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ENGINEERING DEPARTMENT  
Civil/Traffic/Parking/Signal & Lighting/Sign and Pavement Marking  
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**ADDENDUM #2**

February 10, 2015

TO: PROSPECTIVE BIDDERS  
RE: **GP 1114 Allenford SE 72" Sanitary Sewer Protection Project**

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Addendum #2 for bid opening scheduled for February 11, 2015.

The bid opening is being postpone for one week due to omissions and clarifications to the plans as detailed in the following two paragraphs. The new bid opening is scheduled for **February 18, 2015 at 2:00 pm.**

Supplemental Specifications 02-00 ,03-00, 04-01, and 05-01 were omitted from the bid package. They are attached and are intended to be included as part of the bid.

Technical specification Section 02538, Sanitary Sewer System, has been revised. Item 1.3.B.4 has been revised to replace the 2nd use of the word, Infiltration, with the phrase, Exfiltration Acceptance. Item 3.5.A. has been revised to replace the word, Infiltration, with the word, Joint, and to add the phrase, latest edition. Item 3.5.E has been added to state "Infiltration/Exfiltration Test: Test in accordance with ASTM C969, latest edition". The revised spec is attached.

Please sign this Addendum No. 2 at the bottom of this page as proof of receipt. Attach this addendum to the inside front cover of your submission. The Director reserves the right to accept or disqualify the bid if you do not include this addendum.

Respectfully,

Steven L. Henderson  
City of Canton Construction Manager

\_\_\_\_\_  
BIDDERS AUTHORIZED SIGNATURE

\_\_\_\_\_  
DATE

\_\_\_\_\_  
NAME / TITLE (Printed or Typed)

## Supplemental Specification 02-00

### TESTING FOR EXCESSIVE DEFLECTION FOR NON-PRESSURE THERMOPLASTIC SEWER PIPE

September, 2000

- 02.01 Description
- 02-02 Material
- 02-03 Testing for Deflection
- 02-04 Correcting/Repairing
- 02-05 Basis of Acceptance
- 02-06 Reference Material
- 02-07 Table 1, Deflection Diameter List

**02.01 DESCRIPTION.** This item shall consist of furnishing all labor, material and equipment, including all cleaning and flushing of new sewers to complete this test for approval by the City.

The cost for all work related to this item shall be considered incidental to the cost of the new sewer. No separate payment will be made by the City.

All main line sanitary sewers 8" in diameter and larger shall be tested for a maximum deflection of 5% of the pipe average inside diameter not less than 30 days after final full backfill, including all compaction efforts and jetting has been placed, as determined by the City. The average inside diameter is determined by the latest edition of ASTM D 3034, Appendix X1.

**02.02 MATERIAL.** The tests shall be conducted using electronic equipment specifically designed for measuring and recording deflection in flexible pipe or by the use of an approved deflection probe, having a diameter equal to 95% of the average inside diameter of the pipe being tested, pulled through the sewer line. See Table 1. for additional information.

The deflection probe shall be as available from Wortco, Inc.; Burke Concrete Accessories, Inc.; or equal, and shall be designed specifically for testing the deflection of the type of pipe specified. The probe shall incorporate an odd number (no less than 9) of 1/2" x 3/16" bar stock runners equally spaced on edge around and welded to the circumference of two minimum 1/4" thick circular steel plates. The diameter of the probes for the types and nominal sizes of the pipes to be tested shall be equal to 95% of the average inside diameter of the respective pipes as specifically given or determined by the Engineer from information given in the appropriate ASTM Standard for the pipe. The distance between plates, out-to-out, shall not be less than 2" smaller than the nominal diameter of the pipe to be tested. The runners shall extend approximately 1-1/2" beyond each plate, being bent inward for this distance at approximately 30°. A continuous 3/4" threaded rod shall be provided through the center of the plates, having a hex nut drawn tight against the inside face of each plate, and extending each side as required for providing a 3/4" ferrule loop insert or similar piece for attaching the pulling medium.

**02.03 TESTING FOR DEFLECTION.** The Contractor shall schedule with the City's Project Representative at least 48 hours in advance to the commencement of test.

The Contractor shall assign personnel or firm familiar with testing procedures and their requirements set forth.

