STANDARD SPECIFICATION
SECTION 02530
SANITARY SEWAGE SYSTEM

PART 1 GENERAL

1.1 DESCRIPTION

A. Section includes requirements to construct and test sanitary sewage system complete in place.

1.2 REQUIREMENTS FOR MANUFACTURERS AND SUPPLIERS BEFORE DELIVERY

A. Test materials as set forth in applicable referenced specifications and as required herein.

B. Inspect and Test Materials: Follow Section 01450 and as specified herein.
   1. Notify Commission 14 days before manufacture of pipe and fittings.
   2. Pipe manufacturer:
      a. Furnish materials to be tested.
      b. Furnish labor to assist Engineer with inspections and tests.

C. Manufacturer or supplier of reinforced concrete pipe (RCP) and structures: Store completed sections off ground using wood blocks, pallets, or other appropriate means.
   1. Place with ample space between rows and individual pieces, and enough clearance above and below stored sections to allow full view of walls and joint ends for inspection purposes.
   2. Batching plant, casting equipment, and curing facilities: Complete, operating properly and of proper size and range.
   3. Show records of continual maintenance and quality control over casting forms and joint forming rings.

D. Readiness for Inspection.
   1. Pipe will be ready to inspect when it meets requirements of specified tests.
   2. Pipe manufacturer or supplier: Before inspection of pipe for Contractor's order is scheduled furnish Commission with:
      a. The Commission’s contract number and Contractor's name.
      b. Pipe diameters, design, and classes.
      c. Footage of pipe included in order.
      d. Adequate quantities of pipe of required diameters, design, and classes.

E. Requirements for Cold-weather Conditions for Precast Materials Inspection and Testing of Precast Concrete Manholes: See Section 03400.

F. Plant or Site Inspected Materials Markings: See Section 01450.

1.3 SUBMITTALS

A. Submit following Section 01330.
   1. Shop Drawings for RCP, showing strength, details of special fittings, and reinforcing with joint and gasket dimensions.
   2. Lay schedules for RCP.
   3. Results of source quality control tests performed on RCP and profile PVC pipe at point of manufacture.
   4. Method for maintaining sewage flows.
   5. Shop drawings, manufacturer's installation recommendations, and operation and maintenance manuals for slide gates and operators.
   6. Waiver for concrete pipe, manholes and select precast concrete structures: Submit letter naming manufacturer furnishing items, and who has on file with Commission a certified standard submittal package containing required Commission approved information.
      a. Furnish new submittals if standard details or specifications change.
   7. Manufacturer’s literature and installation guidelines for profile PVC pipe.
   8. Coating manufacturer’s catalog data for coating material used to line inside of ductile iron pipe (DIP), including surface preparation, application procedures, curing, and handling of lined pipe.

B. Submit following Section 01450 before delivery of materials.
   1. RCP.
      a. Certificates of Compliance or Materials Checklist Furnished by the Commission:
         1) Include Commission Contract Number, job location, and Contractor's name, types, classes, and strengths of pipe, and pipe manufacturer's name.
         2) Concrete and masonry materials: See Sections 03300, 03400 and 04200.
      b. Certified Test Reports:
         1) Aggregates.
         2) Cement.
         3) Admixtures.
         4) Steel reinforcement.
         5) Materials: Follow national standards specifying pipe and fittings.
         6) Submit reports before start of production and every 30 days after production is ongoing.

C. Packing list, invoice, or delivery ticket with every shipment, to contain the Commission contract number, type and class of pipe, length, and other pertinent information.

D. Installation and Repair Recommendations.
   1. Submit manufacturer's recommended installation and repair methods and procedures for pipe and structures for approval before material fabrication.

2. Submit manufacturer's recommended installation procedures for PVC lined or HDPE lined precast concrete manholes.
3. Submit recommended repair methods and procedures for defects and damage to RCP, structures and lined manholes from manufacturer furnishing product.
    a. Repairs: Performed by manufacturer using specifically trained personnel, only in presence of, and after approval of Engineer.
    b. Lined manhole repair: Repair personnel certified by lining manufacturer.
4. Waiver: When manufacturer has approved installation and repair methods on file with Commission.
    a. Furnish new submittals if specifications change.
5. Submit coating repair methods and procedures to be used at Contract site for lined pipe.
    a. Inspection and repairs: Follow coating manufacturer's recommendations.

E. Concrete Design Mixes: See Sections 03300 and 03400.

F. For more specific handling of different kinds of pipe, see Installation herein.

G. Sewer Service Connection Testing: Closed Circuit Television (CCTV) color CD-ROM and inspection report as specified under Field Testing.

PART 2 PRODUCTS

2.1 MATERIALS

A. Pipe and Fittings.
1. General:
Pipe between structures or between structure and terminus: Same size and material and by same manufacturer.
Each pipe and fitting: Mark with manufacturer's name or trademark, specification designation, pipe class and strength, production shift code, and manufacture date and location.
The Commission will furnish:
    a. Manhole frames and covers, including flexible gasket material to be used between frame and manhole wall.
    b. Manhole steps except for precast manholes and other precast structures.
    c. Cleanout frame and cover for service connection renewals.
    d. Lamphole frame and cover for service connection renewals involving 6 inch cleanouts.
    e. Four-inch diameter PVC backwater valve for sewer service except riser pipe.
To obtain materials from, and return unused materials to the Commission: Follow Section 01110.
2. Gravity Sewer:
    a. PVC Pipe and Fittings (See Section 02510 for AWWA C900 and C905 PVC Pipe and Fittings).

1) Standards.
   a) PVC pipe and fittings 4-inch and 6-inch diameter: ASTM D3034, wall thickness classification SDR 35 or SDR 26.
   b) PVC pipe and fittings 8-inch through 15-inch diameter: ASTM D3034, wall thickness classification SDR 35.
   c) PVC pipe and fittings 18-inch through 27-inch diameter: ASTM F679, wall thickness T-1.
   d) Closed profile PVC pipe 21-inch through 48-inch diameter: ASTM F1803.
      (1) Manufacturer: Designate and mark pipe manufactured to connect to manholes as "Manhole Pipe".
      (2) Exterior seam: Factory smoothed.
   e) Open profile PVC pipe18-inch through 30-inch diameter: ASTM F794.
      (1) Manufacturer: Furnish suitable smooth manhole adapters, ASTM F679, minimum wall thickness T-1, SDR 35.
2) Length: Not less than 12 feet.
3) Joints and fittings: Integral bell gasketed joint is designed so when assembled elastomeric gasket inside bell is compressed radially on pipe spigot it forms watertight joint.
   a) Gasket: ASTM F477.
4) Legible markings: ASTM D3034, ASTM F679, ASTM F794, or ASTM F1803 and with date and location of manufacture.
   a) Pipe and fittings not marked as specified herein will be rejected.
   b) Pipe and fittings manufactured more than 1 year before date of work site inspection will not be accepted.
5) Approved pipe manufacturers:
   a) Charlotte Pipe and Foundry Co., 4 inch through 15 inch.
   b) CONTECH Construction Products, open profile, 18 inch through 36 inch.
   c) Diamond Plastics Corporation, 4 inch through 27 inch, closed profile, 30 inch through 48 inch.
   d) IPEX, Inc., 4 inch through 27 inch, Ultra Rib open pipe, 18 inch through 24 inch.
   e) Lamson Vylon Pipe, closed profile, 21 inch through 48 inch.
   f) National Pipe and Plastics, Inc., 4 inch through 24 inch.
   g) North American Pipe Co., 4 inch through 24 inch.
   h) JM^{TM} Eagle, 4 inch through 15 inch, open profile, 18 inch through 30 inch.
6) Approved fittings manufacturers:
   a) GPK Products, Inc.
   b) JM^{TM} Eagle.
   c) Multifittings, Ltd./Ipex, Inc.
   d) The Harrington Corporation.
   e) Vassallo Industries.
   f) Colonial Engineering, Inc.
   g) Plastic Trends, Inc.

h) Freedom Plastics, Inc.

b. DIP and fittings: Follow Section 02510 and specified herein.
   1) Factory Coated Interior pipe liner.
      a) Materials for Lining Pipe.
         (1) Prepare pipe surfaces and apply coating following coating manufacturer's recommendations. Approved applicators:
            (a) Baumann Coatings, Inc.
            (b) Acme Industrial Coatings.
            (c) Bredero Shaw Company.
      b) Interior Lining Materials.
         (1) Minimum 40.0 mils dry film thickness (DFT) with:
            (a) Protecto 401 Ceramic Epoxy.
            (b) Corropipe II WasteLiner.
            (c) Or equal.
         (2) Amine-cured novolac epoxy containing ceramic quartz pigment as supplied by:
            (a) Induron Protective Coatings.
            (b) Or equal.
         (3) Liquid-applied polyurethane as supplied by:
            (a) Madison Chemical Industries Inc.
            (b) Or equal.

c. RCP: Unless shown otherwise on Drawings, do not use RCP in 30 inch diameter and smaller sizes.
   1) Standards: ASTM C76, Class following Drawings.
      a) Concrete used in production of pipe and fittings: 28-day minimum compressive strength following ASTM C76.
      b) Cement: ASTM C150 with no additives and blends added without prior approval of Engineer. Other exceptions are as modified herein.
      c) Pipe:
         (1) Accepted, if each length of pipe passes hydrostatic test required herein before delivery to Contract site.
         (2) Not accepted from manufacturer's stock, except Engineer may accept from manufacturer's stock a maximum of 10 pieces of pipe, meeting requirements herein.
      d) Shorts, Fittings, and Beveled Pipe: Hydrostatic tests not required.
      e) Pipe and Fitting: Free of coatings.
   2) Ends of pipe and fittings: Circumferential reinforcing steel equivalent in area to single reinforcing cage used in barrel of pipe or fittings.
      a) Extend longitudinal steel to hold circumferential steel in place to within 1 inch of face of ends.
   3) Lengths and types:
      a) Length: Minimum 8-foot lengths, with rubber gasket joints meeting requirements of ASTM C443. Lifting holes will not be permitted.
      b) Bevel pipe: Provide when specified or when required to open pipe joint more than permitted herein.

c) Non-float concrete pipe: Meet requirements specified above and following:
(1) Outside diameter shall be increased so that pipe contains sufficient concrete to resist floatation with pipe empty and uncovered.
d) Increased thickness: Homogeneous or heterogeneous, of same concrete strength as pipe, and reinforced to prevent shrinkage and temperature cracks.
e) Joints: Interchangeable with those of adjoining sewer pipe.
4) Approved manufacturers:
a) Hanson Concrete Products.
b) Rinker Materials, Hydro Conduit Division.

