

# OPERATION AND MAINTENANCE (O&M) PLAN

## VOLUNTARY CLEANUP PROGRAM SITE V00138-7

Winatic Corporation  
409 Commerce Road  
Town of Vestal  
Broome County, New York

June 2011

Modified March 2018 & May 2023

Prepared For:

The New York State Department of Environmental Conservation  
Division of Environmental Remediation, Region 7  
Attn: Stephen E. Catalfamo  
1679 Route 11  
Kirkwood, NY 13795

And

409 Commerce, LLC.  
Attn: Lawrence Pierce and Christina Pierce  
3421 Vestal Road  
Vestal, NY 13840

Prepared by:

**BUCK ENGINEERING, LLC**

P.O. Box 427  
Cortland, NY 13045  
607-753-8010



Modified by:

**GeoLogic NY, PC**

P.O. Box 350  
Homer, NY 13077  
607-749-5000



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### **APPENDICES**

#### **APPENDIX A: Drawings**

- Drawing No. 1.1 – Site Map – Revised 2023;
- Drawing No. 1.2 – Historic Site Map;
- Drawing No. 2 – Groundwater Remediation System As-Built Drawing;
- Drawing No. 3 – Winatic Sub-slab Depressurization System As-Built Drawing.

#### **APPENDIX B: 2020 Documents from Off-Site Work at 408 Commerce Road**

## 1.0 INTRODUCTION

This Operation and Maintenance (O&M) Plan has been developed as a required element of the remedial program for the Winatic Corporation site at 409 Commerce Road, Vestal, New York under the New York State Voluntary Cleanup Program (VCP) administered by New York State Department of Environmental Conservation (NYSDEC). The original Voluntary Cleanup Agreement, INDEX NO. A7-0374-9809, between the Winatic Corporation, a New York corporation and a wholly owned subsidiary of ElectroTechnik Industries, Inc. of Clearwater, Florida (the "Volunteers") and the NYSDEC was executed on March 5, 1999. The site is designated as VCA Site No. V00138-7. A site map is provided as Drawing No. 1, Appendix A.

The primary contaminant of concern associated with the Winatic site is trichloroethene (TCE) (trichloroethylene, TCE) (CAS# 79-01-6). Investigations indicate that a plume of groundwater contamination emanates from the north end of the Winatic site onto adjacent properties to the north and northwest. Soil gas testing indicates there is also a vapor phase plume of TCE in the vadose zone that has impacted indoor air quality at the Winatic site and at nearby commercial properties.

Modifications to this O&M Plan were completed by GeoLogic NY, PC on March 28, 2018 and May 1, 2023.

## 2.0 DESCRIPTION OF REMEDIATION SYSTEMS

The following remediation and mitigation systems have been installed to address contaminated groundwater and vapor intrusion concerns on the Winatic site and neighboring properties. Operation, maintenance, and monitoring guidelines are provided in Section 3 and contact information for suppliers of system components and related services are provided in Section 4.

### 2.1 Onsite Groundwater Recovery and Treatment System

A groundwater pump and treat system operates continually at the Winatic site. An as-built drawing of the system is provided as Drawing No. 2, Appendix A. The system includes the following active components: QED Long AP2B air-powered submersible pump, Kobalt 60 gallon air compressor, Kobalt air regulator, water meter, particulate filter, Carbtrol L-1 Carbon Canisters (2), and assorted piping and valves.

The system pumps recovered groundwater through a sediment filter and two granular activated carbon drums in series to remove contaminants. Groundwater is recovered from the bedrock well (BR-1) located north of the Winatic building using an air-powered submersible pump. The bedrock well has a casing depth of 38.5' and the pump is suspended with the bottom intake of the pump at 37.3' from top of casing. Water and air piping are routed underground from BR-1 to the remaining system components inside the Winatic building. An air compressor supplies pressurized air to the pump, and the recovered groundwater discharge from the pump is plumbed into a pair of activated carbon drums. The carbon drums are connected in series to provide primary and secondary treatment with sampling taps located before the primary drum (influent), between the primary and secondary drums (mid) and after the secondary drum (effluent). The treated water effluent is piped outside to a storm drain manhole near the southeastern corner of the building. The previous recovery well (RW-1) is also connected to the system but is not currently activated. Components associated with RW-1 include a submersible water pump, controlled by an operation timer. To keep the groundwater treatment system operational in the winter months, it is necessary to heat the building.

Pumping rate is a function of the depth of water in the well and the air pressure applied to the pump. The dedicated compressor operates at approximately 155 psi and the pump in BR-1 operates at a regulated 40 psi. The air-powered pump simply stops when there is inadequate recharge, and resumes when sufficient water is available. Actual well yield has averaged between approximately 0.75 to 1.5 gallons per minute (1,080 to 2,160 gallons per day).

## **2.2 Onsite Sub-slab Depressurization System**

An onsite sub-slab depressurization system (SSD) was installed by Enviro Testing to protect the indoor air quality of the Winatic building. The Winatic building was demolished in or around 2014, therefore, there is no longer a sub-slab depressurization system in operation at the site. An as-built drawing of the system when it was in operation is provided as Drawing No. 3, Appendix A.

If a building is constructed at the site in the future, a vapor intrusion evaluation would be completed and a determination would be made regarding the installation of a sub-slab depressurization system.

### 2.3 Offsite Sub-slab Depressurization System

A sub-slab depressurization system (SSD) was installed by Enviro Testing to protect the indoor air quality of an adjacent property, the former Fine-Host building located at 408 Commerce Road, which has been impacted by the Winatic soil vapor contamination plume. At an unknown date the building was vacated and the owner turned the SSD system off.

GeoLogic's *Corrective Measures Work Plan*, dated July 27, 2020, summarizes the removal of the original SSD system and installation of a new SSD system and is included in Appendix B. GeoLogic's *Pressure Field Extension Testing Report*, dated October 19, 2020 documents that the newly installed SSD exceeded the minimum negative pressure of 0.004 inches of water under the concrete slab (see Appendix B).

## 3.0 OPERATION, MAINTENANCE, AND MONITORING

Winatic Corporation must continue to operate, maintain, and monitor the active remediation systems described above until prior written approval to discontinue is granted by the NYSDEC and/or NYSDOH.

