment, labor, tools, materials, excavation, hauling, additional placing and removal of sheeting, additional dewatering and proper disposal of water, disposing of unsuitable material, furnishing, placing and compacting gravel and all incidentals necessary to complete this item of work.

B. Measurement for quantities of excavation below subgrade and gravel refill will be based upon the authorized depth and length and width.

C. Payment for all work in connection with excavation below subgrade and gravel refill will be made at the unit price bid per cubic yard for the volume of gravel placed within the limits defined hereinbefore. No payment will be made for gravel used for dewatering or gravel used at Contractor's option for bedding in-lieu of sculpting.

2.7 BID ITEM FOR MISCELLANEOUS EXCAVATION, BACKFILL AND TEST PITTING (BID ITEMS A7, B5, & C5)

A. The price bid for miscellaneous excavation and backfill shall include and cover excavation and backfill, placement and removal of sheeting, dewatering, removal and restoration of pavement and all other incidental items of work. Authorized test pitting is included under this item. No payment will be made for Contractor's test pitting along the line of work for location of utilities and structures if the test pitting is within the designated areas of required excavation.

B. Measurement for quantities of miscellaneous excavation and refill will be based upon the authorized depth, width and length of the excavation and backfill.

C. Payment for all work in connection with miscellaneous excavation and backfill will be made at the unit price bid per cubic yard for the volume actually excavated and refilled within the limits defined and authorized.

2.8 BID ITEM FOR FURNISHING AND INSTALLING SELECT BACKFILL (BID ITEMS A8, B6, & C6)

A. The price bid for furnishing and placing off-site select backfill shall include and cover the furnishing, placing and compacting of off-site select backfill and all other incidental work. This item only covers the replacement of unsuitable subgrade or backfill materials, and only if there is a deficit of suitable backfill material removed from the excavations.

B. Measurement for quantities of select backfill will be based upon the in-place depth of placement, in trench and the trench payment width indicated and for the authorized depth, width, length for subgrade replacement and for the authorized depth, width and length of backfill around structures.

C. Payment for all work in connection with select backfill will be made at the appropriate unit price bid per cubic yard for the in-place volume actually furnished and placed within the limits defined hereinbefore.

2.9 BID ITEMS FOR FURNISHING AND PLACING MISCELLANEOUS CONCRETE (BID ITEMS A9, B7 & C7)

A. The prices bid for miscellaneous concrete shall include and cover furnishing and placing miscellaneous 4,000 p.s.i. concrete, including forming and all other incidental work, for cradle or other construction not included as a part of other pay items.

B. Measurement for quantities of miscellaneous concrete will be based upon the authorized depth, width and length of concrete placement, as authorized by the Engineer.

C. Payment for all work in connection with miscellaneous concrete will be made at the appropriate unit prices bid for the volume of concrete actually furnished and placed within the limits defined hereinbefore and as authorized. Buttresses are excluded from this item.

2.10 BID ITEM FOR FURNISHING & INSTALLING NEW EQUIPMENT CABINET AND CONTROL PANEL AT THE STEVENSON LANE PUMP STATION (BID ITEM ADD ALT. C1)

A. The lump sum price bid shall include all materials, labor and equipment for the furnishing & installing a new equipment cabinet and control panel at the Stevenson Lane Pump Station indicated on the bid form, including all excavation, select backfill, grading, soil stabilization, surface restoration, sheeting, shoring, bracing, dewatering, disposal of water, gravel bedding, cast-in-place concrete slabs, sediment and erosion

control, selective demolition and disposal as indicated, transducer, pump controls, breaker panels, open air junction boxes, and all related electrical equipment specified and required for pump panels referenced in paragraph 2.2 of this section. Also included is modification to existing structures as required to connect new panel to existing pumps and power supplies, reconnection to existing emergency generator, connection to existing primary and secondary power supplies and all associated work and fees, startup, testing, and all else necessary and required for a complete installation and fully satisfactory operation as shown on the drawings and as specified in the contract documents. Also included is compliance with General & Special Conditions or Provisions and Federal, State and Local requirements. **Note: Work described in this paragraph shall only be completed if Add Alt. C1 is accepted by the Owner.**

B. No measurement will be made.

C. Payment for all work in connection with this item shall be made at the appropriate lump sum price bid. Partial payments will be based on a Schedule of Values prepared by the Contractor and approved by the Engineer.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.1 DESCRIPTION

Work Included:

A. Schedule of values

B. Construction schedule

C. Survey and layout data

D. Shop drawings

E. Certificates of compliance

F. Samples

G. Photos

H. Records of testing

I. Record drawing

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SCHEDULE OF VALUES

A. A schedule of values of the various parts of the work to be done under lump sum items shall be agreed upon by the Contractor and the Engineer. One week prior to the preconstruction conference, the Contractor shall submit for approval a proposed breakdown into construction categories of his lump sum price bid. This breakdown shall add up to the full 100% value of the lump sum price, and all parts of it shall be covered by the performance bond. The approved breakdown shall be used for the purpose of arriving at a basis for monthly estimates.

3.2 CONSTRUCTION SCHEDULE

A. The construction schedule and chart shall be submitted to the Engineer for approval

one week prior to the preconstruction conference. The general schedule will be discussed at the preconstruction meeting and copies made available to all interested parties. No construction shall be permitted until the construction schedule is approved.

B. The Contractor shall develop a critical path construction schedule and chart that shows at a minimum a bar graph indicating the series of activities either separately or concurrently required to complete the project within the allotted time. The chart shall also indicate expected cash flows on a monthly basis. Room shall be provided on the chart whereby the Contractor can plot actual progress of the work against that initially proposed.

C. The Contractor shall update the schedule on a monthly basis and submit the revised schedule to the Engineer along with the monthly pay request.

3.3 SURVEY & LAYOUT DATA

A. The Contractor shall furnish the Engineer at least five days prior to the start of construction two record copies of line and grade stake out data. The furnishing of such record data, despite any action or lack thereof on the part of the Engineer relative to the data furnished, shall in no way release the Contractor from his responsibility for the completeness and accuracy of stake out work necessary for construction.

B. All survey and stake out work shall be done by qualified persons. The Contractor is responsible for stake out of all facilities required by this contract within the prices bid.

C. Any benchmarks destroyed through or as a direct result of the Contractor's construction operations shall be replaced and/or restored at his expense with no additional cost to the Owner.

D. Work done by the Contractor without his having first established proper line and grade, or work done by him to incorrect line and grade, may be ordered removed and replaced at no increase in contract price.

3.4 SHOP DRAWINGS

A. The Contractor shall submit to the Engineer layout drawings for the installation and erection of the work and shop drawings for all fabricated or manufactured articles to be used in the work. The Contractor shall have electronic copies prepared for submittal to the Engineer. Engineer shall review and return electronic submittals marked according to results of Engineer's Review. Contractor shall prepare whatever additional copies as may be necessary or required for his own use and/or use by equipment suppliers and subcontractors.

B. Detailed shop drawings, shall include detailed materials lists and dimensional drawings, data, and literature for fabricated materials or equipment to be incorporated in the work. Include method for mounting for equipment and any alternations required due to removal, replacement, or repair of existing equipment. Include all specific data that may be required for ascertaining the excellence and character of the equipment and the space occupied. Shop drawings shall be submitted to the Engineer for review for general compliance with the Contract Documents before fabrication. The Contractor shall obtain and check manufacturers shop drawings, certified prints and other pertinent data for conformance with all requirements with the Drawings and Specifications and in ample time to permit satisfactory progress of the work. After a completion of such check and verification by the Contractor, the Contractor shall sign or stamp such drawings, which stamp shall state as follows:

CHECKED BY: _____
(Contractor's Name)
SIGNED BY: _____
(Checker's Name)

C. All data, drawings, and correspondence from subcontractors, manufacturers, or suppliers shall be routed through the Contractor. The Engineer shall review only such data and details as are transmitted to him by the Contractor. All correspondence from the Contractor to the Engineer shall refer to the appropriate section of these specifications containing the subject matter of the inquiry.

D. The Engineer's review of layout and shop drawings will be only to verify general compliance with Contract Documents. Figure dimensions and other detail will not be checked. Any notation made on shop drawings by the Engineer shall be for the Contractor's guidance, but shall not relieve the Contractor from his responsibility to re-check, verify and resolve items so noted.

The Engineer's review of shop drawings shall not relieve the Contractor from responsibility for errors or omissions thereon, whether or not called to the attention of the Contractor by the Engineer.

E. The Contractor's attention is specifically directed to the fact that no work shall be fabricated nor equipment or materials ordered nor any construction performed prior to approval by the Engineer of shop drawings applicable thereto. Construction performed in violation of this requirement will be neither approved nor certified for payment until applicable shop drawings have been submitted and approved. If any equipment or materials are ordered by the Contractor prior to submission and approval of shop drawings, he does so at his own risk.

F. The Engineer shall review at no charge shop drawings originally submitted and one resubmittal. Additional reviews resulting from improper submittal, lack of requested information, or disapproval shall be billed to the Contractor by the Engineer. The

Contractor shall notify the Engineer in writing at the time of submission of any deviation in submittals from the requirements of the Contract Documents.

3.5 CERTIFICATES OF COMPLIANCE

Any certificates required for demonstrating proof of compliance of materials with Specifications requirements shall be executed in three (3) copies plus the number to be returned to the Contractor. Each certificate shall be signed by an authorized officer of the manufacturing company and shall contain the name and address of the Contractor, the project name and location, the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed of relieving the Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not be meet the specific requirements.

3.6 SAMPLES

A. The number and type of samples submitted shall be specified in the particular section to which they apply.

B. Samples shall be physical samples to illustrate the materials and workmanship. They shall be submitted in sufficient size and quantity to clearly illustrate the functional characteristics of the product or material, with integrally related parts and attachment devices, and the full range of color to be provided.

C. All samples shall have been checked by and stamped with the approval of the Contractor, identified clearly as to material, manufacturer, and any pertinent catalog numbers indicating the intended use.

3.7 CONSTRUCTION PHOTOGRAPHS

A. Photographs shall be taken at each of the following stages of construction:

1. Before commencement of construction.
2. At weekly intervals during construction of the facilities. Photographs of any week need only show the new work for that week.
3. Upon completion of construction.

B. The number of photographs required at each weekly interval will be determined by the need to show all work adequately.

C. Photographs shall be clear, in color, and minimum 12MP resolution. All photographs shall be identified by date and location.

D. Two sets of photographs shall be delivered to the Engineer as soon as possible after they are taken. All photographs shall be provided in electronic format such as JPEG or TIFF.

E. Should the Contractor fail to deliver photographs on schedule, the Owner will hire the photograph work and deduct the cost from payments due to the Contractor.

3.8 RECORDS OF TESTING

A. The Contractor shall maintain records of all testing performed during the life of the project.

B. Records shall indicate the line, date of testing, persons involved in the testing and the results.

C. At the end of the project, or more frequently if requested, all testing records shall be turned over to the Engineer.

3.9 RECORD DRAWINGS

The Contractor shall keep one copy of the drawings at the site, in good order and provide mark-up to show all changes made during construction. These record drawings shall be available to the Engineer, and shall be delivered to him upon completion of the contract. Record drawings shall contain stationing of all valves, bends, and fittings or dimensions from structures. They shall also contain all as-built elevations. See also Section 01700.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 TEMPORARY FACILITIES

A. The Contractor shall furnish and maintain, during construction of the project, adequate facilities at the site for the use of the Owner, Engineer and himself as set forth below. Upon completion of the project, or as directed by the Engineer, the Contractor shall remove all such temporary structures and facilities from the site, same to become his property and leave the premises in the condition required by the Contract.

B. The Contractor and his subcontractors may maintain temporary facilities on the site in addition to those specified as may be necessary for the proper conduct of the work. These shall be located so as to cause no interference to any Contract work.

C. The Contractor is ultimately responsible for ensuring that his forces do not interrupt the flow of daily traffic, business, or other activities of private citizens with respect to those properties directly affected by improvements made. Contractor shall notify in writing and schedule temporary access to those properties directly affected by improvements.

1.2 TEMPORARY SANITARY FACILITIES

A. Construct or provide portable toilet facilities to provide natural light and ventilation, or artificial light and mechanical ventilation.

B. Provide adequate temporary outside toilet facilities for use of persons working at site.

C. Maintain toilets clean and in sanitary condition. Provide toilet tissue in suitable holder.

D. Remove temporary toilets on a daily basis and when suitable facilities are available within the building or when construction is complete.

1.3 TEMPORARY WATER SERVICE

A. Permanent-type connections may be made by Contractor for his use if piping is returned to original condition at completion.

B. Take positive measures to preclude cross-connections and backflow.

C. The Owner will assume cost of water consumed for sanitary facilities if responsible care and restraint is exercised by the Contractor in its use.

1.4 TEMPORARY HEATING

A. The General Contractor will provide safe, clean temporary heating for the work of each trade for the entire project duration when required for proper installation of materials and working conditions, except as noted below.

B. The General Contractor shall pay costs of equipment, maintenance and fuel for all temporary heating operations.

C. Open fires are not permitted.

D. Methods of temporary heating shall be approved by the Owner and all governing agencies having legal jurisdiction.

1.5 EXISTING UTILITIES

A. Prior to the closeout of the Project, the Contractor shall remove all temporary connections and return all sources to their original conditions prior to commencement of the work.

1.6 TEMPORARY APPROACHES AND ROUTES

A. The Contractor shall provide all necessary temporary approaches and exits as required to properly execute the work. Provide safe alternate pedestrian routes to maintain traffic flow.

B. The Contractor shall at all times maintain safe unrestricted access to all properties along the work area.

C. The Contractor shall keep streets, drives, walks, and corridors, adjacent to and on the site, clean of all dirt, debris, and litter caused by construction operations for this project. A clean-up shall be accomplished at end of the day's work.

D. Temporary approaches and routes shall be ADA compliant.

END OF SECTION

SECTION 01560

EROSION & SEDIMENT CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide necessary equipment, labor and supplies for erosion and sediment control throughout project. Work consists of grading of site, providing silt fence, and other necessary measures required for effective control. Sediment and erosion control work shall be as indicated on drawings and in compliance with applicable requirements of the governing authorities having jurisdiction. The receipt of a proposal by a bonafide bidder shall be interpreted to mean the Contractor has familiarized himself with these Regulations and Rules of Procedure and is fully cognizant of exactly what is required.

1.2 SUBMITTALS

A. Erosion and Sediment Control Schedule.

1. At pre-construction conference or prior to start of actual construction, submit for acceptance, schedules for accomplishment of temporary and permanent erosion control work. Submit schedule for each of the following procedures: demolition, construction, and paving. No work shall be started until erosion control schedules and methods of operation have been approved.
2. Schedule should be prepared on Contractor's letterhead. Send original and one (1) copy to Owner.

1.3 EXECUTION

A. Throughout the duration of the project, control erosion and minimize siltation to catch basin inlets, valley gutters, culverts, storm drains, rivers, streams and impoundments. Control shall include, but is not limited to the use of berms, dikes, dams, sediment basins, sediment traps, filters, fiber mats, netting, gravel or crushed stone, mulch, grasses, slope drains, and other methods. Erosion and sediment control measures as described herein and on the drawings shall be applied to erodible materials exposed by any project activity.

B. Coordinate erosion and sediment control measures with the construction of the permanent drainage facilities which shall be constructed prior to the grading operation to assure economical, effective and continuous erosion and siltation control.

C. Dress, prepare, and seed slopes immediately following the completion of each portion of work and immediately following suspension of grading operations.

D. Fill slopes shall be dressed, prepared and seeded as the embankment proceeds to the extent needed to stop erosion and sedimentation.

E. The Contractor shall incorporate permanent erosion control features into the project at the earliest practicable time. Temporary erosion control measures shall be used to correct conditions that develop during construction that were not foreseen during the design stage, that are needed prior to installation of permanent erosion control features, or that are needed temporarily to control erosion that develops during normal construction practices that are not associated with permanent control features of the project.

END OF SECTION

SECTION 01700

CONTRACT CLOSE-OUT

PART 1 - GENERAL

1.1 GENERAL

A. The items listed herein shall be compiled and prepared by the Contractor prior to completion of all work and delivered to the Owner for his future use.

B. Final payment to the Contractor will be withheld until all items listed herein are delivered to the Owner.

C. Submit all items specified herein to the Engineer for review prior to delivery to the Owner. Make any corrections, additions, or deletions from the contents thereof as may be required by the Engineer.

1.2 FINAL CLEAN UP

A. The Contractor shall perform general cleanup of all areas before final inspection in accordance with this section and the Special Provisions of these specifications. All hard surfaces shall be cleaned of all stickers, tags, protective paper, marks, stains, and fingerprints.

B. Surfaces shall be vacuumed clean and all marks or stains removed.

C. Ducts shall be cleaned of dust.

D. The ground shall be cleaned of debris and paper.

E. All tracks and channels of hatches shall be vacuumed.

F. Dirt splashed on exterior of structures at grade shall be removed.

G. The Contractor shall remove from the Owner's property and from all public and private property at his own expense, all temporary structures, rubbish, excess excavation and waste material resulting from his operations. The Contractor's storage area shall be topsoiled, seeded and mulched.

H. Should the Contractor fail to cleanup to the satisfaction of the Owner and Engineer, the Owner reserves the right to have the work completed at the Contractor's expense.

1.3 ACCESSORY ITEMS

The Contractor shall provide to the Owner all special accessories required to place each item of equipment in full operation including light bulbs, fuses, and other expendable items as required for initial start up and operation of all equipment.

1.4 WARRANTIES & GUARANTEES

The Contractor shall provide all release of liens, guarantees, bonds and affidavits required for equipment and the total project as hereinbefore specified.

1.5 RECEIPT OF SUBMITTALS

The Contractor shall have placed on file with the Engineer all submittals specified within these specifications including project photos, operation and maintenance manuals, record drawings, and records of testing.

1.6 INSPECTION & TESTING

A. Upon completion of the Work, and prior to final acceptance thereof by the Owner, the Contractor shall place all systems in service and permit the Owner to operate all equipment for a period of 30 days. Maintenance during this period shall be performed by the Contractor. At the end of this time, components deemed satisfactory shall thereafter be operated and maintained by the Owner.

B. The Contractor's obligation for operating tests shall include the initial filling with water of hydraulic units to the extent necessary to operate all equipment. The Contractor shall also assist with set up and calibration of all electrical equipment and controls.

C. Upon written notice from the Contractor that the work is completed, the Engineer will make an inspection of the facilities in accordance with the General and Supplementary Conditions.

1.7 RECORD DRAWINGS

A. The Contractor shall keep on site a set of reproducible paper plans, a current record of all changes made during construction including changes to cuts or fills and materials. The record drawings shall show the location of all permanently concealed work not installed where indicated on the Contract Documents. The Record Drawings shall show the location of all uncharted or incorrectly charted utilities encountered during the course of the work.

B. Accuracy of information shall be the sole responsibility of the Contractor. Drawings shall be prepared at the same scale as the Contract Documents. Copies of the Contract Drawings may be obtained from the Engineer. Cost of reproduction and

shipping shall be paid for by the Contractor.

1.8 MAINTENANCE MANUAL

A maintenance manual shall be compiled and prepared by the Contractor to aid the Owner in operation and maintenance of the project and its appurtenances per Section 01300 of this specification.

1.9 RELEASE OF LIENS

Affidavits of payments of all bills related to the project, release of liens, bonding company approvals and consent of surety to final payment.

1.10 ASBESTOS FREE CERTIFICATION

The Contractor shall furnish notarized written certification to the Owner that all materials installed under this Contract for the Additions and Alterations are entirely free of asbestos.

1.11 LEAD FREE CERTIFICATION

The Contractor shall furnish notarized written certification to the Owner that all materials installed under this contract are in compliance with the Delaware Drinking Water Regulations with regard to lead content.

1.12 SYSTEM TESTING

The Contractor shall provide results of all field testing that is performed for this project.

1.13 SUPPLY

The contractor shall furnish extra material supplies as called for throughout specifications.

1.14 CLEAN-UP

A. The contractor shall, at his own expense, keep the sites of his operations clean during construction and remove all rubbish as it accumulates. Daily brush cleaning of roadway and sidewalks with on-going construction activities shall be performed. The contractor shall remove waste materials, debris, and rubbish from site periodically and dispose of at legal disposal areas away from site. The contractor shall also:

1. Clean staining or reactive materials from affected surfaces immediately during course of work. Particular care shall be taken to remove plaster, mortar, and paint from metal surfaces immediately.
2. Clean the work as it progresses to minimize the collection of dust and debris in inaccessible spaces, color change or staining of finishes, and hardening of

curing-type dirt and stains.

3. Clean on a daily basis all areas used for construction traffic. Where dropping from debris carts, concrete buggies, etc. affect traffic, assign full time labor to keep public traffic moving freely under clean, unobstructed conditions.

END OF SECTION

TOWN OF GEORGETOWN
DESIGN AND CONSTRUCTION STANDARDS
FOR
WATER, SEWER, AND STREETS

Prepared for:

Mayor & Council
Town of Georgetown
39 The Circle
Georgetown, Delaware

Prepared by:

Davis, Bowen & Friedel, Inc.
One Plaza East
Salisbury, Maryland

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DBF #319B000

TOWN OF GEORGETOWN
DESIGN AND CONSTRUCTION STANDARDS
FOR WATER, SEWER, AND STREETS

TABLE OF CONTENTS

GENERAL CONDITIONS

1. PURPOSE OF STANDARD SPECIFICATIONS

The following specifications and accompanying details are made available to private contractors and developers, and also for projects conducted by the State of Delaware and Sussex County within the town limits of Georgetown, for use on every utility or street project within the incorporated area of the Town of Georgetown and those areas outside the town limits but within the project authority of the Town of Georgetown. They are binding and shall be closely observed; any exceptions or alterations shall be obtained in writing from the Town at least four (4) weeks prior to commencement of the project.

2. DEFINITIONS OF TERMS

A. Whenever in these specifications, bond and other contract documents, the following terms or pronouns are used, the intent and meaning shall be interpreted as follows:

"Town of Georgetown" or "Town"
Town of Georgetown, Sussex County, Georgetown, Delaware, acting through the Town Council or its authorized representative.

"Contractor"
Party responsible for the construction of a utility or the construction of a sidewalk, curb, gutter or driveway or the construction or restoration of any street or road surface, acting directly or through his or her agents or employees.

"Subcontractor"
Any individual, firm or corporation who contracts with a contractor to perform part or all of the latter's contract.

"Shop Drawings"
Drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are prepared by the Contractor or any subcontractor, manufacturer, supplier or distributor, and which illustrate some portion of the work.

"Drawings"
All drawings or reproductions of drawings, pertaining to the work under the contract, which are furnished or approved by the Town.

"Specifications"
The definitions, descriptions, directions, provisions and requirements contained herein, and all written supplements thereto, made or to be made, pertaining to the contract, and the materials, equipment and workmanship to be furnished under the contract.

"Contract" or "Contract Documents"
All things contained in the specifications, drawings, proposals, agreement and bond, and therein referred to, are to be considered as one instrument forming the contract, including any and all supplementary agreements which could reasonably be required to complete the construction contemplated.

“Approved”, “As Required”, and similar expressions
Meaning shall be construed as "as approved by the Town" and "as required by the Town".

"Provide"
A direction to the Contractor to furnish all materials, equipment and labor and make payment for all of these necessary to complete the contract.

"Work"
Any and all things agreed to be furnished or done by, or on the part of, the Contractor, and which are required in the construction and completion of the project herein contemplated. Includes also labor, material and equipment.

"Material" or "Materials"
Unless the context otherwise requires, these words or either of them, shall include equipment.

"Furnish"
A direction to the Contractor to supply and make payment for materials and equipment but not necessarily to install or pay workmen to install, or both, these items.

“General Conditions”
Provisions that establish and pertain to the legal responsibilities between the parties involved in the work, namely the Town and Contractor.

B. Whenever in the specifications and upon the drawings, the words DIRECTED, REQUIRED, PERMITTED, ORDERED, DESIGNATED, PRESCRIBED, and words of like import are used, it shall be understood that the directions, requirements, permission, order, designation, or prescription of the Town is intended. In the case of shop drawings and similar submissions by a contractor or subcontractor, the words APPROVED, ACCEPTABLE, SATISFACTORY, and words of like import shall mean the submission by the contractor or subcontractor is approved by, or acceptable or satisfactory to the Town unless otherwise expressly stated. Town approval shall not negate reliance on the contractor’s selection of materials or methods to achieve a performance objective specified by the Town.

C. All references herein to the singular shall include the plural, to the plural, shall include the singular, and to any gender shall include all genders.

3. GENERAL CONDITIONS

INTENT OF THE GENERAL CONDITIONS

It is not the intention of the general conditions and/or any other part of these specifications to contradict or supersede any ordinance or legislative enactment of the Town of Georgetown but to act only as a supplement thereof.

PERMITS, FEES, AND NOTICES

A. The Contractor shall pay taxes, royalties, and fees, and secure licenses and permits that are required, during the time of the contract, by local, county, state and federal laws, ordinances, rules, codes and regulations for the legal performance of the contract.

B. The Contractor shall perform the work in accordance with notices issued by public authorities having jurisdiction over the work including but not limited to Delaware Department of Transportation (DelDOT), Delaware Department of Health and Social Services, and the USDA Soil Conservation Service.

C. If the Contractor performs work, knowingly or ignorantly, contrary to requirements of local, county, state and federa11aws, ordinances, rules, codes and regulations, he or she shall assume full responsibility therefore and shall bear all costs of suits, actions and damages resulting from his or her illegal work performance.

PERFORMANCE (GUARANTEE) BOND

A. The Developers of major subdivisions and any other project deemed appropriate by the Town, shall submit a Performance Bond in the amount of 150% of all improvements to be eventually taken over by the Town. These improvements may include, but are not limited to, the costs of installing streets, curb, and sidewalks; water and sewer utilities and appurtenances; storm sewer pipes and catch basins; street lighting; and any other improvements that the Town deems necessary for bonding.

B. The Performance Bond shall be in a form acceptable to the Town and it shall include an agreement which defines the terms of the bond. The Bond and agreement shall be submitted to the Town for review and approval.

C. The Performance Bond shall not be surrendered by the Town until the Mayor and Town Council have formally acknowledged Final Acceptance of the improvements; and not until a two (2) year Maintenance Bond has been submitted to and approved by the Town.

MAINTENANCE BOND

A. Following acknowledgement of Final Acceptance of a major subdivision or other project for which a Performance Bond has been required by the Town, the owner shall submit a Maintenance Bond to the Town for review and approval. The Bond shall be in an amount equal to 10% of the Performance Bond; or in an amount equal to the portion of the Performance Bond which the Town will release. The term of the Maintenance Bond shall be a period of two (2) years, unless otherwise specified for the project, which shall begin on the date of the Town's acknowledgement of Final Acceptance.

B. The Maintenance Bond shall be in a form acceptable to the Town and it shall include an agreement which defines the term of the Bond.

INDEMNIFICATION

A. The Contractor shall indemnify and hold harmless the Town, and all who represent them, from" and against claims, damages, losses and expenses arising out of the Contractor's performance of the work, provided such claim, damage, loss and expense" are related to:

1. Bodily injury, sickness, disease or death, or to injury to tangible property, including the loss of use resulting there from, and

2. Negligence, recklessness and/or malfeasance of the Contractor or his or her subcontractors and others, directly related to the project, or both.

COOPERATION OF CONTRACTOR AND REPRESENTATIVE

The Contractor shall give the work his or her constant attention to facilitate the progress thereof and shall cooperate with the Town. The Contractor shall have at all times a competent and reliable English-speaking representative on the work, authorized to receive orders and act for him or her.

COOPERATION WITH OTHER CONTRACTORS

A. The Contractor shall cooperate with and so conduct his or her operations as not to interfere with or injure the work of other contractors or workmen employed by the Town. He or she shall promptly make good, at his or her own expense, any injury or damage which may be done by him or her or his or her employees or agents on the work.

B. The Contractor shall suspend such part of the work herein specified, or shall carry on the same in such manner, as may be ordered by the Town.

DEFECTIVE MATERIALS AND WORK

The materials and work as described and outlined in these specifications are for the sole purpose of maintaining quality, conformity and safety in all project construction (and materials used) performed within the town limits and authority of the Town of Georgetown. All materials not conforming to the requirements of these specifications shall be considered as defective, and all such materials whether in place or not, shall be rejected and shall be removed immediately from the work unless otherwise permitted. No material which has been rejected, the defects of which have been corrected or removed, shall be used until approval has been given. All work which has been rejected or condemned shall be remedied, or if necessary, removed and replaced in an acceptable manner by the Contractor at his/her own expense.

FAILURE TO REMOVE AND RENEW DEFECTIVE MATERIALS AND WORK

Should the Contractor fail or refuse to remove and renew defective materials used or work performed previously or to make any necessary repairs: in an acceptable manner, and in accordance with the requirements of these specifications, within the time indicated in writing, the Town shall have the authority to cause the unacceptable or defective materials or work to be removed and renewed or such repairs to be made at the Contractor's expense.

LAWS TO BE OBSERVED

The Contractor shall observe and comply with federal, state, county, and local laws, ordinances, rules, regulations, decrees and orders that are in effect and applicable to the work during the time of construction; and he or she shall see that his or her subcontractors likewise meet this requirement. He shall indemnify, and hold harmless, the Town and its representatives against claims and liability arising from Contractor's and/or subcontractor's violations of such laws, ordinances, rules, regulations, decrees, and orders, whether such violations be by the Contractor or any Subcontractor, or any of their agents and/or employees.

LINES, GRADES AND ELEVATIONS

A. The Contractor shall be responsible for layout of the lines, grades, and elevations of the work and shall conform his or her work thereto.

B. The Contractor shall furnish the Town, at least five days prior to the start of construction, two record copies of line and grade stakeout data as well as cut sheets for approval. The furnishing of such record data shall in no way release the Contractor from his or her responsibility for the completeness and accuracy of stakeout work necessary for construction.

C. All survey and stakeout work shall be done by qualified personnel subject to the approval of the Town.

D. All proposed manholes, catch basins, etc., shall be field located by the Contractor prior to the start of construction. Notice shall be given to the Town to observe the

location and make any adjustments deemed necessary.

SANITARY PROVISIONS

The Contractor shall provide and maintain in a neat and sanitary condition such sanity conveniences and accommodations for the use of his or her employees as may be necessary to comply with the requirements and regulations of the Department of Health or of other bodies or tribunals having jurisdiction thereof. He shall commit no public nuisance.

PUBLIC CONVENIENCE AND SAFETY

A. The Contractor shall conduct the work in a manner that will minimize obstruction to traffic in the area. The safety and convenience of the general public and of the residents and occupants of property along and adjacent to the work shall be provided in an adequate and satisfactory manner. Footways and portions of highways and streams adjoining the work shall not be obstructed more than absolutely necessary. In no case shall any traveled thoroughfare be closed without permission of the Town.

B. Fire hydrants on or adjacent to the work shall be kept accessible to fire apparatus at all times, and no obstructions shall be placed within 15 feet of a hydrant.

C. Gutters and storm drain inlets shall be kept unobstructed at all times, except as temporarily required to prevent entrance of construction related debris.

D. In order to protect the lives and health of his or her employees, the Contractor shall comply with all pertinent provisions of the Contract Work Hours and Safety Standards Act, as amended, commonly known as the Construction Safety Act as pertains to health and safety standards; and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under contract.

ACCESS BY RESIDENTS AND BUSINESSES

A. The Contractor shall schedule his work so as to minimize the time during which vehicular access to each dwelling along the work route is prevented. The Contractor shall provide, at all times, safe pedestrian access to all dwellings.

B. Vehicular access on side streets, in the proximity of the route of the work, shall not be encumbered by the Contractor.

C. Public access to businesses shall be provided during all periods of construction.

DETOURS

A. Detours may be requested by the Contractor. Traffic may be detoured over

approved routes along existing roads with written approval of the Town and/or DelDOT (if applicable). The Cost of all work associated with any detour, including revisions to the M.O.T. plans and erection and maintenance of the detour signs, etc., is to be borne by the Contractor.

B. The Contractor shall notify the Town and/or DelDOT (if applicable), local fire companies, post office and the school district of all proposed detours seven (7) days prior to implementation of any detour.

BARRICADES, DANGER, WARNING, AND DETOUR SIGNS

The maintenance of traffic shall be in accordance with a Town and/or DelDOT approved Maintenance of Traffic (MOT) Plan. The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient lights, danger signals and signs, provide a sufficient number of watchmen and take all necessary precautions for the protection of the work and safety of the public. Highways closed to traffic shall be protected by effective barricades, on which shall be placed acceptable warning signs. All signage materials and placement; and all flagging, staging, and personnel shall be in accordance with current DelDOT requirements. The Contractor shall detour traffic and shall furnish and maintain all detour signs required to direct traffic over the entire route of the detour. Costs for .maintaining traffic shall be the responsibility of the Contractor.

WORK WITHIN STATE RIGHT-OF-WAY

A. All materials and construction methods for work affecting DelDOT jurisdiction shall be done in complete accordance with permit and/or franchise stipulations or directives issued by same. All costs for such work shall be the responsibility of the Contractor.

B. Maintenance of traffic shall be accomplished in full accordance with current DelDOT requirements. Work in DelDOT right-of-way shall not commence without an approved signing plan.

PRESERVATION AND RESTORATION OF PROPERTY

A. Easements for proposed work on private property shall be submitted to the Town for review and approval during the plan review process. The Contractor shall not enter private property without an easement approved by the Town, or in the case of “minor” and unanticipated necessary encroachment, permission from the property owner that is first verified by the R.P.R. or Town inspector.

B. The Contractor shall take necessary measures to preserve public and private property, including paving and lawns outside the required excavation lines, adjacent to the property. He shall not permit monuments to be moved until an authorized agent has referenced their locations, and until directed to move them. The Contractor shall pay all expenses for replacing property markers disturbed. Replacement shall be by a surveyor licensed in the state of Delaware.

C. The Contractor shall be responsible for damages to public and private property whether caused by himself, his or her subcontractors, or as a result of negligent construction methods. Contractor shall provide restoration of damaged property to its original condition, or better, at no additional cost to the Town. If contractor fails to restore such property, the Town may, upon 48-hours notice, have property restored at the Contractor's expense.

EROSION AND SEDIMENT CONTROL

The Contractor shall provide for safe disposal of run-off from construction areas in accordance with DNREC erosion and sediment control requirements. Such requirements may be defined in the approved construction drawings, or ordered during construction by the controlling agency, the Town, or the Engineer. The cost of erosion and sediment control shall be the responsibility of the Contractor.

CONTRACTOR'S RESPONSIBILITY FOR WORK

A. Until final acceptance of all the work has been indicated in writing by the Town, the work shall be under the charge of and care of the Contractor. He shall take every precaution against destruction of, injury, or damage to the work or to any part thereof from any other cause whatsoever. The Contractor shall rebuild, repair, restore, and make good, at his or her own expense, any destruction to, injury of, or damage made to the work before its final completion. Acceptance of any restored, rebuilt or repaired work shall be indicated in writing by the Town.

B. Contractor shall furnish, and maintain in safe working condition, equipment necessary to properly perform the work in the scheduled time.

SUBCONTRACTORS

A. The Contractor shall give his personal attention to the faithful performance of the work, shall keep the same under his own control, and shall not assign the contract by power of attorney or otherwise. No sub-contractor shall be engaged upon any branch of the work, who is not thoroughly practical and reasonable and at the time of making this contract conducting business in the particular branch of trade for which he is employed.

B. If the Town or Engineer objects to any proposed sub-contractor, materials or equipment supplier, the Contractor shall furnish such data as may be required to secure the Town’s and Engineer’s approval. If such approval is not then forthcoming, the Town and the Contractor will negotiate the matter to a mutually acceptable conclusion.

C. The Contractor shall not be released from any of his liabilities or obligations should any sub-contractor or sub-contractors fail to perform in a satisfactory manner the work undertaken by him or them.

D. The Contractor agrees that he is as fully responsible to the Town for the acts and omissions of his sub-contractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

E. Nothing contained in any document shall create any contractual relation between any subcontractor and the Town.

CONTRACTOR'S EMPLOYEES

A. Employees of the Contractor or persons connected with the Contractor shall be discharged upon request of the Town for any or all of the following reasons:

1. Directing profanity or abusive language, or both, at the Resident Project Representative and/or other Town representatives;

2. Interfering with Resident Project Representative and/or other Town representatives in performance of their work;

3. Disobeying or evading, or both, instructions of the Resident Project Representative and/or other Town representatives;

4. Carelessness or incompetence, or both;

5. Discharged employees shall not be rehired without consent of the Town.

TEST OF SAMPLES OF MATERIALS

Tests of materials shall be made at the Contractor's expense, by a certified testing laboratory, in accordance with the officially approved methods as described or designated. The Town reserves the right to conduct verification testing at its own expense.

STORAGE OF MATERIALS

Materials shall be stored so as to insure the preservation of their quality and fitness for the work. When considered necessary, they shall be placed on wooden platforms or other hard clean surfaces, and not on the ground, and shall be placed under cover when directed. Stored materials shall be located so as to facilitate prompt inspection. Lawns, grass plots, or other private property shall not be used for storage purposes without written permission of the owner or lessee.

QUALITY OF MATERIALS AND WORKMANSHIP

A. Materials and workmanship shall be of best possible quality and feasibility for the intended purpose, whether or not a brand name *is* specified. Materials shall be new and unused and they shall be in accordance with approved shop drawings

where such drawings submissions are required.

B. Representative preliminary samples of materials may be requested by the Town for examination or testing, or both. Materials, for which samples are submitted to the Town, shall not be ordered by Contractor until the Town furnishes written approval of said samples. Materials may be further inspected by the Town during preparation and construction of the work; materials found to be substandard will be rejected.

CLEAN UP

A. The Contractor shall, at his or her own expense, keep the sites of his or her operations clean during construction and remove all rubbish as it accumulates.

B. Upon failure of the Contractor to keep the sites of his or her operations clean to the satisfaction of the Town, the Town may, upon 24 hours notice to the Contractor, remove rubbish, as *is* deemed necessary, and charge the cost thereof to the Contractor.

C. On or before the completion of the work, the Contractor shall, without charge therefore, tear down and remove all his or her buildings and temporary structures built by him or her, shall remove all rubbish of all kinds from any grounds which he or she has occupied, and shall leave the site of the work in a clean and neat condition.

TEMPORARY SUSPENSION OF WORK

The Town shall have the authority to suspend the work, wholly or in part, for such period or periods as he or she may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for the suitable execution of the work, or for such time as is necessarily due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract. If it should become necessary to stop work for an indefinite period, the Contractor shall store all materials in such manner that they will not obstruct or impede the traveling public unnecessarily nor become damaged in any way, and he or she shall take every precaution to prevent destruction, damage or deterioration of the work performed, provide suitable drainage by opening ditches, shoulder drains, etc., and erect temporary structures where necessary. The Contractor shall not suspend the work without authorization. Neither the failure of the Town to notify the Contractor to suspend the work on account of bad weather or other unfavorable conditions nor permission by the Town to continue work during bad weather or other unfavorable conditions, shall be a cause for the acceptance of any work which does not comply in every respect with the contract and specifications.

CONDITONAL ACCEPTANCE

Whenever, in the opinion of the Town, the Contractor shall have the work in an acceptable manner in accordance with the terms of the contract, the Contractor shall

arrange for start-up of each facility and an inspection of the entire work by the Town and upon completion of all repairs or renewals which may appear at the time to be necessary, the Town will conditionally accept the work.

MAINTENANCE, REPAIRS, ETC., AFTER COMPLETION

The Contractor, at his or her entire cost and expense, shall maintain all portions of the work to meet the requirements of these specifications for and during the period of one (1) month from and after the date of the conditional acceptance of the entire work by the Town, and, in addition, shall at his or her entire cost and expense, make all repairs and replacements of the work and appurtenances which may become necessary, in the judgment of the Town at any time or times, during the following one (1) month period, on account of any failures or defects in said work and appurtenances due to improper work done or materials furnished by the Contractor.

FINAL ACCEPTANCE

A. For projects where the Contractor is under Contract directly with the Town:

1. One (1) month after the date of conditional acceptance of the work, the Town shall make a final inspection of the entire work, witness and approve the satisfactory operation of all facilities and complete restoration, and upon completion of all repairs or renewals which may appear at that time to be necessary in the judgment of the Town, shall certify in writing as to the final acceptance of the entire project.

B. For projects where the Contractor is under Contract with an owner other than the Town, such as a major subdivision or other project involving infrastructure which will be taken over by the Town, the Town shall not grant Final Acceptance until the following have been satisfied:

1. All monumentation must be complete.

2. All improvements to be taken over by the Town must be completed to the satisfaction of the Town, except, in the case of a major subdivision, the top coat of asphalt.

3. In the case of a major subdivision, the ownership of no lots or parcels shall be transferred until the Town has granted Final Acceptance of the project or the current phase.

4. A Maintenance Bond in the amount of 10% of the amount of any Performance Bond must be submitted to the Town for review, and be approved. Final Acceptance will not be granted until the Maintenance Bond has been approved. The term of the Maintenance Bond shall be two (2) years, unless otherwise specified. When Final Acceptance has been granted, the Performance Bond will be released, except that the cost of any

remaining top coat of asphalt which has not yet been installed shall remain bonded in an amount of 150% of the value until it has been installed.

5. All rights-of-way to be taken over by the Town must be formally deeded to the Town, at expense of the Grantor.

6. A Bill of Sale for all items which will be taken over by the Town must be submitted, reviewed, and approved.

7. Unconditional Releases of Liens from the General Contractor, all sub-contractors, and all major material suppliers must be submitted and approved by the Town.

8. The record ("as-built") drawing submission must be reviewed, and approved by the Town.

TERMINATION OF MAINTENANCE PERIOD(S)

A. It shall be the Contractor's responsibility to notify the Town prior to the termination of any two (2) year maintenance period.

B. Upon being notified that any maintenance period is near the termination point, the Town shall perform an inspection of the items for which the bond applies. The Town shall, if necessary, generate a punch list and provide a copy to the Contractor. When all items are acceptable to the Town, the Maintenance Bond, or its unused portion, shall be released by the Town.

UNLIMITED LIABILITY OF CONTRACTOR

It is understood and agreed that any and all of the duties, liabilities and/or obligations imposed upon or assumed by the Contractor by or under these specifications, shall be taken and construed to be cumulative, and that the mention of any specific duty, liability or obligation imposed upon or assumed by the Contractor under these specifications shall not be taken or construed as a limitation or restriction upon any or all of the other duties, liabilities and/or obligations imposed upon or assumed by the Contractor.

WORK HOURS

No work-between the hours of 6:00 PM and 7:00 AM shall be permitted without first obtaining written permission of the Town.

LEGAL HOLIDAYS

A. The Contractor will not be permitted to work on Sundays or days which are legal holidays in the State of Delaware, except in cases of emergency, and only with the written permission of the Town.

B. If the Contractor desires to work upon any such legal holidays, he or she shall notify the Town in writing at least two (2) days in advance of such holiday stating that he or she desires to work and the location of the proposed work The Town reserves the right to deny or approve the Contractor's request.

GUARANTEE

The Contractor shall guarantee all of the work for a period of two (2) years after the date of completion and final acceptance thereof by the Town as follows:

A. Against all faulty materials and against all imperfect, careless, and unskilled workmanship.

B. That the entire equipment and each and every part thereof shall operate (with proper care and attention) in a satisfactory and efficient manner, and in accordance with the requirements of these specifications.

C. That all structures shall be watertight and leakproof at every point, and in every particular.

D. The Contactor agrees to replace, with proper workmanship and materials, and to reconstruct, correct, or repair, without cost to the Town, work which is improper, imperfect, does not operate in a satisfactory manner, fails to perform as specified, or all of these.

E. The guarantee obligations assumed by the Contractor under the contract documents shall not be held or' taken to be in any way impaired because of the specifications errors, indication of approval by or on behalf of the Town of articles, materials, means, combinations or' things used in the construction, performance and completion of the work or any part thereof, or all of these.

F. No use acceptance by the Town of the work or any part thereof, nor any failure to use the same, nor any repairs, adjustments, replacements or corrections made by the Town due to the Contractor's failure to comply with his or her obligations under the contract documents, shall impair in any way the guarantee obligations assumed by the Contractor under the contract documents.

SHOP DRAWINGS

A. The Contractor shall furnish shop drawings for any fabricated construction materials required for the work, unless otherwise directed by the Town. The Contractor shall furnish PDF files of shop drawings via e-mail unless this method is not possible, in which case the Contractor shall submit six (6) paper copies of each shop drawing for the Engineer's approval. The Contractor shall not order any item or material for which a shop drawing submission is required until the respective shop drawing has been approved by the Engineer.

B. Regardless of corrections made in or approval given to shop drawings by the Town, the Contractor will nevertheless be responsible for the accuracy of such drawings and for their conformity to the plans, performance objectives and specifications, unless he or she notifies the Town in writing of any deviation at the time he or she furnishes such drawings. Only drawings bearing the approval stamp of the Town shall be used for ordering materials or for construction.

SCHEDULE OF CONSTRUCTION

The Contractor shall complete the utility or street construction contract according to a schedule of construction as submitted by the Contractor and approved by the Town. Submit three copies for approval.

LOCATION OF EXISTING UTILITIES

A. The Contractor shall contact "Miss Utility", or other such appropriate telephone number, at (800) 282-8555 at least 48 hours prior to digging in the vicinity of existing underground utilities to have them located and marked. It shall then be the Contractor's responsibility to verify these utilities, by test pits, a minimum of fifteen (15) days in advance of actual construction operations in the vicinity of the utilities.

B. The failure to show on the contract documents any existing utilities shall not relieve the Contractor of his or her responsibilities of determining the location of these utilities, and any damage to the utilities or interruption of service shall be repaired by the Contractor according to the Town or utility company specifications. The Town shall be notified of any damage to any utilities.

EXISTING WATER AND SEWERAGE SYSTEMS

A. It is essential that the existing water and sewerage systems remain in operation throughout the construction period. Connections to existing pipes and structures shall be scheduled and coordinated with the Town. Although some interruptions in service may be impossible to avoid, the Contractor shall make every effort to keep these interruptions to a minimum.

B. Certain connections to existing systems might have to be made during weekends or nighttime hours. This determination shall be made by the Town.

WATER SUPPLY

The Contractor shall at his or her own cost provide such quantities of clean water as may be required for any and all purposes under the contract. He shall supply sufficient drinking water to all his or her employees.

RIGHT-OF-WAY AND LOT LINE MONUMENTATION REQUIRED

A. Monuments must be set at all points of deflection of newly formed or existing (if not found) right-of-way and lot lines and curves. In the case of major subdivisions, monumentation must be complete and included in the record (as-built) submission prior to Final Acceptance; and in the case of minor subdivisions, the monumentation must be complete prior to the issuance of a Certificate of Occupancy.

RECORD ("AS-BUILT") DRAWINGS

A. Upon completion and prior to the release of the Performance Bond, the Developer/Contractor shall submit to the Town a draft copy of the record drawings for review and comment. Record drawing information shall include surveyed as-built elevations of the following:

1. All property monuments or markers, found and set;

2. Sewer manhole rims, pipe sizes, and pipe inverts;

3. Sewer cleanout covers and inverts;

4. Pump station wet well rim and bottom, pipe sizes, and pipe inverts;

5. Pump station valve vault rims, pipe sizes, and inverts;

6. Forcemain inverts every 50 feet;

7. Air release valve rims, pipe sizes, and inverts;

8. Grease trap rims, pipe sizes, and inverts;

9. All water valves, hydrants, vaults, meter pits, and curb stops (where required);

10. All storm sewer catch basin grates and manhole rims, all pipe sizes, and inverts;

11. All other items deemed necessary by the Town.

B. When the record drawings have been approved, the Developer/Contractor shall submit to the Town four (4) signed and sealed paper copies of the approved record drawings, a CD of the signed and sealed record drawings in PDF format; and a CD with the record information in digital AutoCAD (2010 or newer) format. The digital AutoCAD information shall be on Delaware State Plane horizontal control and NAVD 88 vertical control.

END OF SECTION

DIVISION 1

DESIGN PARAMETERS

SECTION 1A - DESIGN PARAMETERS FOR WATER DISTRIBUTION SYSTEMS

1.01 GENERAL

Where water mains are to be installed for residential or commercial development, the Developer is responsible for all costs associated with the design, Town review, and installation of the improvements. Developer shall hire a Contractor approved by the Town of Georgetown to install the improvements. The improvements shall include the installation of all water services, including curb stops and meter pit assemblies. All water services must be installed before any paving will be permitted to take place.

1.02 DESIGN CAPACITY

A. Water Mains

In determining the required size and capacity of the water main, the following factors should be considered.

1. Estimated average and maximum water demand for the design period.
2. Topography of area.
3. Depth of excavation.
4. Fire fighting requirements.
5. Number of proposed services.
6. The calculations for design of the water mains shall accompany the Project drawings, when submitted to the Town Engineer for review when requested.
7. Hydrant tests.

B. Water Service Lines

Individual water services shall be installed to each lot of a subdivision. Each unit of a townhouse and condominium shall have a separate meter. Sub-metering shall be the responsibility of the Developer. Service lines sizes shall be designed by the developer for the use intended. Minimum standards shall include the following:

	Min. Service Size	Min. Meter Size (Each Unit)
Single family residence	2"	5/8" x 3/4"
Each duplex residence	2"	5/8" x 3/4"
4 unit apartment, condominium or townhouse (gang service)	2"	5/8" x 3/4"
8 unit apartment, condominium or apartment (gang service)	2"	5/8" x 3/4"

1.03 DESIGN SIZE

A. Pressure

All water mains shall be sized after a hydraulic analysis based on flow demands and pressure requirements. The system shall be designed to maintain a minimum pressure of 21 psi at ground level at all points in the distribution system under all conditions of flow. Design of new pipe shall use an aging c-factor of 100 for ductile iron pipe and 120 for plastic. Design engineer shall provide certification of design and fire flow conditions. Water system shall meet Delaware State Fire Marshal requirements. The static pressure in the distribution system should be designed for 52 psi wherever new pressure sources are provided.

B. Diameter

The minimum size of water main for providing fire protection shall be 6-inch diameter. Larger mains will be required, if necessary, to allow the withdrawal of the required fire flow while maintaining the minimum residual pressure.

C. Small Mains

Any departure from minimum requirements shall be justified by hydraulic analysis and future water use and can be considered only in special circumstances.

1.04 DEPTH OF WATER MAIN

Minimum depth of cover over water mains shall be 42 inches as measured from the top of the pipe to finished grade.

1.05 VALVES

Sufficient valves shall be provided on the water mains for isolation during repairs. Valve spacing shall be in accordance with the Delaware State Fire Marshal's Office and the State Office of Drinking Water. Valves shall also be placed at all main branch connections.

1.06 HYDRANTS

Location and Spacing: Hydrants should generally be provided at each street intersection and at intermediate points between intersections as required or requested by the Town. Hydrant location and spacing shall be in accordance with the Delaware State Fire Marshal's Office.

1.07 SERVICE METERS

Each service connection, except fire service, shall be individually metered. Fire services shall be installed with a detector check meter system.

1.08 DEAD ENDS

Dead ends shall be minimized by looping of all water mains whenever practical. Hydrants shall be placed at the end of all dead end lines. Blow-offs shall not be substituted for hydrants.

1.09(A) DESIGN FLOW

The water system shall be designed on the basis of an average daily demand of 275 gallons per day per equivalent dwelling unit, or typical 2 to 3 bedroom home. Additional allowance may be required for irrigation demands.

1.09(B) WATER IMPACT STUDY

A. Study required for 11 or more EDUs.

B. Developer's engineer is responsible for determining whether adequate flows and pressures are available to meet project needs and for sizing and designing onsite improvements; for sizing and locating any offsite water main extensions or loops needed to meet those needs based upon existing (or proposed, if available) system pressures and flows. The study shall indicate any needs for upgrading existing portions of the system if applicable.

C. In cases where there is an impact on the existing system requiring improvements, the Town may require additional information or conduct an impact study of its own with information provided by the developer's engineer. The cost of this study shall be reimbursed to the Town by the developer.

D. Indicate any high rise projects, isolated areas, commercial and institutional projects needing flows in excess of capacity of existing system, for the project will install private booster pumping and/or tankage to meet site demands.

E. Obtain hydrant test data from Department of Public Works, run additional tests as needed, and provide a water main layout and with sizes needed to meet project demands for fire, domestic, and process.

F. Provide a schematic of proposed improvements drawn to scale.

G. Upon request from the Town, provide the proposed water main layout in a scaled drawing or electronic format on Delaware State Plane Coordinates. The Town may elect to enter this into a master water model for plan review purposes.

H. Checklist:

1. Name and contact information of developer and engineer
2. Proposed water demands (fire, domestic, other). EDU calculation.
3. Demand phasing schedule for build outs in excess of 5 years

4. Copies of hydrant test results, source and date
5. Written summary and pertinent backup information to indicate that design parameters will be met when connecting to the existing system, or proposed improvements to meet project needs.
6. If applicable, show scope of proposed offsite water extensions with schematic.
7. If applicable, show proposed offsite easements or use of public rights of way.
8. If applicable, indicate water quality needs if they are different from normal domestic potable water.
9. Estimated itemized construction cost for offsite improvements and extensions.

I. Developments greater than 50,000 gallons per day require a scoping meeting and the Town may elect to have source and treatment components added to the impact study.

END OF SECTION

SECTION 1B - DESIGN PARAMETERS FOR SANITARY SEWERS

1.10 GENERAL

A. Where sewer mains are to be installed for a residential or commercial development, the developer is responsible for all improvements. Developers shall hire a contractor approved by the Town of Georgetown and pay all costs associated with the work. The Developer shall install sewer laterals with cleanouts in the pipe laying process. Connections to the main shall be made with wye fittings.

B. Laterals shall be constructed of the same material as the sewer main. Maintain a minimum of 36-inch cover. Lateral extensions from the cleanout to the house shall conform with State Plumbing Regulations.

1.11 DESIGN CAPACITY

In determining the required size and capacity of the sanitary sewer, the following factors should be considered:

A. Average and peak hourly domestic sewage flow.

B. Topography of area.

C. Depth of excavation.

D. Pumping requirements if necessary.

The calculations for design of the sanitary sewers shall accompany the Project's Drawings, when submitted for review.

1.12 DESIGN FLOW

A. Average Flow

The sanitary sewer system shall be designed on the basis of an average daily flow of sewer of 225 gallons per day equivalent dwelling unit. Additional allowance may be required for high water use appliances and fixtures.

B. Peak Design Flow

Sanitary sewers shall be designed on a peak flow basis using the 3.5 ratio of peak to average daily flow unless approved otherwise.

1.13 MINIMUM SIZE

A. Sanitary Sewer Main

The required size of sanitary sewer mains will vary with the character and size of the Development. The minimum size for sanitary sewer main is eight (8") inches.

B. Lateral Connections

Lateral cleanouts are required for use with all laterals unless a written waiver is received from the Town Engineer.

Each individual dwelling unit and multi-family units, with the exception of structures where each unit may not extend to the ground floor, shall have an individual lateral installed. The minimum diameter of laterals extending from the Town maintained cleanouts shall be six (6") inches. Cleanouts shall be placed at the property line. Additional cleanouts shall be per the State or County Plumbing Code in effect.

1.14 DEPTH OF SEWER MAIN

Minimum depth of cover over sewer mains shall be three (3') feet as measured from the top of the pipe to finished grade. Any piping not meeting the required minimum depth shall be concrete encased.

1.15 SLOPES

All sewers shall be designed and constructed to give mean velocities, when flowing full, of not less than 2.0 feet per second, based on Manning's formula. If possible, pipe slopes should be increased above minimum slope in locations where pipes will carry functional flow.

Using an "n" value of 0.010 for P.V.C., the following are the minimum slopes which are allowed:

Sewer Size	Minimum Slope in Feet Per 100 Feet
8 inch	0.28
10 inch	0.22
12 inch	0.17
15 inch	0.12
18 inch	0.10
21 inch	0.08

Using an "n" value of 0.013 for Ductile Iron Pipe, the following are the minimum slopes which are allowed:

Sewer Size	Minimum Slope in Feet Per 100 Feet
8 inch	0.40
10 inch	0.28
12 inch	0.22
14 inch	0.17
16 inch	0.14
18 inch	0.12

The minimum slope for 6-inch sewer laterals shall be one (1) foot per 100 feet, or 1.00%; unless approved otherwise by the Town.

1.16(A) MANHOLES

A. Location and Spacing

Manholes shall be installed at the end of each line; at all changes in grade, size or alignment; at all intersections, and at distances not greater than 400 feet.

B. Cleanouts

Terminal cleanouts shall not be substituted for manholes. However, terminal cleanouts may be approved under Special Conditions by the Town Engineer on a case by case basis. Under no conditions shall terminal cleanouts be installed at the end of a main line sewer greater than 150 feet from the last manhole.

C. Drops

A drop pipe should be provided for a sewer entering a manhole at an elevation of 21 inches or more above the manhole invert. Where the difference in elevation between the incoming sewer and the manhole invert is less than 21 inches, the flow channel should be filleted to prevent solids deposition.

D. Minimum Diameter

The minimum diameter of manholes shall be 48 inches. Larger diameters are required for drop connections in new construction. A minimum access diameter of 24 inches shall be provided.

E. Flow Channels

The flow pipe channel through manholes shall be brick and mortar unless otherwise approved and conform in shape and slope to that of the sewers. The top of the brick channel shall be at the same elevation as the crown of the main sewer

line in the manhole. Channel shall drop a minimum of 0.10 foot from influent pipe unless otherwise approved.

F. Use coring machine for connection to an existing manhole and provide flow channel reconstruction to suit. Grouting in of new pipe shall be via Link Seal or Town approved sand collar. Connection shall be watertight.

1.16(B) SEWER IMPACT STUDY

A. Study required for 11 or more EDUs.

B. Developer is responsible for conducting the study and submitting it to the Town for review, or, by decision of the Town, the Town may conduct the study and be reimbursed by the Developer.

C. The study will include existing collection system capability and may include treatment and disposal capability upon review by the Town. All projects over 50,000 gpd and projects needing treatment and disposal capacities may require a scoping meeting.

D. EDU determination component (non-residential uses)

E. Checklist:

1. Contact information for developer and engineer doing study
2. Proposed sewer flows and EDU calculation
3. Flow phasing schedule for build outs in excess of 5 years
4. Written summary and pertinent backup information to indicate that design parameters will be met when connecting to the existing system, or proposed improvements to meet project needs.
5. If applicable, show scope of proposed offsite sewer extensions with schematic.
6. If applicable, show proposed offsite easements or use of public rights of way.
7. Estimated itemized construction cost for offsite improvements and extensions
8. Indicate sewage quality if different from normal domestic.

END OF SECTION

SECTION 1C - DESIGN PARAMETERS FOR SEWAGE PUMPING STATIONS AND FORCE MAINS

1.17 DESIGN CAPACITY

In determining the required size and capacity of the pumping station and force mains, the following factors should be considered:

A. Maximum hourly domestic sewage flow.

B. Topography of area.

C. At no place on the pump curve should the horsepower rating of the pump motor be exceeded.

D. The volume of the wet well between the start elevation and the stop elevation of a single pump.

E. The calculations for design of the pump station shall accompany the Project's Drawings, when submitted to the Town Engineer for review.

1.18 PUMP STATIONS

A. General

1. Flooding - Sewage pump station structures and electrical and mechanical equipment shall be protected from the one hundred (100) year flood.
2. Accessibility - The pump station shall be readily accessible by maintenance vehicles during all weather conditions. The facility should be located off the traffic way of streets and alleys.
3. Station Type - Station type shall be coordinated with the public works director or Town Engineer based on flow, location and standardization desired.

B. Pumps and Hardware

1. Multiple Units - Two (2) pumps at a minimum shall be provided. Approved submersible pumps include Flygt and Myers.
2. Hardware shall be Type-316 stainless steel and shall include guide rails, brackets, chains, cables, etc.
3. Each pump shall have the same capacity and individually shall be capable of handling flows in excess of the expected maximum flow.

C. Valves

1. Discharge Line - Suitable shutoff and check valves shall be placed on the discharge line of each pump. The check valve shall be located between

the shutoff valve and the pump. Valves shall be capable of withstanding normal pressure and water hammer. Gate valves shall have rising sterns and be of the resilient seat type.

2. Unless approved otherwise, discharge and check valves shall be installed in a concrete valve vault.
3. Install an isolation valve and quick connect in an adjacent bypass handhole for emergency pump connection to the force main per Town Standards.

D. Wet Well

1. Size - The wet well size and control setting shall be appropriate to avoid heat buildup in the pump motor due to frequent starting and to avoid septic conditions due to excessive detention time.
2. Floor Slope - The wet well floor shall have a minimum slope of one to one to form the hopper bottom. The horizontal area of the hopper bottom shall not be greater than necessary for proper installation and function of the pump inlet.
3. Material - Wet well shall be reinforced concrete, unless approved otherwise by the Town.
4. Pumping volume shall be 7 times average daily flow divided by 4 (between lead pump on and off).
5. A manhole shall be installed just upstream of the wet well. The invert out of this manhole shall be plugged when bypass pumping is required and the manhole shall serve as a standby wet well for the suction line during bypass pumping.

E. Electrical

1. Electrical plans are required with detailed specifications for control. Controls shall include a flow meter and a pressure sensing device located in the valve vault. The output signal from these two devises shall be routed to digital readout components located in the control panel. The pumps shall operate automatically in a lead/lag fashion and each pump shall be equipped with elapsed time meters. Controls shall also include run lights, alarms, and telemetry as required.
2. Unless approved otherwise, stations shall be provided with an emergency generator with automatic transfer switch in a weatherproof housing on a concrete pad. Small stations may, on a case-by-case basis, be allowed to substitute portable power generation or portable pumping equipment.
3. Electrical equipment and cabinets shall meet standards set by the National Electric Code and Town of Georgetown.
4. Contractor shall hire and pay for an independent licensed inspection agency who shall certify that the installation of the electrical components meet all applicable electrical codes.

1.19 GREASE TRAPS

A. Grease traps are required for all commercial operations, restaurants, convenience stores, etc. which have cooking operations. Traps shall be designed to prevent accumulation of grease in sanitary sewers. Maintenance of grease traps shall be at a minimum of 1 time per month or as needed. Maintenance is the responsibility of the property Owner. The property Owner shall submit to the Town a maintenance contract with a local hauler defining these responsibilities for inspection and pump out as required. Maintenance records shall be made available to the Town upon request.

B. Capacity of grease traps shall be determined based on the specific application.*

One of the following formulas shall apply:

1. <u>Number of Seats Method for Restaurants:</u>

(D) x (GL) x (ST) x HR/2 x (LF) = Size of Grease Interceptor, gallons

where:

D	=	Number of seats in dining area
GL	=	Gallons of wastewater per meal, normally 5 gal
ST	=	Storage capacity factor -- minimum of 1.2
HR	=	Number of hours open
LF	=	Loading factor --

1.0 major highway
1.0 recreational areas
0.8 main highways
0.5 Town center

2. <u>Nursing Homes, Other Type Commercial Kitchens :</u>

(M) x (GL) x (ST) x (2.5) x (LF) = Size of Grease Interceptor, gallons*****

where:

M	=	Meals per day
GL	=	Gallons of wastewater per meal, normally 2.0
ST	=	Storage capacity factor -- minimum of 1.7
LF	=	Loading factor --

1.25 garbage disposal & dishwashing
1.00 without garbage disposal
0.75 without dishwashing
0.50 without dishwashing and garbage disposal

Thus, for a restaurant with a 75-seat dining area, an 8 hour per day operation, a typical discharge of 5 gal. per meal, a storage capacity factor of 1.7 and a loading factor of 0.8, the size of the grease interceptor is calculated as follows:

(75) x (5) x (1.2) x 8/2 x (0.8) = 1,440 gal.

3. Fixture method.

Per restaurant kitchen sink	100 gal
Per single compartment sink	100 gal
Per double compartment sink	75
Per triple compartment sink	100
Per dishwasher	100

*****Minimum size grease interceptor should be 1000 gal.

C. Other design considerations include: facilities for insuring that both the inlet and outlet are properly baffled; easy manhole access for cleaning; and inaccessibility of the trap to insects and vermin.

1.20 FORCE MAINS

A. Force mains shall be sized for a flow velocity of 2.0 feet per second minimum and 6.0 maximum.

B. Designer shall use Hazen & Williams equation and shall plot system curves for new pipe (C = 140 for PE or PVC or C = 130 for DIP) and minimum static head condition, and secondly for old pipe (C = 120 for PE or PVC or C = 100 for DIP) and minimum static head condition.

C. Materials must be approved by the Town.

D. Design and construct force main in profile with grades controlled to plus or minus one half inch to prevent unnecessary high points. Install an air release valve at each high point and at intervals as needed along flat or nearly flat force main grades. Air valves shall be cast iron combination sewage type with stainless steel internals, stainless steel isolation ball valve with street ell attached to top of outlet to prevent contamination from debris, and provided with flushing connections. The minimum depth of cover over forcemains shall be three (3) feet. The depth of cover over force main at high points at air release valves shall be sufficient to accommodate equipment with top of manhole flush with grade in pavements, shoulders, or traffic ways. There shall be a minimum of 6 inches of clearance provided between the top of the air release valve and the underside of the manhole cover.

END OF SECTION

SECTION 1D - DESIGN PARAMETERS FOR STREETS

1.21 GENERAL

A. Where a Developer proposes to construct public streets in the Town of Georgetown, such streets shall be designed in accordance with the Standards defined herein.

B. Sussex County Conservation District, where applicable, shall administer the issuance of permits required for erosion & sediment control and stormwater management. Their requirements are in addition to those defined herein.

1.22 LAYOUT, RIGHT-OF-WAY AND STREET DESIGN

A. The arrangements of streets shall be such as to provide for the appropriate extension of existing streets.

B. Minor streets shall be so designed as to discourage through traffic.

C. Subdivisions abutting arterial streets may be required to provide a marginal service road, or reserve frontage with a buffer strip for planting, or some other means of separation of through and local traffic as the Town may determine appropriate.

D. The minimum right-of-way width shall be measured from lot line to lot line and shall be in accordance with the following schedule:

1. Arterial Streets - 80'-120'
2. Collector Streets - 60' (50-300 homes potential) (35 mph max)
3. Minor Streets -50' (Less than 50 homes potential) (25 mph max)
4. Arterial streets, internal roads, alleys, driveways, and aisles in parking areas shall be designed and built to satisfy the requirements of the Town of Georgetown.

E. Grades of arterial and collector streets shall not exceed four (4%) percent. Grades on other streets shall not exceed ten (10%) percent. No street shall have a minimum grade of less than 0.3%. Where possible, minimum grade shall be 0.5%.

F. Street intersections shall be as nearly at right angles as is possible and in no case shall be less than sixty (60) degrees. The corners at the intersections of the right-of-way lines shall be rounded with a curve having a radius of not less than twenty five (25') feet. The radii of the curb and paving shall be concentric offsets from the right-of-way radii Larger radii may be required depending upon usage.

G. Street jogs with center line offsets of less than one hundred twenty-five (125') feet shall be prohibited.

H. A tangent, at least one hundred (100') feet along, shall be introduced between reverse curves on arterial and collector streets.

I. When connecting street centerlines deflect from each other at any point by more than ten (10) degrees they shall be connected by a curve with a radius of not less than one hundred (150') feet for Minor Streets and three hundred (300') feet for Arterial and Collector Streets.

J. All changes in grade greater than 1% shall be connected by vertical curves of sufficient radius to provide a smooth transition and proper sight distance.

K. Dead-end streets of a permanent nature, if approved, shall not be longer than four hundred (400') feet and shall provide a circular cul-de-sac turn around at the end with a minimum radius along the edge of paving of thirty-eight (38') feet. The radius of the right-of-way of the cul-de-sac shall be 52 feet..

L. If a dead-end street is of a temporary nature, a similar turn around shall be provided and provisions made for future extension of the street and reversion of the excess right-of-way, to the adjoining properties.

M. No street shall have a name which will duplicate or so nearly duplicate as to be confused with the names of existing streets. The continuation of an existing street shall have the same name. Street names are subject to Sussex County 911 Addressing and Town approval.

N. Concrete monuments shall be set at each point of deflection along the approved rights-of-way.

1.23 TRAFFIC IMPACT STUDY

A. Threshold (per project or group of projects):

- 215 single family
- 402 townhomes/condos
- 324 apartments
- or, upon request for problem areas

B. TIS Procedure for impact of development on existing streets:

1. Conducted by applicant’s engineer, or Town at developer’s cost
2. Scoping subject to Town approval
3. Methodology per DelDOT Rules and Regulations for Subdivision Streets
4. DelDOT review
5. DelDOT recommendations for Town streets subject to Town approval
6. Capacity Analysis for internal intersections would be required in lieu of meeting DelDOT Entrance Manual Requirements for left and right turn lanes. Requires design report by developer’s engineer

7. Analysis to be conducted by developer's engineer subject to Town approval.

8. Roundabout designs to be accompanied by Engineer's report and subject to Town approval.

1.24 SIGNAGE AND PAVEMENT MARKINGS

A. All streets shall be designed with traffic control signage and pavement markings in accordance with the Manual of Uniform Traffic Control Devices standards. Pavement markings shall use Thermostripe materials.

B. Street parking and travel lanes shall be delineated by striping when directed.

END OF SECTION

SECTION 1E - SOILS INVESTIGATION AND PAVEMENT DESIGN

1.25 SOILS INVESTIGATION

A. The Town may require the Owner or Developer to employ the services of a Geotechnical Engineering firm to perform a subsurface investigation for the purpose of obtaining information needed to design the proper pavement section.

B. If required, the Geotechnical Engineering firm used must have on staff, an engineer registered in the State of Delaware who is qualified and experienced in the field of Geotechnical Engineering and who is actually engaged in the practice of soils mechanics and foundation engineering.

C. Borings shall be made for all proposed streets within the project area. The following guidelines and methods will be followed when performing the field work:

1. Borings shall be accomplished by using hollow stem augers and/or other equipment necessary to obtain soil samples of each stratum encountered.
2. Boring locations shall be placed along the centerline of the street no more than 300 feet apart, with a minimum of two (2) borings per street. Boring shall be located such that all questionable areas are investigated.
3. Borings shall be performed to a depth of 6 feet below the subgrade of the proposed pavement system.
4. Soil shall be sampled by stratum and at least every one foot depth of boring. At each soil composition change, a sample, sufficient in size to perform the required laboratory testing, shall be obtained.
5. When water is encountered, borings should be left open until water level stabilizes and then depth to water should be recorded.
6. A log of each boring should be performed by the Geotechnical field personnel. The following information should be recorded on the boring log.

    a. Name of street.
    b. Location of boring -- station and offset.
    c. Surface elevation.
    d. Date boring was performed.
    e. Depth, vertical arrangement and thickness of each stratum.
    f. Sample number.
    g. Visual soil classification of each stratum.
    h. Depth to water (if encountered).

D. The following laboratory tests shall be performed on the material sampled from each stratum encountered in the individual borings:

1. Practice for dry preparation of soil samples for particle-size analysis and determination of soil constants (ASTM Designation D-421).

2. Method of particle-size analysis of soils (ASTM Designation D-422).
3. Amount of material in soils finer than the number 200 sieve (ASTM Designation D-1140).
4. Method of laboratory determination of water content of soils (ASTM Designation D-2216).
5. Classification of soils for engineering purposes (ASTM Designation D-2487).
6. Test method for liquid limit, plastic limit and plasticity index of soils (ASTM Designation D-4318) when required.

E. Methods which deviate from any of the above procedures must be submitted to the Town of Georgetown for approval.

F. Results of the soil investigation submitted to the Town of Georgetown shall contain the following information:

1. A plan view of the proposed streets showing boring locations.
2. Logs containing the required data for all borings made.
3. Tests results of all laboratory tests performed.
4. A profile view of each boring plotted to scale showing the ASTM classification of soils encountered.
5. Pavement design report by geotechnical engineer.

G. The Town of Georgetown reserves the right to check soil survey borings and to inspect testing laboratories as part of their review of the investigative work.

1.26 SUBDIVISION PAVEMENT DESIGN

A. Subdivision entrances and internal streets shall be designed in accordance with the DelDOT *Development Coordination Manual*, latest edition, with the following exceptions.

1. The minimum paving section for a street which will be taken over by the Town shall include 1 ½ inches of Type C asphalt, over 3 ½ inches of Type B asphalt, over 6 inches of GABC (crusher run).

2. The final wearing course (top coat) of asphalt shall not be installed, in the case of a subdivision, until 75% of the homes have been constructed; or, when directed to do so by the Town.

3. The minimum required paving section prior to 75% build-out shall equal the full approved depth of stone sub-base (GABC) and the full approved depth of Type B asphalt base course.

4. The number of proposed residential units is to be converted to Average Daily Trips (ADT) by using the appropriate equation(s) as given in the Institute of Transportation Engineer's *Trip Generation Manual*, latest

edition. Weekday ADT equations with no specific time shall be used for all residential uses. Weekday and Saturday ADT equations shall be considered for non-residential uses. Copies of the manual pages used shall be submitted to the Town for review.

B. The applicable details show typical sections for residential streets, based on the following definitions:

1. Minor Street - A street which will serve no more than 50 dwelling units.
2. Collector Streets - A street serving between 50 and 300 dwelling units.

C. Prior to placing the pavement and graded aggregate section, the subgrade shall be prepared and proof rolled in the presence of the Town Public Works or Engineer. If the proof rolling shows the subgrade to be unstable, the Contractor shall scarify, disc, aerate or add moisture and re-compact the subgrade to the extent that when retested it will be stable. If, in the opinion of the Town Public Works or Engineer, there are areas to be removed or undercut, they may be ordered to excavate and replace with approved material. Equipment for proof roll shall be a fully loaded standard 10 wheel tandem dump truck or as otherwise approved by the Town. The Town may, at its discretion, request that samples be taken to generate one or more modified proctor curves followed by testing of the subgrade to verify that the soil is at least 98% of ASTM D1557, based on the proctor curve(s) generated.

D. The pavement section of streets built to serve an adjoining future area of development shall be increased in strength to serve both the present and future traffic loads. If such a street must also serve construction traffic of the future development, the pavement section shall again be increased in strength as follows:

No. of Units Proposed for Future Development Area	Increase in Structural Number
1 – 100	0.48
101 – 300	0.80

E. Streets under construction shall be maintained free of standing water, and any damaged or soft pavement and subgrade shall be removed and replaced prior to installation of the final bituminous surface course. Catch basins on streets under construction shall be modified as necessary to capture and drain runoff with only the base course of asphalt in place. This is especially critical in low point areas. Details concerning the modifications shall be included on the construction drawings.

END OF SECTION

SECTION 1F - STORM DRAIN SYSTEMS

1.27(A) STORM DRAIN SYSTEMS

A. Design of storm drain systems shall be in accordance with drainage criteria included in the *DelDOT Development Coordination Manual*, latest edition.

B. Double inlets may be required by the Town at low points.

C. Design engineer shall certify the design and submit storm drainage report and calculations.

1.27(B) STORM DRAIN IMPACT STUDY

A. Threshold: All site plans and subdivisions requiring Planning and Zoning Commission approval which propose to discharge to a Town storm drain system and propose a storm water management waiver from NRCS, or propose to increase runoff to the Town's storm drain system to an existing problem area (including Savanah Ditch).

B. Developer's engineer shall provide field survey and calculations to characterize and evaluate the capacities of the impacted system and submit it for Town review. Report shall indicate adequate capacity is available, or indicate offsite improvements needed along with a cost estimate of these improvements.

C. Checklist:

1. Contact information for developer and engineer.
2. Existing and proposed stormwater runoff locations and intent to discharge to Town storm drain system.
3. Evidence of known or suspected storm drain problems downstream of development. Scoping meeting may be needed.
4. Predevelopment and post-development calculations and storm drain system evaluation to show suitability or upgrades of infrastructure such that the resulting storm drain system design satisfies all the criteria included in the *DelDOT Development Coordination Manual*, latest edition. Provide construction cost estimate for offsite improvements. DE PE seal required.
5. If applicable, proposed offsite easements or use of public rights of way.

END OF SECTION

SECTION 1G – PROJECT DRAWINGS

1.28 FINAL SITE AND SUBDIVISION CONSTRUCTION IMPROVEMENT PLANS

The Developer and his Engineer are responsible for preparation of detailed drawings. Sheet numbers shall be placed in a prominent location in the lower right corner of each sheet and shall use the following order and sheet number conventions. The numbers below will be used as prefixes for sheet numbering. For example, for a project with three utility plan sheets, they will be numbered 6.1, 6.2, and 6.3. The sheets may also contain the engineer's in-house or other agency sheet numbers provided they do not cause confusion with the Town of Georgetown sheet numbers.

A. Order of Sheets and Sheet Prefix Numbers:

1. Title Sheet containing (The title sheet need not contain a sheet number)
2. Record Plat(s) for subdivision projects. (First sheet in this series will be a key sheet if record plat takes up more than one sheet).
3. General Sheet (General Notes, Site Data Notes, etc.)
4. Construction Key Plan (For large projects)
5. Site and Grading Plans Horizontal
6. Utility Plans Horizontal (For scale of 1"=20' utilities may be shown on site and grading plans. For scale of 1" = 30' or 1" = 40', and where necessary for clarity, provide utility drawings separate from grading drawings).
7. Sediment and Stormwater Plans and Details (Per NRCS Requirements)
8. Street and Stormdrain Profiles
9. Site Details Using Georgetown Standards where applicable and available
10. Utility Profiles (Sewer, and force main)
11. Pump Station if applicable (Site Plan at 1" = 10', Section and Details)
12. Sewer, and Water Details Using Georgetown Standards were available
13. Traffic Signs and Striping Plan for dedicated streets (may be included on Site and Grading Plans for small projects).
14. Landscape and Lighting Plan
15. Architectural where applicable
16. Electrical/Mechanical where applicable

B. Revision Blocks

Provide a revision block on each sheet to accurately disclose and identify all drawing revisions made after the first submittal for preliminary plan review. Provide a Revision Summary Table on the title sheet with sheet number and date of revision.

C. Title Sheet and G-1 General Sheet

1. Title of Project and Address.
2. Phase of Project if applicable
3. Developers' Name, address, phone, and fax number.

4. Design Engineers' Name, address, phone and fax number.
5. Drawing Index
6. Certification Blocks
7. Location Map showing location of Project within the Town and related to area streets. Scale shall be no smaller than one inch equals 1000 feet.
8. Phasing Map if drawings are for one phase of the development.
9. Design Engineer's Seal and Signature.
10. General Legend
11. General Notes:

D. The following minimum general notes shall appear on construction improvement plans:

1. The boundary information shown on these drawings is based on a survey performed by _____ , on _____. (if the boundary is based on a previous survey, provide the following) and recorded in the Sussex County recorder of deeds office, plat book____, page ____.

2. A topographic survey was performed by _____ of _____, Delaware on _____. Elevations are based on control monument _____, with an elevation of _____ NAVD88.

3. Horizontal datum is based on Delaware State Grid, NAD83/91, control monuments _____.

4. Existing utilities are shown in accordance with the best available information. Completeness or correctness thereof is not guaranteed. It shall be the Contractor's responsibility to contact the utility companies involved in order to secure the most accurate information available as to utility location and elevation. No construction around or adjacent to utilities shall begin without notifying their owners at least 48 hours in advance. The Contractor shall take the necessary precautions to protect the existing utilities and maintain uninterrupted service and any damage done to them due to his/her negligence shall be immediately and completely repaired at the Contractor's expense. To locate existing utilities in the field prior to construction, the Contractor shall contact Miss Utility Delmarva (see note 24).

5. All materials shall be installed in accordance with the manufacturer's recommendations. Materials and workmanship shall meet the requirements of the Town of Georgetown design and construction standards for water, sewer, and streets, and all applicable agencies having jurisdiction over the proposed improvements.

6. Use only suitable and approved granular material for back filling trenches.

7. The Contractor shall determine the location of all right-of-way lines and property lines to his own satisfaction. Any disturbed areas beyond the right-of-way or easement lines shall be restored immediately to their original condition.

8. All valve closures and cut-ins shall be coordinated with the Town. Town officials will carry out all necessary valve closures. Contractor shall coordinate isolation of existing water mains with the town and notify affected residents at least 48 hours prior to cut-in.

9. Pipeline detection tape shall be color coded, appropriately labeled, and installed 18 inches below the ground surface and directly above all proposed water main, sewer main, sewer laterals, and water services.

10. Conductive tracer wire shall be installed with all non-metallic water pipe and services; and along all sewer laterals and forcemain. Wire shall be secured to the pipe and shall be securely bonded together at all wire joints with approved watertight connectors. Tracer wire shall be accessible at all valve boxes, meter pits, cleanouts, and air release valves.

11. Prior to isolation and cut-in procedures, Contractor shall excavate, locate, and observe function of all existing valves to assist in the system isolation.

12. Shop drawings for any item(s) which will eventually be taken over by the Town shall be submitted to the town for review and approval prior to the installation of the item(s).

13. All sanitary sewer mains and forcemains shall have a minimum cover of 36 inches and all water mains shall have a minimum cover of 42 inches as measured from the top of pipe to proposed grade. Sewer laterals shall have a minimum diameter of six (6) inches and have a minimum cover of 36 inches.

14. There shall be a minimum horizontal separation between water mains and sanitary sewer mains and forcemains of 10 feet, as measured from edge of pipe to edge of pipe. There shall be a minimum vertical separation of 18 inches between water mains and sanitary sewer mains or forcemains at crossings. One full length of water pipe shall be located so that both joints will be as far from the sewer as possible at crossings.

15. There shall be a minimum vertical separation of 12 inches between any storm drain pipe and any water main or sewer main. If 12 inches cannot be maintained, a minimum of six (6) inches is required and provisions shall be made acceptable to the Town of Georgetown for properly encasing the pipe in concrete.

16. Insert a note which gives the FEMA firm panel number and floodplain classification for this site.

17. All roadways are to be swept free of sediment on a daily basis.

18. The Contractor shall remove and immediately replace, relocate, reset or reconstruct all obstructions in the work area, including, but not limited to, mailboxes, signs, landscaping, lighting, planters, culverts, driveways, parking areas, curbs, gutters, fences, or other natural or man-made obstructions. traffic control regulatory, warning and informational signs shall remain functional and visible to the appropriate lanes of traffic at all times, with their relocation kept to a minimum distance. The cost shall be included in the cost of items bid.

19. It is the Contractor's responsibility to insure that paving is installed to the elevations shown and that no ponding of water will occur after paving is complete.

20. The storm drainage system has been designed using the criteria of the state of DelDOT Standards and Regulations for Subdivision Streets and State Highway Access, latest edition.

21. All fire lanes, fire hydrants, exits, and standpipes will be marked in accordance with State Fire Prevention Regulations.

22. Delaware regulations prohibit the burial of construction demolition debris, including trees and stumps on construction sites. Any solid waste found during the excavation for structures and utility lines on and off site must be removed and properly discarded. Any remedial action required is the responsibility of the owner.

23. Drawings do not include necessary components for construction safety. All construction must be done in compliance with the Occupational Safety and Health Act of 1970, as amended and all rules and regulations thereto appurtenant.

24. Contractor shall grade, topsoil, seed and mulch all disturbed areas of construction, including pipe installation or ditch construction. Erosion control matting shall be provided on all slopes greater than 3:1.

25. A professional surveyor licensed in the State of Delaware shall be responsible for permanently re-establishing any property markers or monuments disturbed during construction. A survey and metes and bounds that includes the re-established marker(s) or monument(s) shall be presented to the property owner for comparison with the original plat, for verification.

26. Miss Utility shall be notified three (3) consecutive working days prior to excavation, at 1-800-282-8555.

27. Insert a note declaring who will be responsible for the short term (during construction) maintenance of the stormwater management and storm sewer systems.

28. Insert a note declaring who will be responsible for the long term (after final acceptance by the Town) maintenance of the stormwater management and storm sewer systems.

29. The Town of Georgetown will assume ownership and maintenance responsibility of water, sewer, and storm sewer pipes and appurtenances installed within town right-of-way, and easements dedicated to the Town, after all items have passed town inspection; after the Town has received and approved digital and hard copies of the record drawings; after the rights-of-way have been deeded to the town; and after all the water, sewer, and storm sewer items have been transferred to the Town by bill of sale.

30. Sewer and water capacity are not guaranteed until building permits are issued, all fees are paid, and suitable utilities are in place for proper conveyance, treatment, and disposal.

31. For preliminary subdivision and site plans, Town approval shall expire within five (5) years of the preliminary plan approval unless the required building permit has been issued. A one (1) year extension may be requested where allowed by code.

32. The applicant is responsible to ensure that all Town and/or agency construction permit applications have been completed, submitted, and all applicable fees have been paid prior to commencing construction. The Town shall not be held responsible for an anticipated construction start date that is not met due to the applicant or his/her Contractor not having met the construction permitting requirements.

33. As a condition of the approval of the construction drawings, and prior to the start of construction, the applicant is required to enter into a formal Public Works Agreement with the Town and to post a completion guaranty for any improvements which will eventually be taken over by the Town. The guaranty shall be in an amount equal to 150% of the cost of the improvements as estimated or approved by the Town engineer. The guaranty shall be in the form of a bond or funds deposited in an escrow account. The Public Works Agreement and the guaranty shall be reviewed and approved by the Town solicitor. The completion guarantee shall not be released until a maintenance bond in the amount of 10% of the improvements has been submitted.

34. A maintenance bond in the amount of 10% of the amount of the completion guaranty shall be submitted to the Town by the owner prior to final acceptance of the improvements and release of the completion guaranty. The maintenance period shall be a minimum of two years. An agreement reviewed and approved by the Town solicitor shall accompany the bond and shall describe the terms of the bond.

35. Upon completion and prior to the release of the developer's completion guarantee, the developer shall provide the Town engineer a draft paper set of detailed record plans (plan view and profile sheets).. Record plan information shall include surveyed as-built elevations and horizontal locations of all property monuments/markers; sewer manhole rims, pipes sizes & inverts' pump stations' force mains (inverts every 50 feet), cleanouts, air release valves, and grease traps; all water valves, hydrants, vaults, meter pits, and curb stops; all storm sewer catch basins, manhole rims, pipe sizes & inverts, and any other item which will be taken over by the Town. Record information shall be placed on the appropriate approved drawings. Original design elevation and/or distance information shall be struck through with a fine line and the record information shall be inserted next to it. When the draft set of drawings has been approved by the Town, three (3) final paper copies shall be submitted, signed and sealed by the owner's engineer. A CD shall also be provided with digital record information in AutoCAD format (version 2010 or later). The digital information shall be on Delaware State Plane, NAD83 horizontal control and NAVD88 vertical control.

36. The Contractor shall notify the Town a minimum of two weeks prior to the start of construction and schedule a pre-construction meeting. The site Contractor and the owner, or his/her representative shall be in attendance.

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E. SITE AND GRADING PLANS

1. The scale shall be 1 inch equals 20 feet for small projects up to a maximum of 1 inch equals 40 feet for large projects.
2. North Arrow.
3. The existing and proposed legend if different from main legend
4. Special drawing notes
5. Location, elevation and description of all the Project Bench Marks
6. Property lines, lot lines, lot numbers, and rights-of-ways and easements with bearings and distances, and location of all monuments and references.
7. Location of all existing and proposed structures and buildings with unit numbers.
8. Beginning and end of proposed construction, including phase limits and offsite improvements where applicable.
9. Existing and proposed street names.

10. Stormwater management, drainage pipe, culverts, slopes, and spot elevation and pipe material.
11. Location of all other drainage facilities and public utilities.
12. Existing and proposed contours (minimum of 1 foot vertical intervals) with major vegetation noted. Provide this information within a minimum of 50 feet beyond the property line or proposed improvements.
13. Ownership of abutting properties.
14. Width of pave, curb lines and sidewalks.
15. Outfall ditches shall be shown for a minimum of 1000' from the property line. Elevation shall be taken at a minimum of 50' intervals.
16. Recreation, open space, common use areas, and parking.
17. Radii at intersections.
18. Stationing of roads with curve data, points of tangent and curve.
19. Curbing locations with type denoted plus top and bottom elevations, at all changes in elevations, and minimum 100 foot intervals.
20. Centerline street data with bearings, distances, and curve data and stations corresponding to the profile.
21. Traffic signage & striping plans.

F. UTILITY (Water and Sewer) PLANS

1. Same as 1-12 for Site and Grading Plans
2. Location of all existing water mains, valves, hydrants, services, meters, etc.
3. Location and sizes of all proposed water lines with stationing.
4. Locations of proposed valves, fittings, meters, services and fire hydrants.
5. Property lines with details of existing and proposed easements where required.
6. Location of existing and proposed structures and buildings.
7. Beginning and end of proposed construction, and connections to existing and future utilities.
8. Locations of proposed service lines.
9. Location of all other drainage facilities and public utilities.
10. Provide profiles at all utility crossings.
11. All existing sanitary sewer facilities (i.e. manholes and pipelines) and labeled for inverts and size.
12. Location, sizes, type and slope of all proposed sanitary sewer lines with stations corresponding to the profiles.
13. Location of all manholes with grades and invert elevations.
14. Location of proposed laterals, wyes, cleanouts, etc.
15. Proposed manhole numbers

G. PUMPING STATIONS AND FORCE MAINS (IN ADDITION TO REQUIREMENTS 1 THROUGH 9 FOR UTILITY PLANS)

1. Metes and bounds for property lines to be deeded to the Town with details of any easements where required.

2. Electrical service with transformers, equipment cabinet, generator, etc.
3. Related landscaping
4. Pump and system curves showing the system's flow and total dynamic head for both proposed and future demands and conditions
5. Design calculations for average daily flow, peak factor, and volume of wet well calculations.
6. Force main and stationing

H. PROFILES (Streets)

1. Scale to match plan horizontally. Vertical scale shall be 1/10 of the horizontal scale.
2. Existing and proposed grades with elevations noted at 25' intervals for vertical curves.
3. Drainage pipes and outfalls.
4. Street Name.
5. Stationing, high points, low points, vertical curves, longitudinal slopes along the center line, the left flow line, and the right flow line.

I. PROFILES (Sanitary Sewers and Force Mains)

1. The horizontal scale shall be identical to the horizontal plan. Vertical scales shall be 1/10 of the horizontal scale.
2. Profiles of existing and proposed ground surface over the pipe with elevations at the top of manholes and air release vaults and at the inverts line.
3. Pipe size, material, slope, manholes, air release vaults, manhole and air release valve numbers, bends and any necessary concrete encasements.
4. Location of all utility and storm drain crossings.
5. Cross section or profile of each location where a proposed water main crosses a sewer, storm drain or other significant utility.

J. DETAILS

1. Provide copies of applicable utility, street and storm drain details per Standard Construction Details as provided by the Town of Georgetown for all facilities proposed to be dedicated to the Town.
2. Dimension all air release valve vault or manhole details for each location installed.
3. Street cross section
4. Curbing type(s), and sidewalks.
5. Entrances
6. Other as required

K. CERTIFICATIONS AND SIGNATURE BLOCKS FOR FINAL IMPROVEMENT PLANS (This information is to be located on the Title Sheet).

1. ENGINEER (SURVEYOR, ARCHITECT) STATEMENT (as applicable): (Note to applicant: Site plans which also contain public street, public utilities, or stormwater management shall be sealed by an Engineer or a Surveyor.)

I hereby certify that I am a registered engineer (licensed surveyor, registered architect) in the State of Delaware, that the information shown hereon has been prepared under my supervision and to my best knowledge and belief represents good engineering practices as required by the applicable laws of the State of Delaware. (Print Name, Address and Phone Number)

Signature:_____Date:_____
(Printed Name)

2. OWNER'S, DEVELOPER'S, or OWNER/DEVELOPER CERTIFICATION*

I hereby certified that I am the (owner, developer, or owner/developer) of the property described and shown on this plan. The plan was made at my direction, that I acknowledge the same to be my act. It is my desire to have the plan developed as shown and in accordance with all applicable laws and regulations.

Signature:_____Date:_____
(Print Name, Address and Phone Number)

*If owner and developer are separate entities, certification statements are to be provided for each.

3. TOWN ENGINEER

Construction improvements plans have been reviewed and are found to be in general conformance with the Town of Georgetown Construction Standards and Specifications for Water, Sewer and Streets. The owner and his engineer and/or surveyor assume all responsibility for design and accuracy of information shown hereon.

Signature:_____Date:_____
(Printed Name)

4. TOWN OF GEORGETOWN APPROVED BY:

Town Manager: _____Date:_____
(Printed Name)

1.29 RECORD DRAWINGS

A. No later than 90 days after completion of construction, submit three (3) copies of record drawings with as-built information including surveyed as-built elevations of all manholes, pump stations, and force mains at air release valves. Also submit one copy of record drawings on AutoCAD or other digital disk format approved by the Town. Digital drawings shall be on Delaware State Plane NAD83 Horizontal control and NAVD88 Vertical control.

END OF SECTION

DIVISION 2

CONSTRUCTION SPECIFICATIONS

DIVISION 2 – SECTION 1

EXCAVATION AND BACKFILL FOR PIPELINES AND STRUCTURES

1.01 GENERAL

A. The Contractor shall perform all excavation, backfilling, grubbing and grading required for construction and installation of pipelines, structures and appurtenances. Excavation shall include removal of pavement, concrete, rock, earth and debris, regardless of character. Trenches and excavations shall be sheeted, shored and braced by the Contractor, as necessary to allow construction and provide safe working conditions. Additionally, the Contractor shall be responsible for maintaining a dry excavation by dewatering. He shall also support and protect existing utilities and structures encountered in the work, provide traffic control, dispose of surplus and unsuitable excavated materials and restore backfilled areas to original condition or as required by the respective contract drawings and specifications.

B. The Contractor is responsible for direct or indirect damage to existing structures, pipelines, conduits, poles, wires of every description in the vicinity of his or her work whether above or below ground, or that may be encountered in trench or structure excavation. This responsibility shall include the cost of protection by sheeting, bracing, hand excavation, when warranted, and the expense to repair or replace any existing facility damaged directly or indirectly by construction activities, whether such facility is or is not shown on the drawings.

C. The Contractor shall verify the location and inverts of all existing utilities at the various points of connection and/or crossings prior to starting any work. Any discrepancies in locations or inverts shall be brought to the attention of the Town in order that the designs may be adjusted accordingly. Damages suffered or additional costs incurred by the Contractor as a result of his or her failure to conform to the requirements of this paragraph shall be the sole responsibility of the Contractor. Connections to existing utilities shall be made by the Contractor at such a time and in such a manner as the Town may direct.

D. Excavation and backfill, within an area where a State agency has jurisdiction, shall be done in accordance with requirements and provisions of the permits issued by the agencies for the construction within their respective rights-of-way. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these specifications.

E. Prior to excavation, soil explorations in the area of the proposed project will be carried out by a qualified geotechnical engineer to determine subsurface conditions.

1.02 PIPELINE TRENCH EXCAVATION

A. The Contractor shall excavate, maintain and backfill all excavation necessary for completing the work under the contract. Unless otherwise specified or approved, excavation shall be open cut.

B. Trenches shall be excavated to the necessary width and depth, as shown on the drawings and as required for the safe installation of the utility, etc.

C. The sides of the trenches shall be practically plumb and shall not be sloped unless approved in writing by the Town. Trench sides shall be supported or sheeted as required to protect pavement surfaces, curbing, utilities, etc., and as required for safety. Safety regulations shall be as required by State safety codes and OSHA.

