AKT PEERLESS™
ENVIRONMENTAL SERVICES

ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES

USEPA Brownfield Cleanup Revolving Loan Fund
Cooperative Agreement BF-00E00793
Freedom House Redevelopment Project
1777 N. Rademacher Street, Detroit, Michigan

PREPARED FOR Detroit Wayne County Port Authority
130 E. Atwater Street
Detroit, Michigan 48226

and

Freedom House Detroit
1777 N. Rademacher Street
Detroit, Michigan 48209

PROJECT # 17164F3

DATE May 9, 2025

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ATTACHMENTS

ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES

Freedom House Redevelopment Project
1777 N. Rademacher Street, Detroit, Michigan
AKT Peerless Project No.: 17164F3

1.0 Introduction

This Analysis of Brownfield Cleanup Alternatives (ABCA) was prepared by AKT Peerless for the Detroit-Wayne County Port Authority (DWCPA) and the Freedom House Detroit. The ABCA is a required element of the Brownfield Cleanup Revolving Loan Fund (RLF) Grant awarded to the DWCPA by the United States Environmental Protection Agency (USEPA).

Environmental cleanup activities at the subject property will be funded, in part, under the USEPA RLF program.

In preparing this ABCA for the Project, AKT Peerless (Qualified Environmental Professional), Freedom House Detroit (property owner and RLF subgrantee) and DWCPA (RLF grantee) considered environmental factors, various subject property characteristics, surrounding property use, land use restrictions, potential future uses of the subject property and surrounding area, and applicable cleanup goals for the Project.

This ABCA provides a comparative analysis of the cleanup alternatives being considered using the criteria of effectiveness, ability to implement, and the cost of each alternative. This ABCA recommends the most appropriate cleanup alternative and enables the redevelopment of the subject property for commercial use which is a direct benefit to the public.

2.0 Background

2.1 Subject Property Description

The subject property is located at 1777 N. Rademacher Street in Detroit, Wayne County, Michigan **(See Figure 1)**. The subject property consists of one parcel of land (Parcel No. 18008161.004), comprising approximately 0.756 acres. It is improved with two conjoined structures: a 2,916 square-foot single-story structure and a 5,120 square-foot two-story structure. Both structures were constructed in 1992 with wood-frames and are slab-on-grade. The building is comprised of living, kitchen, dining, recreation areas, and administrative offices. The subject property also contains a mix of grassland, access drive west of the subject building and an asphalt parking lot. The property boundaries and features are shown on **Figure 2**.

2.2 Subject Property History

The subject property was historically used as part of a cement block manufacturing company from at least 1929 to 1937 and previously functioned as a building supply yard with a central railroad spur from at least 1923 to 1937. By the late 1940s, the property was used as a truck trailer parking lot associated

with an adjacent motor freight station. From at least 1923 to 1961, a rail spur extended across the subject property. Retaining walls were located along portions of the northern, wester, and southern boundaries, and the property appeared elevated with grass-covered areas built up with possible unknown fill materials. Historically, a scale was located on the northeastern portion of the property as early as 1923. Surrounding properties included an iron, oil, and gasoline refinery to the west operating from the 1920s through the 1950s, and a bulk fuel oil storage facility to the north operating from 1920s to the early 1970s. Additionally, a lumberyard, recycler, and trucking repair operation existed on an adjacent northern parcel from the 1920s to the mid-2000s. The subject property has been developed with the present community shelter building since 1992.

2.3 Previous Environmental Investigations

Several previous environmental assessments have been completed for the subject property. The following is a summary of the environmental investigations that are relevant to the redevelopment project and proposed remedial activities.

- Phase I Environmental Site Assessment (ESA), prepared in June 2022 by AKT Peerless

AKT Peerless performed a Phase I Environmental Site Assessments (ESA) in June 2022 for the subject property which identified the following recognized environmental conditions (RECs):

- The subject property was used as part of a cement block manufacturing company from at least 1929 until at least 1937. A rail spur was present on the subject property from at least 1923 until at least 1961. An area of bermed soil was observed on the eastern portion of the subject property. The origin of the soil used in the berm is unknown. In October 2020, Environmental Resource Group, LLC (ERG) prepared a Phase II ESA to evaluate the RECs identified during AKT Peerless' and Soil and Materials Engineer's (SME's) Phase I ESAs. Environmental Resources Group (ERG) advanced 10 soil borings, installed three temporary groundwater monitoring wells, installed eight sub-slab vapor pins, and collected seven soil samples, three groundwater samples, and eight soil gas samples. The soil and groundwater samples were submitted for laboratory analysis of volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PNAs), and Michigan 10 Metals. The soil gas samples were submitted for laboratory analysis of VOCs. Concentrations of arsenic, chromium, mercury, and silver were detected in soil above the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Groundwater Surface Water Interface Protection (GSIP), Residential Drinking Water Protection (DWP), and/or Residential Direct Contact (DC) Cleanup Criteria. Concentrations of ethylbenzene, naphthalene, and 1,2,4-trimethylbenzene were detected in groundwater above the EGLE Groundwater Surface Water Interface (GSI) and/or Residential Drinking Water (DW) Cleanup Criteria. Arsenic and selenium were detected in groundwater above the EGLE GSI and/or Residential DW Cleanup Criteria. Concentrations of ethylbenzene and xylenes were detected in soil gas sample VP-5 above the EGLE Residential Volatilization to Indoor Air Pathway (VIAP) Screening Levels. Dichlorodifluoromethane was detected in all eight soil gas samples above the EGLE Residential VIAP Screening Level; however, ERG concluded that dichlorodifluoromethane (commonly known as Freon) is not stable in soil, was not detected in the soil or groundwater samples, and was therefore, a laboratory artifact.

- The southern adjoining property (1750 Waterman Street) was occupied by a cement block manufacturer from at least 1923 until at least 1937 and as a trucking freight company from at least 1950 until at least 1978. During its October 2022 Phase II ESA, ERG advanced soil boring SB-

1 to evaluate the southern adjoining property. Target parameters were detected in the groundwater sample above the EGLE Residential Cleanup Criteria (RCC). The source of contamination is unknown.

Phase I Environmental Site Assessment (ESA), prepared in July 2022 by SME

Soil & Materials Engineers, Inc. (SME) performed a Phase I Assessments ESA in July 2022 for the site which identified the following RECs:

- The subject property was used as part of a cement block manufacturing company from at least 1929 until at least 1937. Specific information regarding this former use was not identified during this assessment; however, it is likely significant quantities of hazardous substances and petroleum products were used in connection with these activities. In addition, a scale was depicted on the northeastern portion of the subject property on the 1923 Sanborn map. It is unknown if the scale was hydraulically operated.

- A rail spur was present on the subject property from at least 1923 until at least 1961. Records regarding removal of the rail spur were not identified during this assessment. Potential concerns typically associated with rail spurs include the use of fill materials as ballast to support the ties and rails, the use of dust control agents and herbicides, and leaks or spills of hazardous materials or petroleum products.

- From at least 1923 to 1937, the Property was a building supply yard, with a railroad spur in the center position. By the late 1940s, the Property was a truck trailer parking lot associated with the south adjoining motor freight station. The potential for unknown and/or unreported releases of hazardous substances and/or petroleum products associated with the historical building supply, railroad spur, and motor freight uses of the Property represents a REC.

- Retaining walls were along portions of the northern, western, and southern Property boundaries. The Property appeared “built up” in the east and west grass-covered portions and was at a higher elevation than the adjoining roadways and east-adjoining roadways and east adjoining residential development. The potential for fill of an unknown origin to be present at the Property represents a REC.

- From at least the 1920s through the 1950s, an iron, oil, and gasoline refinery site was west of the Property. During its operation, at least five 125,000-gallon ASTs and four 12,000-gallon ASTs were at the northeast subject property corner, across from the Property. The potential for migration of unknown and/or unreported contamination from this subject property, onto the Property, represents a REC.

- From the 1920s to the early 1970s, a north adjoining property was a bulk fuel oil storage facility with 14 ASTs with a total capacity of approximately 120,000 gallons. Assessment activities identified the presence of various VOCs, semi-VOCs (SVOCs), and metals in soil and groundwater at concentrations above Part 201 criteria. The potential for migration of known contamination from this property onto the subject property, represents a REC.

- From the 1920s to the mid-2000s, uses of a north adjoining property, east of the former bulk fuel oil storage property, included a lumberyard, a recycler, and a trucking company and repair shop. Assessment activities identified the presence of various VOCs, polynuclear aromatic hydrocarbons (PAHs), and metals in soil and groundwater concentrations above Part 201

criteria. The potential for migration of known contamination from this property, onto the subject property, represents a REC.

- Phase II ESA, prepared in August 2022 by ERG

On August 29, 2022, ERG advanced 10 soil borings, designated soil borings SB-1 through SB-10, to investigate the RECs identified in the 2022 Phase I ESAs. Based on review of the soil analytical results, VOCs were detected above EGLE Residential SSVIAC, PNAs were detected above EGLE Residential SSVIAC and Residential Part 201 Generic Residential Cleanup Criteria (GRCC), and metals were detected above Part 201 DWP GSIP GRCC and Site-Specific Volatilization to Indoor Air Criteria (SSVIAC).

Review of groundwater analytical results indicated the presence of VOCs above EGLE Residential Part 201 Drinking Water (DW) and Groundwater-Surface Water Interface (GSI) GRCC and metals above EGLE Residential Part 201 DW and GSI GRCC; no PNAs were identified above EGLE Residential cleanup criteria.

In addition to the above, ERG also installed eight vapor pin points inside the subject building on September 14, 2022 for soil gas sampling. A review of the soil gas analytical data indicated that VOCs were detected above laboratory method detection limits (MDLs) in all eight sampling locations. The compounds ethylbenzene and xylenes were detected above EGLE Residential SSVIAC in one of the samples. The compound dichlorodifluoromethane was detected in all eight sampling locations above EGLE Residential SSVIAC.

- Vapor Intrusion Source Soil Investigation, prepared in March 2024 by ERG

ERG completed a Vapor Intrusion (VI) source soil investigation of the subject property. The investigation was performed to determine the feasibility of excavation and removal of soils exceeding EGLE Residential SSVIAC as an alternative to sub-slab vapor intrusion mitigation measures in the existing building and proposed addition. A review of the soil analytical results indicated VOCs were detected above laboratory MDLs in one of the 16 samples, with the compound trichloroethylene detected above Residential SSVIAC.

A review of the groundwater analytical results indicated the compound isopropylbenzene was detected above EGLE Residential SSVIAC in the groundwater sample collected along the west wall of the subject building. Chloroform was detected above EGLE Residential SSVIAC in the groundwater sample collected along the south wall of the subject building. The compounds bromodichloromethane and chloroform were detected above the EGLE Residential SSVIAC in groundwater samples collected along the north wall of the subject building.

- Surface Soil Sampling, prepared in September 2024 by ERG

On September 11, 2024, ERG oversaw the collection of three surface soil samples using a hand auger to evaluate the soil in the layout of the proposed addition to the subject building located on the southeastern portion of the property. Locations were chosen for each of the main footers in the proposed building addition. Based on the analytical results of the surface soil sampling, trichloroethylene was identified above EGLE Part 201 Drinking Water Protection GRCC and SSVIAC in one of the surface soil samples.

- Response Activity Plan to Comply with Section 20107a(1)(b), prepared in February 2025 by ERG

ERG prepared a Response Activity Plan to Comply with Section 20107a(1)(b) (ResAP) on behalf of Freedom House Detroit for response activities proposed for the subject property. Freedom House Detroit plans to develop the property with one mixed-use commercial/residential structure. Therefore, ERG prepared a ResAP under Section 20114b of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, Public Act 451 of 1994, as amended (NREPA).

The ResAp identified complete pathways or pathways that would become complete, which included direct contact, soil particulate inhalation, soil volatilization to ambient air, and volatilization to indoor air. Therefore, response activities are necessary to eliminate exposure risk. ERG proposed excavation and removal of contaminated soil, the installation of exposure barriers at the subject property and installation of an active vapor mitigation system to address these pathways, respectively.

On February 18, 2025, EGLE issued a notice of approval for the ResAP to comply with 7a(1)(b) of Part 201 of NREPA.

2.4 Current Environmental Concerns

Based on the results of the environmental assessment completed for the property, the presence of contaminants of concern that exceed the applicable Part 201 criteria present the following exposure pathways are complete or likely to become complete based on the proposed use of the subject property:

- Direct Contact (with soil)
- Soil Particulate Inhalation
- Soil Volatilization to Ambient Air
- Soil Volatilization to Indoor Air

Therefore, environmental cleanup and response activities will be necessary to abate, prevent, minimize, mitigate or eliminate these pathways during development.

3.0 Proposed Cleanup Objectives

Freedom House Detroit intends to construct an addition to the existing building and renovate the existing building. The new construction will include a 1,450 square-foot addition that will house a commercial kitchen and a new west entrance. The 800 square foot renovation of the existing building will include expanding the dining room and kitchenette. Freedom House Detroit also intends to expand the available parking with an off-street parking lot with 8 parking spaces. The expansion and renovation will create a quality environment for residents that are fleeing persecution and building a new life.

As part of the proposed redevelopment of the subject property, the developer intends to remove existing soils requiring excavation for construction of the building, pave surfaces, and install landscaping. Excavated contaminated soils will be characterized and transported for disposal at a licensed facility. For areas not occupied by the building footprint or by paved surfaces, contaminated soils will be covered by a demarcation fabric followed by at least 12 inches of clean engineered fill and/or topsoil and stabilized by seed, sod, or mulch. Within the proposed building, the developer will install an active sub-slab depressurization (ASSD) system to mitigate potential vapor intrusion concerns. RLF specific activities to accomplish brownfield redevelopment for this project may include:

- Preparing necessary work plans
- Preparing bid specifications for hazardous materials mitigation/removal
- Soil excavation, transportation, and disposal
- Vapor mitigation system design and installation
- Oversight and monitoring during eligible activities
- Sampling and reporting to verify and document achievement of cleanup goals and objectives
- Final reporting
- Other eligible cleanup activities, as necessary to accomplish brownfield redevelopment goals

3.1 Applicable Regulations and Cleanup Standards

Laws and regulations that are applicable to this cleanup include the Federal Small Business Liability Relief and Brownfields Revitalization Act, the Brownfields Utilization, Investment, and Local Development (BUILD) Act. Federal, state, and local laws regarding procurement of contractors to conduct the cleanup will be followed. As described herein, all cleanup will be in accordance with the State of Michigan regulations. All applicable permits and documentation will be obtained prior to the work commencing, and all work will be conducted in accordance with the conditions for approval.

Remediation activities will be undertaken in a manner compliant with protocols established by EGLE pursuant to Part 201 of NREPA, federal Occupational Safety and Health Administration (OSHA), and/or Michigan Occupational Safety and Health Administration (MIOSHA), as applicable. An environmental professional will oversee remediation activities and will include reporting to the EGLE upon completion, as necessary.

3.2 Cleanup Alternatives

To verify that the use of the USEPA RLF for the Project is appropriate and warranted, Freedom House Detroit, DWCPA, and AKT Peerless conducted an evaluation of the proposed development activities to ensure that they are the best and appropriate environmental activities based on a combination of efficacy, implementation, and cost.

Remedial alternatives included in this portion of the ABCA were developed based on the nature and extent of contamination, planned development activities and schedule, and technological feasibility.

3.2.1 Alternative #1 – No Action

The “no action” cleanup alternative is included in the evaluation as a standard to compare other remedial action in order to compare and contrast any significant reduction in risk, as necessary. For the “no action” alternative, no action to remediate the issues identified at the subject property would remain in place. This alternative does not include a means to mitigate or eliminate potential exposure both during and following redevelopment and does not meet the objectives of the project.

Effectiveness

This alternative is not effective in controlling the release of contaminants or achieving project goals. Contamination will remain in the ground and potentially cause issues related to the development activities as well as present a vapor intrusion concern.

Ability to Implement

This option would be the simplest to implement since no activities will be conducted.

Cost

No direct costs are associated with this alternative; however, due care responsibilities would not be addressed and may result in additional management costs during development and future use.

3.2.2 Alternative #2 – Comprehensive Cleanup to Achieve Compliance with Part 201 Criteria

Alternative #2 involves the complete removal of all contamination from the subject property that represents unacceptable exposure risk to future occupants. A comprehensive cleanup approach would facilitate unrestricted use of the property and eliminate the exposure risk via direct contact, soil particulate inhalation, soil volatilization to ambient air, and soil volatilization to indoor air pathways. In addition, this alternative would eliminate the need for engineering controls (i.e., an active vapor mitigation system and direct contact barriers) as well as the associated future operation and maintenance activities that are required.

Effectiveness

This alternative is effective as it completely eliminates contamination from the subject property, allowing the construction of the proposed mixed-use development to proceed. A comprehensive cleanup approach would mitigate the threat to human health and the environment, will not require long term operation and maintenance, and will support future development of the subject property. This option would also be protective of public health, the community or workers at the site and would improve the general environmental quality of the subject property and the area by removing the contaminated media, as well as addressing vapor intrusion concerns. Therefore, this alternative is the most effective option for this project. Drawbacks from this alternative include (1) creating potential off-site safety concerns associated with transportation of waste materials and (2) using landfill capacity.

Ability to Implement

The excavation, transport and disposal of contaminated soil are generally routine, and easily implemented. Based on the results of the previous investigations, the disposal of contaminated soils will likely be characterized as non-hazardous. The site is accessible for field equipment and field personnel, licensed disposal facilities are available to accept the contaminated soil and located a reasonable distance from the subject property; however, this alternative would present implementation challenges with regard to project scope. There is insufficient environmental data to horizontally and vertically delineate the contaminated areas on the subject property. Acquiring sufficient data would require the collection of numerous soil samples at multiple boring locations across the property, which would cause project delays. Once the horizontal and vertical extent of the contamination is defined, the extent of excavation needed to remove contaminated soil can be estimated; however, it's likely that the volume of contaminated soil requiring removal will be extensive and involve adjacent parcels that are not part of the subject property.

Additional health and safety concerns will need to be addressed for the management, monitoring and construction worker exposure to the contaminated soil and groundwater. In addition, open excavations will need to be properly maintained and barricaded to protect the surrounding areas and prevent undue access to the property.

Cost

Although the exposure pathways would be addressed by this alternative, the cost of implementing a comprehensive cleanup approach would not be financially feasible. The approach would involve

complete excavation, transport and disposal of contaminated soil to achieve Part 201 criteria and would add significant costs to the project.

3.2.3 Alternative #3 – Targeted Cleanup and Use of Engineering Controls

A targeted cleanup approach involves the excavation and removal of existing contaminated soils that are required for construction of the proposed building, installation of hard surfaces, and landscaping. Once excavated, the contaminated soils would be characterized and transported for disposal at a licensed facility. Under this alternative, the excavation, transportation and disposal of contaminated soil will not be sufficient to achieve Part 201 criteria. Therefore, the use of engineering controls will be implemented. For areas not occupied by the building footprint or by paved surfaces, contaminated soils will be covered by a direct contact barrier that includes a demarcation fabric followed by at least 12 inches of clean engineered fill and/or topsoil and stabilized by seed, sod, or mulch. Within the proposed building, the developer will install an active sub-slab depressurization (ASSD) system to mitigate potential vapor intrusion concerns. These features will be maintained under an operations and maintenance program.

Effectiveness

The excavation and removal of existing contaminated soils to facilitate the construction of the proposed building, installation of hard surfaces, and landscaping in conjunction with installation of an active vapor mitigation system within the proposed building, and a direct contact barrier for areas not occupied by the building or paved surfaces is protective of public health, the community or workers at the site and would improve the general environmental quality of the subject property and the area by providing protection from the vapor intrusion concern. Therefore, this alternative is an effective option for this project. Drawbacks from this alternative include (1) creating potential off-site safety concerns associated with transportation of waste materials, (2) using landfill capacity and, (3) require ongoing operation and maintenance.

Ability to Implement

The excavation, transport and disposal of contaminated soil are generally routine, and easily implemented. Based on the results of the previous investigations, the disposal will likely be non-hazardous. The site is accessible for field equipment and field personnel, licensed disposal facilities are available to accept the contaminated soil and located a reasonable distance from the subject property. Additional health and safety concerns will need to be addressed for the management, monitoring and construction worker exposure to the contaminated soil and groundwater. In addition, open excavations will need to be properly maintained and barricaded to protect the surrounding areas and prevent undue access to the property.

The installation of a demarcation barrier and cap for areas are also routine and easily implemented. Demarcation fabric materials are readily available, and sources of clean fill materials are located within a reasonable distance from the property. Sampling of imported fill materials will need to be conducted to verify the material is not originating from a contaminated source, prior to delivery to the site. Additional health and safety concerns will need to be addressed for the management, monitoring and construction worker exposure to the contaminated soil and groundwater.

The installation of an active vapor mitigation system is routinely used, easily implemented and can be installed as part of the initial construction of the building; however, ongoing testing and monitoring of the system would be required to ensure effectiveness.

The targeted removal of contaminated soils, in conjunction with the use of engineering controls, would allow the construction of the proposed mixed-use development to proceed. This option would also be protective of public health, the community or workers at the subject property and would improve the general environmental quality of the subject property and the area by providing protection from the potential vapor intrusion concern posed by the volatiles detected in soil at the subject property.

Cost

The costs to load, transport and dispose of the contaminated soil (estimated at 1,000 cubic yards) that may need to be removed from the subject property, and providing all requisite management, sampling, and monitoring, are estimated to be $75,000 to $100,000.

The costs to install the demarcation barrier (approximately 15,000 square feet), as well as the import of approximately 650 cubic yards of engineered fill and/or of topsoil, backfilling and providing all requisite management, sampling, and monitoring, are estimated to be $50,000 to $75,000.

The costs for installation, monitoring, and reporting of the active vapor mitigation system are estimated to be $60,000 to $70,000.

4.0 Recommended Cleanup Alternatives

Alternative #3, the targeted cleanup and use of engineering controls at the subject property is recommended. Alternatives were evaluated based on effectiveness, ability to implement, cost, and the proposed redevelopment of the subject property. The results of the analyses of each of these factors for each option were evaluated as a whole and between options to arrive at the recommendation presented below.

The “no action” alternative was included in this ABCA for comparative purposes only and is not a feasible option for the management of soil contamination at the subject property, nor does it address concerns to human health, safety, welfare and the environment. Further, the proposed redevelopment of the property cannot be completed without remediation measures. Consequently, the “no action” option was eliminated from further discussion.

While still a viable option for remediation, Alternative #2 is not implementable due to the lack of sampling data needed to adequately delineate the contaminated areas horizontally and vertically. In addition, the costs to conduct an additional assessment to obtain the necessary sampling data, as well as the anticipated cost to remediate the subject property to achieve Part 201 criteria, are not economical as the total anticipated remediation costs would make the project financially not feasible.

Therefore, Alternative #3, the targeted cleanup and use of engineering controls is recommended for implementation at the subject property. This cost-effective approach will: (1) mitigate the threat to human health and the environment, (2) support future development of the subject property, and (3) will remove the vapor intrusion concern. This alternative is the most effective option for this project.

This cleanup alternative has also been presented the project’s Response Activity Plan to Comply with Section 20107a(1)(b), prepared in February 2025 by ERG, which was subsequently approved by EGLE on February 18, 2025. Refer to **Attachment A**.

5.0 Signatures of Environmental Professionals

This ABCA was prepared by the following individuals:

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AKT Peerless
Farmington, Michigan
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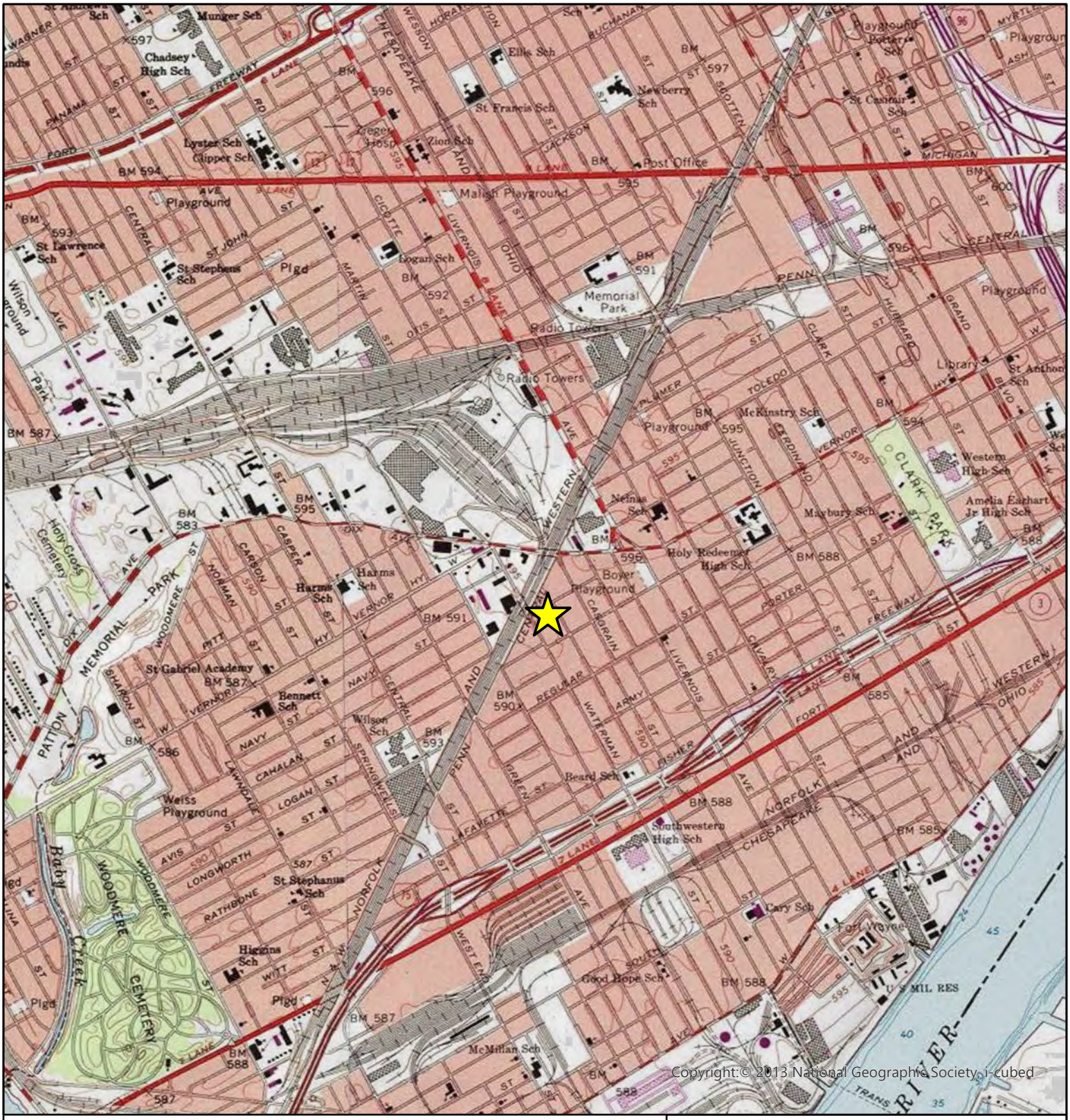
ENVIRONMENTAL SERVICES

Figures



LEGEND

★ **Site Location**

N

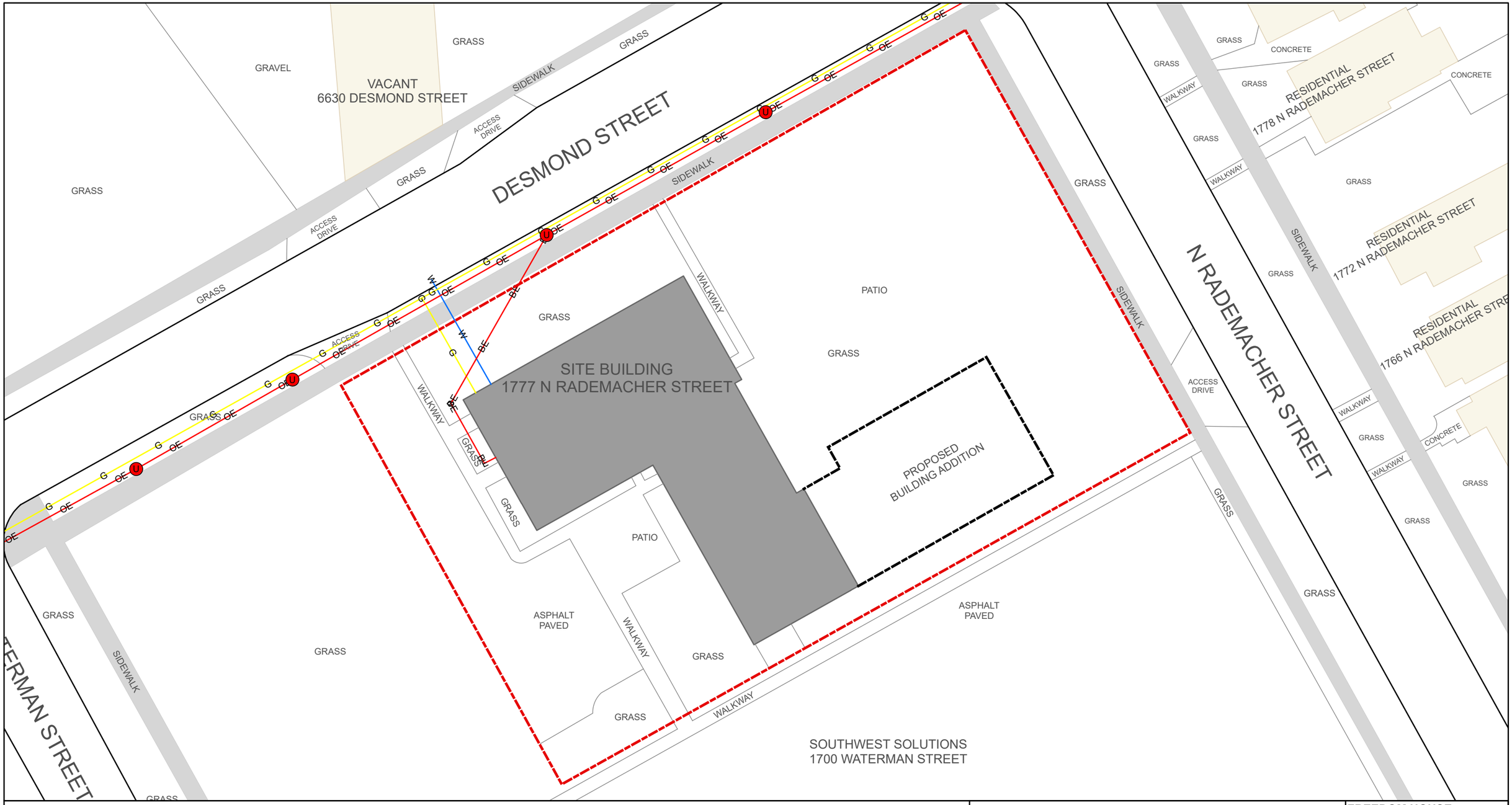
FEET

2000 1000 0 2000 4000

1 INCH = 2000 FEET

FREEDOM HOUSE DETROIT
1777 N RADEMACHER STREET, DETROIT, MI
SITE LOCATION MAP
JOB NO.: 9665
BY: JEC DATE: 9/1/2022
FIGURE 1

ERG Environmental Resources Group
28003 Center Oaks Court • Suite 106 • Wixom, MI • 48393
Phone: 248-773-7986 • Fax: 248-924-3108



LEGEND

- Site Boundary
- Utility Pole
- Overhead Electric
- Buried Electric
- Natural Gas
- Water

30 15 0 30 60 Feet

1 INCH = 30 FEET

N

ERG Environmental Resources Group
28003 Center Oaks Court • Suite 106 • Wixom, MI • 48393
Phone: 248-773-7986 • Fax: 248-924-3108

FREEDOM HOUSE DETROIT

1777 N RADEMACHER STREET, DETROIT, MI

SITE LAYOUT MAP

JOB NO.: 9665

BY: JEC DATE: 10/22/2024

FIGURE 2

AKTPEERLESS
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Attachment A

For EGLE Use Only
Submittal Review Due Date:

MICHIGAN DEPARTMENT OF ENVIRONMENT,

GREAT LAKES, AND ENERGY

Remediation and Redevelopment Division

REQUEST FOR EGLE REVIEW – RESPONSE ACTIVITY PLAN TO COMPLY WITH 7A(1)(B)

Instructions

This form is required for submittal of a request for the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to review a Response Activity Plan, under Section 20114b, Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The Response Activity Plan to Comply with 7a(1)(b), must address the entire property, all complete pathways, and propose the necessary response activities to mitigate unacceptable exposures for all complete pathways through which there is an unacceptable exposure.