3. Forcemains.
a. DIP and Fittings: Follow Section 02510 and specified herein.
1) Unless otherwise noted on Drawings, factory coat interior of DIP force main 100' from transition manhole. For coating requirements see DIP under Gravity Sewer specified herein.
b. PVC AWWA C900: See Section 02510 for 12" and smaller pipe.

B. Connection Appurtenances.
1. Connections 8” and larger will be made by way of Manhole built over existing sewer following Standard Details.
2. Saddles: For connecting sewer service connections to existing main line.
a. PVC Main: Follow manufacturer’s recommendations.
b. Approved saddle manufacturers for connecting to asbestos cement, vitrified clay, concrete, cast iron, or ductile iron sewer pipe with outside diameter:
1) The General Engineering Company, SEALTITE Type "S" saddle with FERNCO adapter, following GENECO Drawing R-3450-D,
2) Romac Industries, Inc., "CB" style saddles.
3) FERNCO, EZ Tap
4) Or equal.
c. Approved wye manufacturer for making wye connection to asbestos cement, vitrified clay, concrete, cast iron, or ductile iron sewer pipe with outside diameter 36-inch and smaller:
1) The General Engineering Company, SEALTITE Type "E" saddle with FERNCO adapter following GENECO Drawing R-3413-D1, View 1.
2) Or equal.
3. Thimbles: Use where conditions preclude use of a tee or saddle when connecting to existing sewer pipe.
a. Approved manufacturers:
1) Inserta Tee.
2) Or equal.
4. Coupling/Adapters: For connections between different types of pipe and point repairs:
a. Approved manufacturers:
1) FERNCO Joint Sealer Co. with shear ring.
2) DFW by NDS non-shear.

3) Or equal.

5. Flexible Gasket Connectors:
   a. For connecting pipes to sewer manholes, see Section 03400.
   b. Transition Gasket to connect DIP to PVC Pipe.
      1) Approved manufacturers:
         a) Harrington Corporation.
         b) Romac Industries.
         c) Or equal.
6. Stoppers for non-pressure pipe.
   a. Open ends of pipe, branches and connections: Close with pre-molded gasket joint stopper meeting requirements for pipe used.
   b. Watertight mechanical plug for placement on interior of pipe.
7. Connections to Forcemains.
   a. Flexible gasket connectors for connecting forcemain to precast manholes: See Section 03400.
   b. Connections to new forcemains constructed under same contract: Use fittings indicated on Drawings.
   c. 2-inch diameter and smaller connections: Use tapped service tee fittings.
   d. Connections to existing forcemain: Sleeve in appropriate fitting or use appropriate saddles or sleeves as specified herein.
   e. Saddles with clamps: See Section 02510.
   f. Tapping sleeves: Used for 3-inch diameter and larger connections to existing forcemain.
      1) Full sleeve mechanical joint type capable of containing pressure within full volume of sleeve.
      2) Rated for minimum 150 psi water operating pressure.
      3) Capable of withstanding rated operating pressure without leakage past side and end gaskets and junction of the two.
      4) Castings: Clean and sound without defects that will impair their service.
      5) No plugging or welding of defects permitted.
      6) Flanged outlet: ANSI B 16.1, Class 125.
      7) Provided with tap and test plug.
      8) Other tapping sleeve requirements: See Section 02510.
   g. Tapping valves: Use with tapping sleeves having flanged inlets compatible with outlet flange of tapping sleeve.
      1) Mechanical joint outlet.
      2) Other tapping valve requirements: See specifications for gate valves in Section 02510.

C. Miscellaneous Materials.
   1. Cast-in-Place Concrete: See Section 03300.
   2. Pipe Embedment Material: For pipe and structures see Section 02315.
   3. Precast Concrete Manholes: See Section 03400.
   4. Castings, Miscellaneous Metal Connectors, and Appurtenances: See Section 05500 and follow Standard Details and Drawings.
   5. Lamphole Style Cast Iron Cover Assembly:

a. Approved manufacturers for 4 inch Cleanout:
    1) Bingham & Taylor Corporation; Approved Foundry: Culpeper Virginia.
        a) Frame and Cover SN 4881-9006-7 Model No. I5TL54SSWSSC.
    2) Capital Foundry, Inc.; Approved Foundry: UMA Iron and Steel, Calcutta, India.
    3) Chesapeake Foundries, Inc.; Approved Foundry: Carnation Industries, Ltd. Calcutta, India. (Imported by Creswell Trading Co.)
        a) Cover: Part no. CLTS-1.
        b) Frame: Part no. CLF-2, per approved drawings.
    4) Or equal.
b. Approved manufacturers for 6 inch Cleanout:
    1) Bingham & Taylor Corporation; Approved Foundry: UMA Iron and Steel Calcutta, India
        a) Cover: Model No. INDMLAMPLID
        b) Frame: Model No. INDMLAMPBOX
    2) Capital Foundry, Inc.; Approved Foundry: UMA Iron and Steel, Calcutta, India.
    3) Chesapeake Foundries, Inc.; Approved Foundry: Cresmac Foundry, Kolkata, India.
    4) East Jordan Iron Works, Inc., Catalog No. 1565.
    5) Or equal.

6. Masonry Work: See Section 04200.
7. Mortar Bonding Admixture: Addition to mortar for installation of precast concrete grade ring adjustment.
    a. Approved manufacturers and admixtures:
        1) Euclid Chemical Co., Flex-con.
        2) Parchem Construction Products, Nitobond Acrylic.
        3) Thoro System Products, Inc., Acryl-60.
8. Curing Compound: ASTM C 309, Type 2, Class B white pigmented resin based for use with parging and precast grade rings.
9. Manhole Steps.
    a. Concrete structures: ASTM C 478.
        1) Minimum 1/2 inch diameter steel reinforcing bar: ASTM A615.
        2) Grade 60 or deformed wire: ASTM A496.
        3) Encase in polypropylene: ASTM D4101.
    b. Masonry structures:
        1) Meet above requirements for concrete structures.
        2) Manufacturer's standard specially designed for brick or block walls.
10. Geotextile, Type A: See Section 02070.
11. Asphalt-Based Waterproof Coating on Brick Transition on Manholes:
    a. Approved manufacturers and coatings:
        1) Lasting Paints, Stix-tite Roof and Foundation Coating MA-241 or FMA-241.
        2) Seaboard Asphalt Products Company (153), Clippership heavy duty fibrated roof coating LN-13S.
        3) Or equal.

12. Quick-Setting Non-Shrink Grout: See Section 03300.
13. Flexible Gasket between Manhole and Manhole Frame: Extruded rope type B, following AASHTO M198 butyl based, 3/4-inch diameter minimum.
    a. Approved manufacturers and models:
        1) Hamilton Kent Manufacturing Co., Kent Seal II.
        2) ADCO Products, Flex-lok.
        3) Press-Seal Gasket Corporation, E-Z Stick.
        4) Concrete Sealants, Inc., CS-302.
14. Manhole Frames and Covers.
    a. Castings:
        1) From iron melted by any process and following ASTM A48, Class 35 minimum.
        2) Cleaned by sandblasting or other approved process.
    b. Drilling and tapping of bolt holes: Done in manner so frames and covers of any manufacturer are interchangeable with those of another manufacturer.
    c. Frames and covers: Do not paint or coat.
    d. Approved Manufacturers:
        1) East Jordan Iron Works (Acceptable 22 inch alternate: EJIW Drawing No. 2060ZVH frame and 2065AVHPT cover, Drawing No. 206001).
        2) Neenah Foundry (Acceptable 22 inch alternate: Neenah frame and platen lid bolted, watertight manhole, Drawing No. NF-0785 015C).
        3) Capital Foundry (22 inch, 30 inch, and 36 inch; Approved Plant: NIF Iron and Steel, Calcutta, India).
        4) Chesapeake Foundry Inc. (22 inch only; Approved Plant: Cresmac Foundry, Kolkata, India).
15. Mastic and Mortar for Filling Pipe Joints.
    a. Mastic: Elastic water resistant formulation of plastic bituminous materials and inert fillers.
        1) When applied to vertical metal surface and heated to 120 degrees F jointing mastic will neither slump nor lose plasticity.
        2) When applied directly from container without further fixing jointing mastic can be applied in even, adherent coat within temperature range of 20 to 100 degrees F.
        3) Capital Foundry (22 inch, 30 inch, and 36 inch, Approved Plant: NIF Iron and Steel, Calcutta, India).
        4) Chesapeake Foundry Inc. (22 inch only; Approved Plant: Cresmac Foundry, Kolkata, India).
    b. Mortar: One part Type II cement and 3 parts of mortar sand following ASTM C144.
16. Slide Gates.
    a. Aluminum plate slide gates:
        1) Structurally reinforced members to limit deflection of slide under full head conditions to less than 1/260 of gate span.
        2) Self-contained, rising stem gates with guides designed to mount on face of concrete.

