ADDITIONAL ADDENDUM NO. 1 TO PROJECT NO. 44996

HVAC WORK AND ELECTRICAL WORK
REPAIR/REPLACE UNDERGROUND HEATING LINE
DOWNSTATE CORRECTIONAL FACILITY
122 RED SCHOOLHOUSE ROAD
FISHKILL, NY

March 3, 2016

NOTE: This Addendum forms a part of the Contract Documents. Insert it in the Project Manual. Acknowledge receipt of this Addendum in the space provided on the Bid Form.

COMMON DIVISION 1 SECTIONS

1. Page 012100-1, Subparagraph 1.02 A.1.: Change “$114,500” to read “$190,000”.

HVAC WORK SPECIFICATIONS

2. DOCUMENT 004113 BID FORM: Discard the Bid Form bound in the Project Manual and substitute the attached Document (pages 004113-1 thru 004113-2) noted “REVISED 03/03/2016”.

   NOTE: All bids should be submitted on the Revised Bid Form. Bids submitted on the original Bid Form will be disqualified.

3. Page 051200-1, Article 1.01 RELATED WORK SPECIFIED ELSEWHERE: Delete this Article in its entirety.

4. Page 051200-5, Paragraph 2.01 I.: Delete this Paragraph in its entirety.

5. Page 230923-27, Paragraph 3.04, A: Delete this Paragraph in its entirety and replace with the following:

   “A. Building 1 through 5 Sequence of Operation
   1. Heating Circulation Pumps P-1 and P-2 shall start when the outside air temperature drops below 60 degrees F (adjustable). The pumps shall turn off when the outside air temperature rises above 65 degrees F (adjustable).
   a. One pump shall run at a time, the other pump shall be stand-by.
   b. The lead/lag designation shall swap after a predetermined run-time (adjustable) so that each pump is utilized over time. A manual software
switch shall allow a DDC operator to manually swap the lead/lag pump designation.

c. Monitor status with a current sensor and alarm at DDC if commanded on but unit is off. When the lead pump fails, alarm the DDC and automatically start the lag pump.

2. When the heating pumps above are operating, the DDC System shall modulate the MTW blending station 3-way mixing valve to maintain the the supply water temperature setpoint based on the following adjustable reset schedule:

<table>
<thead>
<tr>
<th>OUTSIDE AIR TEMP</th>
<th>HOT WATER SUPPLY TEMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>220</td>
</tr>
<tr>
<td>60</td>
<td>180</td>
</tr>
</tbody>
</table>

3. Monitor the following values and calculate, trend, and totalize the energy usage in BTUs for the heat exchanger.
   a. Medium Temperature Water Flowrate.
   b. Medium Temperature Water Supply Temperature.
   c. Medium Temperature Water Return Temperature.

4. Provide the following alarms at DDC:
   a. Building hot water supply temperature is 10 degrees F (adjustable) lower than or greater than setpoint.
   b. Domestic hot water supply temperature drops below 110 degrees F (adjustable) for more than 10 minutes (adjustable).
   c. Lead heating pump failure.

5. Monitor, trend and display the following points in the DDC:
   a. Building heating water supply temperature.
   b. Building heating water return temperature.
   c. Building MTW supply pressure.
   d. Building MTW return pressure.
   e. Building domestic hot water supply temperature.
   f. Outdoor air temperature. Outdoor air temperature shall be monitored at each building such that each building’s reset schedule does not rely on a shared network outdoor air temperature.
   g. Heating pump status.”

6. Page 230923-24, Paragraph 2.11, D: Add the following Subparagraph:

   “2. Current Sensor for Fan or Pump:
      1) Output rating: 0.2 A at 30 Vdc.
      2) Input rating: 0 to 135 ampere continuous.
      3) Sensor supply current induced from monitored conductor. Minimum conductor current required 1A. Maximum rating 135.
      4) Isolation: 600 Vac RMS.
      5) Trip set-point: Adjustable to +1 percent.
      6) Temperature range: -15 degrees C to 85 degrees C.
      7) Humidity range: 0 to 95 percent non-condensing.”

