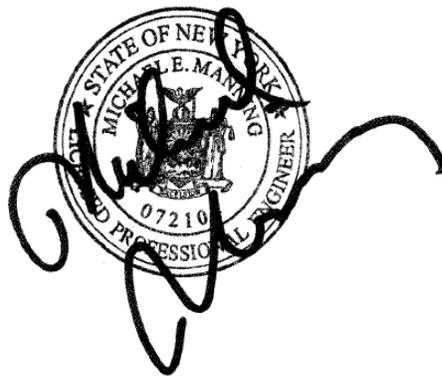


COUNTY OF MONROE
DEPARTMENT OF ENVIRONMENTAL SERVICES
ADDENDUM NO. 2 TO THE
CONSTRUCTION SPECIFICATIONS AND RELATED DOCUMENTS
FOR
FRANK E. VAN LARE WWTF
IRONDEQUOIT BAY PUMP STATION
FORCEMAIN MODIFICATIONS
CONTRACT NO. 1 GENERAL CONSTRUCTION

PREPARED BY

MALCOLM PIRNIE, INC.
300 STATE STREET, SUITE 501
ROCHESTER, NEW YORK 14614

DATE: JANUARY 25, 2011



TO ALL BIDDERS:

The following constitutes ADDENDUM NO. 2 of the Contract Documents. Each Bidder shall acknowledge receipt of this Addendum on Page P-5 of the Proposal.

Pages ADD2-1 through ADD2-4, Specification Section 33 01 30.82R, Epoxy Pipe Lining, and Sketches ADD2-1, ADD2-2, and ADD2-3.

CHANGES TO BIDDING REQUIREMENTS:

2-1. None.

CHANGES TO SPECIFICATIONS:

2-2. Special Conditions, Page SC-3: Add the following to Article 76:

“xii. Internal televising of portions of the 42-inch and 60-inch forcemains, completed in December 2006, can be viewed at the office of Malcolm Pirnie, Inc. located at 300 State Street, Suite 501, Rochester, NY 14614, phone number (585) 454-0500. Appointments must be made at least 24 hours in advance”

2-3. Section 01 14 16, Coordination with Owner’s Operation, Page 01 14 16-6: Replace subparagraph 3.2.C.2 in its entirety with the following:

“2. Per the requirements issued by the New York State Department of Environmental Conservation, shutdown C may only occur from August 1, 2011 through October 15, 2011.”

2-4. Section 01 14 16, Coordination with Owner’s Operation, Page 01 14 16-7: Replace subparagraph 3.2.D.2 in its entirety with the following:

“2. Per the requirements issued by the New York State Department of Environmental Conservation, shutdown D may only occur from December 15, 2011 through March 1, 2012, and after lining of the 42-inch force main has been completed.”

2-5. Section 02 82 33, Asbestos Removal and Disposal, Page 02 82 33-1: Replace subparagraph 1.1.B.2 in its entirety with the following:

“2. Exposed pipe in the Valve Chamber and Manholes, exterior surface, bonded asbestos felt wrap.”

2-6. Section 05 54 63, Floor Access Hatch Covers, Page 05 54 63-3: Add the following subparagraph 2.1.B.14:

“14. Fall-Through Prevention System: Provide access hatch cover manufacturer’s standard safety grating of FRP or aluminum, constructed for live load capacity of not less than 300 psf. Provide hinges and lift-assist to allow grating sections to automatically lock in place in full-open 90-degree position. Provide hold-open arm and release assembly of aluminum or Type 316 stainless steel. Grating shall be colored OSHA “Safety Yellow” or “Safety Orange”.

- 2-7. Section 33 01 30.72, Cured-In-Place Pipe Lining, Page 33 01 30.72-3: Replace the first sentence of Paragraph 1.7.A with the following:

“All lining work shall be fully guaranteed by the CONTRACTOR for a period of two years beginning with the final acceptance of the Work and in accordance with the Agreement.”