This form is for use by a prospective owner or operator who is not yet required to be in compliance with their Section 20107a obligations but is requesting EGLE review of response activities under 7a(1)(b) to be conducted upon their purchase, occupancy or foreclosure that are intended to prevent or mitigate an unacceptable exposure.

OR

This form is for use by a current owner or operator who must undertake response activities under Section 20107a(1)(b) to achieve compliance with their Section 20107a(1)(b) obligation to mitigate an unacceptable exposure. A current owner or operator of contaminated property has obligations under Section 20107a (due care) with respect to any existing contamination on the property to prevent unacceptable exposure.

If additional data or other information needs to be acquired to conduct an adequate evaluation to determine complete pathways or appropriate response activities, this is not the correct response activity plan submittal form.

EGLE will make every effort to review the response activity plan within 45 business days after receipt, but not later than 150 days per section 20114b(3) EGLE will, approve, approve with conditions, or deny the response activity plan, or will notify the submitter the plan does not contain sufficient information for EGLE to make a decision.

Current owners or operators who believe they are in compliance with all their applicable Section 20107a (due care) obligations need to use form EQP 4402, Documentation of Due Care Compliance, and request review under Section 20114g(2), Part 201 of the NREPA.

Environmental Resources Group

Assessment • Remediation • Compliance • Risk Management

RESPONSE ACTIVITY PLAN TO UNDERTAKE RESPONSE ACTIONS TO MITIGATE UNACCEPTABLE EXPOSURES AND ACHIEVE COMPLIANCE WITH SECTION 20107A(1)(B)

FREEDOM HOUSE DETROIT

1777 NORTH RADEMACHER STREET

DETROIT, MICHIGAN 48209

FACILITY ID NO.: 82008890

PREPARED FOR:

FREEDOM HOUSE DETROIT
1777 NORTH RADEMACHER STREET
DETROIT, MICHIGAN 48209

PREPARED BY:

ENVIRONMENTAL RESOURCES GROUP, LLC
28003 CENTER OAKS COURT, SUITE 106
WIXOM, MI 48393

ERG PROJECT NO.: 9665

FEBRUARY 14, 2025

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APPENDICES

1.0 INTRODUCTION

On behalf of Freedom House Detroit (the "Client"), Environmental Resources Group, LLC (ERG) has prepared this Response Activity Plan (ResAP) to undertake response actions to mitigate unacceptable exposures and achieve compliance with Section 20107a(1)(b) for the Freedom House Detroit property located at 1777 North Rademacher Street, Detroit, Wayne County, Michigan, herein referred to as "the Site," as shown in **Figure 1**. The purpose of this ResAP is to identify the complete exposure pathway(s) at the Site, identify the pathways for which there is an unacceptable exposure, and propose within the ResAP the response activities the Submitter will take to mitigate the identified unacceptable exposure(s).

The current owner purchased the Site ("Freedom House Detroit Parcel") on October 21, 2022. Freedom House Detroit is seeking Michigan Department of Environment, Great Lakes, and Energy (EGLE) approval of this ResAP.

An owner or operator of a contaminated property is required under Section 20107a of Part 201, Environmental Remediation, of the Natural Resources and Environmental Response Act, Act 451 of 1994, as amended (NREPA) and the Due Care Rules to determine the exposure pathways that are complete at a property and if there are unacceptable exposures via those complete pathways that need to be mitigated. This ResAP outlines the proposed response activities to be undertaken by the owner to mitigate the potential for unacceptable exposure via the applicable pathways to the Site.

2.0 DETAILED PROPERTY DESCRIPTION

2.1 GENERAL VICINITY CHARACTERISTICS

The Site is located at 1777 North Rademacher Street, Detroit, Wayne County, Michigan and is situated at the southwest corner of Rademacher Street and Desmond Street. The closest major intersection, Waterman Street and Vernor Highway, is located northwest of the Site (see **Figure 1**, Location Map). It is located in a suburban area of Detroit with vacant, railroad, and commercial properties to the north, residential developments to the east, commercial and residential properties to the south, and commercial properties to the west.

2.2 SITE CHARACTERISTICS

The property consists of one parcel identified by Parcel No. 18008161.004. According to the City of Detroit Assessing Department, the property is currently owned by Freedom House Detroit. The legal description of the property, as obtained online from the City of Detroit Assessing Department BS&A website is as follows:

> All of Lots 208 through 211 inclusive, and parts of Lots 212 and 275 through 279 inclusive and a portion of vacated alley (20 feet wide), all of which being located in the Plat of Clarks Subdivision, a portion of Lot 16, Crawfords Subdivision of Fort Tract being part of Private Claims 270 and 268 in Town 2 South, Range 11 East, City of Detroit, Wayne County, Michigan recorded in Liber 4, Page 24, Wayne County Records.
> Tax ID #: 18008161.004

Please see **Figure 2** which depicts the Site/parcel boundary.

The Site consists of one parcel of land and is approximately 0.755 acres. It is improved with two conjoined structures: a 2,916-square-foot single-story structure and a 5,120-square-foot two-story structure. Both structures were constructed in 1992 with wood-frames and are slab-on-grade. The building is comprised of living, kitchen, dining, and recreation areas and administrative offices. The Site also contains an associated asphalt-paved parking lot and access drive west of the Site building; the remainer of the Site is covered by a mixture of grass lawns and landscaped areas. The Site and building surrounding area details are provided in **Figure 2**.

2.3 EXISTING INFRASTRUCTURE FEATURES

Natural gas and electrical services are provided to the Site by DTE Energy. Water and sanitary services are provided by the Great Lakes Water Authority (GLWA). Stormwater in the area infiltrates into the ground surface or flows overland to catch basins on the Site or into adjoining roadways. The exterior utility pathways are shown in **Figure 2.** It should be noted that there are neither septic tanks nor drain fields at the Site.

2.4 WASTEWATER PATHWAYS

Only sanitary wastewater from the use of sinks, toilets, and showers by residents discharging to the municipal sanitary sewer system is generated at the Site. There are no other activities at the Site that generate wastewater.

2.5 STORAGE TANKS

There are no known underground or above ground storage tanks currently present.

2.6 HAZARDOUS SUBSTANCE CONTAINERS

The Submitter is not aware of any hazardous substance containers at the Site.

2.7 EROSION OF SURFACE SOILS

The exterior areas of the Site contain asphalt-paved driveways and parking areas, concrete curbs and sidewalks, and landscaping in all areas that are not covered with grass landscaping. There are currently patches of bare soil in the eastern portion of the Site which are expected to be filled in when an engineered soil and demarcation barrier is installed on the exterior portion of the property. The bare patches are likely a result of lack of maintenance and have no relation to contaminant-related issues. Erosion will be controlled through a grass seed mix used for vegetative cover and a single-net straw erosion control blanket that encompasses the germinating turf grass. Further elaboration is provided in Section 8.1.1.2.

2.8 DISPERSION OF PARTICULATES

As stated in Section 2.7, the Site contains asphalt-paved driveways and parking areas, concrete curbs and sidewalks, and landscaping in all areas that are not covered with grass. There are currently patches of bare soil in the eastern portion of the property; however, the vegetative cover, grass seed mix, erosion control blanket, and resulting turf grass described above will mitigate the dispersion of particulates.

2.9 FIRE AND/OR EXPLOSION HAZARDS

Currently, there are no known fire and/or explosion hazards present on the Site.

3.0 PROPERTY USE

3.1 CURRENT AND/OR INTENDED PROPERTY USE

The current use of the Site is as congregate-style housing and social services for homeless persons. A scaled site map is provided in **Figure 2**. Activities that will occur on the Site include typical residential activities consistent with the assumptions for residential property use as defined in Sec. 20101(1)(ss) of Part 201. Access to the Site is from Desmond Street to the North.

The Submitter intends to construct a future 4,950-square-foot, two-story, slab-on-grade addition. The addition will include family living suites, offices, storage, bathrooms, bathroom exhaust fixtures, windows, roofing, gutters, doors, water heaters, building footings, sidewalks, and landscaping. Limited renovations will be made to the existing residential wing including bathrooms, congregation areas, and the laundry room. See **Figure 3a** for the layout of the existing structure(s) and **Figure 3b** for the layout of the planned addition.

3.1.1 LAND/RESOURCE USE RESTRICTION

There are currently no land or resource use restrictions or institutional controls currently being relied upon or established at the Site.

3.1.2 RESPONSE ACTIVITIES TO DATE

On September 27th, 2024, Vapor Control Solutions (VCS) completed the installation and start-up of a Sub-Slab Depressurization System (SSDS) for the current structure.

3.1.2.1 CURRENT BUILDING INFORMATION

Below Grade Building Features and Foundations

The foundation of the current building is slab-on-grade with trench and post footings 4-6 feet below grade. There are no basements, crawl spaces, elevators, sumps, pits, or tunnels. Please see **Figures 4a and 4b** for the foundation layout.

Heating, Ventilation, and Air Conditioning (HVAC)

The current conjoined building structures use two different HVAC systems. The 2,916-square-foot, single-story structure is heated/cooled by two furnaces located in the mechanical room in the northwest corner of the structure.

The 5,120-square-foot, two-story structure is heated by a ductless mini-split system with four condensers and 16 units. Please see **Figures 5a and 5b** for the layouts of the HVAC systems in the existing single-story and two-story structures, respectively.

Slab Condition

The condition of the floor in the current building is good; one hole greater than ½" was observed in the kitchen. Based on the pressure readings collected, the hole does not appear to be affecting the current SSDS; however, the hole will be filled with concrete. A photolog with representative photos of the slab in each area of the building is provided in **Appendix A**.

Utility Penetrations and Man-Made Preferential Pathways

Please see **Figure 6a** for a depiction of the current plumbing system which includes utility penetrations. As stated above, no sumps, pits, elevators, or other man-made preferential pathways are present inside the Site building. In addition, no other known utility penetrations (e.g., electrical system) of the slab are present within the building. Based on the negative pressure readings collected at the startup of the system and during monitoring, the system is operating within specifications.

3.1.2.2 DESIGN

Pre-Design Sub-Slab Diagnostics Testing

ERG performed a pressure field extension (PFE) test to design a sub-slab vapor mitigation system within the existing building. The testing resulted in a radius of influence of 30 feet, which corresponds to an area of influence greater than 2,827 square feet. Additional PFE testing was completed by VCS on September 27th, 2024, and utilized a digital micro manometer to measure the amount of vacuum created by the soil vapor extraction systems below the slab. Negative pressure readings collected ranged from -0.07 to -2.13 at the 10 locations tested, indicating that the SSDS is effectively mitigating the soil vapors under the slab. Please see **Figure 7a** for the locations of the pressure testing locations and Section 3.1.2.5 for the pressure readings collected. **Figure 7b** shows the profile details of the SSDS.

Deviations from the Proposed Design

ERG's original design specifications included the installation of five blowers as part of the SSDS. VCS installed a total of nine blowers to increase PFE coverage.

3.1.2.3 AS-BUILTS OF THE SSDS

Vent Lines and Horizontal Conveyance Piping

VCS installed horizontal conveyance piping at nine separate locations beneath the building slab with suction points at the end point(s) beneath the building. The conveyance pipes were installed horizontally from the exterior of the building at a depth of approximately 2-4 inches below the building slab and approximately 3-6 feet laterally beneath the slab at each location based on subgrade soil conditions. All horizontal conveyance piping was installed with a minimum downward pitch of 1 inch per foot for drainage.

Vertical vent lines run from the conveyance piping up the building exterior to a height of at least 24 inches above the structure's roof with the exception of the exhaust connected to Fan F, which will be repaired to be in compliance with the AARST SGM-SF guidance document (minimum of 18 inches above a pitched roof) within 14 days of the approval of this ResAp. **Figure 7a** depicts the conveyance piping locations, vent line locations, and fan locations.

Fans

The SSDS consists of nine separate OBAR Systems GBR 76 UD fans mounted on vertical risers on the building exterior which are connected to conveyance piping and nine suction points beneath the building's slab. All of the fans are wall-mounted on the building exterior. The SSDS was installed to aid in the mitigation of areas of the building that exhibited sub-slab soil vapor volatile organic compound (VOC) concentrations exceeding Site-Specific Volatilization to Indoor Air Criteria (SSVIAC).

The system is powered by nine OBAR Systems GBR series inline extraction fans capable of drawing 40 inches of water column (in wc) at a max flow rate of 65 cubic feet per minute (CFM). These operating speeds provide sufficient pressure gradients and vacuum pressures to mitigate the areas of interest. The fans are equipped with continuously variable potentiometers to control the direct current motor speed; no additional controls or variable frequency drives are required. Please see **Figure 7a** for the fan locations. Further information on the installed fans can be found in **Appendix B**.

Exhaust Vents

The current SSDS exhaust points are each a minimum of 24 inches above the building roof with the exception of the exhaust point to Fan F. Aside from this exhaust point, the system is in compliance with the AARST SGM-SF 2023 guidance document with respect to the minimum distances from any air intakes, windows, vents, structure access points, and HVAC components for exhaust trajectories with exhaust spreads of both 45 inches and 11 inches. Further, with the exception of the exhaust point connected to Fan F, the exhausts are located greater than 10 feet above grade and greater than 10 feet horizontally to the side and/or 4 feet above operable openings in the building as required. The Fan F exhaust point will be repaired within 14 days of the approval of this ResAp. Please see **Figure 7a** for the locations of the current fans and exhaust vents.

3.1.2.4 BUILDING CODES AND PERMITS

It was determined by the Site owner that the potential migration of VOCs into the Site structures was considered an immediate health and safety concern and, therefore, no permits were pulled for the installation of the current SSDS. The electrical components of the SSDS were installed by Southgate Electric, a licensed electrician; all of the fans are hardwired on their own individual circuits.

The owner will ensure that the system was installed and operates in accordance with all local, state, and federal laws and rules, including but not limited to, building codes and air quality regulations outside of RRD's review and consideration and will provide this information in the Documentation of Due Care Compliance (DDCC).

System Performance Metrics

Dwyer magnehelic vacuum gauges were installed within the protective fan casing on the single-terminal extraction pipes to measure pressure (0-16 inches WC). Upon start-up, the SSDS was calibrated to achieve an optimal balance between energy input and vacuum pressure across the sub-slab. To demonstrate the sub-slab radial influence, vacuum measurements were recorded using a micro-manometer at 10 monitoring points in the slab. Pressure measurements in the water column were recorded with gauges mounted inside the fan housing.

According to the US EPA, sub-slab depressurization in the range of -0.025 to -0.035 in wc is generally sufficient to maintain downward pressure gradients (USEPA, 1993). All readings taken indicate that the SSDS is effectively mitigating the soil vapors under the slab as indicated by the PFE. Following the system balancing procedures, the nine fans were set to operate at 10.0 in wc. These operating speeds provide sufficient pressure gradients and vacuum pressures to mitigate the areas of interest. The tables below document the negative pressures found at each monitoring/test point after SSDS installation. So long as there is no significant drop in negative pressure (below -0.025 in wc) at the test points, the SSDS is performing within specifications. Please see **Figure 7a** for a figure depicting the system performance monitoring locations.

Post SSDS Installation Vacuum and Pressure Field Extension Log (9/27/24)	
Fan Pressure	**Vacuum Reading (inches of water column)**
A	10.0
B	10.0
C	10.0
D	10.0
E	10.0
F	10.0
G	10.0
H	10.0
I	10.0

Post SSDS Installation Vacuum and Pressure Field Extension Log	
Test Point ID/Location	**Pressure Reading (inches of water column)**
1	-0.13
2	-0.10
3	-2.13
4	-0.07
5	-0.16
6	-0.25
7	-0.10
8	-0.44
9	-0.27
10	-0.12

SSDS Downtime

As described in the OM&M Plan, should any damage or malfunction that poses an immediate threat to human health, safety, or the environment occur (significant system failures or drop in negative pressure greater than -0.025" wc across the slab), the issue will be addressed within 48 hours. For non-critical repairs that do not pose an immediate risk, the issue will be addressed within 14 days.

3.1.2.6 OPERATIONS, MAINTENANCE, AND MONITORING (OM&M) PLAN

An OM&M plan was developed for the current SSDS by VCS and is provided as Appendix B. A maintenance log documenting monitoring of the system from the monitoring plan developed by VCS will be provided in the DDCC. Following the commissioning of the new SSDS in the building addition, the OM&M plan for the existing SSDS will be updated to be in compliance with EGLE's Draft Active Vapor Mitigation System (AVMS) Table of Contents (TOC).

3.2 HISTORICAL PROPERTY USE

During the 1920's and 1930's, the Site was a building supply yard with a railroad spur in the central portion of the property. The property was configured with buildings in the south and east portions, and a truck scale in the northeast corner. The property was subsequently used for truck parking associated with a motor freight station on the southern adjoining property. The railroad spur was removed by the 1970's. The Site has been developed with the present community shelter building since 1992.

3.2.1 RECOGNIZED ENVIRONMENTAL CONDITIONS (RECS)

Soil & Materials Engineers, Inc. (SME) and AKT Peerless Environmental Services (AKT) performed Phase I Environmental Site Assessments (ESA) on July 1st, 2022, and June 22nd, 2022, respectively, for the Site which identified the following *recognized environmental conditions* (RECs) in connection with the Site as excerpted below from AKT:

- *The subject property was used as part of a cement block manufacturing company from at least 1929 until at least 1937. Specific information regarding this former use was not identified during this assessment; however, it is likely significant quantities of hazardous substances and petroleum products were used in connection with these activities. In addition, a scale was depicted on the northeastern portion of the subject property on the 1923 Sanborn map. It is unknown if the scale was hydraulically operated. It is AKT Peerless' opinion, the former cement block manufacturing on the subject property represents an REC.*
- *A rail spur was present on the subject property from at least 1923 until at least 1961. Records regarding removal of the rail spur were not identified during this assessment. Potential concerns typically associated with rail spurs include the use of fill materials as ballast to support the ties and rails, the use of dust control agents and herbicides, and leaks or spills of hazardous materials or petroleum products. It is AKT Peerless' opinion, the rail spur represents an REC*
- *From at least 1923 to 1937, the Property was a building supply yard, with a railroad spur in the center position. By the late 1940s, the Property was a truck trailer parking lot associated with the south adjoining motor freight station. The potential for unknown and/or unreported releases of hazardous substances and/or petroleum products associated with the historical building supply, railroad spur, and motor freight uses of the Property represents a REC.*
- *Retaining walls were along portions of the northern, western, and southern Property boundaries. The Property appeared "built up" in the east and west grass-covered portions and was at a higher elevation than the adjoining roadways and east-adjoining roadways and east-adjoining residential development. The potential for fill of an unknown origin to be present at the Property represents a REC.*
- *From at least the 1920s through the 1950s, an iron, oil, and gasoline refinery site was west of the Property. During its operation, at least five 125,000-gallon ASTs and four 12,000-gallon ASTs were at the northeast site corner, across from the Property. The potential for migration of unknown and/or unreported contamination from this site, onto the Property, represents a REC.*
- *From the 1920s to the early 1970s, a north adjoining site was a bulk fuel oil storage facility with 14 ASTs with a total capacity of approximately 120,000 gallons. Assessment activities identified the presence of various VOCs, SVOCs, and metals in soil and groundwater at concentrations above Part 201 criteria. The potential for migration of known contamination from this site, onto the Property, represents a REC.*
- *From the 1920s to the mid-2000s, uses of a north adjoining site, east of the former bulk fuel oil storage site, included a lumberyard, a recycler, and a trucking company and repair shop.*

Assessment activities identified the presence of various VOCs, PAHs, and metals in soil and groundwater concentrations above Part 201 criteria. The potential for migration of known contamination from this site, onto the Property, represents a REC.

No historical recognized environmental conditions or de minimis conditions *were identified in connection with the Property.*

Please note that the REC regarding the cement block manufacturer refers to the south adjoining property.

In addition to the above, AKT completed a Phase I ESA for the Site dated June 6, 2024. The Phase I ESA identified the following RECs as excerpted below:

REC#1 The subject property was used as part of a cement block manufacturing company from at least 1929 until at least 1937. A rail spur was present on the subject property from at least 1923 until at least 1961. An area of bermed soil was observed on the eastern portion of the subject property. The origin of the soil used in the berm is unknown. In October 2020, Environmental Resource Group, LLC (ERG) prepared a Phase II ESA to evaluate the RECs identified during AKT Peerless' and Soil and Materials Engineer's (SME's) Phase I ESAs. Environmental Resources Group (ERG) advanced 10 soil borings, installed three temporary groundwater monitoring wells, installed eight sub-slab vapor pins, and collected seven soil samples, three groundwater samples, and eight soil gas samples. The soil and groundwater samples were submitted for laboratory analysis of volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PNAs), and Michigan 10 Metals. The soil gas samples were submitted for laboratory analysis of VOCs. Concentrations arsenic, chromium, mercury, and silver were detected in soil above the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Groundwater Surface Water Interface Protection (GSIP), Residential Drinking Water Protection (DWP), and/or Residential Direct Contact (DC) Cleanup Criteria. Concentrations of ethylbenzene, naphthalene, and 1,2,4- trimethylbenzene were detected in groundwater above the EGLE Groundwater Surface Water Interface (GSI) and/or Residential Drinking Water (DW) Cleanup Criteria. Arsenic and selenium were detected in groundwater above the EGLE GSI and/or Residential DW Cleanup Criteria. Concentrations of ethylbenzene and xylenes were detected in soil gas sample VP-5 above the EGLE Residential Volatilization to Indoor Air Pathway (VIAP) Screening Levels. Dichlorodifluoromethane was detected in all eight soil gas samples above the EGLE Residential VIAP Screening Level; however, ERG concluded that dichlorodifluoromethane (commonly known as Freon) is not stable in soil, was not detected in the soil or groundwater samples, and was therefore, a laboratory artifact. It is AKT Peerless' opinion, the facility-status of the subject property and vapor intrusion concern represents an REC.

REC#2 The southern adjoining property (1750 Waterman Street) was occupied by a cement block manufacturer from at least 1923 until at least 1937 and as a trucking freight company from at least 1950 until at least 1978. During its October 2022 Phase II ESA, ERG advanced soil boring SB-1 to evaluate the southern adjoining property. Target parameters were detected in the groundwater sample above the EGLE Residential Cleanup Criteria (RCC). The source of

contamination is unknown. Therefore, it is AKT Peerless' opinion, the historical use of the southern adjoining property and identified contamination represents an REC; however, no additional investigation of the southern adjoining property is necessary at this time.

A copy of the 2024 AKT Phase I ESA can be found in Appendix C.

3.2.2 PREVIOUS INVESTIGATIONS

ERG 2022 Phase II Investigation

On August 29, 2022, ERG advanced 10 soil borings, designated soil borings SB-1 through SB-10, to investigate the RECs identified in the 2022 Phase I ESAs. The boring locations, depths, and sampling strategy are summarized in the following table:

Boring I.D.	Boring Depth	Sample Depth	Location	*Evaluated RECs*
SB-1/TMW-1	12'	7-12'	Center of South Site Boundary	*Rail Spur, South Adjoining Property*
SB-2	12'	2-3'	Central Portion of Site	*Rail Spur*
SB-3	12'	9-10'	Southwest Portion of Site	*South & West Adjoining Properties*
SB-4/TMW-2	12'	7-12'	Center West Portion of Site	*West Adjoining Property*
SB-5/TMW-3	12'	7-12'	Northwest Portion of Site	*North & West Adjoining Properties*
SB-6	12'	9.5-10.5'	Center North Site Boundary	*Rail Spur, North Adjoining Property*
SB-7	12'	9-10	Northeast Portion of Site	*Berm & North Adjoining Property*
SB-8	12'	5-6'	East Portion of Site	*Scale, Berm, Lumber Yard Operations*
SB-9	12'	2-3'	East Portion of Site	*Scale, Berm, Lumber Yard Operations*
SB-10	12'	2-3'	Southeast Portion of Site	*Berm & South Adjoining Property*

A total of seven soil samples and three groundwater samples were selected for analytical testing based on observed conditions and likelihood of contamination. The samples were collected from the zone of most likely contamination (e.g., highest PID reading, or where staining or odors were observed).

The soil and groundwater samples were submitted to Fibertec Analytical for laboratory analysis for VOCs (USEPA Method 8260B), polynuclear aromatic hydrocarbons (PNAs) (USEPA Method 8270E), and Michigan 10 metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc (USEPA Methods 6020A and 7471A). All samples were submitted under proper chain-of-custody protocol and were collected, preserved, and analyzed in accordance with USEPA and EGLE protocols.

Based on review of the soil analytical results, VOCs were detected above EGLE Residential SSVIAC, PNAs were detected above EGLE Residential SSVIAC and Residential Part 201 Generic Residential Cleanup Criteria (GRCC), and metals were detected above Part 201 Drinking Water Protection and Groundwater-Surface Water Interface Protection (GSIP) GRCC and SSVIAC.

Review of groundwater analytical results indicated the presence of VOCs above EGLE Residential Part 201 Drinking Water (DW) and Groundwater-Surface Water Interface (GSI) GRCC and metals above EGLE Residential Part 201 DW and GSI GRCC; no PNAs were identified above EGLE Residential cleanup criteria.

In addition to the above, ERG also installed eight vapor pin points inside the Site building on September 14, 2022 for soil gas sampling. The vapor pins were installed beneath the concrete slab at each sub-slab sampling location using a hammer drill with a 1.5-inch bit. The vapor pins were installed to a depth completely penetrating the concrete slab. Each hole was cleaned with a high-efficiency particulate air (HEPA) vacuum and brush, then the vapor pin was installed and sealed to prevent the collection of ambient air within the sample. Prior to sampling, the integrity of each vapor pin seal was evaluated with helium tracer gas.

Soil gas samples were collected by connecting a negative pressure vacuum bottle to the vapor pin and opening a pressure release valve, which allowed the vacuum bottle to extract air from the sub-slab pore space. Once the sample was collected, the valve was closed, capturing the sample in the bottle for delivery to the analytical laboratory. The samples were analyzed for VOCs by Fibertec via EPA method TO-15. All samples were submitted under proper chain-of-custody protocol and were collected and analyzed in accordance with EGLE Guidance Document, Vapor Intrusion Pathway, May 2013, Remediation and Redevelopment Division.