D. In paved areas, the Contractor shall remove the paving only as necessary for the excavation of the trench or as detailed. Pavement edges at the trench shall be saw cut neat and straight prior to the start of any excavation. Should pavement damage result from cave-ins, settlement, etc., he or she shall replace such paving at his or her own expense.

E. The excavation of all trenches shall be fully completed at least twenty (20) feet in advance of pipe laying, unless otherwise authorized or directed. The Town may require the backfilling of open trench, over completed pipelines, or ahead of the pipe laying operation, if in his or her judgment such action is necessary.

F. Should work be stopped for any reason and any excavation is left open for an unreasonable length of time, the Contractor shall refill the excavation at his or her own expense if so directed, and shall not reopen the excavation until he or she is ready to complete the facility. Should the Contractor refuse or fail to refill any excavation completely within eight (8) hours after a proper notice, the Town shall be authorized to do the work and expenses resulting shall be paid by the Contractor.

G. The Contractor shall complete excavation as nearly as practicable to the lines of the utility to be installed as detailed. All cavities in the bottom of the trench shall be filled to the required level with compacted crushed stone or gravel.

H. Excavated materials shall be graded, hauled, stored and protected as such material found suitable will be required for backfilling, repaving or other purposes. Material classified as unsuitable shall be disposed of by the Contractor.

I. Excavated materials shall not be placed on private property, unless written permission is obtained from the property owner.

J. The Contractor shall be responsible for any damage to curb, gutter, sidewalk, traffic control devices, and pavement material. Any damage resulting directly or indirectly shall be replaced in kind by the Contractor. The reuse of disturbed curb, gutter or sidewalk is prohibited. New sections shall be installed to the nearest undisturbed control joint.

1.03 PIPELINE TRENCH BACKFILL

A. Materials excavated from the trench shall be used for trench backfill, provided that, in the opinion of the Town, the excavated material is suitable for this purpose. Backfill material shall be free from large lumps and stones having any dimension greater than two (2) inches.

B. Suitable material, as approved by the Town, shall be carefully deposited in the trench by methods which will not damage or disturb the pipeline or structure, and shall be solidly tamped around the pipe or structure. Backfill material shall be placed in 8-inch layers. Care shall be taken in the use of mechanical tampers not to injure or move the pipe or to cause the pipe to be supported unevenly.

C. All backfill material shall be compacted to 95 % of maximum density at ± 2 % of optimum moisture content as determined by the Modified Proctor Test, ASTM D 1557 Method C. Materials containing an excess of moisture shall be permitted to dry until the moisture content is within the specified range. Materials too dry shall be wetted uniformly until the moisture content is in the specified range.

D. No compacting shall be done when the material is too wet to be compacted properly. At such times the work shall be suspended until the backfill materials have dried out sufficiently to permit proper compaction or such other precautions shall be taken as may be necessary to obtain proper compaction. The Contractor is responsible for hauling, storing and drying of excavated material to be used in backfill operations.

E. The Town may request compaction tests of the backfilled trenches at any time during construction or upon completion of the backfill operations. Such testing shall be arranged by the Contractor and performed by an independent testing agency approved by the Town. The Contractor shall pay the testing laboratory for all tests performed inclusive of sample collection, preparation and transportation. If the results of any tests show that backfills do not meet the specified compaction, the Contractor shall, at his or her own expense, correct the condition as directed by the Town.

F. The Contractor shall, at his or her own expense, maintain all refilled excavations in proper condition. Trench surfaces shall be reshaped when necessary. If the Contractor fails to make repairs within forty eight (48) hours after receipt of written notice from the Owner, the Town may refill said depression wherever necessary and the cost of so doing will be paid by the Contractor. The Contractor shall be responsible for any injury or damage that may result from lack of maintenance of any refilled excavation at any time prior to final acceptance.

G. All unauthorized excavations made by the Contractor shall be immediately backfilled in accordance with the requirements of the specifications for trench backfill at the Contractor's expense.

H. After completion of backfilling, all material not used shall be disposed of and all places on the line of the work shall be left clean and in good condition. This cleaning up shall be done by the Contractor. If he or she fails to do this work within a reasonable time after receipt of notice, it will be performed by the Town, and the cost will be assessed to the Contractor.

I. No backfill shall be placed against new concrete or masonry structures until the concrete or mortar is properly cured.

J. The Contractor shall exercise caution in backfill and compaction to prevent damage to structures.

1.04 EXCAVATION BELOW SUBGRADE AND GRAVEL REFILL

Materials below the excavation limit for pipelines and structures (below subgrade), which in the judgment of the Town should be removed, shall be removed as directed. All spaces created by the removal of unsuitable material below subgrade shall be refilled and compacted with crushed stone or gravel.

1.05 DEWATERING

A. All excavations must be kept free of water below the subgrade of the work while work is in progress. This may be accomplished by ordinary pumping methods or by well points, whichever will produce the required results. Upon removal of dewatering equipment, the Contractor shall backfill all holes and restore disturbed areas to their original condition.

B. Dewatering for the structures and pipelines shall commence when groundwater is first encountered and shall be continued until such time as backfill has been completed. No concrete footings shall be laid in water nor shall water be allowed to rise over them until the concrete or mortar has set at least eight (8) hours. Groundwater shall not be allowed to rise around the pipe until the trench is backfilled.

C. The Contractor shall dispose of the water from the work in a suitable manner without damage to adjacent property. No water shall be drained into work built or under construction without prior consent of the Town. Water shall be disposed of in such a manner as not to be a menace to public health.

D. The Contractor shall remove any siltation deposits in storm sewer systems, resulting from his or her dewatering or construction operations. He shall also be responsible for conveyance of dewatering flows and for erosion and sediment control.

1.06 SHEETING, SHORING AND BRACING

A. The Contractor shall furnish and install all sheeting, shoring and. bracing necessary to insure safe working conditions and to prevent damage to public and private property and structures. If, in the opinion of the Town, the sheeting, shoring, or bracing is not of proper quality or is not properly placed to insure safe working conditions and to prevent property damage, the Contractor shall remedy such inadequacy at his or her own expense as may be directed by the Town. Sheeting, shoring, and bracing shall be removed as backfilling progresses, except at such locations as the Town may direct or approve it to be left in place.

B. The Contractor shall cut off any sheeting left in place, at least eighteen (18) inches below finished grade, and shall remove the material cut off without compensation.

C. Where necessary for the protection of any structure or property, sheeting shall be driven to such depth below the bottom of the trench as may be required to protect all existing and/or proposed work.

D. A trench box is an acceptable alternative to sheeting, shoring or bracing providing such boxes conform to safety codes in effect for the project.

1.07 SELECT BACKFILL

A. Should the Contractor encounter material during excavation deemed by the Town to be unsuitable for backfill, he or she shall remove and dispose of such material.

B. Should sufficient suitable material from excavations on the project not be available for backfill, the Contractor shall furnish and install select backfill upon approval of the Town. Special backfill shall conform to DelDOT Type "B" borrow.

C. The Contractor shall furnish certification that his or her borrow is from a DelDOT approved source.

1.08 TEMPORARY REPAVING

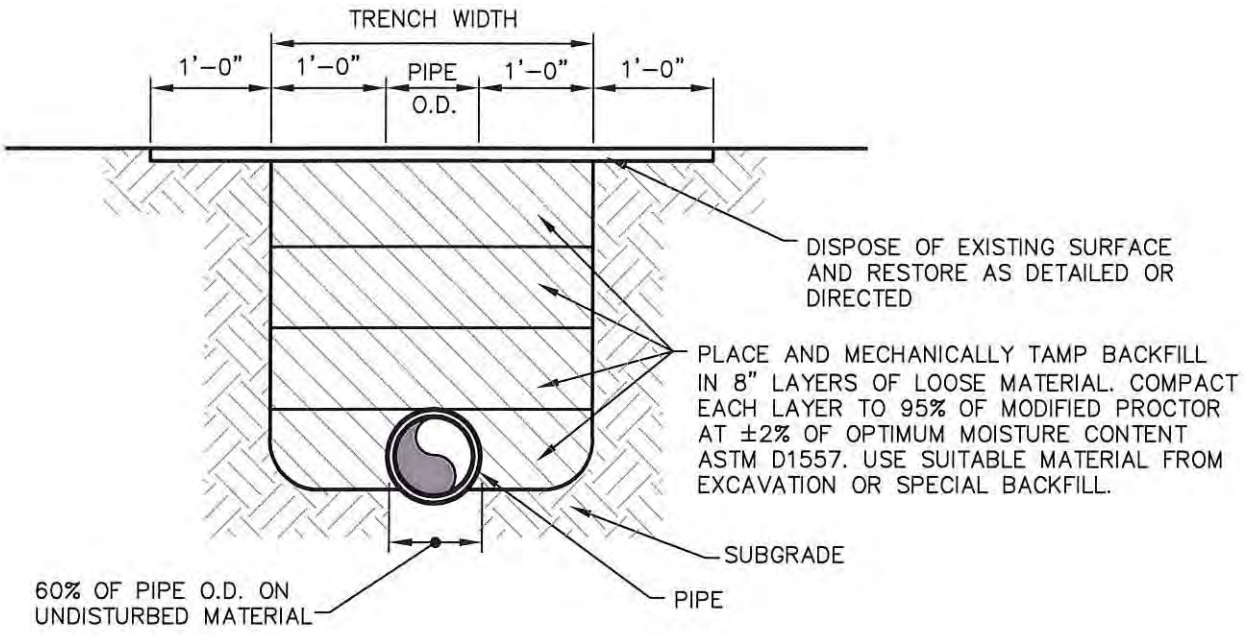
A. The Contractor shall furnish and place 1 ½ inches (compacted depth) of cold patch as temporary pavement surface over all backfill areas created for pipeline and structure installation located in roadways or driveways. This surface shall be maintained by the Contractor until permanent surface restoration has been performed.

B. Should the Contractor remove existing pavement beyond the width specified or detailed on the plans, or should pavement be disturbed from settlement, slides or other construction activities, he or she shall saw cut back the pavement and provide temporary paving in these areas.

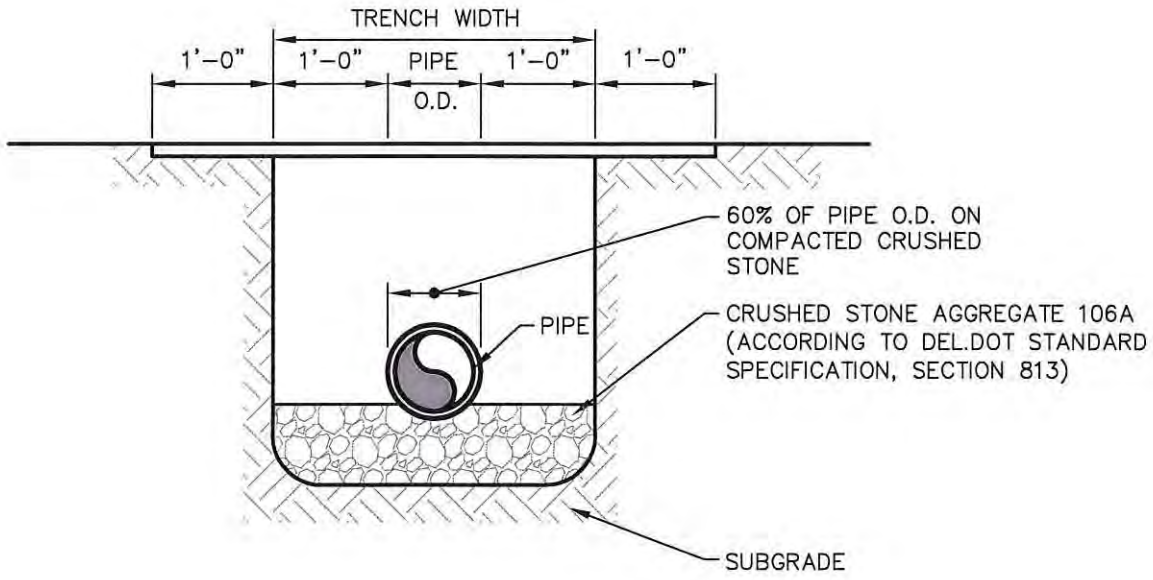
C. On State highways and all other areas over which the DelDOT exercises jurisdiction, all pavement restoration shall be done in accordance with the permit

requirements of the Division of Highways.

END OF SECTION



TRENCH BACKFILL



CRUSHED STONE BEDDING

DATE: FEBRUARY 2015	**TRENCH BACKFILL & PIPE BEDDING DETAIL**
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	**NO SCALE**
	SECTION – 1 | **DRAWING: D1–1**

DIVISION 2 – SECTION 2

WATER MAINS AND APPURTENANCES

2.01 GENERAL

The Contractor shall furnish and install all water mains, valves, hydrants, fittings, meters, corporation stops, housing service piping and appurtenances as specified herein and as defined on the drawings or as directed by the Town. Provide all necessary adaptors for connection to existing mains. PVC pipe shall not be permitted for hydrant leads or inside railroad steel crossing sleeves.

2.02 DUCTILE IRON PIPE AND FITTINGS

A. Ductile iron pipe shall be manufactured in accordance with ANSI/AWWA CI51/A21.51, latest edition, and shall be thickness Class 50 in streets and inside highway sleeves and Class 56 under railroads unless otherwise required. The Contractor shall have the option of furnishing mechanical or push-on joints conforming to latest edition of ANSI/ A WW A C 111/ A21.11.

B. Pipe and fittings shall have an external standard asphaltic coating approximately 1 mil thick.

C. Pipe and fittings shall have an internal cement lining in accordance with latest revisions of ANSI/AWWA CI04/A21.4. No bituminous coating shall be used on the inside of pipe and fittings.

D. All fittings and specials shall be cast-iron with mechanical joints having a 250 psi pressure rating. They shall be marked and manufactured in conformance with ANSI/AWWA C110/A21.10, latest edition. Ductile iron fittings will be an acceptable alternative. They shall be mechanical joint with a 350 psi pressure rating conforming to ANSI/AWWA C 153/A2l.53 and C111/A2l.11.

2.03 POLYVINYL CHLORIDE (PVC) PLASTIC PIPE AND FITTINGS

A. Polyvinyl chloride pipe shall meet the requirements of AWWA C-900. It shall be manufactured in standard length not exceeding 20 feet and have an outside diameter equal to ductile cast iron pipe. PVC pipe shall have a dimension ratio (DR) of 18.0 or less. The pipe shall be rated for a working pressure of at least 150 psi.

B. Polyvinyl chloride (PVC) pipe shall be manufactured with an elastomeric-gasket joint conforming to ASTM D 3139. Pipe ends shall be beveled.

C. Fittings for PVC water main shall be cast iron or ductile iron as specified in 2.02.

D. The Contractor shall provide all necessary adapters for connecting PVC pipe to cast iron fittings and valves or other pipelines. Adapters shall be as recommended

by the pipe manufacturer.

E. Polyvinyl chloride pipe shall be delivered and stockpiled in unit pallets. Store pipe on flat surface. No stacking of pallets of random lengths above 5 feet in height will be allowed. If pipe is stockpiled for more than 30 days prior to installation in the trench, it must be suitably covered with reflective materials to protect the pipe from ultra-violet rays emanating from sunlight. Do not use plastic sheets. Allow for air circulation under covering.

F. Bowed sections of pipe will not be acceptable and will not be allowed to be installed.

2.04 HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS (FOR DIRECTIONAL BORES)

A. HDPE pipe shall be SDR11 plain end for fusion welding conforming to ASTM F 714 and ASTM D 3035. Minimum pressure rating shall be 160 psi.

B. Molded fittings will conform to ASTM F 714. Terminal ends of HDPE piping in directional bore shall have an AWWA C-207 Class D flanged end, butt, fusion welded to HDPE main. Flange shall be drilled to standard 125 pound template.

C. Terminal end of HDPE pipe shall be connected to continuing ductile iron or PVC pipe with a flanged expansion joint. The flanged expansion joint shall be a "FlexTend" flexible expansion joint as manufactured by EBAA, or approved equal.2.05 BORING AND JACKING OF WATER MAINS

A. Where possible, an approach trench shall be excavated far enough to provide a jacking face of at least three (3) feet from a pavement surface. This open face shall be shored securely to prevent slipping or raveling of the face.

B. Boring pits shall be large enough to contain all-necessary equipment and tools. Adequate provision shall be made for the removal of excavated material.

C. A substantial backstop of heavy timber or steel beams shall be provided to take the thrust of the jack or boring equipment.

D. As material is excavated or bored ahead of the pipe, the pipe shall be jacked in to follow this excavation. The distance dug ahead of the pipe shall not exceed six (6) inches.

E. The installation of casing pipe and the boring or excavation shall be done simultaneously.

F. Voids between the sleeve and excavation shall be filled by pressure grouting.

G. Cement grout shall be used to seal the pipe ends between the carrier pipe and

sleeve.

H. A one (1) inch PVC pipe shall be installed in the downgrade seal to permit drainage.

I. Steel sleeve shall be furnished in random lengths of the diameter shown on the plans and shall confirm to the requirements of AWWA C-200 and ASTM A-53; ASTM A-53; ASTM 53 Grade B pipe shall be used. The pipe, including field connections, shall be coated with bitumastic compound, inside and outside. Wall thickness for 18-inch diameter sleeves shall be a minimum of 0.313 inches. Wall thickness for 12-inch diameter sleeves shall be a minimum of 0.250 inches. All sleeve sections shall be joined to one another by continuous weld around the full circumference of the pipe in accordance with AWWA C-206. At railroad crossings, sleeves shall be extra heavy duty or meet railroad specifications.

J. Carrier pipe shall be DR 18, C-900 PVC at each location as requested by the plans except at railroad crossings, where the carrier pipe shall be Class 56 ductile iron.

K. Casing spacers shall be Model SI, as manufactured by Advanced Products & Systems, Inc. and they shall be installed at intervals along the carrier pipe in accordance with the manufacturer's recommendations.

2.05 DIRECTIONAL BORE

A. The system must be remotely steerable and permit electronic monitoring of tunnel depth and location. The system must be able to control the depth and direction of the pipe and must be accurate to a window of +/- 2 inches.

B. The system must be capable of turning 90 degrees in a 35 foot radius.

C. The system shall be a fluid-cutting process which utilizes a liquid clay such as bentonite. This clay must be totally inert and contain no risk to the environment.

D. Liquid clay shall remain in the tunnel to increase stability of the tunnel and provide a lubricant to reduce frictional drag when the pipe is installed.

E. Spoils shall be recovered through the use of a vacuum system mounted on a vehicle for removal of spoils to an approved spoils site. Spoils shall not be discharged into sewer or storm drain system.

F. The equipment must be capable of completing the boring in a single bore.

G. Equipment must be fitted with a permanent alarm system capable of detecting an electrical current. The system will have an audible alarm to warn the operator when the drill head nears electrified cables.

2.06 GATE VALVES AND BOXES

A. Gate valves shall be resilient type, in accordance with AWWA C509. Valve bodies and bonnets shall be cast iron epoxy coated on the inside per AWWA C550.

B. Stem and wedge nuts shall be bronze. Stems shall be sealed by at least two O-rings. Seals shall be replaceable with the valve fully open and while subject to the rated pressure.

C. Wedge shall be constructed of ductile iron fully encapsulated in synthetic rubber except for guide and wedge nut areas or it shall have a replaceable, internally reinforced, contoured molded rubber disc seat ring attached to the face of the wedge with self-locking stainless steel screws. Wedge rubber shall seat against accurately formed seating surfaces in the valve body.

D. Waterway shall be smooth and shall have no depressions or cavities in seat area where foreign material can lodge and prevent closure or seating.

E. Valves shall bear firmly on 4” x 8” x 16” solid concrete block set on undisturbed soil or sufficiently compacted fill.

F. Gate valves shall be manufactured by Kennedy.

G. The appropriate size and model Valve Box Adapter II adapters, as manufactured by Adapter, Inc. shall be installed on the bonnet of all valves.

H. Provide each gate valve with a 5 ¼ inch diameter Buffalo screw type, heavy duty cast iron valve box with "WATER" cast in the lids. All valve boxes shall be Tyler Union 6850 series, two-piece valve boxes with standard base. If valve boxes placed on valves installed on existing or approved new water mains cannot be adjusted to reach the finished surface, cast iron adjustable valve box extensions, as manufactured by Tyler Union, shall be installed. Valves with operating nuts greater than 3’-0” below the finished surface shall be equipped with operating nut extensions, as distributed by Pollard Water or approved equal. Extensions shall be equipped with a plate that will keep the top nut centered in the valve box. If operating nut extensions are used, the top of the extended operating nut shall be between 1’-0” and 2’-6” from the finished surface. Lids shall be extra deep and have two holes for removal of lid. All valve boxes, valve box extensions, bases, and lids shall be as manufactured by Tyler Union or approved equal.

I. Provide socket valve operating wrenches if requested by the Town.

2.07 TAPPING SLEEVE AND VALVE

A. Tapping sleeves shall be of all stainless steel construction including sleeve, bolts and nuts. Sleeves shall wrap 3600 around the pipe with gridded full circumference

gasket. Units shall be FAST Model by Ford Meter Box Co., or approved equal. Tapping sleeves shall be hydrostatically tested to a pressure of 100 psi. The 100 psi test pressure must be maintained for a period of one (1) hour for successful completion of the test. The tap may not be executed if the sleeve does not pass the test.

B. Tapping valves shall be cast iron as manufactured by Kennedy.

C. Install tapping sleeve and valve per manufacturer's recommendations.

2.08 FIRE HYDRANTS

A. Hydrants shall be compression type with a 5 ¼ inch main valve opening, two 2 ½ inch hose nozzles, one 4 ½ inch pumper nozzle, and a 6 inch mechanical joint hub base. Hydrant seats shall be provided with bronze to bronze threaded connections.

B. All nozzle and steamer threads shall conform to National Standard. Hydrants shall be of proper length for a 4-foot trench depth or as required by field conditions and be the Guardian model manufactured by Kennedy Model K-81. They shall meet the requirements of AWWA C-502.

C. A sworn certificate of inspection and testing shall be furnished by the manufacturer. Install hydrants with restraint system as detailed on the drawings.

D. All hydrants to be furnished with non-kinking chains on the 2 ½ inch nozzles.

E. Hydrants shall open by turning the operating nut counterclockwise.

F. Fire hydrants to receive 1 coat of primer and 2 coats of red paint in accordance with Federal Standard 595A. The final coat shall be field applied after the hydrant has been installed.

G. Ductile iron pipe with cast iron or ductile iron fittings shall be used exclusively throughout the hydrant assembly. The use of polyvinyl chloride pipe will not be permitted in construction of any portion of the hydrant leads.

H. Provide hydrant operating wrenches and repairs kits. Deliver a minimum of one wrench and repair kit per project, and a minimum of one per five hydrants installed.

I. Base of hydrants shall bear firmly on 4-inch x 8-inch x 16-inch solid concrete block set on undisturbed soil or sufficiently compacted fill.

2.09 LAYING WATER MAINS, FITTINGS AND APPURTENANCES

A. Water main pipe, fittings, and valves shall be installed per manufacturer's printed

instructions. Care shall be taken to insure that no joints are made with unevenness or rough edges. Pipeline deflection must be kept below the manufacturer's limitations.

B. All pipes shall be bedded on a solid foundation prior to backfilling. Defects due to settlement shall be corrected by the Contractor at his or her own expense. Bell holes shall be dug sufficiently large to receive same.

C. Pipe fittings shall be kept clean until final acceptance of the work. All open pipe ends shall be provided with plugs to keep dirt, water and other materials from entering. This plug shall be kept in place when actual pipe laying is not in progress.

D. Excavation and backfill for water mains and appurtenances shall be per Section 1 of these specifications.

E. PVC pipe shall be beveled before making pipe joint.

F. Install no pipe on frozen or frost penetrated subgrade. When directed, the Contractor shall install pipe on artificial foundations. Such foundation may consist
of gravel or concrete and shall be to the dimensions and in the manner directed by the Town.

G. Pipeline detectable tape shall be installed continuously along all PVC water mains. The tape shall be installed directly above the water main and 18 inches below the ground surface. The tape shall be Lineguard Type III Detectable Tape as manufactured by Lineguard, Inc. of Wheaton, Illinois, or equal. The tape shall be a minimum of two inches wide, blue in color, imprinted with the words, "CAUTION - WATER LINE BELOW", and capable of being detected with inductive methods.

H. Pipeline tracer wire shall be installed along all proposed water main and water services.

1. For direct burial of proposed gasketed-joint water main, wire shall be fastened directly to the top of the pipe, at each end and in the center. For direct burial of HDPE water services, tracer wire shall be attached to the top of the pipe. The distance between attachment points shall be no greater than 10 feet. Tracer wire shall be a #12 AWG high strength, copper-clad steel (HS-CCS) conductor, insulated with a 30 mil, high-density, high molecular-weight polyethylene (HDPE) insulation, and rated for direct burial use at 30 volts. Insulation color shall meet the APWA color code standard for identification of buried utilities. Tracer wire shall be Copperhead HS-CCS HDPE 30 mil insulation as manufactured by Copperhead Industries, LLC of Monticello, MN.

2. For directional drilling/boring of water main, or moling of water services, tracer wire shall be a #12 AWG extra high strength, copper-clad steel (EHS-CCS) conductor, insulated with a 45 mil, high-density, high molecular-weight polyethylene (HDPE) insulation, and rated for direct burial use at 30 volts. Insulation color shall meet the APWA color code standard for identification of buried utilities. Tracer wire shall be Copperhead SoloShot Extra High Strength, EHS-CCS HDPE 45 mil insulation as manufactured by Copperhead Industries, LLC of Monticello, MN.

3. Splicing of tracer wire shall not be permitted. Long runs of tracer wire may not be greater than 400 feet (+/-). At these intervals, or at dead ends, tracer wires shall be extended from the main to grassed area behind the curb or sidewalk. Magnetized tracer boxes, as manufactured by Copperhead Industries, LLC shall be installed in the grassed area and the tracer wires shall be installed up into the boxes and connected to lugs in the boxes. All boxes shall have a color coded cover to match the APWA color code standard for identification of buried utilities. Tracer wire shall not be run up and inside of valve boxes. Tracer on water services shall be connected to the tracer wire on the main using connectors manufactured by Copperhead Industries, LLC. Water service tracer wire shall be attached to, and extended along the service pipe to the inside of the meter pit, where it shall be fixed and made accessible to the locater.

4. All dead ends of tracer wire not made accessible at the ground surface, either in a tracer wire box or a water meter pit shall be grounded by attaching the end to a magnesium anode as manufactured by Copperhead Industries, LLC.

I. All concrete required to construct buttresses behind plugs, tees, bends and other fittings, and anchorages beneath vertical bends, shall be placed as directed and/or as shown on the details.

J. Water mains shall be laid 10 feet horizontally from any existing or proposed sewer. The distance should be measured edge to edge. All water mains and services shall have a minimum depth of cover of 42 inches. Water mains crossing sewers shall be laid to provide a minimum vertical distance of eighteen (18) inches between the outside of the water main and the outside of the sewer, and the water main shall be above the sewer wherever possible. At crossings, one full length of water pipe should be elevated so both joints will be as far from the sewer as possible. Special structural support for the water and sewer pipes may be required. If this minimum vertical separation cannot be provided, either the water line or the sewer line shall be encased for a distance of ten (10) feet on either side of the crossing. Water mains crossing storm drain shall meet requirements of 6.05 (J).

2.10 INSTALLING FITTINGS, HYDRANTS, GATE VALVES, AND VALVE BOXES

A. Fittings, hydrants, gate valves and valve boxes shall be placed along the water mains at the locations indicated on the drawings or where otherwise designated by the Town. The base of hydrants and gate valves shall bear firmly on 4-inch x 8-inch x 16-inch solid concrete blocks set on undisturbed soil or sufficiently compacted fill.

B. Valve box adapters (see 2.05, G. above) shall be installed over valve bonnets and a valve box shall be carefully placed over the adapters on each gate valve with the top at the finished surface of the street, sidewalk or at such other elevation as the Town shall direct. The valve box shall be set exactly plumb. In tamping the backfill around the box special care shall be taken to keep the box plumb. Any box which is found out of plumb, or which is not firmly supported, shall be excavated and reset in a satisfactory manner, at the Contractor's expense.

2.11 INSTALLATION OF FIRE SUPPRESSION BACKFLOW PREVENTORS

A. Any buildings requiring fire suppression shall have a dedicated fire flow water main connected directly to a Town maintained water main. A valve must be installed on the fire main at the tapping or standard tee connection to the Town's main, or at the property line, as directed by the Town.

B. The fire flow backflow preventer shall be a detector check assembly. The detector check shall be located between valves to facilitate removal for maintenance if necessary. The detector check shall be standard pressure operation and shall be located inside the building in an equipment room; or, if permitted by the Town, it may be located outside the building in a vault. See detail D5-1.

C. The detector check shall be Mueller Model EDC-IV.

D. The potable water service for a facility with a dedicated fire flow water main shall not be permitted to be tapped on the fire flow main. The service must have an independent tap on the Town maintained water main and the service shall be installed in accordance with Section 5.

2.12 DISINFECTION OF WATER MAINS

A. Upon completion of water main construction, disinfect main and appurtenances. Disinfection shall be done in accordance with *ANSV* AWWA C-60 1, latest addition. Contractor shall submit a plan of disinfection for approval by the Town.

B. The Contractor shall place in each length of pipe, hydrants, hydrant branches and other appurtenances, a sufficient amount of HTH Tablets to insure adequate disinfection treatment of the main after its completion. Tablets shall be fastened to the inside top of every length of pipe as laid, using gasket cement known as

"Permatex No.2".

C. Water for filling the mains shall be introduced at a velocity of less than 1 foot per second in order to permit the HTH or Perchloron to completely dissolve and have a reasonable uniform distribution throughout the mains. It is the intent of this Specification to require a sufficient amount of chemical to be equivalent to a dosage of 50 p.p.m. of chlorine.

D. The Contractor will be held entirely responsible for securing a minimum residual chlorine content of 5 p.p.m. at the extremities of the mains after twenty-four (24) hours or more contact with the full water pressure on the main.

E. After the chlorine has been in contact with the mains or storage units for twenty-four (24) hours or longer, samples collected for the extremities of the mains shall indicate a residual chlorine content of 5 p.p.m. or more.

F. If less than 5 p.p.m. residual chlorine is indicated, the system shall be drained and the disinfection treatment repeated.

G. After the applicable retention period, the heavily chlorinated water shall be flushed from the main. This water shall be discharged to the sanitary sewer system. Only after water leaving the main is no higher in chlorine concentration than normal drinking water will a discharge to storm drains be allowed. Convey flushed water to discharge point in a closed system.

H. Affidavits of compliance certifying the water sampled from the water mains to be free of coliform bacteria shall be submitted to the Town. The contractor is responsible for requesting tests from the Delaware Department of Public Health. He shall provide written documentation when a section of mains can be placed in service.

I. If samples collected at the extremities indicate residual chlorine of 5 p.p.m. or more, the system shall be flushed until there is only normal chlorine residual (1.0 p.p.m. or less) present, as determined by the DPD Method Test. Samples of water shall be collected from various points along the lines, by the Delaware Division of Public Health for bacteriological analysis. If satisfactory bacteriological results are obtained, the lines may then be allowed to be placed in service. A copy of all test results shall be submitted to the Town.

2.13 WATER MAIN TESTING

A. The Contractor shall furnish all equipment, labor and materials, including water, pumps, compressors, stopwatch, gauges, and meters as approved by the Town for testing. The Town shall determine the amount of main to be tested at any one time and reserves the right to separate the installation into several test sections. All tests must be witnessed by the Town.

B. Pressure Test

After the pipe has been laid, all newly laid pipe or any valved section thereof, shall be subjected to a hydrostatic pressure of 150 psi.

1. Test Pressure shall:

   a. Be of at least two hour duration.
   b. Not vary by more than five psi.

2. Pressurization. Each valved section of pipe shall be filled with water slowly and the specified test pressure, based on the elevation of the lowest point of the line or section under the test and corrected to the elevation of the test gage, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Town.

3. Air Removal. Before applying the specified test pressure, air shall be expelled completely from the pie, valves and hydrants. If permanent air vents are not located at all high point, the Contractor shall install corporation cocks at such points, so that the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied. At the conclusion of the pressure test all corporation cocks shall be removed and plugged, or left in place at the discretion of the Town.

4. Examination. All exposed pipe, fittings, valves, hydrants and joints shall be examined carefully during the test. Any damaged or defective pipe, fittings, valves, or hydrants that are discovered following the pressure test shall be repaired or replaced with same material and the test shall be repeated until it is satisfactory to the Town.

C. Leakage Test

A leakage test shall be conducted concurrently with the pressure test.

1. Leakage Defined. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or at any valved section thereof, to maintain pressure within five psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.

2. Allowable Leakage. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

   L = (ND)(SQRT of P)/7400

   in which the allowable leakage, in gallons per hour; N is the number of

joints in the length of pipeline tested; D is the nominal diameter of the pipe in inches; and P is the average test pressure during the leakage test in pounds per square inch gage.

3. When hydrants are in the test section, the test shall be made with hydrant valves open and hydrant nozzles closed.

D. Should the tests show the main to be defective, the Contractor shall remedy such defects and retest the main as specified above. This procedure shall be repeated until the test requirements are met. Segments of main which do not meet minimum requirements will not be accepted.

TABLE I Allowable Leakage per 1000 feet of Pipeline*
- gph Nominal Pipe Diameter - inch

Ave. Test Pressure psi	2	3	4	6	8	10
150	0.18	0.28	0.37	0.55	0.74	0.92
125	0.17	0.25	0.34	0.50	0.67	0.84
100	0.15	0.23	0.30	0.45	0.60	0.75

Ave. Test Pressure psi	12	14	16	18	20	24
150	1.10	1.29	1.47	1.66	1.84	2.21
125	1.01	1.18	1.34	1.51	1.68	2.01
100	0.90	1.05	1.20	1.35	1.50	1.80

Formula L = (ND)(SQRT of P) / 7,400

L = Allowable leakage (gph per 1,000 feet of pipeline)
N = Number of joints in length of pipeline tested
D = Nominal diameter of pipe in inches
P = Average test pressure during leakage test in psi

*For pipe with 18-ft nominal lengths. To obtain the recommended allowable leakage for pipe with 20-ft nominal lengths, multiply the leakage calculated from the table by 0.9. If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.

END OF SECTION

PROFILE

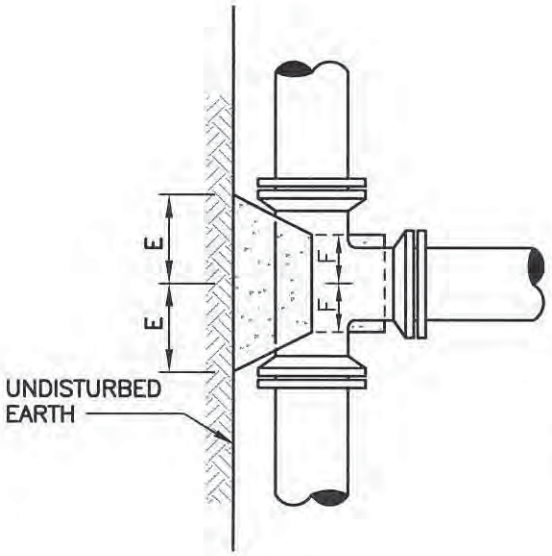
PLAN

DIMENSION SCHEDULE

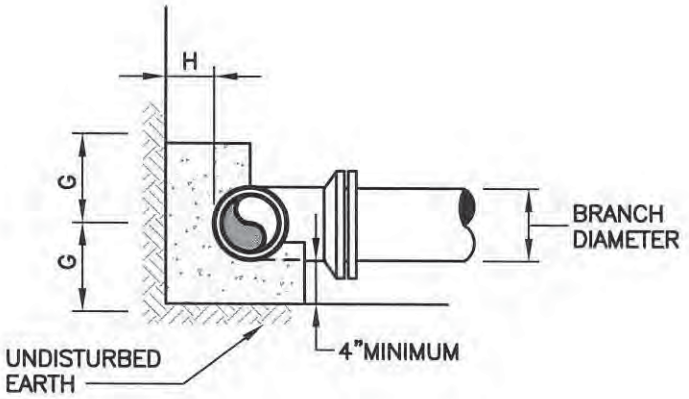
PIPE DIA.	4"	6"	8"	10"	12"	16"	18"	20"	24"
I	6"	6"	8"	8"	10"	1'–0"	1'–4"	1'–6"	1'–8"
J	1'–0"	1'–0"	1'–4"	1'–8"	2'–0"	2'–8"	4'–0"	4'–6"	5'–0"
K	1'–5"	1'–5"	1'–11"	2'–5"	2'–10"	3'–9"	4'–0"	4'–6"	5'–0'

*** USE OF BAGGED CONCRETE PROHIBITED.**

DATE: FEBRUARY 2015	**PLUG THRUST BLOCK DETAIL**
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE
	SECTION – 2 | DRAWING D2–1



PLAN



PROFILE

DIMENSION SCHEDULE									
BRANCH DIA.	4"	6"	8"	10"	12"	16"	18"	20"	24"
E	8"	8"	10"	1'–0"	1'–3"	1'–8"	2'–0"	2'–6"	2'–9"
F	6"	6"	8"	8"	8"	10"	1'–0"	1'–0"	1'–2"
G	7"	7"	9"	1'–0"	1'–2"	1'–6"	2'–0"	2'–6"	2'–9"
H	8"	8"	9"	10"	1'–0"	1'–2"	1'–4"	1'–5"	1'–6"

* USE OF BAGGED CONCRETE PROHIBITED.

CONSTRUCTION STANDARDS
TOWN OF GEORGETOWN

DATE: FEBRUARY 2015

TEE THRUST BLOCK DETAIL

NO SCALE

SECTION – 2

DRAWING D2–2

CONSTRUCTION STANDARDS
TOWN OF GEORGETOWN

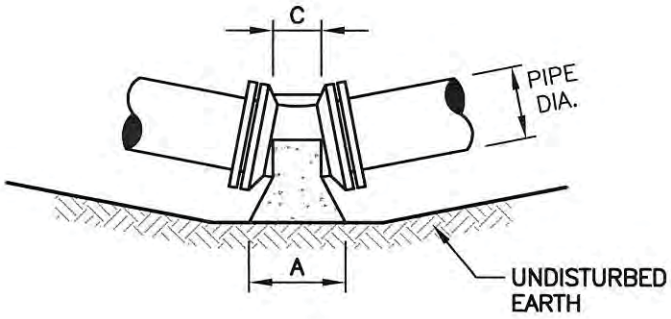
DATE: FEBRUARY 2015

HORIZONTAL BEND THRUST BLOCK DETAIL

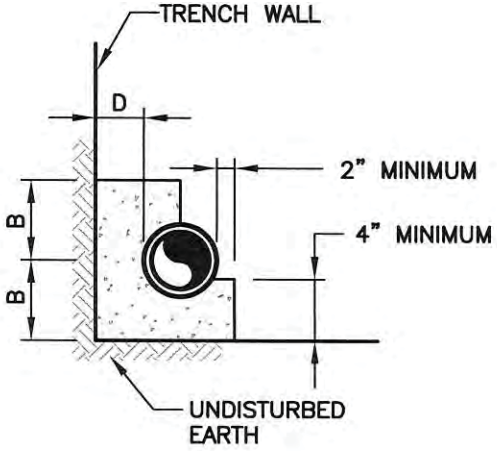
NO SCALE

SECTION – 2

DRAWING D2–3



PLAN



PROFILE

DIMENSION SCHEDULE

BEND	11¼°								22½°								
PIPE DIA.	4"	6"	8"	10"	12"	16"	18"	20"	4"	6"	8"	10"	12"	16"	18"	20"	24"
A	6"	6"	6"	10"	1'–0"	1'–4"	2'–0"	2'–2"	9"	9"	1'–0"	1'–6"	1'–9"	2'–3"	2'–3"	2'–8"	3'–0"
B	7"	7"	8"	9"	10"	1'–0"	1'–6"	1'–6"	7"	7"	8"	9"	10"	1'–0"	1'–0"	1'–6"	1'–6"
C	4"	4"	6"	6"	10"	1'–0"	1'–6"	1'–6"	4"	4"	6"	8"	10"	1'–0"	1'–0"	1'–2"	1'–6"
D	7"	7"	7"	8"	8"	9"	1'–0"	1'–2"	8"	8"	9"	10"	11"	1'–2"	1'–2"	1'–4"	1'–8"

BEND	45°								90°								
PIPE DIA.	4"	6"	8"	10"	12"	16"	18"	20"	4"	6"	8"	10"	12"	16"	18"	20"	24"
A	1'–3"	1'–3"	1'–8"	2'–1"	2'–6"	3'–4"	4'–0"	4'–0"	2'–0"	2'–0"	2'–6"	3'–0"	3'–6"	5'–0"	5'–0"	6'–0"	5'–6"
B	7"	7"	8"	9"	1'–1"	1'–3"	2'–0"	2'–6"	6"	6"	9"	1'–0"	1'–3"	1'–6"	1'–6"	3'–0"	2'–0"
C	4"	4"	6"	8"	10"	1'–0"	1'–6"	1'–6"	4"	4"	6"	8"	10"	1'–0"	1'–0"	1'–6"	1'–6"
D	8"	8"	9"	10"	11"	1'–2"	1'–4"	1'–6"	1'–5"	1'–5"	1'–7"	1'–8"	1'–9"	1'–10"	1'–10"	2'–0"	2'–4"

* USE OF BAGGED CONCRETE PROHIBITED.

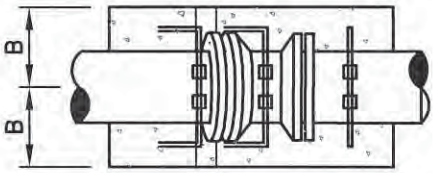
CONSTRUCTION STANDARDS
TOWN OF GEORGETOWN

DATE: DECEMBER 2014

VERTICAL UPWARD BEND
THRUST BLOCK DETAIL
NO SCALE

SECTION – 2

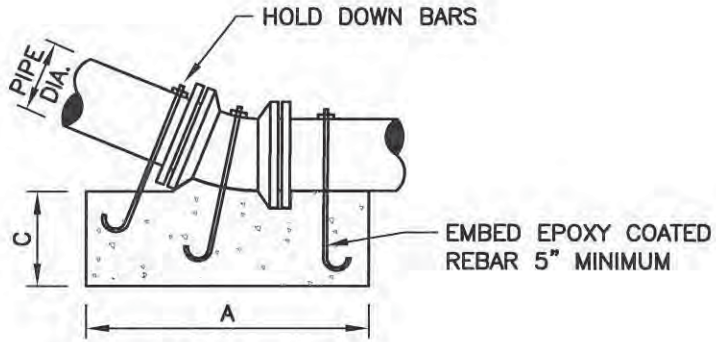
DRAWING D2–4



PLAN

DIMENSION SCHEDULE								
BEND		PIPE DIAMETER						
		4"	6"	8"	10"	12"	16"	24"
11¼°	A	6"	6"	8"	10"	1'–0"	1'–4"	2'–6"
	B	7"	7"	8"	9"	10"	1'–0"	1'–6"
	C	7"	7"	7"	8"	8"	9"	1'–4"
22½°	A	9"	9"	1'–0"	1'–6"	1'–9"	2'–3"	3'–0"
	B	7"	7"	7"	8"	10"	1'–0"	1'–6"
	C	7"	7"	7"	8"	8"	9"	1'–4"
45°	A	1'–3"	1'–3"	1'–8"	2'–1"	2'–6"	3'–4"	4'–2"
	B	7"	7"	8"	9"	11"	1'–3"	2'–0"
	C	7"	7"	8"	10"	11"	1'–3"	2'–0"

* USE OF BAGGED CONCRETE PROHIBITED.



PROFILE

BAR SCHEDULE			
SIZE	REINFORCING BARS		
	11¼°	22½°	45°
4 & 6"	3 #4	3 #4	3 #4
8"	3 #4	3 #4	3 #4
10"	3 #5	3 #5	3 #5
12"	3 #5	3 #5	3 #5
16"	3 #5	3 #5	3 #5
18"	3 #6	3 #6	3 #6
20"	3 #6	3 #6	3 #6
24"	3 #6	3 #6	3 #6

CONSTRUCTION STANDARDS
TOWN OF GEORGETOWN

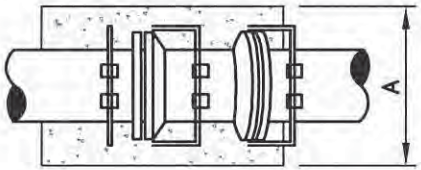
DATE: FEBRUARY 2015

VERTICAL DOWNWARD BEND
THRUST BLOCK DETAIL

NO SCALE

SECTION – 2

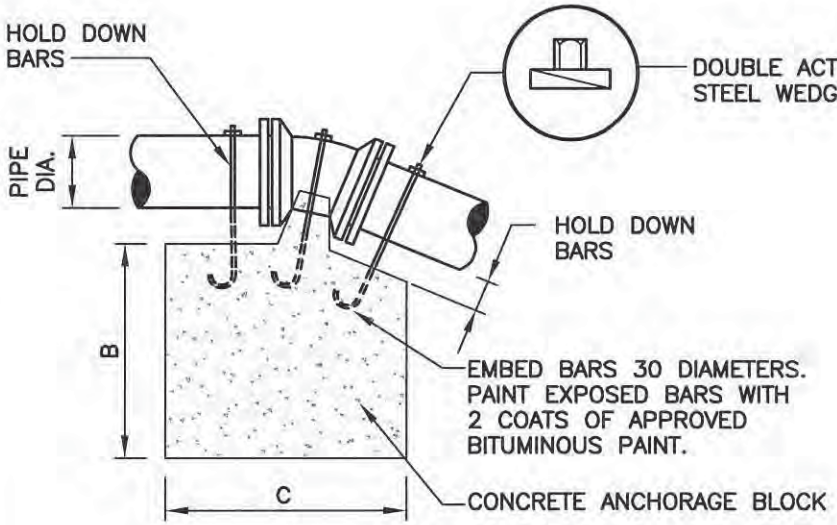
DRAWING D2–5



PLAN

DIMENSION SCHEDULE										
BEND		PIPE DIAMETER								
		4"	6"	8"	10"	12"	16"	18"	20"	24"
11 1/4°	A	1'–6"	1'–6"	1'–6"	2'–5"	3'–0"	3'–4"	3'–6"	3'–9"	4'–0"
	B	1'–3"	1'–3"	1'–9"	1'–9"	2'–0"	2'–4"	2'–6"	2'–9"	3'–0"
	C	2'–0"	2'–0"	2'–6"	2'–9"	3'–0"	3'–4"	3'–6"	3'–9"	4'–0"
22 1/2°	A	2'–0"	2'–0"	3'–4"	3'–8"	4'–0"	4'–4"	4'–6"	4'–9"	5'–0"
	B	1'–9"	1'–9"	2'–3"	2'–6"	2'–6"	3'–0"	3'–2"	3'–4"	3'–6"
	C	2'–6"	2'–6"	2'–8"	3'–10"	4'–0"	5'–4"	5'–6"	5'–9"	6'–0"
45°	A	2'–6"	2'–6"	3'–0"	4'–0"	4'–6"	5'–0"	5'–3"	5'–6"	5'–8"
	B	2'–6"	2'–6"	2'–9"	3'–0"	3'–6"	4'–4"	4'–6"	4'–9"	5'–0"
	C	3'–0"	3'–0"	4'–0"	4'–6"	4'–9"	5'–0"	5'–3"	5'–6"	5'–8"

* USE OF BAGGED CONCRETE PROHIBITED.



PROFILE

BAR SCHEDULE			
SIZE	REINFORCING BARS		
	11 1/4°	22 1/2°	45°
4 & 6"	3 #6	3 #6	3 #6
8"	3 #6	3 #6	3 #6
10"	3 #6	3 #6	3 #6
12"	3 #6	3 #6	3 #6
16"	3 #6	3 #6	3 #6
18"	3 #8	3 #8	3 #8
20"	3 #8	3 #8	3 #8
24"	3 #8	3 #8	3 #8

CONSTRUCTION STANDARDS
TOWN OF GEORGETOWN

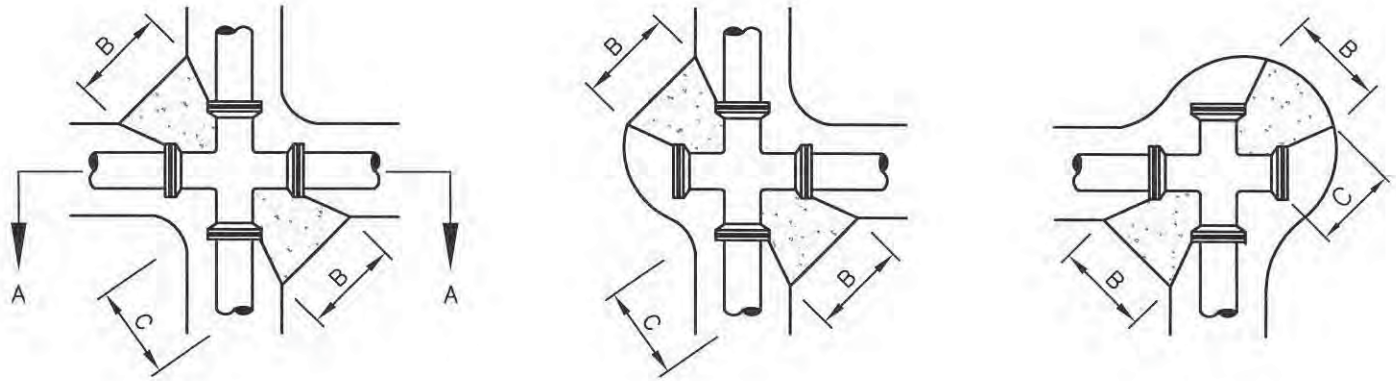
DATE: FEBRUARY 2015

CROSS THRUST BLOCK DETAIL

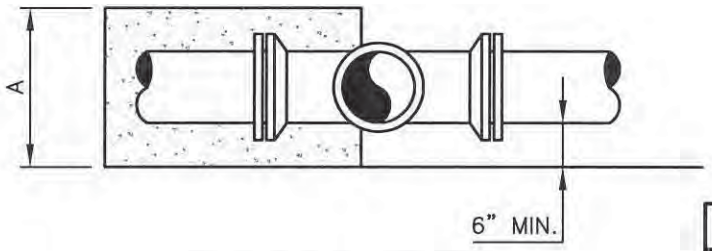
NO SCALE

SECTION – 2

DRAWING D2–6



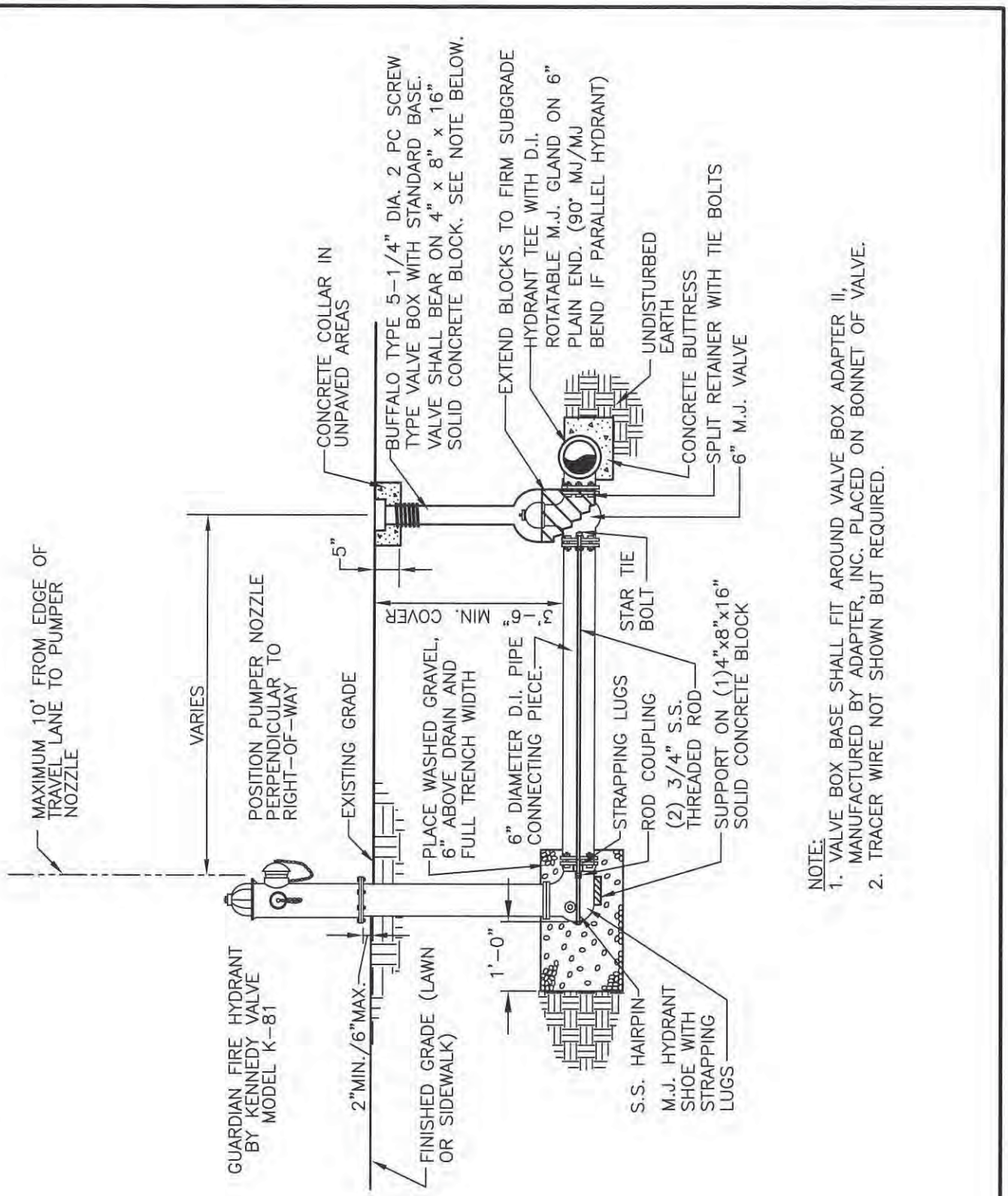
PLAN VIEW



SECTION A

DIMENSION SCHEDULE							
LARGEST BRANCH DIA.	4"	6"	8"	10"	12"	16"	24"
A	1'–9"	1'–9"	2'–6"	3'–0"	3'–3"	3'–9"	4'–6"
B	1'–2"	1'–2"	1'–4"	2'–0"	2'–2"	2'–6"	3'–6"
C	2'–6" MIN., TO UNDISTURBED SOIL.						

* USE OF BAGGED CONCRETE IS PROHIBITED.



DATE: FEBRUARY 2015	FIRE HYDRANT DETAIL
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE
	SECTION – 2 | DRAWING D2-7

DIVISION 2 – SECTION 3

SANITARY SEWER, FORCE MAINS, AND APPURTENANCES

3.01 GENERAL

A. The Contractor shall furnish all material and shall construct the pipe lines and all required appurtenances at the locations and to the lines, slopes, and elevations shown on the drawings or designated by the Town.

B. The Contractor shall submit certifications to the Town that all pipe, fittings, and joints are as specified herein.

3.02 POLYVINYL CHLORIDE PIPE AND FITTINGS

A. GENERAL

1. Polyvinyl Chloride (PVC) pipe shall be manufactured with integral wall bell and spigot joints which shall utilize an elastomeric O-ring gasketed joint conforming to ASTM D-1860. Pipe ends shall be beveled to accept gasketed fittings.

2. Pipe shall be manufactured in lengths not to exceed 20 feet. Laterals shall have a minimum diameter of 6 inches. Lateral shall not cross sewer main it connects into.

3. Polyvinyl Chloride Pipe shall be delivered and stockpiled in unit pallets. Stacking of pallets above 5 feet in height will not be allowed. If pipe is stockpiled for more than 30 days prior to installation in the trench, it must be suitably covered with reflective material to protect the pipe from ultra-violet rays emanating from sunlight. Do not use plastic sheets. All for air circulation under covering.

4. Bowed sections of pipe will be unacceptable and installation of pipe which has bowed, whether or not the bow has been corrected, will not be allowed.

B. POLYVINYL CHLORIDE SEWER PIPE AND FITTINGS

1. Polyvinyl Chloride (PVC) pipe, used for gravity sewer construction, shall equal or exceed the requirements of ASTM D 3034 and shall have a maximum standard dimension ratio (SDR) of 26 and the minimum pipe stiffness, as tested in accordance with ASTM D 2412, shall be 45 when measured under 5 percent deflection at 73 degrees Fahrenheit.

2. Polyvinyl Chloride wye branches, pipe stoppers, and other fittings shall be SDR 26 and shall be manufactured in accordance with the same specifications and shall have the same thickness, depth of socket, and annular space as the pipe. Tee fittings will not be permitted for use. Wye branches shall be complete pipe sections. Saddles will not be permitted for use.

C. POLYVINYL CHLORIDE FORCE MAIN PIPE AND FITTINGS

1. Polyvinyl Chloride (PVC) force main pipe shall be manufactured to meet or exceed the requirements of AWWA C-900, latest revision. It shall have outside diameters equal to cast iron pipe with a dimension ratio (DR) of 18 or less. The pipe shall be rated for a working pressure of at least 150 psi plus a surge allowance of at least 35 psi and shall have a minimum hydrostatic strength of 600 psi.

2. All fittings for PVC force main shall be made of cast iron in accordance with ANSI Standard A21.20. Fittings shall be class 250 and provided with mechanical joint ends furnished in accordance with ANSI Specifications A21.11 except where noted on the plans or delineated in these specifications. Inside of fittings shall be double cement lined with a bituminous seal coat in accordance with ANSI 21.40.

3. Pour concrete thrust blocks according to details D4-2 through D4-7 of these specifications on all horizontal or vertical pipe bends.

3.03 HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS (FOR DIRECTIONAL BORING OF FORCEMAIN)

A. HDPE pipe shall be SDR11 plain end for fusion welding conforming to ASTM F 714 and ASTM D 3035. Minimum pressure rating shall be 160 psi.

B. Molded fittings will conform to ASTM F 714. Terminal ends of HDPE piping in directional bore shall have an AWWA C-207 Class D flanged end, butt, fusion welded to HDPE main. Flange shall be drilled to standard 125 pound template.

D. Terminal end of HDPE pipe shall be connected to continuing ductile iron or PVC pipe with a flanged expansion joint. The flanged expansion joint shall be a "FlexTend" flexible expansion joint as manufactured by EBAA, or approved equal.

3.04 DUCTILE IRON PIPE AND FITTINGS

A. Ductile iron pipe for gravity sewer construction shall be Tyton Joint, Class 52 ductile iron pipe as manufactured by U.S. Pipe. All fittings shall be 250 psi cast iron per ANSI requirements.

B. Pipe and fittings shall have a standard internal and external asphaltic coating approximately 1 mil thick.

C. Laterals along the ductile iron main shall be installed using a ductile iron tee fitting. The lateral branch of the tee shall be 6". Extend the 6" ductile iron lateral pipe vertical to a ductile iron 45 degree bend. Connect another length of 6" ductile iron to the bend and then transition to 6" PVC using a Fernco coupling with stainless steel sheer ring and clamps. Lateral shall have a minimum diameter of 6". Lateral shall not cross sewer main it connects into.

3.05 BORING AND JACKING OF GRAVITY SEWER MAINS

A. Where possible, an approach trench shall be excavated far enough to provide a jacking face of at least three (3) feet from a pavement surface. This open face shall be shored securely to prevent slipping or raveling of the face.

B. Boring pits shall be large enough to contain all-necessary equipment and tools. Adequate provision shall be made for the removal of excavated material.

C. A substantial backstop of heavy timber or steel beams shall be provided to take the thrust of the jack or boring equipment.

D. As material is excavated or bored ahead of the pipe, the pipe shall be jacked in to follow this excavation. The distance dug ahead of the pipe shall not exceed six (6) inches.

E. The installation of casing pipe and the boring or excavation shall be done simultaneously.

F. Voids between the sleeve and excavation shall be filled by pressure grouting.

G. Cement grout shall be used to seal the pipe ends between the carrier pipe and sleeve.

H. A one (1) inch PVC pipe shall be installed in the downgrade seal to permit drainage.

I. Steel sleeve shall be furnished in random lengths of the diameter shown on the plans and shall confirm to the requirements of AWWA C-200 and ASTM A-53; ASTM A-53; ASTM 53 Grade B pipe shall be used. The pipe, including field connections, shall be coated with bitumastic compound, inside and outside. Wall thickness for 18-inch diameter sleeves shall be a minimum of 0.313 inches. Wall thickness for 12-inch diameter sleeves shall be a minimum of 0.250 inches. All sleeve sections shall be joined to one another by continuous weld around the full circumference of the pipe in accordance with AWWA C-206. At railroad crossings, sleeves shall be extra heavy duty or meet railroad specifications.

J. Carrier pipe shall be SDR 26 PVC at each location as requested by the plans except at railroad crossings, where the carrier pipe shall be Class 56 ductile iron.

K. Casing spacers shall be Model SI, as manufactured by Advanced Products & Systems, Inc. and they shall be installed at intervals along the carrier pipe in accordance with the manufacturer's recommendations.

3.06 DIRECTIONAL BORE (FORCEMAIN)

A. The system must be remotely steerable and permit electronic monitoring of tunnel depth and location. The system must be able to control the depth and direction of the pipe and must be accurate to a window of +/- 2 inches.

B. The system must be capable of turning 90 degrees in a 35 foot radius.

C. The system shall be a fluid-cutting process which utilizes a liquid clay such as bentonite. This clay must be totally inert and contain no risk to the environment.

D. Liquid clay shall remain in the tunnel to increase stability of the tunnel and provide a lubricant to reduce frictional drag when the pipe is installed.

E. Spoils shall be recovered through the use of a vacuum system mounted on a vehicle for removal of spoils to an approved spoils site. Spoils shall not be discharged into sewer or storm drain system.

F. The equipment must be capable of completing the boring in a single bore.

G. Equipment must be fitted with a permanent alarm system capable of detecting an electrical current. The system will have an audible alarm to warn the operator when the drill head nears electrified cables.

3.07 PIPE INSTALLATION

A. Pipe and fittings shall be carefully handled and lowered into the trench. Special care shall be taken to insure that each length shall abut against the next in such a manner that there shall be no shoulder or unevenness of any kind along the inside of the pipe.

B. Before pipe is placed, the bottom of the trench shall be carefully shaped to fit the lower part of the pipe exterior with reasonable closeness for circumference of at least 60% of the pipe diameter. Bell holes shall be dug sufficiently large to insure the making of proper joints and so that after placement, only the barrel of the pipe receives bearing pressure from the trench bottom. No pipe shall be brought into position until the preceding length has been thoroughly bedded and secured in place. Any defects due to settlement shall be made good by the Contractor.

C. Sewer laterals and wyes connecting to sewer mains with greater than 8 feet of cover shall be connected using the deep sewer lateral connection method. See detail D2-2.

D. Proper and suitable tools and appliances for the safe and convenient handling and laying of pipe shall be used.

E. Whenever a pipe requires cutting to fit into the line or to bring it to the required location, the work shall be done in a satisfactory manner so as to leave a smooth end.

F. The pipes shall be thoroughly cleaned before they are laid and shall be kept clean until the acceptance of the completed work. The open ends of all pipe lines shall be provided with a stopper carefully fitted so as to keep dirt and other substances from entering. This stopper shall be kept in the end of the pipe line at all times when laying is not in actual progress.

G. All concrete required to support and reinforce wye branches, bends and other fittings shall be placed as directed.

H. Backfill materials shall be hand placed and mechanically tamped in six inch layers, placed uniformly on both sides of the pipe, to a point at least one foot above the pipe crown. Each layer shall be thoroughly compacted for the full trench width and under, around and over the pipe.

I. Pipeline detectable tape shall be installed continuously along all sewer and force mains. The tape shall be installed directly above the pipe and 18 inches from the ground surface. The tape shall be Lineguard Type III detectable tape as manufactured by Lineguard, Inc. of Wheaton, Illinois, or equal. The tape shall be a minimum of two inches wide, imprinted with the words "CAUTION – SEWER LINE BELOW and capable of being detected with inductive methods.

J. Pipeline tracer wire shall be installed along all gravity sewer, sewer forcemain, and sewer laterals.

1. For direct burial of gasketed-joint gravity sewer, sewer forcemain, and sewer laterals, tracer wire shall be fastened directly to the top of the pipe, at each end and in the center. For direct burial of HDPE forcemain, tracer wire shall be attached to the top of the pipe. The distance between attachment points shall be no greater than 10 feet. The distance between attachment points shall be no greater than 10 feet. Tracer wire shall be a #12 AWG high strength, copper-clad steel (HS-CCS) conductor, insulated with a 30 mil, high-density, high molecular-weight polyethylene (HDPE) insulation, and rated for direct burial use at 30 volts. Insulation color shall meet the APWA color code standard for identification of buried utilities. Tracer wire shall be Copperhead HS-CCS HDPE 30 mil insulation as manufactured by Copperhead Industries, LLC of Monticello, MN.

2. For directional drilling/boring of forcemain, tracer wire shall be a #12 AWG extra high strength, copper-clad steel (EHS-CCS) conductor, insulated with a 45 mil, high-density, high molecular-weight polyethylene (HDPE) insulation, and rated for direct burial use at 30 volts. Insulation color shall meet the APWA color code standard for identification of buried utilities. Tracer wire shall be Copperhead SoloShot Extra High Strength, EHS-CCS HDPE 45 mil insulation as manufactured by Copperhead Industries, LLC of Monticello, MN.

3. Splicing of tracer wire shall not be permitted. Long runs of tracer wire may not be greater than 400 feet (+/-). At these intervals, tracer wires shall be extended from the forcemain to grassed area behind the curb or sidewalk. Magnetized tracer boxes, as manufactured by Copperhead Industries, LLC shall be installed in the grassed area and the tracer wires shall be installed up into the boxes and connected to lugs in the boxes. All boxes shall have a color coded cover to match the APWA color code standard for identification of buried utilities. Tracer on sewer laterals shall be connected to magnesium anode at the sewer main. Anode shall be as manufactured by Copperhead Industries, LLC. The upstream end of the tracer wire shall be run up into the cleanout frame and cover where it shall be fixed and made accessible to the locater.

4. All dead ends of tracer wire not made accessible at the ground surface, either in a tracer wire box or a sewer cleanout frame and cover shall be grounded by attaching the end to a magnesium anode as manufactured by Copperhead Industries, LLC.

K. For refill of the remaining trench depth, refer to “Excavation and Backfill” Section 1 of these specifications.

3.08 LAYING PIPE IN FREEZING WEATHER

No pipe shall be laid upon a foundation into which frost has penetrated, nor at any time when the Town shall deem that there is danger of the formation of ice or the penetration of frost at the bottom of the excavation unless all required precautions as to the minimum length of open trench and promptness of backfilling are observed.

3.09 ARTIFICIAL FOUNDATION

Whenever directed, the Contractor shall lay pipe upon an artificial foundation which he or she shall construct. Such foundation may consist of gravel or of concrete and shall be to the dimensions and placed in a manner required by the Town.

3.10 TESTING

A. GENERAL

1. Contractor shall furnish all labor, tools, materials, and equipment, including water, pumps, compressors, stopwatch, gauges, flashlights or other artificial lighting, mirrors and meters, subject to the approval of the Town, for testing in accordance with these specifications.

2. The Town shall be notified in advance of all tests, and all tests shall be conducted to the entire satisfaction of the Town.

3. Sewer mains must pass all test requirements listed hereafter prior to acceptance by the Town with no exceptions.

C. All gravity sanitary sewer pipes shall be mandrel tested as follows. Excepted from this requirement is yard piping used for temporary by-passing.

1. MANDREL TESTING OF SANITARY SEWERS

a. Sanitary sewer pipe shall be deflection tested not less than 30 days after the trench backfill and compaction has been completed. The test shall be conducted by pulling an approved solid pointed mandrel through the completed pipeline. The diameter of the mandrel shall be 95 percent of the inside diameter of the pipe. The mandrel shall be a rigid, non-adjustable mandrel having an effective length of not less than its normal diameter.

b. Testing shall be conducted on a manhole to manhole basis and shall be done after the line had been completely cleaned and flushed. Any portion of the sewer which fails to pass the test shall be excavated, repaired, or realigned and retested with both air and deflection tests.

2. LEAK TESTING USING AIR:

a Sewers shall be tested in sections not exceeding 400 feet in length unless otherwise approved by the Town. Each section shall be tested immediately upon completion thereof. Each section shall meet the air pressure drop limitation specified herein.

b All material and labor required for leakage tests shall be furnished by the Contractor.

c Sewers shall be tested using the low-pressure air method in accordance with the requirements of ASTM C-828 and the Uni-Bell Plastic Pipe Association recommendations, based upon the Ramseier

test time criteria. Procedural and equipment details shall be submitted to the Town prior to acceptance of its use for testing.

d If the test time for the designated size and length, elapses before the test pressure drops 0.5 psig, the section undergoing the test shall have passed.

e If the pressure drops 0.5 psig before the appropriate test time has elapsed, the air loss rate shall be considered excessive and the section of pipe has failed the test. Contractor shall determine at his or her own expense the source or sources of leakage and he or she shall repair or replace all defective materials and/or workmanship to the satisfaction of the Town. The completed pipe installation shall then be retested and required to meet the requirements of this test.

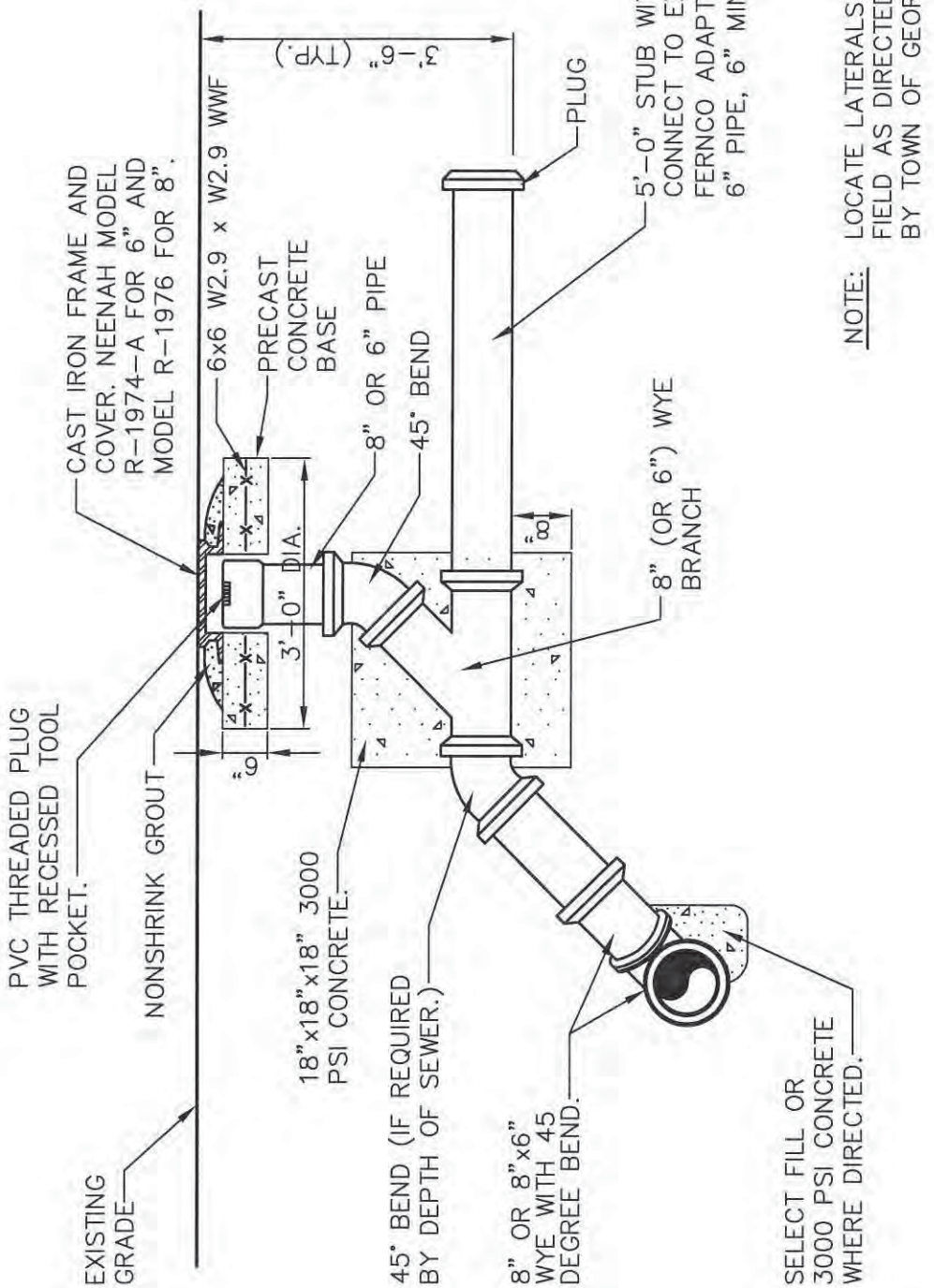
C. Force main is to be tested in accordance with the following:

1. The force mains shall be filled with water, supplied by the Contractor, as directed by the Town, and the pressure raised to obtain a minimum test pressure measured at the highest point of the section of pipeline under test. Particular care shall be taken to eliminate all air from pipeline. The force mains shall be subject to pressure and leakage tests as specified in Section 2 for water mains at the specified test pressure, measured at the highest point of the section of pipeline under test. This test shall be a minimum of four (4) hours duration. All visible leaks shall be repaired by the Contractor at no expense to the Town. The Contractor shall make any and all repairs at his or her expense that may be necessary until the leakage test requirements have been met.

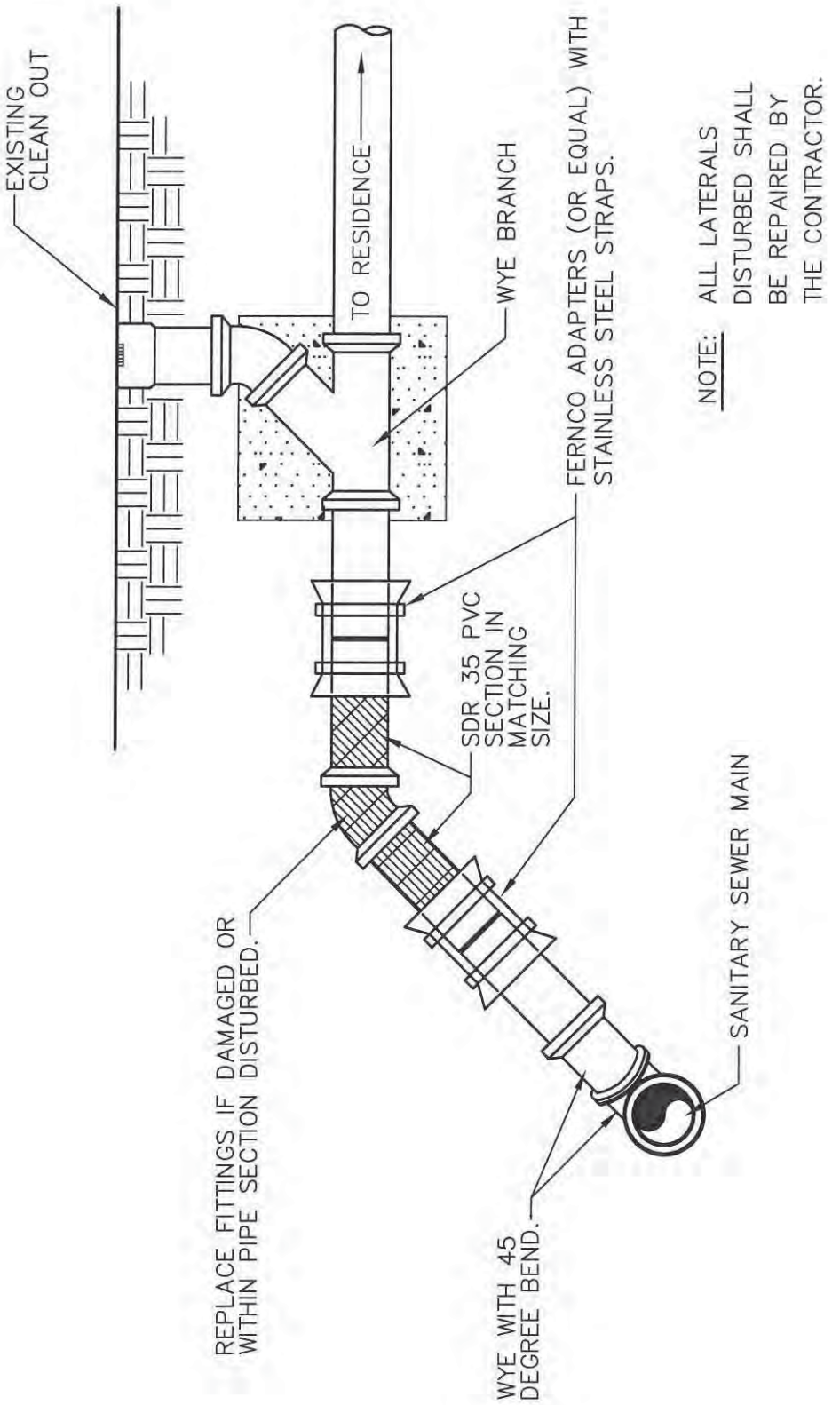
3.11 OIL/WATER SEPARATOR

All new and/or upgraded car washes and vehicle maintenance garages shall install (Model HT) Highland oil/water separators of adequate size for proper operation.

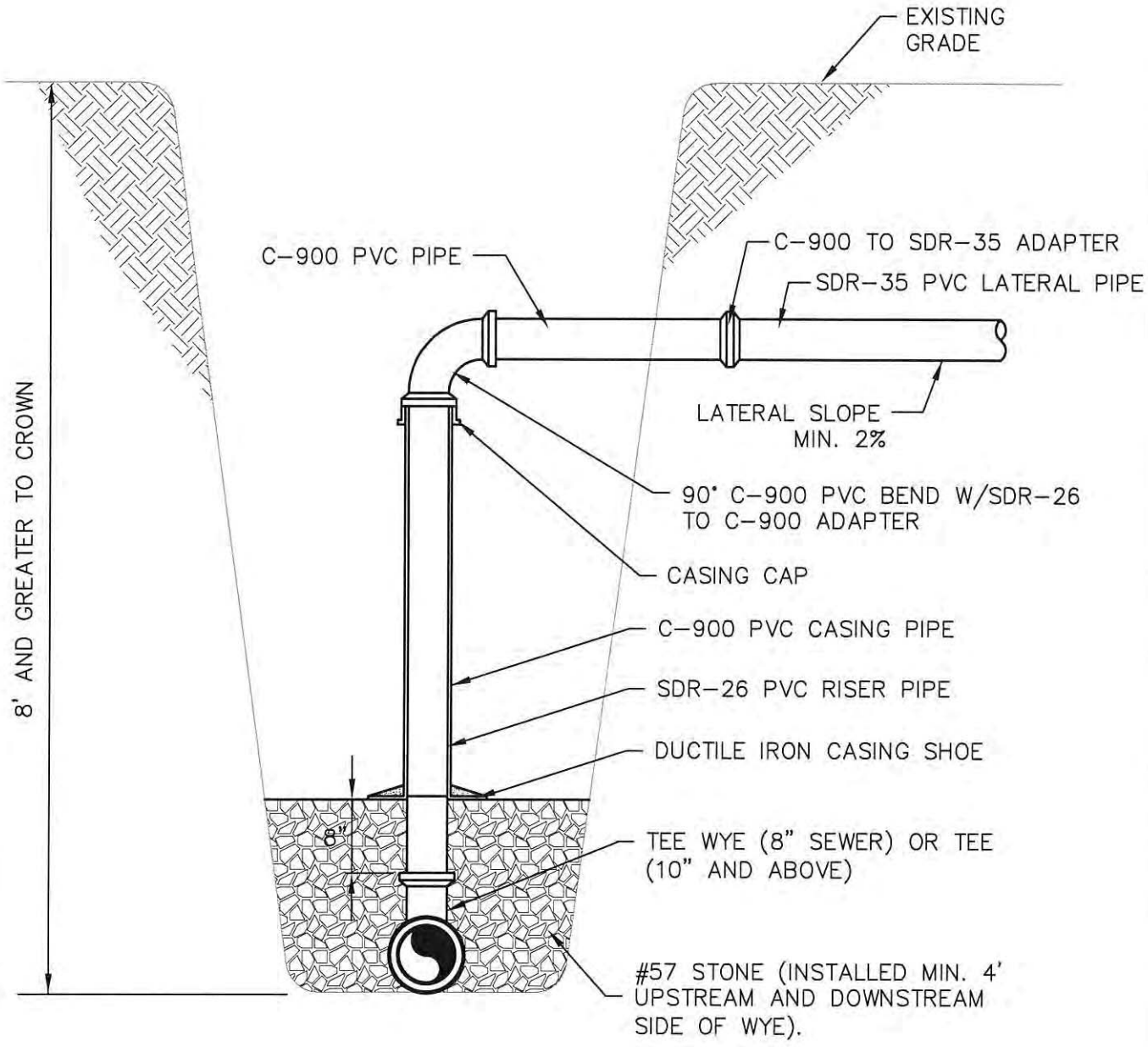
END OF SECTION



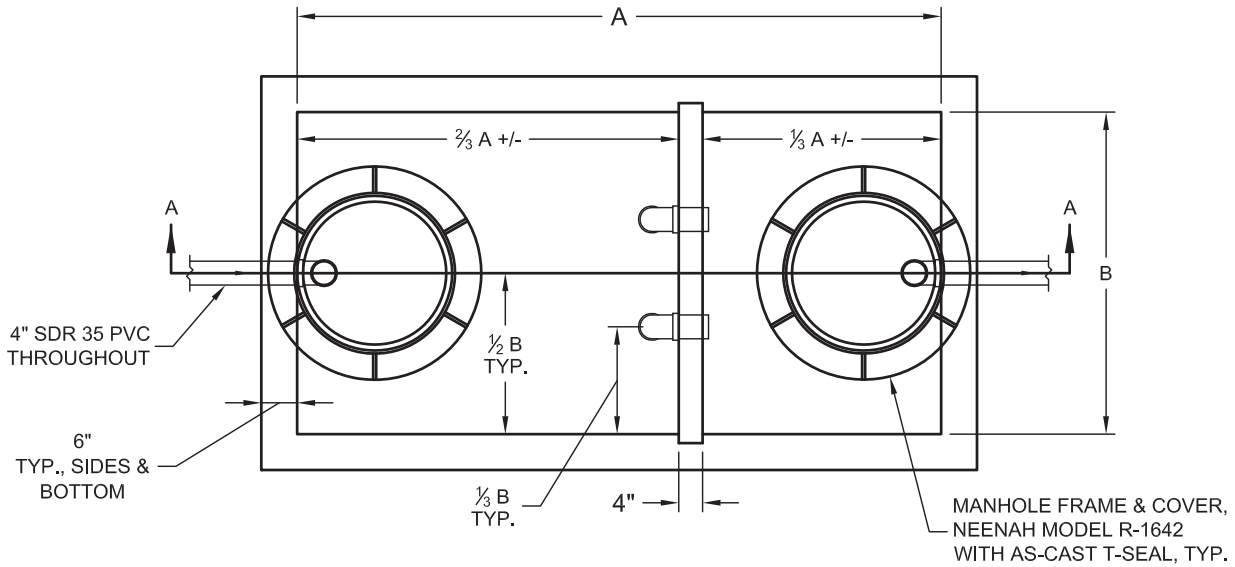
DATE: FEBRUARY 2015	**BUILDING LATERAL CLEANOUT DETAIL**	
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE	
	SECTION – 3	DRAWING D3–1



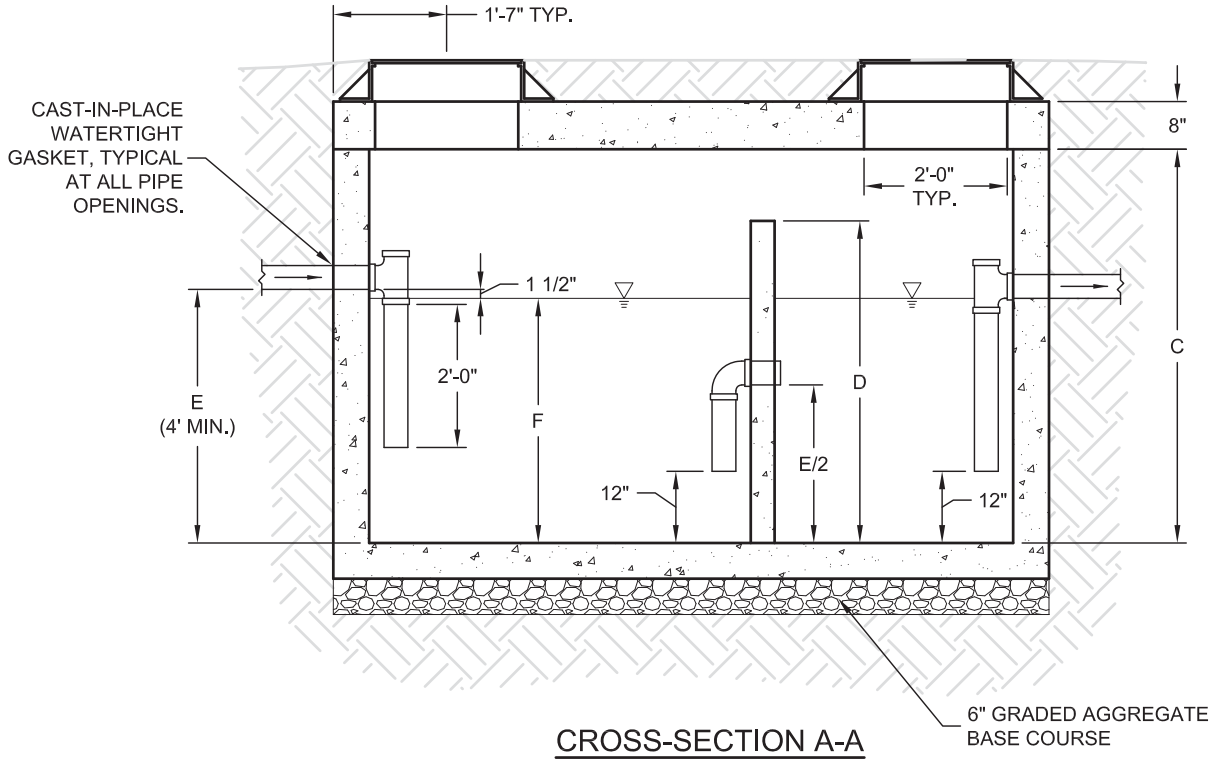
DATE: FEBRUARY 2015	**SEWER LATERAL RESTORATION DETAIL**	
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE	
	SECTION – 3	DRAWING D3–2



DATE: FEBRUARY 2015	**DEEP SEWER LATERAL CONNECTION DETAIL**
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE
	SECTION – 3 | DRAWING D3-3



PLAN VIEW



CROSS-SECTION A-A

NOTES:
1. DESIGN ENGINEER SHALL SPECIFY REQUIRED GREASE TRAP VOLUME AND DIMENSIONS A THROUGH E.
2. GASKETS FOR PIPE PENETRATIONS SHALL BE A-LOK OR APPROVED EQUAL, CAST-IN-PLACE.
3. REINFORCEMENT FOR TOP SHALL BE SUITABLE FOR H-20 LOADING IF VAULT IS IN TRAFFIC AREA.
4. REINFORCEMENT OF BOTTOM, SIDES AND TOP SHALL BE INDICATED ON SHOP DRAWING SUBMISSION. ALL REINFORCEMENT SHALL MEET DELDOT REQUIREMENTS.
5. FLOATATION CALCULATIONS SHALL BE SUBMITTED WITH SHOP DRAWING SUBMISSION.
6. ALL CONCRETE SHALL BE 4,000 PSI.

DATE: DECEMBER 2016	GREASE TRAP DETAIL
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE
	DRAWING D3–4

DIVISION 2 – SECTION 4

SEWER MANHOLES

4.01 GENERAL

A. The Contractor shall construct manholes of precast reinforced concrete. Manholes shall be built at such points on the pipe lines and of such form and dimensions as are shown on the drawings or as may be directed.

B. Manholes shall be built as pipe laying progresses. The Town may stop pipe laying work entirely if manhole construction is delayed to such an extent as to be hazardous to construction or the public.

4.02 PRECAST REINFORCED CONCRETE MANHOLES

A. Precast reinforced concrete risers, eccentric cones and bases shall be in conformance with ASTM: Designation C 478. Joints between riser sections shall be fitted with an "0" ring rubber gasket, meeting the requirements of ASTM Designation C 443. Installation of risers shall be in accordance with manufacturer's recommendations under the supervision of the Town. Minimum compressive strength of precast concrete shall be 4000 psi at 28 days.

B. Precast reinforced concrete base and riser sections shall be as manufactured by Atlantic Concrete Products Company, Virginia Precast Corporation, or equal.

C. Interior and exterior joint spaces of all manhole risers shall mortared prior to application of the exterior waterproofing. The water-stop mortar shall be ThoRoc Plug, as manufactured by ChemRex, or approved equal.

D. Lifting holes in the walls of precast reinforced concrete risers will be allowed but shall be plugged with rubber stoppers and grouted flush with face of manhole wall after installation of manhole riser sections. Not more than two holes shall be cast in the walls of each riser section for the purpose of handling.

E. The exterior surface of all precast manholes shall receive a minimum two coat application of a 68 percent solids coal tar type protective coating. The total average dry film thickness shall measure 24 mils with no single measurement to be less than 20 mils. Surfaces shall be prepared in accordance with the manufacturer's instructions and coatings applied in the field in a manner acceptable to the Town. The coating material shall be Bitumastic Super Service Black manufactured by Koppers Co., Inc., Pittsburgh, Pennsylvania, Tar-Jet Super Black XX-32-B-22 manufactured by Pennsbury Coatings Corp., New Britain, Pennsylvania, or approved equal.

F. All pipe-to-manhole connections in the precast manhole shall be made by means of an integrally cast flexible connector which shall be Lockjoint flexible manhole sleeve as manufactured by Interpace Corp., Parsippany, New Jersey, or A-Lok

flexible manhole gasket as manufactured by A-Lok Corp., Trenton, New Jersey, or approved equal.

G. Openings shall be made in existing manholes to receive new sewer main or lateral tie-ins with a concrete coring saw. Cored openings shall be clean cut circular openings with no irregularities along the perimeter of the opening. Pipe-to-manhole connections at cored openings shall be made by using Kor-N-Seal® I Connectors, as manufactured by E.J. Prescott, Inc.

4.03 FLOW CHANNELS

A. All manhole flow channels and benches shall be constructed of *"SS"* sewer brick with care taken to secure smooth and even surfaces with full special mortar joints. Channel sections shall be built up to true line and radius, and curved sections shall provide a uniform transition in the flow direction.

B. Materials and construction of flow channels shall be in accordance with appropriate sections for materials so used, as hereinafter specified.

C. Manhole flow channels may be factory cast with prior approval from the Town.

4.04 CONCRETE

All concrete for manhole base slabs and cradles, encasements, blocking, etc., shall have a minimum compressive strength of 3000 phi at 28 days. Precast concrete shall have a compressive strength of 4000 psi in 28 days.

4.05 BRICK

All brick shall conform to the "Standard Specifications for Sewer Brick", ASTM Designation C 32, Grade 58, except that the maximum absorption for the average of five bricks shall not exceed 10 percent; and the individual brick maximum shall not exceed 14 percent.

4.06 MORTAR

A. Cement shall be in accordance with the "Standard Specifications for Portland Cement", ASTM: Designation C 150 for Type II.

B. Sand shall be composed of sharp, angular, silicious grains, coarse, or graded from fine to coarse with the coarsest grains predominating, and sensibly free from clay, loam, dirt, mica, organic matter, or other impurities. Sand containing more than 5 percent by weight of foreign material shall not be used.

This limit may be changed for special classes of work if hereinafter specified. Sand exhibiting more than an acceptable amount of matter or impurities may be required to be washed after delivery on the work or shall be rejected altogether.

Sand for mortar shall be screened to reject all particles of a greater diameter than 1/4-inch and shall not contain more than 5 percent by weight of a very fine material.

C. Unless hereinafter specified otherwise, all mortar shall be composed of cement and sand of the character above specified. The proportion of volume shall be one part of cement to two of sand. One volume of cement shall be 94 pounds net. One volume of sand shall be 0.9 cubic feet, the sand not being packed more closely than by throwing it into a box in the usual way. Mortar shall be fresh mixed in small batches for the work in hand. Tight boxes or platforms made for the purposes shall be used. The sand and cement shall be thoroughly mixed dry, in the proper proportions, until a uniform" color has been produced, whereupon a moderate dose of water shall be added, so as to produce a stiff paste of the proper consistency.

D. Sand obtained from the excavation shall not be used.

4.07 LAYING BRICK

A. All brickwork shall be laid by competent professionals, i.e., master brick layers.

B. All brick shall be laid in a full bed of mortar with all vertical and horizontal joints filled solid with mortar.

C. Joints shall be not less than 3/8 inch or more than 1/2-inch wide except as otherwise specified in (E) below.

D. No brickwork shall be laid when the temperature is below 40 degrees or when the indications are for lower temperatures within 24 hours. The contractor shall take such measures as may be approved to prevent brickwork from being exposed to freezing temperatures for a period of not less than five days after laying.

E. Special care shall be taken in laying brick in inverts of manholes to insure a uniform flow of water through the sections. In such locations, joints shall not exceed 1/16-inch in thickness and each brick shall be laid in full mortar bed with joints on bottom side and end made in one operation. No grouting or working in of mortar after laying the brick will be permitted.

4.08 MANHOLE STEPS

A. Manhole steps shall be made of 3/8 inch diameter (No.3) steel reinforcing bars, ASTM Designation A-615, Grade 60, encased in polypropylene plastic. Manhole steps shall have notched tread ridge with retainer lug on each side.

B. Manhole steps shall be cast in place during manufacture of precast reinforced concrete manholes. Embedment length shall be suitable for minimum 5 inch thick, precast reinforced concrete riser walls.

C. Manhole steps shall be OSHA approved and as manufactured by M.A. Industries, Inc., Peachtree City, Georgia, ICM, Inc., Jacksonville, Arkansas, or approved equal.

D. Manhole steps shall be spaced 12-inches apart. The maximum spacing from top of manhole to the first step shall not exceed sixteen (16) inches.

4.09 MANHOLE FRAMES AND COVERS

A. Frames and covers for manholes shall be set by the Contractor as the work progresses. The frame shall be well bedded in mortar. If directed by the Town, a 7' x 7' concrete collar with a minimum thickness of 4 inches and 6 x 6 W2.9xW2.9 WWF shall be poured around the manhole frame and cover. Set rim height at finished grade and finish concrete collar for positive drainage.

B. Materials for frames and covers shall be in accordance with the standard specifications for gray iron castings ASTM A-48 for Class 35.

C. Manhole stubs shall be extended 4 feet outside of the manhole wall unless otherwise required. Gasketed plugs shall be installed in the ends of the stubs.

D. All frames and covers shall be of the sizes and types approved by the Town and with "SANITARY SEWER" and two pick holes cast into the cover.

E. Provide HDPE or stainless steel inflow stopper inserts with double valves and lifting handle. (Parsons or equal)

F. Manhole frames and covers shall be installed on grade to match the slope of the paved surface. Use brick adjustment courses or manufactured adjustment rings grouted in place between the cone and frame for adjustment to match the slope of the paved surface.