7. Page 230923-24, Article 2.11 MISCELLANEOUS ELECTRIC/ELECTRONIC AND MECHANICAL DEVICES: Add the following Paragraphs:

   “E. 3-way control valves for Building blending stations:
2. Fully proportioning with modulating cage trim or V-port inner valves.
3. Flow characteristics shall be modified equal percentage at approximately 30% change per increment.
4. Rangeability shall be 100:1 or greater.
5. Body pressure rating and connection type construction shall conform to fitting and valve schedules. The ANSI rating of the valve shall match or exceed the ANSI rating of the piping in which the valve is installed.
6. Valves 2-1/2” and larger valves shall have a body pressure rating of ANSI class 125 or 250 or better and connection type construction shall conform to pipe, fitting and valve schedules for valves 2-1/2 inches or larger.
7. Stainless steel stems and trim.
8. Spring loaded Teflon packing
9. Fail-safe in normally closed position in the event of power failure.
10. Capable of operating at varying rates of speed to correspond to the exact dictates of the controller and variable load requirements.
11. Provide direct mount actuators specifically made for this valve. External valve linkages and damper actuators are more susceptible to binding and breaking and shall not be allowed.
12. Size valves as indicated on drawings M-701.

F. Actuators for 3-way control valves:
1. Actuator shall be electric motor driving, microprocessor signal controlled.
2. Modulating valves shall be positive positioning, responding to a 0-10VDC, 2-10VDC or 4-20mA signal. Floating modulating signals are acceptable for modulation on terminal units and radiation units. There shall be a visual valve position indicator.
3. Power: All actuators shall be 24VAC power and less than 100VA draw. Power shall be via Class 2 wiring. Actuators requiring more than 100VA shall have a dedicated conduit for power wiring, not mixed with the signal wiring.
4. Fail Safe: Valves actuators shall position the valve in a fail-safe position when the power supply is disrupted or the signal goes to 0. Fail-safe according to the following guidelines unless otherwise stated in the sequence of operations. Power fail safe shall be via spring loaded mechanical means
5. The actuator shall be designed with a current limiting motor protection. A release button (clutch) or handle on the actuator shall be provided to allow for manual override (except when actuator is spring return type).
6. Actuator shall provide minimum torque required for proper valve close-off. The close-off differential pressure rating of the valve shall exceed the highest possible head pressure available at the pump plus 10%, and still be rated for a Class IV leakage.
7. The actuator shall have the capability of adding auxiliary switches or feedback potentiometer if specified.
8. Actuators shall be UL and CSA listed.”
“2.07 MULTI-PURPOSE VALVES

A. Multi-purpose valve shall incorporate the following three functions in one body:
   1. Tight shut-off
   2. Spring-closure type silent non-slam check
   3. Effective throttling design capability

B. The valve body shall have (2) 1/4” NPT connections on each side of the valve seat. One connection on each size shall have brass pressure and temperature metering ports, with check valves and gasketed caps. The other connection on each side shall be supplied with brass drain plugs. Metering ports are to be interchangeable with drain plugs to allow for measurement flexibility when installed in tight locations. The valve disk shall be bronze plug & disc type with high impact engineered resin seat to ensure tight shut-off and silent check operation.

C. The valve stem shall be stainless steel with flat surfaces provided for adjustment with open-end wrench.

D. The valve body shall be Cast Iron with ANSI 125 (PN16) flanged ports.

E. The valve shall be selected and installed in accordance with the manufacturer’s instructions and be suitable for the pressure and temperature specified.

F. Each valve shall be furnished with a pre-formed removable PVC insulation jacket to meet ASTM D1784 Class 14253-C, MEA #7-87, ASTM-E-84 and ASTM136 with a flame spread rating of 25 or less and a smoke development rating of 50 or less. There will be provided sufficient mineral fiberglass insulation to meet ASHRAE 90.1-1989 specifications in operating conditions with maximum Fluid Design Operating Temperature Range of 141°F-200°F (60°C-93°C) and Mean Rating Temperature of 125°F (52°C).

