1100 MYRTLE AVENUE

BROOKLYN, NEW YORK

Soil Vapor Extraction System Design Document

NYSDEC BCP Site Number: C224312

AKRF Project Number: 190458

Prepared for:

New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau B
625 Broadway, 12th Floor
Albany, New York 12233

Prepared On Behalf Of:

SPENCERAN, INC.
650 Fountain Ave,
Brooklyn NY 11208

Prepared by:

AKRF, Inc.
440 Park Avenue South, 7th Floor
New York, New York 10016
212-696-0670

JULY 2021

TABLE OF CONTENTS

FIGURES

ATTACHMENTS

CERTIFICATIONS

I, Marc S. Godick, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Soil Vapor Extraction System Design Document (SVEDD) 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) and that all previously completed Remedial Investigation activities used to develop the SVEDD were performed in full accordance with DER-approved work plans, work plan addenda, and any DER-approved modifications.

Signature

July 21, 2021
Date

I, Rebecca Kinal, certify that I am currently a NYS registered Professional Engineer as defined in 6 NYCRR Part 375 and that this SVEDD 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). I have primary direct responsibility for implementation of the remedial program for the 1100 Myrtle Avenue Site (NYSDEC Site No. C224268).

I certify that the Site description presented in this SVEDD is identical to the Site descriptions presented in the NYSDEC Brownfield Cleanup Agreement executed in July 2020 for the Site.

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

Signature

July 21, 2021
Date

1.0 INTRODUCTION

This Soil Vapor Extraction System Design Document (SVEDD) for a soil vapor extraction system (SVE) system has been prepared by AKRF, Inc. (AKRF) on behalf of SPENCERAN, INC. (the Participant) for the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) Site #C224312 located at 1100 Myrle Avenue, Brooklyn, New York, hereafter referred to as the "Site". The SVEDD was prepared to detail the scope of work for in-situ soil treatment to address petroleum-related (and other) volatile organic compound (VOC) contamination in soil and soil vapor in the northern portion of the site.

AKRF completed the Remedial Investigation (RI) at the Site to satisfy the requirements of the NYSDEC and New York State Department of Health (NYSDOH) in 2020. A draft Remedial Action Work Plan (RAWP) was submitted to NYSDEC and NYSDOH for review in March 2021, allowing for public review prior to approval. Following the completion of State and public reviews in June 2021, NYSDEC and NYSDOH approved the RAWP and issued a final Decision Document.

The SVE design summarized in this document is provided as a supplemental Engineering Control measure for the Site as conceptualized in communications with NYSDEC in March 2021 and as outlined in the RAWP. All work outlined in this SVEDD will be performed in accordance with the approved Site-Specific Health and Safety Plan, Quality Assurance Project Plan, and Community Air Monitoring Plan submitted as part of the RAWP.

The proposed SVE described in this SVEDD is consistent with the procedures defined in NYSDEC Division of Environmental Remediation (DER)-10 *Technical Guidance for Site Investigation and Remediation* and complies with all applicable standards, criteria, and guidance. The remedial design described in this document also complies with all applicable Federal, State, and local laws, regulations, and requirements. The Remedial Action to be performed under this SVEDD is intended to remediate the Site to be protective of human health and the environment consistent with the approved RAWP and the Decision Document issued by NYSDEC.

2.0 REMEDIAL DESIGN BACKGROUND

2.1 Soil Vapor Contamination Summary

The RI identified elevated concentrations of petroleum-related compounds in soil and soil vapor in the northeastern portion of the Site at depths ranging from approximately 10 to 15 feet below sidewalk grade along Myrtle Avenue. This contamination, which was attributed to a suspected leak from a former UST, was reported to NYSDEC and Spill Case No. 1911848 was assigned to the Site. The remedial action described in the RAWP includes excavation and off-site disposal of petroleum-contaminated soil to address the Spill; however, it is anticipated that residual contamination may remain under the north-adjacent sidewalk where access to excavation is limited by columns and footings for an New York City (NYC) Metropolitan Transportation Authority (MTA) structure over Myrtle Avenue.

A SVE system and subslab depressurization system (SSDS) were conceptualized as Engineering Controls for the Site in the RAWP and discussed further below. Construction design documents for both systems are provided as Attachment A.

2.2 Soil Vapor Extraction System

The proposed SVE will be installed as a Site Engineering Control during RAWP implementation to remove and treat the residual volatile contaminant mass in soil and soil vapor, specifically in the

areas immediately adjacent to soil vapor sample location RI-SV-11, and to help limit off-site migration of contaminated soil vapor. The proposed SVE system design is discussed further in Section 3.0 Please refer to the December 2020 RI Report and the RAWP for a detailed review of the location and concentration of contaminants within the SVE treatment area, and for a complete discussion on the contamination profile, remedial objectives, and Engineering and Institutional Controls for the balance of the Site.

All installation details, and operation and monitoring requirements will be documented as discussed further in Sections 3.7 and 4.0.

2.3 Subslab Depressurization System

The RAWP also includes a SSDS as an Engineering Control. The objective of the SSDS is to mitigate potential vapor intrusion into the proposed new building at the Site, and has been designed to operate independently of the SVE described in this SVEDD. The SSDS design includes six (6) legs of 4-inch-diameter slotted underground polyvinyl chloride (PVC) piping installed within a gas-permeable aggregate layer under the entire building slab. The slotted piping legs will extend abovegrade and connect to a single vertical riser via a pipe manifold and header located in the building cellar. The riser pipe will extend through the building to a designated location on the building roof. A 2-horsepower suction fan will connect to the riser on the building roof and vent vapors through an exhaust stack.

Following installation, the SSDS will be started up and induced vacuum conditions will be observed and used to balance the system, and the low vacuum alarm response will be tested. Certain legs of the SSDS manifold may be closed while the SVE system is operational to avoid competition between the two systems. The vacuum monitoring points will be monitored in accordance with the Operation, Maintenance, and Monitoring (OM&M) Plan in the Site Management Plan (SMP) to ensure that the minimum vacuum for the SSDS will be attained beneath the cellar slab in accordance with the remedial objectives in the RAWP.

3.0 SVE DESIGN

3.1 SVE Well Design

Two (2) SVE wells, SVE-01A and SVE-01B, will be installed at the Site as shown on Figure 1 using hollow stem auger drilling technology to a total depth of approximately 20 feet below grade. RI soil vapor results at RI-SV-11 represented conditions at approximately 15.5 feet below grade and the petroleum contamination in soil was generally identified at approximately 10 to 15 feet below grade. As such, the SVE well screen interval of 10 to 20 feet below grade was selected to address the anticipated depth interval where significant residual contamination may remain and to distribute the well screen uniformly, above and below the target depth interval. The two SVE wells will be installed to the west and east of RI-SV-11, in accessible areas along Myrtle Avenue.

The SVE wells will be 4 inches in diameter and be constructed using 0.020-slot PVC well screen installed from a depth of 20 feet below grade to 10 feet below grade, and 4-inch diameter Schedule 40 PVC riser piping. The well screen will be backfilled using No. 2 silica sand to approximately 9.5 inches above the top of screen. A 1-foot thick, bentonite grout seal will be installed from approximately 9.5 feet below grade to 8.5 feet below grade, followed by concrete grout up to 6 inches below the ground surface where the well. The SVE wells will be finished at grade with a flush mount manhole cover.

3.2 SVE Well Operating Conditions

The radius of influence (ROI) for the two SVE wells is expected to completely encompass RI-SV-11, and extend west and east to provide additional soil vapor treatment and further limit off-site migration of contaminated soil vapor.

Based on an assessment of geological data from the remedial investigation, it is proposed that the SVE wells will operate at an applied vacuum of 60 inches of water (inH_2O) and applied air flow rates of approximately 50 cubic feet per minute (cfm) at each SVE well. At these conditions, AKRF anticipates that the ROI (determined as the distance at which a minimum induced vacuum of 0.05 inH_2O can be observed) will be approximately 25 to 30 feet for each SVE well.

Three (3) vapor monitoring points will also be installed during SVE well installation to assess induced vacuum conditions, and to field-verify the ROI using a minimum induced vacuum threshold value of 0.05 inH_2O. The vapor probes will be constructed using 1-inch diameter PVC well screen and riser, and will extend to a total depth of approximately 20 feet below ground surface. The vapor probe screens will extend from the bottom of the well to approximately 10 feet below ground surface, followed by a riser to grade. The vapor probes will be backfilled with No. 2 silica sand from 20 feet to 9.5 feet below grade, and will also have a bentonite seal from 9.5 to 8.5 feet below grade, and a concrete seal extending from 8.5 feet below ground surface up to the ground surface. The vapor monitoring points will be finished at grade with flush mount well covers. The vapor monitoring point layout is shown on Figure 1.

3.3 SVE Piping Network

Each SVE well will be connected to underground 4-inch diameter Schedule 40 PVC pipe using a below grade PVC tee fitting. The piping will be installed in trenches and will be routed below grade to the on-site aboveground SVE equipment room located in the cellar of the new building. One dedicated pipe will be installed for each well, allowing for individual well flow adjustments to be handled at the equipment room. The subsurface SVE pipes will be installed with a minimum 1% slope down towards the individual SVE wells, or to condensate sumps, if necessary. The pipe slope will allow any entrapped water or condensate to drain out of system piping in a controlled manner.

The pipe trench layout is shown on Figure 1. The aboveground system piping routing is discussed further in Section 3.6.

3.4 SVE Equipment Room and Major System Components

The SVE piping will be trenched under the sidewalk toward the building where it will penetrate the foundation wall into the equipment room. The individual SVE lines will each have instrumentation (including dedicated vacuum gauges, air flow rate gauges, sample ports, and throttling valves) installed before being manifolded into a single 4-inch diameter pipe, plumbed toward the major system components, including a moisture knockout tank, particulate filter, dilution valve, SVE blower, carbon treatment drums, riser piping, and the effluent stack.

The SVE blower (Rotron M/N EN656M72XL) has been selected to provide an applied vacuum of 40 inH_2O and corresponding flow rate of 50 cfm at each well (for a total air flow rate of 100 CFM). The frictional losses to vacuum due to the SVE piping network and system components is estimated to be approximately 10 inH_2O, including 5 inches of water column for all subgrade and aboveground piping and system components, and 5 inH_2O total for two carbon vessels. To design conservatively and include friction loss allotments for the remaining SVE system components, an additional 20% safety factor has been accounted for as part of the design, resulting in an adjusted friction loss total of 12 inches H_2O. As the total vacuum capacity for the SVE blower (of 60 inH_2O) is greater than the sum of the designed applied vacuum (40 inH_2O) and the estimated friction loss

value (12 inH_2O), the selected SVE blower will be capable of overcoming the losses associated with the system components. A specification sheet for the selected blower is provided in Attachment B.

In addition to the blower, the system will include the following equipment and instrumentation:

- A two-well SVE piping manifold, with each leg equipped with a sample port, pipe access cleanout, vacuum gauge, flow meter, and a butterfly valve to balance vacuum and flow between wells;
- A dilution line with dedicated vacuum gauge, flow meter, and butterfly valve as a relief mechanism if operating conditions begin to tax the SVE blower;
- A moisture separator with secondary containment system to remove any condensate or recovered water upstream of the SVE blower;
- A particulate filter after the moisture separator;
- Two 225-lbs. granular activated carbon (GAC) vessels in series (further described in Section 3.5);
- A SVE blower inlet pressure sensor, temperatures gauge, and flow meter;
- A temperature sensor before the GAC vessels, and a vacuum gauge and sample port before, between, and after the vessels;
- A control panel to house the programmable logic controller, with a telemetry system; and
- The SVE system power requirements are anticipated to be 200 amps, 3 phase and 208 volt.

The SVE will be equipped with a cellular based telemetry system that will provide remote access to the SVE controls. The telemetry system will allow authorized remote users to start or stop blower operations and monitor SVE vacuum (at blower) and flow rate [before the vapor loss separator (VLS)]. The telemetry system will also provide notifications in the event of alarm conditions or unexpected system shut down to the personnel listed in the table below.

Table 1
Personnel Contact Information

Company	Individual Name	Title	Contact Number
NYSDEC	Mandy Yau	Project Manager	(718) 482-4897
New York State Department of Health	Daniel Tucholski	Project Manager	(518) 402-7860
AKRF	Kenneth Wiles	Project Manager	(646) 388-9528
	Eric Park	Remedial Engineer	(646) 388-9532
	Timothy Larigan	Field Team Leader/Site Safety Officer	(646) 388-9508
SPENCERAN, INC.	Edward Suh	Participant	(718) 346-6500

A Process and Instrumentation Diagram for the proposed treatment system is provided as Figure 2.

3.5 Extracted Vapor Treatment

Pre-discharge treatment of the extracted vapors from the SVE system will be accomplished using two (2) vapor phase GAC vessels plumbed in series in a "lead/lag" configuration. The GAC vessels will be sized to accommodate the proposed 100 CFM flow rate. AKRF proposes the use of two 55-

gallon GAC vessels with radial air flow distribution. Each drum will contain approximately 225 lbs. of GAC. A specification sheet for the selected GAC vessels is provided in Attachment C.

The changeout frequency of the GAC vessels will be determined based on field observations, air sampling results, and actual VOC loading conditions from the installed SVE system; however, AKRF expects an annual frequency or longer. During a changeout event, the GAC in the lead vessel will be replaced, and the lag vessel will be moved to the lead spot. The new GAC will be placed in the lag position, ensuring adequate vapor treatment if the VOCs break through the lead vessel.

3.6 SVE Riser Piping

The treated vapor will be routed through an exhaust stack attached to the second GAC vessel in series via 4-inch diameter Schedule 40 galvanized steel riser piping, which will be installed from the GAC exhaust port to a coordinated location on the building roof. The exhaust stack will be located such that the actual discharge point is located a minimum of 10 feet above the finished roof surface and 25 feet away from any operable windows or air intakes. The exhaust stack will be equipped with rain guard to prevent moisture from entering the GAC vessels.

All underground and aboveground SVE piping will be pressure tested minimum 5 pounds per square inch pressure requirement for 30 minutes).

3.7 Operation, Maintenance, and Monitoring

Following completion of SVE installation, AKRF will document system installation and startup procedures in the Final Engineering Report (FER), and prepare an SVE OM&M Plan, which will be included in the SMP. The OM&M Plan will include an as-built drawings and manufacturer's documentation for the SVE system components, provided by the equipment vendor. The OM&M Plan will also include schedules for routine equipment maintenance and system monitoring. Details of the anticipated system monitoring are provided below.