Site monitoring activities include testing to evaluate the operations and effectiveness of the groundwater recovery and treatment system as well as sampling of groundwater monitoring wells located on the site and adjacent properties. Samples will be taken monthly to evaluate the groundwater recovery and treatment system operations. Groundwater monitoring wells will continue to be sampled annually. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC.

When TCE concentrations for all the monitoring wells meet the TCE groundwater standard of 5 µg/L for two (2) consecutive years, or as otherwise specified by the Department, consideration may be given to discontinuing operation of the groundwater recovery system.

In the event that monitoring data indicates that operation of the systems is no longer required, a proposal to discontinue the system will be submitted by the property owner to the NYSDEC.

Ongoing operation, maintenance, monitoring, and reporting tasks are summarized below:

### 3.1 Monthly Tasks

Complete the following tasks on a monthly basis to ensure continued operation and maintenance of the onsite remediation and mitigation systems.

1. Verify that the groundwater pump and treatment system is operating.
2. Verify that the compressor has air pressure.
3. Check the oil level in the compressor and add oil if necessary.
4. Drain condensate from the compressor and the air supply line to the pump. Store collected condensate in a drum on the premises for proper disposal per Section 3.3.
5. Record the effluent water meter reading.
6. In the winter months, verify that the building heating system is functioning to protect the groundwater system from freezing.
7. To evaluate the groundwater recovery and treatment system operations, collect water samples from sampling taps located:
  - before the primary drum (influent),
  - between the primary and secondary drums (mid), and
  - after the secondary drum (effluent).

Submit samples to an NYSDOH ELAP approved laboratory to be analyzed for volatile organic compounds (VOCs) using EPA Method 8260. Resulting data is used to guide replacement of the activated carbon drums to make sure the system is not releasing contamination. The release threshold for TCE concentration is less than 5 µg/L; however, action should be taken to replace carbon drums if any detectable level of TCE is reported in the system effluent. When the monthly system analysis shows mid breakthrough (i.e. VOC's are detected), it indicates that the primary drum is approaching saturation and needs to be replaced. When this occurs, the primary drum is removed, the existing secondary finish carbon drum is rotated to the primary position and a fresh carbon drum is added to the finish position. Spent drums are stored onsite for proper disposal per Section 3.3.

### 3.2 Annual Tasks

Complete the following annual monitoring tasks for the onsite and offsite monitoring wells listed below. Monitoring well locations and top of casing elevations are depicted on the Site Map included as Drawing No. 1, Appendix A.

MW-1 (On Winatic Site)  
MW-2 (On Winatic Site)  
MW-3 (On Winatic Site)  
BR-1 (On Winatic Site — Recovery Well)  
MW-4 (Destroyed 2019)  
MW-5 (Off-Site – at 408 Commerce Road)  
MW-6 (Off-Site – at 413 Commerce Road, adjoins the Site to the northeast)  
MW-7 (Destroyed 2019)  
MW-7R (Off-Site – at 408 Commerce Road [Installed August 2020])  
MW-15 (Off-Site - at Robintech/National Pipe Site No. 704002)

1. Measure water level elevation in each well.
2. Purge the well according to NYSDEC approved practices. A minimum of three well volumes will be purged from each well or the well will be purged dry prior to groundwater sample collection. The well will be purged utilizing new or dedicated polyethylene bailers or by utilizing a peristaltic pump and new or dedicated polyethylene tubing.
3. Collect groundwater samples from each well and submit to an NYSDOH ELAP approved laboratory to be analyzed for volatile organic compounds (VOCs) using EPA Method 8260 . Field parameters (temperature, pH, conductivity, ORP or Eh and turbidity) will be collected from MW-1, MW-2, MW-3 and MW-15.
4. Submit reports of monitoring results per Section 3.5.

### 3.3 Routine Tasks

Perform the following routine maintenance and disposal tasks as necessary.

1. Store new carbon drums inside the groundwater remediation system storage shed to be used as replacements as necessary.

2. Store spent carbon drums inside the groundwater remediation system storage shed. When four spent drums accumulate, have Environmental Products and Services dispose of them as hazardous waste.
3. Store collected condensate in a drum on the premises and have Environmental Products and Services dispose of it when full.

### **3.4 Tasks to Be Completed Upon Request**

Indoor air and/or sub-slab vapor testing will be conducted at the offsite 408 Commerce Road and 413 Commerce Road building(s) when requested by NYSDEC and/or NYSDOH and/or if a change of use occurs.



### 3.5 Report Submittals

Annual reports of monitoring results (from monthly system testing as well as annual monitoring well sampling) are submitted to the following:

409 Commerce, LLC.  
Lawrence Pierce and Christina Pierce  
3421 Vestal Road  
Vestal, NY 13840  
lcpgroup@yahoo.com

New York State Department of Environmental Conservation  
Stephen E. Catalfamo  
1679 Route 11  
Kirkwood, NY 13795

New York State Department of Health  
Maureen Schuck, Region Chief  
Bureau of Env. Exposure  
Corning Tower Room 1787  
Albany, NY 12237

New York State Department of Health  
Stephanie Selmer, Project Manager  
Bureau of Env. Exposure  
Corning Towner Room 1787  
Albany, NY 12237

Vestal Public Library  
Ready Reference  
320 Vestal Parkway East  
Vestal, NY 13850

## 4.0 SUPPLY AND SERVICES CONTACTS

Contact information is provided below for several companies who have been used to supply system components, spare parts, or services related to the remediation and mitigation systems:

L-1 Carbon Canisters:	Carbtrol Corporation Sharon Voroschak 27 Downs Avenue Bridgeport, CT 06607-1225 800-242-1150 s.voroschak@carbtol.com
Spent Carbon Drum Disposal:	Environmental Products and Services of Vermont, Inc. 532 State Fair Blvd. Syracuse, NY 13204 315-451-6666
Kobalt Compressor:	Lowe's of Vestal 225 Sycamore Road Vestal, NY 13850
QED Pump:	QED Environmental Systems 6095 Jackson Road Ann Arbor, MI 48106-3726 800-810-9908 www.qedenv.com
Sub-slab Depressurization Systems:	GeoLogic NY, PC Forrest Earl, P.G. P.O. Box 350 Homer, NY 13077 607-749-5000
Sampling and Analysis:	GeoLogic NY, PC Forrest Earl, P.G. P.O. Box 350 Homer, NY 13077 607-749-5000



*APPENDIX A*

*DRAWINGS*



**Top of Casing Elevations:**

MW-1	= 102.93'
MW-2	= 109.02'
MW-3	= 106.25
MW-5	= 90.21'
MW-6	= 102.94'
MW-7R	= 73.57'
MW-15	= 91.20'
BR-1	= 109.77'

**Robintech Site  
No. 704002**

**Site  
V00138**

Source: [www.earth.google.com](http://www.earth.google.com)

**Legend:**

- ◆ Monitoring Well & Recovery Well Location
- ▲ Bench Mark = North Rim of Man Hole  
Assumed elevation of 100.00 feet

Note: All locations are approximate.