G. Multi-purpose valve shall be manufactured by the same manufacturer as the pump to which it is associated. The configuration shall be angle or straight pattern as indicated on the drawings.”

9. Page 230523-2, Article 2.03 GATE VALVES: Add the following Paragraph:

   “C. Type C: 125 psig WSP, 200 psig WOG up to 12 inch size, and 150 psig WOG for 14 inch and 16 inch sizes; IBBM OS&Y, bolted bonnet, solid wedge disc, and threaded or flanged ends depending on size. Acceptable Valves: Crane 464-1/2 & 465-1/2, Hammond IR1140, Milwaukee F2885, Nibco T6170 & F6170, and Stockham G620 & G623.”

10. Page 230523-4, Paragraph 3.04 A.: Add the following Subparagraph:

   “6. Building Hot Water (HS & HR):
      a. 4 inches and Up: Flanged end, C gates.”

11. SECTION 331101 WATER UTILITY DISTRIBUTION PIPING: Add the attached Section (pages 331101-1 thru 331101-4) to the Project Manual.
12. SECTION 331300  DISINFECTION OF WATER UTILITY DISTRIBUTION: Add the attached Section (pages 331300-1 thru 331300-4) to the Project Manual.

13. SECTION 334104  CORRUGATED POLYETHYLENE STORM DRAIN PIPE: Add the attached Section (pages 334104-1 thru 334104-2) to the Project Manual.

14. Page 333913-2, Paragraph 2.01,D: Add the following Subparagraph:


HVAC WORK DRAWINGS

15. Drawing M-101, KEYED NOTES, Note 1: Add the following to the end of this Note; “Remove fiberglass insulation at 8” diameter elbows in existing piping and replace with cellular glass, typical (12) elbows.”

16. Addendum Drawings:
   a. Drawing Nos. M-301, M-509, and M-510 noted “ADDENDUM DRAWING 03/02/16” accompany this Addendum and form part of the Contract Documents.

17. Revised Drawings:
   a. Drawing Nos. A-001, M-103, M-104, M-402, M-403, M-404, M-701, S-402, S-501, and S-502 noted “REVISED DRAWING 03/02/16” accompany this Addendum and supersede the same numbered originally issued drawings.

END OF ADDENDUM

Margaret F. Larkin
Executive Director
Design and Construction

JRC:jc
DETACH AND USE THIS FORM

BID FORM FOR:  44996-H

HVAC WORK
REPAIR REPLACE UNDERGROUND HEATING LINE
DOWNSTATE CORRECTIONAL FACILITY
122 RED SCHOOLHOUSE ROAD
FISHKILL, NY

THIS IS A 2 PAGE BID FORM. ALL PAGES MUST BE COMPLETED.

THE STATE RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS. EACH BID FORM SHALL BE ACCOMPANYED BY BID SECURITY (AS DESCRIBED IN THE INSTRUCTIONS TO BIDDERS) IN THE AMOUNT STATED IN THE ADVERTISEMENT FOR BIDS.

The Undersigned agrees to complete the Work within the time stated in Section 011000 of the Specifications.

The Undersigned acknowledges his/her understanding of the social policy concerning minority and women business participation in the State building construction program, and pledges to cooperate with the State in the implementation of this policy, and further pledges to exert good faith efforts to achieve participation of minority and female employees.

The Undersigned certifies, as to each of the occupations listed in the Prevailing Rate Schedule applicable to this Project, the ability and willingness to exert good faith efforts to achieve the goal for minority and women workforce participation set forth in the Supplementary Conditions.

The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goal for Minority and Women-Owned Business Enterprise participation set forth in the Supplementary Conditions.

The Undersigned declares that the Bidding and Contract Documents have been carefully examined and that all things necessary for the completion of the Work shall be provided.