Soil gas samples were collected using the sampling strategy summarized in the table below:

Vapor Point I.D.	Sample Type	Location
VP-1	Soil Gas	Corridor #115 outside Unit # 104
VP-2	Soil Gas	Corridor #115 outside Unit # 107
VP-3	Soil Gas	Corridor #115 outside Manager's Unit # 108

Vapor Point I.D.	Sample Type	Location
VP-4	Soil Gas	Lobby #15 adjacent to Stair A
VP-5	Soil Gas	East side of Living Room #30
VP-6	Soil Gas	North Side of Dining Room #40
VP-7	Soil Gas	South Side of Kitchen #90
VP-8	Soil Gas	North Side of Mechanical Room #70

ERG utilized a stepped approach for vapor intrusion sampling; if VOCs were detected above EGLE SSVIAC, mitigation methods would be required; therefore, soil gas samples would only be collected and analyzed for PNAs if all VOC concentrations were below EGLE SSVIAC.

A review of the soil gas analytical data indicated that VOCs were detected above laboratory method detection limits (MDLs) in all eight locations. The compounds ethylbenzene and xylenes were detected above EGLE Residential SSVIAC in sample VP-5. The compound dichlorodifluoromethane was detected in all eight samples above EGLE Residential SSVIAC. The full report can be found in ERG's BEA which was submitted to EGLE in 2023.

May 31, 2023: Pressure Field Extension Testing

On May 31, 2023, ERG performed a pressure field extension (PFE) test in order to design a sub-slab vapor mitigation system. As part of the PFE testing, a temporary extraction pit was installed, and a shop-vac was utilized to induce a pressure field below the slab. The PFE was measured utilizing the following vapor pins: VP-1, VP-2, VP-3, VP-4, VP-5, VP-6, VP-7, VP-8, VP-9. Results indicated high depressurization values ranging from -0.62 inches of water column (in. WC) to -0.06 in wc.

Based on these results, the radius of influence was found to be 30 feet from the extraction point, or 2,827 square feet. It was determined that at least five fans should be installed in the current building. Ultimately, nine were installed to ensure maximum coverage.

March 18, 2024: Vapor Intrusion Source Soil Investigation

At the request of the Client, ERG completed a Vapor Intrusion (VI) source soil investigation of the Site. The investigation was performed to determine the feasibility of excavation and removal of soils exceeding EGLE Residential SSVIAC as an alternative to sub-slab vapor intrusion mitigation measures in the existing building and proposed addition.

On March 18, 2024, ERG conducted a subsurface investigation to further characterize the extent of VI source soils. ERG oversaw the advancement of 14 soil borings (SB-11 through SB-24) to a maximum depth of 12 feet below ground surface (bgs) and installed four temporary monitoring wells (TWM-4 through TMW-7). The soil borings were located around the building perimeter and outward from the building where VOC source soils or groundwater were likely based on the previous investigation. Two surface soil samples were also collected with a shovel between the surface and 2-feet bgs to evaluate the Direct Contact (DC) pathway in the area northeast of the building.

The boring location, depth, and sampling strategy is summarized in the following table:

Boring I.D.	**Boring Depth**	**Sample Depth**	**Location**	***Evaluated RECs***
SB-11/TMW-4	12’	5-10’(W)	East Side of Building, South	*DelineateTMW-1*
SB-12/TMW-5	12’	5-10’(W)	West Side of Building, South	*DelineateTMW-1, SB-2*
SB-13/TMW-8	12’	1-2’(S) 5-10’(W)	North Side of Building	*Perimeter Boring*
SB-14	12’	1-2’(S)	North Side of Building	*Perimeter Boring*
SB-15	12’	1-2’(S)	West Side of Building	*Perimeter Boring*
SB-16	12’	7-8’ (S)	West Side of Building	*Perimeter Boring*
SB-17/TMW-6	12’	2-3’, 8-9’(S) 5-10’(W)	West Side of Building	*Delineate SB-2*
SB-18	12’	2-3’, 8-9’(S)	West Side of Building	*Perimeter Boring*
SB-19	12’	7-8’ (S)	East Portion of Site	*Characterize Building Addition Area*
SB-20	12’	7-8’ (S)	East Portion of Site	*Characterize Building Addition Area*
SB-21	12’	6-7’ (S)	East Portion of Site	*Characterize Building Addition Area*
SB-22/TMW-7	12’	2-3’ (S) 5-10’(W)	North of SB-13	*Delineate Suspected SB-13 Impacts*
SB-23	4’	2-3’ (S)	North Side of Building	*Delineate Suspected SB-13 Impacts*
SB-24	4’	1-2’ (S)	North Side of Building	*Delineate Suspected SB-13 Impacts*

Boring I.D.	Boring Depth	Sample Depth	Location	*Evaluated RECs*
SS-1	NA	0-2’	Northeast of Building	*Evaluate Direct Contact Exposure*
SS-1	NA	0-2’	Northeast of Building	*Evaluate Direct Contact Exposure*

A review of the soil analytical results indicated VOCs were detected above laboratory MDLs in one of the 16 samples, with the compound trichloroethylene detected above Residential SSVIAC in sample SB-21 (6-7’). Soil boring SB-21 is located east of the present building within the footprint of the proposed eastern building addition.

PNAs were detected above MDLs in SS-1 and SS-2, but at levels below EGLE Part 201 DC GRCC.

Metals were detected in samples SS-1 and SS-2, but at levels below EGLE Part 201 DC GRCC.

A review of the groundwater analytical results indicated VOCs were detected above MDLs in three of the five groundwater samples. The compound isopropylbenzene was detected above EGLE Residential SSVIAC in the groundwater sample collected from TMW-4 located along the west wall of the Site building. The compound chloroform was detected above EGLE Residential SSVIAC in the groundwater sample collected from TMW-6 located along the south wall of the Site building. The compounds bromodichloromethane and chloroform were detected above the EGLE Residential SSVIAC in the groundwater sample collected from TMW-8 located along the north wall of the Site building.

A copy of the 2024 Vapor Intrusion Source Soil Investigation can be found in **Appendix C**.

September 11, 2024: Surface Soil Sampling

On September 11, 2024, ERG oversaw the collection of three surface soil samples (HA-A, HA-B, and HA-C) up to 1.5-feet bgs using a hand auger to evaluate the soil in the layout of the proposed addition to the Site building located on the southeastern portion of the property. Locations were chosen for each of the main footers in the proposed building addition. All samples were analyzed for VOCs.

Based on the analytical results of the surface soil sampling, trichloroethylene was identified above EGLE Part 201 Drinking Water Protection GRCC and SSVIAC in surface soil sample HA-C (0.75’).

A table comparing analyte concentrations to EGLE GRCC/SSVIAC and can be found as Table 1. The full analytical report can be found in **Appendix C**. The boring logs can be found in **Appendix E**.

3.2.3 SUMMARY OF ALL APPROPRIATE INQUIRIES

ERG submitted a BEA to EGLE on April 25, 2023, on behalf of Freedom House Detroit that summarized subsurface investigations at the Site to evaluate RECs identified in the Phase I ESA reports completed by

SME and AKT. The following contaminants that exceed EGLE's GRCC and their respective Chemical Abstract Service (CAS) numbers were documented in the BEA:

Table 1: Maximum Soil Concentrations

Constituent	CAS Number	Maximum Concentration Detected (µg/Kg)	Location	Date	Cleanup Criteria Exceedances (µg/kg)
Phenanthrene	85-01-8	2,400	SB-9 (2-3')	08/29/2022	GSIP
Arsenic	7440-38-2	15,000	SB-7 (9-10')	08/29/2022	DWP, GSIP, DC
Chromium	7440-47-3	200,000	SB-9 (2-3')	08/29/2022	DWP, GSIP
Mercury	7439-97-6	280	SB-10 (2-3')	08/29/2022	GSIP
Silver	7440-22-4	580	SB-9 (2-3')	08/29/2022	GSIP

Table 2: Maximum Groundwater Concentrations

Constituent	CAS Number	Maximum Concentration Detected (µg/Kg)	Location	Date	Cleanup Criteria Exceedances (µg/kg)
Ethylbenzene	100-41-4	33	TMW-1	08/29/2022	GSI
Naphthalene	91-20-3	62	TMW-1	08/29/2022	GSI
n-Propylbenzene	103-65-1	210	TMW-1	08/29/2022	DW
1,2,4-Trimethylbenzene	95-63-6	150	TMW-1	08/29/2022	GSI, DW
Arsenic	7440-38-2	43	TMW-1	08/29/2022	GSI, DW
Selenium	7782-49-2	15	TMW-2	08/29/2022	GSI

Notes:
DC – Direct Contact Criteria
GSI – Groundwater-Surface Water Interface Criteria
DW – Drinking Water Criteria
GSIP – Groundwater-Surface Water Interface Protection Criteria
DWP – Drinking Water Protection Criteria

Based on the above exceedances, the Site is a facility per Section 20101 of Part 201 of the NREPA, Part 451 of 1994, as amended. The District Acknowledgement Letter of the BEA is provided in **Appendix D.**

3.3 PROPERTY GEOLOGY/HYDROGEOLOGY/TOPOGRAPHY

In a Phase I ESA conducted by SME on July 1, 2022, a United States Geological Survey (USGS) 7.5-minute series Topographic Map for the Detroit/Dearborn Quadrangle, Michigan, compiled in 1980/1983 was reviewed. The Site was found to be relatively flat at an elevation of approximately 595 feet above mean sea level (MSL). It is located in an urban area and the Detroit River is approximately 1.5 miles southeast of the Site. Based on the review of the topographic map, groundwater flow is anticipated to be to the southeast towards the Detroit River.

According to the boring logs from subsurface investigations at the Site, the geology typically consists of brown to light brown fine- to medium-grained sand overlying stiff gray clay at depths ranging from 9.0 feet bgs to 11.5 feet bgs. Locally, trace brick debris was observed at shallow depths, and gray sand was observed immediately below the surface and above the clay. A Cross-Section Location Map is depicted as

Figure 9a and cross-sections depicting site geology and subsurface structures are presented as **Figures 9b, 9c, and 9d**. The soil boring logs are included in **Appendix E.**

Groundwater was encountered during field investigations in eight of the 24 soil borings at depths ranging from 8.0 feet bgs to 10.5 feet bgs. A table of temporary groundwater monitoring wells installed, screen depths, and depths to water is presented below:

Well ID	Screen Depth (feet below ground surface)	Approximate Depth to Water (feet below ground surface)
SB-1/TMW-1	7-12	8.0
SB-4/TMW-2	7-12	9.0
SB-5/TMW-3	5.5-10.5	8.5
SB-11/TMW-4	6.5-11.5	8.0
SB-12/TMW-5	5-10	8.0
SB-17/TMW-6	5-10	9.0
SB-22/MW-7	5-10	8.0
SB-13/TMW-8	5-10	8.0

4.0 IDENTIFICATION OF COMPLETE EXPOSURE PATHWAYS

The following exposure pathways are considered complete: direct contact, soil particulate inhalation, soil volatilization to ambient air, and volatilization to indoor air. The elimination of exposure pathways demonstrates that they are not complete or that unacceptable exposures associated with those pathways do not exist and that response activities associated with those pathways are not required to prevent or mitigate unacceptable exposure.

The Site is currently used for residential purposes as defined by Parts 201/213. Based on the "residential" use of the property, the Part 201 GRCC are applicable. The following pathway analysis is based on currently known information and conditions on the Site based on previous investigations. If information regarding additional impacts or exposure points is obtained, the pathway analysis will need to be reevaluated.

COMPLETE PATHWAY?	PERTINENT PROPERTY CONDITIONS	EXPLANATION, IF NOT COMPLETE
Drinking water pathway is not complete	A person cannot drink groundwater because groundwater is not being used on the property for any purpose.	The Site is serviced by municipal water supply.
Direct contact pathway is complete	A person can come in contact with contaminated soils at the landscaped areas where no soil barriers are present. Workers may encounter contaminated subsurface soil during utility line repair or construction.	
Soil particulate inhalation pathway is complete	A person can inhale ambient air particulates from substances present in soils (with or without vegetation) via wind erosion of contaminated soils. Vehicle traffic is not expected on off pavement areas. Earthwork required for utility line repair could cause subsurface soil particles to become airborne.	
Soil volatilization to ambient air pathway is complete	A person can inhale ambient air that contains vapors from volatile substances present in soil.	
Volatilization to indoor air pathway is complete	A person may inhale substances in indoor air from volatile substances present in soil or groundwater that may volatilize into buildings present on the property.	

COMPLETE PATHWAY?	PERTINENT PROPERTY CONDITIONS	EXPLANATION, IF NOT COMPLETE
Groundwater-Surface Water Interface Pathway is not complete	There are no points of exposure such as surface bodies of water or venting groundwater.	Bodies of surface water and/ or venting of groundwater do not exist at or adjoining the Site.

5.0 ASSESSMENT OF APPLICABILITY OF GENERIC CRITERIA

Conditions at the Site do not violate the assumptions for applying EGLE Part 201 GRCC for direct contact criteria (DCC), particulate soil inhalation criteria (PSIC), and infinite source volatile soil inhalation criteria (VSIC). Further, there is no evidence of non-aqueous phase liquid (NAPL) present on the Site; therefore, the EGLE Part 201 GRCC for DCC, PSIC, and VSIC criteria are applicable.

ERG completed the checklists provided by EGLE in Appendices C.1 and C.7 of the May 2013 Guidance Document for Vapor Intrusion Pathway (EGLE 2013 VIAP Guidance, as amended) to determine whether SVIIC and/or Volatilization to Indoor Air Pathway Screening Levels (VIAP SLs) apply. Based on the checklists, the Soil/Groundwater Volatilization to Indoor Air Inhalation generic criteria do not apply due to the presence of heterogenous soils between the vapor source and the building and groundwater elevations on the Site are less than 3 meters; therefore, the VIAP SLs for soil and groundwater are applicable. ERG requested the use of the VIAP SLs as SSVIAC, and this was approved by EGLE on December 18, 2024.

Please see **Appendix F** for copies of the completed checklists and documentation supporting use of the VIAP SLs as SSVIAC. Soil boring logs with the depths-to-water can be found in **Appendix E**.

6.0 IDENTIFICATION OF THE CATEGORY OF APPLICABLE CLEANUP CRITERIA OR SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA

Based on the current and proposed use of the Site as congregate-style housing and social services for homeless persons, Residential criteria are applicable for the property.

7.0 CONTAMINANT INFORMATION

7.1 LOCATIONS AND CONCENTRATIONS OF CONTAMINANTS OF CONCERN

7.1.1 SOIL RESULTS

ERG submitted a total of 25 soil samples to be analyzed for VOCs, PNAs, and/or metals. Refer to **Table 1** and **Figure 10** for the analytical results for soil.

VOCs: Concentrations of n-butylbenzene, sec-butylbenzene, ethylbenzene, n-propylbenzene , and xylenes were detected in collected soil samples; however, each was below their corresponding SSVIAC and/or GRCC.

The following table lists VOC constituents with soil boring locations that exceeded SSVIAC and/or EGLE Part 201 GRCC:

VOCs	Exceedance	Soil Boring (Depth)
Benzene	SSVIAC	SB-10 (2-3’)
Carbon tetrachloride	SSVIAC	SB-2 (2-3')
Chloroform	SSVIAC	SB-2 (2-3')
Ethylbenzene	SSVIAC	SB-3 (9-10’)
Naphthalene	SSVIAC	SB-10 (2-3’)
Tetrachloroethylene	SSVIAC	SB-9 (2-3')
Trichloroethylene	DWP, SSVIAC	HA-B (1.5'), SB-21 (6-7')
Xylenes	SSVIAC	SB-10 (2-3’)

PNAs: Concentrations of acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indenol(1,2,3-cd)pyrene, and pyrene were also detected in collected soil samples; however, each was below their corresponding SSVIAC and/or GRCC.

The following table lists constituents for PNAs with soil boring locations that exceed GRCC and/or EGLE Part 201 GRCC:

PNAs	Exceedance	Soil Boring (depth)
Benzo(a)pyrene	DC	SB-9 (2-3'), SB-10 (2-3’)
Phenanthrene	SSVIAC	SB-9 (2-3'), SS-1 (0-2’)

Metals: Concentrations of barium, cadmium, total chromium, copper, lead, total mercury, selenium, silver, and zinc were detected in collected soil samples; however, each was below their corresponding SSVIAC and/or GRCC.

The following table lists constituents for metals with soil boring locations that exceed SSVIAC and/or EGLE Part 201 GRCC:

Metals	Exceedance	Soil Boring (Depth)
Arsenic	DC, GSIP, DWP	SB-7 (9-10'), SB-8 (5-6'), SB-9 (2-3'), SB-10 (2-3')
Chromium	DWP, GSIP	SB-9 (2-3'), SS-1 (0-2')
Mercury	SSVIAC, GSIP	SB-2 (2-3'), SB-9 (2-3'), SB-10 (2-3')

7.1.2 GROUNDWATER RESULTS

ERG submitted a total of eight groundwater samples to be analyzed for VOCs, PNAs, and metals. Refer to **Table 2** and **Figure 10** for the analytical results for groundwater.

VOCs: Concentrations of n-butylbenzene, sec-butylbenzene, and xylenes were detected in collected water samples; however, each was below their corresponding SSVIAC and/or GRCC.

The following table lists VOC constituents with groundwater well locations that exceed SSVIAC and/or EGLE Part 201 GRCC.

VOCs	Exceedance	Well
Bromodichloromethane	SSVIAC	TMW-8
Chloroform	SSVIAC	TMW-2, TMW-6, TMW-8
Ethylbenzene	GSI, SSVIAC	TMW-1
Isopropylbenzene	GSI, SSVIAC	TMW-1, TMW-4
Napthalene	SSVIAC	TMW-1
n-propylbenzene	SSVIAC	TMW-1
1,2,3-Trimethylbenzene	SSVIAC	TMW-1
1,2,4-Trimethylbenzene	GSI, SSVIAC	TMW-1

PNAs: No PNAs aside from 2-methylnaphthalene were identified above EGLE Part 201 GRCC.

PNAs	Exceedance	Well
2-Methylnaphthalene	GSI	TMW-1

Metals: Concentration of barium, copper, and lead were detected in collected water samples; however, each was below EGLE Part 201 GRCC.

Metals	Exceedance	Well
Arsenic	DW, GSI	TMW-1
Selenium	GSI	TMW-2

7.1.3 SOIL GAS RESULTS

ERG submitted a total of eight soil gas samples to be analyzed for VOCs. Summaries of analytical results are presented in **Table 3** and **Figure 11.**

Concentrations of acetone, 2-butanone, carbon tetrachloride, n-heptane, n-hexane, isopropanol, tetrachloroethene, toluene, trichlorofluoromethane, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene were detected in collected soil gas samples; however, each was below their corresponding SSVIAC.

The following table lists the constituents of VOCs with soil gas locations that exceed SSVIAC.

VOCs	Exceedance	SG Location
Dichlorodifluoromethane	SSVIAC	VP-1, VP-2, VP-3, VP-4, VP-5, VP-6, VP-7, VP-8
Ethylbenzene	SSVIAC	VP-5
Xylenes	SSVIAC	VP-5

8.0 IDENTIFICATION OF COMPLETE OR LIKELY TO BECOME COMPLETE EXPOSURE PATHWAYS REQUIRING RESPONSE ACTIVITIES TO MITIGATE UNACCEPTABLE EXPOSURES

This section presents response activities to mitigate unacceptable exposures via the complete pathways as identified in Section 4.0.

8.1 DIRECT CONTACT

As presented in the previous sections, analytical results from soil samples have identified benzo(a)pyrene above Direct Contact criteria at soil borings SB-9 (2-3') and SB-10 (2-3') on the eastern portion of the site and arsenic above Direct Contact criteria at soil borings SB-7 (9-10'), SB-8 (5-6'), SB-9 (2-3'), and SB-10 (2-3').

8.1.1 RESPONSE ACTIVITY – EXCAVATION AND EXPOSURE BARRIERS

8.1.1.1 EXCAVATION

An excavation within all open lawn areas not covered by hardscapes at the Site will be performed. Specifically, a minimum of 12 inches of existing soil and vegetation will be removed in all areas not covered by hardscapes. All excavated soil will be properly disposed of at a licensed disposal facility. Documentation of disposal will be obtained as documentation of due care. Engineered soil barriers will be constructed in the excavated areas (see below for details).

8.1.1.2 EXPOSURE BARRIERS

In addition to excavation, unacceptable direct contact exposures at the Site will be mitigated via two types of Exposure Barriers:

Hardscapes – These will consist of existing building foundations, asphalt (e.g., parking areas, driveways), or concrete (e.g., sidewalks, walkways) on the Site at the locations shown in **Figure 12**. Concrete hardscapes consist of 4 inches of concrete overlying 2 inches of engineered base material. Asphalt hardscapes consist of 2 inches of asphalt overlying 4 inches of engineered base material. Hardscapes will be inspected monthly by the owner or the owner's representative for damage such as cracking, chipping, or heaving. Operations, Maintenance, and Monitoring (OM&M) of hardscapes will be conducted and documented as detailed below and in **Appendix G**.

Engineered Soil Barriers – These will be constructed of compacted soil barriers a minimum of 12 inches in vertical thickness overlying a demarcation layer comprised of brightly colored geotextile fabric. A site map depicting the general location of the engineered soil barrier is included as **Figure 12.**

The construction of these barriers will generally consist of the removal of at least 12 inches of existing soil via excavation and then placement of the demarcation fabric at the base of the excavation. The void space created by the excavation will then be filled by placement of 6 inches of engineered fill underlying 6 inches of topsoil. This barrier will then be fully vegetated with a high-traffic, drought-tolerant grass seed mix. Construction and maintenance details on Engineered Soil Barriers are as follows:

- Excavate to appropriate depth as described within the aforementioned Excavation Response Activity above, which will include the removal of at least 12 inches of existing soil (and any vegetation).
- Survey the base the of excavation (the global positioning system (GPS) locations of these elevation depth survey points will also be recorded such that these locations can be repeatedly monitored post-construction for continued OM&M). Elevations will be surveyed with an appropriate elevation survey instrument calibrated to at least the nearest 0.01 feet.
- Place a brightly colored, orange geotextile demarcation fabric at the base of the excavation.
- Place and compact 6 inches of engineered clean fill sand over the demarcation fabric. To prevent any future excavation or digging in the location, the demarcation geotextile fabric will have "Danger Do Not Dig" included on the fabric in both English and Spanish.
- Place 6 inches of clean topsoil over the engineered fill sand. At transition with hardscapes, if the natural grade requires placement of more or less topsoil, sufficient topsoil will be placed such that the final elevation of the Engineered Soil Barrier and the Hardscape are equivalent and allows for adequate vegetation.
- Perform a final grade elevation survey (along with the GPS coordinates for OM&M surveying) to ensure the Engineered Soil Barrier is at least 12 inches in vertical thickness.
- Overseed with Michigan Wildflower Farm's Eco-Turf Low Maintenance Mix, a drought-tolerant grass seed mixture rated for high traffic.
- Restrict access to the newly planted Engineered Soil Barriers for the first 45 days following seeding to allow for growth.
- Water/irrigate (one round) at the time of planting to help promote rapid germination; to be performed by the Site maintenance personnel. Subsequent watering will be conducted weekly during the weekly inspections for the first 45 days or 90 percent germination, whichever comes first.

Notes:

1. All engineered fill sand and topsoil will be sourced from native soils from an undisturbed location. The source location of the material will have no history of onsite commercial or industrial developments and no soil contamination or deposition of non-native fill material known or suspected to exist at the source location. The source material will be sampled based on the volume of material necessary to complete the excavation as shown below:
    - Up to 500 cubic yards (cy) = 2 samples
    - Up to 1,000 cy = 2 samples for the first 500 cy +1 additional sample per 250 cy

- 1,000 to 5,000 cy = 4 samples for the first 1,000 cy +1 additional sample per each additional 500 cy

2. Each sample will be collected from the source prior to transportation to the Site and submitted for laboratory analysis of the following: VOCs, PNAs, and Michigan 10 Metals. The laboratory analytical report and comparison tables will be maintained as documentation of due care.
3. Good quality topsoil to support and sustain the growth of vegetative cover will be utilized. The topsoil will be sandy loam or clay loam containing 5-20% by weight of organic matter and be reasonably free of clay, clumps, stones, plant roots, or sticks. The topsoil will have a pH range between 6.0 to 8.0 and contain less than 500 parts per million soluble salts.
4. Eco-turf drought-resistant grass seed mix will be used for vegetative cover. This mixture is touted as never needing irrigation and is rated for high traffic areas. After this mixture has been planted, a single-net straw erosion control blanket will encompass the germinating turf grass to protect against erosion. Access to the newly planted areas will be restricted for at least 45 days following planting via the use of either temporary caution tape or snow fence outlining the perimeter of newly planted areas to prohibit pedestrian traffic. The Site maintenance personnel will provide one watering/irrigation event at the time of seeding to help speed up to the germination process and weekly during post-construction inspections for the first 45 days or 90 percent of germination, whichever occurs first. Following germination, if the grass is visually distressed due to lack of rain or heat stress, the Site maintenance personnel will perform watering/irrigation during inspections.
5. Daily reports, a photo log, and all other documentation (e.g., survey data, truck tickets, etc.) will be completed during the construction of the Engineered Soil Barrier areas. This documentation will be included in the subsequent DDCC report.

8.1.1.2.1 EXPOSURE BARRIERS – OM&M PLAN

To properly maintain the exposure barriers, an Exposure Barrier OM&M Plan will be implemented to prevent any unacceptable direct contact exposures. Refer to **Appendix G** for the proposed OM&M Plan for the Site. The final OM&M plan is subject to change during construction and will be finalized for submission as part of the DDCC. Outlined in the OM&M Plan are post-construction inspections and routine inspections or maintenance activities to keep the exposure barriers in optimal conditions.

For hardscapes, monthly inspections by the owner or owner's maintenance staff will occur. For the engineered soil barrier, weekly site inspections of the engineered soil barrier will occur during the first 45 days following construction or until 90 percent germination, whichever occurs first. Following the initial germination post-construction, routine monthly inspections of the engineered soil barrier will occur at the Site by the owner and/or owner's maintenance staff.

The inspections will include routine monitoring of concrete and asphalt surfaces for hardscapes to identify any cracks, heaving, chipping, potholes, or other signs of wear. Should these signs be identified during the monitoring activities, appropriate maintenance activities (e.g., crack filling, resurfacing, patching) will be completed as soon as possible. Inspections of the engineered soil barrier will include monitoring of

vegetative health (e.g., distressed vegetation), soil conditions (e.g., signs of erosion, exposed geotextile fabric), and bare or eroded patches. Should conditions which warrant maintenance occur, the appropriate measures (e.g., reseeding and soil replacement, vegetation care, seasonal care) will be taken.

Should any issues with any exposure barriers be reported outside of routine monitoring, maintenance activities will be conducted as soon as possible to address the issue(s).

Lawn area maintenance will be performed seasonally to keep lawn areas as near as possible in the as-constructed condition. Routine maintenance includes regular mowing, watering (if needed), application of fertilizer/herbicide, and seeding/repairing areas that are distressed or have been damaged. An inspection form will be filled out during each inspection to document conditions of the exposure barriers and make note of any unacceptable conditions that require corrective action to maintain the effectiveness of the exposure barriers. The following conditions require corrective action:

- Any exposed demarcation fabric;
- Any exposed soils with holes or depressions greater than 1-inch deep; and/or
- Any significantly stressed vegetation.

If repairs or disturbances to the exposure barriers are needed, a repair document is included with the OM&M Plan to document said repair activities. Refer to the OM&M Plan for specific repair guidelines. The owner of the Site will be responsible for compiling and maintaining documentation for each inspection form and/or repair form. Refer to **Appendix G (Exposure Barrier OM&M Plan)** for the inspection and repair forms.

8.2 VOLATILIZATION TO INDOOR AIR PATHWAY

Concentrations of benzene, carbon tetrachloride, chloroform, tetrachloroethylene, trichloroethylene, naphthalene, and phenanthrene exceed SSVIAC in soil samples. In addition, concentrations of bromodichloromethane, chloroform, ethylbenzene, isopropylbenzene, n-propylbenzene, naphthalene, 1,2,3-TMB, and 124-TMB exceed SSVIAC in groundwater samples. Lastly, concentrations of dichlorodifluoromethane, ethylbenzene, and xylenes exceed SSCVIAC in soil gas samples. Therefore, the volatilization to indoor air pathway poses a risk of unacceptable exposure at the Site and requires further response activities as described below.

8.2.1 RESPONSE ACTIVITY: ACTIVE VAPOR MITIGATION SYSTEM

Although an SSDS was installed for the current site building to mitigate unacceptable exposures, it was not commissioned in accordance with EGLE's Draft AVMS TOC; therefore, in the areas where the system does not conform with EGL's Draft AVMS TOC, the current system will be commissioned and operate in accordance with EGLE's Draft AVMS TOC as described in the appropriate sections below.

In addition, an SSDS will be installed for the future building addition which will be commissioned in accordance with EGLE's Draft AVMS TOC. The sections below describe the upcoming addition, the design for the SSDS for that portion of the building, and the planned commissioning processes for both the

existing and planned SSDS's. The two SSDS's will operate in isolation from each other; therefore, the planned SSDS should not impact the performance of the current SSDS.