- 2-8. Section 33 01 30.72, Cured-In-Place Pipe Lining, Page 33 01 30.72-11: Add the following as Paragraph 3.3.D:

“D. Closures at Outlets: Install an appropriately sized circular profile hydrophilic band around the circumference of the opening prior to installing the liner through the pipe. After curing of the CIPP, cut out the opening, brush the edges, then build up a fiberglass fabric using a compatible resin to that used for the force main liner. Lay the fabric up to the top of the outlet, with a minimum thickness at the opening of $\frac{3}{4}$ the liner thickness tapering to a feathered edge. Provide appropriate surface preparation of the host pipe per liner manufacturer’s recommendations.”

- 2-9. Section 33 01 30.72, Cured-In-Place Pipe Lining, Page 33 01 30.72-11: Add the following as Paragraph 3.4.C:

“C. CONTRACTOR may at has option complete a pressure test on each installed section of CIPPL in lieu of a full pipe system exfiltration test. The test pressures for each segment are listed in Table 33 00 30.72-A. Upon completion of the sectional pressure tests and any repairs and retesting required, the completed pipeline will be operated under normal conditions and all new joints observed for leakage. CONTRACTOR will be responsible for keeping each new joint completely exposed during this test period to allow for visual observation of leaks.”

- 2-10. Section 33 01 30.82, Epoxy Pipe Lining: Replace section in its entirety with attached pages 33 01 30.82R-1 through 33 01 30.82R-9.

CHANGES TO DRAWINGS:

- 2-11. Sheet G-3 of 15: Replace Section 1/3/3 with the attached Sketch Add2-1.

- 2-12. Sheet G-7 of 15: Section 2/7/7, Delete the following:

“Remove approximately 2” of unsound concrete to EL. 543.00 on all interior walls (TYP.)”

and replace with:

“Remove approximately 2” of unsound concrete to EL. 343.00 on all interior walls (TYP.)”

2-13. Sheet G-8 of 15: Modify Sectional Plan with the attached Sketch Add2-2.

2-14. Sheet G-8 of 15: Replace Section 2/8/8 with the attached Sketch Add2-3.

2-15. Sheet G-9 of 15: Section 1/9/9, replace note pertaining to perimeter drain with the following:

“6” Dia. Perforated pipe w/drainage stone encased in geotextile around N, S and E sides only. Drain to daylight.”

2-16. Sheet G-10 of 15: Notes, Add the following note:

“Notes: 4. Remove, coat, and re-install existing piping in Manholes 1 through 3 as required for CIPP installation. Provide new flexible couplings as shown on Detail 4.”

++ END OF ADDENDUM ++

SECTION 33 01 30.82R

EPOXY PIPE LINING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide all labor, materials, equipment, power, water, and incidentals necessary to complete rehabilitation and installation of a corrosive resistant epoxy based surfacing system on interior surfaces of existing carbon piping.
- B. This work constitute “confined spaces” as defined in 29 CFR §1926.21(b)(2) and 1910.146. Accordingly, CONTRACTOR shall take appropriate measures to protect the health and safety of all persons on the Site or who may be affected by the Work, including, without limitation thereby, employees and representatives of CONTRACTOR, any Subcontractor, OWNER, or ENGINEER while they are present and engaged in the performance of their duties on the Site. Coordinate with Section 01 35 26.23 Confined Space Entry Plan.

1.2 RELATED SECTIONS

- A. Section 01 14 16, Coordination with Owner’s Operations.
- B. Section 01 36 26.23 Confined Space Entry Plan.
- C. Section 33 01 30.16, Television Inspection.
- D. Section 33 01 30.41, Cleaning of Pipes.
- E. Section 33 01 30.72, Cured In Place Pipe Lining.

1.3 REFERENCE STANDARDS

- A. Comply with applicable provisions and recommendations of the following:
 - 1. ASTM D638 - Tensile Properties of Plastics.
 - 2. ASTM D790 - Flexural Properties of Unreinforced and Reinforced Plastics.
 - 3. ASTM D695 - Compressive Properties of Rigid Plastics.
 - 4. ASTM D4541 - Pull-off Strength of Coatings Using a Portable Adhesion Tester.
 - 5. ASTM D2240- Durometer Hardness, Type D.
 - 6. ASTM D2584 - Volatile Matter Content.
 - 7. ASTM D4414 – Wet Film Thickness by Notched Gages.
 - 8. ASTM D543 - Resistance of Plastics to Chemical Reagents.
 - 9. ASTM - The published standards of the American Society for Testing and Materials, West Conshohocken, PA.

