Former Corning Hospital and Related Parcels

STEUBEN COUNTY, NEW YORK

Construction Completion Report
Sub-Slab Depressurization Systems
Building 1 & Building 2

NYSDEC Site Number: C851049

Prepared for:

Riedman Companies

45 East Avenue, 6th Floor

Rochester, New York 14604

Prepared by:

LaBella Associates, D.P.C.

300 State Street, Rochester New York

585-454-6110

AUGUST 2024

CERTIFICATIONS

I, Ann A. Barber, am currently a registered professional engineer licensed by the State of New York, I had primary direct responsibility for implementation of the remedial program activities, and I certify that the Remedial Design was implemented and that all construction activities were completed in substantial conformance with the Department-approved Remedial Design.

I certify that all documents generated in support of this report have been submitted in accordance with the DER's electronic submission protocols and have been accepted by the Department.

I certify that all data generated in support of this report have been submitted in accordance with the Department's electronic data deliverable and have been accepted by the Department.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Ann A. Barber, of LaBella Associates, D.P.C. am certifying as Owner's Designated Site Representative for the site.

100521	8/22/2024	
NYS Professional Engineer #	Date	Signature

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LIST OF ACRONYMS

Acronym	Definition
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CAMP	Community Air Monitoring Plan
CCR	Construction Completion Report
COC	Constituents of Concern
FER	Final Engineering Report
HASP	Health and Safety Plan
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation and Maintenance
PFE	Pressure Field Extension
SSDS	Sub-Slab Depressurization System
VOC	Volatile Organic Compound
"WC	Inches of water column

CONSTRUCTION COMPLETION REPORT

1.0 BACKGROUND AND SITE DESCRIPTION

This Construction Completion Report (CCR) is for the installation of sub-slab depressurization systems (SSDSs) in Building 1 and Building 2 at the Former Corning Hospital and Related Parcels (the Site). Corning Hospital and the Guthrie Clinic entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) in October 2015, as a participant, with Corning Properties, Inc. (CPI) added to the BCA in November 2015, also as a participant, to investigate and remediate two (2) non-contiguous parcels totaling approximately 4.77-acres located in the City of Corning, New York. The BCA was further amended on September 24, 2018 to include current site owner of 176 Denison Parkway East and 171 East First Street, Riedman Purcell CH II, LLC as a volunteer. On November 7 2018, Riedman Purcell CH I, LLC submitted an application for further amendment of the BCA to include current site owner of 201 East First Street as a volunteer and to update the site map to reflect new tax identification numbers associated with a subdivision of 176 Denison Parkway East (new tax parcel #318.09-01-018.001) to create the new 176 Denison Parkway and 171 East First Street (new tax parcel #318.09-01-018.002). The property was remediated to restricted residential use. The parcels known as 176 Denison Parkway East and 171 East First Street are used for apartments. The property known as 201 East First Street is currently used as a parking lot. It should be noted that 176 Denison Parkway East was subdivided during the Brownfield Cleanup Program (BCP) project into the new 176 Denison Parkway East parcel and 171 East First Street. In addition, the former Pearl Street parcel was also included as part of these two parcels; however, the former Pearl Street parcel was not part of the BCP.

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The site is located in the County of Steuben, New York and is identified as having Tax Map IDs 318.09-01-018.001, 318.09-01-018.002 and 318.09-01-013.000. The site is situated on an approximately 4.77-acre area bounded by Denison Parkway East to the north, East First Street to the south, commercial properties to the east, and Chemung Street to the west (see Figure 1 and Figure 2). It should also be noted that the former Pearl Street bisects the BCP Site; however, the 176 Denison Parkway East and 171 East First Street parcels include the former Pearl Street parcel. The boundaries of the site are fully described in the Final

Engineering Report (FER) Appendix A: Survey Map, Metes and Bounds. In addition, FER Appendix A also includes a survey of the recent subdivision of the parcels.

2.0 SUMMARY OF SITE REMEDY

2.1 Remedial Action Objectives

Based on the results of the Remedial Investigation, the following Remedial Action Objectives (RAOs) were identified for this site.

2.1.1 Groundwater RAOs

RAOs for Public Health Protection

- Prevent ingestion of groundwater containing contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles emanating from contaminated groundwater.

RAOs for Environmental Protection

- Prevent the discharge of contaminants to surface water.

2.1.2 Soil RAOs

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of, or exposure to, contaminants volatilizing from contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

2.2 Description of Selected Remedy

The site was remediated in accordance with the remedy selected by the NYSDEC in the Decision Document dated February 2018.

The factors considered during the selection of the remedy are those listed in 6NYCRR 375-1.8. The following are the components of the selected remedy:

1. A remedial design program was implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques were implemented to the extent feasible in the design, implementation, and Site management of the remedy as per DER-31. The major green remediation components are as follows;
    - Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
    - Reducing direct and indirect greenhouse gases and other emissions;
    - Increasing energy efficiency and minimizing use of non-renewable energy;
    - Conserving and efficiently managing resources and materials;
    - Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
    - Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
    - Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. A Site cover was required to allow for restricted residential use of the Site in areas where the upper two feet of exposed surface soil exceeded the applicable soil cleanup objectives (SCOs). A cover system was used that consisted of a minimum of two feet of gravel or crushed masonry (from prior on-site crushing operations) placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer on that portion of the Site where tangible property is not anticipated to be placed as part of the redevelopment. Soil cover material, including any fill material brought to the Site, will meet the SCOs for cover material for the use of the Site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of Site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

3. Excavation and off-Site disposal of contaminant source areas, included**:**
    - Approximately 1200 sq ft area and 270 cy of soil exceeding the 6 NYCRR Part 371 hazardous criteria for arsenic, cadmium and lead at 201 East First Street; and

- Excavation and removal of a 10,000-gallon petroleum underground storage tank (UST), fuel dispensers, underground piping or other structures associated with a source of contamination and visual and olfactory impacted soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G
- Backfill - On-Site soil which does not exceed the above excavation criteria was used below the cover system described in remedy element 2 to the extent that a sufficient volume of on-site soil was available and / or clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) was be brought in to complete the backfilling of the excavation and establish the designed grades at the Site.

4. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require the remedial party or Site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g);
- although land use is subject to local zoning laws, single family housing is not consistent with restricted residential use as defined by Part 375-1.8(g);
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- require compliance with the Department approved Site Management Plan

5. Site Management Plan

A Site Management Plan is required, which includes the following:

a) an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the Site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 4 above.
Engineering Controls: The Site cover discussed in Paragraph 2 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- a provision should redevelopment occur to ensure no soil exceeding protection of groundwater concentrations will remain below storm water retention basin or infiltration structures.
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any buildings on the Site, including provision for implementing actions recommended to address exposures related to soil vapor or alternatively, installation of an approved soil vapor intrusion mitigation system;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 2 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- provisions for the management and inspection of the identified engineering controls;
- maintaining Site access controls and Department notification; and the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b.) a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring for vapor intrusion for any buildings on the Site, as may be required by the Institutional and Engineering Control Plan discussed above.

In accordance with the SMP as detailed in item #5 above, evaluation of the potential for soil vapor intrusion in buildings or alternatively, installation of approved soil vapor intrusion mitigation systems, is required. This CCR details the installation of SSDSs in the two (2) apartment buildings at the Site; a 40,000 square foot building (Building 1) and 22,000 square foot building (Building 2); refer to Figure 2.

3.0 INTERIM REMEDIAL MEASURES, OPERABLE UNITS AND REMEDIAL CONTRACTS

The remedy for this site was performed as a single project, and no interim remedial measures, operable units or separate construction contracts were performed.

4.0 DESCRIPTION OF REMEDIAL ACTIONS PERFORMED

SSDS installations were conducted in accordance with the NYSDEC-approved Remedial Designs (RD) for the Former Corning Hospital site dated November 2, 2018 and March 6, 2020, approved by NYSDEC on December 18, 2018 and March 19, 2020, respectively as well as the *NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York* dated October 2006 and subsequent updates. There were no deviations to the approved Remedial Designs.

The SSDS installations were completed following completion of the FER and SMP in accordance with Remedial Designs dated November 2, 2018 and March 6, 2020, approved by the NYSDEC on December 18, 2018 and March 19, 2020, respectively. Prior to the remedy, the former hospital building was demolished which included the removal of floor drains, sumps and building slabs and footers. This work was completed in accordance with the Interim Site Management Plan (ISMP) dated June 14, 2016 and approved by the NYSDEC on June 15, 2016. ERSI, Inc. was the contractor for the former hospital buildings and completed the ISMP work.

Remedial activities were conducted under a *Remedial Action Work Plan* (RAWP) by LaBella dated February 2018 and *Remedial Action Work Plan Amendment: Buffer Areas* by LaBella dated February 2018. Activities completed under the RAWP and RAWP Amendment included excavation of contaminated soil exceeding 6 NYCRR Part 371 hazardous criteria for arsenic, cadmium and lead, excavation and removal of a 10,000-gallon petroleum UST and associated infrastructure and impacted soils, backfill and cover system as summarized in Section 2.2.

Activities completed under the ISMP and RAWP are detailed in the FER dated December 2018. The information and certifications made in the FER dated December 2018, Periodic Review Reports (PRRs) dated 2020, 2021 and 2023 were relied upon to prepare this report and certify that the remediation requirements for the site have been met.

4.1 Governing Documents

Governing documents related to the remedy are included in the following table.

Document Name/Date	Description
Sub-Slab Depressurization System Design, November 2, 2018	SSDS Design for the northern apartment building (Building 1) which is approximately 40,000 square feet

Document Name/Date	Description
Sub-Slab Depressurization System Design, March 6, 2020	SSDS Design for the southern apartment building (Building 2) which is approximately 22,000 square feet

4.1.1 Site Specific Health & Safety Plan (HASP)

All remedial work performed under this Remedial Action was in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA.

The Health and Safety Plan (HASP) included as Appendix G of the SMP approved by the NYSDC was complied with for all remedial and invasive work associated with SSDS installations performed by LaBella. Contractors followed their own company's HASP.

4.1.2 Quality Control Plan

The QCP for this project was included as Appendix F of the SMP approved by the NYSDEC. The QCP describes the specific policies, objectives, organization, functional activities and quality assurance/ quality control activities designed to achieve the project data quality objectives.

4.2 Remedial Program elements

This report details the construction, operation and maintenance of the SSDSs in Building 1 and Building 2 (refer to Figure 2). The SSDS for Building 1 was installed in 2019-2020 and the SSDS for Building 2 was installed in 2020-2021.

Refer to the FER dated December 2018 for details regarding removal of contaminated materials and cover system construction, and Periodic Review Reports (PRRs) from 2020 and 2021 for building construction activities including imported materials used for construction. CAMP monitoring was not required for SSDS installations as all components were installed in clean backfill. CAMP monitoring required per the SMP associated with construction activities is detailed in the 2020 PRR.

4.2.1 Contractors and Consultants

JL Plumbing, the plumbing contractor for the construction, installed the SSDS infrastructure. LaBella designed the SSDSs, performed periodic inspections of the SSDSs during and after construction.

Documentation of agency approvals required by the RD is included in Appendix A.

4.2.2 Reporting

Field notes from inspections conducted associated with the SSDS installations are included in Appendix B.

4.3 Sub-Slab Depressuriazation System

Since remaining contaminated soil and groundwater exists beneath the site, Engineering Controls (EC) are required to protect human health and the environment. The site has the following primary Engineering Controls.

- SSDS in Building 1 – 4 subsystems
- SSDS in Building 2 – 2 sub-systems

It should be noted a Maintenance Building is also constructed at the Site. The maintenance building will not be regularly occupied; therefore, a SSDS is not required.

4.3.1 SSDS Installation

Each SSDS subsystem consists of geotextile-wrapped 4" diameter perforated HDPE piping connected to 4" diameter PVC header pipes. The header pipes are connected to 4" PVC vertical risers located in the electrical room within each building. Sub-slab piping was installed within a 12" by 12" pea stone trench. A 10-mil vapor barrier was installed beneath the concrete slab.

Monitoring points consisting of ¼" diameter stainless steel tubing were installed beneath the vapor barrier to monitor pressure field extension. Monitoring points were routed to the electrical room and fitted with a barbed fitting for pressure field extension (PFE) monitoring. Refer to the photograph log in Appendix C for photographs of the monitoring points.

An alarm is installed on each PVC riser within the electrical room. If suction is lost, the alarm will sound and a red light will illuminate. A u-tube manometer was installed on each vertical riser to visually observe there is negative pressure. Refer to the photograph log in Appendix C for photographs of the alarms.

A RadonAway GP-501 fan was installed on each sub-system above the roof. The fans were installed 12" above the roof, and a minimum of 25-ft from any air intake. Refer to the photograph log in Appendix C for photographs of the fans. Labels reading "Sub-Slab Depressurization System – Do Not Disconnect" were placed on the exposed portions of vertical piping.

Refer to Appendix D – O&M Plan for the as-built drawings and specifications for each system, as well as fan operating instructions.

4.3.2 SSDS Inspections and Testing

Periodic inspections were completed by LaBella to observe the SSDS installation. Refer to the photograph log in Appendix C for photographs taken during construction.

An inspection was conducted following completion of the SSDS in Building 1 on May 12, 2021. The alarms were tested and were working properly. In addition, pressure was measured at each PFE point. All PFE points had a minimum pressure differential of -0.004 inches of water column ("wc). PFE readings collected are included in Table A.

Table A – Building 1 PFE Readings (5/12/21)

PFE Number	Pressure Differential (Inches of Water Column)
1	-1.2
2	-0.6
3	-3.4
4	-2.4
5	-0.5
6	-2.3
7	-1.4
8	-1.1
9	-3.5

An inspection of both buildings SSDSs was conducted during the 2023 annual inspection on October 9, 2023. The PFE readings for each building are summarized in Table B below.

Table B – Building 1 & 2 PFE Readings (10/9/23)

Building	Sample Point ID	Manometer Reading (Inches of Water Column)
Building 1 - addressed as 176 Dennison Parkway	1	-0.010
	2	-0.003
	3	-0.016
	4	-0.019
	5	0.009
	6	0.006
	7	-0.001
	8	-0.005
	9	-0.013
Building 2 - addressed as 171 East 1st Street	1	-0.023
	2	-0.042
	3	-0.072
	4	-0.019

As indicated in Table B, monitoring points 5 and 6 had positive readings. Greater negative pressure was recorded in Building 1 during the 2021 inspection. The PFE readings from the 2023 inspection indicate a potential issue with the manometer used to measure pressure during this monitoring event (see Table C, below).

The U-tube manometer readings and alarm checks are provided in Table C.

Table C – Building 1 & 2 U-Tube Manometer and Alarm Inspection (10/9/2023)

Building	SSD System ID	Manometer Reading (Inches of Water Column)	Audible Alarm Checked and Operation
Building 1 - addressed as 176 Dennison Parkway	1	-0.117	Yes
	2	-0.667	Yes
	3	-0.483	Yes
	4	-0.315	Yes
Building 2 - addressed as 171 East 1st Street	1	-0.492	Yes
	2	-0.371	Yes

As indicated in Table C, all U-tube manometer readings were negative

indicating the SSDSs were operating properly. Based on the sufficient U-tube manometer readings, it appears there may have been a malfunction with the manometer used to collect PFE readings on October 9, 2023. PFE will continue to be monitored annually in accordance with the SMP.

4.3.3 SSDS Operation and Maintenance

The SSDSs will be inspected/ monitored annually in accordance with the SMP. The inspections will include the following:

- Observe and record u-tube manometer readings.
- Observe visible portions of SSDS piping and confirm they are intact.
- Observe labeling on SSDS piping and confirm it is intact.
- Observe each alarm to confirm the green light is illuminated. Test each alarm by removing the tubing to confirm the red light will illuminate and the alarm will sound if suction is lost.
- Measure and record pressure at each PFE monitoring point.
- Observe the fans on the roof to confirm there are no obstructions or damage.

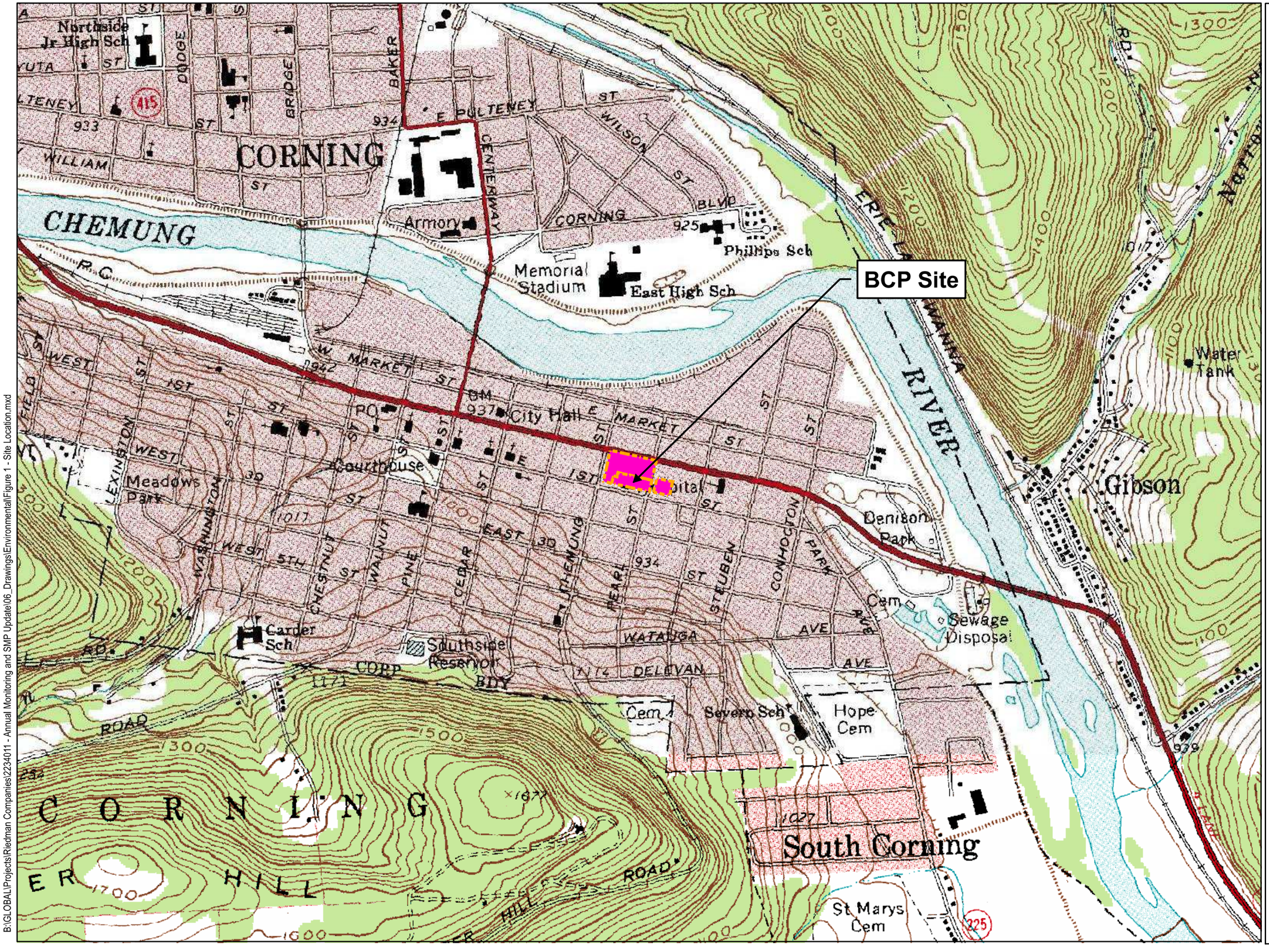
Procedures for monitoring, operating and maintaining the SSDSs are provided in the Operation and Maintenance Plan included in Appendix D as well as in the revised SMP.. The O&M Plan also addresses inspection procedures that must occur after any severe weather condition has taken place that may affect on-site ECs. Forms to be used for routine inspections and monitoring as well as non-routine maintenance are included in the O&M Plan.

4.4 Institutional Controls

The site remedy requires that an environmental easement be placed on the property to (1) implement, maintain and monitor the Engineering Controls; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to Restricted Residential uses only.

The environmental easement for the site was executed by the Department on August 21, 2017, and filed with the Steuben County Clerk on September 8, 2017. The County Recording Identifier number for this filing is 20170030003. A copy of the easement and proof of filing is provided in FER Appendix 12.