3.7.1 System Startup

Upon installation of the SVE system, AKRF will oversee the system startup. The SVE will be started and balanced with the objective of maintaining approximately equal air flow from each SVE well and ensure a minimum vacuum of 0.1 inH_2O in induced in the treatment zone outlined in the RAWP. The ROI will be monitored during startup using the vapor monitoring points to document vacuum distribution through the treatment zone. Adjustments to each SVE line will be made as necessary to maximize induced vacuum and ROI at each well. A handheld photoionization detector (PID) will be used to monitor influent, intermediate, and effluent VOC concentrations during startup. Influent, intermediate, and effluent air samples for laboratory analysis will also be collected using Tedlar bags and analyzed for VOCs using United States Environmental Protection Agency Method TO-15.

Following startup of the SSDS, the SVE system and SSDS will be operated simultaneously and continuously at the Site. It is anticipated that, in addition to the system-specific balancing concerns, inter-system balancing may be required as the SVE system vacuum may compete with SSDS vacuum in areas where the two systems are adjacent to one another. In those areas, it may be necessary to reduce SSDS operation, or shut down specific SSDS lines completely to eliminate any unnecessary impedances to SSDS fan operation. Any substantive changes to either SVE or SSDS operation at the Site will be communicated to NYSDEC in accordance with the requirements set forth in the SMP.

3.7.2 Routine Inspections

AKRF will inspect the system on a weekly basis for the first month of operations before transitioning into a routine monthly inspection schedule. Operations and maintenance logs will completed during each site inspection and will document the treatment system operations, including the following information:

- Applied vacuum and air flow rate and PID readings at each extraction well;
- Total system flow rate;
- Water level in the VLS;
- Vacuum at the VLS and prior to the blower;
- Blower effluent pressure and temperature;
- GAC influent, intermediate, and effluent PID and pressure readings; and,
- Induced vacuum readings at each SVE vapor monitoring point (monthly during first quarter and quarterly thereafter).

PID readings will be collected form each well using the sample ports on the SVE manifold and will be collected by screening Tedlar bags filled using an air sampling pump.

A second round of air samples will be collected for laboratory analysis for VOCs at the end of the first quarter of operation and air sampling will continue at a minimum frequency of annually thereafter. The air samples will be used to estimate the cumulative contaminant mass removal and to monitor for potential breakthrough of the GAC vessels.

4.0 REQUIRED PERMITS

AKRF will coordinate with the Construction Team the necessary NYC permits for SVE installation. A sidewalk opening permit and drilling location approval from the NYC Department of Transportation and NYC MTA, respectively, will be required for installation of the SVE wells and trenched piping. An electrical permit will be obtained from the NYC Department of Buildings, if needed, for the power connection to the SVE. No other permits or approvals (with the exception of any additional NYSDEC and NYSDOH approvals) are required to conduct the proposed activities outlined in this SVEDD.

5.0 SCHEDULE

Specifications and drawings for the proposed SVE system have been incorporated into the construction documents for the proposed new building at the Site. It is anticipated that SVE installation will take place in conjunction with the new building construction, and would begin in the Spring of 2022 and be operational by the end of 2022.

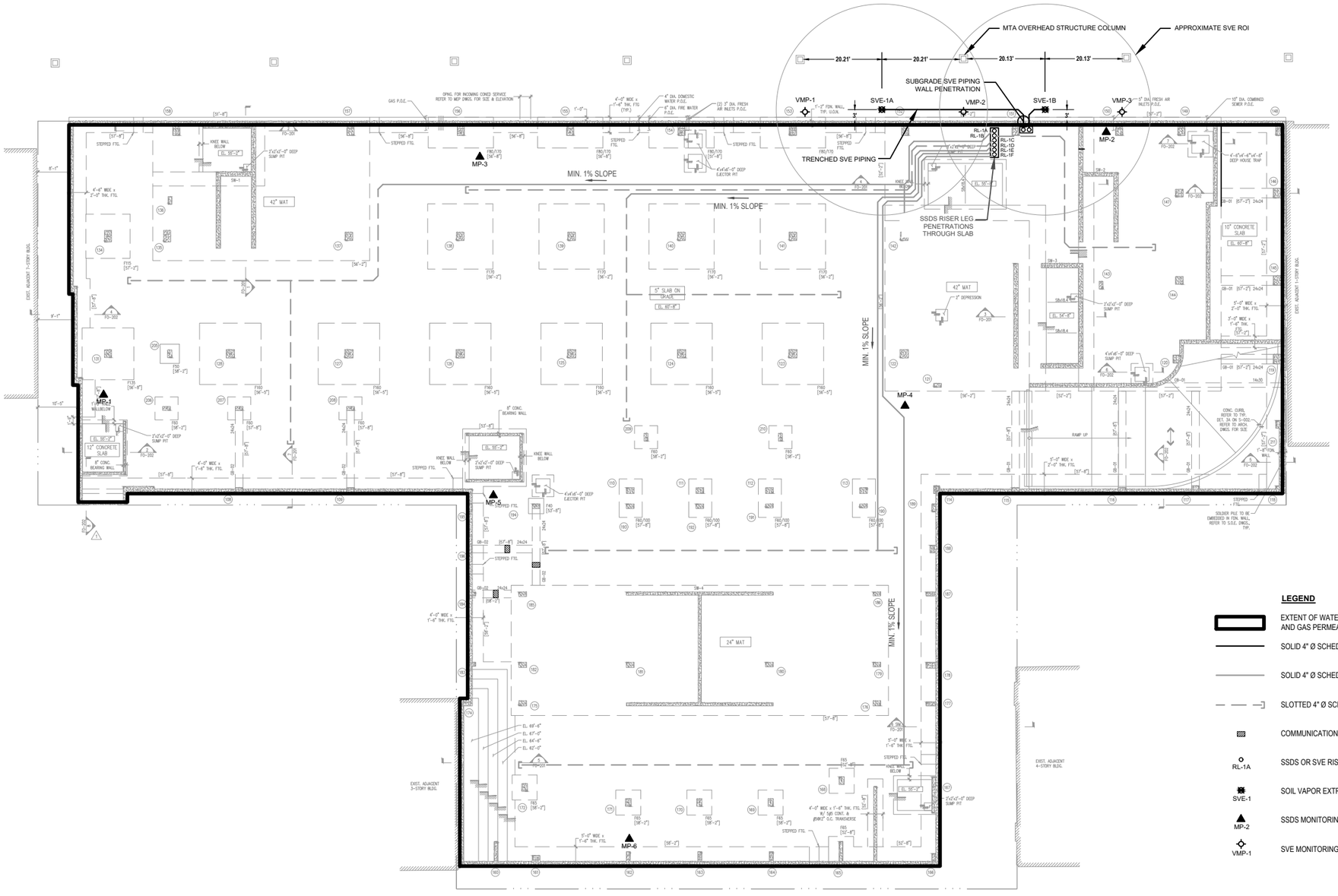
The actual schedule may differ depending on such factors as contractor availability, Site constraints, agency approvals, access coordination, and the overall building construction schedule. The NYSDEC Project Manager will be notified of significant changes to the schedule.

6.0 REPORTING

The SVE installation and startup will be documented in the FER. The FER will include as-built drawings of the SVE. Laboratory analytical data generated as part of remedial activities outlined in this SVEDD will be submitted to NYSDEC in electronic format using the EQuIS electronic data deliverable format. The OM&M Plan will be included in the SMP, which will be submitted as part of the FER.

Following completion of the FER, AKRF will prepare monitoring reports for SVE operations, which will describe the system operations over the past monitoring period, any completed maintenance, and any proposed tasks for the next quarter of operation. Air sampling results and schedules will be included in the monitoring reports. Any GAC replacement events will be documented in the monitoring reports. All Site management activities will also be summarized and documented in annual Periodic Review Reports.

FIGURES



LEGEND

- EXTENT OF WATERPROOFING/VAPOR BARRIER AND GAS PERMEABLE AGGREGATE
- SOLID 4" Ø SCHEDULE 40 PVC SVE PIPE
- SOLID 4" Ø SCHEDULE 40 PVC SSDS PIPE
- SLOTTED 4" Ø SCHEDULE 40 PVC SSDS PIPE WITH PVC END CAP
- COMMUNICATION SLEEVE
- RL-1A — SSDS OR SVE RISER LEG
- SVE-1 — SOIL VAPOR EXTRACTION WELL LOCATION
- MP-2 — SSDS MONITORING POINT LOCATION
- VMP-1 — SVE MONITORING POINT LOCATION

0 15 30 60

SCALE IN FEET

AKRF

440 Park Avenue South, New York, NY 10016

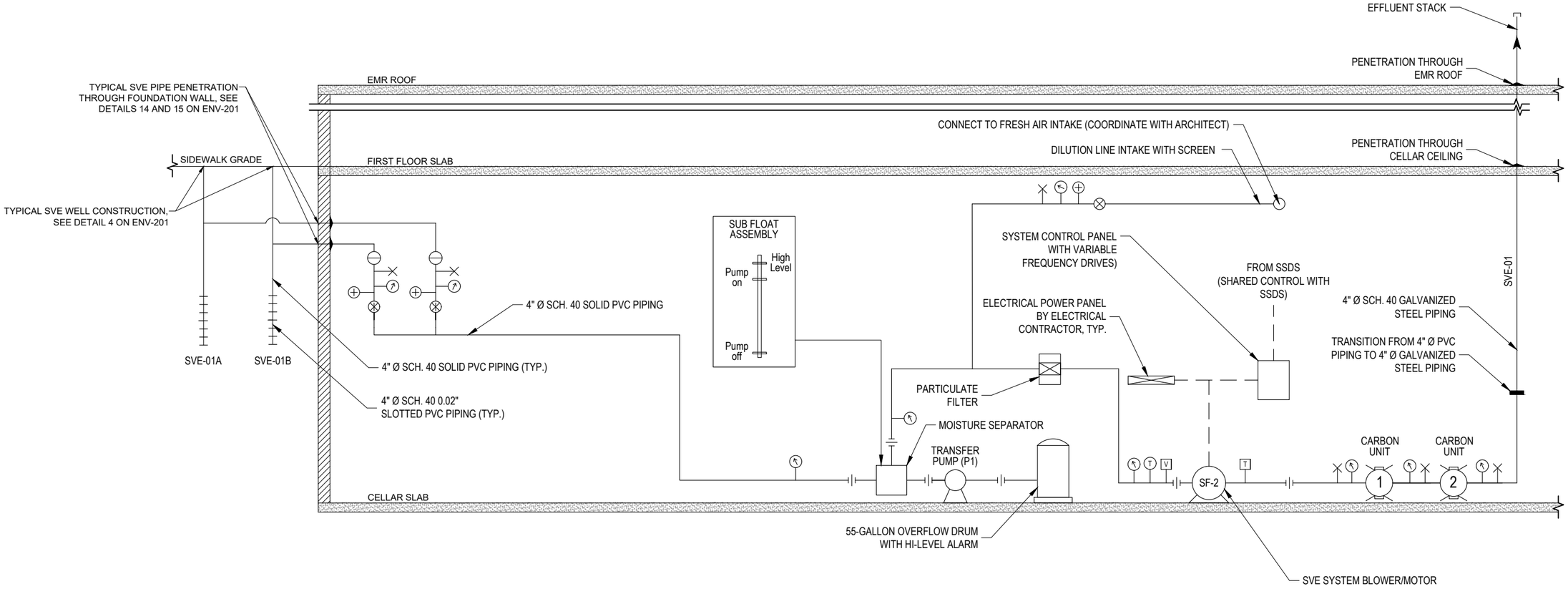
1100 Myrtle Avenue
Brooklyn, New York

SVE SYSTEM LAYOUT

DATE
7/21/2021

PROJECT NO.
190458

FIGURE
1



2 SVE PROCESS AND INSTRUMENTATION DIAGRAM
ENV-202

SCALE: N.T.S.

NOTE:
SEE CONTRACT ELECTRICAL DRAWINGS FOR ACTUAL LOCATION, ROUTING OF CONDUIT AND CONDUCTORS , TYP.

