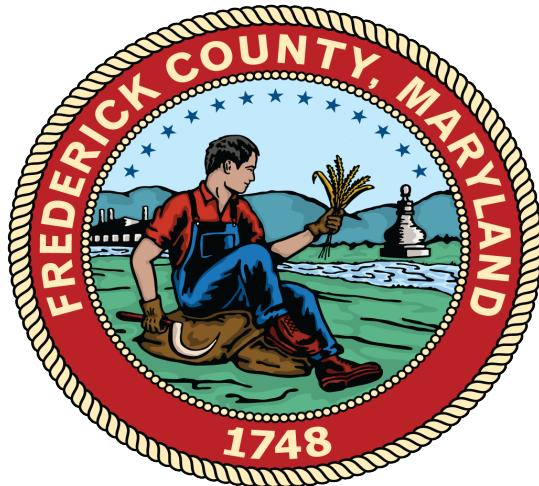


DIVISION OF WATER AND SEWER UTILITIES
FREDERICK COUNTY, MARYLAND

Department of Engineering and Planning
4520 Metropolitan Court • Frederick Maryland 21704
(301) 600-2078 • FAX (301) 600-2349 • TTY Use Maryland Relay
www.FrederickCountyMD.gov



GRINDER PUMP CONTRACT PACKAGE

February 2020

TABLE OF CONTENTS

Introduction.....	3
Checklist for Grinder Pump Contracts.....	5
Grinder Pump Specifications.....	6
Standard Grinder Pump Details:	
Grinder Pump	40
Grinder Pump Electrical Service.....	41
Low Pressure Sewer Service Connection.....	42
E-One Grinder Pumper User Instructions.....	43
Documents.....	44
Deed of Easement	
Routing Sheet	
Letter of Credit (Sample)	
Public Works Agreement	
Proposal and Contract Package containing the following documents:	
Proposal and Proposal Form	
Contract	
Affidavit of Qualification to Bid	
Labor and Material Payment Bond	
Performance Bond	

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December 2017

INTRODUCTION

GRINDER PUMP CONTRACT PROCEDURE

Background

In order for you to receive sanitary sewer service it has been deemed necessary for your home to be served by a low pressure sewer system. The procedures set forth herein explain the process for installation of a County-owned and maintained residential grinder pump unit. All grinder pumps are to be installed outside of the house in accordance with your approved plan and the latest Frederick County Standard Construction Specifications and Details. Wastewater from the building shall flow by gravity to a grinder pump (GP) unit and then pumped to a gravity or pressure sewer main. The pump is equipped with a “grinder” that shreds solids into a slurry that can be pumped substantial distances in a small diameter pipe. The GP control panel has a light and an audible alarm to alert homeowners in the event of pump unit failure. A copy of the *User Instructions* has been included for additional information and a copy should be provided to the building owner and/or end user. In the event of a GP unit failure, please contact the Frederick County Division of Water and Sewer Utilities (DWSU), Department of Water and Wastewater Maintenance, 24-hour emergency number (301) 600-2194 to have a repair technician dispatched.

General Information

A building permit will be placed on hold by the Division of Water and Sewer Utilities (DWSU) if a grinder pump has been deemed necessary for acceptable sewer service. Once the GP contract package has been completed and approved, the applicant can proceed with the building permit process. The required items are outlined on a checklist along with detailed information pertaining to each item. Additional questions or concerns should be directed to Frederick County’s Division of Water and Sewer Utilities, Department of Engineering and Planning at (301) 600-2078 or Office of Accounting and Finance Support at (301) 600-2904, according to the *Comments* column on the Checklist (see Page 5 herein). The applicant should submit the documents, completed as instructed, along with all other necessary documentation to the departments as listed on the Checklist. The DWSU office is located at 4520 Metropolitan Court, Frederick, MD 21704.

- ✓ The Owner/Developer must enter into a Public Works Agreement (PWA) for the grinder pump and public lateral installation. The purpose of this agreement is to define Developer/County responsibilities relative to the grinder pump installation, maintenance, and operation.
- ✓ Applicants are required to have a Proposal Form and Contract completed by a Contractor. Please Note: A Contract for the installation of a grinder pump and lateral that is \$10,000 or less **AND** does not involve sewer mainline extension work will not require performance and payment bonds. If the Contract price is greater than \$10,000, bonding must be provided.
- ✓ Applicants with Design/Improvement Plans which include a sewer mainline extension have the option to use a standard sanitary sewer and water main Public Works Agreement (PWA) **or** a Public Improvements Agreement (PIA) for the sewer mainline extension work ONLY. If a PIA is used for that work, further discussion as to these requirements should be pursued with the Department of Engineering and Planning Construction Manager.
- ✓ An easement is necessary for the County to gain access to the grinder pump system when maintenance is required. A Design Plan or Improvement Plans showing the details for the grinder pump, all appurtenances and the easement area in which they will be situated shall be submitted for review. The easement must be contiguous from the property line to the building. Where the easement “touches” the building, there must be enough clear wall space, free of shrubbery or other obstructions, to mount the control/alarm panel. Easements shall have a minimum width of 15 feet and be contiguous to or accessible from the paved street and the easement description must be prepared by a licensed Maryland surveyor. After DWSU approves the Plan(s), the easement documents can be prepared and submitted. The Deed of Easement must be prepared according to and accompanied by an Attorney Opinion Letter, less than 30 days old, based upon a full title search, issued by an attorney licensed to practice law in Maryland, stating:
 - a. in whom title is vested, including Liber/folio reference to the deed and identity of prior grantors;
 - b. all existing liens on the property, including the identity of each lienholder (and Trustees if available) and the Liber/folio reference to the recorded security interest document; and
 - c. the identity of any contract purchasers, or confirmation of the lack thereof, and the source of that information.

All deeds must be executed by every person or entity having an interest in the property, including but not limited to: all co-owners, all lenders holding deeds of trust or mortgage, and all contract purchasers. The Attorney Opinion Letter and executed Deed of Easement with attached original easement description should be submitted with a Deed of Easement Routing Sheet.

- ✓ A guarantee in the form of an irrevocable Letter of Credit or cash escrow is required for 115% of the total base bid amount in the above-referenced Proposal. A completed, signed W-9 must be provided with the check if a cash escrow is used.
- ✓ There is a fee in the amount of \$250 to review the GP design for adequacy. There is an additional fee of \$600 for GP sewer inspection services during construction. These fees should be submitted as one check in the amount of \$850, made payable to Treasurer of Frederick County. (Revised 8/4/22)

The DWSU will not approve its portion of the building permit until all steps required herein have been successfully completed, all DWSU review comments are addressed and sewer capacity fees are paid.

Samples of the aforementioned documents are at the end of this package. Forms for your use are on the DWSU Engineering & Planning website in the *Forms and Reference Documents* section. These are standard forms approved by the County. Language and formatting should not be changed.

CHECKLIST FOR GRINDER PUMP CONTRACTS

Documents and Items to be provided by the Owner/Developer/Builder for Approval by the County *Prior to the Release of a Building Permit*.

(Submit Design Plan first. Upon approval of the Design Plan, complete the remaining items on this checklist and submit all required documentation to staff as indicated below.)

"X"	<u>DOCUMENT</u>	<u>COMMENTS</u>
	Design Plan	Plot plan to scale showing location of house, driveway, GP unit, control panel, lateral, invert elevations, and easement limits. <u>Submit to:</u> Plan Reviewer, Engineering & Planning Dept.
	Design Review and GP Sewer Inspection Fees	\$850 Design Review & Inspection Fees, check payable to the <i>Treasurer of Frederick County</i> . <u>Submit to:</u> Team Leader, Office of Accounting & Finance
	Completed Contract & Proposal Forms (herewith)	Two Originals to be completed by Contractor <u>Submit to:</u> Construction Manager, Engineering & Planning Dept.
	Developer Executed Public Works Agreement (PWA)	Complete the document (except for date) and sign. DO NOT RETYPE DOCUMENT. <u>Submit to:</u> Team Leader, Office of Accounting & Finance
	Letter of Credit or Cash Guarantee with W-9	Guarantees must be for 115% of total base bid price. Cash guarantees require a completed W-9 from the provider. <u>Submit to:</u> Team Leader, Office of Accounting & Finance
	Deed of Easement Package	1. Completed Routing Sheet 2. Attorney Opinion Letter 3. Executed Deed of Easement, including easement description signed and sealed by a MD licensed Professional Land Surveyor. <u>Submit to:</u> Admin Specialist, Engineering & Planning Dept.
	Payment of Capacity Fees (Tap Fee)	Prevailing Fee for Water and/or Sewer capacity must be paid <u>before</u> the release of a building permit. The total fee amount is determined as part of the building permit review process. Once determined, they can be paid at the Treasurer's Office at 30 N. Market Street or DWSU at 4520 Metropolitan Court.

GRINDER PUMP SPECIFICATIONS

**DIVISION OF WATER AND SEWER UTILITIES
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GRINDER PUMP POLICY No 001
Location Near Existing or Proposed Wells

Please be advised of the following constraints when locating grinder pumps near existing or proposed wells (Jefferson Court, Knoxville/New Addition-certain instances, Buckingham Hills).

1. The grinder pump “station” **CANNOT** be closer than 75 feet to an existing or proposed well.
2. The small diameter pressure sewer **CANNOT** be closer than 10 feet to an existing or proposed well.
3. The gravity sewer from the dwelling must be watertight, e.g., solvent-weld PVC, “neoprene” gasketed DIP/CIP, etc., and **NOT** be closer than 10 feet to an existing or proposed well. Any other pipe material allowed by the Plumbing Code **CANNOT** be within 50 feet of an existing or proposed well, unless it is concrete encased or placed within welded steel pipe for a distance of 100 feet (50 feet to either side of the well).
4. If the property is a lot of record that predates current well and septic regulations, e.g. Knoxville/New Addition, and the geometry or lot size is such that compliance with the aforesaid items is very difficult (likely due to the location of the pump), contact Frederick County Environmental Health, for their consideration, on a case-by-case-basis.

GRINDER PUMP SPECIAL PROVISIONS

SCOPE

The Special Provisions detailed below are meant to augment and/or amend the “General Conditions and Standard Specifications for Water Mains, Sanitary Sewers and Related Structures,” Frederick County Division of Utilities and Solid Waste Management, Frederick, Maryland, revised and approved November 6, 2014, “Standard Details for Water Mains, Sanitary Sewers and Related Structures”, Frederick County Division of Utilities and Solid Waste Management, Frederick, Maryland, revised and approved 2013, and any additions or revisions thereto.

Other references in this contract may also mean the following and are hereby made a part of these specifications:

1. Maryland Department of Transportation, State Highway Administration (MDSHA), “Standard Specifications for Construction and Materials”, dated July 2008, with the latest incorporated revisions.
2. The official Book of Standards for Highway and Incidental Structures, edited by the Maryland Department of Transportation, State Highway Administration (MDSHA), with the latest incorporated revisions.

In case of conflict between the STANDARD SPECIFICATIONS or STANDARD DETAILS and this contract specification, this contract specification shall govern.

DIFFERING SITE CONDITIONS

It is expressly understood and agreed that the Owner assumes no responsibility whatsoever in respect to the sufficiency or of the interpretations set forth therein. There is no guarantee, either expressed or implied, that the site conditions indicated or described are representative of those conditions existing throughout such areas, or any part thereof, or that unlooked for developments may not occur, or that materials other than, or in proportions different from those indicated, may not be encountered.

OWNER'S INTENT

Contractor agrees that the description of the work to be performed is sufficient and understands that the work must be completed in its entirety so that it is fully ready to perform its intended function and produce its intended results. Contractor agrees that everything necessary to accomplish this is included in the contract, unless explicitly excluded on the contract documents.

GENERAL NOTES

- A. All elevations refer to datum shown with bench marks.
- B. Existing utilities are shown from the best available information. The Contractor shall field verify all utility locations and elevations to his own satisfaction prior to any construction at no additional cost. The Contractor shall take all necessary precautions to protect and maintain services.

- C. Trade Permits: Contractor shall be responsible for providing trade permits for all work associated with this contract.
- D. The Owner/Developer shall ensure that the rough grading is within $\frac{1}{2}$ -foot of finished subgrade prior to start of trench excavation for sewer and water lines, per Section 1000 - Summary of Work, Part I: General, Paragraph G. Contractor Responsibilities.

CONTINGENT ITEMS

Contingent Items on the Bid Forms in the Proposal are in addition to that shown on the Contract Drawings, and are to be used and paid for only at the written direction and authorization of the Engineer. Payment for these items shall be made for the materials furnished and placed, in addition to those shown, or beyond the limits indicated in the Contract Documents. The County reserves the right to unlimited increase or decrease of the estimated quantities shown in the Bid Forms, without additional Unit Price increase for the duration of the Contract.

The Contingent Items are defined as follows:

ITEM C-1: HOT MIX ASPHALT PATCH (HMA), FULL DEPTH (COMPLETE)

This item is intended for full depth HMA repair associated with pavement openings related to utility trenches, and shall be provided in accordance with Frederick County Standard Specification, Section 2610 – Roadway Pavement and to the extent as shown on jurisdictional standard details.

Measurement under this item will be made on the basis of the actual in-place quantity of material, satisfactorily furnished and placed, as specified by the Engineer.

Payment will be made at the fixed unit price per square yard.