3) Resilient seal mounted on lower edge or securely attached to frame along invert.
    a) Flush bottom closure with effective seal on structural angle or channel.
4) Aluminum guides with resilient bearing strip inserts on surfaces in contact with gate.
5) Stainless steel stems and fasteners.
6) Approved manufacturer:
    a) Rodney Hunt Company, Series 761.
    b) Or equal.

b. Crank-operated floor stand operators:
1) Weatherproof housing with solid bronze operating nut.
2) Equipped with roller bearings and mechanical seals around operating nut and pinion shaft.
3) Maximum crank effort required to operate gate: Not to exceed 40 pounds.

17. Mandrel.
a. All metal parts of such stiffness that mandrel will not deform during test.
b. Seven equally spaced circumferential runners or fins.
c. Minimum length of runners in contact with pipe not less than nominal diameter of pipe.
d. Inside pipe and outside mandrel diameters as follows:

Pipe Size In Inches	Mandrel Outside Diameter In Inches
6	5.45
8	7.28
10	9.08
12	10.79
15	13.20

e. Approved manufacturers:
1) HURCO Technologies.
2) Cherne.
3) Or equal.

18. Tracer Wire PVC AWWA C900 and C905: See Section 02510.
19. Drop Bowl for Inside Drop Connections.
a. Marine grade fiberglass finished in bright white gel coat.
b. Stainless steel adjustable clamping brackets.
c. Adequate size for incoming pipe diameter.
d. Approved manufacturer:
1) RELINER® by Duran Inc.
2) Or Equal.

2.2 SOURCE QUALITY CONTROL

A. General.
1. Notify Engineer at least 10 working days before performance of tests required herein.

2. Manufacturers or Suppliers: Responsible for facilities, equipment, and competent personnel for conducting load bearing, hydrostatic, and other tests required in applicable reference specifications.
    a. Set up instruments, gages, and other testing and measuring equipment to evaluate quality of proper range, type, and accuracy to verify conformance with specification requirements.
    b. Assure that equipment is calibrated and certified at annual intervals.
        1) Calibrate against measurement standards with known relationship to national standards.
        2) Calibrate and certify gages on equipment to which they belong, and keep them on that piece of equipment following certification.
        3) Do not use instruments, gages, testing, and measuring equipment found to be out of calibration or adjustment until applicable requirements have been met.
        4) Hire agency regularly engaged in this type of activity to perform calibration.

B. PVC Pipe.
    1. Test Standards for Gravity Pipe:
        a. PVC pipe 4 inch through 15 inch diameter: ASTM D3034.
        b. PVC pipe 18 inch through 27 inch diameter: ASTM F679.
        c. Elastomeric gaskets: ASTM D3212.
        d. Closed profile PVC pipe: ASTM F1803.
        e. Open profile PVC pipe: ASTM F794.
    2. Test Standards for Pressure Pipe: AWWA C900 and C905.
    3. Engineer may request that pipe manufacturer witness source quality control testing of PVC pipe and fittings specified herein.

C. RCP.
    1. Load-bearing and Hydrostatic Tests:
        a. Perform in presence of Engineer.
        b. Complete before pipe delivery to site.
    2. Test Specimens: As selected at random by Engineer from pipe produced for Contract.
        a. Quantity:
            1) Load-bearing test: At least half of 1 percent of number of pipes to be furnished for each size and class for each contract, but in no case less than 1 piece for each size and class.
            2) Hydrostatic test: 100 percent of pipe.
        b. Testing Sequence: Load-bearing test may be conducted with hydrostatic testing, using pieces of pipe from same class and lot as hydrostatic test specimens.
            1) If a given contract has 2 or more classes of pipe of same size and joint design, hydrostatic testing may be combined by jointing 2 pieces of pipe with different classes.
            2) If pipe furnished is from previously tested lot, required testing will be waived provided pipe at time of offering is less than 1 year old.

3) Test pipe more than one year old unless lot offered was tested within 6 months of date of offering.
4) Definition of lot as used herein: Assemblage of 100 or fewer concrete pipe sections, all being of like size, design, material, and strength and designation, manufactured by same process and without interruption, during a time period not to exceed 10 consecutive working days using same types of materials.

3. Load-bearing Test:
   a. RCP, 72 inch and smaller diameter:
      1) Acceptance will be based on:
         a) Plant load-bearing tests to 0.01 inch crack and to specified ultimate load.
         b) Material tests and inspection of manufactured pipe for visual defects and imperfections.
         c) Stipulations set forth in appropriate ASTM specification and modified herein.
      2) Retest of failed specimens:
         a) For each specimen failing strength tests, Engineer will randomly select 2 additional specimens from same lot as failed specimen, for each specimen that failed, and will accept pipe only when all of retest specimens meet strength requirements.
         b) One pipe from previous lot will be subjected to load test, and procedure for retest will be as stated above, including test of previous lot.
   b. RCP, 78 inch and larger diameter:
      1) Acceptance: Based on compressive strength and absorption tests and inspection of finished pipe, including amount and placement of reinforcing steel.
   c. Load-bearing test specimens will not be accepted for incorporation into Work.
4. Hydrostatic Test: ASTM C497.
   a. Basis of acceptance of pipes for gravity sewers: Withstand minimum internal hydrostatic pressure of 13 psi for 10 minutes with no leakage before delivery to Contract site.
   b. Testing conditions:
      1) Soak pipes, under reduced pressure, for maximum of 24 hours before testing.
      2) Moisture appearing as patches or beads not resulting in runs on pipe walls is not considered leakage, if pipe walls are dry upon retesting at prescribed test pressure after elapse of not more than 24 hours.
      3) Test pressure may be maintained between initial test and retest at option of manufacturer.
      4) At manufacturer's option, standpipe as specified below may be used in lieu of water-calibrated pressure gage.
         a) Standpipe:
            (1) Calibrated in 1/2 foot increments with permanent markings.

(2) At a height and with adjusted overflow line developed for specified pressure.
(3) Ensure continuous visible stream of water from overflow line during test.

c. Fittings: Test not required.

PART 3 EXECUTION

3.1 PUBLIC NOTIFICATION

A. Service Connection Contracts (AC, SC, LC)
1. Deliver written notices to each home or business 48 hours prior to commencement of work being conducted, including a local telephone number for inquiries or complaints.
2. Provide owner or occupant with summary of work to be completed, and time and duration of service interruption to building.
3. Contact any home or business that cannot be reconnected within time stated in written notice.
4. Fax or email copies of all delivered notices to Engineer.

3.2 INSTALLATION OF SANITARY SEWER

A. Inspect and Test Materials: Follow Section 01450 and as specified herein.

B. Handling of Pipe and Fittings after Delivery
1. Unloading and handling.
a. PVC pipe and fittings: Use proper equipment, avoiding severe impact blows, especially during cold weather.
b. PVC pressure pipe and fittings: AWWA C605.
c. Ductile and gray iron pipe, DIP fittings, and appurtenances: Follow Section 02510.
d. RCP, manholes, and appurtenances: Use crane or backhoe of proper capacity equipped with appropriate slings to protect material from damage.
e. Storage: Store in reasonably level area, well drained, away from brush, and in area accessible for inspection.
1) Store individual pieces or bundles with safe walking space and clearance between to allow full view for inspection purposes.
2) Do not place excavated or other materials over or against stored pipe.
3) Store on flat surface so barrel of pipe is evenly supported and not piled more than 4 feet high.
4) Do not stack bundles or containers.
5) If left bundled, place bundles on flat smooth surface with boards in contact with ground.
6) Gasket: Store in cool place out of direct sun.
2. Inspection and Repair: Pipe will be inspected before installation.

a. Repair damage during handling and placement following Engineer's direction and approved manufacturer's recommendation.
b. Remove and replace at no expense to Commission damaged pipe deemed not repairable by Engineer.
c. Closed profile PVC pipe:
1) Do not repair in field.
2) Acceptable marks: Scrapes or gouges less than 2 inches in length and less than 1/2 total wall thickness on exterior of barrel.
3) Dispose of damaged pipe following manufacturer's recommendation.

3. Cleanliness.
a. Clean and remove foreign matter from each pipe, fitting, and appurtenance before placing in trench.
b. Should foreign matter be observed in previously installed pipe, fitting, or appurtenance, cease work until foreign matter is removed.
c. Close open ends of pipes and fittings with watertight cap or plug when work is stopped.

C. Trench Excavation, Backfill, and Test Pits: Follow Section 02315.
1. Before pipe installation:
a. Dig test pits to determine size, type, and exact location of existing pipe to which proposed pipe will connect.
b. Excavate sufficient trench in advance and test pit all existing underground utilities/structures, whether shown on Drawings or visually identified in field, to:
1) Verify actual locations.
2) Make reasonable changes in line and grade to resolve conflicts, at Engineer’s approval.
c. Furnish Engineer location and elevation information when previously unknown or different underground utilities/structures are encountered.
2. Perform additional work made necessary because of failure to take above precautions at no cost to the Commission.

