

August 1, 2014

Mr. Richard Dana  
Project Manager MGP Remedial Section  
New York State Department of Environmental Conservation  
Division of Environmental Remediation  
Bureau of Western Remedial Action, 11th Floor  
625 Broadway  
Albany, New York 12233-7010

**Re: Containment Pad Depressurization System Installation and Startup Work Plan  
Former Clifton MGP Site, Richmond County, New York  
NYSDEC Site No.: 2-43-023, Order on Consent Index #: D2-0001-98-04**

Dear Mr. Dana:

National Grid is submitting the following Containment Pad Depressurization System Installation and Startup (Depressurization System) Work Plan for the former Clifton Manufactured Gas Plant (MGP) Site (Site), located at 25 and 40 Willow Avenue, Clifton, Richmond County, New York. The 40 Willow Avenue portion of the Site was remediated in 2009 as per New York State Department of Environmental Conservation (NYSDEC) Record of Decision (ROD) by installation of a “containment cell” around the former relief holder to a depth of 130 feet via sheet piles (30 feet below ground surface) and jet grout technology (130 feet below ground surface.) Since construction, groundwater continuously seeps into the containment cell from approximately 130 feet below ground surface, creating a build-up of groundwater within the containment cell. National Grid has prepared this Work Plan to provide details of the Depressurization System that is proposed for the containment cell as part of the long-term Operation and Maintenance of the Site under the Site Management Plan (SMP).

### **Depressurization System Work Plan Objectives**

The objectives of this Depressurization System Work Plan are to:

- Remove groundwater within the containment cell via pumping to relieve the artesian conditions created by groundwater infiltration into the bottom of the containment cell
- Treat the groundwater on-Site for discharge, under permit, to via the New York City Department of Environmental Protection (NYCDEP) sewer system
- Sample and discharge treated groundwater in accordance with the NYSDEC-approved State Pollution Discharge Elimination System (SPDES) permit, the requirements of the NYCDEP permit, and all other applicable regulations

To accomplish these objectives, National Grid proposes to install a groundwater pump and treat (P&T) system on and adjacent to the containment cell and connect the P&T system to the existing discharge line to the NYCDEP sewer.

The Depressurization System will consist of the following components:

- A pump installed over the existing well COU-RW1 to remove groundwater at a rate of 1 gallon per minute (GPM)
- A groundwater P&T system, consisting of an oil-water separator, particulate filters, carbon filters, and associated meters, pressure gauges, controls, pumps and piping
- A treatment shed to house the P&T system
- Discharge pipe connecting the P&T system to the NYCDEP sewer system

The proposed Depressurization System location is shown in Figure 1 of this document. All work will be performed in accordance with the procedures specified in the 2008 NYSDEC-approved Remedial Design Work Plan for OU-2 (ENSR, 2008) including the site-specific Health and Safety Plan and the Quality Assurance Project Plan (QAPP), and this Work Plan.

### **Depressurization System Activities**

The Depressurization System installation and start-up will consist of the following activities, described in the following sections:

- Procurement
- Mobilization
- Site Preparation and Restoration
- P&T System Installation
- Depressurization System Start-up Activities
- Reporting

### **Contractor Procurement**

National Grid will initiate contractor procurement activities following approval of this Work Plan. Two procurement packages have been prepared:

- One package for site preparation and restoration including installation of the discharge pipe, electric connection, and placement of the treatment shed (Attachment A) and
- A separate P&T system package for fabrication, installation, and startup of the P&T system.

### **Mobilization**

Mobilization activities will include:

- Review of P&T system operating manuals and specifications
- Review of contractor submittals
- Coordination with utilities for set up of electric connection (Consolidated Edison) and installation of discharge pipe (NYCDEP)
- Set-up of a staging area
- Revision and implementation of a Health and Safety Plan based on the 2008 NYSDEC-approved Remedial Design Work Plan for OU-2 (ENSR, 2008)

### **Site Preparation and Restoration**

Site preparation activities will be conducted in accordance with the procurement documents included in Attachment A and will include:

- Utility preclearance for installation of the discharge line and electrical line on 40 Willow Avenue property
- Removal and off-Site disposal of the containment cell ramp
- Containment cell grading including asphaltting of the containment cell surface
- Grading of area designated for placement of system enclosure
- Electrical Connection
- Installation of the water influent and discharge connections, piping, and heat tracing

### **Groundwater Pump and Treat System Installation**

P&T system installation activities will be conducted in accordance with the procurement documents and as shown in the process flow diagram (Figure 2), and will include both off-site and on-site pre-installation work and on-Site installation work. On-Site installation work will start following the completion of Site Preparation and Restoration activities. The P&T system installation activities will include:

- Fabrication of the P&T system components (off-Site)
- Fabrication of the System Enclosure (off-Site)
- Transport of the P&T system components and System Enclosure to the Site
- Placement of the System Enclosure in area shown in Figure 1
- Installation of P&T system components

### **Depressurization System Start-up Activities**

The P&T system contractor and AECOM will commission and start-up the Depressurization System including:

- Set the user input process variables at the Human Machine Interface (HMI) screen;
- Dry test all system controls and ensure proper operation of critical safety devices including pressure switches, high level floats, and freeze prevention equipment;
- Record the flow totalizer reading;
- Leak test all piping and system vessels;
- Hydrate the liquid phase carbon, tanks and oil water separator;
- Check instruments, gauges, test controls, internet connection, and remote alarm notifications;
- Start-up the system for full operation;
- Collect initial influent, mid-flow and effluent samples to ensure that the treated groundwater meets the requirement of the NYSDEC SPDES Permit Equivalent.

### **Waste Management**

Two categories of waste are anticipated to be generated as a result of this construction – common construction debris and hazardous water.

Common construction debris, including concrete and other material generated during the Site Preparation and Restoration activities, will be disposed of accordingly. This waste is not anticipated to be impacted by MGP-residual material on the property.

During installation of the Depressurization System, some water may be generated from within the containment cell. This water has been analyzed for waste disposal and found to contain hazardous levels of benzene. If water is generated during construction, it will be containerized for appropriate disposal.

### **Reporting**

A Depressurization System Installation Report will be prepared following the installation of the Depressurization System. The Depressurization System will have an Operation, Monitoring, and Maintenance Plan, and the system will be operated in compliance with the plan and the Site SMP. On-going reporting on the system operation will be included with the Site Periodic Review Reports as part of the SMP.

Mr. Richard Dana  
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Page 5

### **Schedule**

Following NYSDEC approval of this Depressurization System Installation and Start-up Work Plan, National Grid will initiate procurement and contracting. AECOM will assist National Grid with oversight of the system installation and start-up. System installation will begin as soon as the appropriate approvals and contracts are in place.

Your prompt review of this Work Plan is greatly appreciated, as this Depressurization System will provide a sustainable long-term solution for control of the groundwater levels within the containment cell. If you have any questions, comments, or require any additional information, please do not hesitate to contact me at (608) 826-3663 or at [Katherine.Vater@nationalgrid.com](mailto:Katherine.Vater@nationalgrid.com).