ITEM C-2: EXCAVATION AND GRANULAR BACKFILL BELOW SUBGRADE (COMPLETE)

This item of work shall consist of Unclassified Excavation and Refill No. 57 Crushed Aggregate, as described by the Frederick County Standard Specification, Section 2200.

Measurement under this item will be made on the basis of actual in-place cubic yards satisfactorily furnished and placed, as directed by the Engineer. Payment will be made by the cubic yard placed.

ITEM C-3: TEST PIT (COMPLETE)

This item of work shall consist of test pit excavation and backfill, whether mechanically dug or hand dug, and backfilling, as described in MD SHA Standard Specifications, Section 205 and in accordance with the written direction of the Engineer. Work does not include test pits associated with locating any existing utilities shown on the drawings.

Measurement for test pits will be made on the basis of actual volume of material excavated, in cubic yards as directed by the Engineer.

Payment will be made per cubic yard.

ITEM C-4: CAST-IN-PLACE CONCRETE, MIX NO. 2 CONCRETE as described in the Frederick County Standard Specification, Section 3300—Cast-In-Place Concrete, Table 3300-2.

REMOVE from Section 3300—Cast-In-Place Concrete, subsection IV. Measure and Payment and *REPLACE* it with the following:

Payment will be made at the unit price bid per cubic yard for the actual concrete placed, as directed by the Engineer and shall include all excavation, furnishing and placing, complete, as specified in Section 3300—Cast-In-Place Concrete, of the Frederick County Standard Specifications.

EXISTING UTILITIES

The Contractor's attention is directed to Standard Specifications Section 01010 -SITE CONDITIONS. The existence of utilities other than shown on the Contract Drawings is unknown.

The location of known existing utilities based on field surveys and utility company records are shown on the Contract Drawings. The Contractor shall locate, by test pit, at no additional expense to the owner, all utilities before excavating in the area where they are shown. The Contractor shall take all necessary precautions to protect and maintain existing utility customer services. Test pitting of all utilities that are identified on the Contract Drawings shall not be measured and paid for separately. The cost of test pits shall be included in the bid prices for the various bid items included in the Contract.

The Contractor shall call "MISS UTILITY" 1-800-257-7777 seventy-two (72) hours prior to the start of the work.

Should the Contractor in the course of his operations encounter any underground utilities, the presence of which was not previously known, he shall immediately notify the Engineer, and take all necessary precautions to protect the utilities and maintain continuance of service until said utilities can be relocated by their Owners, if necessary.

Should any existing utilities be damaged due to the operations of the Contractor, the Owner shall be immediately notified and the Contractor shall repair or replace the damaged or destroyed components, as necessary to restore the utility to satisfactory operating condition, entirely at the Contractor's expense.

No measurement or direct payment will be made to the Contractor for working around or protecting the utilities within the Contract limits. This includes the work interruptions, special scheduling, staged construction or any effort required by the presence of utilities. It is a requirement that the Contractor cooperate with the Owners of the utilities and/or other Contractors.

All costs incurred shall be included and considered incidental to the pay items set up in the proposal.

PERMITS

Permits are the responsibility of the Contractor and shall be done at no cost to the County. Copies of these permits are to be kept on the site and posted at all times.

SEDIMENT AND EROSION CONTROL

The Contractor shall be responsible for providing temporary erosion and sediment control measures throughout the life of this Contract and in accordance with most recent Maryland standards and specifications for soil erosion and sediment control, County Specifications, these Contract plans and specifications, and as directed by the Engineer.

The Contractor shall observe and execute the requirements and procedures defined by the County Minor Grading permit. All costs necessary to install, maintain, replace, restore, etc., shall be considered incidental to the Contract.

MARYLAND DEPARTMENT OF LABOR AND INDUSTRY -SAFETY REQUIREMENTS GENERAL ORDER – CONSTRUCTION

Under provisions contained in the Maryland Occupational Safety Law, Article 89, Sections 28-48, Annotated Code of Maryland, 1957b Edition, the employer shall furnish and maintain employment and a place of employment which shall be reasonably safe for employees. To this end, the Department of Labor and Industry has adopted the American standard Safety Code for Building Construction, AI0.2-1944 which contains minimum standards having a full force and effect of law, and provides for criminal penalties, fines and imprisonment for failure to comply. These standards must be observed and maintained throughout the entire construction project. This General Order shall remain effective as construction progresses and until such time as this project is completed.

CONTRACT COMPLETION DATE

All work under this contract shall be completed within the number of calendar days specified in the Contract following the date of Notice to Proceed. Liquidated damages will be assessed in accordance with the Contract for each calendar day that the contractor is late in completing the work.

LIABILITY INSURANCE

The Contractor's attention is directed to Article 6.03 of the Supplemental Conditions EJCDC 800.

ACCESS

The Contractor shall provide access to the project to the designated representatives, the Engineer, Frederick County and the State of Maryland.

CONTRACT DOCUMENTS

The Standard Specifications, Standard Details, Proposal (or Bid), Contract, Special Provisions, drawings, plans, addenda, referenced specification of AWWA (and others) form a part of this Contract, and may be referred to collectively as the Contract Documents.

FAMILIARITY WITH PROPOSED WORK

Bidders are required to examine carefully the Contract Documents and advised to make a personal examination of the location and nature of the proposed work. In case doubt shall arise as to the meaning or intent of anything shown or composed in the Contract Documents, inquiry should be made of the Engineer before the proposal is submitted. The submission of a proposal shall be *prima facie* evidence that the bidder thoroughly understands the terms of the specifications. Bidders are assumed to have made themselves familiar with all federal, state and local laws, ordinances and regulations which in any manner affect the work or its prosecution.

CONNECTION TO EXISTING UTILITIES

The cost of making the connection and the necessary alterations to the existing Water Mains and Sanitary Sewers shall be included in the Unit Price Bid thereof unless a specific pay item is shown in the Proposal to cover a specific phase of work.

CONSTRUCTION SEQUENCE FOR SMALL DIAMETER PRESSURE SEWER SYSTEMS

The following construction sequence must be followed and will be strictly enforced:

1. Install all sediment control practices. Complete all excavating and grading. Certify that final grading work is within 6 inches of final grade.
2. All pressure sewer laterals and sewer house connections (SHCs) past the valve assemblies must be completely installed and pass testing before work can begin on installing the grinder pumps.
3. All electrical work required to provide service to the grinder pump control box must be completed and pass inspection before work can begin on the installation of the grinder pump. If applicable, this work can coincide with the construction of the pressure sewer.
4. Installation of all remaining SHC laterals, and the grinder pump units, including final electrical work, may proceed once the above is complete. If applicable, existing SHCs are not to be disconnected until the grinder pump is installed and passes all testing.
5. All other work required to fulfill the requirements of this Contract

END OF SECTION

SECTION 1000 **SUMMARY OF WORK**

In Part *I. General*, paragraph *A. Description*, the following sub-paragraphs are **ADDED**:

2. The work to be performed under this Contract consists of furnishing all materials, labor, equipment, tools and incidentals for the installation of the grinder pump(s) (complete), control panel(s), piping, valves, detectable tape/tracer wire, any taping, etc. and all appurtenances thereof as shown in the Contract Documents, specified herein, or as directed by the Engineer.
3. The Contract Documents are intended to cover the complete project, including the testing of the pipelines and appurtenances. It should be distinctly understood that failure to mention specifically any work which would naturally be required to complete the project shall not relieve the Contractor of his responsibility to perform such work.
4. Drawings or plans may accompany these specifications, and show the extent of the work to be done under this Contract. Otherwise, work shall be limited to the locations shown on the executed easement documents and subject to the approval of the Engineer.

END OF SECTION

SECTION 1800
TEMPORARY FACILITIES AND ENVIRONMENTAL PROTECTION

In Part *I. General*, paragraph *C. Temporary Utilities*, is **CHANGED** to:

The requirement for an Engineer's Office for this contract is waived.

END OF SECTION

SECTION 2200 EARTHWORK

Attention is directed to Section 2200 of Frederick County's most recent version of the "General Conditions and Standard Specifications for Water Mains, Sanitary Sewers and Related Structures", and the "Standard Details for Water Mains, Sanitary Sewers and Related Structures", for information essential to excavation and backfill activities. Section 2200 shall be adhered to unless otherwise directed herein.

In Part *III. Execution*, paragraph *B. Excavation*, sub-paragraph *1. General*, *a.* is REVISED to:

- a. All materials excavated shall be unclassified. No additional compensation will be made for Rock Excavation. Excavation shall be carried out to the lines and grade indicated on the plans or cut sheets.

END OF SECTION

SECTION 2570
SANITARY SEWER SYSTEM

Attention is directed to the Section 2570 of Frederick County's most recent version of the "General Conditions and Standard Specifications for Water Mains, Sanitary Sewers and Related Structures", and the "Standard Details for Water Mains, Sanitary Sewers and Related Structures", for information essential to sanitary sewer systems (including sewer pipe) activities. Section 2570 shall be adhered to unless otherwise directed herein.

END OF SECTION

The following section is ADDED:

SECTION 2573
SMALL DIAMETER PRESSURE SANITARY SEWER SYSTEM

I. General

A. Description

This section includes requirements to provide a small diameter low pressure sanitary sewer system complete in place and in accordance with the Contract Documents.

II. Materials and Equipment

All materials shall be as specified in the most current version of the Frederick County General Conditions and Standard Specifications unless otherwise specified in these SPECIAL PROVISIONS for Grinder Pumps.

A. Grinder Pump

1. The grinder pump station shall be Environment One Corporation, D-Series or equal.

All materials exposed to wastewater shall have inherent corrosion protection, i.e. cast iron, fiberglass, stainless steel, PVC. Any exterior steel surfaces are to be suitably protected against corrosion.

2. The Contractor shall furnish and install a factory-built and tested simplex Wetwell/Drywell Grinder Pump Station(s), each consisting of grinder pump suitably mounted in a basin constructed of high density polyethylene (HDPE) with dimensions and capacities are show on the Contract Drawings, NEMA 6P electrical quick disconnect (EQD), pump removal system stainless steel discharge assembly/shut-off valve, anti-siphon valve, check valve, all assembled in a basin, electrical alarm panel and all necessary internal wiring and controls. Component type grinder pump systems that require field assembly will not be acceptable due to the potential problems that can occur during field assembly. All components and materials shall be in accordance with this Product Specification. For ease of serviceability, all pump, motor/grinder units shall be of the like type and horsepower throughout the system.

3. Manufacturer

- a. The grinder pump station shall be "Extreme Series" as manufactured by Environment One Corporation, Schenectady, NY, Model DH071 (or current model equivalent) with a tank capacity of 70 gallons for homes with no more than 3-1/2 baths or the Model DH151 with a tank capacity of 150 gallons for homes with more than 3-1/2 baths.

- b. Attention is directed to the fact that these specifications are intended to provide guidelines for a standard equipment of a recognized manufacturer who already meets all the requirements of this specification.

4. Experience Clause

- a. The Contractor shall submit, as part of the bid schedule, an installation list with contact person, phone number, and dates of at least 10 installations of the type of pump specified herein that have been in operation for 5 years.

5. Operating Conditions

- a. The pumps shall be capable of delivering 15 GPM against a rated total dynamic head of 0 feet (0 psig), 11 gpm against a rated total dynamic head of 92 (40 psig), and 7.8 gpm against a rated total dynamic head of 185 feet (80 psig). The pump(s) must also be capable of operating at negative total dynamic head without overloading the motor(s). Under no conditions shall in-line piping or valving be allowed to create a false apparent head.

6. Warranty

- a. The grinder pump manufacturer shall provide a part(s) and labor warranty on the complete station and accessories, including, but not limited to, the panel for a period of 24 months after notice of the Owner's acceptance, but no greater than 27 months after receipt of shipment. Any manufacturing defects found during the warranty period will be reported to the manufacturer by the Owner and will be corrected by the manufacturer at no cost to the Owner.