The Undersigned agrees that the bid security shall become the property of the State if this bid is accepted by the State and he/she does not submit executed copies of the Agreement within 10 days of receipt of a written request. A Performance Bond and a Labor and Material Bond, each in an amount equal to the contract sum, shall be supplied with the executed Agreement and shall be the statutory form of public bonds required by Sections 136 and 137 of the State Finance Law.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his/her knowledge and belief:

(1) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition as to any matter relating to such prices with any other bidder or with any competitor;

(2) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor;

(3) No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

(4) This contract shall not cause or result in a violation of Section 73(4) of the Public Officers Law which states: “No officer or employee of a state agency, member of the legislature or legislative employee or firm or association of which such person is a member, or corporation, ten per centum or more of the stock of which is owned or controlled directly or indirectly by such person, shall sell any goods or services having a value in excess of twenty-five dollars to any state agency unless pursuant to an award or contract let after public notice and competitive bidding.”

(5) This contract shall not cause or result in a violation of Section 74(3)(e) of the Public Officers Law which states: “No officer or employee of a state agency, member of the legislature or legislative employee should engage in any transaction as representative or agent of the State with any business entity in which he has a direct or indirect financial interest that might reasonably tend to conflict with the proper discharge of his official duties.”

(6) The bidder recognizes New York State Finance Law §139-j and §139-k and understands and agrees to comply with all of its requirements and procedures.

(7) The bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the state finance law.
(NYS Iran Divestment Act of 2012). The list can be viewed at the following link: [http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf](http://www.ogs.ny.gov/about/regs/docs/ListofEntities.pdf).

(8) Will New York State Businesses be used in the performance of this contract?  

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

(Refer to Document 007324)

Addenda to the Contract Documents are available at: [https://online.ogs.ny.gov/dnc/contractorConsultant/esb/ESBPlansAvailableIndex.asp](https://online.ogs.ny.gov/dnc/contractorConsultant/esb/ESBPlansAvailableIndex.asp).

The Undersigned acknowledges receipt and review of all Addenda to the Contract Documents on the above website, listed by number in the space below:

________________________________________________________________________

The Undersigned proposes to perform the Work required for this project in accordance with the Contract Documents for the following amount:

**BID AMOUNT**

1. All Work except Allowance(s)  

   $ __________ .00

2. Allowance(s) (As described in Section 012100)  

   $ 190,000.00

**Total Bid Amount (Sum of 1. & 2.)**  

   $ __________ .00

SIGN BID HERE  

________________________________________________________________________  

Authorized Signature

PRINT NAME OF SIGNER  

________________________________________________________________________

TITLE OF SIGNER  

________________________________________________________________________

OFFICIAL COMPANY NAME  

________________________________________________________________________

MAILING ADDRESS  

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

City  

State  

Zip

TELEPHONE NO.  

________________________________________________________________________  

FAX NO.  

________________________________________________________________________

Area Code  

Area Code

E-MAIL ADDRESS  

________________________________________________________________________

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PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Concrete For Thrust Blocks: Section 033001.

B. Earthwork: Section 310000.

C. Disinfection: Section 331300.

1.02 SUBMITTALS

A. Product Data: Manufacturer’s specifications including dimensions and coatings.


PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. U.S. Pipe
   1101 East Pearl Street
   Burlington, New Jersey 08016
   (609)387-6122

B. American Pipe
   1614-0 Union Valley Road, Suite 304
   West Milford, New Jersey 07480
   (973)853-4288

C. EBAA Iron Sales, Inc.
   P.O. Box 857
   Eastland, TX  76448
   (800) 433-1716
   www.ebaa.com

2.02 DUCTILE IRON PIPE

A. Centrifugally cast, in accordance with ANSI/AWWA C151/A21.51.
   1. Working Pressure: 100 psi.
   2. Thickness Class: Under 6 inch - 51; 6 inch and larger - 50.
3. **Restrained joints:** Boltless integral restraining system rated for a working pressure of 350 psi in accordance with the performance requirements of ANSI/AWWA C111/A21.1.
   a. Field LOK 350 by U.S. Pipe
   b. Flex-Ring by American Pipe

4. **Laying Lengths:** 18 or 20 feet.

**B. Coating and Lining:**
1. **Outside Coating:** Bituminous enamel, minimum thickness 1 mil.
2. **Inside Lining:** Cement mortar; ANSI/AWWA C104/A21.4.

