design/construction solutions

June 17, 2019

New York State Department of Environmental Conservation
Division of Environmental Remediation – Region 7
615 Erie Boulevard West
Syracuse, New York 13204-2400
Attn: Mr. Michael Belveg

RE: Revised Interim Remedial Measure Work Plan
Former Coyne Textile Facility Vapor Intrusion Mitigation
CHA Project No.: 33525
NYSDEC Site No.: C734144

Dear Mr. Belveg,

On behalf of Ranalli/Taylor St., LLC (Ranalli/Taylor St.), please find an enclosed copy of the Revised Interim Remedial Measure Work Plan (Vapor Intrusion Mitigation) for the Former Coyne Textile Facility located at 140 Cortland Avenue in the City of Syracuse, New York. Section 4.2 of the document has been revised to reflect the comments provided in the New York State Department of Environmental Conservation's (NYSDEC's) and Department of Health's (NYSDOH's) letter dated June 6, 2019.

If you have any questions, please do not hesitate to contact me at (315) 257-7145.

Sincerely,

Meghan M. Platt

Meghan M. Platt, P.E.
Senior Engineer V

ecc: Mr. Harry Warner, NYSDEC
Ms. Angela Martin, NYSDOH
Mr. James Ranalli, Ranalli/Taylor St., LLC
Mr. James Trasher, CHA Consulting, Inc.

V:\Projects\ANY\K4\33525\Reports\Office SVI IRMWP\Final\Rev3\2019-06-17_Cover Letter.doc

One Park Place, 300 South State Street, Suite 600, Syracuse, NY 13202-2024
T 315.471.3920 • F 315.471.3569 • www.chacompanies.com

Interim Remedial Measure Work Plan

Former Coyne Textiles Vapor Intrusion Mitigation 140 Cortland Avenue Syracuse, New York

NYSDEC BCP No. C734144

CHA Project Number: 33525.2000

Prepared for:
Ranalli/Taylor St., LLC
450 Tracy Street
Syracuse, New York 13204

Prepared by:

One Park Place
300 South State Street, Suite 600
Syracuse, New York 13202
Phone: (315) 471-3920
Fax: (315) 471-3569

June 2019

V:\Projects\ANY\K4\33525\Reports\Office SVI IRMWP\Final\Rev3\2019-06-17_Coyne Office Vapor IRMWP_r3.doc

CERTIFICATION

I, the undersigned, certify that I am currently a NYS registered professional engineer and that this Interim Remedial Measure Design Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

For CHA:

(Professional Seal)

Scott M. Smith, P.E.
Printed Name of Certifying Engineer

Signature of Certifying Engineer

June 17, 2019
Date of Certification

083885
Registration Number

New York
Registration State

CHA Consulting, Inc.
Company

Associate Vice President
Title

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LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS & ABBREVIATIONS

Alpine	Alpine Environmental Services, Inc.
ANSI	American National Standards Institute
AOC	Area of Concern
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CAMP	Community Air Monitoring Plan
CCR	Construction Completion Report
CHA	CHA Consulting, Inc.
DER	Division of Environmental Remediation
HASP	Health and Safety Plan
IRMWP	Interim Remedial Measure Work Plan
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
RI	Remedial Investigation
SSDS	Sub-Slab Depressurization System
USEPA	United Stated Environmental Protection Agency

1.0 INTRODUCTION

The Former Coyne Textile Facility (Site) is located at 140 Cortland Avenue in Syracuse, New York (Figure 1). The Site owner, Ranalli/Taylor St. LLC (Ranalli/Taylor St), entered into a Brownfield Cleanup Agreement (BCA) in September 2017 through the New York State Department of Environmental Conservation's (NYSDEC's) Brownfield Cleanup Program (BCP) and is registered as BCP Site No. C734144. Upon entering the BCP, CHA Consulting, Inc (CHA) was retained to conduct a Remedial Investigation (RI) of the Site. The results of the RI and a summary of historical sampling efforts conducted by the previous Site owner are detailed in the RI Report (CHA, February 2019). The data derived from the RI was utilized to facilitate an evaluation of the potential migration of soil vapor into the building. The findings of the RI indicated the presence of VOCs in sub-slab vapor beneath the entire building at levels requiring mitigation in accordance with the New York State Department of Health's (NYSDOH) *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006*, as shown on Figure 2.

CHA has been retained by Ranalli/Taylor St. to prepare this Interim Remedial Measure Work Plan (IRMWP) to provide interim remedial steps that will be implemented at the Site to address the soil vapor intrusion within the office area. This IRMWP has been prepared in general conformance with the NYSDEC "Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation" (May 2010).

The Site is located within a commercial and industrial area within the City of Syracuse and has been identified as two non-contiguous areas as described below:

- The former main laundry facility and offices are known as 140 Cortland Avenue (Tax Map No. 094.-05-06.0) and consist of one parcel of land totaling approximately 1.75 acres. This parcel consists of the currently vacant former laundering facility and offices (approximately 118,500 square feet), and concrete sidewalks. The building is a concrete block building with a slab-on-grade foundation.
- The park area and employee parking area are known as 1002-1022 South Salina Street/Cortland Avenue (Tax Map No. 094.-20-01.0) and 1024-1040 South Salina Street/Tallman Street (Tax Map No. 094.-20-02.0) and consist of two parcels totaling approximately 1.70 acres (0.57 and 1.13 acres, respectively). These parcels consist of a small park and a fenced in asphalt parking lot.

The design and installation of the soil vapor mitigation systems has been separated into Areas of Concern (AOC); Office Vapor, and Warehouse Vapor. The three-story office section (Office) of the former main laundry facility was constructed circa 1980 and is the subject if this IRMWP (Figure 3).

2.0 INVESTIGATION AND TESTING RESULTS

2.1 DESIGN PROCESS

Alpine Environmental Services, Inc. (Alpine) mobilized to the Site on April 8, 2019 to collect Site-specific data via diagnostic pressure testing to determine the most effective system components, pressure gradient, installation methods, and vapor extraction locations for the sub-slab depressurization system (SSDS) design. On-Site diagnostic testing is considered the most accurate way to determine the pressure field extension radius when retrofitting an existing building with a SSDS, particularly when the gradation and consistency of the sub-slab materials may be inconsistent.

The proposed SSDS layout has been prepared by Alpine and is included as Appendix A. The SSDS was designed in accordance with applicable United States Environmental Protection Agency (USEPA), NYSDOH, American National Standards Institute (ANSI), and American Society of Testing and Materials Guidance Documents.

2.2 PERFORMANCE CRITERIA

The SSDS for vapor mitigation is designed to create a constant and continuous negative pressure of the sub-slab air with respect to the room air within the Office AOC of the building. The system is designed to achieve the performance criteria pressure of negative 0.004-inches of water column as described in the following sections.

2.3 PRE-DESIGN DIAGNOSTIC TESTING

On April 8 and 9, 2019, sub-slab pressure gradient pilot/communication testing was performed to identify the appropriate system components, and fan type(s) and size(s) for effective system operations. The Site-specific testing allows the technician to test the system with a variety fans and select a fan size and type that optimizes the pressure gradient relative to the fan flow rate and energy usage.

The data collection involved coring two 5-inch diameter and numerous ½-inch diameter holes through the concrete floor slab to run a series of pressure tests to characterize the permeability of the sub-slab material. The 5-inch diameter holes were utilized as vacuum extraction points with various commercially available fans. The ½-inch diameter holes were utilized as monitoring points to measure the pressure/vacuum at various distances away from the extraction point using a digital micro-manometer to verify acceptable pressure field extension for the specified fan.

2.4 RESULTS OF DIAGNOSTIC TESTING

Results of the sub-slab pressure gradient pilot testing were utilized to determine the following:

- The number of systems required for mitigating the AOC
- Fan/blower to be used in each system/sub-system
- The size of system components (i.e. pipe diameter, fittings, etc.)
- Extraction point locations; horizontal pipe run locations; fan/blower mounting positions
- Monitoring panel locations

The results of sub-slab pressure gradient pilot testing are presented in tabular format on Drawings R-3, R-3a, and R-3b, included in Appendix A.

3.0 SUB-SLAB DEPRESSURIZATION SYSTEM DESIGN

3.1 GENERAL

The SSDS is design is comprised of three (3) sub-systems, each of which will have a system fan and distinct exhaust stack. The system can be operated in its entirety or in any combination of sub-systems, thus enabling certain sub-systems to be shut down over time, as conditions allow and as NYSDEC/NYSDOH approve.

Prior to the installation of the SSDS, the Owner will be consulted for the most recent planned layout in the AOC. That layout will then be checked against the current SSDS design to identify and evaluate any potential conflicts. Though not anticipated, conflicts will be resolved prior to installation of the system, and any changes made that impact the system layout/configuration as designed will be presented to NYSDEC/NYSDOH for approval prior to installation.

3.2 PIPING AND EXTRACTION POINTS

The SSDS piping and extraction points will be installed in accordance with the following procedures:

- A 5-inch diameter hole will be cored through the concrete at each extraction point. The overall system design includes eight (8) extraction points to provide full pressure field extension across the AOC footprint (additional extraction points will be added, if needed, to address non-homogeneous conditions and to achieve the performance criteria identified in Section 2.2). Each extraction point sub-slab cavity will have 0.5 to 1-cubic foot of soil removed and will extend at least 12-inches below the bottom of the slab, as shown on Drawing Sheet R-5a (Appendix A).
- Piping entering extraction points will be sealed into the concrete floor slab with a PVC fitting or collar which fits tight in the hole. Polyurethane caulking (Geocel 3300 or equivalent) will be installed between the concrete slab and the pipe fitting flush with the interior floor surface.
- All pipe, fittings, and valve connections will be solvent welded, with the exception of fan connections, which will be connected utilizing flexible rubber couplings.
- Horizontal and vertical pipes will be secured to the roofing system and walls at intervals in accordance with the New York State Building codes.
- Horizontal pipe runs will be sloped toward the extraction points or a moisture discharge point at a minimum of 1/8-inch per linear foot. No water traps will be created.

Exhaust pipes above the fan will be 3-inch inside diameter PVC insulated polar pipe, or equivalent.

3.3 PATHWAY SEALING

During the sub-slab diagnostic pressure testing, significant air leakage into floor cracks (i.e. short circuiting) was not observed. During installation of the SSDS, any floor penetration observed to be significantly contributing to short circuiting will be sealed air tight with polyurethane caulk for penetrations 5/8-inch wide or less, and with backer rod and self-leveling polyurethane caulk for openings larger than 5/8-inch.

3.4 SYSTEM FANS

Each sub-system will include a fan which will be installed to induce a vacuum beneath the floor slab and induce a pressure gradient between the sub-slab of the building and the interior space. The fan specified for each sub-system is the RadonAwayTM HS 5000. Manufacturer cut sheets are included in Appendix B. Fans will be mounted on the exterior wall of the third-story of the building as shown on Drawing R-4b included in Appendix A. All fans will be installed in accordance with the manufacturers' installation instructions.

3.5 SYSTEM EXHAUST

Exhaust piping will be installed as follows:

- Exhaust pipes will be installed to a termination point 18 to 24-inches above the roof.
- All exhaust pipes will be fitted with a protective screen or cover to reduce the potential for water and vector intrusion.
- Exhaust discharge locations will be a minimum of 2-feet vertically, or 10 feet horizontally, from any opening to the building or air intake.

3.6 SYSTEM MONITORING

The systems will be monitored via a monitoring panel located in the northern corner of the first floor, as shown on Drawing R-4a included in Appendix A. The monitoring system will include a pressure gauge for each of the sub-system fans that will measure the real time pressure after each extraction point. The pressure gauges and low-pressure alarms will be connected to the monitoring panel and will be powered with one 110-volt electrical receptacle.

3.7 SYSTEM LABELING

Vapor mitigation system piping and components will be clearly labeled as follows to facilitate

accurate identification for operation, maintenance and monitoring purposes:

- Extraction points will be labeled with permanent stick-on labels which will correspond to as-built drawing extraction point identification.
- Above slab piping will be labeled at least once every 20-feet, at least once per room, and at least once every floor. The label will state “Mitigation System” and will be readable from a distance of three (3) feet.
- Electrical circuit breakers will be labeled "Vapor Mitigation Fan #" (# will be replaced by the corresponding sub-system).

3.8 ELECTRICAL SERVICE

Electrical service and connection work associated with the electrical components of the SSDS will be conducted as follows:

- Electrical connection of all electrical components will comply with local electrical code and manufacturer requirements.
- Each fan will include an electrical disconnect within six (6) feet of the fan mounting location. An electrical receptacle with a weather tight cover for a plug-in type fan is an acceptable disconnect to satisfy this requirement.
- Electrical inspection will be obtained by the SSDS installer and all necessary conditions will be met to obtain satisfactory inspection and permit closing.
- Fan electrical connection will comply with manufacturer requirements.
- A dedicated electrical circuit breaker will be installed for the fan electrical connections, although multiple fans can be on the same circuit, provided the circuit has sufficient capacity.
- One, 110-volt electrical outlet with four-outlet connections will be installed within two feet of the monitoring panel and must be connected to a circuit that is separate from the mitigation fans.

4.0 POST INSTALLATION TESTING & SAMPLING

4.1 POST-INSTALLATION TESTING

After the installation of the SSDS, the following testing will be performed to verify that the SSDS is operating optimally:

- Verification that the system fans are operating within manufacturer's specifications (i.e. not exceeding maximum operating pressure, etc.). If not, the fan selection will be modified and a new fan will be installed.
- Verification that system switches and gauges are operating correctly by turning off system fans and observing results.
- Performance of sub-slab to room differential pressure testing using a digital micro-manometer to verify pressure field extension throughout the area of influence.
- Test locations will be selected in a manner sufficient to demonstrate sufficient negative pressure field extension.
- The SSDS will be considered to be operating effectively when the minimum sub-slab to room differential pressure of -0.004 inches of water column can be continuously demonstrated throughout the AOC.
- All pressure test holes will be permanently sealed airtight (i.e. patching of the concrete slab) following demonstration of compliance with the performance criteria.

4.2 INDOOR/OUTDOOR POST MITIGATION SAMPLING

In accordance with Section 4.3.1 of the 2006 NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, indoor and outdoor air sampling will be conducted in the office portion of the Site and consistent with the Remedial Investigation (CHA, February 2019) sample locations. Two (2) indoor air and one (1) outdoor air sample will be collected from the office area as shown on Figure 4. Samples will be analyzed for TO-15 parameters and compared to the Air Guideline Values. Post-mitigation sampling will be conducted no sooner than 30 days after installation of the SSDS, however, given that this will be outside of the heating season, post-mitigation sampling will be postponed until the winter months, per the NYSDOH Guidance criteria. In the event that the building should be occupied prior to the heating season, a sampling plan will be submitted to NYSDEC and NYSDOH that is, at a minimum, representative of historic sampling locations, as shown on Figure 4. The sampling plan, including sample locations and the number of samples, will also be representative of the future building use (once known) and be biased towards areas of known impacts.

5.0 MONITORING

Once the SSDS is in full operation, the system will be inspected annually to evaluate the condition of system components (and repair or replace as necessary) and to confirm proper operation of the system. A draft inspection log is included in Appendix C. A summary of operations and maintenance procedures will be included as part of the Construction Completion Report, as described in Section 7.0 of this document.

6.0 HEALTH AND SAFETY PLAN

While conducting fieldwork, CHA employees may be exposed to chemical contaminants, specifically, volatile organic compounds. Additionally, CHA employees may be exposed to physical hazards, including but not limited to bending/lifting, and trip/fall hazards.

A Site Health & Safety Plan (HASP) has been prepared for the use of CHA and its employees. The requirements and guidelines in the HASP are based on a review of available information and an evaluation of potential on-site hazards from previous studies and information available to date.

This HASP will be discussed with site personnel and will be available on-site for review while work is underway. All personnel conducting site activities must be familiar with the procedures, requirements and provision of this plan, and in the event of conflicting plans/requirements, personnel must implement those safety practices which afford the highest level of protection. CHA's Field Team Leader will also serve as CHA's Health and Safety Coordinator and is responsible for implementation of this HASP into daily Site activities. A copy of the HASP is included in Appendix D.

The contractor installing the SSDS will prepare their own Site-specific HASP for their work, which will address health and safety relative to the use of specific tools and equipment they will utilize to complete the installation of the SSDS as well as electrical safety when connecting the fans to a power source and fall protection when working at heights to install the system components.

7.0 COMMUNITY AIR MONITORING PROGRAM

A Community Air Monitoring Plan (CAMP) has been prepared to provide a measure of protection for the downwind community (i.e. off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of the proposed remedial investigation activities. Air monitoring will be conducted in general accordance with the NYSDOH *Generic Community Air Monitoring Plan.* A copy of the Site-specific CAMP is provided in Appendix E.

8.0 CONSTRUCTION COMPLETION REPORT

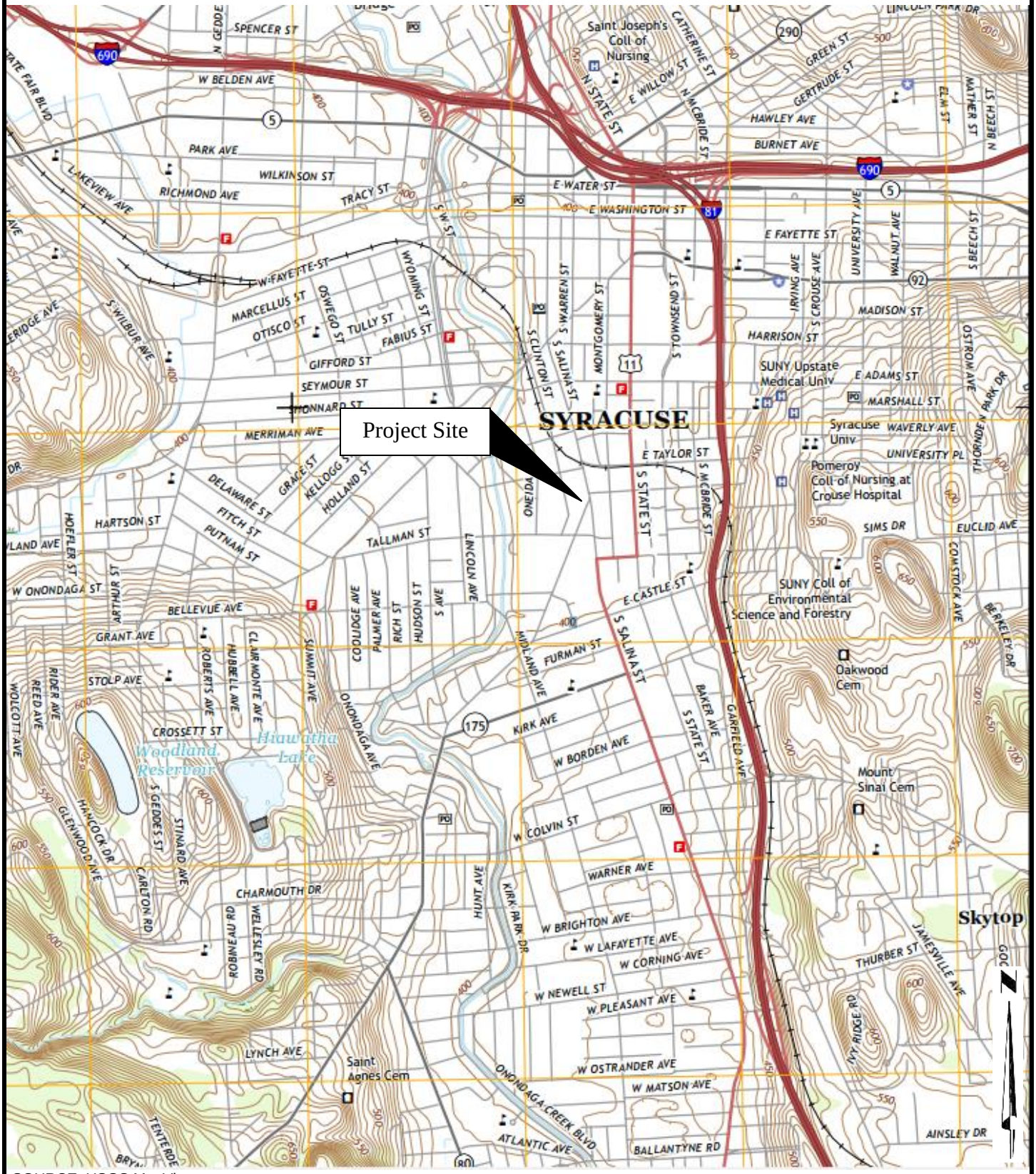
After the installation of the SSDS and post-installation system testing, CHA will prepare a Construction Completion Report (CCR). The report will include the following:

- A written description of the systems installed, including make/model of fans, fan serial numbers, system fan manufacturing dates.
- As-built drawing of the location of fans, system piping, gauges, valves, alarms, etc.
- A chart indicating the pressure, airflow and valve position in each sub-slab extraction line and the pressure and airflow in each exhaust stack at the time of commissioning.
- Manufacturer paperwork (including warranty paperwork, operational manuals, etc.) for all fans, meters, alarms, and switches installed.
- Photographs with description of system components.
- Post-installation sub-slab pressure test data on a drawing indicating test locations demonstrating that the system meets or exceeds the performance criteria.
- The requirements for post-mitigation indoor and outdoor air sampling for samples to be collected during the heating season.
- Operations and maintenance procedures, including criteria for evaluating the proper operation of the systems and a timeline for annual inspection of the systems.