GeoLogic NY, PC, Homer, New York

**2023 SITE LAYOUT PLAN  
SITE NO. V00138 – WINATIC CORP.  
409 COMMERCE ROAD  
VESTAL, NEW YORK**

DRAWN BY: CTG	SCALE: Approx. as shown	PROJECT NO: 223025
REVIEWED BY: FCE	DATE: APRIL 2023	DRAWING NO: 1.1



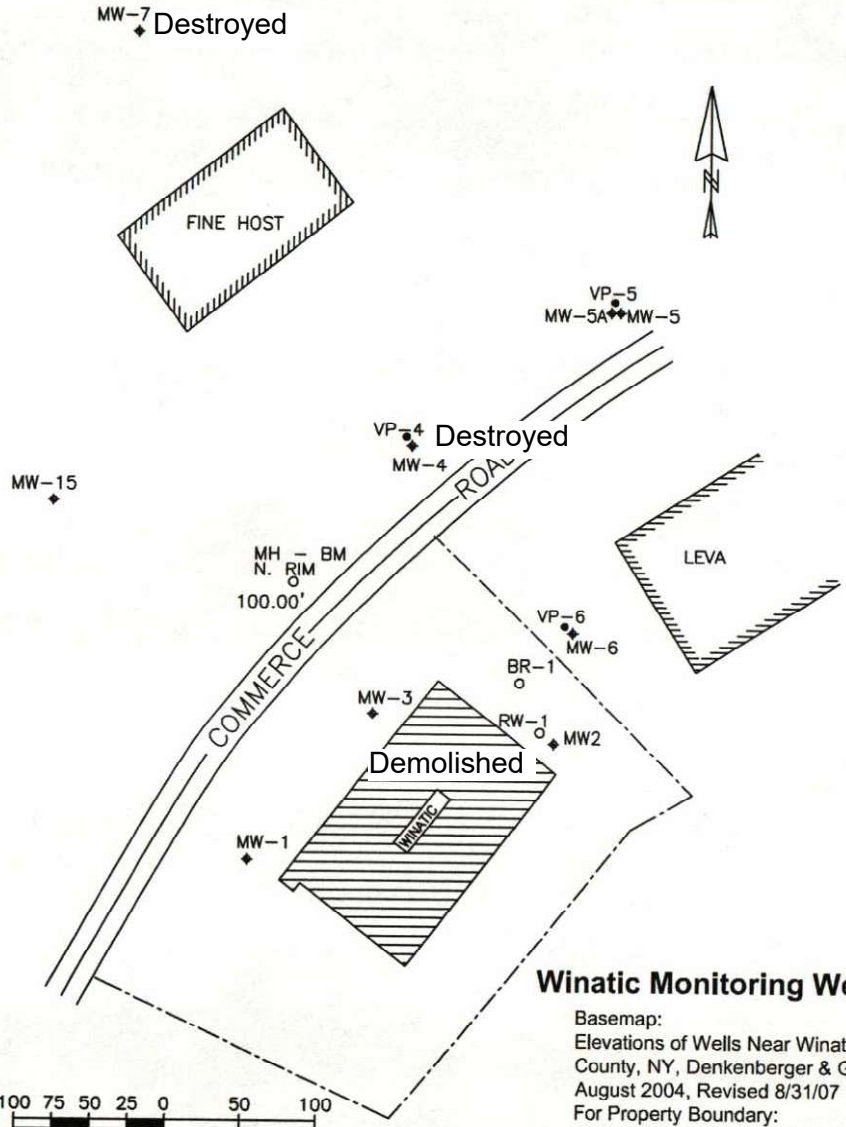
**Drawing No. 1.2  
Historic Site Map**



Winatic Corporation  
409 Commerce Road  
Vestal, New York

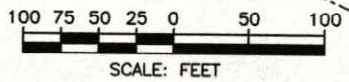
Casing Reference	Elevation
MW-1	= 102.93'
MW-2	= 109.02'
MW-3	= 108.25'
MW-4	= 92.61'
MW-5	= 90.21'
MW5A	= 90.29'
MW-6	= 102.96'
MW-7	= 70.86'
MW-15	= 81.20'
BR-1	= 109.77'

Elevations Refer To Assumed  
Elevation of 100.00' on N. RIM  
M.H. as Shown.



**Winatic Monitoring Well Locations**

Basemap:  
Elevations of Wells Near Winatic Corp., Broome  
County, NY, Denkenberger & Greene, Cortland, NY  
August 2004, Revised 8/31/07  
For Property Boundary:  
Town of Vestal Broome County, N.Y., Winatic Corp.  
Mortgage Survey, Vernon O. Shumaker, July 16, 1991