### 2.03 FITTINGS


B. **Joints:** Match pipe furnished.

C. **Coating and Lining:**
   1. **Outside Coating:** Bituminous enamel, minimum thickness 1 mil.
   2. **Inside Lining:** Cement mortar; ANSI/AWWA C104/A21.4.

### PART 3 EXECUTION

#### 3.01 INSPECTION

A. Inspect pipe and fittings prior to installation to preclude installation of defective materials.

#### 3.02 INSTALLATION

A. **General:** Unless otherwise shown, or specified, install the Work of this Section in accordance with ANSI/AWWA Standard C600 and the manufacturer’s printed instructions.

B. **Laying Pipe:**
   1. Lay pipe to line and grade with joints close and even. Excavate adequate bell holes to facilitate joint assembly and to permit a uniform bearing on undisturbed earth for the pipe barrel. Unless otherwise noted minimum depth of pipe shall be 4’-6” measured from the top of the pipe to the finished or existing grade, whichever is lower.
   2. Keep the trench free from water. Do not lay or test pipe in a wet trench.
   3. Lay water pipe on a continuously rising grade from low points to high points at service lines, hydrants or air valves.
   4. Construct concrete thrust blocks behind bends, tees, caps and plugs, as shown on the drawings. Cast concrete against undisturbed earth and place support so it will not interfere with making joints.
   5. Use clamps, tie-rods, lugged pipe, etc., for anchorage when required and as approved.
C. Push-on Joints: Make joints with a rubber ring and sterile lubricant. The materials used shall be free of water, oil, tar, grease or other foreign substances.

D. Mechanical Joints: Conform strictly to the manufacturer’s instructions with particular reference to gland alignment and the tightening of the bolts.

E. Cutting: Cut pipe at right angles to the axis with sharp tools. Prepare ends for proper connections. Do not lay cut pipe within three lengths of a bend or the end of a line without written approval.

F. Protecting Pipe:
1. Keep pipe clean from all sediment, debris, packing material and other foreign material.
2. Close all open ends of pipes and fittings securely with removable plugs at end of each work day, during storms, and when the Work is left at any time.

3.03 PRESSURE AND LEAKAGE TESTS

A. Before backfilling, fill pipe with water to expel all air. Conduct as directed concurrent pressure and leakage tests for two hours at 1-1/2 times the specified working pressure (100 psi). Maximum variation in test pressures shall not exceed plus or minus 5 psi.
   1. Test Procedures: ANSI/AWWA C600, Section 5.

B. Pipe installations will be rejected when the additional water required to maintain pressure during the test period, exceeds the allowable leakage in the following formula.

\[ L = SD \times \sqrt{P / 148,000} \]

in which:

L = allowable leakage in gallons per hour

S = length of pipe line tested, in feet

D = nominal diameter of pipe, in inches

P = average test pressure during the leakage test, psi (gage)

C. All pressure and leakage tests shall be conducted in the presence of the Director’s Representative.

D. Locate and repair or replace all pipe and fittings showing visible leaks. Repeat Pressure and Leakage Tests as specified.
3.04 DISINFECTION

A. Disinfect pipe and fittings in accordance with Section 331300 after completion of pressure and leakage tests.

3.05 CONNECTIONS

A. When other connecting pipe or other connecting structures have not yet been installed, lay pipe to a point where directed and plug or cap the end. Identify the terminal point with a stake extending above ground, marked to indicate size and service. Provide temporary thrust restraint as directed.

END OF SECTION
SECTION 331300
DISINFECTION OF WATER UTILITY DISTRIBUTION

PART 1 GENERAL

1.01 QUALITY ASSURANCE

A. Conform to provisions of AWWA C-651 for water line disinfection. Do not use Tablet Method therein.

B. Comply with all requirements of the New York State Department of Health for disinfection of potable water lines, valves, hydrants, storage tanks, and appurtenances.