7. Product

a. Pump

- (1) The pump shall be a custom designed, integral, vertical rotor, motor driven, solids handling pump of the progressing cavity type with a single mechanism seal. Double radial O-ring seals are required at all casting joints to minimize corrosion and create a protective barrier. All pump castings shall be cast iron, fully epoxy coated to 8-10 mil Nominal dry thickness, wet applied. The rotor shall be through-hardened, highly polished, precipitation hardened stainless steel. The stator shall be of a specifically compounded ethylene propylene synthetic elastomer. This material shall be suitable for domestic wastewater service. Its physical properties shall include high tear and abrasion resistance, grease resistance, water and detergent resistance, temperature stability, excellent aging properties, and outstanding wear resistance. Buna-N is not acceptable as a stator material because it does not exhibit the properties as outlined above and required for wastewater service.

b. Grinder

- (1) The grinder shall be placed immediately below the pumping elements and shall be direct-driven by a single, one-piece motor shaft. The grinder impeller (cutter wheel) assembly shall be securely fastened to the pump motor shaft by means of a threaded connection attaching the grinder impeller to the motor shaft. Attachment by means of pins or keys will not be acceptable. The grinder impeller shall be a one-piece, 4140 alloy steel cutter wheel of rotating type with inductively hardened cutter teeth. The cutter teeth shall be inductively hardened to Rockwell 50-60c for abrasion resistance. The shredder ring shall be of the stationary type and the material shall be white cast iron. The teeth shall be ground into the material to achieve effective grinding. The shredder ring shall have a staggered tooth pattern with only one edge engaged at a time, maximizing the cutting torque. These materials have been chosen for their capacity to perform in the intended environment as they are materials with wear and corrosive resistant properties.
- (2) This assembly shall be dynamically balanced and operate without objectionable noise or vibration over the entire range of recommended operating pressures. The grinder shall be constructed so as to minimize clogging and jamming under all normal operating conditions including starting. Sufficient vortex action shall be created to scour the tank free of deposits or sludge banks which would impair the operation of the pump. These requirements shall be accomplished by the following, in conjunction with the pump:
 - i. The grinder shall be positioned in such a way that solids are fed in an upward flow direction.
 - ii. The maximum flow rate through the cutting mechanism must not exceed 4 feet per second. This is a critical design element to minimize jamming and as such must be adhered to.
 - iii. The inlet shroud shall have a diameter of no less than 5 inches. Inlet shrouds that are less than 5 inches in diameter will not be accepted due to their inability to maintain the specified 4 feet per second maximum inlet velocity which by design prevents unnecessary jamming of the cutter mechanism and minimizes blinding of the pump by large objects that block the inlet shroud.
 - iv. The impeller mechanism must rotate at a nominal speed of no greater than 1800 rpm.
- (3) The grinder shall be capable of reducing all components in normal domestic sewage, including a reasonable amount of "foreign objects," such as paper, wood, plastic, glass, wipes, rubber and the like, to finely-divided particles which will pass freely through the passages of the pump and the 1-1/4" diameter stainless steel discharge piping.

c. Electric Motor

(1) Non-capacitor start motors or permanent split capacitor motors will not be accepted because of their reduced starting torque and consequent diminished grinding capability. The wet portion of the motor armature must be 300 Series stainless. To reduce the potential of environmental concerns, the expense of handling and disposing of oil, and the associated maintenance costs, oil-filled motors will not be accepted.

d. Mechanical Seal

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

e. Tank and Integral Accessway: High Density Polyethylene Construction

(1) The tank shall be a Wetwell/Drywell design made of high density polyethylene, with a grade selected to provide the necessary environmental stress cracking resistance. Corrugated sections are to be made of a double wall construction with the internal wall being generally smooth to promote scouring. The corrugations of the outside wall are to be a minimum amplitude of 1-1/2" to provide necessary transverse stiffness. Any incidental sections of a single wall construction are to be 0.250" thick (minimum). All seams created during tank construction are to be thermally welded and factory tested for leak tightness. The tank wall and bottom must withstand the pressure exerted by saturated soil loading at maximum burial depth. All station components must function normally when exposed to 150 percent of the maximum external soil and hydrostatic pressure.

(2) The tank shall be furnished with one EPDM grommet fitting to accept a 4.50" OD DWV or Schedule 40 pipe.

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

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

- (5) All discharge piping shall be constructed of 304 stainless steel. The discharge shall terminate outside the accessway bulkhead with a stainless steel, 1-1/4" Female NTP fitting. The discharge piping shall include a stainless steel ball valve rated for 200 psi WOG; PVC ball valves or brass ball/gate valves will not be accepted. The bulkhead penetration shall be factory installed and warranted by the manufacturer to be watertight.
- (6) The accessway shall include a single NEMA 6P Electrical Quick Disconnect (EQD) for all power and control functions, factory installed with accessway penetrations warranted by the manufacturer to be watertight. The EQD will be supplied with 32' of useable Electrical Supply Cable (ESC) outside the station, to connect to the alarm panel. The ESC shall be installed in the basin by the manufacturer. Field assembly of the ESC into the basin is not acceptable because of potential workmanship issues. The EQD shall require no tools for connecting, seal against water before the electrical connection is made, and include radial seals to assure a watertight seal regardless of tightening torque. Plug-type connections of the power cable onto the pump housing will not be acceptable due to the potential for leaks and electrical shorts. A junction box shall not be permitted in the accessway due to the large number of potential leak points. The EQD shall be so designed to be conducive to field wiring as required. The accessway shall also include an integral 2-inch vent to prevent sewage gases from accumulating in the tank.

f. Check Valve

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

g. Anti-Siphon Valve

- (1) The pump discharge shall be equipped with a factory-installed, gravity-operated, flapper-type integral anti-siphon valve built into the stainless steel discharge piping. Moving parts will be made of 300 Series stainless steel and fabric-reinforced synthetic elastomer to ensure corrosion resistance, dimensional stability, and fatigue strength. A nonmetallic hinge shall be an integral part of the flapper

assembly, providing a maximum degree of freedom to ensure proper operation even at a very low pressure. The valve body shall be injection-molded from an engineered thermoplastic resin. Holes or ports in the discharge piping are not acceptable anti-siphon devices due to their tendency to clog from the solids in the slurry being pumped. The anti-siphon port diameter shall be no less than 60% of the inside diameter of the pump discharge piping.

h. Core Unit

- (1) The grinder pump station shall have a cartridge type, easily removable core assembly consisting of pump, motor, grinder, all motor controls, check valve, anti-siphon valve, level controls, electrical quick disconnect and wiring. The core unit shall be installed in the basin by the manufacturer. Field assembly of the pump and controls into the basin is not acceptable because of potential workmanship issues and increased installation time. In some cases, stations taller than 96" may be shipped on their side without the cores assembled in the basin for freight purposes but this is the only exception. The core unit shall seal to the tank deck with a stainless steel latch assembly. The latch assembly must be actuated utilizing a single quick release mechanism requiring no more than a half turn of a wrench. The watertight integrity of each core unit shall be established by a 100 percent factory test at a minimum of 5 psig.
- (2) The grinder pump core unit shall have 2 lifting eyes provided in the top housing which can be used to facilitate easy removal of the core unit from the tank when necessary.

i. Controls

- (1) All necessary motor starting controls shall be located in the cast iron enclosure of the core unit secured by stainless fasteners. Locating the motor starting controls in a plastic enclosure is not acceptable. The wastewater level sensing controls shall be housed in a separate enclosure from motor starting controls. The level sensor housing must be sealed via a radial type seal; solvents or glues are not acceptable. The level sensing control housing must be integrally attached to pump assembly so that it may be removed from the station with the pump and in such a way as to minimize the potential for the accumulation of grease and debris accumulation, etc. The level sensing housing must be a high-impact thermoplastic copolymer over-molded with a thermo plastic elastomer. The use of PVC for the level sensing housing is not acceptable.
- (2) Non-fouling wastewater level controls for controlling pump operation shall be accomplished by monitoring the pressure changes in an integral air column connected to a pressure switch. The air column shall be integrally molded from a thermoplastic elastomer suitable for use in wastewater and with excellent impact resistance. The air column shall have only a single connection between the water level

being monitored and the pressure switch. Any connections are to be sealed radially with redundant O-rings. The level detection device shall have no moving parts in direct contact with the wastewater and shall be integral to the pump core assembly in a single, readily-exchanged unit. Depressing the push to run button must operate the pump even with the level sensor housing removed from the pump.

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

❖ The Contractor shall supply additional cable, as described above, to connect the grinder pump to the grinder pump control box at no additional expense to the County. Said cable shall extend a minimum of 2 feet beyond the top of the accessway cover.

j. Alarm Panel

(1) Each grinder pump station shall include a NEMA 4X, UL-listed alarm panel suitable for wall or pole mounting. The NEMA 4X enclosure shall be manufactured of thermoplastic polyester to ensure corrosion resistance. The enclosure shall include a hinged, lockable cover with padlock, preventing access to electrical components, and creating a secured safety front to allow access only to authorized personnel. The enclosure shall not exceed 10.5”Wx14”Hx7”D. or 12.5”Wx16”Hx7.5”D if certain options are included.

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

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

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

(4) The visual alarm lamp shall be inside a red, oblong lens at least 3.75”Lx2.38”Wx1.5”H. Visual alarm shall be mounted to the top of the enclosure in such a manner as to maintain NEMA 4x rating. The audible alarm shall be externally mounted on the bottom of the enclosure, capable of 93 dB @ 2 feet. The audible alarm shall be capable of being deactivated by depressing a push-type switch that is encapsulated in a weatherproof silicone boot and mounted on the bottom of the enclosure (push-to-silence button).

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

k. Service Equipment/Main Service Disconnect Breaker

(1) A separate, internal breaker rated and approved for use as “service equipment” and acts as a main service disconnect of the grinder pump station shall be provided. Each disconnect shall be a nonfusible heavy duty safety switch with a 600 VAC rating and a 30 amperage rating.

l. Run-time/Hour Meter

(1) A run-time or hour meter to display the total run-time or operation time for the pump core shall be provided.

m. Event/Cycle Counter

(1) An event or cycle counter to display the number of operations of the pump core shall be provided.

B. Low Pressure Sewer System Connection

Provide Low Pressure Sewer Service Connection per Frederick County Standard Detail, 305.1, latest revision

1. Ball Valves

- a. Provide 1-1/2-inch bronze ball valve curb stop cast of red brass containing 85 percent copper and 5 percent tin, lead and zinc (the ball shall be fluorocarbon coated brass). Valves shall be suitable for the conveyance of raw sewage. Directional valves shall not be permitted. All valves shall be of one manufacturer. Seats and O-ring seals shall be of ethylene propylene diene monomer (EPDM) rubber. End Connections shall be female iron pipe threads on both ends of the valve.
- b. Valves shall be rated for 300 psi pressure with a tight shut-off and shall have a full port configuration. The port through the ball and valve interior shall be constant in diameter and shape for a straight through flow pattern. There shall be no obstructions to flow through the valve interior.
- c. Valves shall have a quarter-turn operation and shall be equipped for buried service and operation through a 2-3/4-inch inside diameter screw type curb box with arch pattern bottom section base. Each valve shall be equipped with a single piece brass tee operating head, 5/8 inch thick measuring 1-inch high with a length equal to the diameter of the valve head or a minimum of 2 inches as shown on the plans and details. A stationary rod of sufficient length to extend to within 6-inches of the top of curb box shall be attached to the tee head of the valve using a brass cotter pin. The operating tee head and stationary rod shall be designed to withstand the opening and closing torques up to the full pressure rating of the valve without damage to the operating tee head, stationary rod, or valve. The operating tee head shall be positioned on the valve so the position of the valve port, open or closed, can be determined by viewing from the top of the valve. The stationary rod shall be of steel or cast iron and shall be supplied by the manufacturer of the valve. The curb box shall be provided with a lid marked "SEWER".
- d. Ball valves shall be 1-1/2-inch ball valve curb stops model B11-666 as manufactured by Ford Meter Box or equal approved by the Frederick County DWSU Department of Engineering.
- e. Curb boxes shall be domestic heavy duty series 6500 screw type of the appropriate height range as manufactured by Tyler Union or equal approved by the Frederick County DWSU Department of Engineering.
- f. PVC MPT x compression adapters shall be provided for both ends of each ball valve. PVC MPT x compression adapters shall be 1-1/2-inch model S130-15 as manufactured by Spears Manufacturing or equal approved by the Frederick County DWSU Department of Engineering.

2. Check Valves

- a. Check valves shall be 1-1/2-inch gravity operated, suitable for buried service in the horizontal position and located as shown on the plans and details. Internal parts shall be made of stainless steel, PVC and/or synthetic elastomer to insure corrosion resistance. Valves shall be rated for at least 150 psi service at 73 degrees Fahrenheit. Check valves shall be supplied with compression fittings on both ends compatible for use with the SDR-21 PVC pipe. Each check valve shall provide full-ported passageway when open and flapper or seat to assure tight seating at low back pressure.
- b. Check valves shall be 1-1/2-inch ball compression utility swing check model S1500-15 as manufactured by Spears Manufacturing or equal approved by the Frederick County DWSU Department of Engineering.

C. Low Pressure Sewer In-Line Flushing Connections and Terminal Flushing Connections

Provide Low Pressure Sewer In-Line Flushing Connections per Frederick County Standard Detail, 307.1 latest revision and Low Pressure Sewer Terminal Flushing Connections per Frederick County Standard Detail, 306.1, latest revision.

1. Ball Valves

- a. Provide 1-1/2-inch or 2-inch bronze ball valve curb stops cast of red brass containing 85 percent copper and 5 percent tin, lead and zinc (the ball shall be fluorocarbon coated brass). Valves shall be suitable for the conveyance of raw sewage. Directional valves shall not be permitted. All valves shall be of one manufacturer. Seats and O-ring seals shall be of ethylene propylene diene monomer (EPDM) rubber. End Connections shall be female iron pipe threads on both ends of the valve.
- b. Valves shall be rated for 300 psi pressure with a tight shut-off and shall have a full port configuration. The port through the ball and valve interior shall be constant in diameter and shape for a straight through flow pattern. There shall be no obstructions to flow through the valve interior.
- c. Valves shall have a quarter-turn operation and shall be equipped for buried service and operation through a 2-3/4-inch inside diameter screw type curb box with arch pattern bottom section base. Each valve shall be equipped with a single piece brass tee operating head, 5/8 inch thick measuring 1-inch high with a length equal to the diameter of the valve head or a minimum of 2 inches as shown on the plans and details. A stationary rod of sufficient length to extend to within 6-inches of the top of curb box shall be attached to the tee head of the valve using a brass cotter pin. The operating tee head and stationary rod shall be designed to withstand the opening and closing torques up to the full pressure rating of the valve without damage to the operating tee head, stationary rod, or valve. The operating tee head shall be positioned on the valve so the position of the valve port, open or closed, can be determined by viewing from the top of the valve. The stationary rod shall be of steel or cast iron and shall be supplied by the manufacturer of the valve. The curb box shall be provided with a lid marked "SEWER".