Sincerely,



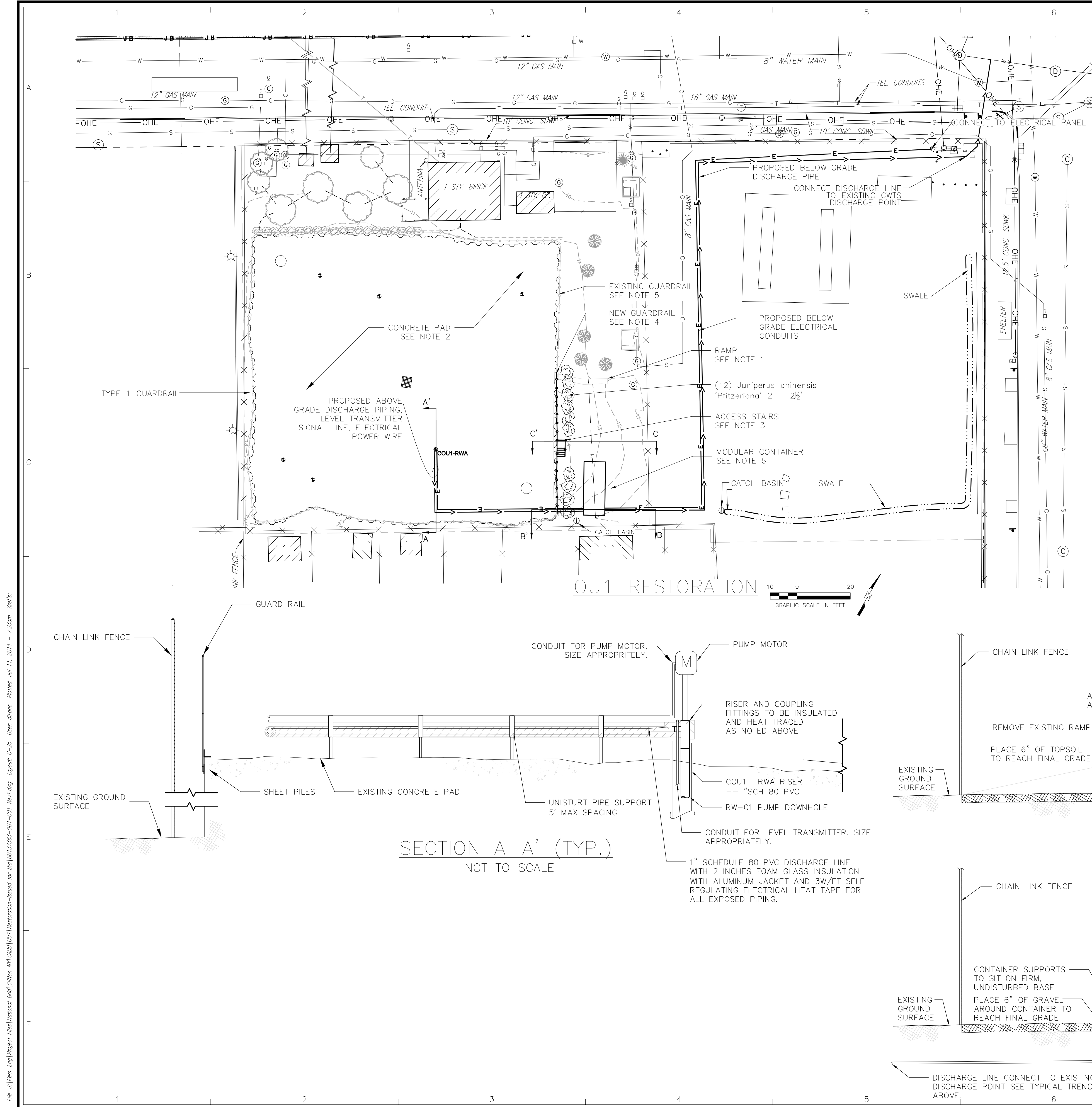
Katherine Vater  
Project Manager

#### Enclosures

Figures  
Attachments

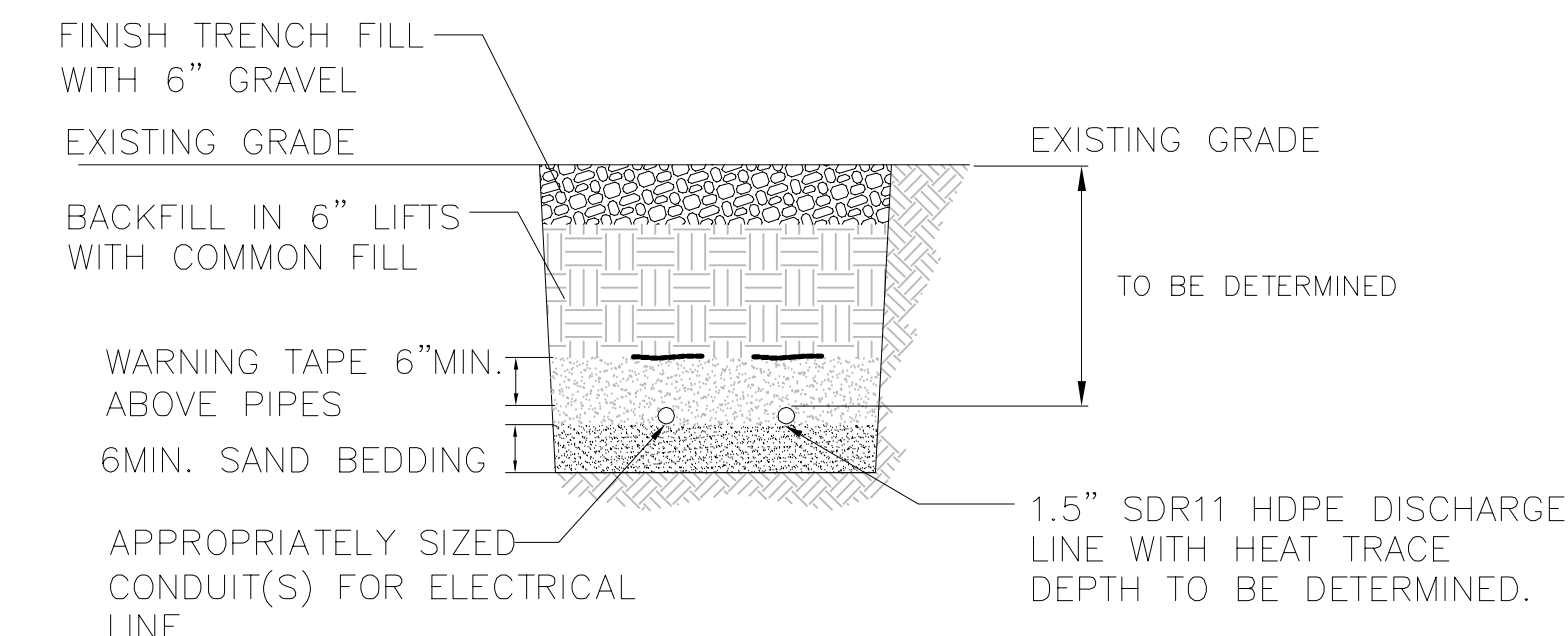
Cc – G. Cross, NYSDEC  
S. Selmer, NYSDOH  
A. Prophete, National Grid  
R. Doshi, AECOM  
S. Pandya, AECOM  
File: 60137363-520