D. Pipe Embedment Material: Follow Standard Details and Section 02315.
1. Encasement and/or concrete cradle where indicated.

E. Pipe Placement.
1. Before pipe installation bring bedding material to grade along entire length of pipe to be installed.
2. Excavate bell holes, for type placed, at each joint to permit proper joint assembly and firm bedding for entire length of pipe barrel.
3. Install pipe to true uniform line and grade with continuous bearing of barrel on bedding material.
4. Where indicated, place erosion checks or concrete anchors following Standard Details.
a. Cure concrete anchors minimum of 2 hours before placing backfill.

5. Install pipe upgrade with bell pointing upstream. Pipe may be installed with bell pointing downstream with Engineer's approval.
6. Place each section of pipe to form close concentric joint with adjoining section and to prevent sudden offsets in flow line.
7. Place sufficient backfill on each section of pipe, as it is installed, to hold it firmly in place.
8. Install DIP and fittings following Section 02510.
9. PVC AWWA C900 and C905 Pressure Pipe: Follow Section 02510.

F. Point Repairs: Replacement of existing sewer from 5 linear feet to 10 linear feet to correct identified problems with sewer main.

G. Verification of Design Slope and Invert Elevations:
1. Installations of 0.5 Percent or Less: Survey immediately upon completion of each segment before setting the cone section.
2. Reinstall segment(s) of pipe where slope or elevations are not to design at no additional cost to the Commission.

H. Work Orders designated as an emergency shall commence work within 24 hours of issuance.

3.3 JOINTS

A. PVC Pipe:
1. Clean joint surfaces immediately before jointing.
2. Apply lubricant, align spigot to bell, inserting until it contacts gasket evenly all around, then force pipe units together with proper equipment.
   a. Insert spigot ends into bells to depth marked on pipe.
   b. If spigot depth reference mark is missing, improperly placed, or on field-cut pipe, mark depth reference around entire circumference of pipe before making joint.
3. Field Cut:
   a. Cut square and bevel outer edge same as factory-made spigot ends.
   b. Closed profile PVC pipe: Seal exposed cells on cut ends following manufacturer's recommendation.
   c. Open profile PVC pipe: Cut 18 inch and larger pipe following manufacturer’s recommendation.

B. DIP: See Section 02510.

C. RCP:
1. Clean RCP joint surfaces immediately before jointing and liberally coat pipe joints with lubricant.
2. Fit bell or spigot with gasket following manufacturer's instructions.
   a. Joint pipes with equipment designed for purpose.

b. Before joint is completely home, check gasket position using suitable gage.
c. If gasket is dislocated, repeat entire joining process using new gasket.

3. For pipe with steel end ring joints, after joining has been completed, completely fill exterior joint spaces with mastic or mortar and fill interior joint spaces on pipes 36 inch and larger diameter with mastic or mortar and remove excess material from inside of pipe.
4. Joint Opening: Maximum 1/2 inch, unless otherwise shown on Drawing.

D. PVC AWWA C900 and C905 Pressure Pipe: Follow Section 02510.

3.4 SEWER SERVICE CONNECTIONS

A. Install following Standard Details and Contract Documents.

B. Service connections to DIP, PVC AWWA C900, and C905.
1. PVC SDR 26.
2. Install transition gasket to mechanical joint tee.

C. Tapping Existing Main:
1. Tap existing sewer with motor driven tapping machine utilizing diamond core bit.

D. Sewer Service Connection Renewal (LC) Contracts.
1. Before connection to mainline, take necessary steps to assure minimum 2 percent grade. Remand to Engineer for resolution when 2 percent grade cannot be obtained.
2. Utilize existing tee at main line unless otherwise directed by Engineer.
3. When not utilizing existing tee remove existing pipe and replace with PVC pipe and tee, wye, or tap with approved saddle.
4. Reconnect and restore service by end of work day.
5. Abandon existing tap, tee, wye, or thimble not utilized for renewal as described herein.
6. Where sewer service connection is same size as existing sewer, cut in PVC tee or wye branch with adapters.
7. Where existing tap with double connection requires replacement, install 2 single connections.
8. Where indicated or directed by Engineer, tap directly into manholes for sewer service connections specified herein.
9. Renewal of existing asbestos cement (AC) pipe.
a. Comply with OSHA requirements for sawing AC pipe.
b. Use water during sawing to prevent dust from being generated, and to shield and contain debris.
c. Allow only workers directly involved in sawing AC pipe in work area during sawing operations.
d. Leave AC pipe to be abandoned intact in largest possible pieces.
1) Do not crush, break up or cut into small pieces.
e. Move cut sections of AC pipe to side wall of trench excavation.

1) Do not damage or break AC pipe into smaller debris.
2) Abandon AC pipe minimum of 8 inches from new service.

f. Cover cut sections and ends with 6 mil plastic sheeting before backfilling.
g. Install new pipe without disturbing AC pipe sections.
h. Install cleanout at property line following Standard Details, and following Section 02955 unless otherwise directed by the Engineer.

E. Post Lining Installation of New Service Lateral.

1. Preparation.
   a. Excavate to host pipe elevation.
   b. Remove host pipe material from area of new connection, so tap saddle will fit onto outside of liner without damaging it.
   c. Clean off liner's exterior and prepare surface for seating saddle.
   d. May require saddle to sit on bed of resin to smooth out surface.
   e. Grinding to smooth the surface is not permitted.

2. Installation.
   a. Cut hole into liner using liner manufacturer's approved cutter, leaving no burrs or damage to mainline liner.
   b. Center saddle over hole in the liner's exterior.
   c. Install strapping bands to hold saddle onto liner without crushing or distorting the liner shape.
   d. Connect lateral to saddle tap following Section 02530 and Standard Details.
   e. Install lateral-mainline interface seal at no additional cost to the Commission.
   f. Internal CCTV inspect new service lateral for defects or distortion to main liner.
   g. Perform lateral-mainline interface testing as described herein.
   h. Repair any defect to lateral, main, or interface seal at no cost to the Commission.
   i. For lined mains, install lateral—mainline interface seal following Section 02955.

F. Area Service Connection Contracts (AC and LC) Only.

1. Engineer will issue an average of 3 work orders per week for sewer service connections, to be constructed in the order they are received, or as directed by Engineer.
2. Schedule work orders designated as health hazards to be completed within 10 working days and other work orders to be are completed within 15 working days of issuance.
3. Provide sufficient equipment and work forces to commence and complete each connection within prescribed timeframe.
4. When directed to mobilize to site designated as an Emergency by Engineer start within 24 hours.
   a. Cost incurred by the Commission due to work orders not completed within timeframe specified herein may be deducted from monies owed Contractor.
   b. Issuance of new work orders may be suspended until outstanding work orders are completed.

c. Complete cleanup, restabilize, and restore as weather permits on each service connection location before leaving site to commence work at another location.
    1) Restoration non-paved areas: Follow Section 02920.

3.5 CONNECTIONS TO EXISTING SEWERS AND MANHOLES

A. Install following Standard Details and Contract Documents.

B. Verify proposed connection for grade, alignment and existing pipe material to existing sewer before installation of pipe.

C. Maintain existing sewage flows during connection to existing sewer.
1. Take precautions and employ methods required to prevent sewage backup.
2. Bypass pumping may be used as option for flow diversion.
3. Return diverted sewage to sanitary system and do not discharge on surfaces or into streams or storm drains.
    a. Use enclosed bypass flumes equivalent in size to existing sewer being diverted, when required.
4. Immediately clean and disinfect raw sewage spills and overflows caused by operation.
    a. Immediately report sanitary sewer spills and overflows onto any surface to the Commission Emergency Call Center at 301-206-8222.
        1) No surfaces or amounts are exempt.
        2) Telephone details available at that time to WSSC Customer Care Agent.
    b. Provide completed Sanitary Sewer Overflow (SSO) Event Form located at end of this section to Engineer by end of work day.
        1) Include date, start and stop times, the duration, volume, whether overflow went into a waterway, impact, contacts, resolution, how recurrence will be prevented, and any other information required on SSO Event Form.
        2) Engineer will fax (301-206-8114) completed form to WSSC Wastewater Collection System Group, Planning Unit within 24 hours of SSO event.
    c. SSO signs.
        1) Post any time there is a chance of public exposure or when SSO occurs in close proximity to a waterway is 10,000 gallons or greater or is a threat to human contact.
        2) Available from Commission Customer Care Depots.
        3) Do not remove while evidence of SSO remains.
            a) Post for 2 weeks for SSO up to 100,000 gallons.
            b) Post for 30 days for SSO greater than 100,000 gallons.
5. Personally notify Schools, Hospitals, Daycare Centers, Elder Care, and similar areas of a SSO in vicinity as soon as possible.

D. Connect pipe to existing concrete manhole by core drill method.
1. Unless otherwise noted, provide flexible gasket connector following manufacturer's recommendation.