1.02 SUBMITTALS

A. Contract Closeout Submittals:
   1. Test Results.

PART 2 PRODUCTS

2.01 DISINFECTANT

A. Chlorine Gas meeting AWWA B301.

B. Hypochlorites meeting AWWA B300.

2.02 TEST KITS

A. High range test kit for chlorine residual (0-200 mg/l) Hach Chemical Co. Model CN-21P.

B. DPD chlorine residual test kit (0-3.5 mg/l) Hach Chemical Co. Model CN-66.

C. Test kits to remain property of the Contractor.

PART 3 EXECUTION

3.01 DISINFECTION - WATER MAINS

A. Flush mains with clear water at a minimum rate of 2.5 fps prior to disinfection. See Table 1.

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TABLE 1 - WATER MAIN FLUSHING DATA
### TABLE 1 - PIPE DIAMETER AND FLUSHING RATE GPM @ 2.5 fps

<table>
<thead>
<tr>
<th>PIPE DIAMETER (INCHES)</th>
<th>FLUSHING RATE GPM @ 2.5 fps</th>
<th>HYDRANT OPENINGS @ 40 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>25</td>
<td>one - 2-1/2</td>
</tr>
<tr>
<td>4</td>
<td>100</td>
<td>one - 2-1/2</td>
</tr>
<tr>
<td>6</td>
<td>220</td>
<td>one - 2-1/2</td>
</tr>
<tr>
<td>8</td>
<td>390</td>
<td>one - 2-1/2</td>
</tr>
<tr>
<td>10</td>
<td>610</td>
<td>one - 2-1/2</td>
</tr>
<tr>
<td>12</td>
<td>880</td>
<td>one - 2-1/2</td>
</tr>
<tr>
<td>14</td>
<td>1200</td>
<td>two - 2-1/2</td>
</tr>
<tr>
<td>16</td>
<td>1570</td>
<td>two - 2-1/2</td>
</tr>
<tr>
<td>18</td>
<td>1985</td>
<td>two - 2-1/2</td>
</tr>
<tr>
<td>24</td>
<td>3525</td>
<td>one - 4-1/2 and one - 2-1/2</td>
</tr>
</tbody>
</table>

B. Chlorine Gas: Apply with a solution-feed chlorinator in combination with a booster pump for injecting the chlorine gas-water mixture into the main. Do not use direct feed chlorinators.

C. Hypochlorites: Apply solutions to water mains with a gasoline or electrically powered chemical feed pump designed for feeding chlorine solutions.

D. Application (Continuous Feed Method).
1. Connect chlorinator or force pump to water main upstream from point of repair or replacement, or new lines.
2. Proportion application rate of chlorine solution to obtain a minimum concentration of 50 mg/1 of available chlorine. Use high range test kit to determine concentration. See Table 2.

### TABLE 2 - QUANTITY OF DISINFECTANT REQUIRED FOR 50 mg/l OF AVAILABLE CHLORINE PER 100 FT. OF PIPE

<table>
<thead>
<tr>
<th>PIPE DIAMETER (INCHES)</th>
<th>POUNDS</th>
<th>OUNCES</th>
<th>QUARTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CI GAS</td>
<td>SOLUTION 70%</td>
<td>OUNCES</td>
</tr>
<tr>
<td></td>
<td>70%</td>
<td>14.7%</td>
<td>5.25%</td>
</tr>
<tr>
<td>2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>4</td>
<td>0.1</td>
<td>0.1</td>
<td>0.6</td>
</tr>
<tr>
<td>6</td>
<td>0.1</td>
<td>0.1</td>
<td>1.4</td>
</tr>
<tr>
<td>8</td>
<td>0.1</td>
<td>0.2</td>
<td>2.5</td>
</tr>
<tr>
<td>10</td>
<td>0.2</td>
<td>0.3</td>
<td>3.9</td>
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<tr>
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<td>0.3</td>
<td>0.4</td>
<td>5.6</td>
</tr>
<tr>
<td>14</td>
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<td>0.5</td>
<td>7.6</td>
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<tr>
<td>16</td>
<td>0.5</td>
<td>0.7</td>
<td>10.1</td>
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<td>18</td>
<td>0.6</td>
<td>0.8</td>
<td>12.6</td>
</tr>
<tr>
<td>24</td>
<td>1.0</td>
<td>1.4</td>
<td>22.4</td>
</tr>
</tbody>
</table>
3. In the absence of a meter, determine rate either by placing a pitot gage at discharge or by measuring the time to fill a container of known volume. See Table 3.