## Figures

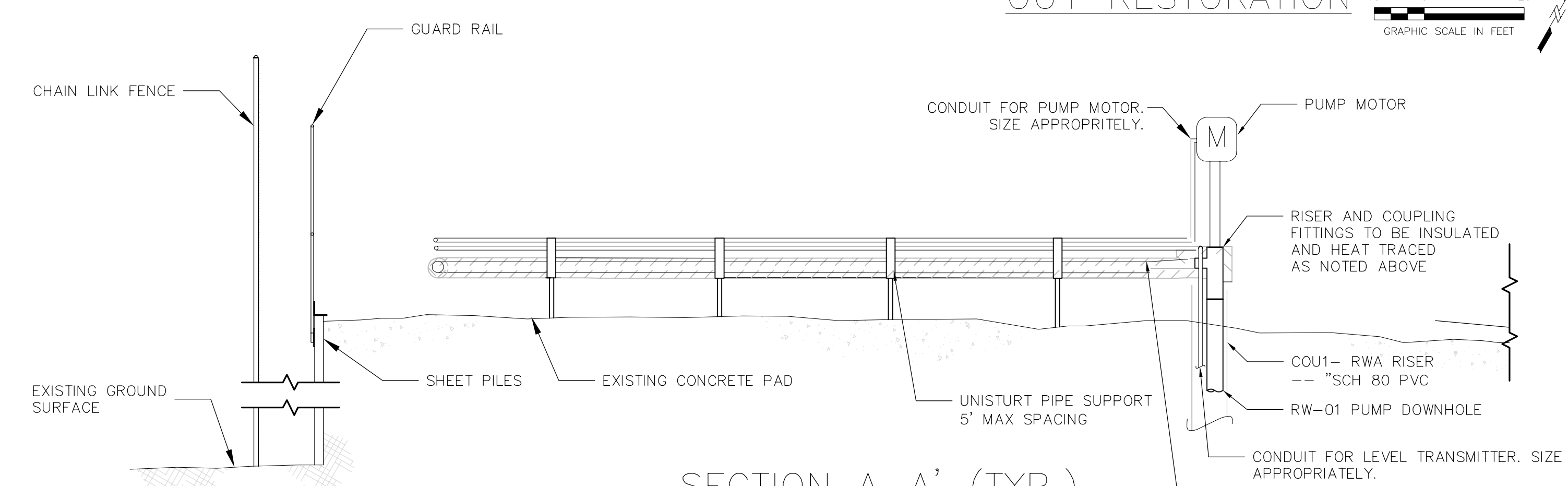


- PLAN NOTES:**
1. REMOVE RAMP AND CONCRETE BLOCK WALL. FINISH DISTURBED AREAS WITH 6" OF TOPSOIL.
  2. SEAL CRACKS IN CONCRETE PAD WITH CEMENT.
  3. INSTALL ERECTASTEP (OR ENGINEER APPROVED EQUIVALENT) ACCESS STAIRS WITH GUARDRAIL. THE LOCATION SHOWN ON PLANS IS APPROXIMATE. THE FINAL LOCATION OF STAIRS IS TO BE DETERMINED BY THE CONSTRUCTION MANAGER.
  4. GUARDRAIL TO CONSIST OF SAFETYRAIL COMPANY PERMANENT RAILING TO MATCH PREVIOUSLY INSTALLED GUARDRAILS.
  5. GUARDRAIL SECTIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING EXACT MEASUREMENTS PRIOR TO ORDERING NEW GUARDRAIL.
  6. THE LOCATION SHOWN FOR THE TREATMENT CONTAINER AND UNDERGROUND PIPING IS SUBJECT TO CHANGE BASED ON FINAL APPROVAL FROM GAS OPERATIONS.
  7. PROCESS WATER PIPING MUST BE HEAT TRACED WITH SELF REGULATING HEAT TRACE.

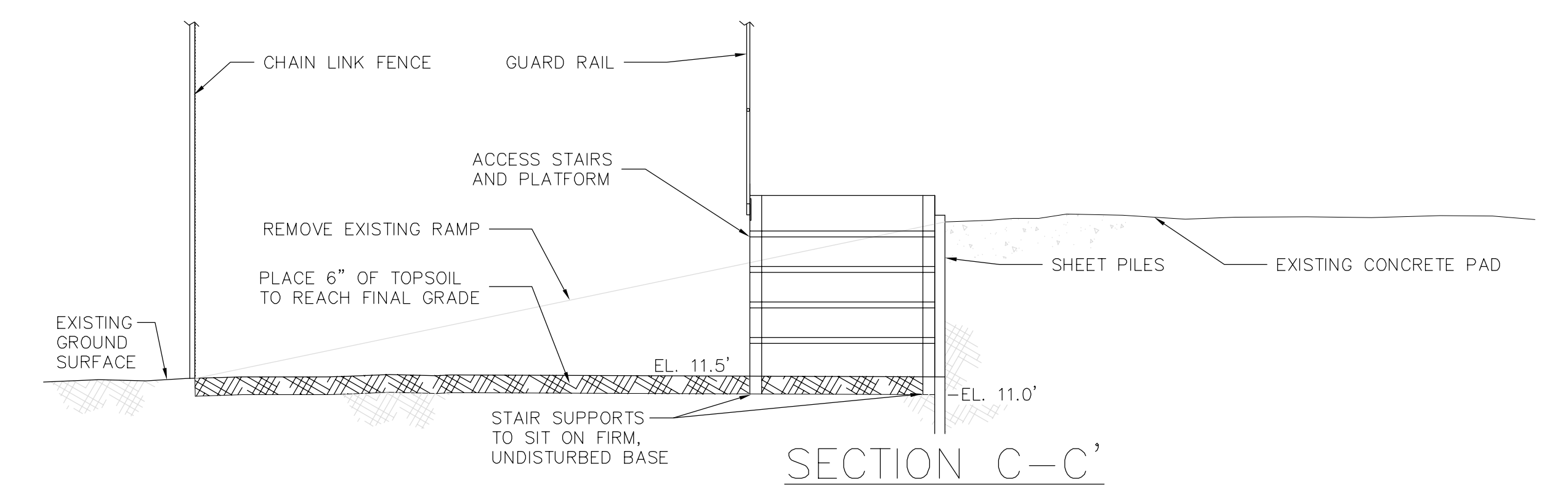
- PLANTING NOTES:**
1. REMOVE ALL DAMAGED TREES AND STUMPS IN LANDSCAPE AREA.
  2. TREES AND SHRUBS TO BE PROVIDED AND PLANTED IN ACCORDANCE WITH "GENERAL TREE AND SHRUB PLANTING STANDARDS - NATIONAL GRID 9/15/09" PROVIDED.
  3. ALL TREES WILL BE FINISHED WITH A 5' CIRCLE OF SHREDDED WOOD MULCH, 3" DEEP. SHRUBS WILL BE MULCHED AS A CONTINUOUS BED.
  4. UNDER MULCH, "NETAFIM TECHLINE" IRRIGATION TO BE INSTALLED IN TWO ZONES AS SHOWN, INCLUDING "ORBIT" 4-ZONE TIMER AND SOLENOID VALVES, OR EQUIVALENT.