The Contractor and City's Project Representative shall be present at all times during the testing procedure. All testing results shall be documented and recorded, at the time of test, on the City's approved test form.

Deflection test shall be performed between two consecutive manholes. If deflection probe is used, test shall be performed without mechanical pulling devices. Prior to the use of said deflection probe, a proving ring, provided by the Contractor and approved by the City, shall be available at the time the probe is used. The proving ring shall have an I. D. equal to the approved O. D. of the probe.

**02.04 CORRECTING OR REPAIRING.** If deflection probe becomes stuck or stopped for any reason between manholes, Contractor shall immediately notify the City Project Representative.

Contractor shall be responsible for all corrective procedures, methods and operational techniques. Following correctional procedure, as approved by the City, the Contractor shall be obligated to retest the section of pipe, as previously tested. If repair necessitated a replacement of pipe, the City reserves the right to require an additional retest of the said section, 30 days following this repair. All labor, material, and equipment necessary for correcting any new section of sewer shall be the responsibility of the Contractor.

**02.05 BASIS OF ACCEPTANCE.** In order for the City to consider a system, in part or whole, approved in this testing procedure, all deflection testing methods, as approved, shall be proofed from manhole structure to manhole structure.

**02.06 REFERENCE MATERIAL.** The City may reference ASTM D3034-96 for supplemental information.

**02.07 Table 1, Deflection Diameter List**

## TABLE 1

**THERMOPLASTIC PIPE, PVC, SDR 35  
AVERAGE INSIDE DIAMETERS  
5.0% DEFLECTION MANDREL DIMENSIONS**

**(DERIVED FROM ASTM D 3034)**

NOMINAL PIPE SIZE ( IN. )	SDR	AVERAGE INSIDE DIAMETER ( IN. )	O. D. OF <b>5.0%</b> DEFLECTION PROBE ( IN. )
6	35	5.893	5.60
8	35	7.891	7.50
10	35	9.864	9.37
12	35	11.737	11.15
15	35	14.374	13.65

## Supplemental Specification 03-00

### TESTING PRACTICES FOR LOW-PRESSURE AIR TESTING OF INSTALLED, NON-PRESSURE, THERMOPLASTIC SEWER PIPE

September, 2000 with revisions 7/18/08

- 03.01 Description
- 03-02 Material/Safety
- 03-03 Testing for Leaks
- 03-04 Correcting/Repairing
- 03-05 Basis of Acceptance
- 03-06 Reference Material

**03.01 DESCRIPTION.** This item shall consist of furnishing all labor, material and equipment to complete this test for approval by the City.

The cost for all work related to this item shall be considered incidental to the cost of the new sewer. No separate payment will be made by the City.

All main lines and laterals shall be tested for air leaks and their associated level of acceptance.

Air testing of new main line and laterals may be done at any time during the installation of the new sewers, following the initial bedding, backfilling and securing are completed.

However, in the event deflection testing requires a repair or replacement of new sewer, the Contractor shall be obligated to re-air test the repaired section of the sewer.

#### **03.02 EQUIPMENT/SAFETY**

List of Equipment

03.021 Plug Design: Either mechanical or pneumatic plugs may be used. All plugs shall be designed to resist internal testing pressures without the aid of external bracing or blocking. However, the Contractor should internally restrain or externally brace the plugs to the manhole wall as an added safety precaution throughout the test.

03.022 Singular Control Panel: To facilitate test verification by the City, all air used shall pass through a single, above ground control panel.

03.023 Equipment Controls: The above ground air control equipment shall include a shut-off valve, pressure regulating valve, pressure relief valve, in-put pressure gauge

and a continuous monitoring pressure gauge having a pressure range from 0 to at least 10 psi. The continuous monitoring gauge shall be no less than 4 inches in diameter with minimum divisions of 0.10 psi and an accuracy of +/-0.04 psi.

03.024 Separate Hoses: Two separate hoses shall be used to: (1) connect the control panel to the sealed line for introducing low-pressure air, and (2) an separate hose connection for constant monitoring of air pressure build-up in the line. This requirement greatly diminishes any chance for over-pressurizing the line.