**Legend**

- ◆ Monitoring Well Location
- Soil Vapor Well
- Winatic Corp. Property Boundary

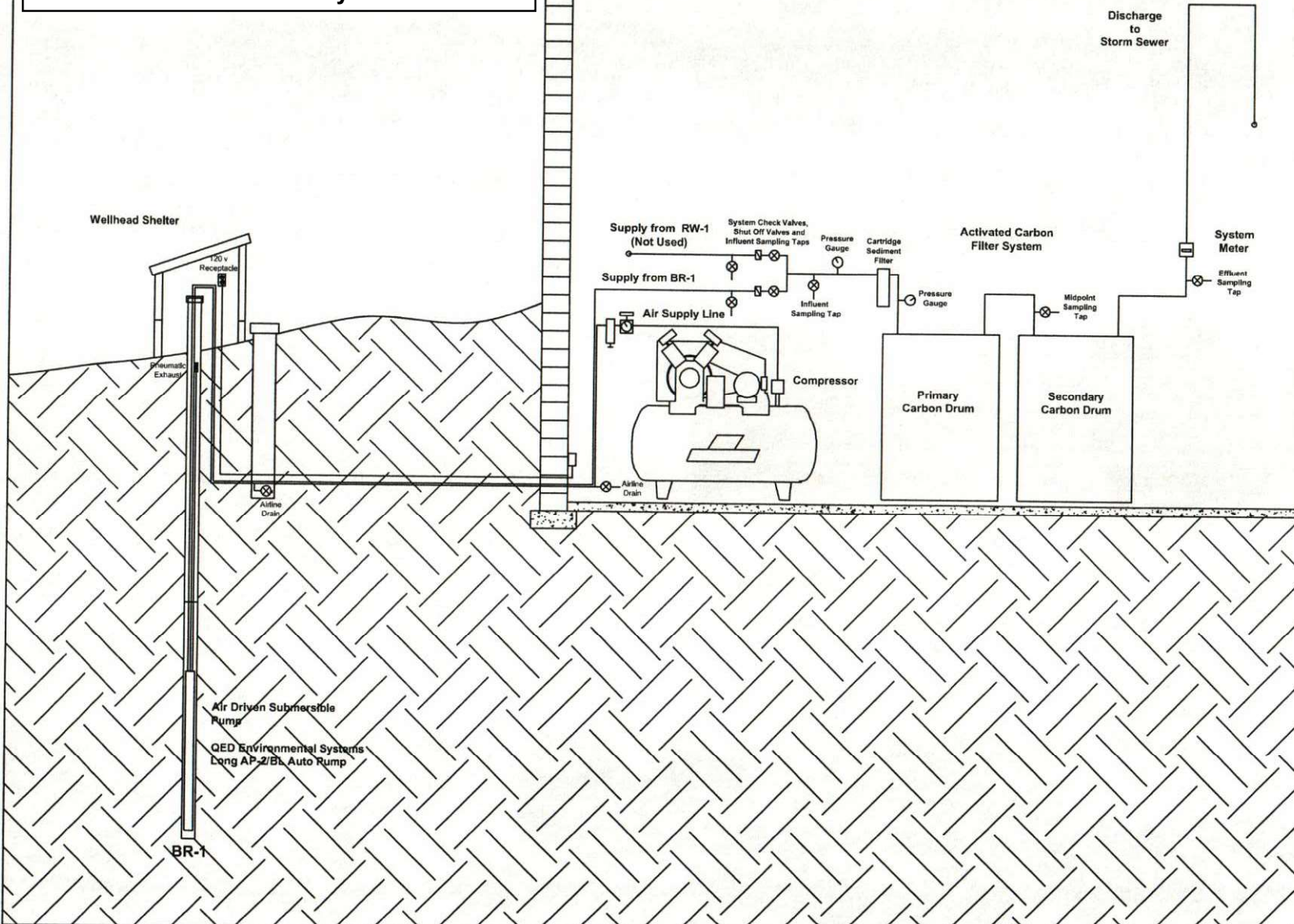
No.	Revision/Issue	Date

Site Map	
Project	Site
No. 6-2-11	Drawn JRH
See Map	

USER REVDATE REVTIME contour map\FinalEngReport\_Site\_map.dwg

**Drawing No. 2**  
**Groundwater Remediation System As-Built**



Winatic Corporation  
 409 Commerce Road  
 Vestal, New York

Groundwater  
 Remediation  
 System  
 As-Built Drawing

Project	Sheet
6-2-11	JRH
Not To Scale	

FNAME BR info\Winatic section final.dwg  
 REVDATE  
 USER



Note - The Building Was Demolished  
This Drawing is for Historic Site  
Information Purposes Only

Multiple offices,  
Restrooms

Groundwater pump  
& treat system

Manufacturing

Manufacturing

Stock room



Sub-slab ventilation  
stacks

FIGURE 2

**WINATIC FLOOR PLAN SHOWING 4 SUBSLAB  
DEPRESSURIZATION SYSTEMS**

(Drawing based on Building Sketch provided by Enviro Testing, Vestal, NY)

Blue circle denotes extraction point

Drawing No. 3  
Winatic Sub-Slab Depressurization System As-Built



*APPENDIX B*

*2020 DOCUMENTS FROM OFF-SITE WORK AT 408 COMMERCE ROAD*





October 19, 2020

Mr. Gary Priscott  
NYSDEC – Region 7 Sub-Office  
1679 NY Route 11  
Kirkwood, New York 13795

Reference: Pressure Field Extension Testing Results  
Off-Site Property - 408 Commerce Road, Vestal, New York 13850  
Site No. V00138

Dear Mr. Priscott:

GeoLogic NY, P.C. (GeoLogic) is writing to provide the results for the pressure field extension testing completed for the above referenced property.

The work completed was outlined in our July 27, 2020 Corrective Measures Work Plan that you approved on September 22, 2020.

### Findings

GeoLogic was on site September 25, 2020 to complete the pressure field extension testing.

The components of the sub-slab depressurization system (SSDS) operating at the property consist of 4-inch diameter perforated extraction pipes located beneath a new concrete floor in the lower level of the building. The extraction pipes are connected to 4-inch diameter solid PVC riser pipes, that are connected to two extraction blowers mounted on the roof. The blowers are Howden American Fans capable of up to 600 cubic feet per minute (CFM). The blowers were turned on March 16, 2020.

The SSDS performance is measured by it's ability to generate a minimum vacuum of 0.004-inches of water under the concrete floor slab.

In order to obtain the vacuum readings from beneath the concrete floor slab, six temporary test points (TP) were utilized. The TPs were installed by drilling 3/4-inch diameter holes through the concrete floor slab and into the subbase material. Each TP was fitted with a rubber stopper to allow readings with a micro-manometer. The locations of the TPs are shown on the attached drawing.

The measured vacuum (inches of water) at the TPs were as follows:

TP-1	TP-2	TP-3	TP-4	TP-5	TP-6
0.048	0.047	0.022	0.106	0.155	0.141

Mr. Gary Priscott  
RE: 408 Commerce Road, Vestal, NY  
October 19, 2020  
Page 2



The results of the pressure field extension testing indicate that the desired minimum vacuum of 0.004-inches of water under the concrete floor slab has been achieved with the current configuration of the SSDS.