G. Manhole frames and covers shall be model 1045, watertight assembly as manufactured by East Jordan Iron Works, Inc.; or, model R-1642, self-sealing application as manufactured by Neenah Foundry. Lids shall have "SANITARY SEWER" engraved in the top surface.

4.10 TESTS

A. Manholes shall be vacuum tested at the discretion of the Engineer in accordance with ASTM C1244 *Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure Test Prior to Backfill.*

B. Manholes shall be complete and ready for backfill prior to execution of the test. Expandable plugs shall be installed and inflated in all interior pipe openings. Bracing of plugs may also be required.

C. Vacuum test pressure shall be 10 inches Hg, or 5 psi.

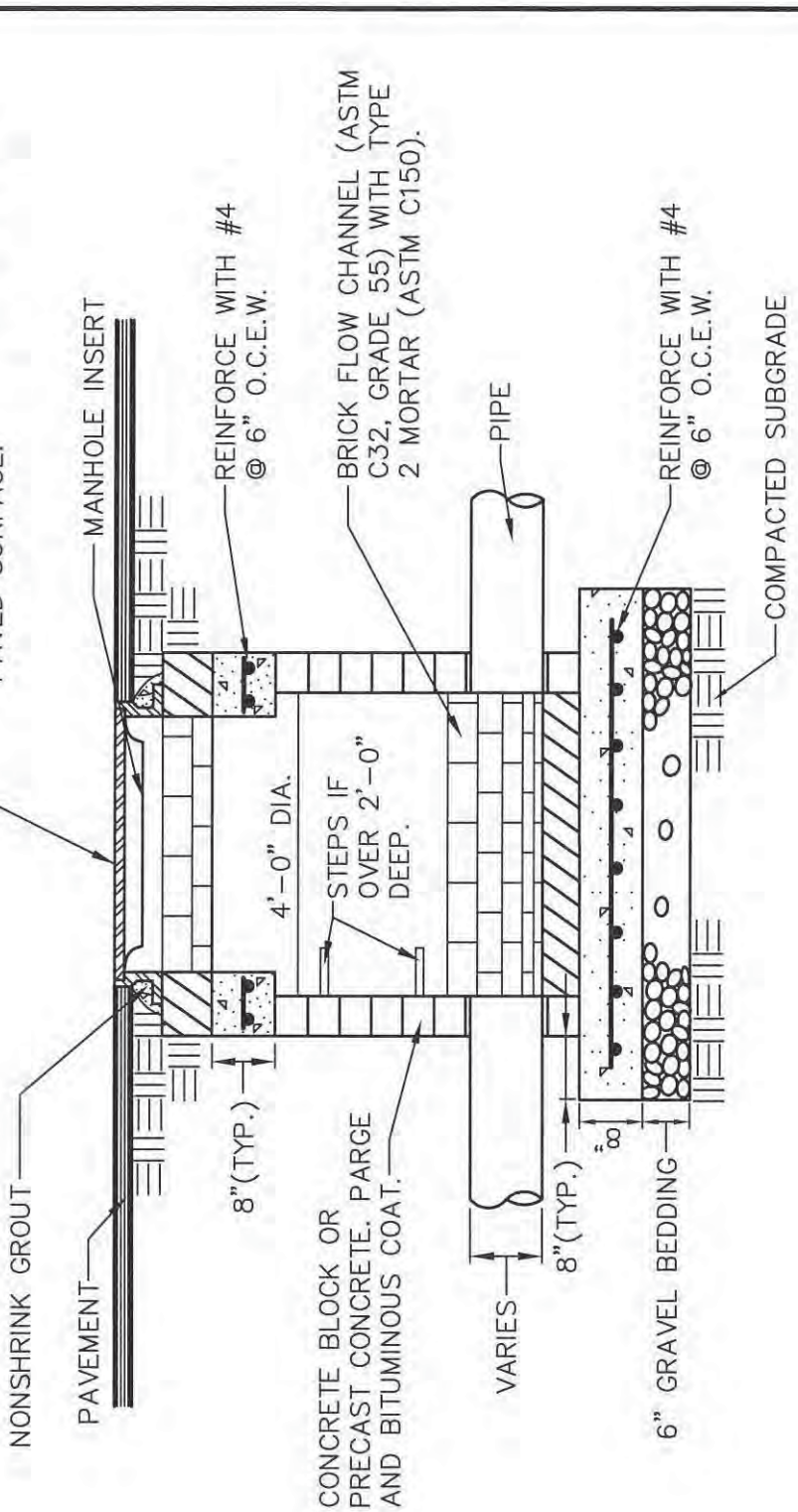
D. The duration of the vacuum test shall be in accordance with the diameter and depth of the manhole and the table below.

Minimum Test Times for Manhole Vacuum Test

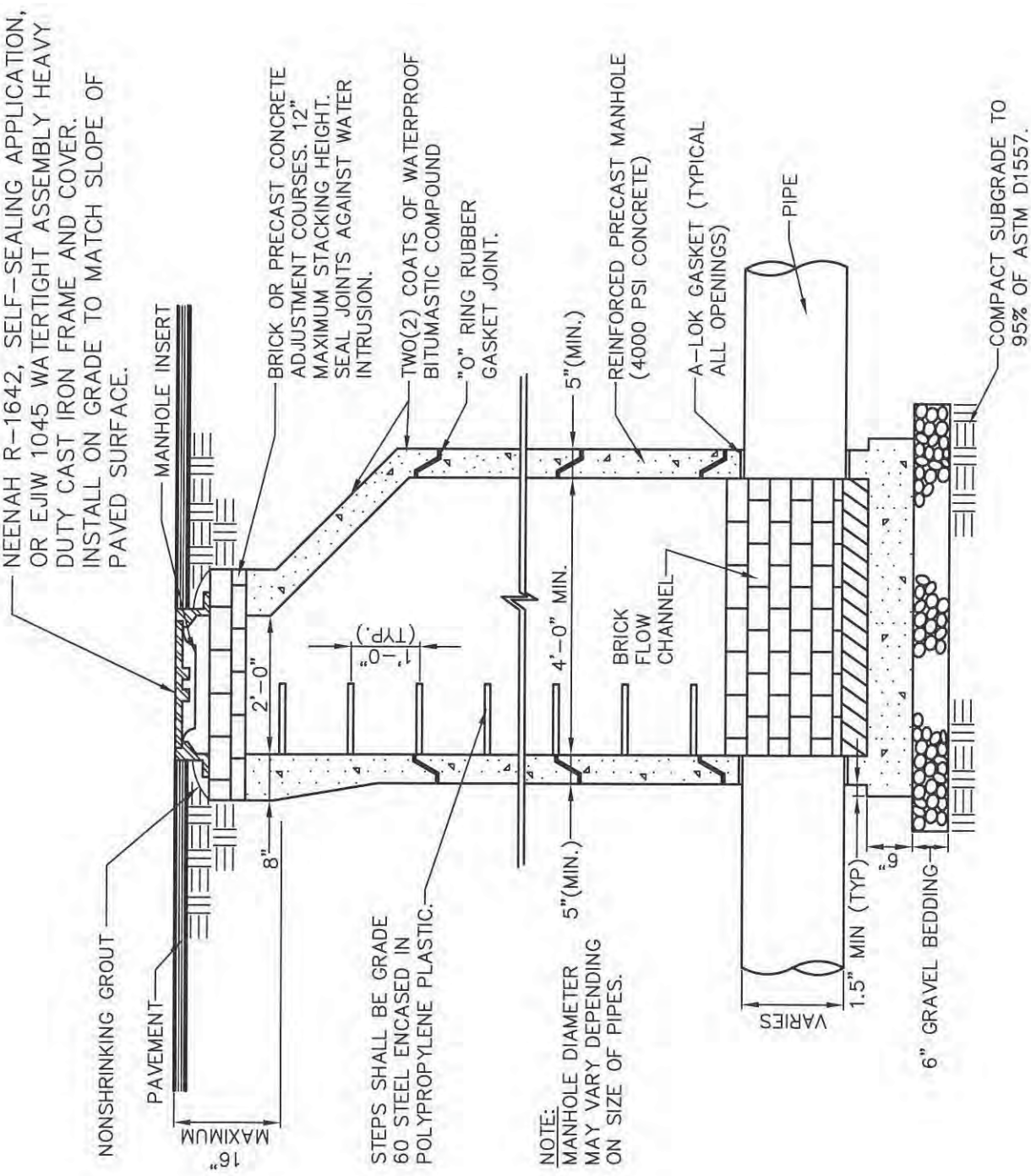
Manhole Depth (feet)	Diameter (inches)	
	48	60
	Time (seconds)	
15 feet or less	60	60
Greater than 15 feet	90	90

E. The manhole shall pass the test if the vacuum pressure does not drop below nine (9) inches Hg, or 4.5 psi in the appropriate time in the table above.

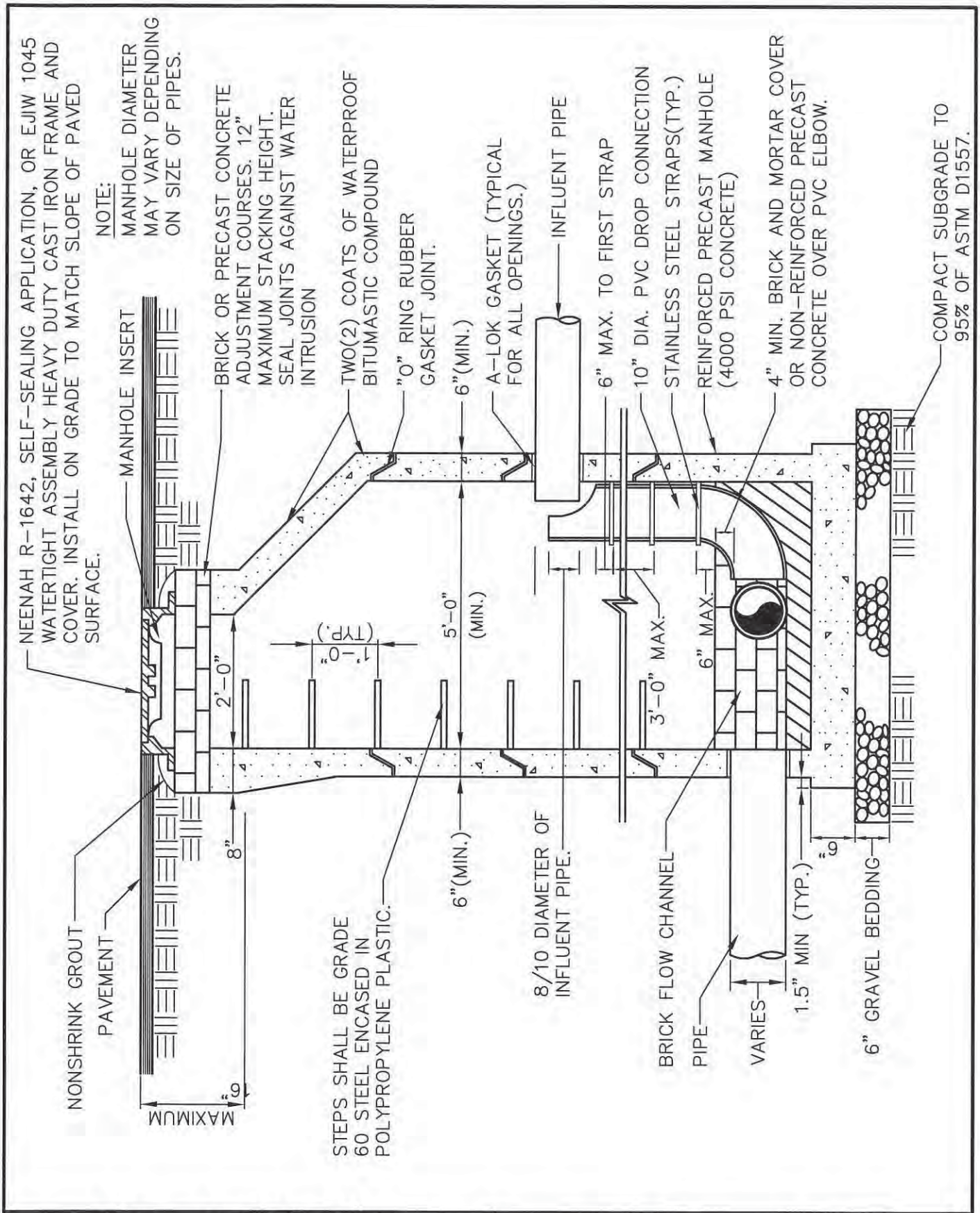
END OF SECTION



DATE: FEBRUARY 2015	**SHALLOW MANHOLE DETAIL**	
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE	
	SECTION – 4	DRAWING D4-1



DATE: FEBRUARY 2015	PRECAST CONCRETE MANHOLE DETAIL NO SCALE	
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	SECTION – 4	DRAWING D4-2



DATE: FEBRUARY 2015	**INSIDE DROP MANHOLE DETAIL**
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE
	SECTION – 4 | DRAWING D4-3

CONSTRUCTION STANDARDS
TOWN OF GEORGETOWN

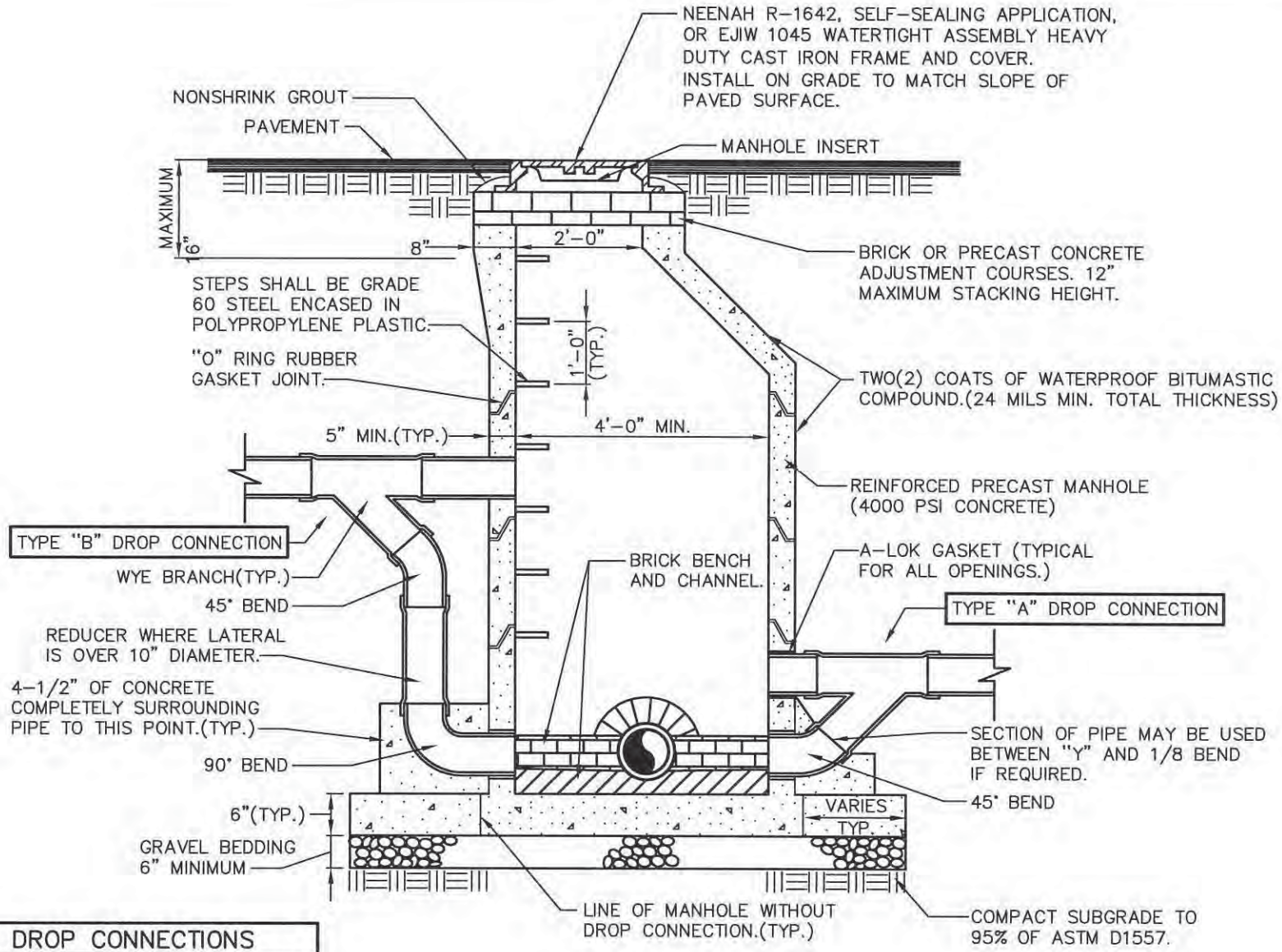
DATE: FEBRUARY 2015

OUTSIDE DROP MANHOLE DETAIL

NO SCALE

SECTION – 4

DRAWING D4-4



DROP CONNECTIONS			
SIZE OF SEWER	TYPE "A"		TYPE "B"
	MAX.DROP	MIN.DROP	MIN.DROP
6" OR 8"	3'–9"	1'–9"	3'–9"
10"	4'–0"	2'–0"	4'–0"
12"	6'–0"	2'–6"	6'–0"

CONSTRUCTION STANDARDS
TOWN OF GEORGETOWN

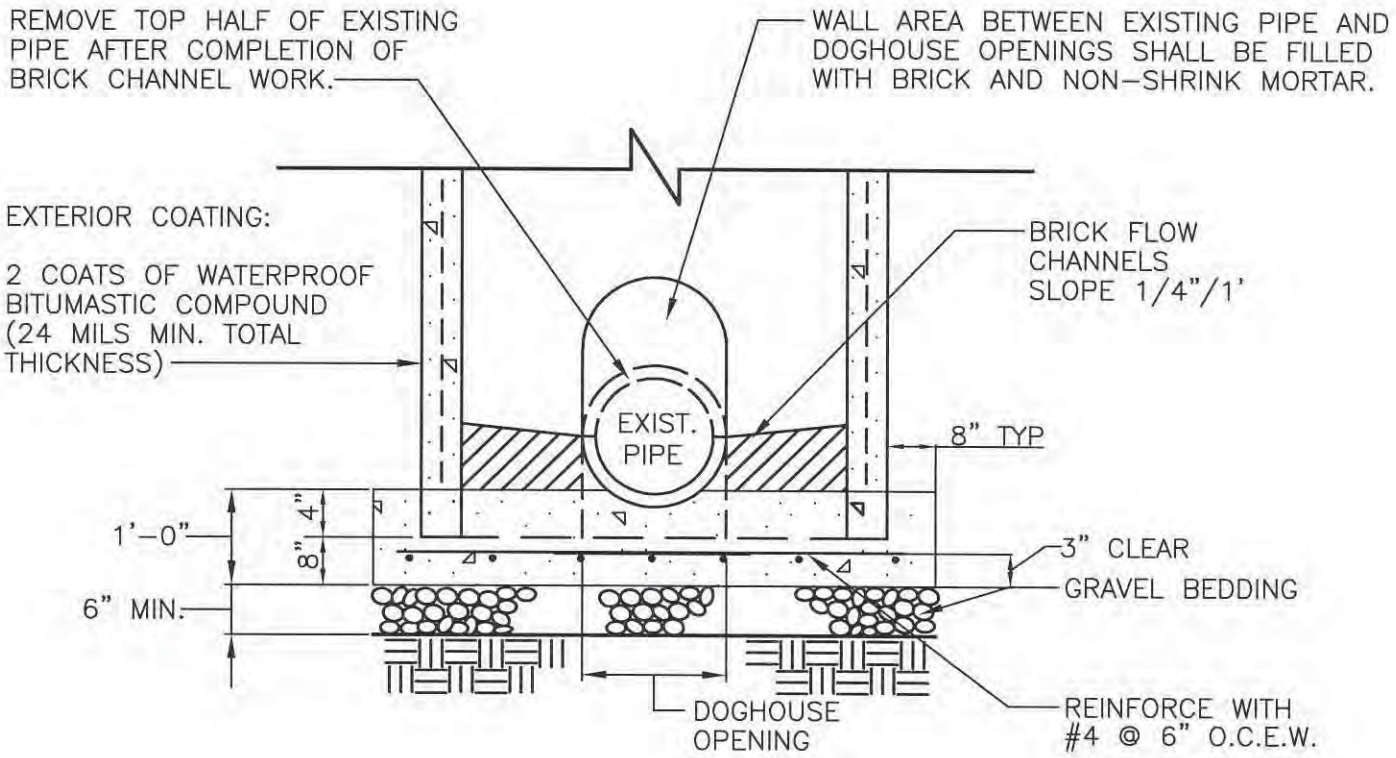
DATE: FEBRUARY 2015

DOGHOUSE MANHOLE DETAIL

NO SCALE

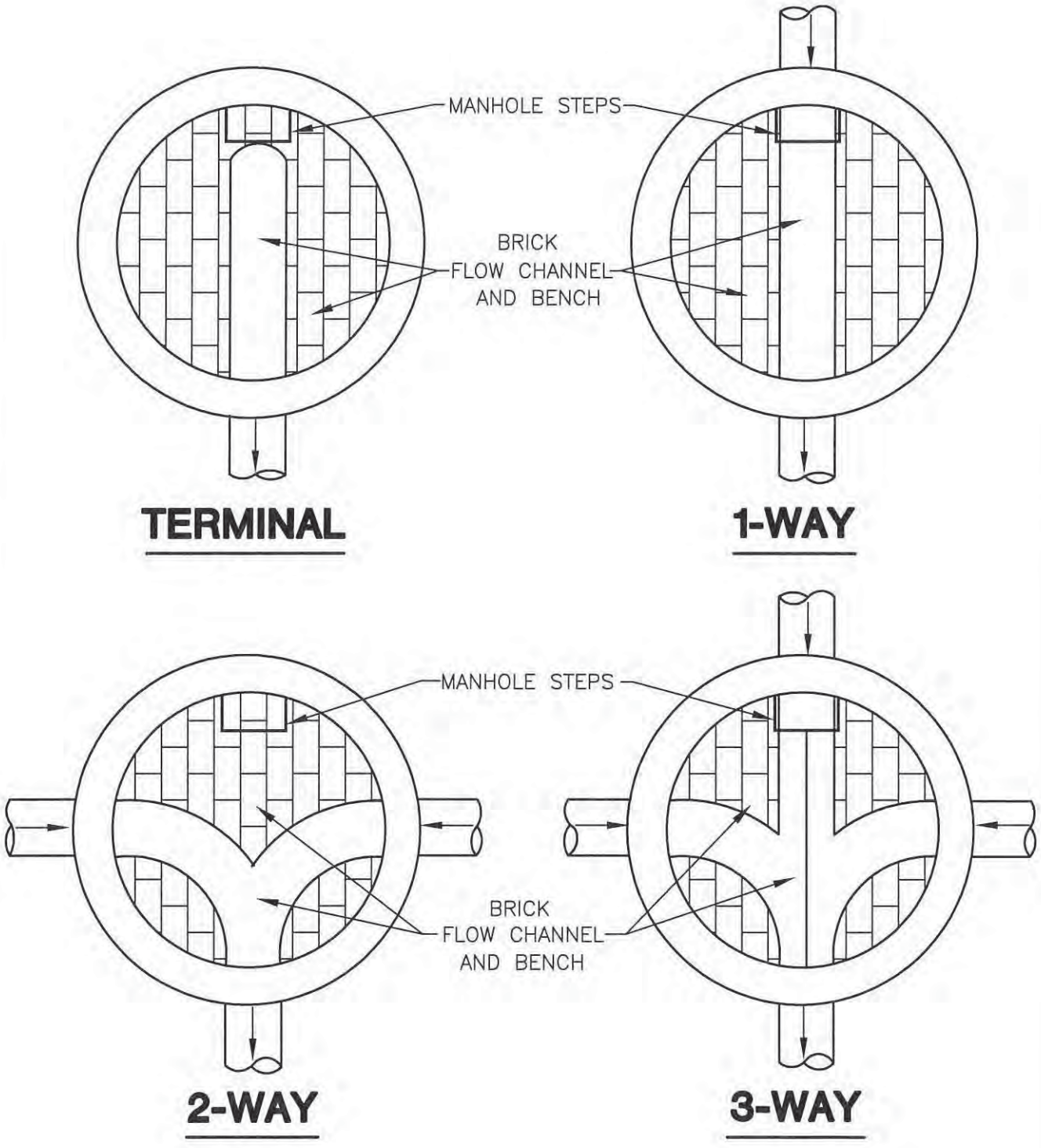
SECTION – 4

DRAWING D4–5



NOTES:

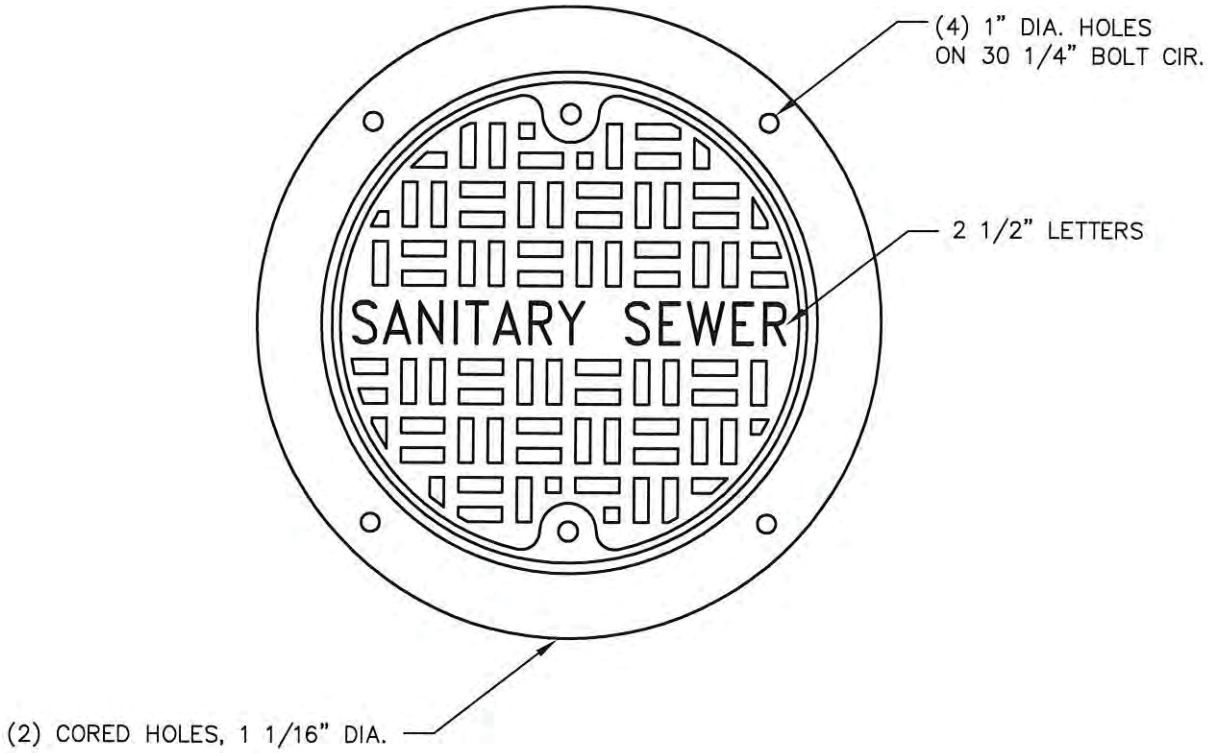
1. CONCRETE COMPRESSIVE STRENGTH SHALL BE 4,000 P.S.I.
2. MANHOLE SHALL CONFORM TO ASTM–C478, LATEST REVISION.
3. ALL PORTIONS OF MANHOLE SHALL BE CONSTRUCTED AS DETAILED FOR PRECAST CONCRETE MANHOLE.

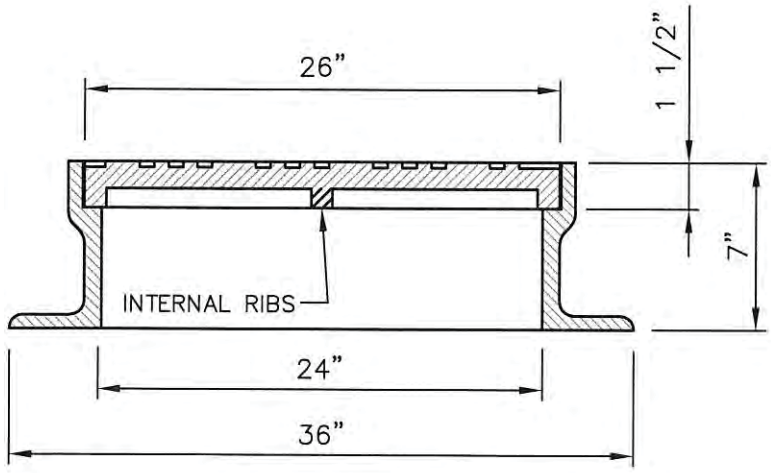


DATE: FEBRUARY 2015	**TYPICAL MANHOLE FLOW CHANNEL DETAIL**
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE
	SECTION – 4 | DRAWING D4–6

NOTES:

1. FRAME AND COVER SHALL BE NEENAH R–1642 SELF–SEALING APPLICATION, OR EJIW 1045 WATERTIGHT ASSEMBLY.
2. MATERIAL – HEAVY DUTY CAST IRON ASTM A48, CL35 WITH MACHINED BEARING SURFACES.





DATE: FEBRUARY 2015	MANHOLE FRAME AND COVER DETAIL NO SCALE	
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	SECTION – 4	DRAWING D4–7

DIVISION 2 - SECTION 5

SERVICE PIPE AND APPURTENANCES

5.01 GENERAL

A. The Contractor shall furnish and install all corporation stops, house service pipe, meter assemblies, covers, and valves and appurtenances as indicated on the drawings, and specified herein. All underground service lines, valves and fittings shall conform to ANSI/AWWA C-800, latest revision.

B. The Contractor shall provide all tools, equipment and accessories required for tapping all existing and new water mains and installing water services.

C. Pipeline tracer wire shall be installed along all proposed water services. See section 2.10, H for tracer wire requirements.

5.02 HOUSE SERVICES

A. Each new dwelling and commercial building shall be provided with a minimum 2" SDR-9 HDPE service line and a dual meter pit to allow for both domestic and irrigation 5/8 × 3/4 meters. One 2" water main tap may service 2 dual pits at a common property line. No cutting of a new street (within 6 years) will be allowed for irrigation or other meters after the final surface pavement course has been applied. Water service pipe shall not cross water main that it is tapped into.

B. Where there is no potential for irrigation, and only with prior approval from the Town, dwellings may use 1" SDR-9 HDPE service line. Service lines shall conform to AWWA C-901 and ASTM D-2737.

C. Corporation stops shall be AWWA/CC taper thread inlet by pack joint outlet for plastic tubing (CTS), Ford F1000-4 for 1" and FB1000-7 for 2". Install stainless steel liner at compression connections to plastic service line. Liners shall be Ford Insert-52 or approved equal. Curb stops shall be Ford B44-444 for 1" and B44-777 for 2". Valve boxes shall be 4 ¼" Mueller roadway screw type with arch base.

D. Cutting tools shall be of the hollow, shell bit type for removal of pipe plug. For tapping PVC mains use only Mueller Plastic Cutting Tool. On multiple taps, place corporation stops as recommended by pipe manufacturer. Furnish saddles with standard AWWA/CC corporation stop tapered inlet thread. Saddles shall be Ford banded stainless steel type FS303 for 1" tap on AWWA/C900 PVC water mains and Ford double strapped type F202 for 1" tap on for iron water mains. For 2" tapping saddles, see Section 5.03(B).

E. Meter box covers shall be Ford A32 for single meter setters and Ford A3 for dual meter setters, or approved equals. Locate meters outside traffic areas and

sidewalks wherever possible. Lids shall be inset cast iron with the words "WATER METER" and plugs for remote reading precast into them. Lids shall include lifter worm locks with a standard pentagon bolt. Frames shall be 4" in depth. Three meter box lid wrenches will be supplied to the Town. Contractor shall verify fit and compatibility of assembly components prior to ordering.

F. Prefabricated meter box assemblies shall not be installed in traffic areas. Meter box assemblies shall also not be installed in sidewalks unless approved by the Town. The box shall be 18" I.D. X 36" PVC for single meter setters and 20" I.D. X 36" PVC for dual meter setters. Meter support shall be by a lateral PVC brace. For 5/8" x ¾" meter pit assemblies angle check valve shall be Ford HA 31-323. System shall also include an angle ball valve with lock wings. Valve shall be Ford BA13-332W. Coupling for inlet connection shall be ¾" F.I.P. x 1" P/J CTS Ford C14-34 with stainless steel insert. Coupling for outlet connection shall be ¾" F.I.P. x ¾" P.J. CTS Ford C14-33 with stainless steel insert.

5.03 COMMERCIAL SERVICES

A. All commercial services shall be Schedule 80 PVC (IPS) or SDR-9 CTS polyethylene tubing. Water service pipe shall not cross water main that it is tapped into.

B. For 2"-3" taps in ductile iron pipe use double strap, iron service clamp Ford F202 or approved equal. For 2"-3" taps in PVC C900 pipe use Ford, stainless steel banded saddle FS202 or approved equal. For taps 4" and larger, see section 2.08.. Use Teflon tape and brass nipple for threaded service connections. Do not torque saddles or sleeves without water pressure in main.

C. Use 2" Ford curb stop on all 2" services. Valve boxes shall be 4-1/4 inch Mueller roadway screw type with arch base.

D. Meter pits and setters shall be as detailed on the approved plans. Pits shall be PVC. Covers shall be MC-30 by Ford, or approved equal, with lifter worm lock and precast hole for remote reading. Meter pit setters shall not be installed in traffic areas.

1.04 NON-RESIDENTIAL SERVICE BACKFLOW PREVENTERS

A. Dual check backflow preventers shall be installed on all commercial, industrial, and institutional water service lines. The devices may be standard system pressure backflow preventers, or reduced pressure principle backflow preventers. The latter are to be used where health hazard contamination is possible and shall be required at the discretion of the Town.

B. Backflow preventers shall be installed above grade; and, either inside a building or in an equipment room. The property owner shall be responsible for purchasing and installing he backflow preventer and he/she shall retain ownership once the device

is installed. The backflow preventer must be maintained and tested in accordance with the manufacturer's recommendations and the owner shall furnish the Town with maintenance and testing records upon request

C. The backflow preventer shall be lead free, equipped with valves on either side of the device, and it shall be the same nominal size as the water meter. Backflow preventers shall be equipped with four test cocks for testing and certification.

D. Backflow preventers shall be as manufactured by Apollo Valves, Watts Water Technologies, or approved equal.

5.05 GANG METER PITS (Up to Four (4) Meters)

A. All service lines connecting gang meter pits to water mains shall be 2-inch Schedule 80 PVC threaded service pipe (IPS) or 2-inch SDR 9 CTS HDPE tubing. The manifold in the pit shall be Schedule 80 PVC pipe. The service pipes downstream of the pit shall be ¾-inch diameter SDR 9 CTS HDPE tubing..

B. The gang meter shall be installed in a precast concrete meter pit by Penn-Cast Products, Inc., Model #448, or approved equal, top section only. The service piping or tubing must be installed through a wall sleeve.

C. Tapping shall be as specified for 2" taps in section 5.03B of these specifications.

D. Curb valve shall be Mueller 2-inch oriseal valve H-10291. The valve box shall be 4-1/4 inch Mueller roadway screw type with arch base.

E. The setting shall be as detailed on the plans. Use Ford yoke 502P, Ford straight yoke ball valve B91-323W, Ford straight yoke check valve HS92-323, P/J coupling Ford C84-33 and Ford expansion connection EC-23W.

F. Cover shall be Model R-1642, self-sealing application, as manufactured by Neenah Foundry; or, model 1045, watertight assembly, manufactured by East Jordan Iron Works.

G. Gang meter pit vaults shall not be permitted to be installed in traffic areas unless approved by the Town. If vaults are permitted to be installed in traffic areas, they will be required to have a solid concrete bottom with an opening provided to permit drainage.

5.06 WATER METERS

A. All water meters (residential or commercial) less than 2" shall be MasterMeter, multijet meters with DIALOG 3G, USG, and frost protection with external straight pipe thread. All meters shall register in U.S. gallons. Each meter shall be equipped with a stainless steel strainer. The contractor shall check all connecting fittings for compatibility prior to ordering.

B. All water meters 2” and larger shall be MasterMeter Octave Ultrasonic with DIALOG 3G AMR, equipped with epoxy coated ductile iron body. All meters shall register in U.S. gallons. The contractor shall check all connecting fittings for compatibility prior to ordering.

C. Contact the Town for information regarding meters larger than 2 inches that are approved for use.

5.07 LAYING SERVICE PIPE AND APPURTENANCES

A. All service pipe shall be carefully inspected for damaged areas. All damaged pipe shall be cut out and recoupled. Pipe installed during hot weather shall be allowed to contract to normal length before backfilling. Pipes and fittings shall be bedded on a solid foundation.

B. Fittings and valves shall be kept clean, handled carefully and installed according to the manufacturer’s recommendations.

C. All new service lines shall be installed in the center of vacant lots with meter outside the sidewalk and driveways, unless otherwise directed by the Town.

D. Service lines in streets shall be installed by open cutting or with an underground piercing tool such as an ACCU-punch or equal. Maximum diameter of piercing tool to be 2-1/2 inches. The Town may adjust the quantity of the various types of service installation as is its best interest.

E. Installation of services by piercing tool shall be performed with all necessary devices to assure alignment accuracy. Such devices shall include a magnetic level, launcher, and aiming frame. The Contractor shall demonstrate installation procedures to the Town for approval prior to use.

F. Service connections and meter boxes shall be installed immediately after the construction of the adjacent main. Postponement of construction of service lines will not be allowed.

G. Requirements for sterilization and pressure testing of service connections shall be the same as specified for mains in this specification.

H. The Contractor is responsible for locating and cutting existing services and reconnection with all necessary adaptors or sleeves within the unit price bid for service lines. The Contractor shall obtain and pay for the services of a licensed plumber if required by code.

I. Pipeline tracer wire shall be installed along all proposed water services. See section 2.10, H for tracer wire requirements.

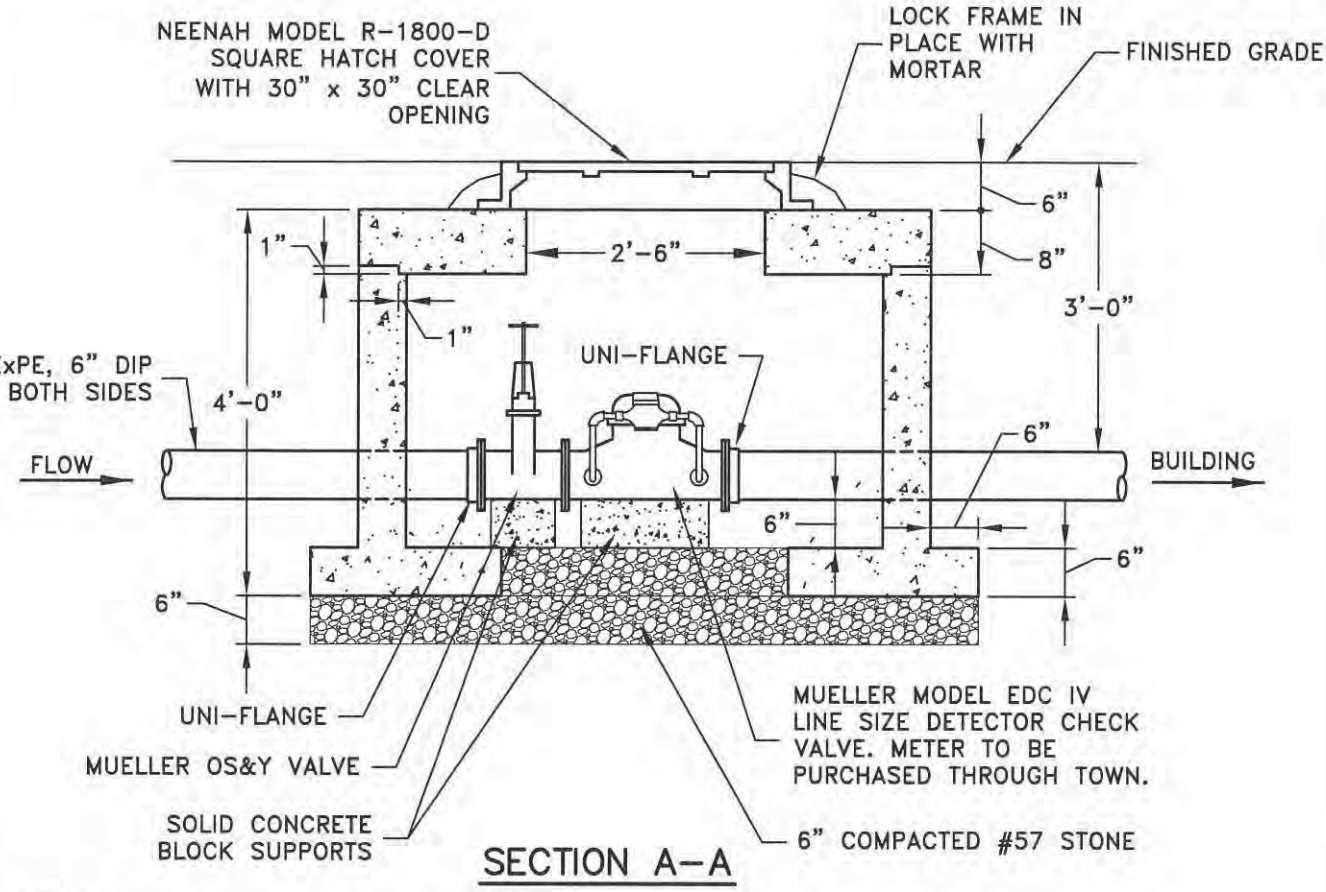
5.08 FIRE LINE DETECTOR CHECK VALVE

A. The detector check shall be Mueller Model EDC-IV.

B. All linkage parts shall be stainless steel. Body shall be formed, welded units in heavy steel. Individually test each unit before shipping and provide certification upon request. Epoxy coat per AWWA C550.

C. Bypass meter shall be per Town Standard for residential meter.

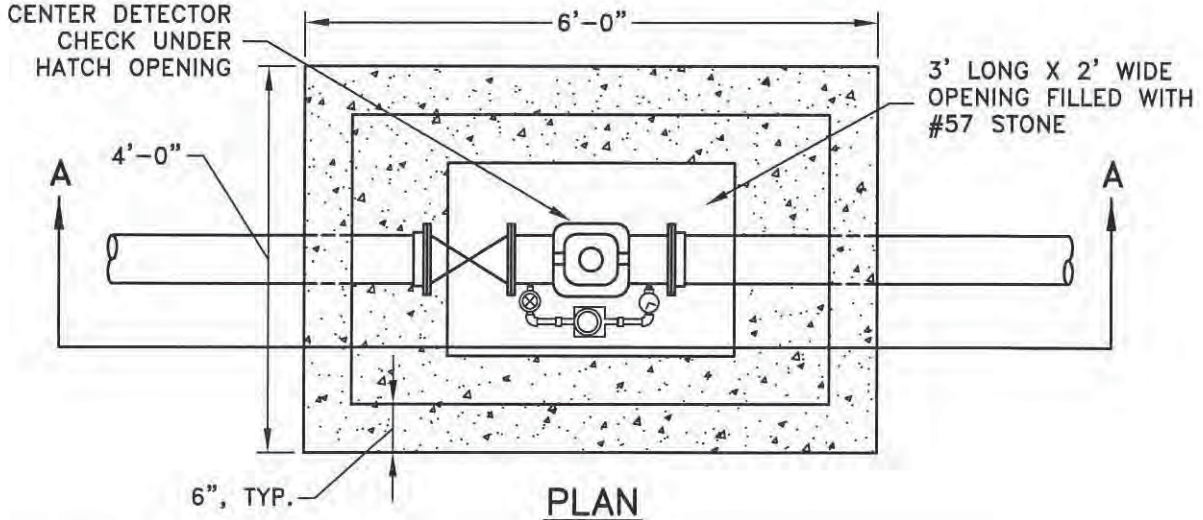
END OF SECTION



SECTION A-A

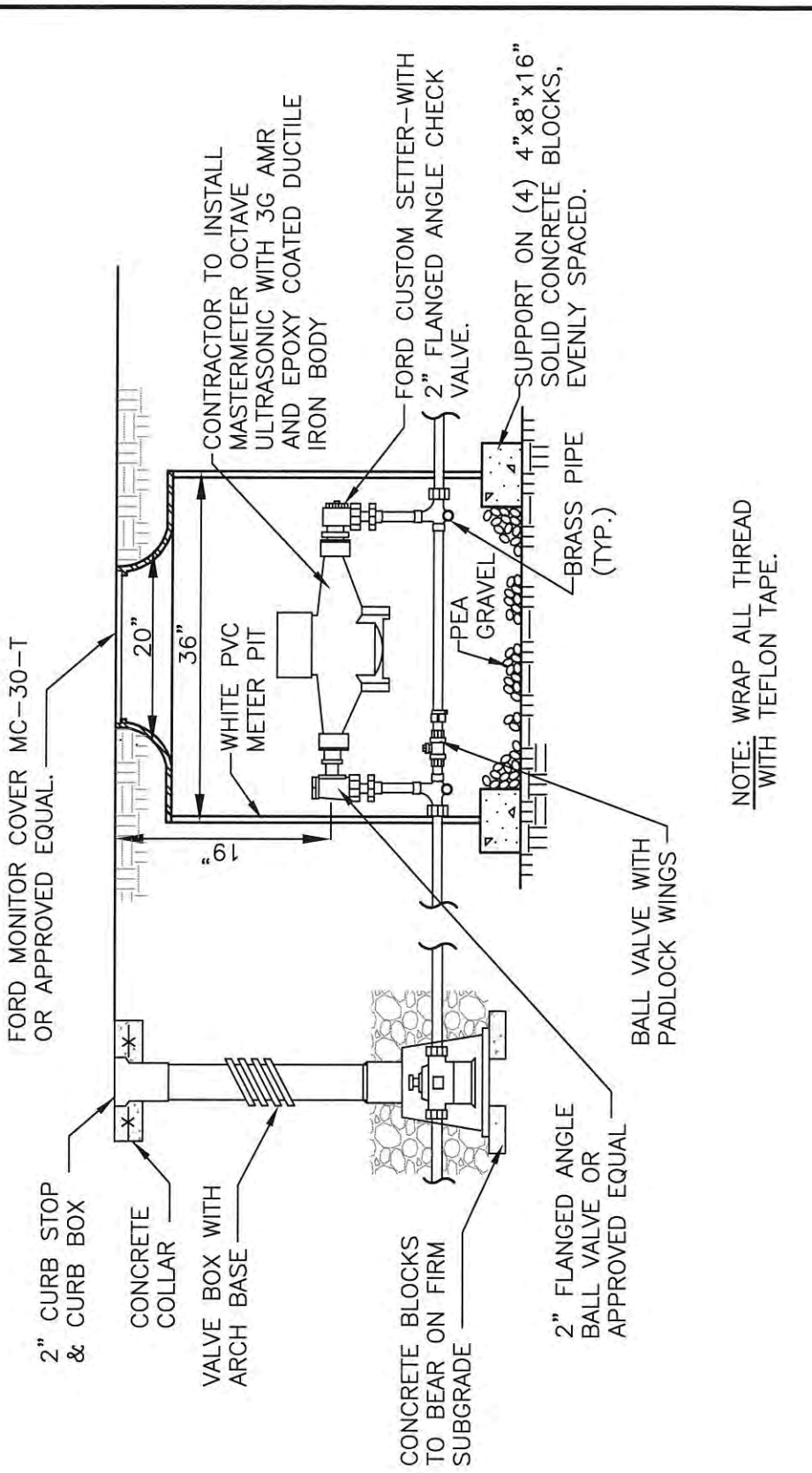
NOTES

1. DETECTOR CHECK AND VALVE MAY BE LOCATED INSIDE THE BUILDING EQUIPMENT ROOM WITHOUT A VAULT TOWN APPROVAL.
2. CONTRACTOR SHALL USE STAINLESS STEEL NUTS AND BOLTS ON ALL FITTINGS IN VAULT.
3. TOWN HAS THE RIGHT TO INSPECT THE VAULT AS IT FINDS NECESSARY. OWNER TO FURNISH MAINTENANCE RECORDS UPON REQUEST.

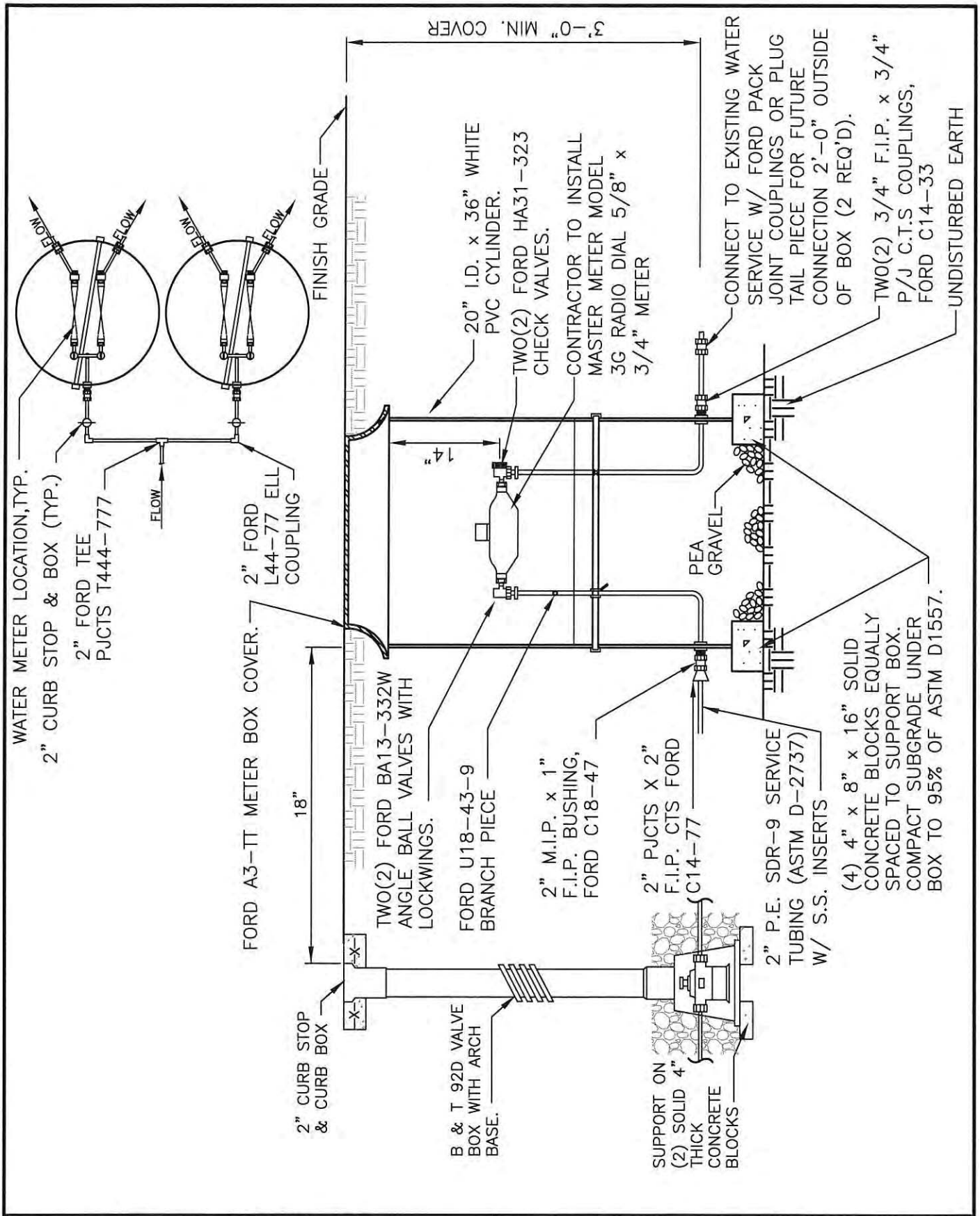


PLAN

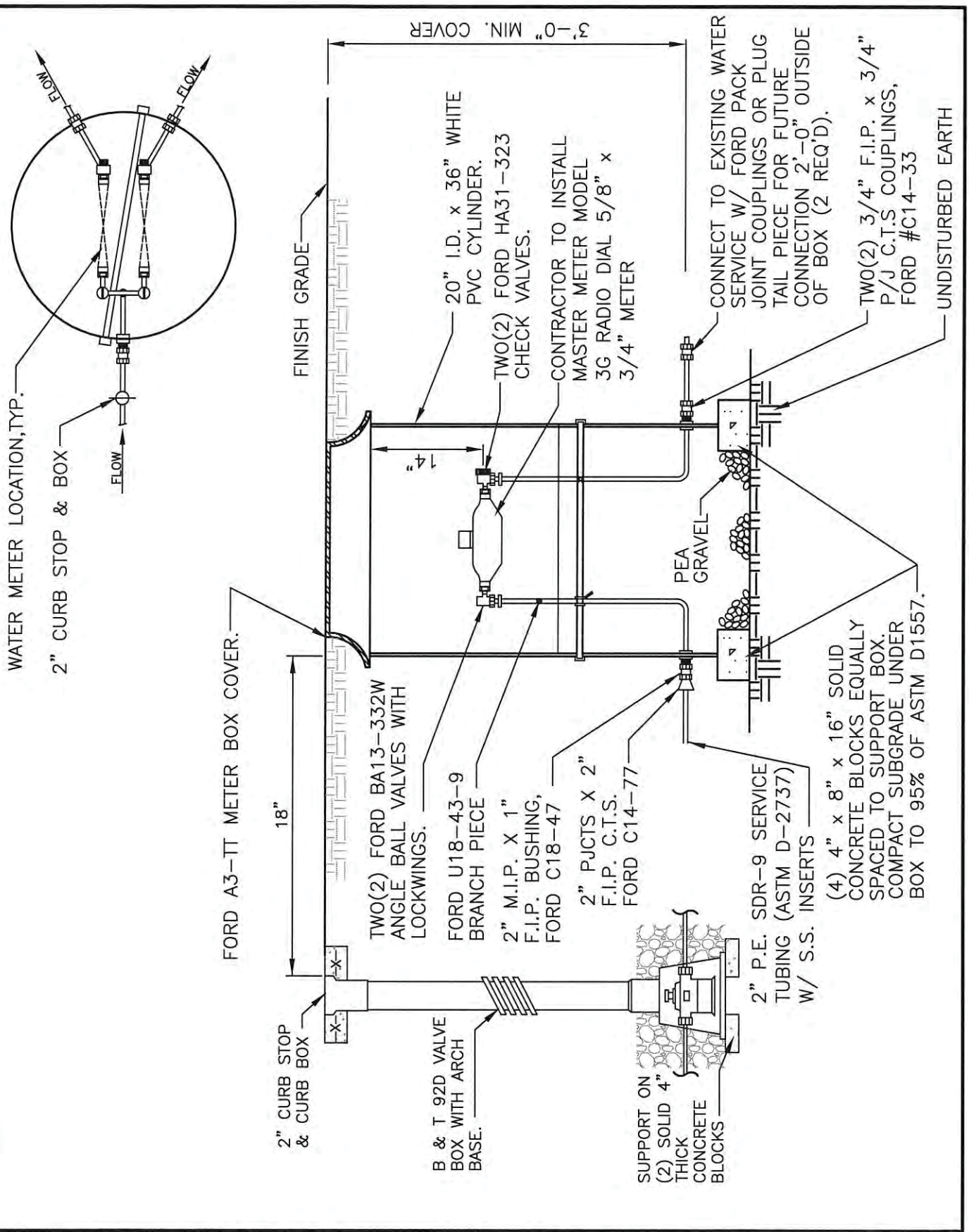
DATE: FEBRUARY 2015	FIRE LINE BACKFLOW PREVENTER DETAIL
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE
	SECTION – 5 | DRAWING D5-1



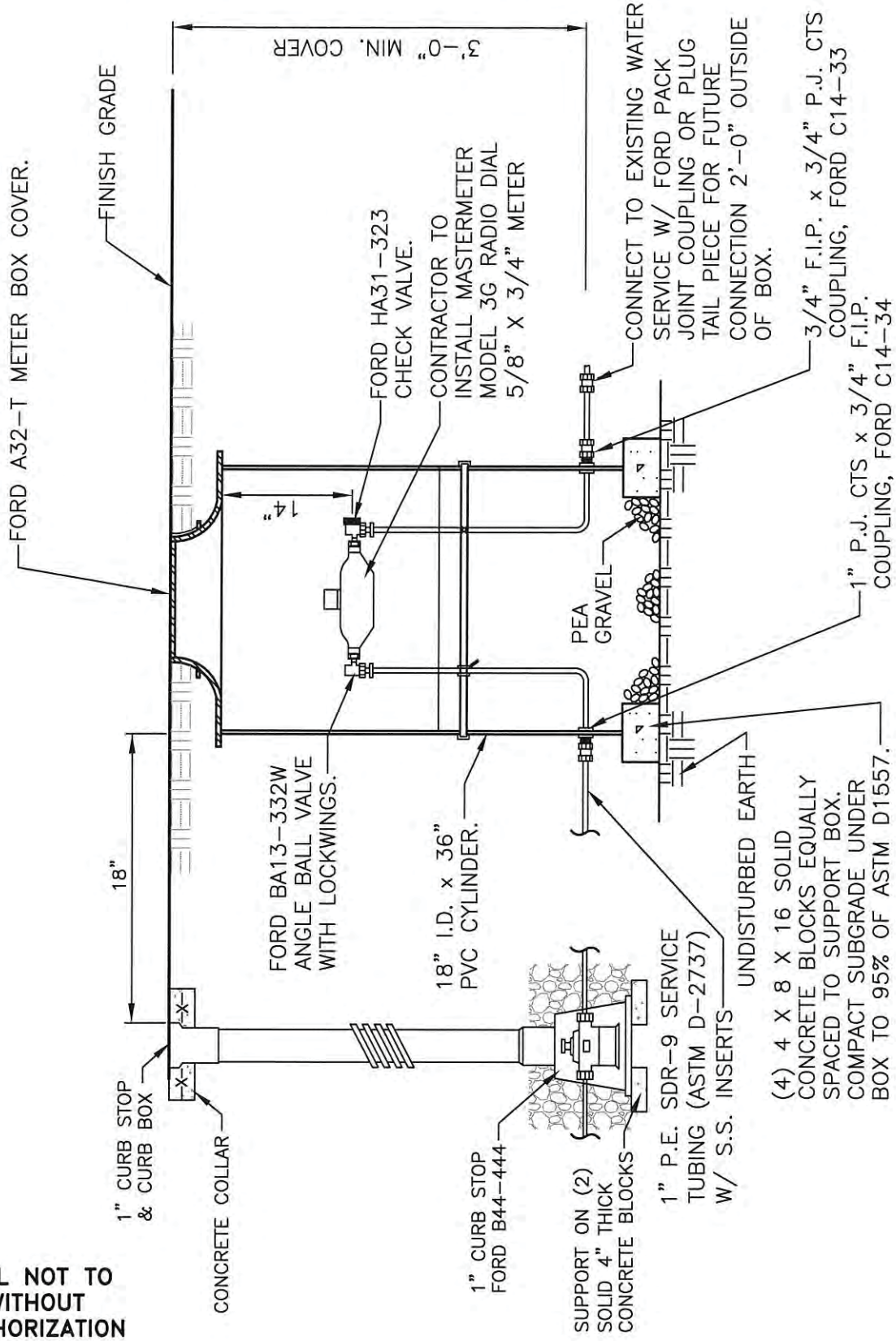
DATE: FEBRUARY 2015	2" METER SETTER DETAIL
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE
	SECTION – 5 | DRAWING D5-2



DATE: FEBRUARY 2015	**STANDARD DUAL METER PIT (DOUBLE LOT) DETAIL (PREFABRICATED)** NO SCALE
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	SECTION – 5 | DRAWING D5-3

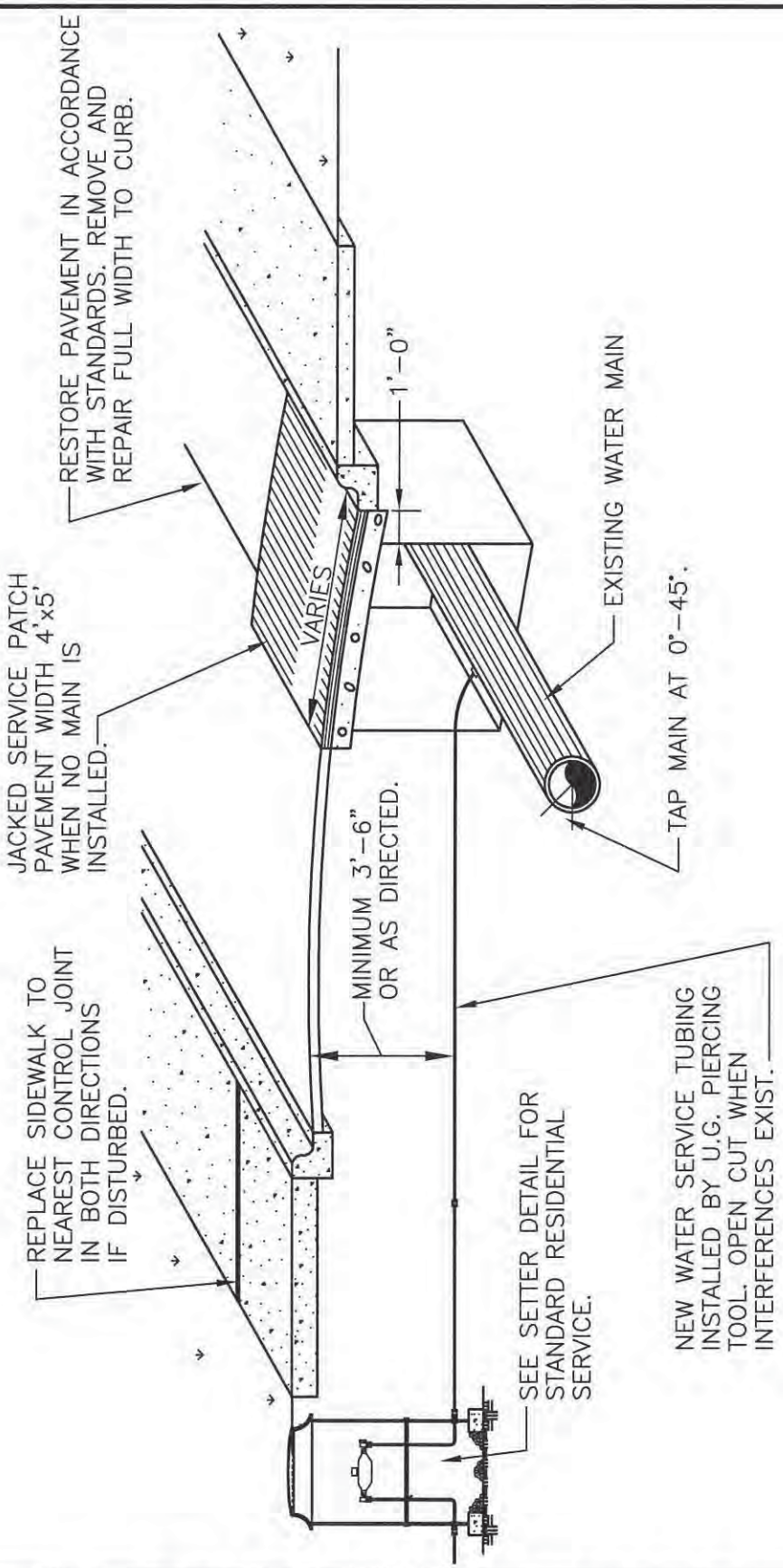


DATE: FEBRUARY 2015	**STANDARD DUAL METER PIT (SINGLE LOT) DETAIL (PREFABRICATED)** NO SCALE
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	SECTION – 5 | DRAWING D5-4

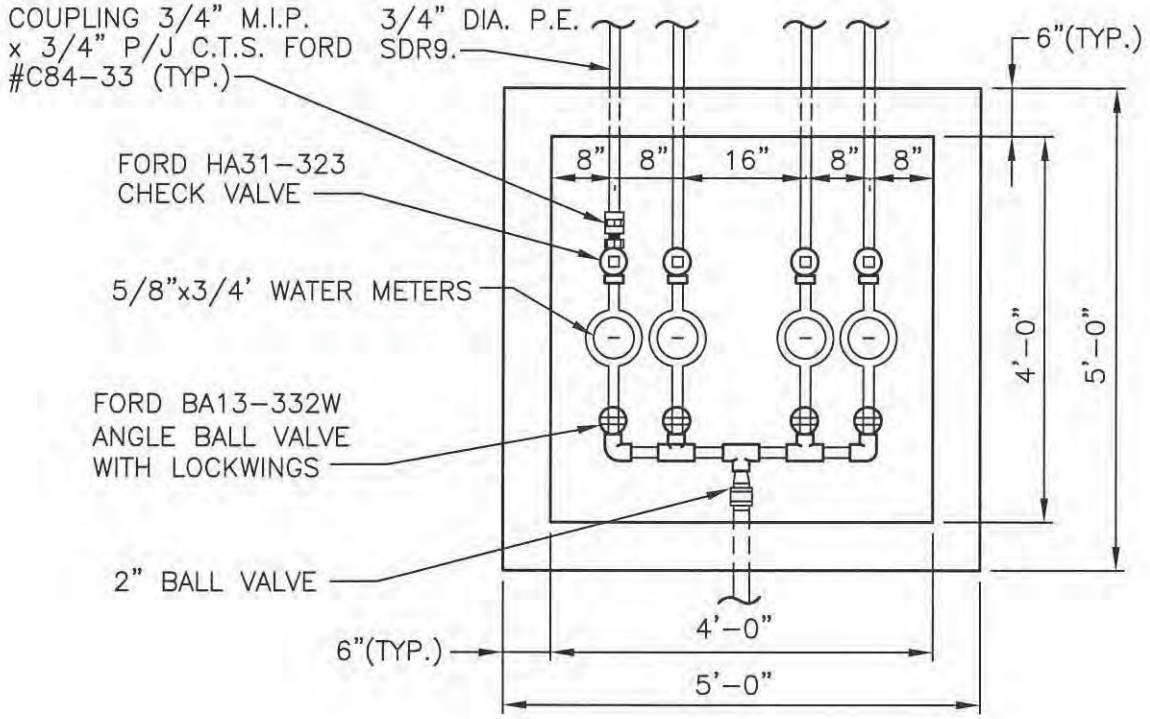


THIS DETAIL NOT TO BE USED WITHOUT PRIOR AUTHORIZATION FROM THE TOWN

DATE: FEBRUARY 2015	**SINGLE METER PIT DETAIL (PREFABRICATED)**
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE
	SECTION – 5 | DRAWING D5-5

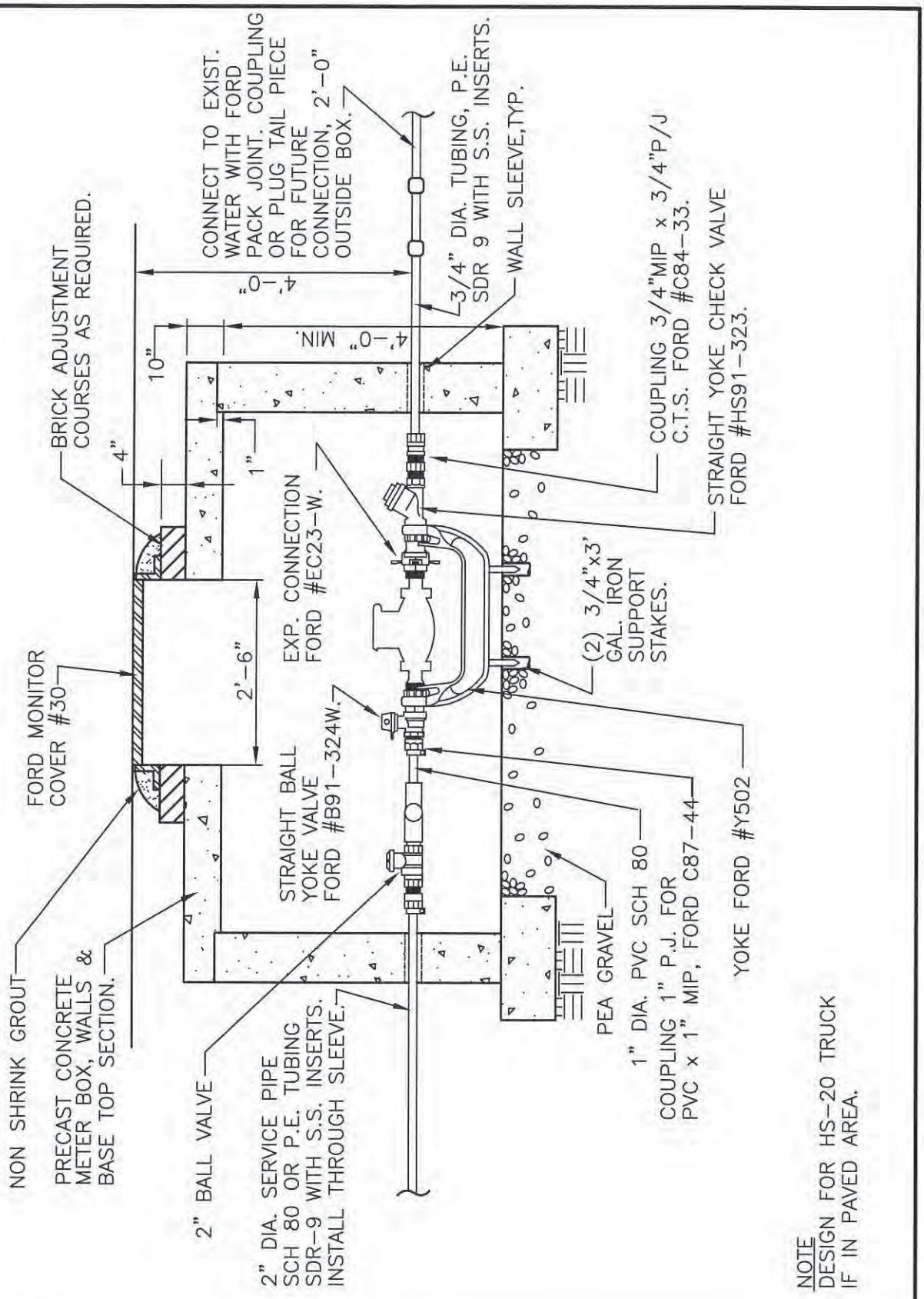


DATE: FEBRUARY 2015	**MOLED WATER SERVICE AND RESTORATION DETAIL** NO SCALE
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	SECTION – 5 | DRAWING D5–6

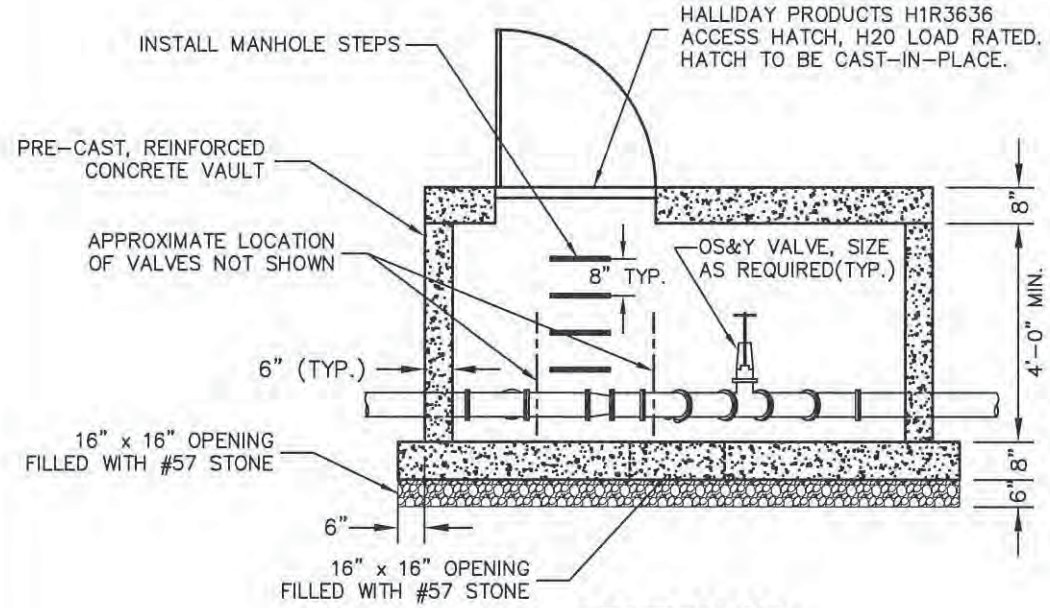


ALL F.I.P SCH 80 PVC FITTINGS SHALL BE SS REINFORCED TYPE BY SPEARS.

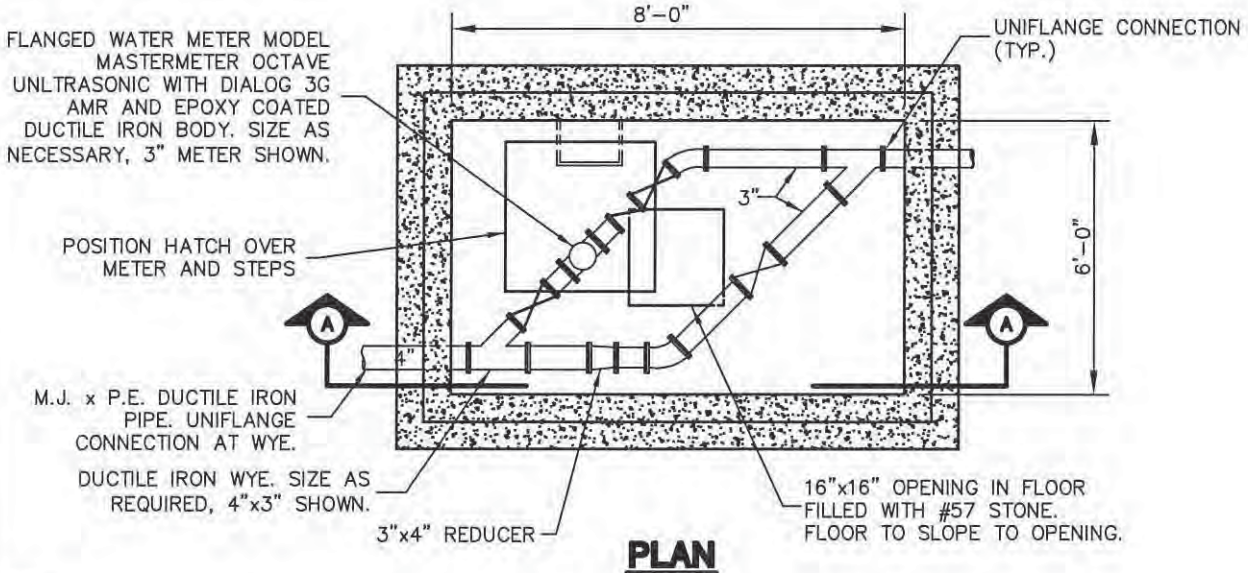
DATE: FEBRUARY 2015	**GANG METER PIT DETAIL** PLAN VIEW NO SCALE
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	SECTION – 5 | DRAWING D5-7



DATE: FEBRUARY 2015	**GANG METER PIT DETAIL** SECTION VIEW NO SCALE	
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	SECTION – 5	DRAWING D5-8



SECTION "A"



PLAN

NOTE:
1. NON-TRAFFIC AREA INSTALLATION AND HATCH TYPE SHOWN HERE AND PREFERRED. IF HATCH MUST BE LOCATED IN TRAFFIC AREA, CONTACT TOWN FOR HATCH REQUIREMENTS.
2. SUPPORT PIPE ON EITHER SIDE OF VALVES WITH ADJUSTABLE STAINLESS STEEL PIPE SUPPORTS.
3. ADJUST SIZE OF VAULT AS NECESSARY FOR LARGER METERS AND SUBMIT TO TOWN FOR REVIEW.

DATE: FEBRUARY 2015	INDUSTRIAL / COMMERCIAL METER DETAIL
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE
	SECTION – 5 | DRAWING D5-9

DIVISION 2 – SECTION 6

STORM DRAINS AND APPURTENANCES

6.01 GENERAL

A. This section covers storm sewer pipe, precast manholes, and precast catch basins.

B. The Contractor shall furnish and install all storm drains and appurtenances as specified herein and as defined on the Drawings or as directed by the Town.

C. The Contractor shall submit certifications to the Town that all pipe, fittings, and joints are as specified herein.

6.02 REINFORCED CONCRETE PIPE

A. Pipe shall be manufactured without lifting holes and shall be handled at all times by means of slings or other methods approved prior to start of construction. Defective or damaged pipe shall not be utilized.

B. Pipe manufactured shall meet the applicable strength requirements contained in ASTM Designation: C~76, Reinforced Concrete Culvert, Storm Drain and Sewer Pipe, minimum circumferential reinforcement shall be as prescribed for Class M. Class N pipe shall be provided where depth of cover is less than 2 feet.

6.03 HIGH DENSITY POLYETHYLENE PIPE (HDPE)

A. HDPE pipe shall be smooth interior, AASHTO designation M252 and M294, with a maximum diameter of 48 inches.

B. Pipe joints and fittings shall conform to AASHTO M252 and M294.

C. HDPE pipe shall be manufactured by Advanced Drainage Systems, Inc., (ADS – N12); Hancor, Inc., (Hi-Q), or approved equal and shall be installed per manufacturer’s guidelines.

D. All pipe joints shall be watertight.

6.04 PIPE AND FITTINGS

A. Pipe laying shall not begin until all stakeout and cut sheets have been approved by the Town.

B. The Contractor shall utilize proper and suitable tools and equipment for the safe handling and laying of the pipe and fittings in accordance with the manufacturer's standards. Pipe and fittings shall be carefully handled and lowered into the trench.

C. Should the pipe require cutting to fit in the line or to bring it to the required

location, the work shall be done without extra compensation, in a satisfactory manner so as to leave a smooth end perpendicular, to the axis of the pipe.

D. Before making joints, each pipe shall be well bedded on a solid foundation and no pipe shall be brought into position until the preceding length has been thoroughly embedded and secured in place. No pipe shall be laid in wet trench conditions that preclude proper bedding or on a frozen trench bottom, or when, in the opinion of the Town, the trench or weather conditions are unsuitable for proper installation.

E. In laying pipe, special care shall be taken to insure that each length shall abut against the next in such a manner that there shall be no shoulder or unevenness of any kind along the inside of the pipeline.

F. No wedging or blocking will be permitted in laying any pipe unless by written order from the Town.

G. Pipe and appurtenances shall be thoroughly cleaned before they are laid and shall be kept clean until the acceptance of the completed work. The open end shall be kept closed with a plug until the next length is laid. At the close of work each day, the end of the pipeline shall be tightly closed with an expansion stopper so that no dirt or other foreign substances may enter the line, and this stopper shall be kept in place until pipe laying is again resumed.

H. Manholes shall be built as pipe laying progresses.

6.05 PRECAST CONCRETE MANHOLES AND INLETS

A. The Contractor shall construct structures of precast reinforced concrete risers and base sections. All catch basins and junction boxes shall be constructed as per most recent DelDOT Standard Construction Details. Storm sewer manholes in outside of State right-of-way shall be constructed as per Town of Georgetown manhole details. Storm sewer manholes in DelDOT right-of-way shall be constructed as per DelDOT Standard Construction Details.

B. Manholes and inlets shall be built at such points on the pipelines and of such form and dimensions as are shown on the drawings or as may be directed. Manholes and inlets shall be built as pipe laying progresses and the Town may stop work entirely on laying pipe if manhole and inlet construction is delayed to such an extent as to be hazardous to construction or the public.

C. Precast reinforced concrete risers, eccentric cones and bases shall be as detailed on the plans and in conformance with ASTM Designation C-478. Joints between riser sections shall be fitted with an "0" ring rubber gasket, meeting the requirements of ASTM Designation C-443. Installation of risers shall be in accordance with manufacturer's recommendations.

D. Precast reinforced concrete base riser sections shall be as manufactured by

Atlantic Concrete Company, Virginia Precast Corporation, or equal.

E. Interior and exterior joint spaces of all manhole and inlet risers shall be filled prior to application of the exterior waterproofing. The interior and exterior joint shall be mortared with ThoRoc Plug, as manufactured by ChemRex

F. Lifting holes in the walls of precast reinforced concrete risers will be allowed, but shall be plugged with rubber stoppers and grouted flush with face of manhole and inlet wall after installation of manhole and inlet riser sections. Not more than two holes shall be cast in the walls of each riser section for the purpose of handling.

G. The exterior surface of all precast manholes and inlets shall receive a minimum two coat application of sixty-eight percent solid coal tar type protective coating. The total average dry film thickness shall measure 24 mils with no single measurement to be less than 20 mils. Surfaces shall be prepared in accordance with the manufacturer's instructions and coating applied in the field in an acceptable manner.

H. Inlet flow channels and benches shall be constructed of brick or under the direction of the Town with care taken to secure smooth and even surfaces. Channel sections shall be built up to true line and radius, and curved sections shall provide a uniform transition in the flow direction. Materials and construction of flow channels shall be in accordance with appropriate sections for materials so used, as hereinbefore specified.

I. Concrete utilized in poured in place structures shall have compressive strength of 3000 psi while precast concrete shall have a compressive strength of 4000 psi in 28 days.

J. Manhole frames and covers shall be installed on grade to match the slope of the paved surface. Use brick adjustment courses or manufactured adjustment rings grouted in place between the cone and frame for adjustment to match the slope of the paved surface.

6.06 CASTINGS

A. Frames and covers or grates for structures shall be set by the Contractor as the work progresses.

B. Material, sizes, and types of frames and covers shall be as per current DelDOT Standard Construction Details and of the sizes and types specified on the plans.

C. All catch basin grates shall be DelDOT Type 3.

6.07 BRICK AND MORTAR FOR INLET FLOW CHANNELS

A. All brick shall conform to the "Standard Specifications for Sewer Brick", ASTM

C-32, Grade 88.

B. Mortar shall be in accordance with the "Standard Specifications for Portland Cement", ASTM C-150 for Type II.

6.08 MANHOLE AND INLET STEPS

A. Manhole and inlet steps shall be made of 3/8 inch diameter (No.3) steel bars, ASTM Designation A-615, Grade 60, encased in polypropylene plastic. Manhole steps shall have notched tread ridge with retainer lug on each side.

B. Steps in structures shall be cast in place during manufacture of precast reinforced concrete risers and eccentric top sections. Embedment length shall be suitable for minimum five inch thick, precast reinforced concrete riser walls.

C. Steps in structures shall be OSHA approved and as manufactured by M.A. Industries, Inc., Peachtree City, Georgia, ICM, Inc., Jacksonville, Arkansas, or approved equal.

D. Steps on structures shall be spaced 12-inches apart. The maximum spacing from top of manhole to the first step shall not exceed 16-inches.

6.09 DETECTION TAPE

A. Pipeline detectable tape shall be installed continuously along all storm drain. The tape shall be installed directly above drain and twelve inches from the ground surface.

B. The tape shall be Lineguard Type III Detectable Tape as manufactured by Lineguard, Inc., of Wheaton, Illinois, or equal. The tape shall be a minimum of two inches wide, white in color, imprinted with the words, "CAUTION STORM DRAIN BELOW", and be capable of being detected with inductive methods.

END OF SECTION

DIVISION 2 – SECTION 7

SIDEWALKS, CURBS, GUTTERS, AND DRIVEWAYS

7.01 GENERAL

A. Contractor shall provide all labor, materials and appurtenances for construction of concrete sidewalk and curb, and curb & gutter where indicated on the drawings and as specified.

B. The Contractor shall furnish and install PVC pipe sleeves in sidewalk for street signs, where directed by the Town.

7.02 METHODS AND MATERIALS

A. All materials and construction methods shall be in accordance with the Delaware Department of Highways and Transportation Standard Specifications, current edition, and Supplements thereto.

B. Minimum ultimate compressive strength of concrete shall be 3,000 pounds per square inch at the end of 28 days. Submit mix design for approval. All concrete shall be air entrained.

C. The Contractor shall retain the services of an independent testing agency to perform concrete testing. He shall schedule one (1) set of test cylinders for every 20 cubic yards of concrete placed as curb and gutter or sidewalk. The testing agency shall be responsible for sample preparation, transportation, testing and submission of testing reports. Testing shall include slump test, air content, ambient temp, concrete temp and 7-d.ay and 28-day compression tests. Test results shall be submitted, in duplicate, direct by the testing agency, to the Town.

D. Curbs shall be depressed at all existing and proposed driveway locations in accordance with DelDOT Standard Details, including proper preparation of subgrade and proper placing and spacing of joints and joint materials.

E. The Contractor shall permanently repair or replace all curbs, sidewalks, and driveways that have been broken, or otherwise damaged during the course of executing any of the work under the contract or damaged by settlement of any backfilled excavation at any time prior to termination of the contract and guarantee period.

F. Cost of reconstruction of curbs, sidewalks, and concrete driveways during construction shall be included within the appropriate unit *and/or* lump sum prices bid for furnishing and laying pipe and appurtenances.

G. New curb and sidewalk, or curb and sidewalk being replaced because it has been damaged during construction, shall be installed in accordance with DelDOT Standard Construction Details. Install ADA compliant wheelchair curb ramps at

all street corners constructed.

7.03 SUBGRADE

Subgrade for concrete sidewalk, curb, and curb & gutter shall be clean, well graded soil compacted to at least 95 percent of maximum density at optimum moisture content as determined by the Modified Proctor Test per ASTM D1557-12.

7.04 SUBBASE

Subbase for standard 4-inch thick concrete sidewalk shall be 4 inches of compacted GABC (crusher run). Subbase for depressed concrete sidewalk, driveway aprons, curb, and curb & gutter shall be 6 inches of compacted GABC (crusher run). The GABC beneath curb and curb & gutter shall extend 6 inches beyond the back of curb, per DelDOT requirements.

7.05 CURB

A. Entrance curb or any other curb within State right-of-way shall be of a type as directed by DelDOT.

B. Curb along new streets within right-of-way to be dedicated to the Town shall be integral PCC curb and gutter Type 2 or Type 3, as directed by the Town. Curb along existing streets within Town right-of-way shall match existing unless directed otherwise by the Town.

C. Curb within commercial, industrial, or institutional development and not within Town right-of-way may be integral PCC curb and gutter Type 2 or Type 3-6; or, it may be PCC curb Type 1-6.

D. Current DelDOT curb types not listed above may be used along streets within right-of-way to be dedicated to the Town with prior approval from the Town.

7.06 RECONSTRUCTION OF PRIVATE DRIVEWAYS

Saw cut existing driveways if sections are acceptable for re-use. Upon completion of utility construction, the Contractor shall reconstruct private driveways in kind as follows:

A. Concrete Driveways

1. Concrete driveways shall be replaced and reconstructed upon a properly prepared, graded and compacted subgrade and in compliance with DelDOT Standard Specifications and Details.

2. Residential concrete driveways shall be constructed to a minimum thickness of 6 inches and shall be reinforced with 6-inch by 6-inch wire mesh of 10-10 gauge. Commercial driveways shall be constructed of 8

inches concrete reinforced with 6-inch by 6-inch wire mesh of W1.4 x W1.4.

3. Restoration shall provide for a smooth transition from back of sidewalk or driveway construction to undisturbed areas and shall be free of all localized depressions or abrupt changes in grade that may trap or otherwise misdirect surface drainage or represent possible damage to vehicular travel.

B. Bituminous Concrete Driveways

1. Bituminous driveways and parking areas disturbed through the Contractors construction operations shall be restored by a minimum of 2 inches of hot-mix bituminous concrete pavement Type C, placed in a single lift onto a base course consisting of 4-inches of properly prepared and compacted graded aggregate base course. Match existing hot-mix thickness where condition exceeds minimum restoration.

2. The hot-mix bituminous concrete surface shall conform to DelDOT Standard Specifications for Type C asphalt.

3. The subgrade shall be properly prepared, graded, and compacted in accordance with Section 2 of these specifications.

7.07 SIDEWALK CONSTRUCTION

A. General

1. Concrete sidewalks damaged or removed during construction shall be replaced as required, or as directed, in accordance with DelDOT Standard Specifications. ADA compliant handicapped ramps shall be installed in all areas defined herein.

2. Sidewalks in areas not subject to vehicular loading shall have a minimum concrete thickness of 4 inches with fiber reinforcement and shall be placed upon a properly prepared, graded, and compacted 4-inch thick GABC subbase. The subbase shall be placed upon a properly graded and compacted subgrade.

3. Depressed sidewalk and sidewalks in residential vehicular loading areas shall have a minimum concrete thickness of 6 inches (8 inches in commercial vehicular loading areas) reinforced with 6 inch by 6 inch wire mesh of 10-10 gauge. Sidewalk in these areas shall be placed upon a properly prepared, graded, and compacted 6-inch thick GABC subbase. Subgrade shall be prepared as stated for non-load areas.

4. Replacement of partial sections of concrete sidewalk, where so directed,

shall be extended to the nearest existing joint in each direction.

5. Where sidewalk is replaced, it shall be replaced to a width equal to that existing prior to start of construction and such width shall be maintained throughout the entire length of the block. In no instance shall the constructed width be less than 4 feet.

6. A broom finish shall be applied perpendicular to the direction of traffic.

B. Sidewalks in New Subdivisions

1. Sidewalks shall be a minimum of 5 feet wide. A 1/2-inch expansion joint of an approved material shall be installed every 20 feet, at a minimum.

2. The sidewalk shall be marked into rectangular slabs 5 feet in length by scoring 1/4 inch deep with an approved edging tool which will create ¼ inch (+/-) radii on the surface edges of the score. The surface edge of each slab shall be rounded to a 1/4-inch radius.

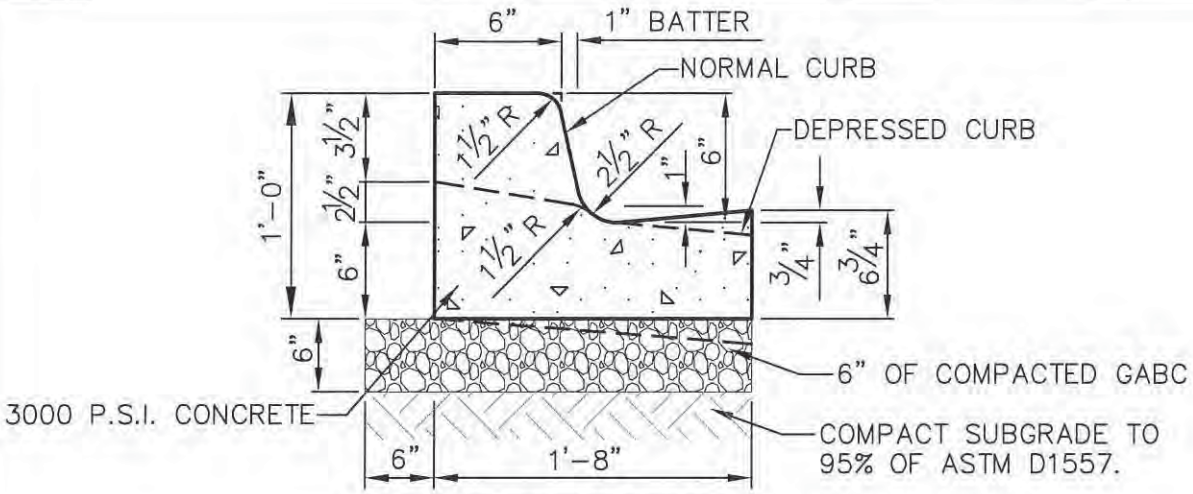
3. The sidewalk shall be installed as indicated on the plans or as directed by the Town. If sidewalk is to be installed against the back of curb, the curb shall be installed prior to installing the sidewalk and it shall be allowed to cure for a minimum of 24 hours. Monolithic curb/sidewalk installation shall not be permitted in public right-of-way

4. Areas in between the curb and sidewalk and/or behind the sidewalk shall be properly graded to provide drainage away from lot.

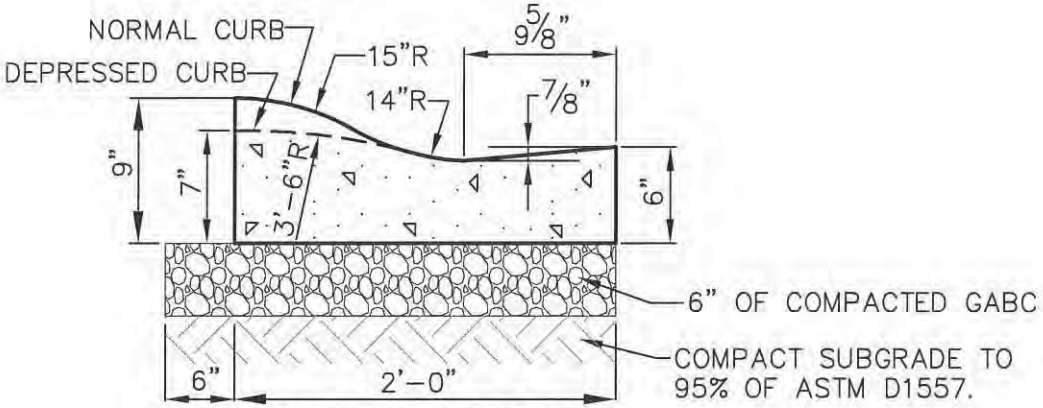
5. Grass shall be established in areas adjacent to the sidewalk in a minimum of 4 inches of topsoil.