- d. Ball valves shall be 1-1/2-inch ball valve curb stop model B11-666 or 2-inch ball valve curb stop model B11-777 as manufactured by Ford Meter Box or equal approved by the Frederick County DWSU Department of Engineering.
- e. Curb boxes shall be domestic heavy duty series 6500 screw type of the appropriate height range as manufactured by Tyler Union or equal approved by the Frederick County DWSU Department of Engineering.
- f. PVC MPT x compression adapters shall be provided for both ends of each ball valve. PVC MPT x compression adapters shall be 1-1/2-inch model S130-15 or 2-inch model S130-20 as manufactured by Spears Manufacturing or equal approved by the Frederick County DWSU Department of Engineering.

2. Plug Valves, 2-1/2-inch or 3-inch

- a. Provide 2-1/2-inch or 3-inch cast iron eccentric plug valves. Valves shall be suitable for the conveyance of raw sewage. Valves shall conform to AWWA standard ANSI/AWWA C-517. All valves shall be of one manufacturer. Valve body shall be cast iron conforming to ASTM A126 Class B. Plug shall be soft rubber faced cast iron. Bearings shall be 316L stainless steel. Bonnet screws shall be 18-8 stainless steel. Plug facing, stem seal, and U-ring filler shall Buna N rubber (AKA: NBR or Acrylonitrile-Butadiene). End Connections shall be female iron pipe threads on both ends of the valve. Valves shall have a factory applied exterior epoxy coating. Valves shall include required (MNA) adapter required for extended nut operation.
- b. Valves shall be rated for 175 psi pressure with a tight shut-off and shall have at least a 99% port area configuration in 2-1/2-inch and 80% port area configuration in 3-inch nominal size.
- c. Valves shall have a quarter-turn operation and shall be equipped for buried service and operation through an extended 2-inch operating nut housed inside a 5-1/4-inch diameter screw type valve box with appropriate base. The 2-inch operating nut shall be rigidly connected to an extension tube of sufficient length to extend the nut to within 6-inches of the top of valve box. The extension tube shall be attached to the plug shaft of the valve using an adapter (MNA) supplied by the valve manufacturer. The operating nut, extension tube, and valve adapter shall be designed to withstand the opening and closing torques up to the full pressure rating of the valve without damage to the operating nut, extension tube, valve adapter, or valve. The valve box shall be provided with a lid marked "SEWER".
- d. Plug valves shall be model PEC Eccentric as manufactured by DeZurik or equal approved by the Frederick County DWSU Department of Engineering.

- e. Valve boxes shall be domestic heavy duty series 6860 screw type of the appropriate height range as manufactured by Tyler Union or equal approved by the Frederick County DWSU Department of Engineering.
- f. PVC MPT x compression adapters shall be provided for both ends of each plug valve. PVC MPT x compression adapters shall be 2-1/2-inch model S130-25 or 3-inch model S130-30 as manufactured by Spears Manufacturing or equal approved by the Frederick County DWSU Department of Engineering.

3. Riser Assembly components

- a. Provide 125# bronze UL listed fittings. Bronze fittings shall be suitable for the conveyance of raw sewage. Bronze fittings shall conform to AWWA C800. All bronze fittings dimensions shall conform to ASME B16.15. All bronze fittings shall be of one manufacturer. Bronze castings shall conform to ASTM B62, UNS Alloy C83600. End Connections shall be iron pipe threads conforming to ASME B1.20.1.
- b. Provide seamless schedule 40 red brass pipe and nipples. Brass pipe and nipples shall be suitable for the conveyance of raw sewage. Seamless brass pipe shall conform to ASTM B43. All brass nipples shall conform to ASTM B687. End Connections shall be male iron pipe threads conforming to ASME B1.20.1.
- c. Riser assemblies shall extend to within 12-inches of the top of the valve box. The tee, nipples, reducing couplings, and riser pipe shall be silver solder brazed at the junction of each male to female thread face to prevent any fitting from backing off when removing the pipe plug. The valve box shall be provided with a lid marked "SEWER".
- d. Bronze fittings and brass nipples shall be as manufactured by Smith-Cooper International or equal approved by the Frederick County DWSU Department of Engineering.
- e. Valve boxes shall be domestic heavy duty series 6860 screw type of the appropriate height range as manufactured by Tyler Union or equal approved by the Frederick County DWSU Department of Engineering.

1. Ball Valves

- a. Provide 2-inch bronze ball valve cast of red brass. Valves shall be suitable for the conveyance of raw sewage. All valves shall be of one manufacturer. Valve body shall conform to ASTM B584 alloy C84400. Valve ball shall be chrome plated brass. Stem packing shall be of reinforced polytetrafluoroethylene (RPTFE) rubber. Seats shall be of polytetrafluoroethylene (PTFE) rubber. End Connections shall be female iron pipe threads on both ends of the valve.

- b. Valves shall be rated for 600 psi pressure with a tight shut-off and shall have a full port configuration. The port through the ball may be a reduced diameter but shall provide a straight through flow pattern.
- c. Valves shall have a quarter-turn operation and shall be equipped with a steel, zinc plated and vinyl covered lever actuating handle.
- d. Ball valves shall be 2-inch ball valve Apollo model 32-100 as manufactured by Conbraco Industries or equal approved by the Frederick County DWSU Department of Engineering.

2. Assembly components

- a. Provide 125# bronze UL listed fittings. Bronze fittings shall be suitable for the conveyance of raw sewage. Bronze fittings shall conform to AWWA C800. All bronze fittings dimensions shall conform to ASME B16.15. All bronze fittings shall be of one manufacturer. Bronze castings shall conform to ASTM B62, UNS Alloy C83600. End Connections shall be iron pipe threads conforming to ASME B1.20.1.
- b. Provide seamless schedule 40 red brass pipe and nipples. Brass pipe and nipples shall be suitable for the conveyance of raw sewage. Seamless brass pipe shall conform to ASTM B43. All brass nipples shall conform to ASTM B687. End Connections shall be male iron pipe threads conforming to ASME B1.20.1.
- c. Bronze fittings and brass nipples shall be as manufactured by Smith-Cooper International or equal approved by the Frederick County DWSU Department of Engineering.
- d. PVC MPT x compression adapters shall be provided for both ends of each bronze tee. PVC MPT x compression adapters shall be as manufactured by Spears Manufacturing or equal approved by the Frederick County DWSU Department of Engineering.
- e. Tank and Integral Accessway: High Density Polyethylene Construction

3. Valve underground vault

- a. Each combination air release and vacuum relief valve shall be contained in an underground vault. The underground vault shall be a tank made of high density polyethylene, with a grade selected to provide the necessary environmental stress cracking resistance. Corrugated sections are to be made of a double wall construction with the internal wall being generally smooth. The corrugations of the outside wall are to be a minimum amplitude of 1-1/2" to provide necessary transverse stiffness. Any incidental sections of a single wall construction are to be 0.250" thick (minimum). All seams created during tank construction are to be thermally welded and factory tested for leak tightness. The tank wall and bottom must withstand the pressure exerted by

saturated soil loading at maximum burial depth. All station components must function normally when exposed to 150 percent of the maximum external soil and hydrostatic pressure.

- b. The tank shall be furnished with two EPDM grommet fitting to accept a 4.50" OD DWV or Schedule 40 pipe.
- c. The vault accessway shall be an integral extension of the tank assembly and shall include a lockable cover assembly providing low profile mounting and watertight capability. The accessway design and construction shall enable field adjustment of the station height in increments of 4" or less without the use of any adhesives or sealants requiring cure time before installation can be completed.

D. SDR-21, Low Pressure Sanitary Sewer Pipe

1. General:

- a. PVC pipe shall meet the requirements of ASTM D2241, SDR-21 for working pressure of 200 psi.
- b. Pipe of given size and material, shall be furnished by the same manufacturer. Each pipe length and fitting shall be supplied and clearly marked as follows:
- c. PVC pressure pipe and fittings shall be produced from resins meeting the requirements of ASTM D1784 for Class 12454-B, Type 1, Grade 1, PVC1120.
- d. PVC pipe and fittings shall be produced by an extrusion process and shall be homogeneous throughout, free from cracks, holes, foreign inclusions, or other defects. The pipe and fittings shall be uniform in color.
- e. PVC pressure pipe and fittings shall have the National Sanitation Foundation (NSF) seal of approval.
- f. Pipe with blisters, bubbles, cuts or scrapes on inside or outside surfaces, which damage the wall thickness, or other imperfections in the opinion of the Engineer will impair the performance or life of the pipe, will be rejected.
- g. PVC pipe shall be legibility marked at intervals of 5 feet maximum with the manufacturer's name or trademark, pipe size, PVC cell classification, appropriate legend such as PVC SDR-21 ASTM D2241, manufacturer's lot number, and date of manufacture and point of origin. Pipe not properly marked will be rejected.

2. Gasketed Joint, PVC Pipe and Fittings

- a. PVC pressure sewer pipe 1 ½-inch through 4-inch diameter shall utilize gasket joints. The contractor shall furnish either integral bell end PVC pipe or spigot end-double bell coupling PVC pipe.
- b. PVC pipe shall meet the requirements of ASTM D2241, SDR-21 for working pressure of 200 psi. Joints shall meet the requirements of ASTM D3139 for push-on joint pipe.
- c. PVC pipe with gasket joints shall utilize and connections in which provisions are made for thermal expansion and contraction at each joint and resulting in pressure tight seals up to the full pressure rating of the pipe. The rubber ring suitable for long-term contact with sewage and which meets the requirements of ASTM F477.
- d. Pipe with gasket joint shall have a reference mark around the entire circumference of the pipe on all spigot ends indicating the depth spigots shall be inserted into bells or couplings. Pipe spigot ends shall be beveled to permit proper and easy assembly of the joint.
- e. Couplings for joining spigot end PVC pipe shall be furnished by the pipe manufacturer. They shall have a minimum pressure rating of 200 psi. Insertion depth of the spigot end of the pipe in the coupling shall be controlled by an internal PVC mechanical stop in the coupling which permits thermal expansion and contract of each pipe section to be taken up at each end of the pipe.
- f. Lubricant for the elastometric gasket shall be supplied by the pipe manufacturer and shall neither support the growth of bacteria nor have a deteriorating effect on the PVC pipe and rubber gasket.
- g. Fittings shall have a minimum pressure rating of 200 psi for continuous service at 73.4° F and shall be manufactured by the pipe manufacturer or be approved by the pipe manufacturer for use and compatibility with said pipe.

3. Threaded PVC Pipe and Fittings

- a. PVC pipe and fittings with threaded end connections shall be Schedule 80 PVC with stainless steel reinforcing meeting the requirements of ASTM D1785 and D2467.
- b. Thread sealant shall be a type which gives a watertight seal, yet permits ease of disassembly. Teflon, Fluroseal, or similar compounds based on Tetrafluoroethylene resins shall be used.

III. EXECUTION

A. Grinder Pump

1. Delivery

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

2. Installation

- a. Earth excavation and backfill are specified under site work, but are also to be done as part of the work under this section, including any necessary sheeting and bracing.
- b. The Contractor shall be responsible for handling ground water to provide a firm, dry subgrade for the structure, and shall guard against flotation or other damage resulting from general water or flooding.
- c. The grinder pump stations shall not be set into the excavation until the installation procedures and excavation have been approved by the Engineer.
- d. Remove the packing material. Users Instructions MUST be given to the OWNER. Hardware supplied with the unit, if required, will be used at installation. The basin will be supplied with a standard 4" inlet grommet (4.50" OD) for connecting the incoming sewer line. Appropriate inlet piping must be used. The basin may not be dropped, rolled or laid on its side for any reason.
- e. Installation shall be accomplished so that 1" to 4" of accessway, below the bottom of the lid, extends above the finished grade line. The finished grade shall slope away from the unit. The diameter of the excavated hole must be large enough to allow for the concrete anchor.
- f. A 6 inch (minimum) layer of naturally rounded aggregate, clean and free flowing, with particle size of not less than 1/8" or more than 3/4" shall be used as bedding material under each unit.
- g. A concrete anti-flotation collar, as detailed on the drawings, and sized according to the manufacturer's instructions, shall be required and shall be pre-cast to the grinder pump or poured in place. Each grinder pump station with its pre-cast anti-flotation collar shall have a minimum of three lifting eyes for loading and unloading purposes.
- h. If the concrete is poured in place, the unit shall be leveled, and filled the water, to the bottom of the inlet, to help prevent the unit from shifting while the concrete is being poured. The concrete must be manually vibrated to ensure there are no voids. If it is necessary to pour the concrete to a level higher than

the inlet piping, an 8" sleeve is required over the inlet prior to the concrete being poured.

- i. The Contractor will provide and install a 4-foot piece of 4-inch SCH 40 PVC pipe with water tight cap, to stub-out the inlet for the property owner's installation contractor.
- j. The electrical enclosure shall be furnished, installed and wired to the grinder pump station by the Contractor. An alarm device is required on every installation, there shall be NO EXCEPTIONS. It will be the responsibility of the Contractor and the Engineer to coordinate with the individual property owner(s) to determine the optimum location for the Alarm Panel.
- k. The Contractor shall mount the alarm device in a conspicuous location, as per national and local codes. The alarm panel will be connected to the grinder pump station by a length of 6-conductor type TC cable. The power and alarm circuits must be on separate power circuits. The grinder pump stations will be provided with 32', 25' useable, electrical supply cable to connect the station to the alarm panel. This cable shall be supplied with a *factory installed* EQD half to connect to the mating EQD half on the core.