At the completion of the testing, the temporary points were filled with concrete repair material.

Do not hesitate to contact me with any questions.

Sincerely,

GeoLogic NY, P.C.

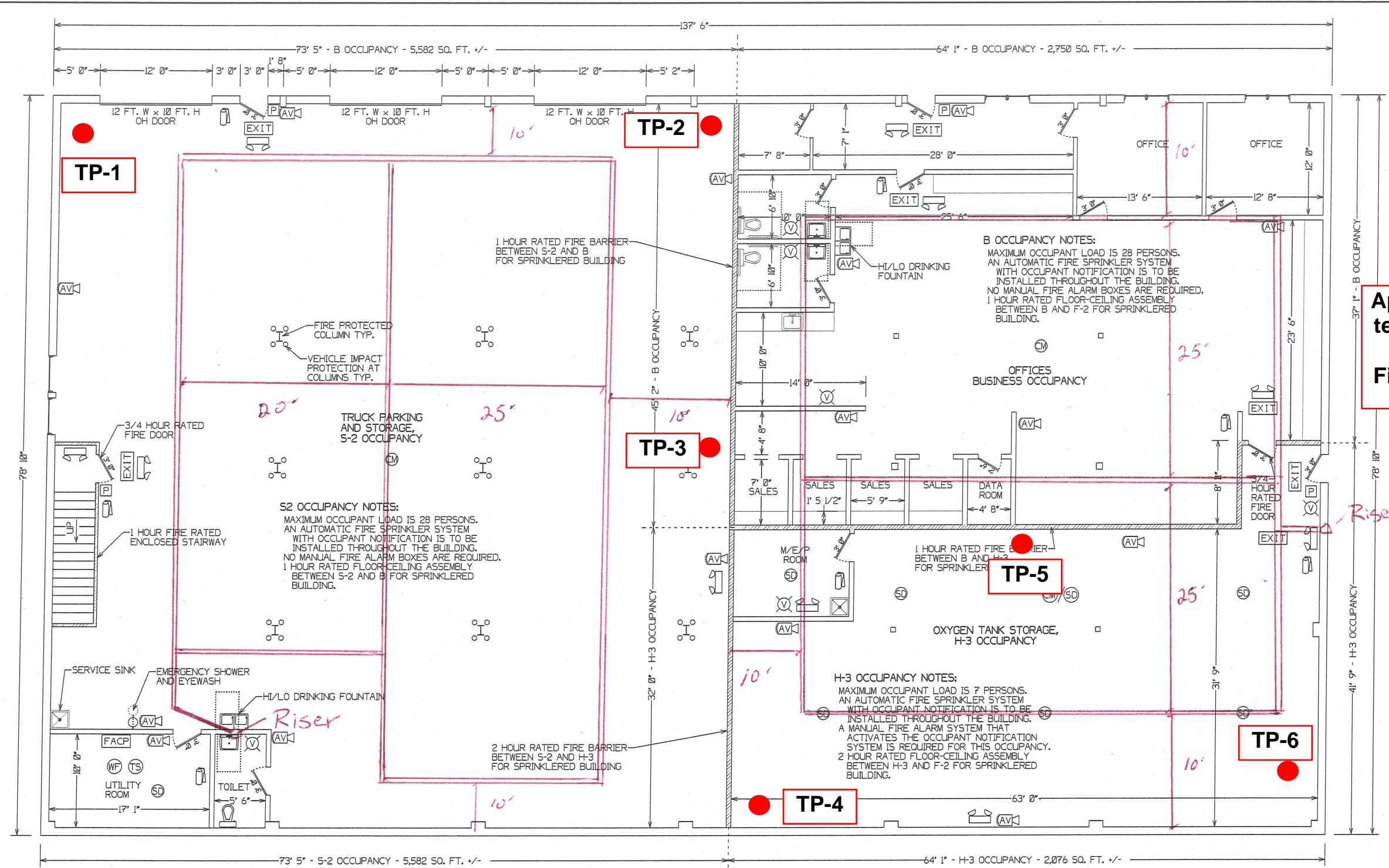
A handwritten signature in blue ink that reads "Sarah E. McCulloch".

Sarah E. McCulloch, P.G.  
Senior Hydrogeologist

Enc: Drawing

CC: Mr. Justin Marchuska, Marchuska Brothers Construction, LLC  
Mr. John Sellers, Winatic  
NYSDOH (to be forward by Gary Priscott, P.G.)

220032\report\Test Results Ltr Rpt 408 Commerce Rd Vestal NY Site V00138

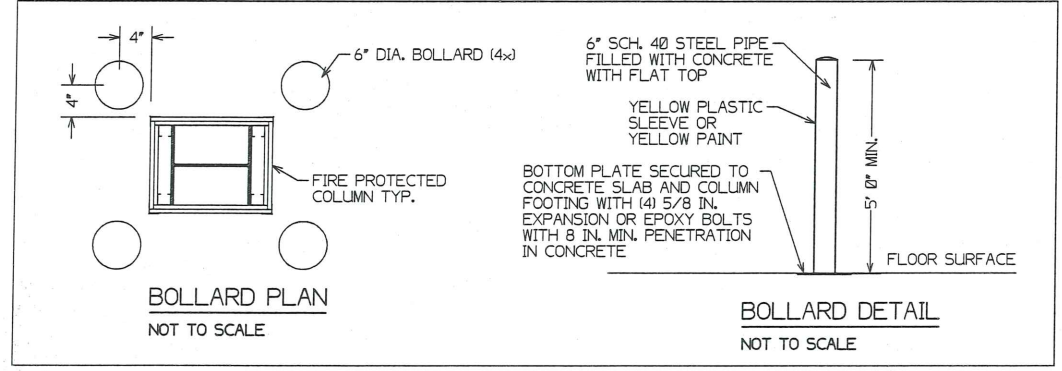


NEW BUSINESS OCCUPANCY  
 MARCUSIA BROTHERS CONSTRUCTION  
 488 COMMERCE ROAD, TOWN OF VESTAL  
 BROOME COUNTY, NEW YORK

LOWER LEVEL FLOOR PLAN

FIRE/EMERGENCY LEGEND

- [EXIT] LIGHTED EXIT SIGN
- [P] PULL STATION
- [E] EMERGENCY LIGHT
- [SD] SMOKE DETECTOR
- [X] EXTERIOR LIGHTING WITH EMERGENCY POWER
- [CM] CARBON MONOXIDE SENSOR
- [V] STROBE VISIBLE ALARM
- [F] FIRE EXTINGUISHER
- [AV] AUDIBLE/VISIBLE ALARM
- [WF] WATERFLOW
- [TS] TAMPER SWITCH