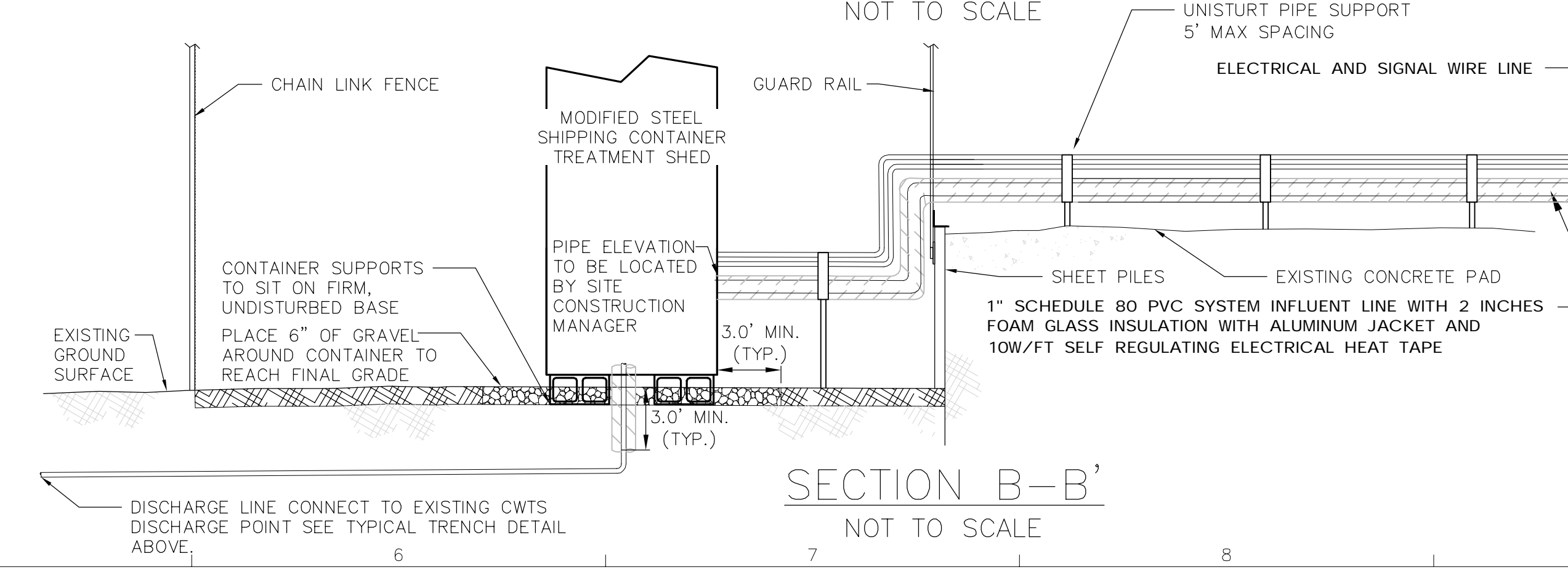
TRENCH SECTION (TYP.)  
NOT TO SCALE



SECTION A-A' (TYP.)  
NOT TO SCALE



SECTION C-C'  
NOT TO SCALE



SECTION B-B'  
NOT TO SCALE

ISSUED FOR BID

NO.	DATE	REVISION	CHKD.	DATE	APPV.	DATE
1	07/10/14	ADDED ALTERNATE PATH				
0	06/21/13	ISSUE FOR BID				

**AECOM**  
100 DRIVE, CHELSEA, MA 02155  
 617.351.2000  
 www.aecom.com

**NATIONAL GRID  
 FORMER CLIFTON  
 MANUFACTURED GAS PLANT**

PROJ. NO.: 60137363-520      DATE: 07/09/14

**RESTORATION DETAILS**

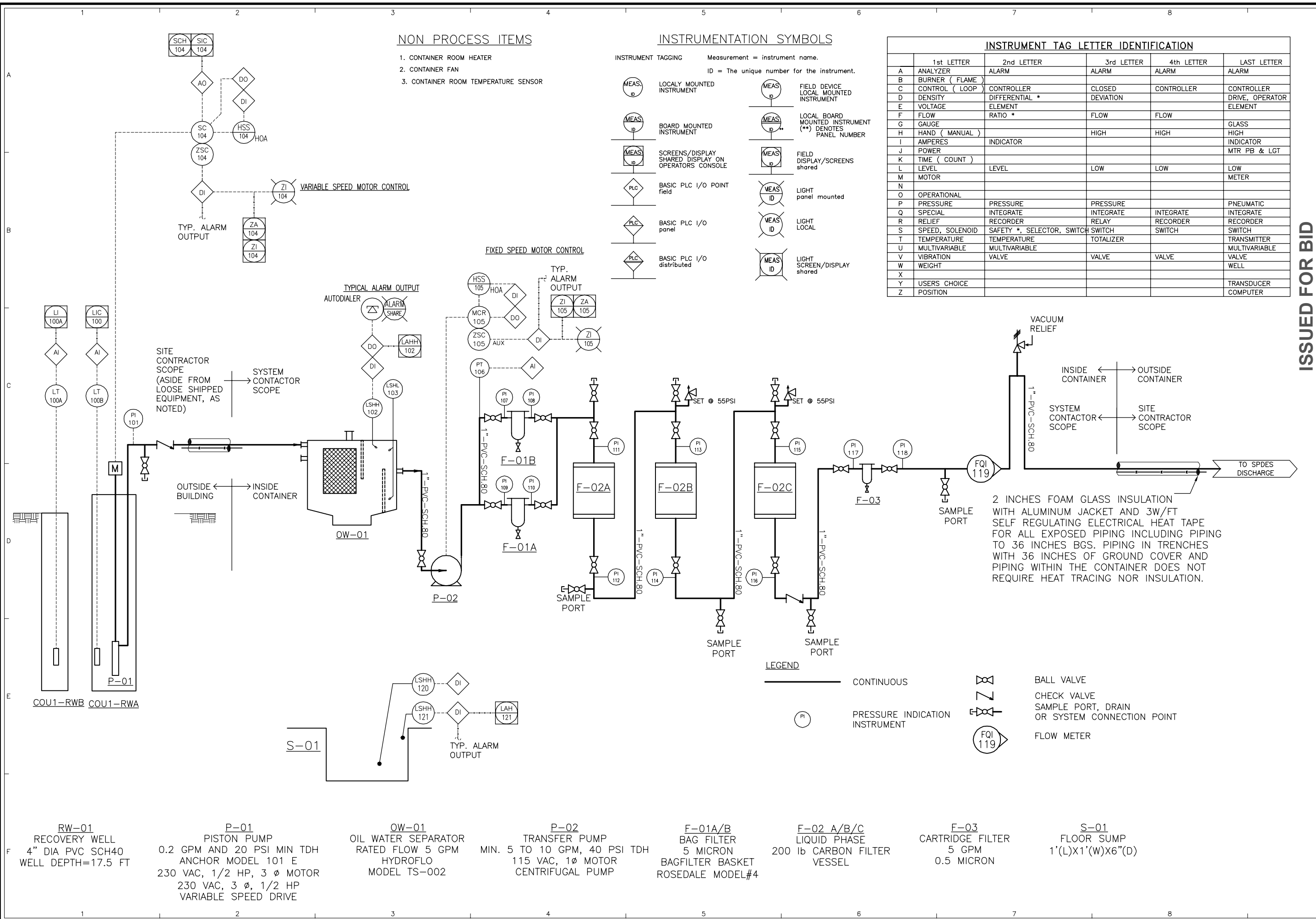
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**C-01**

SHEET NUMBER:  
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REVISION: 1

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ISSUED FOR BID

<b>AECOM</b> <small>AECOM WESTFORD, MASSACHUSETTS (978) 588-3035 www.aecom.com</small>	7	6	5	4	3	2	1	0	REV	DATE	ISSUE FOR BID	REVISION	CHKD	DATE	APPRD	DATE	
	<b>NATIONAL GRID FORMER CLIFTON MANUFACTURED GAS PLANT</b>																
	<b>WATER TREATMENT PROCESS FLOW DIAGRAM</b>																
	PROJ. NO.: 60137363-420      DATE: 06/20/13																
	DRAWING NUMBER: <b>P-02</b>																
	SHEET NUMBER: REVISION 0																



## **Attachments**

AECOM ENVIRONMENT

**Attachment A**

August 1, 2014

Prospective Bidder

**RE: Request for Bid  
40 Willow Avenue Restoration  
National Grid – Clifton Former MGP Site  
40-50 Willow Avenue, Staten Island, NY**

Dear Bidder:

National Grid is seeking bids to perform restoration (ramp removal and concrete repairs, electrical hookup, earthwork, and installation of subsurface piping associated with a pump and treat system) at the Former Clifton Manufactured Gas Plant (MGP) Site (Site) located at 40 Willow Avenue, Staten Island, New York. The Site was the location of a former relief holder, which was part of the former MGP and historically used to store manufactured gas. The Site was remediated in 2010 as per NYSDEC Record of Decision by installation a containment cell around the former relief holder to a depth of 130 feet via sheet piles (30 feet below ground surface) and jet grout technology (130 feet below ground surface).