E. When connecting DIP or RCP to existing brick manhole: Follow Standard Details.

F. When building manhole on existing sewer: Follow Standard Details.

G. Sewer service connections: Connect to existing main line sewers as specified herein and following Standard Details.

3.6 INSTALLATION OF CASING PIPE IN OPEN CUT

A. Install casing pipe in open cut following Section 02315 and specified herein.

3.7 MANHOLES

A. General: Watertight.

B. Construction and Handling.
   1. Construct manholes of precast sections, cast-in-place concrete, following Standard Details and Drawings.
   2. Precast Manholes.
      a. Protect plant-accepted manhole sections from damage while in storage at plant, in transit, and at Contract site.
         1) Handle with proper size equipment, using only appropriate lifting holes or eyes.
         2) Keep joint ends of sections clean and place on wood blocks, pallets, or other appropriate material, never on ground.
      b. Install manhole sections following manhole manufacturer’s written assembly instructions and as specified herein.
         1) Before assembly, inspect joint ends for defects or damage that may prevent watertight joint.
         2) Thoroughly clean joint surfaces, remove debris and foreign matter, and keep joint surfaces clean during assembly.
         3) Manhole rejected by Engineer: Removed and replaced at no expense to the Commission.
         4) Repair damaged manhole sections following manufacturer's recommended repair methods.
   3. Cast-in-place concrete manholes: See Section 03300.
      a. Flexible gasket connectors: See Section 03400.
   4. Lined Manholes.
      a. Installation: Follow Manufacturer’s recommendations.
      b. After installation of lined precast concrete manholes, visually inspect lining for damage. Repair damaged surfaces following manufacturer’s submitted recommendations.

C. Flow Channel/Benches.

1. Form appropriate flow channel/bench in bottoms of manholes: Follow Standard Details.
2. Brick: Follow masonry work for manholes in Section 04200 and Standard Details.
3. Precast concrete: Follow Section 03400.
    a. Fill unfinished gap in channel/bench to permit pipe installation by applying bonding compound and non-shrink grout, finish flush with contour of channel/bench and cure following bonding compound and grout manufacturer's recommendations.
    b. No repair or modification to channel slope, other than unfinished gap, will be permitted.

D. Pipe to Manhole Connections.
    1. Cut pipe square before installation.
        a. Place so springline edges of pipe are flush with inside wall or extend a maximum of 2-1/2 inches following manufacturer’s recommended installation procedures.
        b. Where pipe is extended into manhole, coordinate slope of pipe and slope of notch in invert to ensure smooth transition.
    2. Fit flexible gasket connector between pipe and manhole described herein except for following connections:
        a. When pipe enters manhole at slope greater than 10 percent.
        b. Where pipe enters manholes at angle.
        c. Where manhole is built over existing sewer pipe, except when existing sewer pipe is PVC.
        d. When either DIP or RCP is connected to existing brick manhole.
        e. Parallel connections.
    3. Insert pipe following connector manufacturer's written recommendations.
        a. Ensure that pipe is centered in connector, that full barrel portion of pipe is fully inserted, and that pipe is properly bedded immediately adjacent to manhole.
        b. When flexible gasket connector is not used for reasons stated herein, use quick setting non-shrink grouted pipe to manhole connections and bentonite collar following Standard Details.
        c. Keep excavation dry and do not backfill until 2 hours have elapsed to permit grout to cure.
    4. When AWWA C900 and C905 pipe is to be grouted using solvent cement:
        a. Apply solvent cement following manufacturer’s instructions to entire exterior portion of pipe to be grouted into wall.
        b. Coat softened pipe exterior with concrete sand and allow pipe exterior to harden.
        c. Grout sand-coated pipe into wall.

E. Set bentonite collar at pipe to manhole connections following Standard Details, for following situations:
    1. For pipes 15 inch and larger diameter except at outside drop manholes.
    2. When manhole depth is 16 feet or over, except at outside drop manholes.
    3. When flexible connector is not used.

4. When a flexible connector is installed in existing manhole, except at outside drop manholes.

F. Set manhole steps for each manhole following Standard Details and manufacturer's recommendations.

G. Install watertight frame and cover on each manhole following Standard Details.
   1. Transitions:
      a. Install anchor rods in bolt inserts and align to pass through bolt holes in flange of manhole frame.
         1) When bolt slot inserts are used, align as specified herein, then fill and pack mortar in bolt slot inserts and around anchor rods.
      b. Precast Concrete Grade Ring Transition:
         1) For all sizes frame and cover, see option for use of brick transition below.
         2) Following Standard Details for height requirements.
         3) Set precast concrete grade rings in full beds of Type M mortar minimum ¼ inch and maximum 1 ¼ inch thick.
            a) From April through November, wet grade rings and top of cone section immediately before placing mortar.
            b) Mortar mix following Section 04200.
            c) Point horizontal circumferential and vertical mortar joints, inside and outside, full width, maximum 3/8 inch in depth.
               (1) Fill annular space between anchor rods and bolt holes, pack with mortar on top ring, and finish flush with ring surface.
            d) After mortar has cured, place flexible gasket following Standard Details.
            e) Set frame and bolt in place and provide watertight seal.
      c. Brick Transition:
         1) For manholes with frame and cover 30 inch and larger diameter.
         2) Following 04200 for brick and mortar.
         3) Following Standard Details for height requirements.
         4) Parge exterior of brick with 2 coats of mortar and extend parging below top section of precast manhole section.
            a) Each coat 1/4 to 3/8 inch thick and cure between coats.
            b) Apply curing compound to each coat.
         5) Place a bed of mortar maximum 1 inch thick on top of brick transition.
         6) After mortar has cured, place flexible gasket following Standard Details.
         7) Set frame and bolt in place and provide water tight seal.
         8) Apply 2 coats of asphalt base waterproofing following Standard Details.
         9) Protect waterproof coating from direct sunlight.
   2. Frame and Cover placement without transition: Before placing manhole frame and cover on precast cone, install anchor rods in bolt inserts and align to pass through bolt holes in flange of manhole frame.
      a. When bolt slot inserts are used, align as stated above, then fill and pack mortar in bolt slot inserts and around anchor rods.
      b. Place flexible gasket following Standard Details.

c. Set frame and bolt in place and provide water tight seal.

H. When manhole is located within new subdivision and in area where surface is scheduled to be improved, set marker stakes following Standard Details.

I. Set pipe stubs, at manholes following Drawings, minimum of 18 inches long with watertight stopper in end away from manhole.

J. Lined manholes: Follow Section 03400, Standard Details, specified herein, or following drawings.

K. Slide Gates: Install following manufacturer's recommendations.

3.8 FIELD TESTING

A. Schedule proposed tests with Engineer at least 3 working days in advance.

B. Gravity Sewer - Except for 42-inch and larger RCP.
   1. Perform Air Test including service connections, with low air pressure after completion of backfill.
      a. Before placing testing apparatus, inspect sewers and manholes and eliminate discernible water leaks.
      b. Contractor may perform preliminary tests at his own discretion for his information, without presence of Engineer, at no cost to the Commission.
      c. Perform tests in presence of Engineer.
         1) Provide material, equipment, and labor required.
         2) Test sewers from manhole to manhole or from manhole to terminus.
         3) Contractor may before air testing RCP, soak interior with clean water.
            a) Remove water before air testing begins.
      d. Conduct Test as Follows:
         1) Place test plugs at each manhole or terminus and securely brace.
         2) Determine depth of groundwater level above inverts immediately before testing.
         3) Engineer will increase gage pressures accordingly but total pressure including increased amount of groundwater backpressure at springline of pipe shall not exceed 5.5 psi.
         4) Add air slowly to test section until internal air pressure, on gage, stabilizes at 4 psi or at increased pressure determined for correction of groundwater backpressure.
            a) Do not allow personnel in manholes while test is being performed or when test section is under air pressure.
            b) If leakage is indicated at test plugs, relieve pressure before eliminating leak.

5) When air pressure is stabilized, disconnect hose and compressor and allow pressure to decrease to 3.5 psi, plus correction for groundwater backpressure.
6) Record time period for pressure drop 0.5 psi, from 3.5 to 3.0 psi plus groundwater correction.
7) Pipes failing to maintain holding times in Air Test Tables herein will not be accepted. If test section fails test:
   a) Make repairs or replace
   b) Retest as specified herein.
   c) At no cost to the Commission.
8) Commission will observe test for each test segment, once without charge to Contractor.
   a) Cost of further tests will be deducted from monies owed Contractor at prevailing rates published by the Commission.

2. Perform Pipe Mandrel Deflection Test - PVC pipe 15 inch and smaller.
   a. Thoroughly clean test section prior to test.
   b. Contractor may perform preliminary test at his own discretion, for his information, without Engineer's presence and at no cost to the Commission.
   c. Perform test in presence of Engineer.
      1) Provide material, equipment and labor required.
   d. Push or pull mandrel through pipeline.
   e. Failure of mandrel to pass a point or section in pipe indicates pipe barrel deflection in excess of 5 percent.
      1) If section fails test:
         a) Excavate and re-bed or replace failed section and backfill.
         b) Retest section as specified herein.
         c) At no cost to the Commission.
   f. The Commission will observe test for each section, once, without charge to Contractor.
      1) Cost of additional tests will be deducted from monies owed Contractor at prevailing rates published by the Commission.