FIGURES



B:\GLOBAL\Projects\Riedman Companies\2234011 - Annual Monitoring and SMP Update\06_Drawings\Environmental\Figure 1 - Site Location.mxd

LaBella
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RIEDMAN COMPANIES

Former Corning Hospital
176 Denison Parkway East
171 and 201 East First Street
Corning, New York

N

0 500 1,000 Feet

1 inch = 1,000 feet

Legend

Approximate BCP Boundary

Sources/Notes:

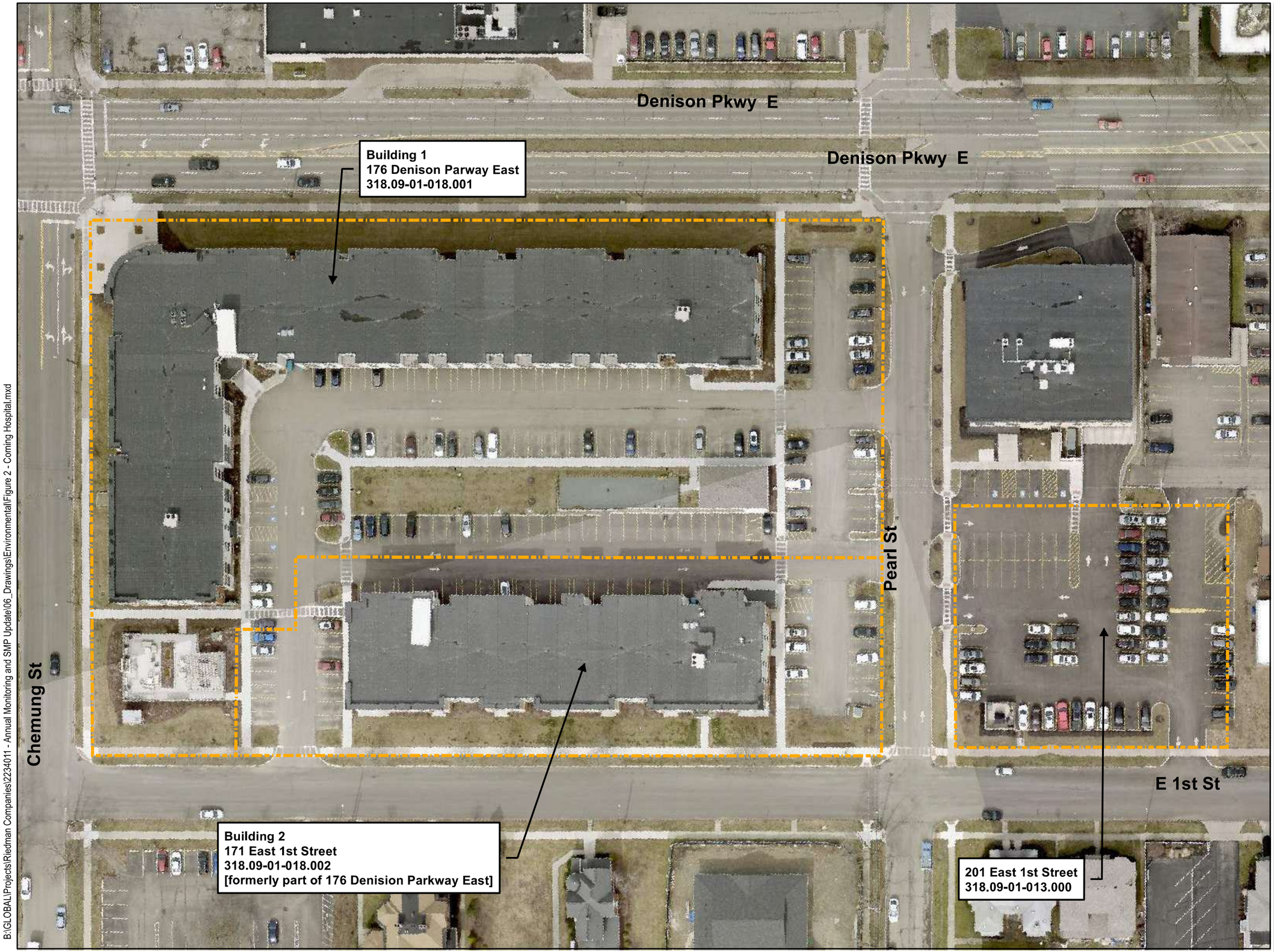
1) USGS image obtained from NYS GIS Clearinghouse.
2) All locations should be considered approximate.

LaBella Project No: 2234011
Date: 10/31/2023

SITE LOCATION

FIGURE 1

INTENDED TO PRINT AS: 11" X 17"



B:\GLOBAL\Projects\Riedman Companies\2234011 - Annual Monitoring and SMP Update\06_Drawings\Environmental\Figure 2 - Corning Hospital.mxd

LaBella
Powered by partnership.

RIEDMAN COMPANIES

Former Corning Hospital
176 Denison Parkway East
171 and 201 East First Street
Corning, New York

N

0 30 60 Feet

1 inch = 60 feet

Legend

Approximate BCP Boundary

Sources/Notes:

1) Aerial image obtained from Eaglveview, Inc. and may not represent current conditions.
2) All locations should be considered approximate.

LaBella Project No: 2234011
Date: 10/31/2023

BCP SITE BOUNDARY

FIGURE 2

INTENDED TO PRINT AS: 11" X 17"

APPENDIX A

NYSDEC Approvals

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 8
6274 East Avon-Lima Road, Avon, NY 14414-9516
P: (585) 226-5353 I F: (585) 226-8139
www.dec.ny.gov

Via E-mail

December 18, 2018

Mr. Jerry Watkins
Riedman Purcell CH II LLC
45 East Avenue
Rochester, NY 14604

Dear Mr. Watkins:

Re: 60-day Change of Use
Former Corning Hospital and Related Parcels Site #C828101
Corning, Steuben County

The New York State Department of Environmental Conservation and the New York State Department of Health has completed a review of the Sub-Slab Depressurization System Designs prepared by LaBella Associates, D.P.C. dated 2 November 2018 for a 40,000 square foot apartment building being constructed at the Former Corning Hospital and Related Parcels Site. The above design document is conditionally approved contingent upon the following:

- The Engineer demonstrates that a pressure field extends across the entire building footprint (1 Pa). The attached Figure G0.01 markup depicts a minimum number of locations.
- The Engineer oversees all construction and system testing.
- The Engineer prepares a construction completion report including as-built drawings and certifies the engineering control is operating as designed and in accordance with the site remedy.
- The Engineer revises the Site Management Plan.
- A schedule of construction and deliverables is submitted to the Department for approval.

Provided these conditions are accepted, notice to proceed is granted.

This letter shall be attached and a copy of the approved document is required to be kept in the document repository.

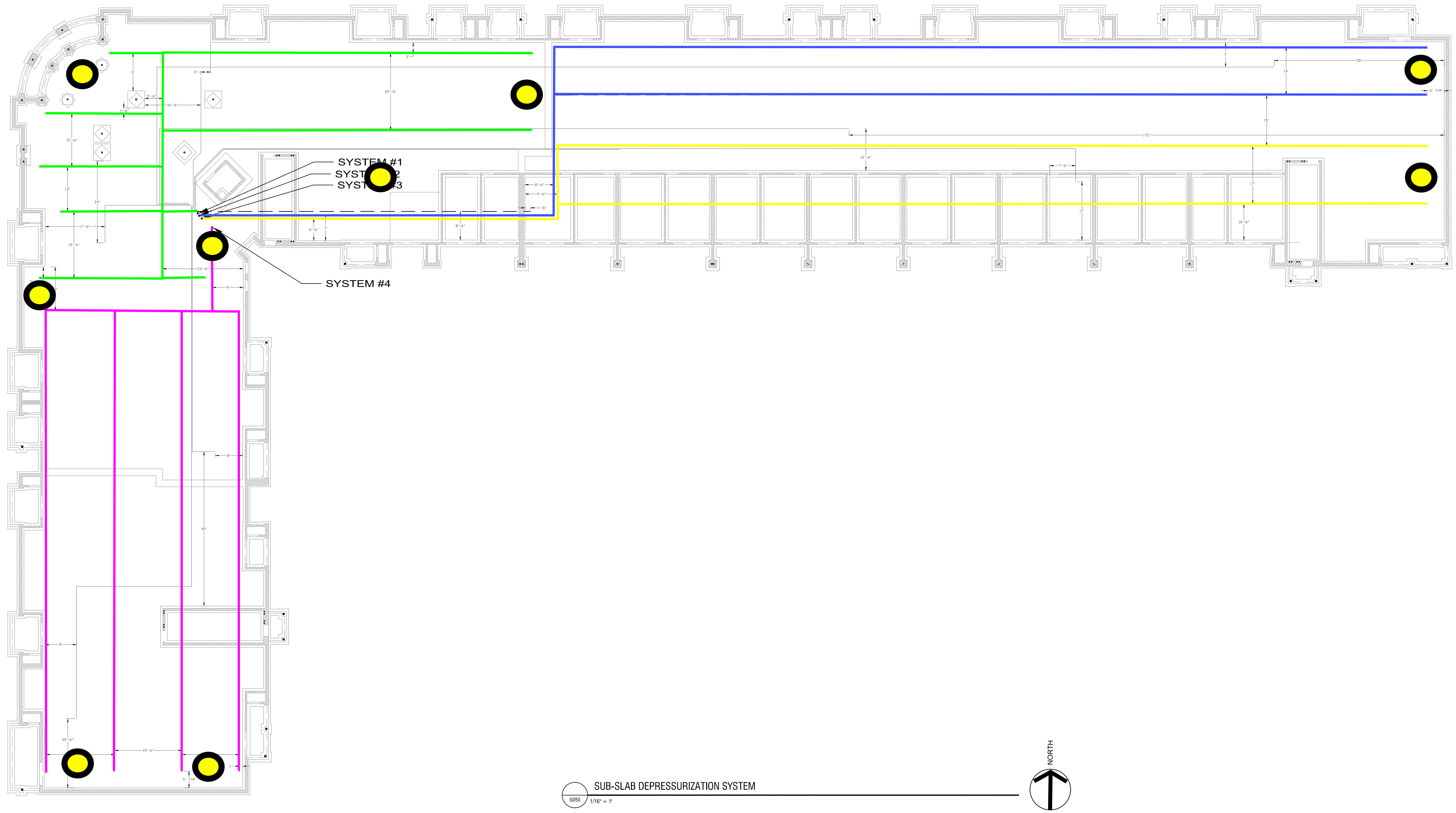
As a reminder, all final documents and reports are to be in electronic format on compact computer discs (CDs). The disk should contain an Adobe® Acrobat® Portable Document Format (PDF) file and must be searchable.

Please contact me at (585) 226-5480 if you have any questions regarding this letter.

Sincerely,

Timothy Schneider, P.E.
Environmental Engineer 1

B. Schilling	D. Loew	M. Sergott
D. Riedman	D. Noll	M. Cruden
J. Deming		



SUB-SLAB DEPRESSURIZATION SYSTEM
G050 1/16" = 1'

NOTES:

1. 1/4 INCH STAINLESS STEEL MONITORING POINTS MOUNTED APPROXIMATELY 2 FEET ABOVE FINISHED FLOOR AGAINST AN INTERIOR WALL WITHIN ELECTRIC ROOM. REFER TO DETAIL 3: PROFILE AT GAUGE POINT.
2. 1/4 STAINLESS STEEL TUBING TERMINATED ABOVE SUB-BASE WITH FABRIC WRAPPED END. REFER TO DETAIL 6: MATERIAL PROFILE.
3. 4 INCH SCHEDULE 40 PVC RISER TO BE LOCATED 6 INCHES FROM WALL AND VENTED UP THROUGH THE ROOF. REFER TO DETAIL 1: REAR END WALL.
4. INSTALL ALARM ON EACH RISER PIPE WITHIN ELECTRIC ROOM. REFER TO DETAIL 4: SUB-SLAB DEPRESSURIZATION ALARM SYSTEM.
5. 4 INCH SCHEDULE 40 PVC TO 4 INCH HDPE PERFORATED PIPE CONNECTION. REFER TO DETAIL 2: DETAIL AT HEADER.
6. 4 INCH HDPE PIPE WRAPPED IN FABRIC AND PLACED IN PEA STONE TRENCH. REFER TO DETAIL 6: MATERIAL PROFILE
7. 4 INCH SOLID PVC EXTENDING MAXIMUM 2 FEET AND ON EITHER SIDE OF WALL, GROUTED IN PLACE TO FORM WATER TIGHT CONNECTION. REFER TO DETAIL 7: PROFILE AT PENETRATION.
8. MOVE PIPING AS NEEDED IN FIELD TO AVOID PLUMBING.
9. INSTALL 4" CAP AT EACH VAPOR COLLECTION PIPE TERMINATION.
10. ALL SUB-SLAB VAPOR COLLECTION PIPING TO BE GEOTEXTILE-WRAPPED 4 INCH PERFORATED DUAL-WALLED CORRUGATED EXTERIOR SMOOTH INTERIOR HDPE.
11. HEADER PIPING TO BE 4 INCH SCHEDULE 40 PVC.
12. PEA STONE SHALL CONSIST OF WASHED MATERIAL THAT WILL PASS THROUGH A 2 INCH SIEVE AND BE RETAINED BY A 1/4 INCH SIEVE.
13. TO PROTECT THE VAPOR BARRIER, ALL PENETRATIONS MADE AFTER POURING OF THE SLAB, SUCH AS JOINTS, ETC, SHALL BE CUT IN A MANNER TO AVOID PENETRATING THE VAPOR BARRIER.
14. SEAL ALL PENETRATIONS AND GAPS WITH AN ELASTOMERIC JOINT SEALANT.
15. THIS DRAWING IS NOT TO INTEND TO PROVIDE STRUCTURAL INFORMATION. REFER TO STRUCTURAL DRAWINGS.
16. CONTRACTOR TO CONFIRM NO AIR INTAKE IS WITHIN 25' FROM FAN EXHAUST.
17. SYSTEM 1, 2, 3, AND 4 INSTALL RADON AWAY GP-501 FAN OR EQUIVALENT.

LEGEND

— — —	FABRIC WRAPPED 4 INCH HDPE PERFORATED PIPE PLACED WITHIN MIDDLE OF PEA STONE TRENCH
———	4 INCH SOLID SCH 40 PVC PIPE PLACED WITHIN MIDDLE OF PEA STONE TRENCH, SLOPED AWAY FROM VERTICAL RISER AT 1/4 INCH PER FOOT TO ALLOW FOR DRAINAGE.
———	1/4 INCH STAINLESS STEEL MONITORING POINTS PLACED ABOVE COMPACTED SUB-BASE MATERIAL, FABRIC WRAPPED AT END.

NO.	REVISION	BY	DATE
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STATE OF NEW YORK
DANIEL P. NOLL
NO. 081996
LICENSED PROFESSIONAL ENGINEER

LaBella
Powered by partnership.

PROJECT/CLIENT
176 DENISON PARKWAY EAST
CORNING, NEW YORK 14830

DRAWING TITLE
SUB-SLAB DEPRESSURIZATION
SYSTEM LAYOUT

ISSUED FOR
CONSTRUCTION

DATE: NOVEMBER, 2018

DESIGNED BY: ---
DRAWN BY: DRP
REVIEWED BY: ---

PROJECT/DRAWING NUMBER
2190002

G0.01

Engelbert, Allan

To: Noll, Dan
Subject: RE: Former Corning Hospital SSDS Design

From: Schneider, Timothy A (DEC) [mailto:timothy.schneider@dec.ny.gov]
Sent: Thursday, March 19, 2020 12:36 PM
To: Noll, Dan <dnoll@LaBellaPC.com>; Pristach, Jared <jpristach@LaBellaPC.com>
Cc: Pratt, David (DEC) <david.pratt@dec.ny.gov>; Sergott, Mark S (HEALTH) <mark.sergott@health.ny.gov>; Jerry Watkins <jwatkins@riedman.com>; Rudy Osmancevic (NOsmancevic@riedman.com) <NOsmancevic@riedman.com>; Tom Fago <TFago@riedman.com>
Subject: Re: Former Corning Hospital SSDS Design

Hi Dan,

I have completed my review your revised SSDS design submitted 3-6-20. You certify that this design is in accordance with NYSDOH standards and guidance. I find that the Department comments regarding pressure field extension testing/monitoring locations have been satisfactorily addressed. The Department has no objection to the system being installed in accordance with your design. Please make sure to prepare as-built drawings of the installed system, document performance testing and update OM&M for the period review report. The SMP will also need to be revised to include this new EC once completed.

If you have any questions please contact me.

Regards,

Tim

From: Noll, Dan <dnoll@LaBellaPC.com>
Sent: Thursday, March 19, 2020 9:21 AM
To: Pristach, Jared <jpristach@LaBellaPC.com>; Schneider, Timothy A (DEC) <timothy.schneider@dec.ny.gov>
Cc: Pratt, David (DEC) <david.pratt@dec.ny.gov>; Sergott, Mark S (HEALTH) <mark.sergott@health.ny.gov>; Jerry Watkins <jwatkins@riedman.com>; Rudy Osmancevic (NOsmancevic@riedman.com) <NOsmancevic@riedman.com>; Tom Fago <TFago@riedman.com>
Subject: RE: Former Corning Hospital SSDS Design

Tim,

When you get a chance could you review/approve the revise SSDS design. The revisions were based on our previous emails/your comments. We revised per your comments and our discussions. The system is being installed now and we wanted to get the formal approval/paperwork squared away.

Dan Noll, PE
LaBella Associates | Project Manager

585-295-6611 direct
585-301-8458 cell
585-454-6611 office
300 State Street, Suite 201
Rochester, NY 14614
labellapc.com

From: Pristach, Jared
Sent: Friday, March 6, 2020 2:58 PM
To: Schneider, Timothy A (DEC) <timothy.schneider@dec.ny.gov>; Noll, Dan <dnoll@LaBellaPC.com>
Cc: Pratt, David (DEC) <david.pratt@dec.ny.gov>; Sergott, Mark S (HEALTH) <mark.sergott@health.ny.gov>; Jerry Watkins <jwatkins@riedman.com>; Rudy Osmancevic (NOsmancevic@riedman.com) <NOsmancevic@riedman.com>; Tom Fago <TFago@riedman.com>
Subject: RE: Former Corning Hospital SSDS Design

Tim,

Attached is the updated SSDS design for the former Corning Hospital site based on your January 2020 comments. Please let Dan or I know if you have any additional comments or concerns.

Thanks,

Jared Pristach, PE
LaBella Associates | Environmental Engineer

585-402-7004 **direct**
585-454-6110 **office**
300 State Street, Suite 201
Rochester, NY 14614
labellapc.com

From: Schneider, Timothy A (DEC) [mailto:timothy.schneider@dec.ny.gov]
Sent: Thursday, January 16, 2020 2:02 PM
To: Noll, Dan <dnoll@LaBellaPC.com>; Pristach, Jared <jpristach@LaBellaPC.com>
Cc: Pratt, David (DEC) <david.pratt@dec.ny.gov>; Sergott, Mark S (HEALTH) <mark.sergott@health.ny.gov>; Jerry Watkins <jwatkins@riedman.com>; Rudy Osmancevic (NOsmancevic@riedman.com) <NOsmancevic@riedman.com>; Tom Fago <TFago@riedman.com>
Subject: RE: Former Corning Hospital SSDS Design

Sorry about the picture, here is the drawing sheet. Just 4 locations at the extent of the pressure trenches should verify system function. Test location biased to far trench for branch having the suction main in series.

From: Noll, Dan <dnoll@LaBellaPC.com>
Sent: Thursday, January 16, 2020 1:49 PM
To: Schneider, Timothy A (DEC) <timothy.schneider@dec.ny.gov>; Pristach, Jared <jpristach@LaBellaPC.com>
Cc: Pratt, David (DEC) <david.pratt@dec.ny.gov>; Sergott, Mark S (HEALTH) <mark.sergott@health.ny.gov>; Jerry Watkins <jwatkins@riedman.com>; Rudy Osmancevic (NOsmancevic@riedman.com) <NOsmancevic@riedman.com>; Tom Fago <TFago@riedman.com>
Subject: RE: Former Corning Hospital SSDS Design

Tim,

Thank you for reviewing the SSDS design submitted on 12/4/19. We reviewed the image you sent but it is very pixilated and difficult to know if we are interpreting it properly. I want to make sure we understand the modifications you want. LaBella proposed 4 pressure field extension (PFE) monitoring points for the approximate 20,000 sq. ft. building. It looks like you show 4 PFE monitoring points also, with one in each corner of the building. Do you want just the 4 PFE monitoring points that you indicated or the ones you show plus ours (8 total)? Eight would seem excessive for this size building and at least 2 of the locations are in close proximately (15 or so feet) of locations we proposed. I marked up the PDF of our drawing to show both DEC (red squares) and the LaBella ones (red circles). If you could confirm.

Also, once the detail on the PFE monitoring locations is confirmed are we approved to start and will you send a formal approval letter?

Dan Noll, PE
LaBella Associates | Project Manager

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585-301-8458 cell
585-454-6611 office
300 State Street, Suite 201
Rochester, NY 14614
labellapc.com

From: Schneider, Timothy A (DEC) [mailto:timothy.schneider@dec.ny.gov]
Sent: Thursday, January 16, 2020 8:37 AM
To: Noll, Dan <dnoll@LaBellaPC.com>; Pristach, Jared <jpristach@LaBellaPC.com>
Cc: Pratt, David (DEC) <david.pratt@dec.ny.gov>; Sergott, Mark S (HEALTH) <mark.sergott@health.ny.gov>; Jerry Watkins <jwatkins@riedman.com>
Subject: RE: Former Corning Hospital SSDS Design

Hi Dan,

I have looked at your design and find the proposed pressure field extension/monitoring locations to be inadequate to verify system function at the full extent.

Attached please find Department suggestions for verification locations taking into consideration the two different configurations of suction mains.

Also, while sub-slab stainless steel tubing run to a central location provides convenience for perioding monitoring, it is not a Department requirement.

Regards,

Tim

From: Noll, Dan <dnoll@LaBellaPC.com>
Sent: Thursday, January 16, 2020 7:13 AM
To: Pristach, Jared <jpristach@LaBellaPC.com>; Schneider, Timothy A (DEC) <timothy.schneider@dec.ny.gov>
Subject: RE: Former Corning Hospital SSDS Design

Tim – have you had a chance to review the SSDS for the southern building being developed at the former Corning Hospital? The contractors are getting ready to complete this work relatively soon.