A groundwater pump and treat system will be constructed (by others) and installed as part of this Work to treat groundwater removed from within the containment cell. The groundwater will be impacted with waste typical of MGP sites including free product (DNAPL), volatiles, semi-volatiles, cyanides, and Resource Conservation and Recovery Act (RCRA) metals. The treated groundwater will be discharged through an existing connection to the New York City storm drain system.

The scope of work under this Request for Bid shall include the following:

- Containment Pad and Ramp Repairs.
- Electrical Connection
- Water Influent and Discharge Piping and Connection
- Heat Tracing and Insulation of the Discharge Line
- Bollard Installation (25 Willow Avenue parcel)

The Contractor shall be responsible for protection of utilities and private property within the area affected by the Work. If Contractor damages any utilities or private property, Contractor shall repair or replace the damaged utility to the original condition to satisfaction of the utility owner at Contractor's own expense without reimbursement.

Contractor shall be required to procure all necessary permits associated with the work including building, electrical etc, as deemed necessary by local permitting authorities. The discharge permit (New York City Sewer Connection Permit and New York State – State Pollutant Discharge Elimination Systems Permit) associated with the pump and treat system shall be obtained by others.

The contractor is responsible for providing a bid as directed to complete all work associated with installation of a complete working groundwater treatment system and all other site upgrades as specified herein.

The following paragraphs specify measurement and payment of the items listed above.

**Bid Item 1: Containment Pad and Ramp Grading**

Work required to complete Containment Pad and Ramp Repairs includes, but is not limited to:

- Repairs/Patching of the containment pad surface for any cracks, etc. shown on Drawing C-01 and discussed during the pre-Bid site walk.
- Apply a water-tight sealcoat to any repair work.
- Extending all existing wells and manholes on the containment pad to reach the design grades.
- Removal of ramp to 6" below surrounding grade, crushing of ramp material to 3" or smaller, and placement of ramp material to low lying portion of 40 Willow Avenue as directed by the Engineer.
- Construct a 6-inch concrete foundation pad as required for the base of a turnkey cargo container to be supplied by others. The concrete pad must have a minimum three inches of secondary containment and be sloped to one corner.
- Final grading and placement of 6" of topsoil in disturbed areas, hydro-seeding the topsoil, and applying mulch.
- Install ERECTASTEP (or Engineer Approved Equivalent) stairs from ground surface to containment pad.
- Install guardrail in areas where no guardrail currently exists. New guardrail to consist of SAFETYRAIL Company permanent railing matching the existing rails that have been installed.
- Extend existing irrigation and planting as shown in the drawing where ramp is removed.
- Containment Pad and Ramp Repair will be measured for payment as one unit, complete as specified.
- Payment for the Bid Item 1 will be made on a percent complete basis of the lump sum price of the bid Item. Payment of the lump sum price for "Containment Pad and Ramp Repair" shall constitute full compensation for all for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete Containment Pad and Ramp Repair as shown on the Drawings. No more than 25% of this bid item may be invoiced prior to demobilization from the site as substantial completion.

**Bid Item 2: Electrical Connection**

The contractor will be required to provide a New York City licensed electrician to complete all necessary connections as noted below, but is not limited to:

- Supplying all equipment, material, and appurtenances required to run a 100A, 240VAC three phase electrical connection from the existing electrical panel on

the northeast corner of 40 Willow Avenue through underground conduit to the NEMA 3R lockable main disconnect (provided by others) mounted on the outside wall of the water system container by the containment pad. The underground conduit minimum bury depth = 2 foot.

- Conduit shall carry all necessary wires for the service and appropriate grounding per NEC. Contractor to size wire and conduit as per latest NEC. The wire shall be rated for underground conduit.
- Electrician responsible for installation of proper grounder per NEC at the new service location.
- Warning Tape Material: Six-inch wide, 4-mil thick film, of inert material such as polyethylene plastic; impervious to acids, alkalis, and other soil components; and supplied in continuous roll. Color/Message: Bright yellow, red, or orange, electrically-detectable, film, with two-line message in permanent one-inch bold letters, one side only. The following message to be repeated continuously the full length of the tape:

**"CAUTION CAUTION CAUTION"  
"ELECTRIC LINE BELOW"**

- No splices or junction boxes are allowed below ground surface.
- Contractor shall notify all utility companies and locate all underground utilities prior to starting excavation Work. Contractor shall be responsible for protection of utilities. If Contractor damages any utilities, Contractor shall repair or replace the damaged utility to the original condition to satisfaction of the utility owner at Contractor's own expense without reimbursement.
- Installing the electrical conduit aboveground and running power wire from the control panel to the well pump motor located in treatment system pad. The conduit shall have three phases 240V. The conduit shall be rigid galvanized steel and suitably supported on anchored unistrut supports.
- Running electrical conduit from the level transmitters located in 40 Willow Avenue wells COU1-RWA and COU1-RWB and the trench to the NEMA 3R junction box (provided by others) mounted on the outside wall of the water system container by the containment pad. The level transmitter signal/power wiring shall be in a separate rigid galvanized steel conduit. No need for any penetration through the container wall. The level transmitter signal wire should not be run in the same conduit with the pump power wire. The level transmitter provided by others shall have 150ft cable which should be sufficient to run un-spliced from the well to the junction box mounted on the outside wall of the container
- Provide and install 240V single phase 10 Watt/ft self-regulating heat trace and connect to the junction box (provided by others) mounted on the outside wall of the water system container by the containment pad. Install junction boxes as necessary so that each heat trace circuit does not exceed manufacturer's recommendation for maximum heat trace circuit length. Any aboveground power cable shall be run in a galvanized steel conduit and below grade cable shall be run in Schedule 80 PVC. The heat trace junction box (provided by others) provides three independent 120/240V single phase from the two 20A and one 30A heat trace circuit breakers located inside the main distribution panel in the container.

- The electrician shall provide all necessary junction boxes and make final wire terminations as necessary to equipment provided by others as noted herein.
- The electrician shall be on-site for a day during system start-up for trouble shooting.
- All electrical work shall be to New York City code.
- Electrical Connection will be measured for payment as one unit, complete as specified.
- Payment for Electrical Connection Work will be made as follows: 90% upon completion of the service connection; 10% retainage upon substantial completion of the work. Payment of the lump sum price for "Electrical Connection" shall constitute full compensation for all for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete Electrical Connection.