LEGEND

- SCHEDULE 40 SOLID PIPE
- ELECTRICAL CONDUIT
- SCHEDULE 40 0.02-INCH SLOTTED PIPE
- FLANGE
- BLOWER HIGH TEMP SENSOR (WIRED TO CONTROL PANEL)
- BLOWER INFLUENT LOW VACUUM SENSOR (WIRED TO CONTROL PANEL)
- 4" X 6" REDUCER
- RAIN CAP
- BUTTERFLY VALVE
- CLEANOUT
- VACUUM/PRESSURE GAUGE
- SAMPLE PORT
- FLOW METER
- TEMPERATURE GAUGE

SVE INSTRUMENT SCHEDULE

ITEM	DESCRIPTION	SERVICE	REQUIREMENTS	RANGE	REMARKS	MANUFACTURER/MODEL
MAGNEHELIC GAUGE	PRESSURE DIFFERENTIAL	SVE	N/A	0-100 WC	FOR EACH MANIFOLD LEG AND ALL PRE-BLOWER APPLICATIONS	DWYER INSTRUMENT INC SERIES 2100
MAGNEHELIC GAUGE	PRESSURE DIFFERENTIAL	SVE	N/A	0-15 WC	FOR ALL POST-BLOWER APPLICATIONS	DWYER INSTRUMENT INC SERIES 2015
LOW VACUUM SENSOR	DIFFERENTIAL PRESSURE SWITCH	AIS - SSDS/SVE	TBD	4-20 IN H_2O	CONNECT TO CONTROL PANEL ALARM	DWYER INSTRUMENT INC SERIES 1900, MODEL 1910-20
TEMPERATURE GAUGE	TEMPERATURE	SVE	N/A	0-250° F	PRE- AND POST-BLOWER	GRAINGER 1NFY4
TEMPERATURE SENSOR	TEMPERATURE SWITCH	SVE	TBD	0-225° F	CONNECT TO CONTROL PANEL ALARM	UNITED ELECTRIC B100-120
CONTROL PANEL	SUCTION FAN	SVE	60HZ, 1 PHASE, 115 VOLTS	N/A	FOR BLOWERS	TBD
FLOW GAUGE	FLOW	SVE	N/A	0-0.5 IN H_2O	FOR EACH MANIFOLD LEG, AND DILUTION LINE	DWYER INSTRUMENT INC MODEL DS-300-4, AND DWYER INSTRUMENT INC MODEL 2000-0

EQUIPMENT SCHEDULE

UNIT NO.	AREAS SERVICED	SERVICE	LOCATION	MOTOR SIZE	MIN. CFM	MIN RATE (INCHES H_2O)	MOTOR REQUIREMENTS	MANUFACTURER/MODEL
SF-2	SLAB-ON GRADE	SVE	CELLAR LEVEL EQUIPMENT ROOM	3 HP	100	60	60 HZ, 3-PHASE, 230 OR 400 VOLTS	ROTRON EN656M72XL
P1	MOISTURE SEPARATOR	SVE	CELLAR LEVEL EQUIPMENT ROOM	0.5 HP	N/A	N/A	60 HZ, 3-PHASE, 230 OR 400 VOLTS	GOULD'S 3G42

AKRF
440 Park Avenue South, New York, NY 10016

1100 Myrtle Avenue
Brooklyn, New York

SVE PROCESS AND INSTRUMENTATION DIAGRAM

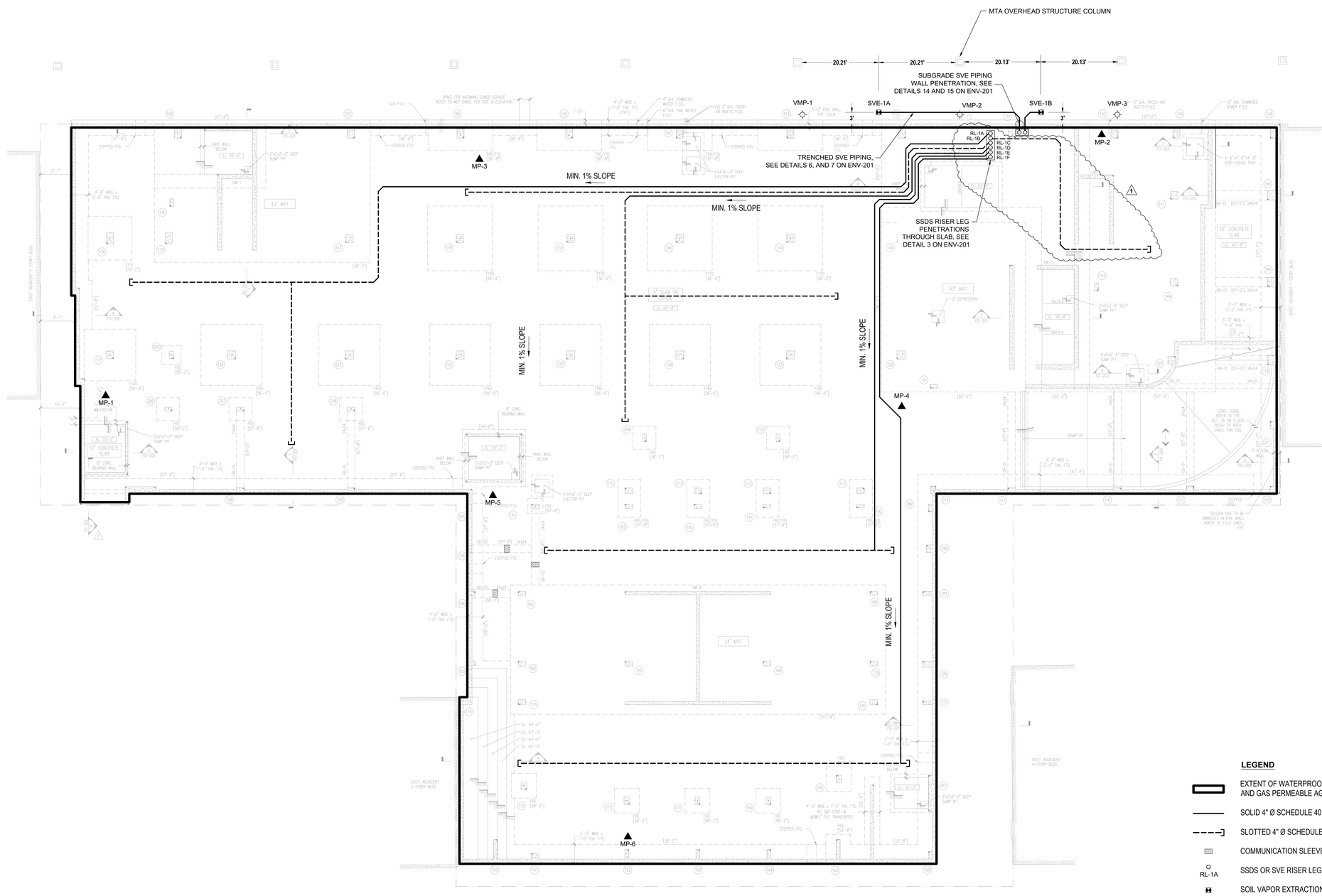
DATE
7/21/2021

PROJECT NO.
190458

FIGURE
2

W:\Projects\190458 - 1100 MYRTLE AVE\Technical\Hazmat\BCP\SSDS Design\CAD\190458 SVE Figures.dwg last save: mvelleux 7/21/2021 9:13 AM

ATTACHMENT A
SSDS AND SVE CONSTRUCTION DRAWINGS



NOTES

1. THIS PLAN SHALL NOT TO BE USED FOR STRUCTURAL, ARCHITECTURAL OR OTHER REFERENCE PURPOSES EXCEPT FOR THE SUB-SLAB DEPRESSURIZATION SYSTEM (SSDS), SOIL VAPOR EXTRACTION (SVE) SYSTEM, AND VAPOR BARRIER.

2. COORDINATE ALL WORK FOR SSDS AND SVE SYSTEM INSTALLATION WITH OTHER TRADES BEFORE INSTALLATION.

3. EXISTING SOIL SHALL BE EXCAVATED AND SUBGRADE PREPARATION SHALL BE PERFORMED PER SPECIFICATIONS AND PER GEOTECHNICAL REPORT.

4. THE FULL EXTENTS OF THE BUILDING CONSTRUCTION BENEATH THE SLABS ON GRADE SHALL BE LINED WITH GAS PERMEABLE AGGREGATE AND VAPOR BARRIER EXCEPT AS NOTED ON THIS DRAWING AND AS REQUIRED BY FOUNDATION ELEMENT LAYOUTS IN STRUCTURAL PLANS. ALL DEVIATIONS SHALL BE PROPOSED IN SHOP DRAWING SUBMITTALS PRIOR TO INSTALLATION IN THE FIELD.

5. THE EXTENTS OF THE BUILDING CONSTRUCTION BENEATH THE SLABS ON GRADE SHALL BE LINED WITH GRACE PREPRUFE 300R #6-MIL VAPOR BARRIER (OR APPROVED EQUIVALENT) IN ACCORDANCE WITH THE ENERGY/ARCHITECTURAL DRAWINGS AND SECTION 07 13 00.

6. THE EXTERIOR PORTIONS OF SUBGRADE FOUNDATION WALLS SHALL BE LINED WITH GRACE PREPRUFE 160R (32-MIL) AND/OR GRACE PREPRUFE BITUTHENE 3000 (OR APPROVED EQUIVALENT) IN ACCORDANCE WITH THE ENERGY/ARCHITECTURAL DRAWINGS AND SECTION 07 13 00.

7. ALL SOLID HORIZONTAL PIPE RUNS MUST BE PITCHED A MINIMUM OF 1/8-INCH VERTICAL PER FOOT HORIZONTAL (1% SLOPE) TOWARDS EACH SECTION OF SLOTTED VENTING PIPE OR TOWARDS SVE WELL. THE SYSTEM SHALL BE INSTALLED SUCH THAT NO PORTION WILL ALLOW EXCESS ACCUMULATION OF CONDENSATION. SOLID UNDERGROUND PIPING MAY BE PITCHED TO CONDENSATE DRAIN OR SVE SUMP, SHOULD THEY BE NECESSARY (SEE DETAILS 5 AND 8 OF ENV-201).

8. PROVIDE PIPE HANGERS FOR UNDERGROUND PIPING AS REQUIRED IN ACCORDANCE WITH PLUMBING SPECIFICATIONS AND DRAWINGS.

9. REFER TO DETAILS ON ENV-201 FOR SUB-SLAB SSDS AND SVE PIPING, SUB-SLAB GAS VAPOR BARRIER, GAS-PERMEABLE AGGREGATE, SVE MONITORING POINTS, AND SVE WELL DETAILS AND SECTIONS.

10. CONTRACTORS TO SUPPLY SHOP DRAWINGS OF PROPOSED PIPE LAYOUTS & PIPE INVERTS IN COORDINATION WITH LATEST FOUNDATION PLANS AND OTHER UNDERGROUND PIPING PLANS TO ENSURE ACCEPTABLE PIPE PITCH & INSTALLATION DETAILS. SHOP DRAWINGS TO INCLUDE PIPE INVERTS FOR SVE & SSDS PIPES TO DEMONSTRATE PITCH AND INSTALLATION DEPTHS WHERE PIPE OVERLAPS OCCUR. SHOP DRAWINGS MUT BE COORDINATED WITH UNDERGROUND PLUMBING DRAWINGS AND OTHER TRADES. 1

11. ALL DIMENSIONS AND ELEVATIONS SHALL BE CHECKED AGAINST ARCHITECTURAL AND BUILDING PLANS. NOTIFY ENGINEER OF ANY DISCREPANCY PRIOR TO CONSTRUCTION.

12. BASEMAP TAKEN FROM DRAWING FO-100 "FOUNDATION PLAN".

13. MONITORING POINT LOCATIONS TO BE COORDINATED WITH CELLAR FLOOR ARCHITECTURAL AND STRUCTURAL PLANS.

14. SVE WELL LOCATION AND QUANTITIES TO BE ADJUSTED BASED UPON PILOT TESTING.

15. GAS PERMEABLE AGGREGATE SHALL HAVE NOMINAL SIZE OF 1 INCH TO 1/2 INCH AND COMFORM TO ASTM C33 STANDARD SPECIFICATION FOR CONCRETE AGGREGATE SIZE #5 AS PER THE TABLE BELOW:

ASTM #5 AGGREGATE GRADATION

SIEVE SIZE	PERCENT FINER BY WEIGHT
1.5 inch	100
1 inch	90 to 100
3/4 inch	20 to 55
1/2 inch	0 to 10
3/8 inch	0 to 5

16. THE CONTRACTOR SHALL COOPERATE WITH THE CONSTRUCTION MANGEMENT TEAM WHOSE RESPONSIBILITY IT IS TO OBTAIN ANY AND ALL REQUIRED PERMITS FROM GOVERNING REGULATORY AGENCIES, INCLUDING BUT NOT LIMITED TO, NEW YORK CITY DEPARTMENT OF BUILDINGS, NEW YORK CITY DEPARTMENT OF TRANSPORTATION, NEW YORK CITY TRANSIT AUTHORITY, AND NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION. THE CONTRACTOR SHALL PROVIDE TO THE GENERAL CONTRACTOR ANY ASSOCIATED DRAWINGS AND/OR OTHER DOCUMENTATION REQUIRED FOR OBTAINING THE PERMITS. CONTRACTOR SHALL BE AWARE OF ANY REQUIRED PERMITS, PERMIT APPLICATION REVIEW TIMELINES, AND PROJECTED PERMIT ISSUANCE DATES TO INFORM THE CONTRACTOR'S PROPOSED SCHEDULE FORPERFORMANCE OF THE WORK OF THIS SECTION.

LEGEND

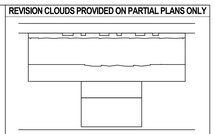
- EXTENT OF WATERPROOFING/VAPOR BARRIER AND GAS PERMEABLE AGGREGATE
- SOLID 4" Ø SCHEDULE 40 PVC SSDS OR SVE PIPE
- SLOTTED 4" Ø SCHEDULE 40 PVC SSDS PIPE WITH PVC END CAP
- COMMUNICATION SLEEVE (SEE ENV-201, DETAIL 9)
- RL-1A — SSDS OR SVE RISER LEG
- SVE-1 — SOIL VAPOR EXTRACTION WELL LOCATION (SEE ENV-201, DETAIL 4A)
- MP-2 — SSDS MONITORING POINT LOCATION (SEE ENV-201, DETAIL 2)
- VMP-1 — SVE MONITORING POINT LOCATION (SEE ENV-201, DETAIL 16)

SSDS MONITORING POINT LOCATIONS

ID	ROOM
MP-1	SOUTH OF PALLET STORAGE AREA
MP-2	SUPER'S WORKSHOP
MP-3	MAIN ELECTRICAL ROOM
MP-4	EASTERN GARAGE
MP-5	PLUMBING EQUIPMENT ROOM
MP-6	BETWEEN PARKING SPACES 3(R)/4(R)

0 5 10 20
SCALE IN FEET

REVISION CLOUDS PROVIDED ON PARTIAL PLANS ONLY



KEY PLAN

N

NOTES:

Number:	Date:	Revision:
	04-30-2021	50% DD SET
	05-20-2021	100% FINAL SET
	06-04-2021	100% FINAL SET REV. 1 (VAPOR BARRIER PRODUCT CHANGE)
1	06-22-2021	BULLETIN #2

Project:
1100 MYRTLE AVENUE
1100 MYRTLE AVENUE
BROOKLYN, NY 11206

Client:
SWDM Myrtle LLC
on behalf of **Spenceran, Inc**
c/o Shorewood Real Estate Group
292 MADISON AVENUE, 24TH FLOOR
NEW YORK, NY 10017

Architect:
HILL | WEST ARCHITECTS
11 BROADWAY
17TH FLOOR
NEW YORK, NY 10004
T. 212 213 8007

Structural Engineer:
GACE Consulting Engineers, DPC
105 MADISON AVENUE, 6TH FLOOR
NEW YORK, NY 10016
(212) 545-7878

MEP / FP / FA / SECURITY / IT / AV Engineer:
DAGHER Engineering, PLLC
29 BROADWAY
NEW YORK, NY 10006
(212) 480-2591

Civil Engineer / Acoustical Consultant / Parking Consultant:
AKRF
440 PARK AVENUE SOUTH
NEW YORK, NY 10016
(973) 994-9220