Regards,

Dan

Dan Noll, PE
LaBella Associates | Project Manager

585-295-6611 direct
585-301-8458 cell
585-454-6611 office
300 State Street, Suite 201
Rochester, NY 14614
labellapc.com

From: Pristach, Jared
Sent: Wednesday, December 4, 2019 3:46 PM
To: Timothy A. Schneider - NYSDEC (timothy.schneider@dec.ny.gov) <timothy.schneider@dec.ny.gov>
Cc: Noll, Dan <dnoll@LaBellaPC.com>
Subject: Former Corning Hospital SSDS Design

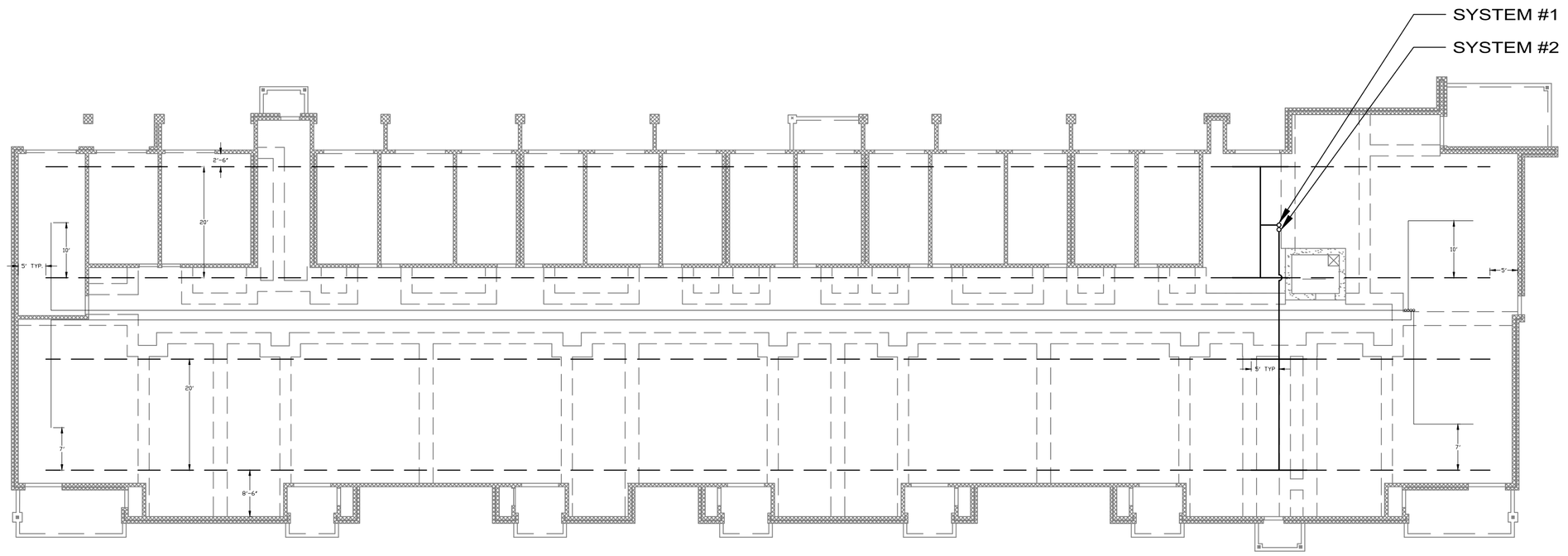
Tim,

Attached is LaBella's SSDS design for Phase 2 of the Former Corning Hospital development. Take a look and let us know if you've got any questions or comments.

Thanks,

Jared Pristach, PE
LaBella Associates | Environmental Engineer

585-402-7004 **direct**
585-454-6110 **office**
300 State Street, Suite 201
Rochester, NY 14614
labellapc.com



SUB-SLAB DEPRESSURIZATION SYSTEM

G050 1/16" = 1'

NORTH

NOTES:

1. 1/4 INCH STAINLESS STEEL MONITORING POINTS MOUNTED APPROXIMATELY 2 FEET ABOVE FINISHED FLOOR AGAINST AN INTERIOR WALL WITHIN ELECTRIC ROOM. REFER TO DETAIL 3: PROFILE AT GAUGE POINT.
2. 1/4 STAINLESS STEEL TUBING TERMINATED ABOVE SUB-BASE WITH FABRIC WRAPPED END. REFER TO DETAIL 6: MATERIAL PROFILE.
3. 4 INCH SCHEDULE 40 PVC RISER TO BE LOCATED 6 INCHES FROM WALL AND VENTED UP THROUGH THE ROOF. REFER TO DETAIL 1: REAR END WALL.
4. INSTALL ALARM ON EACH RISER PIPE WITHIN ELECTRIC ROOM. REFER TO DETAIL 4: SUB-SLAB DEPRESSURIZATION ALARM SYSTEM.
5. 4 INCH SCHEDULE 40 PVC TO 4 INCH HDPE PERFORATED PIPE CONNECTION. REFER TO DETAIL 2: DETAIL AT HEADER.
6. 4 INCH HDPE PIPE WRAPPED IN FABRIC AND PLACED IN PEA STONE TRENCH. REFER TO DETAIL 6: MATERIAL PROFILE
7. 4 INCH SOLID PVC EXTENDING MAXIMUM 2 FEET AND ON EITHER SIDE OF WALL, GROUTED IN PLACE TO FORM WATER TIGHT CONNECTION. REFER TO DETAIL 7: PROFILE AT PENETRATION.
8. MOVE PIPING AS NEEDED IN FIELD TO AVOID PLUMBING.
9. INSTALL 4" CAP AT EACH VAPOR COLLECTION PIPE TERMINATION.
10. ALL SUB-SLAB VAPOR COLLECTION PIPING TO BE GEOTEXTILE-WRAPPED 4 INCH PERFORATED DUAL-WALLED CORRUGATED EXTERIOR SMOOTH INTERIOR HDPE.
11. HEADER PIPING TO BE 4 INCH SCHEDULE 40 PVC.
12. PEA STONE SHALL CONSIST OF WASHED MATERIAL THAT WILL PASS THROUGH A 2 INCH SIEVE AND BE RETAINED BY A 1/4 INCH SIEVE.
13. TO PROTECT THE VAPOR BARRIER, ALL PENETRATIONS MADE AFTER POURING OF THE SLAB, SUCH AS JOINTS, ETC, SHALL BE CUT IN A MANNER TO AVOID PENETRATING THE VAPOR BARRIER.
14. SEAL ALL PENETRATIONS AND GAPS WITH AN ELASTOMERIC JOINT SEALANT.
15. THIS DRAWING IS NOT TO INTEND TO PROVIDE STRUCTURAL INFORMATION. REFER TO STRUCTURAL DRAWINGS.
16. CONTRACTOR TO CONFIRM NO AIR INTAKE IS WITHIN 25' FROM FAN EXHAUST.
17. SYSTEM 1, 2, 3, AND 4 INSTALL RADON AWAY GP-501 FAN OR EQUIVALENT.

LEGEND

- FABRIC WRAPPED 4 INCH HDPE PERFORATED PIPE PLACED WITHIN MIDDLE OF PEA STONE TRENCH
- 4 INCH SOLID SCH 40 PVC PIPE PLACED WITHIN MIDDLE OF PEA STONE TRENCH, SLOPED AWAY FROM VERTICAL RISER AT 1/4 INCH PER FOOT TO ALLOW FOR DRAINAGE.
- 1/4 INCH STAINLESS STEEL MONITORING POINTS PLACED ABOVE COMPACTED SUB-BASE MATERIAL, FABRIC WRAPPED AT END.

NO.	REVISION	BY	DATE
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LaBella
Powered by partnership.

PROJECT/CLIENT

176 DENISON PARKWAY EAST
CORNING, NEW YORK 14830

DRAWING TITLE

SUB-SLAB DEPRESSURIZATION
SYSTEM LAYOUT

ISSUED FOR
CONSTRUCTION

DESIGNED BY: ---
DRAWN BY: DRP
REVIEWED BY: ---

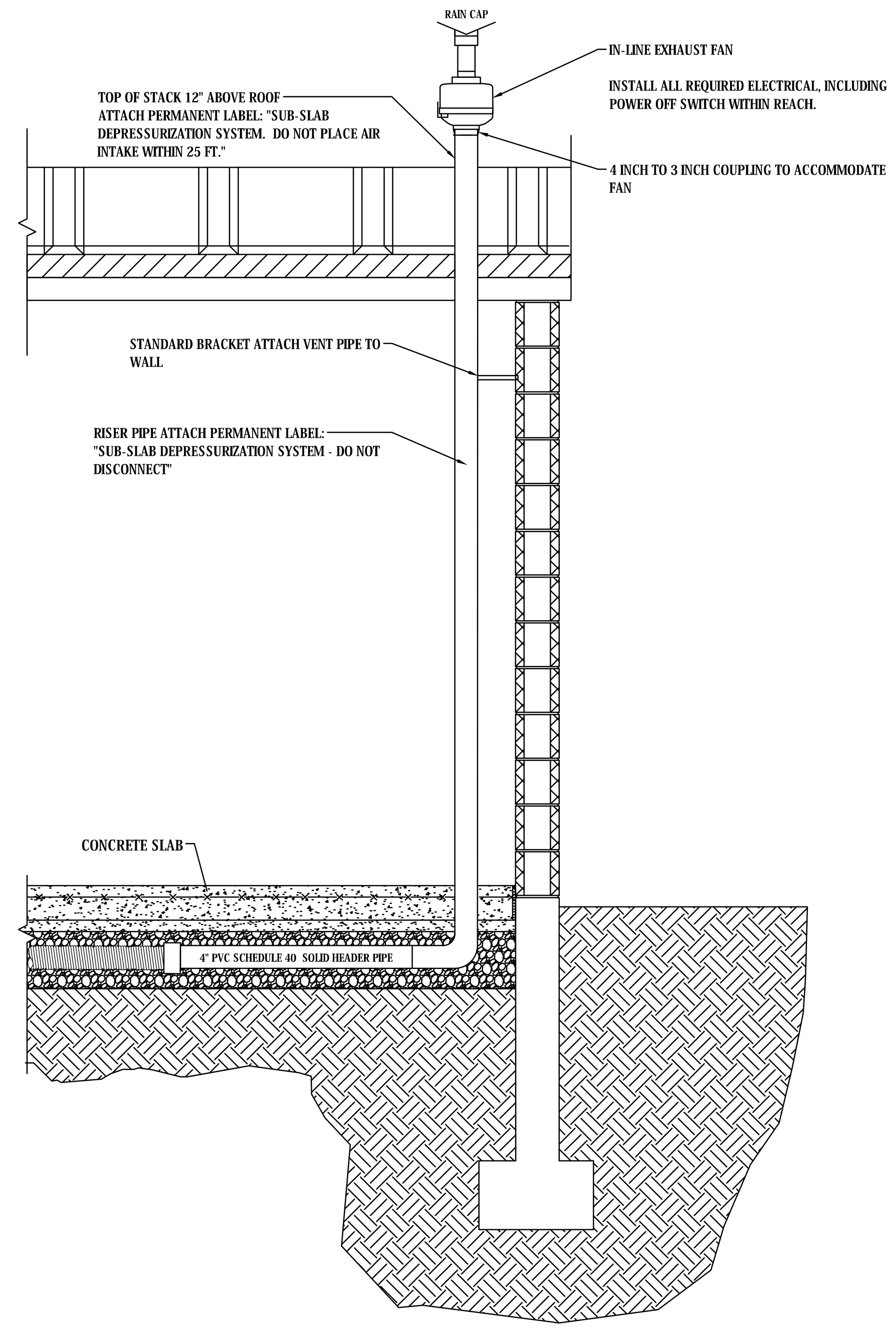
DATE: NOVEMBER, 2018

J:\Blackmon Development Corporation\2190002 - Farmer Corning Hospital 5305 Drawings\5305.dwg

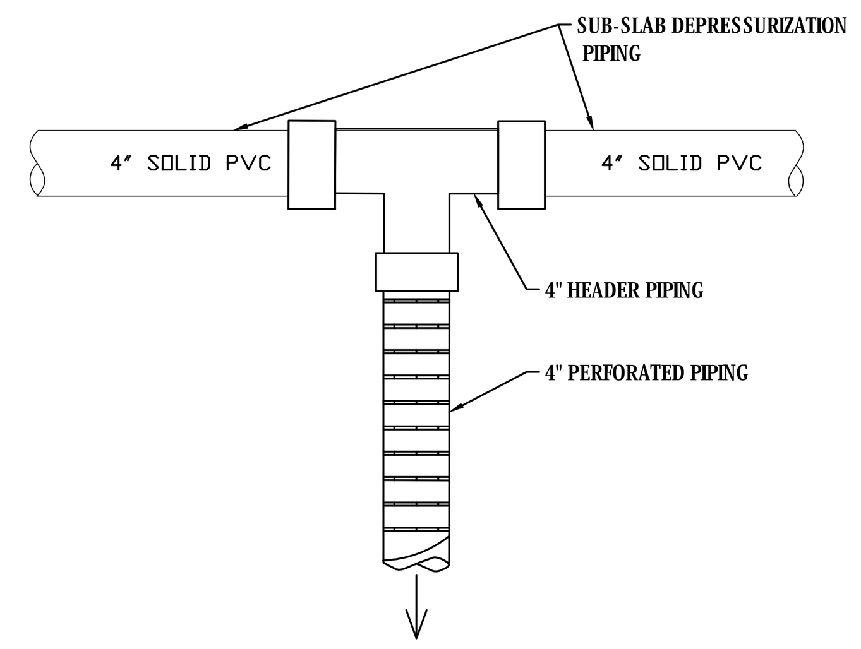
PROJECT/DRAWING NUMBER

2190002

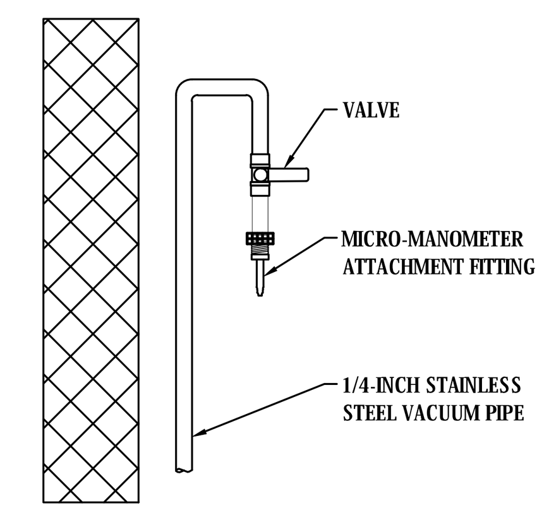
G0.01



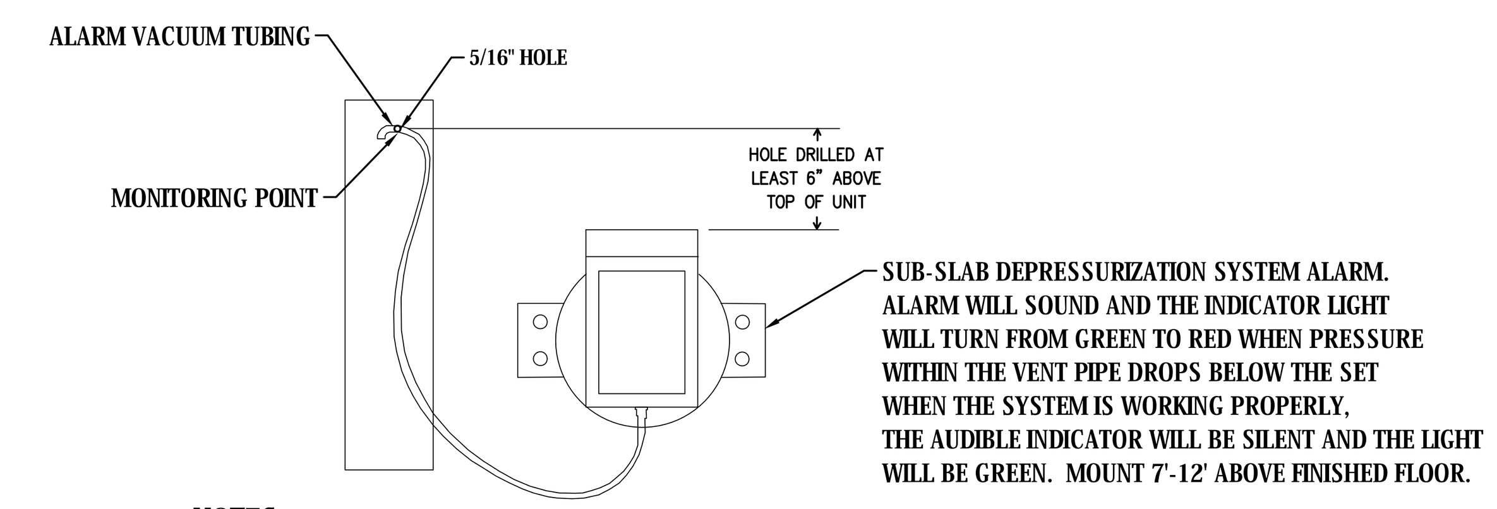
1 REAR END WALL
SCALE: NONE



2 DETAIL AT HEADER
SCALE: NONE



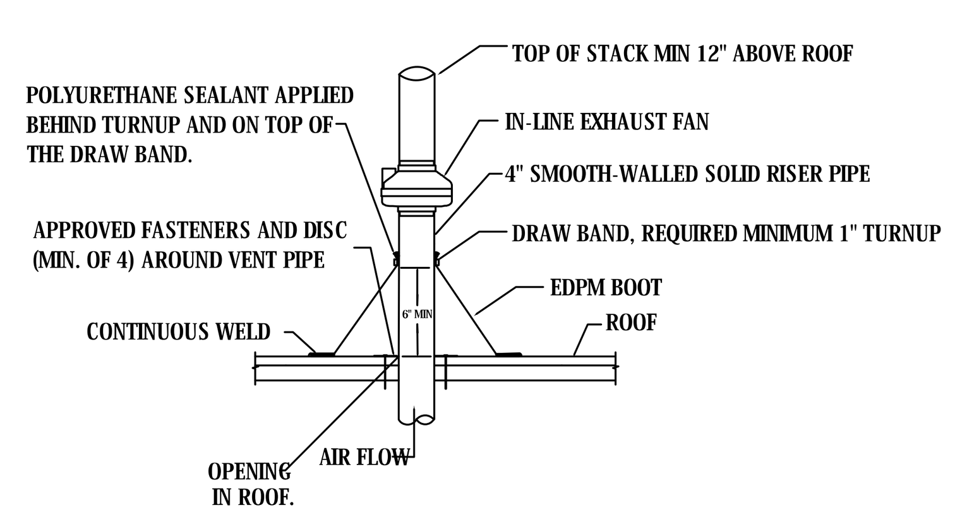
3 PROFILE AT GAUGE POINT
SCALE: NONE



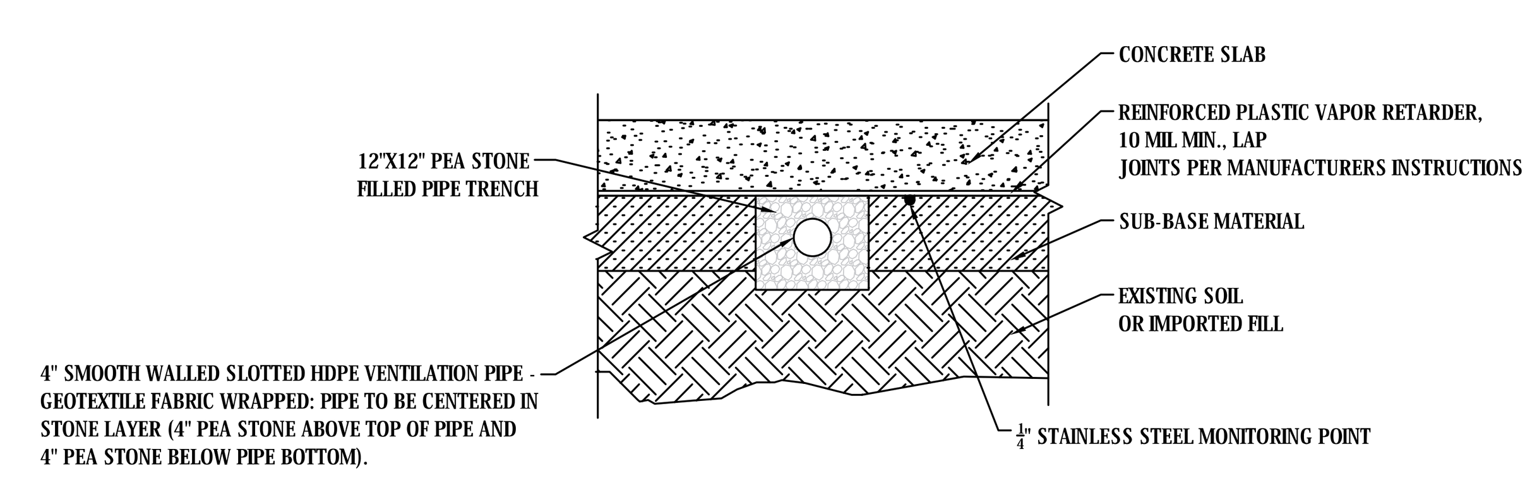
NOTES:

1. CONTRACTOR TO INSTALL ALARM ON SEPARATE CIRCUIT.

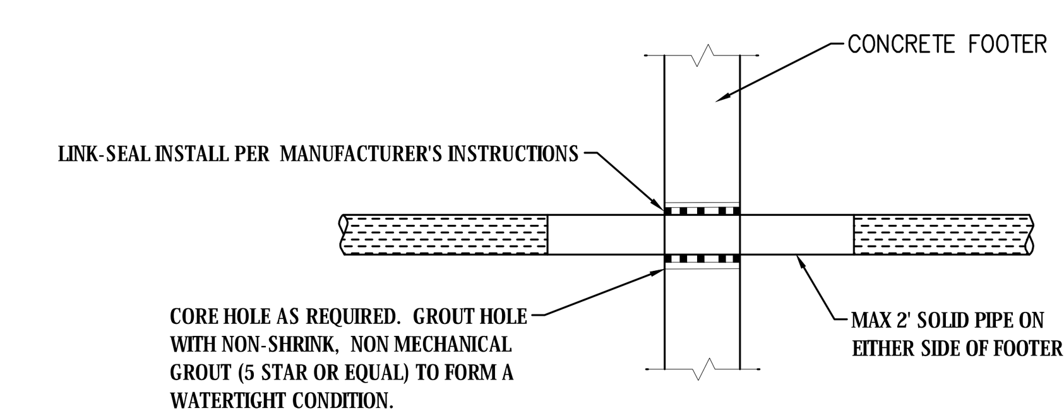
4 SUB-SLAB DEPRESSURIZATION SYSTEM ALARM
SCALE: NONE



5 DETAIL AT ROOF
SCALE: NONE



6 MATERIAL PROFILE
SCALE: NONE



7 PROFILE AT PENETRATION
SCALE: NONE

NOTES:

1. 1/4 INCH STAINLESS STEEL MONITORING POINTS MOUNTED APPROXIMATELY 2 FEET ABOVE FINISHED FLOOR AGAINST AN INTERIOR WALL. REFER TO DETAIL 3: PROFILE AT GAUGE POINT.
2. 1/4 STAINLESS STEEL TUBING TERMINATED ABOVE SUB-BASE WITH FABRIC WRAPPED END. REFER TO DETAIL 6: MATERIAL PROFILE.
3. 4 INCH SCHEDULE 40 PVC RISER TO BE LOCATED 6 INCHES FROM WALL AND VENTED UP THROUGH THE ROOF. REFER TO DETAIL 1: REAR END WALL.
4. INSTALL ALARM ON EACH RISER PIPE WITHIN TRASH COLLECTION ROOM. REFER TO DETAIL 4: SUB-SLAB DEPRESSURIZATION ALARM SYSTEM.
5. 4 INCH SCHEDULE 40 PVC TO 4 INCH HDPE PERFORATED PIPE CONNECTION. REFER TO DETAIL 2: DETAIL AT HEADER.
6. 4 INCH HDPE PIPE WRAPPED IN FABRIC AND PLACED IN PEA STONE TRENCH. REFER TO DETAIL 6: MATERIAL PROFILE
7. 4 INCH SOLID PVC EXTENDING MAXIMUM 2 FEET AND ON EITHER SIDE OF WALL, GROUTED IN PLACE TO FORM WATER TIGHT CONNECTION. REFER TO DETAIL 7: PROFILE AT PENETRATION.
8. MOVE PIPING AS NEEDED IN FIELD TO AVOID PLUMBING.
9. INSTALL 4" CAP AT EACH VAPOR COLLECTION PIPE TERMINATION.
10. ALL SUB-SLAB VAPOR COLLECTION PIPING IS GEOTEXTILE-WRAPPED 4 INCH PERFORATED DUAL-WALLED CORRUGATED EXTERIOR SMOOTH INTERIOR HDPE.
11. HEADER PIPING SHOWN IS 4 INCH SCHEDULE 40 PVC.
12. PEA STONE SHALL CONSIST OF WASHED MATERIAL THAT WILL PASS THROUGH A 2 INCH SIEVE AND BE RETAINED BY A 1/4 INCH SIEVE.
13. TO PROTECT THE VAPOR BARRIER, ALL PENETRATIONS MADE AFTER POURING OF THE SLAB, SUCH AS JOINTS, ETC, SHALL BE CUT IN A MANNER TO AVOID PENETRATING THE VAPOR BARRIER.
14. SEAL ALL PENETRATIONS AND GAPS WITH AN ELASTOMERIC JOINT SEALANT.
15. THIS DRAWING IS NOT TO INTENDED TO PROVIDE STRUCTURAL INFORMATION. REFER TO STRUCTURAL DRAWING.
16. CONTRACTOR TO CONFIRM NO AIR INTAKE IS WITHIN 25' FROM FANS.
17. SYSTEM 1 AND 2 INSTALL RADON AWAY GP-501 FAN, OR EQUIVALENT.