3. Backfill Requirements

- a. Improper backfilling may result in damaged accessways. The grinder pump station shall be installed at a minimum depth from grade to the top of the 1 ¼" discharge line, to assure maximum frost protection. The finish grade line shall be 1" to 4" below the bottom of the lid, and final grade shall slope away from the grinder pump station.
- b. Backfilling shall be performed per Frederick County Standard Specifications, Section 2200.

4. Start-up and Field Testing

- a. The Manufacturer shall provide the services of qualified factory trained technician(s) who shall inspect the placement and wiring of each station, perform field tests as specified herein, and instruct the Owner's personnel in the operation and maintenance of the equipment before the stations are accepted by the Owner.
- b. All equipment materials necessary to perform testing shall be the responsibility of the Installing Contractor. This includes, as a minimum, a portable generator and power cable (if temporary power is required), water in each basin (filled to a depth sufficient to verify the high level alarm is operating), and opening of all valves in the system. These steps shall be completed prior to the qualified factory trained technician(s) arrival on site.
- c. Upon completion of the installation, the authorized factory technician(s) will perform the following test on each station:

- i. Make certain the discharge shut-off valve in the station is fully open.
 - ii. Turn ON the alarm power circuit and verify the alarm is functioning properly.
 - iii. Turn ON the pump power circuit. Initiate the pump operation to verify automatic “on/off” controls are operative. The pump should immediately turn ON.
 - iv. Consult the Manufacturer’s Service Manual for detailed start-up procedures.
- d. Upon completion of the start-up and testing, the Manufacturer shall submit to the Engineer the start-up authorization form describing the results of the tests performed for each grinder pump station. Final acceptance is the system will not occur until authorization forms have been received for each pump station installed and any installation deficiencies corrected.

5. Safety

- a. The grinder pump shall be free from electrical and fire hazards as required in a residential environment. As evidence of compliance with this requirement, the completely assembled and wired grinder pump, in its tank shall be listed by Underwriters Laboratories, Inc. (UL).
- b. The grinder pump shall meet accepted standards for plumbing equipment for use in or near residences, shall be free from noise, odor or health hazards, and shall have been tested by an independent laboratory to certify its capability to perform as specified in either individual or low pressure sewer system applications. As evidence of compliance with this requirement, the grinder pump shall bear the National Sanitations Foundation seal.

B. Low Pressure Sewer Service Connection

1. Provide sewer house connections from the main line sewer to property lines or to the grinder pumps at the elevations indicated on the plans, standard details or as directed by the Engineer. Install tees, corporation stops, check valves and ball valves where indicated.
2. Mark the end of the sewer house connection at the property line with a piece of 2”x4” pressure-treated lumber, painted green its entire length, placed vertically from bottom of trench and extending 2 feet above finished grade. Place lumber so it does not interfere with blocking.
3. Sewer house connections to the pressure sewer shall be made by installing tees simultaneous with the main line installation as indicated on the plans and per Frederick County Standard Detail 305.1.

C. SDR-21, Low Pressure Sanitary Sewer Pipe, 1 ½ inch to 4-inch diameter

1. Trench excavation and backfill shall be in accordance with the General Conditions and Standard Specifications except as modified herein and by the detail shown on the plans. Excavate sufficient trench in advance to assure that no unforeseen obstructions exist before installing pipe. Work occasioned by failure to take such precautions shall be performed at no cost to Frederick County.
2. Inspect each pipe and fitting for damage and discoloration on exterior and interior. Remove damaged or discolored pipe and fittings and replace at no cost to the County. Clean each pipe and fitting of foreign substances before placing in trench and keep clean during jointing process. Should foreign substances, deleterious materials, or damaged pipe be observed in previously installed pipe, cease work until foreign material is removed or damaged pipe removed and replaced. Close open ends of pipe and fittings with a watertight seal during periods when work is not in progress.
3. Place bedding so that pipe is uniformly supported along its length. Do not drop pipe and fitting into the trench. Do not drop pipe in a manner which causes scratching of the pipe surface. Excessive amount of scratching on the pipe surface will be cause for rejection.
4. Follow the pipe manufacturer's installation instructions for field cutting beveling PVC pipe and minimum radius of curvature of the various sizes of pipe for installing curved sections of pipe. Provide thrust blocks at bends, tees, caps and plugs in accordance with the details on the plans.
5. Perform required pressure test as described in the General Conditions and Standard Specifications for Water Mains unless modified herein by these Special Provisions.
6. Provide bedding and backfill around pipe in accordance with the Standard Details and requirements herein. Compact the bedding, haunching and initial backfill to a minimum of 6 inch loose lifts. Remainder of trench backfill shall be in accordance with the General Conditions and Standard Specifications.
7. Furnish and install 6 inch wide detectable tape over the entire length of pressure sewer line and service connection. The tape shall be installed 24 inches above the pipe crown. The tape shall be of polyethylene and have a film of 0.50 mil thickness, solid core, encased in a reinforced protective plastic jacket that is resistant to alkalis, acids and other destructive elements commonly found in soil. Overall thickness shall be 4.5 mils nominal and a width of 3 inches. Color shall be bright green with printed black letters on one side stating: "CAUTION SEWER LINE BURIED BELOW".
8. Joints
 - a. Push-on joints shall be in accordance with the manufacturer's instructions. Spigot ends shall be inserted into bells and couplings to the depth marked on the pipe. If pipe is cut, then mark depth reference around entire circumference of the pipe. Use only lubricant supplied by pipe manufacturer and in accordance with his directions.

b. Threaded pipe shall not be utilized except where shown on the plans and/or details. Use threaded pipe only where threaded adapters and fittings are required to make a complete fitting assembly. Do not force a threaded fitting when tightening. Do not use a pipe wrench. One-fourth to one-half turn past hand-tight will be sufficient for proper tightening.

9. Fittings and Valves

a. Install fittings and valves where indicated on the plans. Inspect and operate valves to insure proper working order prior to installation.

10. Field Testing

a. Field pressure test shall be performed in accordance with the test outlined in the section of the General Conditions and Standard Specifications for Water Mains with the following exceptions:

b. Test pressure shall be 100 psi maximum at the low point of the system or as indicated on the plans, unless otherwise directed by the Engineer. The test pressure shall be 50 psi minimum at the high point of the system. If the elevation between the high and low points exceeds 115 feet, segmental testing shall be directed by the Engineer.

c. Before beginning the pressure test, the Contractor shall:

1. Cure solvent cement joints (if applicable) and concrete thrust blocks.
2. Completely backfill the pipe as specified in the Standard Details and the General Conditions and Standard Specifications.
3. No leakage allowance will be permitted for pipe with solvent cement joint or threaded joint. Maximum allowable leakage for pipe with gasketed joints will be calculated using the following formula:

$$L = \frac{N \cdot D \cdot (P)^{1/2}}{7400}$$

Where:

L = maximum allowable leakage, gallons/hour;

N = number of joints in test section;

D = nominal diameter of tested pipe inches;

P = average test pressure, pounds per square inch

Should test results show displacement, damage, or leakage in excess of the allowable amount, the Contractor shall repair the displacement and damage and eliminate the leakage. He shall retest until specified conditions are met, to the satisfaction of the Engineer.

D. Cast-In-Place Concrete

1. Cast-In-Place Concrete shall be performed per Frederick County Standard Specifications, Section 3300.

IV. MEASUREMENT AND PAYMENT

A. Grinder Pump:

1. Grinder Pump will be measured for payment by each grinder pump furnished and installed, complete, and will include all applicable electrical work and testing to ensure proper installation.
2. Payment for Grinder Pump will be made by the bid amount given for each.

B. Low Pressure Sewer Service Connection

1. Low Pressure Sewer Service Connections will be measured by each furnished and installed, complete and in-place.
2. Payment will be made for the quantities measured at the unit price listed. Payment includes provision for fittings and connections to new and existing facilities, pipes, concrete and installation of saddles.

Payment includes excavation, backfill and bedding as specified in Section 2200 of the Frederick County Standard Specifications.

C. SDR-21, Low Pressure Sanitary Sewer Pipe, 1 ½ Inch Diameter

1. Furnishing and installing Low Pressure Sanitary Sewer Pipe will be measured for payment by the linear foot of the size provided. No deductions will be made for the lengths of fittings or connections.
2. Payment will be made for the quantities measured at the unit price per linear foot of Low Pressure Sanitary Sewer Pipe provided on the proposal form.

Payment will include provision of fittings, connections to new and existing facilities.

Payment will include excavation, backfill, and bedding as specified in Section 2200 of the Frederick County Standard Specifications.

D. Non-Payment Items

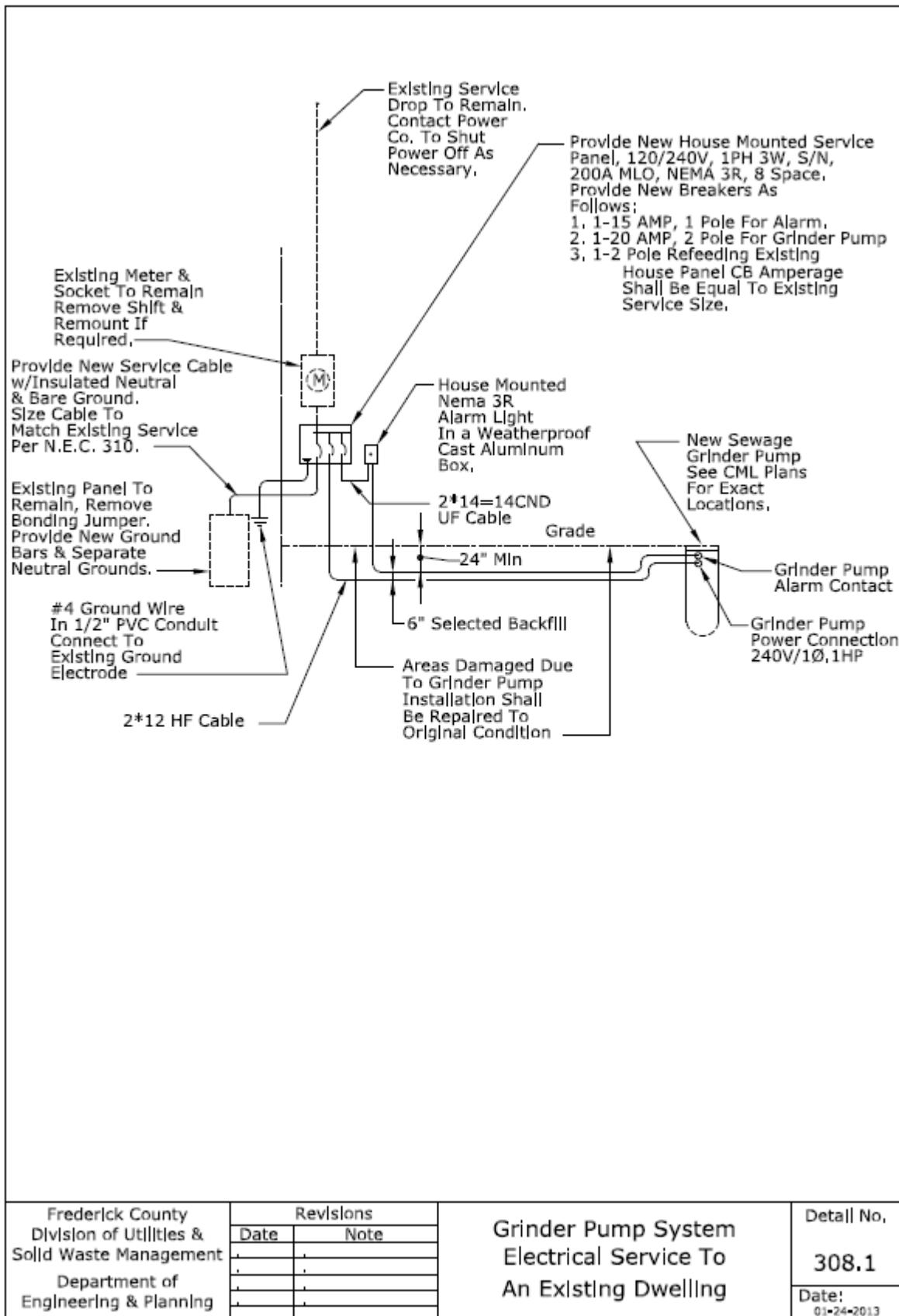
The following items will not be measured for payment but the cost thereof will be considered incidental to the Contract.