<table>
<thead>
<tr>
<th>PIPE DIAMETER (INCHES)</th>
<th>@ 25 GPM</th>
<th>@ 100 GPM</th>
<th>@ 500 GPM</th>
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<tbody>
<tr>
<td>2</td>
<td>0.7</td>
<td>0.2</td>
<td>0.04</td>
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<tr>
<td>4</td>
<td>2.6</td>
<td>0.7</td>
<td>0.13</td>
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<tr>
<td>6</td>
<td>5.9</td>
<td>1.5</td>
<td>0.3</td>
</tr>
<tr>
<td>8</td>
<td>10.5</td>
<td>2.6</td>
<td>0.5</td>
</tr>
<tr>
<td>10</td>
<td>16.3</td>
<td>4.1</td>
<td>0.8</td>
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<tr>
<td>12</td>
<td>23.5</td>
<td>5.9</td>
<td>1.2</td>
</tr>
<tr>
<td>14</td>
<td>32.0</td>
<td>8.0</td>
<td>1.6</td>
</tr>
<tr>
<td>16</td>
<td>41.8</td>
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<td>2.1</td>
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<tr>
<td>18</td>
<td>52.9</td>
<td>13.2</td>
<td>2.7</td>
</tr>
<tr>
<td>24</td>
<td>94.0</td>
<td>23.5</td>
<td>4.7</td>
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</table>

4. Continue to apply chlorine solution until it reaches discharge. Check for the presence of chlorine at discharge by adding an orthotolidine reagent. In the presence of chlorine the reagent will turn red.

5. Maintain chlorinated water in the main for a minimum of 24 hours. At the end of this period chlorine concentration shall be at least 25 mg/l. Use high range test kit to determine concentration.

6. Operate all valves and hydrants to insure their proper disinfection.

7. Prevent back flow of super chlorinated water into existing distribution system.

E. Final Flushing:
1. After a 24-hour retention period, flush main until maximum chlorine concentration is 1.0 mg/l. Use DPD chlorine residual test kit.
2. Discharge super chlorinated water in a manner that will not adversely affect plants and animals. Comply with applicable State regulations for waste discharge.

F. Bacteriological Tests: Contact local health units for sampling criteria and procedures. Local health units may have more stringent criteria.
1. Test water main for bacteriological quality before putting pipe into service. A minimum of two successive sets of samples shall be taken at 24-hour intervals. Both sets of samples shall indicate bacteriological safe water before putting the facility in operation. Pay all expenses incurred for testing.
2. Tests shall be conducted by a laboratory approved by the New York State Health Dept.

G. Give all test results to Director’s Representative.
1. Should test results prove any part of the system bacteriologically unsafe, repeat disinfection procedures until satisfactory results are obtained.
END OF SECTION
SECTION 334104
CORRUGATED POLYETHYLENE STORM DRAIN PIPE

PART 1  GENERAL

1.01  RELATED WORK SPECIFIED ELSEWHERE

A.  Earthwork:  Section 310000.

1.02  SUBMITTALS

A.  Product Data:  Manufacturer’s specifications (AASHTO M-252 or AASHTO M-294), including dimensions, allowable height of cover information, and installation instructions.

PART 2  PRODUCTS

2.01  MANUFACTURERS

A.  Advanced Drainage Systems, Inc., 3300 Riverside Dr., Columbus, OH  43221; (614) 457-3051.

B.  Hancor, Inc., 401 Olive St., Findlay, OH  45840; (800) 847-5880.

2.02  MATERIALS

A.  Corrugated Polyethylene Pipe (Smooth Interior):  Conform to AASHTO M-294 (12 to 36-inch diameter).
   1.  Coefficient of Roughness (interior pipe surface):  0.012 maximum (Manning formula).
   2.  Classification:  Type S.
   3.  Minimum Pipe Stiffness Values:

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<th>DIAMETER</th>
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   4.  Joint Couplings: Polyethylene Couplers; snap-on type or split collar through 24-inch diameter, screw-on type where applicable.
   a.  Corrugated to match pipe corrugations, width not less than one half pipe diameter.
b. Split couplings shall engage an equal number of corrugations on each side of the joint.