03.025 Pneumatic Plugs: If pneumatic plugs are utilized, a separate hose shall also be required to inflate the pneumatic plugs from the above ground control panel.

03.026 Air Source: As approved by the City.

**03.03 TESTING FOR LEAKS**. The Contractor shall arrange with the City's Project Representative at least 48 hours in advance to the commencement of test.

The Contractor shall assign personnel or firm familiar with testing procedures and their requirements set forth.

The Contractor and City's Project Representative shall be present at all times during the testing procedure. All testing results shall be documented and recorded, at the time of test, on the City's approved test form.

After backfilling, air tests shall be conducted between two consecutive manholes.

Each end of the section to be tested and all pipe outlets in the section shall be plugged with approved test plugs. One plug used at a manhole shall have an inlet tap or other provision for connecting an air hose from the air supply equipment. The equipment shall include valves to control the rate at which air flows into the test section and pressure gauges with minimum graduations of 0.1 psi and an accuracy of +/- 0.04 psi to monitor the air pressure within the test section.

Air pressure shall be applied slowly to the test section until the pressure reaches 4.0 psi, plus an adjustment of 0.433 psi for each foot of ground water above the crown of the pipe being tested. Internal air pressure, including adjustment for ground water, should never exceed 5.0 psi. When the pressure reaches 4.0 psi, plus adjustment for ground water, the air supply shall be throttled so that the internal pressure is maintained between 4.0 and 3.5 psi for at least two minutes to permit temperature stabilization. When the pressure has stabilized and is at or above 3.5 psi, the air supply shall be disconnected and a stop watch started and allowed to run until the pressure has dropped 1.0 psi

The permissible time allocated for the 1.0 psi pressure drop shall be calculated on the basis of the diameter and length of main sewer tested and no adjustment shall be made for service connections included in the test section. The air test for a section shall be considered acceptable

if the time elapsed for the 1.0 psi pressure drop is equal to or greater than the time indicated, and shall be considered unacceptable if the elapsed time is less than that indicated in the following table:

MINIMUM HOLDING TIME IN MINUTES:SECONDS REQUIRED FOR 1.0 PSI PRESSURE DROP **								
PIPE DIAMETER	LENGTH OF MAIN LINE TESTED *							
	100'	150'	200'	250'	300'	350'	400'	450'
4"	3:46	3:46	3:46	3:46	3:46	3:46	3:42	3:46
6"	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8"	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10"	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12"	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15"	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18"	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
21"	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24"	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33
27"	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48

\* Interpolate time for intermediate lengths.

\*\* If the test section fails and service connections were included in the test, re-compute test time to include service connections in accordance with 9.6 of ASTM F1417.

**03.04 CORRECTING OR REPAIRING.** If air testing procedure fails for any reason, based on limitation previously set forth, the Contractor shall immediately notify the City Project Representative.

Contractor shall be responsible for all corrective procedures, methods and operational techniques. Following correctional procedure, as approved by the City, the Contractor shall be obligated to retest the section of pipe, as previously tested. If repair necessitated a replacement of pipe, the City reserves the right to retest the said section, 30 days following this repair. All labor, material, and equipment necessary for correcting any new section of sewer shall be the responsibility of the Contractor.

**03.05 BASIS OF ACCEPTANCE.** In order for the City to consider a system, in part or whole, approved in this testing procedure, all air testing methods, as approved, shall be proofed from manhole structure to manhole structure.

**03.06 REFERENCE MATERIAL.** The City may reference UNI-BELL PVC PIPE ASSOCIATION, UNI-B-6-90 for supplemental information.

## **Supplemental Specification 04-01**

### **STANDARD TEST METHOD FOR CONCRETE SEWER MANHOLES BY THE NEGATIVE AIR PRESSURE TEST**

April, 2001

- 04.01 Scope
- 04.02 Description

#### **04.01 SCOPE:**

This test method covers procedures for testing precast concrete manhole sections when using the vacuum test method to demonstrate the integrity of the installed materials and the construction procedures. This test method is used for testing concrete manhole sections utilizing mortar, mastic, or gasketed joints.

This test method is intended to be used as a preliminary test to enable the installer to demonstrate the condition of the concrete manholes prior to backfill. It may also be used to test manholes after backfilling; however, testing should be correlated with the connector supplier.