**IMPACT PROTECTION:**  
 WHERE THE FIRE PROTECTIVE COVERING OF A STRUCTURAL MEMBER IS SUBJECT TO IMPACT DAMAGE FROM MOVING VEHICLES, THE HANDLING OF MERCHANDISE OR OTHER ACTIVITY, THE FIRE PROTECTIVE COVERING SHALL BE PROTECTED BY CORNER GUARDS OR BY A SUBSTANTIAL JACKET OF METAL OR OTHER NONCOMBUSTIBLE MATERIAL TO A HEIGHT ADEQUATE TO PROVIDE FULL PROTECTION, BUT NOT LESS THAN 5 FEET FROM THE FINISHED FLOOR.  
 REFERENCE 2015 INTERNATIONAL BUILDING CODE SECTION BC704.9

**GENERAL NOTES**  
 1. UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING BEARING A LICENSED ENGINEER'S SEAL IS A VIOLATION OF HIS EDUCATION LAW AND SECTION 7209, SUBSECTION 2.  
 2. THIS DRAWING AND DESIGN ARE THE PROPERTY OF MCFILWAIN ENGINEERING. THE STAMP AND/OR SIGNATURE MUST CONTRAST IN COLOR FROM THE DRAWING FOR THIS TO BE AN OFFICIAL DESIGN.  
 3. PLOTTING AND REPRODUCTION PROCESSES DO NOT ALWAYS MAINTAIN DIMENSIONAL ACCURACY. DO NOT ATTEMPT TO SCALE DIMENSIONS FROM THIS DRAWING.



**MCFilwain Engineering**  
 PO BOX 127, 5 PARK STREET  
 NEWARK VALLEY, NEW YORK 13811  
 518.258.2288 mcfilwainengineering.com

July 27, 2020

Mr. Gary Priscott  
NYSDEC – Region 7 Sub-Office  
1679 NY Route 11  
Kirkwood, New York 13795

Reference: Corrective Measures Work Plan  
Off-Site Property - 408 Commerce Road, Vestal, New York 13850  
Site No. V00138

Dear Mr. Priscott:

GeoLogic NY, P.C. (GeoLogic) is writing to provide a Corrective Measures Work Plan for Site No. V00138. The intent of this work plan is to provide information to the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) to facilitate the update of the Institutional and Engineering Controls Certification Form for the Off-Site property located at 408 Commerce Road, Vestal, New York (formerly identified as Fine-Host).

The Off-Site property located at 408 Commerce Road consists of a commercial building that has had major renovations completed in 2019 and 2020, including:

- Removal of the former sub-slab depressurization system (SSDS) that had been installed in 2005;

- Removal of all former interior and exterior building features; however, the steel support beams were left in place and the building was re-constructed;

- Installation of a new SSDS consisting of 4-inch diameter perforated extraction pipe located beneath a new concrete floor in the lower level of the building (photos of extraction pipe attached) and installation of vertical 4-inch diameter solid PVC riser pipes to connect to the extraction blowers. A plan showing location of extraction pipes and risers is attached;

- Installation of two vapor extraction blowers on the roof of the building. The blowers are Howden American Fans capable of up to 600 cubic feet per minute (CFM). The blowers were turned on March 16, 2020;

- One tenant, LinCare, moved into the lower level of the building on March 23, 2020. LinCare occupies approximately 50 percent of the lower level. The owner of the building plans to occupy the remaining spaces of the building in or around the end of the December 2020;



Mr. Gary Priscott, NYSDEC  
Corrective Measures Work Plan  
Off-Site Property - 408 Commerce Road, Vestal, NY  
Site No. V00138  
July 27, 2020  
Page 2



### Planned Activities

GeoLogic will complete pressure field extension testing for the SSDS that is currently operating. The scope of work for the test will include the following:

Drill temporary  $\frac{3}{4}$  inch diameter holes to obtain vacuum readings from beneath the concrete floor slab and into the subbase material. Each temporary hole will be fitted with a rubber stopper to allow readings with a micro-manometer. The data will be used to demonstrate the influence of the system.

At the completion of the testing, the holes will be backfilled;

The locations of the sampling points relative to the existing site features will be established;

A report containing the findings of the work will be submitted to the NYSDEC and NYSDOH.


### Schedule


The work will be scheduled within two weeks of receiving approval of this Corrective Measures Work Plan.

If you have any questions, or additional information is required, please contact the undersigned.

Sincerely,

GeoLogic NY, P.C.

  
Sarah E. McCulloch, P.G.  
Senior Hydrogeologist

  
Forrest C. Earl, P.G.  
President/Principal Hydrogeologist

Attachments: Photographs, Flor Plan

CC: Mr. Justin Marchuska, Marchuska Brothers Construction, LLC  
Mr. John Sellers, Winatic  
NYSDOH (to be forward by Gary Priscott, P.G.)

220032\report\7-27-2020 Corrective Measures Work Plan



Photo 1

View of 4-inch diameter perforated extraction pipe being installed in the lower level of 408 Commerce Road, Vestal, NY – December 2019.