8.2.1.1 BUILDING ADDITION INFORMATION

Below Grade Building Features and Foundations

The foundation of the building addition will be slab-on-grade concrete at least 4" thick with footings placed on column centerlines. Perimeter and exterior footings shall bear a minimum of 42" below finish grade and be placed on native, undisturbed soil or engineered fill with a minimum net allowable bearing capacity of 3,000 pounds per square foot. The footings that meet with the current building will tie into the current building's existing footings via drilling, epoxy, and dowels. The area beneath the building slab will consist of 4 inches of coarse-grade fill material to increase soil permeability and air movement/negative pressure from the SSDS. Please see **Figures 4c and 4d** for drawings depicting the planned foundation.

There are no basements, crawl spaces, elevator sumps, pits, or tunnels planned in the building addition.

Heating, Ventilation, and Air Conditioning (HVAC)

The planned HVAC system on the first floor of the addition will consist of a furnace located in the new second floor mechanical room. Please see **Figure 5c** for the first-floor HVAC plan, including locations of air supply and exhaust ducts related to the HVAC system.

The planned HVAC for the second floor of the addition will consist of packaged terminal air conditioners in each room. Please see **Figure 5d** for the second-floor HVAC plan.

Floor Slab and Condition

The proposed floor slabs in the building addition will consist of concrete a minimum of 4" thick. Footers divide the slab into five separate areas (A, B, C, D, and E) as shown in **Figure 7c**.

Utility Penetrations and Man-Made Preferential Pathways

A depiction of the future plumbing utility penetrations is presented as **Figure 6b**; the current water service line will be extended from the existing building into the building addition without penetrating the slab. No other man-made preferential pathways (sumps, elevators, etc.) are planned for the building addition, and there are no other known slab penetrations for other utilities (e.g., electrical service).

8.2.1.2 OVERVIEW OF AVMS

An SSDS will be installed to prevent vapors from migrating into the building via the subsurface. The SSDS will depressurize the plenum beneath the building slab, preventing the vapors from migrating upwards through the slab or any floor penetrations. The SSDS area of influence will cover the entirety of the building addition.

8.2.1.3 DESIGN TESTING

Overview

Prior to finalizing the design of the SSDS, PFE testing will be completed utilizing a blower, monitoring points, and a micro-manometer. In addition, an evaluation of the HVAC system will be completed to determine the impact the SSDS will have on potential pressure gradients or if any natural backdraft appliances are or will be present.

Pre-Design Sub-Slab Diagnostics Testing

Based on PFE testing completed in the existing building, ERG is expecting a radius of influence of 30 feet for each suction point in the addition. To ensure this is the case, PFE testing will be completed to identify the radius of influence of the proposed SSDS, ensure proper coverage, and identify any potential issues prior to the installation. This will include an evaluation of the pressure differential between the building and sub-slab, an evaluation of the pressure differential findings, identification of known subsurface features which may interfere with the SSDS, an evaluation of areas with poor negative pressure based on the PFE testing results, and changes to the proposed design based on PFE results.

Building HVAC Testing and Evaluation

All building pressure and/or alterations to the pressures and venting will be analyzed and evaluated. Any natural drafting appliances will be backdraft tested in accordance with Section 11.5 of EPA 1993 or similar procedure and documentation will be made available as part of any installation and commissioning process. This will be completed in both the existing structure and in the building addition.

8.2.1.4 PLAN OF PROPOSED SYSTEM

Figures 7c through 7e depict the conveyance piping locations, vent line locations, and fan locations. **Figures 7f and 7g** depict the profile details for the proposed SSDS and the suction pit design, respectively.

Vertical Vent Lines and Horizontal Conveyance Piping

Due to the locations of footers, the SSDS will incorporate suction points in each of the five separate sections of slab in the proposed addition. Seven total suction points will be installed beneath the slab and connect to vertical vent risers within the building interior. The vertical vent risers will continue up to the second floor and connect into a manifold in the second-floor plenum via horizontal laterals. Each manifolded horizontal lateral will connect to a vertical vent line which will lead to the attic where the fan will be located. There will be three separate systems operating in this fashion.

Please see **Figure 7c** for the locations of suction points and vertical vent lines on the first floor, **Figure 7d** for the locations of vertical vent lines and horizontal laterals on the second floor, **Figure 7f** for a general cross-section of the system, and **Figure 7g** for a layout of the suction pit design.

Vertical Vent Risers and Height of Building

Vertical vent risers will connect to horizontal laterals in the second-floor plenum and continue up to the roof of the addition. They will exhaust to a point a minimum of 10 feet above grade level and at least 18" above the gabled roof of the addition per AARST guidance.

Fans

The system will be powered by three OBAR Systems GBR series inline extraction fans capable of drawing 40 inches of water column (in wc) at a max flow rate of 65 cubic feet per minute (CFM).

One fan will be installed in the western portion of the building and will connect to two suction points (suction points A and B); one fan will be located in the central portion of the building and will connect to two suction points (suction points C[2]); and one fan will be located in the eastern portion of the building and connect to three suction points (suction points D[2] and E).

Each fan will be wall-mounted in the attic in an accessible location for maintenance staff to monitor the system, and each separate fan system will exhaust individually above the roof. Please note that, if necessary, the fan type may change based on the PFE and system commissioning results.

Further information on the fans can be found in **Appendix B**. For a layout of suction point locations and fan locations, see **Figure 7c**.

Exhaust Vents

The SSDS exhaust points will be a minimum of 18 inches above the building roof in accordance with the AARST SGM-SF 2023 guidance document. The roof will be pitched at a 6:1 slope and the exhaust trajectory and spread will be in compliance with the AARST SGM-SF 2023 guidance document with respect to the minimum distances from any air intakes, window, vents, structure access points, and HVAC components for exhaust trajectories with exhaust spreads of both 45 inches and 11 inches.

The exhaust points will be located greater than 10 feet above grade and greater than 10 feet horizontally to the side and/or 4 feet above operable openings in the building as required by AARST SGM-SF guidance.

One exhaust point connected to Fan F for the SSDS for the current structures is not in compliance with AARST SGM-SF guidance and will be brought into compliance within 14 days of the approval of this ResAp.

Please see **Figure 7e** for a layout of the roof with exhaust point locations.

Materials and Other Specifications

In either the current structures or the addition where it is necessary to seal cracks, joints, vent riser penetrations, or other openings, AARST SGM-SF 2023 guidance will be followed. Documentation of the type and location of the sealant used will be provided in the installation and commissioning documentation.

Labels for the SSDS's in both the existing structures and the addition will be developed and utilized as identified in AARST SGM-SF 2023. Documentation of the type and location of the labels for future inspection purposes will be provided in the installation and commissioning documentation. Labels for the current SSDS will be developed and implemented within 14 days of the approval of this ResAp.

Groundwater in Contact

Groundwater was encountered in temporary monitoring wells at depths ranging from 8-9 feet bgs. Based on the planned footing depths of 42 inches, groundwater is present within 5 feet of the building structure. All conveyance piping will be sloped a minimum of 1% to allow for drainage of water, and each of the fans is equipped with a condensate collection system to prevent water from damaging the fan. In addition, following commissioning, the SSDS will be routinely monitored on a monthly basis, and alarms will be installed for each fan to identify drops in negative pressure.

Alarm and Performance Indicator

Visual and audio alarms will be installed at noticeable, conspicuous locations inside the buildings for both the proposed and current SSDS's. Alarms for each fan will be installed inside the structure(s); visual alarms will identify whether the system(s) need to be serviced, low battery condition for the alarms, overpressure, and negative low pressure. The auditory alarm will be clear and distinct and indicate low pressure within the system(s). Please see **Figures 7a and 7c** for the proposed locations of the alarms.

8.2.1.5 BUILDING CODES AND PERMITS

The system will be installed and operated in accordance with all local, state, and federal laws and rules, including but not limited to, building codes and air quality regulations outside of RRD's review and consideration.

8.2.1.6 MONITORING POINTS AND TEST PORTS

Monitoring points/test ports shall be permanently installed within the building addition following the finalization of the SSDS design. The monitoring points/test ports shall be installed as follows in accordance with AARST SGM-SF 2023:

Physical Properties

1. Installed in accessible locations that do not require disassembly of building components or finishes
2. Installed such that they do not present hazards (e.g., tripping hazards) to occupants
3. Installed after removing a portion of aggregate, packed fill, or expansive soils that may exist
4. Installed to retain functionality over time
5. Installed and permanently sealed in an airtight manner

Locations

1. At locations which are distant from the suction points in order to best characterize the full expanse of the PFE.
2. Based on the size of the proposed building and in accordance with EGLE's Guidance Document for the Volatilization to Indoor Air Pathway, a minimum of five monitoring points will be installed (with at least one monitoring point within each area separated by footers) inside the building addition. Six monitoring points are currently planned in the building addition.

Please see **Figure 7c** for the planned locations of test/monitoring points in the addition and **Figure 8** for a diagram of how each point will be installed.

8.2.1.7 PERFORMANCE OBJECTIVES

System Performance Metrics

According to the US EPA, sub-slab depressurization in the range of -0.025 to -0.035 in wc is generally sufficient to maintain downward pressure gradients (USEPA, 1993). Following the installation of the SSDS and system balancing procedures, each fan will be set to operate at a certain speed to provide sufficient pressure gradients and vacuum pressures to mitigate the areas of interest. Following the installation of the monitoring points, measurements will be collected from each point per EGLE's commissioning guidance from the Draft AVMS TOC. Following commissioning, the system will be routinely monitored on a monthly basis. All readings will be collected using a manometer or other differential pressure gauge capable of reading 1/1000 inches of water column. So long as there is no significant drop in negative pressure at the test points (negative pressure less than -0.025 inches of water column across the slab based on negative pressure readings from each test/monitoring point), the SSDS is considered to be performing within specifications. Please see **Figure 7c** for a depiction of the planned monitoring locations.

SSDS Downtime

Should any damage or malfunction that poses an immediate threat to human health, safety, or the environment occur (significant system failures or drop in negative pressure greater than -0.25" wc across the slab), the issue will be addressed within 48 hours. For non-critical repairs that do not pose an immediate risk, issues will be addressed within 14 days. If an alarm goes off, monitoring of each test/monitoring point must be completed immediately to ensure no significant drop in pressure across the slab has occurred.

System Installation Oversight Performed

During the installation of the proposed system in the building addition, oversight will be performed daily to ensure that EGLE's Draft AVMS TOC is being followed, that the SSDS adheres to construction quality assurance measures as described in the AARST SGM-SF 2023 guidance document, and that the currently operating SSDS is not impacted by construction activities.

8.2.1.8 SYSTEM COMMISSIONING DOCUMENTATION

Following the installation of the SSDS within the building addition, ERG will complete system commissioning in accordance with EGLE's Draft AVMS TOC to confirm that the SSDS was installed correctly, and that the equipment is able to meet the proposed performance metrics during the SSDS startup. Because there is no data related to long-term groundwater monitoring and seasonal fluctuations of groundwater for the Site, it is possible groundwater may come within 4 feet of the structure. Therefore, SSDS commissioning will follow the timelines listed in the EGLE-provided table below:

Monitoring Time Frame(s)	**Time-period #1 Duration: 4 Days [Week 1]**	**Time-period #2 Duration: 3 Week(s) [Weeks 2, 3, 4]**	**Time-period #3 Duration: 2 Months [Months 2 and 3]**	**Time-period #4 Duration: 3 Quarters [Months 5-12]**
	1st Month of Operation		*1st Quarter*	*Remaining Year*
Meets previous performance metrics for previous period	Performance metrics are measured and met daily from Day 1 through Day 4	Performance metrics are measured and met Week 2 through Week 4	Performance metrics are measured and met monthly from Month 2 and Month 3	Performance metrics are measured and met quarterly from Month 5 through Month 12
Visual inspection of equipment and labels	As necessary	Weekly	Monthly	Quarterly
Verification of system operation	Daily	Weekly	Monthly	Quarterly
Air monitoring as a performance specification	Information will be identified.			
Air monitoring and discharge calculations	Information will be identified.			
Pressure Field Extension (PFE) monitoring	Daily	Weekly	Monthly	Quarterly
Notice to tenants	Initial date of notification shall be based upon system activation and updated if any modifications to the AVMS are required			
Identification of changes to the building and surrounding area	Owner will notify an appropriate contractor when changes occur to prompt further evaluation. Changes will be confirmed through site visits.			
System maintenance	Information and timeframes will be established during commissioning and based on the installed equipment or materials.			

8.2.1.9 SSDS – OM&M PLAN

An OM&M plan will be developed for the planned SSDS in the building addition based on the information obtained during the commissioning process so that the installed SSDS, the maintenance requirements of the equipment utilized, and the final operating parameters are accounted for in the OM&M Plan. The OM&M Plan will be provided in the DDCC.

8.3 NOTIFICATIONS

Prohibited activities will be outlined in each of the OM&M Plans and written notifications will be sent to management and other third parties that reside and/or perform any related activities that would disturb the exposure barriers or exacerbate unacceptable exposures of contamination. These include any contractors performing subsurface work, utilities, site staff, and residents. All residents will be informed of prohibited activities in one of three ways:

1. Existing residents will be informed at a monthly "house meeting". These meetings are translated from English to Spanish, and French. Attendance is taken at these meetings to verify that all residents received all pertinent information.
2. Existing residents who miss this meeting will have the information explained to them at their regular monthly meeting with their case manager.
3. New, incoming residents will receive the information and instructions at their intake meeting. This meeting takes place within 48 hours of arriving onsite.

In addition, written notifications informing residents of prohibited activities (e.g. interfering with SSDS fans/piping, digging, etc.) are currently posted in common areas and provided to all residents. If necessary, the notifications will be translated into a language residents understand. For the protection of Freedom House Detroit residents, resident names are kept confidential; a redacted sign-in sheet from house meetings where the information is verbally conveyed can be provided in future Documentation of Due Care Compliance submittals if requested by EGLE. Example notifications to contractors, utilities, and residents are presented in **Appendix H**.

8.4 PARTICULATE SOIL INHALATION

Analytical soil sample results from subsurface investigations at the Site have not identified contaminants above the Residential Particulate Soil Inhalation criteria; therefore, this pathway does not currently pose an unacceptable exposure risk at the Site.

8.5 SOIL VOLATILIZATION TO AMBIENT AIR

Analytical soil sample results from subsurface investigations at the Site have not identified contaminants above the Residential Infinite Source Volatile Soil Inhalation Criteria; therefore, this pathway does not currently pose an unacceptable exposure risk at the Site.

9.0 PROPOSED RESPONSE ACTIVITIES TO COMPLY WITH APPLICABLE DUE CARE RESULTS

Response activities necessary under Section 20107a(1)(b) also include compliance with Rule 1005, Rule 1009, Rule 1011, Rule 1015, Rule 1017, and Rule 1019 regarding conditions at the Site. The following rules are, or may be, applicable for the Site:

- Rule 1013(6) Notices to utility workers or other persons conducting activities at the property in an easement, under the terms of a utility franchise, or pursuant to severed subsurface mineral rights or severed subsurface formations.

The following actions will be undertaken to provide information on proposed response activities regarding applicable Due Care Rules stated above.

9.1 RULE 1013(6) NOTICE TO UTILITY WORKERS OR OTHERS CONDUCTING ACTIVITIES

The Submitter will provide written notice of the hazardous substances present at the Site to the following under Rule 1013(6):

- DTE; Electricity and Natural Gas Service (855-383-4249)
- Great Lakes Water Authority (GLWA) (313-865-1876)

The sample notice letter is included in **Appendix H**. Acknowledgement of receipt of documentation of letter submittals will be included in future submittals to document compliance.

Response activities necessary under Section 20107a(1)(b) also include compliance with Rule 1005, Rule 1009, Rule 1011, Rule 1015, Rule 1017 and Rule 1019 regarding conditions at the property. The provisions of these rules should be evaluated to determine if response activities may need to be undertaken. Their evaluation may be a simple reference to previous information that documents that the conditions at the property do not require any action to comply.

10.0 SIGNATURE OF ENVIRONMENTAL PROFESSIONALS

This report has been prepared for the sole benefit of Freedom House Detroit. The report may not be relied upon by any other person or entity without the express written consent of ERG.

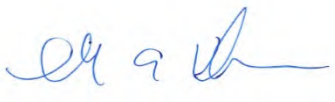
Respectfully submitted,

If you have any questions regarding this report, please contact ERG at 248-773-7986.

REPORT PREPARED BY:

Jake Henning, EIT
Staff Engineer

REPORT REVIEWED BY:



Donald A. Klinger
Senior Project Manager

11.0 REFERENCES

AARST SGM-SF 2023, Soil Gas Mitigation Standards for Existing Homes, prepared by AARST Consortium on National Standards, dated December 1, 2023

Active Vapor Mitigation Systems, Draft Table of Contents, prepared by Michigan Department of Environment, Great Lakes and Energy, Remediation and Redevelopment Division, dated October 19, 2023

Baseline Environmental Assessment, *Freedom House Detroit, 1777 North Rademacher Street, Detroit, Michigan 48209*, Detroit, Michigan, prepared by ERG, dated November 18, 2022.

Guidance Document for the Vapor Intrusion Pathway, MDEQ RRD, May 2013 (Amended 2023). *Exposure Barriers for the Direct Contract Pathway*; *Design, Documentation, and Management Guidance Under Part 201*, EGLE RRD, March 20, 2024 *Michigan Background Soil Survey*

Phase I Environmental Site Assessment, 1777. N. Rademacher Street, Detroit, Michigan, prepared by AKT Peerless, dated June 22, 2022

Phase I Environmental Site Assessment, 1777. N. Rademacher Street, Detroit, Michigan, prepared by AKT Peerless, dated June 6, 2024

Phase I Environmental Site Assessment, Freedom House Detroit, 1777 North Rademacher Street, Detroit, Michigan 48209, prepared by SME, dated July 1, 2022.

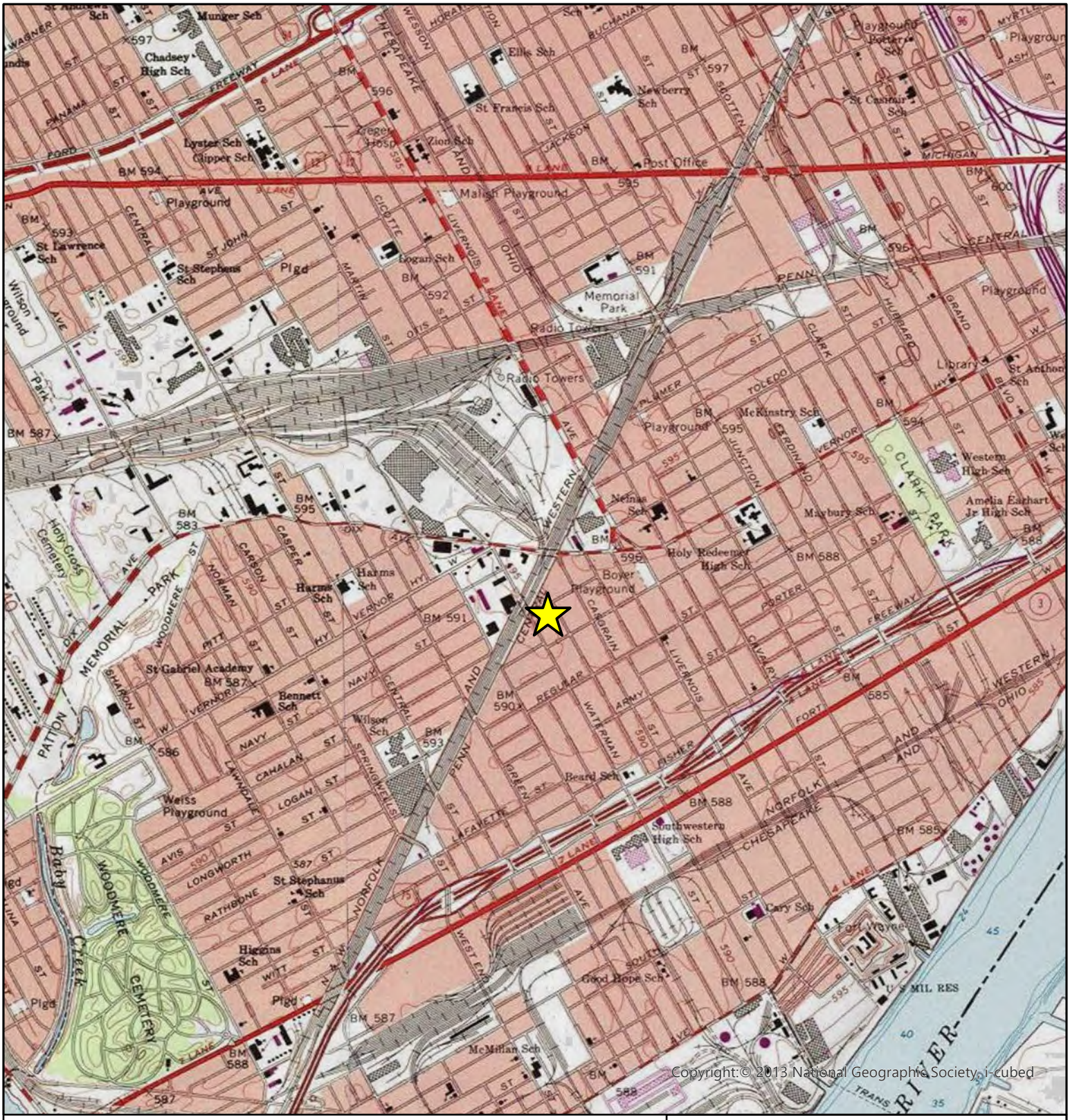
Phase II Environmental Site Assessment, *Freedom House Detroit, 1777 North Rademacher Street, Detroit, Michigan 48209*, prepared by ERG, dated October 12, 2022.

Soil Background and Use of the 2005 Michigan Background Soil Survey, prepared by EGLE, dated September 2019, revised January 2023

Vapor Intrusion Source Soil Investigation, Freedom House Detroit, 1777 North Rademacher Street, Detroit, Michigan 48209, prepared by ERG, dated July 26, 2024.

Vapor Intrusion System Operation & Maintenance (O&M) Plan, 1777 Rademacher St, Detroit, MI 48209, *Job# 1173-23,* prepared by Vapor Control Solutions, dated September 30th, 2024.

FIGURES



LEGEND

★ **Site Location**

N

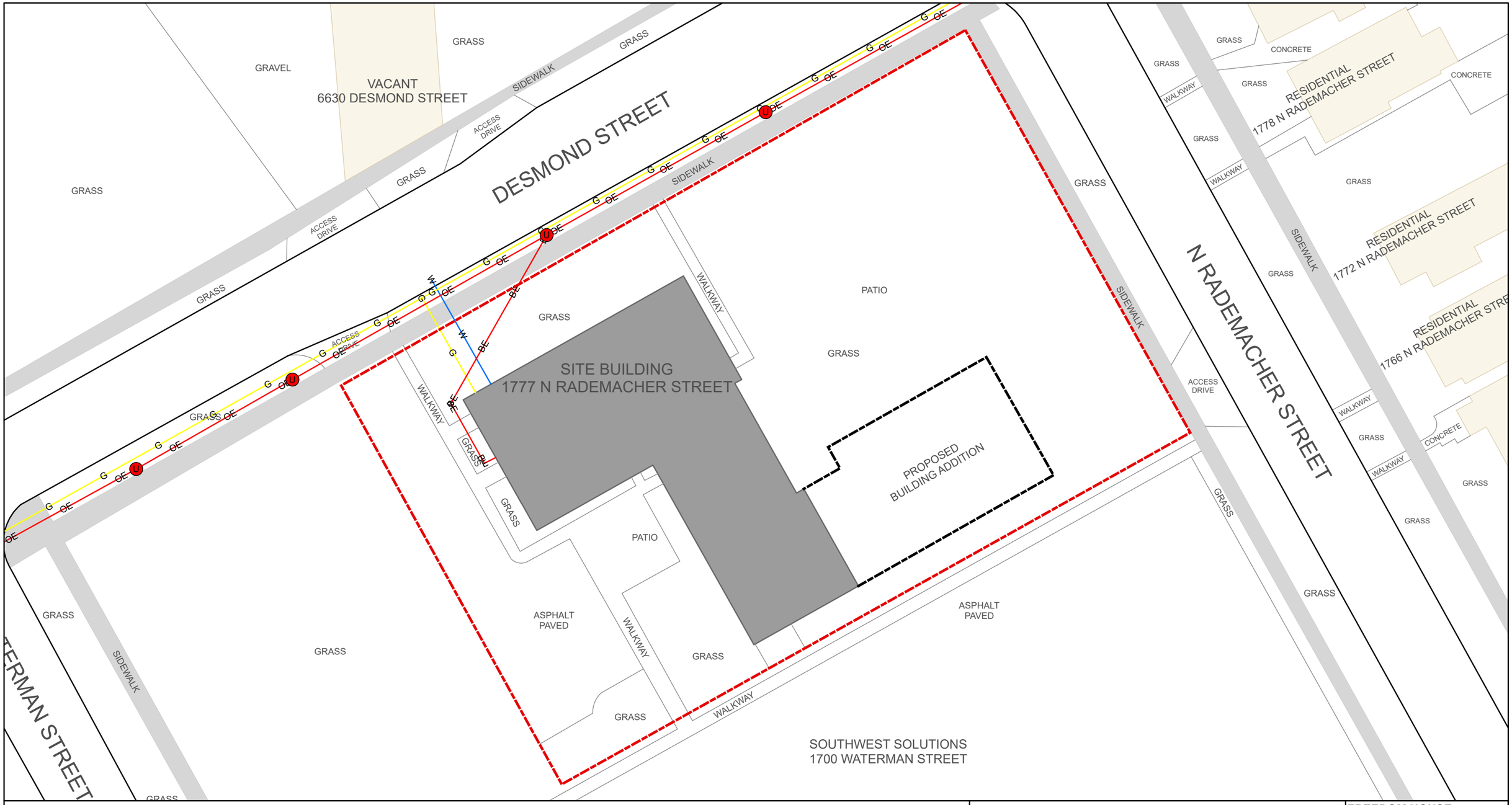
FEET

2000 1000 0 2000 4000

1 INCH = 2000 FEET

FREEDOM HOUSE DETROIT
1777 N RADEMACHER STREET, DETROIT, MI
SITE LOCATION MAP
JOB NO.: 9665
BY: JEC DATE: 9/1/2022
FIGURE 1

ERG Environmental Resources Group
28003 Center Oaks Court • Suite 106 • Wixom, MI • 48393
Phone: 248-773-7986 • Fax: 248-924-3108



LEGEND

- Site Boundary
- Utility Pole
- Overhead Electric
- Buried Electric
- Natural Gas
- Water

30 15 0 30 60 Feet

1 INCH = 30 FEET

N

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FREEDOM HOUSE DETROIT

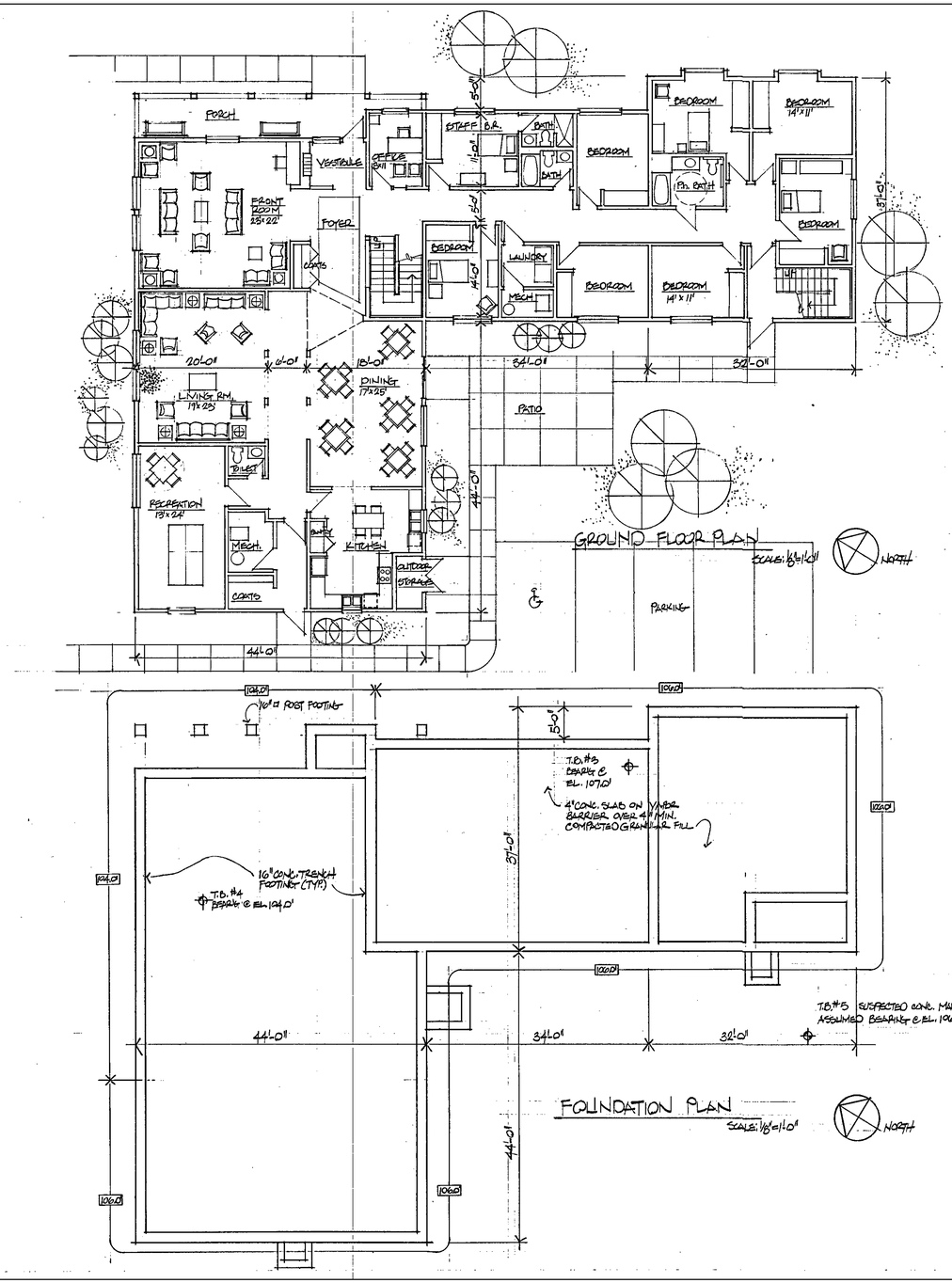
1777 N RADEMACHER STREET, DETROIT, MI

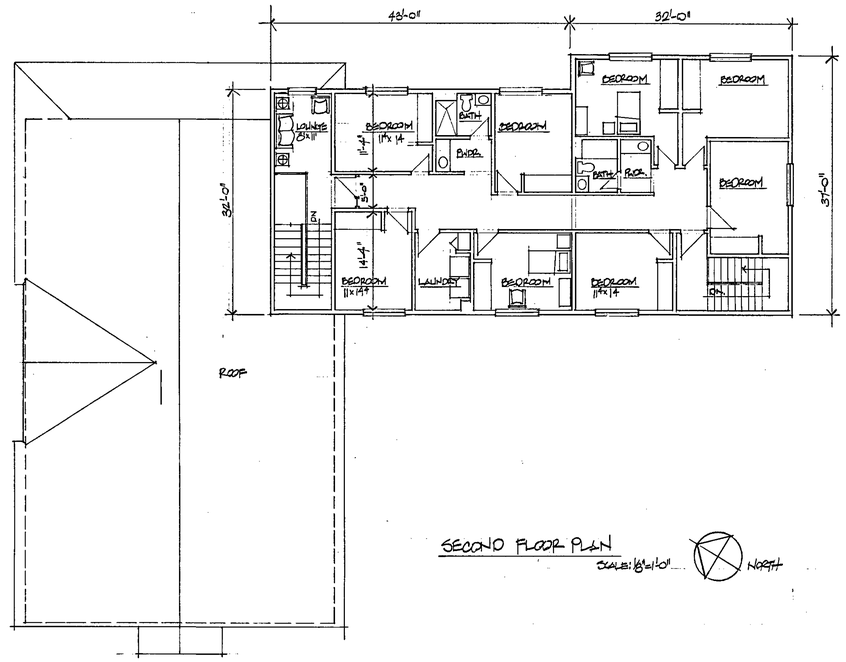
SITE LAYOUT MAP

JOB NO.: 9665

BY: JEC DATE: 10/22/2024

FIGURE 2





Southwest Detroit Community Mental Health Services, Inc.