C. Gravity Sewer - 42-inch and Larger Diameter RCP.
   1. Individual Joint Testing: Use equipment suitable for air and/or water.
      a. Approved individual joint testing equipment suppliers:
         1) Cherne Industries, Inc.
         2) Vanderlans and Sons, Inc.
         3) Or equal.
      b. Conduct individual joint air tests after at least 2 lengths of pipe have been installed beyond joint undergoing test and trench is backfilled to at least top of installed pipes.
         1) Before testing first joint beyond pipe/manhole connector, brace or block first length installed out of manhole.
         2) Conduct individual joint tests as follows:
            a) Clean joint area, and at Contractor's option, wet joint area before placing air test equipment.

b) Position joint tester so end elements are located on both sides of joint to be tested.
c) Inflate end sealing elements to pressure specified by manufacturer of equipment.
d) Determine depth of groundwater level above inverts immediately before testing.
e) Pressurize center cavity with air or water following manufacturer's recommendation through separate pressurizing lines to 3.5 psi.
f) Engineer will increase gage pressures accordingly but total pressure including increased amount of groundwater backpressure at springline of pipe shall not exceed 5.5 psi.
g) Pressure relief device may be installed to pressurizing line to avoid over pressurization.

3) Allow test pressure to stabilize and maintain for approximately 10 to 15 seconds, and then turn off pressure source.
a) If pressure holds or drops less than 1.0 psi in 10 seconds or more, joint is acceptable.
b) Remove equipment by releasing air from center cavity and then from end elements.

4) If test fails, check leakage of air or water at end sealing elements.
a) If leakage is at end sealing elements, eliminate this leakage and perform retest.

5) If pipe joint fails test, remove pipe length(s), inspect joint area for defects and correct, clean joint area and rejoin pipe.
a) Repeat joint test procedure as stated above.
b) To be accepted pipe joint must pass air test.

2. Final Sewer Testing.
a. Test after entire pipeline is installed, backfilled, and dewatering discontinued for 5 days, but before introducing sewage flow, observe pipeline for infiltration. If any infiltration is present, perform an infiltration test.
b. Set up weir, measuring device, stopwatch, and other required materials to perform test.
c. Measure amount of pipeline water infiltration at lower end by means of weir installed in pipeline or by other method to measure water approved by Engineer.
1) Maximum allowable leakage per day (MALPD): 50 gpd per inch diameter per mile of sewer pipe. (linear feet of pipe/5280 times pipe diameter in inches times 50 = MALPD)
2) If infiltration exceeds MALPD, make repairs and re-measure at no cost to the Commission.

D. Force Mains: Follow Section 02510 and specified herein.
1. Pressure Test: Fill length of force main in test section with water and subject it to maximum sustained internal pressure plus water hammer, at low point, following Drawings or Special Provisions.
2. Leakage Test.

a. Test at sustained internal hydrostatic following Drawings or Special Provisions at highest invert elevation or at least 100 psi.

3. If pressure test is less than 100 psi, perform leakage and pressure test concurrently.
4. If test results show displacement, damage, or leakage in excess of allowable amount, repair displacement and damage, and eliminate leakage. Retest until specified conditions meet Engineer's acceptance at no cost to the Commission.

E. Sewer Service Connections: Follow Section 02956 and specified herein.
   1. Sewer Service Connections.
      a. Give 3 days notice to Commission before CCTV Inspection.
      b. Inspect by CCTV sewer service connections from cleanout to main line sewer.
      c. Repair or replace defective sewer service connections installed under this Contract and retelevise within 5 working days.
         1) Defects:
            a) Intermediate low points between cleanout and mainline connection.
            b) Cracked pipe.
            c) Infiltration.
            d) Joints:
               (1) Not made in accordance with manufacturer’s recommendations.
               (2) Deflected joints.
            e) Excessive vertical pipe deflection.
         2) Replacement of defective sewer service connections installed under this contract, and retelevising will be at no additional cost to the Commission.

F. Manholes.
   1. After manhole installation is completed and within guarantee period, each manhole will be inspected for water tightness.
      a. Provide adequate confined space ventilation for inspection access.
      b. Eliminate leakage at manhole, and repair using approved written procedures and repair recommendations from manufacturer in presence of Engineer and manufacturer's representative.

G. Slide Gate and Operator.
   1. Field inspection and testing: Follow Section 01450.

3.9 ABANDONMENT

A. Sewers: See Standard Details.
   1. AC Pipe:
      a. Comply with OSHA requirements for sawing AC pipe.
      b. Use water during sawing to prevent dust from being generated, and to shield and contain debris.
      c. Allow only workers directly involved in sawing AC pipe in work area during sawing operations.
      d. Remove sections of AC pipe after cutting.

1) Follow OSHA requirements.

B. Manholes and Structures: See Standard Details.

C. Service Connections: Abandon following Drawings or as specified if not shown.
   1. If connection to main line sewer is with tee, wye or saddle, remove service connection pipe from mainline connection and replace with approved watertight plug.
   2. If connection to main line sewer is with thimble, remove thimble and perform mainline point repair.
   3. AC pipe: Follow Sewer Service Connection Renewals.

PART 4 MEASUREMENT AND PAYMENT

4.1 PIPE

A. Measurement: By linear foot of various types and sizes provided, measured horizontally along centerline of pipe.
   1. Manholes: Center to Center.
   2. Structures: Outside to outside.
   3. No deductions will be made for lengths of fittings, connections, and manholes.

B. Payment: At unit price for each linear foot for each size listed in Bid Schedule.
   1. Payment includes test pits required by Contract Documents, excavation, backfill, bedding, pipe, fittings, connections to new and existing main, reconnection of existing service connections, various size drop connections at manholes, and concrete.

4.2 SEWER SERVICE CONNECTIONS, NEW AND RENEWED

A. Measurement: By linear foot of various types and sizes, measured horizontally along centerline of pipe from center of main or manhole to limits following Contract Documents.

B. Payment: At unit price for each linear foot listed for each size in Bid Schedule.
   1. Payment includes excavation, backfill, bedding, pipe, fittings, concrete encasement, connections to new and existing facilities, saddles, Y-branch drop connections, cleanout or backwater valves, CCTV inspection and temporary and permanent restoration to disturbed grass areas.

4.3 SEWER SERVICE CONNECTIONS, SEPARATE EXISTING DOUBLE SERVICE CONNECTIONS WITHIN SAME TRENCH

A. Measurement: By linear foot of various types and sizes, measured horizontally along centerline of pipe from center of main or manhole to limits following Contract Documents.

B. Payment: At unit price for each linear foot listed for each size in Bid Schedule.
   1. Payment includes widening of trench, pipe, fittings, concrete encasement, connections to new and existing facilities, saddles, Y-branch drop connections, cleanouts or backwater valves, and CCTV inspection.

4.4 CCTV OF SERVICE CONNECTIONS INSTALLED BY OTHERS

A. Measurement: By each sewer service.

B. Payment: By unit price listed in Bid Schedule.
   1. Payment includes mobilization, demobilization, CD-ROM of each service connection installed by others in Prince George's or Montgomery Counties, inspected with audio commentary and written field report.
   2. Include locator notation showing footage from cleanout to main on CD-ROM.

4.5 MAINLINE SEWER REPLACEMENT IN CONJUNCTION WITH SERVICE CONNECTION RENEWAL

A. Measurement: By each, complete in place, not to exceed 5 linear feet.

B. Payment: By fixed contingent unit price for each listed in Bid Schedule.
   1. Payment includes excavation, backfill, bedding, pipe, fittings, and reconnections to main.
   2. Where mainline sewer replacement occurs in conjunction with separation of double services, payment will be made for one mainline sewer replacement.

4.6 RECONNECTION OF EXISTING SEWER SERVICE TO EXISTING TAP IN MANHOLE ON AREA CONTRACTS

A. Measurement: By each, complete in place.

B. Payment: At contingent unit price listed in Bid Schedule.
   1. Payment includes excavation, backfill, fittings, reshaping channel, and flexible gasket connector to service service.

4.7 CONNECTION OF SEWER SERVICE TO NEW TAP IN MANHOLE ON AREA CONTRACTS

A. Measurement: By each, complete in place.

B. Payment: At contingent unit price listed in Bid Schedule.

1. Payment includes excavation, core drill, backfill, fittings, constructing channel, and flexible gasket connector to service service.

4.8 SANITARY SEWER POINT REPAIR FOR REPLACING 6 INCH THROUGH 12 INCH MAINLINE SEWER PIPE.

A. Measurement: By each completed. Replacement pipe shall consist of a minimum of 5 linear feet not to exceed 10 linear feet. If more than 10 linear feet of pipe is required, payment will be made for a second external point repair at same location.

B. Payment: At contingent unit price listed in Bid Schedule.
   1. Payment includes bypass pumping, sewer main isolation, service over-pumping, plugging as required, excavation, backfill, bedding, pipe, fittings, reconnections to existing services and main, and temporary blocking.

4.9 CLEANOUT ONLY

A. Measurement: By each complete in place.

B. Payment: At contingent unit price for each listed in Bid Schedule.
   1. Payment includes excavation, backfill, bedding, pipe, fittings, and connection to service.

4.10 PIPE IN TUNNELS AND SLEEVES

A. Measurement: By linear foot shown on Drawings measured horizontally along centerline of pipe.

B. Payment: At unit price for each linear foot for each size listed in Bid Schedule.
   1. Payment includes:
      a. Pipe, grout fill for annular space between tunnel liner or sleeve and pipe.
      b. Incidentals required for installing pipe in tunnel liner or sleeve complete following Drawings and Standard Details.

4.11 CASING PIPE INSTALLED IN OPEN CUT

A. Measurement: By linear foot measured horizontally along centerline of pipe from bulkhead to bulkhead.

B. Payment: At unit price for each linear foot listed in Bid Schedule.
   1. Payment includes excavation, backfill, bedding, pipe, bulkheads, and incidental appurtenances.