10. NACE - The published standards of National Association of Corrosion Engineers (NACE International), Houston, TX.

1.4 QUALIFICATIONS

- A. CONTRACTOR, foreman, and coating installer shall be licensed and certified by the manufacturer of the coating system process proposed for use in performing the Work. CONTRACTOR shall have completed epoxy coatings of at least 5,000 feet of pressure piping using the surfacing system proposed herein.
- B. All coating work shall be supervised by a foreman responsible for rehabilitating a minimum of 1,000 linear feet of steel wastewater pressure or gravity sewer piping using the proposed manufacturer's coating system.
- C. All coating work shall be performed by an installer having applied the proposed coating system of a minimum of 1,000 feet of steel wastewater pressure or gravity sewer piping.
- D. Contractor shall utilize equipment for the spray application of the coating product(s) which has been approved by the coating product manufacturer; and, Contractor shall have received training on the operation and maintenance of said equipment from the coating product manufacturer.
- E. Contractor shall initiate and enforce quality control procedures consistent with the coating product(s) manufacturer recommendations and applicable NACE or SSPC standards as referenced herein.

1.5 SUBMITTALS

- A. Product Data:
 - 1. Technical data sheet on each product used including application, cure time and surface preparation procedures.
 - 2. Material Safety Data Sheet (MSDS) for each product used.
 - 3. Copies of independent testing performed on the coating product indicating the product meets the requirements as specified herein.
 - 4. Technical data sheet and project specific data for repair materials to be topcoated with the coating product(s) including application, cure time and surface preparation procedures.
- B. CONTRACTOR Data:
 - 1. Written notice and proof of conformance with Paragraph 1.4 if CONTRACTOR proposes the use of a different coating system, site foreman or installer as proposed at the time of Bid.
 - 2. Warranty information.

C. Qualification:

1. List separately all projects to meet the qualification criteria for the CONTRACTOR, foreman, and installer as listed in Paragraph 1.4. The CONTRACTOR list shall have a minimum of five past clients, including names and telephone numbers, to verify previous satisfactory performance on projects of similar or greater size, environmental conditions and difficulty factor.
2. The monolithic surfacing manufacturer shall provide a minimum of five past installations utilizing their product on similar piping systems. The information required includes name of project, location of project, description of work performed, who performed the work, client representative name(s) and client telephone number(s), to verify previous satisfactory performance on projects of similar or greater size.

1.6 GUARANTEE

- A. All repairs or rehabilitation shall be guaranteed by the CONTRACTOR against corrosion, spalling, loss of adhesion or failure for a period of two years from the date of final acceptance in accordance with the Agreement. During this period, repair all defects in a manner satisfactory to the ENGINEER at no additional compensation from the OWNER.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Materials are to be kept dry, protected from weather and stored under cover.
- B. Protective coating materials are to be stored between 50 deg F and 90 deg F. Do not store near flame, heat or strong oxidants.
- C. Protective coating materials are to be handled according to their material safety data sheets.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Coating products shall be manufactured specifically for installation and curing properly within the specified environment(s). Coating product(s) shall be resistant to all forms of chemical or bacteriological attack found in subject system; and, capable of adhering to the substrate as specified.
- B. Use only chemical materials that meet the following minimum application requirements:
1. All component materials shall be easily transportable by common carriers.
 2. Packing of component materials shall be compatible with field storage requirements.

3. Components shall be packed in such a fashion as to provide for maximum worker safety when handling the materials and minimize spillage when preparing for use.
4. Mixing of the components shall be compatible with field applications, not require precise measurements, and be within the limits recommended by the manufacturer.
5. Catalyzation shall take place at the point of repair.
6. Cleanup shall be done without inordinate use of flammable or hazardous chemicals.