NO.	REVISION	BY	DATE
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LaBella
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PROJECT/CLIENT

176 DENISON PARKWAY EAST
CORNING, NEW YORK 14830

DRAWING TITLE

SUB-SLAB DEPRESSURIZATION SYSTEM DETAILS

ISSUED FOR
CONSTRUCTION

DATE: NOVEMBER, 2018

DESIGNED BY:	---
DRAWN BY:	DRP
REVIEWED BY:	---

J:\Riedman Development Corporation\2190002 - Former Corning Hospital SSDS\Drawings\SSDS.dwg

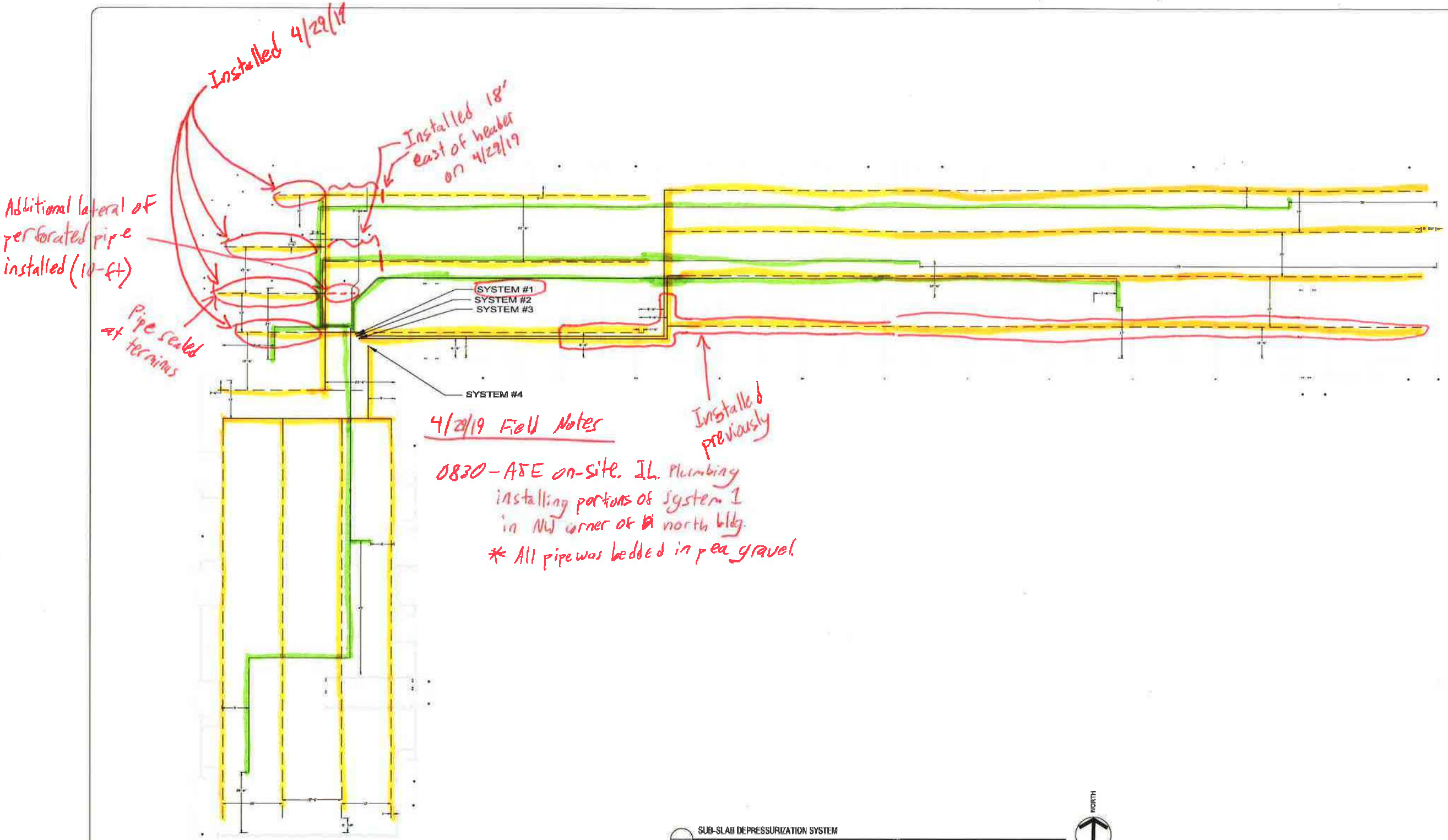
PROJECT/DRAWING NUMBER

2190002

G0.02

APPENDIX B

Field Notes



SUB-SLAB DEPRESSURIZATION SYSTEM

NORTH

NOTES:

1. 1/4 INCH STAINLESS STEEL MONITORING POINTS MOUNTED APPROXIMATELY 2 FEET ABOVE FINISHED FLOOR AGAINST AN INTERIOR WALL WITHIN ELECTRIC ROOM. REFER TO DETAIL 3: PROFILE AT GAUGE POINT.
2. 1/4 STAINLESS STEEL TUBING TERMINATED ABOVE SUB-BASE WITH FABRIC WRAPPED END. REFER TO DETAIL 6: MATERIAL PROFILE.
3. 4 INCH SCHEDULE 40 PVC RISER TO BE LOCATED 6 INCHES FROM WALL AND VENTED UP THROUGH THE ROOF. REFER TO DETAIL 1: REAR END WALL.
4. INSTALL ALARM ON EACH RISER PIPE WITHIN ELECTRIC ROOM. REFER TO DETAIL 4: SUB-SLAB DEPRESSURIZATION ALARM SYSTEM.
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7. 4 INCH SOLID PVC EXTENDING MAXIMUM 2 FEET AND ON EITHER SIDE OF WALL, GROUTED IN PLACE TO FORM WATER TIGHT CONNECTION. REFER TO DETAIL 7: PROFILE AT PENETRATION.
8. MOVE PIPING AS NEEDED IN FIELD TO AVOID PLUMBING.
9. INSTALL 4" CAP AT EACH VAPOR COLLECTION PIPE TERMINATION.
10. ALL SUB-SLAB VAPOR COLLECTION PIPING TO BE GEOTEXTILE-WRAPPED 4 INCH PERFORATED DUAL-WALLED CORRUGATED EXTERIOR SMOOTH INTERIOR HDPE.
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16. CONTRACTOR TO CONFIRM NO AIR INTAKE IS WITHIN 25'FROM FAN EXHAUST.
17. SYSTEM 1, 2, 3, AND 4 INSTALL RADON AWAY GP-501 FAN OR EQUIVALENT.

LEGEND

- FABRIC WRAPPED 4 INCH HDPE PERFORATED PIPE PLACED WITHIN MIDDLE OF PEA STONE TRENCH
- 4 INCH SOLID SCH 40 PVC PIPE PLACED WITHIN MIDDLE OF PEA STONE TRENCH, SLOPED AWAY FROM VERTICAL RISER AT 1/4 INCH PER FOOT TO ALLOW FOR DRAINAGE.
- 1/4 INCH STAINLESS STEEL MONITORING POINTS PLACED ABOVE COMPACTED SUB-BASE MATERIAL, FABRIC WRAPPED AT END.

NO	REVISION	BY	DATE
-	-	-	-

LaBella
Partnered by partnership

PROJECT/CLIENT
176 DENISON PARKWAY EAST
CORNING, NEW YORK 14830

DRAWING TITLE
SUB-SLAB DEPRESSURIZATION SYSTEM LAYOUT

ISSUED FOR: CONSTRUCTION
DATE: NOVEMBER, 2018

DESIGNED BY: -
DRAWN BY: DRP
REVIEWED BY: -

PROJECT/DRAWING NUMBER
2190002
G0.01

LaBella
Powered by partnership.

PROJECT Former Corning Hospital 2021 PRR SHEET 1 OF 1
PROJECT NO. 2190002 CALC. BY _____ DATE 5/12/21
SUBJECT Site Building SSDS Inspection SCALE _____
CHECKED BY _____

North Building PFE Measurements ("WC)

1 = -1.2
2 = -0.6
3 = -3.4
4 = -2.4
5 = -0.5
6 = -2.3
7 = -1.4
8 = -1.1
9 = -3.5

Alarms → 3 of 4 alarms were tested by removing tubing and are functional. Tubing replaced after test. 4th tube could not be removed.

- All (4) fans are operational on roof.
- No manometers installed.

Southern Building PFE Measurements

- 4-inch risers and stainless steel PFE points installed
- Vent fans ~~are installed~~ are not installed
- Fans are on order and will be installed prior to building occupancy
- PFE Alarms and manometers not installed

Central Building

- Storage building / Dog wash
- ~~30~~ 30-ft x 45-ft (1,750 ft²)
- Building will be heated
- No SSDS present

APPENDIX C

Photograph Log

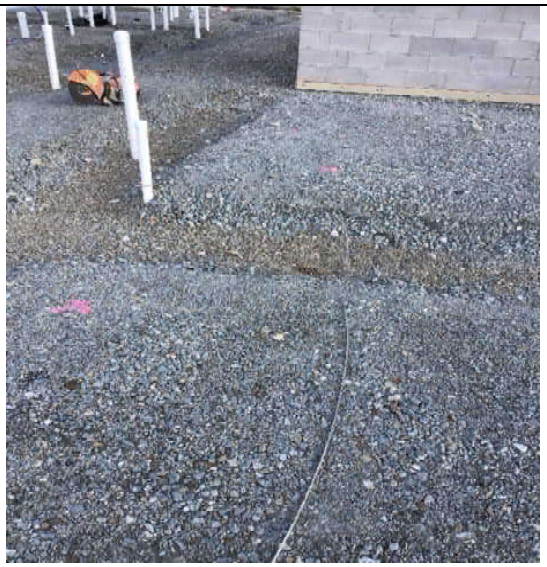
SSDS piping installed Building 1 4/29/19

Header piping connected to perforated Building 1 4/29/19

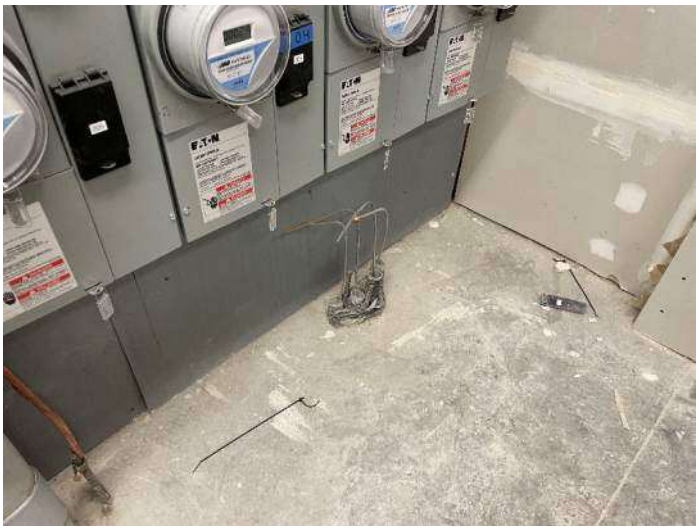
Vapor barrier Building 1 4/1/19

PVC header pipes being installed Building 1 4/29/2019

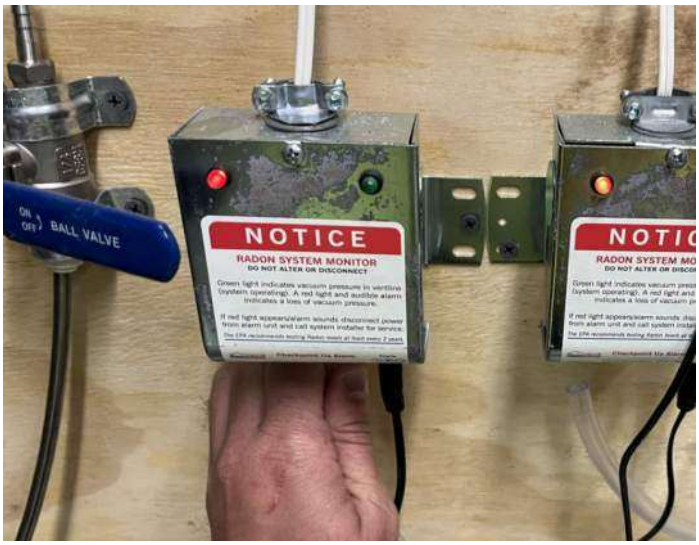
Perforated piping installed beneath Building 1 3/27/19



Stainless steel monitoring point Building 1 4/1/19



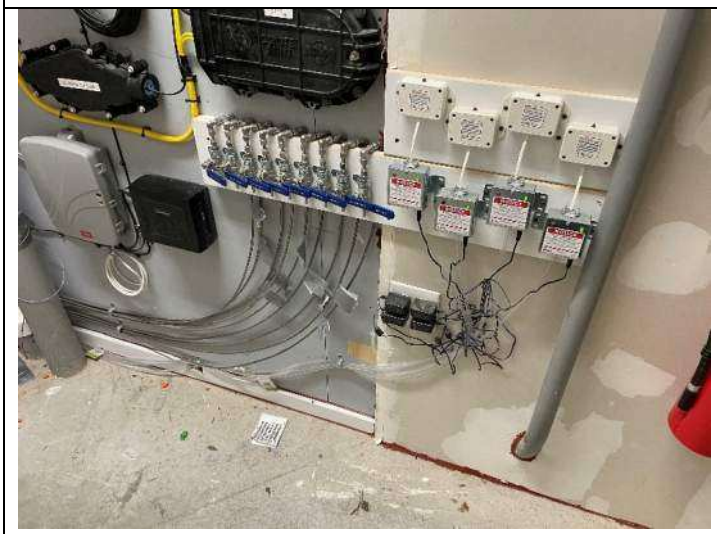
Building 2 PFE points prior to completion 5/12/2021



Building 2 alarms (testing alarms) 10/9/23

Building 2 Fans 10/9/23

Building 2 PFE points and Alarms 10/9/23



Building 1 SSDS PFE Points and Alarms 5/12/21

Building 1 SSDS Fan Locations 5/12/21

APPENDIX D

Operation and Maintenance Plan

Operation & Maintenance Plan
Sub-Slab Depressurization Systems
Former Corning Hospital Site
176 Denison Parkway East and 171 East First Street, Corning, New York

This Operation and Maintenance (O&M) Plan describes the measures necessary to operate, monitor and maintain the mechanical components of the sub-slab depressurization systems (SSDSs) for Building 1 and Building 2 of the Former Corning Hospital Brownfield Cleanup Program (BCP) Site located at 176 Denison Parkway East and 171 East First Street, Corning, New York (the Site).

The purpose of the SSDSs are to prevent the potential for soil vapor intrusion of volatile organic compounds (VOCs) from the subsurface into the Site buildings. The SSDSs work by creating negative pressure beneath the floor slab to redirect potential vapors from beneath the building slab to above the roofline. The SSDSs were installed during building construction as a proactive measure in lieu of conducting soil vapor intrusion evaluations. This O&M Plan includes a description of the layout and components of the SSDSs, routine inspections and monitoring requirements, and non-routine maintenance procedures. A copy of this Plan should be kept at the Site.

Refer to Appendix 1 and Appendix 2 for as-built drawings for Building 1 and Building 2, respectively.

SYSTEM LAYOUT AND COMPONENTS

This O&M plan is for two (2) buildings constructed at the Site: Building 1 is a 40,000 square foot apartment building. Building 2 is a 22,000 square foot apartment building.

Building 1 includes 4 subsystems and Building 2 includes 2 subsystems. The SSDSs were installed during building construction from 2019-2020 (Building 1) and 2020-2021 (Building 2).

Each SSDS subsystem consists of geotextile-wrapped 4" diameter perforated HDPE piping connected to 4" diameter PVC header pipes. The header pipes are connected to 4" PVC vertical risers located in the electrical room within each building. Sub-slab piping was installed within a 12" by 12" pea stone trench. A 10-mil vapor barrier was installed beneath the concrete slab.

Monitoring points consisting of ¼" diameter stainless steel tubing were installed beneath the vapor barrier to monitor pressure field extension. Monitoring points were routed to the electrical room and fitted with a barbed fitting for PFE monitoring.

An alarm is installed on each PVC riser within the electrical room. If suction is lost, the alarm will sound, and a red light will illuminate. A u-tube manometer was installed on each vertical riser to visually observe there is negative pressure.

A RadonAWAY GP-501 fan was installed on each sub-system above the roof. Fan information is included as Appendix 3. The fans were installed 12" above the roof, and a minimum of

25-ft from any air intake. Labels reading “Sub-Slab Depressurization System – Do Not Disconnect” were placed on the exposed portions of vertical piping.

As-built drawings and specifications for Building 1 and Building 2 are included in Appendix 1 and Appendix 2, respectively.

ROUTINE INSPECTIONS & MONITORING

Periodic inspections are required by NYSDEC to be conducted annually as specified in the Site Management Plan (SMP). Periodic inspections should be completed by someone under the direction of a professional engineer licensed in the state of New York. Inspections should also be conducted following severe weather events. The inspections will generally include the following:

- Observe and record u-tube manometer readings.
- Observe visible portions of SSDS piping and confirm they are intact.
- Observe labeling on SSDS piping and confirm it is intact.
- Observe each alarm to confirm the green light is illuminated. Test each alarm by removing the tubing to confirm the red light will illuminate and the alarm will sound if suction is lost.
- Measure and record pressure at each PFE monitoring point.
- Observe the fans on the roof to confirm there are no obstructions or damage.

Observations should be recorded and kept on file. A routine inspection and monitoring form is included in Appendix 4.

NON-ROUTINE MAINTENANCE

The systems were designed and installed to operate with minimal maintenance. In the event of an alarm, the systems should be inspected for damage. In the event no damage is apparent, the system can be shut-off and restarted. In the event the alarm continues, the fan should be evaluated, or a mitigation contractor (e.g., radon mitigation specialist) or environmental consultant should be contacted.

Maintenance events must be documented, and documentation must include the following information:

- Date;
- Condition of SSDS upon arrival;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;
- Any modifications to the system;
- Number of days the SSDS was down;
- Condition of SSDS when finished.