This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

#### **04.02 DESCRIPTION**

See ASTM C 1244

## Supplemental Specification 05-01

### SANITARY SEWER TELEVISION (CLOSED CIRCUIT TV) INSPECTION AND DOCUMENTATION PROCEDURE

June 2001

- 05.01 Description
- 05-02 Equipment
- 05-03 Maintenance of Traffic
- 05-04 Safety
- 05-05 Procedures for Reducing Excessive Sewerage Flow
- 05-06 Documentation of Televised Sewer Inspection

**05.01 DESCRIPTION.** This item shall consist of furnishing all labor, material and equipment, as specified under this section, to complete closed circuit televising and documenting sewers of various sizes, as shown on the plans or as directed by the City Engineer.

The cost for all work related to this item shall be considered incidental to the cost of the new or modified sewer. No separate payment will be made by the City.

All main lines shall be inspected and documented for acceptability and provide documentation to any potential problems or deviations from the proposed specifications

Televising inspection service may be done simultaneously with deflection test as approved by the City Engineer. However, in the event of deflection failure or low pressure air testing fails and a repair or replacement of the sewer is required, the Contractor shall be obligated to re-televising and document the repaired section of the sewer.

The Contractor shall be responsible for obtaining information such as: depth of flow, sewer velocities, rates of flow, manhole depths, air quality in sewers, traffic conditions and other pertinent information which may be necessary to complete the work as specified.

#### **05.02 EQUIPMENT** List of Equipment

05.021 Television Camera: The television camera used for the inspection shall be one specifically designed for such inspection and have radial view capability. The lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe. The camera shall be operative in 100% humidity conditions and shall have either automatic or remote focus and iris controls. The camera, television monitor, video recorder and all other components of the video system shall be capable of producing color picture quality to the satisfaction of the City Engineer. The videotape with audio shall be provided on 2-hour VHS cassettes with a tape

width of ½ inch and be recorded in the 2-hour mode. The videotape shall be of the long life, self lubricating type, produced under rigid quality control standards and provide the highest quality picture and sound.

The camera shall be moved through the sewer line by devices that do not obstruct the camera view or interfere with proper documentation of sewer conditions.

05.022 Camera Monitor: The monitor shall be located on-site within a mobile TV studio large enough to accommodate a minimum of four people for the purpose of viewing the monitor during the inspection process. The City Engineer or his representative shall have access to view the monitor at all times.

05.023 Winching: When manual operated winches are used to pull the camera through the sewer line, telephones or other suitable means of communication must be established between the winch operator and the video system operator.

05.024 Accuracy: The importance of accurate distance measurements is emphasized. The video equipment shall be capable of recording an accurate horizontal distance measurement from the starting point to the point of observation of the camera. Markings on the cable, or the like, which would require interpolation for the depth of manholes is not acceptable. Accuracy of the metering device shall be verified by use of a walking meter, roll-a-tape, or other approved device, and shall be satisfactory to the City Engineer or his representative.

**05.03 MAINTAINING TRAFFIC**: The Contractor shall arrange with the City's Project Representative at least 48 hours in advance to the commencement of procedure.

The Contractor shall be responsible for maintaining traffic at all times in accordance with the requirements set forth in the Ohio Manual of Uniform Traffic Control Devices and as per Item 614-Maintaining Traffic, of the latest edition of the Ohio Department of Transportation, Construction and Material Specifications.

All traffic control devices including plastic drums, cones, temporary signs, flashing arrow panels, etc. shall be placed in accordance with the O.D.O.T. Standard Drawings.

Any temporary roadway or lane closing(s) shall be kept to a minimum and must be approved and coordinated with the City's Traffic Engineering Office at least five (5) working days in advance. The City's Traffic Engineering Office shall notify the news media and emergency departments when necessary.

The Contractor shall maintain access to and from all properties along the line of work at all times, unless otherwise coordinated and approved by the Engineer.

**05.04 SAFETY:** The Developer/Contractor shall be responsible for conducting his work in accordance with all applicable laws as prescribed by the "Occupational Safety and Health Act of 1970" and shall do everything reasonable necessary to protect the life, health, safety and welfare of any employee, visitor or pedestrian.