2.2 CLEANING MATERIAL

- A. Water: Potable Water.
- B. Cleaners: Detergent or muriatic acid capable of removing bacteria, dirt, grease, oil and other matter which would prevent a good bond of lining material to wall. Apply in accordance with manufacturer's recommendations.

2.3 REPAIR AND RESURFACING PRODUCTS

- A. Repair and resurfacing materials must be compatible with the specified coating product(s) and shall be used and applied in accordance with the manufacturer's recommendations. The following products may be accepted and approved as compatible repair and resurfacing products for use:
 1. 100% solids, solvent-free epoxy grout specifically formulated for epoxy top coating compatibility.
 2. When approved for use by the manufacturer, factory blended, rapid setting, high early strength, fiber reinforced, non-shrink repair mortar that can be troweled or pneumatically spray applied may be approved if specifically formulated to be suitable for top coating with the specified coating product(s).

2.4 STRUCTURAL EPOXY SURFACING SYSTEM

- A. Product: 100% solids, solvent-free ultra high-build epoxy system exhibiting the following characteristics:
 1. Product Type: amine cured epoxy.
 2. VOC Content (ASTM D2584): 0%.
 3. Color: White
 4. Compressive Strength, psi (ASTM D695): 13,000 (minimum).
 5. Tensile Strength, psi (ASTM D638): 6,000 (minimum).
 6. Flexural Modulus, psi (ASTM D790): 500,000 (minimum).
 7. Flexural Strength, psi (ASTM D790): 11,000 (minimum).
 8. Taber Abrasion, mg loss (ASTM D4060, 1000 g load/1000 cycles): 112 mg (maximum).
 9. Hardness, Shore D, (ASTM D2240): 88.
 10. Adhesion to Concrete, mode of failure (ASTM D4541): Substrate (concrete) failure. Steel (SSPC SP-10): >400 psi

11. Chemical Resistance (ASTM D543/G20) all types of service for:
 - a. Municipal sanitary sewer environment.
 - b. Sulfuric acid, 10%.
 - c. Sodium hydroxide, 20%.

- B. Manufacturer:
 1. Warren Environmental System, Inc., P.O. Box 1206, Carver, MA 02330 Telephone (508) 947-8539.
 2. Sewer Shield 150 Sprayable, 4702 E. Virginia Street, Mesa, AZ 85215 Telephone (480)984-7608.
 3. Neopoxy, 27057 Industrial Blvd, Hayward, CA 94545 Telephone (510)782-12904.
 4. Chesterton, 860 Salem St., Groveland, MA 01834 Telephone (781) 438-7000.
 5. Or equal.

- C. The finished coating system shall have a minimum total thickness of 150 mils. The cured surface shall be monolithic, The lining system shall be placed and cured in one or two applications in conformance with the recommendations of the epoxy manufacturer.

- D. The surfacing system shall form a continuous, tight fitting, hard, impermeable surface that is chemically resistant to any chemicals, bacteria or vapors normally found in domestic sewage. The sealed interior surface shall prevent any penetration or leakage of groundwater infiltration.

PART 3 – EXECUTION

3.1 GENERAL

- A. Thoroughly clean and prepare existing products to create a seal with the coating system.

- B. Existing coatings should be removed or, where bonded well, thoroughly abraded to provide adequate surface profile for mechanical bond by the new protective coating. Contractor is to maintain strict adherence to the protective coatings manufacturer's recommendations with regard to proper surface preparation and compatibility with existing coatings.

- C. Remove from the Site any uncured compound determined to be more than six months old. Do not use uncured compound if container has been open for more than 24 hours.

- D. Any active flows shall be locked-out, plugged or diverted as required to ensure that the liquid flow is maintained below the surfaces to be coated. Any equipment shall be locked-out according to site safety and OSHA requirements. Coordinate staging of work and shutdowns in accordance with Section 01 14 16 Coordination with Owner's Operations.