In the event that the system and/or system components are observed to require non-routine maintenance (e.g., broken components, alarm sounding, etc.) the following company can be contacted to assist with repairs to the system:

LaBella Associates
300 State Street
Rochester, NY 14614
(585) 454-6110

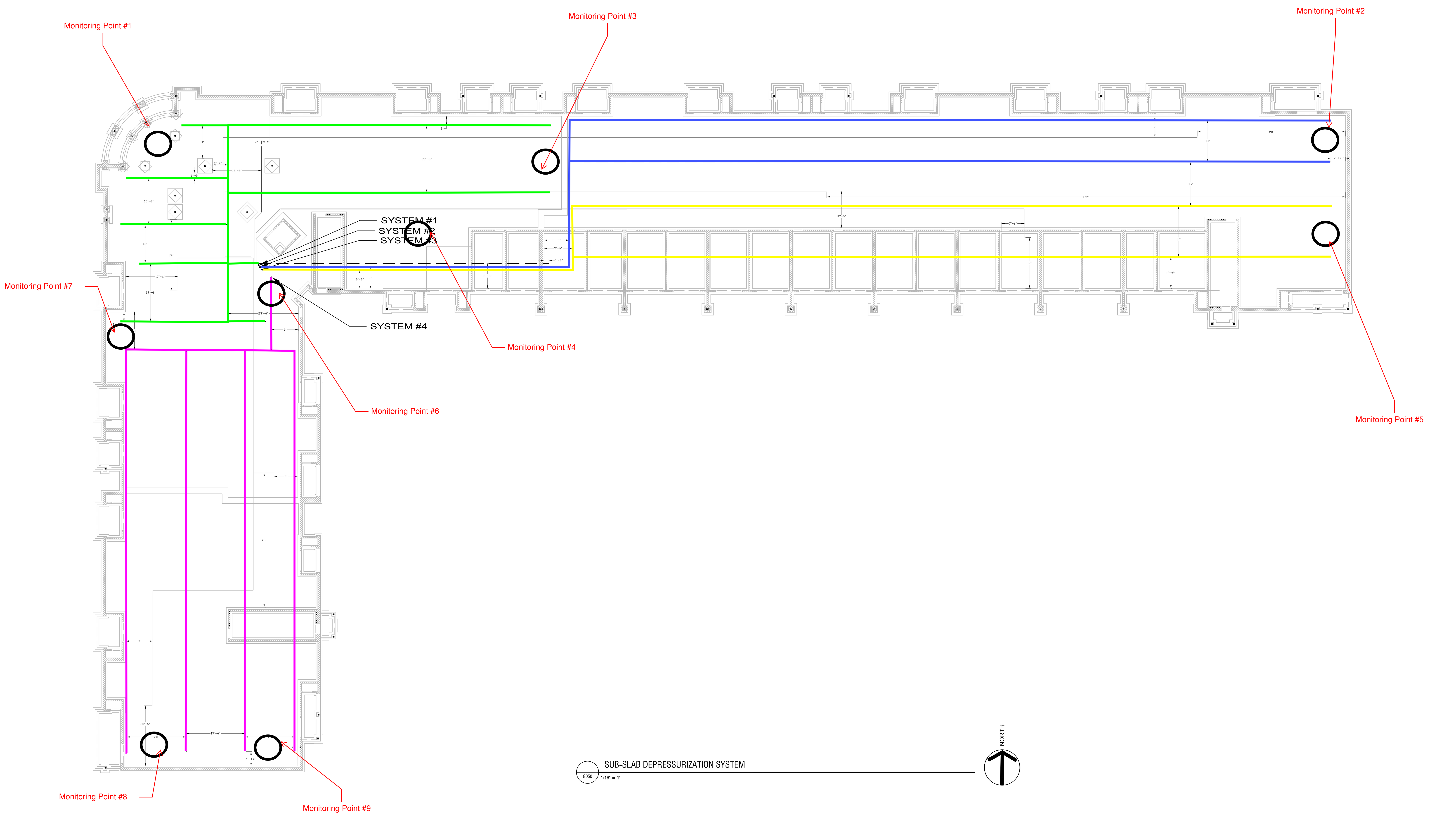
All non-routine maintenance of the SSDS will be documented and these documents will be kept on-file. A non-routine maintenance form is included in Appendix 4.

Attachments:

Appendix 1: Building 1 SSDS As-Built Drawings & Specifications
Appendix 2: Building 2 SSDS As-Built Drawings & Specifications
Appendix 3: Fan Installation and Operating Instructions
Appendix 4: Forms

APPENDIX 1

Building 1 SSDS As-Built & Specifications



NOTES:

1. 1/4 INCH STAINLESS STEEL MONITORING POINTS MOUNTED APPROXIMATELY 2 FEET ABOVE FINISHED FLOOR AGAINST AN INTERIOR WALL WITHIN ELECTRIC ROOM. REFER TO DETAIL 3: PROFILE AT GAUGE POINT.
2. 1/4 STAINLESS STEEL TUBING TERMINATED ABOVE SUB-BASE WITH FABRIC WRAPPED END. REFER TO DETAIL 6: MATERIAL PROFILE.
3. 4 INCH SCHEDULE 40 PVC RISER TO BE LOCATED 6 INCHES FROM WALL AND VENTED UP THROUGH THE ROOF. REFER TO DETAIL 1: REAR END WALL.
4. INSTALL ALARM ON EACH RISER PIPE WITHIN ELECTRIC ROOM. REFER TO DETAIL 4: SUB-SLAB DEPRESSURIZATION ALARM SYSTEM.
5. 4 INCH SCHEDULE 40 PVC TO 4 INCH HDPE PERFORATED PIPE CONNECTION. REFER TO DETAIL 2: DETAIL AT HEADER.
6. 4 INCH HDPE PIPE WRAPPED IN FABRIC AND PLACED IN PEA STONE TRENCH. REFER TO DETAIL 6: MATERIAL PROFILE
7. 4 INCH SOLID PVC EXTENDING MAXIMUM 2 FEET AND ON EITHER SIDE OF WALL, GROUTED IN PLACE TO FORM WATER TIGHT CONNECTION. REFER TO DETAIL 7: PROFILE AT PENETRATION.
8. MOVE PIPING AS NEEDED IN FIELD TO AVOID PLUMBING.
9. INSTALL 4" CAP AT EACH VAPOR COLLECTION PIPE TERMINATION.
10. ALL SUB-SLAB VAPOR COLLECTION PIPING TO BE GEOTEXTILE-WRAPPED 4 INCH PERFORATED DUAL-WALLED CORRUGATED EXTERIOR SMOOTH INTERIOR HDPE.
11. HEADER PIPING TO BE 4 INCH SCHEDULE 40 PVC.
12. PEA STONE SHALL CONSIST OF WASHED MATERIAL THAT WILL PASS THROUGH A 2 INCH SIEVE AND BE RETAINED BY A 1/4 INCH SIEVE.
13. TO PROTECT THE VAPOR BARRIER, ALL PENETRATIONS MADE AFTER POURING OF THE SLAB, SUCH AS JOINTS, ETC, SHALL BE CUT IN A MANNER TO AVOID PENETRATING THE VAPOR BARRIER.
14. SEAL ALL PENETRATIONS AND GAPS WITH AN ELASTOMERIC JOINT SEALANT.
15. THIS DRAWING IS NOT TO INTEND TO PROVIDE STRUCTURAL INFORMATION. REFER TO STRUCTURAL DRAWINGS.
16. CONTRACTOR TO CONFIRM NO AIR INTAKE IS WITHIN 25' FROM FAN EXHAUST.
17. SYSTEM 1, 2, 3, AND 4 INSTALL RADON AWAY GP-501 FAN OR EQUIVALENT.

LEGEND

FABRIC WRAPPED 4 INCH HDPE PERFORATED PIPE PLACED WITHIN MIDDLE OF PEA STONE TRENCH

4 INCH SOLID SCH 40 PVC PIPE PLACED WITHIN MIDDLE OF PEA STONE TRENCH, SLOPED AWAY FROM VERTICAL RISER AT 1/4 INCH PER FOOT TO ALLOW FOR DRAINAGE.

1/4 INCH STAINLESS STEEL MONITORING POINTS PLACED ABOVE COMPACTED SUB-BASE MATERIAL, FABRIC WRAPPED AT END.

NO.	REVISION	BY	DATE

LaBella Powered by partnership

PROJECT/CLIENT

176 DENISON PARKWAY EAST
CORNING, NEW YORK 14830

DRAWING TITLE

SUB-SLAB DEPRESSURIZATION SYSTEM LAYOUT
AS-BUILT

ISSUED FOR CONSTRUCTION

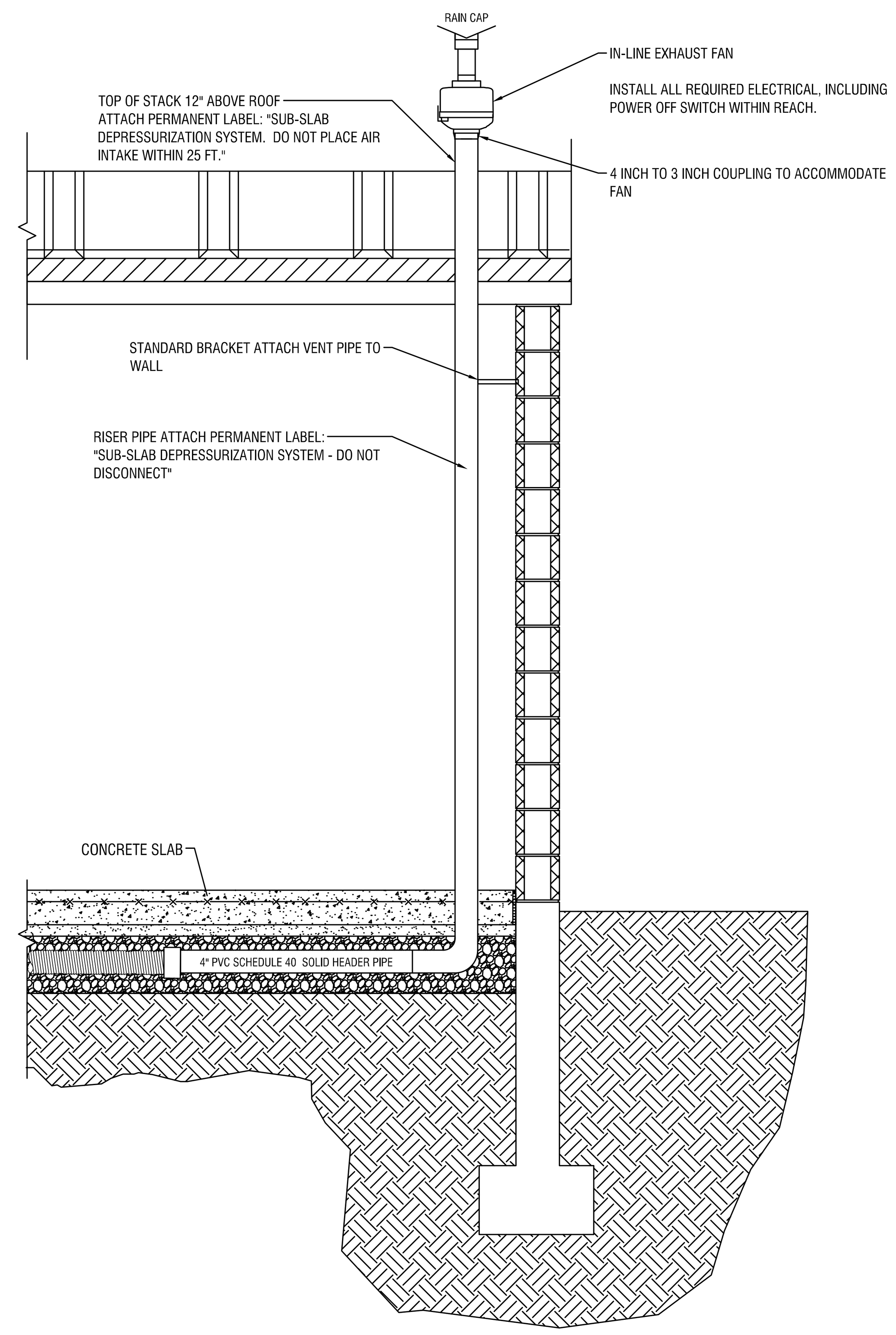
DATE: NOVEMBER, 2018

DESIGNED BY: ---
DRAWN BY: DRP
REVIEWED BY: ---

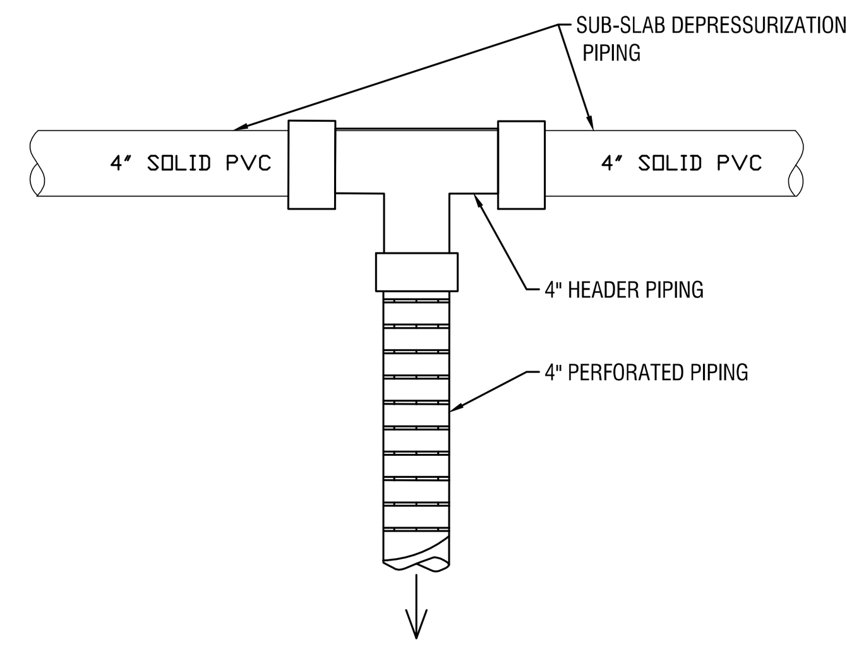
PROJECT/DRAWING NUMBER

2190002

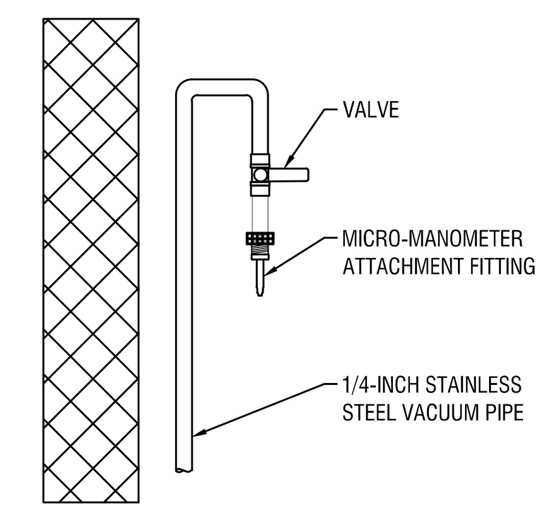
G0.01



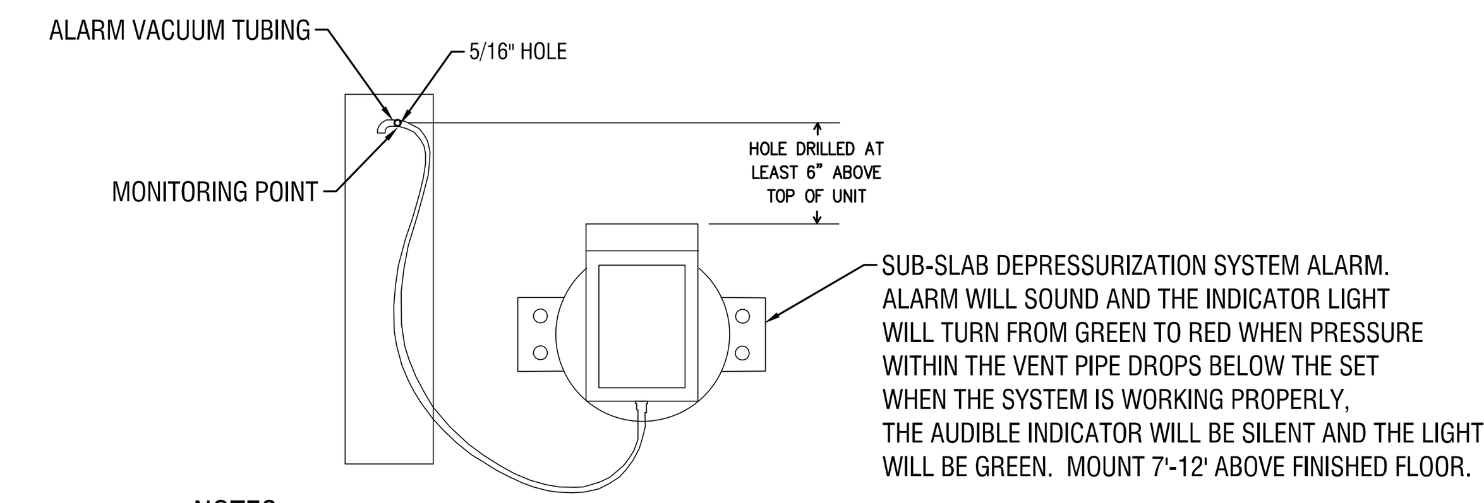
1 REAR END WALL
SCALE: NONE



2 DETAIL AT HEADER
SCALE: NONE



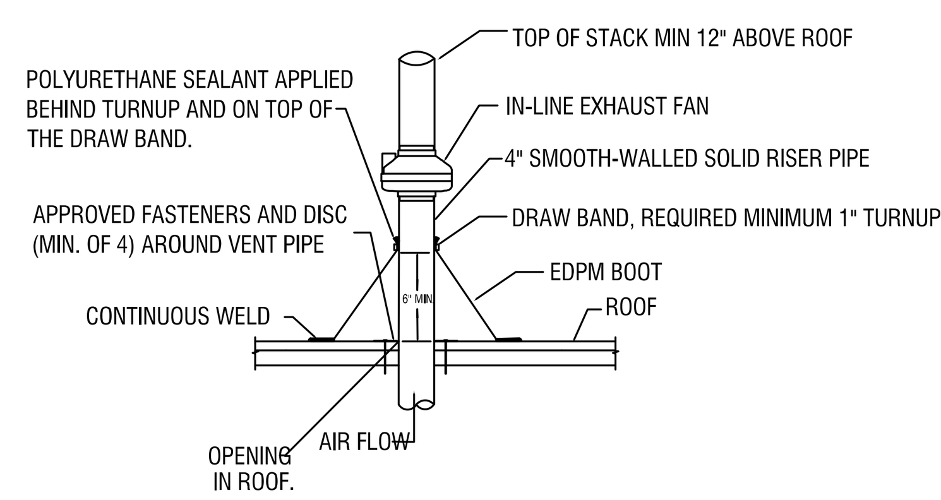
3 PROFILE AT GAUGE POINT
SCALE: NONE



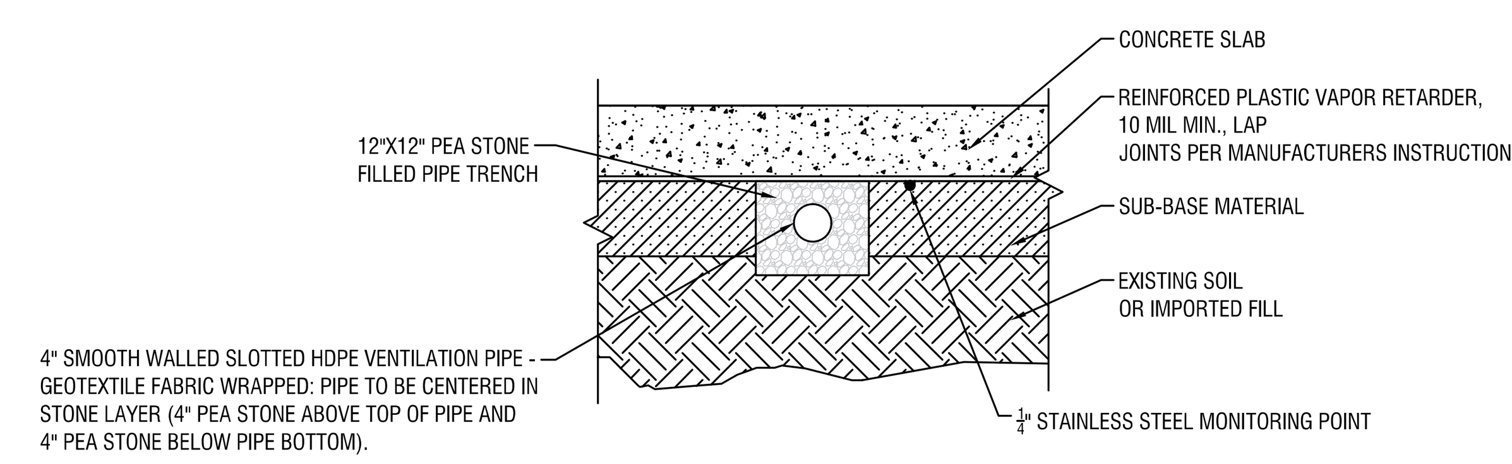
NOTES:

1. CONTRACTOR TO INSTALL ALARM ON SEPARATE CIRCUIT.

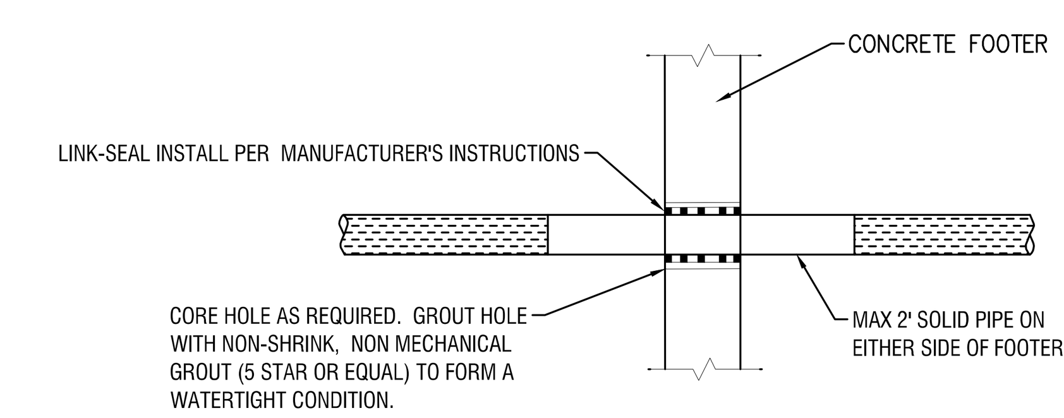
4 SUB-SLAB DEPRESSURIZATION SYSTEM ALARM
SCALE: NONE



5 DETAIL AT ROOF
SCALE: NONE



6 MATERIAL PROFILE
SCALE: NONE



7 PROFILE AT PENETRATION
SCALE: NONE

NOTES:

1. 1/4 INCH STAINLESS STEEL MONITORING POINTS MOUNTED APPROXIMATELY 2 FEET ABOVE FINISHED FLOOR AGAINST AN INTERIOR WALL. REFER TO DETAIL 3: PROFILE AT GAUGE POINT.
2. 1/4 STAINLESS STEEL TUBING TERMINATED ABOVE SUB-BASE WITH FABRIC WRAPPED END. REFER TO DETAIL 6: MATERIAL PROFILE.
3. 4 INCH SCHEDULE 40 PVC RISER TO BE LOCATED 6 INCHES FROM WALL AND VENTED UP THROUGH THE ROOF. REFER TO DETAIL 1: REAR END WALL.
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7. 4 INCH SOLID PVC EXTENDING MAXIMUM 2 FEET AND ON EITHER SIDE OF WALL, GROUTED IN PLACE TO FORM WATER TIGHT CONNECTION. REFER TO DETAIL 7: PROFILE AT PENETRATION.
8. MOVE PIPING AS NEEDED IN FIELD TO AVOID PLUMBING.
9. INSTALL 4" CAP AT EACH VAPOR COLLECTION PIPE TERMINATION.
10. ALL SUB-SLAB VAPOR COLLECTION PIPING IS GEOTEXTILE-WRAPPED 4 INCH PERFORATED DUAL-WALLED CORRUGATED EXTERIOR SMOOTH INTERIOR HDPE.
11. HEADER PIPING SHOWN IS 4 INCH SCHEDULE 40 PVC.
12. PEA STONE SHALL CONSIST OF WASHED MATERIAL THAT WILL PASS THROUGH A 2 INCH SIEVE AND BE RETAINED BY A 1/4 INCH SIEVE.
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14. SEAL ALL PENETRATIONS AND GAPS WITH AN ELASTOMERIC JOINT SEALANT.
15. THIS DRAWING IS NOT TO INTENDED TO PROVIDE STRUCTURAL INFORMATION. REFER TO STRUCTURAL DRAWING.
16. CONTRACTOR TO CONFIRM NO AIR INTAKE IS WITHIN 25' FROM FANS.
17. SYSTEM 1, 2, 3, AND 4 INSTALL RADON AWAY GP-501 FAN, OR EQUIVALENT.