**Bid Item 3: Water Influent and Discharge Connection**

Work required to complete the Water Discharge Connection includes, but is not limited to:

- Supplying all equipment, material, and appurtenances required to run a 1.5 inch SDR 11 HDPE belowground discharge line from the water system container (contractor to provide appropriate flange connection on either end) next to the containment pad to the existing tie-in on the northeast corner of the 40 Willow Avenue portion. Supplying all equipment, material and labor required to run a one-inch Schedule 80 PVC above grade discharge line from the recovery well on the containment pad to the inlet of the pre-fabricated treatment system next to the containment pad. The above ground piping and conduit shall be suitably supported using anchored uni-strut supports and pipe clamps.
- The contractor shall be responsible for surveying grade levels along the discharge pipe and determining the invert depth of the tie in to the existing discharge pipe prior to construction. Prior to start of construction, the contractor will provide AECOM with this information and proposed profile for the entire discharge pipe.
- Supplying all equipment, material, and labor for saw cutting asphalt/concrete, excavation of trenches, installation of subsurface piping, stockpiling backfill, compacting backfill, preparing trench bed, placing and heat tracing pipes, testing pipe connections, and restoring asphalt, concrete, and seeded areas to match the existing conditions.
- Contractor shall notify all utility companies and locate all underground utilities prior to starting excavation Work. Contractor shall be responsible for protection of utilities. If Contractor damages any utilities, Contractor shall repair or replace the damaged utility to the original condition to satisfaction of utility owner at Contractor's own expense without reimbursement.
- The water discharge line will run underground from the treatment system to the discharge point as shown on Drawing C-01. The pipe should be sloped towards the tie-in to avoid accumulation of water and allow gravity drain.
- Installing and connecting the water discharge line to the pre-fabricated system outlet pipe and pipe from the recovery well to the system inlet pipe.

- Pressure test discharge piping on Site as per procedure outlined in Attachment A. Suggested pressure is 100PSI. Fully assembled sections may be pressure tested prior to installation, however no fittings or pipe sections may be added to a tested pipe run for the test to remain valid (i.e. changes to tested piping requires a retest of the newly formed pipe section).
- Water Influent and Discharge Connection will be measured for payment as one unit, complete as specified.
- Payment for this work will be paid as follows: 90% upon completion of the service connection; 10% retainage upon substantial completion of the work. Payment of the lump sum price for "Water Influent and Discharge Connection" shall constitute full compensation for all for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete Water Discharge Connection.

***Bid Item 4: Heat Tracing and Insulation of the Discharge Line***

Work required to protect the drainage line from freezing includes, but is not limited to:

- Supplying all equipment, material, and appurtenances required to protect the discharge piping from freezing.
- For costing purposes the contractor shall assume that the discharge line will need to be heat traced and insulated along its entire length to the tie in point.
- The Contractor will be responsible for insulating and heat tracing the influent line (from well to system) and the water discharge line from 3 feet below grade its connection to the system container. The aboveground piping shall have heat trace at 10w/ft and 2 inches of insulation with a hard jacket.
- Payment for this work will be paid as follows: 90% upon completion of the freeze protection; 10% retainage upon demonstrating success of heat trace and insulation during the first winter following installation. Payment of the lump sum price for "Heat Tracing and Insulation of the Discharge Line" shall constitute full compensation for all for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete the freeze protection.
- The Contractor shall provide at least two year warranty for the installed heat tracing and insulation.

***Bid Item 5: Bollard Installation (25 Willow Ave Parcel)***

Work required on 25 Willow Avenue parcel to protect existing fence includes, but is not limited to:

- Straightening the fence panel on 25 Willow Avenue parcel, across from 66 Willow Avenue loading dock.
- Installation of two bollards right behind the existing fence to protect it.
- Hand digging to the depth of bollards.
- Fix a bolt on top of one of the fence posts.

Payment of the lump sum price for lump sum bid items shall constitute full compensation for all for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete said Work without additional cost.

Please indicate on the bid form which tasks (if any) will be completed by subcontractors.



## Bid Form

**SCHEDULE OF QUANTITIES AND PRICES**  
**40 Willow Avenue**  
**Clifton Former Manufactured Gas Plant**  
**Richmond County, New York**

Bid prices listed in this Schedule are based on performance of the Work as specified in the Bid Letter shall include all overhead, profit, handling, taxes and all other related charges. The estimated quantities in this Schedule A are based on best judgment of Engineer and may vary from actual site conditions.

<b>Bid Item</b>		<b>Unit</b>	<b>Estimated Quantity</b>	<b>Unit Price \$</b>	<b>Total Amount \$</b>
1	Containment Pad and Ramp Grading	LS	1		
2	Electrical Connection	LS	1		
3	Water Influent and Discharge Connection	LS	1		
4	Heat Tracing and Insulation of Discharge Line	LF	185		
5	Bollard Installation (25 Willow Ave Parcel)	EA	2		