9.0 SCHEDULE

It is anticipated that remedial activities described in this IRMWP will commence within approximately two weeks following agency approval, depending on Contractor availability. Installation is anticipated to occur over the course of two weeks and, following installation, a CCR will be submitted to the NYSDEC within one month.

FIGURES



SOURCE: USGS MapViewer

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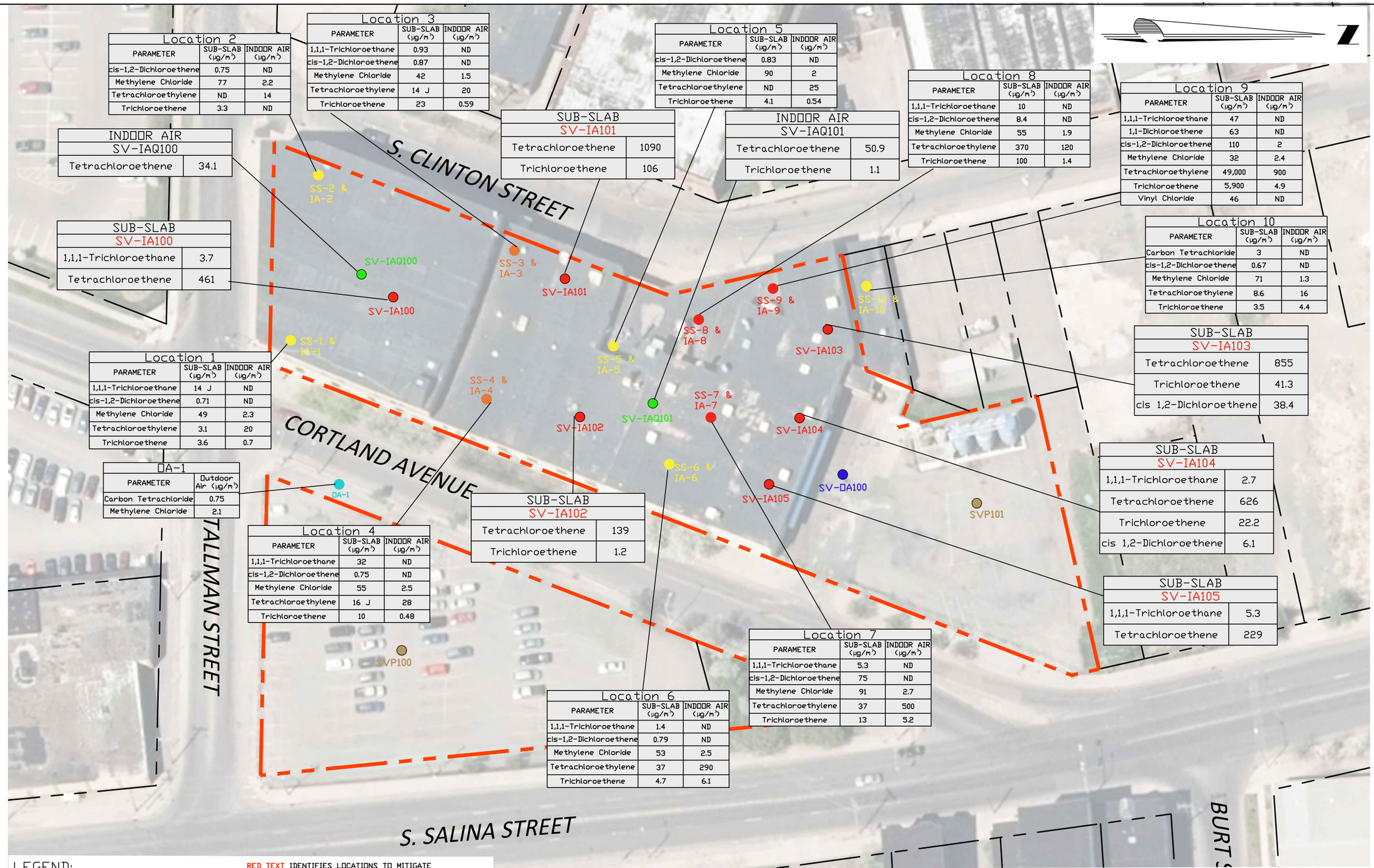
NOT TO SCALE

DATE: May 2019

FIGURE 1
SITE LOCATION MAP
140 CORTLAND AVE
SYRACUSE,
ONONDAGA COUNTY, NEW YORK

V:\Projects\ANY\K4\33525\Reports\RIWP\DRAFT\Figures\Figure 1 - Site Location.doc



Location 1

PARAMETER	SUB-SLAB (µg/m³)	INDOOR AIR (µg/m³)
1,1,1-Trichloroethane	14 J	ND
cis-1,2-Dichloroethene	0.71	ND
Methylene Chloride	49	2.3
Tetrachloroethylene	3.1	20
Trichloroethene	3.6	0.7

Location 2

PARAMETER	SUB-SLAB (µg/m³)	INDOOR AIR (µg/m³)
cis-1,2-Dichloroethene	0.75	ND
Methylene Chloride	77	2.2
Tetrachloroethylene	ND	14
Trichloroethene	3.3	ND

Location 3

PARAMETER	SUB-SLAB (µg/m³)	INDOOR AIR (µg/m³)
1,1,1-Trichloroethane	0.93	ND
cis-1,2-Dichloroethene	0.87	ND
Methylene Chloride	42	1.5
Tetrachloroethylene	14 J	20
Trichloroethene	23	0.59

Location 4

PARAMETER	SUB-SLAB (µg/m³)	INDOOR AIR (µg/m³)
1,1,1-Trichloroethane	32	ND
cis-1,2-Dichloroethene	0.75	ND
Methylene Chloride	55	2.5
Tetrachloroethylene	16 J	28
Trichloroethene	10	0.48

Location 5

PARAMETER	SUB-SLAB (µg/m³)	INDOOR AIR (µg/m³)
cis-1,2-Dichloroethene	0.83	ND
Methylene Chloride	90	2
Tetrachloroethylene	ND	25
Trichloroethene	4.1	0.54

Location 6

PARAMETER	SUB-SLAB (µg/m³)	INDOOR AIR (µg/m³)
1,1,1-Trichloroethane	1.4	ND
cis-1,2-Dichloroethene	0.79	ND
Methylene Chloride	53	2.5
Tetrachloroethylene	37	290
Trichloroethene	4.7	6.1

Location 7

PARAMETER	SUB-SLAB (µg/m³)	INDOOR AIR (µg/m³)
1,1,1-Trichloroethane	5.3	ND
cis-1,2-Dichloroethene	75	ND
Methylene Chloride	91	2.7
Tetrachloroethylene	37	500
Trichloroethene	13	5.2

Location 8

PARAMETER	SUB-SLAB (µg/m³)	INDOOR AIR (µg/m³)
1,1,1-Trichloroethane	10	ND
cis-1,2-Dichloroethene	8.4	ND
Methylene Chloride	55	1.9
Tetrachloroethylene	370	120
Trichloroethene	100	1.4

Location 9

PARAMETER	SUB-SLAB (µg/m³)	INDOOR AIR (µg/m³)
1,1,1-Trichloroethane	47	ND
1,1-Dichloroethene	63	ND
cis-1,2-Dichloroethene	110	2
Methylene Chloride	32	2.4
Tetrachloroethylene	49,000	900
Trichloroethene	5,900	4.9
Vinyl Chloride	46	ND

Location 10

PARAMETER	SUB-SLAB (µg/m³)	INDOOR AIR (µg/m³)
Carbon Tetrachloride	3	ND
cis-1,2-Dichloroethene	0.67	ND
Methylene Chloride	71	1.3
Tetrachloroethylene	8.6	16
Trichloroethene	3.5	4.4

DA-1

PARAMETER	Outdoor Air (µg/m³)
Carbon Tetrachloride	0.75
Methylene Chloride	2.1

INDOOR AIR SV-IAQ100

Tetrachloroethene	34.1

INDOOR AIR SV-IAQ101

Tetrachloroethene	50.9
Trichloroethene	1.1

SUB-SLAB SV-IA100

1,1,1-Trichloroethane	3.7
Tetrachloroethene	461

SUB-SLAB SV-IA101

Tetrachloroethene	1090
Trichloroethene	106

SUB-SLAB SV-IA102

Tetrachloroethene	139
Trichloroethene	1.2

SUB-SLAB SV-IA103

Tetrachloroethene	855
Trichloroethene	41.3
cis 1,2-Dichloroethene	38.4

SUB-SLAB SV-IA104

1,1,1-Trichloroethane	2.7
Tetrachloroethene	626
Trichloroethene	22.2
cis 1,2-Dichloroethene	6.1

SUB-SLAB SV-IA105

1,1,1-Trichloroethane	5.3
Tetrachloroethene	229

LEGEND:

- GZA 2015 SUB-SLAB SOIL VAPOR (TPA*)
- GZA 2015 SUB-SLAB SOIL VAPOR (MONITOR)
- GZA 2015 SUB-SLAB SOIL VAPOR (MITIGATE)
- GZA 2015 OUTDOOR AIR

*TPA - TAKE REASONABLE AND PRACTICAL ACTIONS TO IDENTIFY SOURCE(S) AND REDUCE EXPOSURES

RED TEXT IDENTIFIES LOCATIONS TO MITIGATE

- CHA RIWP SUB-SLAB SAMPLE LOCATION
- CHA RIWP SOIL VAPOR SAMPLE LOCATION
- CHA RIWP OUTDOOR AIR SAMPLE LOCATION
- CHA RIWP INDOOR AIR SAMPLE LOCATION

CONCENTRATIONS IN µg/m³
SAMPLES COLLECTED BY CHA APRIL 2018
NYSDOH CRITERIA EXCEEDANCES SHOWN ONLY

0 60 120
Scale in feet

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FORMER COYNE TEXTILE FACILITY
140 CORTLAND AVE.
SYRACUSE, NY 13202
IRMWP OFFICE VAPOR MITIGATION
INDOOR/OUTDOOR AIR RESULTS

PROJECT NO. 33525
DATE: 5/2019
FIGURE 2

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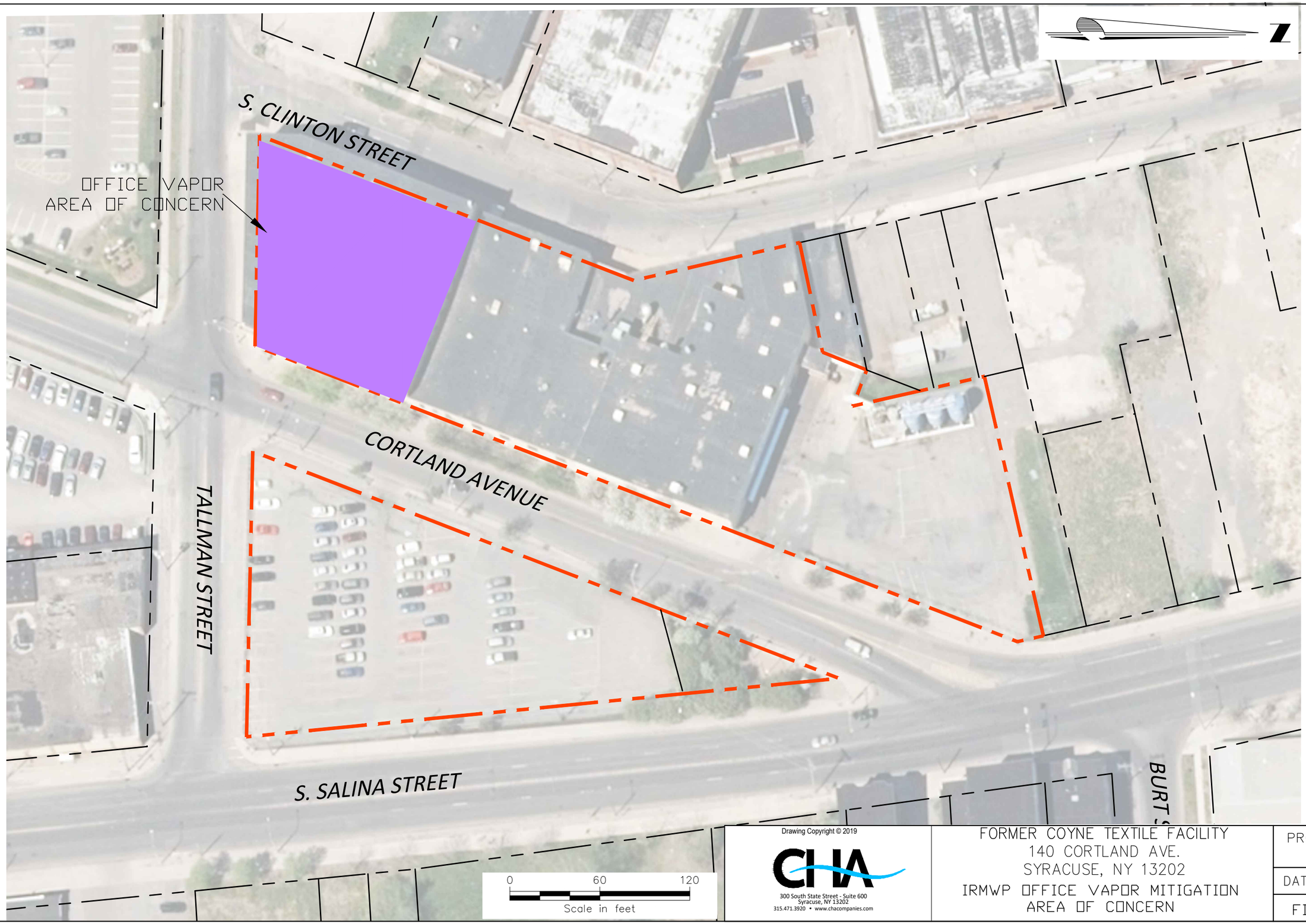

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FORMER COYNE TEXTILE FACILITY
140 CORTLAND AVE.
SYRACUSE, NY 13202
IRMWP OFFICE VAPOR MITIGATION
AREA OF CONCERN

PROJECT NO. 33525

DATE: 05/2019

FIGURE 3

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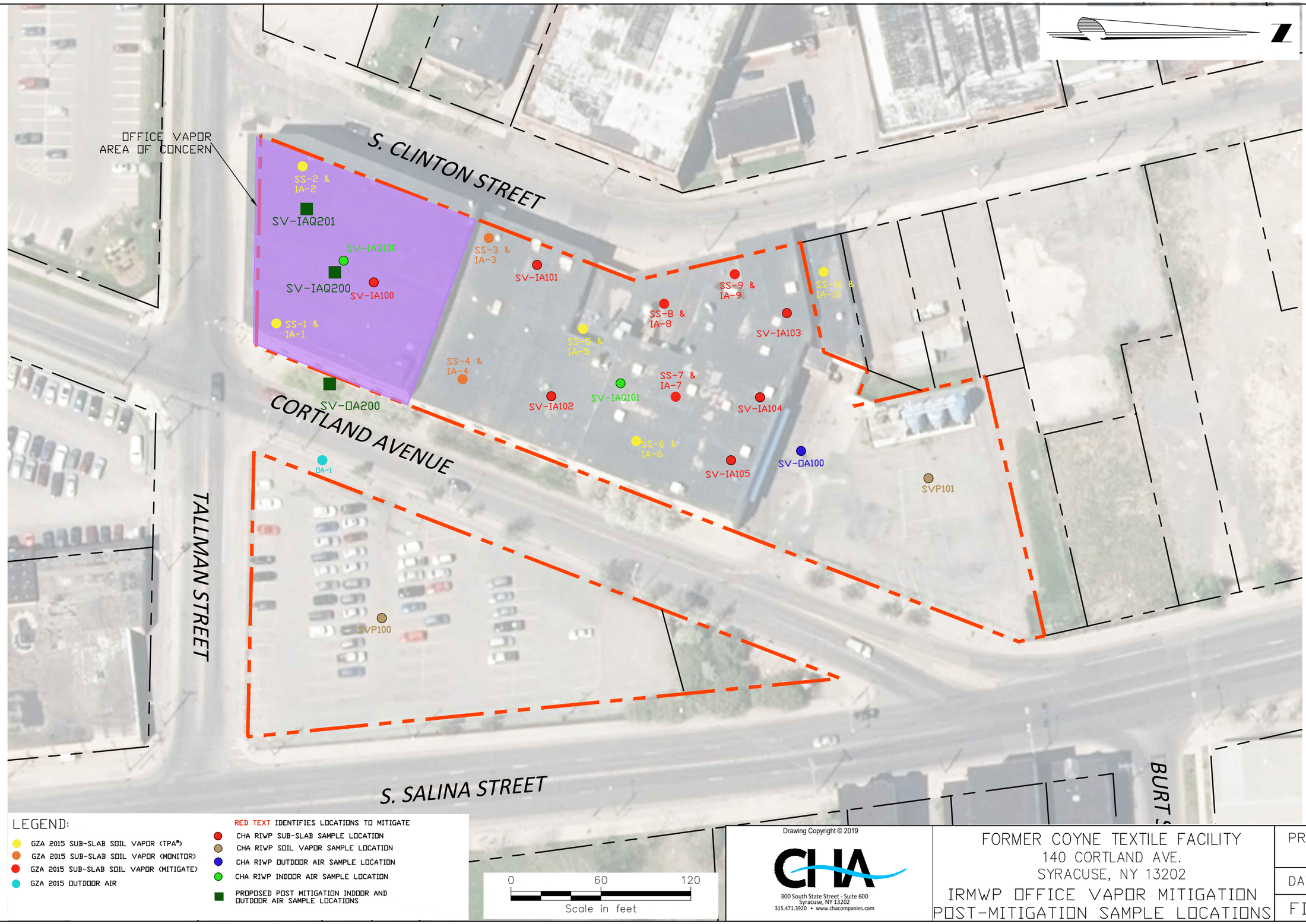

LEGEND:

- GZA 2015 SUB-SLAB SOIL VAPOR (TPA*)
- GZA 2015 SUB-SLAB SOIL VAPOR (MONITOR)
- GZA 2015 SUB-SLAB SOIL VAPOR (MITIGATE)
- GZA 2015 OUTDOOR AIR

RED TEXT IDENTIFIES LOCATIONS TO MITIGATE

- CHA RIWP SUB-SLAB SAMPLE LOCATION
- CHA RIWP SOIL VAPOR SAMPLE LOCATION
- CHA RIWP OUTDOOR AIR SAMPLE LOCATION
- CHA RIWP INDOOR AIR SAMPLE LOCATION
- PROPOSED POST MITIGATION INDOOR AND OUTDOOR AIR SAMPLE LOCATIONS

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FORMER COYNE TEXTILE FACILITY
140 CORTLAND AVE.
SYRACUSE, NY 13202
IRMWP OFFICE VAPOR MITIGATION POST-MITIGATION SAMPLE LOCATIONS

PROJECT NO. 33525

DATE: 5/2019

FIGURE 4

File: V:\PROJECTS\ANY\K4\33525\CADD_ACAD\ENVP\OFFICE IRMWP\FIGURE 4.DWG Saved: 5/31/2019 11:33:11 AM Plotted: 5/31/2019 11:34:17 AM Current User: Miller, Samantha LastSavedBy: 4187

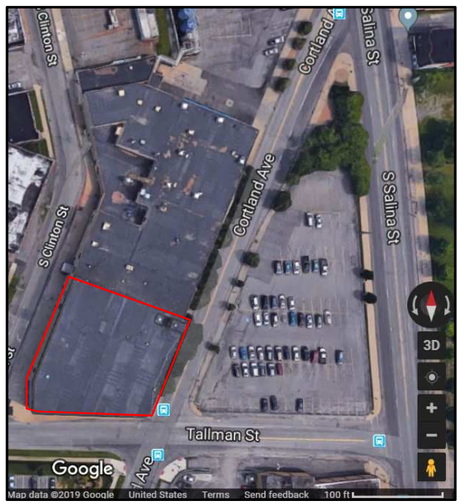
APPENDIX A

SSDS Design

DRAFT Vapor Mitigation System Design

Former Coyne Textile Facility (Target Area)

140 Cortland Avenue, Syracuse, New York



Date:
May 10, 2019

Prepared for:

CHA Companies
300 South State Street, Ste 600
Syracuse, New York 13202

Prepared by:

Alpine Environmental Services, Inc.
438 New Karner Road
Albany, New York 12205

Alpine Inc. ENVIRONMENTAL SERVICES

DATE:
May 2019

Former Coyne Textile Facility
140 Cortland Avenue
Syracuse, New York

DESCRIPTION	DATE
Draft	May 10, 2019
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PROJECT NO. 19-24156-R

SHEET NO.