NO.	REVISION	BY	DATE
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:			

LaBella
Powered by partnership.

PROJECT/CLIENT
176 DENISON PARKWAY EAST
CORNING, NEW YORK 14830

DRAWING TITLE
SUB-SLAB DEPRESSURIZATION SYSTEM DETAILS
AS-BUILT

ISSUED FOR
CONSTRUCTION

DATE: NOVEMBER, 2018

DESIGNED BY: ---
DRAWN BY: DRP
REVIEWED BY: ---

PROJECT/DRAWING NUMBER
2190002

G0.02

SECTION 026216 – SUB-SLAB VAPOR MITIGATION SYSTEM

PART 1 - VAPOR BARRIER

1.1 GAS PERMEABLE LAYER

A. A layer of gas permeable material shall be placed under all concrete floor slabs and other floor systems that directly contact the ground and are within the walls of the interior spaces of the building, to facilitate installation of a Sub-Slab Depressurization System (SSDS). The gas permeable material shall consist of a uniform layer of clean aggregate, a minimum of 6-inches thick. The aggregate shall meet the requirements of NYSDOT Bedding Material 733-23 or equivalent.

1.2 VAPOR RETARDER

A. A minimum 10-mil polyethylene or approved equivalent flexible sheeting material shall be placed above the crushed stone layer to serve as a soil-gas-barrier by bridging any cracks that develop in the slab or floor assembly. The sheeting should cover the entire floor area, and separate sections of sheeting should be overlapped at least 12 inches and sealed at these seems according to the manufacturer's instructions. The sheeting shall be sealed around any pipe, wire or other penetrations of the material, per the manufacturer's instructions. All punctures or tears in the material shall be repaired according to the manufacturer's instructions. The sheeting shall meet the following requirements (Stego Wrap 10-mil Class A Vapor Retarder or approved equivalent)

Property and ASTM Standard	**Performance Standard**
Underslab Vapor Retarders, ASTM E 1745 Class A, B, & C	Exceeds Class A, B, & C
Water Vapor Permeance, ASTM F1249	0.0254 perms
Tensile Strength, ASTM D 882	50.60 lbf./in.
Puncture Resistance, ASTM D1709	3006 grams

B. Seams in the vapor barrier shall be sealed with a product designed to be compatible with the vapor barrier (e.g., Stego Tape for Stego Wrap products).

C. Follow all manufacturer's instructions and specifications.

PREVENTION OF SOIL VAPOR ENTRY

A. All concrete floor slabs shall be designed, mixed, placed, reinforced, consolidated, finished, and cured to minimize the formation of cracks in accordance with standards set forth in the Model

Building Codes.

B. Large openings, if any, through the concrete floor slab, grade beams, or other foundation components in contact with the soil (e.g., spaces around storm sewer piping, etc.) shall be filled or closed with materials that provide a permanent airtight seal such as non-shrink mortar, grouts, expanding foam, or similar materials designed for such application.

C. Smaller gaps around all pipe, wire, or other objects, if any, that penetrate concrete floor slab or other floor assemblies shall be made air-tight with an elastomeric joint sealant, as defined in ASTM C920-87, and applied in accordance with the manufacturer's recommendations.

D. All control joints, isolation joints, construction joints, and any other joints in the concrete floor slab or between the floor slab and the building's walls shall be sealed. A continuous formed gap (for example, a "tooled edge") which allows the application of a sealant that will provide a continuous, airtight seal shall be created along all joints. When the slab has cured, the gap shall be cleared of loose material and filled with an elastomeric joint sealant, as defined in ASTM C920-97, and applied in accordance with the manufacturer's recommendations.

E. Joints, cracks, or other openings around all penetrations of both exterior and interior surfaces of masonry block or poured concrete foundation components below the ground surface shall be sealed with an elastomeric sealant that provides an air-tight seal. Penetrations of poured concrete walls should also be sealed on the exterior surface. This includes sealing of wall tie penetrations, if applicable.

PART 2 – VAPOR COLLECTION AND VENT SYSTEM

A. Lengths of sub-slab vapor collection piping shall be installed beneath the vapor barrier as depicted on drawing G0.01. Sub-slab vapor collection piping shall be geotextile-wrapped, 4-inch diameter, perforated, dual-walled, corrugated exterior, smooth interior high density polyethylene (HDPE).

B. Vapor collection piping shall be installed in the center of 12" x 12" pipe trenches as depicted on drawing G0.02. Pipe trenches shall be backfilled with PEA STONE, which shall consist of material that will pass through a 2-inch sieve and be retained by a ¼-inch sieve.

C. Install perforated cap at each vapor collection pipe termination, and slope header pipe up ¼-inch per foot from connection with vapor collection piping.

D. The collection piping shall be connected via the appropriate fittings to 4-inch, schedule 40, polyvinyl chloride (PVC) header pipe. The header pipes shall penetrate the building envelope, through the concrete floor slab within Electric Room, as depicted on drawings G0.01 and G0.02.

E. The header pipes shall terminate at vertical standpipes at least 12 inches above the surface of the roof, in a location that is: at least 25 feet from any air intakes; at least 10 feet away from any window, air intake, or other opening into the conditioned spaces of the building that is less than 2 feet below the exhaust point; and at least 10 feet from any adjoining or adjacent buildings.

F. All exposed and visible interior and exterior vent pipes shall be identified with labels placed at least every 25 feet. The labels shall read: "Sub-Slab Depressurization System – Do Not Disconnect."

G. Vent pipes shall be installed in a configuration and supported in a manner that ensures that any rain water or condensation accumulating within the pipes drains downward into the ground beneath the vapor barrier.

H. Completion is subject to owner/environmental consultant approval. The owner and environmental consultant shall be provided 48-hour notice to inspect the system prior to any portion being covered. Inspections will include at least (but not limited to) the following:

a. Below Grade Portions of Sub-Slab Depressurization System Piping and Monitoring Piping – prior to covering with stone

b. Soil Vapor Barrier – after sealing all penetrations, foundations edges and seams and prior to pouring of concrete

c. Above Grade Portions of Sub-Slab Depressurization System – Prior to any portions being sealed behind walls, pipe chases, etc.

I. Contractor shall provide photos of piping, trenches, etc.

PART 3 – FANS

3.1 GENERAL

A. "Activation" of the SSDS shall be completed by adding exhaust fans in the vertical stand pipes on the roof, as shown on drawing G0.02.

B. The fans shall meet the following requirements (in-line exhaust fans, such as the "RadonAway GP-501", or approved equivalent).

Watts	Max Pres. "wc	Typical flow [ft^3/min (cfm)] vs. static pressure [water column inches ("wc)]								
60-140	4.2	0.0" wc	0.5" wc	1.0" wc	1.5" wc	2.0" wc	2.5" wc	3.0" wc	3.5" wc	4.0" wc
		-- cfm	-- cfm	95 cfm	87 cfm	80 cfm	70 cfm	57 cfm	30 cfm	10 cfm

C. The fans in the vent pipes and all positively-pressurized portions of the vent pipes shall be located outside the habitable space of the building or within interior mechanical pipe chases if open to the atmosphere and closed to interior spaces.

D. The fans in the vent pipes shall be installed in vertical runs of the vent pipes, at an approximate height of at least 1-ft. above the roofline to facilitate maintenance and repair.

3.2 WARNING SYSTEMS

A. Each vertical standpipe shall be equipped with a U-tube type manometer or approved equivalent below the fan and within the Electric Room in a visible location, to demonstrate that pressure within the pipe is below atmospheric pressure.

B. Each fan shall be equipped with a prominently positioned visible or audible warning system (e.g., RadonAway Checkpoint IIA Mitigation Alarm or approved equivalent) to alert the building occupant if there is loss of pressure or air flow in the vent pipe, or if the fan ceases operation. Location of the warning system shall be subject to owner/Environmental Project Monitor approval.

The Contractor will connect the alarm and fan on separate breakers and provide that information to the Environmental Project Monitor. The fans and alarms shall be labeled with a distinct number in order to identify each fan and associated alarm system. The breakers shall also be labeled with fan number and alarm number. The breaker information will be provided to the Engineer.

PART 4 – TEST POINTS

A. Test Points, consisting of an open length of stainless steel vacuum tubing, shall be installed beneath the slab as depicted on drawing G0.01. The open end of the stainless steel vacuum tubing shall be fabric-wrapped at its sub-slab termination as located as shown on drawing G0.02. The vacuum tubing shall be routed as shown on drawings G0.01 and G0.02 and terminate in a barbed ¼-inch hose fitting. The terminations shall be mounted at an approximate height of three (3) feet above the local grade within the Electric Room and fitted with a stop valve beneath the barbed fitting as depicted in drawing G0.01. The contractor shall label each test point at the termination point and provide labeling to the Engineer along with a figure illustrating the full route of the test point and the associated label.

B. If located in a high-traffic area, each gauge/test point will be protected by the Contractor.

PART 5 – MISCELLANEOUS

A. Heating, Ventilating, and Air Conditioning (HVAC) systems shall be designed and installed to avoid depressurization of the building relative to underlying and surrounding soil. Specifically, joints in air ducts and plenums passing through unconditioned spaces shall be sealed.

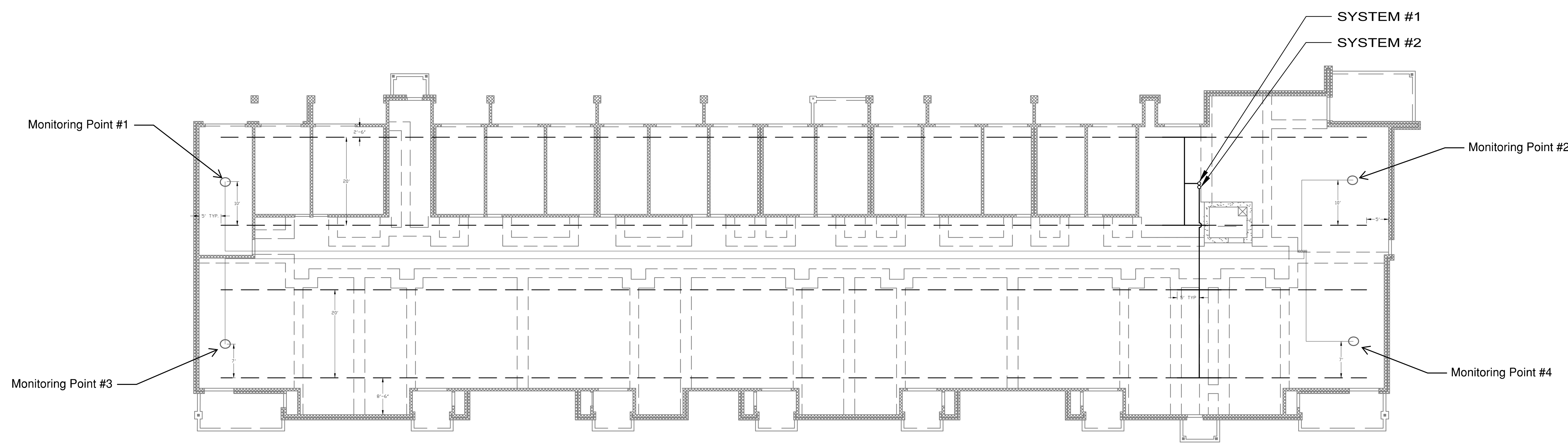
B. The Contractor shall conduct a backdraft test to ensure the operation of the SSDS system does not create backdraft when the HVAC system is in operation. The Contractor will complete the backdraft test per the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2016. The Contractor will provide a letter or report documenting the backdraft test to the Environmental Project Monitor within 14 days of completing the backdraft test.

C. Contractor shall label each monitoring point and system riser numerically in a visible location above the floor slab within Electric Room.

END OF SECTION 026216

APPENDIX 2

Building 2 SSDS As-Built & Specifications



SUB-SLAB DEPRESSURIZATION SYSTEM

G050 3/16" = 1'

NORTH

NOTES:

1. 1/4 INCH STAINLESS STEEL MONITORING POINTS MOUNTED APPROXIMATELY 2 FEET ABOVE FINISHED FLOOR AGAINST AN INTERIOR WALL WITHIN ELECTRIC ROOM. REFER TO DETAIL 3: PROFILE AT GAUGE POINT.
2. 1/4 STAINLESS STEEL TUBING TERMINATED ABOVE SUB-BASE WITH FABRIC WRAPPED END. REFER TO DETAIL 6: MATERIAL PROFILE.
3. 4 INCH SCHEDULE 40 PVC RISER TO BE LOCATED 6 INCHES FROM WALL AND VENTED UP THROUGH THE ROOF. REFER TO DETAIL 1: REAR END WALL.
4. INSTALL ALARM ON EACH RISER PIPE WITHIN ELECTRIC ROOM. REFER TO DETAIL 4: SUB-SLAB DEPRESSURIZATION ALARM SYSTEM.
5. 4 INCH SCHEDULE 40 PVC TO 4 INCH HDPE PERFORATED PIPE CONNECTION. REFER TO DETAIL 2: DETAIL AT HEADER.
6. 4 INCH HDPE PIPE WRAPPED IN FABRIC AND PLACED IN PEA STONE TRENCH. REFER TO DETAIL 6: MATERIAL PROFILE
7. 4 INCH SOLID PVC EXTENDING MAXIMUM 2 FEET AND ON EITHER SIDE OF WALL, GROUTED IN PLACE TO FORM WATER TIGHT CONNECTION. REFER TO DETAIL 7: PROFILE AT PENETRATION.
8. MOVE PIPING AS NEEDED IN FIELD TO AVOID PLUMBING.
9. INSTALL 4" CAP AT EACH VAPOR COLLECTION PIPE TERMINATION.
10. ALL SUB-SLAB VAPOR COLLECTION PIPING TO BE GEOTEXTILE-WRAPPED 4 INCH PERFORATED DUAL-WALLED CORRUGATED EXTERIOR SMOOTH INTERIOR HDPE.
11. HEADER PIPING TO BE 4 INCH SCHEDULE 40 PVC.
12. PEA STONE SHALL CONSIST OF WASHED MATERIAL THAT WILL PASS THROUGH A 2 INCH SIEVE AND BE RETAINED BY A 1/4 INCH SIEVE.
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14. SEAL ALL PENETRATIONS AND GAPS WITH AN ELASTOMERIC JOINT SEALANT.
15. THIS DRAWING IS NOT TO INTEND TO PROVIDE STRUCTURAL INFORMATION. REFER TO STRUCTURAL DRAWINGS.
16. CONTRACTOR TO CONFIRM NO AIR INTAKE IS WITHIN 25' FROM FAN EXHAUST.
17. SYSTEM 1, 2, 3, AND 4 INSTALL RADON AWAY GP-501 FAN OR EQUIVALENT.

LEGEND

Symbol	Description
— — — (dashed line)	FABRIC WRAPPED 4 INCH HDPE PERFORATED PIPE PLACED WITHIN MIDDLE OF PEA STONE TRENCH
——— (solid line)	4 INCH SOLID SCH 40 PVC PIPE PLACED WITHIN MIDDLE OF PEA STONE TRENCH, SLOPED AWAY FROM VERTICAL RISER AT 1/4 INCH PER FOOT TO ALLOW FOR DRAINAGE.
——— (light line)	1/4 INCH STAINLESS STEEL MONITORING POINTS PLACED ABOVE COMPACTED SUB-BASE MATERIAL, FABRIC WRAPPED AT END.

NO.	REVISION	BY	DATE

STATE OF NEW YORK ★ LICENSED PROFESSIONAL ENGINEER

LaBella Powered by partnership.

PROJECT/CLIENT

176 DENISON PARKWAY EAST
CORNING, NEW YORK 14830

DRAWING TITLE

SUB-SLAB DEPRESSURIZATION SYSTEM LAYOUT
AS-BUILT

ISSUED FOR
CONSTRUCTION

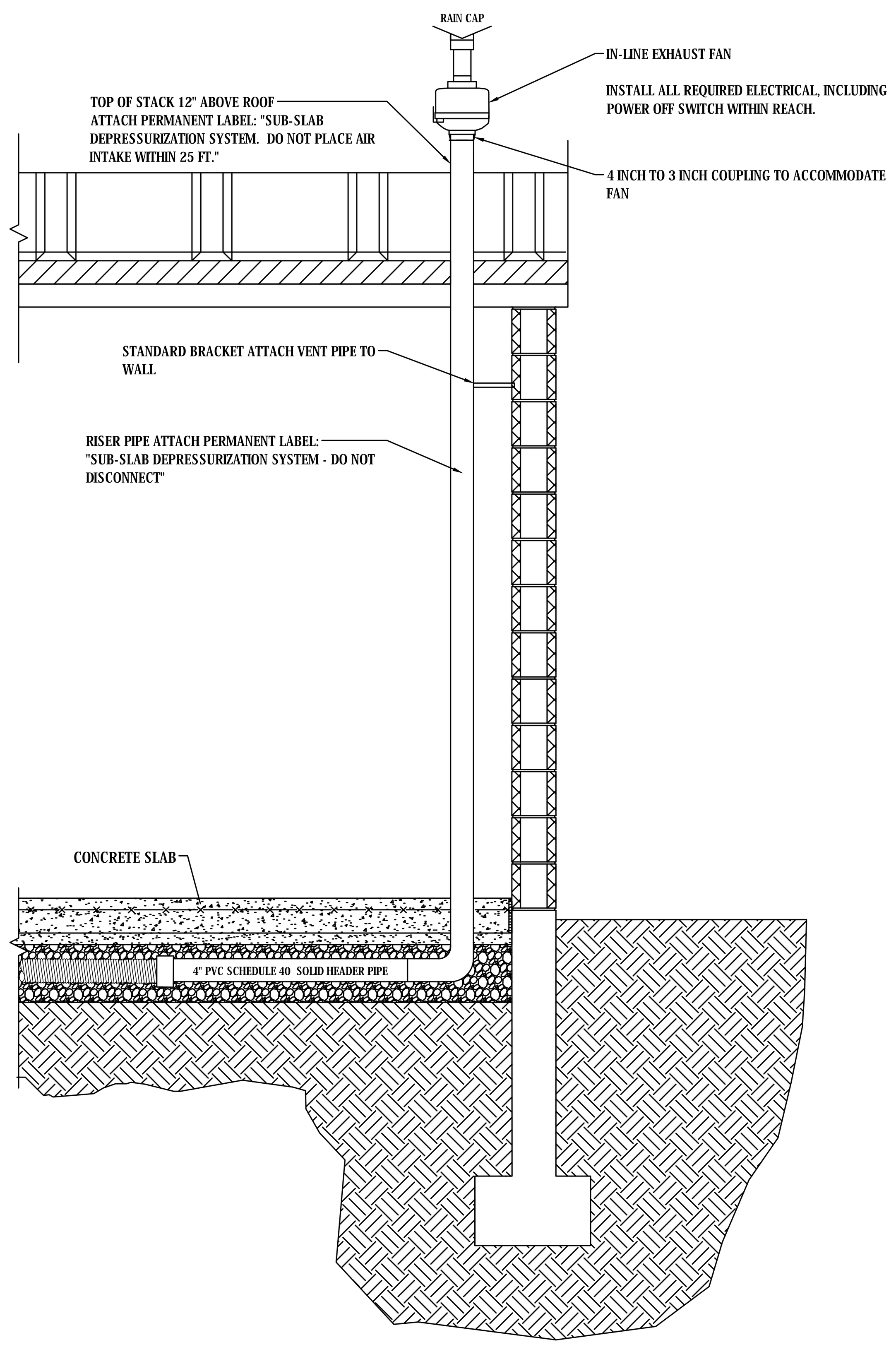
DESIGNED BY: ---
DRAWN BY: DRP
REVIEWED BY: ---