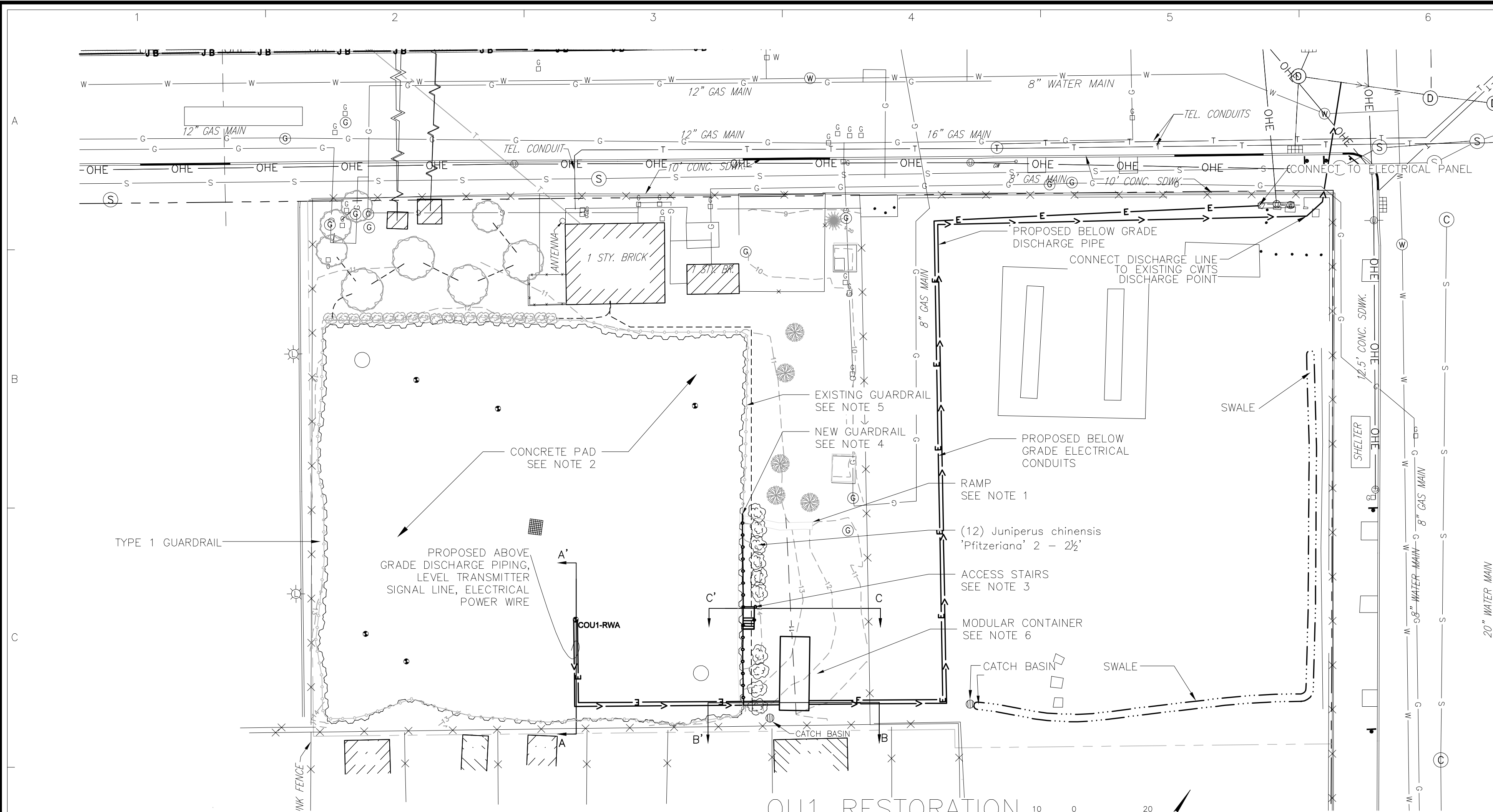
**TOTAL COST** \$ \_\_\_\_\_

**Definitions:**

- LF Denotes Linear Foot
- LS Denotes Lump Sum
- EA Denotes Each

## Drawings

File: \\From\_Eng\Project\_Files\National\_Grid\Cifton\_NY\2010\011\Restoration-Issued\_for\_Bid\60137363-520-OU1-011-Rev.dwg Layout: C-25 User: aaronc Plotfile: Jul 11, 2014 - 7:23am Plot's:

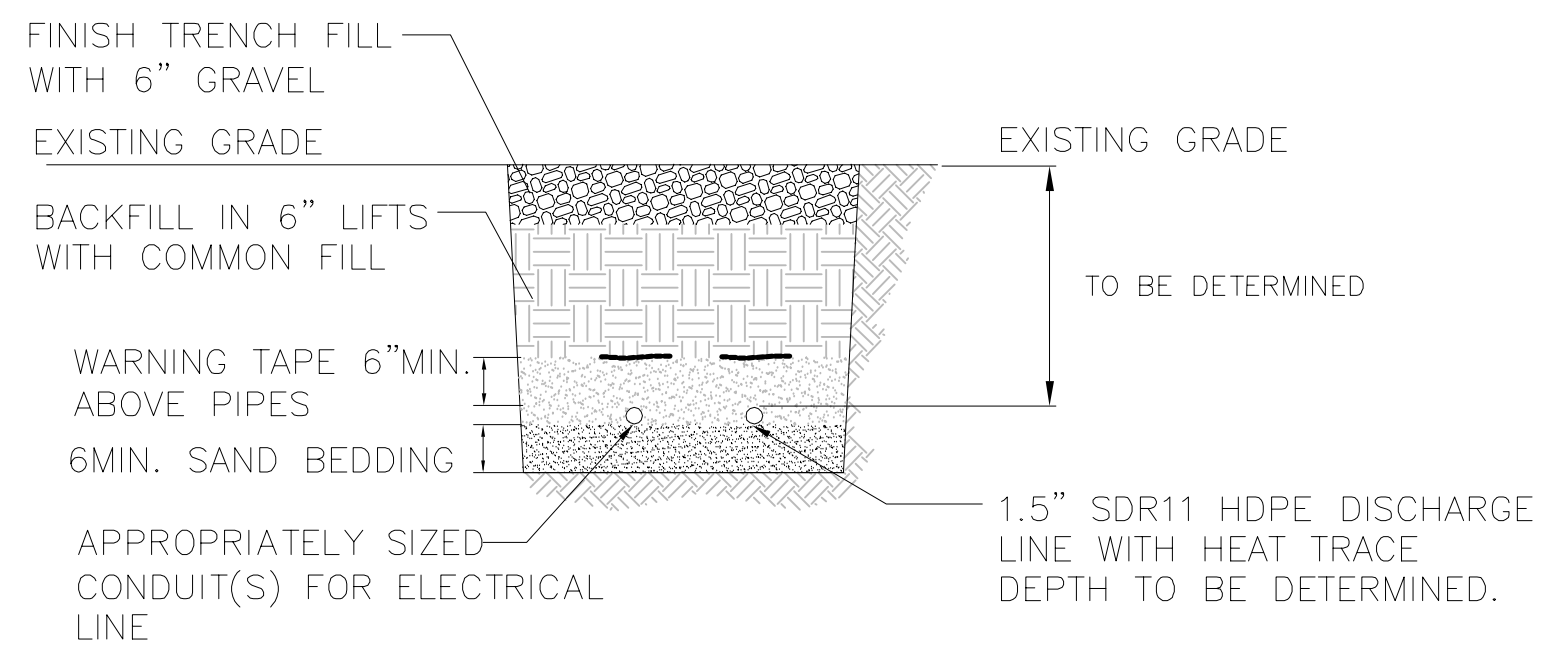


**PLAN NOTES:**

1. REMOVE RAMP AND CONCRETE BLOCK WALL. FINISH DISTURBED AREAS WITH 6" OF TOPSOIL.
2. SEAL CRACKS IN CONCRETE PAD WITH CEMENT.
3. INSTALL ERECTASTEP (OR ENGINEER APPROVED EQUIVALENT) ACCESS STAIRS WITH GUARDRAIL. THE LOCATION SHOWN ON PLANS IS APPROXIMATE. THE FINAL LOCATION OF STAIRS IS TO BE DETERMINED BY THE CONSTRUCTION MANAGER.
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7. PROCESS WATER PIPING MUST BE HEAT TRACED WITH SELF REGULATING HEAT TRACE.

**PLANTING NOTES:**

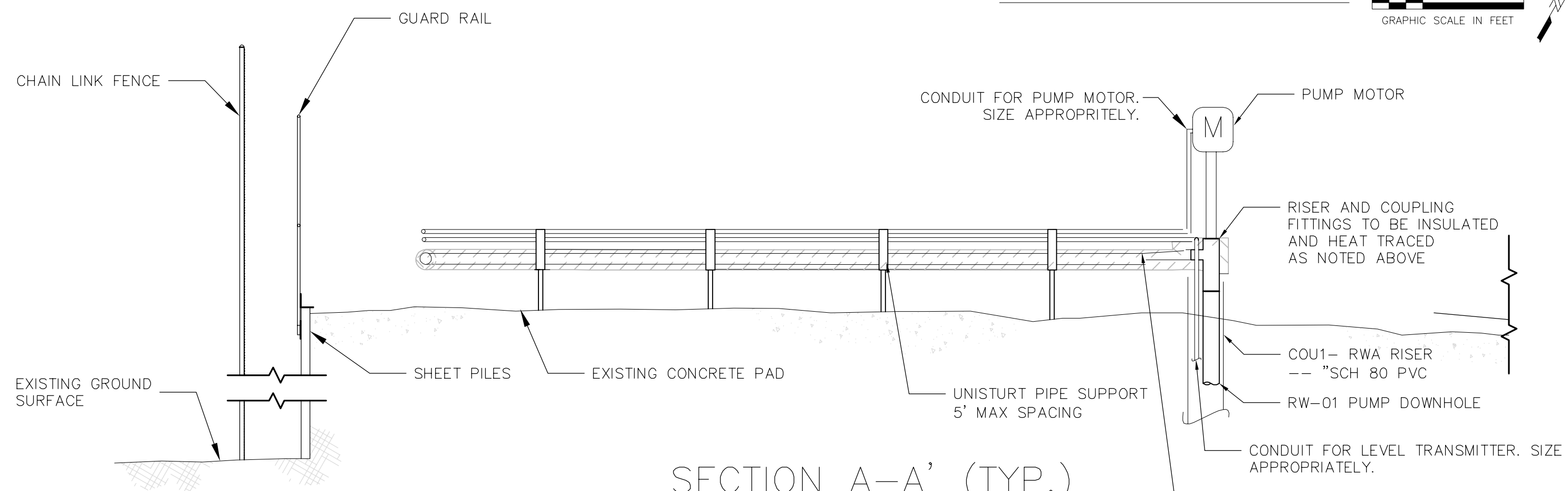
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TRENCH SECTION (TYP.)