- E. Mix and handle the compounds, including their component parts in accordance with manufacturer's recommendations and to minimize hazard to personnel. Provide appropriate protective measures to ensure that the components and the chemicals produced in mixing are under the control of the CONTRACTOR at all times and are not available to unauthorized personnel or others. Dispose of excess material resulting from rehabilitation operations in a safe manner. All equipment and material shall be subject to the review of the ENGINEER.
- F. Prior to commencing surface preparation, CONTRACTOR shall inspect all surfaces specified to receive the coating and notify ENGINEER, in writing, of any noticeable disparity in the site, structure or surfaces which may interfere with the work, use of materials or procedures as specified herein.

3.2 CLEANING / PREPARATION

- A. Clean piping by removing deleterious material, incompatible existing coatings, waxes, curing compounds, efflorescence, sealers, salts, dirt, oil, grease, and other debris which may affect the performance and adhesion of the coating to the substrate shall be removed.
- B. Damaged piping sections by corrosion, chemical attack or other means of degradation shall be removed so that only sound substrate remains.
- C. Surface preparation method, or combination of methods, may include high pressure water cleaning (4,000 to 10,000 psi), high pressure water jetting, abrasive blasting, shotblasting, grinding, scarifying, detergent water cleaning, hot water blasting and others as described in NACE No. 6/SSPC SP-13. Whichever method(s) are used, they shall be performed in a manner that provides a uniform, sound clean neutralized surface suitable for the specified coating product(s). Blast air or water shall be free of oils and grease.
- D. Anchor profile shall be minimum 2.5-5.0 mil for bare metal and sound coating surfaces and in accordance with manufacturer standards.
- E. Remove all blasting and cleaning residues from the piping by means of vacuum cleaning plus, as appropriate, shovels, brooms, clean compressed air and other dry extraction methods.
- F. Piping to receive epoxy coating system shall be free of infiltration. Method(s) used to eliminate infiltration shall be approved by the ENGINEER and shall be compatible with the epoxy lining system.
- G. Prepare surfaces in accordance with the requirements of the epoxy coating system material manufacturer. Remove all loose material and fill voids, holes, and/or smooth transitions with repair products.

- H. Resurfacing products shall be used to fill large voids, smooth deteriorated surfaces, and rebuild severely deteriorated structures.
- I. Coating product(s) shall be applied in one continuous seamless application, as conditions permit. If coating is applied in segments, the CONTRACTOR shall provide a minimum of a one foot overlap between the coatings. The overlap surface shall be prepared in accordance with the manufacturer's recommendations to allow proper adhesion of the coating product(s).

3.3 APPLICATION

- A. All products shall be applied in accordance with manufacturer recommendations, including environmental controls, product handling, mixing, application equipment and methods.
- B. Spray equipment shall be specifically designed to accurately ratio and apply the coating product(s) and shall be in proper working order.
- C. All aspects of the coating system application shall be installed by an installer meeting the qualifications requirements in paragraph 1.4.
- D. Before spraying any coating, all welds, grooves, pits, other rough areas, difficult-to-spray areas, and other areas as specified shall be striped. Striping can be accomplished by spray application in accessible areas; and, hand-mixing product or spray followed by scrub-striping with a good-quality bristle brush in difficult-to-spray areas. These areas shall be bare metal and sound coating surfaces when finished.
- E. Prepared surfaces shall be coated by spray application of the coating product(s) described herein to a minimum wet film thickness of 150 mils for steel pipe. Depending on manufacturer and substrate preparation, thicker applications to prevent sagging on vertical surfaces may be required and must be provided at no additional cost to Owner.
- F. Subsequent topcoating or additional coats of the coating product(s) shall occur within the product's recoat window as specified by the manufacturer. Additional surface preparation procedures will be required if the recoat window is exceeded.
- G. Coating product(s) shall interface with adjoining construction materials throughout the piping to effectively seal and protect. Procedures and materials necessary to effect this interface shall be as recommended by the coating product(s) manufacturer.
- H. Termination points of the coating product(s) on pipe interiors abutting pipe with a CIPPL system shall be minimum of six inches past the termination of the CIPPL.