DATE: NOVEMBER, 2018

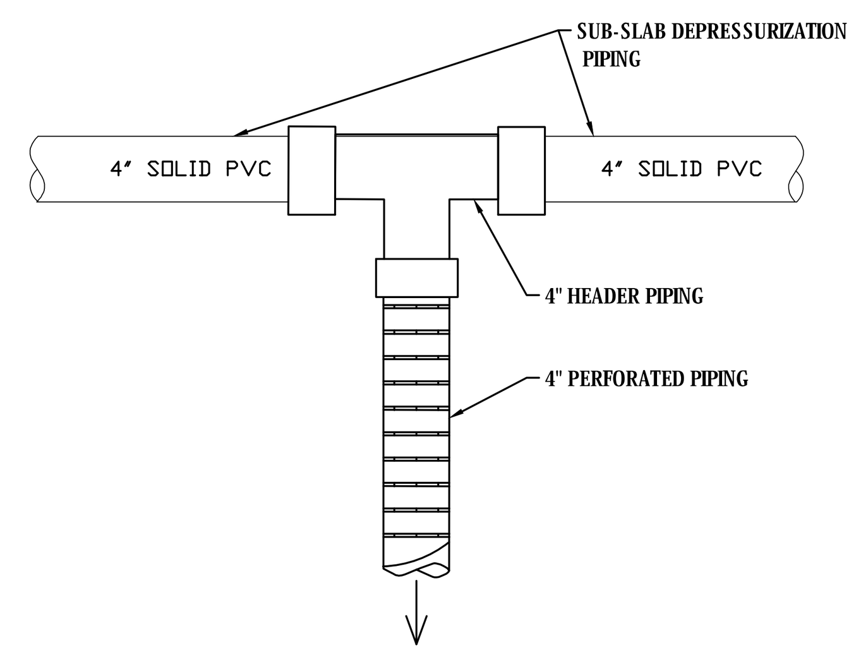
PROJECT/DRAWING NUMBER

2190002

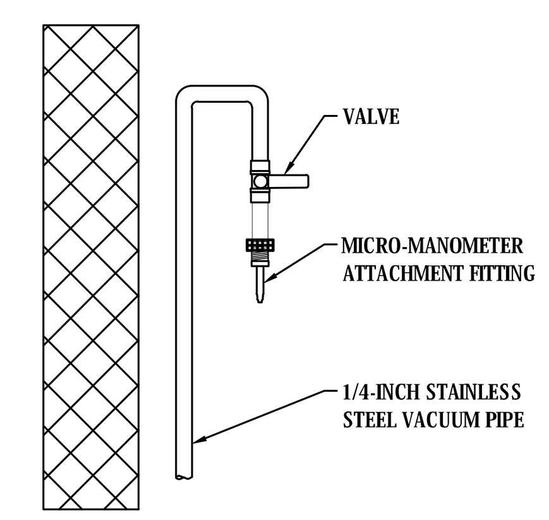
G0.01



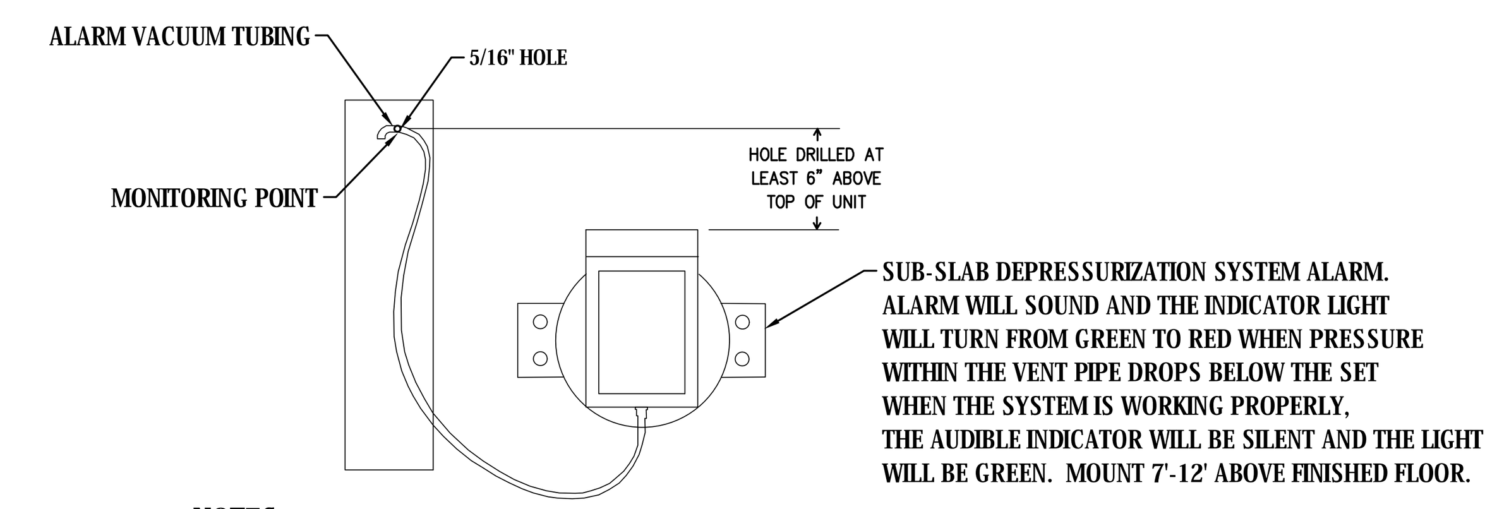
1 REAR END WALL
SCALE: NONE



2 DETAIL AT HEADER
SCALE: NONE



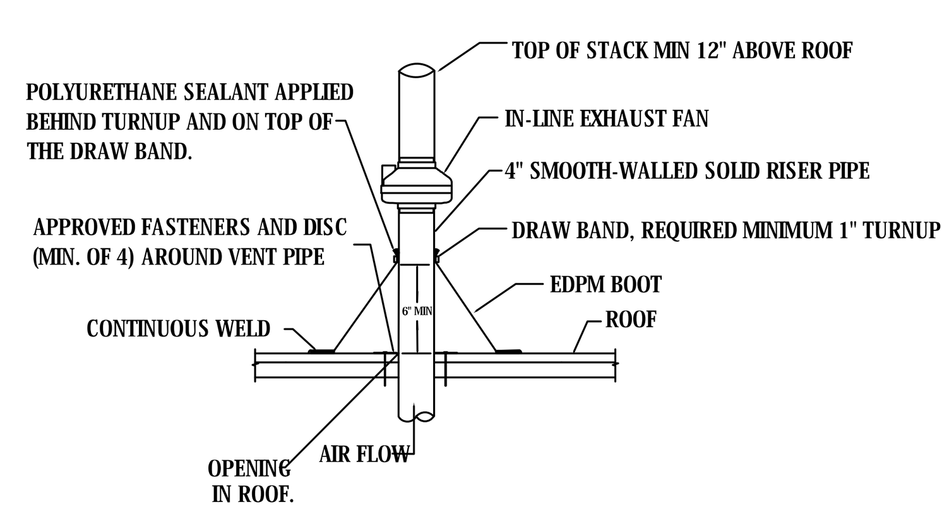
3 PROFILE AT GAUGE POINT
SCALE: NONE



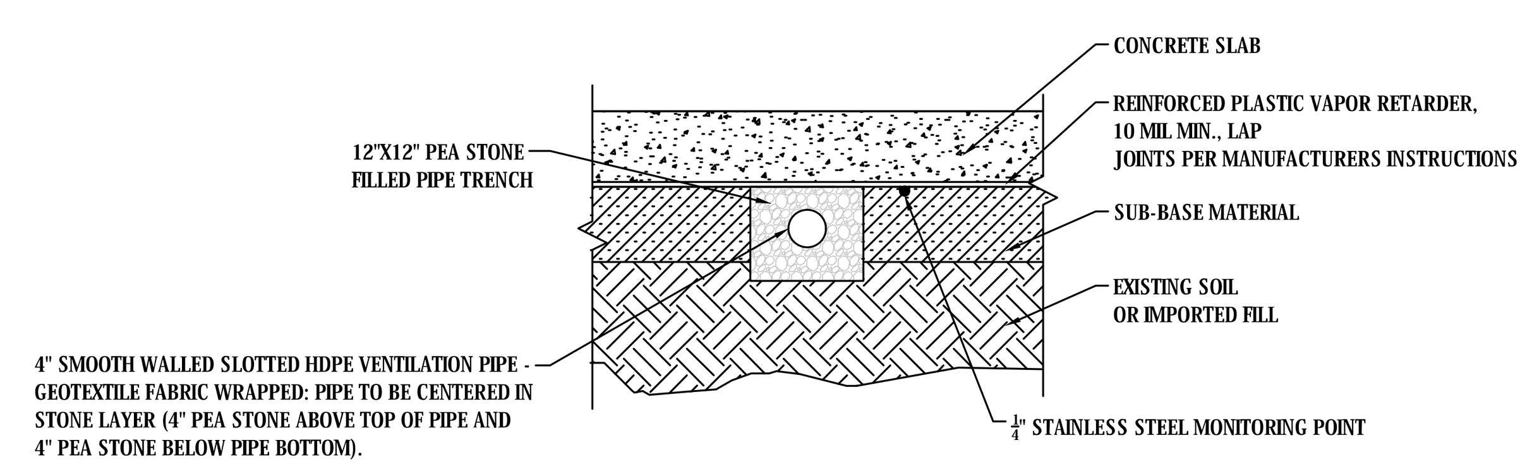
NOTES:

1. CONTRACTOR TO INSTALL ALARM ON SEPARATE CIRCUIT.

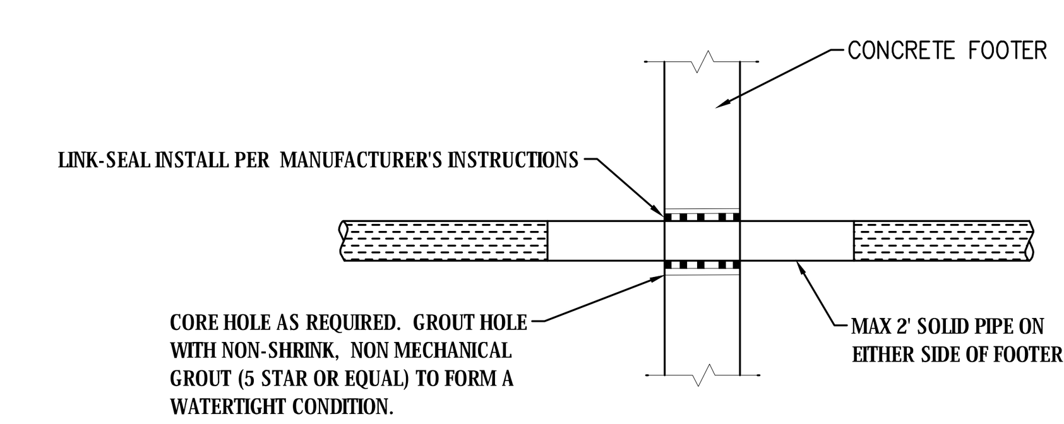
4 SUB-SLAB DEPRESSURIZATION SYSTEM ALARM
SCALE: NONE



5 DETAIL AT ROOF
SCALE: NONE



6 MATERIAL PROFILE
SCALE: NONE



7 PROFILE AT PENETRATION
SCALE: NONE

NOTES:

1. 1/4 INCH STAINLESS STEEL MONITORING POINTS MOUNTED APPROXIMATELY 2 FEET ABOVE FINISHED FLOOR AGAINST AN INTERIOR WALL. REFER TO DETAIL 3: PROFILE AT GAUGE POINT.
2. 1/4 STAINLESS STEEL TUBING TERMINATED ABOVE SUB-BASE WITH FABRIC WRAPPED END. REFER TO DETAIL 6: MATERIAL PROFILE.
3. 4 INCH SCHEDULE 40 PVC RISER TO BE LOCATED 6 INCHES FROM WALL AND VENTED UP THROUGH THE ROOF. REFER TO DETAIL 1: REAR END WALL.
4. INSTALL ALARM ON EACH RISER PIPE WITHIN TRASH COLLECTION ROOM. REFER TO DETAIL 4: SUB-SLAB DEPRESSURIZATION ALARM SYSTEM.
5. 4 INCH SCHEDULE 40 PVC TO 4 INCH HDPE PERFORATED PIPE CONNECTION. REFER TO DETAIL 2: DETAIL AT HEADER.
6. 4 INCH HDPE PIPE WRAPPED IN FABRIC AND PLACED IN PEA STONE TRENCH. REFER TO DETAIL 6: MATERIAL PROFILE
7. 4 INCH SOLID PVC EXTENDING MAXIMUM 2 FEET AND ON EITHER SIDE OF WALL, GROUTED IN PLACE TO FORM WATER TIGHT CONNECTION. REFER TO DETAIL 7: PROFILE AT PENETRATION.
8. MOVE PIPING AS NEEDED IN FIELD TO AVOID PLUMBING.
9. INSTALL 4" CAP AT EACH VAPOR COLLECTION PIPE TERMINATION.
10. ALL SUB-SLAB VAPOR COLLECTION PIPING IS GEOTEXTILE-WRAPPED 4 INCH PERFORATED DUAL-WALLED CORRUGATED EXTERIOR SMOOTH INTERIOR HDPE.
11. HEADER PIPING SHOWN IS 4 INCH SCHEDULE 40 PVC.
12. PEA STONE SHALL CONSIST OF WASHED MATERIAL THAT WILL PASS THROUGH A 2 INCH SIEVE AND BE RETAINED BY A 1/4 INCH SIEVE.
13. TO PROTECT THE VAPOR BARRIER, ALL PENETRATIONS MADE AFTER POURING OF THE SLAB, SUCH AS JOINTS, ETC, SHALL BE CUT IN A MANNER TO AVOID PENETRATING THE VAPOR BARRIER.
14. SEAL ALL PENETRATIONS AND GAPS WITH AN ELASTOMERIC JOINT SEALANT.
15. THIS DRAWING IS NOT TO INTENDED TO PROVIDE STRUCTURAL INFORMATION. REFER TO STRUCTURAL DRAWING.
16. CONTRACTOR TO CONFIRM NO AIR INTAKE IS WITHIN 25' FROM FANS.
17. SYSTEM 1 AND 2 INSTALL RADON AWAY GP-501 FAN, OR EQUIVALENT.

NO.	REVISION	BY	DATE

LaBella
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PROJECT/CLIENT
176 DENISON PARKWAY EAST
CORNING, NEW YORK 14830

DRAWING TITLE
SUB-SLAB DEPRESSURIZATION SYSTEM DETAILS
AS-BUILT

ISSUED FOR
CONSTRUCTION

DATE: NOVEMBER, 2018
DESIGNED BY: ---
DRAWN BY: DRP
REVIEWED BY: ---

PROJECT/DRAWING NUMBER
2190002

G0.02

Section 026216 – SUB-SLAB VAPOR MITIGATION SYSTEM

PART 1 – VAPOR BARRIER

1.1 GAS PERMEABLE layer

A. A layer of gas permeable material shall be placed under all concrete floor and other floor systems that directly contact the ground and are within the walls of the interior spaces of the building, to facility installation of a Sub-Slab Depressurization System (SSDS). The gas permeable material shall consist of a uniform layer of clean aggregate, a minimum of 6-inches thick. The aggregate shall meet the requirements of NYSDOT Bedding Material 733-23 or equivalent.

1.2 VAPOR RETARDER

A. A minimum 10-mil polyethylene or approved equivalent flexible sheeting material shall be placed above the crushed stone layer to serve as a soil-gas-barrier by bridging any cracks that develop in the slab or floor assembly. The sheeting should cover the entire floor area, and separate sections of sheeting should be overlapped at least 12 inches and sealed at these seams according to the manufacturer's instructions. The sheeting shall be sealed around any pipe, wire, or other penetrations of the material, per the manufacturer's instructions. All punctures or tears in the material shall be repaired according to the manufacturer's instructions. The sheeting shall meet the following requirements (Stego Wrap 10-mil Class A Vapor Retarder or approved equivalent):\

Property and ASTM Standard	**Performance Standard**
Underslab Vapor Retarders, ASTM E 1745 Class A, B, & C	Exceeds Class A, B, & C
Water Vapor Permeance, ASTM F1249	0.0254 perms
Tensile Strength, ASTM D 882	50.60 lbf/in
Puncture Resistance, ASTM D1709	3006 grams

B. Seams in the vapor barrier shall be sealed with a product designed to be compatible with the vapor barrier (e.g. Stego Tape for Stego Wrap products).

C. Follow all manufacturer's instructions and specifications.

1.3 PREVENTION OF SOIL VAPOR ENTRY

A. All concrete floor slabs shall be designed, mixed, placed, reinforced, consolidated, finished, and cured to minimize the formation of cracks in accordance with standards set forth in the Model Building Codes.

B. Large openings, if any, through the concrete floor slab, grade beams, or other foundation components in contact with the soil (e.g. spaces around storm sewer piping, etc.) shall be filled or closed with materials that provide a permanent airtight seal such as non-shrink mortar, grouts, expanding foam, or similar materials designed for such application.

C. Smaller gaps around all pipe, wire, or other objects, if any, that penetrate concrete floor slab or other floor assemblies shall be made air-tight with an elastomeric joint sealant, as defined in ASTM C920-87, and applied in accordance with the manufacturer's recommendations.

D. All control joints, isolation joints, and any other joints in the concrete floor slab or between the floor slab and the building's walls shall be sealed. A continuous formed gap (for example, a "tooled edge") which allows the application of a sealant that will provide a continuous, airtight seal shall be created along all joints. When the slab has cured, the gap shall be cleared of loose material and filled with an elastomeric joint sealant, as defined in ASTM C920-97, and applied in accordance with the manufacturer's recommendations.

E. Joints, cracks, or other openings around all penetrations of both exterior and interior surfaces of masonry block or poured concrete foundation components below the ground surface shall be sealed with an elastomeric sealant that provides an airtight seal. Penetrations of poured concrete walls should also be sealed on the exterior surface. This includes sealing of wall tie penetrations, if applicable.

PART 2 – VAPOR COLLECTION AND VENT SYSTEM

A. Lengths of sub-slab vapor collection piping shall be installed beneath the vapor barrier as depicted on drawing G0.01. Sub-slab vapor collection piping shall be geotextile-wrapped, 4-inch diameter, perforated, dual-walled, corrugated exterior, smooth interior high-density polyethylene (HDPE).

B. Vapor collection piping shall be installed in the center of 12" x 12" pipe trenches as depicted on drawing G0.02. Pipe trenches shall be backfilled with PEA STONE, which shall consist of material that will pass through a 2-inch sieve and be retained by a ¾-inch sieve.

C. Install perforated cap at each vapor collection pipe termination, and slope header pipe up ¼-inch per foot from connection with vapor collection piping.

D. The collection piping shall be connected via appropriate fittings to 4-inch, Schedule 40, poly-vinyl chloride (PVC) header pipe. The header pipes shall penetrate the building envelope, through the concrete floor slab within the Trash Collection Room, as depicted on drawings G0.01 and G0.02.

E. The header pipes shall terminate at vertical standpipes at least 12 inches above the surface of the roof, in a location that is: at least 25 feet from any air intakes; at least 10 feet away from any window, air intake, or other opening into the conditioned spaces of the building that is less than 2 feet below the exhaust point, and at least 10 feet from any adjoining or adjacent buildings.

F. All exposed and visible interior and exterior vent pipes shall be identified with labels placed at least every 25 feet. The labels shall read: "Sub-Slab Depressurization System – Do Not Disconnect."

G. Vent pipes shall be installed in a configuration and supported in a manner that ensures that any rain water or condensation accumulating within the pipes drains downward into the ground beneath the vapor barrier.

H. Completion is subject to owner/environmental consultant approval. The owner and environmental consultant shall be provided 48-hour notice to inspect the system prior to any portion being covered. Inspections will include at least (but not limited to) the following:

   a. Below Grade Portions of Sub-Slab Depressurization System Piping and Monitoring Piping – prior to covering with stone

   b. Soil Vapor Barrier – after sealing all penetrations, foundations edges and seams and prior to pouring of concrete

c. Above Grade Portions of Sub-Slab Depressurization System – Prior to any portions being sealed behind walls, pipe chases, etc.

I. Contractor shall provide photos of piping, trenches, etc.

PART 3 – FANS

3.1 GENERAL

A. "Activation" of the SSDS shall be completed by adding exhaust fans in the vertical stand pipes on the roof, as shown on drawing G0.02.

B. The fans shall meet the following requirements (in-line exhaust fans, such as the "RadonAway GP-501", or approved equivalent).

Watts	Max Pres. "wc	Typical flow [ft^3/min (cfm)] vs. static pressure [water column inches ("sc")]								
60-140	4.2	0.0" wc	0.5" wc	1.0" wc	1.5" wc	2.0" wc	2.5" wc	3.0" wc	3.5" wc	4.0" wc
		--cfm	--cfm	95 cfm	87 cfm	80 cfm	70 cfm	57 cfm	30 cfm	10 cfm

C. The fans in the vent pipes and all positively-pressurized portions of the vent pipes shall be located outside the habitable space of the building or within interior mechanical pipe chases if open to the atmosphere and closed to interior spaces.

D. The fans in the vent pipes shall be installed in vertical runs of the vent pipes, at an approximate height of at least 1-ft. above the roofline to facilitate maintenance and repair.

3.2 WARNING SYSTEMS

A. Each vertical standpipe shall be equipped with a U-tube type manometer or approved equivalent below the fan and within the Trash Collection room in a visible manner, to demonstrate that pressure within the pipe is below atmospheric pressure.

B. Each fan shall be equipped with a prominently positioned visible or audible warning system (e.., RadonAway Checkpoint IIA Mitigation Alarm or approved equivalent) to alter the building occupant is there is loss of pressure or air flow in the vent pipe, or if the fan ceases operation. Location of the warning system shall be subject to owner/Environmental Project Monitor approval. The Contractor will connect the alarm and fan on separate breakers and provide that information to the Environmental Project Monitor. The fans and alarms shall be labeled with a distinct number in order to identify each fan and associated alarm system. The breakers shall also be labeled with fan number and alarm number. The breaker information will be provided to the Engineer.

PART 4 – TEST POINTS

A. Test Points, consisting of an open length of stainless steel vacuum tubing, shall be installed beneath the slab as depicted on drawing G0.01. The open end of the stainless steel vacuum tubing shall be fabric-wrapped as its sub-slab termination as shown on drawing G0.02. The vacuum tubing shall be routed as shown on drawings G0.01 and G0.02 and terminate in a barbed ¼-inch hose fitting. The terminations shall be mounted at an approximate height of three (3) feet above the local grade within the Electric Room and fitted with a stop valve beneath the barbed fitting as depicted in drawing G0.01. The contractor shall label each test point at the termination point and provide labeling to the Engineer along with a figure illustrating the full route of the test point and the associated label.

B. If located in a high-traffic area, each gauge/test point will be protected by the Contractor.

PART 5 – MISCELLANEOUS

A. Heating, Ventilating, and Air Conditioning (HVAC) systems shall be designed and installed to avoid depressurization of the building relative to the underlying and surrounding soil. Specifically, joints in air ducts and plenums passing through unconditioned spaces shall be sealed.