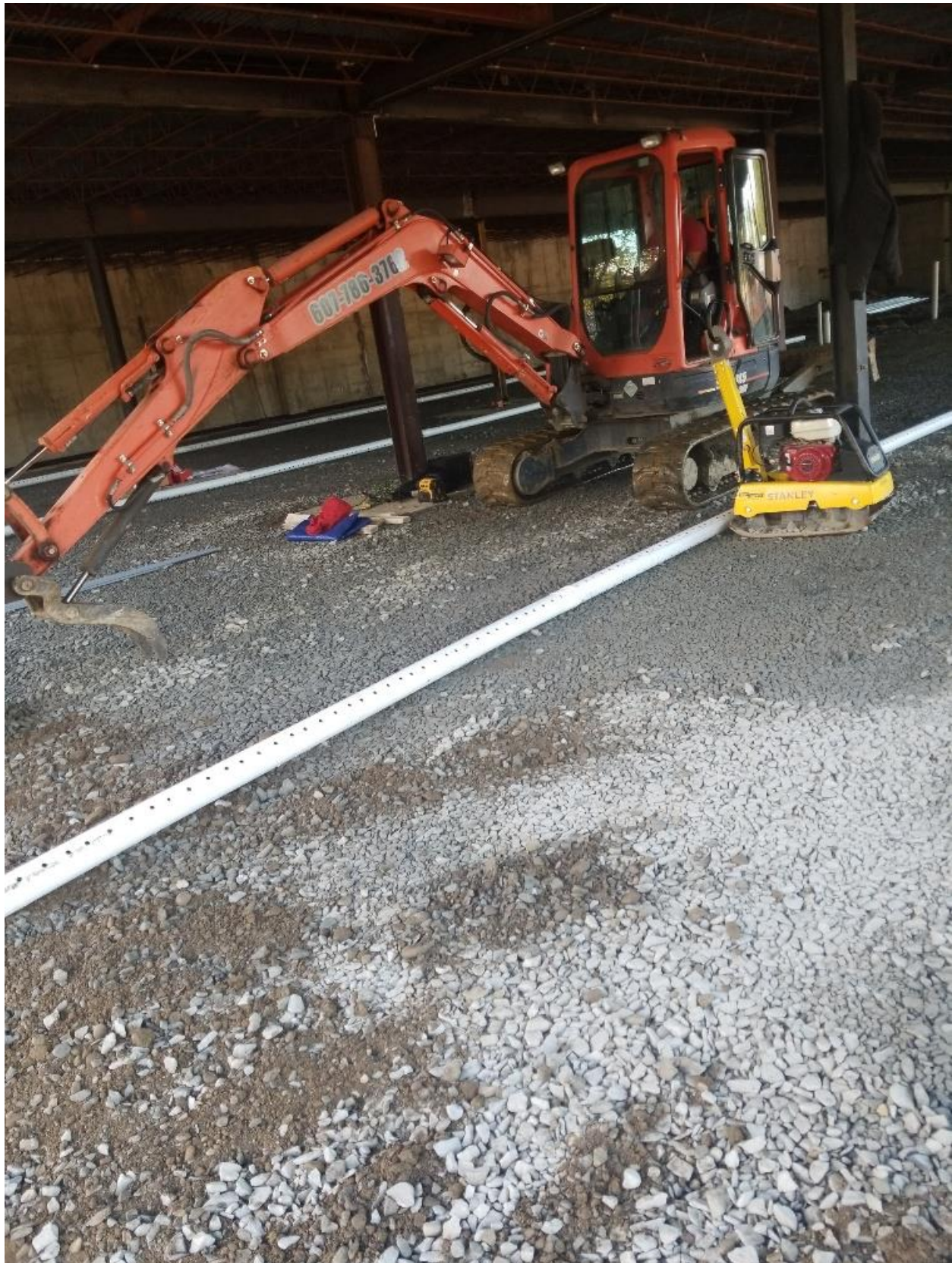


Photo 2

View of 4-inch diameter perforated extraction pipe being installed in the lower level of 408 Commerce Road, Vestal, NY – December 2019.