**05.05 PROCEDURES FOR REDUCING EXCESSIVE SEWERAGE FLOW (during sewer televising):**

Reducing flow shall be performed with the approval of the City when the flow at the upstream manhole, of the sewer section to be televised, is greater than 33% of the pipe diameter. In the event that televising is not permitted, due to excessive depth of flow, the Contractor shall perform the work by one of the following methods only as directed by the City Engineer:

1. Televising may be performed during low flow periods (off peak hours), such as night hours. No additional compensation will be paid by the City for this work. Times for the above work shall be scheduled by the City Engineer.

2. A sewer plug, or sand bags, shall be inserted into the line upstream of the section being televised to achieve the required maximum depth of flow. (The plug shall be so designed that all or any portion of the sewage can be released during the televising inspection.) Immediately after the work has been completed for that particular section of sewer, the flow shall be restored to normal.

3. Bypass Pumping: When required, as noted above, the Contractor shall supply the pumps, conduits, and other equipment to divert the flow of sewage around the sewer section to be televised. The bypass system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during a rainstorm.

NOTE: When flow in a sewer is plugged, blocked or bypassed, the Contractor must take sufficient precautions to protect the sewer lines from damage that might result from sewer surcharging. Further precautions must be taken to insure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewer system. The Contractor shall be solely responsible for any damages as a result of their actions.

**05.06 DOCUMENTATION OF TELEVISED SEWER INSPECTION:**

The Contractor shall assign personnel or firm familiar with televising procedures and their requirements set forth.

The Contractor and City's Project Representative shall be present at all times during the televising procedure, unless otherwise approved by the City Engineer.

Original color videotape recordings shall be forwarded to the City Engineer for replay and shall become the property of the City upon final approval of the City Engineer. The tapes shall be

professionally labeled showing the City's name, the lines or sections recorded on the tape, tape number as referenced on a log, the name of the Contractor, and other labeling approved by the City Engineer. Reprocessed tapes or copies will not be accepted. All unacceptable tapes will be returned to the Contractor.

An accurate and continuous footage reading shall be superimposed on the video recording for each line inspected. The header shown on the tape prior to inspecting each line shall include at a minimum, the date of inspection, the diameter of the sewer and the manhole number designation for each manhole on the line section inspected, as established and referenced on the Contractor's inspection log.

The camera may be moved through the sewer line in either direction, at a rate not to exceed 30 feet per minute, and stopping when necessary to permit proper documentation of the sewer's condition, as outlined elsewhere in this section.

The video recording shall be augmented with audio voice recording calling out the nomenclature of the sewer system, the pipe, manholes, wyes, debris, mud, roots, water, "event" (bad joints, cracked, damaged, or deformed pipe) or any other information that would be of use to internal inspection of sewers.

The voice shall be clean, concise, and loud enough to overcome any background noise from machinery or equipment. The audio annotation shall start by identifying the pipe footage from the downstream manhole of the run and then go on to identify the "event". The camera shall stop at each "event" if it is something out of the ordinary as indicated above. It is left to the discretion of the Contractor as to whether the "event" is of such severity (or unidentifiable) to warrant reversing the camera one or more times to catch a better view.

At locations of the "events" described above, as well as at all service connections, the camera's radial view capabilities shall be utilized where appropriate, to carefully view the "event" so as to allow the City to make a better determination of the severity of a problem or to determine the condition of service line connections.

In addition to videotape recordings, the Contractor shall furnish the City with one copy of a television inspection log. This inspection log shall be printed on a format pre-approved by the City. The log shall accurately describe in detail and reference all information required on the videotape recording of each section chronologically.

**TABLE 1**

**THERMOPLASTIC PIPE, PVC, SDR 35  
AVERAGE INSIDE DIAMETERS  
5.0% DEFLECTION MANDREL DIMENSIONS  
(DERIVED FROM ASTM D 3034)**

NOMINAL PIPE SIZE (IN.)	SDR	AVERAGE INSIDE DIAMETER (IN.)	O. D. OF 5.0% DEFLECTION PROBE (IN.)
6	35	5.893	5.60
8	35	7.891	7.50
10	35	9.864	9.37
12	35	11.737	11.15
15	35	14.374	13.65

## SECTION 02538

### SANITARY SEWER SYSTEM

#### PART 1 GENERAL

##### 1.1 SUMMARY

A. This section includes the installation of 72" reinforced concrete pipe to replace existing pipe as shown on the plans. The project manual includes a subsurface exploration report by PSI, Inc. for reference.