2

10-18-89

REV. 4-6-90

REV. 4-12-90

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FREEDOM HOUSE DETROIT

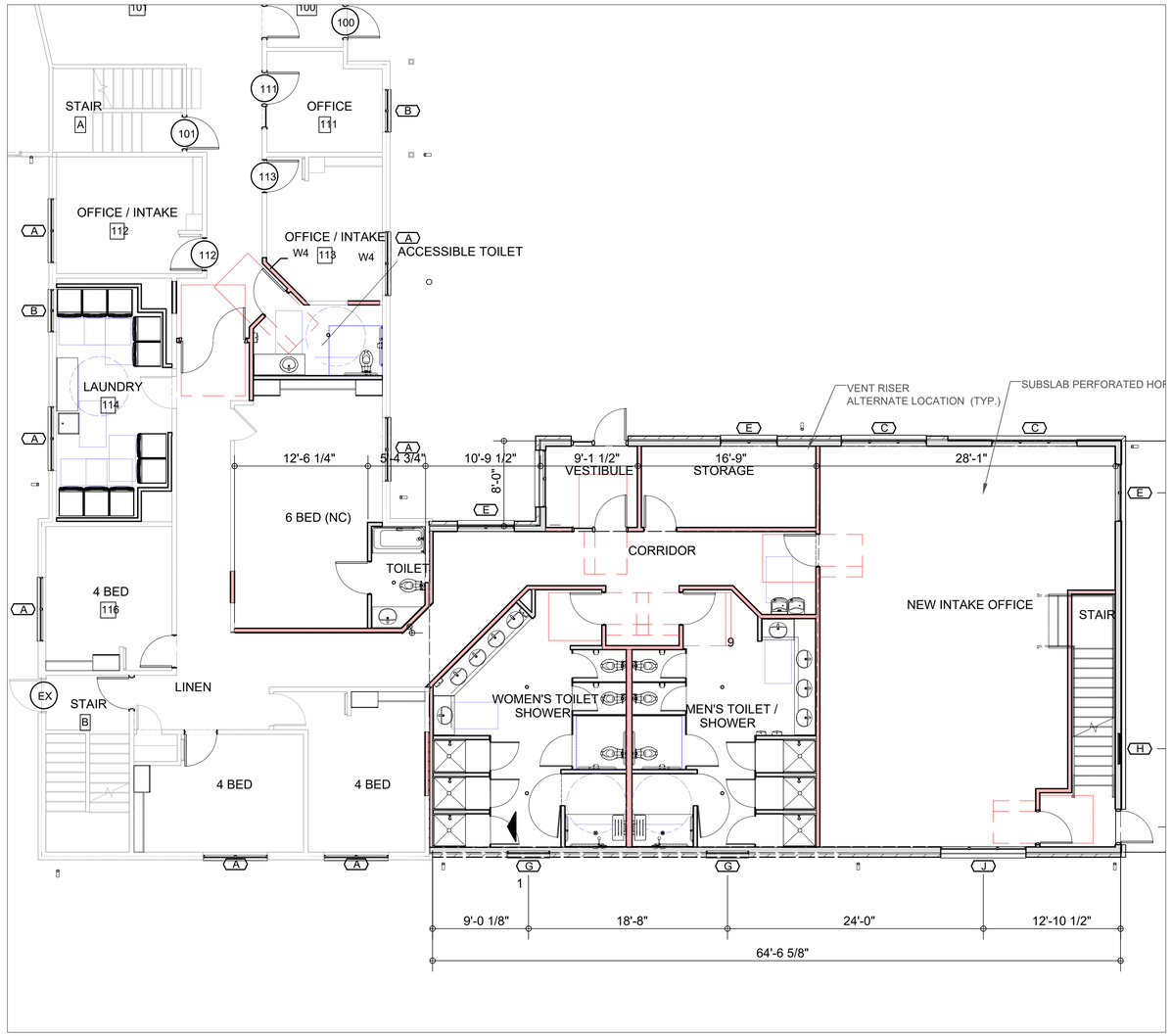
1777 N RADEMACHER, DETROIT, MI 48209

RESPONSE ACTIVITY PLAN

EXISTING BUILDING LAYOUT

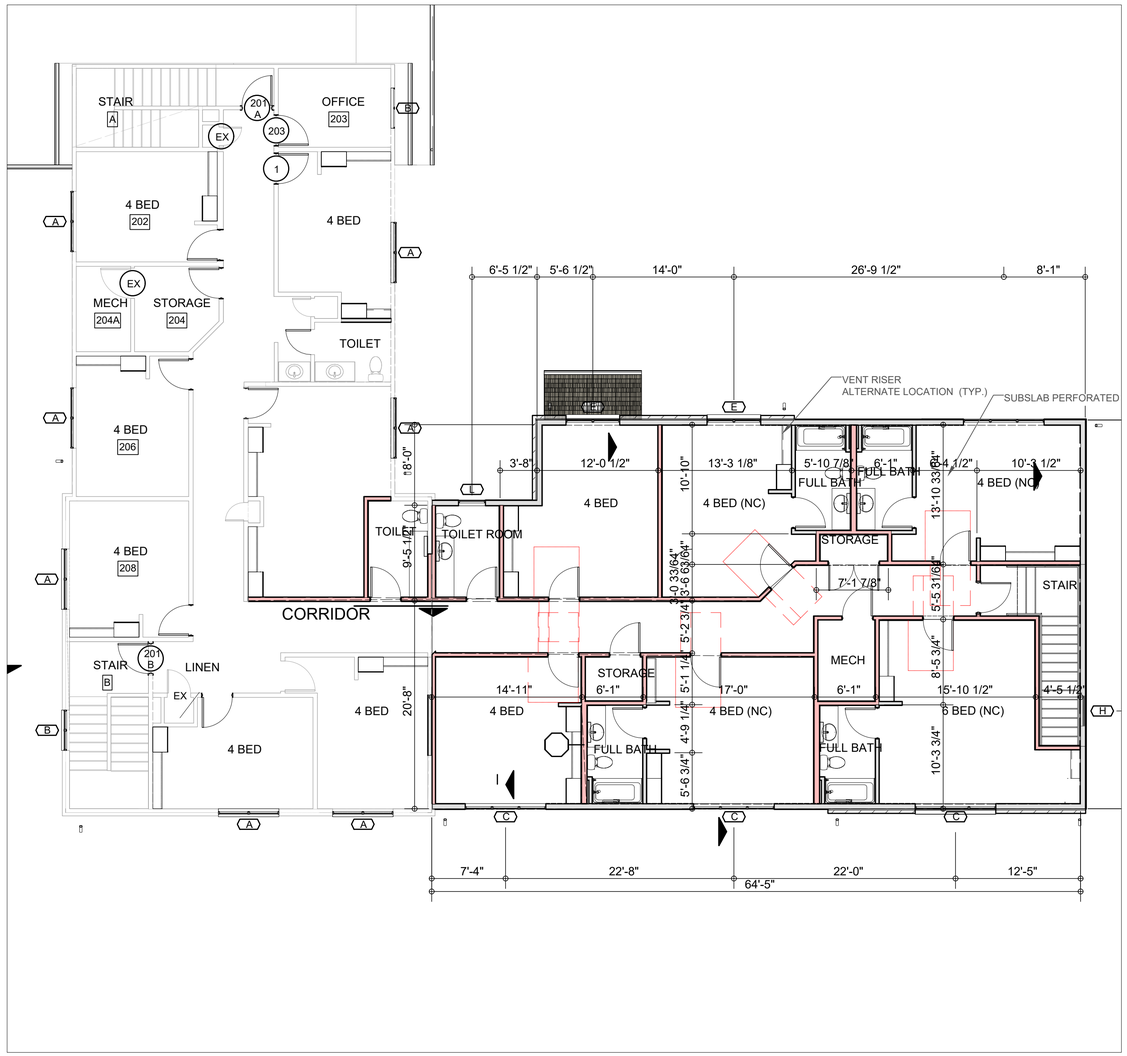
FIGURE **3a**

PROJECT NO. 9665



PROPOSED 1ST FLOOR LAYOUT

SCALE: NTS



PROPOSED 2ND FLOOR LAYOUT

SCALE: NTS

#	mm/yyyy	DESCRIPTION	.	.	.	.
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE

DWN BY JCH
DES BY
CHK BY
APP BY

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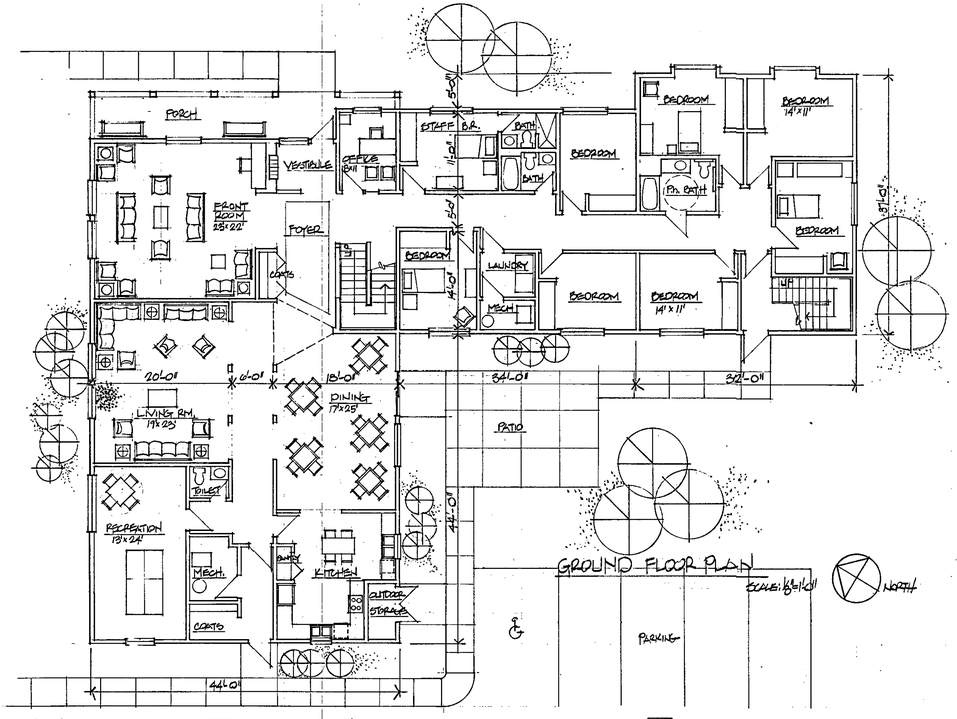
FREEDOM HOUSE DETROIT
1777 N RADEMACHER, DETROIT, MI 48209
RESPONSE ACTIVITY PLAN

PLANNED ADDITION LAYOUT

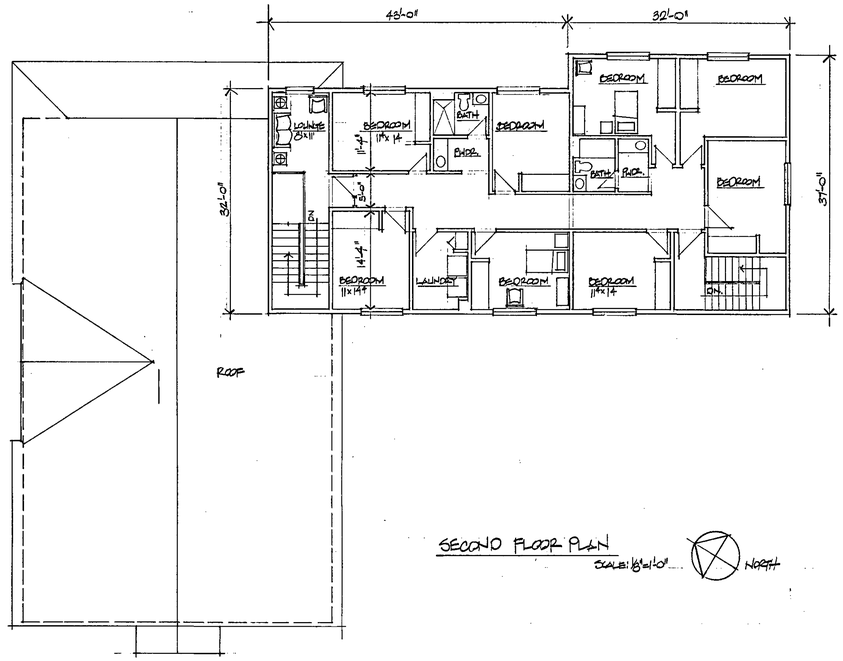
FIGURE
3b
PROJECT NO.
9665



GROUND FLOOR PLAN

SCALE: 1/8"=1'-0"

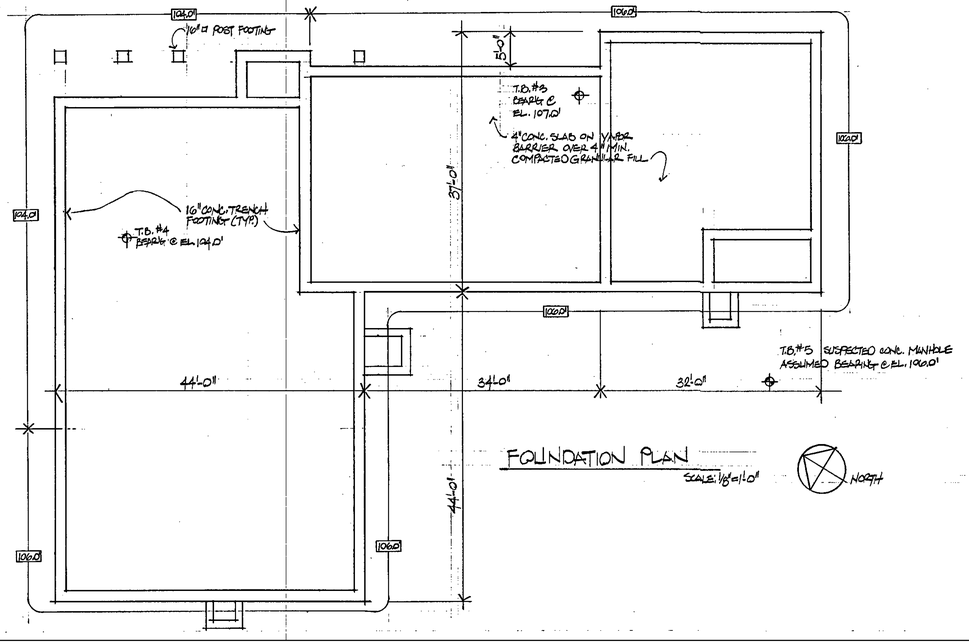
NORTH



SECOND FLOOR PLAN

SCALE: 1/8"=1'-0"

NORTH



FOUNDATION PLAN

SCALE: 1/8"=1'-0"

NORTH

Southwest Detroit Community Mental Health Services, Inc.

2

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FREEDOM HOUSE DETROIT

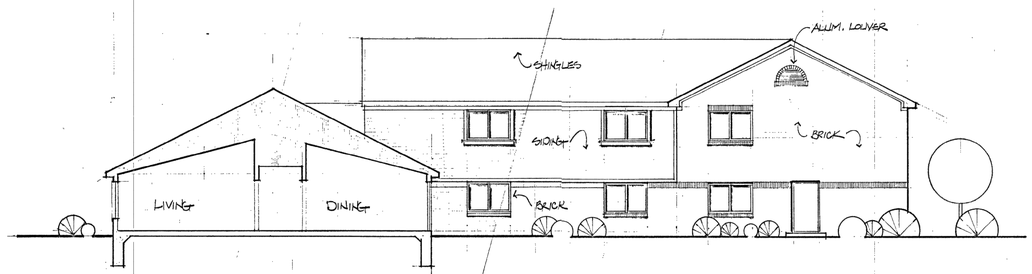
1777 N RADEMA CHER, DETROIT, MI 48209

RESPONSE ACTIVITY PLAN

EXISTING FOUNDATION PLAN

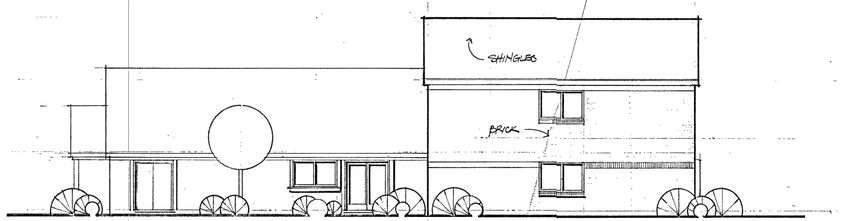
FIGURE 4a

PROJECT NO. 9665



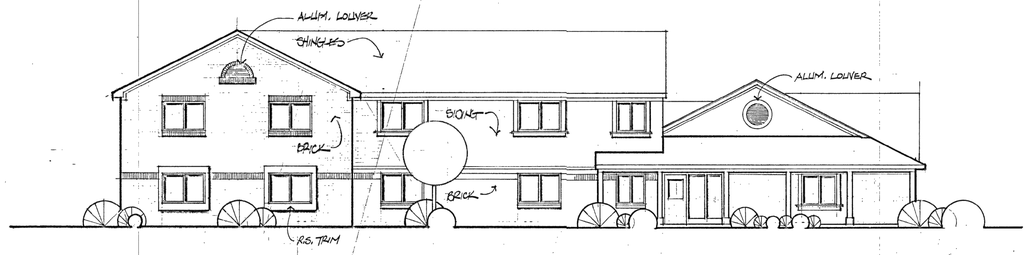
WEST ELEVATION

SCALE: 1/8" = 1'-0"



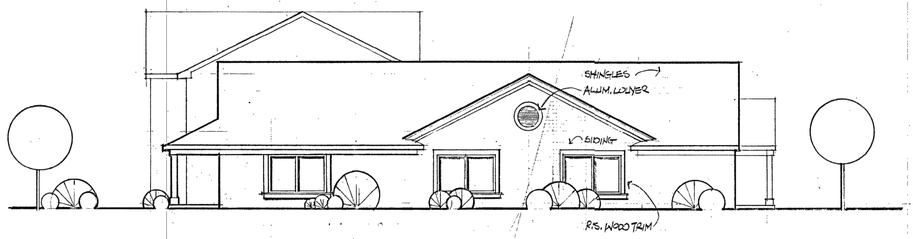
SOUTH ELEVATION

SCALE: 1/8" = 1'-0"



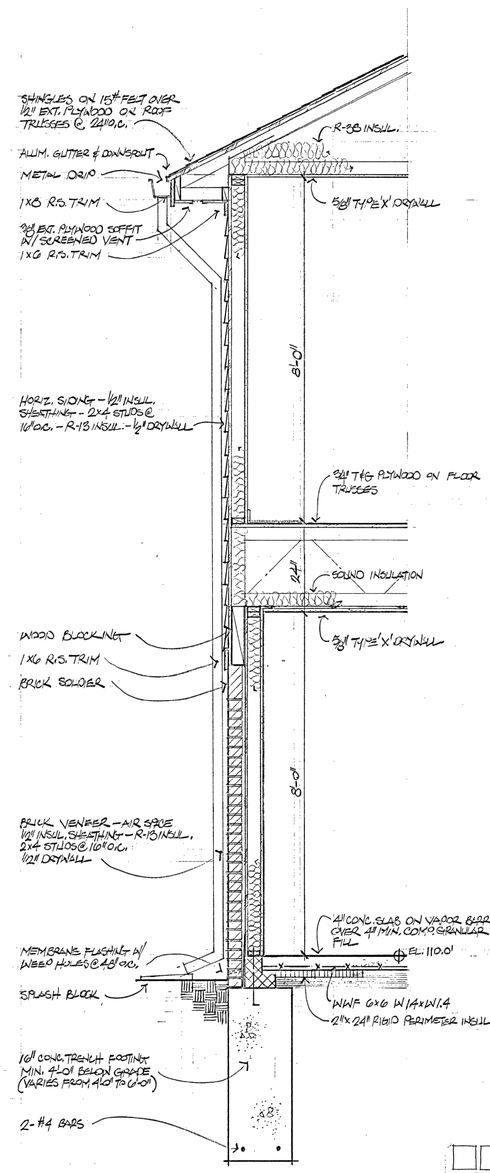
EAST ELEVATION

SCALE: 1/8" = 1'-0"



NORTH ELEVATION

SCALE: 1/8" = 1'-0"



WALL SECTION

SCALE: 3/4" = 1'-0"

Southwest Detroit Community Mental Health Services, Inc.

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FREEDOM HOUSE DETROIT
1777 N RADEMA CHER, DETROIT, MI 48209
RESPONSE ACTIVITY PLAN

EXISTING FOUNDATION DETAILS

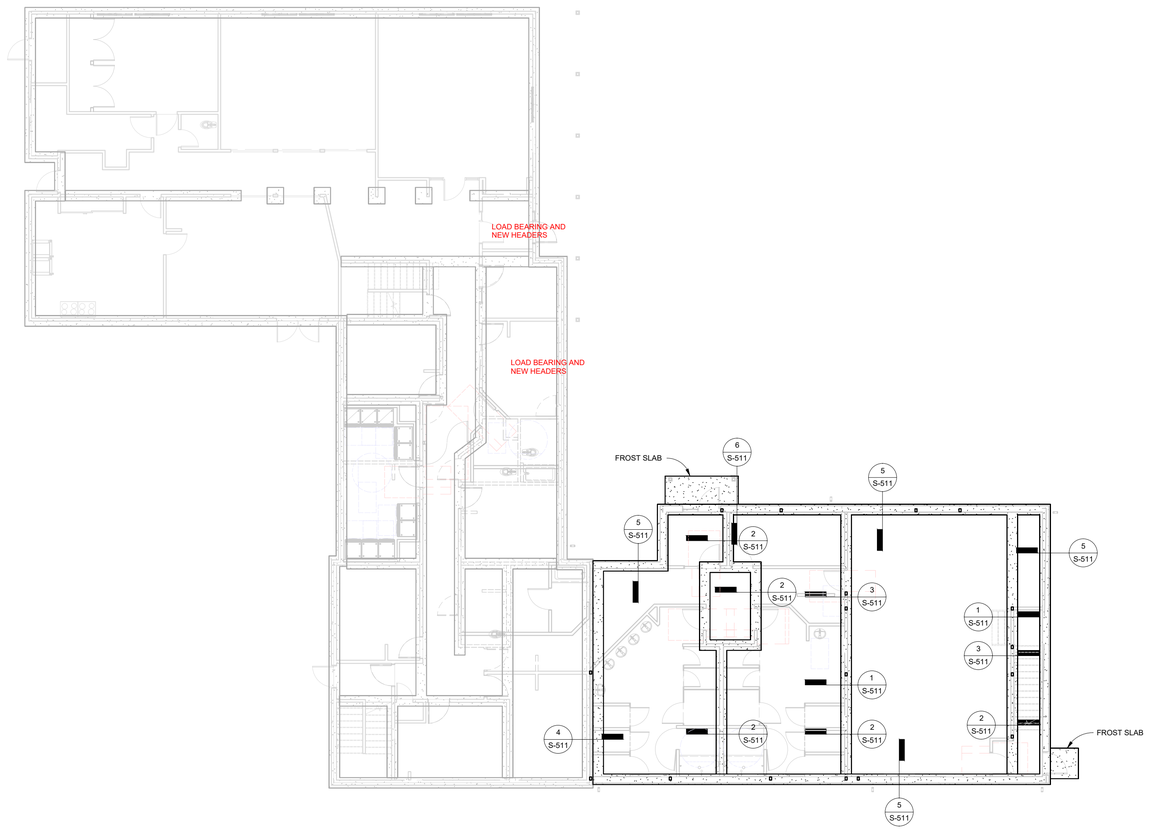
FIGURE **4b**

PROJECT NO. 9665

SPREAD FOOTING SCHEDULE				
Type Mark	Length	Width	Thickness	Reinforcing

FOUNDATION PLAN NOTES

1. REFER TO DRAWINGS FOR ADDITIONAL INFORMATION
   A. DRAWING S-001 THROUGH S-002 FOR STRUCTURAL GENERAL NOTES.
   B. DRAWING S-003 THROUGH S-004 FOR SPECIAL INSPECTIONS & TESTING.
   C. DRAWING S-005 THROUGH S-006 FOR STRUCTURAL SPECIFICATIONS.
2. TYPICAL DETAILS APPLY TO ALL DRAWINGS.
   USE THROUGHOUT EXCEPT WHERE OTHERWISE SHOWN OR NOTED.
3. DO NOT BACKFILL FOUNDATION WALLS UNTIL LOWER LEVEL SLAB ON GRADE AND ELEVATED SLAB HAVE BEEN PLACED AND ACHIEVE 75% REQUIRED f'c.
4. TOP OF SLAB REFERENCE ELEVATION = 0' - 0" U.O.N.
5. TOP OF INTERIOR SPREAD FOOTING ELEVATION = -0' - 8" U.O.N.
   TOP OF EXTERIOR SPREAD FOOTING ELEVATION = -1' - 0" U.O.N.
   TOP OF EXTERIOR TRENCH FOOTING ELEVATION = -0' - 8" U.O.N.
6. PERIMETER AND EXTERIOR FOOTINGS SHALL BEAR 42" BELOW FINISH GRADE MINIMUM.
7. FOOTINGS SHALL BE PLACED ON COLUMN CENTERLINES U.O.N.
8. FOOTINGS SHALL BEAR ON NATIVE UNDISTURBED SOIL OR ENGINEERED FILL HAVING A MINIMUM NET ALLOWABLE BEARING CAPACITY OF 3000 PSF.
9. CONTINUOUS REINFORCING IN CONCRETE TRENCH FOOTINGS SHALL BE LAPPED IN ACCORDANCE WITH TENSION LAP SPLICE SCHEDULE. PROVIDE CORNER BARS AT ALL CORNERS AND INTERSECTIONS, SIZE AND QUANTITY TO MATCH CONTINUOUS REINFORCING.
10. REFER TO CIVIL AND PLUMBING DRAWINGS FOR DRAIN TILE AND STORM SEWER SYSTEM TIE IN LOCATIONS.
11. REFER TO SECTIONS & DETAILS FOR MASONRY SIZE & REINFORCING.
12. CONCRETE SLAB ON GRADE:
    A. S-1, TYP:
       4" THICK NORMAL WEIGHT CONCRETE W/ REINFORCING: 4 PCY - MACRO-SYNTHETIC FIBERS
       OVER 4" COMPACTED GRANULAR FILL
       SLAB ON GRADE CONTROL JOINTS AT 10' - 0" OC MAX.
       MAX ASPECT RATIO OF 1.5:1
13. SLAB ON GRADE FLOOR FLATNESS / LEVELNESS:
    MINIMUM OVERALL FLATNESS / LEVELNESS F50, F35.
    MINIMUM LOCAL FLATNESS / LEVELNESS F35, F24.
14. MINIMUM OF 4" COARSE AGGREGATE TO BE PLACED BETWEEN CONCRETE SLAB AND SUBGRADE