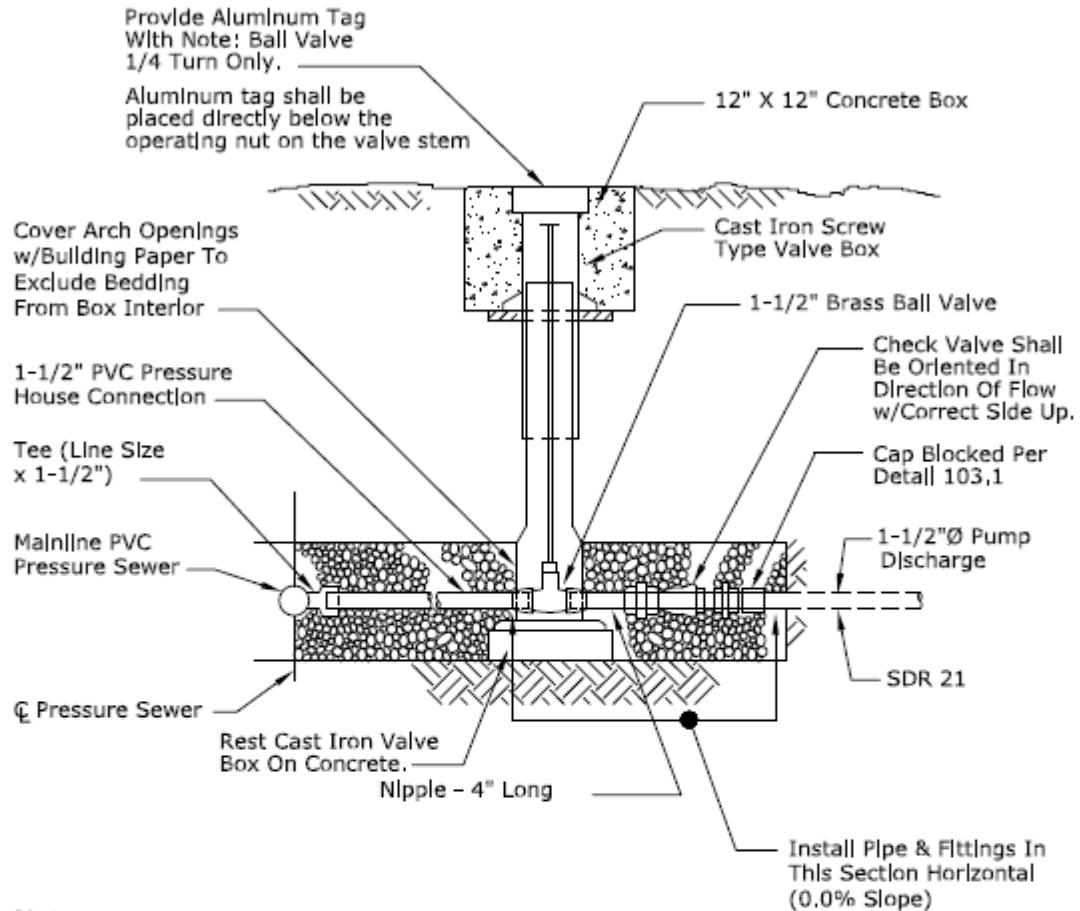
- a. Removal of existing facilities as necessary to complete this Contract.
- b. Restoration and re-stabilization of disturbed areas.

- c. Concrete and wood thrust blocking.
- d. Stoppers, plugs and caps.
- e. Testing
- f. Lumber marking house connections
- g. Replacement of various appurtenant connections and devices required for pressure-tight installation.
- h. Materials and installation of the 6 inch wide detectable tape.

END OF SECTION

STANDARD GRINDER PUMP DETAILS





Notes:

1. Place Brick On Undisturbed Earth Or Firm Soil.
2. Installation Of New Pressure Sewer Service Connections To Previously Installed Mains Requires Tapping. Tap Main Using A Ford #FC202 Series Saddle And A Ford #FB1600 Series Corporation Stop. Provide Male PVC Adaptor Between The Corporation Stop And Pressure Sewer Service Connection.

Frederick County Division of Utilities & Solid Waste Management Department of Engineering & Planning	Revisions		Detail No. 305.1
	Date	Note	
.	.		
.	.		
.	.		
.	.		
.	.		
.	.		

User Instructions for the Environment One Grinder Pump

Congratulations on your Environment One grinder pump investment. With proper care and by following a few guidelines, your grinder pump will give you years of dependable service.

General Information

In order to provide you with suitable wastewater disposal, your home is served by a low pressure sewer system. The key element in this system is an Environment One grinder pump. The tank collects all solid materials and effluent from the house. The solid materials are then ground to a small size suitable for pumping as a slurry with the effluent water. The grinder pump generates sufficient pressure to pump this slurry from your home to the wastewater treatment receiving line and/or disposal plant.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: 1) this device may not cause harmful interference; and 2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Care and Use of your Grinder Pump

The Environment One grinder pump is capable of accepting and pumping a wide range of materials. Regulatory agencies advise that the following items should not be introduced into any sewer, either directly or through a kitchen waste disposal unit:

Glass	Seafood shells	Diapers, socks, rags or cloth
Metal	Plastic objects (toys, utensils, etc.)	Kitty litter
Goldfish stone	Sanitary napkins or tampons	

In addition, you must never introduce into any sewer:

Explosives	Strong chemicals	Lubricating oil and/or grease
Flammable material	Gasoline	

Periods of Disuse

If your home or building is left unoccupied for longer than a couple of weeks, perform the following procedure:

Purge the System. Run clean water into the unit until the pump activates. Immediately turn off the water and allow the grinder pump to run until it shuts off automatically.

Duplex Units. Special attention must be taken to ensure that both pumps turn on when clean water is added to the tank.

Caution: Do not disconnect power to the unit

Power Failure

Your grinder pump cannot dispose of wastewater without electrical power. If electrical power service is interrupted, keep water usage to a minimum.

Pump Failure Alarm

Your Environment One grinder pump has been manufactured to produce an alarm signal (120 volt) in the event of a high water level in the basin. The installer must see that the alarm signal provided is connected to an audible and/or visual alarm in such a manner as to provide adequate warning to the user that service is required. During the interim prior to the arrival of an authorized service technician, water usage must be limited to the reserve capacity of the tank.

For service, please call your local distributor:



DOCUMENTS

When printing forms in this section, please print them single-sided.

RECORD AND RETURN TO:

FCG - Beth Ramacciotti
Water and Sewer Utilities
4520 Metropolitan Court

Tax Account No.
W & S Contract No.

**DEED OF EASEMENT
Utility Line and Grinder Pump**

THIS DEED OF EASEMENT, made this _____ day of _____, _____, by
(insert owner name) (“GRANTOR”) and **Frederick County, Maryland**, a body corporate and
politic of the State of Maryland (“GRANTEE”).

WITNESSETH: That for and in consideration of the sum of Five Dollars (\$5.00) and in
further consideration of the mutual promises, covenants and agreements contained herein, the
receipt and sufficiency of which is hereby acknowledged, the GRANTOR does hereby grant and
convey unto the GRANTEE, its successors and assigns, the following described perpetual
easement to install, construct, reconstruct, maintain, repair, operate and inspect a wastewater
conveyance system, together with all necessary appurtenances thereto:

All that perpetual easement containing **(insert)** square feet or **(insert)** acres, more or less,
being more particularly described on **EXHIBIT A**, which is attached hereto and incorporated
herein by reference; said easement being situate in, through, over and across that parcel of real
estate located in the **(insert)** Election District, Frederick County, Maryland, described and
conveyed unto the GRANTOR from **(insert)**, by a deed dated **(insert)** and recorded in Liber
(insert), folio **(insert)**, among the land records of Frederick County, Maryland.

Notwithstanding the location of said easement as shown in the areas so designated, said
easement shall also include the control panel.

The GRANTOR and GRANTEE, for themselves, their successors and assigns, hereby
covenant and agree as follows:

A. The sewer line, grinder pump unit, and appurtenances thereto, and all such related
equipment shall be and remain the property of the GRANTEE.

B. The GRANTEE, and its agents, shall have the right of ingress and egress to and
from the aforesaid easement area, on and across the land of the GRANTOR; provided, however,
that the GRANTEE shall use existing roadways where possible and shall minimize damage to
growing crops, planted or cultivated fields, streams, lawns, pastures, existing asphalt and parking
areas, and structures.

C. The GRANTEE shall have the right to trim, cut and remove trees, shrubbery, fences, structures, or other obstructions or facilities in the easement area, deemed by GRANTEE to interfere with the proper and efficient use of the easement for the purposes herein named; provided, however, that the GRANTEE, at its own expense, shall restore as nearly as possible the property to its original condition, including the backfilling of trenches, resurfacing of roadways, and reseeding of lawns and pasture areas, disturbed during future maintenance, but not the replacement of structures, fences, trees or other obstructions.

D. The sewer line or lines shall be installed below cultivation level, except for certain appurtenances typical to water and sewer facilities such as stacks, vents, manholes, etc., which may extend to or above ground level. The GRANTOR shall not, within the easement area, erect any building or other structure, make a fill which will result in more than eight (8) feet of ground cover over an existing or proposed sewer line, excavate to an extent which will result in a ground cover of less than four (4) feet over an existing or proposed sewer line, or inundate the land with water. Additionally, the GRANTOR shall not construct a roadway, place concrete or pavement or any solid surface on or within four (4) feet of the grinder pump unit or cover the grinder pump unit in any way.

E. GRANTOR shall be responsible for the cost of electricity necessary to operate the grinder pump, control panel and appurtenances. GRANTOR shall be responsible for maintenance of the outfall line from the house to the pump and all items located inside the dwelling or structure.

F. Any future relocation of the grinder pump, control panel or other appurtenances shall only be done with the prior written approval of GRANTEE and at GRANTOR'S sole expense.

G. GRANTEE shall be responsible for normal routine maintenance and repair of the grinder pump, control panel and directly related appurtenances.

H. GRANTOR shall make appropriate efforts to protect the grinder pump, control panel, and appurtenances from damage. GRANTOR shall reimburse GRANTEE for repairs or maintenance required as a result of the accidental or intentional damage to the equipment and appurtenances, other than normal wear and tear.

I. If GRANTOR fails to pay an invoice for repairs within thirty (30) days, the outstanding amount shall become a lien on the property of GRANTOR served by the wastewater system as identified in the being clause herein, and shall be collected in the same manner as delinquent taxes.

J. The GRANTOR covenants and agrees that the easements and agreements contained herein shall run with the land and shall bind the GRANTOR and their heirs, executors, administrators, successors and assigns and shall bind all present and subsequent owners of the property identified herein.

K. The GRANTOR further covenants and agrees that all parties having an interest in the property which is subject to this deed of easement have executed this document and agreed to the terms hereof.

L. The GRANTOR warrants specially said easements and will execute such further assurances thereof as the GRANTEE may request.

WITNESS the hands and seals of the parties on the date and year first above written.

Witness:

(SEAL)
(insert owner name)

(SEAL)
(insert owner name)

GRANTOR

***Sample Signature Block - must select proper format for each Grantor**

Witness/Attest:

FREDERICK COUNTY, MARYLAND,
a body corporate and politic of the State of
Maryland

By: _____ (SEAL)

Chief Administrative Officer

GRANTEE

STATE OF _____, COUNTY OF _____, TO WIT:

I HEREBY CERTIFY that on this _____ day of _____, _____, before me,
the subscriber, a Notary Public in and for the State of _____ and County of
_____, personally appeared _____ and _____,
and they did each acknowledge the foregoing DEED OF EASEMENT to be their act and deed,
for the purposes therein contained.

WITNESS my hand and Notarial Seal.

NOTARY PUBLIC

My Commission expires: _____

***Sample Notary/Acknowledgment - must select proper format for each Grantor**

STATE OF MARYLAND, COUNTY OF FREDERICK, TO WIT:

I HEREBY CERTIFY that on this _____ day of _____, _____, before me, the Subscriber, a Notary Public in and for the State and County aforesaid, duly commissioned and qualified, personally appeared _____ who acknowledged himself to be the Chief Administrative Officer of Frederick County, Maryland a body corporate and politic, and that he, as Chief Administrative Officer, being authorized so to do, executed the aforesgoing DEED OF EASEMENT for the purposes therein contained, by signing the name of the body corporate and politic by himself as Chief Administrative Officer.

WITNESS my hand and Notarial Seal.