6. Construction of sidewalks in new subdivisions must also adhere to Section 7.05A of these specifications.

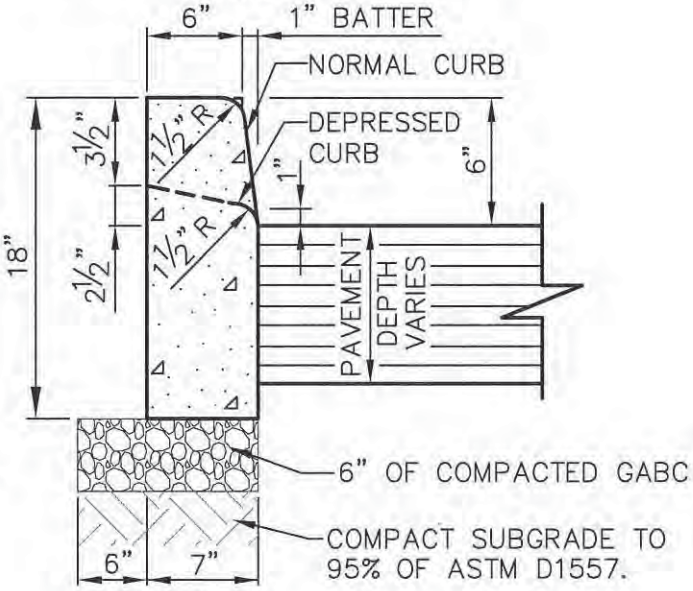
END OF SECTION



INTEGRAL P.C.C. CURB AND GUTTER
TYPE 3



INTEGRAL P.C.C. CURB AND GUTTER
TYPE 2

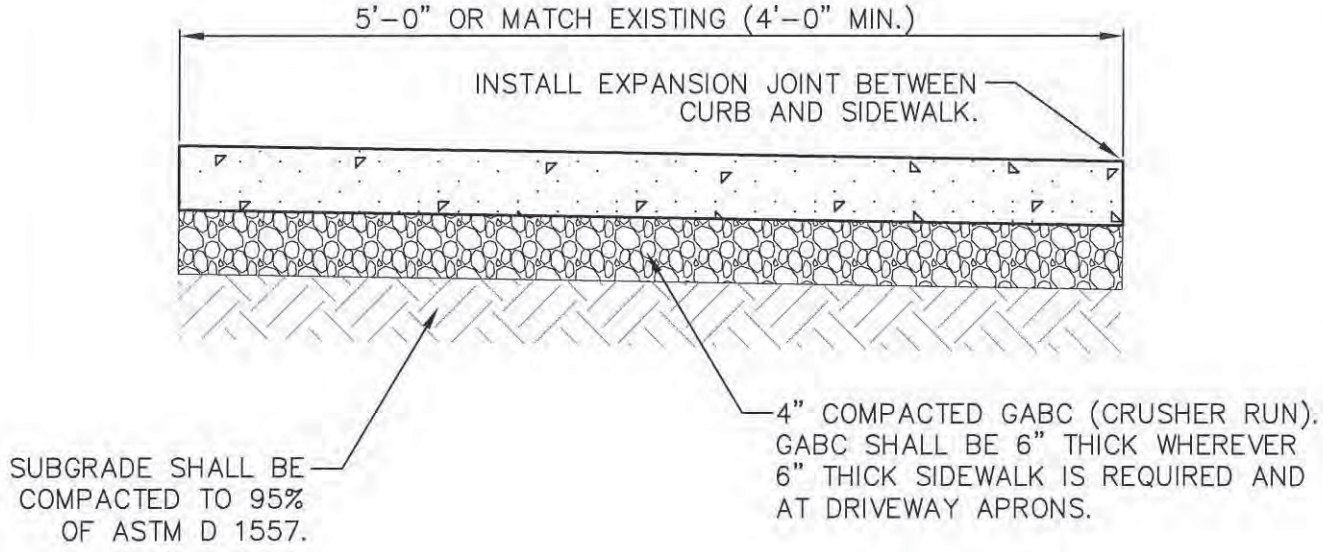


NOTE:

WHEN ADJACENT TO CONCRETE PAVEMENT, INSTALL APPROVED EXPANSION JOINT.

P.C.C. CURB
TYPE 1

DATE: FEBRUARY 2015	**CONCRETE CURB DETAILS**
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE
	SECTION – 7 | DRAWING D7-1



NOTES:

1. CONCRETE SHALL BE 3000 PSI WITH FIBER REINFORCEMENT (1 LB/CY).
2. STANDARD SIDEWALK SHALL BE 4" THICK. SIDEWALK ACROSS DRIVEWAYS; AT HANDICAP RAMPS, INCLUDING THE APPROACH, TO THE HANDICAP RAMP; AT AT DRIVEWAY APRONS SHALL BE 6" THICK.
3. ALL 6" THICK SIDEWALK AND DRIVEWAY APRONS SHALL INCLUDE 6" x 6", 10 GAUGE WIRE MESH REINFORCEMENT.
4. SEE SECTION 7 OF THE SPECIFICATIONS FOR ADDITIONAL SIDEWALK REQUIREMENTS.

DATE: FEBRUARY 2015	**CONCRETE SIDEWALK DETAIL**
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	**NO SCALE**
	SECTION – 7 | **DRAWING D7-2**

DIVISION 2 – SECTION 8

SURFACE RESTORATION

8.01 GENERAL

A. The Contractor shall restore all surfaces damaged by his or her operations to the widths and extent detailed or noted on the plans or specified herein.

B. Surface restoration in streets and roads maintained by DelDOT shall be accomplished in accordance with DelDOT Standard Specifications current at the time of plan approval, or construction, if no plan submission was required.

C. Existing pavement shall be saw cut to form a straight, clean edge for repaving. Saw cut pavement as shown on the drawings and as directed to obtain a clean pavement edge.

D. No staggered or irregular longitudinal trench repair widths shall be permitted. Repairs shall be of a uniform width and in a straight line.

E. Minimum pavement restoration width is five (5) feet including restoration along the edge of roads. Actual width shall be as detailed or as noted on the plans. Payment, where applicable, is limited to these widths. Should the Contractor damage or disturb larger areas, he or she shall replace the additional area at his or her cost.

F. Surface course and concrete sections shall be cut into manageable sections and removed and shall not be broken out.

G. Undetermined areas shall be grout filled or cut back.

H. A temporary 1 ½ inch (compacted) layer of cold patch shall be placed on all utility trenches at the end of every workday.

I. Metal plating may be used at the end point of the utility laying operation, with prior permission from the Town or DelDOT, whichever is applicable. Plates must be used to protect concrete patches during the curing process.

J. All adjustments to existing utilities must be made prior to overlay operations and must be repeated if there is any damage due to rolling and compacting operations.

K. Manhole or catch basins adjustments shall be made with brick courses or mortar layers. Screw-type multiple piece valve boxes shall be adjusted by rotating the upper section where adjustment is available, installing metal valve box adjustment rings, or replacing the valve box.

L. All trenches must have a one (1) foot wide by 1 ½ inch (minimum or match repair surface course depth) surface mill for a paving tie-in on each side of the trench which adjoins existing paving.

M. Skewed isolated patches will not be permitted; they shall be saw cut to form a square.

a. Permissible paving temperatures and asphalt lift thicknesses shall be as set forth in the current DelDOT Standard Specifications for the specific asphalt type being installed.

N. Catch basins, inlets, curbs, and all other appurtenances shall be adequately covered and protected prior to application of bituminous materials. No earth or bituminous materials shall be allowed to enter any storm drainage system and suitable containment provisions shall be employed to prevent surface runoff of bituminous materials.

O. The final surface except on overlays shall match approved grades or grades existing prior to construction and shall be such that a smooth transition free of abrupt changes in grade is made with adjacent pavements and/or sidewalks. No depressions or other misalignment shall obstruct, trap, or otherwise misdirect the flow of surface water drainage.

1.02 MAINTENANCE OF REFILLED EXCAVATIONS

A. The Contractor shall maintain, at his or her own expense, all refilled excavations and surfacing in proper condition as specified herein. All depressions appearing in the refilled excavation, stabilized base, or temporary paving shall be properly refilled. If the Contractor fails to make repairs within 48 hours after receipt of written notice from the Town, the Town may refill said depressions and the cost thereof shall be billed to the Contractor. In case of emergency, the Town may refill any depression or protect with barricades without giving previous notice to the Contractor, and the cost of doing so shall be billed to the Contractor.

B. The Contractor shall be responsible for any injury or damage that may result from lack of maintenance of any refilled excavation at any time.

8.03 PAVEMENT RESTORATION

A. Bituminous Concrete Pavement Surface Course

Hot mix, hot laid bituminous concrete surface course shall consist of placing bituminous concrete courses of the specified or appropriate type on a prepared base, to the minimum compacted thickness shown on the drawings. Hot mix, hot laid bituminous concrete shall meet the provisions of DelDOT's Standard Specifications.

B. Base Courses

1. Graded Aggregate Base Course

Graded aggregate base course (GABC) shall be spread on prepared and compacted refilled excavations to the compacted depth shown on the drawing details. Materials and methods of construction shall meet the provisions of DelDOT's Standard Specifications.

2. Bituminous Concrete Base Course (Deeplift)

Deeplift bituminous concrete base course shall be spread on prepared and compacted GABC to the compacted depth shown on the approved details, or as directed. Materials and methods of construction shall meet the provisions of DelDOT's Standard Specifications.

3. Type B Bituminous Concrete Pavement

Type B bituminous concrete pavement shall be spread on prepared and compacted GABC or deeplift bituminous concrete pavement to the compacted depth shown on the details. Materials and methods of construction shall meet the provisions of DelDOT's Standard Specifications.

8.04 CONCRETE PAVEMENT

A. Concrete used in restoration of streets and roads shall be placed to the minimum thickness shown on the drawings. Concrete may be a base course with a bituminous concrete pavement overlay or a finished surface course as shown on the drawings.

B. Concrete pavement shall meet the provisions of DelDOT's Standard Specifications.

C. Concrete sidewalk, curb, gutter, and driveway restoration shall meet the provisions of DelDOT's Standard Specifications. During paving projects, all existing sidewalk corners or handicap ramps adjacent to the street shall be removed and replaced if they are not currently ADA compliant.

8.05 TOPSOIL AND SEEDING

A. Topsoil shall be placed in areas where grass has been disturbed by the Contractor's operations. Depth of topsoil shall be 4 inches minimum. When installing top soil, all materials and methods of construction shall meet the provisions of DelDOT's Standard Specifications.

B. Seeding shall consist of furnishing and placing seed and soil supplements on topsoiled areas and at any other locations as directed by the Town. When seeding, all materials and methods of construction shall meet the provisions of DelDOT's Standard Specifications.

C. Fertilizer shall be a recognized commercial fertilizer containing a minimum 5 percent nitrogen, 10 percent available phosphoric acid, and 10 percent soluble potash by weight. It shall be applied in sufficient amounts to provide 60 pounds of nitrogen per acre.

D. Fertilizing and seeding application dates shall be in conformance with DelDOT's Standard. Seed shall be applied at a rate of four (4) to five (5) pounds per 1,000 square feet.

E. Seeded areas shall be mulched if directed to do so by the Town, DelDOT, or if required per the details on the approved plans. Mulch shall consist of straw mulch as specified in DelDOT's Standard Specifications.

END OF SECTION

CONSTRUCTION STANDARDS
TOWN OF GEORGETOWN

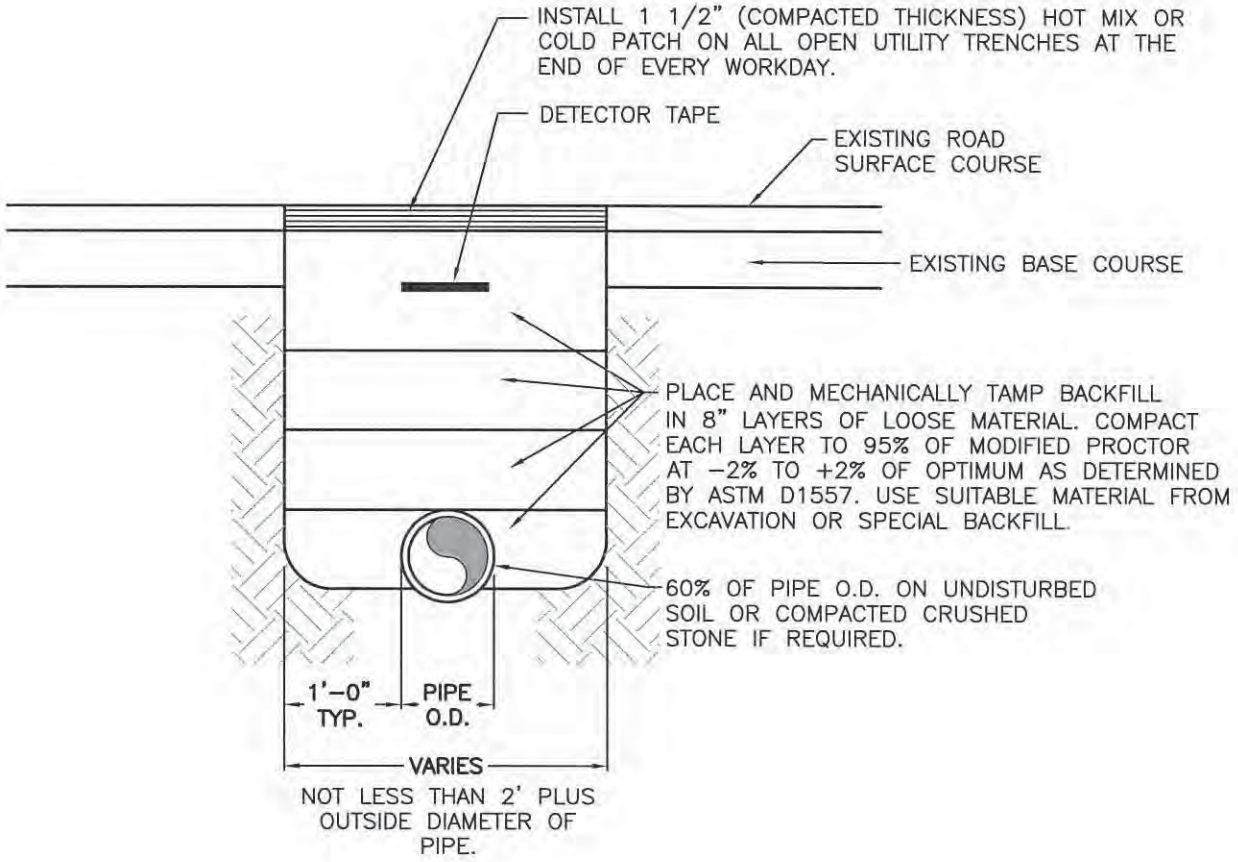
DATE: FEBRUARY 2015

SECTION – 8

DRAWING D8–1

TEMPORARY CROSS ROAD AND LONGITUDINAL PATCH DETAIL

NO SCALE

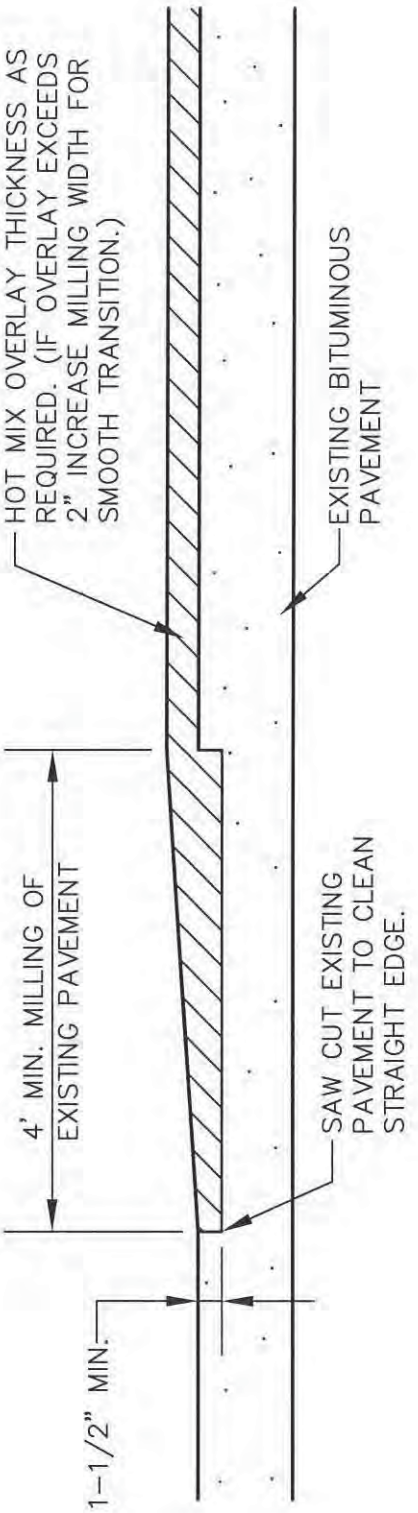


NOTES:
1. METAL PLATING MAY BE USED AT THE END POINT OF THE LAYING OPERATION WITH PERMISSION FROM THE TOWN OR DEDLOT, WHICHEVER IS APPLICABLE.
2. IF STEEL PLATING IS PERMITTED, THE FULL PERIMETER OF THE PLATE SHALL BE "HEELED IN" WITH COLD PATCH.
3. TEMPORARY PATCHING REQUIRED FOR ALL PAVED ROADS IN TOWN AND STATE RIGHT–OF–WAY.

NOTE:

1. MINIMUM FULL WIDTH OF RESTORATION AT SURFACE SHALL BE 7'-0", OR 5'-0" MINIMUM FOR TRENCH ALONG EDGE OF ROAD.
2. IF PATCH FALLS WITHIN 2' OF EXISTING CURB OR EDGE OF PAVING, CONTINUE RESTORATION TO CURB.
3. PAVING SECTION DEPTH REQUIREMENTS SHALL BE BASED ON THE REQUIREMENTS OF SECTION 1E OF THE TOWN'S SPECIFICATIONS, OR MATCH EXISTING SECTION IF IT IS GREATER. THE MINIMUM PAVING SECTION SHALL BE 1 1/2" TYPE C ASPHALT OVER 3 1/2" TYPE B ASPHALT, OVER 6" GABC (CRUSHER RUN).
4. PERMANENT PAVING RESTORATION REQUIREMENTS WITHIN DELDOT RIGHT-OF-WAY SHALL BE APPROVED BY DELDOT.

DATE: MAY 2015	**PERMANENT PAVEMENT RESTORATION DETAIL FOR TOWN STREETS** NO SCALE	
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	SECTION – 8	DRAWING D8–2



DATE: FEBRUARY 2015	**TRANSITION PAVING DETAIL**	
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE	
	SECTION – 8	DRAWING D8–3

DIVISION 2 – SECTION 9

NEW SUBDIVISION STREETS AND ENTRANCES

9.01 GENERAL

A. All new subdivision streets within future Town right-of-way shall be designed and constructed in accordance with Division 1, Sections 1D & 1E of these standards. However, the minimum paving section shall be 1 ½ inches of Type C asphalt, over 3 ½ inches of Type B asphalt, over 6 inches of GABC (crusher run).

B. All subdivision entrances connecting to State right-of-way shall be designed and constructed in accordance with DelDOT's *Development Coordination Manual*, latest edition.

C. All subdivision entrances connecting to Town right-of-way shall be designed and constructed in accordance with Division 1, Sections 1D & 1E of these standards.

D. All streets must have a minimum longitudinal slope of 0.3%. Cross slopes must be as detailed. Intersections must have valley gutters if slope is less than 0.3%

E. Storm drain systems shall be designed per DelDOT standards.

9.02 LIGHTING

A. All subdivision streets shall be lighted with decorative cast aluminum , Wadsworth-style lamp posts and Granville, classic style, borosilicate glass optical refractor, and 100W high-pressure sodium lamps, unless approved otherwise. Lighting fixtures must be approved by the Town Planning Commission.

B. The wiring for the street lighting shall be directly buried and meet all applicable electrical codes.

C. The lamps shall be 12 feet in height and have a maximum spacing of 150 feet. A lamp must be placed at every street corner and subdivision entrance.

D. The lamps shall be placed in all cases between the back edge of the sidewalk and the right-of-way line. The maximum distance the lamps shall be placed behind the sidewalk is one foot.

A. Developers shall coordinate subdivision street lighting with Delmara Power's outdoor lighting program.

END OF SECTION

A – 1 1/2" TYPE C HOT MIX, MINIMUM.

B – 3 1/2" TYPE B HOT MIX, MINIMUM.

C – 6" GRADED AGGREGATE BASE COURSE (CRUSHER RUN), MINIMUM, COMPACTED TO 98% OF ASTM D1557. MODIFIED PROCTOR METHOD AND 8" COMPACTED DEPTH.

D – APPROVED SUBGRADE COMPACTED TO 95% OF ASTM D1557.

NOTES:

1. 4" TOPSOIL SEED AND MULCH.
2. REFER TO SECTION 7 FOR CURB AND SIDEWALK DETAILS AND SPECIFICATIONS.
3. REFER TO SECTION 9 FOR PAVING SECTION DESIGN. SEE NOTES AT RIGHT FOR MINIMUM ASPHALT AND GABC (CRUSHER RUN) THICKNESSES.

DATE: MAY 2015	MINOR STREET TYPICAL SECTION
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	NO SCALE
	SECTION – 9 | DRAWING D9–1

A – 1 1/2" TYPE C HOT MIX, MINIMUM.

B – 3 1/2" TYPE B HOT MIX, MINIMUM.

C – 6" GRADED AGGREGATE BASE COURSE (CRUSHER RUN), MINIMUM, COMPACTED TO 98% OF ASTM D1557. MODIFIED PROCTOR METHOD AND 8" COMPACTED DEPTH.

D – APPROVED SUBGRADE COMPACTED TO 95% OF ASTM D1557.

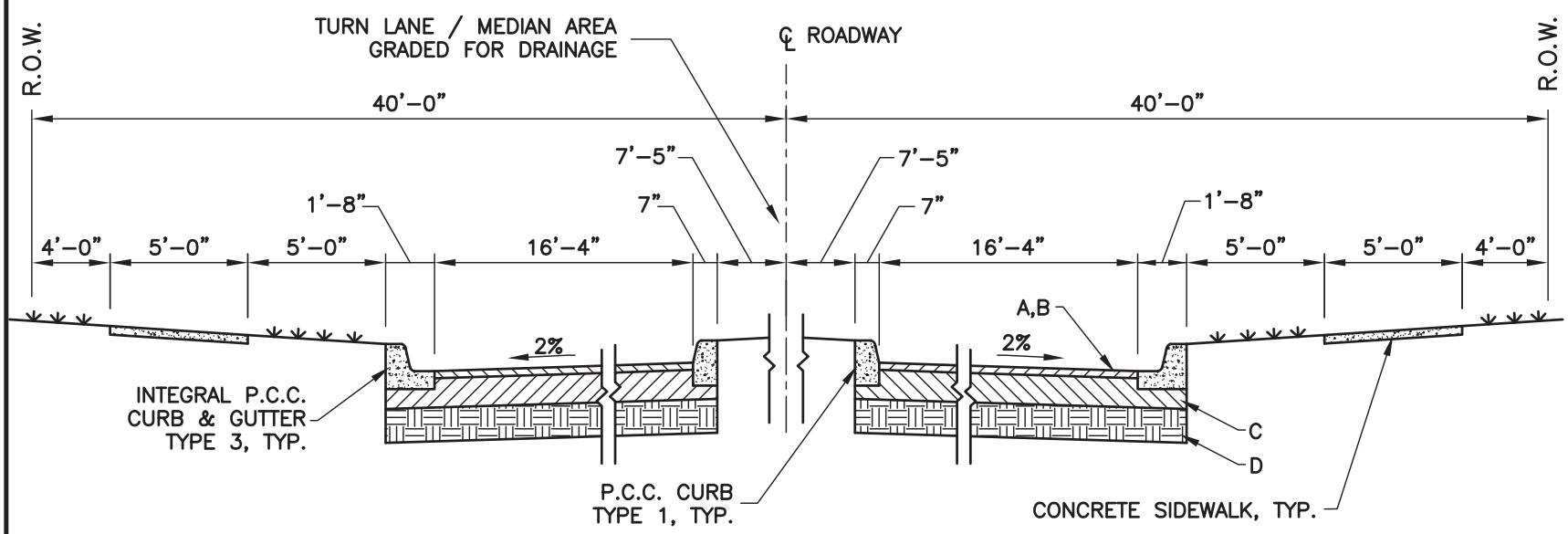
NOTES:

1. 4" TOPSOIL SEED AND MULCH.
2. REFER TO SECTION 7 FOR CURB AND SIDEWALK DETAILS AND SPECIFICATIONS.
3. REFER TO SECTION 9 FOR PAVING SECTION DESIGN. SEE NOTES AT RIGHT FOR MINIMUM ASPHALT AND GABC (CRUSHER RUN) THICKNESSES.

DATE: MAY 2015	**COLLECTOR STREET TYPICAL SECTION**
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	**NO SCALE**
	SECTION – 9 | DRAWING D9–2

CONSTRUCTION STANDARDS
TOWN OF GEORGETOWN

DATE: MAY 2015



DUAL LANE BOULEVARD TYPICAL SECTION

NO SCALE

NOTES:

1. ↓↓↓ 4" TOPSOIL SEED AND MULCH.
2. REFER TO SECTION 7 FOR CURB AND SIDEWALK DETAILS AND SPECIFICATIONS.
3. REFER TO SECTION 9 FOR PAVING SECTION DESIGN. SEE NOTES AT RIGHT FOR MINIMUM ASPHALT AND GABC (CRUSHER RUN) THICKNESSES.
4. NO RESIDENTIAL DRIVEWAY ACCESSES UNLESS APPROVED BY THE TOWN.

A – 1 1/2" TYPE C HOT MIX, MINIMUM.

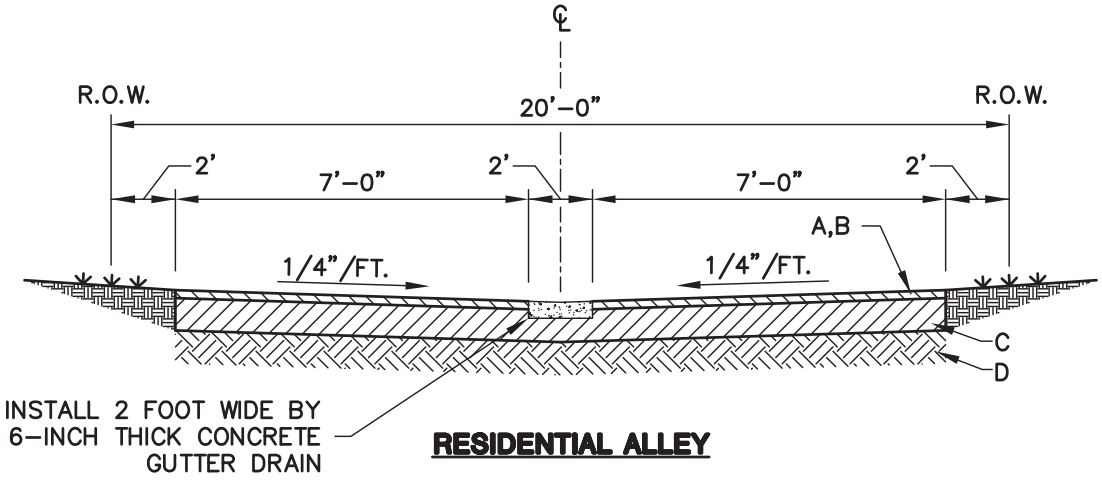
B – 3 1/2" TYPE B HOT MIX, MINIMUM.

C – 6" GRADED AGGREGATE BASE COURSE (CRUSHER RUN), MINIMUM, COMPACTED TO 98% OF ASTM D1557. MODIFIED PROCTOR METHOD AND 8" COMPACTED DEPTH.

D – APPROVED SUBGRADE COMPACTED TO 95% OF ASTM D1557.

SECTION – 9

DRAWING D9–3



RESIDENTIAL ALLEY

NOTE:

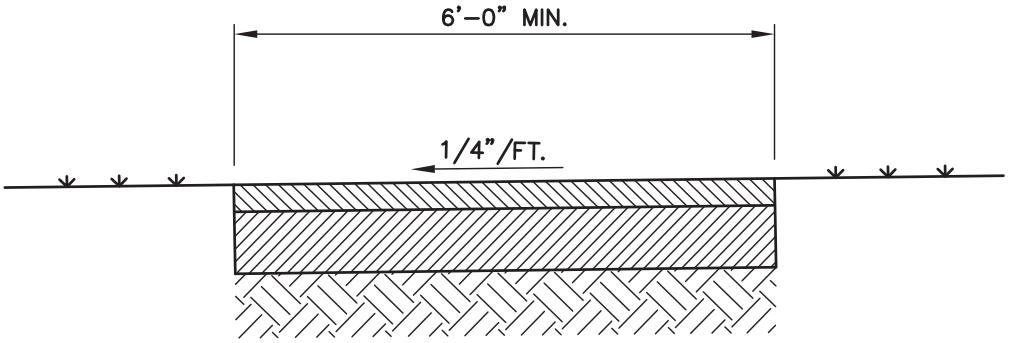
↓ ↓ ↓ 4" TOPSOIL SEED AND MULCH.

A – 1 1/2" TYPE C HOT MIX.

B – 3 1/2" TYPE B HOT MIX.

C – 6" GRADED AGGREGATE BASE COURSE (CRUSHER RUN), COMPACTED TO 98% OF ASTM D1557. MODIFIED PROCTOR METHOD AND 8" COMPACTED DEPTH.

D – APPROVED SUBGRADE COMPACTED TO 95% OF ASTM D1557.



MULTI-USE TRAIL

NOTES:

1. 2" OF TYPE C ASPHALT OVER 4" OF A GABC (CRUSHER RUN) COMPACTED TO 95% ASTM D1557 MODIFIED PROCTOR, OVER SUBGRADE COMPACTED TO 95% ASTM D1557 MODIFIED PROCTOR.
2. GRADING SHALL SLOPE AWAY FROM EITHER SIDE OF BIKE PATH, OR GRADING SHALL PROVIDE FOR DRAINAGE ACROSS BIKE PATH.

DATE: MAY 2015	**RESIDENTIAL ALLEY & MULTI-USE TRAIL**
CONSTRUCTION STANDARDS TOWN OF GEORGETOWN	**NO SCALE**
	SECTION – 9 | DRAWING D9–4

SECTION 02935

TRANSPLANTING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Section includes requirements for transplanting shrubs & landscaping.

1.2 SUBMITTALS

A. Product data each type of product indicated.

B. Product certificates.

C. Planting Schedule: Indicating anticipated planting dates for transplanting shrubs & landscaping including:

1. Time of year for transplanting.
2. Transplanting methods.
3. Follow-up care and maintenance.

1.3 QUALITY ASSURANCE

A. Contractor shall maintain an experienced full-time landscape contractor on site when transplanting is in progress.

B. A topsoil analysis shall be furnished by a qualified soil-testing laboratory.

C. Report suitability of topsoil for plant growth. Soil amendments shall be added, if required, to produce satisfactory topsoil.

1.4 HANDLING

A. Do not prune vegetation before transplanting. Protect bark, branches, and root systems from handling and tying damage. Do not bend or bind-tie plants & landscaping in such a manner as to destroy their natural shape. Provide protective covering of plants during transplanting.

B. Move vegetation after preparations for planting have been completed and install immediately.

1.5 SEQUENCING AND SCHEDULING

A. Proceed and coordinate work as the site becomes available, consistent with seasonal limitations for transplanting.

B. Owner's representative will select and tag at the site, those plants to be transplanted to new locations.

C. Transplant vegetation during cool weather. Avoid moving plants on very hot, dry, or windy days.

1.6 FINAL ACCEPTANCE

A. Work under this Section will be accepted by Engineer upon satisfactory completion of all work including maintenance, but exclusive of replacement of plant materials under warranty period. Upon Final Acceptance, Owner will assume responsibility of maintenance of the work.

1.7 WARRANTY

A. Contractor agrees to repair or replace plantings which fail in materials, workmanship, or growth within a warranty period of 12 months.

1. Failures include, but are not limited to, the following:

- Death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, abuse by Owner, or incidents that are beyond Contractor's control.

- Structural failures including plantings falling or blowing over.

B. Any delay in completion of planting operations which extends planting into more than one planting season shall extend Warranty Period correspondingly.

C. All shrubs planted under this Contract will be healthy and in flourishing condition of active growth one year from date of Final Acceptance.

D. Replace, without cost to Owner, and as soon as weather conditions permit, all dead plants and all plants not in vigorous, thriving condition as determined by Owner during and at the end of Warranty Period. Plants shall be free of dead or dying branches and branch tips, and shall bear foliage of a normal density, size, and color. Replacements shall closely match adjacent specimens of the same species and shall be subject to all specified requirements.

1.8 MAINTENANCE

A. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until plantings are acceptably healthy and well established, but for not less than maintenance period of 12 months.

PART 2 - PRODUCTS

2.1 FERTILIZER

A. Perform a soil test to determine nutrient requirements. Apply fertilizer based on soil test results and recommendations.

B. Slow-release fertilizer shall be the preferred type.

2.2 MULCHES

A. Mulch shall be shredded hardwood, free of debris, deciduous leaves, and sticks. Bark chips shall not exceed 1-1/2 inch in size.

2.3 EQUIPMENT

A. When pruning, use only sharp, clean tools, sterilized prior to use.

B. Do not drive onto or operate a vehicle on jobsite carrying dirt or plant debris from another site. Wash all dirt and mud from tires prior to entering jobsite.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify with Owner all plants to be transplanted prior to beginning work.

B. Stake plant layout for adjustment and approval prior to transplanting.

C. Transplant all plantings as shown on Drawings. Proceed with transplanting operations based upon Owner accepted schedule and methods.

D. Root ball size shall be a minimum of diameter 2/3 of the branch spread.

3.2 POST PLANTING FERTILIZATION

A. Apply fertilization 30-45 days after installation, if required.

3.3 PRUNING

A. Remove only dead, dying, or broken branches prior to transplanting. Do not prune for shape.

B. Prune, thin, and shape shrubs according to standard horticultural practice. Prune shrubs to retain required size and spread.

3.4 PLANT MAINTENANCE

A. Maintain vegetation by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray or treat as required to keep shrubs & landscaping and shrubs free of insects and disease.

B. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

3.5 FINAL INSPECTION

A. Make written request for inspection after planting operations are complete.

B. Submit requests for inspection to Owner at least two (2) days prior to anticipated inspection date.

3.6 CLEANING

A. Clean all areas as required for complete and acceptable inspection.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

The work of this section consists of furnishing all plant, labor, equipment, materials, and reinforcement for the installation of all miscellaneous concrete work complete, as shown on the Drawings, as specified herein and subject to the provisions of the General and Special Conditions.

1.2 STANDARDS, QUALITY ASSURANCE

A. General: All work shall be done in accordance with all codes having jurisdiction. Unless specifically specified otherwise herein or by local ordinance, all work shall be done in accordance with the ACI Building Code Requirements for Reinforced Concrete (ACI-318) latest revision and such requirements shall be binding as if specified directly herein. The following standards, specifications, and codes of the latest edition (at bid date), listed below, form a part of this Specification to the extent indicated by the reference thereto.

B. American Concrete Institute (ACI) Manual of Concrete Practice.

C. American Society for Testing Materials (ASTM) A-615 Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement:

A-185	Specifications for Welded Steel Wire Fabric for Concrete Reinforcement.
C-31	Standard Method of Making and Curing Concrete Compression and Flexure Test Specimens in the Field.
C-33	Specifications for Concrete Aggregates.
C-39	Standard Method of Test for Compressive Strength of Molded Concrete Cylinders.
C-42	Standard Methods of Securing, Preparing and Testing Specimens from Hardened Concrete for Compressive and Flexural Strengths.
C-87	Method of test for measuring mortar making properties of fine Aggregates.
C-94	Specifications for Ready-Mix Concrete.
C-150	Specifications for Portland Cement.
C-172	Standard Methods of Sampling Fresh Concrete.
C-192	Standard Method of Making and Curing Concrete Compression and Flexure Test Specimens in the Laboratory.
C-330	Specification for Lightweight Aggregates for Structural Concrete.

D. Conflicts: Conform to requirements of above standards unless specified otherwise hereinafter. In case of apparent conflict between standards, or between standards and the specifications hereinafter, refer the matter to the architect whose decision shall be final.

1.3 REINFORCEMENT SHOP DRAWINGS

A. Submit drawings showing laying and details of all reinforcing.

B. Reprints of the Contract Drawings are not acceptable.

C. Use figured dimensions only, scaling drawings not permitted.

D. Verity dimensions and coordinate same.

E. Review of shop drawings is limited to design intent only. No responsibility for a detailed check of member length, size spacing or similar detail information is assumed by virtue of such review.

PART 2 - PRODUCTS

2.1 CONCRETE

A. General: The Contractor shall supply concrete of the specified strength, and the responsibility for obtaining this strength shall rest solely upon the Contractor.

B. Type and Strength: All concrete shall have stone aggregate and shall develop a minimum compressive strength of 4000 psi in 28 days, seven day tests not less than 65% of 28-day tests.

C. Design Mixes: Submit design mixes for classes of concrete to be used on the project for review prior to placing concrete. Each design mix shall indicate the proposed use within the structure (i.e., floors slabs, footing, etc.). Approval of the design mix and/or acceptance of the test report does not in any way relieve the Contractor of his responsibility to insure that the strength, and slump quality of the in-place concrete meets the requirements of the contract documents. Determination of strength and quality of the concrete proposed for use is the responsibility of the Contractor, established by tests made in advance of the beginning of operations, using the consistencies most suitable for the work. Unless otherwise specified, provide concrete composed of cement, fine and coarse aggregate, admixture(s) and water. The exact division of the total aggregate shall be such as to produce a concrete of the greatest workability and density.

1. Mix

a. Cement: Minimum 6 bags of cement per cubic yard of concrete.

b. Aggregates: Use amounts necessary to produce a dense workable mixture. Coarse aggregates size as specified for intended use.

c. Water: Minimum amount required to attain required slumps. Water/cement ratio not to exceed 6-1/2 gallons of water per bag of cement.

d. Water Reducing Admixture: In accord with admixture manufacturer's recommendations, vary quantities of admixtures in order that slump and water and cement content of mix remains constant for all temperatures.

e. Air Entraining Admixture: Concrete exposed to freezing and thawing shall have air entrainment of not less than 4 percent nor more than 6 percent and shall be so certified by the supplier.

f. Slump: ACI 211.1 except that concrete for slabs on earth and for concrete topping shall have a 4 inch maximum slump.

2.2 MATERIALS

A. Cement shall be Portland and shall conform to ASTM Designation C150, Type I or II. Mill Test Certificates of the cement to be used shall be submitted by the Contractor to the Architect before it is used. Air entraining cements shall not be used.

B. Fine Aggregate: Conform to the requirements of ASTM Designation C33. Fine aggregate shall have the following characteristics:

1. It shall not contain more than three percent (3%) clay.

2. It shall not show darker than light amber when tested by the calorimetric method.

3. It shall be capable of developing 100% of the compressive strength of Ottawa Sand when tested in accordance with ASTM Designation C87.

4. The gradation of the sand shall be constant and the Fineness Modules shall not vary more than 0.2.

5. It shall conform to the following gradation requirements:

SIEVE	3/8"	No. 4	No. 16	No. 50	No. 100
% Passing	100	95-100	50-85	10-30	2-10

C. Coarse Aggregate for storage concrete shall conform to the requirements of ASTM Designation C33 and shall consist of hard crystalline stone or gravel, free from single or decomposed or thin, laminated pieces. It shall be uncoated and clean. It shall conform to one of the following gradation requirements:

SIEVE	□"	1	3/4	□	3/8	No. 4
% Passing	---	100	90-100	---	20-60	0-10
	100	95-100	---	25-60	---	0-10

D. Water shall be clean water usable for drinking purposes and free from injurious amounts of mineral and organic substance. If there is any question as to its suitability, it shall be tested in accordance with AASHO Standard Method of Test T-26.

E. Reinforcing Steel shall be new deformed billet stock conforming to ASTM A-615, Grade 60.

F. Welded Wire Fabric shall be in accord with ASTM A185.

G. Air Entraining Agent for all exposed concrete shall be Darex AEA as manufactured by the Dewey & Almy Chemical division, W.R. Grace Co., or Sika AER as manufactured by Sika Chemical Corp., or other approved equal. Agent shall be added to the batch in accordance with the manufacturer's instructions. The air content shall be 5 percent (-1%, +1%).

H. Expansion Joint Filler shall be premolded asphalt impregnated fiber board. Sealer shall be as recommended by the manufacturer of the filler. Filler shall be Care Fiber Code 1390, manufactured by Servicised Products Co., Dewey and Almy Chemical Division, W.R. Grace Co., or Corkfill Expansion Joints, manufactured by W.R. Meadows, Inc. or equal. Contractor to submit sample.

I. Curing Compound: FS TT-C-08800, Type I. Material shall be chlorinated rubber base stabilized with epoxy, not less than 28 percent solids content, "Klor-Kure", Castile Chemical Corp., "Clearseal", W.R. Crane: "Masterseal", Master Builders; or approved equal. Curing Compound shall have a fugitive dye. These compounds may only be used with prior approval of the Engineer.

J. Vapor Barrier under all concrete slabs in contact with ground shall be "Moistop", manufactured by American Sisalcraft Corp., "Ply-Bar Plus", manufactured by Glass Craft, Inc., or 6 mil polyethylene. Vapor Barrier shall be installed, lapped and sealed per the manufacturer's recommendations.

K. Waterstops: Polyvinyl, dumbbell type, width as indicated, 3/16 inch minimum web thickness, with end bulbs by Vinylex Corp. Or Greenstreak Plastic Products or approved equal.

L. Bonding Agent: Sikadur-Hi Mad by Sika Chemical Corp. Or Sure Poxy by Kaufman Products, Inc., a 2-component epoxy adhesive.

2.3 FORM WORK

A. General: The Contractor shall furnish forms of approval material. Forms shall be true to shape, lines, grades and dimensions for the concrete indicated. They shall be braced, shored, and tight to prevent leakage. They shall maintain position and shape under weight of wet concrete and construction loads. All forms shall be built to within 1/4 inch of lines and dimensions indicated on the Drawings. Wood forms shall be constructed from good sound lumber, free of loose knots or other defects and suitable for the work. Temporary openings shall be provided at the base of wall forms, and at other points where necessary to facilitate cleaning and inspection immediately before placing concrete. Care to be exercised in seeing that all walls are plumb and true and thoroughly braced to keep them so. Wood forms shall be properly oiled before placing reinforcement. Caulk and tape butt joints. Provide beveled chamfer strips for form corners fitted tightly into place.

B. Exposed Concrete: For exposed concrete surfaces plywood forms, properly cleated and tied together with approved devices, shall be used.

C. Removal: After concrete has been placed, forms, bracing and supports shall remain undisturbed long enough to allow the concrete to reach the strength necessary to support with safety its own weight plus any live load and earth pressure that might be placed upon it without causing excessive settlement, deflection or any temporary or permanent damage to the structure. Strip forms in order that finishing is completed within 24 hours of stripping. Take special care to prevent the breaking of edges and corners.

2.4 BRACING, SHEETING AND SHORING

The Contractor shall brace and/or sheet all excavations whenever necessary for proper prosecution of the work.

The Contractor is also responsible for the capacity of form work, shores and bracing to carry all superimposed loads - both live and dead, until the concrete has achieved its design strength.

PART 3 - EXECUTION

3.1 CONCRETE MIXING

A. Mixers: Concrete may be job mixed or ready-mixed. Ready mixed concrete may be central mixed or transit mixed concrete. Shrink mixing will not be permitted. Transit mixed concrete shall be mixed and have water added only at the site. All mixing equipment must, in the opinion of the inspector, be suitable for the job. A standard type of batch mixer shall be used and no hand mixing will be permitted. Ready-mixed concrete shall conform to ASTM C94. Contractor is to maintain a readily available file of delivery tickets stating design strength, mix slumps, aggregate and admix (if applicable) and yards delivered for all concrete.

B. Charging Procedure: Mix shall be kept at a consistency which can be placed readily without segregation. Aggregates shall be measured in grated hoppers by weight, in a manner which can easily be checked. Cement shall be measured by volume or by weight. Air slacked cement or cement which is lumpy, whatever the cause, shall not be used. Stationary mixers shall be level during mixing. Worming of cement directly into truck mixers shall not be permitted.

C. Mixing Procedure: In stationary mixers, mixing time shall be a minimum of ten minutes after addition of water. If an extra charge of water is required because of too low slump, the drum shall be turned a minimum of 30 revolutions after adding such charge. Once initial set has taken place, no attempt shall be made to temper the concrete by the addition of water. Any concrete so tempered will be rejected and shall be removed from the site. Mixers shall not be charged in excess of the rated speed. Mixer shall be completely discharged before recharging.

D. Time Limit: When either Type I or Type II Portland cements are in use, the elapsed time between the initial contact of the cement with water and the discharge of the batch on the job shall not be more than 1 ½ hours or 300 revolutions. In hot weather, when the air temperature is between 85 degrees F and 90 degrees F, or until conditions contributing to quick stiffening of the
concrete, the elapsed time shall not exceed 75 minutes. When air temperature is above 90 degrees F, reduce the mixing and delivery time to 60 minutes.

E. Rejected Concrete: Concrete in ready-mix trucks rejected for excess water shall be removed from the site. No materials shall be added for correction.

3.2 REINFORCEMENT PLACING

A. Bars and WWF shall be free from scale, oil, ice, and structural defects and kept so on the job. Bars and mesh shall be stored out of contact with the ground. Adequate chairs and devices shall be used to maintain proper elevation of bar and mesh reinforcing at all times. Footing dowels and column anchor bolts shall be rigidly held

in place by templates. All reinforcing steel within the limits of a day's pour shall be in place and firmly wired before concreting starts. Bending of bars by use of heat will not be permitted. The sides of adjoining sheets of mesh reinforcing shall lap and be wired together on not more than 18-inch spacing. Lap shall be at least the spacing of the wires of the mesh.

B. Fastening Devices and Other Work: Install all inserts, anchors, sleeves, and other devices required for the installation of work. Provide spacers, chairs, ties or other devices for properly assembling, placing, spacing, and supporting reinforcement in place. All chairs, devices, or nails for positioning reinforcing steel shall be galvanized or plastic protected. Provide metal accessories with solid plastic feet for exposed slabs and similarly exposed concrete surfaces, both interior and exterior, where accessories come in contact with forms. Provide chairs for reinforcing for slabs, footings and beams on water proofing membrane with metal pads attached to the feet to prevent their penetration of the liner. Use wall ties which will not leave metal closure more than one inch to the surface. They shallot contain lugs, cones, washers or other devices which will leave holes larger than 1/8 inch in diameter or depressions in the exposed surface of the concrete.

C. Tying is required at every second intersection, but with not less than three ties to any one bar, and, in any case, not more than four feet apart in either direction. Support and tie in a way which will prevent displacement of reinforcing while concrete is being placed. All wall mats must be secured at the top and middle to keep it in a vertical plane. For walls not exposed or which are covered by other material, nails can be driven into form work near the top and middle of the bars, projecting to the required amount of cover, with wire looped around the nail head and the vertical bar using a nailhead tie.

D. Epoxy coat all steel dowels in concrete.

E. Notify Engineer 48 hours in advance of pouring concrete for inspection of reinforcement.

3.3 PLACING OF CONCRETE

A. General: Placement of concrete shall be according to the accepted practice of the A.C.I. and as follows:

1. Approved mechanical vibrators operated by experienced operators shall be used to insure proper consolidation without segregation.

2. Dropping of concrete over 10 feet will not be permitted. Angle and length of chutes shall be limited to avoid segregation.

3. Use vibrating head small enough to reach between reinforcing bars and

between reinforcing and forms.

4. Transmit vibrating, unless otherwise approved, directly through the concrete, and in no case through the forms, or through the reinforcing.

5. Vibrate for the minimum duration required to produce thorough compaction.

6. Supplement vibrating with forking or spading by hand adjacent to the forms on exposed faces or as required.

7. Vibrate concrete walls. Determine the time for revibrating in the field, based on time required for concrete to set. Generally, this time will be from 15 to 30 minutes after original vibration.

8. Insert vibrator through fresh concrete into layer previously poured in order to eliminate cold joints. Provide a minimum of 2 vibrators in good working condition on the job at all times. Use elephant trunks for depth or more than 5 feet.

9. Before depositing new concrete on or against concrete which has already set, thoroughly roughen existing surfaces and clean of latence, foreign matter and loose particles and retighten forms and thoroughly wet existing surfaces.

10. Do not let aluminum equipment come in contact with fresh concrete during mixing, placing or curing.

11. Before placing concrete topping where indicated, apply a coat of epoxy bonding agent to surface of clean base slab. Let stand until solvent free, but must be tacky when topping is laced. Place in accord with the manufacturers instructions.

B. Maximum Pours: Maximum length of pours shall be forty feet (40 ft.). All joints shall be as approved by the Engineer or as detailed on the drawings. All reinforcement, forms and ground with which concrete is to come in contact, shall be free of frost.

C. Rate of Placement: The concreting shall be carried on at such a rate that the concrete is at all times plastic and flows readily into the spaces between the bars.

D. Installation of Construction Joints:
Provide construction joints doweled and keyed and located as to least impair the strength of the structure. Location shall be as shown on the drawings.

E. Condemned Concrete: No concrete that has partially hardened or been contaminated by foreign materials shall be deposited on the work, nor shall retempered concrete be used.

F. Miscellaneous Requirements: Concrete shall be deposited in dry weather only on clean moist surfaces, free from running water. Care must be taken during placing not to dislocate embedded items such as anchors, bolts, pipe sleeves, hangers, etc. Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing.

3.4 CURING

Protect freshly placed concrete from the elements and from defacement due to building operations immediately after required surface work has been completed. Cover concrete slabs with 4 mil polyethylene film or reinforced kraft paper lapped 6 inches at edges and weighted down to prevent movement. Maintain covering in place for a minimum of 7 days after pour. Curing and hardening compounds for floors may be applied in lieu of covering specified above if approved by the Engineer. Apply in strict accordance with the manufacturer's recommendations. Minimum coverage 350 square feet per gallon.

3.5 COLD WEATHER CONCRETING

A. Concrete Temperatures: Concrete, when deposited, shall have a temperature of not less than 60 degrees F. When necessary, the Contractor shall provide approved facilities to heat water and aggregates to provide such temperature, but in no event shall the temperature of the concrete exceed 100 degrees F. Under no conditions is the cement to be heated. When temperature of either water or aggregates is above 100 degrees F, the sequence of loading the mixer shall be such as to prevent cement from contacting hot materials.

B. Protection After Placement: Suitable means shall be provided for maintaining a temperature in the concrete of at least 50 degrees F for not less than three days after concrete is placed. For a period of seven days the concrete shall not be exposed to a temperature below 40 degrees F. Provide protection cover with a 4 inch minimum thick layer of straw or insulation blankets. Cover in turn with weighted polyethylene film, tarps or other approved protective covers to keep the covering in place. Provide enclosures and heating as required in order to facilitate pouring concrete.

C. Chemicals: Use of chemicals to accelerate hardening of concrete or to reduce the freezing temperatures shall be prohibited without written approval of the Engineer. Under no conditions shall calcium chloride be used in the concrete.

D. Engineer Approval: The Contractor shall, upon request of the Engineer, submit his method of cold weather concreting for approval.

E. Special Precautions: Concrete placement shall be made when air temperature is at least 32 degrees F and rising, unless special precautions acceptable to the Engineer have been taken and are maintained through specified period.

3.6 HOT WEATHER CONCRETING

A. When atmospheric temperature is in excess of 90 degrees F, or is forecast to exceed 90 degrees F within 8 hours, concrete shall be placed at maximum temperature of 90 degrees F, in the concrete mix. Contractor shall make adequate provision to this end by sprinkling of aggregate stockpiles, use of ice in mixing water, and other methods recommended in ACI 305.

B. Provide extra protection against moisture loss by keeping exposed concrete surfaces constantly wet for at least seven days. curing compounds may also be substituted.

3.7 FINISH AND REPAIR OF CONCRETE SURFACES

A. General: Forms shall be removed to prevent breaking of edges at the minimum time subject to the approval of the Engineer and all finishing operations performed without delay. No patching shall be done without the Engineers approval and all honeycombing shall be cut for inspection.

B. Unfinished Surfaces: On surfaces below finished grade or for unfinished areas, remove all ties and fill tie holes and surface voids with 1:2 mortar.

C. On Exposed Surfaces, fill all tie holes and surface voids with a non-shrink mortar color of concrete, applied with a burlap or sponge rubber float. All cracks over 1/16 inch shall be routed and filled as specified. Follow procedure as outlined in Portland Cement Association Engineering Bulletin "Design and Control of Concrete Mixtures", July 1968.

D. Condemned Work: Sections containing imperfections which are unsuitable for permanence or strength shall be removed and replaced or repaired as directed by the Engineer, at the Contractor's expense.

3.8 SLOTS, RECESSES, SLEEVES:

The Contractor shall cooperate with and coordinate all trades in the forming and setting of slots, recesses, chases, sleeves, inserts, bolts, hangers, etc., of other trades not in this Section of the work. All slots, etc., shall be so located as not to infringe on or impair the strength of any structural member, unless approved by the Engineer. The Contractor shall be responsible for using proper care in the placing of the concrete so as not to dislodge or dislocate embedded items of other trades. Before pouring he shall ascertain that all insertions have been properly set in place.

3.9 GROUT

Bearing and Base Plates: The Contractor shall be responsible for grouting in place steel base and bearing plates. Grout for plates and other applications shall be Sika grout 212 non-shrink

cementatious grout.

3.10 FOUNDATIONS FOR MECHANICAL EQUIPMENT

The Contractor shall provide concrete foundations for fans, motors, pumps, and other items, for all mechanical and electrical trades of the sizes shown or as directed by the Architect or Engineer. Coordinate the mechanical and electrical trades for the setting bolts, inserts, sleeves, etc.

3.11 MISCELLANEOUS CONCRETE ITEMS

All filling-In: Fill in holes and openings left in concrete structures for passage of existing and new work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

3.12 CONCRETE TESTING AND INSPECTION

A. Submit to the Engineer for approval each design mix and accompanying 28 day test results for each class of concrete which are to be used on the job. All mix design submittals must be approved by the Architect or Engineer before placing any concrete.

B. Engineer may secure concrete tests at any time. Contractor shall notify the Engineer 48 hours in advance of any concrete placement. For a Monday placement, notify Engineer no later than previous Thursday. Contractor shall cooperate with testing agency in performing their tasks. The Owner will pay for the concrete testing.

C. Testing agency shall make four (4) test cylinders for each 50 cubic yards or fraction thereof for each class of concrete in any one day's operation. One (1) cylinder from each set is to be tested and reported at seven (7) days, two (2) cylinders at twenty-eight (28) days, and one (1) hold cylinder to be tested as required by the Engineer. Test reports are to be submitted by the testing agency directly to the Engineer. Test reports shall contain the following information.

1. Exact mix, including quantities of admixture, etc.
2. Date of pour.
3. Exact location of pour.
4. Slump.
5. Percentage of air entrainment.
6. Design strength of concrete tested.
7. Report results of both 7 and 28 day test results on the same report.

D. If evidence exists of faulty workmanship, violation of specifications or likelihood of concrete having been frozen, load tests may be required, which shall be made at the Contractor's expense under the direction of the Engineer. In lieu of load tests, the

Contractor may, at his own expense and under the direction of the Engineer, take cores from the concrete for the purpose of testing. (The Contractor's expense shall include the Engineer's cost for preparation and supervision).

E. Should strength shown by test specimens fall below the required strength, a change will be required in misproportions to insure adequate strengths in the remainder of the project, and testing of the concrete by coring, or removal of that portion of the construction covered by those tests, may be required at the Contractor's expense.

F. All reinforcing shall be inspected and approved by Engineer before the concrete is placed. Notify Engineer 48 hours in advance of pouring concrete for inspection of reinforcement. For pouring on Monday, notify Engineer no later than previous Thursday.

3.13 CLEANING AND PATCHING

A. After forms have been removed and concrete surfaces observed, where approved by the Engineer patch bad joints, voids, stone pockets or other defective areas.

B. Chip away defective areas to a depth of not less than one inch with the edges perpendicular to the surface.

C. Wet area to be patched and space at least 6 inches wide entirely surrounding it to prevent absorption of water from patching mortar.

D. Brush into surface a grout of equal parts of Portland Cement and sand with sufficient water to produce a brushing consistency, follow immediately with patching mortar.

E. Make patch of same material and same proportions as used for concrete, except omit course aggregate.

F. Amount of mixing water as little as consistent with requirement of handling and placing.

G. Retemper mortar without addition of water by allowing it to stand for a period of one hour during which time, mix with trowel to prevent settling.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Contractor shall provide all labor, materials, equipment and services for and reasonably incidental to furnishing and installing complete all fabricated and miscellaneous metals as indicated on drawings and/or specified. Costs shall be included in the appropriate Unit Prices Bid.

B. Work shall consist of, but not limited to, the following: hatches, supports, anchors, and other fabricated and miscellaneous metal items as required to complete the job.

C. Work shall include shop fabrication, field erection, all equipment hangers, struts, bases, anchors and accessory parts, fittings, fastenings, shop cleaning and coating, finishing.

1.2 COORDINATION

A. Work shall be erected or built-in under other Sections of this specification, complete with necessary items to securely and rigidly hold in place.

B. All items shall be provided in ample time for incorporation into work of other trades and contractor shall coordinate same.

C. Measurements required to assure proper fit of parts or assemblies with surrounding work for neat and workmanlike installation shall be taken and verified during construction.

1.3 STANDARDS: Comply with the applicable provisions of latest editions of:

A. ASTM A 36: Specification for Structural Steel.

B. ASTM A 307: Specification for Low-Carbon Steel Externally and Internally Threaded Standard Fasteners.

C. ASTM A 386: Specification for Zinc Coating (Hot-Dip) on Assembled Steel Products.

D. ASTM B 211: Specification for Aluminum-Alloy Bars, Rods and Wires.

E. ASTM B 221: Specification for Aluminum-Alloy Extruded Bars, Rods, Shapes, and Tubes.

F. AWS: Structural Welding Code D1.1.

1.4 SUBMITTALS - SHOP DRAWINGS

A. Before proceeding with work, shop drawings shall be submitted and approved in accordance with and subject to all provisions of General Conditions.

B. Shop drawings shall show locations and adjacent construction in addition to detailing of items as to size, shape, connection details, fastenings and the like.

PART 2 - MATERIALS

2.1 STANDARDS

A. General: For fabrication of miscellaneous metal work which will be exposed to view, use materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.

B. Steel shapes, plates and bars: ASTM A-240, Type 304.

C. Bolts, nuts, screws, anchor bolts and miscellaneous fasteners: ASTM A-276 or ASTM A-493.

D. Aluminum: Rolled = ASTM fB-211, Extruded = B-211, Extruded Alloy = 6063-T5.

2.2 SURFACE PREPARATION

A. Cleaning: Remove mill scale, spatter, slag flux, oil, dust, dirt or other foreign particles before painting or coating.

B. Fabricated items to be field assembled with all stainless steel fasteners. No field welding except where necessary.

C. All aluminum surfaces and attachments in contact with concrete or plaster shall be primed with at least 1 mil coat of zinc chromate primer; all such items shall be touched up in field before installation.

2.3 ANCHORING BOLTS IN EXISTING CONCRETE

A. Anchor bolts into existing concrete shall be as follows:

1. Adhesive type utilizing 304 stainless steel threaded anchor and epoxy adhesive. Viscosity shall allow both horizontal and vertical installations.
2. Install anchors per manufacturer's recommendations. Do not apply load until adhesive has cured.

B. Anchor bolts placed into cast-in-place concrete shall be L-Hook cast-in-place, unless otherwise noted.

C. Anchor bolts placed into hardened concrete shall be as follows:

1. For non-submerged conditions:

a. Hilti Kwik Bolt II expansion anchor or equal.
b. Hilti HY 150 adhesive anchor or equal.

2. For submerged, intermittently submerged, or within 3' of submergence:

a. Hilti HY 150 adhesive anchor or equal.

3. Expansion type shall use 304 stainless steel anchor and lead alloy shield.

4. Anchors shall extend at least 4 inches into concrete and masonry. Bolts in concrete and masonry shall have non-corroding metal shields. Bolts in material less than 8 inches thick and with a compressive strength of less than 600 psi shall be through bolts, extending through a steel backup plate that reduces unit stress upon the material to one-half the allowable stresses.

2.4 MISCELLANEOUS PIPE SUPPORTS AND SADDLES

Miscellaneous pipe supports and saddles shall be provided as indicated or as necessary to support piping or provide restraint of pipe subject to pressure thrust.

2.5 MISCELLANEOUS PLATES AND SHAPES

Miscellaneous plates and shapes for items that do not form a part of the structural steel framework, such as lintels, sill angles, miscellaneous mountings, and frames, shall be provided to complete the work. Miscellaneous plates and shapes shall conform to ASTM Specification A36.

2.6 ACCESS HATCH

A. The H1R (single leaf) and H2R (double leaf) series access frames and covers as manufactured by Halliday Products, Inc. of Orlando, Florida, or approved equal, shall have a 1/4 inch (7mm) thick, one-piece, mill finish, extruded aluminum frame, incorporating a continuous concrete anchor. The inside of the frame shall have a door-support ledge on two (2) sides. Both frame and ledge must be supported by a full bed of Class A concrete. The door panels shall be 1/4" (7mm) aluminum diamond plate, reinforced to withstand a live load of the H-20, Uniform live load. Doors shall open to 90 degrees and automatically lock with a T-316 stainless steel hold open arms with release handles. For ease of operation, doors shall incorporate enclosed stainless steel

compression spring assists. Doors shall close flush with the frame. Hinges and all fastening hardware shall be T-316 stainless steel. Unit shall lock with a T-316 stainless steel slam lock with removable keys and have a non-corrosive handle. Unit shall carry a lifetime guarantee against defects in material and/or workmanship.

2.7 HATCH PROTECTIVE GRATE

A. The protective grating panel as manufactured by Halliday Products, of Orlando, Florida, or approved equal, shall be 3 inch (76mm) aluminum "I" bar grating with Safety Orange powder-coated finish. Grating shall be hinged with tamper proof stainless steel bolts, and shall be supplied with a positive latch to maintain unit in an upright position. Grating shall have a 6-in. (152mm) viewing area on each lateral unhinged side for visual observation and limited maintenance. A padlock hasp for owner-supplied padlock shall be provided.

B. Secondary protective grating panel shall be 3 inch (77mm) thick aluminum "I" bar grating.

C. Grating panel color and finish shall be Safety Orange powder- coating.

D. Grating panel shall be hinged with tamper proof stainless steel bolts, and shall be supplied with positive latch to maintain unit in an upright position.

E. A 6-in. (152mm) viewing area shall be provided on each lateral unhinged side of grating panel, for visual observation and limited maintenance procedures.

F. A padlock hasp for owner-supplied padlock shall be provided.

2.8 PORTABLE HOIST

A. The portable hoist shall be series DB as manufactured by Halliday Products Inc. of Orlando, Florida, or approved equal. The unit shall be sized to facilitate equipment placement and removal. The portable hoist shall be all T-304 stainless steel construction with marine grade brake winch and 30 feet (9m) of ¼ inch (7mm) T-304 stainless steel cable with galvanized safety hook. The davit arm shall adjust in 1 inch (25mm) increments from 24 to 36 inches (610 to 914mm) and the overall unit height shall be 60" (1.5m). The portable hoist shall be guaranteed against defects in material and or workmanship for a period of 3 years.

B. Provide supplemental stainless steel cable that would be attached to each pump and trash basket such that hoist would be capable of removing each component without human entry into the wetwell.

2.9 GRAB BAR

A. The series L1E safety extension as manufactured by Halliday Products Inc. of Orlando, Florida, or approved equal, shall be constructed entirely of aluminum and stainless steel. The aluminum housing shall mount to the ladder by means of stainless steel channel clamps secured to the ladder rungs with stainless steel "U" bolts. The aluminum telescoping post shall extend 37" (940mm) for Model A and 34" (864mm) for Model B above the top of the housing and lock into position with a stainless steel pin.

PART 3 - EXECUTION

3.1 GENERAL

A. Welds shall be continuous unless otherwise indicated, sized to fully transmit all loads, including rotational loads. Welds shall conform to AWS Standards. In exposed work, grind welds smooth, remove splatter and burns.

B. Units shall be fabricated in largest possible sections with field and in such a way that full strength is developed in field connection. For flexibility in meeting field conditions make use of slotted holes and adjustable connections.

C. Joints exposed to weather shall be formed to exclude water. Exposed ends of hollow members shall be closed with approved closures.

3.2 CLEANING AND FINISHING

A. Shop painting and zinc chromate primer on aluminum surfaces shall be as specified.

3.3 INSTALLATION

A. Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction.

B. Perform cutting, drilling, and fitting required for installation of miscellaneous metal. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry or similar construction.

C. Fit exposed connections accurately together to form tight hair-line joints. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication.

D. All aluminum surfaces and attachments in contact with concrete shall be primed with

at least one mil coat of zinc chromate primer. The zinc chromate prime coat shall be touched-up on the field before installation.

3.4 SUPPORTS, HANGERS AND FOUNDATIONS

A. Provide supports, hangers, braces, attachments, and foundations required for the work. Support and set the work in a thoroughly substantial and workmanlike manner without placing strains on materials, equipment, or structure, submit shop drawings for approval.

B. Supports, hangers, braces, and attachments shall be standard manufactured items or fabricated structural steel shapes.

END OF SECTION

SECTION 07540

FULLY ADHERED SPUF/EPDM ROOF SYSTEM

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Labor, products, equipment and services necessary for roofing in accordance with the Contract Documents
B. Materials and installation for ethylene propylene diene monomer (EPDM) roofing
C. Materials and installation for TTR Tri-Thermal Roofing spray-in-place polyurethane roofing foam insulation covered by a fully adhered EPDM membrane.

1.2 REFERENCES

A. UL-790/ASTM E-108 Class A Fire Resistance Rating.
B. ASTM D4637 Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane.
C. CGSB 37-GP-52M-1984, "Roofing and Waterproofing Membrane, Sheet Applied Elastomeric.
D. ULC/ORD-C790-4-1996 Roof Drains

1.3 TESTING METHODS

A. ASTM D 1621: Standard Test Method for Compressive Properties Of Rigid Cellular Plastics,
B. ASTM D 1622: Standard Test Method for Apparent Density of Rigid Cellular Plastics;
C. ASTM D 2126: Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging;
D. ASTM D 2856: Standard Test Method for Open-Cell Content of Rigid Cellular Plastic by the Air Pycnometer;
E. ASTM E 96: Standard Test Methods for Water Vapor Transmission of Materials, Procedure A: desiccant method.

1.4 PRE-INSTALLATION MEETING

A. Prior to commencement of the work, the successful contractor is to attend a mandatory pre-construction meeting with the owner's representative. The contract documents, specifications, and scope of work shall be reviewed and confirmed.

1.5 SUBMITTALS

A. Product Data: Manufacturer's printed data sheets or catalog pages describing the products to be incorporated into the roof, in accordance with Section 01300 - Submittals.
B. Shop Drawings: In accordance with Section 01300 - Submittals.
C. Material Safety Data Sheets: WHMIS MSDS in accordance with Section 01300 - Submittals.
D. Manufacturer's Instructions: Indicate special handling criteria, installation sequence, cleaning procedures
E. Maintenance Data: Sample Annual Inspection and Report forms.
F. Warranty: Sample 20 YEAR Warranty Certificate.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with Department of Labor and Occupational Health and Safety Act.
B. Installer Qualifications: Use adequate numbers of skilled, qualified personnel thoroughly trained and completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.

1.7 DELIVERY STORAGE AND HANDLING

A. Deliver, handle, store and protect materials in accordance with manufacturer's instructions.
B. Provide and maintain dry, off-ground weatherproof storage.
C. Store materials on supports to prevent deformation.
D. Remove only in quantities required for same day use.
E. Store uncured flashing and jointing materials to prevent premature curing and freezing.
F. Store roofing materials in accordance with manufacturer's written instructions.

1.8 SITE CONDITIONS

A. Apply polyurethane insulation and EPDM membrane only when surfaces and ambient temperatures are within manufacturer's prescribed limits.
B. Do not install EPDM membrane when air and substrate temperature remain below [5 degrees C (40° F)] causing condensation in accordance with manufacturer's recommendations or when wind chill gives equivalent cooling effect causing condensation.
C. Install EPDM membrane on dry substrate, free of water, snow and ice. Use only dry materials and apply only during weather that will not introduce moisture into system.

1.9 WARRANTY

A. Warrant EPDM membrane and flashings will stay in place and remain leak-proof for a period of 20 years in accordance with roofing system contractor's standard Warranty. Include annual inspection service with Warranty.
B. Warranty to be subject to annual inspection by roofing system contractor at no additional cost as per Annual Inspection Check List & Report forms referenced in 1.5 Submittals.

PART 2 - PRODUCTS

2.1 MANUFACTURER

Acceptable roofing system manufacturer or approved equal:
TTR Roofing International, Inc. 5317 -#49 Fruitville RD, Sarasota, FL 34232 Toll Free: 1-844-344-9989 Email: support@ttrsystems.com or info@ttrsystems.com Web: www.ttrsystems.com

A. Polyurethane insulation: HFC blown (zero-ozone depleting) liquid spray monolithic system, medium density rigid polyurethane insulation with R7.1 per square foot per inch, Class A Fire Tested rating to UL790/ASTM E108. Acceptable TTR Spray applied Polyurethane Roofing Foam.
B. Membrane adhesive: TTR Tri-Thermal Roofing's TTR007G Adhesive, two-part spray applied polyurethane adhesive, containing no VOC's, CFC's or HCFC's, 12 mm (1/4 -1/2" thickness)
C. Membrane: Non-reinforced white colored EPDM (Ethylene Propylene Diene Monomer) cured, single ply membrane, (1.5 mm thickness), 30.5 long rolls x 3m widths up to 30.5 long rolls x 9.14m widths. Membrane to meet or exceed the minimum requirements set forth by ASTM D4637 and CGSB 37- GP52M for Class 1, Class A non-reinforced EPDM single ply roofing membrane. Acceptable Material: Firestone
D. Seam Tape: Splice tape, 76.2mm wide x 30.5 m rools x 0.77mm thickness, black or whole colored rubber polymer base. Acceptable Material: Firestone QuickSeam
E. Elastomeric U.V. protection: Elastomeric coating, Silicone Coating or Polyurea Coating
F. Cap Flashing: 24 gauge galvanized steel
G. Cap Flashing Fastener: 25.4 mm galvanized self tapping screws fitted with rubber grommet.
H. Roof Drains: One-piece seamless body of 3 mm (.125", 11 gauge) spun aluminum, extra large 445 mm (17-1/2") deck flange, cast aluminum strainer dome and clamping ring, 305 mm (12") long drain stem, U-Flow Seal, [75 mm (3")] [100 mm (4")] [125 mm (5")] [150 mm (6")] diameter, to ANSI/SPRI RD-1 and ULC/ORD-790.4. Acceptable Material: Hercules Classic drain.

PART 3 - EXECUTION

3.1 PREPARATION

Remove existing roofing system and prepare existing decking as required by manufacturers installation instructions. Clean roof surfaces receiving polyurethane foam insulation by sweeping, power washing or dry/wet vac. Prior to beginning work, ensure:

A. Substrates are firm, straight, smooth, dry, free of water, snow, ice or frost, and swept or vacuumed clean of dust and debris.
B. Curbs have been built.
C. Drains have been installed at proper elevations relative to finished surfaces.
D. Plywood and lumber nailer plates have been installed to walls and parapets as indicated. Remove wet areas and ensure deck surfaces.
E. Remove wet areas and ensure deck surfaces are dry before introducing new insulation to level of removed areas.

3.2 SAFETY REQUIREMENTS

A. Protect workers as recommended by polyurethane foam and membrane manufacturers.
B. Ensure workers wear gloves, respirators, dust masks, long-sleeve clothing, eye protection and protective clothing when applying foam insulation
C. Do not permit workers to eat, drink or smoke while applying foam insulating and adhesive.
D. Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of insulation, adhesive, sealing tape and membrane.

3.3 APPLICATION

A. POLYURETHANE FOAM INSULATION:

1. Using foam insulation, build up low areas to reduce or eliminate ponding and to create uniform surface for receiving membrane. Up to 38 mm (1/2") only depth of ponding will be acceptable after a rainfall.
2. Use transit level to ensure positive drainage slope from roof perimeter to drain locations.
3. Build foam up around pipes and curbs to shed water away from roof protrusions.
4. Protect adjacent surfaces and equipment from damage by over-spray and dusting of insulation material.
5. Apply foam 38 mm to 50 mm (1" to 3+") thickness and allow approximately 45 minutes to off-gas and cure sufficiently, before applying membrane adhesive.

B. EPDM:

1. Position membrane over insulation starting at highest point and allow membrane to relax for 1/2 hour.
2. Overlap sheets minimum 75 mm (4″) at both side laps and end laps.
3. Fold back EPDM membrane to expose polyurethane foam
4. Spray on slow acting urethane adhesive over surface of cured polyurethane insulation just prior to applying membrane.
5. Apply foam adhesive 6 mm (1/4″) thickness to ensure any indentations in the insulation are filled while permitting the EPDM to be fully adhered to the insulation.
6. If necessary, use wind screens and avoid overspray when applying adhesive.
7. Pull membrane into urethane adhesive and ensure membrane is placed within 10 minutes of urethane adhesive being sprayed onto polyurethane foam insulation.
8. Roll or broom membrane from centre of sheet in direction of roll to ensure adhesive contact is made between rubber and foam insulation, and to minimize or eliminate wrinkles in membrane.
9. At protrusions, seal membranes at base of protrusion using EPDM seam tape and cover with second application of polyurethane foam to a height of 200 mm (8″) up protrusion. Spray elastomeric U.V. protective coating over exposed foam insulation at rate recommended by manufacturer.
10. Apply 75 mm (3″) wide EPDM seam tape to membrane overlaps using solvent adhesive.
11. Apply roofing in sections and seal at end of day to protect against any overnight rainfall.

C. NEW DRAIN/ INSERTS

1. Fit new drain or inserts to original drain locations to facilitate drainage.
2. Apply water block or mastic to stem and base of drain to seal drain insert. Use one (1) tube of water block or mastic for each [250 mm (10″)] drain insert.
3. Install sealing ring gasket or similar to bottom of drain stem to seal stem to rainwater leader and to prevent back- up of water into ceiling spaces in the event of a plugged drain.
4. Install 3″ seam tape to drain flange using adhesive to ensure adhesion and seal made to drain flange while installing spray applied polyurethane foam.
5. Install additional roof drain(s) at low spots where indicated on roof plan, if necessary.
6. Upon completion of EPDM membrane install clamping ring on drain- apply water block mastic bead to both underside and topside of membrane under clamping ring and install.

D. CAP FLASHINGS

1. At roof edge or curbs, carry membrane over roof eave and cover with metal cap flashing. Secure cap flashing with precoated screw fasteners at 610 mm (24") centers and as shown on engineering drawings.

E. CLEANING

1. Clean Work in accordance with Section 01700.
2. Check drains to ensure proper function, and remove debris, equipment and excess material from site.

END OF SECTION

SECTION 08110

STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Steel doors.
2. Steel door frames.
3. Fire rated door and frame assemblies.

B. Related Sections include the following:

1. Division 8 Section "Door Hardware" for door hardware and weather stripping.
2. Division 9 Section "Painting" for field painting factory-primed doors and frames.

1.3 DEFINITIONS

A. Steel Sheet Thicknesses: Thickness dimensions, including those referenced in ANSI A250.8, are minimums as defined in referenced ASTM standards for both uncoated steel sheet and the uncoated base metal of metallic-coated steel sheets.

1.4 SUBMITTALS

A. Product Data: For each type of door and frame indicated, include door designation, type, level and model, material description, core description, construction details, label compliance, sound and fire-resistance ratings, and finishes.

B. Door Schedule: Use same reference designations indicated on Drawings in preparing schedule for doors and frames.

1.5 QUALITY ASSURANCE

A. Steel Door and Frame Standard: Comply with ANSI A 250.8, unless more stringent requirements are indicated.

B. Fire Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspection agency acceptable to authorities having jurisdiction, for fire protection ratings indicated, based on testing according to NFPA 252.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.

B. Inspect doors and frames on delivery for damage, and notify shipper and supplier if damage is found. Minor damages may be repaired provided refinished items match new work and are acceptable to Owner. Remove and replace damaged items that cannot be repaired as directed.

C. Store doors and frames at building site under cover. Place units on minimum 4-inch- (100-mm-) high wood blocking. Avoid using non-vented plastic or canvas shelters that could create a humidity chamber. If door packaging becomes wet, remove cartons immediately. Provide minimum 1/4-inch (6-mm) spaces between stacked doors to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one the following:

1. Steel Doors and Frames:

a. Amweld Building Products, Inc.
b. Ceco Door Products; a United Dominion Company.
c. Kewanee Corporation (The).
d. Steelcraft; a division of Ingersoll-Rand.

2.2 MATERIALS

A. Hot-Rolled Steel Sheets: ASTM A 569/A 569M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

B. Cold-Rolled Steel Sheets: ASTM A 366/A 366M, Commercial Steel (CS), or ASTM A 620/A 620M, Drawing Steel (DS), Type B; stretcher-leveled standard of flatness.

C. Metallic-Coated Steel Sheets: ASTM A 653/A 653M, Commercial Steel (CS), Type B, with an A40 (ZF120) zinc-iron-alloy (galvannealed) coating; stretcher-leveled standard of flatness.

D. Electrolytic Zinc-Coated Steel Sheet: ASTM A 591/A 591M, Commercial Steel (CS), Class B coating; mill phosphatized; suitable for unexposed applications; stretcher-leveled standard of flatness where used for face sheets.

2.3 DOORS

A. General: Provide doors of sizes, thicknesses, and designs indicated on Door Schedule.

B. Exterior Doors: Provide doors complying with requirements indicated below by referencing ANSI A250.8 for level and model and ANSI A250.4 for physical-endurance level:

1. Level 2 and Physical Performance Level B (Heavy Duty), Model 1 (Full Flush).
2. Door Size: 3-0 x 7-0
3. Door Thickness: 1 ¾"
4. Material: Hollow Metal
5. Accessories: 20x24 Vision Panel
6. Frame: Hollow Metal, 2" frame with 4" head
7. Threshold: ½" height, aluminum

2.4 FRAMES

A. General: Provide steel frames for doors, transoms, sidelights, borrowed lights, and other openings that comply with ANSI A250.8 and with details indicated for type and profile. Conceal fastenings, unless otherwise indicated. Frame to be 16 gauge (.0598 inch).

B. Door Silencers: Except on weather-stripped frames, fabricate stops to receive three silencers on strike jambs of single-door frames and two silencers on heads of double-door frames.

C. Plaster Guards: Provide 0.016-inch- (0.4-mm-) thick, steel sheet plaster guards or mortar boxes to close off interior of openings; place at back of hardware cutouts where mortar or other materials might obstruct hardware operation.

D. Supports and Anchors: Fabricated from not less than 0.042-inch- (1.0-mm-) thick,

electrolytic zinc-coated or metallic-coated steel sheet.

E. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where zinc-coated items are to be built into exterior walls, comply with ASTM A 153/A 153M, Class C or D as applicable.

2.5 FABRICATION

A. General: Fabricate steel door and frame units to comply with ANSI A250.8 and to be rigid, neat in appearance, and free from defects including warp and buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site.

B. Exterior Door Construction: For exterior locations and elsewhere as indicated, fabricate doors, panels, and frames from metallic-coated steel sheet. Close top and bottom edges of doors flush as an integral part of door construction or by addition of 0.053-inch- (1.3-mm-) thick, metallic-coated steel channels with channel webs placed even with top and bottom edges.

C. Core Construction: Manufacturer's standard core construction that produces a door complying with SDI standards.

D. Clearances for Non-Fire-Rated Doors: Not more than 1/8 inch (3.2 mm) at jambs and heads, except not more than 1/4 inch (6.4 mm) between pairs of doors. Not more than 3/4 inch (19 mm) at bottom.

E. Clearances For Fire Rated Doors: As required by NFPA 80.

F. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."

G. Fabricate concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold- or hot-rolled steel sheet.

H. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.

I. Thermal-Rated (Insulating) Assemblies: At exterior locations and elsewhere as shown or scheduled, provide doors fabricated as thermal-insulating door and frame assemblies and tested according to ASTM C 236 or ASTM C 976 on fully operable door assemblies.

1. Unless otherwise indicated, provide thermal-rated assemblies with U-value of 0.41 Btu/sq. ft. x h x deg F (2.33 W/sq. m x K) or better.

J. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements in ANSI A250.6 and ANSI A115 Series specifications for door and frame preparation for hardware.

1. For concealed overhead door closers, provide space, cutouts, reinforcement, and provisions for fastening in top rail of doors or head of frames, as applicable.

K. Frame Construction: Fabricate frames to shape shown.

1. Fabricate frames with mitered or coped and continuously welded corners and seamless face joints.
2. Provide welded frames with temporary spreader bars.

L. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site.

M. Locate hardware as indicated on Shop Drawings or, if not indicated, according to ANSI A250.8.

N. Glazing Stops: Manufacturer's standard, formed from 0.032-inch- (0.8-mm-) thick steel sheet.

1. Provide nonremovable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.

2.6 FINISHES

A. Prime Finish: Manufacturer's standard, factory-applied coat of rust-inhibiting primer complying with ANSI A250.10 for acceptance criteria.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install steel doors, frames, and accessories according to Shop Drawings, manufacturer's data, and as specified.

B. Placing Frames: Comply with provisions in SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.

1. Place frames before construction of enclosing walls and ceilings.
2. Install fire rated frames according to NFPA 80.

C. Door Installation: Comply with ANSI A250.8. Fit hollow-metal doors accurately in frames, within clearances specified in ANSI A250.8. Shim as necessary to comply with SDI 122 and ANSI/DHI A115.1G.

1. Fire-Rated Doors: Install within clearances specified in NFPA 80.

3.2 ADJUSTING AND CLEANING

A. Prime-Coat Touch up: Immediately after installation, sand smooth any rusted or damaged areas of prime coat and apply touch up of compatible air-drying primer.

B. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

END OF SECTION

SECTION 08520

ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes fixed windows.

1.2 PERFORMANCE REQUIREMENTS

A. General: Provide aluminum windows capable of complying with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified and that are of minimum test size required by AAMA/NWWDA 101/I.S.2.

B. Structural Performance: Provide aluminum windows capable of withstanding the following, including wind loads based on passing AAMA/NWWDA 101/I.S.2, Uniform Load Structural Test, at basic wind speed indicated:

1. Deflection: Based on passing AAMA/NWWDA 101/I.S.2, Uniform Load Deflection Test or on glass framing system designed to limit lateral deflections of glass edges to less than 1/175 of glass-edge length or 3/4 inch (19 mm), whichever is less, at design pressure based on structural computations.

2. Basic Wind Speed: As indicated in miles per hour (meters per second) at 33 feet (10m) above grade. Determine wind loads and resulting design pressures applicable to Project according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures," Section 6.4.2, "Analytic Procedure"; based on mean roof heights above grade as indicated on Drawings.

C. Air Infiltration: Maximum rate not more than .06 cfm/ft when tested according to ASTM E-283, Air Infiltration Test.

D. Water Resistance: No water leakage as defined in AAMA/NWWDA referenced test methods at a water test pressure equaling 10.0 psf when tested according to ASTM E-331, Water Resistance Test.

E. Forced-Entry Resistance: Comply with Performance Level 10 requirements when tested according to ASTM F 588.

F. Condensation-Resistance Factor: Provide aluminum windows tested for thermal performance according to AAMA 1503, showing a CRF of not less than 53, where windows are indicated to be "thermally improved."

G. Thermal Transmittance: Provide aluminum windows with a whole-window U-value maximum 0.51 BTU/HR/SF at 15-mph (24-km/h) exterior wind velocity and winter condition temperatures when tested according to AAMA 1503.

H. Thermal Movements: Provide aluminum windows, including anchorage, that accommodate thermal movements of units resulting from the following maximum change (range) in ambient and surface temperatures without buckling, distortion, opening of joints, failure of joint sealants, damaging loads and stresses on glazing and connections, and other detrimental effects. Base engineering calculation on actual surface temperatures of materials due to solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F 67 deg C, ambient; 180 deg F100 deg C material surfaces.

I. Specific Product Performance Requirements: Comply with Section 2.2 of AAMA/NWWDA 101/I.S.2 as applicable to types of aluminum windows indicated.

1.3 SUBMITTALS

A. Product Data: For each type of aluminum window indicated.

B. Shop Drawings: Include plans, elevations, sections, details, hardware, attachments to other Work, and operational clearances.

1. Include structural analysis data indicating structural test pressures and design pressures from basic wind speeds indicated and deflection limitations of glass framing systems, signed and sealed by the qualified professional engineer responsible for their preparation.

C. Samples: For each exposed finish.

1.4 QUALITY ASSURANCE

A. Installer: A qualified installer, approved by manufacturer to install manufacturer's products.

B. Fenestration Standard: Comply with AAMA/NWWDA 101/I.S.2, "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors," for minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

C. Glazing Publications: Comply with published recommendations of glass manufacturers and GANA's "Glazing Manual" unless more stringent requirements are indicated.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace aluminum windows that fail in materials and workmanship within two years from date of Substantial Completion.

B. Warranty Period for Metal Finishes:10 years from date of Substantial Completion.

C. Warranty Period for Glass:10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide the following or approved equal :

1. Kawneer Company, Inc. 8225TLF Heavy Commercial Window.

2.2 GLAZING

A. Glass: Clear 1", insulating-glass Conforming to ASTM C 1036.

B. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.

C. Match glazing pattern of existing windows.

2.3 FABRICATION

A. General: Fabricate aluminum windows, in sizes indicated, that comply with requirements and that meet or exceed AAMA/NWWDA 101/I.S.2 performance requirements for the following window type and performance class. Include a complete system for assembling components and anchoring windows.

1. Casement window: Match existing operation.

B. Fabricate aluminum windows that are reglazable without dismantling sash or ventilator framing.

C. Weather Stripping: Provide full-perimeter weather stripping for each operable

sash and ventilator.

D. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.

E. Provide water-shed members above side-hinged ventilators and similar lines of natural water penetration.

F. Mullions: Provide mullions and cover plates as shown, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections, as indicated. Provide mullions and cover plates capable of withstanding design loads of window units.

G. Subframes: Provide subframes with anchors for window units as shown, of profile and dimensions indicated but not less than 0.062-inch- (1.6-mm-) thick extruded aluminum. Miter or cope corners, and weld and dress smooth with concealed mechanical joint fasteners. Finish to match window units. Provide subframes capable of withstanding design loads of window units.

H. Glazing Stops: Provide snap-on glazing stops coordinated with and glazing system indicated. Provide glazing stops to match sash and ventilator frames.

2.4 FINISHES

A. Baked-Enamel Finish: Thermosetting, modified-acrylic enamel primer/topcoat system complying with AAMA 603.8.

1. Color: As selected from manufacturer's full range.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

B. Set sill members in bed of sealant or with gaskets, as indicated, for weathertight construction.

C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.

D. Metal Protection: Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified in "Dissimilar Materials" Paragraph in Appendix B in AAMA/NWWDA 101/I.S.2.

E. Adjust operating sashes and ventilators, screens, and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts.

F. Protect window surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor window surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written recommendations.

G. Clean aluminum surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

H. Clean factory-glazed glass immediately after installing windows. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels and clean surfaces.

I. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION

SECTION 08711

DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Commercial door hardware.

1.2 SUBMITTALS

A. Product Data: For each product indicated.

B. Door Hardware Schedule: Organized into door hardware sets indicating type, style, function, size, label, hand, manufacturer, fasteners, location, and finish of each door hardware item.

1.3 QUALITY ASSURANCE

A. Supplier Qualifications: Person who is or employs a qualified DHI Architectural Hardware Consultant.

B. Templates: Obtain and distribute templates for doors, frames, and other work specified to be factory prepared for installing door hardware.

C. Standards: Comply with BHMA A156 series standards, Grade 1.

D. Certified Products: Provide door hardware that is listed in BHMA directory of certified products.

1.4 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within warranty period.

1. Warranty Period for Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Product named for each door hardware item establishes the basis of design. Provide either the named product or a comparable product by one of the manufacturers specified for each type of hardware item.

2.2 DOOR HARDWARE

A. Scheduled Door Hardware: Provide door hardware where called for on the drawings.

2.3 PIVOTS AND HINGES

A. Manufacturers:

1. Hager Companies (HAG).
2. McKinney Products Company; Div. of ESSEX Industries, Inc. (MCK).
3. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT).
4. Stanley Commercial Hardware; Div. of The Stanley Works (STH).

B. Products:

1. Provide Stanley FBB 179 Full Mortise Hinge or Approved Equal.

C. General: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

D. Hinge Base Metal: Unless otherwise indicated, provide the following:

1. Exterior Hinges: Stainless steel, with stainless-steel pin.
2. Interior Hinges: Steel, with steel pin.
3. Hinges for Fire-Rated Assemblies: Steel, with steel pin.

E. Nonremovable Pins: Provide set screw in hinge barrel that prevents removal of pin while door is closed; for outswinging exterior doors.

2.4 ELECTRONIC LOCKS

A. Manufacturers:

1. KABA/ILCO Corp.

2. Schlage Lock Company; an Ingersoll-Rand Company (SCH).
3. Yale Security Inc.; Div. of Williams Holdings (YAL).

B. Products:
1. Provide Dynalock 7200 series weather/vandal resistant keypad or approved equal.

2.5 EXIT DEVICES AND TRIM

A. Manufacturers:

1. Adams Rite Manufacturing Co. (ARM).
2. Corbin Russwin Architectural Hardware; Div. of Yale Security Inc. (CR).
3. NT Dor-O-Matic Hardware Div.; an Ingersoll-Rand Company (NTD).
4. NT Monarch Hardware; an Ingersoll-Rand Company (NTM).
5. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT).
6. Von Duprin; an Ingersoll-Rand Company (VD).
7. Yale Security Inc.; Div. of Williams Holdings (YAL).

B. Products:

1. Provide Von Duprin 98/99 Mortise Lock Device with 992L Trim.

2.6 CLOSERS

A. Manufacturers

1. Corbin Russwin Architectural Hardware; Div. of Yale Security Inc. (CR)
2. LCN Closers; and Ingersoll-Rand Company (LCN).
3. Norton Door Controls; Div. of Yale Security Inc. (NDC).

B. Products:

1. Provide LCN4110 Series with hold open feature or approved equal.

2.7 LOCKSETS

A. Manufacturers

1. Schlage Lock Company or approved Equal.

B. Products:

1. Provide Schlage D Series "Rhodes" Heavy Duty Commercial Lockset

2.8 DOOR GASKETING AND THRESHOLDS

A. Door Gasketing: Provide continuous weather-strip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

1. Manufacturers:

a. Gasketing:

1) Hager Companies (HAG).
2) Pemko Manufacturing Co., Inc. (PEM).
3) Reese Enterprises, Inc. (RE).
4) Zero International, Inc. (ZRO).

b. Door Bottoms:

1) Hager Companies (HAG).
2) Pemko Manufacturing Co., Inc. (PEM).
3) Reese Enterprises, Inc. (RE).
4) Zero International, Inc. (ZRO).

2. Air Leakage: Not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283.
3. Fire-Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled, based on testing according to UL 10B or NFPA 252.
4. Gasketing Materials: Comply with ASTM D 2000 and AAMA 701/702.

B. Thresholds: Of type scheduled or indicated.

1. Manufacturers:

a. Hager Companies (HAG).
b. Pemko Manufacturing Co., Inc. (PEM).
c. Reese Enterprises, Inc. (RE).
d. Zero International, Inc. (ZRO).

2.9 CYLINDERS, KEYING, AND STRIKES

A. Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.

1. Manufacturers:

a. Same manufacturer as for locks and latches.

2. Number of Pins: Manufacturers standard.
3. High-Security Grade: BHMA Grade 1A, listed and labeled as complying with UL 437 (Suffix A).
4. Permanent Cores: Manufacturer's standard; finish face to match lockset; removable cores.
5. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.
6. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

a. Replace construction cores with permanent cores, as directed by Owner.

B. Keying System: Factory-registered keying system; master key system.

C. Strikes: Manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set.

2.10 FABRICATION

A. Base Metals: Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18 for finishes. Do not furnish manufacturer's standard materials if different from specified standard.

B. Fasteners: Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated. Provide steel machine or wood screws or steel through bolts for fire-rated applications.

C. Spacers or Sex Bolts: For through bolting of hollow metal doors.

D. Finishes: Comply with BHMA A156.18

PART 3 - EXECUTION

3.1 INSTALLATION

A. Examine doors and frames for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Steel Door and Frame Preparation: Comply with DHI A115 series. Drill and tap doors and frames for surface-applied hardware according to SDI 107.

C. Mounting Heights: Comply with the following requirements, unless otherwise indicated:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

D. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with accessibility requirements.

1. Door Closers: Adjust sweep period so that from an open position of 70 degrees, the door will take at least three seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.

END OF SECTION

SECTION 09900

PAINTING

PART 1 - GENERAL

1.1 DESCRIPTION

Painting shall include, but not necessarily be limited to, surface preparation, pretreatment where indicated, priming, shop and field coating, touch up, curing, and painted surface protection on new or existing structures, pipes, materials, or other surfaces including pipe markings, safety signs, and other identification devices in accordance with the Contract Documents.

1.2 RELATED WORK INCLUDED ELSEWHERE

Painting systems for specific applications are specified elsewhere in the Specifications. In case of conflict with this section, the system specified for a specific application shall govern.

1.3 SCOPE

A. Work includes preparation and painting throughout interiors and exteriors of project. Surfaces required to be so treated under this section shall be construed to include all surfaces of any nature whatsoever, unless specifically excluded by note in these Specifications. Contractor is bound to this basic premise. This includes painting of shop finished surfaces which in the Engineer's opinion are not compatible with the color scheme. The basic intention underlying work called for in this section is to ensure the presence of an industrial type protective film on materials which would otherwise deteriorate, and of a decorative film on all visible surfaces.

B. Surface preparation, priming and coats of paint specified are in addition to shop priming and surface treatment specified under other sections of the work.

C. The work includes the field painting of all exposed pipes, valves and fittings, hydrants, identity painting, and of hangers, exposed steel and iron work, interior of building walls, concrete floors and ceilings (use liquid floor hardener), doors, and primed metal surfaces of equipment not having a factory finish coat of paint installed under the mechanical and electrical work, except as otherwise indicated.

D. The term "paint" as used herein means all coating systems materials, which includes primers, emulsions, enamels, stain and sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.

E. Paint roof top equipment, including aluminum items as directed.

F. Do not paint:

1. Pipe code markings or code required labels such as UL and FM and equipment identification rating or nomenclature plates.
2. Mechanical and electrical work in areas above ceilings, that are boxed in or otherwise completely covered, unless otherwise indicated. Pipe identification is required on piping in concealed but accessible areas.
3. Caulking, bronze, chromium, nickel, stainless steel, anodized aluminum, and copper unless otherwise indicated or directed.
4. Moving parts of operating units, mechanical and electrical parts such as valve operators, linkages, sensing devices and motor shafts, unless otherwise indicated.

G. Work not included under this section: The following categories of work are not included as part of the field applied finish work, or are included in other sections of these specifications

1. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for structural steel, miscellaneous metal items, hollow metal work, and similar items. Also, shop-fabricated or factory-built mechanical and electrical equipment or accessories.

2. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory-finishing or installer-finishing is specified for such items as (but not limited to) finished mechanical and electrical equipment and finished equipment.

3. Interior surface of wetwell: Apply coating system per section 09710.

1.4 QUALITY ASSURANCE

A. Referenced Standards:

1. SSPC-SP1, Solvent Cleaning.
2. SSPC-SP2, Hand Tool Cleaning.
3. SSPC-SP3, Power Tool Cleaning.
4. SSPC-SP6, Commercial Blast Cleaning.
5. SSPC-SP7, Brush-Off Blast Cleaning.
6. SSPC-SP8, Pickling.
7. SSPC-SP10, Near-White Blast Cleaning.

B. Paint manufacturer's direct factory representative shall make an initial site inspection

of conditions pertinent to painting and coating work with Contractor or his authorized painting representative and advise Contractor as to acceptance of surfaces for painting. Factory representative shall make his services available to the Engineer for consultation in regard to the painting and coating work.

C. Inspection - The Engineer will inspect all materials prior to and/or after application to ensure compliance with the Contract Documents. Prepared metal surface shall be inspected for degree of cleaning in accordance with SSPC Vis-1 and in accordance with the approved proof panels at the discretion of the Engineer. Finished work shall be uniform, smooth, of approved color, shall completely cover, and shall be free from runs, sags, clogging, or excessive flooding. Edging of paint adjoining other materials or colors shall be sharp and clean, without overlapping. Damaged or defective areas shall be cleaned and repainted at no additional cost to the Owner. The Engineer will inspect painting at the following hold points:

1. After surface preparation and before priming
2. After priming and before intermediate coat
3. After intermediate coat and before finish coat
4. After each coat for interior, non-immersion surfaces

The Contractor will not be permitted to apply the next coat until the previous work has been accepted by the Engineer. The Contractor's equipment shall be subject to inspection by the Engineer or it's designated agent to insure adequate capacity and proper operation.