B. The Contractor shall conduct a backdraft test to ensure the operation of the SSDS system does not create backdraft when the HVAC system is in operation. The Contractor will complete the backdraft test per the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2016. The Contractor will provide a letter or report documenting the backdraft test to the Environmental Project Monitor within 14 days of completing the backdraft test.

C. Contractor shall label each monitoring point and system riser numerically in a visible location above the floor slab within the Electric Room.

END OF SECTION 026216

APPENDIX 3

Fan Installation and Operating Instructions

RadonAway®

The world's leading radon fan manufacturer

RPc, GPc, XPc, XR Series Installation Instructions

DO NOT CONNECT POWER SUPPLY UNTIL FAN IS COMPLETELY INSTALLED. MAKE SURE ELECTRICAL SERVICE TO FAN IS LOCKED IN "OFF" POSITION. DISCONNECT POWER BEFORE SERVICING FAN.

1. **WARNING!** For General Ventilating Use Only. Do Not Use to Exhaust Hazardous, Corrosive or Explosive Materials, Gases or Vapors. See Vapor Intrusion Application Note #AN001 for important information on VI Applications. RadonAway.com/vapor-intrusion

2. **NOTE:** Fan is suitable for use with solid state speed controls; however, use of speed controls is not generally recommended.

2. **WARNING!** Check voltage at the fan to insure it corresponds with nameplate.

3. **WARNING!** Normal operation of this device may affect the combustion airflow needed for safe operation of fuel burning equipment. Check for possible backdraft conditions on all combustion devices after installation.

4. **NOTICE!** There are no user serviceable parts located inside the fan unit.
Do NOT attempt to open. Return unit to the factory. (See Warranty, p. 8, for details.)

5. **WARNING!** Do not leave fan unit installed on system piping without electrical power for more than 48 hours. Fan failure could result from this non-operational storage.

6. **WARNING!** TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

    a) Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer. (See p. 8.)

    b) Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.

    c) Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire rated construction.

    d) Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent backdrafting. Follow the heating equipment manufacturers' guidelines and safety standards such as those published by any National Fire Protection Association, and the American Society for Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), and the local code authorities.

    e) When cutting or drilling into a wall or ceiling, do not damage electrical wiring and other hidden utilities.

    f) Ducted fans must always be vented to outdoors.

    g) If this unit is to be installed over a tub or shower, it must be marked as appropriate for the application and be connected to a GFCI (Ground Fault Circuit Interrupter) protected branch circuit.

1.0 SYSTEM DESIGN CONSIDERATIONS

1.1 INTRODUCTION

The RPc, GPc, XPc and XR Series Radon Fans are intended for use by trained, professional, certified/licensed radon mitigators. The purpose of these instructions is to provide additional guidance for the most effective use of RPc, GPc, XPc and XR Series Fans. These instructions should be considered supplemental to EPA/radon industry standard practices, state and local building codes and regulations. In the event of a conflict, those codes, practices and regulations take precedence over these instructions.

1.2 FAN SEALING

The RPc, GPc, XPc and XR Series Fans are factory sealed; no additional caulk or other materials are required to inhibit air leakage.

1.3 ENVIRONMENTALS

The RPc, GPc, XPc and XR Series Fans are designed to perform year-round in all but the harshest climates without additional concern for temperature or weather. For installations in an area of severe cold weather, please contact RadonAway for assistance. When not in operation, the fan should be stored in an area where the temperature is never less than 32 degrees F or more than 100 degrees F.

1.4 ACOUSTICS

The RPc, GPc, XPc and XR Series Fans, when installed properly, operate with little or no noticeable noise to the building occupants. The velocity of the outgoing air should be considered in the overall system design. In some cases the “rushing” sound of the outlet air may be disturbing. In these instances, the use of a RadonAway Exhaust Muffler is recommended.

(To ensure quiet operation of inline and remote fans, each fan shall be installed using sound attenuation techniques appropriate for the installation. For bathroom and general ventilation applications, at least 8 feet of insulated flexible duct shall be installed between the exhaust or supply grille(s) and the fan(s). RPc, GPc, XPc and XR Series Fans are not suitable for kitchen range hood remote ventilation applications.)

1.5 GROUND WATER

In the event that a temporary high water table results in water at or above slab level, water may be drawn into the riser pipes, thus blocking air flow to the RPc, GPc, XPc and XR Series Fan. The lack of cooling air may result in the fan cycling on and off as the internal temperature rises above the thermal cutoff. Should this condition arise, it is recommended that the fan be turned off until the water recedes, allowing for return to normal operation.

1.6 SLAB COVERAGE

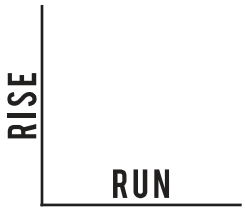
The RPc, GPc, XPc and XR Series Fans can provide coverage up to 2000+ sq. ft. per slab penetration. This will primarily depend on the sub-slab material in any particular installation. In general, the tighter the material, the smaller the area covered per penetration. Appropriate selection of the RPc, GPc, XPc and XR Series Fan best suited for the sub-slab material can improve the slab coverage. The RPc, GPc, XPc and XR Series have a wide range of models to choose from to cover a wide range of sub-slab materials. The RP140c and 145c are best suited for general purpose use. The RP260c can be used where additional airflow is required, and the RP265c is best suited for large slab, high airflow applications. Additional suction points can be added as required. It is recommended that a small pit (5 to 10 gallons in size) be created below the slab at each suction hole.

1.7 CONDENSATION & DRAINAGE

Condensation is formed in the piping of a mitigation system when the air in the piping is chilled below its dew point. This can occur at points where the system piping goes through unheated space such as an attic, garage or outside. The system design must provide a means for water to drain back to a slab hole to remove the condensation. The RPc, GPc, XPc and XR Series Fan MUST be mounted vertically plumb and level, with the outlet pointing up for proper drainage through the fan. Avoid mounting the fan in any orientation that will allow water to accumulate inside the fan housing. The RPc, GPc, XPc and XR Series Fans are NOT suitable for underground burial.

For RPc, GPc, XPc and XR Series Fan piping, the following table provides the minimum recommended pipe diameter and pitch under several system conditions.

Pipe Diameter	Minimum Rise per Ft of Run*		
	@25 CFM	@50 CFM	@100 CFM
4"	1/8"	1/4"	3/8"
3"	1/4"	3/8"	1 1/2"



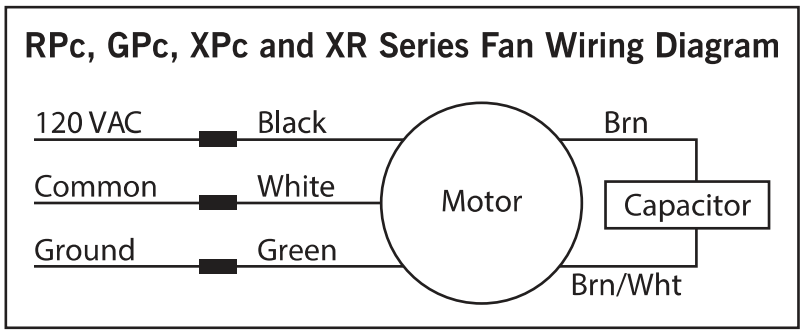
See p. 7 for detailed specifications.

1.8 SYSTEM MONITOR & LABEL

A System Monitor, such as a manometer (P/N 50017) or audible alarm (P/N 28001-2, 28001-4 or 28421), is required to notify the occupants of a fan system malfunction. A System Label (provided with Manometer P/N 50017) with instructions for contacting the installing contractor for service and identifying the necessity for regular radon tests to be conducted by the building occupants must be conspicuously placed in a location where the occupants frequent and can see the label.

1.9 ELECTRICAL WIRING

The RPc, GPc, XPc and XR Series Fans operate on standard 120V, 60Hz AC. All wiring must be performed in accordance with National Fire Protection (NFPA) National Electrical Code, Standard #70, current edition, for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician. Outdoor installations require the use of a UL Listed watertight conduit. Ensure that all exterior electrical boxes are outdoor rated and properly sealed to prevent water penetration into the box. A means, such as a weep hole, is recommended to drain the box.



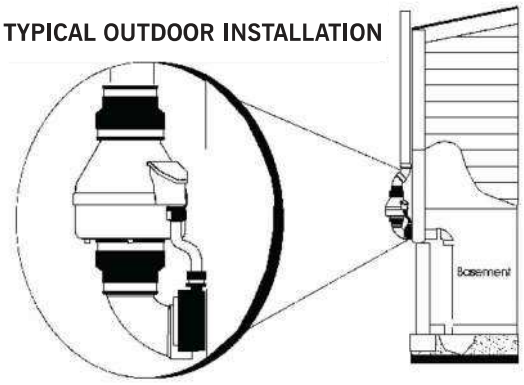
1.10 SPEED CONTROLS

The RPc, GPc, XPc and XR Series Fans are rated for use with electronic speed controls; however, speed controls are generally not recommended. If used, the recommended speed control is Pass & Seymour Solid State Speed Control (Cat. No. 94601-1).

2.0 INSTALLATION

The RPc, GPc, XPc and XR Series Fans can be mounted indoors or outdoors. (It is suggested that EPA and radon mitigation standards recommendations be followed in choosing the fan location.) The GPc fans have an integrated mounting bracket; RPc, XPc and XR Series Fans may be mounted directly on the system piping or fastened to a supporting structure by means of an optional mounting bracket.
The ducting from the fan to the outside of the building has a strong effect on noise and fan energy use. Use the shortest, straightest duct routing possible for best performance, and avoid installing the fan with smaller ducts than recommended. Insulation around the ducts can reduce energy loss and inhibit mold growth. Fans installed with existing ducts may not achieve their rated airflow.

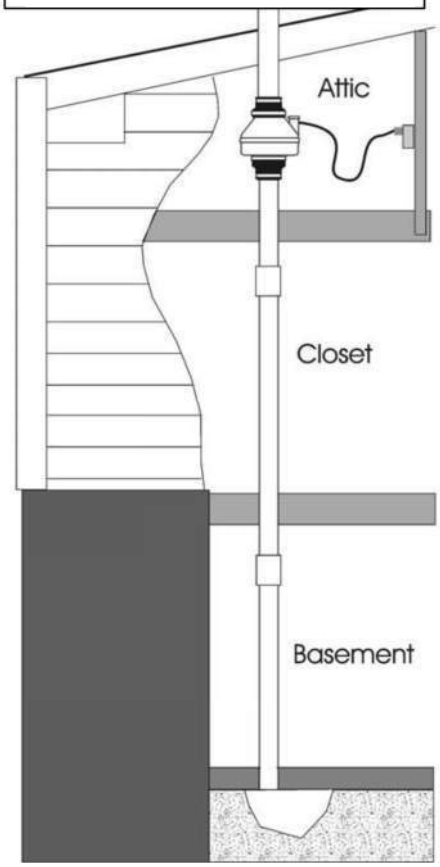
TYPICAL OUTDOOR INSTALLATION



2.1 MOUNTING

Mount the RPc, GPc, XPc and XR Series Fan vertically with outlet up. Insure the unit is plumb and level. When mounting directly on the system piping assure that the fan does not contact any building surface to avoid vibration noise.

TYPICAL INDOOR INSTALLATION



2.2 MOUNTING BRACKET (optional)

The RPc, XPc and XR Series Fans may be optionally secured with the RadonAway P/N 25007 mounting bracket. Foam or rubber grommets may also be used between the bracket and mounting surface for vibration isolation.

2.3 SYSTEM PIPING

Complete piping run, using flexible couplings as a means of disconnect for servicing the unit and for vibration isolation. As the fan is typically outside of the building thermal boundary and is venting to the outside, installation of insulation around the fan is not required.

2.4 ELECTRICAL CONNECTION

Connect wiring with wire nuts provided, observing proper connections (See Section 1.9). Note that the fan is not intended for connection to rigid metal conduit.

2.5 VENT MUFFLER (optional)

Install the muffler assembly in the selected location in the outlet ducting. Solvent weld all connections. The muffler is normally installed at the end of the vent pipe.

2.6 OPERATION CHECKS & ANNUAL SYSTEM MAINTENANCE

_____ **Verify** all connections are tight and **leak-free**.

_____ **Ensure** the RPc, GPc, XPc and XR Series Fan and all ducting are **secure and vibration-free**.

_____ **Verify system vacuum pressure** with manometer. **Insure** vacuum pressure is within normal operating range and **less than** the maximum recommended operating pressure.

(Based on sea-level operation, at higher altitudes reduce by about 4% per 1000 feet)
(Further reduce Maximum Operating Pressure by 10% for High Temperature environments.)
See Product Specifications. If this is exceeded, increase the number of suction points.

_____ **Verify Radon levels** by testing to EPA Protocol and applicable testing standards.

THE FOLLOWING CHARTS SHOW THE PERFORMANCE OF THE RPc, GPc, XPc and XR SERIES FANS

RPc Series Product Specifications

Typical CFM Vs. Static Pressure "WC									
Model	**0"**	**.25"**	**.5"**	**.75"**	**1.0"**	**1.25"**	**1.5"**	**1.75"**	**2.0"**
RP140c	135	103	70	14	-	-	-	-	
RP145c	166	146	126	104	82	61	41	21	3
RP260c	251	209	157	117	70	26	-	-	-
RP265c	334	291	247	210	176	142	116	87	52

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
RP140c	15 - 21 watts	0.7" WC
RP145c	41 - 72 watts	1.7" WC
RP260c	47-65 watts	1.3" WC
RP265c	91-129 watts	2.2" WC

**Reduce by 10% for High Temperature Operation **Reduce by 4% per 1000 ft. of altitude.*

Model	Size	Weight	Inlet/Outlet	L.2
RP140c	8.5"H x 9.7" Dia.	5.5 lbs	4.5"OD (4.0" PVC Sched 40 size compatible)	25
RP145c	8.5"H x 9.7" Dia.	5.5 lbs	4,5" OD	15
RP260c	8.6"H x 11.75" Dia.	5.5 lbs	6.0" OD	48
RP265c	8.6"H x 11.75" Dia.	6.5 lbs	6.0" OD	30

L.2 = Estimated Equivalent Length of Rigid Metal Ducting resulting in .2" WC pressure loss for Duct Size listed. Longer Equivalent Lengths can be accommodated at Flows Lower than that at .2" WC pressure loss (see CFM Vs Static Pressure "WC Table).

XPc and XR Series Product Specifications

Typical CFM Vs. Static Pressure "WC						
	0"	**.5"**	**1.0"**	**1.5"**	**1.75"**	**2.0"**
XP201c	112	95	70	40	-	-
XR261	217	149	87	27	-	-

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
XP201c	45 - 66 watts	1.7" WC
XR261	67 - 117 watts	1.6" WC

**Reduce by 10% for High Temperature Operation **Reduce by 4% per 1000 ft. of altitude.*

Model	Size	Weight	Inlet/Outlet
XP201c	9.5"H x 8.5" Dia.	6 lbs	4.5" OD
XR261	9.5"H x 8.5" Dia.	7 lbs	6" OD

GPc Series Product Specifications

Typical CFM Vs. Static Pressure "WC							
	1.0"	**1.5"**	**2.0"**	**2.5"**	**3.0"**	**3.5"**	**4.0"**
GP301c	64	54	41	4	-	-	-
GP501c	-	-	66	58	50	27	4

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
GP301c	56-100 watts	2.3" WC
GP501c	68 - 146 watts	3.8" WC

**Reduce by 10% for High Temperature Operation **Reduce by 4% per 1000 ft. of altitude.*

Model	Size	Weight	Inlet/Outlet
GP301c	13"H x 12.5" Dia.	12 lbs	3.5" OD
GP501c	13"H x 12.5" Dia.	12 lbs	3.5" OD

RPc, XPc, XR and GPc Series Additional Specifications

Model	Recommended Duct	PVC Pipe Mounting	Thermal Cutout	Insulation Class
RP140c	3" or 4" Schedule 20/40 PVC	Mount on the duct pipe or with optional mounting bracket. For Ventilation: 4", 6" or 8" Rigid or Flexible Ducting.	130°C/266°F	Class B Insulation
RP145c			130°C/266°F	Class F Insulation
RP260c			150°C/302°F	
RP265c			150°C/302°F	
XP201c	3" or 4" Schedule 20/40 PVC	Fan may be mounted on the duct pipe or with integral flanges.	120°C/248°F	Class B Insulation
XR261				
GP301c	3" or 4" Schedule 20/40 PVC	Fan may be mounted on the duct pipe or with integral flanges.	120°C/248°F	Class B Insulation
GP501c				

Continuous Duty
3000 RPM
Thermally Protected
RPc, GPc Residential and Commercial
XPc, XR Residential Only
Rated for Indoor or Outdoor Use

LISTED
Electric Fan

Intertek
77728

Conforms to
UL STD. 507
Certified to
CAN/CSA STD.
C22.2 No.113

IMPORTANT INSTRUCTIONS TO INSTALLER

Inspect the RadonAway® RPc, GPc, XPc and XR Series Fan for shipping damage within 15 days of receipt. **Notify RadonAway of any damages immediately.** RadonAway is not responsible for damages incurred during shipping. However, for your benefit, RadonAway does insure shipments.

There are no user serviceable parts inside the fan. **Do not attempt to open the housing.** Return unit to factory. (See Warranty below).

Install the RPc, GPc, XPc and XR Series Fan in accordance with all EPA, ANSI/AARST standard practices, and state and local building codes and regulations.

Provide a copy of this instruction or comparable radon system and testing information to the building occupants after completing system installation.

Warranty

RadonAway® warrants that the RPc, GPc, XPc and XR Series Fan (the "Fan") will be free from defects in materials and workmanship for a period of 12 months from the date of purchase or 18 months from the date of manufacture, whichever is sooner (the "Warranty Term").

RadonAway® will replace any fan which fails due to defects in materials or workmanship during the Warranty Term. This Warranty is contingent on installation of the Fan in accordance with the instructions provided. This Warranty does not apply where any repairs or alterations have been made or attempted by others, or if the unit has been abused or misused. Warranty does not cover damage in shipment unless the damage is due to the negligence of RadonAway®.

The Fan must be returned (at Owner's cost) to the RadonAway® factory. Any Fan returned to the factory will be discarded unless the Owner provides specific instructions along with the Fan when it is returned regardless of whether or not the Fan is actually replaced under this warranty. Proof of purchase must be supplied upon request for service under this Warranty.

5-YEAR EXTENDED WARRANTY WITH PROFESSIONAL INSTALLATION.

RadonAway® will extend the Warranty Term of the fan to 60 months (5 years) from date of purchase or 66 months from date of manufacture, whichever is sooner, provided that the fan is installed by a professional radon mitigation contractor. Proof of purchase and/or proof of professional installation may be required for service under this warranty. No extended warranty is offered outside the Continental United States and Canada beyond the standard 12 months from the date of purchase or18 months from the date of manufacture, whichever is sooner.

RadonAway® is not responsible for installation, removal or delivery costs associated with this Warranty.

LIMITATION OF WARRANTY

EXCEPT AS STATED ABOVE, THE RPc, GPc, XPc and XR SERIES FANS ARE PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULARPURPOSE.

IN NO EVENT SHALL RADONAWAY BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR RELATING TO, THE FAN OR THE PERFORMANCE THEREOF. RADONAWAY'S AGGREGATE LIABILITY HEREUNDER SHALL NOT IN ANY EVENT EXCEED THE AMOUNT OF THE PURCHASE PRICE OF SAID PRODUCT. THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY SHALL BE THE REPAIR OR REPLACEMENT OF THE PRODUCT, TO THE EXTENT THE SAME DOES NOT MEET WITH RADONAWAY'S WARRANTY AS PROVIDED ABOVE.

For service under this Warranty, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. No returns can be accepted without an RMA. If factory return is required, the customer assumes all shipping costs, including insurance, to and from factory.

RadonAway® 3 Saber Way
Ward Hill, MA 01835 USA TEL (978) 521-3703
FAX (978) 521-3964
Email to: Returns@RadonAway.com

Record the following information for your records:

Serial Number: _____ Purchase Date: _____

APPENDIX 4

Forms

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SUB SLAB DEPRESSURIZATION SYSTEM
ROUTINE INSPECTION AND MONITORING FORM

PROJECT NAME: Former Corning Hospital (C851049)
LOCTION: 176 Denison Parkway East and 171 East First Street
PROJECT NO.:
INSPECTED BY:
DATE:
WEATHER:

Inspection/ Monitoring Component	Building and Subsystem						If NO, explain
	Building 1 System 1	Building 1 System 2	Building 1 System 3	Building 1 System 4	Building 2 System 1	Building 2 System 2	
Observe fans on the roof. Fan intact and operating?	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	
Observe visible portions of SSDS piping. Piping intact?	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	
Observe labeling on SSDS piping. Labeling intact?	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	
Observe each alarm to confirm light is green. Test alarm by removing tubing. Red light should illuminate and alarm should sound. Alarm functioning properly?	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	
U-Tube Manometer Reading (inches of water column)							
PFE Reading (inches of water column)	PFE POINT ID 1: 2: 3:	 4: 5: 6:	 7: 8: 9:		PFE POINT ID 1: 2:	 3: 4:	

Additional Notes:

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SUB SLAB DEPRESSURIZATION SYSTEM
NON-ROUTINE MAINTENANCE FORM

PROJECT NAME: Former Corning Hospital (C851049)
LOCTION: 176 Denison Parkway East and 171 East First Street
PROJECT NO.:
INSPECTED BY:
DATE:
WEATHER:

BUILDING # & SSDS SYSTEM # REQUIRING NON-ROUTINE MAINTENANCE:	
CONDUTION OF SSDS UPON ARRIVAL	
NAME/ COMPANY/ POSITION OF PERSON CONDUCTING MAINTENANCE:	
SUMMARY OF MAINTENANCE ACTIVITIES PERFORMED:	
MODIFICATIONS MADE TO SSDS:	
CONDITION OF SSDS WHEN FINISHED:	
ADDITIONAL NOTES:	

Attach relevant sketches showing location(s) of any problems or incidents noted.
Attach relevant documentation such as copies of invoices for maintenance work, receipts of replacement equipment, etc..