- I. The lining system shall be allowed to cure for the minimum amount of time as specified by the manufacturer prior to returning the pipeline to service.
- J. No cracks, voids, pinholes, uncured spots, dry spots, lifts, delamination or other type of defect shall exist.

3.4 TESTING AND INSPECTION

- A. During application a wet film thickness gauge, meeting ASTM D4414 - Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages, shall be used. Measurements shall be taken, documented and attested to by CONTRACTOR for submission to ENGINEER.
- B. After the coating has set hard to the touch it shall be inspected with high-voltage holiday detection equipment. The spark tester shall be initially set at 100 volts per 1 mil (25 microns) of film thickness applied but may be adjusted as necessary to detect the induced holiday (refer to NACE RPO188-99). All detected holidays shall be marked and repaired by abrading the coating surface with abrasive paper or brush blast. After abrading, additional protective coating material can be hand applied to the repair area, but should not be applied beyond the abraded area. All touch-up/repair procedures shall follow the coating manufacturer's recommendations.
- C. Measure the coating thickness with an ultrasonic thickness gauge to ensure that the required DFT has been applied. Repair low DFT by application of additional coating.
- D. Measurement of bond strength of the protective coating to the substrate can be made at regular intervals and along different sections of the structure. Bond strength can be measured in accordance with ASTM D4541. Any areas detected to have inadequate bond strength shall be evaluated by the ENGINEER. Further bond tests may be performed in that area to determine the extent of the potentially deficient bonded area and repairs should be made by the CONTRACTOR in strict accordance with manufacturer's recommendations. Any pitting in the lining material caused by the pull test shall be repaired by the CONTRACTOR using the same material as the original lining material.

3.5 POST-CONSTRUCTION INSPECTION OF COMPLETED WORK

- A. Stations 0+00 through 1+06 (42 and 60-inch pipe lines) and STA 11+23 to 12+27 (60-inch pipeline – Alternate No. 3): A final visual inspection shall be made by the Engineer and Owner. Any deficiencies in the finished coating shall be marked and repaired according to the procedures set forth herein by Contractor.
- B. Alternative No. 4: A final visual inspection shall be made by the Engineer and Owner where accessible. Any deficiencies in the finished coating shall be marked and repaired according to the procedures set forth herein by Contractor.

- C. Alternative No. 4: For areas not accessible for physical inspection, Contractor to perform a CCTV inspection in the presence of the Engineer and Owner. Any deficiencies in the finished coating shall be noted and repaired according to the procedures set forth herein by Contractor.