D. Testing

1. Thickness - The dry film thickness of paint on metal surfaces may be tested with a calibrated magnetic film-thickness gauge in accordance with SSPC PA2-73T. Specified mil thickness and/or coats are minimums and applications less than those specified will be rejected.
2. Holiday Detection - Painting systems requiring holiday-free application may be tested using a low amperage, high voltage flaw detector in accordance with the recommendations of the SSPC.

1.5 SUBMITTALS

A. Shop Drawings - Shop drawings shall be submitted as specified in Section 1300 for all painting materials. The shop drawings shall include manufacturer's name, catalog number, and finish system designation; product technical description; manufacturer's material safety data sheets; label analysis; storage, handling, application (including recommended number of coats), and curing recommendations; and color chip samples of the colors the Contractor proposes to use. Each material shall be cross referenced to the specific paint and finish system and its application in the project.

B. Certificates of Compliance - Certificates of compliance shall be submitted for all paint stating that the material furnished meets the requirements specified.

C. Maintenance Requirements - In addition to the shop drawing data, maintenance information for each material shall be submitted which includes product name and catalog number; name, address and telephone number of manufacturer and/or local distributor; detailed requirements for cleaning; and procedures for repair of surface damage such as dents, scratches and staining.

D. Applicator's Qualifications - Submit qualifications of the proposed coating applicator to indicate compliance with paragraph 1.9.

E. Samples - Engineer and Owner will select colors and supply Contractor with a complete color schedule. Submit one sample for each finish and color required. Such samples shall constitute standards for color finish for the project. The approved samples shall be marked and retained by the Engineer for comparison with the actual work. Samples shall be eight inches by ten inches in size and be of the same materials as those on which the finish is to be applied.

F. Sample Panels - Sample panels, when required by the Contract Documents, shall be applied on every surface to be painted for each coating system for the Engineer's approval prior to proceeding with the remaining work.

G. Proof Panels - The Contractor shall provide and set aside proof panels to demonstrate that surface preparation and/or painting will meet the quality specifications. Proof panels shall be subject to acceptance by the Engineer so that they may be compared to completed work prior to acceptance. Proof panels shall be 6" x 6" square; minimum and shall be protected from ambient degradation.

H. Submit a written schedule setting forth name of manufacturer of paint to be used on project, and brand name or number as designated by the manufacturer for reference to Engineer's paint schedule. Do not proceed with painting until samples or schedule are approved. Finished work must comply with samples and schedule.

1.6 SUBSTITUTIONS

No material substitutions will be approved by the Engineer which will, in the Engineer's opinion, decrease film thickness, the number of coats, and/or the degree of surface preparation; change the generic type of coating specified; and/or reduce the physical properties of adhesion, abrasion resistance, impact resistance, hardness, weather resistance, corrosion resistance, flexibility, gloss retention and/or salt spray resistance.

1.7 OCCUPATIONAL EXPOSURE

The Contractor is responsible for compliance with all provisions of the Delaware

Occupational Safety and Health Administration (DE. OSHA) for Occupational Exposure to Lead, (as well as other toxic or hazardous substances) in Construction Work.

1.8 PRODUCT DELIVERY, STORAGE & HANDLING

All painting materials shall be delivered to the site in the manufacturer's original new and unopened containers with label's intact and seals unbroken. Labels shall show the manufacturer's name; the name, stock number, color, and quantity of the contents; the date of manufacture and the lot number; constituents; thinning instructions; and application instructions. Stored materials at site in a designated area restricted to paint materials and equipment.

1.9 APPLICATOR

The applicator shall have successfully painted similar facilities for at least five years. Contractor shall submit applicator's experience record to the Engineer for evaluation and approval. The experience record shall include at least five similar projects; the name, address, and telephone number of the Owner's representative, Architect and/or Engineer observer, or other responsible official having direct knowledge of the applicator's performance on the referenced project. Verification of unsatisfactory performance or inadequate experience record on similar projects will be cause for rejection of applicator.

1.10 GUARANTEE

Colors of all surfaces finished under the section shall remain free from serious variations and fading for a period of one year after project final acceptance. Variations in color, if any, shall be uniform. There shall be no evidence of blisters, peeling, chalking, running, streaks or stain at the end of the guarantee period. Surfaces shall be such that washing with water and alkali soap will remove surface dirt without deteriorating the paint.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Acceptable manufacturers are as follows:

1. Tnemec Company, Inc.
2. Glidden, Inc.
3. Koppers Company, Inc.
4. Sherwin-Williams

2.2 PAINTING SCHEDULE - GENERAL

A. General - The paint systems are specified by their generic type. The Tnemec coating systems are included to serve as a standard of quality for comparison. The

number of coats and dry film thickness same as generic system. The following paint systems are intended to include all items to be painted at the job site. Any item not specifically named herein but obviously required to be painted, shall be painted in accord with the system selected by the Engineer, or painted as directed by the Engineer.

B. The product names and numbers used in the following schedules are that of Tnemec Co., Inc. unless otherwise noted. The schedules are not intended to include mention of every item requiring field painting.

2.3 PAINTING SCHEDULE

Surface		Coats	Product Name or Material	Type of Coating	Coverage SF/GAL	Dry Film Thickness Per Coat (Mils)
A.	Iron & Steel (excluding galvanized):					
1.	Nonsubmerged-normal conditions (doors, equipment cabinets, pipe, machinery, valves, structural steel, safety, painting, etc.)	1	Touch-up of shop prime Series 66-1211	Epoxy	350	2-3
		1	Field Prime Series 66-1211 Color Hi-Build Epoxoline	Epoxy	175	4-6
		1	Finish Coat Series 73 Endurashield	Urethane	575	1.5-2.5
	(Preparation: SSPC-SP-6 Commercial Blast unless otherwise noted)					
2.	Submerged and within 3' of submergence (piping, weirs, etc)	1	Touch-up of shop prime Series 66-1211	Epoxy	180	3-5
		1	Field prime Series 66-1211 Color Hi-Build Epoxoline	Epoxy	180	3-5
		2	Finish coat Series 66 High Build	Epoxy	180	3-5

	Surface	Coats	Product Name or Material	Type of Coating	Coverage SF/GAL	Dry Film Thickness Per Coat (Mils)
			Epoxoline			
	(preparation SSPC-SP-6 Commercial Blast unless otherwise noted)					
B.	Galvanized Metal (Hot Dip Galvanized)					
		1	Series 66-Color Hi-Build Epoxoline		250	3-4
		1	Series 70-71		400	1.5-2.5
	(preparation: SSPC-SP-1 Solvent Cleaning and Pretreat)					
C.	Concrete & Masonry					
1.	Concrete Hair Crack Repair Pressure inject all hair cracks with SIKA-Dur 35 Hi-Mod LV moisture insensitive epoxy system or approved equal. See also section 03320.					
	Interior Walls and Dense Concrete (Non-Submerged) unless otherwise noted.	2	Series 66	Epoxy	180	4-6
2.	Safety Painting of Concrete & Masonry	1	Series 66	Epoxy	180	4-6
		1	Series 69	Epoxy	180	4-6

PART 3 - EXECUTION

3.1 STORAGE AND HANDLING

Sealed containers shall be stored and handled in accordance with manufacturer's recommendations. Only approved materials for use on the project shall be stored at the project site. Paint materials and related equipment shall be stored in a suitable area designated for and restricted to that use. The area shall meet all applicable health and fire regulations and shall be maintained in a clean, orderly and accessible condition. Paint storage areas shall be maintained at a minimum temperature of 50 degrees Fahrenheit and/or

the manufacturer's recommended storage temperatures. Promptly and safely dispose of all excess and waste materials.

3.2 JOB CONDITIONS

A. Exterior paint shall not be applied in damp, rainy weather or when temperatures are below 40 degrees F.

B. Interior Paint shall not be applied when temperature is below 50 degrees F. or in any place that is not closed and free from draft, dampness and dust.

C. Apply paint to clean, dry, smooth surfaces, under suitable weather conditions.

D. Paint shall not be applied in the rain, wind, snow, mist, and fog, or when surface temperatures are lower than 5 degrees F above the dew point.

E. Paint shall not be applied when temperature of surface to be painted is above 120 degrees F or as recommended by the coating manufacturer.

F. Paint shall not be applied when the relative humidity is above 85% or the temperature is above 90 degrees F.

G. Provide supplementary ventilation such as fans and blowers in confined or enclosed areas to carry off solvents during the evaporation stage.

H. Paint valves and operators same color as piping.

3.3 GENERAL

A. The Contractor shall inspect the surface for imperfections and repair before painting. Application of material to any surface constitutes acceptance by applicator of suitability of surface, he assumes responsibility for, and shall rectify any unsatisfactory finish.

B. Protect hardware and accessories, plates, lighting fixtures, and similar items installed prior to painting and remove protection upon completion of work in each space. If necessary, disconnect and move equipment in order to paint behind, reconnect and reposition equipment upon completion of work.

3.4 PROTECTION

A. Protect painted materials before, during and after application, and protect other work and materials with drop cloths or other impervious material.

B. Clean up or otherwise remedy without additional cost, damage by paint and

coatings to public or private property.

3.5 PAINTING FACTORY-FINISH EQUIPMENT

A. Equipment, such as motors, pumps and other such items, which when installed become an integral part of a system and which may be delivered fully factory-finished (that is, having finish coatings in addition to the prime coating) shall not require repainting in the field unless:

1. Factory finish is unacceptable to the Engineer; that is, not having generic type of paint or proper mil thickness to withstand humid atmosphere of water treatment plants or is not compatible with color schedule.
2. Factory finish is damaged.

B. On factory-finished items requiring repainting, first sand existing paint to a dull finish and then repaint in scheduled finish system for the installed location of such factory-finished items.

3.6 INSPECTIONS

Each coat of paint shall be inspected by the Engineer and approved before succeeding coats are applied.

3.7 COATS AND FINISHES

A. Coats specified in this section are in addition to shop coats and coats specified in other sections.

B. Apply additional coats where required to obtain good cover, at Contractor's expense if exceptions have not been taken to material or number of coats as scheduled, at the time of bidding.

3.8 PREPARATION

A. The Contractor shall clean all surfaces to be painted. Scarify or sand, as necessary, to prepare surfaces to receive paint or varnish. Surface preparation for steel shall be performed in accordance with methods and procedures set forth in the SSPC Specifications, and in accordance with the respective manufacturer's recommendation for the particular paint system.

1.	Solvent Cleaning	SSPC SP-1
2.	Hand Tool Cleaning	SSPC SP-2
3.	Power Tool Cleaning	SSPC SP-3
4.	Commercial Blast Cleaning	SSPC SP-6
5.	Brush-off Blast Cleaning	SSPC-SP7

6.	Pickling	SSPC-SP8
7.	Near-White Blast Cleaning	SSPC SP-10

B. Paint shall be mixed by mechanical means except that hand mixing will be permitted for up to 5 gallon containers. Use all paint directly from original containers without any additions or thinning except tinting of colors as approved by the Engineer. Paint shall not be left in spray pots or painter's bucket overnight, but gathered into the original container and remixed before using.

C. Damaged factory or shop primer shall be repaired with matching primer prior to application of finished coat(s).

D. Blast cleaned surfaces shall be painted within 8 hours of cleaning. If paint is not applied within 8 hours of blast cleaning, surfaces shall be blast cleaned again or cleaned as directed prior to paint application.

E. Ferrous Metal:

1. Shop Primed:

   a. Immediately before paint application, clean dust, dirt and other foreign matter from the shop coat.
   b. Touch-up damaged shop paint.
   c. Surface preparation of surfaces to be touched-up must be as effective as those specified for shop painting.

2. Non-shop primed and submerged or intermittently submerged in liquid:

   a. Grind smooth to a rounded contour sharp edges and welds, and remove weld splatter.
   b. Except for insides of pipes, sandblast in accord with SSPC SP-10 or pickle in accord with SSPC SP-8.
   c. After sandblasting, remove dust and spent sand from surface by brushing or vacuum cleaning.
   d. Apply prime coat before surface begins to oxidize.
   e. Do not allow sandblasted surfaces to stand overnight before prime coating.

3. Non-shop primed and non-submerged:

   a. Grind smooth to a rounded contour sharp edges and welds, and remove weld splatter.
   b. Sandblast in accord with SSPC SP-6.
   c. After sandblasting, remove dust and spent sand from surface by brushing or vacuum cleaning.

d. Apply prime coat before surface begins to oxidize.
e. Do not allow sandblasted surface to stand overnight before prime coating.

F. Galvanized Metal Pipes and Conduits:

1. Solvent clean in accord with SSPC SP-1.
2. Remove white rust by hand or power tool cleaning in accord with SSPC SP-2 or SP-3. Pretreat with vinyl wash primer.

G. Galvanized steel:

1. Same as for galvanized pipe except add galvanized repair paint for damaged areas complying with DOD-P-21035A or SSPC Paint 20.

H. Polyvinyl Chloride Pipe: Lightly sand off sheen and clean.

I. Concrete

1. Remove oil, grease, dirt, laitance & bond inhibiting materials, etc., by commercial blast cleaning on submerged surfaces and brush blast cleaning on non-submerged surfaces. Perform other cleaning as required by manufacturer of coatings.
2. Thoroughly vacuum clean any substances remaining upon drying.
3. Unless otherwise specified fill exposed aggregate or deep pits and air holes with cement grout and trowel to a uniform surface texture.
4. Perform work only on cured, clean and dry concrete surfaces. If form oils, waxes or curing membranes are present, they shall be removed by blasting per this section.

J. Masonry

1. Remove mortar spots and projections before applying finish coats by sanding or rubbing.
2. Proceeding with paint application denotes acceptance of surface.
3. Perform work only on cured, dry and dust free masonry surfaces.

K. Mechanical & Electrical Systems

1. Clean free of dust, dirt, and other foreign matter.
2. Solvent clean or degrease surfaces; exercise care not to damage surfaces.
3. Do not paint factory finish painted surfaces of mechanical and electrical components in such systems unless directed.
4. Do not paint light fixtures.

3.9 APPLICATION - GENERAL

A. Strictly follow paint manufacturer's label instructions for mixing, thinning, proper spreading rate and drying time. In no case shall film thickness be less than manufacturer's recommendations.

B. If material has thickened or must be diluted for application, the coating shall be built up to the same film thickness achieved with undiluted material. Do not use thinner to extend coverage of the paint.

C. Regardless of the surface, it shall be the painter's responsibility to achieve a protective and decorative finish either by decreasing the coverage rate or by applying additional coats of paint.

D. Paint all exposed surfaces. Prime all sides, cut ends, and edges. Parts of any member inaccessible after installation shall be painted before installation.

E. All exterior painting operations shall be performed in daylight hours only. Do not paint while surfaces to receive paint are damp or wet. Allow sufficient drying time between each coat. Sand surfaces as necessary between coats to produce a smooth finish.

3.10 METHOD OF APPLICATION

A. Workmanship: In general, finished surface regardless of method of paint application shall show no evidence of improper application according to accepted trade practice. Do not use paint rollers having nap exceeding 3/8 inch.

B. Succeeding coats of paint shall show visual difference from preceding coats. Each coat shall have a uniform and smooth appearance and be tinted to the final coat. The final coat shall present solid hiding with edges of paint adjoining other paint or materials made clean and sharp without overlap. Wipe or otherwise render undercoats dust free just prior to application of succeeding coatings.

C. Do not apply additional coats of paint until the film to be recoated is sufficiently cured to receive the next coat.

D. If the time limit is exceeded for coatings that have a maximum recoat time, consult paint manufacturer before proceeding with the next coat.

E. Work must be free from runs, defective brushing and clogging of lines and angles.

3.11 PAINTING EXPOSED/CONCEALED SURFACES

A. It is a requirement of this specification that surfaces be painted except as specified

herein and elsewhere in the Specifications.

B. Paint exterior surfaces only as scheduled.

C. In interior exposed areas of structures, paint mechanical and electrical systems, including pipe, duct and conduit systems, except for full factory finished items as defined previously.

D. Paint exposed mechanical and electrical systems the same color as adjacent wall and/or ceiling color. Paint materials as scheduled herein.

3.12 SAFETY COLOR CODING

A. General: Color code physical hazards and safety equipment in accord with paragraph 1910.44 of the OSHA regulations. The colors utilized shall meet the tests specified in ANSI Z53.1-1971, "Safety Color Code for Marking Physical Hazards".

B. Colors and Associated Hazards: Following listing includes categories of physical hazards to be identified but does not necessarily include every item. Contractor shall, however, color code physical hazards as specified below:

1. Safety Red

   a. Fire protection equipment and apparatus.
   b. Barricades and temporary obstructions.
   c. Containers for flammable liquids.
   d. Emergency electrical stop switches for machinery.

2. Safety Orange

   a. Dangerous parts of machinery or energized equipment.
   b. Hazards exposed when enclosure doors or guards are opened or removed.

3. Safety Yellow

   a. Exposed edges of platforms, pits and walls.
   b. Caution and warning signs.
   c. Waste containers for explosive or combustible material.

4. Safety Green

   a. Safety equipment.
   b. Location of first aid equipment.

5. Safety Black and Safety White

a. Borders of stairways.
b. Floor space to remain clear.
c. Location of items for housekeeping purposes.
d. Directional signs.

3.13 UTILIZATION OF PAINTED SURFACES

Do not use or place into service items which are painted until paints and coatings are fully cured (dry-hard).

3.14 MARKINGS

Apply identification markings on painted surfaces by stenciling, preprinted adhesive markers or other specified identification device of the sizes, colors, and text indicated in the Contract Documents. Use OSHA approved color and format for safety and hazard identification where appropriate. Do not apply markings until the provisions of paragraph 3.12 above have been met.

3.15 CLEANUP

A. Provide "Wet Paint" signs as required to protect newly painted finishes.

B. Remove temporary protective wrappings provided by others for protection of their work after completion of paint work operations.

C. The Contractor shall remove all paint smears, splatters, or smudges from all glass, floors, walls, hardware, and other unpainted or previously painted surfaces.

D. The Contractor shall touch-up minor surface damage which can be job-repaired to the satisfaction of the Engineer.

E. Areas of finish surface damage which can not, in the opinion of the Engineer, be satisfactorily "touched-up" shall be refinished at no cost to the Owner.

F. Keep site free from accumulation of paint containers, solvents, thinner and used cleaning cloths and legally dispose of same off premises daily.

END OF SECTION

SECTION 11001

EQUIPMENT

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies general provisions and specific requirements applicable to equipment for this project.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. The following sections form a part of this section. It shall be the Contractor's responsibility to coordinate work of other sections with the work of this section to complete the work required.

1. Section 09900 - Painting
2. Division 11 - Equipment
3. Division 15 - Mechanical
4. Division 16 - Electrical

1.3 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies: The construction requirements of State, County, or other political subdivision specifications exceeding the requirements of the codes, standards, and approving bodies referenced herein shall be met and complied with. Both the Underwriters' Laboratories (UL) Listings and Approvals and the National Electrical Manufacturers' Associations (NEMA) stamps or seals shall be evidenced where applicable to electrical apparatus forming parts of the "mechanical" equipment.

B. Certificates and Permits: Upon completion of work, and prior to final payment, furnish to the Engineer formal certification of final inspections from authorities having jurisdiction and secure required permits, if any, from same. Additionally, prepare detailed diagrams and drawings which may be required by those authorities having jurisdiction.

C. Reference Standards: Steel Structures Painting Council.

1. Surface Preparation Specifications.

a. SSPC-SP 6, Commercial Blast Cleaning.
b. SSPC-SP 8, Pickling.
c. SSPC-SP 10, Near-White Blast Cleaning.

2. Paint Application Specifications: SSPC-PA 1, Shop Field and Maintenance Painting.

1.4 SUBMITTALS

The Contractor shall submit copies of shop drawings:

A. Shop drawings shall be detailed dimensional drawings and materials listings shall be submitted as specified in Section 01300 and as further stipulated hereinafter.

B. Submit shop drawings for the following items within thirty (30) days after Notice to Proceed.

1. All Pumps and Appurtenances
2. Electrical Equipment
3. Ventilation Fan
4. Biofilter
5. Access Hatches
6. Trash Baskets
7. Hoists
8. Any long-lead items

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. General: In addition to requirements for materials handling and storage as stated in the General Conditions of the Contract, the following applies.

1. When unloading materials, equipment and machinery provide special lifting harness or apparatus as may be required by manufacturer. Handle materials, equipment and machinery in accordance with manufacturer's written instructions.
2. Store materials, equipment and machinery, both on and off site, in accordance with manufacturer's written instructions. Additionally, provide manufacturer's certificates of proper materials, equipment or machinery storage for the following listed items. Prior to issuance of such certificates, a manufacturer's representative shall visit the site of storage and examine materials, equipment or machinery in actual storage conditions.

1.6 JOB CONDITIONS

A. Electrical Interface shall conform to the following:

1. Install or mount, as work of Division 11 - Equipment, such electrical components or apparatus as provided by product manufacturer's specified under the various sections of Division 11.

2. Power wiring, including final connections of such to electrical components or apparatus of products specified shall NOT be performed as work of Division 11 - Equipment but as work of Division 16 - Electrical.
3. Motor starters required under this division of the Specifications will be provided under Division 16 of the Specifications.

B. Field and Shop Coat Compatibility: To insure satisfactory paint and coating performance, it is a contract requirement that products applied in the shop and field be mutually compatible. Contractor shall require fabricators and equipment manufacturers to apply shop coats that are compatible with field coats specified in Painting: Section 09900.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Shop Paint for primer coat use only those primers that are compatible with field coats specified under Painting Section 09900.

B. Motors shall generally conform to the following unless otherwise specified:

1. Provide motors of sufficient capacity to operate the given equipment under all conditions of operation without loading beyond the nameplate current or power.
2. In no case are motors offered to be less than the horsepower specified except when it can be demonstrated that because the efficiency of the drive equipment is greater than that specified, a lesser horsepower will suffice.
3. Design motors smaller than one-half horsepower to operate on 120 volt single phase, 60 Hertz current unless otherwise specified or indicated on Drawings.
4. Provide motors of TEFC, ball bearing type unless otherwise specified.
5. Design motors to operate in an ambient temperature of 40 degrees C in continuous operation with a service factor of 1.15. Service factor shall not be considered when selecting motor size.
6. Explosion proof motors shall comply with requirements of Class I, Division I, Group C & D, Hazardous Locations, as defined by the National Electrical Code.
7. Motors designed for outdoor service shall have motor windings protected by U.S. Motors Everseal Solid-Cast Encapsulation, Westinghouse Life-Guard Encapsulation or equal.
8. All motors shall comply with Standards of IEEE and NEMA in all respects except where requirements exceed these standards.
9. Provide vertical motors with thrust bearings adequate for axial loading to which they can be subjected in operations.
10. Bearings for motors one-half horsepower and larger shall be rated for 20-year life under AFBMA Standards.

11. Design controls to operate on 120 volt, single phase, 60 Hertz current.

D. Lubrication: Provide means of lubrication for bearings and other metallic parts in sliding contact. Use alemite industrial type fittings except where specified otherwise in Division 11.

1. Locate lubrication points on equipment readily accessible without the necessity of removing covers, plates, housings or guards, or without creating safety hazards at installed equipment elevations.
2. Exhaust pressure lubricated units to the atmosphere to prevent excessive greasing.
3. Provide two grease guns with appropriate fittings and one sealed 25-pound container of each type of lubricating grease required to service equipment.

E. Equipment Anchors: Provide anchors for equipment requiring such. Size anchors for embedding in concrete and sleeve anchors as recommended by equipment manufacturers. When recommendations are not provided, size anchors in the largest diameter that will pass through the bolt holes in equipment bases.

1. Stainless Steel Anchor Bolts: ASTM A320 Grade B8, AISC Type 304.
2. Expansion Anchors: Conforming to Federal Specification FF-S-325, Group II, Type 4, Class I Stainless Steel Type 304; such as Hilti Kwik-Bolt, Phillips Red Head Wedge-Anchor and Molly Parabolt, or equal.
3. See acceptable anchors for concrete in section 05500.

F. Shop Painting shall conform to the following:

1. Prior to painting, remove all rust, dust and scale as well as other foreign substances on ferrous metal surfaces to be prime painted in the shop, by sand-blasting or pickling.

    a. Sand-blasting shall conform to requirements of the latest edition of SSPC-SP6, Commercial Blast Cleaning.
    b. Pickling shall conform to requirements of the latest edition of SSPC-SP8, Pickling, or SSPC-SP10.

2. The ferrous metal surfaces thus cleaned shall be prime painted as soon as possible after cleaning to prevent new rusting.
3. All ferrous metal surfaces of equipment, apparatus, and devices shall receive a shop coat of primer (except acceptable factory finished surfaces) unless otherwise specified or required by the Engineer.
4. Painting:

    a. Apply shop paint in accordance with SSPC-PA-1.
    b. Minimum dry mil thickness at 1.5 to 2 mils.

G. All equipment and machinery furnished under this Contract shall be the latest improved design suitable for the service specified. All equipment and machinery shall be designed and constructed to operate efficiently, continuously and quietly under the specified requirements with a minimum of maintenance, renewals, and repairs. The design and construction of all equipment and machinery shall be such as to permit operation with minimum wear, vibration and noise when properly installed. Allowable amplitude permitted shall be 2.0 mils maximum for any 3600 rpm machinery. All other machinery shall have a maximum allowable amplitude of 4.0 mils. Ample room for erecting, repairing, inspecting and adjusting of all equipment and machinery shall be provided. The design, construction and installation of all equipment and machinery shall conform to and comply with the latest safety codes and regulations. All equipment of identical size, type and service shall be the product of the same manufacturer. All equipment selected shall suit the general arrangement of the space in which it is to be installed.

H. Special tools shall include any type of tool that has been specially made or used on an item of equipment for assembly, disassembly, repair or maintenance. Any special tools that are required to assemble, disassemble, repair or maintain any mechanical equipment shall be furnished with the equipment.

I. Nameplates shall be provided for all equipment provided under this Contract. All nameplates shall be constructed of the same material to provide uniformity throughout the job. Nameplates shall be attached to the machinery casing and to the panel where required for panel boards. Nameplates shall be black-laminated phenolic plastic having engraved white letters and beveled white trim. Nameplates shall be engraved with minimum 1/4-inch letters showing the equipment name and number as given on the Contract Drawings or by the Engineer. All equipment nameplates shall be screwed into the equipment frames.

J. Oil drains on all equipment shall be easily accessible with extensions as required to prevent oil running on or down equipment.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install equipment with skilled mechanical erection labor in accordance with manufacturer's instructions.

B. Installed equipment shall be inspected, adjusted, approved and certified satisfactory by the manufacturer.

C. Furnish the Engineer with manufacturer's certificates regarding equipment installation prior to initial mechanical performance tests.

D. Field Painting: As specified in Painting: Section 09900.

3.2 FIELD QUALITY CONTROL

A. Upon completion of utility work as well as installation and adjustment of equipment in a manner satisfactory to the Engineer, the Contractor with his own forces, including such equipment and other experts as may be necessary (hereinafter collectively referred to as "Contractor's Personnel") shall place equipment in operation.

B. Give the Engineer at least seven days written notice prior to placing equipment in operation.

C. Operating procedures during said period are subject to Engineer's approval.

D. Operation of equipment prior to satisfactory completion of performance tests is the Contractor's complete responsibility.

E. The Contractor shall with the manufacturer's technician test the facilities during clear water operations and again at connection to the sewage mains. Tests shall include at minimum the following:

1. Motor amperage and voltage, loaded and unloaded.
2. Resistance to ground and phase to phase of electrical motors and wiring.
3. Pump pressures; discharge, suction, and static.
4. Operational sequence by level and by time (pump on, off; standby generator start up, shutdown; alarm set, reset; telemetry on, off).
5. Capacities (flow rate, electrical generation).
6. Timing set points (time delay relays; generator start, transfer, and cool down; generator exercise, etc.)

3.3 COORDINATION BY CONTRACTOR

Contractor shall properly coordinate his work and the work of all subcontractor's and manufacturer's representatives during installation, start-up and the guarantee period. Scheduling of personnel shall insure the presence of all necessary representatives so that individual components of each system work together and are properly adjusted to achieve the desired result. The Contractor, as a single entity, is designated as having the responsibility for all components making up equipment systems. The Contractor shall have the sole responsibility to answer and solve any and all problems as regards to proper installation, compatibility, performance and acceptance of all equipment.

3.4 MANUFACTURERS REPRESENTATIVE EXTENDED SERVICES

A. Contractor shall provide end of warranty inspection and services of equipment manufacturer's representative as follows. Not more than six (6) weeks prior to end of

warranty nor less than two (2) weeks before end of warranty, equipment representative shall inspect, adjust, calibrate or repair equipment as necessary and shall certify in writing that performance and operation are satisfactory. Equipment listed below shall be thus inspected and serviced.

1. All Pumps and Controls
2. Biofilter
3. All Electrical Equipment (including generator)

B. Applicable contract prices will include furnishing of said services.

C. Said services are additional to those furnished in connection with equipment erection, installation, testing, correction of deficiencies, personnel training at time of start-up and start-up assistance.

D. The one year warranty period is described in the General Conditions.

END OF SECTION

SECTION 11306

SEWAGE PUMPS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The contractor shall furnish and install sewage pumps as specified herein and as shown on the drawings. This section includes requirements for providing the following:

a. Health Unit Pump Station: Solids handling submersible pumps
b. Three Bells Pump Station: Solids handling submersible pumps
c. Meadows Pump Station: Solids handling submersible pumps (Provide 1 Hydromatic Pump with 2 base assemblies as indicated on the drawings)
d. Big Park Pump Station: Horizontal self-priming centrifugal pumps

1.2 QUALITY ASSURANCE

A. All equipment in this Section shall be furnished by or through a single supplier. Pumps shall be fabricated, assembled, erected and placed in proper operating condition in full conformity with the drawings, specifications, engineering data, instructions and recommendations of the equipment manufacturer.

B. The manufacturers shall be experienced in the design and construction of equipment for this purpose, and shall have furnished such equipment and can prove that it has performed successfully for a period of not less than (5) years.

C. All centrifugal pumps of like size and type shall be of the same manufacturer for the purpose of parts interchangeability.

1.3 REFERENCES

A. Hydraulic Institute. Current Edition

B. ASTM: American Society for Testing & Materials (ASTM) Publications:

C. ANSI: American National Standards Institute (ANSI):

1.4 SUBMITTALS

Submittals shall include all necessary information for the proper determination of the acceptability of the proposed equipment and shall include, but not necessarily be limited to, the following:

A. Complete description of the equipment, system, process, or function, including a list of system components and features, drawings, catalog information and cuts, manufacturer's specifications, including materials description.

B. Performance data and curves, and horsepower requirements.

C. Outside utility requirements, such as water power, air, etc.

D. Functional description of any internal instrumentation and control supplied including list of parameters monitored, controlled, or alarmed.

E. Addresses and phone numbers of nearest service centers and a listing of the manufacturer's or manufacturer's representatives' services available at these locations, including addresses and phone numbers of the nearest parts warehouses capable of providing full parts replacement and/or repair services.

F. A list of five installations in the United States where similar equipment by the manufacturer is currently in similar service; include contact name, telephone number, mailing address of the municipality or installation, engineer, owner, and installation contractor; if five installations do not exist, the list shall include all that do exist, if any.

G. Detailed information on site, architectural, structural, mechanical, plumbing, electrical, and control, and all other changes or modifications to the design and construction work necessary to adapt the equipment or systems to the arrangement shown and/or functions described on the drawings and in the technical specifications. This shall include plan view and section sketches illustrating any additional space requirements necessary to provide the minimum adequate clear space within and around the equipment for operation and maintenance, as shown on the drawings and specified.

G. All differences between the specifications and the proposed substitute equipment shall be clearly stated in writing under a heading of "differences".

H. Operation and Maintenance manuals.

I. Other specified submittal requirements listed in the detailed equipment and material specifications.

1.5 QUALITY ASSURANCE

A. Certified Shop Tests

Each pump furnished for this project shall be shop tested. The tests shall conform to the latest standards of the Hydraulic Institute. The tests shall determine efficiency, head, capacity and brake horsepower as a minimum. The results shall be plotted in the form of a performance curve with efficiency, head and brake horsepower plotted as a function of capacity, from shutoff head at zero gpm to 1.33 times the design flow rate.

1.6 DELIVERY, STORAGE & HANDLING:

A. Pump(s) shall be skidded and wrapped for transportation. Spare parts and other accessories not assembled on pump(s) shall be boxed or otherwise completely enclosed and protected during shipment, handling and storage.

B. Protect materials and equipment from exposure to the elements and keep dry at all times. Handle and store to prevent damage and in accordance with the manufacturer's recommendations.

C. Material and equipment damaged by handling and storage shall be repaired or replaced by the Contractor as directed by the Engineer.

D. Contractor shall inspect the stored pump weekly. Before the pump is put into operation, it shall be cleaned, and renew all lubrication as necessary and per the manufacturer's recommendations.

1.7 RELATED WORK SPECIFIED ELSEWHERE

The following sections form a part of this section. It shall be the Contractor's responsibility to coordinate work of other sections with the work of this section to complete the work required.

1. Section 03300: "Cast-In-Place Concrete"
2. Section 11001: "Equipment"
3. Section 15500: "Ventilation"

1.8 MANUFACTURER'S WARRANTY

A. The pump manufacturer shall warranty the pump equipment to be of quality construction, free of defects in material and workmanship. A written warranty shall include specific details described below.

B. All equipment, apparatus, and parts furnished shall be warranted for one (1) year from the date of installation, or eighteen (18) months from the date of shipment, whichever comes first, excepting only those items that are normally consumed in service, such as oils, grease, packing, gaskets, O-rings, etc. The pump manufacture shall be solely responsible for warranty of the pump equipment only. Motors, gear reducers, couplings and other accessories shall be covered by the warranties of their respective manufacturers.

C. In the event a component fails to perform as specified or is proven defective in service during the warranty period, the Manufacturer shall repair or replace, at his discretion, such defective part. He shall further provide, without cost, such labor as may be required to replace, repair or modify major components such as the steel structure, main pumps, main pump motors and main piping manifold.

D. Prior to the end of the warranty period, there shall be an evaluation of the pump station to determine any deficiencies that need to be addressed.

1.9 EVALUATION

A. If substituted equipment is accepted, the contractor shall, at his own expense, make any changes in the structures, piping, electrical, etc. necessary to accommodate the equipment. If engineering is required due to substitution of alternate equipment, the contractor shall pay for all engineering charges.

B. To receive final consideration, copies of the manufacturers' quotations for the equipment may be required to document the savings to the satisfaction of the Owner. It is the intent that the Owner shall receive the full benefit of the savings in cost of equipment and the contractor's bid price shall be reduced by an amount equal to the savings. In all technical and other evaluations, the decision of the engineer is final.

PART 2 – PRODUCTS

2.1 NON-CLOG SUBMERSIBLE SEWAGE PUMPS

A. PUMP MODEL – Pump shall be Myers Model Number 4R/4RX Solids Handling Submersible Pump, or approved equal, with recessed type impeller. All openings in pump

shall be large enough to pass a 3" diameter sphere. Discharge flange shall be four (4) inch standard. 4RX pump and motor assembly shall be FM listed for Class 1, Group D hazardous location service.

B. OPERATING CONDITIONS – Pump shall have capacity as indicated on the construction plans.

C. MOTOR – Pump motor for Health Unit and Three Bells Pump Stations shall be of the sealed submersible type rated 1 HP at 1140 RPM, 60 Hz. Motor shall be 3 phase, 230 volt. Three phase motors shall be NEMA B type.

Stator winding shall be of the open type with Class F insulation good for 155°C (311°F) maximum operating temperature. Winding housing shall be filled with a clean high dielectric oil that lubricates bearings and seals and transfers heat from windings and rotor to outer shell. Air-filled motors, which do not have the superior heat dissipating capabilities of oil-filled motors, shall not be considered equal.

Motor shall have two heavy-duty ball bearings to support pump shaft and take radial and thrust loads and a sleeve guide bushing directly above the lower seal to take radial load and act as flame path for seal chamber. Ball bearings shall be designed for 50,000 hours B-10 life. Stator shall be heat shrunk into motor housing.

A heat sensor thermostat shall be attached to and embedded in the winding and be connected in series with the motor starter contactor coil to stop motor if temperature of winding is more than 120°C (248°F). Thermostat to reset automatically when motor cools to safe operating temperature. Three heat sensors to be used on 3 phase motors. The common pump motor shaft shall be of 416 stainless steel.

D. SEALS – Motor shall be protected by two mechanical seals mounted in tandem with a seal chamber between the seals. Seal chamber shall be oil filled to lubricate seal face and to transmit heat from shaft to outer shell. Seal face shall be carbon and ceramic and lapped to a flatness of one light band. Lower seal faces shall be carbon and ceramic.

A double electrode shall be mounted in the seal chamber to detect any water entering the chamber through the lower seal. Water in the chamber shall cause a red light to turn on at the control box. This signal shall not stop the motor but shall act as a warning only, indicating service is required.

E. IMPELLER – The impeller shall be cast ductile iron and of the recessed type. Pump-out vanes shall be used on back shroud. Impeller shall be dynamically balanced. Impeller shall be driven by stainless steel key and impeller held in position with lock screw and washer. Impeller and motor shall have top lift-out of case so that the assembly can be removed without disturbing any piping.

F. PUMP CASE – The volute case shall be of cast iron and have a flanged center line discharge. Discharge flange shall be 4" standard with bolt holes straddling center line.

G. PUMP AND MOTOR CASTINGS – The pump shall be painted with waterborne hybrid acrylic/alkyd paint. This custom engineered, quick dry paint shall provide superior levels of corrosion and chemical protection.

H. BEARING END CAP – Upper motor bearing cap shall be a separate casting for easy mounting and replacement.

I. POWER CABLES – Power cord and control cord shall be double sealed. The power and control conductor shall be single strand sealed with epoxy potting compound and then clamped in place with rubber seal bushing to seal outer jacket against leakage and to provide for strain pull. Cords shall withstand a pull strain to meet FM requirements.

Insulation of power and control cords shall be type SOOW or W. Both control and power cords shall have a green carrier ground conductor that attaches to motor frame.

2.2 HORIZONTAL SELF-PRIMING CENTRIFUGAL PUMP

A. PUMP MODEL – Pump shall be Gorman-Rupp Model 14A2-B Solids Handling Suction Lift Pump, or approved equal, with 2-vane solids handling impeller. All openings in pump shall be large enough to pass a 2" diameter sphere. Suction & discharge flanges shall be 4 inch standard.

B. OPERATING CONDITIONS – Pump shall have capacity as indicated on the construction plans.

C. MOTOR – Each pump shall be driven by means of at maximum of a 7.5 HP; ball bearing, squirrel cage, induction motor having a maximum speed of 1800 RPM for operation on 3 Phase, 60 Hertz, 230-460V. Motor shall be of totally enclosed fan cooled enclosure designed for continuous operation under full load, 40C ambient with Class F insulation, and shall conform to NEMA or IEC standards, unless specified otherwise.

Motor shall be coupled to the pump shaft by means of a flexible shear-type coupling designed to handle shaft misalignment, torsional shock loads and vibration. Coupling flanges shall be cast iron. Coupling shall be supplied with a one-piece solid design molded EPDM flexible black rubber sleeve (temp range -30°F to 375°F). Coupling shall be as manufactured by Lovejoy S-Flex or equal.

Provide a fabricated steel coupling guard in conformance with OSHA.

D. PUMP DESIGN – Pumps shall be horizontal, self-priming centrifugal type, designed specifically for handling wastewater. Pump solids handling capability and performance criteria shall be in accordance with requirements defined on the drawings.

E. PUMP CONSTRUCTION – Pump casing shall be cast iron ASTM A48 Class 30 with integral volute.

1. Casing shall incorporate following features:
   Mounting feet sized to prevent tipping or binding when pump is completely disassembled for maintenance.
   Fill port cover plate, 3-1/2" diameter, shall be opened after loosening a hand nut/clamp bar assembly. In consideration for safety, hand nut threads must provide slow release of pressure, and the clamp bar shall be retained by detente lugs. A Teflon® gasket shall prevent adhesion of the fill port cover to the casing.
   Casing drain plug shall be at least 1-1/4" NPT to insure complete and rapid draining.
2. Cover plate shall be cast iron ASTM A48 Class 30, and shall incorporate the following features:
   Retained by hand nuts for complete access to pump interior. Coverplate removal must provide ample clearance for removal of stoppages, and allow service to the impeller, seal, wear plate or check valve without removing suction or discharge piping.
   Replaceable wear plate shall be AISI 1026 carbon steel and secured to the cover plate by weld studs and nuts.
   O-rings of Buna-N material shall seal cover plate to pump casing.
   Back-out bolt capability to assist in removal of cover plate. B ack-out bolt threaded holes shall be sized to accept same retaining cap screws as used in rotating assembly.
   Accessible handle shall be mounted to face of cover plate.
3. Seal plate and bearing housing shall be cast iron ASTM A48 Class 30. Separate oil filled cavities, vented to atmosphere, and shall be provided for shaft seal and bearings. Cavities must be cooled by the liquid pumped. Lip seals will prevent leakage of oil.
4. The bearing cavity shall have an oil level sight gauge and fill plug check valve. The clear sight gauge shall provide easy monitoring of the bearing cavity oil level and condition of oil without removal of the fill plug check valve. The check valve shall vent the cavity but prevent introduction of moist air to the bearings.
5. The seal cavity shall have an oil level sight gauge and fill/vent plug. The clear sight gauge shall provide easy monitoring of the seal cavity oil level and condition of oil without removal of the fill/vent plug.
6. Double lip seal shall provide an atmospheric path providing positive protection of bearings, with capability for external drainage monitoring.

F. IMPELLER & PUMP SHAFT – Impeller shall be ductile iron ASTM A536 65-45-12, two-vane, semi-open, non-clog, with integral pump out vanes on the back shroud. Impeller shall thread onto the pump shaft and be secured with a lock screw and tapered washer.

Shaft shall be carbon steel 1045. Shaft sleeve shall also be carbon steel 1026.

G. BEARINGS – Bearings shall be anti-friction open ball type of proper size and design to withstand all radial and thrust loads expected during normal operation. Bearings shall be oil lubricated from a dedicated reservoir. Pump designs which use the same oil to lubricate the bearings and shaft seal shall not be acceptable.

H. MECHANICAL SEAL ASSEMBLY – Mechanical seal assembly shall be cartridge oil lubricated mechanical type. The stationary and rotating seal faces shall be tungsten titanium carbide alloy. The stationary seal seat shall be double floating by means of a dual O-ring design; an external O-ring secures the stationary seat to the seal plate, and an internal O-ring holds the faces in alignment during periods of mechanical or hydraulic shock. Elastomers shall be viton; cage and spring to be stainless steel. Seal shall be oil lubricated from a dedicated reservoir. The same oil shall not lubricate both shaft seal and shaft bearings.

I. IMPELLER ADJUSTMENT – Adjustment of the impeller face clearance (distance between impeller and wear plate) shall be accomplished by external means.

Clearances shall be maintained by external shimless cover plate adjustment, utilizing collar and adjusting screw design for incremental adjustment of clearances by hand. Realignment of belts, couplings, etc., shall not be required. Cover plate shall be capable of being removed without disturbing clearance settings.

There shall be provisions for additional clearance adjustment in the event that adjustment tolerances have been depleted from the cover plate side of the pump. The removal of stainless steel shims from the rotating assembly side of the pump shall allow for further adjustment as described above

Clearance adjustment which requires movement of the shaft only, thereby adversely affecting seal working length or impeller back clearance, shall not be acceptable.

J. SUCTION CHECK VALVE – Suction check valve shall be Class 30 cast iron with Buna-N gasket with integral steel and nylon reinforcement. A blow-out center shall protect pump casing from hydraulic shock or excessive pressure. Removal or installation of the check valve must be accomplished through the cover plate opening, without disturbing the suction piping. Sole function of check valve shall be to save energy by eliminating need to reprime after each pumping cycle.

K. SPOOL FLANGE – Spool flanges shall be one-piece cast iron, class 30 fitted to suction and/or discharge ports. Each spool shall have one 1-1/4" NPT and one 1/4" NPT tapped hole with pipe plugs for mounting gauges or other equipment.

L. PUMP BASE – Each pump and drive motor shall be factory mounted on a common base fabricated of heavy-duty steel suitably constructed to support the full weight of the equipment.

M. SPECIAL TOOLS & SPARE PARTS – No special tools shall be required for replacement of any components within the pump. The following recommended spare parts shall be supplied for each pump:

1. Qty: 1 Mechanical Seal Assembly

2. Qty: 1 Complete Set of All Gaskets

N. PAINTING – All ferrous metal surfaces shall be shop cleaned and degreased to a minimum surface preparation of SSPC-SP2. With the exception of those parts and components customarily furnished unpainted, all metal surfaces shall be shop primed and coated. Pumps, motors and their appurtenances shall be supplied to the Owner with the standard factory applied primer, alkyd inhibitive enamel (DFT 1.0-1.5 mils/coat), and a standard factory finish coat paint, alkyd gloss enamel (DFT 1.0-1.5 mils/coat), unless otherwise specified. Refer to section 09900 for field painting requirements.

PART 3-EXECUTION

3.1 INSTALLATION AND OPERATING INSTRUCTIONS

A. Installation of the pump chamber shall be done in accordance with the written instructions provided by the manufacturer.

B. Contractor shall be responsible to install, level, align, and lubricate pump(s) as indicated on project drawings. Installation must be in accordance with written instructions supplied by the manufacturer at time of delivery.

C. Suction pipe connections are vacuum tight. Discharge pipe shall be water tight and free of leaks. Fasteners at all pipe connections must be tight and properly torqued. Install pipe with supports and thrust blocks to prevent strain and vibration on pump piping. Install and secure all service lines (level control, air release valve or pump drain lines) as required in wet well.

D. Electrical contractor shall be responsible to check motor and control data plates for compatibility to site voltage. Install and test the station ground prior to connecting

line voltage to control panel. Verify all wiring, protective devices, line voltage, phase and ground prior to start-up. Ensure that all electrical components conform to project design documents

E. Operation and maintenance manuals shall be furnished which will include parts lists of components and complete service procedures and troubleshooting guide.

3.3 START-UP

The Manufacturer shall provide the services of a factory-trained representative for a minimum period of one day per station on-site if necessary, an additional day to perform initial start-up of the pump station and to instruct the owner's operating personnel in the operation and maintenance of the equipment.

END OF SECTION

SECTION 15060

PROCESS PIPING, VALVES & FITTINGS

PART 1 - GENERAL

1.1 SCOPE

The Contractor shall furnish all material and shall construct the pipe lines and all required appurtenances at the locations and to the lines, slopes and elevations shown on the Drawings or designated by the Engineer. This section covers all piping and valves, specialties and appurtenances for all plant work, not otherwise specifically specified in other sections of this specification.

1.2 SUBMITTALS (Reference General and Special Conditions)

A. Submit shop drawings for each size and type of valve, specialty, and appurtenances furnished.

B. The Contractor shall submit manufacturers' certifications to the Engineer that all pipe, fittings and joints are as specified herein.

C. O&M manuals.

1.3 DESCRIPTION

A. Selection and Arrangement:

The Contractor shall verify all dimensions of valves, special castings and fittings, pipe, equipment, etc., so that all of the pipe work performed will fit together properly and will conform to the arrangement as shown on the drawings. In selecting laying lengths in between fittings, the contractor shall be guided by the dimensions of the equipment to which connections are made and by the indicated dimensions on the drawings. He shall submit three copies of proposed layout drawings for approval prior to ordering.

B. Defects to be Made Good:

If, at any time before the completion of the contract, any broken pipes, or any defects, are found in any of the lines or in any of their appurtenances, the contractor shall cause the same to be removed and replaced by proper material and workmanship, without extra compensation for the labor and material required, even though such injury or damage may not have been due to any act, default, or negligence on the part of the contractor. All materials shall be carefully examined by the contractor for defects, just before placing, and any found defective shall not be placed in the line.

C. Pipe Supports:

All underground piping shall be supported at bends and fittings with concrete thrust blocks unless otherwise noted. All above ground piping shall be supported by pipe supports and hangers, base fittings, and/or concrete pedestals where indicated on the drawings or as required. Unless otherwise shown on the drawings, suspended pipe shall be held by adjustable pipe hangers having hinged loops, or three-bolt pipe clamps or other approved devices. Hanger rods shall have turn-buckles for adjustment. Hanger rods shall be adequately sized and no straps, chain, cable, etc., shall be used for pipe support. No piping shall be bolted to pump flanges until the pipe is sufficiently supported and checked to ensure that no strain is placed on the pump and/or other fittings. Adequacy of size, spacing and type of supports shall be subject to the Engineer's approval. Adjustable pipe supports, pipe hangers, clevis, clamps, and concrete inserts shall be equal to Federal Specification WW-H-171c and shall be as manufactured by Grinnell Company, Inc., Crain Co. or equal.

PART 2 - PRODUCTS

2.1 DUCTILE IRON PIPE AND FITTINGS

A. Ductile iron pipe shall be manufactured in accordance with ANSI/AWWA C151/A21.51, latest edition, and shall be thickness Class 52 unless otherwise noted. The contractor shall furnish and install flanged joints conforming to the latest edition of ANSI/AWWA C110/A21.10.

B. All above ground pipe and fittings shall be painted in accordance with Section 09900.

C. Pipe and fittings shall have an internal epoxy coating in accordance with latest revision of ANSI/AWWA C116/A21.16.

D. All fittings and specials shall be cast or ductile iron with a 250 psi pressure rating and marked in conformance with ANSI/AWWA C110/A21.10, latest edition. Wall thickness shall be equal to Class 56 ductile iron pipe. Flanges shall be class 125 in accordance with ANSI B16.1.

E. Below grade ductile iron piping shall be furnished and installed in accordance with the Georgetown Construction Standards.

2.2 BALL CHECK VALVES

A. Ball check valves shall be designed to be fully automatic in operation and specifically suited to serve where solids, fibers or highly viscous materials are encountered.

B. Ball check valves will have one moving part, the ball, which moves automatically out of the path of flow, providing an unobstructed smooth flow through the valve body. Upon discontinuation of flow the ball automatically rolls back to the closed position, providing a positive seal against back pressure or backflow.

C. Ball check valves, epoxy coated cast iron or ductile iron, are designed to be maintenance free and suited for installation in the horizontal or vertical position, In the horizontal position 20 feet of static head is recommended for proper seating, In the vertical position 10 feet is recommended. Recommended flow velocity is 3-5 ft/sec either position.

D. The valve shall be so constructed that by unbolting and lifting off the cover, the ball may be removed and replaced without removing the valve from the line.

E. The valve shall be equal in all respects to the Model 408 as manufactured by the Flomatic Corporation, or approved equal.

2.3 PLUG VALVES

A. Plug Valves shall be energy-efficient, round-port, eccentric, quarter turn plug valves designed in compliance with AWWA C517, in a fusion bonded epoxy coated Ductile Iron body. Plug Valves shall be designed with a 98% nickel welded seat for long service life.

B. Plug Valves shall be full port opening. Body shall be ANSI B16.1 Class 150 ductile iron and fitted with Class 150 ANSI B16.5 Flanged ends. Plug shall be BUNA-N coated ductile iron. Valves shall be fitted with V-Type packing with a self-lubricating Type 316 SS thrust bearing.

C. Plug Valves shall be fitted with a totally enclosed and sealed worm gear operator with 2" square operating nut. All gear actuator shall be designed to withstand a 300 lb-ft input torque.

D. Plug Valves shall be Model 54-0 as manufactured by Flowmatic Corporation or approved equal.

2.4 WALL CASTINGS

Wall castings for piping shall be cast iron for sizes and connection of pipe types as indicated on the drawings, with center flanged water stop cast integral with the pipe barrel to be cast into the concrete at the mid-point. Unless specifically indicated otherwise, each end of the wall pipe shall protrude a sufficient distance from each face of the finished concrete into which it is cast to allow adequate clearance for tools, bolts, and nuts required to complete the type of pipe connection indicated. They shall be rated for a working pressure of 250 psi. Wall

castings shall be furnished by U.S. Pipe and Foundry, Co., Birmingham, Alabama, or approved equal. Wall sleeves shall be used for all pipes passing through any concrete structures.

2.5 WALL SLEEVE & SEAL

A. Furnish and install pipe sleeves wherever piping passes through walls, floors, partitions, foundations, roof or other structures.

B. Wall sleeves above grade and not subject to hydrostatic pressure shall be finished flush at both wall faces and shall be constructed of galvanized steel pipe for lines larger than 6 inches. Sleeves for lines 4 inches and smaller may be constructed of 18 gauge soldered sheet metal and shall clear the pipe or insulation O.D. by not less than ⍰ inch. Wall sleeves below grade or where under hydrostatic pressure shall include center flanged water stop external to the wall sleeves at the mid-point of the wall. The pipes within the sleeves below grade and/or subject to hydrostatic pressure shall be made watertight with hydrostatic wall seal. All other pipes shall be sealed to sleeves with fiberglass and both ends sealed with waterproof caulking.

C. Install sleeves as the building is constructed and when concrete is poured. Securely anchor sleeves to the structure with anchor lugs or flanges. Floor sleeves in wet area shall extend ⍰" above finished floor.

D. Hydrostatic seal designed to seal opening between pipes and true wall opening and between carrier pipe and sleeve. Use Link-Seal by Thunderline Corp., or equal.

2.6 PIPE HANGERS AND SUPPORTS

A. All piping shall be supported by hangers, brackets and piers in accordance with standard practice and to the entire satisfaction of the Engineer. Provide thrust blocks where called for on drawings and in accordance with standard practice and satisfaction of the Engineer.

B. Before starting fabrication of the ductile iron pipe and fittings, the Contractor shall submit line drawings showing the location, dimensions, and schedule of all pipe fittings, hangers, supports and appurtenances.

C. Pipe Supports

1. All piping shall be mounted or suspended with ring type hanger Grinnel or equal. Floor supports shall be heavy duty welded steel pipe, complete with adjusting screw or jack, allowing final fraction of an inch adjustment. A pipe saddle or flange bolts shall be provided to fit this support. A detail drawing of all supports shall be submitted to the Engineer for approval prior to the installation of the piping. All supports shall allow for expansion and contrac

tion of pipe materials.

2. Angle iron braces, hangers and pipe supports shall be provided and installed wherever shown on the drawings and as needed to provide a complete piping system.
3. Where underground pipes enter or leave a structure or building, the Contractor shall take special precautions to provide adequate support for such pipe over the span between the structural walls and undisturbed soil bearings. A pipe joint shall be located within two (2) feet of all structures. This can consist of special reinforced concrete support beams laid below the pipe or adequately spaced timber or metal posts, located below the pipe and carried down to undisturbed earth. In any event, should underground pipe fail in any manner due to earth settlement around structures within the guarantee period of this contract, such failures are to be corrected by the Contractor.
4. Concrete pipe supports shall be furnished where shown on the plans.

E. Pipe Hangers

1. All pipes where suspended from walls, floors or ceilings shall be held with substantial adjustable pipe hangers designed for use in connection with concrete, brick or tile wall, ceiling, or floor construction.
2. Provide adjustable inserts, properly located and set in the forms before placing the concrete, wherever possible. Hangers are to be of rodded steel, adjustable screw rod pattern, not strap hangers. Particular care shall be taken to arrange and support pipes in an orderly and neat appearing manner.
3. In all cases (except submerged pipe) where a concrete or metal pipe support is used, a 1/8 in. thick Teflon strip is to be placed under all piping at the point of bearing with pipe support. The full width of the support in contact with the pipe shall be covered. All hangers shall allow for expansion and contraction of pipe materials.
4. Hangers and supports in chemical rooms and clear well shall be 316 stainless steel or cast iron.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

Tests: After piping system has been tested and put into service, but before final adjusting and balancing, inspect valves for leaks. Adjust or replace packing to stop leaks; replace valves if leak persists.

3.2 ABOVE GROUND PIPING

All piping and accessories shall be installed according to manufacturer's instructions. Installation shall be completed to present a neat and orderly appearance. Piping shall be

parallel to walls of buildings unless indicated otherwise. Piping shall be kept free from contact with building structure or other installed items or equipment.

3.3 ADJUSTING AND CLEANING

Cleaning: Clean mill scale, grease, and protective coatings from exterior of valves and prepare valves to receive finish painting or insulation.

3.4 DISINFECTION

All potable water lines and appurtenances, process piping, equipment and specials, shall be disinfected in accordance with Section 02713 of this specification.

3.5 DEFECTS TO BE MADE GOOD

If, at any time before the final acceptance of the Contract or during the guarantee period, any broken pipes, or any defects, are found in the piping system, valve arrangement or in any of their appurtenances, the Contractor shall cause the same to be removed and replaced by the proper material and workmanship, without extra compensation for the labor and material required, even though such injury or damage may not have been due to any act, default, or negligence on the part of the Contractor. All materials shall be carefully examined by the Contractor for defects, just before placing, and any found defective shall not be placed.

END OF SECTION

SECTION 15500

VENTILATION

PART 1 - GENERAL

1.1 GENERAL

A. Furnish and install all materials including labor, equipment and services necessary for the installation of all ventilating equipment as indicated on the drawings and as specified.

PART 2 - PRODUCTS

2.1 VENT SET CENTRIFUGAL EXHAUST FAN

A. Furnish and install centrifugal industrial exhaust fan Model Plastec 15 as manufactured Plastec Ventilation, Bradenton, FL., or approved equal.

Fans shall meet the following requirements:

Performance Requirement	
Air Transfer Rate	250 CFM
Static Pressure	2"
Motor Horsepower	1/2 Hp
Motor RPM	3150
Motor Voltage	115V
Phase & Cycle	1ph/60hz

B. Units shall be constructed with corrosion resistant housing.

C. Unit inlet and outlet shall be slip connection.

D. Unit shall be provided with a 1/2" drilled and tapped hole at the lowest point of the fan scroll to facilitate condensate drainage.

E. Provide fan inlet with hot dip galvanized steel bird screen.

F. Fan wheel shall be forward inclined polypropylene and direct connected to the motor shaft, with a rotation necessary to force the required air flow into the wetwell.

G. Unit shall be provided with all-weather cover over motor and drive. Complete, assembled unit shall be suitable for outdoors installation. Provide corrosion resistant coatings.

H. Motors shall be ball bearing totally enclosed, type TEFC (fan-cooled, explosion-proof).

I. Furnish vibration isolators of the type recommended by fan manufacturer, suitable for concrete pad mounting.

J. Flexible 5" dia. pipe connections shall be furnished on fan outlet.

2.2 VENTILATION PIPING

All ventilation piping shall be schedule 40 PVC per ASTM D-1785 or ductile iron per Section 2610. Minimum burial depth shall be 2.5' to top of pipe.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION

SECTION 15830

HEATING UNITS

PART 1 - GENERAL

1.1_ RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

A. Extent of terminal unit work is indicated by drawings and schedules, and by requirements of this section.

B. Types of terminal units required for project include the following:

1. Electrical Unit Heaters.

1.3 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of electric unit heaters of types and sizes required, whose products have been in satisfactory use in similar service for not less than 3 years.

B. Codes and Standards:

1. Electrical components shall be U.L. listed and per NEMA Standards.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's specifications for terminal units showing dimensions, capacities, ratings, performance characteristics, and finishes of materials, and installation instructions.

B. Shop Drawings: Submit assembly-type shop drawings showing unit dimensions, construction details, and field connection details.

PART 2 - PRODUCTS

2.1 HOSE DOWN BLOWER UNIT HEATER

A. General: Provide electric unit heaters of size and in location indicated, and of capacities as scheduled. Heater shall be U.L. listed for corrosive areas.

B. Unit heater shall have stainless steel housing and grilles. Heating elements shall be Monel Fintube elements with stainless steel fittings. Motor shall be U.L. listed totally enclosed with permanently lubricated ball bearings. Motor shall resist moisture and corrosion. Fan blade shall be aluminum. Factory wiring shall be NEMA 4X molded fiberglass junction box with built in controls which include two power contactors (primary and backup), motor contactor and fused transformer for 120V control circuit. Branch circuit protection and temperature control shall be provided and remotely mounted. Controls shall include an internal three-position heat-cool switch (heater on, heater off, fan only) which permits air flow with or without energizing the heating elements accessible from outside the NEMA 4X enclosure, an internal thermostat with a temperature range of 40° - 100° with an adjustable control knob outside the NEMA 4X enclosure. Provide stainless steel wall bracket with swivel mounting bracket.

C. Manufacturer: Subject to compliance with requirements electric heaters shall be Chromolax Type HDH, or approved equal.

2.2 REMOTE THERMOSTAT

The thermostat shall be designed to directly control an individual heater. Using an external contactor, it shall control several heaters. The thermostat shall provide high level accuracy and sensitivity with 2.5°F differential. The controls shall have a SPDT output and shall be used for heating. The thermostat shall feature; a shielded sensing bulb with nickel-plated anchor attached directly to bottom of enclosure where it shall be shielded from damage and accumulation of insulating particles; sealed Noryl case with neoprene gasket to seal out dust and moisture; knob opening closed with lubricated "O" ring; adjustable Knob setting shall be accurate to $\pm$ 2.5°F with a large easily-read numerical dial; positive OFF for heating shall be provided by setting unit to LO position. (At LO Position heat circuit shall be open and cool circuit shall be closed at any temperature). Positive snap-action switch; NEMA 4X enclosure; 40-100°F temperature range. Unit shall be Chromalox Model WCRT Room Thermostat or approved equal.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine areas and conditions under which terminal units are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 CLEANING

A. General: After construction is completed, including painting, clean unit exposed surfaces, and clean unit heater.

3.3 INSTALLATION

Include a hand-off-automatic switch for use in heat unit operation. Refer to Division 16 for details.

END OF SECTION

Runtime Data (Daily)
Georgetown Delaware Wastewater - Health Unit Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				Total					
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
1 Jan 2019	0	0.0	0.0	0	1	3.0	3.0	412	0	0.0	0.0	1	3.0	412
2 Jan 2019	9	32.0	3.6	3,891	17	60.0	3.5	8,244	0	0.0	0.0	26	92.0	12,135
3 Jan 2019	10	33.0	3.3	4,013	20	67.0	3.4	9,206	0	0.0	0.0	30	100.0	13,219
4 Jan 2019	12	40.0	3.3	4,864	25	81.0	3.2	11,129	0	0.0	0.0	37	121.0	15,993
5 Jan 2019	10	35.0	3.5	4,256	22	72.0	3.3	9,893	0	0.0	0.0	32	107.0	14,149
6 Jan 2019	9	30.0	3.3	3,648	19	57.0	3.0	7,832	0	0.0	0.0	28	87.0	11,480
7 Jan 2019	8	27.0	3.4	3,283	16	54.0	3.4	7,420	0	0.0	0.0	24	81.0	10,703
8 Jan 2019	16	56.0	3.5	6,810	31	111.0	3.6	15,251	0	0.0	0.0	47	167.0	22,061
9 Jan 2019	14	43.0	3.1	5,229	29	89.0	3.1	12,229	0	0.0	0.0	43	132.0	17,458
10 Jan 2019	14	42.0	3.0	5,107	27	91.0	3.4	12,503	0	0.0	0.0	41	133.0	17,610
11 Jan 2019	14	48.0	3.4	5,837	30	112.0	3.7	15,389	0	0.0	0.0	44	160.0	21,226
12 Jan 2019	14	47.0	3.4	5,715	27	93.0	3.4	12,778	0	0.0	0.0	41	140.0	18,493
13 Jan 2019	6	22.0	3.7	2,675	14	47.0	3.4	6,458	0	0.0	0.0	20	69.0	9,133
14 Jan 2019	7	23.0	3.3	2,797	15	49.0	3.3	6,733	0	0.0	0.0	22	72.0	9,530
15 Jan 2019	13	43.0	3.3	5,229	25	90.0	3.6	12,366	0	0.0	0.0	38	133.0	17,595
16 Jan 2019	11	36.0	3.3	4,378	23	81.0	3.5	11,129	0	0.0	0.0	34	117.0	15,507
17 Jan 2019	13	51.0	3.9	6,202	27	106.0	3.9	14,564	0	0.0	0.0	40	157.0	20,766
18 Jan 2019	8	29.0	3.6	3,526	16	54.0	3.4	7,420	0	0.0	0.0	24	83.0	10,946
19 Jan 2019	7	22.0	3.1	2,675	14	49.0	3.5	6,733	0	0.0	0.0	21	71.0	9,408
20 Jan 2019	7	22.0	3.1	2,675	15	49.0	3.3	6,733	0	0.0	0.0	22	71.0	9,408
21 Jan 2019	13	47.0	3.6	5,715	25	93.0	3.7	12,778	0	0.0	0.0	38	140.0	18,493
22 Jan 2019	15	41.0	2.7	4,986	24	72.0	3.0	9,893	0	0.0	0.0	39	113.0	14,879
23 Jan 2019	12	46.0	3.8	5,594	26	94.0	3.6	12,916	0	0.0	0.0	38	140.0	18,510
24 Jan 2019	13	47.0	3.6	5,715	27	100.0	3.7	13,740	0	0.0	0.0	40	147.0	19,455
25 Jan 2019	19	66.0	3.5	8,026	38	149.0	3.9	20,473	0	0.0	0.0	57	215.0	28,499
26 Jan 2019	14	40.0	2.9	4,864	30	106.0	3.5	14,564	0	0.0	0.0	44	146.0	19,428
27 Jan 2019	11	32.0	2.9	3,891	22	75.0	3.4	10,305	0	0.0	0.0	33	107.0	14,196
28 Jan 2019	10	28.0	2.8	3,405	20	67.0	3.4	9,206	0	0.0	0.0	30	95.0	12,611
29 Jan 2019	14	39.0	2.8	4,742	30	95.0	3.2	13,053	0	0.0	0.0	44	134.0	17,795
30 Jan 2019	10	25.0	2.5	3,040	22	63.0	2.9	8,656	0	0.0	0.0	32	88.0	11,696
31 Jan 2019	15	44.0	2.9	5,350	28	96.0	3.4	13,190	0	0.0	0.0	43	140.0	18,540
1 Feb 2019	14	38.0	2.7	4,621	28	95.0	3.4	13,053	0	0.0	0.0	42	133.0	17,674
2 Feb 2019	13	39.0	3.0	4,742	25	89.0	3.6	12,229	0	0.0	0.0	38	128.0	16,971
3 Feb 2019	7	19.0	2.7	2,310	15	50.0	3.3	6,870	0	0.0	0.0	22	69.0	9,180
4 Feb 2019	8	23.0	2.9	2,797	16	51.0	3.2	7,007	0	0.0	0.0	24	74.0	9,804
5 Feb 2019	13	37.0	2.8	4,499	26	85.0	3.3	11,679	0	0.0	0.0	39	122.0	16,178

Runtime Data (Daily)
Georgetown Delaware Wastewater - Health Unit Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				Total					
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
6 Feb 2019	14	38.0	2.7	4,621	29	94.0	3.2	12,916	0	0.0	0.0	43	132.0	17,537
7 Feb 2019	13	38.0	2.9	4,621	26	75.0	2.9	10,305	0	0.0	0.0	39	113.0	14,926
8 Feb 2019	8	22.0	2.8	2,675	15	42.0	2.8	5,771	0	0.0	0.0	23	64.0	8,446
9 Feb 2019	10	35.0	3.5	4,256	22	73.0	3.3	10,030	0	0.0	0.0	32	108.0	14,286
10 Feb 2019	8	21.0	2.6	2,554	17	44.0	2.6	6,046	0	0.0	0.0	25	65.0	8,600
11 Feb 2019	8	21.0	2.6	2,554	16	42.0	2.6	5,771	0	0.0	0.0	24	63.0	8,325
12 Feb 2019	10	30.0	3.0	3,648	19	55.0	2.9	7,557	0	0.0	0.0	29	85.0	11,205
13 Feb 2019	21	53.0	2.5	6,445	41	111.0	2.7	15,251	0	0.0	0.0	62	164.0	21,696
14 Feb 2019	18	50.0	2.8	6,080	35	102.0	2.9	14,015	0	0.0	0.0	53	152.0	20,095
15 Feb 2019	15	41.0	2.7	4,986	30	85.0	2.8	11,679	0	0.0	0.0	45	126.0	16,665
16 Feb 2019	15	40.0	2.7	4,864	28	80.0	2.9	10,992	0	0.0	0.0	43	120.0	15,856
17 Feb 2019	11	33.0	3.0	4,013	21	63.0	3.0	8,656	0	0.0	0.0	32	96.0	12,669
18 Feb 2019	11	33.0	3.0	4,013	21	60.0	2.9	8,244	0	0.0	0.0	32	93.0	12,257
19 Feb 2019	17	48.0	2.8	5,837	34	98.0	2.9	13,465	0	0.0	0.0	51	146.0	19,302
20 Feb 2019	13	44.0	3.4	5,350	27	84.0	3.1	11,542	0	0.0	0.0	40	128.0	16,892
21 Feb 2019	12	41.0	3.4	4,986	24	79.0	3.3	10,855	0	0.0	0.0	36	120.0	15,841
22 Feb 2019	16	55.0	3.4	6,688	33	109.0	3.3	14,977	0	0.0	0.0	49	164.0	21,665
23 Feb 2019	12	37.0	3.1	4,499	23	71.0	3.1	9,755	0	0.0	0.0	35	108.0	14,254
24 Feb 2019	10	32.0	3.2	3,891	23	73.0	3.2	10,030	0	0.0	0.0	33	105.0	13,921
25 Feb 2019	17	58.0	3.4	7,053	33	106.0	3.2	14,564	0	0.0	0.0	50	164.0	21,617
26 Feb 2019	17	61.0	3.6	7,418	35	121.0	3.5	16,625	0	0.0	0.0	52	182.0	24,043
27 Feb 2019	19	61.0	3.2	7,418	38	113.0	3.0	15,526	0	0.0	0.0	57	174.0	22,944
28 Feb 2019	19	68.0	3.6	8,269	38	132.0	3.5	18,137	0	0.0	0.0	57	200.0	26,406
1 Mar 2019	18	59.0	3.3	7,174	36	130.0	3.6	17,862	0	0.0	0.0	54	189.0	25,036
2 Mar 2019	12	39.0	3.2	4,742	23	73.0	3.2	10,030	0	0.0	0.0	35	112.0	14,772
3 Mar 2019	14	47.0	3.4	5,715	27	97.0	3.6	13,328	0	0.0	0.0	41	144.0	19,043
4 Mar 2019	15	53.0	3.5	6,445	30	114.0	3.8	15,664	0	0.0	0.0	45	167.0	22,109
5 Mar 2019	21	80.0	3.8	9,728	42	162.0	3.9	22,259	0	0.0	0.0	63	242.0	31,987
6 Mar 2019	17	67.0	3.9	8,147	33	135.0	4.1	18,549	0	0.0	0.0	50	202.0	26,696
7 Mar 2019	16	61.0	3.8	7,418	32	130.0	4.1	17,862	0	0.0	0.0	48	191.0	25,280
8 Mar 2019	15	58.0	3.9	7,053	30	117.0	3.9	16,076	0	0.0	0.0	45	175.0	23,129
9 Mar 2019	14	53.0	3.8	6,445	28	96.0	3.4	13,190	0	0.0	0.0	42	149.0	19,635
10 Mar 2019	11	38.0	3.5	4,621	22	73.0	3.3	10,030	0	0.0	0.0	33	111.0	14,651
11 Mar 2019	14	53.0	3.8	6,445	28	103.0	3.7	14,152	0	0.0	0.0	42	156.0	20,597
12 Mar 2019	15	58.0	3.9	7,053	31	127.0	4.1	17,450	0	0.0	0.0	46	185.0	24,503
13 Mar 2019	16	60.0	3.8	7,296	34	131.0	3.9	17,999	0	0.0	0.0	50	191.0	25,295

Runtime Data (Daily)
Georgetown Delaware Wastewater - Health Unit Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2							Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
14 Mar 2019	16	63.0	3.9	7,661	32	123.0	3.8	16,900	0	0.0	0.0	48	186.0	24,561
15 Mar 2019	17	67.0	3.9	8,147	33	129.0	3.9	17,725	0	0.0	0.0	50	196.0	25,872
16 Mar 2019	16	62.0	3.9	7,539	33	132.0	4.0	18,137	0	0.0	0.0	49	194.0	25,676
17 Mar 2019	13	47.0	3.6	5,715	25	96.0	3.8	13,190	0	0.0	0.0	38	143.0	18,905
18 Mar 2019	17	69.0	4.1	8,390	34	133.0	3.9	18,274	0	0.0	0.0	51	202.0	26,664
19 Mar 2019	20	79.0	4.0	9,606	39	159.0	4.1	21,847	0	0.0	0.0	59	238.0	31,453
20 Mar 2019	19	75.0	3.9	9,120	39	141.0	3.6	19,373	0	0.0	0.0	58	216.0	28,493
21 Mar 2019	6	791.0	131.8	96,186	11	803.0	73.0	110,332	0	0.0	0.0	17	1594.0	206,518
22 Mar 2019	14	526.0	37.6	63,962	28	576.0	20.6	79,142	0	0.0	0.0	42	1102.0	143,104
23 Mar 2019	20	73.0	3.6	8,877	39	152.0	3.9	20,885	0	0.0	0.0	59	225.0	29,762
24 Mar 2019	13	50.0	3.8	6,080	26	99.0	3.8	13,603	0	0.0	0.0	39	149.0	19,683
25 Mar 2019	13	49.0	3.8	5,958	26	96.0	3.7	13,190	0	0.0	0.0	39	145.0	19,148
26 Mar 2019	15	60.0	4.0	7,296	28	101.0	3.6	13,877	0	0.0	0.0	43	161.0	21,173
27 Mar 2019	17	64.0	3.8	7,782	33	115.0	3.5	15,801	0	0.0	0.0	50	179.0	23,583
28 Mar 2019	14	50.0	3.6	6,080	28	100.0	3.6	13,740	0	0.0	0.0	42	150.0	19,820
29 Mar 2019	15	60.0	4.0	7,296	29	114.0	3.9	15,664	0	0.0	0.0	44	174.0	22,960
30 Mar 2019	11	42.0	3.8	5,107	23	90.0	3.9	12,366	0	0.0	0.0	34	132.0	17,473
31 Mar 2019	10	39.0	3.9	4,742	19	69.0	3.6	9,481	0	0.0	0.0	29	108.0	14,223
1 Apr 2019	9	34.0	3.8	4,134	19	70.0	3.7	9,618	0	0.0	0.0	28	104.0	13,752
2 Apr 2019	15	60.0	4.0	7,296	30	116.0	3.9	15,938	0	0.0	0.0	45	176.0	23,234
3 Apr 2019	14	54.0	3.9	6,566	27	106.0	3.9	14,564	0	0.0	0.0	41	160.0	21,130
4 Apr 2019	15	59.0	3.9	7,174	31	118.0	3.8	16,213	0	0.0	0.0	46	177.0	23,387
5 Apr 2019	13	53.0	4.1	6,445	25	100.0	4.0	13,740	0	0.0	0.0	38	153.0	20,185
6 Apr 2019	12	44.0	3.7	5,350	24	90.0	3.8	12,366	0	0.0	0.0	36	134.0	17,716
7 Apr 2019	4	14.0	3.5	1,702	7	24.0	3.4	3,298	0	0.0	0.0	11	38.0	5,000
8 Apr 2019	5	23.0	4.6	2,797	10	41.0	4.1	5,633	0	0.0	0.0	15	64.0	8,430
9 Apr 2019	12	49.0	4.1	5,958	23	89.0	3.9	12,229	0	0.0	0.0	35	138.0	18,187
10 Apr 2019	8	26.0	3.2	3,162	15	55.0	3.7	7,557	0	0.0	0.0	23	81.0	10,719
11 Apr 2019	12	51.0	4.2	6,202	25	101.0	4.0	13,877	0	0.0	0.0	37	152.0	20,079
12 Apr 2019	21	91.0	4.3	11,066	41	168.0	4.1	23,083	0	0.0	0.0	62	259.0	34,149
13 Apr 2019	22	98.0	4.5	11,917	45	188.0	4.2	25,831	0	0.0	0.0	67	286.0	37,748
14 Apr 2019	5	21.0	4.2	2,554	11	42.0	3.8	5,771	0	0.0	0.0	16	63.0	8,325
15 Apr 2019	8	33.0	4.1	4,013	14	57.0	4.1	7,832	0	0.0	0.0	22	90.0	11,845
16 Apr 2019	13	53.0	4.1	6,445	28	114.0	4.1	15,664	0	0.0	0.0	41	167.0	22,109
17 Apr 2019	15	60.0	4.0	7,296	30	117.0	3.9	16,076	0	0.0	0.0	45	177.0	23,372
18 Apr 2019	13	49.0	3.8	5,958	25	93.0	3.7	12,778	0	0.0	0.0	38	142.0	18,736

Runtime Data (Daily)
Georgetown Delaware Wastewater - Health Unit Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2							Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
19 Apr 2019	12	44.0	3.7	5,350	25	92.0	3.7	12,641	0	0.0	0.0	37	136.0	17,991
20 Apr 2019	10	33.0	3.3	4,013	19	64.0	3.4	8,794	0	0.0	0.0	29	97.0	12,807
21 Apr 2019	11	38.0	3.5	4,621	21	73.0	3.5	10,030	0	0.0	0.0	32	111.0	14,651
22 Apr 2019	5	11.0	2.2	1,338	5	12.0	2.4	1,649	0	0.0	0.0	10	23.0	2,987
23 Apr 2019	12	46.0	3.8	5,594	24	100.0	4.2	13,740	0	0.0	0.0	36	146.0	19,334
24 Apr 2019	14	54.0	3.9	6,566	27	106.0	3.9	14,564	0	0.0	0.0	41	160.0	21,130
25 Apr 2019	14	56.0	4.0	6,810	28	111.0	4.0	15,251	0	0.0	0.0	42	167.0	22,061
26 Apr 2019	6	25.0	4.2	3,040	13	51.0	3.9	7,007	0	0.0	0.0	19	76.0	10,047
27 Apr 2019	12	45.0	3.8	5,472	22	87.0	4.0	11,954	0	0.0	0.0	34	132.0	17,426
28 Apr 2019	6	23.0	3.8	2,797	13	50.0	3.8	6,870	0	0.0	0.0	19	73.0	9,667
29 Apr 2019	6	23.0	3.8	2,797	13	45.0	3.5	6,183	0	0.0	0.0	19	68.0	8,980
30 Apr 2019	10	31.0	3.1	3,770	19	59.0	3.1	8,107	0	0.0	0.0	29	90.0	11,877
1 May 2019	13	52.0	4.0	6,323	26	99.0	3.8	13,603	0	0.0	0.0	39	151.0	19,926
2 May 2019	8	25.0	3.1	3,040	14	42.0	3.0	5,771	0	0.0	0.0	22	67.0	8,811
3 May 2019	15	58.0	3.9	7,053	32	127.0	4.0	17,450	0	0.0	0.0	47	185.0	24,503
4 May 2019	9	37.0	4.1	4,499	20	86.0	4.3	11,816	0	0.0	0.0	29	123.0	16,315
5 May 2019	5	18.0	3.6	2,189	11	37.0	3.4	5,084	0	0.0	0.0	16	55.0	7,273
6 May 2019	12	40.0	3.3	4,864	23	82.0	3.6	11,267	0	0.0	0.0	35	122.0	16,131
7 May 2019	17	68.0	4.0	8,269	34	132.0	3.9	18,137	0	0.0	0.0	51	200.0	26,406
8 May 2019	10	39.0	3.9	4,742	19	79.0	4.2	10,855	0	0.0	0.0	29	118.0	15,597
9 May 2019	4	16.0	4.0	1,946	7	27.0	3.9	3,710	0	0.0	0.0	11	43.0	5,656
10 May 2019	10	37.0	3.7	4,499	20	72.0	3.6	9,893	0	0.0	0.0	30	109.0	14,392
11 May 2019	13	47.0	3.6	5,715	27	99.0	3.7	13,603	0	0.0	0.0	40	146.0	19,318
12 May 2019	7	24.0	3.4	2,918	15	50.0	3.3	6,870	0	0.0	0.0	22	74.0	9,788
13 May 2019	9	31.0	3.4	3,770	19	61.0	3.2	8,381	0	0.0	0.0	28	92.0	12,151
14 May 2019	19	69.0	3.6	8,390	37	131.0	3.5	17,999	0	0.0	0.0	56	200.0	26,389
15 May 2019	14	49.0	3.5	5,958	28	98.0	3.5	13,465	0	0.0	0.0	42	147.0	19,423
16 May 2019	14	51.0	3.6	6,202	28	95.0	3.4	13,053	0	0.0	0.0	42	146.0	19,255
17 May 2019	14	51.0	3.6	6,202	28	97.0	3.5	13,328	0	0.0	0.0	42	148.0	19,530
18 May 2019	12	44.0	3.7	5,350	25	84.0	3.4	11,542	0	0.0	0.0	37	128.0	16,892
19 May 2019	9	32.0	3.6	3,891	18	59.0	3.3	8,107	0	0.0	0.0	27	91.0	11,998
20 May 2019	9	31.0	3.4	3,770	18	58.0	3.2	7,969	0	0.0	0.0	27	89.0	11,739
21 May 2019	14	43.0	3.1	5,229	27	79.0	2.9	10,855	0	0.0	0.0	41	122.0	16,084
22 May 2019	11	38.0	3.5	4,621	24	75.0	3.1	10,305	0	0.0	0.0	35	113.0	14,926
23 May 2019	5	16.0	3.2	1,946	10	29.0	2.9	3,985	0	0.0	0.0	15	45.0	5,931
24 May 2019	7	18.0	2.6	2,189	13	35.0	2.7	4,809	0	0.0	0.0	20	53.0	6,998

Runtime Data (Daily)
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Date/Time	Pump 1				Pump 2				Total					
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
25 May 2019	6	20.0	3.3	2,432	13	39.0	3.0	5,359	0	0.0	0.0	19	59.0	7,791
26 May 2019	2	7.0	3.5	851	4	11.0	2.8	1,511	0	0.0	0.0	6	18.0	2,362
27 May 2019	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	
28 May 2019	4	12.0	3.0	1,459	8	21.0	2.6	2,885	0	0.0	0.0	12	33.0	4,344
29 May 2019	9	28.0	3.1	3,405	17	51.0	3.0	7,007	0	0.0	0.0	26	79.0	10,412
30 May 2019	10	30.0	3.0	3,648	20	56.0	2.8	7,694	0	0.0	0.0	30	86.0	11,342
31 May 2019	6	17.0	2.8	2,067	13	35.0	2.7	4,809	0	0.0	0.0	19	52.0	6,876
1 Jun 2019	8	25.0	3.1	3,040	15	45.0	3.0	6,183	0	0.0	0.0	23	70.0	9,223
2 Jun 2019	2	5.0	2.5	608	4	10.0	2.5	1,374	0	0.0	0.0	6	15.0	1,982
3 Jun 2019	6	18.0	3.0	2,189	12	35.0	2.9	4,809	0	0.0	0.0	18	53.0	6,998
4 Jun 2019	4	10.0	2.5	1,216	9	22.0	2.4	3,023	0	0.0	0.0	13	32.0	4,239
5 Jun 2019	10	29.0	2.9	3,526	18	51.0	2.8	7,007	0	0.0	0.0	28	80.0	10,533
6 Jun 2019	8	25.0	3.1	3,040	17	50.0	2.9	6,870	0	0.0	0.0	25	75.0	9,910
7 Jun 2019	7	20.0	2.9	2,432	12	35.0	2.9	4,809	0	0.0	0.0	19	55.0	7,241
8 Jun 2019	4	12.0	3.0	1,459	8	23.0	2.9	3,160	0	0.0	0.0	12	35.0	4,619
9 Jun 2019	0	1.0	0.0	122	0	1.0	0.0	137	0	0.0	0.0	0	2.0	259
10 Jun 2019	6	16.0	2.7	1,946	11	27.0	2.5	3,710	0	0.0	0.0	17	43.0	5,656
11 Jun 2019	17	51.0	3.0	6,202	35	96.0	2.7	13,190	0	0.0	0.0	52	147.0	19,392
12 Jun 2019	17	50.0	2.9	6,080	33	95.0	2.9	13,053	0	0.0	0.0	50	145.0	19,133
13 Jun 2019	4	7.0	1.8	851	7	16.0	2.3	2,198	0	0.0	0.0	11	23.0	3,049
14 Jun 2019	8	22.0	2.8	2,675	16	43.0	2.7	5,908	0	0.0	0.0	24	65.0	8,583
15 Jun 2019	11	34.0	3.1	4,134	21	64.0	3.0	8,794	0	0.0	0.0	32	98.0	12,928
16 Jun 2019	10	30.0	3.0	3,648	19	57.0	3.0	7,832	0	0.0	0.0	29	87.0	11,480
17 Jun 2019	7	21.0	3.0	2,554	16	43.0	2.7	5,908	0	0.0	0.0	23	64.0	8,462
18 Jun 2019	5	112.0	22.4	13,619	10	125.0	12.5	17,175	0	0.0	0.0	15	237.0	30,794
19 Jun 2019	14	44.0	3.1	5,350	30	91.0	3.0	12,503	0	0.0	0.0	44	135.0	17,853
20 Jun 2019	14	40.0	2.9	4,864	27	74.0	2.7	10,168	0	0.0	0.0	41	114.0	15,032
21 Jun 2019	15	42.0	2.8	5,107	30	77.0	2.6	10,580	0	0.0	0.0	45	119.0	15,687
22 Jun 2019	9	24.0	2.7	2,918	17	41.0	2.4	5,633	0	0.0	0.0	26	65.0	8,551
23 Jun 2019	9	25.0	2.8	3,040	18	46.0	2.6	6,320	0	0.0	0.0	27	71.0	9,360
24 Jun 2019	6	15.0	2.5	1,824	11	28.0	2.5	3,847	0	0.0	0.0	17	43.0	5,671
25 Jun 2019	13	34.0	2.6	4,134	28	66.0	2.4	9,068	0	0.0	0.0	41	100.0	13,202
26 Jun 2019	14	37.0	2.6	4,499	29	70.0	2.4	9,618	0	0.0	0.0	43	107.0	14,117
27 Jun 2019	14	38.0	2.7	4,621	26	69.0	2.7	9,481	0	0.0	0.0	40	107.0	14,102
28 Jun 2019	5	12.0	2.4	1,459	11	29.0	2.6	3,985	0	0.0	0.0	16	41.0	5,444
29 Jun 2019	6	17.0	2.8	2,067	9	27.0	3.0	3,710	0	0.0	0.0	15	44.0	5,777

Runtime Data (Daily)
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Date/Time	Pump 1				Pump 2				Total					
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
30 Jun 2019	9	23.0	2.6	2,797	17	44.0	2.6	6,046	0	0.0	0.0	26	67.0	8,843
1 Jul 2019	8	24.0	3.0	2,918	17	46.0	2.7	6,320	0	0.0	0.0	25	70.0	9,238
2 Jul 2019	14	39.0	2.8	4,742	26	70.0	2.7	9,618	0	0.0	0.0	40	109.0	14,360
3 Jul 2019	12	33.0	2.8	4,013	23	63.0	2.7	8,656	0	0.0	0.0	35	96.0	12,669
4 Jul 2019	7	21.0	3.0	2,554	17	49.0	2.9	6,733	0	0.0	0.0	24	70.0	9,287
5 Jul 2019	3	9.0	3.0	1,094	7	20.0	2.9	2,748	0	0.0	0.0	10	29.0	3,842
6 Jul 2019	12	33.0	2.8	4,013	23	54.0	2.3	7,420	0	0.0	0.0	35	87.0	11,433
7 Jul 2019	13	40.0	3.1	4,864	24	65.0	2.7	8,931	0	0.0	0.0	37	105.0	13,795
8 Jul 2019	7	20.0	2.9	2,432	15	37.0	2.5	5,084	0	0.0	0.0	22	57.0	7,516
9 Jul 2019	11	31.0	2.8	3,770	22	54.0	2.5	7,420	0	0.0	0.0	33	85.0	11,190
10 Jul 2019	13	33.0	2.5	4,013	26	64.0	2.5	8,794	0	0.0	0.0	39	97.0	12,807
11 Jul 2019	15	43.0	2.9	5,229	29	76.0	2.6	10,442	0	0.0	0.0	44	119.0	15,671
12 Jul 2019	8	23.0	2.9	2,797	16	41.0	2.6	5,633	0	0.0	0.0	24	64.0	8,430
13 Jul 2019	13	39.0	3.0	4,742	27	73.0	2.7	10,030	0	0.0	0.0	40	112.0	14,772
14 Jul 2019	3	995.0	331.7	120,992	5	999.0	199.8	137,263	0	0.0	0.0	8	1994.0	258,255
15 Jul 2019	8	613.0	76.6	74,541	15	626.0	41.7	86,012	0	0.0	0.0	23	1239.0	160,553
16 Jul 2019	14	41.0	2.9	4,986	28	76.0	2.7	10,442	0	0.0	0.0	42	117.0	15,428
17 Jul 2019	15	40.0	2.7	4,864	29	73.0	2.5	10,030	0	0.0	0.0	44	113.0	14,894
18 Jul 2019	15	44.0	2.9	5,350	31	80.0	2.6	10,992	0	0.0	0.0	46	124.0	16,342
19 Jul 2019	12	36.0	3.0	4,378	24	65.0	2.7	8,931	0	0.0	0.0	36	101.0	13,309
20 Jul 2019	14	39.0	2.8	4,742	29	73.0	2.5	10,030	0	0.0	0.0	43	112.0	14,772
21 Jul 2019	11	28.0	2.5	3,405	22	53.0	2.4	7,282	0	0.0	0.0	33	81.0	10,687
22 Jul 2019	10	27.0	2.7	3,283	19	49.0	2.6	6,733	0	0.0	0.0	29	76.0	10,016
23 Jul 2019	9	25.0	2.8	3,040	20	52.0	2.6	7,145	0	0.0	0.0	29	77.0	10,185
24 Jul 2019	16	47.0	2.9	5,715	32	85.0	2.7	11,679	0	0.0	0.0	48	132.0	17,394
25 Jul 2019	15	45.0	3.0	5,472	29	78.0	2.7	10,717	0	0.0	0.0	44	123.0	16,189
26 Jul 2019	14	41.0	2.9	4,986	28	77.0	2.8	10,580	0	0.0	0.0	42	118.0	15,566
27 Jul 2019	14	41.0	2.9	4,986	27	71.0	2.6	9,755	0	0.0	0.0	41	112.0	14,741
28 Jul 2019	9	27.0	3.0	3,283	19	51.0	2.7	7,007	0	0.0	0.0	28	78.0	10,290
29 Jul 2019	10	24.0	2.4	2,918	19	46.0	2.4	6,320	0	0.0	0.0	29	70.0	9,238
30 Jul 2019	14	43.0	3.1	5,229	28	77.0	2.8	10,580	0	0.0	0.0	42	120.0	15,809
31 Jul 2019	14	42.0	3.0	5,107	29	77.0	2.7	10,580	0	0.0	0.0	43	119.0	15,687
1 Aug 2019	17	48.0	2.8	5,837	33	86.0	2.6	11,816	0	0.0	0.0	50	134.0	17,653
2 Aug 2019	12	32.0	2.7	3,891	26	66.0	2.5	9,068	0	0.0	0.0	38	98.0	12,959
3 Aug 2019	16	47.0	2.9	5,715	32	89.0	2.8	12,229	0	0.0	0.0	48	136.0	17,944
4 Aug 2019	11	29.0	2.6	3,526	21	55.0	2.6	7,557	0	0.0	0.0	32	84.0	11,083

Runtime Data (Daily)
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Date/Time	Pump 1				Pump 2				Total					
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
5 Aug 2019	10	32.0	3.2	3,891	20	57.0	2.8	7,832	0	0.0	0.0	30	89.0	11,723
6 Aug 2019	16	47.0	2.9	5,715	33	89.0	2.7	12,229	0	0.0	0.0	49	136.0	17,944
7 Aug 2019	14	38.0	2.7	4,621	28	76.0	2.7	10,442	0	0.0	0.0	42	114.0	15,063
8 Aug 2019	15	45.0	3.0	5,472	30	84.0	2.8	11,542	0	0.0	0.0	45	129.0	17,014
9 Aug 2019	15	39.0	2.6	4,742	30	77.0	2.6	10,580	0	0.0	0.0	45	116.0	15,322
10 Aug 2019	15	41.0	2.7	4,986	30	76.0	2.5	10,442	0	0.0	0.0	45	117.0	15,428
11 Aug 2019	10	27.0	2.7	3,283	19	45.0	2.4	6,183	0	0.0	0.0	29	72.0	9,466
12 Aug 2019	9	26.0	2.9	3,162	19	47.0	2.5	6,458	0	0.0	0.0	28	73.0	9,620
13 Aug 2019	12	30.0	2.5	3,648	26	60.0	2.3	8,244	0	0.0	0.0	38	90.0	11,892
14 Aug 2019	16	42.0	2.6	5,107	31	77.0	2.5	10,580	0	0.0	0.0	47	119.0	15,687
15 Aug 2019	16	41.0	2.6	4,986	32	80.0	2.5	10,992	0	0.0	0.0	48	121.0	15,978
16 Aug 2019	14	38.0	2.7	4,621	27	71.0	2.6	9,755	0	0.0	0.0	41	109.0	14,376
17 Aug 2019	15	43.0	2.9	5,229	30	74.0	2.5	10,168	0	0.0	0.0	45	117.0	15,397
18 Aug 2019	10	26.0	2.6	3,162	20	47.0	2.4	6,458	0	0.0	0.0	30	73.0	9,620
19 Aug 2019	9	26.0	2.9	3,162	18	46.0	2.6	6,320	0	0.0	0.0	27	72.0	9,482
20 Aug 2019	17	44.0	2.6	5,350	34	92.0	2.7	12,641	0	0.0	0.0	51	136.0	17,991
21 Aug 2019	17	50.0	2.9	6,080	33	93.0	2.8	12,778	0	0.0	0.0	50	143.0	18,858
22 Aug 2019	15	46.0	3.1	5,594	30	85.0	2.8	11,679	0	0.0	0.0	45	131.0	17,273
23 Aug 2019	12	33.0	2.8	4,013	26	68.0	2.6	9,343	0	0.0	0.0	38	101.0	13,356
24 Aug 2019	16	44.0	2.8	5,350	32	82.0	2.6	11,267	0	0.0	0.0	48	126.0	16,617
25 Aug 2019	9	28.0	3.1	3,405	18	47.0	2.6	6,458	0	0.0	0.0	27	75.0	9,863
26 Aug 2019	9	25.0	2.8	3,040	19	49.0	2.6	6,733	0	0.0	0.0	28	74.0	9,773
27 Aug 2019	16	45.0	2.8	5,472	30	78.0	2.6	10,717	0	0.0	0.0	46	123.0	16,189
28 Aug 2019	15	43.0	2.9	5,229	31	81.0	2.6	11,129	0	0.0	0.0	46	124.0	16,358
29 Aug 2019	15	38.0	2.5	4,621	30	68.0	2.3	9,343	0	0.0	0.0	45	106.0	13,964
30 Aug 2019	18	48.0	2.7	5,837	35	90.0	2.6	12,366	0	0.0	0.0	53	138.0	18,203
31 Aug 2019	16	47.0	2.9	5,715	32	86.0	2.7	11,816	0	0.0	0.0	48	133.0	17,531
1 Sep 2019	11	28.0	2.5	3,405	23	52.0	2.3	7,145	0	0.0	0.0	34	80.0	10,550
2 Sep 2019	11	29.0	2.6	3,526	21	50.0	2.4	6,870	0	0.0	0.0	32	79.0	10,396
3 Sep 2019	8	23.0	2.9	2,797	17	44.0	2.6	6,046	0	0.0	0.0	25	67.0	8,843
4 Sep 2019	16	44.0	2.8	5,350	30	80.0	2.7	10,992	0	0.0	0.0	46	124.0	16,342
5 Sep 2019	15	42.0	2.8	5,107	31	86.0	2.8	11,816	0	0.0	0.0	46	128.0	16,923
6 Sep 2019	14	42.0	3.0	5,107	27	81.0	3.0	11,129	0	0.0	0.0	41	123.0	16,236
7 Sep 2019	15	39.0	2.6	4,742	29	75.0	2.6	10,305	0	0.0	0.0	44	114.0	15,047
8 Sep 2019	8	19.0	2.4	2,310	16	35.0	2.2	4,809	0	0.0	0.0	24	54.0	7,119
9 Sep 2019	9	25.0	2.8	3,040	17	43.0	2.5	5,908	0	0.0	0.0	26	68.0	8,948