4.12 MANHOLES

A. Measurement: By vertical foot measured from invert to bottom of frame of various types and sizes installed complete, in place, including frame and cover.

B. Payment: At unit price for each vertical foot for various types and sizes listed in Bid Schedule.
   1. Payment includes excavation, backfill, bedding, manhole complete following Standard Details, including aluminum safety ladder, ladder extension, safety rail, and reconnection of existing sewer service connections and existing sewer mains.

4.13 ABANDONMENT OF MANHOLES AND PIPE AT MANHOLE

A. Measurement: By each abandoned.

B. Payment: At unit prices for each listed in Bid Schedule.
   1. Payment includes excavation and backfill, mechanical plugs, concrete, and all incidentals as shown on Standard Details.

4.14 ABANDONMENT OF SERVICE CONNECTIONS

A. Measurement: By each of various types and sizes abandoned in separate trench from new or renewed service, complete in place.

B. Payment: At contingent unit price or unit price for various types and sizes listed in Bid Schedule.
   1. Payment includes excavation, backfill and bedding, removal of pipe and fittings, pipe and fittings required to complete abandonment.

4.15 MOBILIZATION: See Section 01110.

4.16 INSTALLING BACKWATER VALVES

A. Measurement: By each, complete in place.

B. Payment: At the fixed quantity and contingent unit price for each listed in Bid Schedule.
   1. Payment included excavation, backfill, bedding, pipe, fittings and connection to service.

4.17 INSIDE MAIN LINE DROP CONNECTION

A. Measurement: By vertical foot measured along centerline of Drop-Line.

B. Payment: At unit price listed in Bid Schedule.
   1. Payment includes connection, sealing, air testing, bypass pumping, labor, materials, and equipment necessary to install drop specified herein.

4.18 SEWER SERVICE CONNECTIONS AREA CONTRACTS (LC)

A. Measurement: By linear foot of various types and sizes, measured horizontally along centerline of pipe from center of main or manhole and depth of connection at its deepest point measured vertically from invert of the new service connection pipe to surface of existing ground to limits following Contract Documents.

B. Payment: At unit price for each linear foot listed for each size at the depth specified in Bid Schedule.
   1. Payment includes excavation, backfill, bedding, pipe, fittings, concrete encasement, connections to new and existing facilities, saddles, Y-Branch drop connections, cleanout and CCTV inspection.

AIR TEST TABLES – ALL PIPES OTHER THAN RCP

Minimum Holding Time in Minutes: Seconds Required
For Pressure Drop from 3.5* to 3.0* PSIG

PIPE DIAMETER

LENGTH OF TEST STATION	4”	6”	8”	10”	12”	15”	16”	18”	20”	21”	24”	27”
25	2:00	3:00	4:00	4:30	5:30	7:00	7:30	8:30	9:30	10:00	11:30	14:30
50												
75												
100									9:30	10:00	11:30	14:30
25								8:30	10:00	11:00	14:30	18:00
150						7:00	7:30	9:30	12:00	13:00	18:00	21:30
175						8:00	9:00	11:00	14:00	15:30	20:00	25:00
200					5:30	9:00	10:00	13:00	16:00	17:30	23:00	29:00
225				4:30	6:30	10:00	11:30	14:30	18:00	19:30	25:30	32:30
250				5:00	7:00	11:00	12:30	16:00	20:00	22:00	28:30	36:00
275				5:30	8:00	12:30	14:00	17.30	22:00	24:00	31:30	39:40
300				6:00	8:30	13:30	15:00	19:00	24:00	26:00	34:00	43:30
325				6:30	9:30	14:30	16:30	21:00	25:30	28:30	37:00	47:00
350			4:30	7:00	10:00	15:30	17:30	22:30	27:30	30:30	40:00	50:30
375			5:00	7:30	10:30	16:30	19:00	24.00	29:30	32:30	42:30	54:00
400	2:00	3:00	5:00	8:00	11:30	18:00	20:30	25:30	31:30	35:00	45:30	57:30

*Test pressures shall be increased by amount of groundwater backpressure at springline of pipe but shall not exceed 5.5 PSIG.

NOTE: For test sections with a minimum holding time exceeding 5 minutes: If gage needle has dropped 0.0 PSIG from starting pressure after 5 minutes, section will be considered to have passed air test.

RCP PIPE - AIR TEST TABLE

Minimum Holding Time in Minutes: Seconds Required
For Pressure Drop from 3.5* to 3.0* PSIG

PIPE DIAMETER

LENGTH OF TEST STATION	18”	21”	24”	27”	30”	33”	36”
25	1:00	1:00	1:00	1:00	1:00	1:30	1:30
50	1:00	1:30	2:00	2:00	2:30	2:30	3:00
75	2:00	2:00	2:30	3:00	3:30	4:00	4:30
100	2:30	3:00	3:30	4:00	5:00	5:30	6:00
125	3:00	3:30	4:30	5:30	6:00	7:00	7:30
150	3:30	4:30	5:30	6:30	7:00	8:00	9:00
175	4:00	5:00	6:00	7:30	8:30	9:30	10:30
200	5:00	6:00	7:00	8:30	9:30	11:00	12:00
225	5:30	6:30	8:00	9:30	11:00	12:00	13:30
250	6:00	7:30	9:00	10:30	12:00	13:30	15:00
275	6:30	8:00	9:30	11:30	13:00	15:00	16:30
300	7:00	9:00	10:30	12:30	14:30	16:00	18:00
325	8:00	9:30	11:30	13:30	15:30	17:30	19:30
350	8:30	10:30	12:30	14:30	17:00	19:00	21:00
375	8:30	11:00	13:30	16:00	18:00	20:30	22:30
400	9:30	12:00	14:00	17:00	19:00	21:30	24:00
425	10:00	12:30	15:00	18:00	20:30	23:00	25:30
450	11:00	13:30	16:00	19:00	21:30	24:30	27:00
475	11:30	14:00	17:00	20:00	23:00	25:30	28:30
500	12:00	15:00	18:00	21:00	24:00	27:00	30:00
525	12:30	15:30	18:30	22:00	25:00	28:30	31:30
550	13:00	16:30	19:30	23:00	26:30	29:30	33:00

*Test pressures shall be increased by amount of groundwater backpressure at springline of pipe but shall not exceed 5.5 PSIG.

NOTE: For test sections with a minimum holding time exceeding 5 minutes: If gage needle has dropped 0.0 PSIG from starting pressure after 5 minutes, section will be considered to have passed air test.

AIR TEST TABLES FOR MAIN LINE WITH SERVICE CONNECTION

Minimum holding time in Minutes: Seconds required for pressure drop from 3.5* psig to 3.0* psig
*Test pressures shall be increased by amount of groundwater backpressure at springline of pipe but shall not exceed 5.5 PSIG

Length of 6-inch diameter Main Line in Test Section, in Feet

Length of Service Connection in Test Section, in Feet

4 inch diameter

	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
50	4:30	5:00	5:00	5:00	5:30	5:30	5:30	5:30	5:30	5:30	5:30	5:30	5:30	5:30	5:30	6:00
100	4:30	4:30	5:00	5:00	5:00	5:00	5:00	5:00	5:00	5:30	5:30	5:30	5:30	5:30	6:00	6:30
150	4:00	4:30	4:30	4:30	5:00	5:00	5:00	5:00	5:00	5:00	5:00	5:00	5:30	6:00	6:30	6:30
200	4:00	4:30	4:30	4:30	4:30	5:00	5:00	5:00	5:00	5:00	5:00	5:30	6:00	6:00	6:30	7:00
250	4:00	4:00	4:30	4:30	4:30	4:30	4:30	5:00	5:00	5:00	5:30	6:00	6:00	6:30	7:00	7:30
300	4:00	4:00	4:30	4:30	4:30	4:30	4:30	4:30	5:00	5:30	6:00	6:00	6:30	7:00	7:30	7:30
350	4:00	4:00	4:30	4:30	4:30	4:30	4:30	5:00	5:30	6:00	6:00	6:30	7:00	7:00	7:30	8:00
400	4:00	4:00	4:00	4:30	4:30	4:30	5:00	5:30	5:30	6:00	6:30	7:00	7:00	7:30	8:00	8:30

NOTE: For test sections with a minimum holding time exceeding 5 minutes: If gage needle has dropped 0.0 psig from starting pressure after 5 minutes, section will be considered to have passed air test.