N FOUNDATION PLAN
SCALE: 1/8" = 1'-0"

FUSCO, SHAFFER & PAPPAS, INC.
ARCHITECTS AND PLANNERS
550 E. NINE MILE ROAD
FERNDALE, MICHIGAN, 48220
PHONE 248.543.4100 FAX 248.543.4141

CARNAGHI STRUCTURAL CONSULTING
16950 19 Mile Road, Suite 8 • Clinton Township, MI 48038
Phone: (586) 277-0700 • Website: carnaghisc.com
CSC PROJECT NUMBER: 24058

SEAL

TRANSITIONAL HOUSING
FREEDOM HOUSE DETROIT
1777 N. RADEMACHER ST
DETROIT MICHIGAN

DATE	ISSUE

KEY PLAN

FSP PROJECT NO.
FHD21.091

DRAWING TITLE
Foundation Plan

DRAWING NUMBER
S-101

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Phone: 248-773-7986 • Fax: 248-924-3108

FREEDOM HOUSE DETROIT
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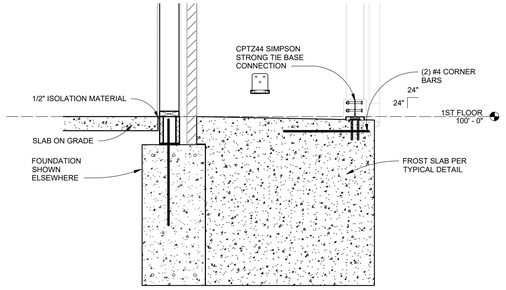
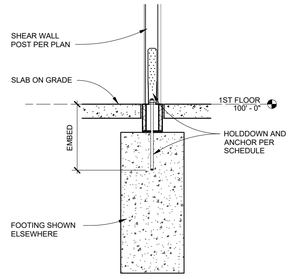
RESPONSE ACTIVITY PLAN
BUILDING ADDITION FOUNDATION PLAN

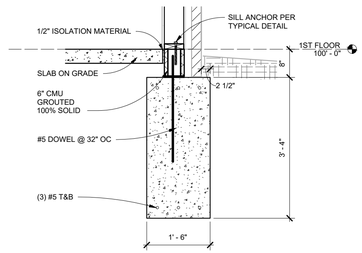
FIGURE
4c
PROJECT NO.
9665



6 S-100 SECTION
SCALE: 3/4" = 1'-0"



3 S-100 SECTION
SCALE: 3/4" = 1'-0"



5 S-100 SECTION
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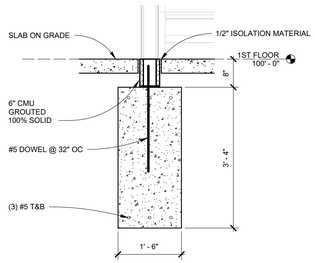
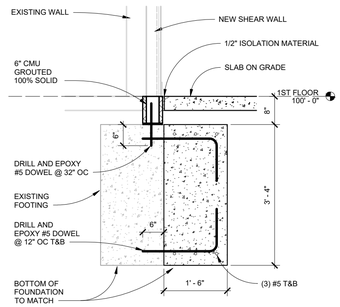
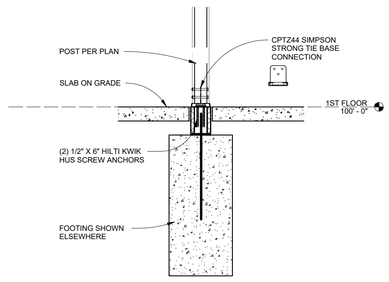


2 S-100 SECTION
SCALE: 3/4" = 1'-0"



4 S-100 SECTION
SCALE: 3/4" = 1'-0"



1 S-100 SECTION
SCALE: 3/4" = 1'-0"

NOTE: A MINIMUM OF 4" COARSE AGGREGATE IS TO BE PLACED BETWEEN THE SLAB AND SUBGRADE

FUSCO, SHAFFER & PAPPAS, INC.
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CARNAGHI STRUCTURAL CONSULTING
16950 19 Mile Road, Suite 8 • Clinton Township, MI 48038
Phone: (586) 277-0700 • Website: carnaghisc.com

CSC PROJECT NUMBER: 24058

SEAL

TRANSITIONAL HOUSING

FREEDOM HOUSE DETROIT

1777 N. RADEMACHER ST DETROIT MICHIGAN

DATE	ISSUE

KEY PLAN

FSP PROJECT NO.
FHD21.091

DRAWING TITLE

Sections & Details

DRAWING NUMBER

S-511

ERG Environmental Resources Group
28003 Center Oaks Court • Suite 106 • Wixom, MI • 48393
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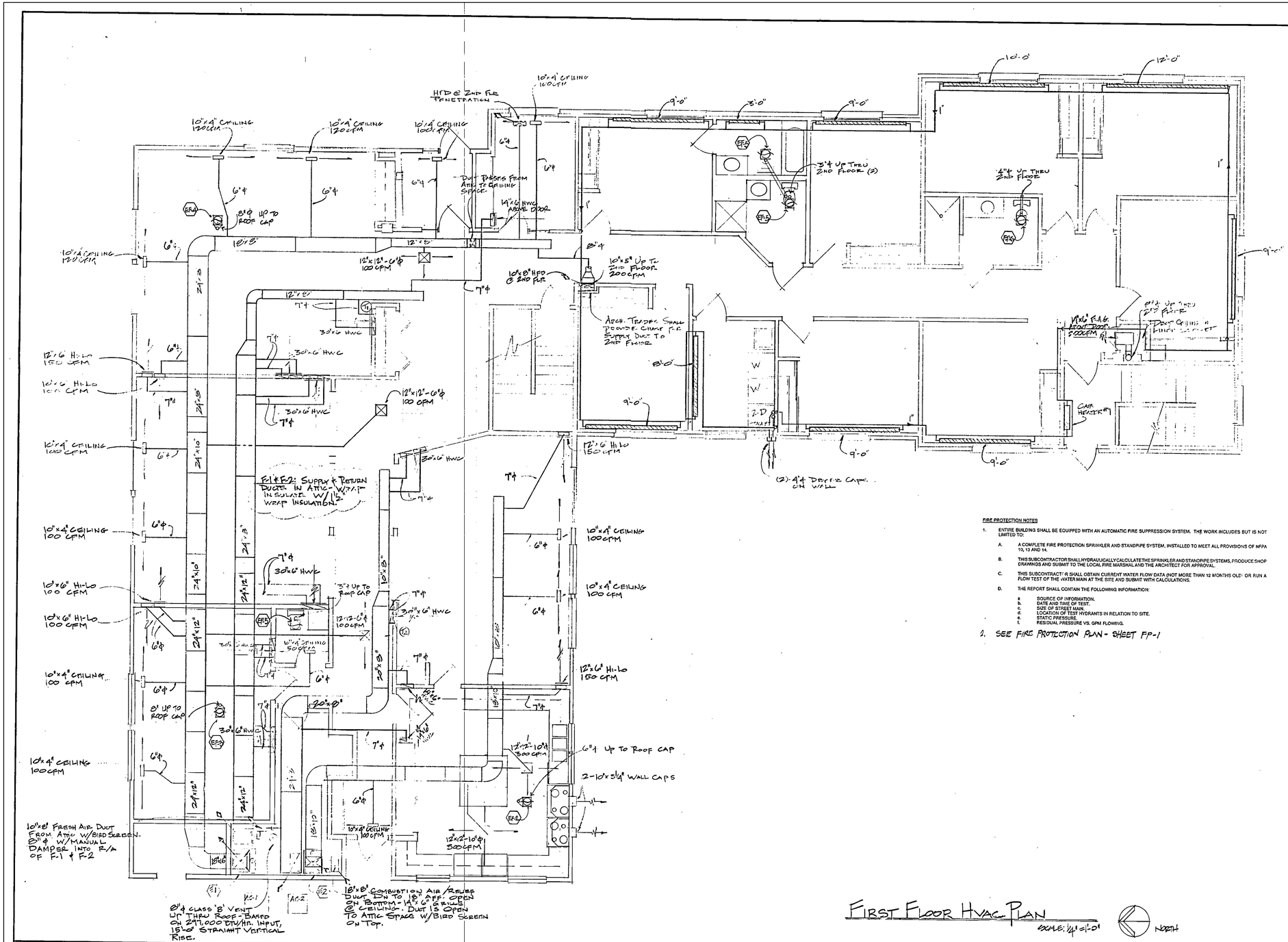
FREEDOM HOUSE DETROIT
1777 N RADEMA CHER, DETROIT, MI 48209
RESPONSE ACTIVITY PLAN

BUILDING ADDITION FOUNDATION DETAILS

FIGURE
4d
PROJECT NO.
9665



FIRE PROTECTION NOTES

1. ENTIRE BUILDING SHALL BE EQUIPPED WITH AN AUTOMATIC FIRE SUPPRESSION SYSTEM. THE WORK INCLUDES BUT IS NOT LIMITED TO:
   - A. A COMPLETE FIRE PROTECTION SPRINKLER AND STANDPIPE SYSTEM, INSTALLED TO MEET ALL PROVISIONS OF NFPA 13, 13 AND 14.
   - B. THIS SUBCONTRACTOR SHALL HYDRAULICALLY CALCULATE THE SPRINKLER AND STANDPIPE SYSTEMS, PRODUCE SHOP DRAWINGS AND SUBMIT TO THE LOCAL FIRE MARSHAL AND THE ARCHITECT FOR APPROVAL.
   - C. THIS SUBCONTRACT: R SHALL OBTAIN CURRENT WATER FLOW DATA (NOT MORE THAN 12 MONTHS OLD) OR RUN A FLOW TEST OF THE WATER MAIN AT THE SITE AND SUBMIT WITH CALCULATIONS.
   - D. THE REPORT SHALL CONTAIN THE FOLLOWING INFORMATION:
     - a. SOURCE OF INFORMATION.
     - b. DATE AND TIME OF TEST.
     - c. SIZE OF STREET MAIN.
     - d. LOCATION OF TEST HYDRANTS IN RELATION TO SITE.
     - e. STATIC PRESSURE.
     - f. RESIDUAL PRESSURE VS. GPM FLOWING.
2. SEE FIRE PROTECTION PLAN - SHEET FP-1

FIRST FLOOR HVAC PLAN

SCALE: ¼" = 1'-0"

NORTH

Rademacher Lodge

Detroit, Michigan

FUSCO SHAFFER & PAPPAS INC.
ARCHITECTS AND PLANNERS
28383 FRANKLIN ROAD
SOUTHFIELD, MICHIGAN 48034
313-356-3400

DEVELOPMENT TEAM

ARCHITECT
FUSCO, SHAFFER & PAPPAS, INC.
28362 Franklin Road
Southfield, Michigan 48034
(313) 356-3400

CIVIL ENGINEER
ZEIMET, WOZNIAK & ASSOCIATES, INC.
29450 Franklin Road
Southfield, Michigan 48034
(313) 352-8950

GENERAL CONTRACTOR
LIBERTY CONSTRUCTION CORP.
28388 Franklin Road
Southfield, Michigan 48034
(313) 350-4000

DATE	ISSUE
4-15-91	BIDDING
2-14-91	
12-3-90	PERMIT

KEY PLAN

DRAWING TITLE
FIRST FLOOR MECHANICAL PLAN

DRAWING NO.
M-1

TELEDYNE POST 15AB 20 – 24 x 36

ERG Environmental Resources Group
28003 Center Oaks Court • Suite 106 • Wixom, MI • 48393
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FREEDOM HOUSE DETROIT
1777 N RADEMA CHER, DETROIT, MI 48209
RESPONSE ACTIVITY PLAN

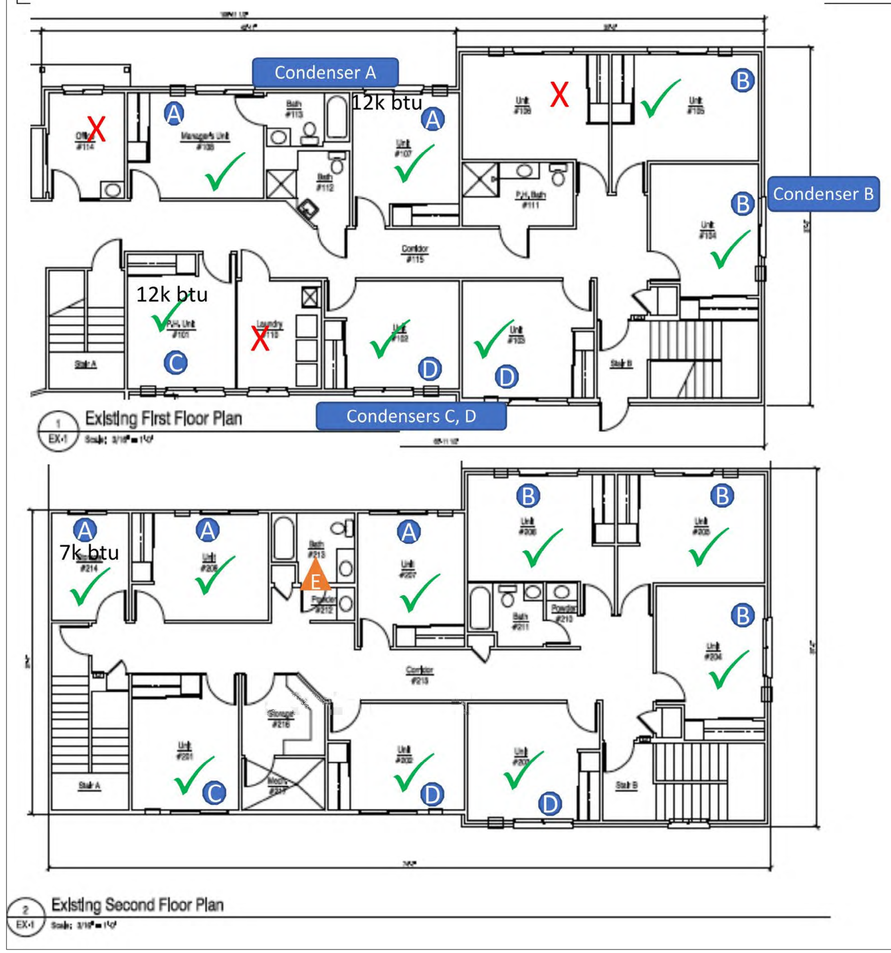
EXISTING SINGLE STORY STRUCTURE HVAC LAYOUT

FIGURE 5a

PROJECT NO. 9665

Freedom House Detroit
HVAC Scope Revised: 8/30/23

- New mini-split units installed in 16 rooms with ✓. 15 units have 9,000 BTU ductless mini-split units. 1 room has 7,000 BTU (2nd story office). 2 rooms have 12,000 BTU units (noted below).
- All existing baseboard elements and a/c units were removed.
- 4 condensers installed and projected by steel security gates.
- Condensers mapped as follows:
    - Condenser A (4 ton): Rooms 214 (7kBTU), 208, 207, 106, 107 (12kBTU)
    - Condenser B (4 ton): Rooms 206, 205, 204, 105, 104)
    - Condenser C (2 ton) Rooms 201, 101 (12k BTU)
    - Condenser D (4 ton): Rooms 202, 203, 102, 103
- Electric Panel upgraded electric circuits /breakers as needed for new condensers
- Electric Heater Wall Unit install in Bathroom # 213
- Central Controlled operating system controlled by building staff.
- Rooms with "X" not included.



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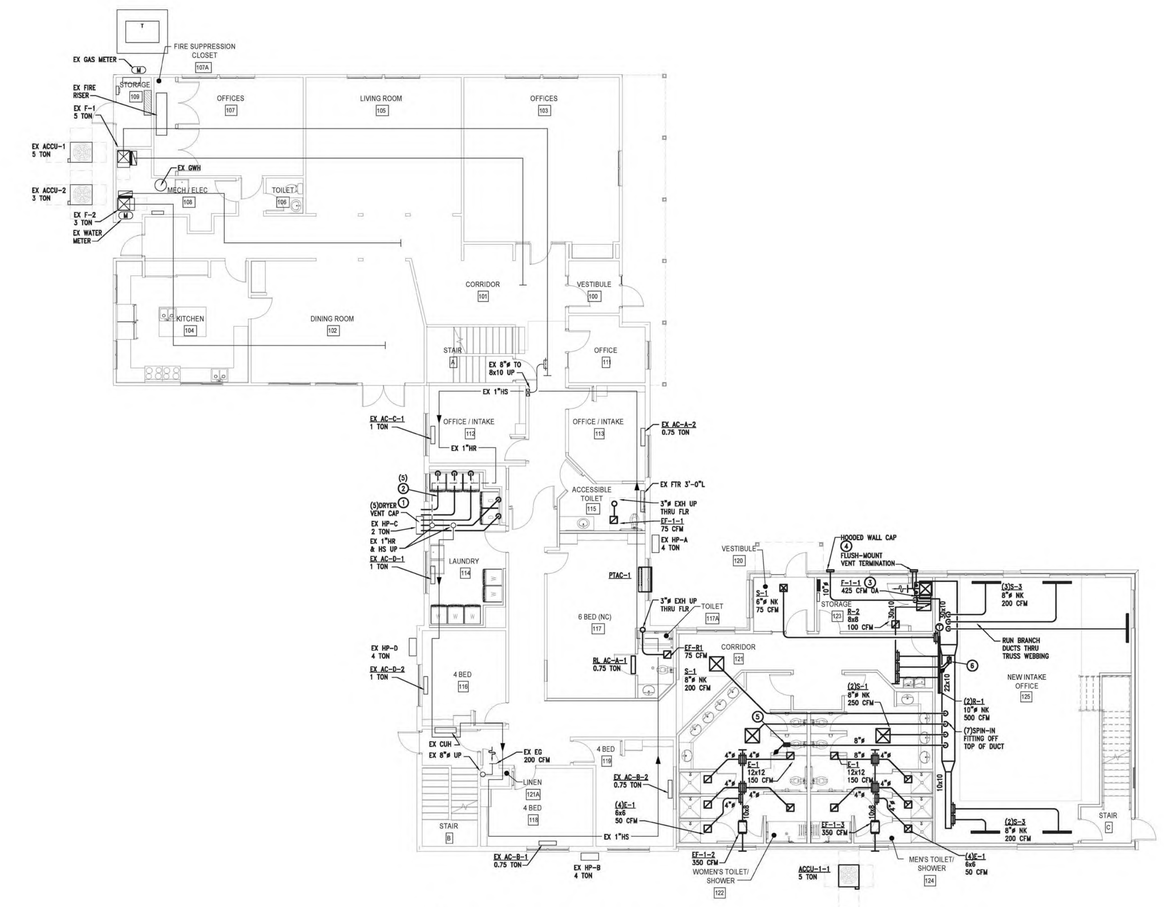
FREEDOM HOUSE DETROIT
1777 N RADEMA CHER, DETROIT, MI 48209
RESPONSE ACTIVITY PLAN

EXISTING TWO-STORY STRUCTURE HVAC LAYOUT

FIGURE
5b
PROJECT NO.
9665



First Floor Plan - HVAC

GENERAL NOTES

A. THE DRAWINGS ARE DIAGRAMMATIC AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/ COORDINATION/SHOP DRAWINGS AND COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE ADDITIONAL FITTINGS AND OFFSETS THAT MAY BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, DUCTWORK, PIPING SYSTEMS, ELECTRICAL CONDUIT, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC., AND/OR OTHER SPACE CONSTRAINTS.

B. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF LIGHTS, CEILING DROPS, ELEVATIONS, ETC.

C. COORDINATE NEW WORK WITH ALL OTHER TRADES.

D. PROVIDE YOUNG REGULATOR, BOWDEN CABLE BALANCING DAMPERS AND CONTROLS FOR ALL CONCEALED DAMPERS.

E. ALL EXPOSED DUCTWORK TO BE DOUBLE WALL INSULATED GALVANIZED SPIRAL DUCT WITH GASKETS, NO SEALANT ACCEPTED. PREPARE DUCTWORK FOR FIELD PAINTING.

F. ANY EXPOSED RECTANGULAR OR TRANSITION SUPPLY DUCTWORK SHALL BE INTERNALLY LINED WITH 1" ARMAFLEX DUCT LINER.

G. PROVIDE PROVIDE 1" ARMAFLEX AP DUCT LINING IN RETURN DUCTWORK TO UNIT.

H. DO NOT RUN PIPING OR DUCTWORK OVER ELECTRICAL PANELS. COORDINATE WITH ELECTRICAL CONTRACTOR.

KEY NOTES:

1. CONNECT (2) NEW DRYER VENT TO EXISTING VENT CAPS AND PROVIDE (3) NEW DRYER VENT CAP ADJACENT TO EXISTING. FIELD VERIFY EXACT LOCATION.
2. 4"ø DRYER VENT DOWN AND OFFSET UP THRU WALL WITH DRYER VENT CAP. DRYER VENT SHALL BE CONSTRUCTED OF ALL RIGID SHEET METAL WITH SMOOTH INTERIOR FINISH. THE MALE END OF DUCT JOINTS SHALL BE SEALED WITH NON-COMBUSTIBLE MATERIAL AND SHALL NOT BE FASTENED WITH SHEET METAL SCREWS OR OTHER FASTENING MEANS WHICH EXTEND INTO THE DUCT. WRAP DUCTWORK WITH ZERO CLEARANCE UL LISTED TWO HOUR RATED INSULATION. PROVIDE DRYER VENT "LENGTH IDENTIFICATION LABEL" PER IMC SECTION 504.4.5, INFORMATION ON THE LABEL MUST BE ACTUAL LENGTH PROVIDED BY INSTALLER.
3. SUPPLY AND RETURN DUCTS UP TO UNDERSIDE OF TRUSS SPACE. COORDINATE ROUTING WITH STRUCTURAL AND OTHER TRADES. PROVIDE 8"ø SPIN-IN FITTING AND EXTEND TO SUPPLY GRILLE (S-2, 10x6, 100 CFM) ABOVE DOOR.
4. OUTDOOR AIR HOODED CAP WITH BIRDSCREEN, EXTEND AND CONNECT 10"ø DUCT (MINIMUM 26 GAUGE) TO RETURN AIR MAIN WITH BACKDRAFT DAMPER.
5. TRANSITION 8"ø TO 10x6 SUPPLY DUCT AND EXTEND UP THRU FLOOR WITH FIRE DAMPER.
6. TRANSITION 8"ø TO 6x10 RETURN DUCT AND EXTEND UP THRU FLOOR WITH FIRE DAMPER.

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SEAL

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No. 6201034939
PROFESSIONAL ENGINEER

TRANSITIONAL HOUSING
FREEDOM HOUSE DETROIT
MICHIGAN
DETROIT

DATE	ISSUE
01.06.25	POST-BID ADDENDUM #1
10.28.24	BID SET
09.06.24	PERMIT SET

IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS, TO EXAMINE THE COMPLETE SET OF DRAWINGS AND SPECIFICATIONS FOR THE WORK AND TO PROVIDE LABOR AND MATERIAL FOR THEIR RESPECTIVE AREA OF WORK FOR A COMPLETE AND FINISHED INSTALLATION IN COMPLIANCE WITH THE INTENT OF THE DRAWINGS AND THE SPECIFICATIONS. THE WORK SHALL BE IN COMPLIANCE WITH ALL CODES AND ORDINANCES THAT ARE APPLICABLE TO THE PROJECT. SUBMITTAL OF PROPOSAL IMPLIES THAT THE CONTRACTOR AND/OR SUBCONTRACTOR IS FULLY CONVERSANT WITH AND AWARE OF ALL REQUIREMENTS OF ALL DIVISIONS AND DOCUMENTS OF THE CONTRACT DOCUMENTS.

FSP PROJECT NO.
FHD21.091

DRAWING TITLE
FIRST FLOOR PLAN - HVAC

DRAWING NUMBER
M.101

MAENGINEERING
MECHANICAL ELECTRICAL
180 High Oak Rd, Suite 200 | (248) 258 | 1610
Bloomfield, Michigan 48304 | (248) 258 | 9538
Job No.: 86090

H:\ACAD\TILED\86090-Freedom House Phase 1 #21-091\CAD\MECH\86090_M.101 First Floor Plan - HVAC.dwg, 10/23/2024 10:42:21 AM, dberry

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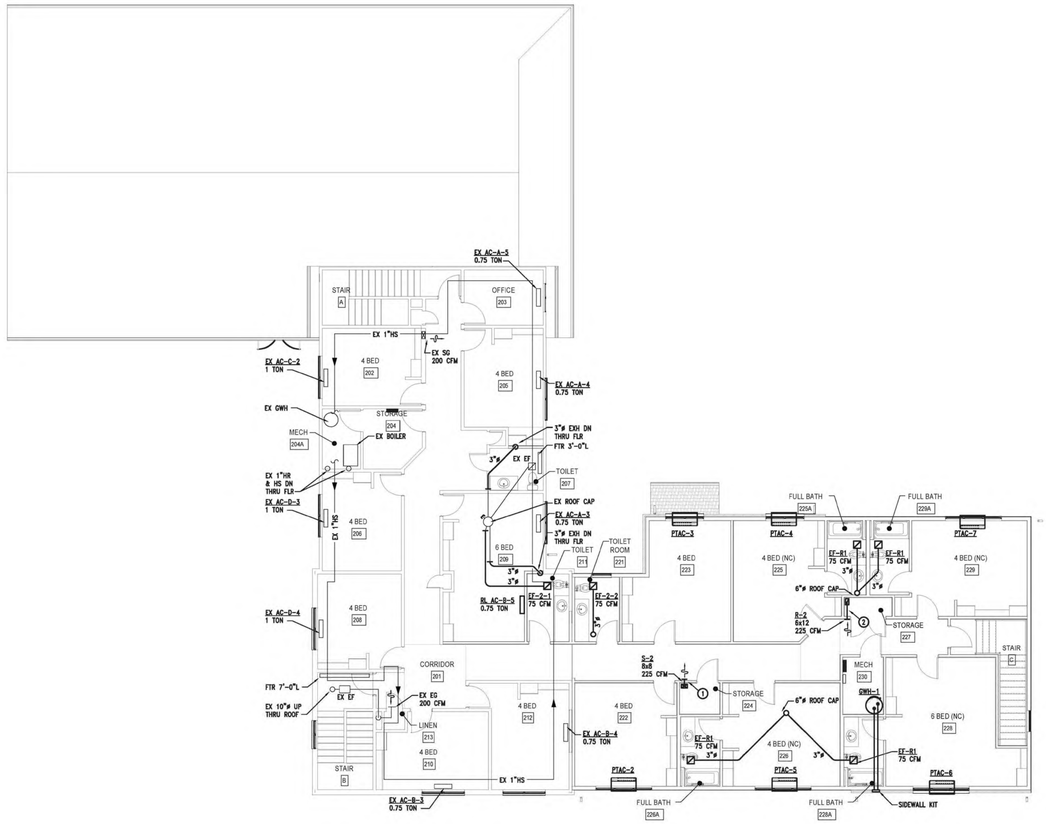
FREEDOM HOUSE DETROIT
1777 N RADEMA CHER, DETROIT, MI 48209
RESPONSE ACTIVITY PLAN

BUILDING ADDITION FIRST FLOOR HVAC LAYOUT

FIGURE
5c
PROJECT NO.
9665



N

Second Floor Plan - HVAC

SCALE: 1/8" = 1'-0"

GENERAL NOTES

A. THE DRAWINGS ARE DIAGRAMMATIC AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/ COORDINATION/SHOP DRAWINGS AND COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE ADDITIONAL FITTINGS AND OFFSETS THAT MAY BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, DUCTWORK, PIPING SYSTEMS, ELECTRICAL CONDUIT, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC., AND/OR OTHER SPACE CONSTRAINTS.

B. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF LIGHTS, CEILING DROPS, ELEVATIONS, ETC.

C. COORDINATE NEW WORK WITH ALL OTHER TRADES.

D. PROVIDE YOUNG REGULATOR, BOWDEN CABLE BALANCING DAMPERS AND CONTROLS FOR ALL CONCEALED DAMPERS.

E. ALL EXPOSED DUCTWORK TO BE DOUBLE WALL INSULATED GALVANIZED SPIRAL DUCT WITH GASKETS, NO SEALANT ACCEPTED. PREPARE DUCTWORK FOR FIELD PAINTING.

F. ANY EXPOSED RECTANGULAR OR TRANSITION SUPPLY DUCTWORK SHALL BE INTERNALLY LINED WITH 1" ARMAFLEX DUCT LINER.

G. PROVIDE PROVIDE 1" ARMAFLEX AP DUCT LINING IN RETURN DUCTWORK TO UNIT.

H. DO NOT RUN PIPING OR DUCTWORK OVER ELECTRICAL PANELS. COORDINATE WITH ELECTRICAL CONTRACTOR.

KEY NOTES:

1. 10x6 SUPPLY DUCT DOWN THRU FLOOR WITH FIRE DAMPER, PROVIDE SUPPLY GRILLE 12"BELOW CEILING.
2. 6x10 RETURN DUCT DOWN THRU FLOOR WITH FIRE DAMPER, PROVIDE RETURN REGISTER 12"BELOW CEILING.