Runtime Data (Daily)
Georgetown Delaware Wastewater - Health Unit Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				Total					
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
10 Sep 2019	13	42.0	3.2	5,107	27	75.0	2.8	10,305	0	0.0	0.0	40	117.0	15,412
11 Sep 2019	12	31.0	2.6	3,770	23	54.0	2.3	7,420	0	0.0	0.0	35	85.0	11,190
12 Sep 2019	15	41.0	2.7	4,986	29	71.0	2.4	9,755	0	0.0	0.0	44	112.0	14,741
13 Sep 2019	17	47.0	2.8	5,715	33	89.0	2.7	12,229	0	0.0	0.0	50	136.0	17,944
14 Sep 2019	13	35.0	2.7	4,256	27	71.0	2.6	9,755	0	0.0	0.0	40	106.0	14,011
15 Sep 2019	11	30.0	2.7	3,648	21	51.0	2.4	7,007	0	0.0	0.0	32	81.0	10,655
16 Sep 2019	10	27.0	2.7	3,283	20	48.0	2.4	6,595	0	0.0	0.0	30	75.0	9,878
17 Sep 2019	15	44.0	2.9	5,350	30	79.0	2.6	10,855	0	0.0	0.0	45	123.0	16,205
18 Sep 2019	10	30.0	3.0	3,648	20	51.0	2.6	7,007	0	0.0	0.0	30	81.0	10,655
19 Sep 2019	14	36.0	2.6	4,378	31	76.0	2.5	10,442	0	0.0	0.0	45	112.0	14,820
20 Sep 2019	16	40.0	2.5	4,864	29	67.0	2.3	9,206	0	0.0	0.0	45	107.0	14,070
21 Sep 2019	14	40.0	2.9	4,864	28	75.0	2.7	10,305	0	0.0	0.0	42	115.0	15,169
22 Sep 2019	9	22.0	2.4	2,675	19	45.0	2.4	6,183	0	0.0	0.0	28	67.0	8,858
23 Sep 2019	10	29.0	2.9	3,526	19	52.0	2.7	7,145	0	0.0	0.0	29	81.0	10,671
24 Sep 2019	8	20.0	2.5	2,432	16	37.0	2.3	5,084	0	0.0	0.0	24	57.0	7,516
25 Sep 2019	7	20.0	2.9	2,432	16	40.0	2.5	5,496	0	0.0	0.0	23	60.0	7,928
26 Sep 2019	11	26.0	2.4	3,162	22	53.0	2.4	7,282	0	0.0	0.0	33	79.0	10,444
27 Sep 2019	8	20.0	2.5	2,432	19	48.0	2.5	6,595	0	0.0	0.0	27	68.0	9,027
28 Sep 2019	11	32.0	2.9	3,891	24	62.0	2.6	8,519	0	0.0	0.0	35	94.0	12,410
29 Sep 2019	10	24.0	2.4	2,918	19	44.0	2.3	6,046	0	0.0	0.0	29	68.0	8,964
30 Sep 2019	11	29.0	2.6	3,526	22	53.0	2.4	7,282	0	0.0	0.0	33	82.0	10,808
1 Oct 2019	16	42.0	2.6	5,107	31	77.0	2.5	10,580	0	0.0	0.0	47	119.0	15,687
2 Oct 2019	16	45.0	2.8	5,472	32	85.0	2.7	11,679	0	0.0	0.0	48	130.0	17,151
3 Oct 2019	17	54.0	3.2	6,566	33	91.0	2.8	12,503	0	0.0	0.0	50	145.0	19,069
4 Oct 2019	14	41.0	2.9	4,986	29	79.0	2.7	10,855	0	0.0	0.0	43	120.0	15,841
5 Oct 2019	9	25.0	2.8	3,040	19	47.0	2.5	6,458	0	0.0	0.0	28	72.0	9,498
6 Oct 2019	3	8.0	2.7	973	6	15.0	2.5	2,061	0	0.0	0.0	9	23.0	3,034
7 Oct 2019	7	9.0	1.3	1,094	8	18.0	2.2	2,473	0	0.0	0.0	15	27.0	3,567
8 Oct 2019	15	43.0	2.9	5,229	31	82.0	2.6	11,267	0	0.0	0.0	46	125.0	16,496
9 Oct 2019	10	26.0	2.6	3,162	18	42.0	2.3	5,771	0	0.0	0.0	28	68.0	8,933
10 Oct 2019	12	34.0	2.8	4,134	24	62.0	2.6	8,519	0	0.0	0.0	36	96.0	12,653
11 Oct 2019	9	29.0	3.2	3,526	20	56.0	2.8	7,694	0	0.0	0.0	29	85.0	11,220
12 Oct 2019	10	29.0	2.9	3,526	20	54.0	2.7	7,420	0	0.0	0.0	30	83.0	10,946
13 Oct 2019	4	10.0	2.5	1,216	8	20.0	2.5	2,748	0	0.0	0.0	12	30.0	3,964
14 Oct 2019	4	10.0	2.5	1,216	8	20.0	2.5	2,748	0	0.0	0.0	12	30.0	3,964
15 Oct 2019	11	34.0	3.1	4,134	20	54.0	2.7	7,420	0	0.0	0.0	31	88.0	11,554

Runtime Data (Daily)
Georgetown Delaware Wastewater - Health Unit Pump Station
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Date/Time	Pump 1				Pump 2								Total	
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
16 Oct 2019	11	33.0	3.0	4,013	22	62.0	2.8	8,519	0	0.0	0.0	33	95.0	12,532
17 Oct 2019	12	35.0	2.9	4,256	25	66.0	2.6	9,068	0	0.0	0.0	37	101.0	13,324
18 Oct 2019	13	37.0	2.8	4,499	25	66.0	2.6	9,068	0	0.0	0.0	38	103.0	13,567
19 Oct 2019	9	26.0	2.9	3,162	18	46.0	2.6	6,320	0	0.0	0.0	27	72.0	9,482
20 Oct 2019	4	11.0	2.8	1,338	8	19.0	2.4	2,611	0	0.0	0.0	12	30.0	3,949
21 Oct 2019	7	21.0	3.0	2,554	14	36.0	2.6	4,946	0	0.0	0.0	21	57.0	7,500
22 Oct 2019	11	33.0	3.0	4,013	22	65.0	3.0	8,931	0	0.0	0.0	33	98.0	12,944
23 Oct 2019	12	38.0	3.2	4,621	25	69.0	2.8	9,481	0	0.0	0.0	37	107.0	14,102
24 Oct 2019	11	32.0	2.9	3,891	22	63.0	2.9	8,656	0	0.0	0.0	33	95.0	12,547
25 Oct 2019	12	32.0	2.7	3,891	23	60.0	2.6	8,244	0	0.0	0.0	35	92.0	12,135
26 Oct 2019	9	26.0	2.9	3,162	19	51.0	2.7	7,007	0	0.0	0.0	28	77.0	10,169
27 Oct 2019	4	12.0	3.0	1,459	9	25.0	2.8	3,435	0	0.0	0.0	13	37.0	4,894
28 Oct 2019	5	13.0	2.6	1,581	10	24.0	2.4	3,298	0	0.0	0.0	15	37.0	4,879
29 Oct 2019	12	35.0	2.9	4,256	24	64.0	2.7	8,794	0	0.0	0.0	36	99.0	13,050
30 Oct 2019	11	33.0	3.0	4,013	22	60.0	2.7	8,244	0	0.0	0.0	33	93.0	12,257
31 Oct 2019	13	40.0	3.1	4,864	24	69.0	2.9	9,481	0	0.0	0.0	37	109.0	14,345
1 Nov 2019	11	31.0	2.8	3,770	21	55.0	2.6	7,557	0	0.0	0.0	32	86.0	11,327
2 Nov 2019	10	30.0	3.0	3,648	21	62.0	3.0	8,519	0	0.0	0.0	31	92.0	12,167
3 Nov 2019	3	7.0	2.3	851	5	11.0	2.2	1,511	0	0.0	0.0	8	18.0	2,362
4 Nov 2019	2	5.0	2.5	608	5	13.0	2.6	1,786	0	0.0	0.0	7	18.0	2,394
5 Nov 2019	13	37.0	2.8	4,499	25	68.0	2.7	9,343	0	0.0	0.0	38	105.0	13,842
6 Nov 2019	10	25.0	2.5	3,040	20	51.0	2.6	7,007	0	0.0	0.0	30	76.0	10,047
7 Nov 2019	10	31.0	3.1	3,770	21	63.0	3.0	8,656	0	0.0	0.0	31	94.0	12,426
8 Nov 2019	10	30.0	3.0	3,648	19	55.0	2.9	7,557	0	0.0	0.0	29	85.0	11,205
9 Nov 2019	9	26.0	2.9	3,162	19	52.0	2.7	7,145	0	0.0	0.0	28	78.0	10,307
10 Nov 2019	3	8.0	2.7	973	6	15.0	2.5	2,061	0	0.0	0.0	9	23.0	3,034
11 Nov 2019	5	13.0	2.6	1,581	8	20.0	2.5	2,748	0	0.0	0.0	13	33.0	4,329
12 Nov 2019	6	16.0	2.7	1,946	13	31.0	2.4	4,259	0	0.0	0.0	19	47.0	6,205
13 Nov 2019	10	31.0	3.1	3,770	19	55.0	2.9	7,557	0	0.0	0.0	29	86.0	11,327
14 Nov 2019	11	32.0	2.9	3,891	21	60.0	2.9	8,244	0	0.0	0.0	32	92.0	12,135
15 Nov 2019	12	36.0	3.0	4,378	24	68.0	2.8	9,343	0	0.0	0.0	36	104.0	13,721
16 Nov 2019	14	40.0	2.9	4,864	27	70.0	2.6	9,618	0	0.0	0.0	41	110.0	14,482
17 Nov 2019	9	24.0	2.7	2,918	19	49.0	2.6	6,733	0	0.0	0.0	28	73.0	9,651
18 Nov 2019	8	21.0	2.6	2,554	17	41.0	2.4	5,633	0	0.0	0.0	25	62.0	8,187
19 Nov 2019	13	36.0	2.8	4,378	25	67.0	2.7	9,206	0	0.0	0.0	38	103.0	13,584
20 Nov 2019	12	38.0	3.2	4,621	23	132.0	5.7	18,137	0	0.0	0.0	35	170.0	22,758

Runtime Data (Daily)
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Date/Time	Pump 1				Pump 2								Total	
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
21 Nov 2019	15	35.0	2.3	4,256	24	142.0	5.9	19,511	0	0.0	0.0	39	177.0	23,767
22 Nov 2019	7	26.0	3.7	3,162	13	520.0	40.0	71,448	0	0.0	0.0	20	546.0	74,610
23 Nov 2019	17	37.0	2.2	4,499	21	537.0	25.6	73,784	0	0.0	0.0	38	574.0	78,283
24 Nov 2019	3	9.0	3.0	1,094	10	45.0	4.5	6,183	0	0.0	0.0	13	54.0	7,277
25 Nov 2019	4	12.0	3.0	1,459	7	19.0	2.7	2,611	0	0.0	0.0	11	31.0	4,070
26 Nov 2019	10	29.0	2.9	3,526	19	53.0	2.8	7,282	0	0.0	0.0	29	82.0	10,808
27 Nov 2019	9	27.0	3.0	3,283	18	49.0	2.7	6,733	0	0.0	0.0	27	76.0	10,016
28 Nov 2019	7	20.0	2.9	2,432	16	40.0	2.5	5,496	0	0.0	0.0	23	60.0	7,928
29 Nov 2019	2	5.0	2.5	608	4	10.0	2.5	1,374	0	0.0	0.0	6	15.0	1,982
30 Nov 2019	3	10.0	3.3	1,216	6	19.0	3.2	2,611	0	0.0	0.0	9	29.0	3,827
1 Dec 2019	2	6.0	3.0	730	3	9.0	3.0	1,237	0	0.0	0.0	5	15.0	1,967
2 Dec 2019	3	9.0	3.0	1,094	6	17.0	2.8	2,336	0	0.0	0.0	9	26.0	3,430
3 Dec 2019	9	28.0	3.1	3,405	19	53.0	2.8	7,282	0	0.0	0.0	28	81.0	10,687
4 Dec 2019	9	28.0	3.1	3,405	18	51.0	2.8	7,007	0	0.0	0.0	27	79.0	10,412
5 Dec 2019	11	28.0	2.5	3,405	21	54.0	2.6	7,420	0	0.0	0.0	32	82.0	10,825
6 Dec 2019	13	34.0	2.6	4,134	26	63.0	2.4	8,656	0	0.0	0.0	39	97.0	12,790
7 Dec 2019	9	28.0	3.1	3,405	19	53.0	2.8	7,282	0	0.0	0.0	28	81.0	10,687
8 Dec 2019	5	13.0	2.6	1,581	10	26.0	2.6	3,572	0	0.0	0.0	15	39.0	5,153
9 Dec 2019	10	29.0	2.9	3,526	19	51.0	2.7	7,007	0	0.0	0.0	29	80.0	10,533
10 Dec 2019	9	27.0	3.0	3,283	19	50.0	2.6	6,870	0	0.0	0.0	28	77.0	10,153
11 Dec 2019	12	36.0	3.0	4,378	23	61.0	2.7	8,381	0	0.0	0.0	35	97.0	12,759
12 Dec 2019	10	27.0	2.7	3,283	21	56.0	2.7	7,694	0	0.0	0.0	31	83.0	10,977
13 Dec 2019	11	31.0	2.8	3,770	22	60.0	2.7	8,244	0	0.0	0.0	33	91.0	12,014
14 Dec 2019	12	34.0	2.8	4,134	25	66.0	2.6	9,068	0	0.0	0.0	37	100.0	13,202
15 Dec 2019	7	19.0	2.7	2,310	13	34.0	2.6	4,672	0	0.0	0.0	20	53.0	6,982
16 Dec 2019	4	11.0	2.8	1,338	9	22.0	2.4	3,023	0	0.0	0.0	13	33.0	4,361
17 Dec 2019	10	31.0	3.1	3,770	21	56.0	2.7	7,694	0	0.0	0.0	31	87.0	11,464
18 Dec 2019	12	34.0	2.8	4,134	23	59.0	2.6	8,107	0	0.0	0.0	35	93.0	12,241
19 Dec 2019	8	23.0	2.9	2,797	16	39.0	2.4	5,359	0	0.0	0.0	24	62.0	8,156
20 Dec 2019	8	22.0	2.8	2,675	16	41.0	2.6	5,633	0	0.0	0.0	24	63.0	8,308
21 Dec 2019	11	34.0	3.1	4,134	22	60.0	2.7	8,244	0	0.0	0.0	33	94.0	12,378
22 Dec 2019	5	14.0	2.8	1,702	11	28.0	2.5	3,847	0	0.0	0.0	16	42.0	5,549
23 Dec 2019	2	7.0	3.5	851	4	11.0	2.8	1,511	0	0.0	0.0	6	18.0	2,362
24 Dec 2019	12	33.0	2.8	4,013	22	54.0	2.5	7,420	0	0.0	0.0	34	87.0	11,433
25 Dec 2019	6	16.0	2.7	1,946	12	28.0	2.3	3,847	0	0.0	0.0	18	44.0	5,793
26 Dec 2019	1	3.0	3.0	365	6	11.0	1.8	1,511	0	0.0	0.0	7	14.0	1,876

Runtime Data (Daily)
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Date/Time	Pump 1				Pump 2							Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
27 Dec 2019	11	23.0	2.1	2,797	18	42.0	2.3	5,771	0	0.0	0.0	29	65.0	8,568
28 Dec 2019	9	24.0	2.7	2,918	17	44.0	2.6	6,046	0	0.0	0.0	26	68.0	8,964
29 Dec 2019	2	8.0	4.0	973	5	14.0	2.8	1,924	0	0.0	0.0	7	22.0	2,897
30 Dec 2019	2	5.0	2.5	608	4	10.0	2.5	1,374	0	0.0	0.0	6	15.0	1,982
31 Dec 2019	10	28.0	2.8	3,405	20	52.0	2.6	7,145	0	0.0	0.0	30	80.0	10,550
1 Jan 2020	11	32.0	2.9	3,891	22	57.0	2.6	7,832	0	0.0	0.0	33	89.0	11,723
2 Jan 2020	4	11.0	2.8	1,338	8	22.0	2.8	3,023	0	0.0	0.0	12	33.0	4,361
3 Jan 2020	11	31.0	2.8	3,770	22	54.0	2.5	7,420	0	0.0	0.0	33	85.0	11,190
4 Jan 2020	10	28.0	2.8	3,405	20	48.0	2.4	6,595	0	0.0	0.0	30	76.0	10,000
5 Jan 2020	4	11.0	2.8	1,338	8	19.0	2.4	2,611	0	0.0	0.0	12	30.0	3,949
6 Jan 2020	4	11.0	2.8	1,338	7	18.0	2.6	2,473	0	0.0	0.0	11	29.0	3,811
7 Jan 2020	9	25.0	2.8	3,040	19	48.0	2.5	6,595	0	0.0	0.0	28	73.0	9,635
8 Jan 2020	9	26.0	2.9	3,162	18	51.0	2.8	7,007	0	0.0	0.0	27	77.0	10,169
9 Jan 2020	10	30.0	3.0	3,648	19	55.0	2.9	7,557	0	0.0	0.0	29	85.0	11,205
10 Jan 2020	9	26.0	2.9	3,162	18	48.0	2.7	6,595	0	0.0	0.0	27	74.0	9,757
11 Jan 2020	11	32.0	2.9	3,891	20	56.0	2.8	7,694	0	0.0	0.0	31	88.0	11,585
12 Jan 2020	4	12.0	3.0	1,459	9	23.0	2.6	3,160	0	0.0	0.0	13	35.0	4,619
13 Jan 2020	3	8.0	2.7	973	6	16.0	2.7	2,198	0	0.0	0.0	9	24.0	3,171
14 Jan 2020	11	33.0	3.0	4,013	21	59.0	2.8	8,107	0	0.0	0.0	32	92.0	12,120
15 Jan 2020	11	34.0	3.1	4,134	22	65.0	3.0	8,931	0	0.0	0.0	33	99.0	13,065
16 Jan 2020	11	33.0	3.0	4,013	23	66.0	2.9	9,068	0	0.0	0.0	34	99.0	13,081
17 Jan 2020	10	27.0	2.7	3,283	20	54.0	2.7	7,420	0	0.0	0.0	30	81.0	10,703
18 Jan 2020	9	28.0	3.1	3,405	18	50.0	2.8	6,870	0	0.0	0.0	27	78.0	10,275
19 Jan 2020	3	9.0	3.0	1,094	7	19.0	2.7	2,611	0	0.0	0.0	10	28.0	3,705
20 Jan 2020	3	8.0	2.7	973	6	16.0	2.7	2,198	0	0.0	0.0	9	24.0	3,171
21 Jan 2020	3	8.0	2.7	973	6	16.0	2.7	2,198	0	0.0	0.0	9	24.0	3,171
22 Jan 2020	9	23.0	2.6	2,797	17	42.0	2.5	5,771	0	0.0	0.0	26	65.0	8,568
23 Jan 2020	9	26.0	2.9	3,162	18	50.0	2.8	6,870	0	0.0	0.0	27	76.0	10,032
24 Jan 2020	8	24.0	3.0	2,918	17	48.0	2.8	6,595	0	0.0	0.0	25	72.0	9,513
25 Jan 2020	10	32.0	3.2	3,891	20	60.0	3.0	8,244	0	0.0	0.0	30	92.0	12,135
26 Jan 2020	7	21.0	3.0	2,554	14	39.0	2.8	5,359	0	0.0	0.0	21	60.0	7,913
27 Jan 2020	4	12.0	3.0	1,459	8	22.0	2.8	3,023	0	0.0	0.0	12	34.0	4,482
28 Jan 2020	11	32.0	2.9	3,891	23	61.0	2.7	8,381	0	0.0	0.0	34	93.0	12,272
29 Jan 2020	11	34.0	3.1	4,134	22	63.0	2.9	8,656	0	0.0	0.0	33	97.0	12,790
30 Jan 2020	12	36.0	3.0	4,378	23	68.0	3.0	9,343	0	0.0	0.0	35	104.0	13,721
31 Jan 2020	10	30.0	3.0	3,648	21	56.0	2.7	7,694	0	0.0	0.0	31	86.0	11,342

Runtime Data (Daily)
Georgetown Delaware Wastewater - Health Unit Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				Total					
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
1 Feb 2020	11	34.0	3.1	4,134	21	58.0	2.8	7,969	0	0.0	0.0	32	92.0	12,103
2 Feb 2020	4	12.0	3.0	1,459	9	23.0	2.6	3,160	0	0.0	0.0	13	35.0	4,619
3 Feb 2020	5	15.0	3.0	1,824	9	26.0	2.9	3,572	0	0.0	0.0	14	41.0	5,396
4 Feb 2020	11	34.0	3.1	4,134	23	66.0	2.9	9,068	0	0.0	0.0	34	100.0	13,202
5 Feb 2020	12	37.0	3.1	4,499	23	66.0	2.9	9,068	0	0.0	0.0	35	103.0	13,567
6 Feb 2020	11	35.0	3.2	4,256	23	67.0	2.9	9,206	0	0.0	0.0	34	102.0	13,462
7 Feb 2020	13	40.0	3.1	4,864	27	76.0	2.8	10,442	0	0.0	0.0	40	116.0	15,306
8 Feb 2020	13	40.0	3.1	4,864	26	73.0	2.8	10,030	0	0.0	0.0	39	113.0	14,894
9 Feb 2020	7	21.0	3.0	2,554	13	37.0	2.8	5,084	0	0.0	0.0	20	58.0	7,638
10 Feb 2020	7	20.0	2.9	2,432	14	39.0	2.8	5,359	0	0.0	0.0	21	59.0	7,791
11 Feb 2020	13	41.0	3.2	4,986	25	74.0	3.0	10,168	0	0.0	0.0	38	115.0	15,154
12 Feb 2020	12	38.0	3.2	4,621	25	75.0	3.0	10,305	0	0.0	0.0	37	113.0	14,926
13 Feb 2020	13	39.0	3.0	4,742	25	74.0	3.0	10,168	0	0.0	0.0	38	113.0	14,910
14 Feb 2020	15	49.0	3.3	5,958	31	97.0	3.1	13,328	0	0.0	0.0	46	146.0	19,286
15 Feb 2020	10	33.0	3.3	4,013	20	63.0	3.2	8,656	0	0.0	0.0	30	96.0	12,669
16 Feb 2020	4	15.0	3.8	1,824	10	30.0	3.0	4,122	0	0.0	0.0	14	45.0	5,946
17 Feb 2020	6	19.0	3.2	2,310	11	31.0	2.8	4,259	0	0.0	0.0	17	50.0	6,569
18 Feb 2020	8	24.0	3.0	2,918	17	52.0	3.1	7,145	0	0.0	0.0	25	76.0	10,063
19 Feb 2020	11	35.0	3.2	4,256	22	64.0	2.9	8,794	0	0.0	0.0	33	99.0	13,050
20 Feb 2020	12	37.0	3.1	4,499	24	69.0	2.9	9,481	0	0.0	0.0	36	106.0	13,980
21 Feb 2020	13	39.0	3.0	4,742	26	77.0	3.0	10,580	0	0.0	0.0	39	116.0	15,322
22 Feb 2020	10	31.0	3.1	3,770	19	58.0	3.1	7,969	0	0.0	0.0	29	89.0	11,739
23 Feb 2020	4	12.0	3.0	1,459	9	25.0	2.8	3,435	0	0.0	0.0	13	37.0	4,894
24 Feb 2020	4	11.0	2.8	1,338	7	20.0	2.9	2,748	0	0.0	0.0	11	31.0	4,086
25 Feb 2020	10	31.0	3.1	3,770	21	63.0	3.0	8,656	0	0.0	0.0	31	94.0	12,426
26 Feb 2020	10	32.0	3.2	3,891	20	63.0	3.2	8,656	0	0.0	0.0	30	95.0	12,547
27 Feb 2020	12	40.0	3.3	4,864	24	74.0	3.1	10,168	0	0.0	0.0	36	114.0	15,032
28 Feb 2020	9	28.0	3.1	3,405	20	59.0	3.0	8,107	0	0.0	0.0	29	87.0	11,512
29 Feb 2020	9	28.0	3.1	3,405	18	56.0	3.1	7,694	0	0.0	0.0	27	84.0	11,099
1 Mar 2020	3	10.0	3.3	1,216	6	18.0	3.0	2,473	0	0.0	0.0	9	28.0	3,689
2 Mar 2020	3	9.0	3.0	1,094	6	16.0	2.7	2,198	0	0.0	0.0	9	25.0	3,292
3 Mar 2020	10	31.0	3.1	3,770	21	63.0	3.0	8,656	0	0.0	0.0	31	94.0	12,426
4 Mar 2020	12	36.0	3.0	4,378	23	70.0	3.0	9,618	0	0.0	0.0	35	106.0	13,996
5 Mar 2020	12	38.0	3.2	4,621	24	75.0	3.1	10,305	0	0.0	0.0	36	113.0	14,926
6 Mar 2020	13	40.0	3.1	4,864	26	79.0	3.0	10,855	0	0.0	0.0	39	119.0	15,719
7 Mar 2020	15	48.0	3.2	5,837	30	95.0	3.2	13,053	0	0.0	0.0	45	143.0	18,890

Runtime Data (Daily)
Georgetown Delaware Wastewater - Health Unit Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				Total					
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
8 Mar 2020	5	15.0	3.0	1,824	10	30.0	3.0	4,122	0	0.0	0.0	15	45.0	5,946
9 Mar 2020	4	13.0	3.2	1,581	8	25.0	3.1	3,435	0	0.0	0.0	12	38.0	5,016
10 Mar 2020	11	36.0	3.3	4,378	22	69.0	3.1	9,481	0	0.0	0.0	33	105.0	13,859
11 Mar 2020	9	30.0	3.3	3,648	21	68.0	3.2	9,343	0	0.0	0.0	30	98.0	12,991
12 Mar 2020	13	43.0	3.3	5,229	27	90.0	3.3	12,366	0	0.0	0.0	40	133.0	17,595
13 Mar 2020	10	31.0	3.1	3,770	20	63.0	3.2	8,656	0	0.0	0.0	30	94.0	12,426
14 Mar 2020	10	31.0	3.1	3,770	20	63.0	3.2	8,656	0	0.0	0.0	30	94.0	12,426
15 Mar 2020	4	12.0	3.0	1,459	8	24.0	3.0	3,298	0	0.0	0.0	12	36.0	4,757
16 Mar 2020	3	9.0	3.0	1,094	6	18.0	3.0	2,473	0	0.0	0.0	9	27.0	3,567
17 Mar 2020	10	33.0	3.3	4,013	20	68.0	3.4	9,343	0	0.0	0.0	30	101.0	13,356
18 Mar 2020	10	31.0	3.1	3,770	21	63.0	3.0	8,656	0	0.0	0.0	31	94.0	12,426
19 Mar 2020	10	29.0	2.9	3,526	19	53.0	2.8	7,282	0	0.0	0.0	29	82.0	10,808
20 Mar 2020	10	30.0	3.0	3,648	19	53.0	2.8	7,282	0	0.0	0.0	29	83.0	10,930
21 Mar 2020	10	29.0	2.9	3,526	20	56.0	2.8	7,694	0	0.0	0.0	30	85.0	11,220
22 Mar 2020	4	11.0	2.8	1,338	8	21.0	2.6	2,885	0	0.0	0.0	12	32.0	4,223
23 Mar 2020	2	6.0	3.0	730	4	10.0	2.5	1,374	0	0.0	0.0	6	16.0	2,104
24 Mar 2020	10	31.0	3.1	3,770	19	55.0	2.9	7,557	0	0.0	0.0	29	86.0	11,327
25 Mar 2020	7	21.0	3.0	2,554	15	41.0	2.7	5,633	0	0.0	0.0	22	62.0	8,187
26 Mar 2020	9	27.0	3.0	3,283	17	50.0	2.9	6,870	0	0.0	0.0	26	77.0	10,153
27 Mar 2020	8	26.0	3.2	3,162	16	46.0	2.9	6,320	0	0.0	0.0	24	72.0	9,482
28 Mar 2020	8	27.0	3.4	3,283	16	51.0	3.2	7,007	0	0.0	0.0	24	78.0	10,290
29 Mar 2020	7	23.0	3.3	2,797	14	39.0	2.8	5,359	0	0.0	0.0	21	62.0	8,156
30 Mar 2020	6	17.0	2.8	2,067	11	31.0	2.8	4,259	0	0.0	0.0	17	48.0	6,326
31 Mar 2020	11	31.0	2.8	3,770	20	54.0	2.7	7,420	0	0.0	0.0	31	85.0	11,190
1 Apr 2020	11	33.0	3.0	4,013	21	63.0	3.0	8,656	0	0.0	0.0	32	96.0	12,669
2 Apr 2020	9	28.0	3.1	3,405	19	56.0	2.9	7,694	0	0.0	0.0	28	84.0	11,099
3 Apr 2020	10	31.0	3.1	3,770	20	58.0	2.9	7,969	0	0.0	0.0	30	89.0	11,739
4 Apr 2020	9	27.0	3.0	3,283	18	51.0	2.8	7,007	0	0.0	0.0	27	78.0	10,290
5 Apr 2020	4	12.0	3.0	1,459	8	22.0	2.8	3,023	0	0.0	0.0	12	34.0	4,482
6 Apr 2020	4	13.0	3.2	1,581	8	22.0	2.8	3,023	0	0.0	0.0	12	35.0	4,604
7 Apr 2020	9	24.0	2.7	2,918	17	44.0	2.6	6,046	0	0.0	0.0	26	68.0	8,964
8 Apr 2020	11	33.0	3.0	4,013	21	57.0	2.7	7,832	0	0.0	0.0	32	90.0	11,845
9 Apr 2020	9	29.0	3.2	3,526	19	55.0	2.9	7,557	0	0.0	0.0	28	84.0	11,083
10 Apr 2020	9	27.0	3.0	3,283	18	51.0	2.8	7,007	0	0.0	0.0	27	78.0	10,290
11 Apr 2020	4	12.0	3.0	1,459	8	21.0	2.6	2,885	0	0.0	0.0	12	33.0	4,344
12 Apr 2020	2	7.0	3.5	851	5	16.0	3.2	2,198	0	0.0	0.0	7	23.0	3,049

Runtime Data (Daily)
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Date/Time	Pump 1				Pump 2								Total	
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
13 Apr 2020	3	9.0	3.0	1,094	5	15.0	3.0	2,061	0	0.0	0.0	8	24.0	3,155
14 Apr 2020	8	24.0	3.0	2,918	16	45.0	2.8	6,183	0	0.0	0.0	24	69.0	9,101
15 Apr 2020	10	30.0	3.0	3,648	20	56.0	2.8	7,694	0	0.0	0.0	30	86.0	11,342
16 Apr 2020	8	25.0	3.1	3,040	17	50.0	2.9	6,870	0	0.0	0.0	25	75.0	9,910
17 Apr 2020	7	23.0	3.3	2,797	15	46.0	3.1	6,320	0	0.0	0.0	22	69.0	9,117
18 Apr 2020	7	22.0	3.1	2,675	14	38.0	2.7	5,221	0	0.0	0.0	21	60.0	7,896
19 Apr 2020	4	12.0	3.0	1,459	7	19.0	2.7	2,611	0	0.0	0.0	11	31.0	4,070
20 Apr 2020	2	6.0	3.0	730	5	13.0	2.6	1,786	0	0.0	0.0	7	19.0	2,516
21 Apr 2020	9	28.0	3.1	3,405	18	51.0	2.8	7,007	0	0.0	0.0	27	79.0	10,412
22 Apr 2020	7	20.0	2.9	2,432	13	36.0	2.8	4,946	0	0.0	0.0	20	56.0	7,378
23 Apr 2020	6	18.0	3.0	2,189	13	37.0	2.8	5,084	0	0.0	0.0	19	55.0	7,273
24 Apr 2020	12	39.0	3.2	4,742	25	75.0	3.0	10,305	0	0.0	0.0	37	114.0	15,047
25 Apr 2020	8	25.0	3.1	3,040	16	47.0	2.9	6,458	0	0.0	0.0	24	72.0	9,498
26 Apr 2020	4	12.0	3.0	1,459	8	22.0	2.8	3,023	0	0.0	0.0	12	34.0	4,482
27 Apr 2020	3	9.0	3.0	1,094	7	18.0	2.6	2,473	0	0.0	0.0	10	27.0	3,567
28 Apr 2020	8	25.0	3.1	3,040	16	48.0	3.0	6,595	0	0.0	0.0	24	73.0	9,635
29 Apr 2020	7	22.0	3.1	2,675	14	41.0	2.9	5,633	0	0.0	0.0	21	63.0	8,308
30 Apr 2020	8	24.0	3.0	2,918	16	48.0	3.0	6,595	0	0.0	0.0	24	72.0	9,513
1 May 2020	8	24.0	3.0	2,918	15	40.0	2.7	5,496	0	0.0	0.0	23	64.0	8,414
2 May 2020	6	18.0	3.0	2,189	13	36.0	2.8	4,946	0	0.0	0.0	19	54.0	7,135
3 May 2020	4	12.0	3.0	1,459	7	19.0	2.7	2,611	0	0.0	0.0	11	31.0	4,070
4 May 2020	3	9.0	3.0	1,094	7	19.0	2.7	2,611	0	0.0	0.0	10	28.0	3,705
5 May 2020	11	35.0	3.2	4,256	22	63.0	2.9	8,656	0	0.0	0.0	33	98.0	12,912
6 May 2020	9	29.0	3.2	3,526	18	54.0	3.0	7,420	0	0.0	0.0	27	83.0	10,946
7 May 2020	8	27.0	3.4	3,283	17	51.0	3.0	7,007	0	0.0	0.0	25	78.0	10,290
8 May 2020	8	25.0	3.1	3,040	16	47.0	2.9	6,458	0	0.0	0.0	24	72.0	9,498
9 May 2020	12	42.0	3.5	5,107	24	77.0	3.2	10,580	0	0.0	0.0	36	119.0	15,687
10 May 2020	6	16.0	2.7	1,946	10	26.0	2.6	3,572	0	0.0	0.0	16	42.0	5,518
11 May 2020	3	9.0	3.0	1,094	7	19.0	2.7	2,611	0	0.0	0.0	10	28.0	3,705
12 May 2020	8	27.0	3.4	3,283	15	45.0	3.0	6,183	0	0.0	0.0	23	72.0	9,466
13 May 2020	7	21.0	3.0	2,554	15	46.0	3.1	6,320	0	0.0	0.0	22	67.0	8,874
14 May 2020	7	25.0	3.6	3,040	14	52.0	3.7	7,145	0	0.0	0.0	21	77.0	10,185
15 May 2020	10	37.0	3.7	4,499	19	71.0	3.7	9,755	0	0.0	0.0	29	108.0	14,254
16 May 2020	6	19.0	3.2	2,310	13	48.0	3.7	6,595	0	0.0	0.0	19	67.0	8,905
17 May 2020	4	12.0	3.0	1,459	8	26.0	3.2	3,572	0	0.0	0.0	12	38.0	5,031
18 May 2020	3	9.0	3.0	1,094	6	20.0	3.3	2,748	0	0.0	0.0	9	29.0	3,842

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Date/Time	Pump 1				Pump 2				Total					
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
19 May 2020	7	25.0	3.6	3,040	13	48.0	3.7	6,595	0	0.0	0.0	20	73.0	9,635
20 May 2020	9	30.0	3.3	3,648	18	56.0	3.1	7,694	0	0.0	0.0	27	86.0	11,342
21 May 2020	7	26.0	3.7	3,162	15	52.0	3.5	7,145	0	0.0	0.0	22	78.0	10,307
22 May 2020	8	25.0	3.1	3,040	16	52.0	3.2	7,145	0	0.0	0.0	24	77.0	10,185
23 May 2020	8	25.0	3.1	3,040	14	46.0	3.3	6,320	0	0.0	0.0	22	71.0	9,360
24 May 2020	5	15.0	3.0	1,824	9	28.0	3.1	3,847	0	0.0	0.0	14	43.0	5,671
25 May 2020	2	6.0	3.0	730	5	17.0	3.4	2,336	0	0.0	0.0	7	23.0	3,066
26 May 2020	3	10.0	3.3	1,216	6	21.0	3.5	2,885	0	0.0	0.0	9	31.0	4,101
27 May 2020	8	27.0	3.4	3,283	15	52.0	3.5	7,145	0	0.0	0.0	23	79.0	10,428
28 May 2020	7	23.0	3.3	2,797	14	47.0	3.4	6,458	0	0.0	0.0	21	70.0	9,255
29 May 2020	6	21.0	3.5	2,554	13	44.0	3.4	6,046	0	0.0	0.0	19	65.0	8,600
30 May 2020	7	21.0	3.0	2,554	14	39.0	2.8	5,359	0	0.0	0.0	21	60.0	7,913
31 May 2020	3	9.0	3.0	1,094	6	17.0	2.8	2,336	0	0.0	0.0	9	26.0	3,430
1 Jun 2020	2	6.0	3.0	730	4	12.0	3.0	1,649	0	0.0	0.0	6	18.0	2,379
2 Jun 2020	7	23.0	3.3	2,797	13	40.0	3.1	5,496	0	0.0	0.0	20	63.0	8,293
3 Jun 2020	7	21.0	3.0	2,554	14	39.0	2.8	5,359	0	0.0	0.0	21	60.0	7,913
4 Jun 2020	8	24.0	3.0	2,918	17	45.0	2.6	6,183	0	0.0	0.0	25	69.0	9,101
5 Jun 2020	8	25.0	3.1	3,040	15	43.0	2.9	5,908	0	0.0	0.0	23	68.0	8,948
6 Jun 2020	7	21.0	3.0	2,554	14	40.0	2.9	5,496	0	0.0	0.0	21	61.0	8,050
7 Jun 2020	2	5.0	2.5	608	5	12.0	2.4	1,649	0	0.0	0.0	7	17.0	2,257
8 Jun 2020	4	12.0	3.0	1,459	8	23.0	2.9	3,160	0	0.0	0.0	12	35.0	4,619
9 Jun 2020	9	27.0	3.0	3,283	19	53.0	2.8	7,282	0	0.0	0.0	28	80.0	10,565
10 Jun 2020	8	25.0	3.1	3,040	16	54.0	3.4	7,420	0	0.0	0.0	24	79.0	10,460
11 Jun 2020	6	18.0	3.0	2,189	12	32.0	2.7	4,397	0	0.0	0.0	18	50.0	6,586
12 Jun 2020	9	26.0	2.9	3,162	19	50.0	2.6	6,870	0	0.0	0.0	28	76.0	10,032
13 Jun 2020	7	20.0	2.9	2,432	14	35.0	2.5	4,809	0	0.0	0.0	21	55.0	7,241
14 Jun 2020	3	8.0	2.7	973	5	13.0	2.6	1,786	0	0.0	0.0	8	21.0	2,759
15 Jun 2020	1	3.0	3.0	365	3	9.0	3.0	1,237	0	0.0	0.0	4	12.0	1,602
16 Jun 2020	7	19.0	2.7	2,310	14	33.0	2.4	4,534	0	0.0	0.0	21	52.0	6,844
17 Jun 2020	8	24.0	3.0	2,918	15	41.0	2.7	5,633	0	0.0	0.0	23	65.0	8,551
18 Jun 2020	8	21.0	2.6	2,554	16	37.0	2.3	5,084	0	0.0	0.0	24	58.0	7,638
19 Jun 2020	8	23.0	2.9	2,797	16	40.0	2.5	5,496	0	0.0	0.0	24	63.0	8,293
20 Jun 2020	7	21.0	3.0	2,554	15	40.0	2.7	5,496	0	0.0	0.0	22	61.0	8,050
21 Jun 2020	5	13.0	2.6	1,581	9	23.0	2.6	3,160	0	0.0	0.0	14	36.0	4,741
22 Jun 2020	4	11.0	2.8	1,338	9	22.0	2.4	3,023	0	0.0	0.0	13	33.0	4,361
23 Jun 2020	9	25.0	2.8	3,040	18	48.0	2.7	6,595	0	0.0	0.0	27	73.0	9,635

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Georgetown Delaware Wastewater - Health Unit Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2								Total	
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
24 Jun 2020	9	26.0	2.9	3,162	18	47.0	2.6	6,458	0	0.0	0.0	27	73.0	9,620
25 Jun 2020	10	31.0	3.1	3,770	20	62.0	3.1	8,519	0	0.0	0.0	30	93.0	12,289
26 Jun 2020	11	31.0	2.8	3,770	22	56.0	2.5	7,694	0	0.0	0.0	33	87.0	11,464
27 Jun 2020	8	21.0	2.6	2,554	16	43.0	2.7	5,908	0	0.0	0.0	24	64.0	8,462
28 Jun 2020	5	14.0	2.8	1,702	10	25.0	2.5	3,435	0	0.0	0.0	15	39.0	5,137
29 Jun 2020	3	7.0	2.3	851	6	15.0	2.5	2,061	0	0.0	0.0	9	22.0	2,912
30 Jun 2020	11	32.0	2.9	3,891	22	57.0	2.6	7,832	0	0.0	0.0	33	89.0	11,723
1 Jul 2020	9	23.0	2.6	2,797	19	48.0	2.5	6,595	0	0.0	0.0	28	71.0	9,392
2 Jul 2020	11	33.0	3.0	4,013	22	63.0	2.9	8,656	0	0.0	0.0	33	96.0	12,669
3 Jul 2020	9	25.0	2.8	3,040	18	49.0	2.7	6,733	0	0.0	0.0	27	74.0	9,773
4 Jul 2020	4	11.0	2.8	1,338	8	22.0	2.8	3,023	0	0.0	0.0	12	33.0	4,361
5 Jul 2020	4	10.0	2.5	1,216	7	18.0	2.6	2,473	0	0.0	0.0	11	28.0	3,689
6 Jul 2020	3	8.0	2.7	973	6	14.0	2.3	1,924	0	0.0	0.0	9	22.0	2,897
7 Jul 2020	10	29.0	2.9	3,526	21	56.0	2.7	7,694	0	0.0	0.0	31	85.0	11,220
8 Jul 2020	13	36.0	2.8	4,378	25	64.0	2.6	8,794	0	0.0	0.0	38	100.0	13,172
9 Jul 2020	11	30.0	2.7	3,648	22	55.0	2.5	7,557	0	0.0	0.0	33	85.0	11,205
10 Jul 2020	11	29.0	2.6	3,526	21	54.0	2.6	7,420	0	0.0	0.0	32	83.0	10,946
11 Jul 2020	18	49.0	2.7	5,958	36	89.0	2.5	12,229	0	0.0	0.0	54	138.0	18,187
12 Jul 2020	6	15.0	2.5	1,824	13	32.0	2.5	4,397	0	0.0	0.0	19	47.0	6,221
13 Jul 2020	6	17.0	2.8	2,067	12	32.0	2.7	4,397	0	0.0	0.0	18	49.0	6,464
14 Jul 2020	13	37.0	2.8	4,499	26	68.0	2.6	9,343	0	0.0	0.0	39	105.0	13,842
15 Jul 2020	11	31.0	2.8	3,770	21	58.0	2.8	7,969	0	0.0	0.0	32	89.0	11,739
16 Jul 2020	10	27.0	2.7	3,283	20	53.0	2.6	7,282	0	0.0	0.0	30	80.0	10,565
17 Jul 2020	10	27.0	2.7	3,283	20	49.0	2.4	6,733	0	0.0	0.0	30	76.0	10,016
18 Jul 2020	9	25.0	2.8	3,040	19	50.0	2.6	6,870	0	0.0	0.0	28	75.0	9,910
19 Jul 2020	5	13.0	2.6	1,581	9	22.0	2.4	3,023	0	0.0	0.0	14	35.0	4,604
20 Jul 2020	4	10.0	2.5	1,216	8	19.0	2.4	2,611	0	0.0	0.0	12	29.0	3,827
21 Jul 2020	9	25.0	2.8	3,040	19	48.0	2.5	6,595	0	0.0	0.0	28	73.0	9,635
22 Jul 2020	12	31.0	2.6	3,770	23	54.0	2.3	7,420	0	0.0	0.0	35	85.0	11,190
23 Jul 2020	9	25.0	2.8	3,040	19	45.0	2.4	6,183	0	0.0	0.0	28	70.0	9,223
24 Jul 2020	10	24.0	2.4	2,918	20	45.0	2.2	6,183	0	0.0	0.0	30	69.0	9,101
25 Jul 2020	10	28.0	2.8	3,405	19	48.0	2.5	6,595	0	0.0	0.0	29	76.0	10,000
26 Jul 2020	4	9.0	2.2	1,094	9	19.0	2.1	2,611	0	0.0	0.0	13	28.0	3,705
27 Jul 2020	6	15.0	2.5	1,824	11	25.0	2.3	3,435	0	0.0	0.0	17	40.0	5,259
28 Jul 2020	13	34.0	2.6	4,134	27	66.0	2.4	9,068	0	0.0	0.0	40	100.0	13,202
29 Jul 2020	14	37.0	2.6	4,499	28	67.0	2.4	9,206	0	0.0	0.0	42	104.0	13,705

Runtime Data (Daily)
Georgetown Delaware Wastewater - Health Unit Pump Station
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	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
30 Jul 2020	9	23.0	2.6	2,797	18	41.0	2.3	5,633	0	0.0	0.0	27	64.0	8,430
31 Jul 2020	10	25.0	2.5	3,040	19	44.0	2.3	6,046	0	0.0	0.0	29	69.0	9,086
1 Aug 2020	10	27.0	2.7	3,283	20	48.0	2.4	6,595	0	0.0	0.0	30	75.0	9,878
2 Aug 2020	6	14.0	2.3	1,702	11	24.0	2.2	3,298	0	0.0	0.0	17	38.0	5,000
3 Aug 2020	5	14.0	2.8	1,702	11	26.0	2.4	3,572	0	0.0	0.0	16	40.0	5,274
4 Aug 2020	12	32.0	2.7	3,891	23	56.0	2.4	7,694	0	0.0	0.0	35	88.0	11,585
5 Aug 2020	15	42.0	2.8	5,107	31	79.0	2.5	10,855	0	0.0	0.0	46	121.0	15,962
6 Aug 2020	15	40.0	2.7	4,864	30	76.0	2.5	10,442	0	0.0	0.0	45	116.0	15,306
7 Aug 2020	13	37.0	2.8	4,499	25	69.0	2.8	9,481	0	0.0	0.0	38	106.0	13,980
8 Aug 2020	10	27.0	2.7	3,283	21	54.0	2.6	7,420	0	0.0	0.0	31	81.0	10,703
9 Aug 2020	6	15.0	2.5	1,824	11	25.0	2.3	3,435	0	0.0	0.0	17	40.0	5,259
10 Aug 2020	4	10.0	2.5	1,216	8	18.0	2.2	2,473	0	0.0	0.0	12	28.0	3,689
11 Aug 2020	10	26.0	2.6	3,162	21	49.0	2.3	6,733	0	0.0	0.0	31	75.0	9,895
12 Aug 2020	14	34.0	2.4	4,134	28	64.0	2.3	8,794	0	0.0	0.0	42	98.0	12,928
13 Aug 2020	11	28.0	2.5	3,405	22	51.0	2.3	7,007	0	0.0	0.0	33	79.0	10,412
14 Aug 2020	12	33.0	2.8	4,013	23	55.0	2.4	7,557	0	0.0	0.0	35	88.0	11,570
15 Aug 2020	11	27.0	2.5	3,283	23	52.0	2.3	7,145	0	0.0	0.0	34	79.0	10,428
16 Aug 2020	7	16.0	2.3	1,946	14	30.0	2.1	4,122	0	0.0	0.0	21	46.0	6,068
17 Aug 2020	8	20.0	2.5	2,432	15	36.0	2.4	4,946	0	0.0	0.0	23	56.0	7,378
18 Aug 2020	12	32.0	2.7	3,891	25	61.0	2.4	8,381	0	0.0	0.0	37	93.0	12,272
19 Aug 2020	13	38.0	2.9	4,621	25	66.0	2.6	9,068	0	0.0	0.0	38	104.0	13,689
20 Aug 2020	14	41.0	2.9	4,986	29	79.0	2.7	10,855	0	0.0	0.0	43	120.0	15,841
21 Aug 2020	14	38.0	2.7	4,621	27	71.0	2.6	9,755	0	0.0	0.0	41	109.0	14,376
22 Aug 2020	12	30.0	2.5	3,648	25	61.0	2.4	8,381	0	0.0	0.0	37	91.0	12,029
23 Aug 2020	8	23.0	2.9	2,797	15	40.0	2.7	5,496	0	0.0	0.0	23	63.0	8,293
24 Aug 2020	6	16.0	2.7	1,946	13	33.0	2.5	4,534	0	0.0	0.0	19	49.0	6,480
25 Aug 2020	11	32.0	2.9	3,891	22	68.0	3.1	9,343	0	0.0	0.0	33	100.0	13,234
26 Aug 2020	13	39.0	3.0	4,742	26	82.0	3.2	11,267	0	0.0	0.0	39	121.0	16,009
27 Aug 2020	18	47.0	2.6	5,715	35	88.0	2.5	12,091	0	0.0	0.0	53	135.0	17,806
28 Aug 2020	12	36.0	3.0	4,378	24	70.0	2.9	9,618	0	0.0	0.0	36	106.0	13,996
29 Aug 2020	11	34.0	3.1	4,134	22	76.0	3.5	10,442	0	0.0	0.0	33	110.0	14,576
30 Aug 2020	8	25.0	3.1	3,040	15	51.0	3.4	7,007	0	0.0	0.0	23	76.0	10,047
31 Aug 2020	6	19.0	3.2	2,310	13	43.0	3.3	5,908	0	0.0	0.0	19	62.0	8,218
1 Sep 2020	13	45.0	3.5	5,472	25	87.0	3.5	11,954	0	0.0	0.0	38	132.0	17,426
2 Sep 2020	13	42.0	3.2	5,107	26	94.0	3.6	12,916	0	0.0	0.0	39	136.0	18,023
3 Sep 2020	12	37.0	3.1	4,499	24	82.0	3.4	11,267	0	0.0	0.0	36	119.0	15,766

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	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
4 Sep 2020	12	40.0	3.3	4,864	25	98.0	3.9	13,465	0	0.0	0.0	37	138.0	18,329
5 Sep 2020	13	43.0	3.3	5,229	26	90.0	3.5	12,366	0	0.0	0.0	39	133.0	17,595
6 Sep 2020	11	35.0	3.2	4,256	22	79.0	3.6	10,855	0	0.0	0.0	33	114.0	15,111
7 Sep 2020	11	32.0	2.9	3,891	23	66.0	2.9	9,068	0	0.0	0.0	34	98.0	12,959
8 Sep 2020	9	28.0	3.1	3,405	17	47.0	2.8	6,458	0	0.0	0.0	26	75.0	9,863
9 Sep 2020	14	42.0	3.0	5,107	28	73.0	2.6	10,030	0	0.0	0.0	42	115.0	15,137
10 Sep 2020	13	38.0	2.9	4,621	27	73.0	2.7	10,030	0	0.0	0.0	40	111.0	14,651
11 Sep 2020	12	35.0	2.9	4,256	24	67.0	2.8	9,206	0	0.0	0.0	36	102.0	13,462
12 Sep 2020	12	34.0	2.8	4,134	23	62.0	2.7	8,519	0	0.0	0.0	35	96.0	12,653
13 Sep 2020	7	21.0	3.0	2,554	15	41.0	2.7	5,633	0	0.0	0.0	22	62.0	8,187
14 Sep 2020	7	21.0	3.0	2,554	13	35.0	2.7	4,809	0	0.0	0.0	20	56.0	7,363
15 Sep 2020	12	36.0	3.0	4,378	25	69.0	2.8	9,481	0	0.0	0.0	37	105.0	13,859
16 Sep 2020	13	38.0	2.9	4,621	26	70.0	2.7	9,618	0	0.0	0.0	39	108.0	14,239
17 Sep 2020	12	33.0	2.8	4,013	23	60.0	2.6	8,244	0	0.0	0.0	35	93.0	12,257
18 Sep 2020	12	33.0	2.8	4,013	24	58.0	2.4	7,969	0	0.0	0.0	36	91.0	11,982
19 Sep 2020	13	33.0	2.5	4,013	26	58.0	2.2	7,969	0	0.0	0.0	39	91.0	11,982
20 Sep 2020	6	13.0	2.2	1,581	13	26.0	2.0	3,572	0	0.0	0.0	19	39.0	5,153
21 Sep 2020	6	15.0	2.5	1,824	12	27.0	2.2	3,710	0	0.0	0.0	18	42.0	5,534
22 Sep 2020	16	45.0	2.8	5,472	32	77.0	2.4	10,580	0	0.0	0.0	48	122.0	16,052
23 Sep 2020	13	34.0	2.6	4,134	26	61.0	2.3	8,381	0	0.0	0.0	39	95.0	12,515
24 Sep 2020	11	32.0	2.9	3,891	22	58.0	2.6	7,969	0	0.0	0.0	33	90.0	11,860
25 Sep 2020	11	32.0	2.9	3,891	22	73.0	3.3	10,030	0	0.0	0.0	33	105.0	13,921
26 Sep 2020	11	33.0	3.0	4,013	21	64.0	3.0	8,794	0	0.0	0.0	32	97.0	12,807
27 Sep 2020	8	24.0	3.0	2,918	17	50.0	2.9	6,870	0	0.0	0.0	25	74.0	9,788
28 Sep 2020	10	27.0	2.7	3,283	20	56.0	2.8	7,694	0	0.0	0.0	30	83.0	10,977
29 Sep 2020	13	38.0	2.9	4,621	25	83.0	3.3	11,404	0	0.0	0.0	38	121.0	16,025
30 Sep 2020	17	50.0	2.9	6,080	35	108.0	3.1	14,839	0	0.0	0.0	52	158.0	20,919
1 Oct 2020	18	55.0	3.1	6,688	35	114.0	3.3	15,664	0	0.0	0.0	53	169.0	22,352
2 Oct 2020	10	31.0	3.1	3,770	21	68.0	3.2	9,343	0	0.0	0.0	31	99.0	13,113
3 Oct 2020	11	35.0	3.2	4,256	22	93.0	4.2	12,778	0	0.0	0.0	33	128.0	17,034
4 Oct 2020	6	15.0	2.5	1,824	12	26.0	2.2	3,572	0	0.0	0.0	18	41.0	5,396
5 Oct 2020	6	17.0	2.8	2,067	12	30.0	2.5	4,122	0	0.0	0.0	18	47.0	6,189
6 Oct 2020	13	32.0	2.5	3,891	26	58.0	2.2	7,969	0	0.0	0.0	39	90.0	11,860
7 Oct 2020	14	35.0	2.5	4,256	28	64.0	2.3	8,794	0	0.0	0.0	42	99.0	13,050
8 Oct 2020	16	45.0	2.8	5,472	31	74.0	2.4	10,168	0	0.0	0.0	47	119.0	15,640
9 Oct 2020	12	31.0	2.6	3,770	24	56.0	2.3	7,694	0	0.0	0.0	36	87.0	11,464

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10 Oct 2020	11	31.0	2.8	3,770	22	56.0	2.5	7,694	0	0.0	0.0	33	87.0	11,464
11 Oct 2020	7	19.0	2.7	2,310	14	38.0	2.7	5,221	0	0.0	0.0	21	57.0	7,531
12 Oct 2020	8	24.0	3.0	2,918	16	44.0	2.8	6,046	0	0.0	0.0	24	68.0	8,964
13 Oct 2020	21	63.0	3.0	7,661	42	119.0	2.8	16,351	0	0.0	0.0	63	182.0	24,012
14 Oct 2020	19	60.0	3.2	7,296	39	114.0	2.9	15,664	0	0.0	0.0	58	174.0	22,960
15 Oct 2020	12	36.0	3.0	4,378	24	83.0	3.5	11,404	0	0.0	0.0	36	119.0	15,782
16 Oct 2020	14	47.0	3.4	5,715	28	160.0	5.7	21,984	0	0.0	0.0	42	207.0	27,699
17 Oct 2020	12	43.0	3.6	5,229	23	168.0	7.3	23,083	0	0.0	0.0	35	211.0	28,312
18 Oct 2020	7	24.0	3.4	2,918	15	103.0	6.9	14,152	0	0.0	0.0	22	127.0	17,070
19 Oct 2020	8	26.0	3.2	3,162	16	96.0	6.0	13,190	0	0.0	0.0	24	122.0	16,352
20 Oct 2020	13	48.0	3.7	5,837	26	159.0	6.1	21,847	0	0.0	0.0	39	207.0	27,684
21 Oct 2020	11	37.0	3.4	4,499	21	207.0	9.9	28,442	0	0.0	0.0	32	244.0	32,941
22 Oct 2020	11	37.0	3.4	4,499	21	386.0	18.4	53,036	0	0.0	0.0	32	423.0	57,535
23 Oct 2020	19	45.0	2.4	5,472	29	256.0	8.8	35,174	0	0.0	0.0	48	301.0	40,646
24 Oct 2020	12	42.0	3.5	5,107	24	149.0	6.2	20,473	0	0.0	0.0	36	191.0	25,580
25 Oct 2020	8	26.0	3.2	3,162	16	67.0	4.2	9,206	0	0.0	0.0	24	93.0	12,368
26 Oct 2020	16	53.0	3.3	6,445	31	108.0	3.5	14,839	0	0.0	0.0	47	161.0	21,284
27 Oct 2020	18	53.0	2.9	6,445	36	115.0	3.2	15,801	0	0.0	0.0	54	168.0	22,246
28 Oct 2020	15	47.0	3.1	5,715	30	108.0	3.6	14,839	0	0.0	0.0	45	155.0	20,554
29 Oct 2020	14	49.0	3.5	5,958	27	146.0	5.4	20,060	0	0.0	0.0	41	195.0	26,018
30 Oct 2020	16	55.0	3.4	6,688	31	204.0	6.6	28,030	0	0.0	0.0	47	259.0	34,718
31 Oct 2020	17	51.0	3.0	6,202	34	109.0	3.2	14,977	0	0.0	0.0	51	160.0	21,179
1 Nov 2020	11	35.0	3.2	4,256	21	73.0	3.5	10,030	0	0.0	0.0	32	108.0	14,286
2 Nov 2020	12	40.0	3.3	4,864	24	85.0	3.5	11,679	0	0.0	0.0	36	125.0	16,543
3 Nov 2020	15	48.0	3.2	5,837	31	99.0	3.2	13,603	0	0.0	0.0	46	147.0	19,440
4 Nov 2020	14	44.0	3.1	5,350	27	83.0	3.1	11,404	0	0.0	0.0	41	127.0	16,754
5 Nov 2020	16	55.0	3.4	6,688	33	132.0	4.0	18,137	0	0.0	0.0	49	187.0	24,825
6 Nov 2020	11	39.0	3.5	4,742	23	170.0	7.4	23,358	0	0.0	0.0	34	209.0	28,100
7 Nov 2020	12	45.0	3.8	5,472	22	139.0	6.3	19,099	0	0.0	0.0	34	184.0	24,571
8 Nov 2020	8	27.0	3.4	3,283	17	93.0	5.5	12,778	0	0.0	0.0	25	120.0	16,061
9 Nov 2020	9	29.0	3.2	3,526	17	117.0	6.9	16,076	0	0.0	0.0	26	146.0	19,602
10 Nov 2020	9	32.0	3.6	3,891	18	322.0	17.9	44,243	0	0.0	0.0	27	354.0	48,134
11 Nov 2020	13	41.0	3.2	4,986	27	130.0	4.8	17,862	0	0.0	0.0	40	171.0	22,848
12 Nov 2020	12	34.0	2.8	4,134	25	61.0	2.4	8,381	0	0.0	0.0	37	95.0	12,515
13 Nov 2020	24	72.0	3.0	8,755	47	126.0	2.7	17,312	0	0.0	0.0	71	198.0	26,067
14 Nov 2020	17	53.0	3.1	6,445	34	93.0	2.7	12,778	0	0.0	0.0	51	146.0	19,223

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	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
15 Nov 2020	11	32.0	2.9	3,891	23	62.0	2.7	8,519	0	0.0	0.0	34	94.0	12,410
16 Nov 2020	11	34.0	3.1	4,134	22	61.0	2.8	8,381	0	0.0	0.0	33	95.0	12,515
17 Nov 2020	16	50.0	3.1	6,080	32	94.0	2.9	12,916	0	0.0	0.0	48	144.0	18,996
18 Nov 2020	18	56.0	3.1	6,810	37	105.0	2.8	14,427	0	0.0	0.0	55	161.0	21,237
19 Nov 2020	21	59.0	2.8	7,174	41	108.0	2.6	14,839	0	0.0	0.0	62	167.0	22,013
20 Nov 2020	11	31.0	2.8	3,770	23	57.0	2.5	7,832	0	0.0	0.0	34	88.0	11,602
21 Nov 2020	15	44.0	2.9	5,350	28	71.0	2.5	9,755	0	0.0	0.0	43	115.0	15,105
22 Nov 2020	9	26.0	2.9	3,162	18	46.0	2.6	6,320	0	0.0	0.0	27	72.0	9,482
23 Nov 2020	8	21.0	2.6	2,554	16	39.0	2.4	5,359	0	0.0	0.0	24	60.0	7,913
24 Nov 2020	13	38.0	2.9	4,621	27	74.0	2.7	10,168	0	0.0	0.0	40	112.0	14,789
25 Nov 2020	9	27.0	3.0	3,283	17	50.0	2.9	6,870	0	0.0	0.0	26	77.0	10,153
26 Nov 2020	12	36.0	3.0	4,378	25	118.0	4.7	16,213	0	0.0	0.0	37	154.0	20,591
27 Nov 2020	9	31.0	3.4	3,770	18	86.0	4.8	11,816	0	0.0	0.0	27	117.0	15,586
28 Nov 2020	10	32.0	3.2	3,891	21	87.0	4.1	11,954	0	0.0	0.0	31	119.0	15,845
29 Nov 2020	10	33.0	3.3	4,013	20	67.0	3.4	9,206	0	0.0	0.0	30	100.0	13,219
30 Nov 2020	10	34.0	3.4	4,134	19	64.0	3.4	8,794	0	0.0	0.0	29	98.0	12,928
1 Dec 2020	18	56.0	3.1	6,810	36	127.0	3.5	17,450	0	0.0	0.0	54	183.0	24,260
2 Dec 2020	13	46.0	3.5	5,594	27	338.0	12.5	46,441	0	0.0	0.0	40	384.0	52,035
3 Dec 2020	12	44.0	3.7	5,350	22	518.0	23.5	71,173	0	0.0	0.0	34	562.0	76,523
4 Dec 2020	8	25.0	3.1	3,040	16	165.0	10.3	22,671	0	0.0	0.0	24	190.0	25,711
5 Dec 2020	11	38.0	3.5	4,621	23	103.0	4.5	14,152	0	0.0	0.0	34	141.0	18,773
6 Dec 2020	17	59.0	3.5	7,174	34	168.0	4.9	23,083	0	0.0	0.0	51	227.0	30,257
7 Dec 2020	11	39.0	3.5	4,742	22	96.0	4.4	13,190	0	0.0	0.0	33	135.0	17,932
8 Dec 2020	20	71.0	3.6	8,634	41	192.0	4.7	26,381	0	0.0	0.0	61	263.0	35,015
9 Dec 2020	15	53.0	3.5	6,445	31	148.0	4.8	20,335	0	0.0	0.0	46	201.0	26,780
10 Dec 2020	16	56.0	3.5	6,810	33	145.0	4.4	19,923	0	0.0	0.0	49	201.0	26,733
11 Dec 2020	15	58.0	3.9	7,053	30	258.0	8.6	35,449	0	0.0	0.0	45	316.0	42,502
12 Dec 2020	12	48.0	4.0	5,837	23	343.0	14.9	47,128	0	0.0	0.0	35	391.0	52,965
13 Dec 2020	9	32.0	3.6	3,891	18	96.0	5.3	13,190	0	0.0	0.0	27	128.0	17,081
14 Dec 2020	10	36.0	3.6	4,378	21	103.0	4.9	14,152	0	0.0	0.0	31	139.0	18,530
15 Dec 2020	13	51.0	3.9	6,202	22	443.0	20.1	60,868	0	0.0	0.0	35	494.0	67,070
16 Dec 2020	15	47.0	3.1	5,715	32	296.0	9.2	40,670	0	0.0	0.0	47	343.0	46,385
17 Dec 2020	19	50.0	2.6	6,080	36	94.0	2.6	12,916	0	0.0	0.0	55	144.0	18,996
18 Dec 2020	18	50.0	2.8	6,080	37	93.0	2.5	12,778	0	0.0	0.0	55	143.0	18,858
19 Dec 2020	17	50.0	2.9	6,080	34	88.0	2.6	12,091	0	0.0	0.0	51	138.0	18,171
20 Dec 2020	13	36.0	2.8	4,378	25	63.0	2.5	8,656	0	0.0	0.0	38	99.0	13,034

Runtime Data (Daily)
Georgetown Delaware Wastewater - Health Unit Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2								Total	
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
21 Dec 2020	12	34.0	2.8	4,134	24	58.0	2.4	7,969	0	0.0	0.0	36	92.0	12,103
22 Dec 2020	17	49.0	2.9	5,958	35	92.0	2.6	12,641	0	0.0	0.0	52	141.0	18,599
23 Dec 2020	16	46.0	2.9	5,594	32	81.0	2.5	11,129	0	0.0	0.0	48	127.0	16,723
24 Dec 2020	16	45.0	2.8	5,472	32	80.0	2.5	10,992	0	0.0	0.0	48	125.0	16,464
25 Dec 2020	12	32.0	2.7	3,891	25	59.0	2.4	8,107	0	0.0	0.0	37	91.0	11,998
26 Dec 2020	15	42.0	2.8	5,107	29	73.0	2.5	10,030	0	0.0	0.0	44	115.0	15,137
27 Dec 2020	11	28.0	2.5	3,405	23	53.0	2.3	7,282	0	0.0	0.0	34	81.0	10,687
28 Dec 2020	8	22.0	2.8	2,675	17	41.0	2.4	5,633	0	0.0	0.0	25	63.0	8,308
29 Dec 2020	14	39.0	2.8	4,742	27	68.0	2.5	9,343	0	0.0	0.0	41	107.0	14,085
30 Dec 2020	11	26.0	2.4	3,162	22	51.0	2.3	7,007	0	0.0	0.0	33	77.0	10,169
31 Dec 2020	12	33.0	2.8	4,013	24	57.0	2.4	7,832	0	0.0	0.0	36	90.0	11,845
Total	7587	26198.0	3.8	3,185,684	15129	52738.0	3.7	7,246,188	0	0.0	0.0	22716	78936.0	10,431,872

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
1 Jan 2019	1	2.0	2.0	626	0	0.0	0.0	0	0	0.0	0.0	1	2.0	626
2 Jan 2019	27	40.0	1.5	12,516	0	0.0	0.0	0	0	0.0	0.0	27	40.0	12,516
3 Jan 2019	47	74.0	1.6	23,155	0	0.0	0.0	0	0	0.0	0.0	47	74.0	23,155
4 Jan 2019	48	75.0	1.6	23,468	0	0.0	0.0	0	0	0.0	0.0	48	75.0	23,468
5 Jan 2019	38	60.0	1.6	18,774	0	0.0	0.0	0	0	0.0	0.0	38	60.0	18,774
6 Jan 2019	27	40.0	1.5	12,516	0	0.0	0.0	0	0	0.0	0.0	27	40.0	12,516
7 Jan 2019	23	38.0	1.7	11,890	0	0.0	0.0	0	0	0.0	0.0	23	38.0	11,890
8 Jan 2019	41	64.0	1.6	20,026	0	0.0	0.0	0	0	0.0	0.0	41	64.0	20,026
9 Jan 2019	41	60.0	1.5	18,774	0	0.0	0.0	0	0	0.0	0.0	41	60.0	18,774
10 Jan 2019	36	57.0	1.6	17,835	0	0.0	0.0	0	0	0.0	0.0	36	57.0	17,835
11 Jan 2019	40	64.0	1.6	20,026	0	0.0	0.0	0	0	0.0	0.0	40	64.0	20,026
12 Jan 2019	34	54.0	1.6	16,897	0	0.0	0.0	0	0	0.0	0.0	34	54.0	16,897
13 Jan 2019	19	26.0	1.4	8,135	0	0.0	0.0	0	0	0.0	0.0	19	26.0	8,135
14 Jan 2019	21	33.0	1.6	10,326	0	0.0	0.0	0	0	0.0	0.0	21	33.0	10,326
15 Jan 2019	36	64.0	1.8	20,026	0	0.0	0.0	0	0	0.0	0.0	36	64.0	20,026
16 Jan 2019	34	58.0	1.7	18,148	0	0.0	0.0	0	0	0.0	0.0	34	58.0	18,148
17 Jan 2019	35	61.0	1.7	19,087	0	0.0	0.0	0	0	0.0	0.0	35	61.0	19,087
18 Jan 2019	36	68.0	1.9	21,277	0	0.0	0.0	0	0	0.0	0.0	36	68.0	21,277
19 Jan 2019	37	68.0	1.8	21,277	0	0.0	0.0	0	0	0.0	0.0	37	68.0	21,277
20 Jan 2019	20	32.0	1.6	10,013	0	0.0	0.0	0	0	0.0	0.0	20	32.0	10,013
21 Jan 2019	36	65.0	1.8	20,338	0	0.0	0.0	0	0	0.0	0.0	36	65.0	20,338
22 Jan 2019	27	46.0	1.7	14,393	0	0.0	0.0	0	0	0.0	0.0	27	46.0	14,393
23 Jan 2019	37	61.0	1.6	19,087	0	0.0	0.0	0	0	0.0	0.0	37	61.0	19,087
24 Jan 2019	43	70.0	1.6	21,903	0	0.0	0.0	0	0	0.0	0.0	43	70.0	21,903
25 Jan 2019	57	92.0	1.6	28,787	0	0.0	0.0	0	0	0.0	0.0	57	92.0	28,787
26 Jan 2019	52	81.0	1.6	25,345	0	0.0	0.0	0	0	0.0	0.0	52	81.0	25,345
27 Jan 2019	29	44.0	1.5	13,768	0	0.0	0.0	0	0	0.0	0.0	29	44.0	13,768
28 Jan 2019	27	48.0	1.8	15,019	0	0.0	0.0	0	0	0.0	0.0	27	48.0	15,019
29 Jan 2019	42	66.0	1.6	20,651	0	0.0	0.0	0	0	0.0	0.0	42	66.0	20,651
30 Jan 2019	41	65.0	1.6	20,338	0	0.0	0.0	0	0	0.0	0.0	41	65.0	20,338
31 Jan 2019	39	61.0	1.6	19,087	0	0.0	0.0	0	0	0.0	0.0	39	61.0	19,087
1 Feb 2019	38	69.0	1.8	21,590	0	0.0	0.0	0	0	0.0	0.0	38	69.0	21,590
2 Feb 2019	34	63.0	1.9	19,713	0	0.0	0.0	0	0	0.0	0.0	34	63.0	19,713
3 Feb 2019	21	36.0	1.7	11,264	0	0.0	0.0	0	0	0.0	0.0	21	36.0	11,264
4 Feb 2019	22	40.0	1.8	12,516	0	0.0	0.0	0	0	0.0	0.0	22	40.0	12,516
5 Feb 2019	40	67.0	1.7	20,964	0	0.0	0.0	0	0	0.0	0.0	40	67.0	20,964
6 Feb 2019	41	65.0	1.6	20,338	0	0.0	0.0	0	0	0.0	0.0	41	65.0	20,338

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
7 Feb 2019	40	67.0	1.7	20,964	0	0.0	0.0	0	0	0.0	0.0	40	67.0	20,964
8 Feb 2019	38	61.0	1.6	19,087	0	0.0	0.0	0	0	0.0	0.0	38	61.0	19,087
9 Feb 2019	38	62.0	1.6	19,400	0	0.0	0.0	0	0	0.0	0.0	38	62.0	19,400
10 Feb 2019	24	39.0	1.6	12,203	0	0.0	0.0	0	0	0.0	0.0	24	39.0	12,203
11 Feb 2019	22	38.0	1.7	11,890	0	0.0	0.0	0	0	0.0	0.0	22	38.0	11,890
12 Feb 2019	48	84.0	1.8	26,284	0	0.0	0.0	0	0	0.0	0.0	48	84.0	26,284
13 Feb 2019	55	95.0	1.7	29,725	0	0.0	0.0	0	0	0.0	0.0	55	95.0	29,725
14 Feb 2019	51	82.0	1.6	25,658	0	0.0	0.0	0	0	0.0	0.0	51	82.0	25,658
15 Feb 2019	42	68.0	1.6	21,277	0	0.0	0.0	0	0	0.0	0.0	42	68.0	21,277
16 Feb 2019	40	69.0	1.7	21,590	0	0.0	0.0	0	0	0.0	0.0	40	69.0	21,590
17 Feb 2019	28	52.0	1.9	16,271	0	0.0	0.0	0	0	0.0	0.0	28	52.0	16,271
18 Feb 2019	26	46.0	1.8	14,393	0	0.0	0.0	0	0	0.0	0.0	26	46.0	14,393
19 Feb 2019	44	77.0	1.8	24,093	0	0.0	0.0	0	0	0.0	0.0	44	77.0	24,093
20 Feb 2019	43	73.0	1.7	22,842	0	0.0	0.0	0	0	0.0	0.0	43	73.0	22,842
21 Feb 2019	45	71.0	1.6	22,216	0	0.0	0.0	0	0	0.0	0.0	45	71.0	22,216
22 Feb 2019	47	80.0	1.7	25,032	0	0.0	0.0	0	0	0.0	0.0	47	80.0	25,032
23 Feb 2019	40	68.0	1.7	21,277	0	0.0	0.0	0	0	0.0	0.0	40	68.0	21,277
24 Feb 2019	30	50.0	1.7	15,645	0	0.0	0.0	0	0	0.0	0.0	30	50.0	15,645
25 Feb 2019	43	70.0	1.6	21,903	0	0.0	0.0	0	0	0.0	0.0	43	70.0	21,903
26 Feb 2019	47	82.0	1.7	25,658	0	0.0	0.0	0	0	0.0	0.0	47	82.0	25,658
27 Feb 2019	43	81.0	1.9	25,345	0	0.0	0.0	0	0	0.0	0.0	43	81.0	25,345
28 Feb 2019	44	78.0	1.8	24,406	0	0.0	0.0	0	0	0.0	0.0	44	78.0	24,406
1 Mar 2019	42	73.0	1.7	22,842	0	0.0	0.0	0	0	0.0	0.0	42	73.0	22,842
2 Mar 2019	42	75.0	1.8	23,468	0	0.0	0.0	0	0	0.0	0.0	42	75.0	23,468
3 Mar 2019	36	62.0	1.7	19,400	0	0.0	0.0	0	0	0.0	0.0	36	62.0	19,400
4 Mar 2019	36	61.0	1.7	19,087	0	0.0	0.0	0	0	0.0	0.0	36	61.0	19,087
5 Mar 2019	57	97.0	1.7	30,351	0	0.0	0.0	0	0	0.0	0.0	57	97.0	30,351
6 Mar 2019	46	80.0	1.7	25,032	0	0.0	0.0	0	0	0.0	0.0	46	80.0	25,032
7 Mar 2019	42	75.0	1.8	23,468	0	0.0	0.0	0	0	0.0	0.0	42	75.0	23,468
8 Mar 2019	42	71.0	1.7	22,216	0	0.0	0.0	0	0	0.0	0.0	42	71.0	22,216
9 Mar 2019	42	73.0	1.7	22,842	0	0.0	0.0	0	0	0.0	0.0	42	73.0	22,842
10 Mar 2019	29	54.0	1.9	16,897	0	0.0	0.0	0	0	0.0	0.0	29	54.0	16,897
11 Mar 2019	36	70.0	1.9	21,903	0	0.0	0.0	0	0	0.0	0.0	36	70.0	21,903
12 Mar 2019	51	89.0	1.7	27,848	0	0.0	0.0	0	0	0.0	0.0	51	89.0	27,848
13 Mar 2019	44	80.0	1.8	25,032	0	0.0	0.0	0	0	0.0	0.0	44	80.0	25,032
14 Mar 2019	44	71.0	1.6	22,216	0	0.0	0.0	0	0	0.0	0.0	44	71.0	22,216
15 Mar 2019	44	76.0	1.7	23,780	0	0.0	0.0	0	0	0.0	0.0	44	76.0	23,780

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
16 Mar 2019	43	71.0	1.7	22,216	0	0.0	0.0	0	0	0.0	0.0	43	71.0	22,216
17 Mar 2019	33	61.0	1.8	19,087	0	0.0	0.0	0	0	0.0	0.0	33	61.0	19,087
18 Mar 2019	39	69.0	1.8	21,590	0	0.0	0.0	0	0	0.0	0.0	39	69.0	21,590
19 Mar 2019	51	92.0	1.8	28,787	0	0.0	0.0	0	0	0.0	0.0	51	92.0	28,787
20 Mar 2019	50	95.0	1.9	29,725	0	0.0	0.0	0	0	0.0	0.0	50	95.0	29,725
21 Mar 2019	46	89.0	1.9	27,848	0	0.0	0.0	0	0	0.0	0.0	46	89.0	27,848
22 Mar 2019	46	86.0	1.9	26,909	0	0.0	0.0	0	0	0.0	0.0	46	86.0	26,909
23 Mar 2019	45	92.0	2.0	28,787	0	0.0	0.0	0	0	0.0	0.0	45	92.0	28,787
24 Mar 2019	30	55.0	1.8	17,210	0	0.0	0.0	0	0	0.0	0.0	30	55.0	17,210
25 Mar 2019	29	56.0	1.9	17,522	0	0.0	0.0	0	0	0.0	0.0	29	56.0	17,522
26 Mar 2019	55	96.0	1.7	30,038	0	0.0	0.0	0	0	0.0	0.0	55	96.0	30,038
27 Mar 2019	47	80.0	1.7	25,032	0	0.0	0.0	0	0	0.0	0.0	47	80.0	25,032
28 Mar 2019	41	75.0	1.8	23,468	0	0.0	0.0	0	0	0.0	0.0	41	75.0	23,468
29 Mar 2019	40	68.0	1.7	21,277	0	0.0	0.0	0	0	0.0	0.0	40	68.0	21,277
30 Mar 2019	37	62.0	1.7	19,400	0	0.0	0.0	0	0	0.0	0.0	37	62.0	19,400
31 Mar 2019	23	42.0	1.8	13,142	0	0.0	0.0	0	0	0.0	0.0	23	42.0	13,142
1 Apr 2019	22	41.0	1.9	12,829	0	0.0	0.0	0	0	0.0	0.0	22	41.0	12,829
2 Apr 2019	36	70.0	1.9	21,903	0	0.0	0.0	0	0	0.0	0.0	36	70.0	21,903
3 Apr 2019	37	72.0	1.9	22,529	0	0.0	0.0	0	0	0.0	0.0	37	72.0	22,529
4 Apr 2019	41	79.0	1.9	24,719	0	0.0	0.0	0	0	0.0	0.0	41	79.0	24,719
5 Apr 2019	35	64.0	1.8	20,026	0	0.0	0.0	0	0	0.0	0.0	35	64.0	20,026
6 Apr 2019	35	62.0	1.8	19,400	0	0.0	0.0	0	0	0.0	0.0	35	62.0	19,400
7 Apr 2019	22	42.0	1.9	13,142	0	0.0	0.0	0	0	0.0	0.0	22	42.0	13,142
8 Apr 2019	21	38.0	1.8	11,890	0	0.0	0.0	0	0	0.0	0.0	21	38.0	11,890
9 Apr 2019	35	66.0	1.9	20,651	0	0.0	0.0	0	0	0.0	0.0	35	66.0	20,651
10 Apr 2019	37	70.0	1.9	21,903	0	0.0	0.0	0	0	0.0	0.0	37	70.0	21,903
11 Apr 2019	36	66.0	1.8	20,651	0	0.0	0.0	0	0	0.0	0.0	36	66.0	20,651
12 Apr 2019	49	95.0	1.9	29,725	0	0.0	0.0	0	0	0.0	0.0	49	95.0	29,725
13 Apr 2019	56	107.0	1.9	33,480	0	0.0	0.0	0	0	0.0	0.0	56	107.0	33,480
14 Apr 2019	24	44.0	1.8	13,768	0	0.0	0.0	0	0	0.0	0.0	24	44.0	13,768
15 Apr 2019	25	45.0	1.8	14,080	0	0.0	0.0	0	0	0.0	0.0	25	45.0	14,080
16 Apr 2019	41	76.0	1.9	23,780	0	0.0	0.0	0	0	0.0	0.0	41	76.0	23,780
17 Apr 2019	36	66.0	1.8	20,651	0	0.0	0.0	0	0	0.0	0.0	36	66.0	20,651
18 Apr 2019	36	66.0	1.8	20,651	0	0.0	0.0	0	0	0.0	0.0	36	66.0	20,651
19 Apr 2019	35	58.0	1.7	18,148	0	0.0	0.0	0	0	0.0	0.0	35	58.0	18,148
20 Apr 2019	24	45.0	1.9	14,080	0	0.0	0.0	0	0	0.0	0.0	24	45.0	14,080
21 Apr 2019	32	55.0	1.7	17,210	0	0.0	0.0	0	0	0.0	0.0	32	55.0	17,210

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
22 Apr 2019	27	46.0	1.7	14,393	0	0.0	0.0	0	0	0.0	0.0	27	46.0	14,393
23 Apr 2019	36	66.0	1.8	20,651	0	0.0	0.0	0	0	0.0	0.0	36	66.0	20,651
24 Apr 2019	33	63.0	1.9	19,713	0	0.0	0.0	0	0	0.0	0.0	33	63.0	19,713
25 Apr 2019	34	65.0	1.9	20,338	0	0.0	0.0	0	0	0.0	0.0	34	65.0	20,338
26 Apr 2019	31	54.0	1.7	16,897	0	0.0	0.0	0	0	0.0	0.0	31	54.0	16,897
27 Apr 2019	36	64.0	1.8	20,026	0	0.0	0.0	0	0	0.0	0.0	36	64.0	20,026
28 Apr 2019	23	36.0	1.6	11,264	0	0.0	0.0	0	0	0.0	0.0	23	36.0	11,264
29 Apr 2019	21	36.0	1.7	11,264	0	0.0	0.0	0	0	0.0	0.0	21	36.0	11,264
30 Apr 2019	33	59.0	1.8	18,461	0	0.0	0.0	0	0	0.0	0.0	33	59.0	18,461
1 May 2019	37	66.0	1.8	20,651	0	0.0	0.0	0	0	0.0	0.0	37	66.0	20,651
2 May 2019	34	58.0	1.7	18,148	0	0.0	0.0	0	0	0.0	0.0	34	58.0	18,148
3 May 2019	42	80.0	1.9	25,032	0	0.0	0.0	0	0	0.0	0.0	42	80.0	25,032
4 May 2019	38	76.0	2.0	23,780	0	0.0	0.0	0	0	0.0	0.0	38	76.0	23,780
5 May 2019	24	46.0	1.9	14,393	0	0.0	0.0	0	0	0.0	0.0	24	46.0	14,393
6 May 2019	30	56.0	1.9	17,522	0	0.0	0.0	0	0	0.0	0.0	30	56.0	17,522
7 May 2019	40	75.0	1.9	23,468	0	0.0	0.0	0	0	0.0	0.0	40	75.0	23,468
8 May 2019	37	69.0	1.9	21,590	0	0.0	0.0	0	0	0.0	0.0	37	69.0	21,590
9 May 2019	48	90.0	1.9	28,161	0	0.0	0.0	0	0	0.0	0.0	48	90.0	28,161
10 May 2019	44	70.0	1.6	21,903	0	0.0	0.0	0	0	0.0	0.0	44	70.0	21,903
11 May 2019	36	66.0	1.8	20,651	0	0.0	0.0	0	0	0.0	0.0	36	66.0	20,651
12 May 2019	26	36.0	1.4	11,264	0	0.0	0.0	0	0	0.0	0.0	26	36.0	11,264
13 May 2019	31	48.0	1.5	15,019	0	0.0	0.0	0	0	0.0	0.0	31	48.0	15,019
14 May 2019	48	85.0	1.8	26,596	0	0.0	0.0	0	0	0.0	0.0	48	85.0	26,596
15 May 2019	41	71.0	1.7	22,216	0	0.0	0.0	0	0	0.0	0.0	41	71.0	22,216
16 May 2019	39	67.0	1.7	20,964	0	0.0	0.0	0	0	0.0	0.0	39	67.0	20,964
17 May 2019	36	64.0	1.8	20,026	0	0.0	0.0	0	0	0.0	0.0	36	64.0	20,026
18 May 2019	18	51.0	2.8	15,958	0	0.0	0.0	0	0	0.0	0.0	18	51.0	15,958
19 May 2019	13	42.0	3.2	13,142	0	0.0	0.0	0	0	0.0	0.0	13	42.0	13,142
20 May 2019	26	37.0	1.4	11,577	0	0.0	0.0	0	0	0.0	0.0	26	37.0	11,577
21 May 2019	42	61.0	1.5	19,087	0	0.0	0.0	0	0	0.0	0.0	42	61.0	19,087
22 May 2019	38	62.0	1.6	19,400	0	0.0	0.0	0	0	0.0	0.0	38	62.0	19,400
23 May 2019	41	65.0	1.6	20,338	0	0.0	0.0	0	0	0.0	0.0	41	65.0	20,338
24 May 2019	45	62.0	1.4	19,400	0	0.0	0.0	0	0	0.0	0.0	45	62.0	19,400
25 May 2019	37	54.0	1.5	16,897	0	0.0	0.0	0	0	0.0	0.0	37	54.0	16,897
26 May 2019	22	36.0	1.6	11,264	0	0.0	0.0	0	0	0.0	0.0	22	36.0	11,264
27 May 2019	20	32.0	1.6	10,013	0	0.0	0.0	0	0	0.0	0.0	20	32.0	10,013
28 May 2019	22	37.0	1.7	11,577	0	0.0	0.0	0	0	0.0	0.0	22	37.0	11,577

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
29 May 2019	38	59.0	1.6	18,461	0	0.0	0.0	0	0	0.0	0.0	38	59.0	18,461
30 May 2019	36	47.0	1.3	14,706	0	0.0	0.0	0	0	0.0	0.0	36	47.0	14,706
31 May 2019	34	40.0	1.2	12,516	0	0.0	0.0	0	0	0.0	0.0	34	40.0	12,516
1 Jun 2019	33	43.0	1.3	13,455	0	0.0	0.0	0	0	0.0	0.0	33	43.0	13,455
2 Jun 2019	23	26.0	1.1	8,135	0	0.0	0.0	0	0	0.0	0.0	23	26.0	8,135
3 Jun 2019	20	20.0	1.0	6,258	0	0.0	0.0	0	0	0.0	0.0	20	20.0	6,258
4 Jun 2019	35	44.0	1.3	13,768	0	0.0	0.0	0	0	0.0	0.0	35	44.0	13,768
5 Jun 2019	31	52.0	1.7	16,271	0	0.0	0.0	0	0	0.0	0.0	31	52.0	16,271
6 Jun 2019	36	68.0	1.9	21,277	0	0.0	0.0	0	0	0.0	0.0	36	68.0	21,277
7 Jun 2019	34	62.0	1.8	19,400	0	0.0	0.0	0	0	0.0	0.0	34	62.0	19,400
8 Jun 2019	23	40.0	1.7	12,516	0	0.0	0.0	0	0	0.0	0.0	23	40.0	12,516
9 Jun 2019	20	35.0	1.8	10,952	0	0.0	0.0	0	0	0.0	0.0	20	35.0	10,952
10 Jun 2019	22	38.0	1.7	11,890	0	0.0	0.0	0	0	0.0	0.0	22	38.0	11,890
11 Jun 2019	48	82.0	1.7	25,658	0	0.0	0.0	0	0	0.0	0.0	48	82.0	25,658
12 Jun 2019	40	65.0	1.6	20,338	0	0.0	0.0	0	0	0.0	0.0	40	65.0	20,338
13 Jun 2019	31	56.0	1.8	17,522	0	0.0	0.0	0	0	0.0	0.0	31	56.0	17,522
14 Jun 2019	46	83.0	1.8	25,971	0	0.0	0.0	0	0	0.0	0.0	46	83.0	25,971
15 Jun 2019	59	110.0	1.9	34,419	0	0.0	0.0	0	0	0.0	0.0	59	110.0	34,419
16 Jun 2019	19	32.0	1.7	10,013	0	0.0	0.0	0	0	0.0	0.0	19	32.0	10,013
17 Jun 2019	19	33.0	1.7	10,326	0	0.0	0.0	0	0	0.0	0.0	19	33.0	10,326
18 Jun 2019	24	58.0	2.4	18,148	0	0.0	0.0	0	0	0.0	0.0	24	58.0	18,148
19 Jun 2019	39	68.0	1.7	21,277	0	0.0	0.0	0	0	0.0	0.0	39	68.0	21,277
20 Jun 2019	36	62.0	1.7	19,400	0	0.0	0.0	0	0	0.0	0.0	36	62.0	19,400
21 Jun 2019	39	71.0	1.8	22,216	0	0.0	0.0	0	0	0.0	0.0	39	71.0	22,216
22 Jun 2019	36	60.0	1.7	18,774	0	0.0	0.0	0	0	0.0	0.0	36	60.0	18,774
23 Jun 2019	23	42.0	1.8	13,142	0	0.0	0.0	0	0	0.0	0.0	23	42.0	13,142
24 Jun 2019	21	38.0	1.8	11,890	0	0.0	0.0	0	0	0.0	0.0	21	38.0	11,890
25 Jun 2019	33	52.0	1.6	16,271	0	0.0	0.0	0	0	0.0	0.0	33	52.0	16,271
26 Jun 2019	36	62.0	1.7	19,400	0	0.0	0.0	0	0	0.0	0.0	36	62.0	19,400
27 Jun 2019	35	58.0	1.7	18,148	0	0.0	0.0	0	0	0.0	0.0	35	58.0	18,148
28 Jun 2019	38	65.0	1.7	20,338	0	0.0	0.0	0	0	0.0	0.0	38	65.0	20,338
29 Jun 2019	32	59.0	1.8	18,461	0	0.0	0.0	0	0	0.0	0.0	32	59.0	18,461
30 Jun 2019	22	36.0	1.6	11,264	0	0.0	0.0	0	0	0.0	0.0	22	36.0	11,264
1 Jul 2019	23	37.0	1.6	11,577	0	0.0	0.0	0	0	0.0	0.0	23	37.0	11,577
2 Jul 2019	32	55.0	1.7	17,210	0	0.0	0.0	0	0	0.0	0.0	32	55.0	17,210
3 Jul 2019	34	55.0	1.6	17,210	0	0.0	0.0	0	0	0.0	0.0	34	55.0	17,210
4 Jul 2019	37	54.0	1.5	16,897	0	0.0	0.0	0	0	0.0	0.0	37	54.0	16,897

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
5 Jul 2019	21	37.0	1.8	11,577	0	0.0	0.0	0	0	0.0	0.0	21	37.0	11,577
6 Jul 2019	34	62.0	1.8	19,400	0	0.0	0.0	0	0	0.0	0.0	34	62.0	19,400
7 Jul 2019	32	54.0	1.7	16,897	0	0.0	0.0	0	0	0.0	0.0	32	54.0	16,897
8 Jul 2019	22	34.0	1.5	10,639	0	0.0	0.0	0	0	0.0	0.0	22	34.0	10,639
9 Jul 2019	36	52.0	1.4	16,271	0	0.0	0.0	0	0	0.0	0.0	36	52.0	16,271
10 Jul 2019	39	61.0	1.6	19,087	0	0.0	0.0	0	0	0.0	0.0	39	61.0	19,087
11 Jul 2019	34	49.0	1.4	15,332	0	0.0	0.0	0	0	0.0	0.0	34	49.0	15,332
12 Jul 2019	36	51.0	1.4	15,958	0	0.0	0.0	0	0	0.0	0.0	36	51.0	15,958
13 Jul 2019	34	54.0	1.6	16,897	0	0.0	0.0	0	0	0.0	0.0	34	54.0	16,897
14 Jul 2019	8	14.0	1.8	4,381	0	0.0	0.0	0	0	0.0	0.0	8	14.0	4,381
15 Jul 2019	30	65.0	2.2	20,338	0	0.0	0.0	0	0	0.0	0.0	30	65.0	20,338
16 Jul 2019	34	52.0	1.5	16,271	0	0.0	0.0	0	0	0.0	0.0	34	52.0	16,271
17 Jul 2019	36	57.0	1.6	17,835	0	0.0	0.0	0	0	0.0	0.0	36	57.0	17,835
18 Jul 2019	36	65.0	1.8	20,338	0	0.0	0.0	0	0	0.0	0.0	36	65.0	20,338
19 Jul 2019	36	63.0	1.8	19,713	0	0.0	0.0	0	0	0.0	0.0	36	63.0	19,713
20 Jul 2019	33	53.0	1.6	16,584	0	0.0	0.0	0	0	0.0	0.0	33	53.0	16,584
21 Jul 2019	27	47.0	1.7	14,706	0	0.0	0.0	0	0	0.0	0.0	27	47.0	14,706
22 Jul 2019	23	42.0	1.8	13,142	0	0.0	0.0	0	0	0.0	0.0	23	42.0	13,142
23 Jul 2019	39	72.0	1.8	22,529	0	0.0	0.0	0	0	0.0	0.0	39	72.0	22,529
24 Jul 2019	41	70.0	1.7	21,903	0	0.0	0.0	0	0	0.0	0.0	41	70.0	21,903
25 Jul 2019	37	62.0	1.7	19,400	0	0.0	0.0	0	0	0.0	0.0	37	62.0	19,400
26 Jul 2019	35	60.0	1.7	18,774	0	0.0	0.0	0	0	0.0	0.0	35	60.0	18,774
27 Jul 2019	32	52.0	1.6	16,271	0	0.0	0.0	0	0	0.0	0.0	32	52.0	16,271
28 Jul 2019	22	38.0	1.7	11,890	0	0.0	0.0	0	0	0.0	0.0	22	38.0	11,890
29 Jul 2019	22	34.0	1.5	10,639	0	0.0	0.0	0	0	0.0	0.0	22	34.0	10,639
30 Jul 2019	35	66.0	1.9	20,651	0	0.0	0.0	0	0	0.0	0.0	35	66.0	20,651
31 Jul 2019	34	63.0	1.9	19,713	0	0.0	0.0	0	0	0.0	0.0	34	63.0	19,713
1 Aug 2019	38	68.0	1.8	21,277	0	0.0	0.0	0	0	0.0	0.0	38	68.0	21,277
2 Aug 2019	38	60.0	1.6	18,774	0	0.0	0.0	0	0	0.0	0.0	38	60.0	18,774
3 Aug 2019	39	72.0	1.8	22,529	0	0.0	0.0	0	0	0.0	0.0	39	72.0	22,529
4 Aug 2019	23	40.0	1.7	12,516	0	0.0	0.0	0	0	0.0	0.0	23	40.0	12,516
5 Aug 2019	25	41.0	1.6	12,829	0	0.0	0.0	0	0	0.0	0.0	25	41.0	12,829
6 Aug 2019	37	64.0	1.7	20,026	0	0.0	0.0	0	0	0.0	0.0	37	64.0	20,026
7 Aug 2019	35	60.0	1.7	18,774	0	0.0	0.0	0	0	0.0	0.0	35	60.0	18,774
8 Aug 2019	48	89.0	1.9	27,848	0	0.0	0.0	0	0	0.0	0.0	48	89.0	27,848
9 Aug 2019	41	67.0	1.6	20,964	0	0.0	0.0	0	0	0.0	0.0	41	67.0	20,964
10 Aug 2019	36	63.0	1.8	19,713	0	0.0	0.0	0	0	0.0	0.0	36	63.0	19,713