Notary Public

My Commission Expires: _____

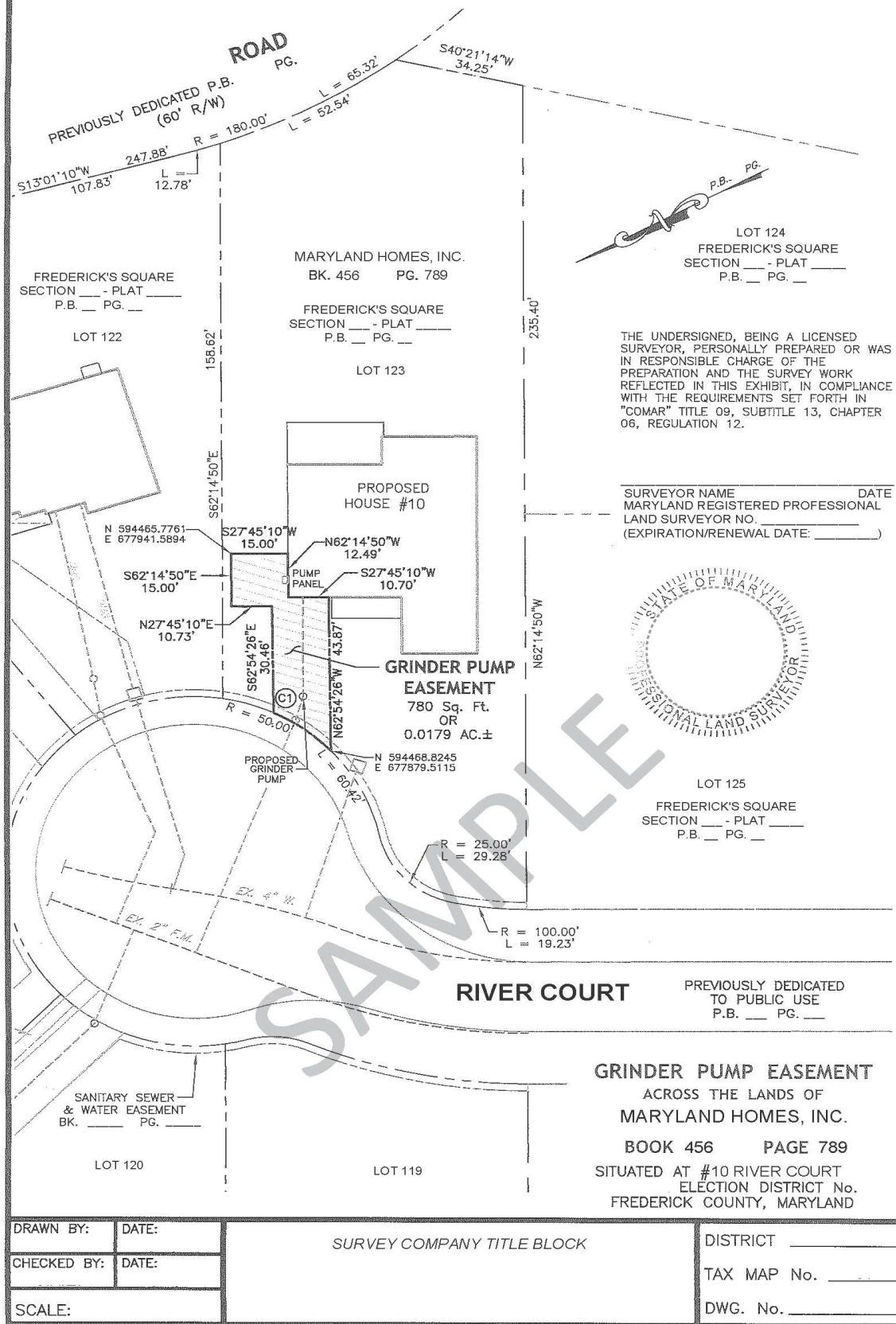
CERTIFICATION OF PREPARATION

I HEREBY CERTIFY that this instrument has been prepared under the supervision of the undersigned, an Attorney admitted to practice before the Court of Appeals of Maryland.

Printed Name: _____

EXHIBIT A

CURVE TABLE							
CURVE	RADIUS	LENGTH	TANGENT	DELTA	BEARING	CHORD	
C1	50.00'	18.75'	9.49'	21°29'16"	N63°31'04"E	18.64'	



FREDERICK COUNTY DIVISION OF WATER AND SEWER UTILITIES
Water and Sewer Deed of Easement Routing Sheet

Project: _____

Applicant(s): _____

Contact Name: _____
(Print First and Last Name) Phone: (_____) _____

W&S Contract #: _____ Submission Date: _____

For County Use Only—Below This Line

Receive Date: _____ ES #: _____ Reviewed By: _____ & forwarded on _____

TECHNICAL REVIEW: Completed by _____ on _____
EASEMENT DOCUMENT/TITLE REVIEW: Completed by _____ on _____

Additional Easements Needed? Yes No
Encroachment Agreement Needed? Yes No
Releases Needed? Yes No
Associated ES Numbers: _____

Imp. Plans approved & signed? Yes No
DO needed prior to release? Yes No

Comments:

W&S ADMINISTRATION REVIEW:

DATE FORWARDED: _____

LEGAL REVIEW:

DATE FORWARDED: _____
____ K. Mitchell _____ Other: _____

Comments:

COUNTY SIGNATURE:

DATE FORWARDED: _____

RECORDATION:

DATE FORWARDED: _____
____ Beth Ramacciotti
____ Other: _____

Sample: Water and Sewer Letter of Credit for Use with the Public Works Agreement (PWA)

MUST BE ON BANK LETTERHEAD

Date of Issue: _____

Initial Date of Expiry: _____

Issue Number: _____

Beneficiary: Frederick County, Maryland
c/o Division of Water and Sewer Utilities
4520 Metropolitan Court
Frederick, Maryland 21704

Re: IRREVOCABLE LETTER OF CREDIT

We hereby establish our irrevocable letter of credit in your favor for the account of: (NAME AND ADDRESS OF CUSTOMER PROCURING THIS LETTER), up to an aggregate amount of \$ _____ available by your drafts at sight accompanied by: A signed statement that the funds are being drawn and required in accordance with a Public Works Agreement between Frederick County and (NAMES OF ALL OTHER PARTIES TO THE PUBLIC WORKS AGREEMENT) for the water and sewer contract [contract number].

Drafts must be drawn and negotiated prior to expiration at our counters, or by facsimile with original documents sent by certified mail within 72 hours.

This Letter of Credit shall be deemed automatically renewed without amendment for successive one-year periods from the initial and any future expiration date(s). Cancellation of this document may only occur 60 days after written notice of the intent to cancel has been sent by certified mail, return receipt requested to Frederick County.

Each draft must state that it is drawn under the Irrevocable Letter of Credit of (ISSUER) number _____ dated _____.

Partial draws are permitted.

This Letter of Credit is not transferable or assignable without written consent of (NAME OF ISSUING BANK).

Requests for reduction or cancellation shall be submitted to:

Frederick County Division of Water and Sewer Utilities
4520 Metropolitan Court
Frederick, MD 21704

This Letter of Credit is subject to the "Uniform Customs and Practices for Documentary Credits, 2007 Revision" of the International Chamber of Commerce, Publication #600.

We hereby agree that all drafts under and within the terms and amount of this credit accompanied by the documents above specified will be duly honored upon presentation to the drawee. Presentation of drafts via fax will also be accepted in lieu of a Maryland bank or location.

Yours truly,

*** This letter of credit must be issued by a Maryland bank, or include a Maryland location for presentment of drafts.**

REVISED 7/22 KLM

PUBLIC WORKS AGREEMENT NO._____

SEWER CONTRACT
GRINDER PUMP AND LATERAL INSTALLATION

It is hereby agreed this _____ day of _____, 20____, by and between the FREDERICK COUNTY, MARYLAND, a body corporate and politic in the State of Maryland, hereinafter referred to as "County" and _____ hereinafter referred to as "Property Owner," as follows:

1. The Property Owner is the owner of and wishes to develop certain land in Frederick County described as: _____

2. All requisite easements and fee simple deeds to the County for the areas where the sewer facilities and appurtenances will be located shall be recorded among the Land Records of Frederick County, Maryland at the expense of the Property Owner prior to the issuance of a building permit.

3. The Property Owner has applied to the County for the construction of the necessary sewage collection facilities and the appurtenances thereto to serve the above referenced property, and has undertaken to locate a contractor for the construction of said system in accordance with the Frederick County rules, regulations and specifications.

4. The necessary sewerage facilities and appurtenances to service subject property shall be constructed at the expense of the Property Owner. After completion of the construction and inspection of the facilities, ownership shall be transferred to the County. The County will be responsible for the normal routine maintenance of the facilities and appurtenances thereto, which

are located within the easement area. The County shall not be responsible for the repair or maintenance of any lines or facilities inside any dwelling or structure built on the subject property. Repairs needed as a result of damage to the facilities, (either accidental or intentional) shall be made at the property owners' expense.

5. The sewerage facilities have been designed in accordance with Frederick County rules, regulations, and specification and the construction of the system shall be in accordance with the standard specifications and details of the County.

6. The property owner agrees that all costs and expenses incurred by the County in connection with the review and approval of the design, the inspection of the construction of the system and any other costs incurred in relation to the project shall be borne by the Property Owner.

7. The Property Owner shall pay to the County the amount of the agreed upon contract bid, plus fifteen percent (15%) for contingencies, prior to the award of the contract or the issuance of the permit, in the form of cash escrow or Letter of Credit acceptable to the County Attorney. These financial assurances will guarantee the completion of the project and payment of all costs incurred in the construction of the sewer system and appurtenances. If cash is deposited in escrow with the County, the appropriate amount will be withdrawn by the County in order to pay the contractor the amount of any approved invoices. Any unused portion of the construction money will be refunded to the Property Owner after the construction has been completed and accepted by the County. If the cost of construction exceeds the amount deposited with the County, the Property Owner shall pay the additional monies necessary prior to the acceptance and operation of the system or the issuance of a use and occupancy permit for any structure being built on the property.

8. The Property Owner will pay the design and review fee for the review of the design plans for the systems, when the plans are submitted, in accordance with the fee schedule of the Division of Water and Sewer Utilities ("DWSU").

9. The Property Owner will pay any inspection fees prior to the execution of the construction contract in accordance with the fee schedule of the DWSU.

10. Property Owner shall obtain all the applicable permits prior to the commencement of construction.

11. The Property Owner shall pay the prevailing connection fees for the sewer service for each equivalent dwelling unit, as determined by the County, prior to the issuance of the construction and/or building permits.

12. During construction of the systems the County shall have the sole right to approve any changes relating to the construction or design of the system and will transmit any such change orders to the Property Owner. Approval of any change orders requested by the Property Owner will not be unreasonably withheld by the County.

13. The County shall not be liable or responsible for any delay or default or any other problems encountered during the construction of the system. The Property Owner shall not have the right to assign this agreement without the approval of the County.

14. Every notice, approval, consent, or other communication authorized or required by this agreement shall be effective if made in writing and sent postage prepaid by United States mail or hand delivered to the other party at the address herein stated:

Division of Water and Sewer Utilities
4520 Metropolitan Court
Frederick, Maryland 21704

Property Owner:

15. This agreement sets forth all the promises, agreements, conditions and understandings between the County and the Property Owner relative to the specific subject matter of this agreement, and there are no promises, agreements, conditions, or understandings either in writing or oral, expressed or implied, between the parties other than set forth herein. Except as otherwise specifically provided herein, no subsequent changes, additions, or amendments to this agreement shall be binding upon the parties unless in writing and executed by each of the parties.

In witness thereof the parties herein set their hands and seals or caused these documents to be executed by the appropriate officers or officials.

ATTEST: **FREDERICK COUNTY, MARYLAND,**
a body corporate and politic

By _____

Chief Administrative Officer

WITNESS:

[Property Owners]

Typed or printed name(s)

Typed or Printed Name(s)

PROPOSAL
AND
CONTRACT
PACKAGE

**FREDERICK COUNTY
DIVISION OF WATER AND SEWER UTILITIES
DEPARTMENT OF ENGINEERING AND PLANNING
FREDERICK, MARYLAND**

PROPOSAL FORM

**GRINDER PUMPS AND LOW PRESSURE SANITARY
SEWERS**

(PROJECT NAME)

CONTRACT NO. _____

PREPARED BY: _____

DATE

PROPOSAL

OWNER: Frederick County, Maryland

PROPOSAL ON CONTRACT NO. _____

Made this _____ day of _____, 20 _____

By:

(Business Address)

The bidder declares that the only person, firm or corporation or persons, firms or corporations, that has or have any interest in this proposal, or in the Contract or Contracts proposed to be taken, is or are the undersigned; that this proposal is made without any connection or collusion with any person, firm or corporation making a proposal for the same work; that the attached and/or referenced Contract Documents and Drawings therein referred to, have been carefully examined and are understood; that as careful and examination has been made as is necessary to become informed as to the character and extent of the work to the Contract with the Owner in the form of Contract hereto attached, to do the required work in the manner set forth in the Contract Documents as shown by the Drawings.

The prices on the attached and signed proposal forms are to include and cover the furnishing of all materials and labor, requisite and proper and the providing of all necessary machinery, tools, apparatus and means for performing the work, and the doing of all the above-mentioned work, in the manner set forth, described and shown in the Contract Documents and on the Contract Drawings, within the prescribed time. If this proposal shall be accepted by the Owner and the undersigned shall refuse or neglect, within 10 days after receiving the Contract for execution, to execute the same and to give the stipulated bond, then said Owner may at its option, determine that the bidder has abandoned the Contract, and thereupon the proposal and the acceptance thereof shall be forfeited to and become the property of said Owner.

Note: The Bidder or Bidders must sign and the address for each must be given. In the case of firms, the firm's name, must be signed and subscribed to by a least one member. In the case of a corporation, the corporate name must be signed by some authorized officer or agent thereof, who shall subscribe his name and office. If practicable, the seal of the corporation shall be affixed.

(For Execution by Individuals, Partnerships or Corporations)

FOR INDIVIDUALS AND PARTNERSHIPS:

BY: _____ (SEAL)

_____ (SEAL)

_____ (SEAL)

WITNESS:

FOR CORPORATIONS:

NAME: _____ (SEAL)

_____ (SEAL)

BY: _____ (SEAL)
(President)

ATTEST:

(Secretary)

The Proposal Form shall be filled out in ink. The Proposal, if submitted by an individual, shall be signed by an individual; if submitted by a partnership, shall be signed by such member or members of the partnership as having authority to bind the partnership; if submitted by a corporation the same shall be signed by an officer and attested by the Secretary or an Assistant Secretary. If not signed by an officer, as aforesaid, there must be attached a copy of that portion of the By-Laws, or a copy of a Board Resolution, duly certified by the Secretary, showing the authority of the person so signing on behalf of the corporation.

In lieu thereof, the corporation may file such evidence with Frederick County, Maryland duly certified by the Secretary, together with a list of the names of those officers having authority to execute documents on behalf of the corporation, duly certified by the Secretary, which listing shall remain in full force and effect until such time as Frederick County, Maryland is advised, in writing, to the contrary. In any case where a Proposal is signed by an Attorney-in-fact the same must be accompanied by a copy of the appointing document, duly certified.