Interior Designer:
ALCHEMY STUDIO, LLC
648 BROADWAY, SUITE 504
NEW YORK, NY 10004
(646) 490-5358

Lighting Designer:
REVEAL Design Group
150 WEST 28TH STREET, SUITE 401
NEW YORK, NY 10001
(212) 633-4353

Landscape Architect:
OSD I OUTSIDE
250 WEST BROADWAY, 2ND FLOOR
NEW YORK, NY 10013
(917) 533-5586

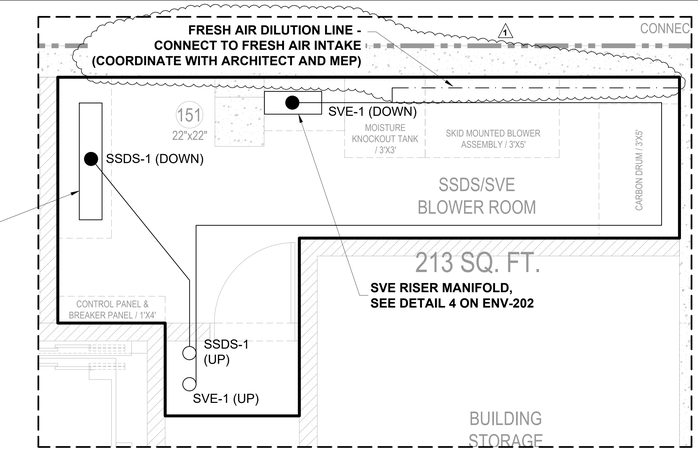
DOB STAMPS & SIGNATURES:

DWG TITLE:
SSDS AND SVE PIPING LAYOUT

SEAL & SIGNATURE:

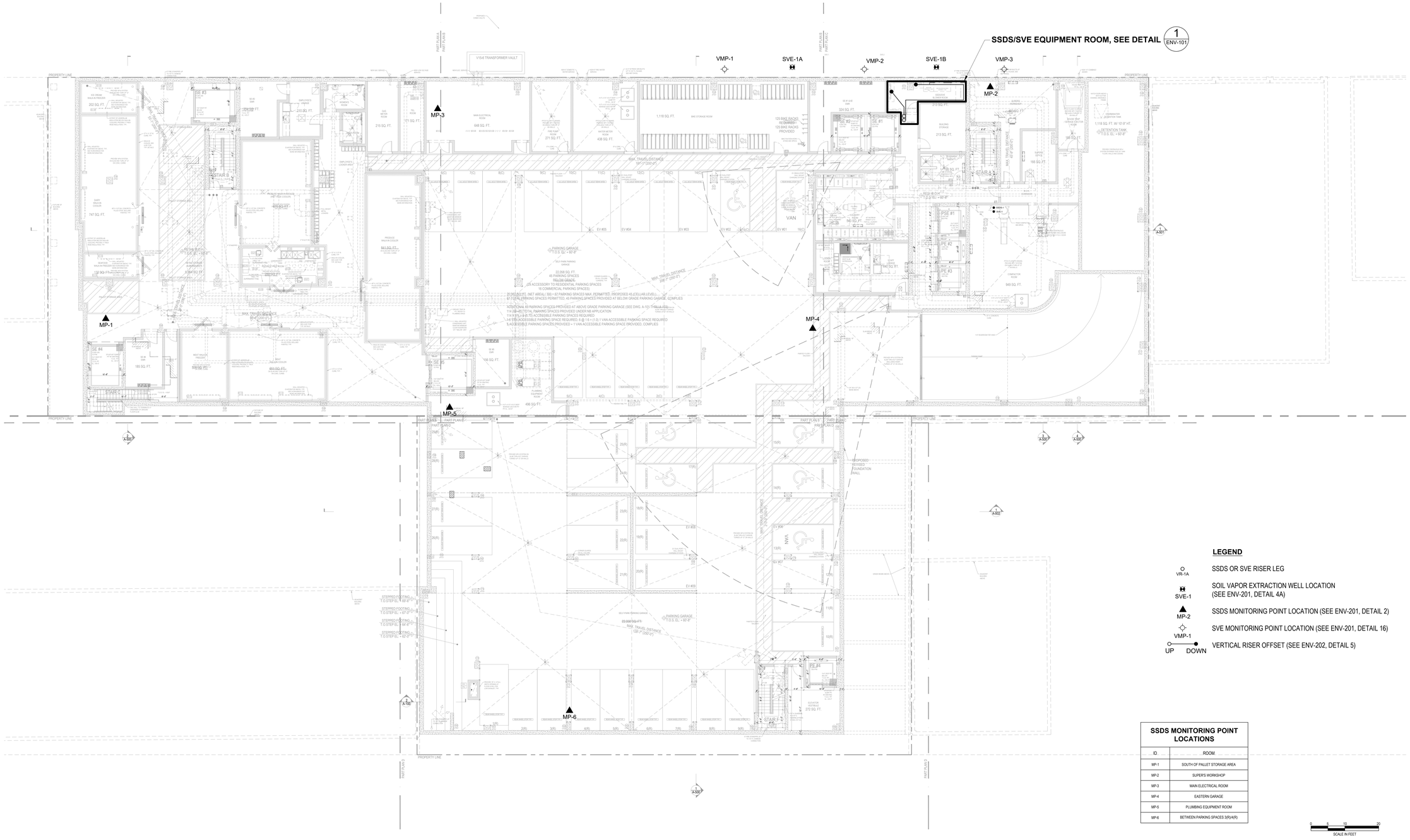
DATE: 06 - 22 - 2021
PROJECT #: 19A18
SCALE: As Noted
ENV-100
DWG NO.

NYC DOB NB # 321592157 1 OF 5



SSDS RISER MANIFOLD, SEE DETAIL 3 ON ENV-202

1 ENV-101 **CELLAR LEVEL SSDS/SVE EQUIPMENT ROOM**
SCALE: 1" = 2'-0"



LEGEND

- VR-1A — SSDS OR SVE RISER LEG
- SVE-1 — SOIL VAPOR EXTRACTION WELL LOCATION (SEE ENV-201, DETAIL 4A)
- MP-2 — SSDS MONITORING POINT LOCATION (SEE ENV-201, DETAIL 2)
- VMP-1 — SVE MONITORING POINT LOCATION (SEE ENV-201, DETAIL 16)
- UP / DOWN — VERTICAL RISER OFFSET (SEE ENV-202, DETAIL 5)

SSDS MONITORING POINT LOCATIONS

ID	ROOM
MP-1	SOUTH OF PALLET STORAGE AREA
MP-2	SUPER'S WORKSHOP
MP-3	MAIN ELECTRICAL ROOM
MP-4	EASTERN GARAGE
MP-5	PLUMBING EQUIPMENT ROOM
MP-6	BETWEEN PARKING SPACES 3(R)/4(R)

SCALE IN FEET

REVISION CLOUDS PROVIDED ON PARTIAL PLANS ONLY

KEY PLAN

NOTES:

Number:	Date:	Revision:
	04-30-2021	50% DD SET
	05-20-2021	100% FINAL SET
	06-04-2021	100% FINAL SET REV. 1 (VAPOR BARRIER PRODUCT CHANGE)
1	06-22-2021	BULLETIN #2

Project:
1100 MYRTLE AVENUE
1100 MYRTLE AVENUE
BROOKLYN, NY 11206

Client:
SWDM Myrtle LLC
on behalf of **Spenceran, Inc**
c/o Shorewood Real Estate Group
292 MADISON AVENUE, 24TH FLOOR
NEW YORK, NY 10017

Architect:
HILL | WEST ARCHITECTS
11 BROADWAY
17TH FLOOR
NEW YORK, NY 10004
T. 212 213 8007

Structural Engineer:
GACE Consulting Engineers, DPC
105 MADISON AVENUE, 6TH FLOOR
NEW YORK, NY 10016
(212) 545-7878

MEP / FP / FA / SECURITY / IT / AV Engineer:
DAGHER Engineering, PLLC
29 BROADWAY
NEW YORK, NY 10006
(212) 480-2591

Civil Engineer / Acoustical Consultant / Parking Consultant:
AKRF
440 PARK AVENUE SOUTH
NEW YORK, NY 10016
(973) 994-9220

Interior Designer:
ALCHEMY STUDIO, LLC
648 BROADWAY, SUITE 504
NEW YORK, NY 10004
(646) 490-5358

Lighting Designer:
REVEAL Design Group
150 WEST 28TH STREET, SUITE 401
NEW YORK, NY 10001
(212) 633-4353

Landscape Architect:
OSD I OUTSIDE
250 WEST BROADWAY, 2ND FLOOR
NEW YORK, NY 10013
(917) 533-5586

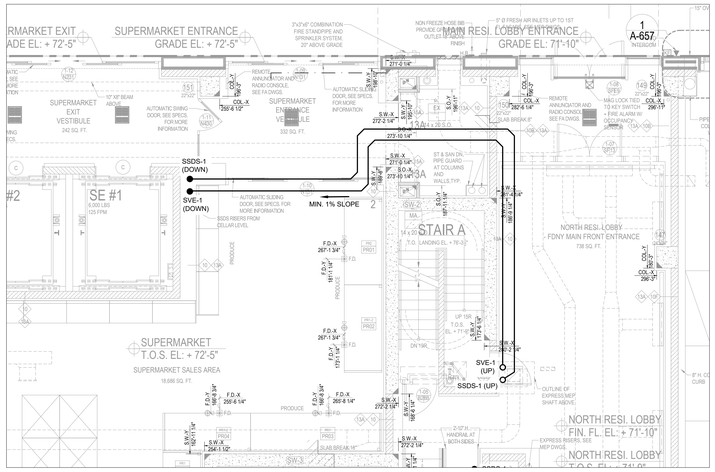
DOB STAMPS & SIGNATURES:

DWG TITLE:
SSDS AND SVE RISER LOCATIONS - CELLAR

SEAL & SIGNATURE:
STATE OF NEW YORK — REBECCA A. WEST — 032564 — LICENSED PROFESSIONAL ENGINEER

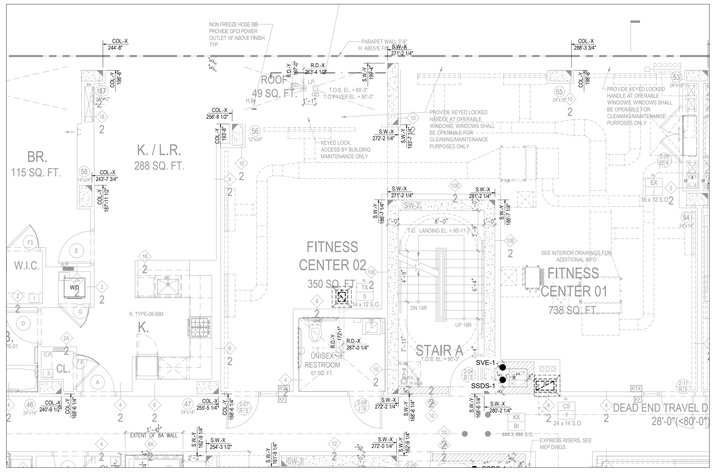
DATE: 06 - 22 - 2021
PROJECT #: 19A18
SCALE: As Noted
ENV-101
DWG NO.

NYC DOB NB # 321592157 2 OF 5



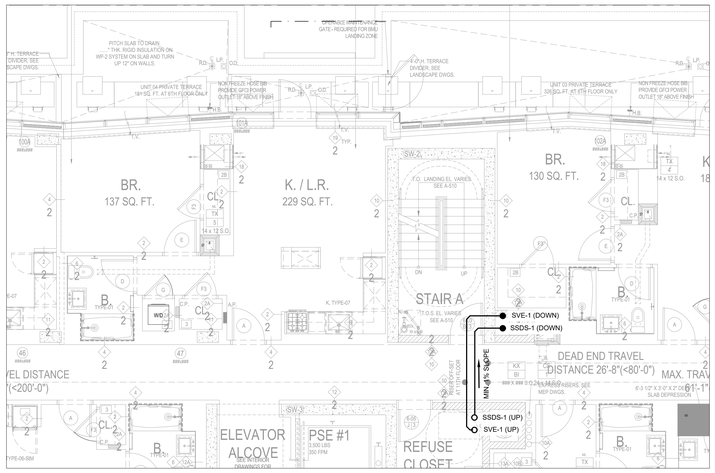
1 GROUND FLOOR
ENV-102 SCALE: 1" = 5'-0"

0 2.5 5 10
SCALE IN FEET



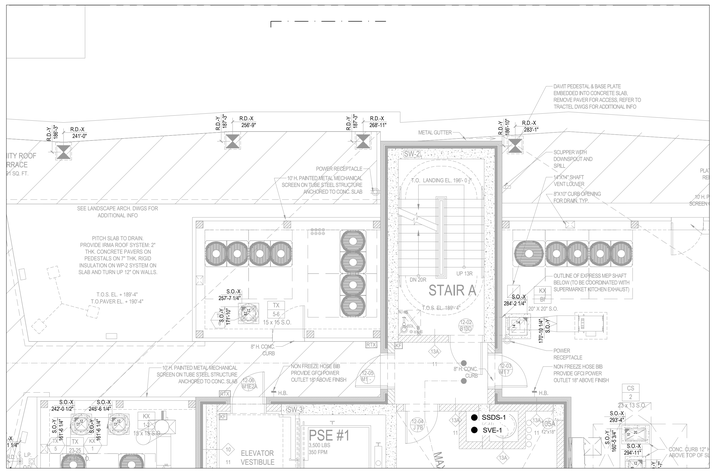
2 SECOND THROUGH TENTH FLOORS
ENV-102 SCALE: 1" = 5'-0"