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
11 Aug 2019	24	42.0	1.8	13,142	0	0.0	0.0	0	0	0.0	0.0	24	42.0	13,142
12 Aug 2019	23	40.0	1.7	12,516	0	0.0	0.0	0	0	0.0	0.0	23	40.0	12,516
13 Aug 2019	34	60.0	1.8	18,774	0	0.0	0.0	0	0	0.0	0.0	34	60.0	18,774
14 Aug 2019	40	72.0	1.8	22,529	0	0.0	0.0	0	0	0.0	0.0	40	72.0	22,529
15 Aug 2019	40	70.0	1.8	21,903	0	0.0	0.0	0	0	0.0	0.0	40	70.0	21,903
16 Aug 2019	36	65.0	1.8	20,338	0	0.0	0.0	0	0	0.0	0.0	36	65.0	20,338
17 Aug 2019	37	62.0	1.7	19,400	0	0.0	0.0	0	0	0.0	0.0	37	62.0	19,400
18 Aug 2019	24	40.0	1.7	12,516	0	0.0	0.0	0	0	0.0	0.0	24	40.0	12,516
19 Aug 2019	22	38.0	1.7	11,890	0	0.0	0.0	0	0	0.0	0.0	22	38.0	11,890
20 Aug 2019	40	69.0	1.7	21,590	0	0.0	0.0	0	0	0.0	0.0	40	69.0	21,590
21 Aug 2019	41	70.0	1.7	21,903	0	0.0	0.0	0	0	0.0	0.0	41	70.0	21,903
22 Aug 2019	35	59.0	1.7	18,461	0	0.0	0.0	0	0	0.0	0.0	35	59.0	18,461
23 Aug 2019	42	69.0	1.6	21,590	0	0.0	0.0	0	0	0.0	0.0	42	69.0	21,590
24 Aug 2019	42	68.0	1.6	21,277	0	0.0	0.0	0	0	0.0	0.0	42	68.0	21,277
25 Aug 2019	23	38.0	1.7	11,890	0	0.0	0.0	0	0	0.0	0.0	23	38.0	11,890
26 Aug 2019	23	36.0	1.6	11,264	0	0.0	0.0	0	0	0.0	0.0	23	36.0	11,264
27 Aug 2019	38	69.0	1.8	21,590	0	0.0	0.0	0	0	0.0	0.0	38	69.0	21,590
28 Aug 2019	38	67.0	1.8	20,964	0	0.0	0.0	0	0	0.0	0.0	38	67.0	20,964
29 Aug 2019	38	62.0	1.6	19,400	0	0.0	0.0	0	0	0.0	0.0	38	62.0	19,400
30 Aug 2019	42	75.0	1.8	23,468	0	0.0	0.0	0	0	0.0	0.0	42	75.0	23,468
31 Aug 2019	40	68.0	1.7	21,277	0	0.0	0.0	0	0	0.0	0.0	40	68.0	21,277
1 Sep 2019	29	49.0	1.7	15,332	0	0.0	0.0	0	0	0.0	0.0	29	49.0	15,332
2 Sep 2019	28	47.0	1.7	14,706	0	0.0	0.0	0	0	0.0	0.0	28	47.0	14,706
3 Sep 2019	23	38.0	1.7	11,890	0	0.0	0.0	0	0	0.0	0.0	23	38.0	11,890
4 Sep 2019	39	70.0	1.8	21,903	0	0.0	0.0	0	0	0.0	0.0	39	70.0	21,903
5 Sep 2019	42	71.0	1.7	22,216	0	0.0	0.0	0	0	0.0	0.0	42	71.0	22,216
6 Sep 2019	37	56.0	1.5	17,522	0	0.0	0.0	0	0	0.0	0.0	37	56.0	17,522
7 Sep 2019	45	72.0	1.6	22,529	0	0.0	0.0	0	0	0.0	0.0	45	72.0	22,529
8 Sep 2019	24	36.0	1.5	11,264	0	0.0	0.0	0	0	0.0	0.0	24	36.0	11,264
9 Sep 2019	23	32.0	1.4	10,013	0	0.0	0.0	0	0	0.0	0.0	23	32.0	10,013
10 Sep 2019	37	61.0	1.6	19,087	0	0.0	0.0	0	0	0.0	0.0	37	61.0	19,087
11 Sep 2019	35	61.0	1.7	19,087	0	0.0	0.0	0	0	0.0	0.0	35	61.0	19,087
12 Sep 2019	39	66.0	1.7	20,651	0	0.0	0.0	0	0	0.0	0.0	39	66.0	20,651
13 Sep 2019	42	73.0	1.7	22,842	0	0.0	0.0	0	0	0.0	0.0	42	73.0	22,842
14 Sep 2019	36	67.0	1.9	20,964	0	0.0	0.0	0	0	0.0	0.0	36	67.0	20,964
15 Sep 2019	24	40.0	1.7	12,516	0	0.0	0.0	0	0	0.0	0.0	24	40.0	12,516
16 Sep 2019	26	48.0	1.8	15,019	0	0.0	0.0	0	0	0.0	0.0	26	48.0	15,019

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
17 Sep 2019	36	66.0	1.8	20,651	0	0.0	0.0	0	0	0.0	0.0	36	66.0	20,651
18 Sep 2019	37	60.0	1.6	18,774	0	0.0	0.0	0	0	0.0	0.0	37	60.0	18,774
19 Sep 2019	35	63.0	1.8	19,713	0	0.0	0.0	0	0	0.0	0.0	35	63.0	19,713
20 Sep 2019	37	68.0	1.8	21,277	0	0.0	0.0	0	0	0.0	0.0	37	68.0	21,277
21 Sep 2019	37	66.0	1.8	20,651	0	0.0	0.0	0	0	0.0	0.0	37	66.0	20,651
22 Sep 2019	24	36.0	1.5	11,264	0	0.0	0.0	0	0	0.0	0.0	24	36.0	11,264
23 Sep 2019	24	39.0	1.6	12,203	0	0.0	0.0	0	0	0.0	0.0	24	39.0	12,203
24 Sep 2019	40	75.0	1.9	23,468	0	0.0	0.0	0	0	0.0	0.0	40	75.0	23,468
25 Sep 2019	36	65.0	1.8	20,338	0	0.0	0.0	0	0	0.0	0.0	36	65.0	20,338
26 Sep 2019	40	65.0	1.6	20,338	0	0.0	0.0	0	0	0.0	0.0	40	65.0	20,338
27 Sep 2019	39	62.0	1.6	19,400	0	0.0	0.0	0	0	0.0	0.0	39	62.0	19,400
28 Sep 2019	32	58.0	1.8	18,148	0	0.0	0.0	0	0	0.0	0.0	32	58.0	18,148
29 Sep 2019	25	44.0	1.8	13,768	0	0.0	0.0	0	0	0.0	0.0	25	44.0	13,768
30 Sep 2019	23	47.0	2.0	14,706	0	0.0	0.0	0	0	0.0	0.0	23	47.0	14,706
1 Oct 2019	37	65.0	1.8	20,338	0	0.0	0.0	0	0	0.0	0.0	37	65.0	20,338
2 Oct 2019	38	73.0	1.9	22,842	0	0.0	0.0	0	0	0.0	0.0	38	73.0	22,842
3 Oct 2019	38	70.0	1.8	21,903	0	0.0	0.0	0	0	0.0	0.0	38	70.0	21,903
4 Oct 2019	35	63.0	1.8	19,713	0	0.0	0.0	0	0	0.0	0.0	35	63.0	19,713
5 Oct 2019	23	40.0	1.7	12,516	0	0.0	0.0	0	0	0.0	0.0	23	40.0	12,516
6 Oct 2019	10	18.0	1.8	5,632	0	0.0	0.0	0	0	0.0	0.0	10	18.0	5,632
7 Oct 2019	11	20.0	1.8	6,258	0	0.0	0.0	0	0	0.0	0.0	11	20.0	6,258
8 Oct 2019	35	65.0	1.9	20,338	0	0.0	0.0	0	0	0.0	0.0	35	65.0	20,338
9 Oct 2019	29	44.0	1.5	13,768	0	0.0	0.0	0	0	0.0	0.0	29	44.0	13,768
10 Oct 2019	30	51.0	1.7	15,958	0	0.0	0.0	0	0	0.0	0.0	30	51.0	15,958
11 Oct 2019	28	38.0	1.4	11,890	0	0.0	0.0	0	0	0.0	0.0	28	38.0	11,890
12 Oct 2019	27	48.0	1.8	15,019	0	0.0	0.0	0	0	0.0	0.0	27	48.0	15,019
13 Oct 2019	11	18.0	1.6	5,632	0	0.0	0.0	0	0	0.0	0.0	11	18.0	5,632
14 Oct 2019	12	17.0	1.4	5,319	0	0.0	0.0	0	0	0.0	0.0	12	17.0	5,319
15 Oct 2019	28	45.0	1.6	14,080	0	0.0	0.0	0	0	0.0	0.0	28	45.0	14,080
16 Oct 2019	29	49.0	1.7	15,332	0	0.0	0.0	0	0	0.0	0.0	29	49.0	15,332
17 Oct 2019	33	55.0	1.7	17,210	0	0.0	0.0	0	0	0.0	0.0	33	55.0	17,210
18 Oct 2019	33	55.0	1.7	17,210	0	0.0	0.0	0	0	0.0	0.0	33	55.0	17,210
19 Oct 2019	25	43.0	1.7	13,455	0	0.0	0.0	0	0	0.0	0.0	25	43.0	13,455
20 Oct 2019	15	25.0	1.7	7,822	0	0.0	0.0	0	0	0.0	0.0	15	25.0	7,822
21 Oct 2019	24	35.0	1.5	10,952	0	0.0	0.0	0	0	0.0	0.0	24	35.0	10,952
22 Oct 2019	29	52.0	1.8	16,271	0	0.0	0.0	0	0	0.0	0.0	29	52.0	16,271
23 Oct 2019	32	53.0	1.7	16,584	0	0.0	0.0	0	0	0.0	0.0	32	53.0	16,584

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
24 Oct 2019	28	49.0	1.8	15,332	0	0.0	0.0	0	0	0.0	0.0	28	49.0	15,332
25 Oct 2019	30	50.0	1.7	15,645	0	0.0	0.0	0	0	0.0	0.0	30	50.0	15,645
26 Oct 2019	25	40.0	1.6	12,516	0	0.0	0.0	0	0	0.0	0.0	25	40.0	12,516
27 Oct 2019	14	23.0	1.6	7,197	0	0.0	0.0	0	0	0.0	0.0	14	23.0	7,197
28 Oct 2019	15	24.0	1.6	7,510	0	0.0	0.0	0	0	0.0	0.0	15	24.0	7,510
29 Oct 2019	30	51.0	1.7	15,958	0	0.0	0.0	0	0	0.0	0.0	30	51.0	15,958
30 Oct 2019	30	50.0	1.7	15,645	0	0.0	0.0	0	0	0.0	0.0	30	50.0	15,645
31 Oct 2019	31	51.0	1.6	15,958	0	0.0	0.0	0	0	0.0	0.0	31	51.0	15,958
1 Nov 2019	28	49.0	1.8	15,332	0	0.0	0.0	0	0	0.0	0.0	28	49.0	15,332
2 Nov 2019	31	53.0	1.7	16,584	0	0.0	0.0	0	0	0.0	0.0	31	53.0	16,584
3 Nov 2019	9	18.0	2.0	5,632	0	0.0	0.0	0	0	0.0	0.0	9	18.0	5,632
4 Nov 2019	7	9.0	1.3	2,816	0	0.0	0.0	0	0	0.0	0.0	7	9.0	2,816
5 Nov 2019	31	48.0	1.5	15,019	0	0.0	0.0	0	0	0.0	0.0	31	48.0	15,019
6 Nov 2019	24	38.0	1.6	11,890	0	0.0	0.0	0	0	0.0	0.0	24	38.0	11,890
7 Nov 2019	29	52.0	1.8	16,271	0	0.0	0.0	0	0	0.0	0.0	29	52.0	16,271
8 Nov 2019	24	42.0	1.8	13,142	0	0.0	0.0	0	0	0.0	0.0	24	42.0	13,142
9 Nov 2019	25	43.0	1.7	13,455	0	0.0	0.0	0	0	0.0	0.0	25	43.0	13,455
10 Nov 2019	3	8.0	2.7	2,503	0	0.0	0.0	0	0	0.0	0.0	3	8.0	2,503
11 Nov 2019	2	14.0	7.0	4,381	0	0.0	0.0	0	0	0.0	0.0	2	14.0	4,381
12 Nov 2019	13	33.0	2.5	10,326	0	0.0	0.0	0	0	0.0	0.0	13	33.0	10,326
13 Nov 2019	26	49.0	1.9	15,332	0	0.0	0.0	0	0	0.0	0.0	26	49.0	15,332
14 Nov 2019	25	48.0	1.9	15,019	0	0.0	0.0	0	0	0.0	0.0	25	48.0	15,019
15 Nov 2019	25	43.0	1.7	13,455	0	0.0	0.0	0	0	0.0	0.0	25	43.0	13,455
16 Nov 2019	27	43.0	1.6	13,455	0	0.0	0.0	0	0	0.0	0.0	27	43.0	13,455
17 Nov 2019	4	32.0	8.0	10,013	0	0.0	0.0	0	0	0.0	0.0	4	32.0	10,013
18 Nov 2019	3	28.0	9.3	8,761	0	0.0	0.0	0	0	0.0	0.0	3	28.0	8,761
19 Nov 2019	15	56.0	3.7	17,522	0	0.0	0.0	0	0	0.0	0.0	15	56.0	17,522
20 Nov 2019	24	52.0	2.2	16,271	0	0.0	0.0	0	0	0.0	0.0	24	52.0	16,271
21 Nov 2019	23	47.0	2.0	14,706	0	0.0	0.0	0	0	0.0	0.0	23	47.0	14,706
22 Nov 2019	9	27.0	3.0	8,448	0	0.0	0.0	0	0	0.0	0.0	9	27.0	8,448
23 Nov 2019	3	40.0	13.3	12,516	0	0.0	0.0	0	0	0.0	0.0	3	40.0	12,516
24 Nov 2019	9	17.0	1.9	5,319	0	0.0	0.0	0	0	0.0	0.0	9	17.0	5,319
25 Nov 2019	2	4.0	2.0	1,252	0	0.0	0.0	0	0	0.0	0.0	2	4.0	1,252
26 Nov 2019	20	58.0	2.9	18,148	0	0.0	0.0	0	0	0.0	0.0	20	58.0	18,148
27 Nov 2019	24	41.0	1.7	12,829	0	0.0	0.0	0	0	0.0	0.0	24	41.0	12,829
28 Nov 2019	21	34.0	1.6	10,639	0	0.0	0.0	0	0	0.0	0.0	21	34.0	10,639
29 Nov 2019	7	10.0	1.4	3,129	0	0.0	0.0	0	0	0.0	0.0	7	10.0	3,129

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
30 Nov 2019	10	18.0	1.8	5,632	0	0.0	0.0	0	0	0.0	0.0	10	18.0	5,632
1 Dec 2019	7	12.0	1.7	3,755	0	0.0	0.0	0	0	0.0	0.0	7	12.0	3,755
2 Dec 2019	14	20.0	1.4	6,258	0	0.0	0.0	0	0	0.0	0.0	14	20.0	6,258
3 Dec 2019	26	41.0	1.6	12,829	0	0.0	0.0	0	0	0.0	0.0	26	41.0	12,829
4 Dec 2019	25	41.0	1.6	12,829	0	0.0	0.0	0	0	0.0	0.0	25	41.0	12,829
5 Dec 2019	28	43.0	1.5	13,455	0	0.0	0.0	0	0	0.0	0.0	28	43.0	13,455
6 Dec 2019	34	53.0	1.6	16,584	0	0.0	0.0	0	0	0.0	0.0	34	53.0	16,584
7 Dec 2019	28	44.0	1.6	13,768	0	0.0	0.0	0	0	0.0	0.0	28	44.0	13,768
8 Dec 2019	18	26.0	1.4	8,135	0	0.0	0.0	0	0	0.0	0.0	18	26.0	8,135
9 Dec 2019	26	43.0	1.7	13,455	0	0.0	0.0	0	0	0.0	0.0	26	43.0	13,455
10 Dec 2019	32	57.0	1.8	17,835	0	0.0	0.0	0	0	0.0	0.0	32	57.0	17,835
11 Dec 2019	34	52.0	1.5	16,271	0	0.0	0.0	0	0	0.0	0.0	34	52.0	16,271
12 Dec 2019	37	55.0	1.5	17,210	0	0.0	0.0	0	0	0.0	0.0	37	55.0	17,210
13 Dec 2019	32	49.0	1.5	15,332	0	0.0	0.0	0	0	0.0	0.0	32	49.0	15,332
14 Dec 2019	35	60.0	1.7	18,774	0	0.0	0.0	0	0	0.0	0.0	35	60.0	18,774
15 Dec 2019	26	41.0	1.6	12,829	0	0.0	0.0	0	0	0.0	0.0	26	41.0	12,829
16 Dec 2019	14	21.0	1.5	6,571	0	0.0	0.0	0	0	0.0	0.0	14	21.0	6,571
17 Dec 2019	35	60.0	1.7	18,774	0	0.0	0.0	0	0	0.0	0.0	35	60.0	18,774
18 Dec 2019	35	56.0	1.6	17,522	0	0.0	0.0	0	0	0.0	0.0	35	56.0	17,522
19 Dec 2019	26	38.0	1.5	11,890	0	0.0	0.0	0	0	0.0	0.0	26	38.0	11,890
20 Dec 2019	23	36.0	1.6	11,264	0	0.0	0.0	0	0	0.0	0.0	23	36.0	11,264
21 Dec 2019	30	43.0	1.4	13,455	0	0.0	0.0	0	0	0.0	0.0	30	43.0	13,455
22 Dec 2019	16	25.0	1.6	7,822	0	0.0	0.0	0	0	0.0	0.0	16	25.0	7,822
23 Dec 2019	8	13.0	1.6	4,068	0	0.0	0.0	0	0	0.0	0.0	8	13.0	4,068
24 Dec 2019	26	48.0	1.8	15,019	0	0.0	0.0	0	0	0.0	0.0	26	48.0	15,019
25 Dec 2019	18	28.0	1.6	8,761	0	0.0	0.0	0	0	0.0	0.0	18	28.0	8,761
26 Dec 2019	7	11.0	1.6	3,442	0	0.0	0.0	0	0	0.0	0.0	7	11.0	3,442
27 Dec 2019	23	40.0	1.7	12,516	0	0.0	0.0	0	0	0.0	0.0	23	40.0	12,516
28 Dec 2019	20	34.0	1.7	10,639	0	0.0	0.0	0	0	0.0	0.0	20	34.0	10,639
29 Dec 2019	12	19.0	1.6	5,945	0	0.0	0.0	0	0	0.0	0.0	12	19.0	5,945
30 Dec 2019	10	16.0	1.6	5,006	0	0.0	0.0	0	0	0.0	0.0	10	16.0	5,006
31 Dec 2019	30	44.0	1.5	13,768	0	0.0	0.0	0	0	0.0	0.0	30	44.0	13,768
1 Jan 2020	31	50.0	1.6	15,645	0	0.0	0.0	0	0	0.0	0.0	31	50.0	15,645
2 Jan 2020	13	16.0	1.2	5,006	0	0.0	0.0	0	0	0.0	0.0	13	16.0	5,006
3 Jan 2020	28	45.0	1.6	14,080	0	0.0	0.0	0	0	0.0	0.0	28	45.0	14,080
4 Jan 2020	27	49.0	1.8	15,332	0	0.0	0.0	0	0	0.0	0.0	27	49.0	15,332
5 Jan 2020	16	26.0	1.6	8,135	0	0.0	0.0	0	0	0.0	0.0	16	26.0	8,135

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
6 Jan 2020	13	18.0	1.4	5,632	0	0.0	0.0	0	0	0.0	0.0	13	18.0	5,632
7 Jan 2020	26	44.0	1.7	13,768	0	0.0	0.0	0	0	0.0	0.0	26	44.0	13,768
8 Jan 2020	23	41.0	1.8	12,829	0	0.0	0.0	0	0	0.0	0.0	23	41.0	12,829
9 Jan 2020	23	38.0	1.7	11,890	0	0.0	0.0	0	0	0.0	0.0	23	38.0	11,890
10 Jan 2020	24	36.0	1.5	11,264	0	0.0	0.0	0	0	0.0	0.0	24	36.0	11,264
11 Jan 2020	26	40.0	1.5	12,516	0	0.0	0.0	0	0	0.0	0.0	26	40.0	12,516
12 Jan 2020	13	19.0	1.5	5,945	0	0.0	0.0	0	0	0.0	0.0	13	19.0	5,945
13 Jan 2020	10	18.0	1.8	5,632	0	0.0	0.0	0	0	0.0	0.0	10	18.0	5,632
14 Jan 2020	25	49.0	2.0	15,332	0	0.0	0.0	0	0	0.0	0.0	25	49.0	15,332
15 Jan 2020	25	50.0	2.0	15,645	0	0.0	0.0	0	0	0.0	0.0	25	50.0	15,645
16 Jan 2020	25	49.0	2.0	15,332	0	0.0	0.0	0	0	0.0	0.0	25	49.0	15,332
17 Jan 2020	22	43.0	2.0	13,455	0	0.0	0.0	0	0	0.0	0.0	22	43.0	13,455
18 Jan 2020	22	43.0	2.0	13,455	0	0.0	0.0	0	0	0.0	0.0	22	43.0	13,455
19 Jan 2020	9	17.0	1.9	5,319	0	0.0	0.0	0	0	0.0	0.0	9	17.0	5,319
20 Jan 2020	10	19.0	1.9	5,945	0	0.0	0.0	0	0	0.0	0.0	10	19.0	5,945
21 Jan 2020	9	17.0	1.9	5,319	0	0.0	0.0	0	0	0.0	0.0	9	17.0	5,319
22 Jan 2020	20	39.0	2.0	12,203	0	0.0	0.0	0	0	0.0	0.0	20	39.0	12,203
23 Jan 2020	21	41.0	2.0	12,829	0	0.0	0.0	0	0	0.0	0.0	21	41.0	12,829
24 Jan 2020	22	45.0	2.0	14,080	0	0.0	0.0	0	0	0.0	0.0	22	45.0	14,080
25 Jan 2020	22	44.0	2.0	13,768	0	0.0	0.0	0	0	0.0	0.0	22	44.0	13,768
26 Jan 2020	19	37.0	1.9	11,577	0	0.0	0.0	0	0	0.0	0.0	19	37.0	11,577
27 Jan 2020	11	20.0	1.8	6,258	0	0.0	0.0	0	0	0.0	0.0	11	20.0	6,258
28 Jan 2020	27	50.0	1.9	15,645	0	0.0	0.0	0	0	0.0	0.0	27	50.0	15,645
29 Jan 2020	27	52.0	1.9	16,271	0	0.0	0.0	0	0	0.0	0.0	27	52.0	16,271
30 Jan 2020	26	51.0	2.0	15,958	0	0.0	0.0	0	0	0.0	0.0	26	51.0	15,958
31 Jan 2020	24	49.0	2.0	15,332	0	0.0	0.0	0	0	0.0	0.0	24	49.0	15,332
1 Feb 2020	24	48.0	2.0	15,019	0	0.0	0.0	0	0	0.0	0.0	24	48.0	15,019
2 Feb 2020	11	22.0	2.0	6,884	0	0.0	0.0	0	0	0.0	0.0	11	22.0	6,884
3 Feb 2020	12	22.0	1.8	6,884	0	0.0	0.0	0	0	0.0	0.0	12	22.0	6,884
4 Feb 2020	26	51.0	2.0	15,958	0	0.0	0.0	0	0	0.0	0.0	26	51.0	15,958
5 Feb 2020	25	51.0	2.0	15,958	0	0.0	0.0	0	0	0.0	0.0	25	51.0	15,958
6 Feb 2020	24	51.0	2.1	15,958	0	0.0	0.0	0	0	0.0	0.0	24	51.0	15,958
7 Feb 2020	32	65.0	2.0	20,338	0	0.0	0.0	0	0	0.0	0.0	32	65.0	20,338
8 Feb 2020	31	59.0	1.9	18,461	0	0.0	0.0	0	0	0.0	0.0	31	59.0	18,461
9 Feb 2020	16	30.0	1.9	9,387	0	0.0	0.0	0	0	0.0	0.0	16	30.0	9,387
10 Feb 2020	15	30.0	2.0	9,387	0	0.0	0.0	0	0	0.0	0.0	15	30.0	9,387
11 Feb 2020	29	56.0	1.9	17,522	0	0.0	0.0	0	0	0.0	0.0	29	56.0	17,522

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
12 Feb 2020	31	67.0	2.2	20,964	0	0.0	0.0	0	0	0.0	0.0	31	67.0	20,964
13 Feb 2020	27	59.0	2.2	18,461	0	0.0	0.0	0	0	0.0	0.0	27	59.0	18,461
14 Feb 2020	34	68.0	2.0	21,277	0	0.0	0.0	0	0	0.0	0.0	34	68.0	21,277
15 Feb 2020	24	42.0	1.8	13,142	0	0.0	0.0	0	0	0.0	0.0	24	42.0	13,142
16 Feb 2020	15	29.0	1.9	9,074	0	0.0	0.0	0	0	0.0	0.0	15	29.0	9,074
17 Feb 2020	13	26.0	2.0	8,135	0	0.0	0.0	0	0	0.0	0.0	13	26.0	8,135
18 Feb 2020	21	39.0	1.9	12,203	0	0.0	0.0	0	0	0.0	0.0	21	39.0	12,203
19 Feb 2020	27	55.0	2.0	17,210	0	0.0	0.0	0	0	0.0	0.0	27	55.0	17,210
20 Feb 2020	28	55.0	2.0	17,210	0	0.0	0.0	0	0	0.0	0.0	28	55.0	17,210
21 Feb 2020	30	60.0	2.0	18,774	0	0.0	0.0	0	0	0.0	0.0	30	60.0	18,774
22 Feb 2020	26	51.0	2.0	15,958	0	0.0	0.0	0	0	0.0	0.0	26	51.0	15,958
23 Feb 2020	12	25.0	2.1	7,822	0	0.0	0.0	0	0	0.0	0.0	12	25.0	7,822
24 Feb 2020	10	18.0	1.8	5,632	0	0.0	0.0	0	0	0.0	0.0	10	18.0	5,632
25 Feb 2020	24	49.0	2.0	15,332	0	0.0	0.0	0	0	0.0	0.0	24	49.0	15,332
26 Feb 2020	25	48.0	1.9	15,019	0	0.0	0.0	0	0	0.0	0.0	25	48.0	15,019
27 Feb 2020	23	53.0	2.3	16,584	0	0.0	0.0	0	0	0.0	0.0	23	53.0	16,584
28 Feb 2020	18	40.0	2.2	12,516	0	0.0	0.0	0	0	0.0	0.0	18	40.0	12,516
29 Feb 2020	8	38.0	4.8	11,890	0	0.0	0.0	0	0	0.0	0.0	8	38.0	11,890
1 Mar 2020	5	17.0	3.4	5,319	0	0.0	0.0	0	0	0.0	0.0	5	17.0	5,319
2 Mar 2020	9	16.0	1.8	5,006	0	0.0	0.0	0	0	0.0	0.0	9	16.0	5,006
3 Mar 2020	19	42.0	2.2	13,142	0	0.0	0.0	0	0	0.0	0.0	19	42.0	13,142
4 Mar 2020	15	50.0	3.3	15,645	0	0.0	0.0	0	0	0.0	0.0	15	50.0	15,645
5 Mar 2020	12	47.0	3.9	14,706	0	0.0	0.0	0	0	0.0	0.0	12	47.0	14,706
6 Mar 2020	26	49.0	1.9	15,332	0	0.0	0.0	0	0	0.0	0.0	26	49.0	15,332
7 Mar 2020	33	61.0	1.8	19,087	0	0.0	0.0	0	0	0.0	0.0	33	61.0	19,087
8 Mar 2020	13	26.0	2.0	8,135	0	0.0	0.0	0	0	0.0	0.0	13	26.0	8,135
9 Mar 2020	9	19.0	2.1	5,945	0	0.0	0.0	0	0	0.0	0.0	9	19.0	5,945
10 Mar 2020	23	52.0	2.3	16,271	0	0.0	0.0	0	0	0.0	0.0	23	52.0	16,271
11 Mar 2020	27	51.0	1.9	15,958	0	0.0	0.0	0	0	0.0	0.0	27	51.0	15,958
12 Mar 2020	30	61.0	2.0	19,087	0	0.0	0.0	0	0	0.0	0.0	30	61.0	19,087
13 Mar 2020	24	47.0	2.0	14,706	0	0.0	0.0	0	0	0.0	0.0	24	47.0	14,706
14 Mar 2020	24	47.0	2.0	14,706	0	0.0	0.0	0	0	0.0	0.0	24	47.0	14,706
15 Mar 2020	10	17.0	1.7	5,319	0	0.0	0.0	0	0	0.0	0.0	10	17.0	5,319
16 Mar 2020	9	17.0	1.9	5,319	0	0.0	0.0	0	0	0.0	0.0	9	17.0	5,319
17 Mar 2020	22	42.0	1.9	13,142	0	0.0	0.0	0	0	0.0	0.0	22	42.0	13,142
18 Mar 2020	23	45.0	2.0	14,080	0	0.0	0.0	0	0	0.0	0.0	23	45.0	14,080
19 Mar 2020	12	36.0	3.0	11,264	0	0.0	0.0	0	0	0.0	0.0	12	36.0	11,264

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
20 Mar 2020	22	34.0	1.5	10,639	0	0.0	0.0	0	0	0.0	0.0	22	34.0	10,639
21 Mar 2020	30	43.0	1.4	13,455	0	0.0	0.0	0	0	0.0	0.0	30	43.0	13,455
22 Mar 2020	18	29.0	1.6	9,074	0	0.0	0.0	0	0	0.0	0.0	18	29.0	9,074
23 Mar 2020	11	20.0	1.8	6,258	0	0.0	0.0	0	0	0.0	0.0	11	20.0	6,258
24 Mar 2020	26	41.0	1.6	12,829	0	0.0	0.0	0	0	0.0	0.0	26	41.0	12,829
25 Mar 2020	22	33.0	1.5	10,326	0	0.0	0.0	0	0	0.0	0.0	22	33.0	10,326
26 Mar 2020	21	45.0	2.1	14,080	0	0.0	0.0	0	0	0.0	0.0	21	45.0	14,080
27 Mar 2020	22	41.0	1.9	12,829	0	0.0	0.0	0	0	0.0	0.0	22	41.0	12,829
28 Mar 2020	22	40.0	1.8	12,516	0	0.0	0.0	0	0	0.0	0.0	22	40.0	12,516
29 Mar 2020	21	36.0	1.7	11,264	0	0.0	0.0	0	0	0.0	0.0	21	36.0	11,264
30 Mar 2020	16	26.0	1.6	8,135	0	0.0	0.0	0	0	0.0	0.0	16	26.0	8,135
31 Mar 2020	25	45.0	1.8	14,080	0	0.0	0.0	0	0	0.0	0.0	25	45.0	14,080
1 Apr 2020	25	49.0	2.0	15,332	0	0.0	0.0	0	0	0.0	0.0	25	49.0	15,332
2 Apr 2020	25	40.0	1.6	12,516	0	0.0	0.0	0	0	0.0	0.0	25	40.0	12,516
3 Apr 2020	24	37.0	1.5	11,577	0	0.0	0.0	0	0	0.0	0.0	24	37.0	11,577
4 Apr 2020	23	34.0	1.5	10,639	0	0.0	0.0	0	0	0.0	0.0	23	34.0	10,639
5 Apr 2020	13	19.0	1.5	5,945	0	0.0	0.0	0	0	0.0	0.0	13	19.0	5,945
6 Apr 2020	12	15.0	1.2	4,694	0	0.0	0.0	0	0	0.0	0.0	12	15.0	4,694
7 Apr 2020	19	28.0	1.5	8,761	0	0.0	0.0	0	0	0.0	0.0	19	28.0	8,761
8 Apr 2020	25	45.0	1.8	14,080	0	0.0	0.0	0	0	0.0	0.0	25	45.0	14,080
9 Apr 2020	24	45.0	1.9	14,080	0	0.0	0.0	0	0	0.0	0.0	24	45.0	14,080
10 Apr 2020	22	41.0	1.9	12,829	0	0.0	0.0	0	0	0.0	0.0	22	41.0	12,829
11 Apr 2020	12	20.0	1.7	6,258	0	0.0	0.0	0	0	0.0	0.0	12	20.0	6,258
12 Apr 2020	12	22.0	1.8	6,884	0	0.0	0.0	0	0	0.0	0.0	12	22.0	6,884
13 Apr 2020	8	14.0	1.8	4,381	0	0.0	0.0	0	0	0.0	0.0	8	14.0	4,381
14 Apr 2020	24	43.0	1.8	13,455	0	0.0	0.0	0	0	0.0	0.0	24	43.0	13,455
15 Apr 2020	24	44.0	1.8	13,768	0	0.0	0.0	0	0	0.0	0.0	24	44.0	13,768
16 Apr 2020	24	45.0	1.9	14,080	0	0.0	0.0	0	0	0.0	0.0	24	45.0	14,080
17 Apr 2020	20	34.0	1.7	10,639	0	0.0	0.0	0	0	0.0	0.0	20	34.0	10,639
18 Apr 2020	18	35.0	1.9	10,952	0	0.0	0.0	0	0	0.0	0.0	18	35.0	10,952
19 Apr 2020	12	21.0	1.8	6,571	0	0.0	0.0	0	0	0.0	0.0	12	21.0	6,571
20 Apr 2020	9	17.0	1.9	5,319	0	0.0	0.0	0	0	0.0	0.0	9	17.0	5,319
21 Apr 2020	22	41.0	1.9	12,829	0	0.0	0.0	0	0	0.0	0.0	22	41.0	12,829
22 Apr 2020	18	35.0	1.9	10,952	0	0.0	0.0	0	0	0.0	0.0	18	35.0	10,952
23 Apr 2020	16	30.0	1.9	9,387	0	0.0	0.0	0	0	0.0	0.0	16	30.0	9,387
24 Apr 2020	30	54.0	1.8	16,897	0	0.0	0.0	0	0	0.0	0.0	30	54.0	16,897
25 Apr 2020	23	42.0	1.8	13,142	0	0.0	0.0	0	0	0.0	0.0	23	42.0	13,142

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
26 Apr 2020	12	20.0	1.7	6,258	0	0.0	0.0	0	0	0.0	0.0	12	20.0	6,258
27 Apr 2020	13	24.0	1.8	7,510	0	0.0	0.0	0	0	0.0	0.0	13	24.0	7,510
28 Apr 2020	20	35.0	1.8	10,952	0	0.0	0.0	0	0	0.0	0.0	20	35.0	10,952
29 Apr 2020	20	34.0	1.7	10,639	0	0.0	0.0	0	0	0.0	0.0	20	34.0	10,639
30 Apr 2020	20	33.0	1.6	10,326	0	0.0	0.0	0	0	0.0	0.0	20	33.0	10,326
1 May 2020	21	31.0	1.5	9,700	0	0.0	0.0	0	0	0.0	0.0	21	31.0	9,700
2 May 2020	18	30.0	1.7	9,387	0	0.0	0.0	0	0	0.0	0.0	18	30.0	9,387
3 May 2020	12	18.0	1.5	5,632	0	0.0	0.0	0	0	0.0	0.0	12	18.0	5,632
4 May 2020	11	17.0	1.5	5,319	0	0.0	0.0	0	0	0.0	0.0	11	17.0	5,319
5 May 2020	38	67.0	1.8	20,964	0	0.0	0.0	0	0	0.0	0.0	38	67.0	20,964
6 May 2020	23	40.0	1.7	12,516	0	0.0	0.0	0	0	0.0	0.0	23	40.0	12,516
7 May 2020	23	40.0	1.7	12,516	0	0.0	0.0	0	0	0.0	0.0	23	40.0	12,516
8 May 2020	20	36.0	1.8	11,264	0	0.0	0.0	0	0	0.0	0.0	20	36.0	11,264
9 May 2020	32	61.0	1.9	19,087	0	0.0	0.0	0	0	0.0	0.0	32	61.0	19,087
10 May 2020	14	23.0	1.6	7,197	0	0.0	0.0	0	0	0.0	0.0	14	23.0	7,197
11 May 2020	14	22.0	1.6	6,884	0	0.0	0.0	0	0	0.0	0.0	14	22.0	6,884
12 May 2020	19	34.0	1.8	10,639	0	0.0	0.0	0	0	0.0	0.0	19	34.0	10,639
13 May 2020	20	36.0	1.8	11,264	0	0.0	0.0	0	0	0.0	0.0	20	36.0	11,264
14 May 2020	19	32.0	1.7	10,013	0	0.0	0.0	0	0	0.0	0.0	19	32.0	10,013
15 May 2020	25	44.0	1.8	13,768	0	0.0	0.0	0	0	0.0	0.0	25	44.0	13,768
16 May 2020	19	32.0	1.7	10,013	0	0.0	0.0	0	0	0.0	0.0	19	32.0	10,013
17 May 2020	13	22.0	1.7	6,884	0	0.0	0.0	0	0	0.0	0.0	13	22.0	6,884
18 May 2020	11	17.0	1.5	5,319	0	0.0	0.0	0	0	0.0	0.0	11	17.0	5,319
19 May 2020	18	31.0	1.7	9,700	0	0.0	0.0	0	0	0.0	0.0	18	31.0	9,700
20 May 2020	23	43.0	1.9	13,455	0	0.0	0.0	0	0	0.0	0.0	23	43.0	13,455
21 May 2020	20	35.0	1.8	10,952	0	0.0	0.0	0	0	0.0	0.0	20	35.0	10,952
22 May 2020	22	36.0	1.6	11,264	0	0.0	0.0	0	0	0.0	0.0	22	36.0	11,264
23 May 2020	20	35.0	1.8	10,952	0	0.0	0.0	0	0	0.0	0.0	20	35.0	10,952
24 May 2020	16	25.0	1.6	7,822	0	0.0	0.0	0	0	0.0	0.0	16	25.0	7,822
25 May 2020	10	15.0	1.5	4,694	0	0.0	0.0	0	0	0.0	0.0	10	15.0	4,694
26 May 2020	10	18.0	1.8	5,632	0	0.0	0.0	0	0	0.0	0.0	10	18.0	5,632
27 May 2020	20	35.0	1.8	10,952	0	0.0	0.0	0	0	0.0	0.0	20	35.0	10,952
28 May 2020	19	32.0	1.7	10,013	0	0.0	0.0	0	0	0.0	0.0	19	32.0	10,013
29 May 2020	18	35.0	1.9	10,952	0	0.0	0.0	0	0	0.0	0.0	18	35.0	10,952
30 May 2020	20	35.0	1.8	10,952	0	0.0	0.0	0	0	0.0	0.0	20	35.0	10,952
31 May 2020	11	19.0	1.7	5,945	0	0.0	0.0	0	0	0.0	0.0	11	19.0	5,945
1 Jun 2020	8	15.0	1.9	4,694	0	0.0	0.0	0	0	0.0	0.0	8	15.0	4,694

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
2 Jun 2020	18	30.0	1.7	9,387	0	0.0	0.0	0	0	0.0	0.0	18	30.0	9,387
3 Jun 2020	20	33.0	1.6	10,326	0	0.0	0.0	0	0	0.0	0.0	20	33.0	10,326
4 Jun 2020	22	41.0	1.9	12,829	0	0.0	0.0	0	0	0.0	0.0	22	41.0	12,829
5 Jun 2020	21	38.0	1.8	11,890	0	0.0	0.0	0	0	0.0	0.0	21	38.0	11,890
6 Jun 2020	20	31.0	1.6	9,700	0	0.0	0.0	0	0	0.0	0.0	20	31.0	9,700
7 Jun 2020	11	16.0	1.5	5,006	0	0.0	0.0	0	0	0.0	0.0	11	16.0	5,006
8 Jun 2020	16	28.0	1.8	8,761	0	0.0	0.0	0	0	0.0	0.0	16	28.0	8,761
9 Jun 2020	26	44.0	1.7	13,768	0	0.0	0.0	0	0	0.0	0.0	26	44.0	13,768
10 Jun 2020	20	31.0	1.6	9,700	0	0.0	0.0	0	0	0.0	0.0	20	31.0	9,700
11 Jun 2020	18	31.0	1.7	9,700	0	0.0	0.0	0	0	0.0	0.0	18	31.0	9,700
12 Jun 2020	27	48.0	1.8	15,019	0	0.0	0.0	0	0	0.0	0.0	27	48.0	15,019
13 Jun 2020	20	31.0	1.6	9,700	0	0.0	0.0	0	0	0.0	0.0	20	31.0	9,700
14 Jun 2020	10	16.0	1.6	5,006	0	0.0	0.0	0	0	0.0	0.0	10	16.0	5,006
15 Jun 2020	9	14.0	1.6	4,381	0	0.0	0.0	0	0	0.0	0.0	9	14.0	4,381
16 Jun 2020	19	32.0	1.7	10,013	0	0.0	0.0	0	0	0.0	0.0	19	32.0	10,013
17 Jun 2020	23	41.0	1.8	12,829	0	0.0	0.0	0	0	0.0	0.0	23	41.0	12,829
18 Jun 2020	21	39.0	1.9	12,203	0	0.0	0.0	0	0	0.0	0.0	21	39.0	12,203
19 Jun 2020	21	36.0	1.7	11,264	0	0.0	0.0	0	0	0.0	0.0	21	36.0	11,264
20 Jun 2020	21	31.0	1.5	9,700	0	0.0	0.0	0	0	0.0	0.0	21	31.0	9,700
21 Jun 2020	14	23.0	1.6	7,197	0	0.0	0.0	0	0	0.0	0.0	14	23.0	7,197
22 Jun 2020	15	30.0	2.0	9,387	0	0.0	0.0	0	0	0.0	0.0	15	30.0	9,387
23 Jun 2020	24	44.0	1.8	13,768	0	0.0	0.0	0	0	0.0	0.0	24	44.0	13,768
24 Jun 2020	23	43.0	1.9	13,455	0	0.0	0.0	0	0	0.0	0.0	23	43.0	13,455
25 Jun 2020	25	43.0	1.7	13,455	0	0.0	0.0	0	0	0.0	0.0	25	43.0	13,455
26 Jun 2020	28	48.0	1.7	15,019	0	0.0	0.0	0	0	0.0	0.0	28	48.0	15,019
27 Jun 2020	21	37.0	1.8	11,577	0	0.0	0.0	0	0	0.0	0.0	21	37.0	11,577
28 Jun 2020	14	23.0	1.6	7,197	0	0.0	0.0	0	0	0.0	0.0	14	23.0	7,197
29 Jun 2020	11	19.0	1.7	5,945	0	0.0	0.0	0	0	0.0	0.0	11	19.0	5,945
30 Jun 2020	26	46.0	1.8	14,393	0	0.0	0.0	0	0	0.0	0.0	26	46.0	14,393
1 Jul 2020	24	44.0	1.8	13,768	0	0.0	0.0	0	0	0.0	0.0	24	44.0	13,768
2 Jul 2020	26	46.0	1.8	14,393	0	0.0	0.0	0	0	0.0	0.0	26	46.0	14,393
3 Jul 2020	23	36.0	1.6	11,264	0	0.0	0.0	0	0	0.0	0.0	23	36.0	11,264
4 Jul 2020	14	26.0	1.9	8,135	0	0.0	0.0	0	0	0.0	0.0	14	26.0	8,135
5 Jul 2020	10	18.0	1.8	5,632	0	0.0	0.0	0	0	0.0	0.0	10	18.0	5,632
6 Jul 2020	12	20.0	1.7	6,258	0	0.0	0.0	0	0	0.0	0.0	12	20.0	6,258
7 Jul 2020	31	58.0	1.9	18,148	0	0.0	0.0	0	0	0.0	0.0	31	58.0	18,148
8 Jul 2020	36	64.0	1.8	20,026	0	0.0	0.0	0	0	0.0	0.0	36	64.0	20,026

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
9 Jul 2020	26	44.0	1.7	13,768	0	0.0	0.0	0	0	0.0	0.0	26	44.0	13,768
10 Jul 2020	29	50.0	1.7	15,645	0	0.0	0.0	0	0	0.0	0.0	29	50.0	15,645
11 Jul 2020	55	104.0	1.9	32,542	0	0.0	0.0	0	0	0.0	0.0	55	104.0	32,542
12 Jul 2020	15	124.0	8.3	38,800	0	0.0	0.0	0	0	0.0	0.0	15	124.0	38,800
13 Jul 2020	17	31.0	1.8	9,700	0	0.0	0.0	0	0	0.0	0.0	17	31.0	9,700
14 Jul 2020	25	412.0	16.5	128,915	0	0.0	0.0	0	0	0.0	0.0	25	412.0	128,915
15 Jul 2020	21	463.0	22.0	144,873	0	0.0	0.0	0	0	0.0	0.0	21	463.0	144,873
16 Jul 2020	26	42.0	1.6	13,142	0	0.0	0.0	0	0	0.0	0.0	26	42.0	13,142
17 Jul 2020	26	44.0	1.7	13,768	0	0.0	0.0	0	0	0.0	0.0	26	44.0	13,768
18 Jul 2020	26	39.0	1.5	12,203	0	0.0	0.0	0	0	0.0	0.0	26	39.0	12,203
19 Jul 2020	14	21.0	1.5	6,571	0	0.0	0.0	0	0	0.0	0.0	14	21.0	6,571
20 Jul 2020	14	22.0	1.6	6,884	0	0.0	0.0	0	0	0.0	0.0	14	22.0	6,884
21 Jul 2020	25	38.0	1.5	11,890	0	0.0	0.0	0	0	0.0	0.0	25	38.0	11,890
22 Jul 2020	30	50.0	1.7	15,645	0	0.0	0.0	0	0	0.0	0.0	30	50.0	15,645
23 Jul 2020	25	47.0	1.9	14,706	0	0.0	0.0	0	0	0.0	0.0	25	47.0	14,706
24 Jul 2020	27	44.0	1.6	13,768	0	0.0	0.0	0	0	0.0	0.0	27	44.0	13,768
25 Jul 2020	27	46.0	1.7	14,393	0	0.0	0.0	0	0	0.0	0.0	27	46.0	14,393
26 Jul 2020	15	26.0	1.7	8,135	0	0.0	0.0	0	0	0.0	0.0	15	26.0	8,135
27 Jul 2020	17	28.0	1.6	8,761	0	0.0	0.0	0	0	0.0	0.0	17	28.0	8,761
28 Jul 2020	34	61.0	1.8	19,087	0	0.0	0.0	0	0	0.0	0.0	34	61.0	19,087
29 Jul 2020	34	57.0	1.7	17,835	0	0.0	0.0	0	0	0.0	0.0	34	57.0	17,835
30 Jul 2020	25	44.0	1.8	13,768	0	0.0	0.0	0	0	0.0	0.0	25	44.0	13,768
31 Jul 2020	25	43.0	1.7	13,455	0	0.0	0.0	0	0	0.0	0.0	25	43.0	13,455
1 Aug 2020	27	47.0	1.7	14,706	0	0.0	0.0	0	0	0.0	0.0	27	47.0	14,706
2 Aug 2020	16	28.0	1.8	8,761	0	0.0	0.0	0	0	0.0	0.0	16	28.0	8,761
3 Aug 2020	16	27.0	1.7	8,448	0	0.0	0.0	0	0	0.0	0.0	16	27.0	8,448
4 Aug 2020	28	49.0	1.8	15,332	0	0.0	0.0	0	0	0.0	0.0	28	49.0	15,332
5 Aug 2020	44	75.0	1.7	23,468	0	0.0	0.0	0	0	0.0	0.0	44	75.0	23,468
6 Aug 2020	37	68.0	1.8	21,277	0	0.0	0.0	0	0	0.0	0.0	37	68.0	21,277
7 Aug 2020	33	56.0	1.7	17,522	0	0.0	0.0	0	0	0.0	0.0	33	56.0	17,522
8 Aug 2020	28	47.0	1.7	14,706	0	0.0	0.0	0	0	0.0	0.0	28	47.0	14,706
9 Aug 2020	15	27.0	1.8	8,448	0	0.0	0.0	0	0	0.0	0.0	15	27.0	8,448
10 Aug 2020	14	23.0	1.6	7,197	0	0.0	0.0	0	0	0.0	0.0	14	23.0	7,197
11 Aug 2020	27	49.0	1.8	15,332	0	0.0	0.0	0	0	0.0	0.0	27	49.0	15,332
12 Aug 2020	40	58.0	1.4	18,148	0	0.0	0.0	0	0	0.0	0.0	40	58.0	18,148
13 Aug 2020	30	49.0	1.6	15,332	0	0.0	0.0	0	0	0.0	0.0	30	49.0	15,332
14 Aug 2020	32	55.0	1.7	17,210	0	0.0	0.0	0	0	0.0	0.0	32	55.0	17,210

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
15 Aug 2020	29	47.0	1.6	14,706	0	0.0	0.0	0	0	0.0	0.0	29	47.0	14,706
16 Aug 2020	20	34.0	1.7	10,639	0	0.0	0.0	0	0	0.0	0.0	20	34.0	10,639
17 Aug 2020	22	35.0	1.6	10,952	0	0.0	0.0	0	0	0.0	0.0	22	35.0	10,952
18 Aug 2020	32	58.0	1.8	18,148	0	0.0	0.0	0	0	0.0	0.0	32	58.0	18,148
19 Aug 2020	32	55.0	1.7	17,210	0	0.0	0.0	0	0	0.0	0.0	32	55.0	17,210
20 Aug 2020	38	64.0	1.7	20,026	0	0.0	0.0	0	0	0.0	0.0	38	64.0	20,026
21 Aug 2020	32	58.0	1.8	18,148	0	0.0	0.0	0	0	0.0	0.0	32	58.0	18,148
22 Aug 2020	31	56.0	1.8	17,522	0	0.0	0.0	0	0	0.0	0.0	31	56.0	17,522
23 Aug 2020	22	41.0	1.9	12,829	0	0.0	0.0	0	0	0.0	0.0	22	41.0	12,829
24 Aug 2020	17	30.0	1.8	9,387	0	0.0	0.0	0	0	0.0	0.0	17	30.0	9,387
25 Aug 2020	28	48.0	1.7	15,019	0	0.0	0.0	0	0	0.0	0.0	28	48.0	15,019
26 Aug 2020	34	59.0	1.7	18,461	0	0.0	0.0	0	0	0.0	0.0	34	59.0	18,461
27 Aug 2020	40	72.0	1.8	22,529	0	0.0	0.0	0	0	0.0	0.0	40	72.0	22,529
28 Aug 2020	30	54.0	1.8	16,897	0	0.0	0.0	0	0	0.0	0.0	30	54.0	16,897
29 Aug 2020	30	52.0	1.7	16,271	0	0.0	0.0	0	0	0.0	0.0	30	52.0	16,271
30 Aug 2020	23	37.0	1.6	11,577	0	0.0	0.0	0	0	0.0	0.0	23	37.0	11,577
31 Aug 2020	18	31.0	1.7	9,700	0	0.0	0.0	0	0	0.0	0.0	18	31.0	9,700
1 Sep 2020	31	55.0	1.8	17,210	0	0.0	0.0	0	0	0.0	0.0	31	55.0	17,210
2 Sep 2020	34	64.0	1.9	20,026	0	0.0	0.0	0	0	0.0	0.0	34	64.0	20,026
3 Sep 2020	29	52.0	1.8	16,271	0	0.0	0.0	0	0	0.0	0.0	29	52.0	16,271
4 Sep 2020	38	66.0	1.7	20,651	0	0.0	0.0	0	0	0.0	0.0	38	66.0	20,651
5 Sep 2020	37	66.0	1.8	20,651	0	0.0	0.0	0	0	0.0	0.0	37	66.0	20,651
6 Sep 2020	31	52.0	1.7	16,271	0	0.0	0.0	0	0	0.0	0.0	31	52.0	16,271
7 Sep 2020	29	52.0	1.8	16,271	0	0.0	0.0	0	0	0.0	0.0	29	52.0	16,271
8 Sep 2020	23	38.0	1.7	11,890	0	0.0	0.0	0	0	0.0	0.0	23	38.0	11,890
9 Sep 2020	35	63.0	1.8	19,713	0	0.0	0.0	0	0	0.0	0.0	35	63.0	19,713
10 Sep 2020	33	61.0	1.8	19,087	0	0.0	0.0	0	0	0.0	0.0	33	61.0	19,087
11 Sep 2020	32	61.0	1.9	19,087	0	0.0	0.0	0	0	0.0	0.0	32	61.0	19,087
12 Sep 2020	29	54.0	1.9	16,897	0	0.0	0.0	0	0	0.0	0.0	29	54.0	16,897
13 Sep 2020	19	35.0	1.8	10,952	0	0.0	0.0	0	0	0.0	0.0	19	35.0	10,952
14 Sep 2020	17	26.0	1.5	8,135	0	0.0	0.0	0	0	0.0	0.0	17	26.0	8,135
15 Sep 2020	31	60.0	1.9	18,774	0	0.0	0.0	0	0	0.0	0.0	31	60.0	18,774
16 Sep 2020	31	56.0	1.8	17,522	0	0.0	0.0	0	0	0.0	0.0	31	56.0	17,522
17 Sep 2020	30	52.0	1.7	16,271	0	0.0	0.0	0	0	0.0	0.0	30	52.0	16,271
18 Sep 2020	30	54.0	1.8	16,897	0	0.0	0.0	0	0	0.0	0.0	30	54.0	16,897
19 Sep 2020	32	60.0	1.9	18,774	0	0.0	0.0	0	0	0.0	0.0	32	60.0	18,774
20 Sep 2020	17	28.0	1.6	8,761	0	0.0	0.0	0	0	0.0	0.0	17	28.0	8,761

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
21 Sep 2020	16	27.0	1.7	8,448	0	0.0	0.0	0	0	0.0	0.0	16	27.0	8,448
22 Sep 2020	37	70.0	1.9	21,903	0	0.0	0.0	0	0	0.0	0.0	37	70.0	21,903
23 Sep 2020	31	52.0	1.7	16,271	0	0.0	0.0	0	0	0.0	0.0	31	52.0	16,271
24 Sep 2020	28	54.0	1.9	16,897	0	0.0	0.0	0	0	0.0	0.0	28	54.0	16,897
25 Sep 2020	28	42.0	1.5	13,142	0	0.0	0.0	0	0	0.0	0.0	28	42.0	13,142
26 Sep 2020	27	40.0	1.5	12,516	0	0.0	0.0	0	0	0.0	0.0	27	40.0	12,516
27 Sep 2020	20	34.0	1.7	10,639	0	0.0	0.0	0	0	0.0	0.0	20	34.0	10,639
28 Sep 2020	25	45.0	1.8	14,080	0	0.0	0.0	0	0	0.0	0.0	25	45.0	14,080
29 Sep 2020	31	55.0	1.8	17,210	0	0.0	0.0	0	0	0.0	0.0	31	55.0	17,210
30 Sep 2020	41	70.0	1.7	21,903	0	0.0	0.0	0	0	0.0	0.0	41	70.0	21,903
1 Oct 2020	47	83.0	1.8	25,971	0	0.0	0.0	0	0	0.0	0.0	47	83.0	25,971
2 Oct 2020	27	49.0	1.8	15,332	0	0.0	0.0	0	0	0.0	0.0	27	49.0	15,332
3 Oct 2020	28	51.0	1.8	15,958	0	0.0	0.0	0	0	0.0	0.0	28	51.0	15,958
4 Oct 2020	16	26.0	1.6	8,135	0	0.0	0.0	0	0	0.0	0.0	16	26.0	8,135
5 Oct 2020	17	34.0	2.0	10,639	0	0.0	0.0	0	0	0.0	0.0	17	34.0	10,639
6 Oct 2020	31	57.0	1.8	17,835	0	0.0	0.0	0	0	0.0	0.0	31	57.0	17,835
7 Oct 2020	32	57.0	1.8	17,835	0	0.0	0.0	0	0	0.0	0.0	32	57.0	17,835
8 Oct 2020	37	67.0	1.8	20,964	0	0.0	0.0	0	0	0.0	0.0	37	67.0	20,964
9 Oct 2020	30	53.0	1.8	16,584	0	0.0	0.0	0	0	0.0	0.0	30	53.0	16,584
10 Oct 2020	29	49.0	1.7	15,332	0	0.0	0.0	0	0	0.0	0.0	29	49.0	15,332
11 Oct 2020	18	30.0	1.7	9,387	0	0.0	0.0	0	0	0.0	0.0	18	30.0	9,387
12 Oct 2020	21	34.0	1.6	10,639	0	0.0	0.0	0	0	0.0	0.0	21	34.0	10,639
13 Oct 2020	54	99.0	1.8	30,977	0	0.0	0.0	0	0	0.0	0.0	54	99.0	30,977
14 Oct 2020	48	87.0	1.8	27,222	0	0.0	0.0	0	0	0.0	0.0	48	87.0	27,222
15 Oct 2020	30	50.0	1.7	15,645	0	0.0	0.0	0	0	0.0	0.0	30	50.0	15,645
16 Oct 2020	32	56.0	1.8	17,522	0	0.0	0.0	0	0	0.0	0.0	32	56.0	17,522
17 Oct 2020	36	67.0	1.9	20,964	0	0.0	0.0	0	0	0.0	0.0	36	67.0	20,964
18 Oct 2020	19	36.0	1.9	11,264	0	0.0	0.0	0	0	0.0	0.0	19	36.0	11,264
19 Oct 2020	20	36.0	1.8	11,264	0	0.0	0.0	0	0	0.0	0.0	20	36.0	11,264
20 Oct 2020	35	65.0	1.9	20,338	0	0.0	0.0	0	0	0.0	0.0	35	65.0	20,338
21 Oct 2020	30	58.0	1.9	18,148	0	0.0	0.0	0	0	0.0	0.0	30	58.0	18,148
22 Oct 2020	32	58.0	1.8	18,148	0	0.0	0.0	0	0	0.0	0.0	32	58.0	18,148
23 Oct 2020	32	60.0	1.9	18,774	0	0.0	0.0	0	0	0.0	0.0	32	60.0	18,774
24 Oct 2020	31	56.0	1.8	17,522	0	0.0	0.0	0	0	0.0	0.0	31	56.0	17,522
25 Oct 2020	21	38.0	1.8	11,890	0	0.0	0.0	0	0	0.0	0.0	21	38.0	11,890
26 Oct 2020	36	68.0	1.9	21,277	0	0.0	0.0	0	0	0.0	0.0	36	68.0	21,277
27 Oct 2020	45	77.0	1.7	24,093	0	0.0	0.0	0	0	0.0	0.0	45	77.0	24,093

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
28 Oct 2020	38	65.0	1.7	20,338	0	0.0	0.0	0	0	0.0	0.0	38	65.0	20,338
29 Oct 2020	35	63.0	1.8	19,713	0	0.0	0.0	0	0	0.0	0.0	35	63.0	19,713
30 Oct 2020	47	89.0	1.9	27,848	0	0.0	0.0	0	0	0.0	0.0	47	89.0	27,848
31 Oct 2020	47	90.0	1.9	28,161	0	0.0	0.0	0	0	0.0	0.0	47	90.0	28,161
1 Nov 2020	27	50.0	1.9	15,645	0	0.0	0.0	0	0	0.0	0.0	27	50.0	15,645
2 Nov 2020	31	59.0	1.9	18,461	0	0.0	0.0	0	0	0.0	0.0	31	59.0	18,461
3 Nov 2020	40	75.0	1.9	23,468	0	0.0	0.0	0	0	0.0	0.0	40	75.0	23,468
4 Nov 2020	34	65.0	1.9	20,338	0	0.0	0.0	0	0	0.0	0.0	34	65.0	20,338
5 Nov 2020	49	90.0	1.8	28,161	0	0.0	0.0	0	0	0.0	0.0	49	90.0	28,161
6 Nov 2020	33	64.0	1.9	20,026	0	0.0	0.0	0	0	0.0	0.0	33	64.0	20,026
7 Nov 2020	36	63.0	1.8	19,713	0	0.0	0.0	0	0	0.0	0.0	36	63.0	19,713
8 Nov 2020	25	41.0	1.6	12,829	0	0.0	0.0	0	0	0.0	0.0	25	41.0	12,829
9 Nov 2020	25	43.0	1.7	13,455	0	0.0	0.0	0	0	0.0	0.0	25	43.0	13,455
10 Nov 2020	40	69.0	1.7	21,590	0	0.0	0.0	0	0	0.0	0.0	40	69.0	21,590
11 Nov 2020	39	70.0	1.8	21,903	0	0.0	0.0	0	0	0.0	0.0	39	70.0	21,903
12 Nov 2020	34	63.0	1.9	19,713	0	0.0	0.0	0	0	0.0	0.0	34	63.0	19,713
13 Nov 2020	71	135.0	1.9	42,242	0	0.0	0.0	0	0	0.0	0.0	71	135.0	42,242
14 Nov 2020	46	85.0	1.8	26,596	0	0.0	0.0	0	0	0.0	0.0	46	85.0	26,596
15 Nov 2020	32	56.0	1.8	17,522	0	0.0	0.0	0	0	0.0	0.0	32	56.0	17,522
16 Nov 2020	32	58.0	1.8	18,148	0	0.0	0.0	0	0	0.0	0.0	32	58.0	18,148
17 Nov 2020	43	84.0	2.0	26,284	0	0.0	0.0	0	0	0.0	0.0	43	84.0	26,284
18 Nov 2020	47	85.0	1.8	26,596	0	0.0	0.0	0	0	0.0	0.0	47	85.0	26,596
19 Nov 2020	52	102.0	2.0	31,916	0	0.0	0.0	0	0	0.0	0.0	52	102.0	31,916
20 Nov 2020	39	71.0	1.8	22,216	0	0.0	0.0	0	0	0.0	0.0	39	71.0	22,216
21 Nov 2020	38	75.0	2.0	23,468	0	0.0	0.0	0	0	0.0	0.0	38	75.0	23,468
22 Nov 2020	25	45.0	1.8	14,080	0	0.0	0.0	0	0	0.0	0.0	25	45.0	14,080
23 Nov 2020	23	40.0	1.7	12,516	0	0.0	0.0	0	0	0.0	0.0	23	40.0	12,516
24 Nov 2020	35	66.0	1.9	20,651	0	0.0	0.0	0	0	0.0	0.0	35	66.0	20,651
25 Nov 2020	38	69.0	1.8	21,590	0	0.0	0.0	0	0	0.0	0.0	38	69.0	21,590
26 Nov 2020	34	64.0	1.9	20,026	0	0.0	0.0	0	0	0.0	0.0	34	64.0	20,026
27 Nov 2020	28	50.0	1.8	15,645	0	0.0	0.0	0	0	0.0	0.0	28	50.0	15,645
28 Nov 2020	32	60.0	1.9	18,774	0	0.0	0.0	0	0	0.0	0.0	32	60.0	18,774
29 Nov 2020	27	50.0	1.9	15,645	0	0.0	0.0	0	0	0.0	0.0	27	50.0	15,645
30 Nov 2020	27	49.0	1.8	15,332	0	0.0	0.0	0	0	0.0	0.0	27	49.0	15,332
1 Dec 2020	52	102.0	2.0	31,916	0	0.0	0.0	0	0	0.0	0.0	52	102.0	31,916
2 Dec 2020	44	84.0	1.9	26,284	0	0.0	0.0	0	0	0.0	0.0	44	84.0	26,284
3 Dec 2020	46	86.0	1.9	26,909	0	0.0	0.0	0	0	0.0	0.0	46	86.0	26,909

Runtime Data (Daily)
Georgetown Delaware Wastewater - 3 Bells Pumping station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				High Wet Well			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
4 Dec 2020	37	70.0	1.9	21,903	0	0.0	0.0	0	0	0.0	0.0	37	70.0	21,903
5 Dec 2020	36	69.0	1.9	21,590	0	0.0	0.0	0	0	0.0	0.0	36	69.0	21,590
6 Dec 2020	58	112.0	1.9	35,045	0	0.0	0.0	0	0	0.0	0.0	58	112.0	35,045
7 Dec 2020	32	59.0	1.8	18,461	0	0.0	0.0	0	0	0.0	0.0	32	59.0	18,461
8 Dec 2020	55	104.0	1.9	32,542	0	0.0	0.0	0	0	0.0	0.0	55	104.0	32,542
9 Dec 2020	47	91.0	1.9	28,474	0	0.0	0.0	0	0	0.0	0.0	47	91.0	28,474
10 Dec 2020	45	83.0	1.8	25,971	0	0.0	0.0	0	0	0.0	0.0	45	83.0	25,971
11 Dec 2020	44	86.0	2.0	26,909	0	0.0	0.0	0	0	0.0	0.0	44	86.0	26,909
12 Dec 2020	42	81.0	1.9	25,345	0	0.0	0.0	0	0	0.0	0.0	42	81.0	25,345
13 Dec 2020	26	48.0	1.8	15,019	0	0.0	0.0	0	0	0.0	0.0	26	48.0	15,019
14 Dec 2020	30	55.0	1.8	17,210	0	0.0	0.0	0	0	0.0	0.0	30	55.0	17,210
15 Dec 2020	46	90.0	2.0	28,161	0	0.0	0.0	0	0	0.0	0.0	46	90.0	28,161
16 Dec 2020	43	82.0	1.9	25,658	0	0.0	0.0	0	0	0.0	0.0	43	82.0	25,658
17 Dec 2020	59	107.0	1.8	33,480	0	0.0	0.0	0	0	0.0	0.0	59	107.0	33,480
18 Dec 2020	50	86.0	1.7	26,909	0	0.0	0.0	0	0	0.0	0.0	50	86.0	26,909
19 Dec 2020	46	78.0	1.7	24,406	0	0.0	0.0	0	0	0.0	0.0	46	78.0	24,406
20 Dec 2020	35	55.0	1.6	17,210	0	0.0	0.0	0	0	0.0	0.0	35	55.0	17,210
21 Dec 2020	36	61.0	1.7	19,087	0	0.0	0.0	0	0	0.0	0.0	36	61.0	19,087
22 Dec 2020	46	84.0	1.8	26,284	0	0.0	0.0	0	0	0.0	0.0	46	84.0	26,284
23 Dec 2020	43	82.0	1.9	25,658	0	0.0	0.0	0	0	0.0	0.0	43	82.0	25,658
24 Dec 2020	42	80.0	1.9	25,032	0	0.0	0.0	0	0	0.0	0.0	42	80.0	25,032
25 Dec 2020	37	67.0	1.8	20,964	0	0.0	0.0	0	0	0.0	0.0	37	67.0	20,964
26 Dec 2020	41	79.0	1.9	24,719	0	0.0	0.0	0	0	0.0	0.0	41	79.0	24,719
27 Dec 2020	33	58.0	1.8	18,148	0	0.0	0.0	0	0	0.0	0.0	33	58.0	18,148
28 Dec 2020	32	53.0	1.7	16,584	0	0.0	0.0	0	0	0.0	0.0	32	53.0	16,584
29 Dec 2020	39	64.0	1.6	20,026	0	0.0	0.0	0	0	0.0	0.0	39	64.0	20,026
30 Dec 2020	39	64.0	1.6	20,026	0	0.0	0.0	0	0	0.0	0.0	39	64.0	20,026
31 Dec 2020	39	64.0	1.6	20,026	0	0.0	0.0	0	0	0.0	0.0	39	64.0	20,026
Total	21053	37993.0	1.9	11,888,008	0	0.0	0.0	0	0	0.0	0.0	21053	37993.0	11,888,008

Runtime Data (Daily)
Georgetown Delaware Wastewater - Meadows Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
1 Jan 2019	3	3.0	1.0	1,139	3	2.0	0.7	634	0	0.0	0.0	6	5.0	1,773
2 Jan 2019	79	71.0	0.9	26,966	79	61.0	0.8	19,343	0	0.0	0.0	158	132.0	46,309
3 Jan 2019	68	65.0	1.0	24,687	67	49.0	0.7	15,538	0	0.0	0.0	135	114.0	40,225
4 Jan 2019	70	65.0	0.9	24,687	70	47.0	0.7	14,904	0	0.0	0.0	140	112.0	39,591
5 Jan 2019	61	57.0	0.9	21,649	62	42.0	0.7	13,318	0	0.0	0.0	123	99.0	34,967
6 Jan 2019	67	65.0	1.0	24,687	66	45.0	0.7	14,270	0	0.0	0.0	133	110.0	38,957
7 Jan 2019	63	55.0	0.9	20,889	64	44.0	0.7	13,952	0	0.0	0.0	127	99.0	34,841
8 Jan 2019	57	51.0	0.9	19,370	57	44.0	0.8	13,952	0	0.0	0.0	114	95.0	33,322
9 Jan 2019	62	54.0	0.9	20,509	61	42.0	0.7	13,318	0	0.0	0.0	123	96.0	33,827
10 Jan 2019	57	51.0	0.9	19,370	58	35.0	0.6	11,098	0	0.0	0.0	115	86.0	30,468
11 Jan 2019	52	47.0	0.9	17,851	53	36.0	0.7	11,416	0	0.0	0.0	105	83.0	29,267
12 Jan 2019	52	51.0	1.0	19,370	51	36.0	0.7	11,416	0	0.0	0.0	103	87.0	30,786
13 Jan 2019	51	47.0	0.9	17,851	52	37.0	0.7	11,733	0	0.0	0.0	103	84.0	29,584
14 Jan 2019	59	49.0	0.8	18,610	59	41.0	0.7	13,001	0	0.0	0.0	118	90.0	31,611
15 Jan 2019	57	44.0	0.8	16,711	57	39.0	0.7	12,367	0	0.0	0.0	114	83.0	29,078
16 Jan 2019	51	41.0	0.8	15,572	50	34.0	0.7	10,781	0	0.0	0.0	101	75.0	26,353
17 Jan 2019	49	45.0	0.9	17,091	49	36.0	0.7	11,416	0	0.0	0.0	98	81.0	28,507
18 Jan 2019	49	45.0	0.9	17,091	50	40.0	0.8	12,684	0	0.0	0.0	99	85.0	29,775
19 Jan 2019	48	43.0	0.9	16,331	48	31.0	0.6	9,830	0	0.0	0.0	96	74.0	26,161
20 Jan 2019	48	42.0	0.9	15,952	48	36.0	0.8	11,416	0	0.0	0.0	96	78.0	27,368
21 Jan 2019	92	92.0	1.0	34,942	94	67.0	0.7	21,246	0	0.0	0.0	186	159.0	56,188
22 Jan 2019	77	69.0	0.9	26,206	76	53.0	0.7	16,806	0	0.0	0.0	153	122.0	43,012
23 Jan 2019	68	62.0	0.9	23,548	67	50.0	0.7	15,855	0	0.0	0.0	135	112.0	39,403
24 Jan 2019	70	75.0	1.1	28,485	53	268.0	5.1	84,983	0	0.0	0.0	123	343.0	113,468
25 Jan 2019	121	145.0	1.2	55,071	92	431.0	4.7	136,670	0	0.0	0.0	213	576.0	191,741
26 Jan 2019	93	86.0	0.9	32,663	92	84.0	0.9	26,636	0	0.0	0.0	185	170.0	59,299
27 Jan 2019	90	87.0	1.0	33,043	90	72.0	0.8	22,831	0	0.0	0.0	180	159.0	55,874
28 Jan 2019	83	70.0	0.8	26,586	84	77.0	0.9	24,417	0	0.0	0.0	167	147.0	51,003
29 Jan 2019	76	67.0	0.9	25,447	76	70.0	0.9	22,197	0	0.0	0.0	152	137.0	47,644
30 Jan 2019	74	73.0	1.0	27,725	73	71.0	1.0	22,514	0	0.0	0.0	147	144.0	50,239
31 Jan 2019	70	63.0	0.9	23,927	70	66.0	0.9	20,929	0	0.0	0.0	140	129.0	44,856
1 Feb 2019	62	48.0	0.8	18,230	63	61.0	1.0	19,343	0	0.0	0.0	125	109.0	37,573
2 Feb 2019	63	40.0	0.6	15,192	62	60.0	1.0	19,026	0	0.0	0.0	125	100.0	34,218
3 Feb 2019	63	41.0	0.7	15,572	64	62.0	1.0	19,660	0	0.0	0.0	127	103.0	35,232
4 Feb 2019	66	49.0	0.7	18,610	66	57.0	0.9	18,075	0	0.0	0.0	132	106.0	36,685
5 Feb 2019	59	35.0	0.6	13,293	59	42.0	0.7	13,318	0	0.0	0.0	118	77.0	26,611
6 Feb 2019	63	51.0	0.8	19,370	48	242.0	5.0	76,738	0	0.0	0.0	111	293.0	96,108

Runtime Data (Daily)
Georgetown Delaware Wastewater - Meadows Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
7 Feb 2019	67	73.0	1.1	27,725	33	589.0	17.8	186,772	0	0.0	0.0	100	662.0	214,497
8 Feb 2019	60	49.0	0.8	18,610	57	266.0	4.7	84,349	0	0.0	0.0	117	315.0	102,959
9 Feb 2019	55	37.0	0.7	14,053	56	50.0	0.9	15,855	0	0.0	0.0	111	87.0	29,908
10 Feb 2019	55	32.0	0.6	12,154	54	54.0	1.0	17,123	0	0.0	0.0	109	86.0	29,277
11 Feb 2019	56	36.0	0.6	13,673	57	52.0	0.9	16,489	0	0.0	0.0	113	88.0	30,162
12 Feb 2019	61	43.0	0.7	16,331	61	53.0	0.9	16,806	0	0.0	0.0	122	96.0	33,137
13 Feb 2019	88	72.0	0.8	27,346	86	79.0	0.9	25,051	0	0.0	0.0	174	151.0	52,397
14 Feb 2019	79	68.0	0.9	25,826	81	74.0	0.9	23,465	0	0.0	0.0	160	142.0	49,291
15 Feb 2019	66	61.0	0.9	23,168	66	63.0	1.0	19,977	0	0.0	0.0	132	124.0	43,145
16 Feb 2019	66	62.0	0.9	23,548	65	60.0	0.9	19,026	0	0.0	0.0	131	122.0	42,574
17 Feb 2019	65	60.0	0.9	22,788	65	59.0	0.9	18,709	0	0.0	0.0	130	119.0	41,497
18 Feb 2019	61	54.0	0.9	20,509	62	55.0	0.9	17,440	0	0.0	0.0	123	109.0	37,949
19 Feb 2019	72	59.0	0.8	22,408	72	66.0	0.9	20,929	0	0.0	0.0	144	125.0	43,337
20 Feb 2019	58	41.0	0.7	15,572	58	57.0	1.0	18,075	0	0.0	0.0	116	98.0	33,647
21 Feb 2019	68	60.0	0.9	22,788	67	64.0	1.0	20,294	0	0.0	0.0	135	124.0	43,082
22 Feb 2019	71	66.0	0.9	25,067	71	66.0	0.9	20,929	0	0.0	0.0	142	132.0	45,996
23 Feb 2019	62	50.0	0.8	18,990	62	59.0	1.0	18,709	0	0.0	0.0	124	109.0	37,699
24 Feb 2019	67	62.0	0.9	23,548	68	61.0	0.9	19,343	0	0.0	0.0	135	123.0	42,891
25 Feb 2019	113	113.0	1.0	42,917	111	117.0	1.1	37,101	0	0.0	0.0	224	230.0	80,018
26 Feb 2019	90	86.0	1.0	32,663	91	89.0	1.0	28,222	0	0.0	0.0	181	175.0	60,885
27 Feb 2019	79	77.0	1.0	29,245	79	74.0	0.9	23,465	0	0.0	0.0	158	151.0	52,710
28 Feb 2019	73	68.0	0.9	25,826	72	65.0	0.9	20,612	0	0.0	0.0	145	133.0	46,438
1 Mar 2019	69	63.0	0.9	23,927	70	50.0	0.7	15,855	0	0.0	0.0	139	113.0	39,782
2 Mar 2019	72	70.0	1.0	26,586	72	70.0	1.0	22,197	0	0.0	0.0	144	140.0	48,783
3 Mar 2019	89	81.0	0.9	30,764	89	77.0	0.9	24,417	0	0.0	0.0	178	158.0	55,181
4 Mar 2019	99	88.0	0.9	33,422	98	98.0	1.0	31,076	0	0.0	0.0	197	186.0	64,498
5 Mar 2019	123	123.0	1.0	46,715	124	131.0	1.1	41,540	0	0.0	0.0	247	254.0	88,255
6 Mar 2019	93	94.0	1.0	35,701	94	82.0	0.9	26,002	0	0.0	0.0	187	176.0	61,703
7 Mar 2019	88	83.0	0.9	31,523	87	82.0	0.9	26,002	0	0.0	0.0	175	165.0	57,525
8 Mar 2019	77	70.0	0.9	26,586	77	71.0	0.9	22,514	0	0.0	0.0	154	141.0	49,100
9 Mar 2019	73	66.0	0.9	25,067	73	55.0	0.8	17,440	0	0.0	0.0	146	121.0	42,507
10 Mar 2019	72	65.0	0.9	24,687	73	50.0	0.7	15,855	0	0.0	0.0	145	115.0	40,542
11 Mar 2019	98	97.0	1.0	36,841	97	69.0	0.7	21,880	0	0.0	0.0	195	166.0	58,721
12 Mar 2019	88	73.0	0.8	27,725	88	66.0	0.8	20,929	0	0.0	0.0	176	139.0	48,654
13 Mar 2019	78	53.0	0.7	20,129	78	54.0	0.7	17,123	0	0.0	0.0	156	107.0	37,252
14 Mar 2019	73	59.0	0.8	22,408	74	50.0	0.7	15,855	0	0.0	0.0	147	109.0	38,263
15 Mar 2019	76	69.0	0.9	26,206	58	270.0	4.7	85,617	0	0.0	0.0	134	339.0	111,823

Runtime Data (Daily)
Georgetown Delaware Wastewater - Meadows Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
16 Mar 2019	74	68.0	0.9	25,826	67	336.0	5.0	106,546	0	0.0	0.0	141	404.0	132,372
17 Mar 2019	62	58.0	0.9	22,028	63	44.0	0.7	13,952	0	0.0	0.0	125	102.0	35,980
18 Mar 2019	60	56.0	0.9	21,269	60	53.0	0.9	16,806	0	0.0	0.0	120	109.0	38,075
19 Mar 2019	55	49.0	0.9	18,610	54	43.0	0.8	13,635	0	0.0	0.0	109	92.0	32,245
20 Mar 2019	52	41.0	0.8	15,572	52	41.0	0.8	13,001	0	0.0	0.0	104	82.0	28,573
21 Mar 2019	53	37.0	0.7	14,053	53	44.0	0.8	13,952	0	0.0	0.0	106	81.0	28,005
22 Mar 2019	61	49.0	0.8	18,610	61	50.0	0.8	15,855	0	0.0	0.0	122	99.0	34,465
23 Mar 2019	60	53.0	0.9	20,129	59	40.0	0.7	12,684	0	0.0	0.0	119	93.0	32,813
24 Mar 2019	54	50.0	0.9	18,990	54	31.0	0.6	9,830	0	0.0	0.0	108	81.0	28,820
25 Mar 2019	56	54.0	1.0	20,509	57	51.0	0.9	16,172	0	0.0	0.0	113	105.0	36,681
26 Mar 2019	51	47.0	0.9	17,851	51	43.0	0.8	13,635	0	0.0	0.0	102	90.0	31,486
27 Mar 2019	46	45.0	1.0	17,091	46	35.0	0.8	11,098	0	0.0	0.0	92	80.0	28,189
28 Mar 2019	48	43.0	0.9	16,331	48	43.0	0.9	13,635	0	0.0	0.0	96	86.0	29,966
29 Mar 2019	46	43.0	0.9	16,331	44	34.0	0.8	10,781	0	0.0	0.0	90	77.0	27,112
30 Mar 2019	41	31.0	0.8	11,774	42	32.0	0.8	10,147	0	0.0	0.0	83	63.0	21,921
31 Mar 2019	48	33.0	0.7	12,533	48	40.0	0.8	12,684	0	0.0	0.0	96	73.0	25,217
1 Apr 2019	46	34.0	0.7	12,913	46	40.0	0.9	12,684	0	0.0	0.0	92	74.0	25,597
2 Apr 2019	52	51.0	1.0	19,370	37	294.0	7.9	93,227	0	0.0	0.0	89	345.0	112,597
3 Apr 2019	47	44.0	0.9	16,711	46	242.0	5.3	76,738	0	0.0	0.0	93	286.0	93,449
4 Apr 2019	42	39.0	0.9	14,812	42	35.0	0.8	11,098	0	0.0	0.0	84	74.0	25,910
5 Apr 2019	34	33.0	1.0	12,533	34	28.0	0.8	8,879	0	0.0	0.0	68	61.0	21,412
6 Apr 2019	35	32.0	0.9	12,154	36	30.0	0.8	9,513	0	0.0	0.0	71	62.0	21,667
7 Apr 2019	46	40.0	0.9	15,192	45	36.0	0.8	11,416	0	0.0	0.0	91	76.0	26,608
8 Apr 2019	46	36.0	0.8	13,673	46	33.0	0.7	10,464	0	0.0	0.0	92	69.0	24,137
9 Apr 2019	43	35.0	0.8	13,293	44	31.0	0.7	9,830	0	0.0	0.0	87	66.0	23,123
10 Apr 2019	43	23.0	0.5	8,735	43	34.0	0.8	10,781	0	0.0	0.0	86	57.0	19,516
11 Apr 2019	42	31.0	0.7	11,774	42	36.0	0.9	11,416	0	0.0	0.0	84	67.0	23,190
12 Apr 2019	42	24.0	0.6	9,115	42	35.0	0.8	11,098	0	0.0	0.0	84	59.0	20,213
13 Apr 2019	28	25.0	0.9	9,495	28	21.0	0.8	6,659	0	0.0	0.0	56	46.0	16,154
14 Apr 2019	32	24.0	0.8	9,115	31	21.0	0.7	6,659	0	0.0	0.0	63	45.0	15,774
15 Apr 2019	31	23.0	0.7	8,735	31	20.0	0.6	6,342	0	0.0	0.0	62	43.0	15,077
16 Apr 2019	38	30.0	0.8	11,394	39	29.0	0.7	9,196	0	0.0	0.0	77	59.0	20,590
17 Apr 2019	50	36.0	0.7	13,673	48	125.0	2.6	39,638	0	0.0	0.0	98	161.0	53,311
18 Apr 2019	45	31.0	0.7	11,774	45	39.0	0.9	12,367	0	0.0	0.0	90	70.0	24,141
19 Apr 2019	44	37.0	0.8	14,053	43	37.0	0.9	11,733	0	0.0	0.0	87	74.0	25,786
20 Apr 2019	46	37.0	0.8	14,053	46	39.0	0.8	12,367	0	0.0	0.0	92	76.0	26,420
21 Apr 2019	62	59.0	1.0	22,408	64	57.0	0.9	18,075	0	0.0	0.0	126	116.0	40,483

Runtime Data (Daily)
Georgetown Delaware Wastewater - Meadows Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
22 Apr 2019	48	45.0	0.9	17,091	46	43.0	0.9	13,635	0	0.0	0.0	94	88.0	30,726
23 Apr 2019	44	37.0	0.8	14,053	43	41.0	1.0	13,001	0	0.0	0.0	87	78.0	27,054
24 Apr 2019	42	41.0	1.0	15,572	42	39.0	0.9	12,367	0	0.0	0.0	84	80.0	27,939
25 Apr 2019	44	38.0	0.9	14,432	45	36.0	0.8	11,416	0	0.0	0.0	89	74.0	25,848
26 Apr 2019	43	42.0	1.0	15,952	43	31.0	0.7	9,830	0	0.0	0.0	86	73.0	25,782
27 Apr 2019	46	41.0	0.9	15,572	46	31.0	0.7	9,830	0	0.0	0.0	92	72.0	25,402
28 Apr 2019	43	40.0	0.9	15,192	44	34.0	0.8	10,781	0	0.0	0.0	87	74.0	25,973
29 Apr 2019	46	44.0	1.0	16,711	46	36.0	0.8	11,416	0	0.0	0.0	92	80.0	28,127
30 Apr 2019	44	41.0	0.9	15,572	43	31.0	0.7	9,830	0	0.0	0.0	87	72.0	25,402
1 May 2019	46	57.0	1.2	21,649	28	368.0	13.1	116,693	0	0.0	0.0	74	425.0	138,342
2 May 2019	45	44.0	1.0	16,711	41	270.0	6.6	85,617	0	0.0	0.0	86	314.0	102,328
3 May 2019	45	38.0	0.8	14,432	48	42.0	0.9	13,318	0	0.0	0.0	93	80.0	27,750
4 May 2019	48	45.0	0.9	17,091	48	46.0	1.0	14,587	0	0.0	0.0	96	91.0	31,678
5 May 2019	51	50.0	1.0	18,990	52	52.0	1.0	16,489	0	0.0	0.0	103	102.0	35,479
6 May 2019	59	57.0	1.0	21,649	59	62.0	1.1	19,660	0	0.0	0.0	118	119.0	41,309
7 May 2019	51	46.0	0.9	17,471	50	51.0	1.0	16,172	0	0.0	0.0	101	97.0	33,643
8 May 2019	47	44.0	0.9	16,711	46	48.0	1.0	15,221	0	0.0	0.0	93	92.0	31,932
9 May 2019	48	46.0	1.0	17,471	48	50.0	1.0	15,855	0	0.0	0.0	96	96.0	33,326
10 May 2019	44	43.0	1.0	16,331	44	45.0	1.0	14,270	0	0.0	0.0	88	88.0	30,601
11 May 2019	43	43.0	1.0	16,331	43	42.0	1.0	13,318	0	0.0	0.0	86	85.0	29,649
12 May 2019	45	47.0	1.0	17,851	45	41.0	0.9	13,001	0	0.0	0.0	90	88.0	30,852
13 May 2019	50	55.0	1.1	20,889	51	52.0	1.0	16,489	0	0.0	0.0	101	107.0	37,378
14 May 2019	62	69.0	1.1	26,206	63	72.0	1.1	22,831	0	0.0	0.0	125	141.0	49,037
15 May 2019	52	54.0	1.0	20,509	52	58.0	1.1	18,392	0	0.0	0.0	104	112.0	38,901
16 May 2019	49	51.0	1.0	19,370	49	53.0	1.1	16,806	0	0.0	0.0	98	104.0	36,176
17 May 2019	48	48.0	1.0	18,230	47	54.0	1.1	17,123	0	0.0	0.0	95	102.0	35,353
18 May 2019	44	46.0	1.0	17,471	45	48.0	1.1	15,221	0	0.0	0.0	89	94.0	32,692
19 May 2019	42	42.0	1.0	15,952	42	48.0	1.1	15,221	0	0.0	0.0	84	90.0	31,173
20 May 2019	48	49.0	1.0	18,610	47	52.0	1.1	16,489	0	0.0	0.0	95	101.0	35,099
21 May 2019	42	44.0	1.0	16,711	42	44.0	1.0	13,952	0	0.0	0.0	84	88.0	30,663
22 May 2019	38	37.0	1.0	14,053	39	43.0	1.1	13,635	0	0.0	0.0	77	80.0	27,688
23 May 2019	41	38.0	0.9	14,432	41	42.0	1.0	13,318	0	0.0	0.0	82	80.0	27,750
24 May 2019	55	34.0	0.6	12,913	53	35.0	0.7	11,098	0	0.0	0.0	108	69.0	24,011
25 May 2019	50	35.0	0.7	13,293	50	37.0	0.7	11,733	0	0.0	0.0	100	72.0	25,026
26 May 2019	59	46.0	0.8	17,471	58	40.0	0.7	12,684	0	0.0	0.0	117	86.0	30,155
27 May 2019	60	43.0	0.7	16,331	61	47.0	0.8	14,904	0	0.0	0.0	121	90.0	31,235
28 May 2019	66	44.0	0.7	16,711	67	42.0	0.6	13,318	0	0.0	0.0	133	86.0	30,029

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Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
29 May 2019	60	50.0	0.8	18,990	60	40.0	0.7	12,684	0	0.0	0.0	120	90.0	31,674
30 May 2019	75	45.0	0.6	17,091	83	124.0	1.5	39,320	0	0.0	0.0	158	169.0	56,411
31 May 2019	62	34.0	0.5	12,913	63	46.0	0.7	14,587	0	0.0	0.0	125	80.0	27,500
1 Jun 2019	75	44.0	0.6	16,711	75	43.0	0.6	13,635	0	0.0	0.0	150	87.0	30,346
2 Jun 2019	72	42.0	0.6	15,952	72	35.0	0.5	11,098	0	0.0	0.0	144	77.0	27,050
3 Jun 2019	77	48.0	0.6	18,230	77	38.0	0.5	12,050	0	0.0	0.0	154	86.0	30,280
4 Jun 2019	66	34.0	0.5	12,913	66	27.0	0.4	8,562	0	0.0	0.0	132	61.0	21,475
5 Jun 2019	65	38.0	0.6	14,432	65	29.0	0.4	9,196	0	0.0	0.0	130	67.0	23,628
6 Jun 2019	71	34.0	0.5	12,913	69	38.0	0.6	12,050	0	0.0	0.0	140	72.0	24,963
7 Jun 2019	69	33.0	0.5	12,533	69	35.0	0.5	11,098	0	0.0	0.0	138	68.0	23,631
8 Jun 2019	68	41.0	0.6	15,572	68	37.0	0.5	11,733	0	0.0	0.0	136	78.0	27,305
9 Jun 2019	71	31.0	0.4	11,774	73	36.0	0.5	11,416	0	0.0	0.0	144	67.0	23,190
10 Jun 2019	87	49.0	0.6	18,610	86	46.0	0.5	14,587	0	0.0	0.0	173	95.0	33,197
11 Jun 2019	117	56.0	0.5	21,269	115	62.0	0.5	19,660	0	0.0	0.0	232	118.0	40,929
12 Jun 2019	87	46.0	0.5	17,471	88	43.0	0.5	13,635	0	0.0	0.0	175	89.0	31,106
13 Jun 2019	82	39.0	0.5	14,812	81	34.0	0.4	10,781	0	0.0	0.0	163	73.0	25,593
14 Jun 2019	101	46.0	0.5	17,471	100	51.0	0.5	16,172	0	0.0	0.0	201	97.0	33,643
15 Jun 2019	99	44.0	0.4	16,711	99	49.0	0.5	15,538	0	0.0	0.0	198	93.0	32,249
16 Jun 2019	102	44.0	0.4	16,711	99	43.0	0.4	13,635	0	0.0	0.0	201	87.0	30,346
17 Jun 2019	101	47.0	0.5	17,851	102	43.0	0.4	13,635	0	0.0	0.0	203	90.0	31,486
18 Jun 2019	100	43.0	0.4	16,331	92	47.0	0.5	14,904	0	0.0	0.0	192	90.0	31,235
19 Jun 2019	108	46.0	0.4	17,471	109	47.0	0.4	14,904	0	0.0	0.0	217	93.0	32,375
20 Jun 2019	104	46.0	0.4	17,471	105	34.0	0.3	10,781	0	0.0	0.0	209	80.0	28,252
21 Jun 2019	104	44.0	0.4	16,711	103	36.0	0.3	11,416	0	0.0	0.0	207	80.0	28,127
22 Jun 2019	109	51.0	0.5	19,370	109	51.0	0.5	16,172	0	0.0	0.0	218	102.0	35,542
23 Jun 2019	90	38.0	0.4	14,432	91	27.0	0.3	8,562	0	0.0	0.0	181	65.0	22,994
24 Jun 2019	97	36.0	0.4	13,673	97	41.0	0.4	13,001	0	0.0	0.0	194	77.0	26,674
25 Jun 2019	90	38.0	0.4	14,432	90	43.0	0.5	13,635	0	0.0	0.0	180	81.0	28,067
26 Jun 2019	86	34.0	0.4	12,913	86	39.0	0.5	12,367	0	0.0	0.0	172	73.0	25,280
27 Jun 2019	86	35.0	0.4	13,293	86	40.0	0.5	12,684	0	0.0	0.0	172	75.0	25,977
28 Jun 2019	75	33.0	0.4	12,533	75	24.0	0.3	7,610	0	0.0	0.0	150	57.0	20,143
29 Jun 2019	84	40.0	0.5	15,192	85	25.0	0.3	7,928	0	0.0	0.0	169	65.0	23,120
30 Jun 2019	85	33.0	0.4	12,533	85	24.0	0.3	7,610	0	0.0	0.0	170	57.0	20,143
1 Jul 2019	89	36.0	0.4	13,673	88	35.0	0.4	11,098	0	0.0	0.0	177	71.0	24,771
2 Jul 2019	84	30.0	0.4	11,394	96	32.0	0.3	10,147	0	0.0	0.0	180	62.0	21,541
3 Jul 2019	79	39.0	0.5	14,812	78	32.0	0.4	10,147	0	0.0	0.0	157	71.0	24,959
4 Jul 2019	77	37.0	0.5	14,053	78	31.0	0.4	9,830	0	0.0	0.0	155	68.0	23,883