R - 1

SHEET TITLE	Title		
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1.01 APPLICABLE SPECIFICATIONS, CODES, AND STANDARDS

A. OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor sources to Indoor Air, US EPA Publication No. 9200.2-154 (2015).
B. ANSI/AARST RMS-LB 2018, Radon Mitigation Standards for Schools and Large Buildings.
C. NYS DOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (2006,updated to 5/2017)
D. ASTM D-2665-11 - Standard Specification for PVC Plastic Drain, Waste, and Vent Pipe and Fittings
E. ASTM D-2564 - Standard Specification for Solvent Cements for Poly PVC Plastic Piping Systems
F. ASTM F-656-10 - Standard Specification for Primers for Use in Solvent Cement Joints of PVC Pipe and Fittings.

1.02 DEFINITIONS & ABBREVIATIONS

AOI - Area of Influence: The area to be covered by the vapor mitigation system.
cfm - cubic feet per minute
DWV - Drain, Waste, and Vent
PC- Performance Criteria : The minimal acceptable sub slab to room vacuum pressure induced by the vapor mitigation system in the AOI (-0.004"WC).
ROI- Radius of Influence: The radius extending out from an extraction point where the PC is met or exceeded.
SSD- Sub Slab Depressurization: Creation of a vacuum (negative differential pressure) under the ground floor slab with respect to the room above.
SP - Subject Property
"WC - Inches of Water Column

1.03 SCHEDULES

A. Schedule of Vapor Mitigation System drawings:

Sheet	Area/Description
R-1	Title
R-2a	General Notes 1
R-2b	General Notes 2
R-2c	General Notes 3
R-3	Drawing: Pilot Test Locations-Overview
R-3a	Drawing: Pilot Testing Results -Test EP-1
R-3b	Drawing: Pilot Testing Results - Test EP-2
R-4a	Drawing: System Layout_Plan View_First Floor
R-4b	Drawing: System Layout_Plan View_Third Floor
R-5a	Drawing: Details 1: Moisture Discharge Point, and Extraction Point Detail
R-5b	Drawing: Details 2: Monitoring Panel
R-5c	Drawing: Details 3: Fan Mounting

B. Schedule of Vapor Mitigation System Cut Sheets:

Sheet	Manufacturer/Model	Description
CS-01	Radonaway HS5000	System Fans
CS-02	Polar 3-inch ID PVC Pipe	Insulated Pipe for Exhaust Stack
CS-03	Dwyer Instruments Magnehelic 2030	Pressure Gauge
CS-04	Radonaway Checkpoint IIA	Low Pressure Alarm
CS-05	Leviton 47605-21	Enclosure for monitoring pane

1.04 AREA OF INFLUENCE

The Area of Influence (AOI) has been delineated as a portion of the footprint of the Subject Property (SP) Building. The target AOI is the portion of the building reportedly constructed in circa 1980, approximately the southern 1/3 of the building footprint.

1.05 BASIS FOR DESIGN

The vapor mitigation design was developed utilizing the following:

A. Area of influence: The footprint of the circa 1980 portion of the SP Building.

B. Performance Criteria: The minimal acceptable sub slab to room vacuum pressure induced by the vapor mitigation system in the AOI is -1 Pascal (-0.004 "WC). This is a boundary limit, and all other areas covered by the system shall meet or exceed it.

C. Pilot testing was performed in the target area of the SP in April 2019. Fans with different characteristics were operated on test extraction holes. Fan operating pressures and sub slab floor vacuum readings were measured and recorded. Results of the pilot testing are located on drawing sheet R-3, R-3a, and R-3b.

Pilot testing is not exhaustive. It relies on assumptions of homogeneity of the near sub slab aggregate material, as well as the construction techniques used to place the sub slab aggregate material (i.e. level of compaction, etc.). The Resulting Layout relies on the sub slab test data to generalize the sub slab pressure gradient used in the design. As such, lack of consistency in the actual sub slab pressure gradient may be cause for modifications to the design.

PART 2 MATERIALS

2.01 PIPE, FITTINGS, & VALVES

A. Pipe & Fittings
1. All system piping, from extraction points tie in up to the fan inlet connection shall be 4" inside diameter schedule 40 PVC.
2. All pipe fittings shall be 4" inside diameter schedule 40 PVC with slip connectors suitable for solvent weld with the exception of fan connectors.
3. Fan connectors shall be flexible PVC fittings with screw tightened clamps (Fernco or equivalent) sized to connect the piping to the fan connection points.
4. All exhaust stack pipes above the fans shall be 3-inch nominal inside diameter, schedule 40 PVC pipe, pre-insulated Polar Pipe or equivalent.
5. All extraction points shall be 3-inch inside diameter, schedule 40 PVC pipeup to the trunk line tie in.
6. All extraction point valves shall be 3-inch diameter, schedule 40, PVC ball valves. A valve shall be installed on all extraction points on all sub systems with greater than one extraction point.

Alpine Inc. ENVIRONMENTAL SERVICES

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SHEET NO.

R - 2a

SHEET TITLE	General Notes 1			
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2.02 SYSTEM FAN/BLOWER & ACCESSORIES

A. Schedule of System Fans (or acceptable equivalents):

Quantity	Manufacturer/Model	Sub systems	Mount Location
3	Radonaway HS5000	3	Exterior Sidewall

B. All exterior parts shall be rated for exterior use.

2.03 SYSTEM MONITORING EQUIPMENT

A. Monitoring Panel (See Sheet R-5b)
1. Leviton Structured 21" Media Enclosure Model 47605-21E with flush mount cover Model 47605-21C or equivalent.
2. Pressure Gauge Dwyer Magnehelic Model 2030 (www.dwyer-inst.com) Pressure Gauges shall have a range from zero to thirty inches of water column. (Quantity: 3)
3. Low Pressure Alarm Radonaway Checkpoint IIA Low Pressure Alarm (Quantity: 3) with Alarm set to activate at 0.25 inches of water column.

2.04 Miscellaneous

A. None

PART 3 EXECUTION

3.01 INSTALLATION

A. Extraction Points (EPs).

EPs shall be installed at eight locations in the SP building. Extraction points shall be installed at locations identified on Sheets R-4a. See Sheet R-5a for installation details.

EPs shall be installed through a five-inch hole through the concrete floor with approximately 0.5-1 cubic foot of soils removed and extend at least 12 inches below the bottom of the slab. The 3-inch diameter PVC pipe shall be secured within the concrete extraction hole by inserting a PVC fitting or collar which fits tight in the hole and decreasing pipe through appropriately sized PVC fittings.

Polyurethane caulking (Geocel 3300 or equivalent) shall be installed in the annulus between the concrete slab and the pipe fitting/collar to flush with the interior floor surface, following the urethane manufacturer's installation instructions.

The pipe shall also be secured to walls at the specified intervals in accordance with NYS Building Code for DWV pipe.

B. Pipe System

1. Steps will be taken to ensure that foreign materials are not left in the extraction point cavities or drawn into the system piping or fans which might later interfere with RM system performance.
2. All pipe, fitting, and valve connections shall be solvent welded, with the exception of the fan connections.
3. Horizontal pipe runs shall be sloped toward the sub slab extraction points or a moisture discharge point a minimum of $^1/_8$ inch per foot. No water traps shall be created in any mitigation system pipe.
4. Horizontal and vertical runs of mitigation system piping shall be supported in accordance with NYS building code for DWV pipe of the same type and size.
5. Approximate routing of pipe to exhaust locations is indicated on the accompanying drawings. Field adjustments shall be made to avoid conflicts with current service, access, or use requirements of the space.
6. A "T" fitting (3"x3"x3") shall be installed on the end of each exhaust pipe if there is a risk of debris falling into the exhaust opening.
7. Exhaust pipe above the fan shall be 3-inch inside diameter PVC insulated polar pipe or equivalent.

C. Fan Installation

1. Install fans in accordance with manufacturer's installation requirements.
2. Fans specified in section 1.03B, shall be side wall mounted at the locations designated on Sheet R-4.
3. Fan connections to pipe shall be with appropriately sized flexible PVC couplings (Fernco or equivalent).
4. Attach fan to building structural member.
5. Exhaust discharge location for each subsystem is 18-24" above the roof. Additionally, it shall be 2 feet above, or if not 2 feet above then 10 feet horizontally, from any opening to the building air or air intake. Extend exhaust stack discharge height as needed to meet this requirement, with added support as needed.
6. Roof penetrations shall be sealed weather tight.
7. See Sheet R-5c for details of sidewall mounted fans.

Figure 3.01Ci: Example of sidewall mounted fan at roof elevation change.

Figure 3.01Cii: Sketch of sidewall mounted fans on existing photo at roof elevation change.

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R - 2b

SHEET TITLE	General Notes 2		
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D. Monitoring Panel
1. The monitoring panel shall be installed at the location identified on Sheet R-4a.
2. The monitoring panel shall include a pressure gauge for each sub system (ie each fan) measuring the real time pressure in the sub system pipe, after all EPs of a sub system have manifolded to one common line.
3. Pressure gauges and low pressure alarms shall be connected to the monitoring panel location of the system pipe with polyethylene (or equivalent) tubing and a brass barb. Tubing outside the monitoring panel and indicator panel areas, shall be run in PVC conduit for protection.
4. See Figure 3.01D for an example of a monitoring panel and drawing sheet R-5b for details.

E. Labeling
1. Label the EPs on each the extraction point with permanent stick on labels, below the valve, with the number convention identified in Sheet R-4a.
2. Label above slab piping at least once every 20 feet, at least once per room, and at least once on every floor. Label shall read "Mitigation System" and shall be readable from a distance of three feet.
3. Circuit breaker(s) in the electric panel serving the vapor mitigation system fans shall be labeled as " Vapor Mitigation Fan(s)".

F. Electrical
1. Fans and Alarm panel electrical wiring and connection shall be in accordance with applicable electrical codes.
2. Fan electrical connections shall comply with manufacturer requirements.
3. An electrical disconnect shall be provided on the exterior of the building within six feet of each fan.
4. Fan electrical connections shall be through a dedicated electrical circuit breaker, although multiple fans can be on the same circuit, provided the circuit has sufficient capacity. Connect fan electric to existing electrical circuit panel identified on Sheet R-4b.
5. One, 110V electrical outlet with 4 outlet connections shall be installed within 2 feet of the monitoring panel location. A dedicated circuit is not required; however, it shall not be the same circuit that the mitigation system fans are connected to. A panel is identified on Sheet R-4a in close proximity to the monitoring panel.

G. System Controls
1. The mitigation fan is operated as on or off as controlled by a manual electrical disconnect adjacent to the fan mounting location and by the electrical circuit breaker inside the building.

3.02 TESTING & BALANCING

A. Testing & Balancing of SSD System

Following the installation of the SSD mitigation system, the following tests shall be performed to verify the system is operating optimally. The post installation testing shall include the following:

1. Verify system fan is operating within manufacturer's specifications (i.e. not exceeding fan maximum operating pressure, etc.).
2. Verify system switches and gauges are operating correctly by turning off system fans observing results.
3. Perform sub slab to room differential pressure testing with a digital micro manometer to verify pressure field extension throughout the AOI.
4. The mitigation system shall be considered successful when the sub slab to room vacuum within the AOI is at least -0.004"WC and can be continuously demonstrated.

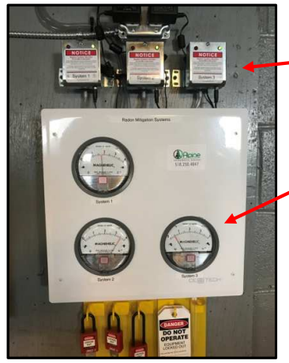

Figure 3.01D: Example of Monitoring Panel.

3.03 DOCUMENTATION

A. Operations & Maintenance Report

Following the installation of the mitigation system, an Operations & Maintenance (O&M) Report shall be provided in electronic format (PDF). O & M Report shall include the Following Items:

1. A written description of the system installed, including make/model of fans, fan serial numbers (if any), system fan date of manufacture.
2. A chart indicating the pressure in each sub system with provisions for recording future readings.
3. Manufacturer paperwork (including warranty paperwork) for all fans, meters, alarms, gauges, etc. installed.
4. Photos with description of system components.
5. As built drawing of the location of fans, piping, gauges, valves, alarms, and electrical tie in locations, etc.
6. Troubleshooting table.
7. Provide inspection criteria and timeline.

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PROJECT NO. 19-24156-R

SHEET NO.

R - 2c

SHEET TITLE	General Notes 3		
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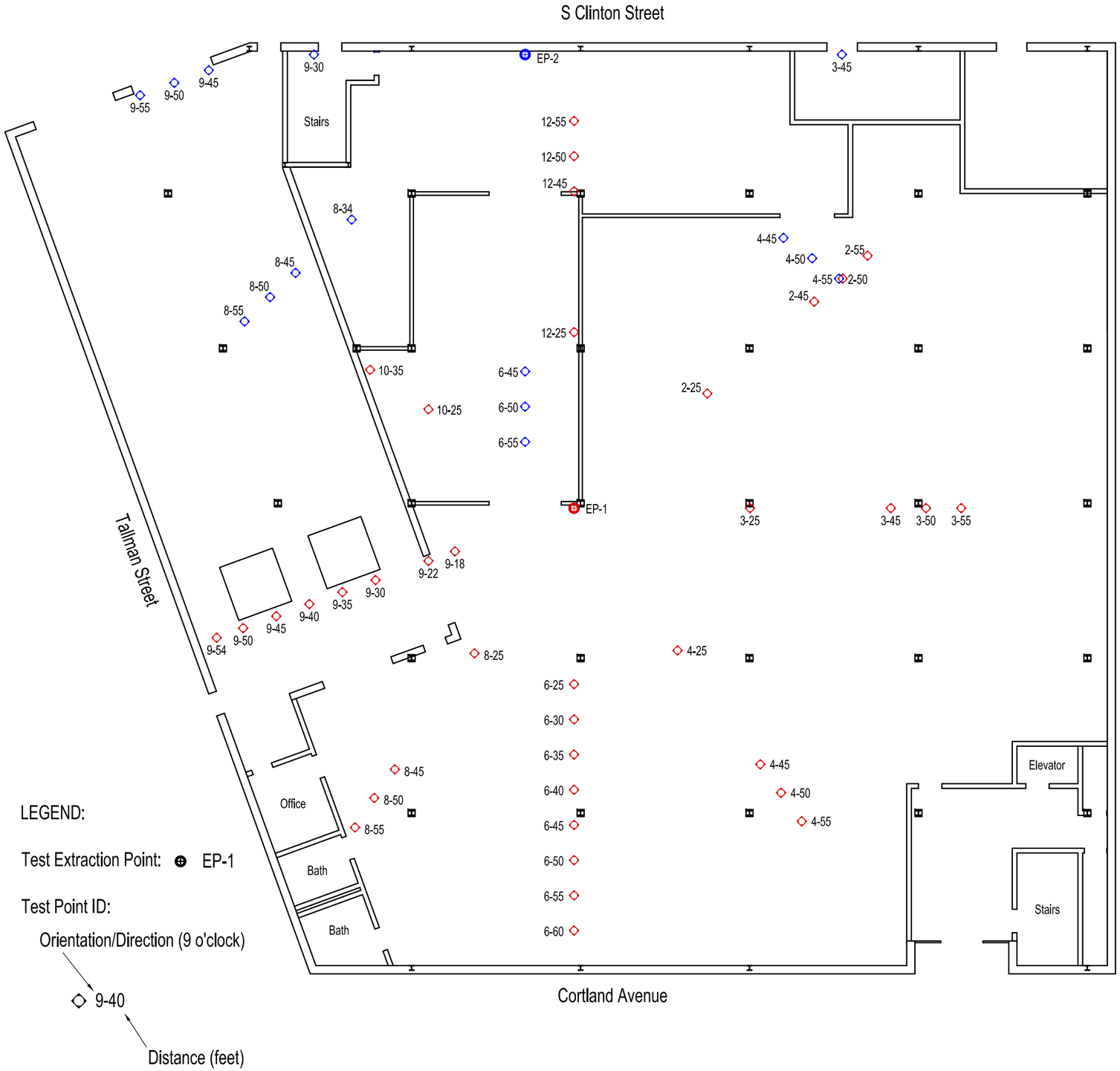

EP 1

Testing Location	HS50000 20" WC	Rn4-4	No Fan
12-25	-0.033	-0.012	0.000
12-45	-0.025	-0.009	0.000
12-50	-0.023	-0.008	0.000
12-55	-0.022	-0.006	0.000
2-25	-0.034	-0.012	0.001
2-45	-0.030	-0.011	0.002
2-50	-0.023	-0.010	0.000
2-55	-0.023	-0.008	0.000
3-25	-0.033	-0.013	0.000
3-45	-0.020	-0.006	0.000
3-50	-0.016	-0.005	0.001
3-55	-0.014	-0.004	0.000
4-25	-0.036	-0.013	0.000
4-45	-0.018	-0.005	0.000
4-50	-0.013	-0.004	0.000
4-55	-0.010	-0.003	0.000
6-25	-0.036	-0.012	0.000
6-30	-0.034	-0.011	0.001
6-35	-0.032	-0.008	0.001
6-40	-0.029	-0.007	0.002
6-45	-0.022	-0.005	0.002
6-50	-0.007	-0.003	0.003
6-55	-0.001	0.000	0.003
6-60	-0.001	0.000	0.001
8-25	-0.037	-0.014	0.000
8-45	-0.009	-0.003	0.002
8-50	-0.002	0.000	0.002
8-55	0.000	0.000	0.000
9-18	-0.035	-0.013	0.000
9-22	-0.026	-0.008	0.000
9-30	-0.020	-0.006	0.000
9-35	-0.008	-0.001	0.000
9-40	-0.007	0.000	0.001
9-45	-0.006	0.000	0.002
9-50	0.000	0.000	0.003
9-54	0.000	0.000	0.000
10-25	-0.033	-0.011	0.000
10-35	-0.026	-0.007	0.000