0 2.5 5 10
SCALE IN FEET



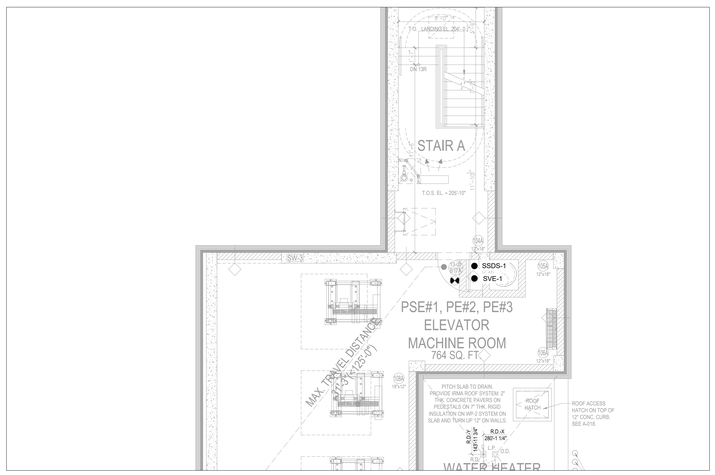
3 ELEVENTH FLOOR
ENV-102 SCALE: 1" = 5'-0"

0 2.5 5 10
SCALE IN FEET



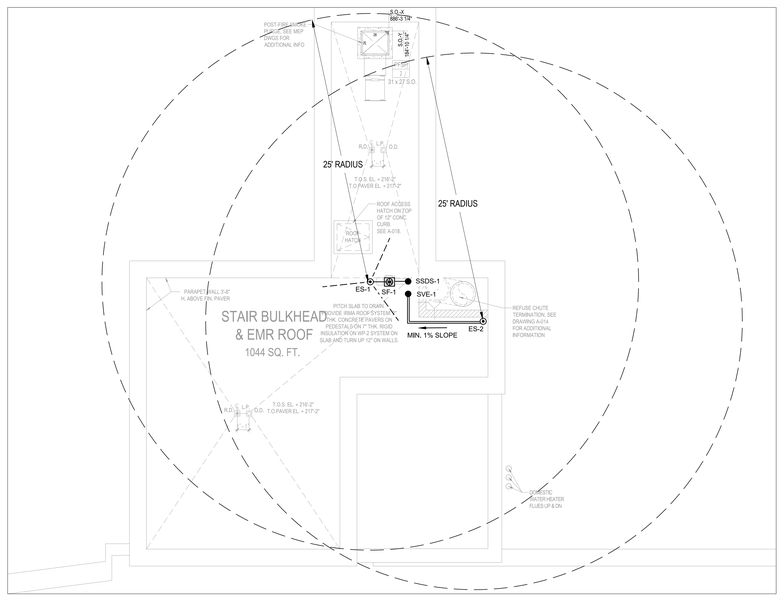
4 MAIN ROOF
ENV-102 SCALE: 1" = 5'-0"

0 2.5 5 10
SCALE IN FEET



5 EMR LEVEL
ENV-102 SCALE: 1" = 5'-0"

0 2.5 5 10
SCALE IN FEET



6 EMR ROOF
ENV-102 SCALE: 1" = 5'-0"

0 2.5 5 10
SCALE IN FEET

NOTES

1. THIS PLAN SHALL NOT TO BE USED FOR STRUCTURAL, ARCHITECTURAL OR OTHER REFERENCE PURPOSES EXCEPT FOR THE SUB-SLAB DEPRESSURIZATION SYSTEM.
2. COORDINATE ALL WORK FOR SSDS AND SVE INSTALLATION WITH OTHER TRADES BEFORE INSTALLATION.
3. BASE MAP TAKEN FROM ARCHITECTURAL AND MECHANICAL DRAWING SERIES.
4. REFER TO DRAWING ENV-202 FOR SSDS AND SVE FAN AND INTRUMENT SCHEDULES, PROCESS FLOW DIAGRAMS, GENERAL NOTES AND INSTRUMENT/FAN NOTES.
5. ALL HORIZONTAL PIPE RUNS MUST BE PITCHED A MINIMUM OF 1/8-INCH VERTICAL PER FOOT HORIZONTAL (1% SLOPE) TOWARDS EACH SUB-SLAB DEPRESSURIZATION PIT/SVE WELL OR TO UNDERGROUND CONDENSATE DRAIN OR SUMP WITHIN THE SUB SLAB WHEN UNDERGROUND PIPING CANNOT BE SLOPED TOWARD PIT. THE SYSTEM SHALL BE INSTALLED SUCH THAT NO PORTION WILL ALLOW EXCESS ACCUMULATION OF CONDENSATION.

CODE COMPLIANCE NOTES:

1. BOTH THE SUB-SLAB DEPRESSURIZATION AND SVE SYSTEMS COMPLY WITH THE REQUIREMENTS OF THE 2014 NYC MECHANICAL CODE SECTION 512, "SUB-SLAB SOIL EXHAUST SYSTEMS."
2. NEITHER THE SUB-SLAB DEPRESSURIZATION SYSTEM NOR THE SVE SYSTEM ARE "HAZARDOUS EXHAUST SYSTEMS" AS DEFINED IN THE 2014 NYC MECHANICAL CODE SECTION 510.
3. IN ACCORDANCE WITH 2014 NYC MECHANICAL CODE CHAPTER 6, "DUCT SYSTEMS", PARAGRAPH 601.4, "CONTAMINATION PREVENTION", SVE RISERS, WHICH ARE UNDER PRESSURE, SHALL NOT EXTEND INTO OR PASS THROUGH DUCTS OR PLENUMS. SSDS RISERS, WHICH ARE NOT UNDER PRESSURE, ARE NOT SUBJECT TO THIS CODE REQUIREMENT.
4. 2014 NYC MECHANICAL CODE CHAPTER 6, "DUCT SYSTEMS", PARAGRAPH 607.5.5.2, "LIMITATIONS" DOES NOT APPLY TO THE SUB-SLAB DEPRESSURIZATION SYSTEM RISERS; HOWEVER, THE DESIGN DOES NOT ALLOW FOR INSTALLATION OF SSDS RISERS IN SHAFTS THAT CONTAIN DUCTWORK CONVEYING ENVIRONMENTAL AIR.

LEGEND

- 4" Ø GALVANIZED STEEL SVE PIPE
- 8" Ø GALVANIZED STEEL SSDS PIPE
- SSDS-1 — VERTICAL RISER AND IDENTIFICATION NUMBER
- UP / DOWN — VERTICAL RISER OFFSET (SEE ENV-202, DETAIL 5)
- SF-1 — SSDS SUCTION FAN (SEE DETAIL 7 ON ENV-202)
- ES-1 — SSDS EXHAUST STACK WITH GUY WIRES (SEE DETAIL 6 ON ENV-202)
- ES-2 — SVE EXHAUST STACK (SEE DETAIL 7 ON ENV-202)

REVISION CLOUDS PROVIDED ON PARTIAL PLANS ONLY

KEY PLAN

NOTES:

	04-30-2021	50% DD SET
	05-20-2021	100% FINAL SET
	06-04-2021	100% FINAL SET REV. 1 (VAPOR BARRIER PRODUCT CHANGE)
1	06-22-2021	BULLETIN #2
Number:	Date:	Revision:

Project:
1100 MYRTLE AVENUE
1100 MYRTLE AVENUE
BROOKLYN, NY 11206

Client:
SWDM Myrtle LLC
on behalf of **Spenceran, Inc**
c/o Shorewood Real Estate Group
292 MADISON AVENUE, 24TH FLOOR
NEW YORK, NY 10017

Architect:
HILL | WEST ARCHITECTS
11 BROADWAY
17TH FLOOR
NEW YORK, NY 10004
T. 212 213 8007

Structural Engineer:
GACE Consulting Engineers, DPC
105 MADISON AVENUE, 6TH FLOOR
NEW YORK, NY 10016
(212) 545-7878

MEP / FP / FA / SECURITY / IT / AV Engineer:
DAGHER Engineering, PLLC
29 BROADWAY
NEW YORK, NY 10006
(212) 480-2591

Civil Engineer / Acoustical Consultant / Parking Consultant:
AKRF
440 PARK AVENUE SOUTH
NEW YORK, NY 10016
(973) 994-9220

Interior Designer:
ALCHEMY STUDIO, LLC
648 BROADWAY, SUITE 504
NEW YORK, NY 10004
(646) 490-5358

Lighting Designer:
REVEAL Design Group
150 WEST 28TH STREET, SUITE 401
NEW YORK, NY 10001
(212) 633-4353

Landscape Architect:
OSD I OUTSIDE
250 WEST BROADWAY, 2ND FLOOR
NEW YORK, NY 10013
(917) 533-5586

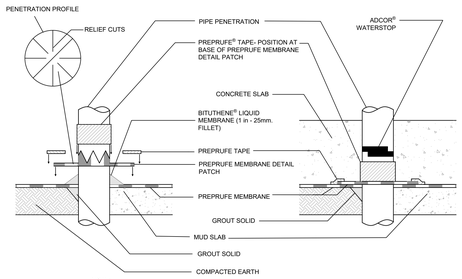
DOB STAMPS & SIGNATURES:

DWG TITLE:
SSDS AND SVE RISER LOCATIONS - GROUND FLOOR THROUGH ROOF

SEAL & SIGNATURE:

DATE: 06 - 22 - 2021
PROJECT #: 19A18
SCALE: As Noted
ENV-102
DWG NO.

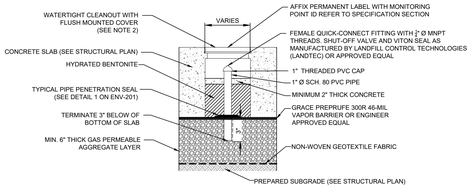
NYC DOB NB # 321592157 3 OF 5



NOTE:

1. SEAL WATERPROOFING PENETRATIONS IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.
2. DETAIL TAKEN FROM GCP, "PIPE PENETRATION FOR WALL OR SLAB PREPRUFE WATERPROOFING SYSTEM", DATED 07/01/2016.

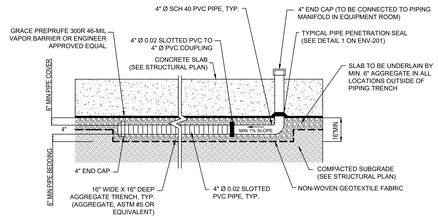
1 ENV-201 **VAPOR BARRIER PENETRATION**
SCALE: N.T.S.



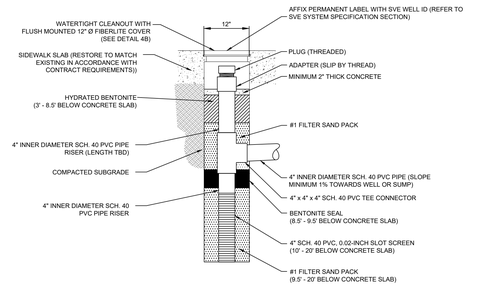
NOTES:

1. ANY DEVIATION FROM THIS INSTALLATION MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
2. SEE SECTION 028000 (VAPOR MITIGATION SYSTEM) FOR WATERTIGHT COVER REQUIREMENTS.

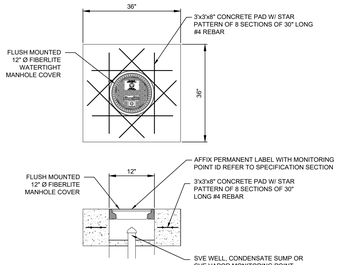
2 ENV-201 **TYPICAL SSDS MONITORING POINT DETAIL**
SCALE: N.T.S.



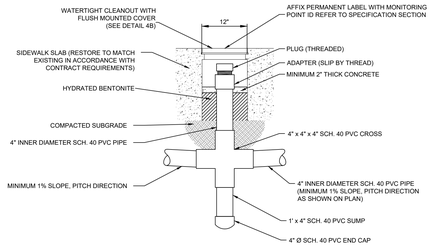
3 ENV-201 **TYPICAL SSDS PIPING PROFILE**
SCALE: N.T.S.



4A ENV-201 **TYPICAL SVE WELL CONSTRUCTION**
SCALE: N.T.S.



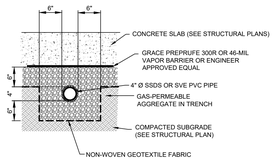
4B ENV-201 **SVE SYSTEM FIBERLITE WATERTIGHT COVER DETAIL**
SCALE: N.T.S.



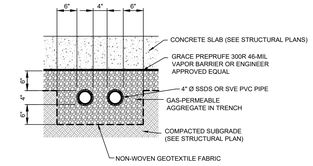
NOTE:

1. INSTALL AS NEEDED AT LOW POINTS IN SUB-SLAB SVE PIPING IF PIPING CANNOT MAINTAIN MINIMUM 1% SLOPE TO SVE WELL
2. SEE SECTION 022221 (SOIL VAPOR EXTRACTION SYSTEM) FOR WATERTIGHT COVER REQUIREMENTS.

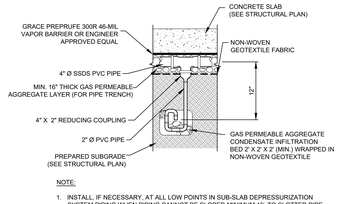
5 ENV-201 **TYPICAL SVE SUMP DETAIL**
SCALE: N.T.S.



6 ENV-201 **TYPICAL SSDS AND SVE PIPE TRENCH DETAIL - SINGLE PIPE**
SCALE: N.T.S.



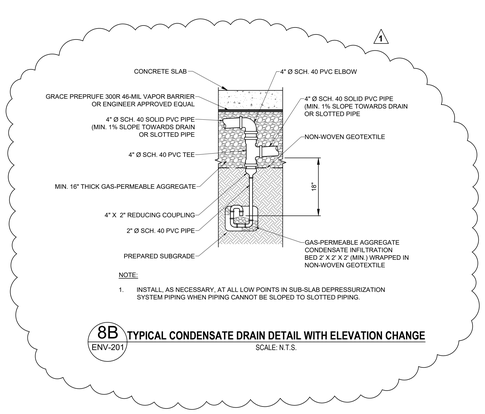
7 ENV-201 **TYPICAL SSDS AND SVE PIPE TRENCH DETAIL - MULTIPLE PIPES**
SCALE: N.T.S.



NOTE:

1. INSTALL, IF NECESSARY, AT ALL LOW POINTS IN SUB-SLAB DEPRESSURIZATION SYSTEM PIPING WHEN PIPING CANNOT BE SLOPED MINIMUM 1% TO SLOTTED PIPE.

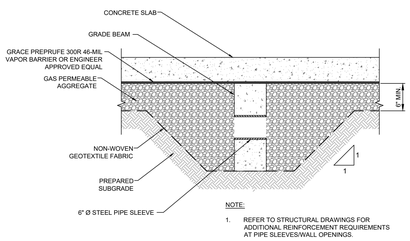
8A ENV-201 **TYPICAL SSDS LOW POINT CONDENSATE DRAIN DETAIL**
SCALE: N.T.S.