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Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
5 Jul 2019	85	42.0	0.5	15,952	84	22.0	0.3	6,976	0	0.0	0.0	169	64.0	22,928
6 Jul 2019	89	44.0	0.5	16,711	89	30.0	0.3	9,513	0	0.0	0.0	178	74.0	26,224
7 Jul 2019	84	36.0	0.4	13,673	84	32.0	0.4	10,147	0	0.0	0.0	168	68.0	23,820
8 Jul 2019	91	33.0	0.4	12,533	91	28.0	0.3	8,879	0	0.0	0.0	182	61.0	21,412
9 Jul 2019	86	29.0	0.3	11,014	85	28.0	0.3	8,879	0	0.0	0.0	171	57.0	19,893
10 Jul 2019	72	38.0	0.5	14,432	73	28.0	0.4	8,879	0	0.0	0.0	145	66.0	23,311
11 Jul 2019	73	34.0	0.5	12,913	73	27.0	0.4	8,562	0	0.0	0.0	146	61.0	21,475
12 Jul 2019	83	27.0	0.3	10,255	83	29.0	0.3	9,196	0	0.0	0.0	166	56.0	19,451
13 Jul 2019	87	42.0	0.5	15,952	87	21.0	0.2	6,659	0	0.0	0.0	174	63.0	22,611
14 Jul 2019	85	33.0	0.4	12,533	85	27.0	0.3	8,562	0	0.0	0.0	170	60.0	21,095
15 Jul 2019	94	38.0	0.4	14,432	94	28.0	0.3	8,879	0	0.0	0.0	188	66.0	23,311
16 Jul 2019	118	41.0	0.3	15,572	116	27.0	0.2	8,562	0	0.0	0.0	234	68.0	24,134
17 Jul 2019	100	31.0	0.3	11,774	102	32.0	0.3	10,147	0	0.0	0.0	202	63.0	21,921
18 Jul 2019	83	27.0	0.3	10,255	88	36.0	0.4	11,416	0	0.0	0.0	171	63.0	21,671
19 Jul 2019	81	26.0	0.3	9,875	80	47.0	0.6	14,904	0	0.0	0.0	161	73.0	24,779
20 Jul 2019	104	37.0	0.4	14,053	104	37.0	0.4	11,733	0	0.0	0.0	208	74.0	25,786
21 Jul 2019	103	38.0	0.4	14,432	104	35.0	0.3	11,098	0	0.0	0.0	207	73.0	25,530
22 Jul 2019	78	25.0	0.3	9,495	94	48.0	0.5	15,221	0	0.0	0.0	172	73.0	24,716
23 Jul 2019	113	32.0	0.3	12,154	121	43.0	0.4	13,635	0	0.0	0.0	234	75.0	25,789
24 Jul 2019	117	33.0	0.3	12,533	118	36.0	0.3	11,416	0	0.0	0.0	235	69.0	23,949
25 Jul 2019	114	35.0	0.3	13,293	118	42.0	0.4	13,318	0	0.0	0.0	232	77.0	26,611
26 Jul 2019	117	38.0	0.3	14,432	115	25.0	0.2	7,928	0	0.0	0.0	232	63.0	22,360
27 Jul 2019	164	37.0	0.2	14,053	136	41.0	0.3	13,001	0	0.0	0.0	300	78.0	27,054
28 Jul 2019	126	45.0	0.4	17,091	127	36.0	0.3	11,416	0	0.0	0.0	253	81.0	28,507
29 Jul 2019	122	25.0	0.2	9,495	123	36.0	0.3	11,416	0	0.0	0.0	245	61.0	20,911
30 Jul 2019	133	29.0	0.2	11,014	117	29.0	0.2	9,196	0	0.0	0.0	250	58.0	20,210
31 Jul 2019	104	38.0	0.4	14,432	104	30.0	0.3	9,513	0	0.0	0.0	208	68.0	23,945
1 Aug 2019	103	22.0	0.2	8,356	104	39.0	0.4	12,367	0	0.0	0.0	207	61.0	20,723
2 Aug 2019	115	41.0	0.4	15,572	116	44.0	0.4	13,952	0	0.0	0.0	231	85.0	29,524
3 Aug 2019	126	36.0	0.3	13,673	126	45.0	0.4	14,270	0	0.0	0.0	252	81.0	27,943
4 Aug 2019	108	39.0	0.4	14,812	107	46.0	0.4	14,587	0	0.0	0.0	215	85.0	29,399
5 Aug 2019	113	38.0	0.3	14,432	114	34.0	0.3	10,781	0	0.0	0.0	227	72.0	25,213
6 Aug 2019	118	36.0	0.3	13,673	117	43.0	0.4	13,635	0	0.0	0.0	235	79.0	27,308
7 Aug 2019	114	33.0	0.3	12,533	119	41.0	0.3	13,001	0	0.0	0.0	233	74.0	25,534
8 Aug 2019	141	45.0	0.3	17,091	140	37.0	0.3	11,733	0	0.0	0.0	281	82.0	28,824
9 Aug 2019	103	48.0	0.5	18,230	59	47.0	0.8	14,904	0	0.0	0.0	162	95.0	33,134
10 Aug 2019	114	64.0	0.6	24,307	36	17.0	0.5	5,391	0	0.0	0.0	150	81.0	29,698

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Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
11 Aug 2019	59	34.0	0.6	12,913	58	30.0	0.5	9,513	0	0.0	0.0	117	64.0	22,426
12 Aug 2019	59	38.0	0.6	14,432	59	28.0	0.5	8,879	0	0.0	0.0	118	66.0	23,311
13 Aug 2019	57	33.0	0.6	12,533	58	26.0	0.4	8,245	0	0.0	0.0	115	59.0	20,778
14 Aug 2019	64	44.0	0.7	16,711	64	27.0	0.4	8,562	0	0.0	0.0	128	71.0	25,273
15 Aug 2019	62	39.0	0.6	14,812	62	29.0	0.5	9,196	0	0.0	0.0	124	68.0	24,008
16 Aug 2019	54	28.0	0.5	10,634	55	28.0	0.5	8,879	0	0.0	0.0	109	56.0	19,513
17 Aug 2019	54	34.0	0.6	12,913	53	28.0	0.5	8,879	0	0.0	0.0	107	62.0	21,792
18 Aug 2019	60	58.0	1.0	22,028	43	337.0	7.8	106,863	0	0.0	0.0	103	395.0	128,891
19 Aug 2019	101	76.0	0.8	28,865	44	490.0	11.1	155,379	0	0.0	0.0	145	566.0	184,244
20 Aug 2019	122	69.0	0.6	26,206	31	3.0	0.1	951	0	0.0	0.0	153	72.0	27,157
21 Aug 2019	63	40.0	0.6	15,192	52	31.0	0.6	9,830	0	0.0	0.0	115	71.0	25,022
22 Aug 2019	54	37.0	0.7	14,053	54	32.0	0.6	10,147	0	0.0	0.0	108	69.0	24,200
23 Aug 2019	56	31.0	0.6	11,774	57	31.0	0.5	9,830	0	0.0	0.0	113	62.0	21,604
24 Aug 2019	58	37.0	0.6	14,053	57	38.0	0.7	12,050	0	0.0	0.0	115	75.0	26,103
25 Aug 2019	58	37.0	0.6	14,053	59	29.0	0.5	9,196	0	0.0	0.0	117	66.0	23,249
26 Aug 2019	60	38.0	0.6	14,432	59	34.0	0.6	10,781	0	0.0	0.0	119	72.0	25,213
27 Aug 2019	56	35.0	0.6	13,293	56	32.0	0.6	10,147	0	0.0	0.0	112	67.0	23,440
28 Aug 2019	54	34.0	0.6	12,913	54	26.0	0.5	8,245	0	0.0	0.0	108	60.0	21,158
29 Aug 2019	57	41.0	0.7	15,572	57	30.0	0.5	9,513	0	0.0	0.0	114	71.0	25,085
30 Aug 2019	51	38.0	0.7	14,432	51	26.0	0.5	8,245	0	0.0	0.0	102	64.0	22,677
31 Aug 2019	53	34.0	0.6	12,913	54	33.0	0.6	10,464	0	0.0	0.0	107	67.0	23,377
1 Sep 2019	56	33.0	0.6	12,533	55	28.0	0.5	8,879	0	0.0	0.0	111	61.0	21,412
2 Sep 2019	58	41.0	0.7	15,572	58	25.0	0.4	7,928	0	0.0	0.0	116	66.0	23,500
3 Sep 2019	68	75.0	1.1	28,485	45	385.0	8.6	122,084	0	0.0	0.0	113	460.0	150,569
4 Sep 2019	57	42.0	0.7	15,952	86	326.0	3.8	103,375	0	0.0	0.0	143	368.0	119,327
5 Sep 2019	56	51.0	0.9	19,370	44	237.0	5.4	75,153	0	0.0	0.0	100	288.0	94,523
6 Sep 2019	56	43.0	0.8	16,331	63	272.0	4.3	86,251	0	0.0	0.0	119	315.0	102,582
7 Sep 2019	60	39.0	0.6	14,812	60	32.0	0.5	10,147	0	0.0	0.0	120	71.0	24,959
8 Sep 2019	57	43.0	0.8	16,331	57	27.0	0.5	8,562	0	0.0	0.0	114	70.0	24,893
9 Sep 2019	59	43.0	0.7	16,331	60	33.0	0.6	10,464	0	0.0	0.0	119	76.0	26,795
10 Sep 2019	57	41.0	0.7	15,572	56	18.0	0.3	5,708	0	0.0	0.0	113	59.0	21,280
11 Sep 2019	53	33.0	0.6	12,533	53	27.0	0.5	8,562	0	0.0	0.0	106	60.0	21,095
12 Sep 2019	57	29.0	0.5	11,014	57	29.0	0.5	9,196	0	0.0	0.0	114	58.0	20,210
13 Sep 2019	58	53.0	0.9	20,129	44	322.0	7.3	102,106	0	0.0	0.0	102	375.0	122,235
14 Sep 2019	54	45.0	0.8	17,091	52	318.0	6.1	100,838	0	0.0	0.0	106	363.0	117,929
15 Sep 2019	60	38.0	0.6	14,432	59	30.0	0.5	9,513	0	0.0	0.0	119	68.0	23,945
16 Sep 2019	62	32.0	0.5	12,154	62	43.0	0.7	13,635	0	0.0	0.0	124	75.0	25,789

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Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
17 Sep 2019	57	36.0	0.6	13,673	57	30.0	0.5	9,513	0	0.0	0.0	114	66.0	23,186
18 Sep 2019	55	27.0	0.5	10,255	56	29.0	0.5	9,196	0	0.0	0.0	111	56.0	19,451
19 Sep 2019	53	25.0	0.5	9,495	54	33.0	0.6	10,464	0	0.0	0.0	107	58.0	19,959
20 Sep 2019	54	29.0	0.5	11,014	54	26.0	0.5	8,245	0	0.0	0.0	108	55.0	19,259
21 Sep 2019	52	25.0	0.5	9,495	51	28.0	0.5	8,879	0	0.0	0.0	103	53.0	18,374
22 Sep 2019	60	34.0	0.6	12,913	61	52.0	0.9	16,489	0	0.0	0.0	121	86.0	29,402
23 Sep 2019	63	34.0	0.5	12,913	62	35.0	0.6	11,098	0	0.0	0.0	125	69.0	24,011
24 Sep 2019	60	28.0	0.5	10,634	60	34.0	0.6	10,781	0	0.0	0.0	120	62.0	21,415
25 Sep 2019	55	34.0	0.6	12,913	56	31.0	0.6	9,830	0	0.0	0.0	111	65.0	22,743
26 Sep 2019	54	34.0	0.6	12,913	53	32.0	0.6	10,147	0	0.0	0.0	107	66.0	23,060
27 Sep 2019	53	23.0	0.4	8,735	54	35.0	0.6	11,098	0	0.0	0.0	107	58.0	19,833
28 Sep 2019	43	21.0	0.5	7,976	41	17.0	0.4	5,391	0	0.0	0.0	84	38.0	13,367
29 Sep 2019	61	30.0	0.5	11,394	62	31.0	0.5	9,830	0	0.0	0.0	123	61.0	21,224
30 Sep 2019	63	36.0	0.6	13,673	63	34.0	0.5	10,781	0	0.0	0.0	126	70.0	24,454
1 Oct 2019	57	32.0	0.6	12,154	59	31.0	0.5	9,830	0	0.0	0.0	116	63.0	21,984
2 Oct 2019	57	24.0	0.4	9,115	56	29.0	0.5	9,196	0	0.0	0.0	113	53.0	18,311
3 Oct 2019	59	24.0	0.4	9,115	58	30.0	0.5	9,513	0	0.0	0.0	117	54.0	18,628
4 Oct 2019	60	25.0	0.4	9,495	61	35.0	0.6	11,098	0	0.0	0.0	121	60.0	20,593
5 Oct 2019	57	29.0	0.5	11,014	57	28.0	0.5	8,879	0	0.0	0.0	114	57.0	19,893
6 Oct 2019	65	30.0	0.5	11,394	64	42.0	0.7	13,318	0	0.0	0.0	129	72.0	24,712
7 Oct 2019	67	41.0	0.6	15,572	68	43.0	0.6	13,635	0	0.0	0.0	135	84.0	29,207
8 Oct 2019	65	56.0	0.9	21,269	52	258.0	5.0	81,812	0	0.0	0.0	117	314.0	103,081
9 Oct 2019	67	45.0	0.7	17,091	78	265.0	3.4	84,032	0	0.0	0.0	145	310.0	101,123
10 Oct 2019	62	39.0	0.6	14,812	61	29.0	0.5	9,196	0	0.0	0.0	123	68.0	24,008
11 Oct 2019	61	29.0	0.5	11,014	62	29.0	0.5	9,196	0	0.0	0.0	123	58.0	20,210
12 Oct 2019	62	35.0	0.6	13,293	62	39.0	0.6	12,367	0	0.0	0.0	124	74.0	25,660
13 Oct 2019	70	33.0	0.5	12,533	71	31.0	0.4	9,830	0	0.0	0.0	141	64.0	22,363
14 Oct 2019	78	38.0	0.5	14,432	78	44.0	0.6	13,952	0	0.0	0.0	156	82.0	28,384
15 Oct 2019	64	59.0	0.9	22,408	51	283.0	5.5	89,739	0	0.0	0.0	115	342.0	112,147
16 Oct 2019	66	37.0	0.6	14,053	90	290.0	3.2	91,959	0	0.0	0.0	156	327.0	106,012
17 Oct 2019	63	42.0	0.7	15,952	65	40.0	0.6	12,684	0	0.0	0.0	128	82.0	28,636
18 Oct 2019	61	36.0	0.6	13,673	60	38.0	0.6	12,050	0	0.0	0.0	121	74.0	25,723
19 Oct 2019	56	31.0	0.6	11,774	56	21.0	0.4	6,659	0	0.0	0.0	112	52.0	18,433
20 Oct 2019	62	35.0	0.6	13,293	62	32.0	0.5	10,147	0	0.0	0.0	124	67.0	23,440
21 Oct 2019	95	83.0	0.9	31,523	63	376.0	6.0	119,230	0	0.0	0.0	158	459.0	150,753
22 Oct 2019	65	41.0	0.6	15,572	65	367.0	5.6	116,376	0	0.0	0.0	130	408.0	131,948
23 Oct 2019	58	22.0	0.4	8,356	58	36.0	0.6	11,416	0	0.0	0.0	116	58.0	19,772

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Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
24 Oct 2019	61	35.0	0.6	13,293	49	246.0	5.0	78,007	0	0.0	0.0	110	281.0	91,300
25 Oct 2019	53	24.0	0.5	9,115	66	282.0	4.3	89,422	0	0.0	0.0	119	306.0	98,537
26 Oct 2019	52	25.0	0.5	9,495	51	33.0	0.6	10,464	0	0.0	0.0	103	58.0	19,959
27 Oct 2019	57	28.0	0.5	10,634	58	37.0	0.6	11,733	0	0.0	0.0	115	65.0	22,367
28 Oct 2019	67	26.0	0.4	9,875	66	38.0	0.6	12,050	0	0.0	0.0	133	64.0	21,925
29 Oct 2019	57	23.0	0.4	8,735	58	35.0	0.6	11,098	0	0.0	0.0	115	58.0	19,833
30 Oct 2019	54	18.0	0.3	6,836	53	28.0	0.5	8,879	0	0.0	0.0	107	46.0	15,715
31 Oct 2019	52	26.0	0.5	9,875	53	26.0	0.5	8,245	0	0.0	0.0	105	52.0	18,120
1 Nov 2019	51	27.0	0.5	10,255	51	39.0	0.8	12,367	0	0.0	0.0	102	66.0	22,622
2 Nov 2019	58	37.0	0.6	14,053	58	34.0	0.6	10,781	0	0.0	0.0	116	71.0	24,834
3 Nov 2019	56	36.0	0.6	13,673	56	36.0	0.6	11,416	0	0.0	0.0	112	72.0	25,089
4 Nov 2019	65	35.0	0.5	13,293	65	43.0	0.7	13,635	0	0.0	0.0	130	78.0	26,928
5 Nov 2019	53	21.0	0.4	7,976	52	37.0	0.7	11,733	0	0.0	0.0	105	58.0	19,709
6 Nov 2019	55	26.0	0.5	9,875	56	35.0	0.6	11,098	0	0.0	0.0	111	61.0	20,973
7 Nov 2019	57	27.0	0.5	10,255	57	32.0	0.6	10,147	0	0.0	0.0	114	59.0	20,402
8 Nov 2019	53	26.0	0.5	9,875	53	31.0	0.6	9,830	0	0.0	0.0	106	57.0	19,705
9 Nov 2019	54	30.0	0.6	11,394	53	28.0	0.5	8,879	0	0.0	0.0	107	58.0	20,273
10 Nov 2019	55	30.0	0.5	11,394	56	29.0	0.5	9,196	0	0.0	0.0	111	59.0	20,590
11 Nov 2019	55	28.0	0.5	10,634	55	32.0	0.6	10,147	0	0.0	0.0	110	60.0	20,781
12 Nov 2019	58	28.0	0.5	10,634	57	37.0	0.6	11,733	0	0.0	0.0	115	65.0	22,367
13 Nov 2019	55	28.0	0.5	10,634	55	28.0	0.5	8,879	0	0.0	0.0	110	56.0	19,513
14 Nov 2019	56	30.0	0.5	11,394	57	30.0	0.5	9,513	0	0.0	0.0	113	60.0	20,907
15 Nov 2019	55	32.0	0.6	12,154	54	22.0	0.4	6,976	0	0.0	0.0	109	54.0	19,130
16 Nov 2019	50	27.0	0.5	10,255	50	31.0	0.6	9,830	0	0.0	0.0	100	58.0	20,085
17 Nov 2019	61	40.0	0.7	15,192	62	30.0	0.5	9,513	0	0.0	0.0	123	70.0	24,705
18 Nov 2019	62	46.0	0.7	17,471	62	37.0	0.6	11,733	0	0.0	0.0	124	83.0	29,204
19 Nov 2019	60	40.0	0.7	15,192	60	33.0	0.6	10,464	0	0.0	0.0	120	73.0	25,656
20 Nov 2019	58	39.0	0.7	14,812	58	37.0	0.6	11,733	0	0.0	0.0	116	76.0	26,545
21 Nov 2019	59	62.0	1.1	23,548	38	436.0	11.5	138,256	0	0.0	0.0	97	498.0	161,804
22 Nov 2019	53	34.0	0.6	12,913	58	285.0	4.9	90,374	0	0.0	0.0	111	319.0	103,287
23 Nov 2019	52	34.0	0.7	12,913	52	28.0	0.5	8,879	0	0.0	0.0	104	62.0	21,792
24 Nov 2019	57	33.0	0.6	12,533	56	35.0	0.6	11,098	0	0.0	0.0	113	68.0	23,631
25 Nov 2019	67	43.0	0.6	16,331	68	44.0	0.6	13,952	0	0.0	0.0	135	87.0	30,283
26 Nov 2019	54	37.0	0.7	14,053	54	42.0	0.8	13,318	0	0.0	0.0	108	79.0	27,371
27 Nov 2019	52	29.0	0.6	11,014	51	33.0	0.6	10,464	0	0.0	0.0	103	62.0	21,478
28 Nov 2019	58	31.0	0.5	11,774	58	45.0	0.8	14,270	0	0.0	0.0	116	76.0	26,044
29 Nov 2019	60	35.0	0.6	13,293	60	43.0	0.7	13,635	0	0.0	0.0	120	78.0	26,928

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Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
30 Nov 2019	54	35.0	0.6	13,293	54	33.0	0.6	10,464	0	0.0	0.0	108	68.0	23,757
1 Dec 2019	60	41.0	0.7	15,572	61	48.0	0.8	15,221	0	0.0	0.0	121	89.0	30,793
2 Dec 2019	65	48.0	0.7	18,230	64	46.0	0.7	14,587	0	0.0	0.0	129	94.0	32,817
3 Dec 2019	54	40.0	0.7	15,192	54	33.0	0.6	10,464	0	0.0	0.0	108	73.0	25,656
4 Dec 2019	56	42.0	0.8	15,952	56	37.0	0.7	11,733	0	0.0	0.0	112	79.0	27,685
5 Dec 2019	56	41.0	0.7	15,572	57	41.0	0.7	13,001	0	0.0	0.0	113	82.0	28,573
6 Dec 2019	53	38.0	0.7	14,432	52	30.0	0.6	9,513	0	0.0	0.0	105	68.0	23,945
7 Dec 2019	49	33.0	0.7	12,533	40	23.0	0.6	7,293	0	0.0	0.0	89	56.0	19,826
8 Dec 2019	72	44.0	0.6	16,711	43	24.0	0.6	7,610	0	0.0	0.0	115	68.0	24,321
9 Dec 2019	53	30.0	0.6	11,394	54	45.0	0.8	14,270	0	0.0	0.0	107	75.0	25,664
10 Dec 2019	60	37.0	0.6	14,053	60	42.0	0.7	13,318	0	0.0	0.0	120	79.0	27,371
11 Dec 2019	53	33.0	0.6	12,533	54	46.0	0.9	14,587	0	0.0	0.0	107	79.0	27,120
12 Dec 2019	63	45.0	0.7	17,091	62	55.0	0.9	17,440	0	0.0	0.0	125	100.0	34,531
13 Dec 2019	51	31.0	0.6	11,774	51	35.0	0.7	11,098	0	0.0	0.0	102	66.0	22,872
14 Dec 2019	56	33.0	0.6	12,533	55	46.0	0.8	14,587	0	0.0	0.0	111	79.0	27,120
15 Dec 2019	83	56.0	0.7	21,269	83	69.0	0.8	21,880	0	0.0	0.0	166	125.0	43,149
16 Dec 2019	60	37.0	0.6	14,053	61	45.0	0.7	14,270	0	0.0	0.0	121	82.0	28,323
17 Dec 2019	58	38.0	0.7	14,432	58	49.0	0.8	15,538	0	0.0	0.0	116	87.0	29,970
18 Dec 2019	59	38.0	0.6	14,432	59	48.0	0.8	15,221	0	0.0	0.0	118	86.0	29,653
19 Dec 2019	56	42.0	0.8	15,952	56	43.0	0.8	13,635	0	0.0	0.0	112	85.0	29,587
20 Dec 2019	53	36.0	0.7	13,673	54	41.0	0.8	13,001	0	0.0	0.0	107	77.0	26,674
21 Dec 2019	53	35.0	0.7	13,293	53	39.0	0.7	12,367	0	0.0	0.0	106	74.0	25,660
22 Dec 2019	62	40.0	0.6	15,192	61	46.0	0.8	14,587	0	0.0	0.0	123	86.0	29,779
23 Dec 2019	58	38.0	0.7	14,432	58	46.0	0.8	14,587	0	0.0	0.0	116	84.0	29,019
24 Dec 2019	54	30.0	0.6	11,394	54	44.0	0.8	13,952	0	0.0	0.0	108	74.0	25,346
25 Dec 2019	53	31.0	0.6	11,774	52	42.0	0.8	13,318	0	0.0	0.0	105	73.0	25,092
26 Dec 2019	56	32.0	0.6	12,154	56	44.0	0.8	13,952	0	0.0	0.0	112	76.0	26,106
27 Dec 2019	55	32.0	0.6	12,154	55	43.0	0.8	13,635	0	0.0	0.0	110	75.0	25,789
28 Dec 2019	54	35.0	0.6	13,293	53	41.0	0.8	13,001	0	0.0	0.0	107	76.0	26,294
29 Dec 2019	56	30.0	0.5	11,394	56	47.0	0.8	14,904	0	0.0	0.0	112	77.0	26,298
30 Dec 2019	59	38.0	0.6	14,432	59	49.0	0.8	15,538	0	0.0	0.0	118	87.0	29,970
31 Dec 2019	63	43.0	0.7	16,331	62	46.0	0.7	14,587	0	0.0	0.0	125	89.0	30,918
1 Jan 2020	56	27.0	0.5	10,255	57	46.0	0.8	14,587	0	0.0	0.0	113	73.0	24,842
2 Jan 2020	51	21.0	0.4	7,976	52	36.0	0.7	11,416	0	0.0	0.0	103	57.0	19,392
3 Jan 2020	53	35.0	0.7	13,293	55	45.0	0.8	14,270	0	0.0	0.0	108	80.0	27,563
4 Jan 2020	51	24.0	0.5	9,115	53	33.0	0.6	10,464	0	0.0	0.0	104	57.0	19,579
5 Jan 2020	63	31.0	0.5	11,774	62	45.0	0.7	14,270	0	0.0	0.0	125	76.0	26,044

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Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
6 Jan 2020	63	41.0	0.7	15,572	64	41.0	0.6	13,001	0	0.0	0.0	127	82.0	28,573
7 Jan 2020	49	29.0	0.6	11,014	48	31.0	0.6	9,830	0	0.0	0.0	97	60.0	20,844
8 Jan 2020	53	36.0	0.7	13,673	53	26.0	0.5	8,245	0	0.0	0.0	106	62.0	21,918
9 Jan 2020	57	28.0	0.5	10,634	52	35.0	0.7	11,098	0	0.0	0.0	109	63.0	21,732
10 Jan 2020	49	31.0	0.6	11,774	52	37.0	0.7	11,733	0	0.0	0.0	101	68.0	23,507
11 Jan 2020	44	26.0	0.6	9,875	42	31.0	0.7	9,830	0	0.0	0.0	86	57.0	19,705
12 Jan 2020	46	33.0	0.7	12,533	46	31.0	0.7	9,830	0	0.0	0.0	92	64.0	22,363
13 Jan 2020	55	37.0	0.7	14,053	54	46.0	0.9	14,587	0	0.0	0.0	109	83.0	28,640
14 Jan 2020	45	30.0	0.7	11,394	44	34.0	0.8	10,781	0	0.0	0.0	89	64.0	22,175
15 Jan 2020	56	34.0	0.6	12,913	55	39.0	0.7	12,367	0	0.0	0.0	111	73.0	25,280
16 Jan 2020	60	40.0	0.7	15,192	61	46.0	0.8	14,587	0	0.0	0.0	121	86.0	29,779
17 Jan 2020	58	31.0	0.5	11,774	57	36.0	0.6	11,416	0	0.0	0.0	115	67.0	23,190
18 Jan 2020	52	30.0	0.6	11,394	52	47.0	0.9	14,904	0	0.0	0.0	104	77.0	26,298
19 Jan 2020	59	41.0	0.7	15,572	59	43.0	0.7	13,635	0	0.0	0.0	118	84.0	29,207
20 Jan 2020	60	35.0	0.6	13,293	60	44.0	0.7	13,952	0	0.0	0.0	120	79.0	27,245
21 Jan 2020	65	39.0	0.6	14,812	65	50.0	0.8	15,855	0	0.0	0.0	130	89.0	30,667
22 Jan 2020	52	34.0	0.7	12,913	52	38.0	0.7	12,050	0	0.0	0.0	104	72.0	24,963
23 Jan 2020	51	31.0	0.6	11,774	51	38.0	0.7	12,050	0	0.0	0.0	102	69.0	23,824
24 Jan 2020	41	25.0	0.6	9,495	43	35.0	0.8	11,098	0	0.0	0.0	84	60.0	20,593
25 Jan 2020	48	31.0	0.6	11,774	47	38.0	0.8	12,050	0	0.0	0.0	95	69.0	23,824
26 Jan 2020	84	45.0	0.5	17,091	83	63.0	0.8	19,977	0	0.0	0.0	167	108.0	37,068
27 Jan 2020	57	38.0	0.7	14,432	58	37.0	0.6	11,733	0	0.0	0.0	115	75.0	26,165
28 Jan 2020	39	26.0	0.7	9,875	41	31.0	0.8	9,830	0	0.0	0.0	80	57.0	19,705
29 Jan 2020	41	21.0	0.5	7,976	45	36.0	0.8	11,416	0	0.0	0.0	86	57.0	19,392
30 Jan 2020	44	27.0	0.6	10,255	44	33.0	0.8	10,464	0	0.0	0.0	88	60.0	20,719
31 Jan 2020	41	26.0	0.6	9,875	42	34.0	0.8	10,781	0	0.0	0.0	83	60.0	20,656
1 Feb 2020	47	34.0	0.7	12,913	46	33.0	0.7	10,464	0	0.0	0.0	93	67.0	23,377
2 Feb 2020	57	38.0	0.7	14,432	58	43.0	0.7	13,635	0	0.0	0.0	115	81.0	28,067
3 Feb 2020	58	39.0	0.7	14,812	59	39.0	0.7	12,367	0	0.0	0.0	117	78.0	27,179
4 Feb 2020	48	27.0	0.6	10,255	48	35.0	0.7	11,098	0	0.0	0.0	96	62.0	21,353
5 Feb 2020	52	33.0	0.6	12,533	51	29.0	0.6	9,196	0	0.0	0.0	103	62.0	21,729
6 Feb 2020	56	36.0	0.6	13,673	57	40.0	0.7	12,684	0	0.0	0.0	113	76.0	26,357
7 Feb 2020	80	56.0	0.7	21,269	81	58.0	0.7	18,392	0	0.0	0.0	161	114.0	39,661
8 Feb 2020	86	51.0	0.6	19,370	85	74.0	0.9	23,465	0	0.0	0.0	171	125.0	42,835
9 Feb 2020	59	34.0	0.6	12,913	57	40.0	0.7	12,684	0	0.0	0.0	116	74.0	25,597
10 Feb 2020	55	24.0	0.4	9,115	55	41.0	0.7	13,001	0	0.0	0.0	110	65.0	22,116
11 Feb 2020	56	38.0	0.7	14,432	54	38.0	0.7	12,050	0	0.0	0.0	110	76.0	26,482

Runtime Data (Daily)
Georgetown Delaware Wastewater - Meadows Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
12 Feb 2020	78	46.0	0.6	17,471	78	61.0	0.8	19,343	0	0.0	0.0	156	107.0	36,814
13 Feb 2020	59	25.0	0.4	9,495	61	50.0	0.8	15,855	0	0.0	0.0	120	75.0	25,350
14 Feb 2020	63	39.0	0.6	14,812	63	40.0	0.6	12,684	0	0.0	0.0	126	79.0	27,496
15 Feb 2020	61	38.0	0.6	14,432	62	49.0	0.8	15,538	0	0.0	0.0	123	87.0	29,970
16 Feb 2020	64	40.0	0.6	15,192	64	52.0	0.8	16,489	0	0.0	0.0	128	92.0	31,681
17 Feb 2020	61	37.0	0.6	14,053	61	45.0	0.7	14,270	0	0.0	0.0	122	82.0	28,323
18 Feb 2020	61	43.0	0.7	16,331	60	46.0	0.8	14,587	0	0.0	0.0	121	89.0	30,918
19 Feb 2020	46	21.0	0.5	7,976	45	35.0	0.8	11,098	0	0.0	0.0	91	56.0	19,074
20 Feb 2020	62	32.0	0.5	12,154	62	49.0	0.8	15,538	0	0.0	0.0	124	81.0	27,692
21 Feb 2020	114	66.0	0.6	25,067	9	6.0	0.7	1,903	0	0.0	0.0	123	72.0	26,970
22 Feb 2020	118	64.0	0.5	24,307	0	0.0	0.0	0	0	0.0	0.0	118	64.0	24,307
23 Feb 2020	132	77.0	0.6	29,245	1	0.0	0.0	0	0	0.0	0.0	133	77.0	29,245
24 Feb 2020	102	71.0	0.7	26,966	1	0.0	0.0	0	0	0.0	0.0	103	71.0	26,966
25 Feb 2020	92	56.0	0.6	21,269	36	20.0	0.6	6,342	0	0.0	0.0	128	76.0	27,611
26 Feb 2020	59	38.0	0.6	14,432	62	42.0	0.7	13,318	0	0.0	0.0	121	80.0	27,750
27 Feb 2020	58	38.0	0.7	14,432	63	42.0	0.7	13,318	0	0.0	0.0	121	80.0	27,750
28 Feb 2020	70	40.0	0.6	15,192	65	35.0	0.5	11,098	0	0.0	0.0	135	75.0	26,290
29 Feb 2020	64	42.0	0.7	15,952	67	49.0	0.7	15,538	0	0.0	0.0	131	91.0	31,490
1 Mar 2020	67	43.0	0.6	16,331	63	46.0	0.7	14,587	0	0.0	0.0	130	89.0	30,918
2 Mar 2020	71	41.0	0.6	15,572	67	44.0	0.7	13,952	0	0.0	0.0	138	85.0	29,524
3 Mar 2020	52	33.0	0.6	12,533	53	38.0	0.7	12,050	0	0.0	0.0	105	71.0	24,583
4 Mar 2020	60	37.0	0.6	14,053	56	42.0	0.8	13,318	0	0.0	0.0	116	79.0	27,371
5 Mar 2020	56	26.0	0.5	9,875	55	40.0	0.7	12,684	0	0.0	0.0	111	66.0	22,559
6 Mar 2020	56	29.0	0.5	11,014	58	42.0	0.7	13,318	0	0.0	0.0	114	71.0	24,332
7 Mar 2020	59	38.0	0.6	14,432	64	54.0	0.8	17,123	0	0.0	0.0	123	92.0	31,555
8 Mar 2020	67	38.0	0.6	14,432	67	50.0	0.7	15,855	0	0.0	0.0	134	88.0	30,287
9 Mar 2020	63	41.0	0.7	15,572	67	54.0	0.8	17,123	0	0.0	0.0	130	95.0	32,695
10 Mar 2020	55	26.0	0.5	9,875	55	46.0	0.8	14,587	0	0.0	0.0	110	72.0	24,462
11 Mar 2020	62	29.0	0.5	11,014	65	53.0	0.8	16,806	0	0.0	0.0	127	82.0	27,820
12 Mar 2020	57	29.0	0.5	11,014	60	49.0	0.8	15,538	0	0.0	0.0	117	78.0	26,552
13 Mar 2020	60	36.0	0.6	13,673	60	44.0	0.7	13,952	0	0.0	0.0	120	80.0	27,625
14 Mar 2020	61	37.0	0.6	14,053	60	46.0	0.8	14,587	0	0.0	0.0	121	83.0	28,640
15 Mar 2020	69	38.0	0.6	14,432	71	56.0	0.8	17,758	0	0.0	0.0	140	94.0	32,190
16 Mar 2020	70	37.0	0.5	14,053	67	41.0	0.6	13,001	0	0.0	0.0	137	78.0	27,054
17 Mar 2020	60	37.0	0.6	14,053	62	52.0	0.8	16,489	0	0.0	0.0	122	89.0	30,542
18 Mar 2020	63	35.0	0.6	13,293	57	48.0	0.8	15,221	0	0.0	0.0	120	83.0	28,514
19 Mar 2020	59	43.0	0.7	16,331	62	48.0	0.8	15,221	0	0.0	0.0	121	91.0	31,552

Runtime Data (Daily)
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1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
20 Mar 2020	61	34.0	0.6	12,913	60	46.0	0.8	14,587	0	0.0	0.0	121	80.0	27,500
21 Mar 2020	67	42.0	0.6	15,952	64	46.0	0.7	14,587	0	0.0	0.0	131	88.0	30,539
22 Mar 2020	67	45.0	0.7	17,091	70	52.0	0.7	16,489	0	0.0	0.0	137	97.0	33,580
23 Mar 2020	69	45.0	0.7	17,091	71	52.0	0.7	16,489	0	0.0	0.0	140	97.0	33,580
24 Mar 2020	72	51.0	0.7	19,370	69	53.0	0.8	16,806	0	0.0	0.0	141	104.0	36,176
25 Mar 2020	62	41.0	0.7	15,572	68	51.0	0.8	16,172	0	0.0	0.0	130	92.0	31,744
26 Mar 2020	68	42.0	0.6	15,952	63	48.0	0.8	15,221	0	0.0	0.0	131	90.0	31,173
27 Mar 2020	65	42.0	0.6	15,952	69	48.0	0.7	15,221	0	0.0	0.0	134	90.0	31,173
28 Mar 2020	65	46.0	0.7	17,471	66	50.0	0.8	15,855	0	0.0	0.0	131	96.0	33,326
29 Mar 2020	87	53.0	0.6	20,129	85	72.0	0.8	22,831	0	0.0	0.0	172	125.0	42,960
30 Mar 2020	75	56.0	0.7	21,269	78	58.0	0.7	18,392	0	0.0	0.0	153	114.0	39,661
31 Mar 2020	67	42.0	0.6	15,952	66	45.0	0.7	14,270	0	0.0	0.0	133	87.0	30,222
1 Apr 2020	55	37.0	0.7	14,053	57	43.0	0.8	13,635	0	0.0	0.0	112	80.0	27,688
2 Apr 2020	65	49.0	0.8	18,610	72	55.0	0.8	17,440	0	0.0	0.0	137	104.0	36,050
3 Apr 2020	63	43.0	0.7	16,331	66	55.0	0.8	17,440	0	0.0	0.0	129	98.0	33,771
4 Apr 2020	64	47.0	0.7	17,851	65	48.0	0.7	15,221	0	0.0	0.0	129	95.0	33,072
5 Apr 2020	64	47.0	0.7	17,851	62	49.0	0.8	15,538	0	0.0	0.0	126	96.0	33,389
6 Apr 2020	62	34.0	0.5	12,913	67	52.0	0.8	16,489	0	0.0	0.0	129	86.0	29,402
7 Apr 2020	70	45.0	0.6	17,091	63	49.0	0.8	15,538	0	0.0	0.0	133	94.0	32,629
8 Apr 2020	59	35.0	0.6	13,293	54	39.0	0.7	12,367	0	0.0	0.0	113	74.0	25,660
9 Apr 2020	62	39.0	0.6	14,812	63	50.0	0.8	15,855	0	0.0	0.0	125	89.0	30,667
10 Apr 2020	57	42.0	0.7	15,952	60	51.0	0.8	16,172	0	0.0	0.0	117	93.0	32,124
11 Apr 2020	59	48.0	0.8	18,230	63	53.0	0.8	16,806	0	0.0	0.0	122	101.0	35,036
12 Apr 2020	61	44.0	0.7	16,711	61	53.0	0.9	16,806	0	0.0	0.0	122	97.0	33,517
13 Apr 2020	59	39.0	0.7	14,812	64	55.0	0.9	17,440	0	0.0	0.0	123	94.0	32,252
14 Apr 2020	71	51.0	0.7	19,370	72	69.0	1.0	21,880	0	0.0	0.0	143	120.0	41,250
15 Apr 2020	60	47.0	0.8	17,851	60	47.0	0.8	14,904	0	0.0	0.0	120	94.0	32,755
16 Apr 2020	63	44.0	0.7	16,711	64	52.0	0.8	16,489	0	0.0	0.0	127	96.0	33,200
17 Apr 2020	60	40.0	0.7	15,192	59	47.0	0.8	14,904	0	0.0	0.0	119	87.0	30,096
18 Apr 2020	58	42.0	0.7	15,952	56	42.0	0.8	13,318	0	0.0	0.0	114	84.0	29,270
19 Apr 2020	58	40.0	0.7	15,192	53	42.0	0.8	13,318	0	0.0	0.0	111	82.0	28,510
20 Apr 2020	50	28.0	0.6	10,634	59	54.0	0.9	17,123	0	0.0	0.0	109	82.0	27,757
21 Apr 2020	51	41.0	0.8	15,572	49	47.0	1.0	14,904	0	0.0	0.0	100	88.0	30,476
22 Apr 2020	55	27.0	0.5	10,255	60	296.0	4.9	93,862	0	0.0	0.0	115	323.0	104,117
23 Apr 2020	54	33.0	0.6	12,533	51	44.0	0.9	13,952	0	0.0	0.0	105	77.0	26,485
24 Apr 2020	58	39.0	0.7	14,812	58	50.0	0.9	15,855	0	0.0	0.0	116	89.0	30,667
25 Apr 2020	74	58.0	0.8	22,028	71	61.0	0.9	19,343	0	0.0	0.0	145	119.0	41,371

Runtime Data (Daily)
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1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
26 Apr 2020	62	44.0	0.7	16,711	62	51.0	0.8	16,172	0	0.0	0.0	124	95.0	32,883
27 Apr 2020	62	46.0	0.7	17,471	63	58.0	0.9	18,392	0	0.0	0.0	125	104.0	35,863
28 Apr 2020	59	46.0	0.8	17,471	62	51.0	0.8	16,172	0	0.0	0.0	121	97.0	33,643
29 Apr 2020	62	49.0	0.8	18,610	60	54.0	0.9	17,123	0	0.0	0.0	122	103.0	35,733
30 Apr 2020	53	43.0	0.8	16,331	54	50.0	0.9	15,855	0	0.0	0.0	107	93.0	32,186
1 May 2020	59	42.0	0.7	15,952	59	56.0	0.9	17,758	0	0.0	0.0	118	98.0	33,710
2 May 2020	60	47.0	0.8	17,851	62	50.0	0.8	15,855	0	0.0	0.0	122	97.0	33,706
3 May 2020	62	47.0	0.8	17,851	63	52.0	0.8	16,489	0	0.0	0.0	125	99.0	34,340
4 May 2020	61	43.0	0.7	16,331	60	52.0	0.9	16,489	0	0.0	0.0	121	95.0	32,820
5 May 2020	95	75.0	0.8	28,485	97	93.0	1.0	29,490	0	0.0	0.0	192	168.0	57,975
6 May 2020	67	54.0	0.8	20,509	70	61.0	0.9	19,343	0	0.0	0.0	137	115.0	39,852
7 May 2020	68	45.0	0.7	17,091	70	60.0	0.9	19,026	0	0.0	0.0	138	105.0	36,117
8 May 2020	66	47.0	0.7	17,851	71	60.0	0.8	19,026	0	0.0	0.0	137	107.0	36,877
9 May 2020	68	50.0	0.7	18,990	72	57.0	0.8	18,075	0	0.0	0.0	140	107.0	37,065
10 May 2020	68	50.0	0.7	18,990	72	58.0	0.8	18,392	0	0.0	0.0	140	108.0	37,382
11 May 2020	68	46.0	0.7	17,471	70	56.0	0.8	17,758	0	0.0	0.0	138	102.0	35,229
12 May 2020	66	50.0	0.8	18,990	66	54.0	0.8	17,123	0	0.0	0.0	132	104.0	36,113
13 May 2020	63	44.0	0.7	16,711	66	57.0	0.9	18,075	0	0.0	0.0	129	101.0	34,786
14 May 2020	64	47.0	0.7	17,851	63	44.0	0.7	13,952	0	0.0	0.0	127	91.0	31,803
15 May 2020	64	50.0	0.8	18,990	65	51.0	0.8	16,172	0	0.0	0.0	129	101.0	35,162
16 May 2020	64	47.0	0.7	17,851	62	47.0	0.8	14,904	0	0.0	0.0	126	94.0	32,755
17 May 2020	67	44.0	0.7	16,711	70	54.0	0.8	17,123	0	0.0	0.0	137	98.0	33,834
18 May 2020	78	50.0	0.6	18,990	79	56.0	0.7	17,758	0	0.0	0.0	157	106.0	36,748
19 May 2020	73	47.0	0.6	17,851	73	53.0	0.7	16,806	0	0.0	0.0	146	100.0	34,657
20 May 2020	67	43.0	0.6	16,331	68	48.0	0.7	15,221	0	0.0	0.0	135	91.0	31,552
21 May 2020	67	41.0	0.6	15,572	66	45.0	0.7	14,270	0	0.0	0.0	133	86.0	29,842
22 May 2020	63	37.0	0.6	14,053	63	41.0	0.7	13,001	0	0.0	0.0	126	78.0	27,054
23 May 2020	57	39.0	0.7	14,812	59	42.0	0.7	13,318	0	0.0	0.0	116	81.0	28,130
24 May 2020	64	46.0	0.7	17,471	72	51.0	0.7	16,172	0	0.0	0.0	136	97.0	33,643
25 May 2020	60	40.0	0.7	15,192	64	53.0	0.8	16,806	0	0.0	0.0	124	93.0	31,998
26 May 2020	61	44.0	0.7	16,711	61	46.0	0.8	14,587	0	0.0	0.0	122	90.0	31,298
27 May 2020	64	40.0	0.6	15,192	64	49.0	0.8	15,538	0	0.0	0.0	128	89.0	30,730
28 May 2020	61	39.0	0.6	14,812	66	50.0	0.8	15,855	0	0.0	0.0	127	89.0	30,667
29 May 2020	62	44.0	0.7	16,711	68	56.0	0.8	17,758	0	0.0	0.0	130	100.0	34,469
30 May 2020	75	41.0	0.5	15,572	70	51.0	0.7	16,172	0	0.0	0.0	145	92.0	31,744
31 May 2020	67	39.0	0.6	14,812	66	47.0	0.7	14,904	0	0.0	0.0	133	86.0	29,716
1 Jun 2020	67	46.0	0.7	17,471	69	58.0	0.8	18,392	0	0.0	0.0	136	104.0	35,863

Runtime Data (Daily)
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Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
2 Jun 2020	62	40.0	0.6	15,192	65	47.0	0.7	14,904	0	0.0	0.0	127	87.0	30,096
3 Jun 2020	60	40.0	0.7	15,192	63	46.0	0.7	14,587	0	0.0	0.0	123	86.0	29,779
4 Jun 2020	61	41.0	0.7	15,572	61	51.0	0.8	16,172	0	0.0	0.0	122	92.0	31,744
5 Jun 2020	59	40.0	0.7	15,192	58	49.0	0.8	15,538	0	0.0	0.0	117	89.0	30,730
6 Jun 2020	55	40.0	0.7	15,192	54	47.0	0.9	14,904	0	0.0	0.0	109	87.0	30,096
7 Jun 2020	58	37.0	0.6	14,053	65	51.0	0.8	16,172	0	0.0	0.0	123	88.0	30,225
8 Jun 2020	62	35.0	0.6	13,293	66	48.0	0.7	15,221	0	0.0	0.0	128	83.0	28,514
9 Jun 2020	60	34.0	0.6	12,913	66	51.0	0.8	16,172	0	0.0	0.0	126	85.0	29,085
10 Jun 2020	54	31.0	0.6	11,774	61	54.0	0.9	17,123	0	0.0	0.0	115	85.0	28,897
11 Jun 2020	49	31.0	0.6	11,774	49	40.0	0.8	12,684	0	0.0	0.0	98	71.0	24,458
12 Jun 2020	76	38.0	0.5	14,432	79	52.0	0.7	16,489	0	0.0	0.0	155	90.0	30,921
13 Jun 2020	55	40.0	0.7	15,192	53	47.0	0.9	14,904	0	0.0	0.0	108	87.0	30,096
14 Jun 2020	65	49.0	0.8	18,610	64	55.0	0.9	17,440	0	0.0	0.0	129	104.0	36,050
15 Jun 2020	63	44.0	0.7	16,711	63	53.0	0.8	16,806	0	0.0	0.0	126	97.0	33,517
16 Jun 2020	55	37.0	0.7	14,053	57	50.0	0.9	15,855	0	0.0	0.0	112	87.0	29,908
17 Jun 2020	30	20.0	0.7	7,596	47	59.0	1.3	18,709	0	0.0	0.0	77	79.0	26,305
18 Jun 2020	63	31.0	0.5	11,774	53	51.0	1.0	16,172	0	0.0	0.0	116	82.0	27,946
19 Jun 2020	56	31.0	0.6	11,774	57	48.0	0.8	15,221	0	0.0	0.0	113	79.0	26,995
20 Jun 2020	50	35.0	0.7	13,293	58	49.0	0.8	15,538	0	0.0	0.0	108	84.0	28,831
21 Jun 2020	57	36.0	0.6	13,673	65	59.0	0.9	18,709	0	0.0	0.0	122	95.0	32,382
22 Jun 2020	60	42.0	0.7	15,952	60	54.0	0.9	17,123	0	0.0	0.0	120	96.0	33,075
23 Jun 2020	56	35.0	0.6	13,293	56	48.0	0.9	15,221	0	0.0	0.0	112	83.0	28,514
24 Jun 2020	54	36.0	0.7	13,673	59	44.0	0.7	13,952	0	0.0	0.0	113	80.0	27,625
25 Jun 2020	56	26.0	0.5	9,875	56	39.0	0.7	12,367	0	0.0	0.0	112	65.0	22,242
26 Jun 2020	56	31.0	0.6	11,774	51	40.0	0.8	12,684	0	0.0	0.0	107	71.0	24,458
27 Jun 2020	56	40.0	0.7	15,192	54	44.0	0.8	13,952	0	0.0	0.0	110	84.0	29,144
28 Jun 2020	58	37.0	0.6	14,053	62	38.0	0.6	12,050	0	0.0	0.0	120	75.0	26,103
29 Jun 2020	58	39.0	0.7	14,812	59	40.0	0.7	12,684	0	0.0	0.0	117	79.0	27,496
30 Jun 2020	55	37.0	0.7	14,053	52	37.0	0.7	11,733	0	0.0	0.0	107	74.0	25,786
1 Jul 2020	49	32.0	0.7	12,154	52	34.0	0.7	10,781	0	0.0	0.0	101	66.0	22,935
2 Jul 2020	52	39.0	0.8	14,812	52	33.0	0.6	10,464	0	0.0	0.0	104	72.0	25,276
3 Jul 2020	52	35.0	0.7	13,293	52	31.0	0.6	9,830	0	0.0	0.0	104	66.0	23,123
4 Jul 2020	60	64.0	1.1	24,307	40	384.0	9.6	121,766	0	0.0	0.0	100	448.0	146,073
5 Jul 2020	36	38.0	1.1	14,432	17	964.0	56.7	305,684	0	0.0	0.0	53	1002.0	320,116
6 Jul 2020	50	60.0	1.2	22,788	50	886.0	17.7	280,951	0	0.0	0.0	100	946.0	303,739
7 Jul 2020	64	38.0	0.6	14,432	68	46.0	0.7	14,587	0	0.0	0.0	132	84.0	29,019
8 Jul 2020	60	38.0	0.6	14,432	61	46.0	0.8	14,587	0	0.0	0.0	121	84.0	29,019

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Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
9 Jul 2020	35	529.0	15.1	200,914	34	551.0	16.2	174,722	0	0.0	0.0	69	1080.0	375,636
10 Jul 2020	57	464.0	8.1	176,227	53	488.0	9.2	154,745	0	0.0	0.0	110	952.0	330,972
11 Jul 2020	112	76.0	0.7	28,865	114	117.0	1.0	37,101	0	0.0	0.0	226	193.0	65,966
12 Jul 2020	76	51.0	0.7	19,370	66	53.0	0.8	16,806	0	0.0	0.0	142	104.0	36,176
13 Jul 2020	66	39.0	0.6	14,812	71	50.0	0.7	15,855	0	0.0	0.0	137	89.0	30,667
14 Jul 2020	62	40.0	0.6	15,192	62	51.0	0.8	16,172	0	0.0	0.0	124	91.0	31,364
15 Jul 2020	60	40.0	0.7	15,192	56	40.0	0.7	12,684	0	0.0	0.0	116	80.0	27,876
16 Jul 2020	57	42.0	0.7	15,952	62	50.0	0.8	15,855	0	0.0	0.0	119	92.0	31,807
17 Jul 2020	55	36.0	0.7	13,673	62	50.0	0.8	15,855	0	0.0	0.0	117	86.0	29,528
18 Jul 2020	56	42.0	0.8	15,952	55	46.0	0.8	14,587	0	0.0	0.0	111	88.0	30,539
19 Jul 2020	55	39.0	0.7	14,812	59	42.0	0.7	13,318	0	0.0	0.0	114	81.0	28,130
20 Jul 2020	56	35.0	0.6	13,293	61	46.0	0.8	14,587	0	0.0	0.0	117	81.0	27,880
21 Jul 2020	54	37.0	0.7	14,053	50	36.0	0.7	11,416	0	0.0	0.0	104	73.0	25,469
22 Jul 2020	49	33.0	0.7	12,533	49	38.0	0.8	12,050	0	0.0	0.0	98	71.0	24,583
23 Jul 2020	56	27.0	0.5	10,255	57	50.0	0.9	15,855	0	0.0	0.0	113	77.0	26,110
24 Jul 2020	59	30.0	0.5	11,394	53	35.0	0.7	11,098	0	0.0	0.0	112	65.0	22,492
25 Jul 2020	61	42.0	0.7	15,952	55	45.0	0.8	14,270	0	0.0	0.0	116	87.0	30,222
26 Jul 2020	54	40.0	0.7	15,192	57	48.0	0.8	15,221	0	0.0	0.0	111	88.0	30,413
27 Jul 2020	54	36.0	0.7	13,673	59	47.0	0.8	14,904	0	0.0	0.0	113	83.0	28,577
28 Jul 2020	53	39.0	0.7	14,812	56	43.0	0.8	13,635	0	0.0	0.0	109	82.0	28,447
29 Jul 2020	51	41.0	0.8	15,572	50	44.0	0.9	13,952	0	0.0	0.0	101	85.0	29,524
30 Jul 2020	50	35.0	0.7	13,293	52	37.0	0.7	11,733	0	0.0	0.0	102	72.0	25,026
31 Jul 2020	50	36.0	0.7	13,673	51	36.0	0.7	11,416	0	0.0	0.0	101	72.0	25,089
1 Aug 2020	52	31.0	0.6	11,774	54	38.0	0.7	12,050	0	0.0	0.0	106	69.0	23,824
2 Aug 2020	57	44.0	0.8	16,711	45	210.0	4.7	66,591	0	0.0	0.0	102	254.0	83,302
3 Aug 2020	59	45.0	0.8	17,091	54	359.0	6.6	113,839	0	0.0	0.0	113	404.0	130,930
4 Aug 2020	49	31.0	0.6	11,774	54	38.0	0.7	12,050	0	0.0	0.0	103	69.0	23,824
5 Aug 2020	53	40.0	0.8	15,192	64	51.0	0.8	16,172	0	0.0	0.0	117	91.0	31,364
6 Aug 2020	44	34.0	0.8	12,913	42	43.0	1.0	13,635	0	0.0	0.0	86	77.0	26,548
7 Aug 2020	47	35.0	0.7	13,293	47	46.0	1.0	14,587	0	0.0	0.0	94	81.0	27,880
8 Aug 2020	47	39.0	0.8	14,812	47	45.0	1.0	14,270	0	0.0	0.0	94	84.0	29,082
9 Aug 2020	48	42.0	0.9	15,952	45	41.0	0.9	13,001	0	0.0	0.0	93	83.0	28,953
10 Aug 2020	47	34.0	0.7	12,913	49	44.0	0.9	13,952	0	0.0	0.0	96	78.0	26,865
11 Aug 2020	44	37.0	0.8	14,053	49	40.0	0.8	12,684	0	0.0	0.0	93	77.0	26,737
12 Aug 2020	45	34.0	0.8	12,913	48	39.0	0.8	12,367	0	0.0	0.0	93	73.0	25,280
13 Aug 2020	45	36.0	0.8	13,673	48	44.0	0.9	13,952	0	0.0	0.0	93	80.0	27,625
14 Aug 2020	50	35.0	0.7	13,293	49	49.0	1.0	15,538	0	0.0	0.0	99	84.0	28,831

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Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
15 Aug 2020	48	35.0	0.7	13,293	49	45.0	0.9	14,270	0	0.0	0.0	97	80.0	27,563
16 Aug 2020	57	43.0	0.8	16,331	54	52.0	1.0	16,489	0	0.0	0.0	111	95.0	32,820
17 Aug 2020	54	38.0	0.7	14,432	58	50.0	0.9	15,855	0	0.0	0.0	112	88.0	30,287
18 Aug 2020	49	27.0	0.6	10,255	49	40.0	0.8	12,684	0	0.0	0.0	98	67.0	22,939
19 Aug 2020	47	38.0	0.8	14,432	47	40.0	0.9	12,684	0	0.0	0.0	94	78.0	27,116
20 Aug 2020	47	33.0	0.7	12,533	53	41.0	0.8	13,001	0	0.0	0.0	100	74.0	25,534
21 Aug 2020	50	40.0	0.8	15,192	49	34.0	0.7	10,781	0	0.0	0.0	99	74.0	25,973
22 Aug 2020	48	35.0	0.7	13,293	48	37.0	0.8	11,733	0	0.0	0.0	96	72.0	25,026
23 Aug 2020	53	36.0	0.7	13,673	55	58.0	1.1	18,392	0	0.0	0.0	108	94.0	32,065
24 Aug 2020	49	39.0	0.8	14,812	48	52.0	1.1	16,489	0	0.0	0.0	97	91.0	31,301
25 Aug 2020	45	32.0	0.7	12,154	49	40.0	0.8	12,684	0	0.0	0.0	94	72.0	24,838
26 Aug 2020	46	40.0	0.9	15,192	36	266.0	7.4	84,349	0	0.0	0.0	82	306.0	99,541
27 Aug 2020	52	58.0	1.1	22,028	26	604.0	23.2	191,528	0	0.0	0.0	78	662.0	213,556
28 Aug 2020	47	34.0	0.7	12,913	47	245.0	5.2	77,690	0	0.0	0.0	94	279.0	90,603
29 Aug 2020	51	28.0	0.5	10,634	41	32.0	0.8	10,147	0	0.0	0.0	92	60.0	20,781
30 Aug 2020	53	41.0	0.8	15,572	52	44.0	0.8	13,952	0	0.0	0.0	105	85.0	29,524
31 Aug 2020	44	36.0	0.8	13,673	46	39.0	0.8	12,367	0	0.0	0.0	90	75.0	26,040
1 Sep 2020	41	39.0	1.0	14,812	43	39.0	0.9	12,367	0	0.0	0.0	84	78.0	27,179
2 Sep 2020	38	36.0	0.9	13,673	41	39.0	1.0	12,367	0	0.0	0.0	79	75.0	26,040
3 Sep 2020	38	34.0	0.9	12,913	40	38.0	1.0	12,050	0	0.0	0.0	78	72.0	24,963
4 Sep 2020	50	41.0	0.8	15,572	51	50.0	1.0	15,855	0	0.0	0.0	101	91.0	31,427
5 Sep 2020	62	56.0	0.9	21,269	61	60.0	1.0	19,026	0	0.0	0.0	123	116.0	40,295
6 Sep 2020	49	42.0	0.9	15,952	52	43.0	0.8	13,635	0	0.0	0.0	101	85.0	29,587
7 Sep 2020	50	39.0	0.8	14,812	54	45.0	0.8	14,270	0	0.0	0.0	104	84.0	29,082
8 Sep 2020	54	62.0	1.1	23,548	42	276.0	6.6	87,520	0	0.0	0.0	96	338.0	111,068
9 Sep 2020	50	50.0	1.0	18,990	41	287.0	7.0	91,008	0	0.0	0.0	91	337.0	109,998
10 Sep 2020	45	33.0	0.7	12,533	42	32.0	0.8	10,147	0	0.0	0.0	87	65.0	22,680
11 Sep 2020	41	36.0	0.9	13,673	45	27.0	0.6	8,562	0	0.0	0.0	86	63.0	22,235
12 Sep 2020	44	36.0	0.8	13,673	44	29.0	0.7	9,196	0	0.0	0.0	88	65.0	22,869
13 Sep 2020	46	39.0	0.8	14,812	43	35.0	0.8	11,098	0	0.0	0.0	89	74.0	25,910
14 Sep 2020	44	38.0	0.9	14,432	48	39.0	0.8	12,367	0	0.0	0.0	92	77.0	26,799
15 Sep 2020	42	35.0	0.8	13,293	40	29.0	0.7	9,196	0	0.0	0.0	82	64.0	22,489
16 Sep 2020	44	36.0	0.8	13,673	41	30.0	0.7	9,513	0	0.0	0.0	85	66.0	23,186
17 Sep 2020	41	35.0	0.9	13,293	45	38.0	0.8	12,050	0	0.0	0.0	86	73.0	25,343
18 Sep 2020	50	55.0	1.1	20,889	33	363.0	11.0	115,107	0	0.0	0.0	83	418.0	135,996
19 Sep 2020	53	40.0	0.8	15,192	84	232.0	2.8	73,567	0	0.0	0.0	137	272.0	88,759
20 Sep 2020	45	29.0	0.6	11,014	51	38.0	0.7	12,050	0	0.0	0.0	96	67.0	23,064

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Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
21 Sep 2020	50	32.0	0.6	12,154	59	41.0	0.7	13,001	0	0.0	0.0	109	73.0	25,155
22 Sep 2020	47	32.0	0.7	12,154	50	36.0	0.7	11,416	0	0.0	0.0	97	68.0	23,570
23 Sep 2020	44	25.0	0.6	9,495	46	39.0	0.8	12,367	0	0.0	0.0	90	64.0	21,862
24 Sep 2020	42	43.0	1.0	16,331	34	227.0	6.7	71,982	0	0.0	0.0	76	270.0	88,313
25 Sep 2020	47	47.0	1.0	17,851	57	411.0	7.2	130,328	0	0.0	0.0	104	458.0	148,179
26 Sep 2020	44	36.0	0.8	13,673	36	28.0	0.8	8,879	0	0.0	0.0	80	64.0	22,552
27 Sep 2020	49	35.0	0.7	13,293	49	38.0	0.8	12,050	0	0.0	0.0	98	73.0	25,343
28 Sep 2020	43	36.0	0.8	13,673	50	35.0	0.7	11,098	0	0.0	0.0	93	71.0	24,771
29 Sep 2020	48	37.0	0.8	14,053	44	34.0	0.8	10,781	0	0.0	0.0	92	71.0	24,834
30 Sep 2020	45	37.0	0.8	14,053	46	38.0	0.8	12,050	0	0.0	0.0	91	75.0	26,103
1 Oct 2020	51	34.0	0.7	12,913	63	51.0	0.8	16,172	0	0.0	0.0	114	85.0	29,085
2 Oct 2020	49	38.0	0.8	14,432	36	335.0	9.3	106,229	0	0.0	0.0	85	373.0	120,661
3 Oct 2020	48	42.0	0.9	15,952	49	308.0	6.3	97,667	0	0.0	0.0	97	350.0	113,619
4 Oct 2020	50	41.0	0.8	15,572	49	36.0	0.7	11,416	0	0.0	0.0	99	77.0	26,988
5 Oct 2020	47	34.0	0.7	12,913	51	33.0	0.6	10,464	0	0.0	0.0	98	67.0	23,377
6 Oct 2020	44	33.0	0.8	12,533	44	38.0	0.9	12,050	0	0.0	0.0	88	71.0	24,583
7 Oct 2020	49	44.0	0.9	16,711	50	40.0	0.8	12,684	0	0.0	0.0	99	84.0	29,395
8 Oct 2020	46	41.0	0.9	15,572	49	34.0	0.7	10,781	0	0.0	0.0	95	75.0	26,353
9 Oct 2020	44	35.0	0.8	13,293	45	33.0	0.7	10,464	0	0.0	0.0	89	68.0	23,757
10 Oct 2020	53	49.0	0.9	18,610	39	277.0	7.1	87,837	0	0.0	0.0	92	326.0	106,447
11 Oct 2020	55	61.0	1.1	23,168	28	543.0	19.4	172,185	0	0.0	0.0	83	604.0	195,353
12 Oct 2020	54	44.0	0.8	16,711	56	266.0	4.8	84,349	0	0.0	0.0	110	310.0	101,060
13 Oct 2020	75	43.0	0.6	16,331	74	59.0	0.8	18,709	0	0.0	0.0	149	102.0	35,040
14 Oct 2020	49	33.0	0.7	12,533	55	42.0	0.8	13,318	0	0.0	0.0	104	75.0	25,851
15 Oct 2020	45	31.0	0.7	11,774	49	39.0	0.8	12,367	0	0.0	0.0	94	70.0	24,141
16 Oct 2020	43	32.0	0.7	12,154	43	38.0	0.9	12,050	0	0.0	0.0	86	70.0	24,204
17 Oct 2020	67	57.0	0.9	21,649	61	56.0	0.9	17,758	0	0.0	0.0	128	113.0	39,407
18 Oct 2020	51	41.0	0.8	15,572	51	39.0	0.8	12,367	0	0.0	0.0	102	80.0	27,939
19 Oct 2020	53	46.0	0.9	17,471	48	42.0	0.9	13,318	0	0.0	0.0	101	88.0	30,789
20 Oct 2020	46	37.0	0.8	14,053	50	41.0	0.8	13,001	0	0.0	0.0	96	78.0	27,054
21 Oct 2020	42	25.0	0.6	9,495	46	37.0	0.8	11,733	0	0.0	0.0	88	62.0	21,228
22 Oct 2020	41	27.0	0.7	10,255	44	37.0	0.8	11,733	0	0.0	0.0	85	64.0	21,988
23 Oct 2020	44	28.0	0.6	10,634	49	37.0	0.8	11,733	0	0.0	0.0	93	65.0	22,367
24 Oct 2020	47	49.0	1.0	18,610	38	234.0	6.2	74,201	0	0.0	0.0	85	283.0	92,811
25 Oct 2020	58	68.0	1.2	25,826	29	634.0	21.9	201,041	0	0.0	0.0	87	702.0	226,867
26 Oct 2020	65	53.0	0.8	20,129	75	267.0	3.6	84,666	0	0.0	0.0	140	320.0	104,795
27 Oct 2020	52	39.0	0.8	14,812	58	48.0	0.8	15,221	0	0.0	0.0	110	87.0	30,033

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Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
28 Oct 2020	44	33.0	0.8	12,533	49	37.0	0.8	11,733	0	0.0	0.0	93	70.0	24,266
29 Oct 2020	53	61.0	1.2	23,168	28	396.0	14.1	125,572	0	0.0	0.0	81	457.0	148,740
30 Oct 2020	94	93.0	1.0	35,321	83	293.0	3.5	92,910	0	0.0	0.0	177	386.0	128,231
31 Oct 2020	81	65.0	0.8	24,687	101	85.0	0.8	26,954	0	0.0	0.0	182	150.0	51,641
1 Nov 2020	73	44.0	0.6	16,711	58	203.0	3.5	64,371	0	0.0	0.0	131	247.0	81,082
2 Nov 2020	95	98.0	1.0	37,220	49	705.0	14.4	223,556	0	0.0	0.0	144	803.0	260,776
3 Nov 2020	73	51.0	0.7	19,370	68	271.0	4.0	85,934	0	0.0	0.0	141	322.0	105,304
4 Nov 2020	70	37.0	0.5	14,053	76	45.0	0.6	14,270	0	0.0	0.0	146	82.0	28,323
5 Nov 2020	66	36.0	0.5	13,673	68	50.0	0.7	15,855	0	0.0	0.0	134	86.0	29,528
6 Nov 2020	64	33.0	0.5	12,533	66	45.0	0.7	14,270	0	0.0	0.0	130	78.0	26,803
7 Nov 2020	74	37.0	0.5	14,053	77	82.0	1.1	26,002	0	0.0	0.0	151	119.0	40,055
8 Nov 2020	65	42.0	0.6	15,952	63	58.0	0.9	18,392	0	0.0	0.0	128	100.0	34,344
9 Nov 2020	65	46.0	0.7	17,471	63	49.0	0.8	15,538	0	0.0	0.0	128	95.0	33,009
10 Nov 2020	62	45.0	0.7	17,091	64	34.0	0.5	10,781	0	0.0	0.0	126	79.0	27,872
11 Nov 2020	57	45.0	0.8	17,091	53	37.0	0.7	11,733	0	0.0	0.0	110	82.0	28,824
12 Nov 2020	69	55.0	0.8	20,889	66	50.0	0.8	15,855	0	0.0	0.0	135	105.0	36,744
13 Nov 2020	181	165.0	0.9	62,667	184	186.0	1.0	58,981	0	0.0	0.0	365	351.0	121,648
14 Nov 2020	121	106.0	0.9	40,259	125	106.0	0.8	33,613	0	0.0	0.0	246	212.0	73,872
15 Nov 2020	99	85.0	0.9	32,283	110	94.0	0.9	29,807	0	0.0	0.0	209	179.0	62,090
16 Nov 2020	108	90.0	0.8	34,182	111	90.0	0.8	28,539	0	0.0	0.0	219	180.0	62,721
17 Nov 2020	89	70.0	0.8	26,586	98	80.0	0.8	25,368	0	0.0	0.0	187	150.0	51,954
18 Nov 2020	89	73.0	0.8	27,725	90	63.0	0.7	19,977	0	0.0	0.0	179	136.0	47,702
19 Nov 2020	80	65.0	0.8	24,687	86	58.0	0.7	18,392	0	0.0	0.0	166	123.0	43,079
20 Nov 2020	76	60.0	0.8	22,788	69	53.0	0.8	16,806	0	0.0	0.0	145	113.0	39,594
21 Nov 2020	78	57.0	0.7	21,649	77	48.0	0.6	15,221	0	0.0	0.0	155	105.0	36,870
22 Nov 2020	82	104.0	1.3	39,499	59	408.0	6.9	129,377	0	0.0	0.0	141	512.0	168,876
23 Nov 2020	46	63.0	1.4	23,927	22	919.0	41.8	291,415	0	0.0	0.0	68	982.0	315,342
24 Nov 2020	61	53.0	0.9	20,129	65	608.0	9.4	192,797	0	0.0	0.0	126	661.0	212,926
25 Nov 2020	65	57.0	0.9	21,649	76	67.0	0.9	21,246	0	0.0	0.0	141	124.0	42,895
26 Nov 2020	67	49.0	0.7	18,610	76	66.0	0.9	20,929	0	0.0	0.0	143	115.0	39,539
27 Nov 2020	75	54.0	0.7	20,509	67	69.0	1.0	21,880	0	0.0	0.0	142	123.0	42,389
28 Nov 2020	65	54.0	0.8	20,509	70	69.0	1.0	21,880	0	0.0	0.0	135	123.0	42,389
29 Nov 2020	68	52.0	0.8	19,750	71	66.0	0.9	20,929	0	0.0	0.0	139	118.0	40,679
30 Nov 2020	62	45.0	0.7	17,091	75	71.0	0.9	22,514	0	0.0	0.0	137	116.0	39,605
1 Dec 2020	91	78.0	0.9	29,624	102	99.0	1.0	31,393	0	0.0	0.0	193	177.0	61,017
2 Dec 2020	89	71.0	0.8	26,966	84	74.0	0.9	23,465	0	0.0	0.0	173	145.0	50,431
3 Dec 2020	79	62.0	0.8	23,548	86	75.0	0.9	23,782	0	0.0	0.0	165	137.0	47,330

Runtime Data (Daily)
Georgetown Delaware Wastewater - Meadows Pump Station
1 Jan 2019 - 31 Dec 2020

Date/Time	Pump 1				Pump 2				Input 8			Total		
	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Gallons	Starts	Runtime	Average	Starts	Runtime	Gallons
4 Dec 2020	73	59.0	0.8	22,408	69	67.0	1.0	21,246	0	0.0	0.0	142	126.0	43,654
5 Dec 2020	67	52.0	0.8	19,750	71	58.0	0.8	18,392	0	0.0	0.0	138	110.0	38,142
6 Dec 2020	162	163.0	1.0	61,907	168	205.0	1.2	65,006	0	0.0	0.0	330	368.0	126,913
7 Dec 2020	124	120.0	1.0	45,576	129	144.0	1.1	45,662	0	0.0	0.0	253	264.0	91,238
8 Dec 2020	117	100.0	0.9	37,980	120	116.0	1.0	36,784	0	0.0	0.0	237	216.0	74,764
9 Dec 2020	103	85.0	0.8	32,283	111	102.0	0.9	32,344	0	0.0	0.0	214	187.0	64,627
10 Dec 2020	96	81.0	0.8	30,764	97	99.0	1.0	31,393	0	0.0	0.0	193	180.0	62,157
11 Dec 2020	88	72.0	0.8	27,346	93	92.0	1.0	29,173	0	0.0	0.0	181	164.0	56,519
12 Dec 2020	87	72.0	0.8	27,346	90	108.0	1.2	34,247	0	0.0	0.0	177	180.0	61,593
13 Dec 2020	78	72.0	0.9	27,346	93	122.0	1.3	38,686	0	0.0	0.0	171	194.0	66,032
14 Dec 2020	90	82.0	0.9	31,144	83	109.0	1.3	34,564	0	0.0	0.0	173	191.0	65,708
15 Dec 2020	87	76.0	0.9	28,865	90	115.0	1.3	36,466	0	0.0	0.0	177	191.0	65,331
16 Dec 2020	83	76.0	0.9	28,865	86	115.0	1.3	36,466	0	0.0	0.0	169	191.0	65,331
17 Dec 2020	102	103.0	1.0	39,119	112	168.0	1.5	53,273	0	0.0	0.0	214	271.0	92,392
18 Dec 2020	132	134.0	1.0	50,893	142	207.0	1.5	65,640	0	0.0	0.0	274	341.0	116,533
19 Dec 2020	109	102.0	0.9	38,740	115	169.0	1.5	53,590	0	0.0	0.0	224	271.0	92,330
20 Dec 2020	102	94.0	0.9	35,701	110	151.0	1.4	47,882	0	0.0	0.0	212	245.0	83,583
21 Dec 2020	59	72.0	1.2	27,346	78	126.0	1.6	39,955	0	0.0	0.0	137	198.0	67,301
22 Dec 2020	39	33.0	0.8	12,533	63	104.0	1.7	32,978	0	0.0	0.0	102	137.0	45,511
23 Dec 2020	93	72.0	0.8	27,346	97	120.0	1.2	38,052	0	0.0	0.0	190	192.0	65,398
24 Dec 2020	87	72.0	0.8	27,346	92	111.0	1.2	35,198	0	0.0	0.0	179	183.0	62,544
25 Dec 2020	100	89.0	0.9	33,802	97	130.0	1.3	41,223	0	0.0	0.0	197	219.0	75,025
26 Dec 2020	131	123.0	0.9	46,715	137	223.0	1.6	70,713	0	0.0	0.0	268	346.0	117,428
27 Dec 2020	107	94.0	0.9	35,701	113	146.0	1.3	46,297	0	0.0	0.0	220	240.0	81,998
28 Dec 2020	100	81.0	0.8	30,764	90	127.0	1.4	40,272	0	0.0	0.0	190	208.0	71,036
29 Dec 2020	94	75.0	0.8	28,485	93	122.0	1.3	38,686	0	0.0	0.0	187	197.0	67,171
30 Dec 2020	92	73.0	0.8	27,725	85	119.0	1.4	37,735	0	0.0	0.0	177	192.0	65,460
31 Dec 2020	88	67.0	0.8	25,447	80	101.0	1.3	32,027	0	0.0	0.0	168	168.0	57,474
Total	47093	33385.0	0.7	12,679,622	46190	55142.0	1.5	17,485,535	0	0.0	0.0	93283	88527.0	30,165,157

Daily Runtime Summary
Minutes and Gallons

Device : Big Park Pump Station

Time	Pump 1			Pump 2			Pump 3			Total		
	Minutes	**Gallons**	**Starts**	**Minutes**	**Gallons**	**Starts**	**Minutes**	**Gallons**	**Starts**	**Minutes**	**Gallons**	**Starts**
1/1/2019	434		43	383		43	0	0		817	0	
1/2/2019	349		42	374		42	0	0		723	0	
1/3/2019	330		41	412		43	0	0		742	0	
1/4/2019	314		42	400		42	0	0		714	0	
1/5/2019	284		38	554		37	0	0		838	0	
1/6/2019	305		36	512		36	0	0		817	0	
1/7/2019	287		41	274		41	0	0		561	0	
1/8/2019	284		38	332		38	0	0		616	0	
1/9/2019	271		40	334		40	0	0		605	0	
1/10/2019	247		37	294		37	0	0		541	0	
1/11/2019	256		36	280		36	0	0		536	0	
1/12/2019	320		35	305		34	0	0		625	0	
1/13/2019	301		32	404		33	0	0		705	0	
1/14/2019	252		39	365		39	0	0		617	0	
1/15/2019	213		38	315		39	0	0		528	0	
1/16/2019	210		38	326		38	0	0		536	0	
1/17/2019	193		35	277		36	0	0		470	0	
1/18/2019	259		36	302		36	0	0		561	0	
1/19/2019	300		35	295		35	0	0		595	0	
1/20/2019	623		20	399		19	0	0		1022	0	
1/21/2019	361		32	525		32	0	0		886	0	
1/22/2019	361		37	389		38	0	0		750	0	
1/23/2019	329		37	425		37	0	0		754	0	
1/24/2019	416		25	926		17	0	0		1342	0	
1/25/2019	378		22	822		21	0	0		1200	0	
1/26/2019	261		21	937		20	0	0		1198	0	
1/27/2019	698		22	500		19	0	0		1198	0	
1/28/2019	392		32	604		32	0	0		996	0	
1/29/2019	437		33	477		33	0	0		914	0	
1/30/2019	360		36	467		37	0	0		827	0	
1/31/2019	361		37	392		37	0	0		753	0	
2/1/2019	269		30	308		29	0	0		577	0	
2/2/2019	351		28	325		28	0	0		676	0	
2/3/2019	360		29	510		29	0	0		870	0	
2/4/2019	370		35	379		34	0	0		749	0	
2/5/2019	337		34	373		35	0	0		710	0	
2/6/2019	326		35	326		34	0	0		652	0	
2/7/2019	312		35	344		36	0	0		656	0	
2/8/2019	283		35	310		34	0	0		593	0	
2/9/2019	304		34	377		34	0	0		681	0	
2/10/2019	344		32	423		32	0	0		767	0	
2/11/2019	354		36	418		36	0	0		772	0	
2/12/2019	409		31	461		31	0	0		870	0	
2/13/2019	466		34	484		34	0	0		950	0	
2/14/2019	387		37	412		38	0	0		799	0	
2/15/2019	388		37	438		36	0	0		826	0	
2/16/2019	378		34	454		34	0	0		832	0	
2/17/2019	479		37	255		38	0	0		734	0	
2/18/2019	543		40	204		40	0	0		747	0	
2/19/2019	327		41	214		41	0	0		541	0	
2/20/2019	377		38	231		38	0	0		608	0	
2/21/2019	426		40	300		40	0	0		726	0	
2/22/2019	377		41	323		40	0	0		700	0	
2/23/2019	479		33	322		34	0	0		801	0	
2/24/2019	872		18	355		21	0	0		1227	0	
2/25/2019	581		32	438		31	0	0		1019	0	
2/26/2019	505		37	340		38	0	0		845	0	
2/27/2019	447		38	370		37	0	0		817	0	
2/28/2019	399		40	346		40	0	0		745	0	
3/1/2019	465		36	361		36	0	0		826	0	
3/2/2019	634		31	348		31	0	0		982	0	
3/3/2019	804		26	259		28	0	0		1063	0	
3/4/2019	1233		9	133		13	0	0		1366	0	
3/5/2019	839		29	227		29	0	0		1066	0	
3/6/2019	687		45	290		48	0	0		977	0	
3/7/2019	497		41	320		41	0	0		817	0	
3/8/2019	451		39	392		38	0	0		843	0	
3/9/2019	435		37	444		37	0	0		879	0	
3/10/2019	778		19	309		21	0	0		1087	0	
3/11/2019	753		26	325		25	0	0		1078	0	
3/12/2019	556		34	371		34	0	0		927	0	
3/13/2019	509		33	412		34	0	0		921	0	

3/14/2019	488	36	375	36	0	0	863	0
3/15/2019	514	33	381	32	0	0	895	0
3/16/2019	481	34	399	34	0	0	880	0
3/17/2019	583	30	307	31	0	0	890	0
3/18/2019	361	37	282	36	0	0	643	0
3/19/2019	310	37	267	37	0	0	577	0
3/20/2019	313	35	253	35	0	0	566	0
3/21/2019	378	37	292	37	0	0	670	0
3/22/2019	428	39	282	39	0	0	710	0
3/23/2019	373	40	291	40	0	0	664	0
3/24/2019	371	40	288	40	0	0	659	0
3/25/2019	352	40	194	40	0	0	546	0
3/26/2019	288	38	194	39	0	0	482	0
3/27/2019	265	37	211	36	0	0	476	0
3/28/2019	256	36	224	36	0	0	480	0
3/29/2019	296	38	267	38	0	0	563	0
3/30/2019	306	39	298	39	0	0	604	0
3/31/2019	334	35	342	36	0	0	676	0
4/1/2019	231	35	257	35	0	0	488	0
4/2/2019	215	33	214	32	0	0	429	0
4/3/2019	248	33	217	34	0	0	465	0
4/4/2019	220	33	202	32	0	0	422	0
4/5/2019	248	33	239	34	0	0	487	0
4/6/2019	310	40	295	39	0	0	605	0
4/7/2019	270	42	262	43	0	0	532	0
4/8/2019	269	41	145	41	0	0	414	0
4/9/2019	274	37	126	36	0	0	400	0
4/10/2019	289	36	136	37	0	0	425	0
4/11/2019	265	36	123	36	0	0	388	0
4/12/2019	308	37	131	38	0	0	439	0
4/13/2019	417	40	162	40	0	0	579	0
4/14/2019	423	39	155	39	0	0	578	0
4/15/2019	322	41	151	41	0	0	473	0
4/16/2019	246	36	135	36	0	0	381	0
4/17/2019	246	37	134	37	0	0	380	0
4/18/2019	294	38	138	38	0	0	432	0
4/19/2019	309	39	150	39	0	0	459	0
4/20/2019	488	38	162	39	0	0	650	0
4/21/2019	424	43	165	41	0	0	589	0
4/22/2019	349	37	156	37	0	0	505	0
4/23/2019	307	35	143	35	0	0	450	0
4/24/2019	291	35	136	35	0	0	427	0
4/25/2019	272	34	123	34	0	0	395	0
4/26/2019	348	34	154	35	0	0	502	0
4/27/2019	324	37	261	36	0	0	585	0
4/28/2019	361	34	270	34	0	0	631	0
4/29/2019	257	33	213	34	0	0	470	0
4/30/2019	251	34	201	33	0	0	452	0
5/1/2019	205	32	197	32	0	0	402	0
5/2/2019	219	27	191	28	0	0	410	0
5/3/2019	241	35	238	36	0	0	479	0
5/4/2019	353	33	265	33	0	0	618	0
5/5/2019	407	35	332	34	0	0	739	0
5/6/2019	284	36	264	37	0	0	548	0
5/7/2019	246	35	234	35	0	0	480	0
5/8/2019	246	34	214	34	0	0	460	0
5/9/2019	234	33	191	32	0	0	425	0
5/10/2019	266	34	227	35	0	0	493	0
5/11/2019	291	34	258	34	0	0	549	0
5/12/2019	334	35	326	35	0	0	660	0
5/13/2019	330	35	324	35	0	0	654	0
5/14/2019	302	38	290	38	0	0	592	0
5/15/2019	271	36	271	36	0	0	542	0
5/16/2019	264	38	269	37	0	0	533	0
5/17/2019	289	35	276	36	0	0	565	0
5/18/2019	345	38	293	37	0	0	638	0
5/19/2019	367	36	311	36	0	0	678	0
5/20/2019	265	36	269	38	0	0	534	0
5/21/2019	255	35	251	35	0	0	506	0
5/22/2019	231	34	219	35	0	0	450	0
5/23/2019	215	32	191	32	0	0	406	0
5/24/2019	267	36	241	35	0	0	508	0
5/25/2019	290	36	248	37	0	0	538	0
5/26/2019	353	35	252	34	0	0	605	0
5/27/2019	296	36	256	37	0	0	552	0
5/28/2019	309	33	232	32	0	0	541	0
5/29/2019	230	33	211	34	0	0	441	0
5/30/2019	225	30	191	30	0	0	416	0
5/31/2019	235	32	198	31	0	0	433	0

6/1/2019	265	33	228	34	0	0	493	0
6/2/2019	306	34	253	33	0	0	559	0
6/3/2019	220	31	204	32	0	0	424	0
6/4/2019	243	33	213	32	0	0	456	0
6/5/2019	217	31	213	32	0	0	430	0
6/6/2019	217	32	192	31	0	0	409	0
6/7/2019	229	32	209	32	0	0	438	0
6/8/2019	249	31	236	32	0	0	485	0
6/9/2019	323	34	253	34	0	0	576	0
6/10/2019	388	38	320	38	0	0	708	0
6/11/2019	272	35	259	36	0	0	531	0
6/12/2019	256	34	210	33	0	0	466	0
6/13/2019	282	35	242	35	0	0	524	0
6/14/2019	265	36	246	37	0	0	511	0
6/15/2019	285	34	237	34	0	0	522	0
6/16/2019	317	36	277	35	0	0	594	0
6/17/2019	261	34	237	34	0	0	498	0
6/18/2019	264	32	238	32	0	0	502	0
6/19/2019	268	34	223	35	0	0	491	0
6/20/2019	266	34	225	34	0	0	491	0
6/21/2019	326	36	263	36	0	0	589	0
6/22/2019	304	35	265	35	0	0	569	0
6/23/2019	354	34	280	34	0	0	634	0
6/24/2019	275	33	237	32	0	0	512	0
6/25/2019	313	33	266	34	0	0	579	0
6/26/2019	258	35	204	35	0	0	462	0
6/27/2019	269	35	225	35	0	0	494	0
6/28/2019	270	33	236	34	0	0	506	0
6/29/2019	296	34	254	33	0	0	550	0
6/30/2019	366	32	294	33	0	0	660	0
7/1/2019	342	31	258	30	0	0	600	0
7/2/2019	280	32	266	33	0	0	546	0
7/3/2019	288	32	253	32	0	0	541	0
7/4/2019	277	30	232	30	0	0	509	0
7/5/2019	376	32	253	31	0	0	629	0
7/6/2019	348	28	236	28	0	0	584	0
7/7/2019	375	29	284	29	0	0	659	0
7/8/2019	355	30	249	29	0	0	604	0
7/9/2019	292	29	219	29	0	0	511	0
7/10/2019	229	29	219	30	0	0	448	0
7/11/2019	274	27	223	27	0	0	497	0
7/12/2019	299	27	232	26	0	0	531	0
7/13/2019	367	24	236	24	0	0	603	0
7/14/2019	338	26	259	27	0	0	597	0
7/15/2019	314	28	213	27	0	0	527	0
7/16/2019	282	28	214	28	0	0	496	0
7/17/2019	276	30	235	31	0	0	511	0
7/18/2019	280	31	229	31	0	0	509	0
7/19/2019	286	30	229	30	0	0	515	0
7/20/2019	323	32	257	32	0	0	580	0
7/21/2019	367	29	251	29	0	0	618	0
7/22/2019	334	28	229	28	0	0	563	0
7/23/2019	310	30	237	30	0	0	547	0
7/24/2019	259	31	205	30	0	0	464	0
7/25/2019	237	28	211	29	0	0	448	0
7/26/2019	234	30	220	29	0	0	454	0
7/27/2019	280	31	252	31	0	0	532	0
7/28/2019	409	27	241	28	0	0	650	0
7/29/2019	392	26	247	25	0	0	639	0
7/30/2019	237	29	250	29	0	0	487	0
7/31/2019	322	25	224	26	0	0	546	0
8/1/2019	317	27	220	26	0	0	537	0
8/2/2019	349	25	248	27	0	0	597	0
8/3/2019	328	28	248	27	0	0	576	0
8/4/2019	355	29	282	29	0	0	637	0
8/5/2019	323	29	237	27	0	0	560	0
8/6/2019	275	27	214	27	0	0	489	0
8/7/2019	289	25	273	25	0	0	562	0
8/8/2019	267	28	218	28	0	0	485	0
8/9/2019	275	26	216	25	0	0	491	0
8/10/2019	297	28	259	28	0	0	556	0
8/11/2019	371	27	279	28	0	0	650	0
8/12/2019	329	26	232	26	0	0	561	0
8/13/2019	360	24	318	25	0	0	678	0
8/14/2019	277	28	223	27	0	0	500	0
8/15/2019	249	27	222	28	0	0	471	0
8/16/2019	261	27	230	27	0	0	491	0
8/17/2019	307	25	258	25	0	0	565	0
8/18/2019	318	28	278	27	0	0	596	0

8/19/2019	289	26	275	27	0	0	564	0
8/20/2019	236	24	228	24	0	0	464	0
8/21/2019	257	27	227	27	0	0	484	0
8/22/2019	274	28	221	27	0	0	495	0
8/23/2019	341	25	207	26	0	0	548	0
8/24/2019	351	28	253	28	0	0	604	0
8/25/2019	412	27	242	27	0	0	654	0
8/26/2019	311	26	219	26	0	0	530	0
8/27/2019	285	26	215	25	0	0	500	0
8/28/2019	303	25	213	26	0	0	516	0
8/29/2019	250	25	205	25	0	0	455	0
8/30/2019	283	28	218	28	0	0	501	0
8/31/2019	339	28	232	28	0	0	571	0
9/1/2019	393	28	276	28	0	0	669	0
9/2/2019	385	28	295	28	0	0	680	0
9/3/2019	307	31	242	30	0	0	549	0
9/4/2019	260	27	212	27	0	0	472	0
9/5/2019	270	26	208	26	0	0	478	0
9/6/2019	306	31	253	31	0	0	559	0
9/7/2019	330	29	254	29	0	0	584	0
9/8/2019	397	27	269	27	0	0	666	0
9/9/2019	298	27	248	28	0	0	546	0
9/10/2019	254	27	211	26	0	0	465	0
9/11/2019	253	26	222	27	0	0	475	0
9/12/2019	239	25	205	25	0	0	444	0
9/13/2019	240	27	234	26	0	0	474	0
9/14/2019	361	27	246	27	0	0	607	0
9/15/2019	333	29	259	30	0	0	592	0
9/16/2019	259	28	255	27	0	0	514	0
9/17/2019	264	27	228	27	0	0	492	0
9/18/2019	248	26	207	27	0	0	455	0
9/19/2019	248	27	215	27	0	0	463	0
9/20/2019	290	29	210	28	0	0	500	0
9/21/2019	251	31	267	31	0	0	518	0
9/22/2019	371	33	200	34	0	0	571	0
9/23/2019	231	35	180	35	0	0	411	0
9/24/2019	175	32	179	32	0	0	354	0
9/25/2019	154	30	207	29	0	0	361	0
9/26/2019	177	29	225	30	0	0	402	0
9/27/2019	134	24	159	24	0	0	293	0
9/28/2019	219	33	250	32	0	0	469	0
9/29/2019	280	33	332	32	0	0	612	0
9/30/2019	268	28	237	29	0	0	505	0
10/1/2019	261	30	224	29	0	0	485	0
10/2/2019	306	27	189	27	0	0	495	0
10/3/2019	454	23	166	24	0	0	620	0
10/4/2019	300	29	211	28	0	0	511	0
10/5/2019	380	28	239	29	0	0	619	0
10/6/2019	387	28	269	28	0	0	656	0
10/7/2019	318	27	207	27	0	0	525	0
10/8/2019	304	27	211	28	0	0	515	0
10/9/2019	216	30	222	29	0	0	438	0
10/10/2019	249	27	196	27	0	0	445	0
10/11/2019	288	28	233	29	0	0	521	0
10/12/2019	265	31	278	31	0	0	543	0
10/13/2019	271	32	323	31	0	0	594	0
10/14/2019	322	26	215	27	0	0	537	0
10/15/2019	260	28	208	27	0	0	468	0
10/16/2019	317	27	264	27	0	0	581	0
10/17/2019	272	28	210	28	0	0	482	0
10/18/2019	261	26	204	27	0	0	465	0
10/19/2019	388	29	241	28	0	0	629	0
10/20/2019	709	18	237	20	0	0	946	0
10/21/2019	416	30	254	31	0	0	670	0
10/22/2019	304	28	204	28	0	0	508	0
10/23/2019	306	27	196	27	0	0	502	0
10/24/2019	262	26	180	26	0	0	442	0
10/25/2019	287	28	184	27	0	0	471	0
10/26/2019	364	29	233	29	0	0	597	0
10/27/2019	463	26	233	26	0	0	696	0
10/28/2019	264	29	219	29	0	0	483	0
10/29/2019	287	28	207	28	0	0	494	0
10/30/2019	252	26	194	27	0	0	446	0
10/31/2019	257	28	185	27	0	0	442	0
11/1/2019	314	30	212	31	0	0	526	0
11/2/2019	371	28	203	27	0	0	574	0
11/3/2019	478	28	257	29	0	0	735	0
11/4/2019	324	29	189	27	0	0	513	0
11/5/2019	282	28	192	28	0	0	474	0

11/6/2019	254	27	166	27	0	0	420	0
11/7/2019	248	29	175	29	0	0	423	0
11/8/2019	294	29	194	30	0	0	488	0
11/9/2019	354	28	216	28	0	0	570	0
11/10/2019	463	29	178	28	0	0	641	0
11/11/2019	407	26	185	27	0	0	592	0
11/12/2019	349	26	176	26	0	0	525	0
11/13/2019	286	27	164	27	0	0	450	0
11/14/2019	285	27	154	26	0	0	439	0
11/15/2019	292	29	183	30	0	0	475	0
11/16/2019	356	31	155	31	0	0	511	0
11/17/2019	489	29	165	29	0	0	654	0
11/18/2019	333	31	154	30	0	0	487	0
11/19/2019	303	31	171	32	0	0	474	0
11/20/2019	267	30	159	29	0	0	426	0
11/21/2019	271	29	144	29	0	0	415	0
11/22/2019	340	32	173	32	0	0	513	0
11/23/2019	337	29	201	30	0	0	538	0
11/24/2019	439	34	217	33	0	0	656	0
11/25/2019	289	29	216	29	0	0	505	0
11/26/2019	249	28	187	28	0	0	436	0
11/27/2019	255	28	182	29	0	0	437	0
11/28/2019	263	29	139	28	0	0	402	0
11/29/2019	277	29	135	30	0	0	412	0
11/30/2019	333	33	162	32	0	0	495	0
12/1/2019	514	28	162	29	0	0	676	0
12/2/2019	322	32	166	32	0	0	488	0
12/3/2019	283	31	139	30	0	0	422	0
12/4/2019	274	30	133	30	0	0	407	0
12/5/2019	263	31	143	32	0	0	406	0
12/6/2019	269	30	166	29	0	0	435	0
12/7/2019	332	30	243	30	0	0	575	0
12/8/2019	393	29	231	29	0	0	624	0
12/9/2019	369	32	239	32	0	0	608	0
12/10/2019	316	31	202	31	0	0	518	0
12/11/2019	355	34	226	33	0	0	581	0
12/12/2019	256	29	230	33	0	0	486	0
12/13/2019	322	29	224	29	0	0	546	0
12/14/2019	522	34	293	33	0	0	815	0
12/15/2019	420	30	276	31	0	0	696	0
12/16/2019	368	31	228	31	0	0	596	0
12/17/2019	326	30	233	31	0	0	559	0
12/18/2019	284	32	210	31	0	0	494	0
12/19/2019	271	29	194	30	0	0	465	0
12/20/2019	310	32	218	31	0	0	528	0
12/21/2019	313	31	210	31	0	0	523	0
12/22/2019	447	28	206	28	0	0	653	0
12/23/2019	328	30	212	30	0	0	540	0
12/24/2019	309	30	168	31	0	0	477	0
12/25/2019	272	31	131	31	0	0	403	0
12/26/2019	324	32	132	31	0	0	456	0
12/27/2019	305	31	151	32	0	0	456	0
12/28/2019	316	31	161	31	0	0	477	0
12/29/2019	411	33	186	32	0	0	597	0
12/30/2019	389	33	226	34	0	0	615	0
12/31/2019	355	33	183	32	0	0	538	0