EP 2

Testing Location	HS50000	Rn4-4	No Fan
3-45	-0.011	-0.019	0.000
4.45	-0.013	-0.016	0.000
4-50	-0.014	-0.020	0.000
4-55	-0.012	-0.016	0.000
6-45	-0.015	-0.021	0.000
6-50	-0.013	-0.018	0.000
6-55	-0.013	-0.017	0.000
8-34	-0.011	-0.020	0.000
8-45	-0.003	-0.005	0.000
8-50	-0.003	-0.003	0.000
8-55	-0.002	-0.001	0.000
9-30	-0.013	-0.011	0.000
9-45	-0.004	-0.003	0.002
9-50	-0.004	-0.002	0.001
9-55	-0.003	0.000	0.001

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SHEET NO: R-3

SHEET TITLE:	RADON MITIGATION SYSTEM - PILOT TEST OVERVIEW		
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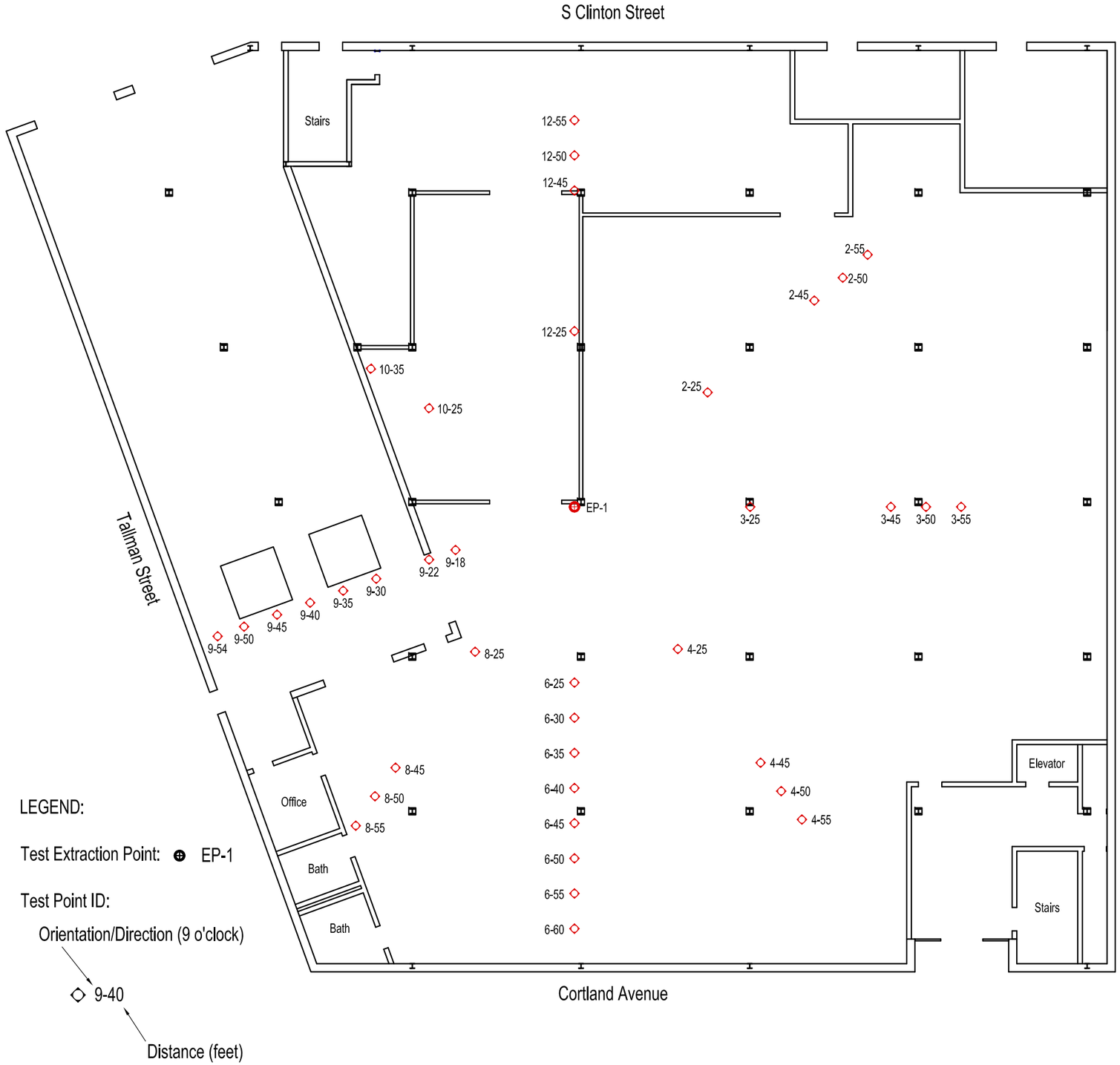

EP 1

Testing Location	HS50000 20" WC	Rn4-4	No Fan
12-25	-0.033	-0.012	0.000
12-45	-0.025	-0.009	0.000
12-50	-0.023	-0.008	0.000
12-55	-0.022	-0.006	0.000
2-25	-0.034	-0.012	0.001
2-45	-0.030	-0.011	0.002
2-50	-0.023	-0.010	0.000
2-55	-0.023	-0.008	0.000
3-25	-0.033	-0.013	0.000
3-45	-0.020	-0.006	0.000
3-50	-0.016	-0.005	0.001
3-55	-0.014	-0.004	0.000
4-25	-0.036	-0.013	0.000
4-45	-0.018	-0.005	0.000
4-50	-0.013	-0.004	0.000
4-55	-0.010	-0.003	0.000
6-25	-0.036	-0.012	0.000
6-30	-0.034	-0.011	0.001
6-35	-0.032	-0.008	0.001
6-40	-0.029	-0.007	0.002
6-45	-0.022	-0.005	0.002
6-50	-0.007	-0.003	0.003
6-55	-0.001	0.000	0.003
6-60	-0.001	0.000	0.001
8-25	-0.037	-0.014	0.000
8-45	-0.009	-0.003	0.002
8-50	-0.002	0.000	0.002
8-55	0.000	0.000	0.000
9-18	-0.035	-0.013	0.000
9-22	-0.026	-0.008	0.000
9-30	-0.020	-0.006	0.000
9-35	-0.008	-0.001	0.000
9-40	-0.007	0.000	0.001
9-45	-0.006	0.000	0.002
9-50	0.000	0.000	0.003
9-54	0.000	0.000	0.000
10-25	-0.033	-0.011	0.000
10-35	-0.026	-0.007	0.000

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140 Cortland Avenue
Syracuse, New York

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SHEET NO:

R-3a

SHEET TITLE:	RADON MITIGATION SYSTEM - PILOT TEST - EP-1		
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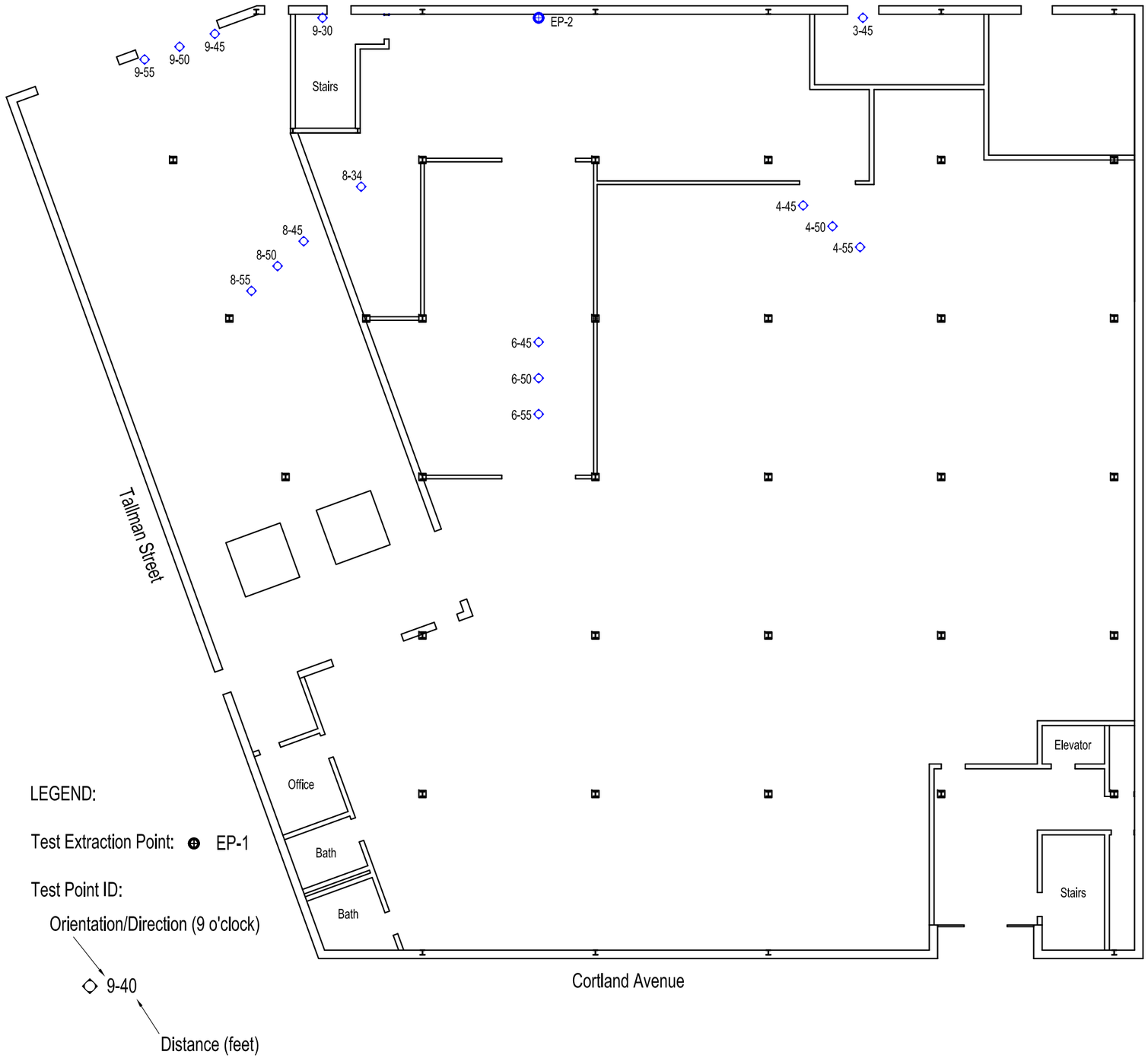

EP 2

Testing Location	HS50000	Rn4-4	No Fan
3-45	-0.011	-0.019	0.000
4.45	-0.013	-0.016	0.000
4-50	-0.014	-0.020	0.000
4-55	-0.012	-0.016	0.000
6-45	-0.015	-0.021	0.000
6-50	-0.013	-0.018	0.000
6-55	-0.013	-0.017	0.000
8-34	-0.011	-0.020	0.000
8-45	-0.003	-0.005	0.000
8-50	-0.003	-0.003	0.000
8-55	-0.002	-0.001	0.000
9-30	-0.013	-0.011	0.000
9-45	-0.004	-0.003	0.002
9-50	-0.004	-0.002	0.001
9-55	-0.003	0.000	0.001

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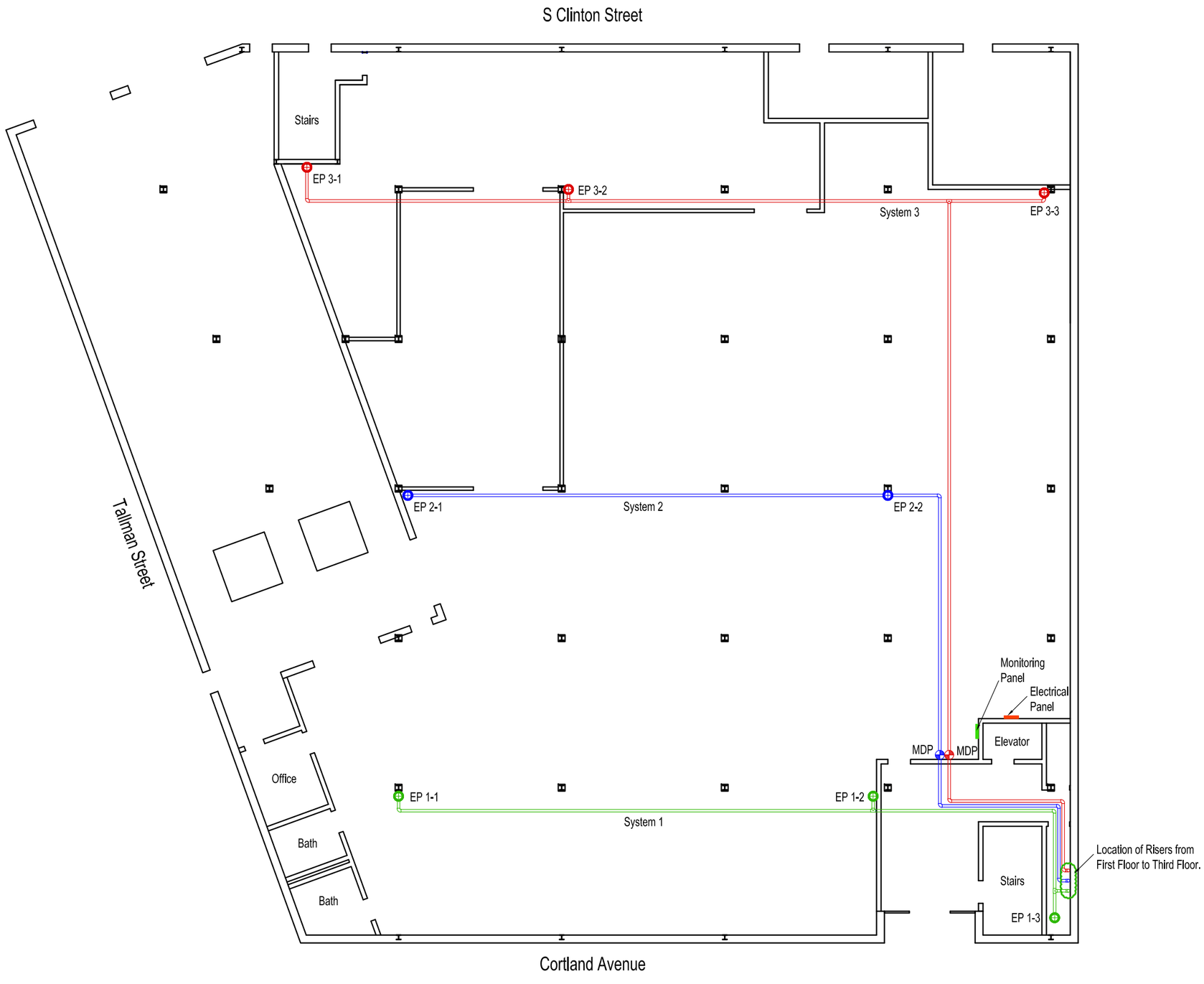
SHEET NO:

R-3b

SHEET TITLE:	RADON MITIGATION SYSTEM - PILOT TEST - EP-2			
DRAWN BY:	BG	CHECKED BY:	MS	



LEGEND:

Extraction Point: EP 1-1

Moisture Discharge Point: MDP

Extraction System Number: Sub-System 1

Mitigation Piping:

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PROJECT NO: 19-24156-R

SHEET NO: R-4a

SHEET TITLE:	RADON MITIGATION SYSTEM - SYSTEM LAYOUT - FIRST FLOOR		
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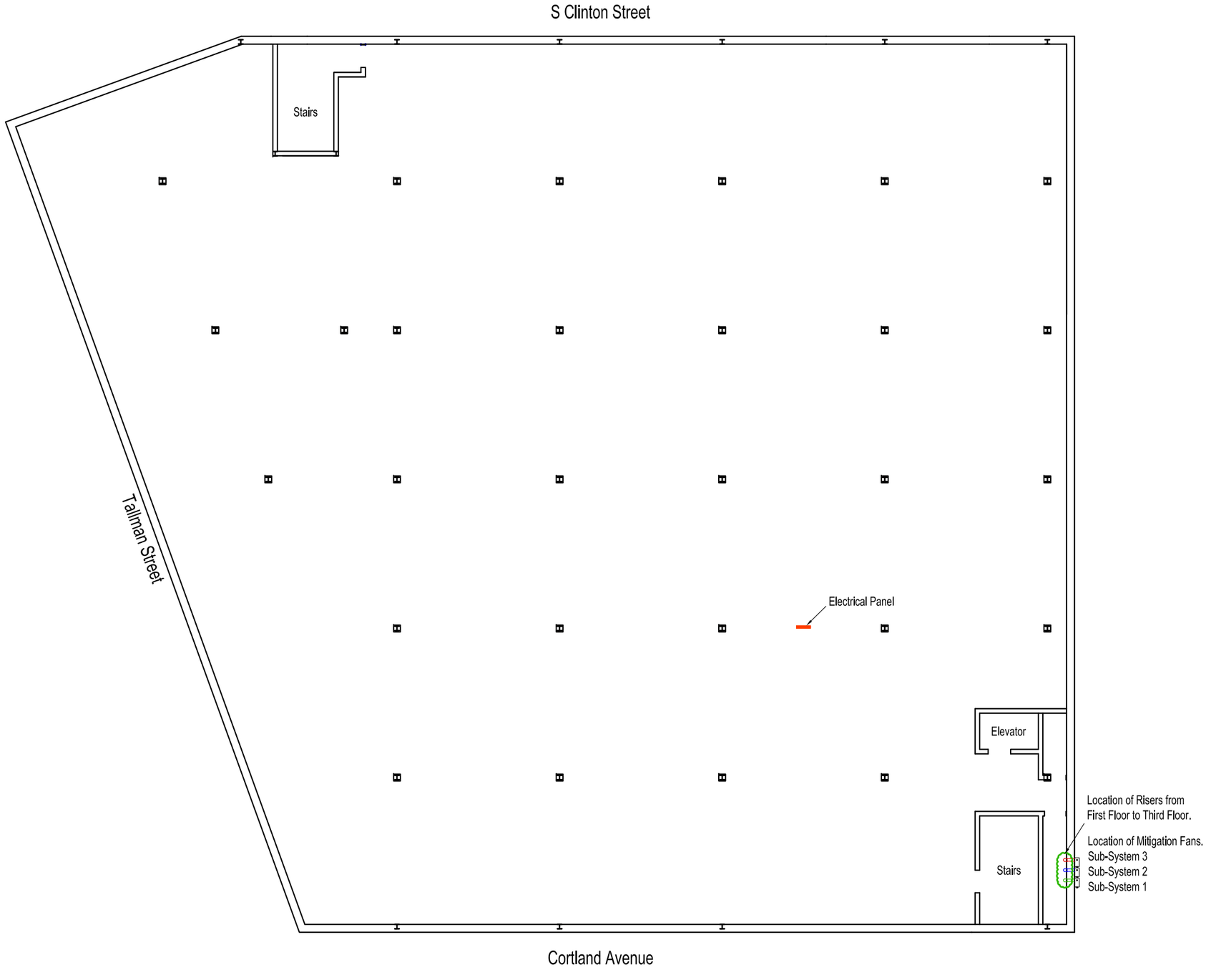

LEGEND:

Extraction System Number: Sub-System 1

Mitigation Piping:

Mitigation Fan:

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140 Cortland Avenue
Syracuse, New York