The names and addresses of all members of a firm or the names, addresses and titles of every officer of a corporation, as the case may be, must be given here by the member of the firm, or by the officer or agent of the corporation who signs the Proposal.

The Bidder hereby agrees to commence work under the Contract within (10) days after service of a written "Notice to Proceed" from the Owner and to complete the work fully within _____ calendar days after the date of said service.

The Bidder acknowledges receipt of the following addenda:

1. _____
2. _____
3. _____

Having carefully examined the Standard Specifications and Details, Special Provisions and Supplemental General Conditions referred to as the Contract Documents, for the work hereinbefore named, and in conformity with the Specifications, I/WE hereby certify that I/WE am/are the only person or persons interested in this Proposal as principals, that is it made without collusion with any person, firm or corporation; that an examination has been made of the Specifications and the Contract Documents, including the Special Conditions contained herein, and of the site of work, and propose to furnish all necessary machinery, plant, equipment, tools, labor and other means of construction, and furnish all materials specified, in the manner and at the times prescribed, and perform all work as follows:

PROPOSAL FORM

CONTRACT NAME: _____

CONTRACT NUMBER: _____ DATE: _____

BIDDER NAME: _____

BIDDER ADDRESS: _____

SIGNATURE: _____

BASE BID SCHEDULE

ITEM NO.	UNIT	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE
B-1	EACH	Grinder Pump System (Complete)		\$	\$
B-2	EACH	Low Pressure Sewer Service Connection		\$	\$
B-3	LF	SDR-21 PVC, Low Pressure Sanitary Sewer Pipe, 1-1/2 Inch Diameter		\$	\$
TOTAL FOR BASE BID ITEMS				\$	

CONTINGENT BID SCHEDULE

ITEM NO.	UNIT	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE
C-1	SY	Hot Mix Asphalt Patch, Full Depth (Complete)	5	\$	\$
C-2	CY	Excavation and Granular Backfill Below Subgrade (Complete)	10	\$	\$
C-3	CY	Test Pit	10	\$	\$
C-4	CY	Cast-In-Place Concrete	5	\$	\$
TOTAL FOR CONTINGENT BID ITEMS				\$	

Total Base Bid Price: \$ _____

(Total Base Bid Items + Total Contingent Bid Items) \$ _____

Total Bid Price (Total Base Bid Items + Total Contingent Bid Items) in writing: _____

The work shall be ready and be substantially complete within _____ calendar days following the notice to proceed date.

END OF PROPOSAL

CONTRACT

(Name and Number of Contract)

FREDERICK COUNTY, MARYLAND

THIS CONTRACT, made this _____ day of _____, 20 _____ by and between
_____, hereinafter called the "CONTRACTOR",
and FREDERICK COUNTY, MARYLAND, a body corporate and politic, hereinafter called the
"OWNER".

WITNESSETH, that the Contractor and the Owner for the consideration stated herein agree
as follows:

Article 1. Scope of Work. The Contractor shall perform everything required to be
performed and shall provide and furnish all the labor, materials, necessary tools, expendable
equipment, and all utility and transportation services required to perform and complete in a
workmanlike manner all the work required for the construction of Frederick County, Maryland,
Division of Water and Sewer Utilities Contract designated ***Contract No.*** _____, all in strict
accordance with the Contract Drawings and Specifications including any and all Addenda,
prepared by _____ Engineers, acting and in these documents,
referred to as the "Engineers", which Contract Drawings and Specifications are made a part of the
Contract and in strict compliance with the Contractor's Proposal and the other sections of the
Contract documents herein mentioned which are a part of this Contract, and the Contractor shall
do everything required by this Contract and the other documents constituting a part hereof.

Article II. The Contract Price. The Owner shall pay to the Contractor for the actual
quantities supplied and installed in the performance of this Contract, subject to any additions or

deductions provided therein, in current funds, an amount not to exceed the contract bid price of _____.

The foregoing bid price shall be the basis for establishing the amount of the Performance and Payment Bonds, and is not to be construed to be a lump sum contract price. The quantities of the unit price items as stated in the Contractor's Proposal are approximate only, and it is understood and agreed that payment will be made only on the actual quantities of work completed in place measured on the basis defined in the Contract Conditions and Contract Specifications and at the unit prices stated.

Article III. Component Parts of this Contract. This contract consists of the following component parts, all of which are as fully a part of this Contract as if herein set out verbatim or, if not attached, as if hereto attached:

1. Addenda No. _____, _____, _____, _____, _____, and _____.
2. Supplemental General Conditions
3. General Conditions and Standard Specifications, latest edition.
4. Contract Drawings.
5. Standard Construction Details, latest edition.
6. Project Specifications.
7. Special Provisions of the Contract
8. Contractor's Proposal.
9. This Instrument.
10. Contractor's Performance and Payment Bonds and Insurance Policies.

This Contract is intended to conform in all respects to applicable statutes of the State or County in which the work is to be constructed, and if any part or provision of this Contract conflicts therewith, said statute shall govern.

Article IV. Starting and Completion. The Contractor agrees to commence work under this Contract on a date to be specified in a written order from the Owner, and to fully complete all work included in the Contract to the point of substantial completion by the Owner within _____ consecutive calendar days including the said date, and the liquidated damage provisions of this Contract, \$600.00 per calendar day, applies to this time period.

ATTEST:

(Contractor)

Title: _____

By: _____

Title: _____

Date: _____

FREDERICK COUNTY, MARYLAND

WITNESS/ATTEST:

BY: _____

Chief Administrative Officer

Approved as to form and legal sufficiency:

Frederick County Attorney

AFFIDAVIT OF QUALIFICATION TO BID

I hereby affirm that:

1. I am the _____ and duly authorized of the firm of
(Title) _____ whose address is _____

_____ and that I possess the legal authority to make this
affidavit on behalf of myself and the firm for which I am acting.

2. Except as described in Paragraph 3 below, neither I nor the above firm, nor to the best of my knowledge, any of its officers, directors, or partners, or any of its employees directly involved in obtaining contracts with the State, any unit of the State, or any local governmental entity in the State (including a county, buttoned, or multi-county governmental entity) have been convicted of, or have pleaded nolo contendere to charge of, or have during the course of an official investigation or other proceeding admitted, in writing or under oath, acts or omissions which constitute bribery, attempted bribery, or conspiracy to bribe under the provisions of Article 27 of the Annotated Code of Maryland or under the laws of any State or the Federal Government. (Conduct prior to July 1, 1977 is not required to be reported)

3. (State "None" or, as appropriate, list a conviction, plea or admission described in Paragraph 2 above, with the date; court, official or administrative body, the individuals, involved and their position with the firm, and the sentence of disposition, if any.)

I acknowledge that this affidavit is to be furnished to Frederick County and, where appropriate, to the Board of Public Works and the Attorney General under Maryland State Finance and Procurement Code Annotated, Sections 16-201 through 16-208. I acknowledge that, if the representations set forth in this affidavit are not true and correct, Frederick County, Maryland may terminate any contract awarded and take any other appropriate action. I further acknowledge that I am executing this affidavit in compliance with Maryland State Finance and Procurement Code Annotated, Section 16-201 through 16-208, which provides that certain persons who have been convicted or have admitted to bribery, attempted bribery, or conspiracy to bribe may be disqualified, either by operation of law or after a hearing, from entering into contracts with the State or any of its agencies or subdivisions.

I do solemnly declare and affirm under the penalties of perjury and upon personal knowledge that the contents of this affidavit are true and correct.

Date: _____

Signature: _____

LABOR AND MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____

as Principal, and, _____
_____ as Surety, are held and
firmly bound unto the Frederick County, Maryland as Owner in the full and just sum of _____
_____ Dollars (\$ _____)
lawful money of the United States of America, to be paid to said Frederick County, Maryland or
to their attorney, to which payment well and truly to be made and done, we bind ourselves, our
heirs, executors, administrators, successors and assigns, jointly and severally, firmly these
presents.

WHEREAS, the above bounden _____
(Contractor) (hereinafter called the Contractor) has entered or is about to enter into a Contract with
the said Frederick County, Maryland bearing even date herewith, among other things for the
furnishing of all labor and material necessary for the construction of _____
_____ (Contract Name and Number) (hereinafter called the Contract) in Frederick
County, Maryland and which Contract and all documents forming a part thereof shall be deemed
a part hereof as fully as if set herein, and

WHEREAS, it was one of the conditions of the award of said Contract, and pursuant to
which said Contract was entered into, that these presents should be executed.

NOW, THEREFORE, THE CONDITIONS OF THE OBLIGATION ARE SUCH, that if the said Principal and all sub-contractors to whom any portion of the work provided for in said Contract is sublet and all assignees of said Principal and of such sub-contractors shall promptly make payment for all materials furnished and/or all labor performed and services rendered in the prosecution and/or construction of the work provided for in said Contract or in any amendment or extension of or addition to said contract which may be made with or without notice to the Surety, then the above obligation shall be void; otherwise to remain in full force and effect,

PROVIDED, however that this Bond is subject to the following conditions and limitations.

(a) All persons, firms, and/or corporations who have furnished materials and/or performed labor or rendered services as aforesaid shall have a direct right of action against the principal and Surety on this Bond, which right of action shall be asserted in proceedings instituted in any court of appropriate jurisdiction. Insofar as permitted by laws of the forum, such right of action shall be asserted in a proceeding instituted in the name of the Frederick County, Maryland to the use and benefit of the person instituting such action and of all other persons have claims hereunder, and any other person having a claim hereunder shall have the right to be made a party to such proceedings, (but not later than six months after the complete performance of said Contract and final settlement thereof) and to have such claim adjudicated in such action and judgment rendered thereon.

(b) The Surety shall not be liable hereunder for any damages or compensation recoverable under any workman's compensation or employer's liability statute.

(c) In no event shall the Surety be liable for a greater sum than the penalty of this Bond, or subject to any suit, action or proceeding thereon that is instituted later than six months after the complete performance of said Contract and final settlement thereof.

IN WITNESS WHEREOF, the said _____ has caused
(Contractor)

this bond to be signed in its name, by its President and its corporate seal to be hereon affixed,
duly attested by its Secretary and the said _____ has caused
(Surety)

this bond to be signed in its name by its _____ and its corporate seal
to be hereon affixed, duly attested by its _____ this _____ day of _____
_____ in the year _____.

WITNESS:

(Contractor)

_____ By: _____ (SEAL)
(President)

_____ ATTEST: _____ (SEAL)
(Secretary)

WITNESS:

(Surety)

_____ By: _____ (SEAL)
(President)

_____ ATTEST: _____ (SEAL)
(Secretary)

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____

as Principal, and, _____
_____ as Surety, are held and
firmly bound unto the Frederick County, Maryland in the full and just sum of _____
_____ Dollars (\$_____
lawful money of the United States of America, to be paid to said Frederick County, Maryland or
to their attorney, to which payment well and truly to be made and done, we bind ourselves, our
heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these
presents.

WHEREAS, the above bounden _____
(Contractor) (hereinafter called the Contractor) has entered or is about to enter into a Contract with
the said Frederick County, Maryland bearing even date herewith, among other things for the
furnishing of all labor and material necessary for the construction _____
_____ (Contract) (hereinafter called the Contract) in Frederick County, Maryland and
which Contract and all documents forming a part thereof shall be deemed a part hereof as fully as
if set herein, and

WHEREAS, it was one of the conditions of the award of said Contract, and pursuant to
which said Contract was entered into, that these presents should be executed.

NOW, THEREFORE, THE CONDITIONS OF THE OBLIGATION ARE SUCH, that if the said Contractor shall well and truly perform, fulfill and comply in all respects with all the undertakings, covenants, terms, and conditions and agreements of the said Contract, and, all obligations thereunder, including the proposal, specifications and/or drawings, etc., therein referred to, and made a part thereof, during the original term of said Contract, and any extension or extensions thereof, that may be granted from time to time, by said Frederick County, Maryland with or without notice to the surety, and during the term or terms of any guarantee required under the proposal, specifications and/or drawings, etc. and shall also well and truly perform, fulfill and comply in all respects with all the undertakings, covenants, terms, and conditions and agreements of any and all duly authorized modifications of said Contract that may be made hereafter, with or without notice to the surety, and shall indemnify and save harmless said Frederick County, Maryland, its agents and employees against and from all cost, expenses, damages, injury or loss to which the said Frederick County, Maryland, its agents and employees may be subjected by reason of any wrongdoing, misconduct, want of care of skill, negligence or default upon the part of the said Contractor, their agents or employees, or in any other manner arising, directly or indirectly from any and all causes whatsoever, in or about the execution of performance of the Contract, including said Frederick County, Maryland, their agents and employees against and from all losses to it from any cause whatsoever, including actual or alleged patent infringements in furnishing, delivery and constructing complete the said Contract, then this obligation to be void, otherwise to be remain in full force and virtue in law.

IN WITNESS WHEREOF, the said _____ has caused
(Contractor)

this bond to be signed in its name, by its President and its corporate seal to be hereon affixed,
duly attested by its Secretary and the said _____ has caused
(Surety)

this bond to be signed in its name by its _____ and its corporate seal
to be hereon affixed, duly attested by its _____ this _____ day of _____
_____ in the year _____.

WITNESS:

(Contractor)

_____ By: _____ (SEAL)
(President)

_____ ATTEST: _____ (SEAL)
(Secretary)

WITNESS:

(Surety)

_____ By: _____ (SEAL)
(President)

_____ ATTEST: _____ (SEAL)
(Secretary)