NOTE:

1. INSTALL, AS NECESSARY, AT ALL LOW POINTS IN SUB-SLAB DEPRESSURIZATION SYSTEM PIPING WHEN PIPING CANNOT BE SLOPED TO SLOTTED PIPING.

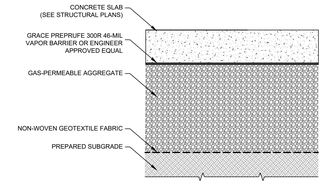
8B ENV-201 **TYPICAL CONDENSATE DRAIN DETAIL WITH ELEVATION CHANGE**
SCALE: N.T.S.



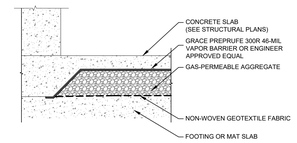
NOTE:

1. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL REINFORCEMENT REQUIREMENTS AT PIPE SLEEVES/WALL OPENINGS.

9 ENV-201 **TYPICAL COMMUNICATION SLEEVE THROUGH GRADE BEAM DETAIL**
SCALE: N.T.S.



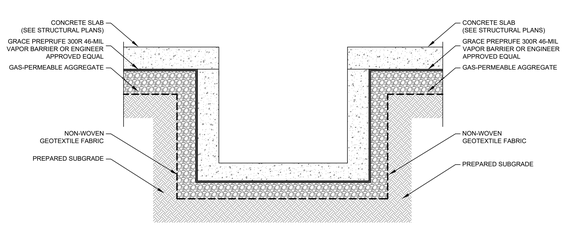
11 ENV-201 **TYPICAL SECTION THROUGH SLAB**
SCALE: N.T.S.



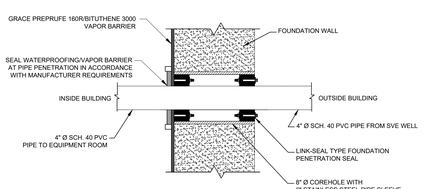
NOTE:

1. ATTACH VAPOR BARRIER AT FOOTING/GRADE BEAM IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS AND SECTION 07013.00.

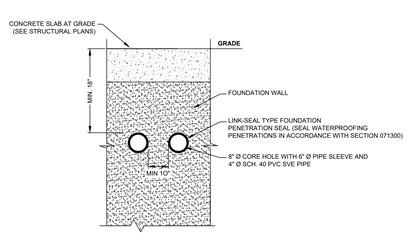
12 ENV-201 **VAPOR BARRIER DETAIL FOR HAUNCHED SLAB**
SCALE: N.T.S.



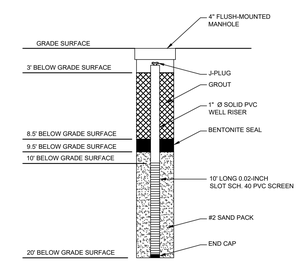
13 ENV-201 **VAPOR BARRIER DETAIL AT TYPICAL PIT, ETC.**
SCALE: N.T.S.



14 ENV-201 **TYPICAL BELOW GRADE PENETRATION CONSTRUCTION DETAIL**
SCALE: N.T.S.



15 ENV-201 **ELEVATION VIEW OF PENETRATION THROUGH BUILDING FACADE**
SCALE: N.T.S.



NOTE:

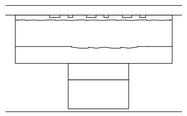
1. SEAL VAPOR BARRIER PENETRATIONS IN ACCORDANCE WITH SPECIFICATIONS

16 ENV-201 **TYPICAL SVE VAPOR MONITORING POINT DETAIL**
SCALE: N.T.S.

GENERAL NOTES:

1. GRACE PREPRUFE 300R 46-MIL VAPOR BARRIER (BELOW BUILDING SLAB), GRACE PREPRUFE 160R AND/OR BITUTHENE (SUBGRADE FOUNDATION WALLS) (OR APPROVED EQUAL) SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATION (AND ALL OTHER APPLICABLE SPECIFICATION SECTIONS), AND RELATED DRAWINGS. CONTRACTOR TO SUBMIT SHOP DRAWINGS SHOWING VAPOR BARRIER INSTALLATION DETAILS.
2. DRAWING SHALL NOT BE USED FOR STRUCTURAL, ARCHITECTURAL, UTILITY, OR OTHER REFERENCE EXCEPT FOR THE SSDS AND SVE SYSTEM.
3. DESIGN DETAILS AND DRAWINGS ARE ADAPTED FROM EPA DOCUMENT EPA/625/R-92/016.
4. ALL SOLID HORIZONTAL PIPE RUNS MUST BE PITCHED A MINIMUM OF 1/8-INCH VERTICAL PER FOOT HORIZONTAL (1% SLOPE) TOWARDS EACH SECTION OF SLOTTED VENTING PIPE, SVE WELL, OR LOW POINT CONDENSATE DRAIN OR SVE SUMP (SEE DETAIL 5 FOR SVE, DETAIL 8 FOR SSDS). THE SYSTEMS SHALL BE INSTALLED SUCH THAT NO PORTION WILL ALLOW EXCESS ACCUMULATION OF CONDENSATION.
5. ALL CONNECTIONS AT PIPE FITTINGS AND JOINTS SHALL BE LEAK FREE.
6. INSTALLATION OF THE SUB-SLAB COMPONENTS MUST BE COORDINATED WITH OTHER TRADES FOR THE INSTALLATION OF OTHER UTILITIES AND STRUCTURAL COMPONENTS.
7. CONTRACTOR TO SUBMIT SHOP DRAWINGS OF ALL EQUIPMENT, PIPING, MONITORING POINT LOCATIONS FOR APPROVAL. SHOP DRAWINGS TO INCLUDE PIPE INVERTS FOR SVE & SSDS PIPES TO DEMONSTRATE PITCH AND INSTALLATION DEPTHS WHERE PIPE OVERLAPS OCCUR.
8. SYSTEM INSTALLATION SHALL ADHERE TO: OCTOBER 2006 FINAL GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK, UPDATED SEPTEMBER 2013 FOR AIR GUIDANCE VALUE (AGV) CHANGE FOR TETRACHLOROETHYLENE (PCE) AND AUGUST 2015 FOR AGV CHANGE FOR TRICHLOROETHYLENE (TCE), PREPARED BY NEW YORK STATE DEPARTMENT OF HEALTH (NYSDOH), ALL APPLICABLE PORTIONS OF THE BUILDING CODE OF THE CITY OF NEW YORK, INCLUDING BUT NOT LIMITED TO 2012 NEW YORK CITY MECHANICAL CODE, CHAPTER 5, SECTION MC 512-SUBSLAB EXHAUST SYSTEMS.
9. ANY DEVIATION FROM THIS INSTALLATION MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

REVISION CLOUDS PROVIDED ON PARTIAL PLANS ONLY



KEY PLAN

N

NOTES:

Number	Date	Revision:
	04-30-2021	50% DD SET
	05-20-2021	100% FINAL SET
	06-04-2021	100% FINAL SET REV. 1 (VAPOR BARRIER PRODUCT CHANGE)
1	06-22-2021	BULLETIN #2

Project:
1100 MYRTLE AVENUE
1100 MYRTLE AVENUE
BROOKLYN, NY 11206

Client:
SWDM Myrtle LLC
on behalf of **Spenceran, Inc**
c/o Shorewood Real Estate Group
292 MADISON AVENUE, 24TH FLOOR
NEW YORK, NY 10017

Architect:
HILL | WEST ARCHITECTS
11 BROADWAY
17TH FLOOR
NEW YORK, NY 10004
T. 212 213 8007

Structural Engineer:
GACE Consulting Engineers, DPC
105 MADISON AVENUE, 6TH FLOOR
NEW YORK, NY 10016
(212) 545-7878

MEP / FP / FA / SECURITY / IT / AV Engineer:
DAGHER Engineering, PLLC
29 BROADWAY
NEW YORK, NY 10006
(212) 480-2591

Civil Engineer / Acoustical Consultant / Parking Consultant:
AKRF
440 PARK AVENUE SOUTH
NEW YORK, NY 10016
(973) 994-9220

Interior Designer:
ALCHEMY STUDIO, LLC
648 BROADWAY, SUITE 504
NEW YORK, NY 10004
(646) 490-5358

Lighting Designer:
REVEAL Design Group
150 WEST 28TH STREET, SUITE 401
NEW YORK, NY 10001
(212) 633-4353

Landscape Architect:
OSD I OUTSIDE
250 WEST BROADWAY, 2ND FLOOR
NEW YORK, NY 10013
(917) 533-5586

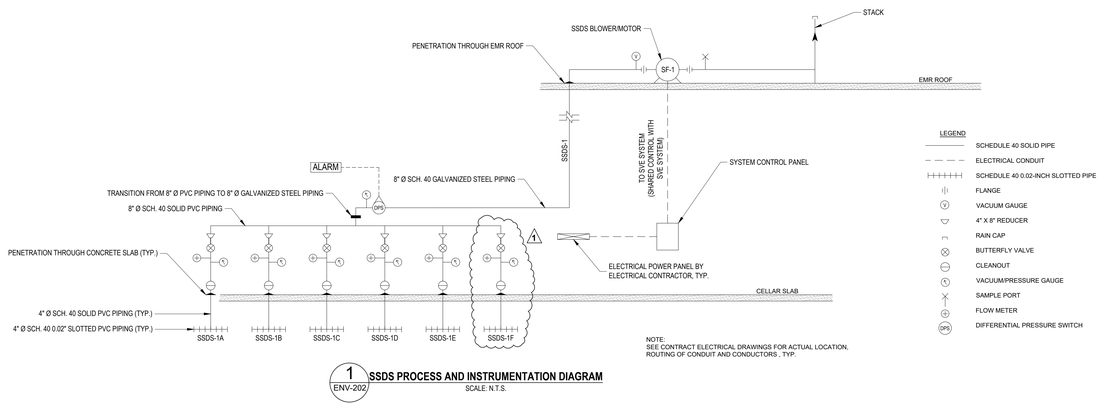
DOB STAMPS & SIGNATURES:

DWG TITLE:
SSDS AND SVE PIPING DETAILS

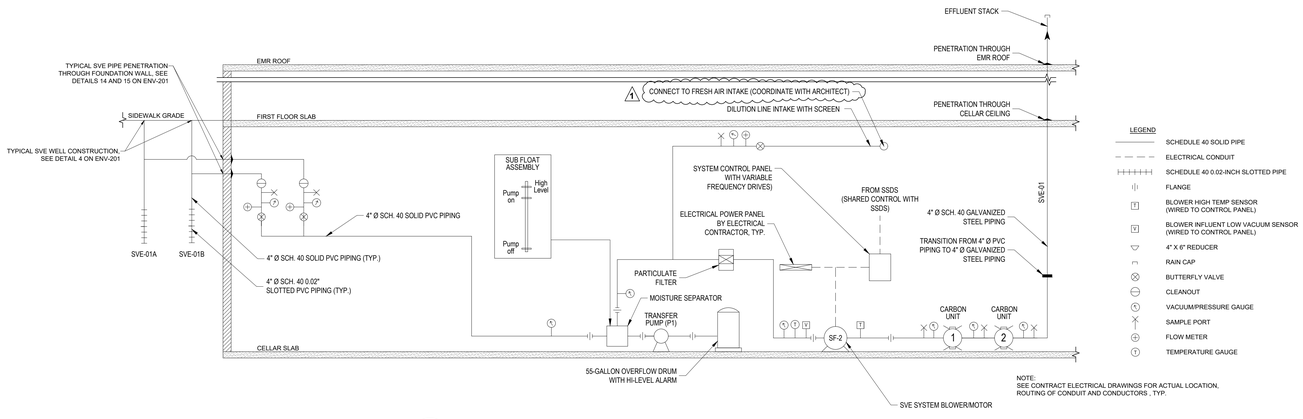
SEAL & SIGNATURE:

DATE: 06 - 22 - 2021
PROJECT #: 19A18
SCALE: As Noted
ENV-201
DWG NO.

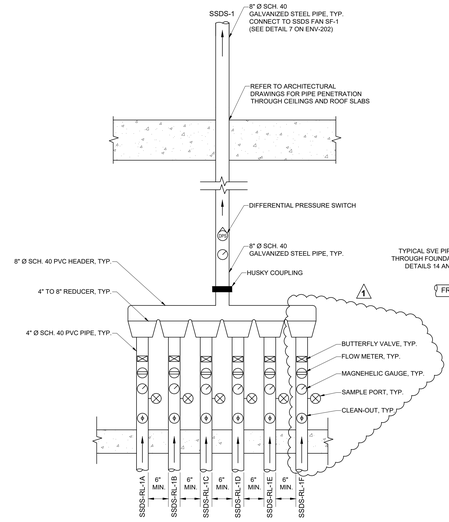
NYC DOB NB # 321592157 4 OF 5



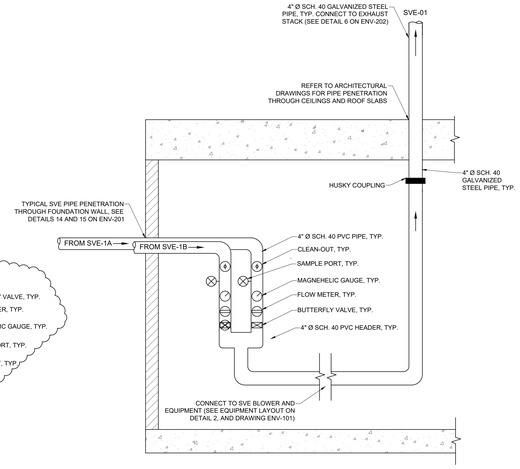
1 ENV-202 **SSDS PROCESS AND INSTRUMENTATION DIAGRAM**
SCALE: N.T.S.



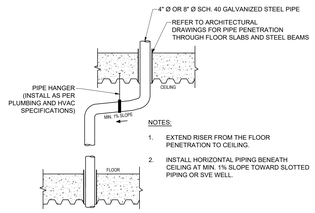
2 ENV-202 **SVE PROCESS AND INSTRUMENTATION DIAGRAM**
SCALE: N.T.S.