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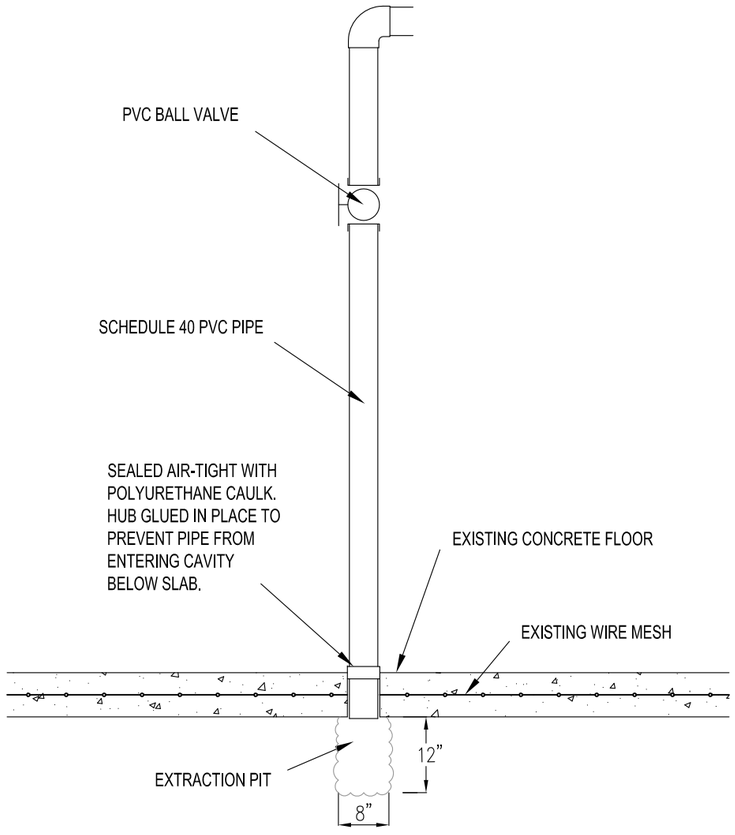
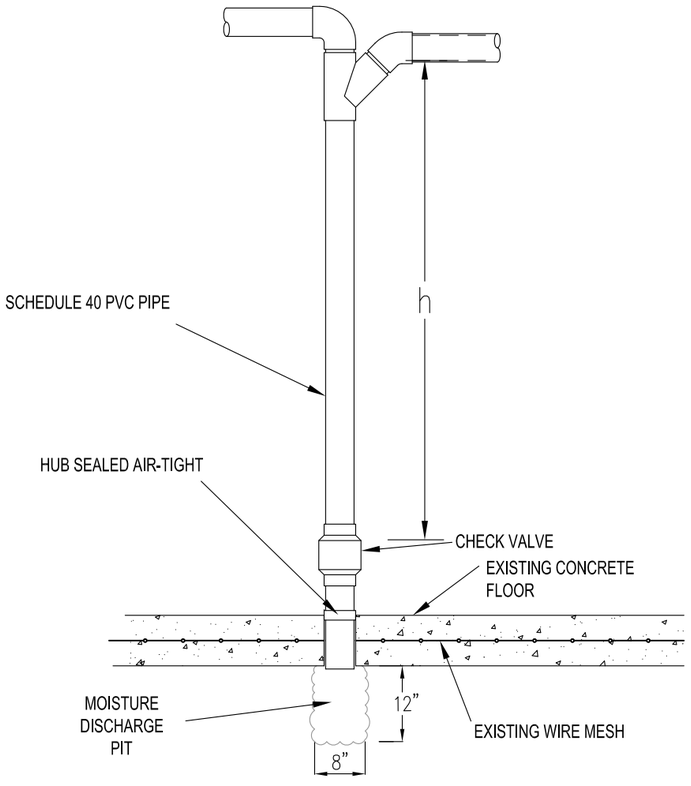
SHEET NO:

R-4b

SHEET TITLE:	RADON MITIGATION SYSTEM - SYSTEM LAYOUT - THIRD FLOOR			
DRAWN BY:	BG	CHECKED BY:	MS	



EXTRACTION POINT DETAIL
NOT TO SCALE



THE RELATIONSHIP OF THE HEIGHT (h in inches) BETWEEN THE CHECK VALVE AND THE NEAREST LATERAL PIPING ABOVE, AND THE CRACKING FORCE OF THE CHECK VALVE (Pc in pounds) IS AS FOLLOWS: Pc (pounds) < h/4 (pounds/inch)

MOISTURE DISCHARGE POINT DETAIL
NOT TO SCALE

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SHEET NO:

R-5a

SHEET TITLE:	RADON MITIGATION SYSTEM - SYSTEM DETAILS 1			
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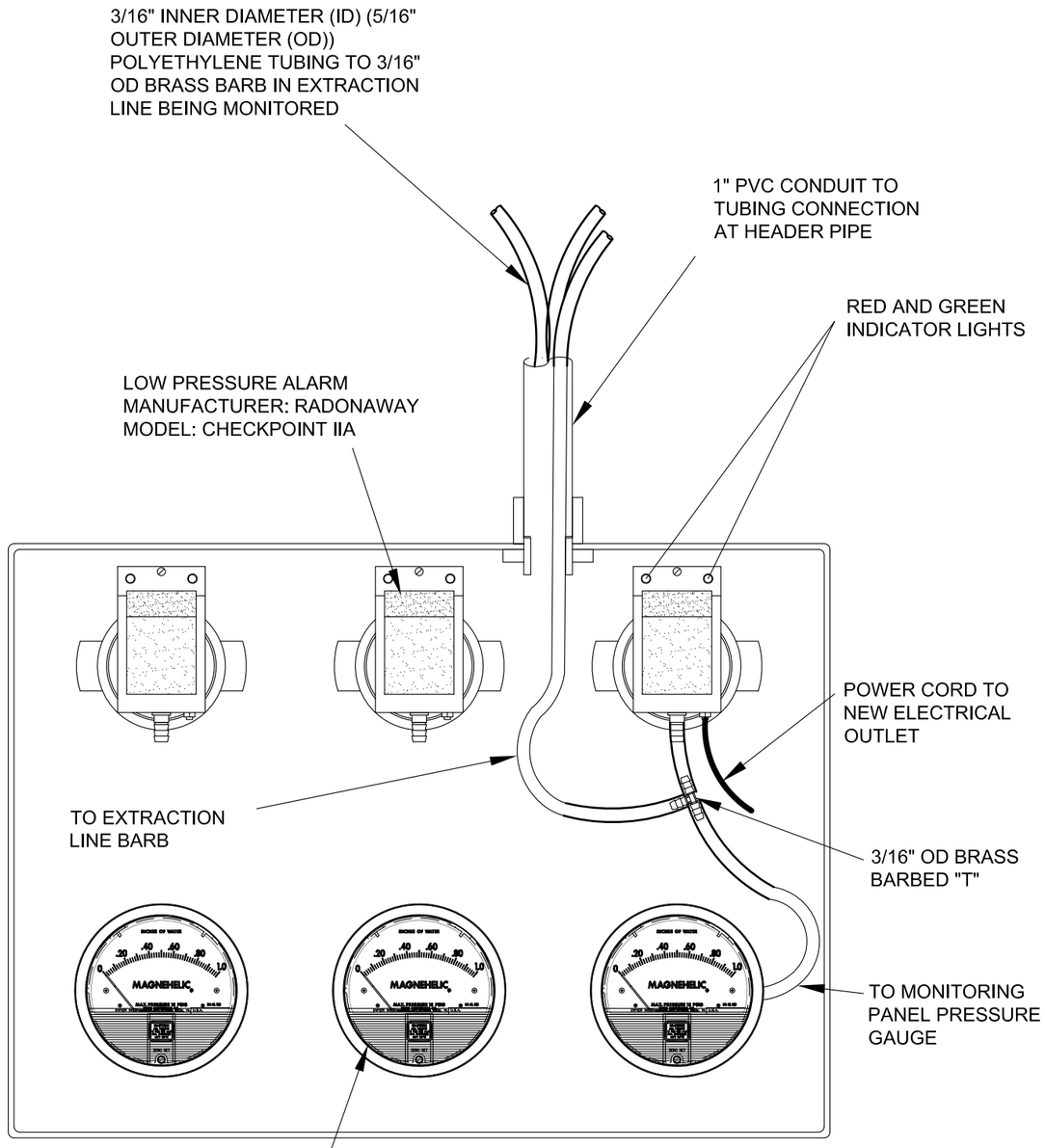

MONITORING PANEL
NOT TO SCALE

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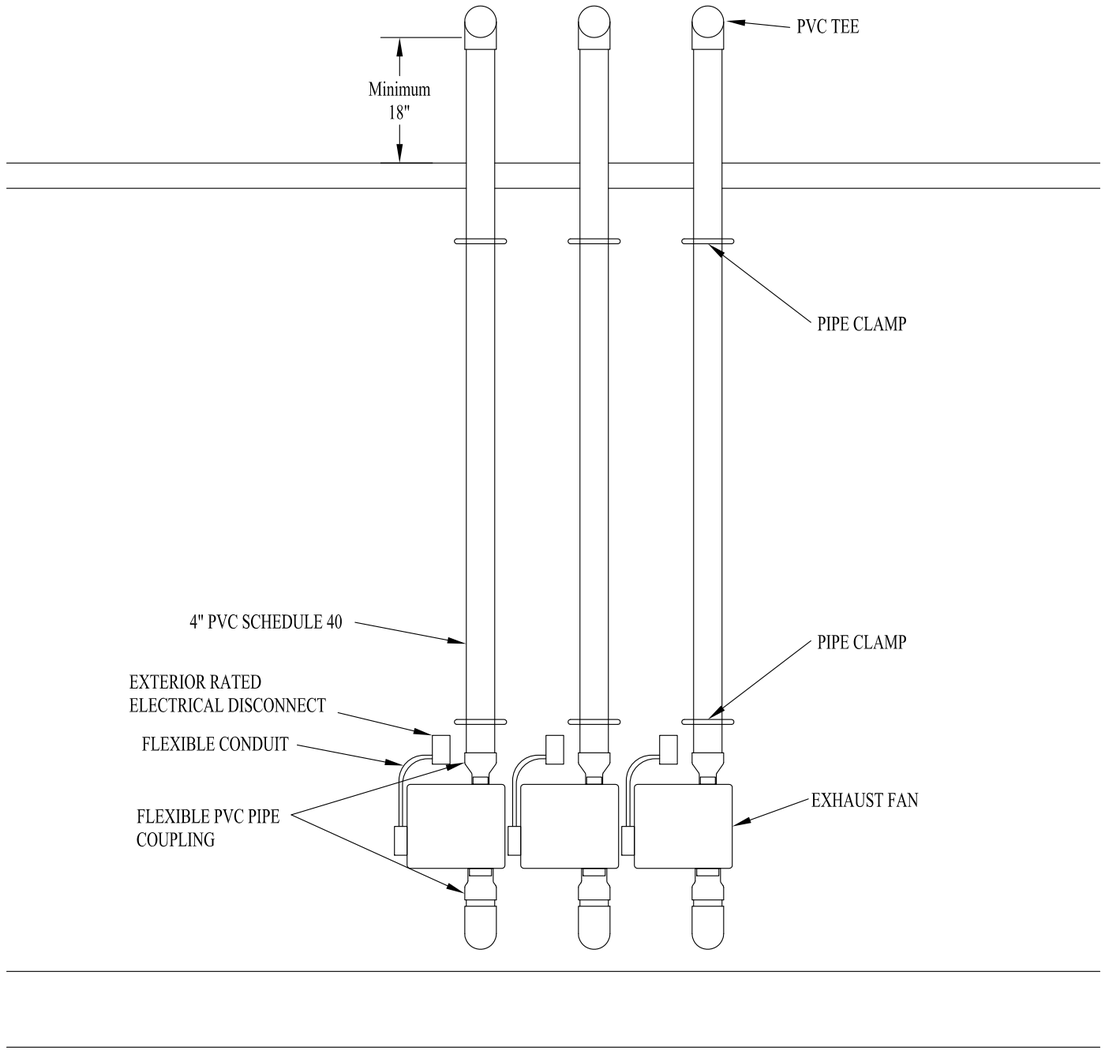
PROJECT NO: 19-24156-R

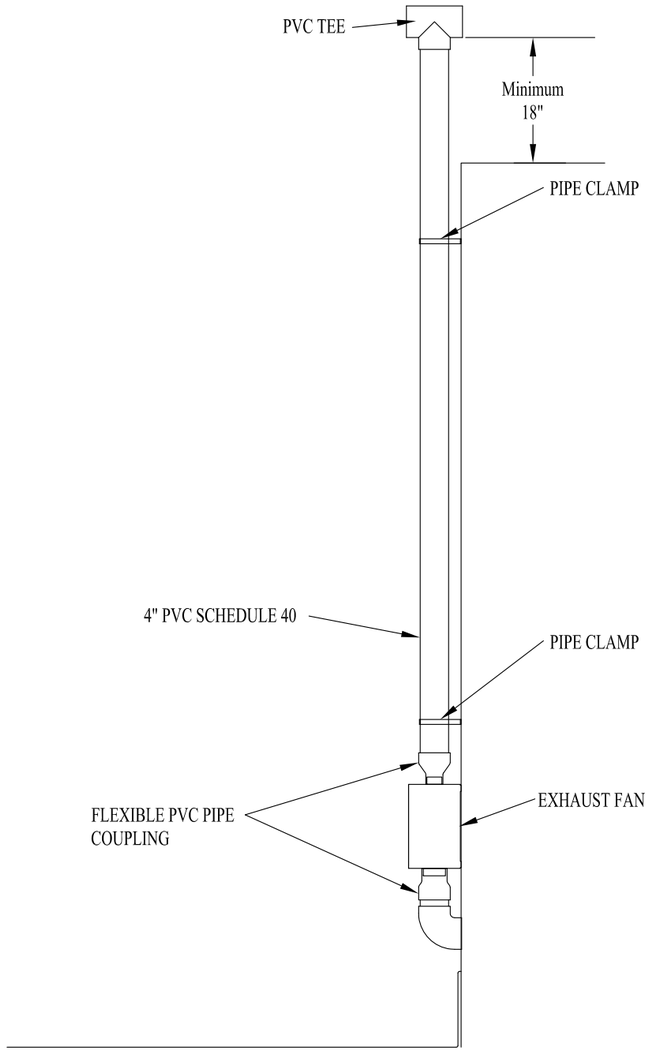
SHEET NO:

R-5b

SHEET TITLE:	RADON MITIGATION SYSTEM - SYSTEM DETAILS 2 - MONITORING PANEL			
DRAWN BY:	BG	CHECKED BY:	MS	



RADON AWAY HS 5000 FAN MOUNTING DETAIL
WALL MOUNT - FRONT VIEW
NOT TO SCALE



RADON AWAY HS 5000 FAN MOUNTING DETAIL
WALL MOUNT - SIDE VIEW
NOT TO SCALE

Alpine Inc. ENVIRONMENTAL SERVICES

DATE: April 2019

Former Coyne Textile Facility
140 Cortland Avenue
Syracuse, New York

DESCRIPTION:	DATE:
DRAFT	May 6, 2019

PROJECT NO: 19-24156-R

SHEET NO:

R-5c

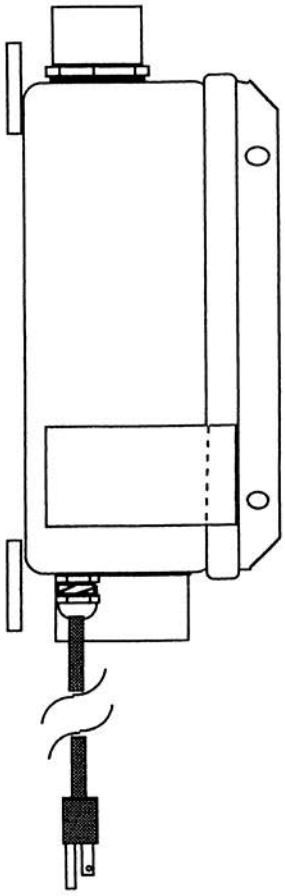
SHEET TITLE:	RADON MITIGATION SYSTEM - SYSTEM DETAILS 3 - FAN MOUNTING			
DRAWN BY:	BG	CHECKED BY:	MS	

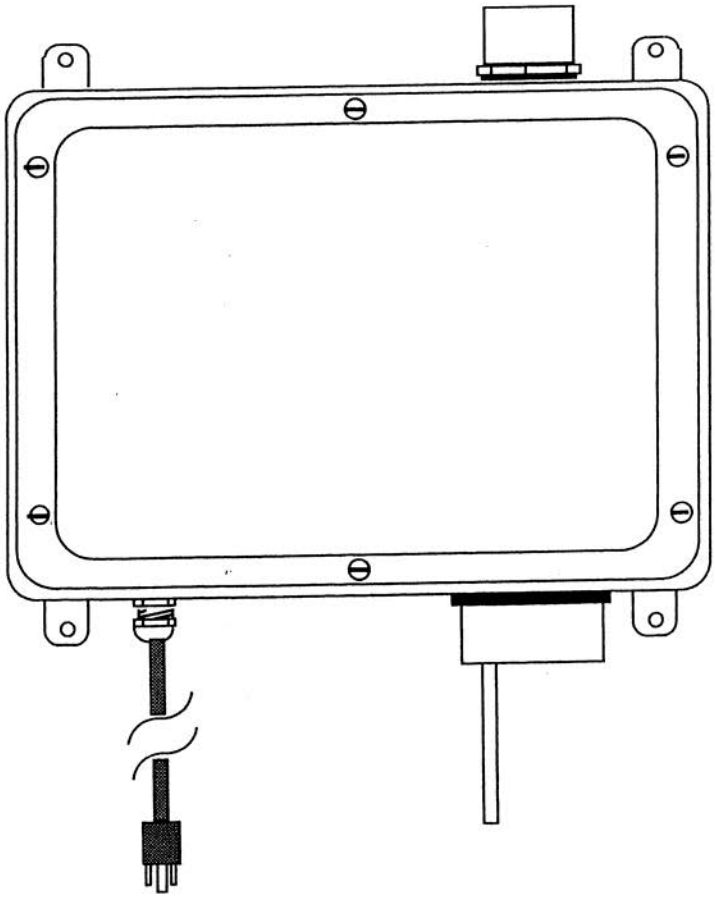
APPENDIX B

Manufacturer's Cut Sheets

HS SERIES INSTALLATION INSTRUCTIONS

BY RadonAway™





RadonAway, Inc. Ward Hill, MA. P/N IN007 Rev F

RadonAway Ward Hill, MA.

HS Series Fan Installation Instructions

Please Read and Save These 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!** Do not use fan in hazardous environments where fan electrical system could provide ignition to combustible or flammable materials.

2. **WARNING!** Do not use fan to pump explosive or corrosive gases.

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

4. **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.

5. **NOTICE!** There are no user serviceable parts located inside the fan unit. **Do NOT attempt to open.** Return unit to the factory for service.

6. All wiring must be performed in accordance with the National Fire Protection Association's (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..

7. **WARNING!** In the event that the fan is immersed in water, return unit to factory for service before operating.

8. **WARNING!** Do not twist or torque fan inlet or outlet piping as Leakage may result.

9. **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.

INSTALLATION INSTRUCTIONS (Rev F)
for DynaVac High Suction Series
HS2000 p/n 23004-1
HS3000 p/n 23004-2
HS5000 p/n 23004-3

1.0 SYSTEM DESIGN CONSIDERATIONS

1.1 INTRODUCTION

The DynaVac is intended for use by trained, professional Radon mitigators. The purpose of this instruction is to provide additional guidance for the most effective use of the DynaVac. This instruction should be considered as a supplement to EPA standard practices, state and local building codes and state regulations. In the event of a conflict, those codes, practices and regulations take precedence over this instruction.