NOT TO SCALE

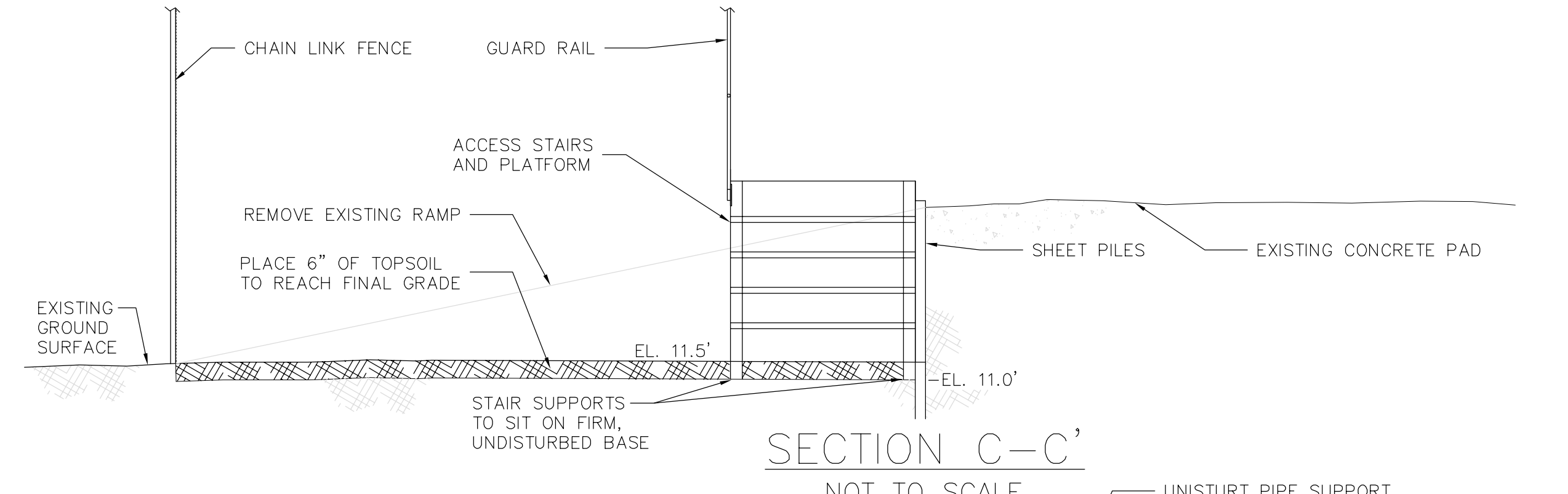
**OU1 RESTORATION**



SECTION A-A' (TYP.)

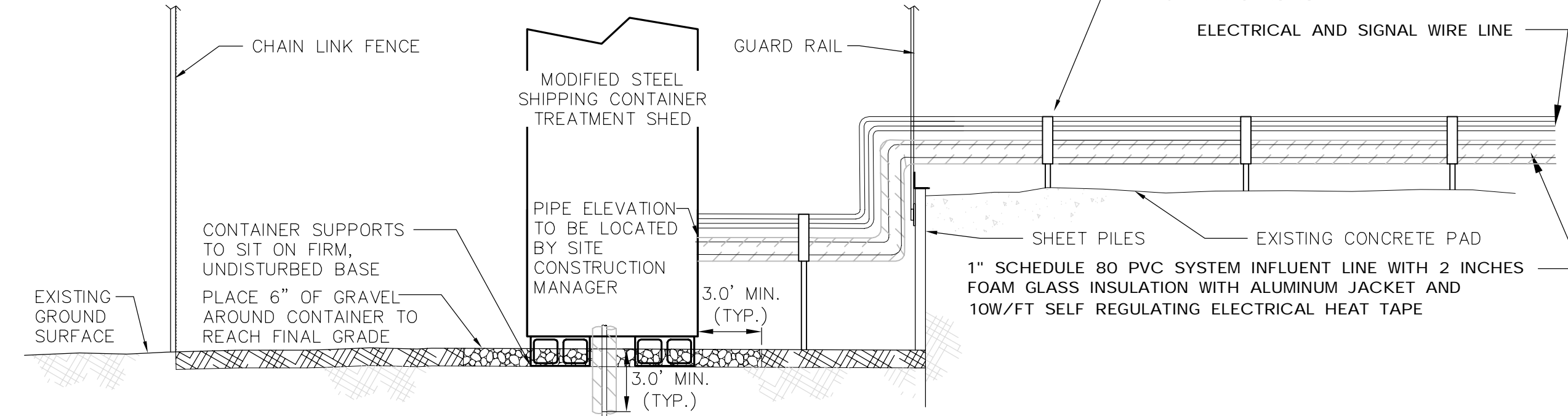
NOT TO SCALE

1" SCHEDULE 80 PVC DISCHARGE LINE WITH 2 INCHES FOAM GLASS INSULATION WITH ALUMINUM JACKET AND 3W/FT SELF REGULATING ELECTRICAL HEAT TAPE FOR ALL EXPOSED PIPING.



SECTION C-C'

NOT TO SCALE



SECTION B-B'

NOT TO SCALE

**ISSUED FOR BID**

NO.	DATE	REVISION	CHKD.	DATE	APPV.	DATE
1	07/10/14	ADDED ALTERNATE PATH				
0	06/21/13	ISSUE FOR BID				

**AECOM**  
1000 DRIVE, CHELSEA, MA 02156  
 617.351.1000  
 www.aecom.com

**NATIONAL GRID  
 FORMER CLIFTON  
 MANUFACTURED GAS PLANT**  
 PROJ. NO.: 60137363-520      DATE: 07/09/14

**RESTORATION DETAILS**

DRAWING NUMBER: **C-01**  
 SHEET NUMBER:  
 REVISION: **1**

## Attachments

**Attachment A**  
**Pressure Test Procedure**

**PIPING PRESSURE TEST PROCEDURE**

Test Number: \_\_\_\_\_ Length Tested: \_\_\_\_\_ Date \_\_\_\_\_  
 Tested: \_\_\_\_\_  
 Line ID: \_\_\_\_\_ Test By: \_\_\_\_\_ Approval: \_\_\_\_\_  
 \_\_\_\_\_

STEP ACTION	NOTES	INITIAL

**Notes:**

1. All piping, especially joints, should be exposed for visual inspection of potential leaks.
2. A ½-inch nipple and block valve must be installed at the high point(s).
3. Connect the test assembly at the most suitable end of the piping run.
4. Remove and cap any pressure or safety relief devices including rupture discs, relief valves, or vacuum gauges not rated for test pressure.
5. Fill the entire line with water, venting air from high point(s).
6. Once line to be tested is full, supply hydrostatic pressure (via test pump or supply pressure) to the appropriate test pressure for the line. Suggested pressure is 100PSI.
7. Close off the pressure source from the line being tested and note the time and pressure in the "Notes" column to the right.
8. Inspect exposed joints and fittings for leaks. Tag any leaks and ensure that these are repaired upon depressurization
9. If there are no visible leaks, and the pressure has remained within 5% of the initial pressure, note the final pressure in the "Notes" column and approve the line tested.

(Ref: ASME B31.3-345)