3 ENV-202 **SSDS PIPING MANIFOLD**
SCALE: N.T.S.



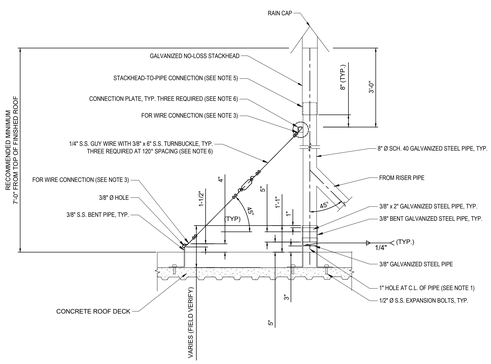
4 ENV-202 **SVE PIPING MANIFOLD**
SCALE: N.T.S.



NOTES:

1. EXTEND RISER FROM THE FLOOR PENETRATION TO CEILING.
2. INSTALL HORIZONTAL PIPING BENEATH CEILING AT MIN. 1% SLOPE TOWARD SLOTTED PIPING OR SVE WELL.

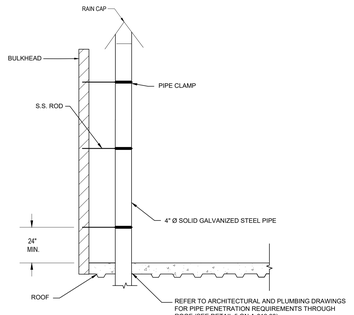
5 ENV-202 **TYPICAL PIPING OFFSET**
SCALE: N.T.S.



NOTE:

1. DISCHARGE EXHAUST STACK MINIMUM 10' ABOVE FINISHED ROOF AND MINIMUM 25' FROM ANY WINDOWS AND AIR INTAKES.

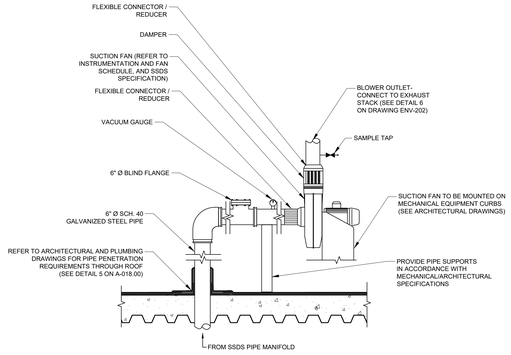
6 ENV-202 **SSDS STACK MOUNTING DETAIL**
SCALE: N.T.S.



NOTE:

1. DISCHARGE EXHAUST STACK MINIMUM 10' ABOVE FINISHED ROOF AND MINIMUM 25' FROM ANY WINDOWS AND AIR INTAKES.

7 ENV-202 **SVE STACK MOUNTING DETAIL**
SCALE: N.T.S.



NOTES:

1. NOT ALL REQUIRED ACCESSORIES ARE SHOWN. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. ELECTRICAL WIRING AND EQUIPMENT NOT SHOWN. REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR REQUIREMENTS.
3. PIPE AND EQUIPMENT ARRANGEMENT SHOWN FOR SCHEMATIC PURPOSES ONLY (NOT TO SCALE). CONTRACTOR TO SUBMIT TO-SCALE DRAWING SHOWING PROPOSED ARRANGEMENT. CONTRACTOR IS REQUIRED TO OBTAIN APPROVAL OF ARRANGEMENT.
4. COORDINATE ALL ROOF PENETRATIONS WITH ALL OTHER TRADES TO ENSURE ALL PENETRATIONS ARE SEALED IN ACCORDANCE WITH WARRANTY.
5. PROVIDE SHOP DRAWINGS FOR BLOWER AND ACCESSORY LAYOUT AND EXHAUST STACK MOUNTING.
6. DISCHARGE EXHAUST STACK MINIMUM 10' ABOVE FINISHED ROOF AND MINIMUM 25' FROM ANY WINDOWS AND AIR INTAKES.

8 ENV-202 **SSDS SUCTION FAN DETAIL (SF-1)**
SCALE: N.T.S.

SVE INSTRUMENT SCHEDULE						
ITEM	DESCRIPTION	SERVICE	REQUIREMENTS	RANGE	REMARKS	MANUFACTURER/MODEL
MAGNEHELIC GAUGE	PRESSURE DIFFERENTIAL	SVE	N/A	0-100 WC	FOR EACH MANIFOLD LEG AND ALL PRE-BLOWER APPLICATIONS	DWYER INSTRUMENT INC SERIES 2100
MAGNEHELIC GAUGE	PRESSURE DIFFERENTIAL	SVE	N/A	0-15 WC	FOR ALL POST-BLOWER APPLICATIONS	DWYER INSTRUMENT INC SERIES 2015
LOW VACUUM SENSOR	DIFFERENTIAL PRESSURE SWITCH	AIS - SSDS/SVE	TBD	4-20 IN H_2O	CONNECT TO CONTROL PANEL ALARM	DWYER INSTRUMENT INC SERIES 1900, MODEL 1910-20
TEMPERATURE GAUGE	TEMPERATURE	SVE	N/A	0-250° F	PRE- AND POST-BLOWER	GRAINGER 1NFY4
TEMPERATURE SENSOR	TEMPERATURE SWITCH	SVE	TBD	0-225° F	CONNECT TO CONTROL PANEL ALARM	UNITED ELECTRIC B100-120
CONTROL PANEL	SUCTION FAN	SVE	60HZ, 1 PHASE, 115 VOLTS	N/A	FOR BLOWERS	TBD
FLOW GAUGE	FLOW	SVE	N/A	0-0.5 IN H_2O	FOR EACH MANIFOLD LEG, AND DILUTION LINE	DWYER INSTRUMENT INC MODEL DS-300-4, AND DWYER INSTRUMENT INC MODEL 2000-0

SSDS INSTRUMENT SCHEDULE						
ITEM	DESCRIPTION	SERVICE	REQUIREMENTS	RANGE	REMARKS	MANUFACTURER/MODEL
MAGNEHELIC GAUGE	PRESSURE DIFFERENTIAL	SSDS/SVE	N/A	0-10 WC	FOR EACH MANIFOLD LEG AND RISER	DWYER INSTRUMENT INC SERIES 2000
LOW VACUUM SENSOR	DIFFERENTIAL PRESSURE SWITCH	AIS - SSDS/SVE	N/A	0.4-1.6 IN H_2O	CONNECT TO CONTROL PANEL ALARM	DWYER INSTRUMENT INC SERIES 1900, MODEL 1910-10
ALARM STATION	LOW VACUUM ALARM	SSDS	60HZ, 1 PHASE, 24 VAC	N/A	CONNECT TO DIFFERENTIAL PRESSURE SWITCH	KELE AIS-TDR-MV
CONTROL PANEL	SUCTION FAN	SSDS/SVE	60HZ, 1 PHASE, 115 VOLTS	N/A	FOR BLOWERS	TBD
FLOW GAUGE	FLOW	SSDS/SVE	N/A	0-0.5 IN H_2O	FOR EACH MANIFOLD LEG	DWYER INSTRUMENT INC MODEL DS-300-4, AND DWYER INSTRUMENT INC MODEL 2000-0

1

EQUIPMENT SCHEDULE							
UNIT NO.	AREAS SERVICED	SERVICE	LOCATION	MOTOR SIZE	MIN. CFM	MIN RATE (INCHES H_2O)	MOTOR REQUIREMENTS	MANUFACTURER/MODEL
SF-1	SLAB-ON GRADE	SSDS	CELLAR LEVEL EQUIPMENT ROOM	1.5 HP	500	8	60 HZ, 3-PHASE, 230 OR 400 VOLTS	NY BLOWER CG 116
SF-2	SLAB-ON GRADE	SVE	CELLAR LEVEL EQUIPMENT ROOM	3 HP	100	60	60 HZ, 3-PHASE, 230 OR 400 VOLTS	ROTRON EN6SM7ZXL
P1	MOISTURE SEPARATOR	SVE	CELLAR LEVEL EQUIPMENT ROOM	0.5 HP	N/A	N/A	60 HZ, 3-PHASE, 230 OR 400 VOLTS	GOULD'S 3G42

1

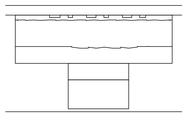
NOTES:

1. PROVIDE PITCH POCKET IN PLATE FOR DRAINAGE.
2. ADJUST DIMENSIONS TO PROVIDE A TIGHT FIT BETWEEN THE PIPE AND THE BEND.
3. 1/4" S.S. GUY WIRE SHALL BE LOOPED THROUGH THE 3/8" Ø HOLES AT THE TOP AND BOTTOM CONNECTION PLATES AND THROUGH THE EYE AT EACH END OF THE TURNBUCKLE. EACH CONNECTION SHALL BE SECURED BY TWO 1/ 4" S.S. WIRE ROPE CLAMPS.
4. ALL PLATES, GUY WIRES, TURNBUCKLES, AND CLIPS SHALL BE ASTM G304 STAINLESS STEEL.
5. RISER PIPE IS GALVANIZED STEEL. REFER TO SPECIFICATION VAPOR MITIGATION SYSTEM.
6. PROVIDE CONNECTION PER MANUFACTURER'S RECOMMENDATION OR USE (6) 1/4" ASTM G304 STAINLESS STEEL MACHINE SCREWS, DRILL AND TAP AS REQUIRED.
7. THREE GUY WIRE/CONNECTION PLATES ARE TO BE USED SPACED EVENLY AROUND THE CIRCUMFERENCE OF THE PIPE (120° SPACING).
8. PROVIDE LIGHTNING ROD AND GROUNDING WIRE AS PER ELECTRICAL REQUIREMENTS.
9. COORDINATE ALL ROOF PENETRATIONS WITH OTHER TRADES.
10. PIPE AND EQUIPMENT ARRANGEMENT SHOWN FOR SCHEMATIC PURPOSES ONLY (NOT TO SCALE). CONTRACTOR TO SUBMIT TO-SCALE DRAWING SHOWING PROPOSED ARRANGEMENT. CONTRACTOR IS REQUIRED TO OBTAIN APPROVAL OF ARRANGEMENT.
11. COORDINATE ALL ROOF PENETRATIONS WITH ALL OTHER TRADES TO ENSURE ALL PENETRATIONS ARE SEALED IN ACCORDANCE WITH WARRANTY.
12. PROVIDE SHOP DRAWINGS FOR BLOWER AND ACCESSORY LAYOUT AND EXHAUST STACK MOUNTING.
13. DISCHARGE EXHAUST STACK MINIMUM 10' ABOVE FINISHED ROOF AND MINIMUM 25' FROM ANY WINDOWS AND AIR INTAKES.

BLOWER NOTES:

1. THE BLOWER SCHEMATICS ARE SHOWN TO ILLUSTRATE THE REQUIRED COMPONENTS AND THE GENERAL LOCATIONS IN THE PIPING RUN AND SHALL NOT BE CONSIDERED TO BE ACCURATE. THE ACTUAL CONFIGURATION AND DIMENSIONS OF THE BLOWER ASSEMBLY WILL VARY BASED ON MANUFACTURING METHODS AND FIELD CONDITIONS. FINAL DESIGN AND BLOWER SYSTEM SELECTED ARE SUBJECT TO APPROVAL BY THE ENGINEER. CONTRACTOR SHALL PROVIDE ALL BLOWER SPECIFICATIONS AND CUT SHEETS FOR THE ENGINEER'S APPROVAL PRIOR TO INSTALLATION.
2. A DIFFERENTIAL PRESSURE SWITCH SHALL BE INSTALLED FOR THE 8" SSDS RISER. THE DIFFERENTIAL PRESSURE SWITCH SHALL BE CONNECTED TO THE SSDS MONITORING PANEL AND ALARM INDICATION STATION IN ACCORDANCE WITH SECTIONS 02 80 00.
3. BLOWER MOTOR WILL REQUIRE A THREE-PHASE, 60HZ, 208-230/480 VOLT POWER SUPPLY. VFD WILL REQUIRE A THREE-PHASE, 60HZ, 208 VOLT POWER SUPPLY. THE CONTROL PANEL FOR THE BLOWER WILL REQUIRE A ONE PHASE, 60 HZ, 115 VOLT POWER SUPPLY. THE ELECTRICAL SERVICE TO THE BLOWER MOTOR IS SHOWN ON THE ELECTRICAL DRAWINGS. COORDINATE POWER SUPPLIES WITH BUILDING POWER FLOOR PLAN.
4. CONTRACTOR TO PROVIDE CONNECTION TO GROUNDING FOR ROOF TOP BLOWER.
5. CONTRACTOR TO PROVIDE SPARE BLOWER AND PARTS.
6. REFER TO SPECIFICATION SECTION 02 80 00 - SUB-SLAB DEPRESSURIZATION SYSTEM FOR REQUIREMENTS RELATING TO SUB-SLAB DEPRESSURIZATION SYSTEM ACCESSORIES.
7. CONTRACTOR REQUIRED TO PROVIDE PLAN/DRAWING DETAILING A SUPPORT SYSTEM FOR THE EXHAUST PIPE STACK AND RAIN CAP.

REVISION CLOUDS PROVIDED ON PARTIAL PLANS ONLY



KEY PLAN

NOTES:

Number:	Date:	Revision:
	04-30-2021	50% DD SET
	05-20-2021	100% FINAL SET
	06-04-2021	100% FINAL SET REV. 1 (VAPOR BARRIER PRODUCT CHANGE)
1	06-22-2021	BULLETIN #2

Project:
1100 MYRTLE AVENUE
1100 MYRTLE AVENUE
BROOKLYN, NY 11206

Client:
SWDM Myrtle LLC
on behalf of **Spenceran, Inc**
c/o Shorewood Real Estate Group
292 MADISON AVENUE, 24TH FLOOR
NEW YORK, NY 10017

Architect:
HILL WEST ARCHITECTS
11 BROADWAY
17TH FLOOR
NEW YORK, NY 10004
T. 212 213 8007

Structural Engineer:
GACE Consulting Engineers, DPC
105 MADISON AVENUE, 6TH FLOOR
NEW YORK, NY 10016
(212) 545-7878

MEP / FP / FA / SECURITY / IT / AV Engineer:
DAGHER Engineering: PLLC
29 BROADWAY
NEW YORK, NY 10006
(212) 480-2591

Civil Engineer / Acoustical Consultant / Parking Consultant:
AKRF
440 PARK AVENUE SOUTH
NEW YORK, NY 10016
(973) 994-9220

Interior Designer:
ALCHEMY STUDIO, LLC
648 BROADWAY, SUITE 504
NEW YORK, NY 10004
(646) 490-5358

Lighting Designer:
REVEAL Design Group
150 WEST 28TH STREET, SUITE 401
NEW YORK, NY 10001
(212) 633-4353

Landscape Architect:
OSD I OUTSIDE
250 WEST BROADWAY, 2ND FLOOR
NEW YORK, NY 10013
(917) 533-5586

DOB STAMPS & SIGNATURES:

DWG TITLE:
SSDS AND SVE EQUIPMENT AND INSTRUMENTATION DETAILS

SEAL & SIGNATURE:

DATE: 06 - 22 - 2021
PROJECT # 19A18
SCALE: As Noted
ENV-202
DWG NO.