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SEAL

STATE OF MICHIGAN
SALIM M. SESSINE
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No. 6201034939
PROFESSIONAL ENGINEER

MICHIGAN

TRANSITIONAL HOUSING

FREEDOM HOUSE DETROIT

DETROIT

DATE	ISSUE
01.06.25	POST-BID ADDENDUM #1
10.28.24	BID SET
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FSP PROJECT NO.
FHD21.091

DRAWING TITLE

SECOND FLOOR PLAN - HVAC

DRAWING NUMBER

M.102

MAENGINEERING
MECHANICAL ELECTRICAL
180 High Oak Rd., Suite 200
Bloomfield, Michigan 48304
t | 248 | 258 | 1610
f | 248 | 258 | 9538
Job No.: 86090

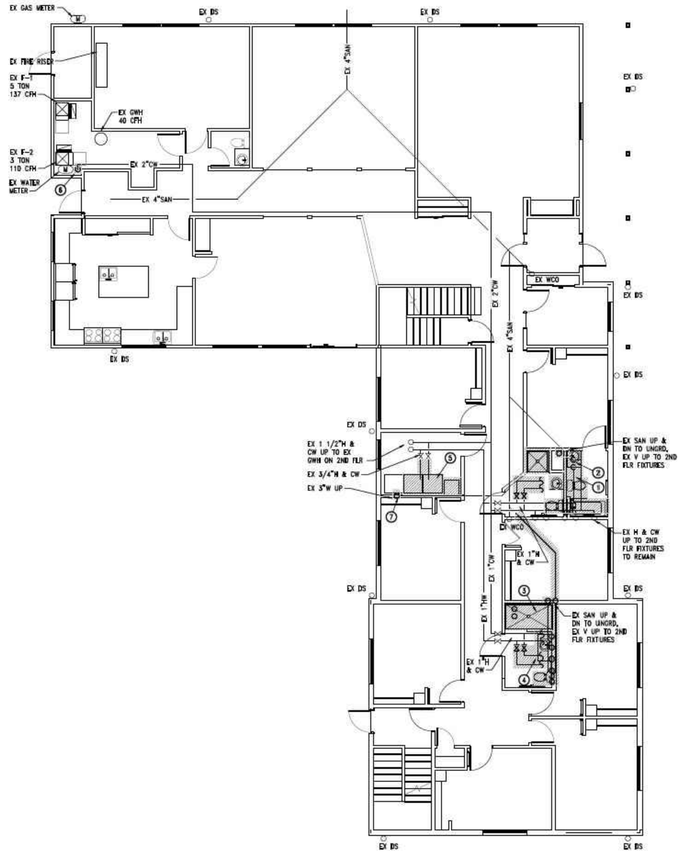
H:\ACAD\FILES\86090\86090-Freedom House- Phase 1 #21-09\ICAD\PECH\86090_M.102 Second Floor Plan - HVAC.dwg, 10/23/2024 10:42:26 AM, dbarry

Environmental Resources Group
28003 Center Oaks Court • Suite 106 • Wixom, MI • 48393
Phone: 248-773-7986 • Fax: 248-924-3108

FREEDOM HOUSE DETROIT
1777 N RADEMA CHER, DETROIT, MI 48209
RESPONSE ACTIVITY PLAN

BUILDING ADDITION SECOND FLOOR HVAC LAYOUT

FIGURE
5d
PROJECT NO.
9665



N

First Floor Demolition Plan - Plumbing

SCALE: 1/8" = 1'-0"

GENERAL NOTES:

A. COORDINATE WORK WITH ALL OTHER TRADES.

B. DO NOT RUN DUCTWORK OVER ELECTRICAL PANELS. COORDINATE WITH ELECTRICAL CONTRACTOR.

C. EXISTING UNDERGROUND SANITARY ROUTING IS BASED ON ASSUMED LOCATION, PRIOR TO CONSTRUCTION THIS CONTRACTOR SHALL FIELD VERIFY LOCATION AND CONDITION OF EXISTING UNDER FLOOR SANITARY PIPING. USE FLOOR SCANNING TECHNOLOGY, CAMERA OR OTHER ACCEPTED METHODS TO DETERMINE LOCATION, DIRECTION OF FLOW AND INVERT ELEVATIONS. IF THERE IS ANY DEVIATION FROM THESE DRAWINGS NOTIFY ARCHITECT OR DESIGN ENGINEER. COORDINATE ALL EXCAVATION AND FINAL ROUTING WITH ARCHITECT TO MISS FOOTINGS/FOUNDATIONS AND NOT TO UNDERMINE ANY STRUCTURAL ELEMENTS. CONTRACTOR SHALL CLEAN ENTIRE SANITARY LINE TO CITY SEWER. CONTRACTOR SHALL CAMERA, POWER JET CLEAN AND CLEAN OUT SYSTEM TO SEWER. PROVIDE REPORT TO OWNER OF ANY DEFECTS FOUND.

D. MINIMUM SANITARY PIPE SIZE BELOW FLOOR SHALL BE 3".

KEY NOTES:

1. DISCONNECT AND REMOVE FIRST FLOOR PLUMBING FIXTURES, RELATED WASTE (IN IT'S ENTIRETY), VENT (UP THRU FLOOR), HOT AND COLD WATER (TO MAINS AND CAP). FIELD VERIFY EXACT LOCATION.
2. DISCONNECT AND REMOVE HOT AND COLD FROM TUB ON SECOND FLOOR TO MAINS AND CAP. FIELD VERIFY EXACT LOCATION.
3. DISCONNECT AND REMOVE FIRST FLOOR PLUMBING FIXTURES, RELATED WASTE (TO MAIN AND CAP), VENT (UP THRU FLOOR), HOT AND COLD WATER (TO POINTS INDICATED AND PREPARE FOR NEW CONNECTIONS). FIELD VERIFY EXACT LOCATION.
4. DISCONNECT AND REMOVE HOT AND COLD WATER SERVING SECOND FLOOR PLUMBING FIXTURES (TO MAINS AND CAP). FIELD VERIFY EXACT LOCATION.
5. DISCONNECT AND REMOVE (2) WASHING MACHINE FITING, LAUNDRY TUB, RELATED WASTE (TO MAIN AND CAP), HOT AND COLD WATER (TO POINTS INDICATED AND PREPARE FOR NEW CONNECTIONS). FIELD VERIFY EXACT LOCATION.
6. DISCONNECT AND REMOVE PORTION OF 3"COLD WATER FROM DISCHARGE SIDE OF METER (TO A POINT ADJACENT TO METER AND PREPARE FOR NEW CONNECTION). SEE DETAIL ON SHEET M.301 FOR EXTENT OF WORK. FIELD VERIFY EXACT LOCATION.
7. DISCONNECT AND REMOVE SANITARY DOWN IN WALL SECOND FLOOR FLOOR DRAIN (TO A POINT ADJACENT TO DROP AND BELOW FLOOR AND PREPARE ENDS FOR NEW CONNECTIONS). FIELD VERIFY EXACT LOCATION.
8. DISCONNECT AND REMOVE SECOND FLOOR PLUMBING FIXTURES, RELATED WASTE (IN IT'S ENTIRETY), VENT (DOWN THRU FLOOR AND UP TO UNDERSIDE OF ROOF AND CAP), HOT AND COLD WATER (DOWN THRU FLOOR TO MAINS AND CAP). FIELD VERIFY EXACT LOCATION.
9. DISCONNECT AND REMOVE TUB, RELATED WASTE (TO MAIN AND CAP), HOT AND COLD (DOWN THRU FLOOR TO MAINS AND CAP). FIELD VERIFY EXACT LOCATION.
10. DISCONNECT AND REMOVE WASTE DOWN (TO A POINT ADJACENT TO FLOOR BELOW AND PREPARE FOR NEW CONNECTION) AND VENT. FIELD VERIFY EXACT LOCATION.
11. DISCONNECT AND REMOVE LAVATORY, RELATED WASTE (TO MAIN BELOW FLOOR AND CAP), VENT (TO MAIN AND CAP), HOT AND COLD WATER (DOWN THRU FLOOR TO MAINS AND CAP). FIELD VERIFY EXACT LOCATION.

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SEAL

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ENGINEER
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PROFESSIONAL ENGINEER

TRANSITIONAL HOUSING

FREEDOM HOUSE DETROIT

MICHIGAN

DETROIT

DATE	ISSUE
01.06.25	POST-BID ADDENDUM #1
10.28.24	BID SET
09.06.24	PERMIT SET

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FSP PROJECT NO.
FHD21.091

DRAWING TITLE

DEMOLITION FLOOR PLANS - PLUMBING

DRAWING NUMBER

PD.101

MAENGINEERING
MECHANICAL ELECTRICAL
193 High Oaks Trl., Suite 200 (248) 258-1610
Bloomfield, Michigan 48304 (248) 258-9536
Job No.: 66090

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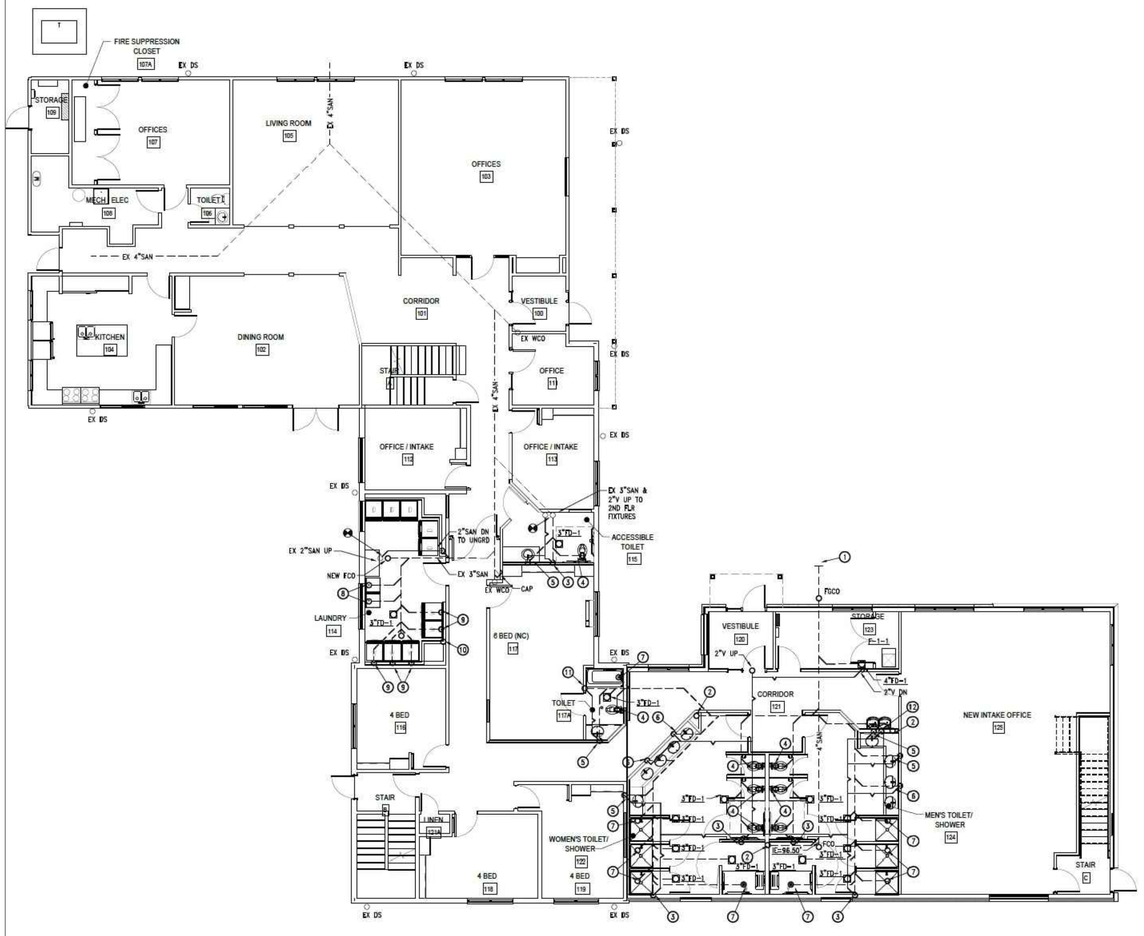
FREEDOM HOUSE DETROIT
1777 N RADEMA CHER, DETROIT, MI 48209
RESPONSE ACTIVITY PLAN

EXISTING BUILDING PLUMBING PLAN

FIGURE
6a
PROJECT NO.
9665



N

First Floor Plan - Sanitary/Vent

SCALE: 1/8" = 1'-0"

GENERAL NOTES:

A. COORDINATE WORK WITH ALL OTHER TRADES.

B. DO NOT RUN DUCTWORK OVER ELECTRICAL PANELS. COORDINATE WITH ELECTRICAL CONTRACTOR.

C. EXISTING UNDERGROUND SANITARY ROUTING IS BASED ON ASSUMED LOCATION. PRIOR TO CONSTRUCTION THIS CONTRACTOR SHALL FIELD VERIFY LOCATION AND CONDITION OF EXISTING UNDER FLOOR SANITARY PIPING. USE FLOOR SCANNING TECHNOLOGY, CAMERA OR OTHER ACCEPTED METHODS TO DETERMINE LOCATION, DIRECTION OF FLOW AND INVERT ELEVATIONS. IF THERE IS ANY DEVIATION FROM THESE DRAWINGS NOTIFY ARCHITECT OR DESIGN ENGINEER. COORDINATE ALL EXCAVATION AND FINAL ROUTING WITH ARCHITECT TO MISS FOOTINGS/FOUNDATIONS AND NOT TO UNDERMINE ANY STRUCTURAL ELEMENTS. CONTRACTOR SHALL CLEAN ENTIRE SANITARY LINE TO CITY SEWER. CONTRACTOR SHALL CAMERA, POWER JET CLEAN AND CLEAN OUT SYSTEM TO SEWER. PROVIDE REPORT TO OWNER OF ANY DEFECTS FOUND.

D. MINIMUM SANITARY PIPE SIZE BELOW FLOOR SHALL BE 3".

E. CONCEAL ALL PIPING IN WALLS, EXCEPT WATER PIPING IN EXTERIOR WALLS. PROTECT EXPOSED PIPING WITH HEAVY GAUGE STEEL PAINTED PIPE IMPACT GRADE.

KEY NOTES:

1. EXTEND 4"SANITARY 5'-0" FROM BUILDING. COORDINATE EXACT LOCATION, INVERT AND CONNECTION REQUIREMENTS WITH CIVIL. PROVIDE MINIMUM 48"OF COVER.
2. 4"SANITARY UP AND DOWN TO UNDERGROUND WITH CLEANOUT AT BASE (PROVIDE ACCESS PANEL). SEE SHEET P.102 FOR CONTINUATION.
3. 4" SANITARY DOWN WITH WALL CLEANOUT 12" ABOVE FINISHED FLOOR, 2" VENT DOWN.
4. WATER CLOSET, 4" WASTE UP
5. LAVATORY, 1 1/2" WASTE AND VENT DOWN
6. (2) LAVATORIES, 2"WASTE AND VENT DOWN, BRANCH 1 1/2" WASTE TO EACH FIXTURE.
7. BATH TUB/SHOWER, 2" WASTE UP
8. LAUNDRY TUB, 2" WASTE UP
9. WASHING MACHINE FITTING, 2" WASTE AND VENT DOWN, RUN VENT HORIZONTALLY IN WALL 4' ABOVE FINISHED FLOOR AS REQUIRED.
10. 2"VENT UP TO AIR ADMITTANCE VALVE WITH ACCESS BOX AS HIGH AS POSSIBLE BELOW CEILING. COORDINATE FINAL LOCATION WITH ARCHITECT.
11. 4" SANITARY DOWN WITH WALL CLEANOUT 12" ABOVE FINISHED FLOOR, 2" VENT DOWN AND UP TO AIR ADMITTANCE VALVE WITH ACCESS BOX AS HIGH AS POSSIBLE BELOW CEILING. COORDINATE FINAL LOCATION WITH ARCHITECT.
12. ELECTRIC WATER COOLER, 1 1/2" WASTE AND VENT DOWN

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SEAL

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LICENSED PROFESSIONAL ENGINEER

MICHIGAN

TRANSITIONAL HOUSING

FREEDOM HOUSE DETROIT

DETROIT

DATE	ISSUE
01.06.25	POST-BID ADDENDUM #1
10.28.24	BID SET
09.06.24	PERMIT SET

IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS TO EXAMINE THE COMPLETE SET OF DRAWINGS AND SPECIFICATIONS FOR THE WORK AND TO PROVIDE LABOR AND MATERIAL FOR THEIR RESPECTIVE AREA OF WORK FOR A COMPLETE AND FINISHED INSTALLATION IN COMPLIANCE WITH THE INTENT OF THE DRAWINGS AND THE SPECIFICATIONS. THE WORK SHALL BE IN COMPLIANCE WITH ALL CODES AND ORDINANCES THAT ARE APPLICABLE TO THE PROJECT. SUBMITTAL OF PROPOSAL IMPLIES THAT THE CONTRACTOR AND/OR SUBCONTRACTOR IS FULLY CONVERSANT WITH AND AWARE OF ALL REQUIREMENTS OF ALL DIVISIONS AND DOCUMENTS OF THE CONTRACT DOCUMENTS.

FSP PROJECT NO.
FHD21.091

DRAWING TITLE

FIRST FLOOR PLAN - SANITARY/VENT

DRAWING NUMBER

P.101

MAENGINEERING
MECHANICAL ELECTRICAL
180 High Oak Rd. Suite 200
Bloomfield, Michigan 48304
t | 248 | 258 | 1610
f | 248 | 258 | 9538
Job No.: 86090

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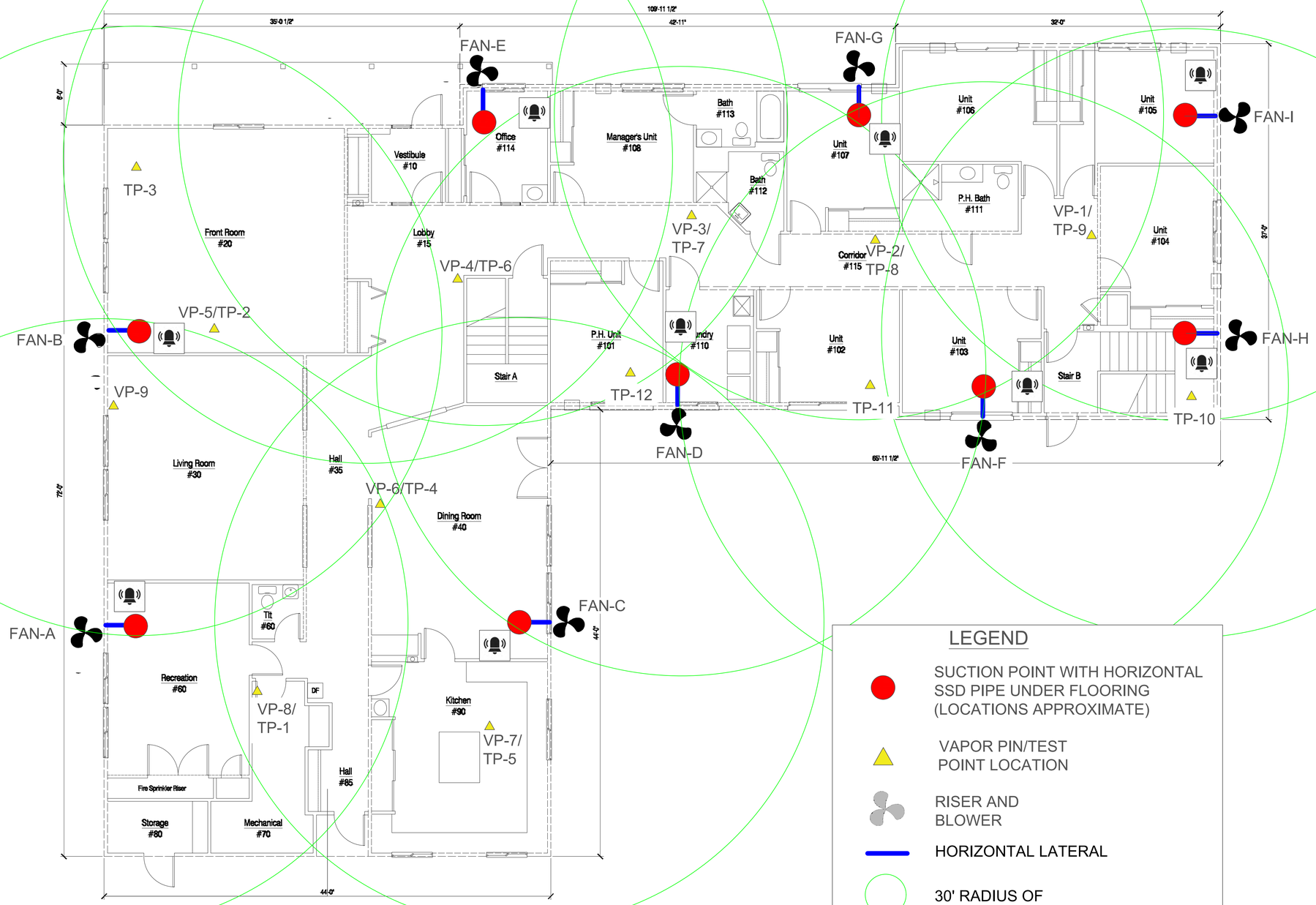
Phone: 248-773-7986 • Fax: 248-924-3108

FREEDOM HOUSE DETROIT
1777 N RADEMA CHER, DETROIT, MI 48209
RESPONSE ACTIVITY PLAN

BUILDING ADDITION PLUMBING PLAN

FIGURE
6b
PROJECT NO.
9665



LEGEND

- SUCTION POINT WITH HORIZONTAL SSD PIPE UNDER FLOORING (LOCATIONS APPROXIMATE)
- VAPOR PIN/TEST POINT LOCATION
- RISER AND BLOWER
- HORIZONTAL LATERAL
- 30' RADIUS OF INFLUENCE
- SSDS ALARM

EXISTING BUILDING 1ST FLOOR

NOT TO SCALE

#	mm/yyyy	DESCRIPTION	.	.	.	.
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE

DWN BY JCH
DES BY
CHK BY
APP BY

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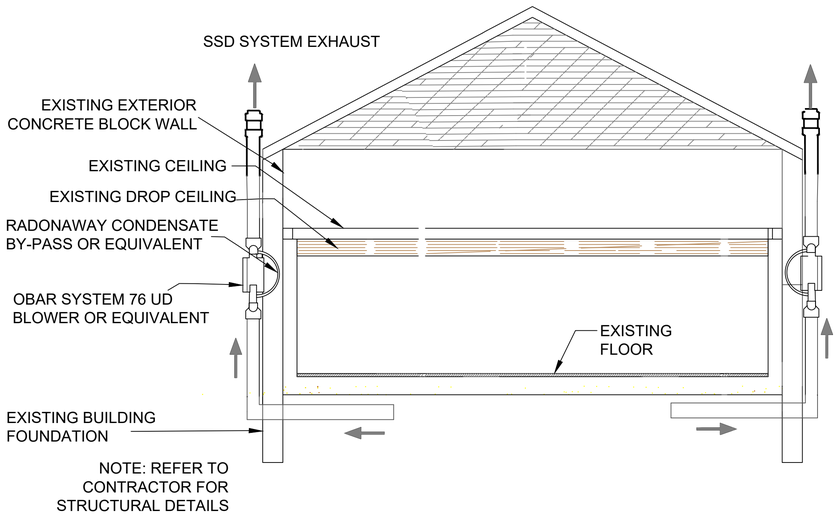
FREEDOM HOUSE DETROIT
1777 N RADEMACHER, DETROIT, MI 48209
RESPONSE ACTIVITY PLAN

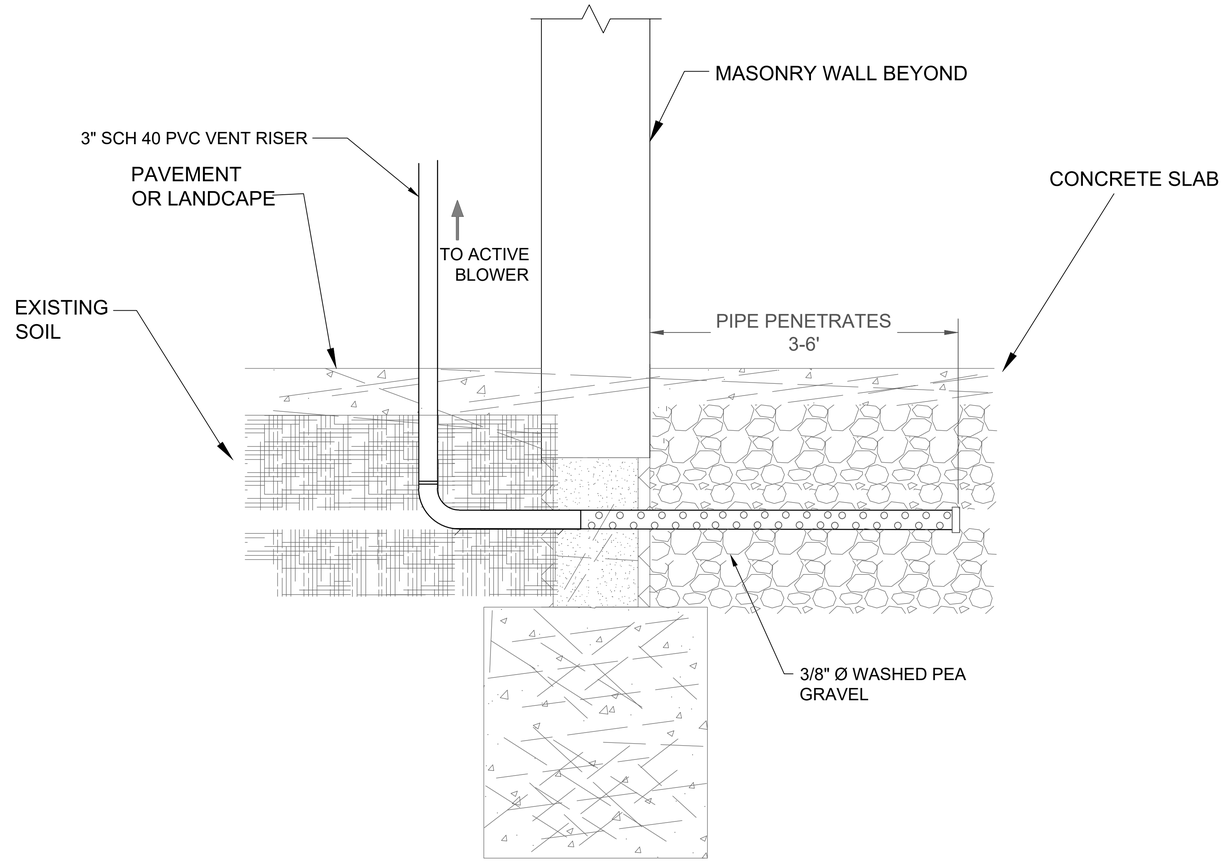
CURRENT SSDS AND MONITORING LOCATION LAYOUT

FIGURE
7a
PROJECT NO.
9665



SSD SYSTEM ELEVATION VIEW (TYPICAL)

SCALE: N.T.S.



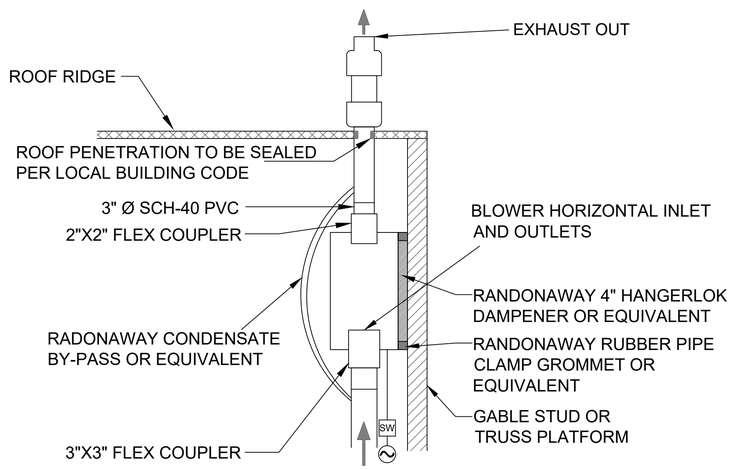
TYPICAL VENT RISER TRANSITION

SCALE: N.T.S.