B. Section Includes:

1. Sanitary sewage pipe.
2. Bedding and cover materials.

C. Related Sections:

1. Section 02980- Bypass Pumping
2. Section 02990- Manhole Lining
3. Section 31 66 13- Helical Piles and Helical Anchors
4. *Subsurface Exploration of Allenford Dr. Sewer Line Emergency Stabilization*, PSI, Inc., April 25, 2012 (in project manual).

##### 1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Pipe and Fittings:

1. Basis of Measurement: By the linear foot.
2. Basis of Payment: Includes excavation, bedding, pipe and fittings, and reconnection to existing sanitary sewer.

##### 1.3 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
2. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
3. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>))
4. ASTM C969- Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines
5. ASTM C1103- Standard Practice for Joint Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines

6. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
7. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
8. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

#### 1.4 SUBMITTALS

- A. Provide submittals as required by Owner.
- B. Product Data: Submit data indicating pipe material used, pipe accessories, and bedding and backfill.
- C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record location of pipe runs, connections, and invert elevations according to City's Geographic Information Systems (GIS).

#### 1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with Ohio Department of Transportation (ODOT) and City of Canton standards.

#### 1.7 PRE-CONSTRUCTION MEETINGS

- A. Convene minimum one week prior to commencing work in this section.

#### 1.8 FIELD MEASUREMENTS

- A. Verify field measurements and elevations as indicated on the plans.

#### 1.9 COORDINATION

- A. Coordinate the Work with the City for the reconnection to existing sanitary sewer and trenching.

### PART 2 PRODUCTS

#### 2.1 SANITARY SEWAGE PIPE

- A. Reinforced Concrete Pipe: ASTM C76, Class IV with Wall Type B; bar reinforcement; inside nominal diameter of 72 inches, bell and spigot ends.
  1. Fittings: Reinforced concrete.

2. Joints: ASTM C443, rubber compression gasket.

## 2.2 BEDDING AND COVER MATERIALS

- A. Bedding: According to Canton's Standard Drawing No.19.
- B. Cover: According to Canton's Standard Drawing No. 19.
- C. Soil Backfill from Above Pipe to Finish Grade: According to Canton's Standard Drawing No. 19.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verification of existing conditions before starting work.
- B. Verify trench is ready to receive work and excavations, dimensions, and elevations are as indicated on drawings.

### 3.2 PREPARATION

- A. Correct over excavation with coarse aggregate.
- B. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction.

### 3.3 BEDDING

- A. Excavate pipe trench in accordance with Canton's Standard Drawing No. 19.
- B. Place bedding material at trench bottom, level materials in continuous layer in accordance with Canton's Standard Drawing No.19.
- C. Maintain optimum moisture content of bedding material to attain required compaction density.

### 3.4 INSTALLATION - PIPE

- A. Install pipe, fittings, and accessories in accordance with manufacture's recommendations. Seal joints watertight.
- B. Lay pipe to slope gradients noted on drawings.
- C. Install bedding at sides and over top of pipe according to Canton's Standard Drawing No.19.
- D. Install concrete caps under pipe as shown on plans.
- E. Install helical piles under concrete caps as shown on plans and Section 31 66 13.

F. Install Work in accordance with State and City standards.

3.5 FIELD QUALITY CONTROL

A. Joint Test: Test in accordance with ASTM C1103, latest edition.

B. Request inspection prior to and immediately after placing bedding.

C. Compaction Testing: In accordance with ODOT

D. When tests indicate Work does not meet specified requirements, remove work, replace and retest.

E. Infiltration/Exfiltration Test: Test in accordance with ASTM C969, latest edition.

3.6 PROTECTION OF FINISHED WORK

A. Protect pipe and aggregate cover from damage or displacement until backfilling operation is complete.

3.7 SCHEDULE

A. Sanitary Sewer: See anticipated construction schedule on plans

END OF SECTION