NYC DOB NB # 321592157 5 OF 5

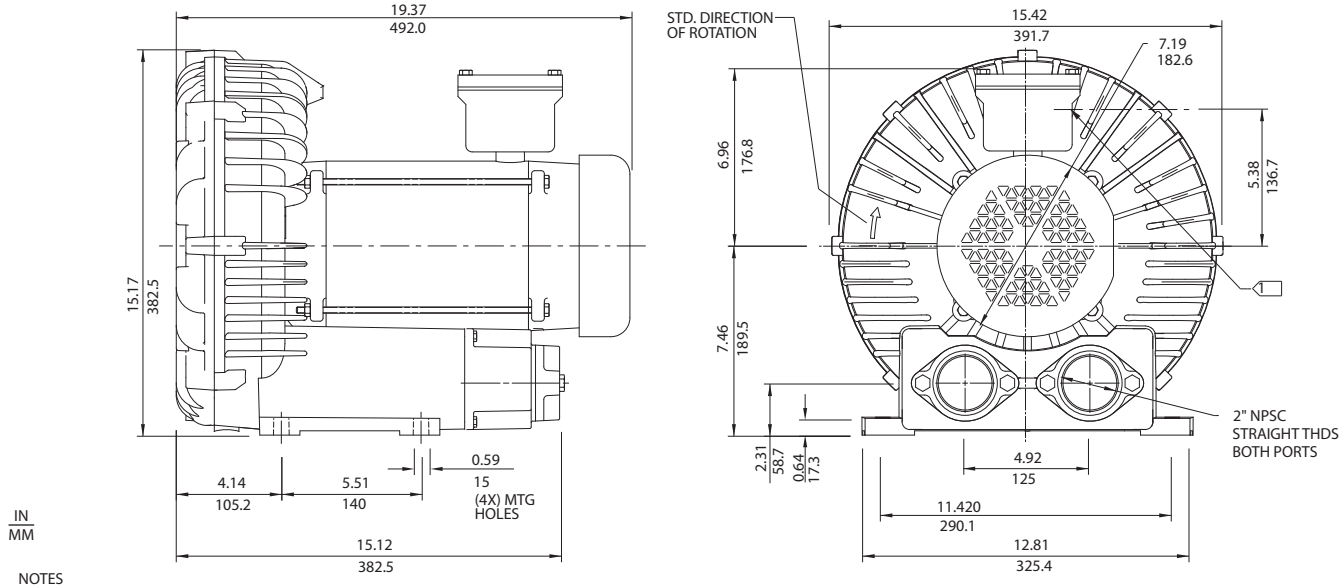
ATTACHMENT B

SPECIFICATION SHEET FOR SVE BLOWER

EN 656 & CP 656

ROTRON®

3.0 HP Sealed Regenerative w/Explosion-Proof Motor



NOTES
1. TERMINAL BOX CONNECTOR HOLE 3/4" NPT.
2. DRAWING NOT TO SCALE, CONTACT FACTORY FOR SCALE CAD DRAWING.
3. CONTACT FACTORY FOR BLOWER MODEL LENGTHS NOT SHOWN.

		Part/Model Number			
		EN656M5XL	EN656M72XL	EN656M86XL	CP656FU72XLR
Specification	Units	080060	080059	080058	080142
Motor Enclosure - Shaft Mtl.	-	Explosion-proof-CS	Explosion-proof-CS	Explosion-proof-CS	CHEM XP-SS
Horsepower	-	3	3	3	3
Phase - Frequency	-	Single-60 hz	Three-60 hz	Three-60 hz	Three-60 hz
Voltage	AC	208-230	208-230/460	575	208-230/460
Motor Nameplate Amps	Amps (A)	15.5-14.5	7.4/3.7	3.0	7.4/3.7
Max. Blower Amps	Amps (A)	17	10/5	4.1	10/5
Locked Rotor Amps	Amps (A)	95-86	54/27	21.6	54/27
Service Factor	-	1	0/0	0	0/0
Starter Size	-	1.0	1.0	1.0	1.0
Thermal Protection	-	Class B - Pilot Duty	Class B - Pilot Duty	Class B - Pilot Duty	Class B - Pilot Duty
XP Motor Class - Group	-	I-D, II-F&G	I-D, II-F&G	I-D, II-F&G	I-D, II-F&G
Shipping Weight	Lbs	142	117	117	117
	Kg	64.4	53.1	53.1	53.1

Voltage - ROTRON motors are designed to handle a broad range of world voltages and power supply variations. Our dual voltage 3 phase motors are factory tested and certified to operate on both: **208-230/415-460 VAC-3 ph-60 Hz** and **190-208/380-415 VAC-3 ph-50 Hz**. Our dual voltage 1 phase motors are factory tested and certified to operate on both: **104-115/208-230 VAC-1 ph-60 Hz** and **100-110/200-220 VAC-1 ph-50 Hz**. All voltages above can handle a ±10% voltage fluctuation. Special wound motors can be ordered for voltages outside our certified range.

Operating Temperatures - Maximum operating temperature: Motor winding temperature (winding rise plus ambient) should not exceed 140°C for Class F rated motors or 120°C for Class B rated motors. Blower outlet air temperature should not exceed 140°C (air temperature rise plus inlet temperature). Performance curve maximum pressure and suction points are based on a 40°C inlet and ambient temperature. Consult factory for inlet or ambient temperatures above 40°C.

Maximum Blower Amps - Corresponds to the performance point at which the motor or blower temperature rise with a 40°C inlet and/or ambient temperature reaches the maximum operating temperature.

XP Motor Class - Group - See Explosive Atmosphere Classification Chart in Section I

AMETEK DYNAMIC FLUID SOLUTIONS
75 North Street, Saugerties, NY 12477
USA: +1 215-256-6601 - Europe: +49 7703 930909 - Asia: +86 21 5763 1258
Customer Service Fax: +1 215.256.1338
www.ametekdfs.com

Environmental / Chemical Processing Blowers

EN 656 & CP 656

ROTRON®

3.0 HP Sealed Regenerative w/Explosion-Proof Motor

FEATURES

- Manufactured in the USA - ISO 9001 and NAFTA compliant
- Maximum flow: 212 SCFM
- Maximum pressure: 75 IWG
- Maximum vacuum: 73 IWG
- Standard motor: 3.0 HP, explosion-proof
- Cast aluminum blower housing, impeller , cover & manifold; cast iron flanges (threaded); teflon® lip seal
- UL & CSA approved motor with permanently sealed ball bearings for explosive gas atmospheres Class I Group D minimum
- Sealed blower assembly
- Quiet operation within OSHA standards

MOTOR OPTIONS

- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepowers for application-specific needs

BLOWER OPTIONS

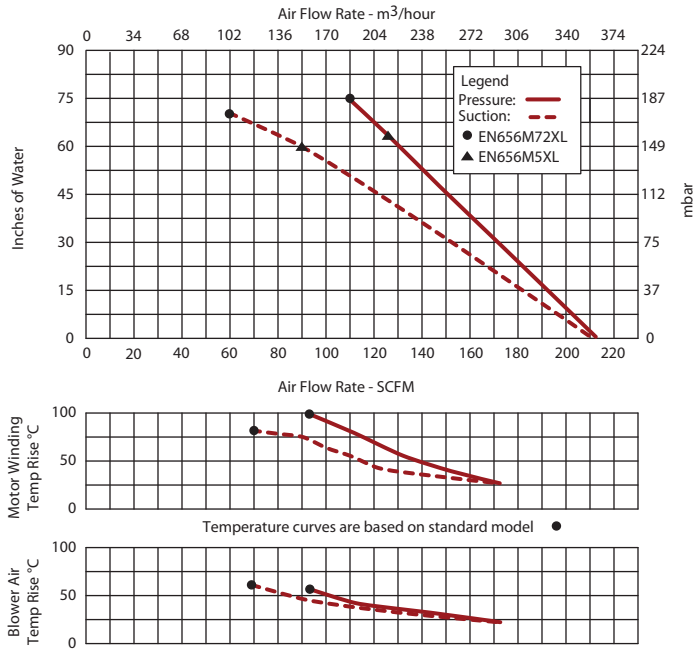
- Corrosion resistant surface treatments & sealing options
- Remote drive (motorless) models
- Slip-on or face flanges for application-specific needs

ACCESSORIES

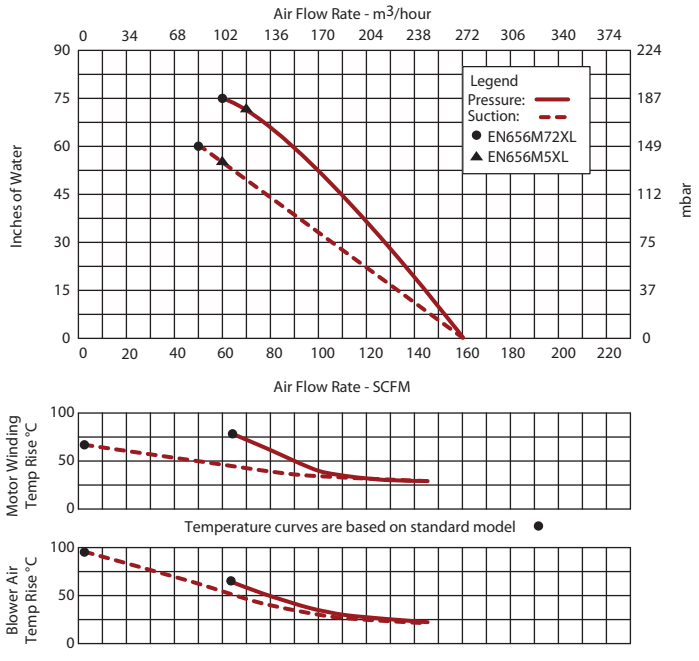
- Flowmeters reading in SCFM
- Filters & moisture separators
- Pressure gauges, vacuum gauges, & relief valves
- Switches - air flow, pressure, vacuum, or temperature
- External mufflers for additional silencing
- Air knives (used on blow-off applications)
- Variable frequency drive package

Blower Performance at Standard Conditions

60 Hz



50 Hz



AMETEK DYNAMIC FLUID SOLUTIONS
75 North Street, Saugerties, NY 12477
USA: +1 215-256-6601 - Europe: +49 7703 930909 - Asia: +86 21 5763 1258
Customer Service Fax: +1 215.256.1338
www.ametekdfs.com

AMETEK®
PRECISION MOTION CONTROL
DYNAMIC FLUID SOLUTIONS

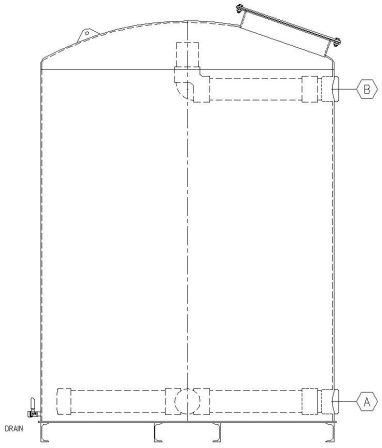
ATTACHMENT C

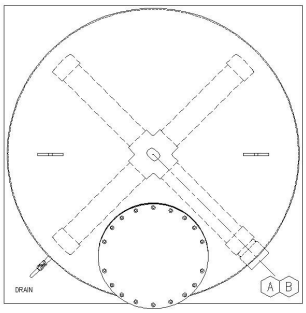
SPECIFICATION SHEET FOR GAC VESSELS

PRODUCT DATA

VFV SERIES FILTERS

VFV series filters are designed to treat vapor streams in a wide variety of adsorption applications. The modular design enables the units to easily fit into a wide variety of installations. Standard features include steel construction with epoxy internal coating, efficient internal distributor array, forklift skid and lifting eyes.





A - Process Inlet
B - Process Outlet
C - Drain
Manway standard size 18" Round

Standard Model Shown - Detailed Submittal Drawings Available

VFV SERIES STANDARD SPECIFICATIONS

Model Number	VFV-250	VFV-500	VFV-1000	VFV-2000	VFV-3000	VFV-5000	VFV-10000
Overall Height	3'11"	5'3"	6'5"	7'7"	7'10"	9'0"	9'4"
Diameter	24"	30"	36"	48"	60"	72"	96"
Process Connection	2" FNPT	2" FNPT	3" FNPT	4" FNPT	4" FNPT	6" FNPT	6" FNPT
Typical GAC Fill (28#/ FT^3)	250 Lbs	500 Lbs	1,000 Lbs	2,000 Lbs	3,000 Lbs	5,000 Lbs	10,000 Lbs
Shipping Weight (empty)	165 Lbs	375 Lbs	500 Lbs	925 Lbs	1,375 Lbs	2,300 Lbs	3,150 Lbs
Operational Weight	500 Lbs	1,050 Lbs	1,800 Lbs	3,500 Lbs	5,250 Lbs	8,750 Lbs	15,800 Lbs
Air flows for standard conditions	30 to 180 CFM	50 to 300 CFM	70 to 420 CFM	125 to 750 CFM	200 to 1200 CFM	280 to 1680 CFM	500 to 3000 CFM
Available Bed Volume	9 FT^3	19.5 FT^3	35 FT^3	75 FT^3	117 FT^3	196 FT^3	400 FT^3
Maximum Pressure	10 PSIG	10 PSIG	10 PSIG	10 PSIG	10 PSIG	10 PSIG	10 PSIG
Maximum Vacuum	28" Hg	28" Hg	28" Hg	28" Hg	28" Hg	28" Hg	28" Hg