3.6 FINAL CLEANUP

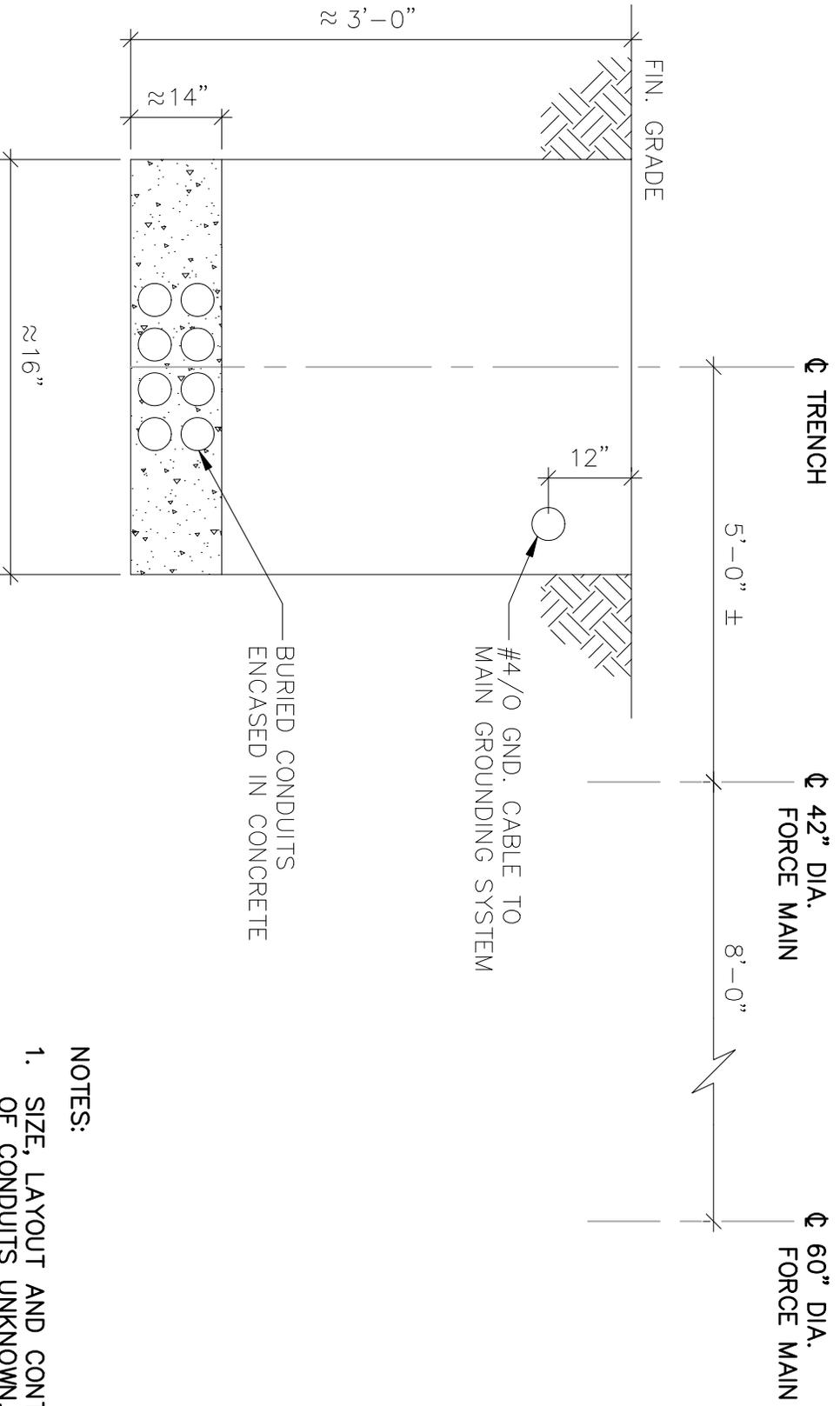
- A. Upon completion of rehabilitation work and testing, clean and restore project area affected by work.

3.7 FINAL CLEANUP

- A. Provide a CCTV inspection 18 months after completion of epoxy lining work showing all completed work in accordance with Section 33 01 30.16, Television Inspection. Actual period for inspection shall be determined by the ENGINEER and will ideally be conducted during high groundwater conditions. CONTRACTOR will be provided with 60 days notice prior to period of inspection. Conduct all inspections in the presence of the ENGINEER. Inspection to be completed concurrently with the CIPPL inspection.
- B. Correct all defects discovered during the warranty period at no additional compensation. After the defects are corrected, inspect the pipe again at no additional compensation.

++ END OF SECTION ++

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SECTION

NOT TO SCALE

- NOTES:**
1. SIZE, LAYOUT AND CONTENTS OF CONDUITS UNKNOWN.
 2. CONTRACTOR TO LOCATE BURIED DUCT BANK PRIOR TO EXCAVATION.

REPLACE EXISTING DV-43 (BELOW)