1.2 ENVIRONMENTALS

The DynaVac is 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 DynaVac should be stored in an area where the temperature is never less than 32 degrees F. or more than 100 degrees F. The DynaVac is thermally protected such that it will shut off when the internal temperature is above 104 degrees F. Thus if the DynaVac is idle in an area where the ambient temperature exceeds this shut off, it will not restart until the internal temperature falls below 104 degrees F.

1.3 ACOUSTICS

The DynaVac, when installed properly, operates with little or no noticable noise to the building occupants. There are, however, some considerations to be taken into account in the system design and installation. When installing the DynaVac above sleeping areas, select a location for mounting which is as far away as possible from those areas. Avoid mounting near doors, fold-down stairs or other uninsulated structures which may transmit sound. Insure a solid mounting for the DynaVac to avoid structure-borne vibration or noise.

The velocity of the outgoing air must also be considered in the overall system design. With small diameter piping, the "rushing" sound of the outlet air can be disturbing. The system design should incorporate a means to slow and quiet the outlet air. The use of the RadonAway Exhaust Muffler, p/n 24001, is strongly recommended.

1.4 GROUND WATER

Under no circumstances should water be allowed to be drawn into the inlet of the DynaVac as this may result in damage to the unit. The DynaVac should be mounted at least 5 feet above the slab penetration to minimize the risk of filling the DynaVac with water in installations with occasional high water tables.

In the event that a temporary high water table results in water at or above slab level, water will be drawn into the riser pipes thus blocking air flow to the DynaVac. The lack of cooling air will result in the DynaVac cycling on and off as the internal temperature rises above the thermal cutoff and falls upon shutoff. Should this condition arise, it is recommended that the DynaVac be disconnected until the water recedes allowing for return to normal operation.

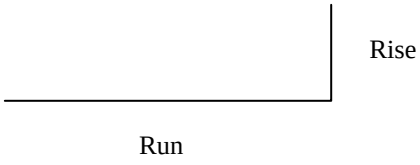
1.5 CONDENSATION & DRAINAGE

(WARNING!: Failure to provide adequate drainage for condensation can result in system failure and damage the DynaVac).

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 use of small diameter piping in a system increases the speed at which the air moves. The speed of the air can pull water uphill and at sufficient velocity it can actually move water vertically up the side walls of the pipe. This has the potential of creating a problem in the negative pressure (inlet) side piping. For DynaVac inlet piping, the following table provides the minimum recommended pipe diameters as well as minimum pitch under several system condition. Use this chart to size piping for a system.

Pipe Diam.	Minimum Rise per Foot of Run*		
	@ 25 CFM	@ 50 CFM	@ 100 CFM
4"	1/32 "	3/32 "	3/8 "
3"	1/8 "	3/8 "	1 1/2 "



*Typical operational flow rates:

HS3000, or HS5000	20 - 40 CFM
HS2000	50 - 90 CFM

All exhaust piping should be 2" PVC.

1.6 "SYSTEM ON" INDICATOR

A properly designed system should incorporate a "System On" Indicator for affirmation of system operation. A Magnehelic pressure gauge is recommended for this purpose. The indicator should be mounted at least 5 feet above the slab penetration to minimize the risk of filling the gauge with water in installations with occasional high water tables.

1.7 SLAB COVERAGE

The DynaVac can provide coverage of well over 1000 sq. ft. per slab penetration. This will, of course, depend on the sub-slab aggregate in any particular installation and the diagnostic results. In general, sand and gravel are much looser aggregates than dirt and clay. Additional suction points can be added as required. It is recommended that a small pit (2 to 10 gallons in size) be created below the slab at each suction hole.

1.8 ELECTRICAL WIRING

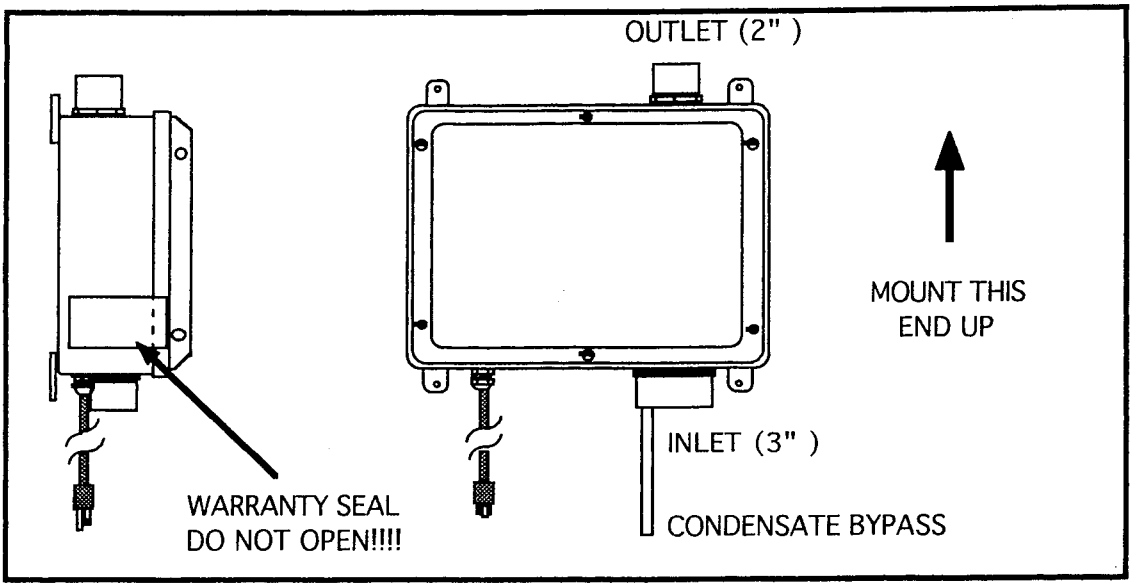
The DynaVac plugs into a standard 120V outlet. All wiring must be performed in accordance with the National Fire Protection Association's (NFPA)"National Electrical Code, Standard #70"-current edition for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician.

1.8a ELECTRICAL BOX (optional)

The optional Electrical Box (p/n 20003) provides a weathertight box with switch for outdoor hardwire connection. All wiring must be performed in accordance with the National Fire Protection Association's (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 U.L. listed watertight conduit.

1.9 SPEED CONTROLS

Electronic speed controls can **NOT** be used on HS series units.



2.0 INSTALLATION

2.1 MOUNTING

Mount the DynaVac to the wall studs, or similar structure, in the selected location with (4) 1/4" x 1 1/2" lag screws (not provided). Insure the DynaVac is both plumb and level.

2.2 DUCTING CONNECTIONS

Make final ducting connection to DynaVac with flexible couplings. Insure all connections are tight. Do not twist or torque inlet and outlet piping on DynaVac or leaks may result.

2.3 VENT MUFFLER INSTALLATION

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

2.5 OPERATION CHECKS

____ Make final operation checks by verifying all connections are tight and leak-free.

____ Insure the DynaVac and all ducting is secure and vibration-free.

____ Verify system vacuum pressure with Magnehelic. Insure vacuum pressure is less than the maximum recommended as shown below:

DynaVac	HS2000	14" WC
DynaVac	HS3000	21" WC
DynaVac	HS5000	40" WC

(Above are based on sea-level operation, at higher altitudes reduce above by about 4% per 1000 Feet.)
If these are exceeded, increase number of suction points.

____ Verify Radon levels by testing to EPA protocol.

Addendum

PRODUCT SPECIFICATIONS

Model	Maximum Static Suction	Typical CFM vs Static Suction WC (Recommended Operating Range)						Power* Watts @ 115 VAC
		0"	10"	15"	20"	25"	35"	
HS2000	18"	110	72	40	-	-	-	150-270
HS3000	27"	40	33	30	23	18	-	105-195
HS5000	50"	53	47	42	38	34	24	180-320

*Power consumption varies with actual load conditions

Inlet: 3.0" PVC
Outlet: 2.0" PVC
Mounting: Brackets for vertical mount
Weight: Approximately 18 lbs.
Size: Approximately 15"W x 13"H x 8"D
Minimum recommended inlet ducting (greater diameter may always be used):
HS3000, HS5000 --- 2.0" PVC Pipe
HS2000 --- Main feeder line of 3.0" or greater PVC Pipe
Branch lines (if 3 or more) may be 2.0" PVC Pipe
Outlet ducting: 2.0" PVC
Storage temperature range: 32 - 100 degrees F.
Thermally protected
Locked rotor protection
Internal Condensate Bypass

IMPORTANT INSTRUCTIONS TO INSTALLER

Inspect the HS 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.** Return unit to factory for service.

Install the HS Series Fan in accordance with all EPA standard practices, and state and local building codes and state regulations.

WARRANTY

Subject to any applicable consumer protection legislation, RadonAway warrants that the HS Series Fan (the "Fan") will be free from defects in materials and workmanship for a period of one (1) year from the date of manufacture (the "Warranty Term"). Outside the Continental United States and Canada the Warranty Term is one (1) year from the date of manufacture.

RadonAway will replace any Fan which fails due to defects in materials or workmanship. The Fan must be returned (at owner's cost) to the RadonAway factory. Proof of purchase must be supplied upon request for service under this Warranty.

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 include damage in shipment unless the damage is due to the negligence of RadonAway.

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

EXCEPT AS STATED ABOVE, THE HS SERIES FANS ARE PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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 cost to and from factory.

RadonAway
3 Saber Way
Ward Hill, MA 01835
TEL. (978) 521-3703
FAX (978) 521-3964

Record the following information for your records:

Serial No._____
Purchase Date_____

Radon Supplies

CS-02

3 Foster Lane, Suite 102, Flemington, NJ 08822
Toll Free: (888)-800-5955 * In NJ: (908)-284-0123
Fax: 908-284-0127

Polar Pipe™ Schedule 40

(Sound Proof and Insulated)

SOLD PER PACK. Pack includes:

Two 5' Polar Pipe sections plus a Schedule 40 coupler

- **Durable: Approximately 13 lbs. per 5' section**
- **Schedule 40 PVC pipe outer pipe; Schedule 20 PVC pipe inner pipe**
- **Double layered wall**
- **Proprietary insulation makes system virtually sound free**
- **Tested at 0 degrees F with no condensation at 15'**
- **Heat generated by a radon fan increases internal pipe temperature by approximately 5 degrees**
- **Can be cut to size on-site; reseal with silicone or polyurethane caulk**
- **Schedule 40 PVC pipe: ~ R value of 1**
- **Schedule 20 PVC pipe: ~ R value of .5**
- **Insulation: ~ R value of 4.2**
- **Total R value estimated at 5.5**
- **Adhesive is an acylic biaxially-oriented polyproplylene film for use up to 250 degrees F**

Insulation Specifications:

Physical Properties	Test	Value
NOMINAL THICKNESS	—	5/16"
FIRE RATING	ASTM E84-09	CLASS 1 / CLASS A
	CAN/ULC-S102-10	FLAME SPREAD = 0 / SMOKE DEVELOPED = 10
FIRE RATING - FULL ROOM BURN	NFPA 286	PASSES
EMISSIVITY	ASTM C1371-04A	0.04
REFLECTIVITY	ASTM E903	0.96
WATER VAPOR PERMEABILITY	ASTM E96	0.02 Perms
RESISTANCE TO FUNGI & BACTERIA	ASTM C1149	DOES NOT PROMOTE GROWTH
PLIABILITY	ASTM C1224-03	NO CRACKING
BLEEDING AND DELAMINATION	ASTM C1224-03	NO BLEEDING OR DELAMINATION
CORROSIVENESS	ASTM D3310-00	PASSES

Adhesive Specifications:

Features	Benefits
UL 181B-FX Listed	• Meets code requirements for sealing flexible air ducts and connections • Can contribute toward satisfying EA Credit 1 (Optimize Energy Performance) under LEED®
Acrylic Adhesive	• Excellent, long-lasting adhesion • Low-odor adhesive • Mold and moisture-resistant
Biaxially-Oriented Polypropylene Film	• Tough and durable • Hand tearable for simple, quick installation • 181B-FX printed for easy inspector identification
Low VOC Content	• Can contribute toward satisfying EQ Credit 4.1 (Low Emitting Materials) under LEED®

Typical Test Values

	Standard UOM	Metric UOM	Test Method
Total Thickness	3.1 mils	79 µm	ASTM D-1000
Adhesion to Steel	45 oz/in	4.92 N/cm	PSTC-101
Tensile Strength	34 lb/in	59.54 N/cm	ASTM D-1000
Operating Temperature	-10 to 250 °F	-17 to 121 °C	
VOC Content	< 1 g/L		

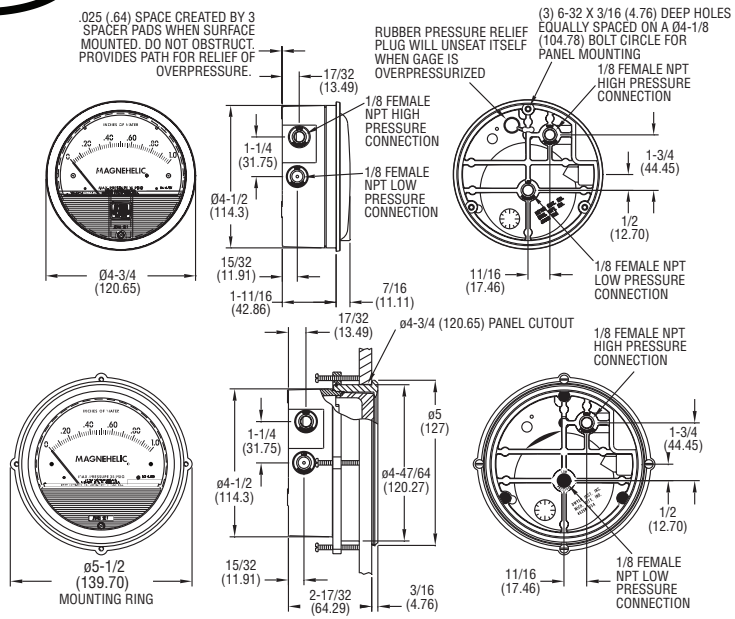
Schedule 20 PVC Pipe:

- Bonded joints have no gap where roots can creep in
- Drain & sewer pipe manufactured to ASTM D2729
- Belled on one end
- Smooth inner wall prevents flow resistance & build-up
- Corrosion proof & unharmed by water, sewage, brine, many acids & alkalies
- Also used for underground conduit
- Self-extinguishing; will not support combustion
- 3000 lbs. crush strength & resistant to earth loading
- Shock resistant

Schedule 40 PVC Pipe:

- Pipe is PVC Type 1, Grade I (Cell Class 12454) per ASTM D1784
- Schedule 40 & 80 pipe is manufactured to ASTM D1785
- Non-toxic, odorless & tasteless
- Not UV resistant
- Pressure varies by size, psi is based on water @ 73°F (derate 50% @ 110°F & 78% @ 140°F)
- Not for use with compressed air or gas
- Temperature range: 33°F to 140°F
- NSF 14 & 61 certified
- Made in the USA

Magnehelic® Differential Pressure Gage



**The blowout plug is not used on models above 180 inches of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm.*

STANDARD GAGE ACCESSORIES: Two 1/8″ NPT plugs for duplicate pressure taps, two 1/8″ pipe thread to rubber tubing adapters and three flush mounting adapters with screws.

MP AND HP GAGE ACCESSORIES: Mounting ring and snap ring retainer substituted for 3 adaptors, 1/4" compression fittings replace 1/8" pipe thread to rubber tubing adaptors.

OVERPRESSURE PROTECTION: Standard Magnehelic® Differential Pressure Gages are rated for a maximum pressure of 15 psig and should not be used where that limit could be exceeded. Models employ a rubber plug on the rear which functions as a relief valve by unseating and venting the gage interior when over pressure reaches approximately 25 psig (excludes MP and HP models). To provide a free path for pressure relief, there are four spacer pads which maintain .023″ clearance when gage is surface mounted. Do not obstruct the gap created by these pads.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases. (Natural Gas option available.)
Wetted Materials: Consult factory.
Housing: Die cast aluminum case and bezel, with acrylic cover. (MP model has polycarbonate cover).
Accuracy: ±2% of full scale (±3% on - 0, -100 Pa, -125 Pa, 10MM and ±4% on -00, - 00N, -60 Pa, -6MM ranges), throughout range at 70°F (21.1°C).
Pressure Limits: -20″ Hg to 15 psig.† (-0.677 bar to 1.034 bar); MP option: 35 psig (2.41 bar), HP option: 80 psig (5.52 bar).
Overpressure: Relief plug opens at approximately 25 psig (1.72 bar), standard gages only. The blowout plug is not used on models above 180 inches of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm.
Temperature Limits: 20 to 140°F (-6.67 to 60°C). *Low temperature models available as special option.
Size: 4″ (101.6 mm) diameter dial face.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Process Connections: 1/8″ female NPT duplicate high and low pressure taps - one pair side and one pair back.
Weight: 1 lb 2 oz (510 g), MP & HP 2 lb 2 oz (963 g).
Agency Approvals: RoHS.

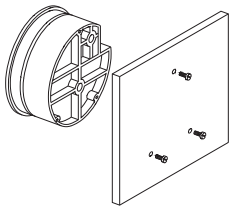
†For applications with high cycle rate within gage total pressure rating, next higher rating is recommended. See Medium and High pressure options.

Note: May be used with hydrogen when ordering Buna-N diaphragm. Pressure must be less than 35 psi.

INSTALLATION

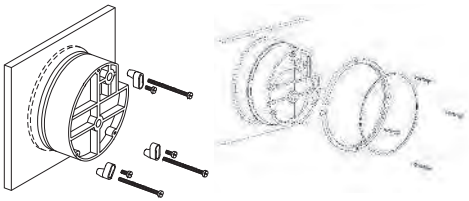
Select a location free from excessive vibration and where the ambient temperature will not exceed 140°F (60°C). Also, avoid direct sunlight which accelerates discoloration of the clear plastic cover. Sensing lines may be run any necessary distance. Long tubing lengths will not affect accuracy but will increase response time slightly. Do not restrict lines. If pulsating pressures or vibration cause excessive pointer oscillation, consult the factory for ways to provide additional damping.
All standard Magnehelic® Differential Pressure Gages are calibrated with the diaphragm vertical and should be used in that position for maximum accuracy. If gages are to be used in other than vertical position, this should be specified on the order. Many higher range gages will perform within tolerance in other positions with only rezeroing. Low range models of 0.5" w.c. plus 0.25" w.c. and metric equivalents must be used in the vertical position only.

SURFACE MOUNTING



Locate mounting holes, 120° apart on a 4-1/8" dia. circle. Use No. 6-32 machine screws of appropriate length.

FLUSH MOUNTING



Provide a 4-9/16" dia. (116 mm) opening in panel. Provide a 4-3/4" dia. (120 mm) opening for MP and HP models. Insert gage and secure in place with No. 6-32 machine screws of appropriate length, with adapters, firmly secured in place.

PIPE MOUNTING

To mount gage on 1-1/4" - 2" pipe, order optional A-610 pipe mounting kit.

TO ZERO GAGE AFTER INSTALLATION

Set the indicating pointer exactly on the zero mark, using the external zero adjust screw on the cover at the bottom. Note that the zero check or adjustment can only be made with the high and low pressure taps both open to atmosphere.

OPERATION

Positive Pressure: Connect tubing from source of pressure to either of the two high pressure ports. Plug the port not used. Vent one or both low pressure ports to atmosphere.
Negative Pressure: Connect tubing from source of vacuum or negative pressure to either of the two low pressure ports. Plug the port not used. Vent one or both high pressure ports to atmosphere.
Differential Pressure: Connect tubing from the greater of two pressure sources to either high pressure port and the lower to either low pressure port. Plug both unused ports.
When one side of the gage is vented in dirty, dusty atmosphere, we suggest an A-331 Filter Vent Plug be installed in the open port to keep inside of gage clean.

A. For portable use of temporary installation use 1/8" pipe thread to rubber tubing adapter and connect to source of pressure with flexible rubber or vinyl tubing.
B. For permanent installation, 1/4" O.D., or larger, copper or aluminum tubing is recommended.