C. Fittings:
1. High density polyethylene meeting the properties specified for the pipe.
2. Either molded or fabricated.
3. Designed specifically for the pipe furnished and manufactured by the pipe manufacturer.

D. Headwalls and End Sections: Galvanized steel manufactured from material meeting the requirements of AASHTO M-218.
1. Conform to shape, dimensions, and thickness shown on the drawings.
2. Use only extra length rod and lug-type, galvanized coupling band connectors.

PART 3 EXECUTION

3.01 INSTALLATION

A. Laying: Lay pipe to indicated line and grade with a firm uniform bearing for the entire length of the pipe. Fill excess excavation with suitable materials and tamp.

B. Joints: Install coupling and fasten per manufacturer’s instructions.

C. Connections:
1. Make connections to existing pipe by using a galvanized steel “dimple”-type coupling. Remake damaged existing joints.
2. Make connections to existing manholes and drainage structures by cutting into the floor or bench of the manhole or drainage structure and forming a new channel.
3. If the pipe, manholes or other structures with which connections are to be made have not yet been installed, install the pipe to a point directed by the Director’s Representative and plug or cap the end in a satisfactory manner.

END OF SECTION
GENERAL NOTES:
1. ALL DISTURBED AREAS TO BE RETURNED TO THEIR EXISTING COVER TYPES UNTIL COMPLETION.
2.临时围栏和大门将在施工完成后拆除，现有的围栏和大门将恢复到原状。

Erosion & Sediment Control & Site Restoration Plan East

CONTRACTOR TO INSTALL 80 LF OF TEMPORARY FENCE WITH BARBED WIRE AND DOUBLE LEAF GATE PRIOR TO CONSTRUCTION. OFFSET FENCE APPROXIMATELY 7' TO END OF EXISTING JERSEY BARRIER.

CONTRACTOR TO REMOVE CHAIN LINK FABRIC FROM POSTS TO PERFORM CONTRACT WORK.

EXISTING CHAIN LINK FENCE ON JERSEY BARRIER

PROVIDE INLET PROTECTION AROUND NEW STRUCTURE AFTER INSTALLATION.

REMOVE TWO ABANDONED 8" SCHEDULE 40 PIPES BURIED APPROXIMATELY 4 FEET BELOW GRADE AND APPROXIMATELY 15 FEET LONG.

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CONTRACT & DESIGN

SEE M-104.1

REVISED DRAWING 03/02/2016

M-103
RELOCATE APPROXIMATELY 75 LF OF 4" CAST IRON WATERMAIN WITH DUCTILE IRON PIPE, SEE SHEET M-509.

PROPOSED DRAINAGE STRUCTURE, SEE SHEET M-510

PROPOSED BEND WITH THRUST BLOCK (TYP.)

REMOVE EXISTING DRAINAGE STRUCTURE APPROXIMATELY 5 LF OF 6" HDPE WITH POSITIVE DRAINAGE

PROVIDE INLET PROTECTION AROUND NEW STRUCTURE AFTER INSTALLATION.

CONTRACTOR TO VERIFY DEPTH OF EXISTING 12" RCP

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EROSION SEDIMENT CONTROL & SITE RESTORATION PLAN WEST
ENLARGED REMOVALS PLAN AT BUILDING 5

ENLARGED INSTALLATIONS PLAN AT BUILDING 5

SECTION VIEW REMOVALS PLAN AT BUILDING 5

SECTION VIEW INSTALLATIONS PLAN AT BUILDING 5

COMPLEX 5 KEY PLAN

REVISED DRAWING 03/02/2016

M-403