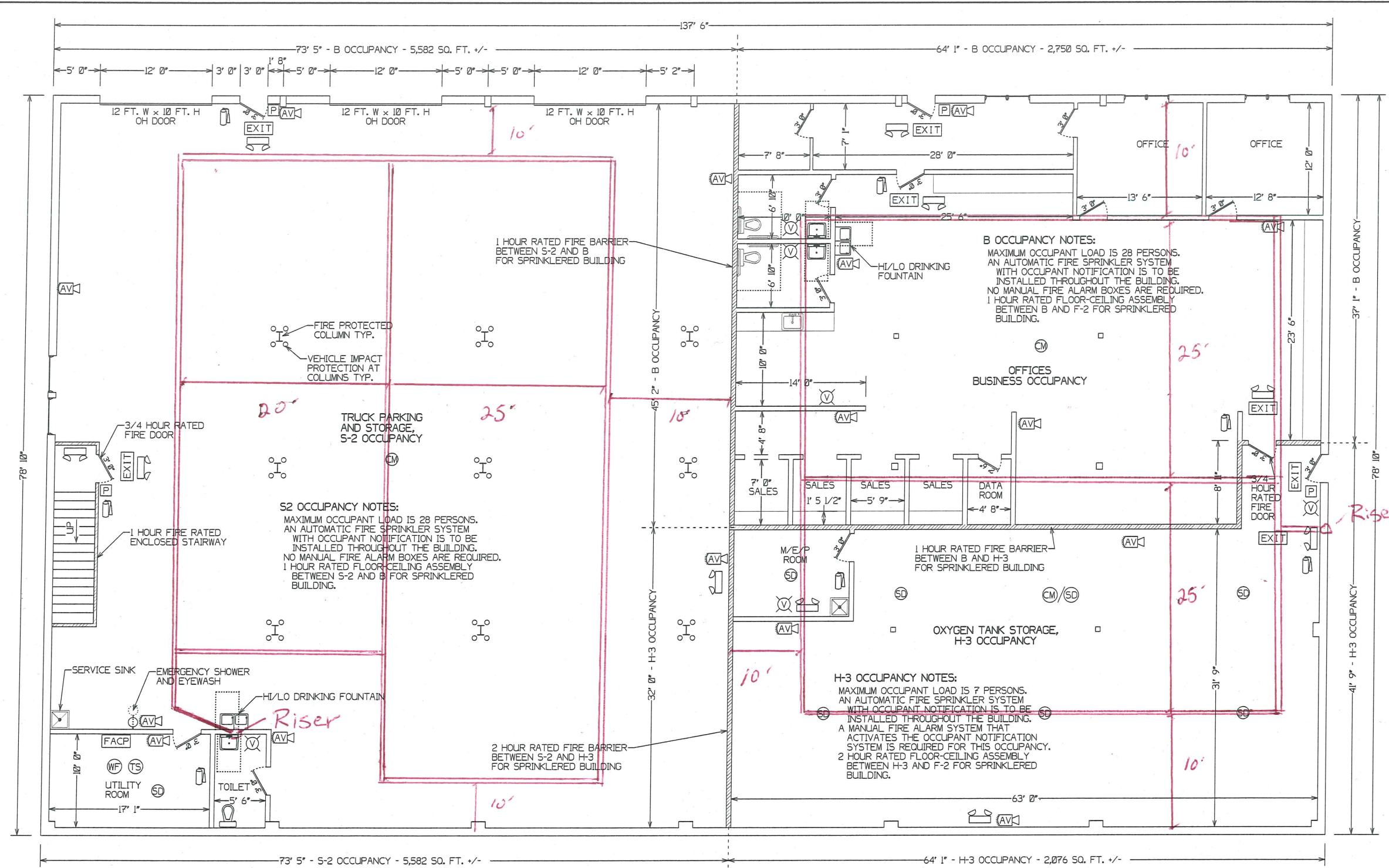




Photo 3

View of 4-inch diameter perforated extraction pipe being installed in the lower level of 408 Commerce Road, Vestal, NY – December 2019.





**B OCCUPANCY NOTES:**  
 MAXIMUM OCCUPANT LOAD IS 28 PERSONS.  
 AN AUTOMATIC FIRE SPRINKLER SYSTEM WITH OCCUPANT NOTIFICATION IS TO BE INSTALLED THROUGHOUT THE BUILDING. NO MANUAL FIRE ALARM BOXES ARE REQUIRED. 1 HOUR RATED FLOOR-CEILING ASSEMBLY BETWEEN B AND F-2 FOR SPRINKLERED BUILDING.

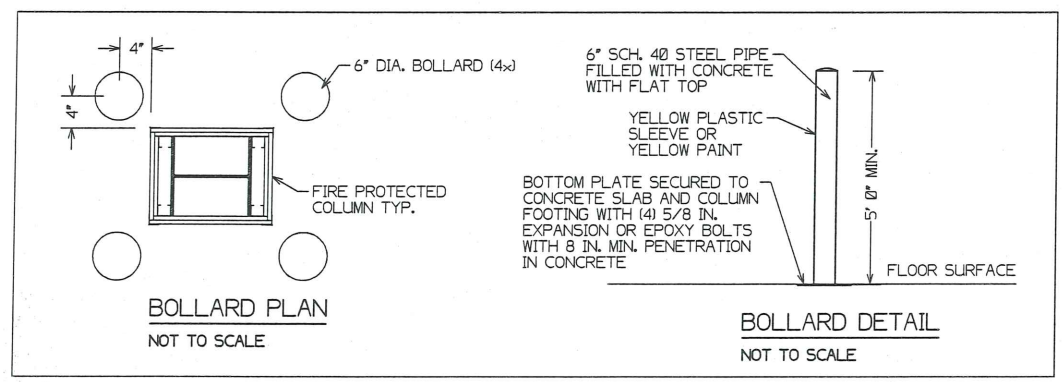
**S2 OCCUPANCY NOTES:**  
 MAXIMUM OCCUPANT LOAD IS 28 PERSONS. AN AUTOMATIC FIRE SPRINKLER SYSTEM WITH OCCUPANT NOTIFICATION IS TO BE INSTALLED THROUGHOUT THE BUILDING. NO MANUAL FIRE ALARM BOXES ARE REQUIRED. 1 HOUR RATED FLOOR-CEILING ASSEMBLY BETWEEN S-2 AND B FOR SPRINKLERED BUILDING.

**H-3 OCCUPANCY NOTES:**  
 MAXIMUM OCCUPANT LOAD IS 7 PERSONS. AN AUTOMATIC FIRE SPRINKLER SYSTEM WITH OCCUPANT NOTIFICATION IS TO BE INSTALLED THROUGHOUT THE BUILDING. A MANUAL FIRE ALARM SYSTEM THAT ACTIVATES THE OCCUPANT NOTIFICATION SYSTEM IS REQUIRED FOR THIS OCCUPANCY. 2 HOUR RATED FLOOR-CEILING ASSEMBLY BETWEEN H-3 AND F-2 FOR SPRINKLERED BUILDING.

**LOWER LEVEL FLOOR PLAN**

**FIRE/EMERGENCY LEGEND**

- [EXIT] LIGHTED EXIT SIGN
- [E] EMERGENCY LIGHT
- [X] EXTERIOR LIGHTING WITH EMERGENCY POWER
- [V] STROBE VISIBLE ALARM
- [AV] AUDIBLE/VISIBLE ALARM
- [P] PULL STATION
- [SD] SMOKE DETECTOR
- [CM] CARBON MONOXIDE SENSOR
- [FE] FIRE EXTINGUISHER
- [WF] WATERFLOW
- [TS] TAMPER SWITCH



**IMPACT PROTECTION:**  
 WHERE THE FIRE PROTECTIVE COVERING OF A STRUCTURAL MEMBER IS SUBJECT TO IMPACT DAMAGE FROM MOVING VEHICLES, THE HANDLING OF MERCHANDISE OR OTHER ACTIVITY, THE FIRE PROTECTIVE COVERING SHALL BE PROTECTED BY CORNER GUARDS OR BY A SUBSTANTIAL JACKET OF METAL OR OTHER NONCOMBUSTIBLE MATERIAL TO A HEIGHT ADEQUATE TO PROVIDE FULL PROTECTION, BUT NOT LESS THAN 5 FEET FROM THE FINISHED FLOOR.  
 REFERENCE 2015 INTERNATIONAL BUILDING CODE SECTION BC704.9

**GENERAL NOTES**

- UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING BEARING A LICENSED ENGINEER'S SEAL IS A VIOLATION OF HIS EDUCATION LAW AND SECTION 7209, SUBSECTION 2.
- THIS DRAWING AND DESIGN ARE THE PROPERTY OF MCFILAVIN ENGINEERING. THE STAMP AND/OR SIGNATURE MUST CONTRAST IN COLOR FROM THE DRAWING FOR THIS TO BE AN OFFICIAL DESIGN.
- PLOTTING AND REPRODUCTION PROCESSES DO NOT ALWAYS MAINTAIN DIMENSIONAL ACCURACY. DO NOT ATTEMPT TO SCALE DIMENSIONS FROM THIS DRAWING.