MAINTENANCE

No lubrication or periodic servicing is required. Keep case exterior and cover clean. Occasionally disconnect pressure lines to vent both sides of gage to atmosphere and re-zero. Optional vent valves should be used in permanent installations. The Series 2000 is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

WARNING

Attempted field repair may void your warranty. Recalibration or repair by the user is not recommended.

TROUBLE SHOOTING TIPS

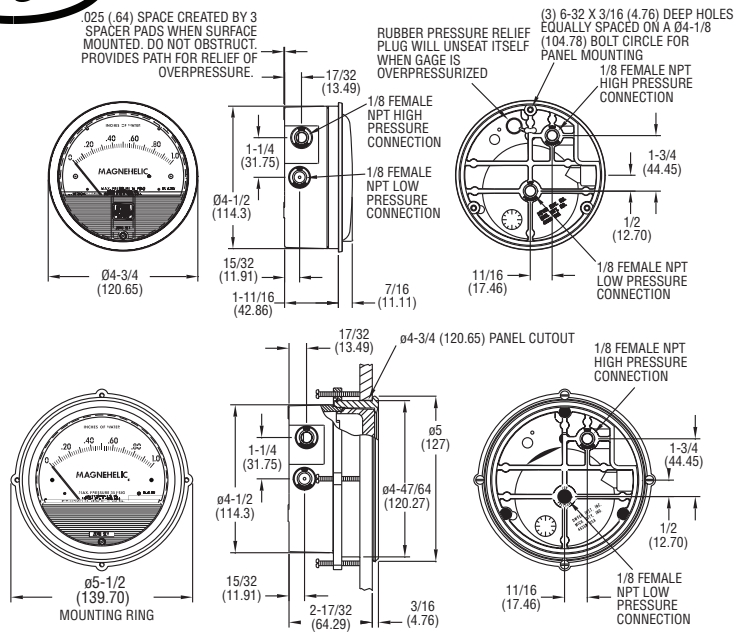
Gage won't indicate or is sluggish.

1. Duplicate pressure port not plugged.
2. Diaphragm ruptured due to overpressure.
3. Fittings or sensing lines blocked, pinched, or leaking.
4. Cover loose or "O"ring damaged, missing.
5. Pressure sensor, (static tips, Pitot tube, etc.) improperly located.
6. Ambient temperature too low. For operation below 20°F (-7°C), order gage with low temperature, (LT) option.

DWYER INSTRUMENTS, INC.
P.O. BOX 373 • MICHIGAN CITY, INDIANA 46360 U.S.A.
Phone: 219/879-8000 Fax: 219/872-9057
www.dwyer-inst.com e-mail: info@dwyer-inst.com

DWYER INSTRUMENTS, INC.
P.O. BOX 373 • MICHIGAN CITY, INDIANA 46360 U.S.A.
Phone: 219/879-8000 Fax: 219/872-9057
www.dwyer-inst.com e-mail: info@dwyer-inst.com

Magnehelic® Differential Pressure Gage
INSTRUCCIONES Y LISTA DE PARTES



(El tapón de goma no es usado en los modelos sobre 180 pulgadas de presión de agua, modelos de presión media o alta, o en instrumentos que requieren un elastizado en cualquier otro material que no sea silicona para el diafragma.)

Accesorios: Tapones 1/8" NPT para las conexiones duplicadas, dos adaptadores de rosca 1/8" NPT a tubo de goma; y tres adaptadores para montaje al ras y tornillos.

Accesorios para Los Modelos MP y HP: El anillo de montaje y el retensor del anillo de presión son substituidos por 3 adaptadores, accesorios de compresión de 1/4" remplazan a los adaptadores de rosca 1/8" a tubo de goma.

Protección Para Sobrepresión: Los Manómetros Diferenciales Magnehelic Estándar están clasificados para una presión máxima de 15 psi y no se deberían de usar donde el límite puede excederse. Los modelos emplean un tapón de goma en el trasero que funciona como una válvula de alivio desmontándose y ventilando el interior del instrumento cuando la sobrepresión alcanza aproximadamente 25 psig. (Los modelos MP y HP son excluidos) Para proveer un camino libre para el alivio de presión, el instrumento viene con rodilleras que mantienen un espacio de .023" cuando el instrumento es montado en superficie. No bloque el espacio creado por estas rodilleras.

† Para aplicaciones con alto ciclo de velocidad dentro de la clasificación de presión total del instrumento, la próxima clasificación mas alta es recomendada. Vea las opciones de media y alta presión.

El instrumento puede ser usado con hidrogeno cuando se ordena con diafragma de Buna-N. La presion tiene que ser menos de 35 psi.

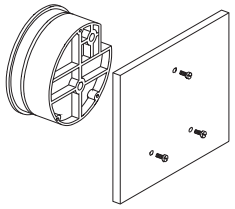
ESPECIFICACIONES

Servicio: aire y gases no combustibles, gases compatibles. (ópcion disponible para uso con gas natural).
Materiales Mojados: Consulte con la fábrica.
Carcasa: Caja y anillo de retención de aluminio fundido a presión con tapadera de acrílico. (El modelo MP tiene la tapadera de policarbonato.)
Exactitud: ±2% de fondo de escala a 21 °C
Mod. 2000-0 ±3%; Mod. 2000-00 ±4%
Límite de Presión: -20 Hg. a 15 psig. † (-0.677 bar a 1,034 bar); opción MP: 35 psig (2.41 bar), opción HP: 80 psig (5.52 bar).
Sobrepresión: El tapón de alivio se abre aproximadamente a los 25 psig, modelos estandard únicamente. El tapón de goma no es usado en los modelos sobre 180 pulgadas de presión de agua, modelos de presión media o alta, o en instrumentos que requieren un elastizado en cualquier otro material que no sea silicio para el diafragma.
Límite de Temperatura: -6.67 a 60ºC. * Modelos de baja temperatura disponibles como opción especial.
Dimensiones: diám. 120,65 mm x 55,6 prof.
Orientación de Montaje: El diafragma debe ser usado solo en posición vertical. Consulte con la fábrica para otras orientaciones de posición.
Conexiones: 1/8" NPT para alta y baja presión, duplicadas (atrás, a los lados).
Peso: 510 g, MP y HP 963 g.
Aprobación de la agencia: RoHS.

Instalacion

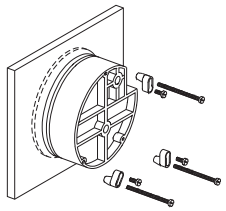
Seleccione un lugar libe de exceso de vibraciones, y donde la temperatura ambiente no supere los 60°C. Evite luz solar directa, para evitar decoloración de la cubierta plástica. Las conexiones de proceso pueden tener cualquier longitud sin afectar la exactitud, pero pueden extender el tiempo de respuesta del instrumento. Si hay pulsación de presión o vibración, consulte a fábrica sobre medios de amortiguación.
Los MAGNEHELIC han sido calibrados con el diafragma vertical, y deben ser usados en esas condiciones. Para otras posiciones, se debe especificar en la orden de provisión. Los de rango elevado pueden ser usados en diversas posiciones, pero se debe reajustar el cero. Los modelos de la serie 2000-00 y equivalentes métricos deben ser usados solo verticalmente.

Montaje en Superficie



Perfore tres orificios separados 120° sobre una circunferencia de 105 mm de diám. y sostenga el instrumento con tres tornillos 6-32 de long. apropiada.

Montaje alineado



Perfore un circulo de 115 mm de diám. en el panel, y sostenga el instrumento mediante los.

Montaje Sobre Pipa

Para montar el instrumento sobre pipas de 32 a 50 mm de diám., ordene el adaptador opcional A-610.

Puesta a Cero Después de Instalar

Deje las conexiones de presión abiertas a atmósfera y ajuste a cero desde tornillo del panel frontal.

Operacion

Presión Positiva: Conecte la tubería desde la fuente de presión a cualquiera de las dos conexiones de alta presión (HIGH), bloqueando la no usada; Las conexiones de baja (LOW) presión pueden dejarse uno o los dos abiertos a la atmósfera.
Presión Negativa: Repita el procedimiento anterior, conectado en este caso las conexiones de baja presión (LOW). Deje las otras conexiones abiertas.
Presión diferencial: Conecte el tubo correspondiente a la presión más positiva al cualquiera de los conectores de alta presión (HIGH) bloqueando el no usado, y la más baja presión o presión negativa (vacío) al conector de baja presión (LOW). Puede usarse cualquier conector de cada par, dejando siempre uno bloqueado. Si se deja una conexión abierta a la atmósfera, se recomienda el uso de un filtro tipo A-331 en el lugar correspondiente para mantener limpio el interior del instrumento. Para uso portable, o instalación temporaria, uso adapta dores para rosca de tubo de 1/89 a tubo flexible, y conecte a proceso mediante una tubería de goma, o equivalente. Para instalación permanente, se recomienda el uso de tubo de cobre o aluminio de por lo menos 1/4" de diám. exterior.

No se requiere mantenimiento específico alguno, ni lubricación. Periódicamente, desconecte el instrumento, ventee la presión acumulada, y reajuste el cero. Para instalaciones permanentes, se debe usar un juego de válvulas de montaje permanente para el venteo.
El instrumento de Serie 2000 no puede ser re parado en el campo y debería de ser regresado si reparos son necesarios (Reparos en el campo no deben de ser intentados y pueden cancelar la garantía.). Asegurarse de incluir una descripción breve del problema más cualquier notas pertinentes a la aplicación para devolución de productos antes de enviar el instrumento.

Cuidado! : La recalibración en campo puede invalidar la garantía. No se recomienda la recalibracion por parte del usuario. En caso necesario envie el instrumento con transporte pago a:

Localización De Fallas

• *El instrumento no indica, o es lento en reacción.*
1. Conexión duplicada abierta.
2. Diafragma roto por sobrepresión.
3. Tubería de conexión perforada, con pérdidas o pinchazos.
4. Anillo de retención flojo, u "O " ring dañado.
5. Conexión a proceso indebida o inadecuada.
6. Temperatura muy baja. Para este caso ordene tipos LT (baja temperatura).

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INSTALLATION & OPERATING INSTRUCTIONS
Instruction P/N IN015 Rev E
FOR *CHECKPOINT IIa*™ P/N 28001-2 & 28001-3
RADON SYSTEM ALARM

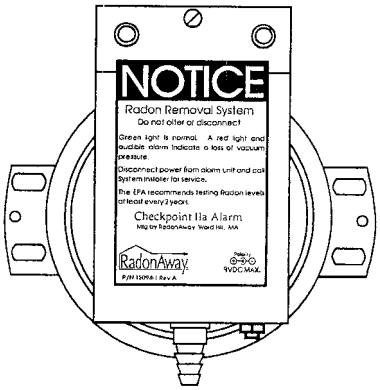
INSTALLATION INSTRUCTIONS
(WALL MOUNTING)

Select a suitable wall location near a vertical section of the suction pipe. The unit should be mounted about four or five feet above the floor and as close to the suction pipe as possible. Keep in mind that with the plug-in transformer provided, the unit must also be within six feet of a 120V receptacle. **NOTE: The Checkpoint IIa is calibrated for vertical mounting, horizontal mounting will affect switchpoint calibration.**

Drill two ¼" holes 4" apart horizontally where the unit is to be mounted.

Install the two ¼" wall anchors provided.

Hang the CHECKPOINT IIa from the two mouting holes located on the mounting bracket. Tighten the mounting screws so the unit fits snugly and securely against the wall.



Drill a 5/16" hole into the side of the vent pipe about 6" higher than the top of the unit.

Insert the vinyl tubing provided about 1" inside the suction pipe.

Cut a suitable length of vinyl tubing and attach it to the pressure switch connector on the CHECKPOINT IIa.

CALIBRATION AND OPERATION.

The CHECKPOINT IIa units are calibrated and sealed at the factory to alarm when the vacuum pressure falls below the factory setting and should not normally require field calibration. Factory Settings are:
28001-2 -.25" WC Vacuum
28001-3 -.10" WC Vacuum

To Verify Operation:

With the exhaust fan off or the pressure tubing disconnected and the CHECKPOINT IIa plugged in, both the red indicator light and the audible alarm should be on.

Turn the fan system on or connect the pressure tubing to the fan piping. The red light and the audible alarm should go off. The green light should come on.

Now turn the fan off. The red light and audible alarm should come on in about two or three seconds and the green light should go out.

WARRANTY INFORMATION

Subject to applicable consumer protection legislation, RadonAway warrants that the CHECKPOINT IIa will be free from defective material and workmanship for a period of (1) year from the date of purchase. Warranty is contingent on installation in accordance with the instructions provided. This warranty does not apply where repairs or alterations have been made or attempted by others; or the unit has been abused or misused. Warranty does not include damage in shipment unless the damage is due to the negligence of RadonAway. All other warranties, expressed or written, are not valid. To make a claim under these limited warranties, you must return the defective item to RadonAway with a copy of the purchase receipt. RadonAway is not responsible for installation or removal cost associated with this warranty. In no case is RadonAway liable beyond the repair or replacement of the defective product FOB RadonAway.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE IS NO WARRANTY OF MERCHANTIBILITY. ALL OTHER WARRANTIES, EXPRESSED OR WRITTEN, ARE NOT VALID.

For service under these warranties, 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 to and from factory.

Manufactured by:
RadonAway
Ward Hill, MA
(978)-521-3703

PRODUCT SPECIFICATIONS
47605-14x, 47605-21x

LEVITON

14" & 21" Structured Media® Enclosures

APPLICATION

Leviton 14-inch and 21-inch Structured Media Enclosures make running cable and managing media both simple and cost effective. Designed to provide a central distribution point for home or small office technologies, the enclosures accommodate the distribution of voice, data, video, audio, security, and control applications.

SPECIFICATION

Enclosures shall be one-piece (excluding cover) boxes, made of 20-gauge, white powder-coated steel. They shall be flush mountable, with four wood screws (provided) on standard 16-inch center wall studs prior to drywall, or surface mountable after drywall installation. Each enclosure shall have a cutout to accommodate a single-gang J-Box power module, AC power module, or a Mini or Universal DC power supply. The enclosures shall include multiple knockouts on the top and bottom to support conduit up to two inches in diameter and facilitate cable routing and entry. The enclosure shall be cULus Listed and comply with ANSI/TIA-568-C, ANSI/TIA-570-B, and ANSI/TIA-607 standards.

WARRANTY INFORMATION

For a copy of Leviton product warranties, visit www.leviton.com/warranty.

FEATURES

- Cutout pattern in bottom accommodates AC power modules and DC power supplies
- Mounting slots on the enclosure simplify adjustment for different drywall depths (1/2 inch, 5/8 inch, and 3/4 inch)
- Enclosures may be surface or flush mounted
- Optional Flush-Mount Cover overlaps 3/4 inch to hide possible uneven drywall cuts around the enclosure
- Ships with a cardboard insert to help prevent drywall debris or paint overspray from entering the enclosure during the rough-in stage of installation
- Multiple knockouts on the top and bottom support conduit up to two inches in diameter and facilitate cable routing and entry
- Self-healing foam grommets protect cable bundles and prevent dust from entering the enclosure
- 14-inch enclosure includes optional ceiling-mount kit for installing in non-plenum drop-ceiling applications

IMPORTANT NOTES

- Flush mounting should precede drywall installation
- Enclosure not intended to be mounted in firewall applications
- Premium Hinged Vented Doors recommended when using active equipment inside enclosures
- For enterprise PON applications, recommended capacity of the 14-inch enclosure is one 32-leg passive optical splitter and three 12-port SC/APC adapter plates

STANDARDS COMPLIANCE

cULus Listed: ANSI/UL 1863 – Communication Circuit Accessories
ANSI/UL 985 – Household Fire-Warning System Units
ANSI/UL 1023 – Household Burglar-Alarm System Units
CAN/CSA C22.2 No. 182.4-M90 (R2010) – Plugs, Receptacles, and Connectors for Communication Systems

TIA standards: ANSI/TIA-568-C, ANSI/TIA-570-B, and ANSI/TIA-607

PHYSICAL SPECIFICATIONS

Dimensions:	See page two
Materials:	Enclosure: 20-gauge, white powder-coated steel
Covers:	18-gauge, white powder-coated steel
Capacity:	Maximum of two full-sized distribution panels

COUNTRY OF ORIGIN

Mexico

ELECTRONIC FILES

For CAD files, typical specs, or technical drawings (.DXF, .DWG), visit www.leviton.com.

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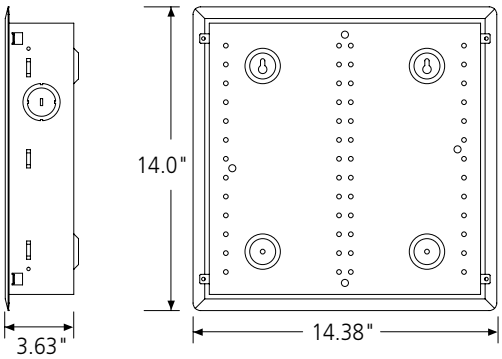
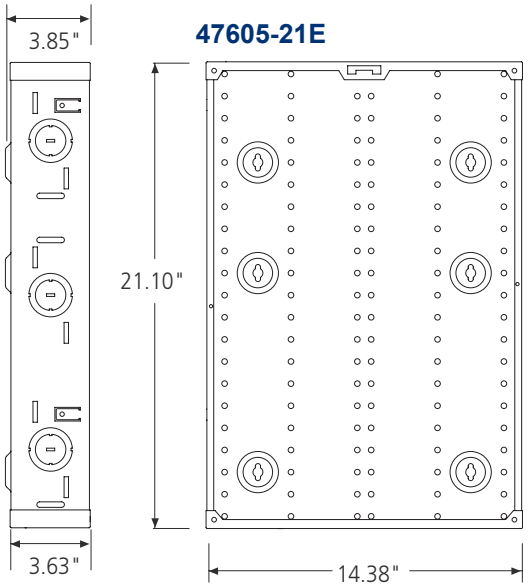
Revised May 2014

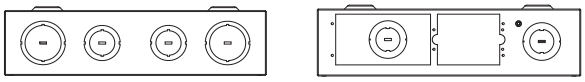
47605-14E



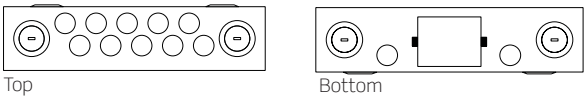
47605-21E



14" and 21" enclosures (excluding 47605-1MG):



14" MDU enclosure Configuration A (47605-1MG):



Leviton 14" & 21" Structured Media® Enclosures, Covers, and Doors

Description	Part No.
14" Enclosure and Flush-Mount Cover, 15.32" (389.1 mm) H x 15.62" (396.7 mm) W x 3.68" (93.5 mm) D	47605-140
14" Enclosure only, 14.0" (355.6 mm) H x 14.38" (365.3 mm) W x 3.63" (91.4 mm) D	47605-14E
14" Multi Dwelling Unit Configuration A Enclosure and Flush-Mount Cover, 15.32" (389.1 mm) H x 15.62" (396.7 mm) W x 3.68" (93.5 mm) D	47605-1MG
14" Flush-Mount Cover, 15.32" (389.1 mm) H x 15.62" (396.7 mm) W x 0.20" (5.1 mm) D	47605-14C
14" Economy Hinged Door, 15.32" (389.1 mm) H x 15.62" (396.7 mm) W x 0.25" (6.4 mm) D	47605-14D
14" Premium Vented Hinged Door, 15.32" (389.1 mm) H x 15.62" (396.7 mm) W x 0.25" (6.4 mm) D	47605-14S
14" Enclosure only, job packed, 6 per pack, 14.0" (355.6 mm) H x 14.38" (365.3 mm) W x 3.60" (91.4 mm) D	47605-14G
14" Flush-Mount Cover only, job packed, 6 per pack 15.32" (389.1 mm) H x 15.62" (396.7 mm) W x 0.20" (5.1 mm) D	47605-14B
14" Ceiling-Mount Kit, .75" (19 mm) H x 23.68" (601.5 mm) W x 23.68" (601.5 mm) D	47612-CMK
21" Enclosure only, 21.10" (533.4 mm) H x 14.38" (365.3 mm) W x 3.63" (91.4 mm) D	47605-21E
21" Flush-Mount Cover, 22.35" (567.7 mm) H x 15.62" (396.7 mm) W x 0.20" (5.1 mm) D	47605-21C
21" Premium Vented Hinged Door, 22.35" (567.7 mm) H x 15.62" (396.7 mm) W x 0.25" (6.4 mm) D	47605-21S