EXISTING 24" DIA. DRAIN ϕ EL. 239.50

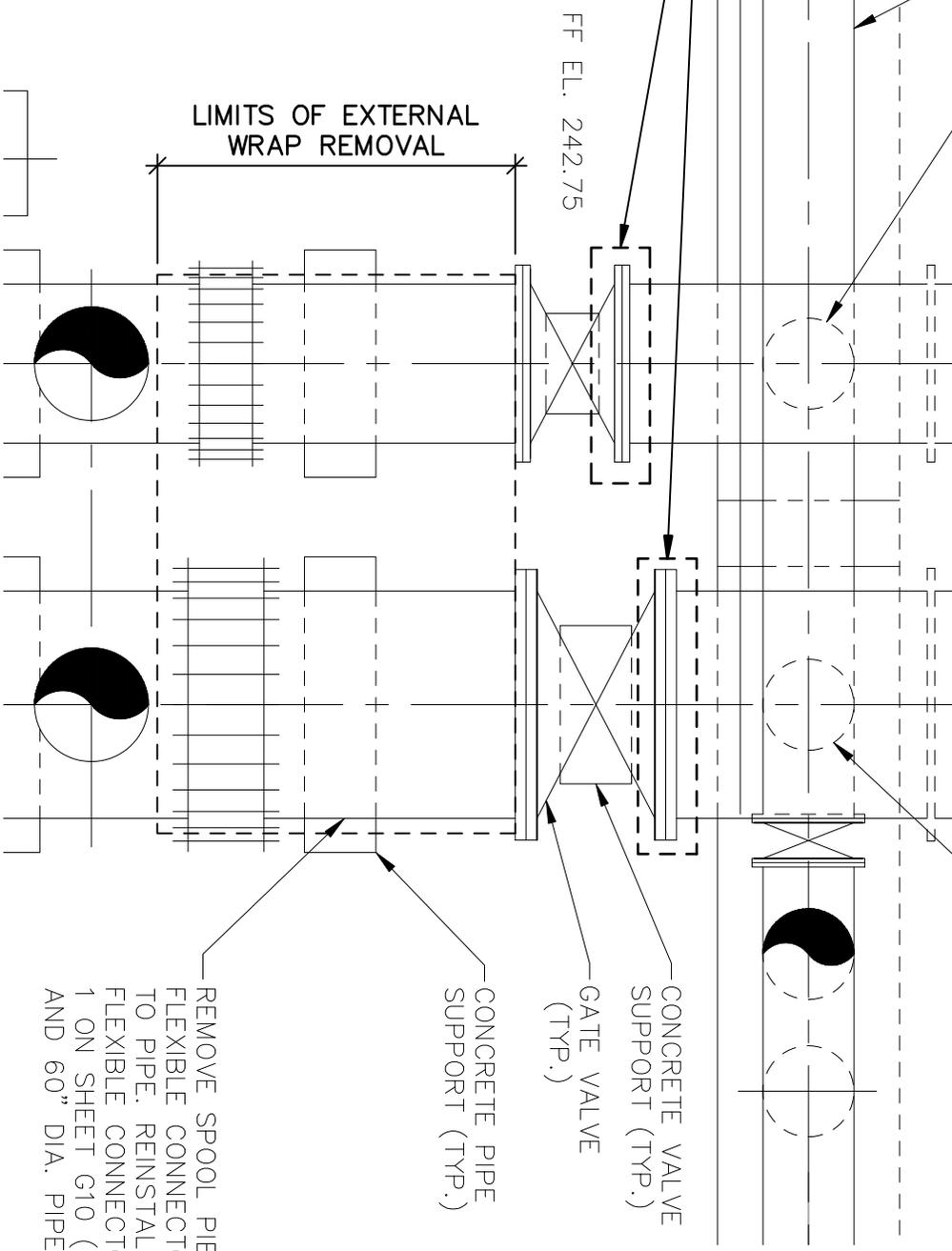
42" DIA. ϕ EL. 247.00

60" DIA. ϕ EL. 247.00

REPLACE EXISTING DV-44 (BELOW)



CONDITION OF GATE VALVES UNKNOWN. CONTRACTOR TO FURNISH FABRICATED STEEL PLATE DURING FORCEMAIN EXFILTRATION TESTING



SECTIONAL PLAN
SCALE: 1/4"=1'-0"

REMOVE SPOOL PIECE AND FLEXIBLE CONNECTOR FOR ACCESS TO PIPE. REINSTALL WITH NEW FLEXIBLE CONNECTOR PER DETAIL 1 ON SHEET G10 (TYP. 42" DIA. AND 60" DIA. PIPES)

CONCRETE VALVE SUPPORT (TYP.)

GATE VALVE (TYP.)

CONCRETE PIPE SUPPORT (TYP.)

LIMITS OF EXTERNAL WRAP REMOVAL

FF EL. 242.75