Length of 8-inch diameter Main Line in Test Section, in Feet

Length of Service Connection in Test Section, in Feet

4 inch diameter

	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
50	5:30	6:30	6:30	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:30	8:00	8:30	9:00	10:00	10:30
100	5:00	5:30	6:00	6:30	6:30	6:30	6:30	7:00	7:00	7:00	7:30	8:00	9:00	9:30	10:00	11:00
150	4:30	5:30	5:30	6:00	6:00	6:30	6:30	6:30	6:30	7:30	8:00	8:30	9:00	10:00	10:30	11:00
200	4:30	5:00	5:30	5:30	6:00	6:00	6:00	6:30	7:00	7:30	8:00	9:00	9:30	10:00	11:00	11:30
250	4:30	5:00	5:00	5:30	5:30	6:00	6:00	6:30	7:30	8:00	8:30	9:00	10:00	10:30	11:00	11:30
300	4:30	4:30	5:00	5:30	5:30	5:30	6:30	7:00	7:30	8:00	9:00	9:30	10:00	11:00	11:30	12:00
350	4:00	4:30	5:00	5:00	5:30	6:00	6:30	7:30	8:00	8:30	9:00	10:00	10:30	11:00	11:30	12:30
400	4:00	4:30	5:00	5:00	5:30	6:30	7:00	7:30	8:00	9:00	9:30	10:00	11:00	11:30	12:00	12:30

AIR TEST TABLES FOR MAIN LINE WITH SERVICE CONNECTION

Minimum holding time in Minutes: Seconds required for pressure drop from 3.5* psig to 3.0* psig
*Test pressures shall be increased by amount of groundwater backpressure at springline of pipe but shall not exceed 5.5 PSIG

Length of 8-inch diameter Main Line in Test Section, in Feet

6 inch diameter / Length of House Connection in Test	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
50	6:30	6:30	7:00	7:00	7:00	7:00	7:00	7:30	7:30	7:30	7:30	8:30	9:00	9:30	10:00	11:00
100	6:00	6:30	6:30	6:30	7:00	7:00	7:00	7:00	7:00	8:00	8:30	9:00	9:30	10:30	11:00	11:30
150	6:00	6:00	6:30	6:30	6:30	6:30	7:00	7:00	8:00	8:30	9:00	9:30	10:30	11:00	11:30	12:30
200	6:00	6:00	6:30	6:30	6:30	6:30	7:30	8:00	8:30	9:00	10:00	10:30	11:00	11:30	12:30	13:00
250	6:00	6:00	6:00	6:30	6:30	7:30	8:00	8:30	9:30	10:00	10:30	11:00	12:00	12:30	13:00	13:30
300	6:00	6:00	6:00	7:00	7:30	8:00	8:30	9:30	10:00	10:30	11:00	12:00	12:30	13:00	14:00	14:30
350	6:00	6:00	7:00	7:30	8:00	9:00	9:30	10:00	10:30	11:30	12:00	12:30	13:00	14:00	14:30	15:00
400	6:30	7:00	7:30	8:30	9:00	9:30	10:00	11:00	11:30	12:00	12:30	13:30	14:00	14:30	15:00	16:00

NOTE: For test sections with a minimum holding time exceeding 5 minutes: If gage needle has dropped 0.0 psig from starting pressure after 5 minutes, section will be considered to have passed air test.

Length of 10-inch diameter Main Line in Test Section, in Feet

4 inch diameter / Length of House Connection in Test	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
50	7:00	8:00	8:00	8:30	8:30	9:00	9:00	9:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
100	6:00	7:00	7:30	8:00	8:00	8:00	8:30	8:30	9:30	10:30	11:30	12:30	13:30	14:30	15:30	16:30
150	5:30	6:30	7:00	7:00	7:30	8:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00
200	5:00	6:00	6:30	7:00	7:00	7:30	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00
250	5:00	5:30	6:00	6:30	7:00	7:30	8:30	9:30	10:30	11:30	12:30	13:30	14:30	15:30	16:30	17:30
300	4:30	5:30	6:00	6:30	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	16:30	17:30
350	4:30	5:30	5:30	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
400	4:30	5:00	5:30	6:30	7:30	8:30	9:30	10:30	11:30	12:30	13:30	14:30	15:30	16:30	17:30	18:30

AIR TEST TABLES FOR MAIN LINE WITH SERVICE CONNECTION

Minimum holding time in Minutes: Seconds required for pressure drop from 3.5* psig to 3.0* psig
*Test pressures shall be increased by amount of groundwater backpressure at springline of pipe but shall not exceed 5.5 PSIG

Length of 10-inch diameter Main Line in Test Section, in Feet

6 inch diameter	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
50	7:30	8:00	8:30	8:30	8:30	9:00	9:00	9:00	9:30	10:30	11:30	12:30	13:30	14:30	15:30	16:30
100	7:00	7:30	8:00	8:00	8:00	8:30	8:30	9:30	10:30	11:30	12:30	13:30	14:30	15:30	16:30	17:00
150	6:30	7:00	7:30	7:30	8:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
200	6:30	7:00	7:00	7:30	8:00	9:00	10:00	11:00	12:00	12:30	13:30	14:30	15:30	16:30	17:30	18:30
250	4:30	5:30	6:30	7:30	8:30	9:30	10:30	11:30	12:30	13:30	14:30	15:30	16:30	17:30	18:30	19:30
300	6:00	6:30	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00
350	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00
400	6:30	7:30	8:30	9:30	10:30	11:30	12:30	13:30	14:30	15:30	16:30	17:30	18:30	19:30	20:30	21:30

NOTE: For test sections with a minimum holding time exceeding 5 minutes: If gage needle has dropped 0.0 psig from starting pressure after 5 minutes, section will be considered to have passed air test.

Length of 12-inch diameter Main Line in Test Section, in Feet

4 inch diameter	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
50	8:30	9:30	10:00	10:30	10:30	10:30	10:30	11:30	13:00	14:30	16:00	17:30	19:00	20:30	21:30	23:00
100	7:00	8:30	9:00	9:30	10:00	10:00	10:30	12:00	13:30	15:00	16:30	17:30	19:00	20:30	22:00	23:30
150	6:30	7:30	8:30	9:00	9:00	9:30	11:00	12:30	14:00	15:00	16:30	18:00	19:30	21:00	22:30	23:30
200	6:00	7:00	8:00	8:30	8:30	10:00	11:00	12:30	14:00	15:30	17:00	18:30	20:00	21:00	22:30	24:00
250	5:30	6:30	7:30	8:00	8:30	10:00	11:30	13:00	14:30	16:00	17:00	18:30	20:00	21:30	23:00	24:30
300	5:30	6:30	7:00	7:30	9:00	10:30	12:00	13:30	14:30	16:00	17:30	19:00	20:30	22:00	23:00	24:30
350	5:00	6:00	6:30	8:00	9:30	11:00	12:00	13:30	15:00	16:30	18:00	19:30	20:30	22:00	23:30	25:00
400	5:00	6:00	7:00	8:00	9:30	11:00	12:30	14:00	15:30	17:00	18:00	19:30	21:00	22:30	24:00	25:30

AIR TEST TABLES FOR MAIN LINE WITH SERVICE CONNECTION

Minimum holding time in Minutes: Seconds required for pressure drop from 3.5* psig to 3.0* psig
*Test pressures shall be increased by amount of groundwater backpressure at springline of pipe but shall not exceed 5.5 PSIG

Length of 12-inch diameter Main Line in Test Section, in Feet

Length of House Connection in Test

6 inch diameter	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
50	8:30	9:30	10:00	10:00	10:00	10:30	10:30	12:00	13:30	15:00	16:30	18:00	19:00	20:30	22:00	23:30
100	7:30	8:30	9:00	9:30	9:30	10:00	11:30	13:00	14:00	15:30	17:00	18:30	20:00	21:30	23:00	24:00
150	7:00	8:00	8:30	9:00	9:30	10:30	12:00	13:30	15:00	16:30	18:00	19:00	20:30	22:00	23:30	25:00
200	7:00	7:30	8:00	8:30	10:00	11:30	13:00	14:00	15:30	17:00	18:30	20:00	21:30	23:00	24:00	25:30
250	6:30	7:30	8:00	9:30	10:30	12:00	13:30	15:00	16:30	18:00	19:00	20:30	22:00	23:30	25:00	26:30
300	6:30	7:00	8:30	10:00	11:30	13:00	14:00	15:30	17:00	18:30	20:00	21:30	23:00	24:00	25:30	27:00
350	6:30	8:00	9:30	10:30	12:00	13:30	15:00	16:30	18:00	19:00	20:30	22:00	23:30	25:00	26:30	28:00
400	7:00	8:30	10:00	11:30	13:00	14:00	15:30	17:00	18:30	20:00	21:30	23:00	24:00	25:30	27:00	28:30

NOTE: For test sections with a minimum holding time exceeding 5 minutes: If gage needle has dropped 0.0 psig from starting pressure after 5 minutes, section will be considered to have passed air test.

Washington Suburban Sanitary Commission
Sanitary Sewer Overflow Event

Work Order Number	WDC

Street Address	Reference WO	Component Type & ID

Start Date	Start Time		End Date	End Time	
		am pm			am pm

Flow Rate	GPM	Estimated Volume*	GL	Storm Drain, Grass, Dirt, Gravel or Forest areas affected?	Y N

* Enter either Flow Rate or Estimated Volume

Basin	Zip Code	Technician ID	Defect	Cause	Repair Tech	Severity
						1 2 3

Impacts:

	DIS	Discoloration
	DW	Dry weather
	FK	Fishkill
	NO	Noticeable odor
	PA	Public access
	PUO	Public use observed
	VSB	Visible solids, stream bank
	VSI	Visible solids, in stream
	WW	Wet weather

Minimization:

	FMH	Flushed back into MH
	GRD	Grading of area
	LIM	Lime
	RAK	Raked area
	VSR	Visible solids removed

Notification: (Facility Overflow Only)

	DEP	DEP Montgomery County
	NWS	Newspapers
	PHD	PG County Health Dept
	RAD	Radio Stations
	TV	Television
	MDE	MD Dept Environment

Signs:	
Number Posted	
Date	

Work Order Comments
Cause
Impact Comments
Minimization Comments
Notification Comments

_____ _____

Signature Date

WSSC