E14 4996

ISO 9001 REGISTERED Quality Manufacturer

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Revised May 2014

APPENDIX C

Draft SSDS Inspection Log

SUB-SLAB DEPRESSURIZATION SYSTEM CHECKLIST

Report No.	
Date:	Time:

Inspector(s):	Project No.
	Weather:
Type of Inspection: ☐ Routine ☐ Post Severe Condition	Temp.: Hi Low

FAN/BLOWER SYSTEM INSPECTION

ITEM/CONDITION	TRUE	FALSE	N/A	COMMENTS
The blower unit is operational,	☐	☐	☐	
There is no excessive noise emanating from the blower.	☐	☐	☐	
There is no excessive vibration emanating from the blower.	☐	☐	☐	
The blower unit is not excessively hot to the touch.	☐	☐	☐	
The blower unit housing is clean and in good condition.	☐	☐	☐	
The fan continues to be mounted securely.	☐	☐	☐	
Coupling connections are secure.	☐	☐	☐	
Seals around exhaust stack/conduit properly sealed.	☐	☐	☐	
Condensate lines function properly, if present.	☐	☐	☐	

SYSTEM PRESSURE INSPECTION

ITEM/CONDITION	TRUE	FALSE	N/A	COMMENTS
Vacuum gauge on inlet piping in good condition and shows negative pressure is being applied to sub-slab.	☐	☐	☐	
Pressure gauge on discharge piping in good condition and shows positive pressure being exhausted from blower.	☐	☐	☐	
Pressures are within acceptable normal range for system.	☐	☐	☐	Pressure Reading At commissioning: ____ inches H_2O At time of inspection: _____ inches H_2O
When required, pressure field extension testing demonstrates continued sub-slab communication.	☐	☐	☐	

ELECTRICAL/ALARM INSPECTION

ITEM/CONDITION	TRUE	FALSE	N/A	COMMENTS
No observable electrical component damage.	☐	☐	☐	
All electrical disconnects/switches tested and functional.	☐	☐	☐	
Alarm sounds when blower power disconnected and pressure falls below alarm set point.	☐	☐	☐	
All electrical connections appear secure.	☐	☐	☐	

DRAFT

SUB-SLAB DEPRESSURIZATION SYSTEM CHECKLIST

Report No.	
Date:	Time:

Junction boxes are closed.	☐	☐	☐	
Conduits/wires properly supported.	☐	☐	☐	
Are SSDS breakers identified in electrical panel?	☐	☐	☐	

PIPING SYSTEM INSPECTION

ITEM/CONDITION	TRUE	FALSE	N/A	COMMENTS
All above-grade piping in good condition and free of cracks or other damage.	☐	☐	☐	
All pipe supports undamaged and functional.	☐	☐	☐	
In-line mufflers/silencers installed and functioning properly.	☐	☐	☐	
Discharge piping above roof undamaged and free of obstructions.	☐	☐	☐	
All labels present and legible	☐	☐	☐	

CONCRETE SLAB/PIPING SYSTEM INSPECTION

ITEM/CONDITION	TRUE	FALSE	N/A	COMMENTS
All visible pipe penetrations appear properly sealed (e.g. not air leak noise).	☐	☐	☐	
There are no new significant, observable floor cracks or penetrations that may breach the floor tightness and effectiveness of the system.	☐	☐	☐	

ADDITIONAL NOTES & OBSERVATIONS

Signature:	Total Inspection Time:

DRAFT

APPENDIX D

HASP

SITE HEALTH AND SAFETY PLAN

PROJECT INFORMATION	
Project Name: Former Coyne Textile Facility BCP	**CHA Project No.** 33525.2000.31000
Project Start Date: **Completion Date:**	**Weather:**
Project Location: Syracuse, New York	**Project Task:** Observe installation of SSDS *Complete a Site Health & Safety Plan per Task*

Description of Work:
Be Specific: CHA staff will oversee the installation of a sub-slab depressurization system by Alpine Environmental Services, Inc.

Key Personnel:	Meghan Platt	Karyn Ehmann	Karyn Ehmann
Responsibilities:	*Project Manager*	*Field Team Leader*	*Site Safety Officer*

Description of Hazards: Hazards include inhalation of vapors for chlorinated solvent contamination in the subsurface. Concentrations are minimal in the Office section and CHA staff will not be in direct contact with contamination or the installation operations. Vapors will likely not accumulate in the indoor air. If vapors are noted, fans will be used to ventilate the office area. CAMP monitoring is included as a separate Appendix of the IRMWP

TASK HAZARDS			TASK SAFETY MEASURES & PPE
Eye	Chemical Exposure	Yes ☐ No ☒	☒ Safety Glasses
	High Heat/Cold	Yes ☐ No ☒	☐ Safety Goggles
	Dust/Flying Debris	Yes ☒ No ☐	☐ Face Shield
	Impact	Yes ☒ No ☐	☐ Shaded Lenses
	Light/Radiation	Yes ☐ No ☒	
Head	Impact	Yes ☐ No ☒	☐ Hard Hat: ☐ Orange or ☐ White or ☐ Blue
	Electrical Shock	Yes ☐ No ☒	☐ Reflector Tape (Required for night operations)
	Lack of Visibility	Yes ☐ No ☒	
Foot	Chemical Exposure	Yes ☐ No ☒	☒ Work Boots ☒ Steel Toed Boots
	High Heat/Cold	Yes ☒ No ☐	☐ Ankle Protection ☐ I/75 C/75 (Impact/Compression)
	Impact/Compression	Yes ☐ No ☒	☐ Rubber Boots ☐ Cd Type 1 or 2 (Conductive)
	Slips/Trips	Yes ☒ No ☐	☐ Insulated Boots ☐ PR (Puncture Resistant)
	Puncture	Yes ☒ No ☐	☐ Non-slip Soles ☐ Mt/70 or 50 or 30 (Metatarsal)
	Slippery/Wet Surface	Yes ☒ No ☐	☐ Chemical resistant ☐ EH (Electrical Hazard)
	Explosive/Flammable Atmospheres	Yes ☐ No ☒	☐ SD Type I or II (Static Dissipative)
	Electrical	Yes ☐ No ☒	
Hand	Chemical Exposure	Yes ☒ No ☐	☒ Work Gloves ☐ Rubber Gloves
	High Heat or Cold	Yes ☒ No ☐	☐ Leather Gloves ☐ Nitrile Gloves
	Cuts/Abrasion	Yes ☒ No ☐	☒ Latex Gloves ☐ Insulated Gloves
	Puncture	Yes ☒ No ☐	☐ Vinyl Gloves ☐ Metal Mesh Gloves
	Electrical Shock	Yes ☐ No ☒	☐ Neoprene Gloves
	Bloodborne Pathogen	Yes ☐ No ☒	☐ Butyl Gloves
Body/Torso	Chemical Exposure	Yes ☒ No ☐	☐ Tyvek Suits: ☐ White or ☐ Yellow
	Extreme Heat/Cold	Yes ☒ No ☐	☒ UV Protection ☐ Cooling/Heating Vests
	Abrasion	Yes ☐ No ☒	☐ Coveralls
	Lack of Visibility	Yes ☐ No ☒	☐ Reflective Vest
	Impact	Yes ☒ No ☐	☐ Electrical Safety PPE
	Electrical Arc	Yes ☐ No ☒	
Fall	Fall Hazard	Yes ☐ No ☒	☐ Harness ☐ Fall Protection Lanyard
Noise	Noise Hazard	Yes ☒ No ☐	☒ Ear Plugs ☐ Ear Muffs
Respiratory	Chemical Exposure	Yes ☒ No ☐	☐ Respirator: ☐ ½ Face or ☐ Full Face
	Confined Spaces	Yes ☐ No ☒	☐ Cartridge: ☐ P or ☐ OV or ☐ C

	Particulate Exposure	Yes ☐ No ☒	☐ PA/PR
Biohazards	Poisonous Plants Ticks Bee Stings Poisonous Snakes Pigeon Guano Large Mammals Dry Weather (e.g. wildfires)	Yes ☐ No ☒ Yes ☒ No ☐ Yes ☒ No ☐ Yes ☐ No ☒ Yes ☒ No ☐ Yes ☒ No ☐ Yes ☐ No ☒	☐ SOPs ☐ Long Pants/Sleeves ☐ Ivy Block ☒ Tick Removal Kit ☒ Insect Repellent ☒ Epipen ☒ Allergy Kits ☒ Be Alert/Observant ☐ Chaps ☐ Dust/Nuisance Respirator ☐ PPE
Additional Equipment	As Needed		☐ Traffic Cones ☐ Signage ☐ Flags ☐ 2- Way Radios ☒ Flashlight/Floodlights ☒ First Aid Kit ☐ Hand/Power Tools ☐ Beacon Light ☐ Ladders

SITE CONTROL

Site Control/Site Security[1]: ***Describe Measures***	Contact Mike at 315-414-6213 for acces to the building. Provide at least 24 hours notice.	M & PT: ☐ Y ☒ N *If yes, sketch information on separate sheet*
Confined Space Entry: *If Yes, Attach Permit*	☐ Y ☒ N	
Decontamination: *If Yes, Describe Procedures*	☐ Y ☒ N	
Site Monitoring[2]: *If Yes, Describe Procedures*	☐ Y ☒ N	

CONTINGENCY PLAN

Emergency Contacts: *Provide Telephone Numbers*	Police: 911 Ambulance: 911 Fire: 911 Hospital: Crouse Hospital	Client Contact: James Ranalli Client Phone #: CHA PM Phone #: 315-657-6916 Poison Control: 1-800-222-1222

Route to Hospital:
(Directions attached to the end of this HASP) 736 Irving Ave., Syracuse, NY 13210

Communication: ☒ Cell Phone ☐ Nearest Pay Phone ☐ Pager

Comments:

PLAN SIGN-OFF

Name:	Name:	Name:	Name:
X:	X:	X:	X:
Date:	Date:	Date:	Date:
Name:	Name:	Name:	Name:
X:	X:	X:	X:
Date:	Date:	Date:	Date:

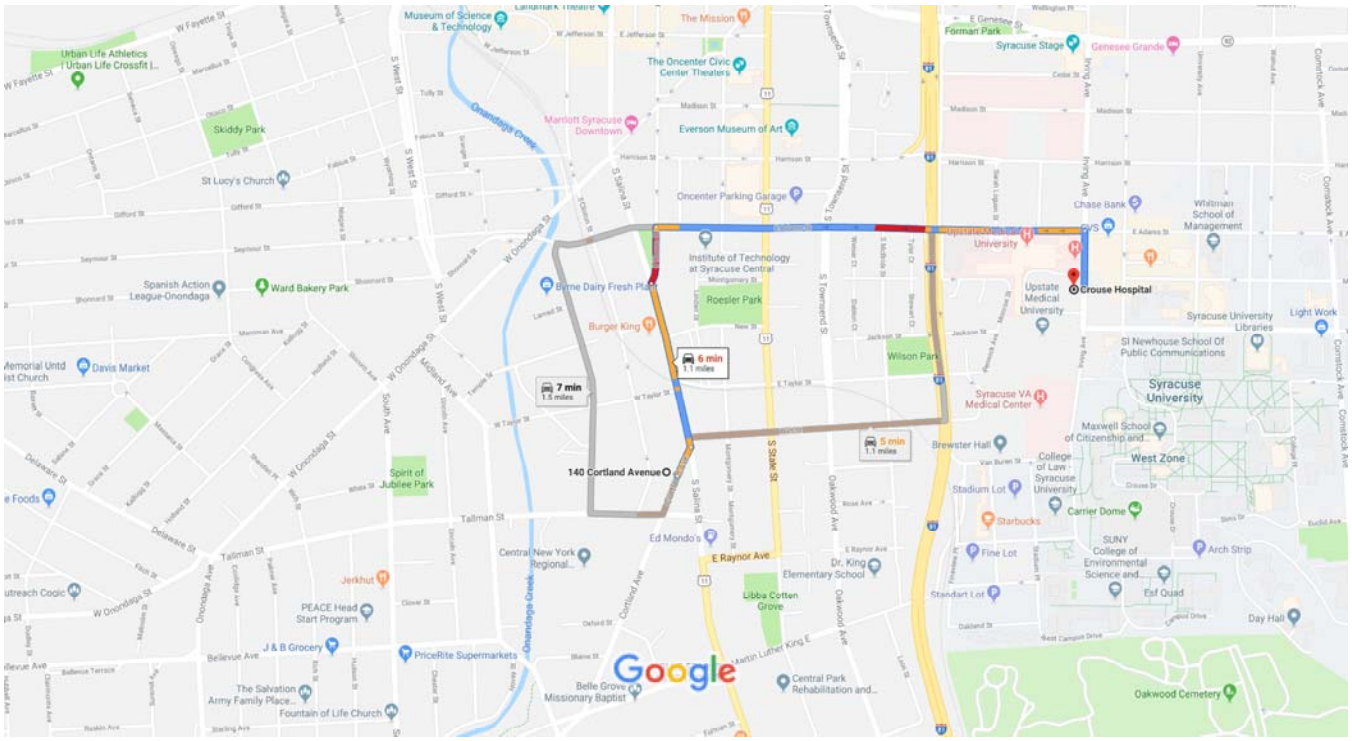
SAFETY TRAINING/MEDICAL MONITORING

Type:	Type:	Type:	Type:
Date:	Date:	Date:	Date:
Type:	Type:	Type:	Type:
Date:	Date:	Date:	Date:

Google Maps

140 Cortland Avenue, Syracuse, NY to Crouse Hospital

Drive 1.1 miles, 6 min



Map data ©2019 Google 500 ft

140 Cortland Ave

Syracuse, NY 13202

1. Head north on Cortland Ave toward S Salina St

266 ft

2. Use any lane to turn left onto S Salina St

Pass by Burger King (on the left)

0.3 mi

3. Turn right onto S Warren St

459 ft

4. Turn right at the 1st cross street onto E Adams St

0.7 mi

5. Turn right onto Irving Ave

Destination will be on the right

476 ft

Crouse Hospital

736 Irving Ave, Syracuse, NY 13210

APPENDIX E

Community Air Monitoring Plan

COMMUNITY AIR MONITORING PLAN

140 Cortland Ave., Syracuse, New York

Overview

Air monitoring at the Former Coyne Textile Facility (Site) located at 140 Cortland Avenue in the City of Syracuse, New York will be performed during all intrusive activities where there is a potential to come into contact with existing soil in accordance with the New York State Department of Health (NYSDOH) *Generic Community Air Monitoring Plan (CAMP)*, and Appendix 1A and 1B of DER-10. All air monitoring will be conducted on a real-time basis for particulates (i.e. dust) and organic vapors.

The primary contaminants of concern associated with the Site are solvents, which are volatile organic compounds (VOCs). Particulates and VOCs will be monitored concurrently with the DustTrak CAMP monitors, or similar.

All air monitoring readings will be recorded in a logbook and/or recorded by data loggers and made available for review by both the New York State Department of Environmental Conservation (NYSDEC) and NYSDOH. Air monitoring will be performed at one location upwind and one location downwind of the designated work areas during subsurface drilling, for the installation of the sub-slab depressurization system (SSDS). The direction of wind will be monitored daily to determine upwind and downwind location.

Enclosures will be provided for remote air monitoring stations to reduce potential weather-induced performance issues. The enclosures will be located in areas where they are not subject to damage from vehicular traffic and there is minimal potential for tampering in publicly accessible areas. Additionally, all intake ports on the instruments must be equipped with rain guards/shields to minimize the potential for water intrusion.

The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-Site receptors including residences and businesses and on-Site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of demolition and redevelopment construction work activities. Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs and dust at a minimum around the work areas, and supplements to the CAMP may be required depending on the nature of the planned intrusive activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-Site through the air.

"Continuous monitoring" will be required for all ground intrusive activities and during the excavation of contaminated soils. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, utility trenching, and monitoring well decommissioning.

"Periodic monitoring" will be conducted on excavated material and during soil sampling. Excavated soil will be screened for the presence of VOCs with a handheld photoionization detector (PID). Soil may be reused or stockpiled for characterization and off-Site disposal in accordance with the Excavation Work Plan.

In order to ensure the validity of the fugitive dust and VOC measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

Fugitive Dust and Particulate Monitoring, Response Levels, and Actions

Fugitive dust is described as discrete particles, liquid droplets or solids, which become airborne and contribute to air quality as a nuisance and threat to human health and the environment.

The following fugitive dust suppression and particulate monitoring program should be employed at the Site during construction and other intrusive activities which warrant its use:

- Reasonable fugitive dust suppression techniques will be employed during all Site activities which may generate fugitive dust.
- Particulate monitoring will be employed during the handling of waste or contaminated soil or when activities on Site may generate fugitive dust from exposed waste or contaminated soil.

Particulate monitoring will be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

- Objects to be measured: Dust, mists or aerosols;
- Measurement Ranges: 0.001 to 400 mg/m³ (1 to 400,000 µg/m³);
- Precision (2-sigma) at constant temperature: +/- 10 g/m³ for one second averaging; and +/- 1.5 g/m³ for sixty second averaging;
- Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mass median diameter (mmd)= 2 to 3; g-2.5, as aerosolized);
- Resolution: 0.1% of reading or 1g/m³, whichever is larger;
- Particle Size Range of Maximum Response: <0.1 to 10 microns (µm);
- Total Number of Data Points in Memory: 10,000 or greater;
- Logged Data: Each data point with average concentration, time/date and data point number
- Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL

concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;

- Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required. Personnel conducting air monitoring must be immediately notified of any alarms by remote sensors, pagers, or other similar equipment. Utilizing periodic checks of instrumentation in alarm mode only is not acceptable monitoring practice.
- Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
- Operating Temperature: 0 to 50˚ C (14 to 122˚ F);

Particulate levels will be monitored immediately upwind and downwind at the working Site and integrated over a period not to exceed 15 minutes. Consequently, instrumentation shall require necessary averaging hardware to accomplish this task.

The action level will be established at 150µg/m³ (15 minutes average). While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150µg/m³, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 µg/m³ above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-Site personnel and implementing additional dust suppression techniques. Should the action level of 150µg/m³ continue to be exceeded work must stop and Project Managers from CHA Consulting, Inc. (CHA), NYSDEC, and NYSDOH must be notified. Contact information is provided in the Site Management Plan and reiterated in the Excavation Work Plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

Volatile Organic Compound Monitoring, Response Levels, and Actions

VOCs will be monitored at the perimeter of the ground intrusive work area on a continuous basis, concurrently with fugitive dust monitoring. The monitoring work will be performed using a 10.6 eV PID. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

If the ambient air concentration of total organic vapors at the downwind perimeter of the work area exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

If the organic vapor level is above 25 ppm at the perimeter of the work area; activities must be shutdown. The NYSDEC, NYSDOH, and the CHA Project Manager will be notified of the situation. Emergency Response Contacts identified in the Health and Safety Plan, including the local police and fire departments, will be contacted by CHA.

Air monitoring will be conducted at 15-minute intervals at a 20-foot offset from the exclusion zone. If two successive readings below 25 ppm are measured by the field instrument and documented, the work may resume following the previously described monitoring plan.

All 15-minute readings will be recorded and be available for State (NYSDEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.