Legend

SW - POWER SWITCH

- AIR FLOW DIRECTION



FAN BLOWER ASSEMBLY DETAIL

NO SCALE

#	mm/yyyy	DESCRIPTION	.	.	.	.
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

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DWN BY JCH

DES BY

CHK BY

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FREEDOM HOUSE DETROIT
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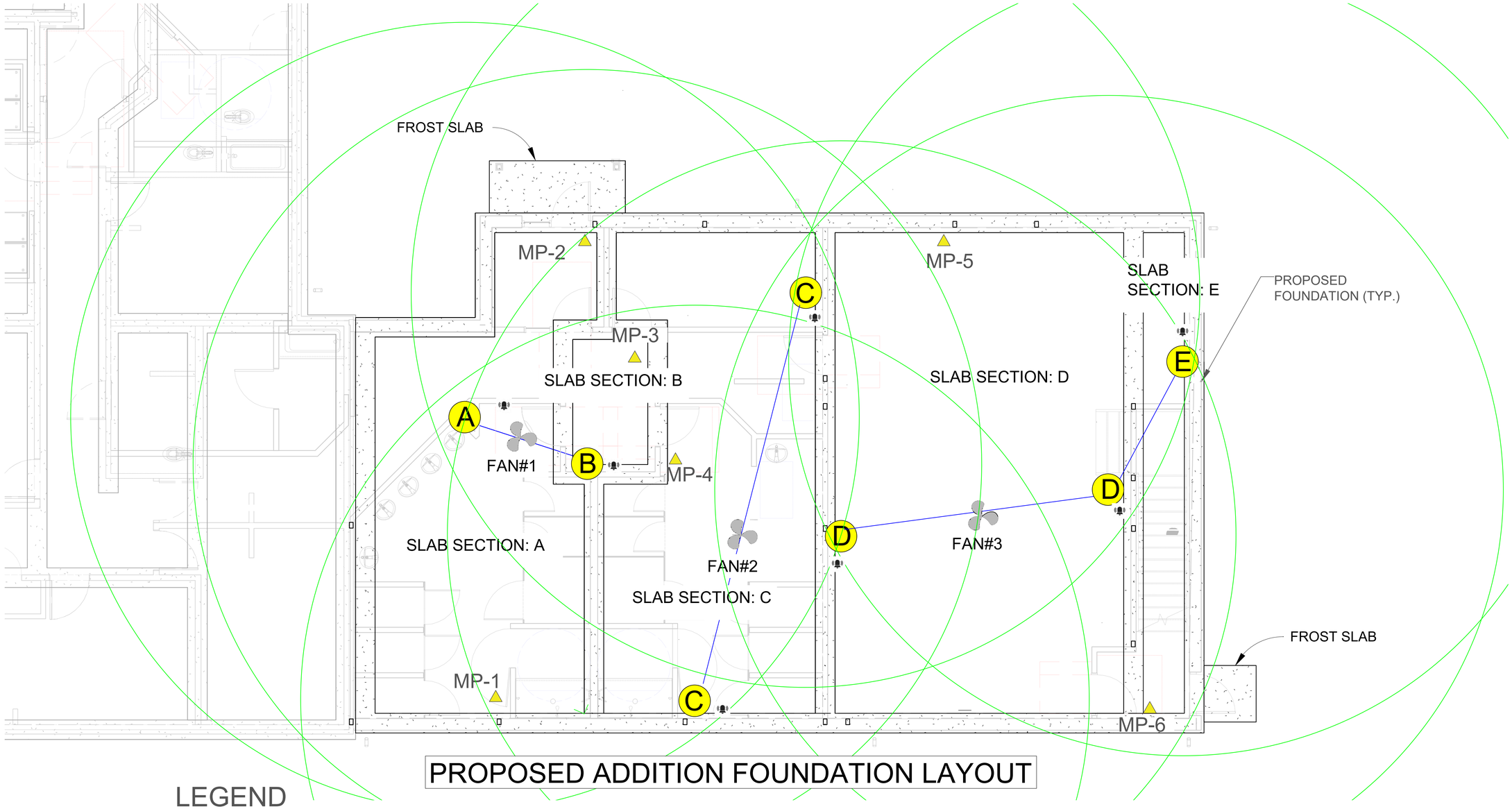
RESPONSE ACTIVITY PLAN

EXISTING BUILDING SSDS DETAILS

FIGURE **7b**

PROJECT NO. 9665



PROPOSED ADDITION FOUNDATION LAYOUT

LEGEND

- 2ND FLOOR HORIZONTAL PVC LATERAL
- ATTIC WALL-MOUNTED BLOWER
- MONITORING POINT (MP-#)
- 30' RADIUS OF INFLUENCE
- A-D — SUCTION POINT/PROPOSED PVC RISER LOCATION
- SSDS ALARM

SCALE: 1"=4'

0' 2' 4' 6' 8'

#	mm/yyyy	DESCRIPTION	.	.	.	.
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE

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CHK BY

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FREEDOM HOUSE DETROIT
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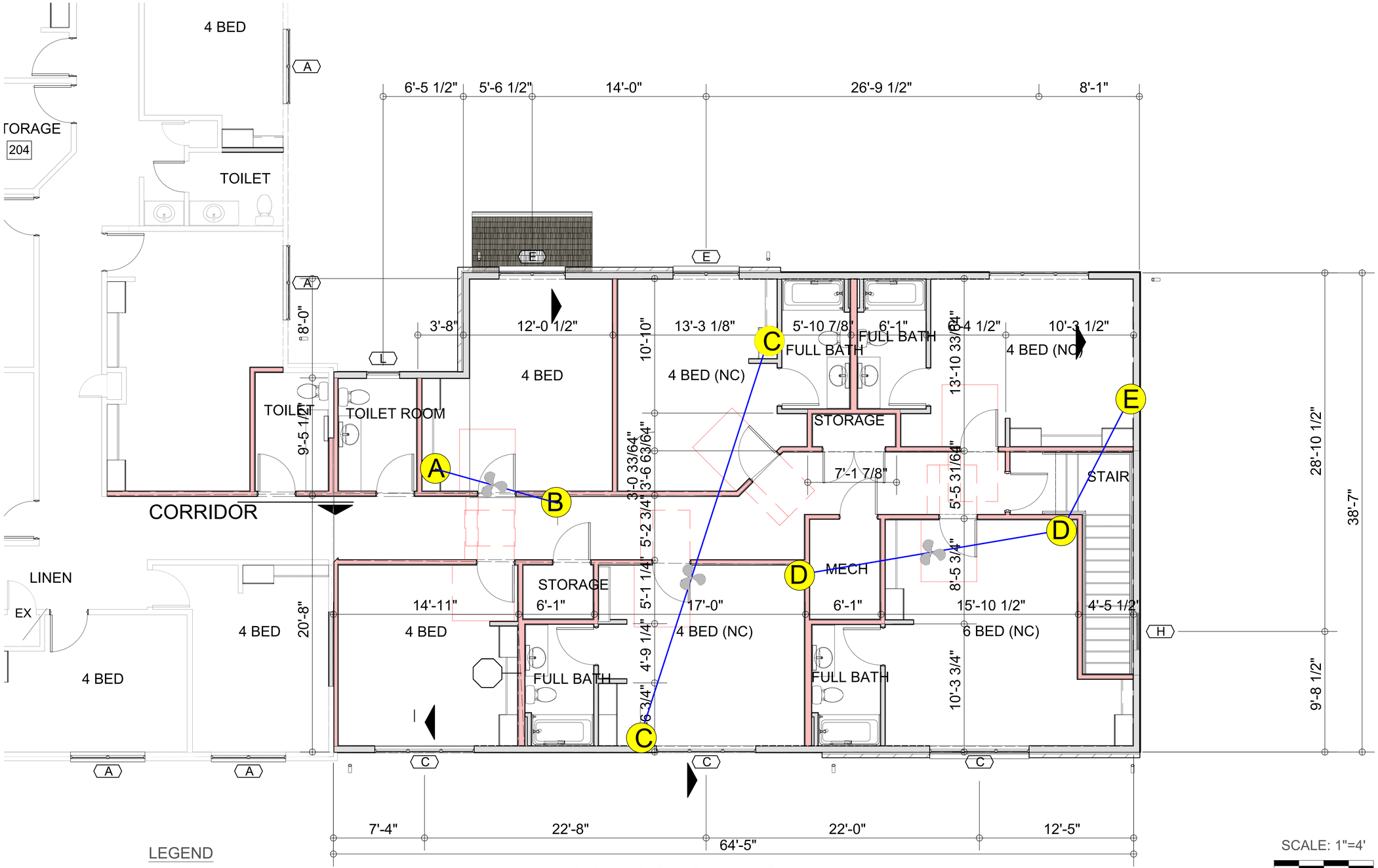
REPONSE ACTIVITY PLAN

PROPOSED SSDS LAYOUT - 1F

FIGURE 7c

PROJECT NO. 9665



LEGEND

2ND FLOOR HORIZONTAL PVC LATERAL

ATTIC WALL-MOUNTED BLOWER

A-E PROPOSED PVC RISER LOCATION

SCALE: 1"=4'

0' 2' 4' 6' 8'

2ND FLOOR SSDS LAYOUT

#	mm/yyyy	DESCRIPTION	.	.	.	.
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE

DWN BY JCH

DES BY

CHK BY

APP BY

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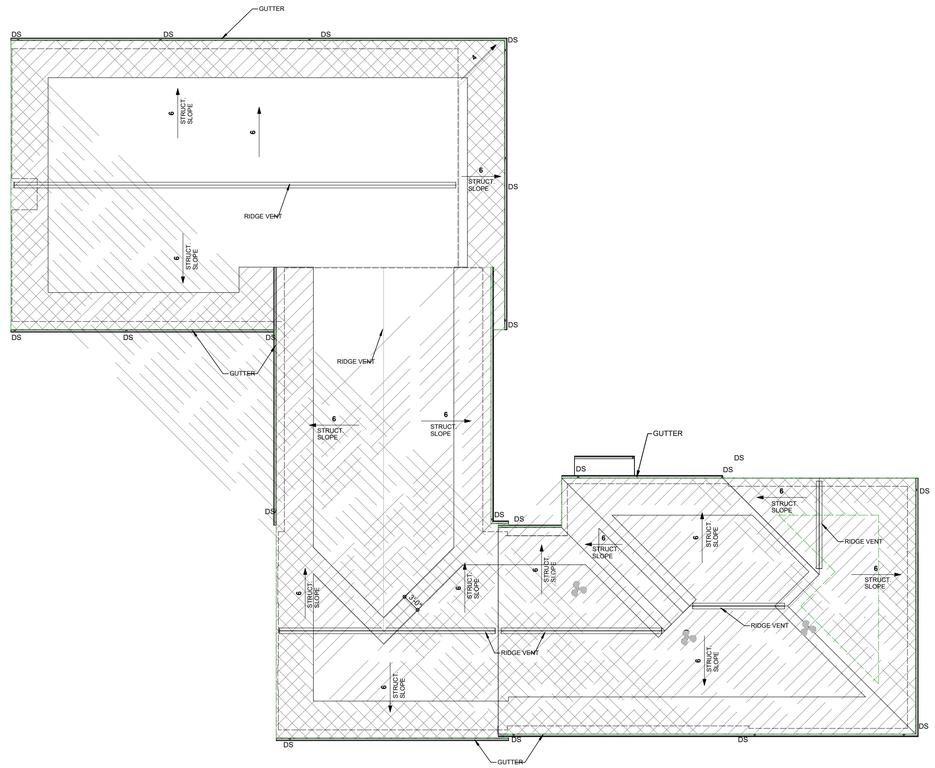
FREEDOM HOUSE DETROIT
1777 N RADEMACHER, DETROIT, MI 48209
RESPONSE ACTIVITY PLAN

PROPOSED SSDS LAYOUT - 2F

DRAWING 7d

PROJECT NO. 9665



ROOF PLAN

A.109

SCALE: 1/8" = 1'-0"

PLAN NORTH

NOTE | IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS TO EXAMINE THE COMPLETE SET OF DRAWINGS AND SPECIFICATIONS AND TO PROVIDE LABOR AND MATERIAL FOR THEIR RESPECTIVE AREA OF WORK FOR A COMPLETE AND FINISHED INSTALLATION IN COMPLIANCE WITH THE INTENT OF THE DRAWINGS AND THE SPECIFICATIONS. SUBMITTAL OF PROPOSAL IMPLIES THAT THE CONTRACTOR/SUBCONTRACTOR HAS REVIEWED ALL CONTRACT DOCUMENTS AND IS FULLY CONVERSANT WITH AND AWARE OF ALL REQUIREMENTS OF ALL DIVISIONS.

GENERAL ROOF NOTES

1. RIGID INSULATION SHALL MAINTAIN A MINIMUM R VALUE OF R-30 AT ALL LOCATIONS, STAGGER JOINTS BETWEEN LAYERS.
2. ALL LOW SLOPE ROOF LOCATIONS SHALL HAVE A MINIMUM SLOPE OF 1/4-INCH PER FOOT (2%). REFER TO SPECIFIC SECTIONS FOR AREAS SLOPED BY THE STRUCTURE.
3. CRICKETS AND SADDLES SHALL BE FORMED FROM TAPERED INSULATION WITH A MINIMUM SLOPE OF 1/2-INCH PER FOOT (4%). ADDITIONAL TAPERED INSULATION SHALL BE PROVIDED IN AREAS NOT EXPLICITLY INDICATED ON DRAWINGS TO MAINTAIN POSITIVE DRAINAGE.
4. THE CONTRACTOR IS RESPONSIBLE FOR SUPPLYING AND INSTALLING MANUFACTURER-RECOMMENDED UNDERLAYMENTS, SLIP SHEETS, ISOLATION MATERIALS, ETC., WHICH ARE NOT EXPLICITLY DEPICTED ON THE DRAWINGS, TO ENSURE A COMPREHENSIVE INSTALLATION OF THE ROOF SYSTEM.
5. INSTALL MANUFACTURER-STANDARD WALKWAY PADS BETWEEN ALL ROOF HATCHES, ROOF ACCESS DOORS, AND ROOF-MOUNTED MECHANICAL EQUIPMENT. WALKWAY PADS SHALL SURROUND THE PERIMETER OF ALL EQUIPMENT AND EQUIPMENT MOUNTING FRAMES.

ROOF PLAN LEGEND

	LOCATION OF WALKING PADS SEE DETAIL 1/A.191
	ROOF PENETRATION SEE DETAIL 2/A.191
	VENT STACK
	SOLAR PANEL COLLECTOR
SWS	INDICATES SLOPE W/ STRUCTURE OR PERCENT SLOPE
	ICE & WATER BARRIER
DS	DOWNSPOUT
	RIDGE VENT

FUSCO, SHAFFER & PAPPAS, INC.
ARCHITECTS AND PLANNERS
550 E. NINE MILE ROAD
FERNDALE, MICHIGAN, 48220
PHONE 248.543.4100 FAX 248.543.4141

SEAL

FREEDOM HOUSE DETROIT
TRANSITIONAL HOUSING

MICHIGAN

DETROIT

DATE	ISSUE
09.06.24	PERMIT SET
07.15.24	PROGRESS SET

KEY PLAN

NOT FOR CONSTRUCTION

FSP PROJECT NO. 1102321.001

DRAWING TITLE

ROOF PLAN

DRAWING NUMBER

A.109

SCALE: NOT TO SCALE

LEGEND

SSDS EXHAUST POINTS

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
#	mm/yyyy	DESCRIPTION	.	.	.	.

DATE OF ISSUE

DWN BY JCH

DES BY

CHK BY

APP BY .

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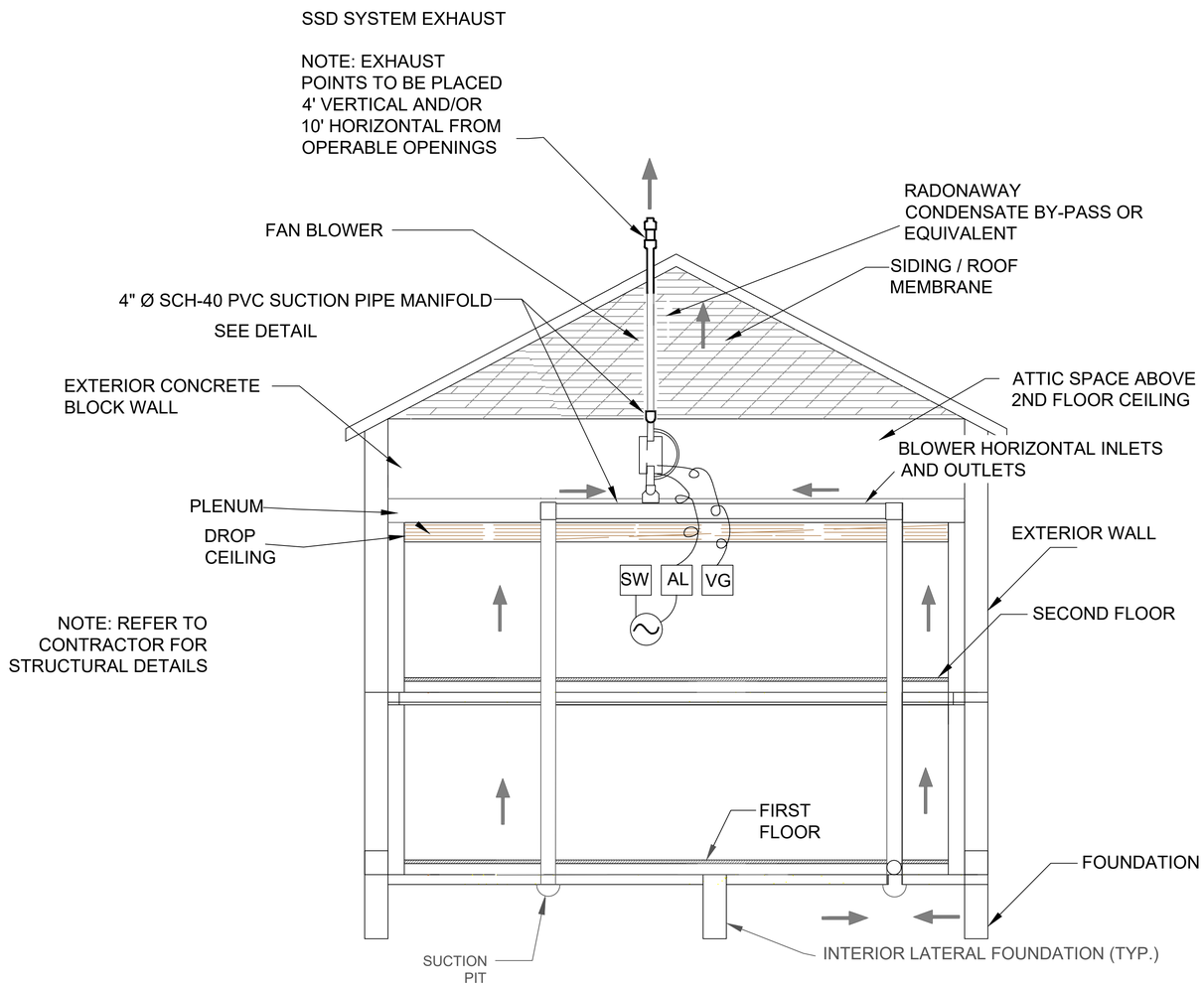
FREEDOM HOUSE DETROIT
1777 N RADEMACHER, DETROIT MI 48209
RESPONE ACTIVITY PLAN

ROOF LAYOUT

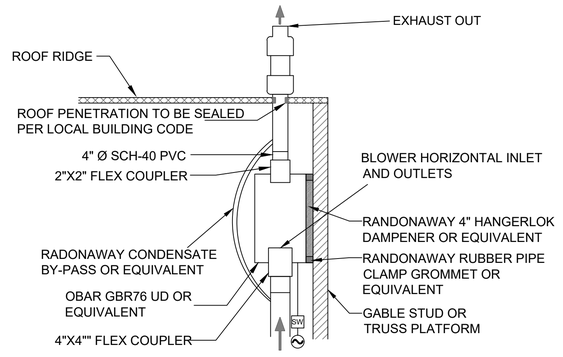
FIGURE 7e

PROJECT NO. 9665



SSD SYSTEM ELEVATION VIEW - LOOKING NORTH/SOUTH (TYPICAL)

NO SCALE

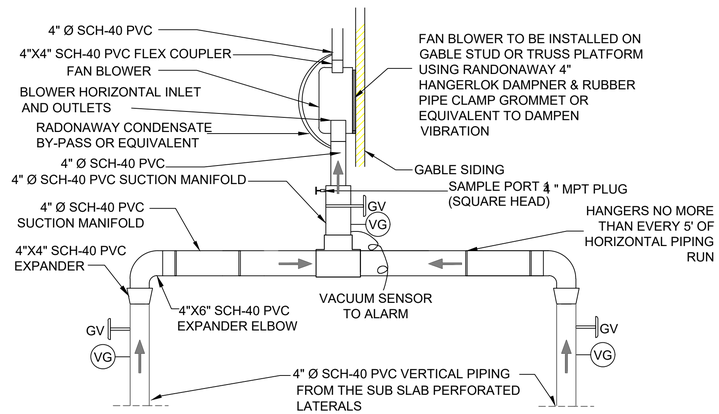


FAN BLOWER ASSEMBLY DETAIL

NO SCALE

Legend

SW - POWER SWITCH
AL - ALARM
VG - 0-20" WATER DWYER MAGNEHELIC VACUUM GAUGE OR EQUIVALENT
GV - PVC GATE VALVE
- AIR FLOW DIRECTION



SCHEMATIC OF SUCTION MANIFOLD

NO SCALE

#	mm/yyyy	DESCRIPTION	.	.	.	.
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE
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CHK BY
APP BY .

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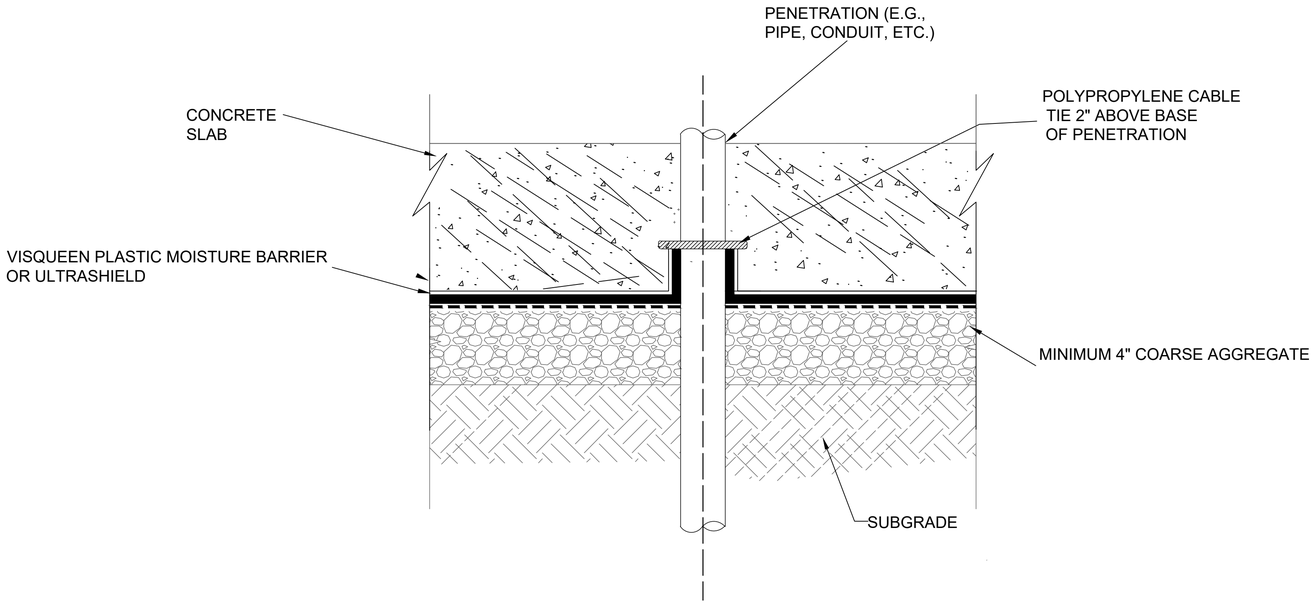
FREEDOM HOUSE DETROIT
1777 N RADEMACHER, DETROIT, MI 48209
RESPONSE ACTIVITY PLAN

SSDS PROFILE
PROPOSED ADDITION

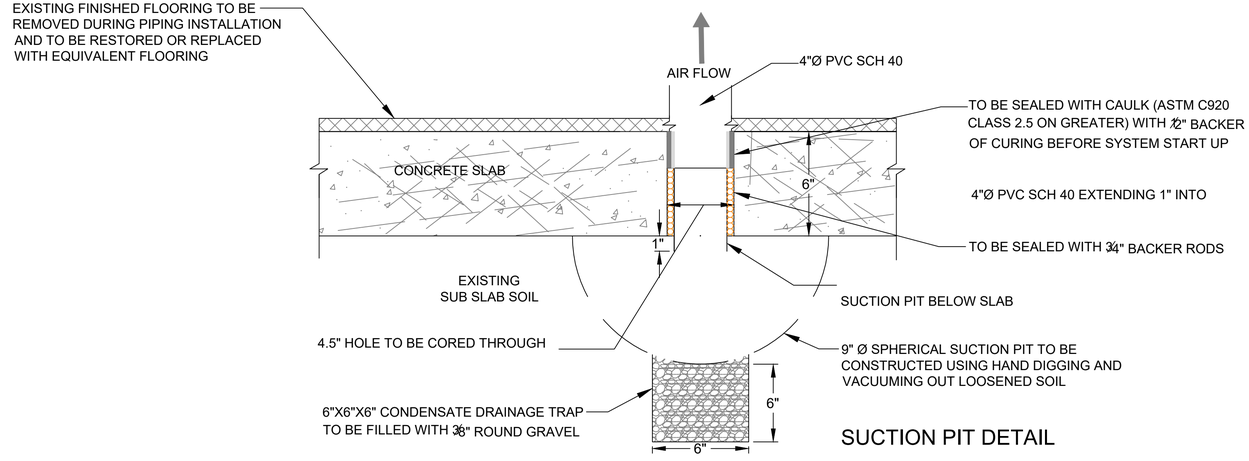
DRAWING **7f**
PROJECT NO. 9665



TYPICAL VAPOR BARRIER PENETRATION
NO SCALE

NOTES:
1. CONTRACTOR TO VERIFY QUANTITY AND LOCATIONS OF ALL UTILITY FLOOR PERFORATIONS (WATER, GAS, SEWER, AND FLOOR DRAINS, ETC.).

RODS. ALLOW FOR A MINIMUM OF 48 HOURS



SUCTION PIT DETAIL

SUCTION PIT
NO SCALE

#	mm/yyyy	DESCRIPTION	.	.	.	.
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE
DWN BY JCH
DES BY
CHK BY
APP BY

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FREEDOM HOUSE
1777 N RADEMACHER, DETROIT, MI 48209
VAPOR MITIGATION SYSTEM PLAN

SSDS PROFILE DETAILS
PROPOSED ADDITION

DRAWING
7g
PROJECT NO.
9665

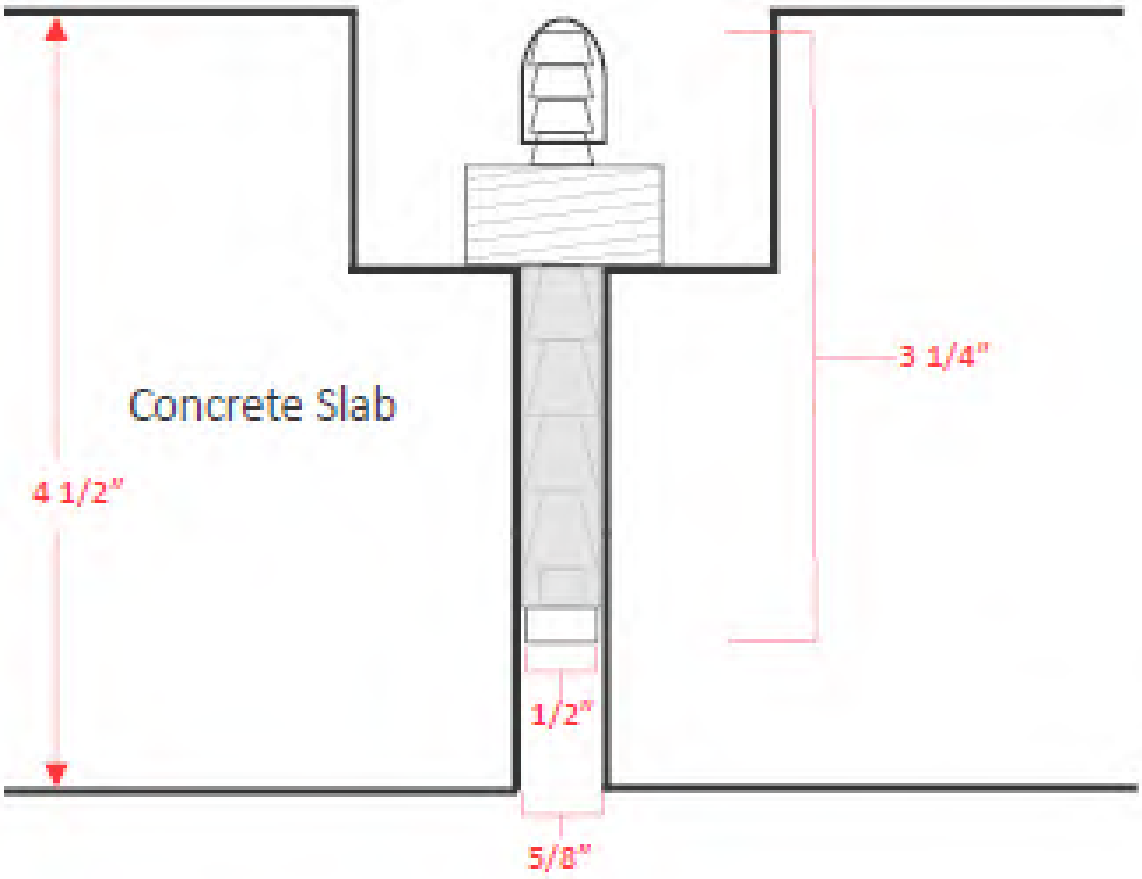

FIGURE **8**

PROJECT NO.: 9665	
DRWG BY: CJB	
DATE: 1/27/25	
APPROVED BY: DAK	
SCALE:	
SHEET:	

MONITORING POINT INSTALLATION DIAGRAM

FREEDOM HOUSE DETROIT
1777 N. RADEMACHER STREET
DETROIT, MICHIGAN

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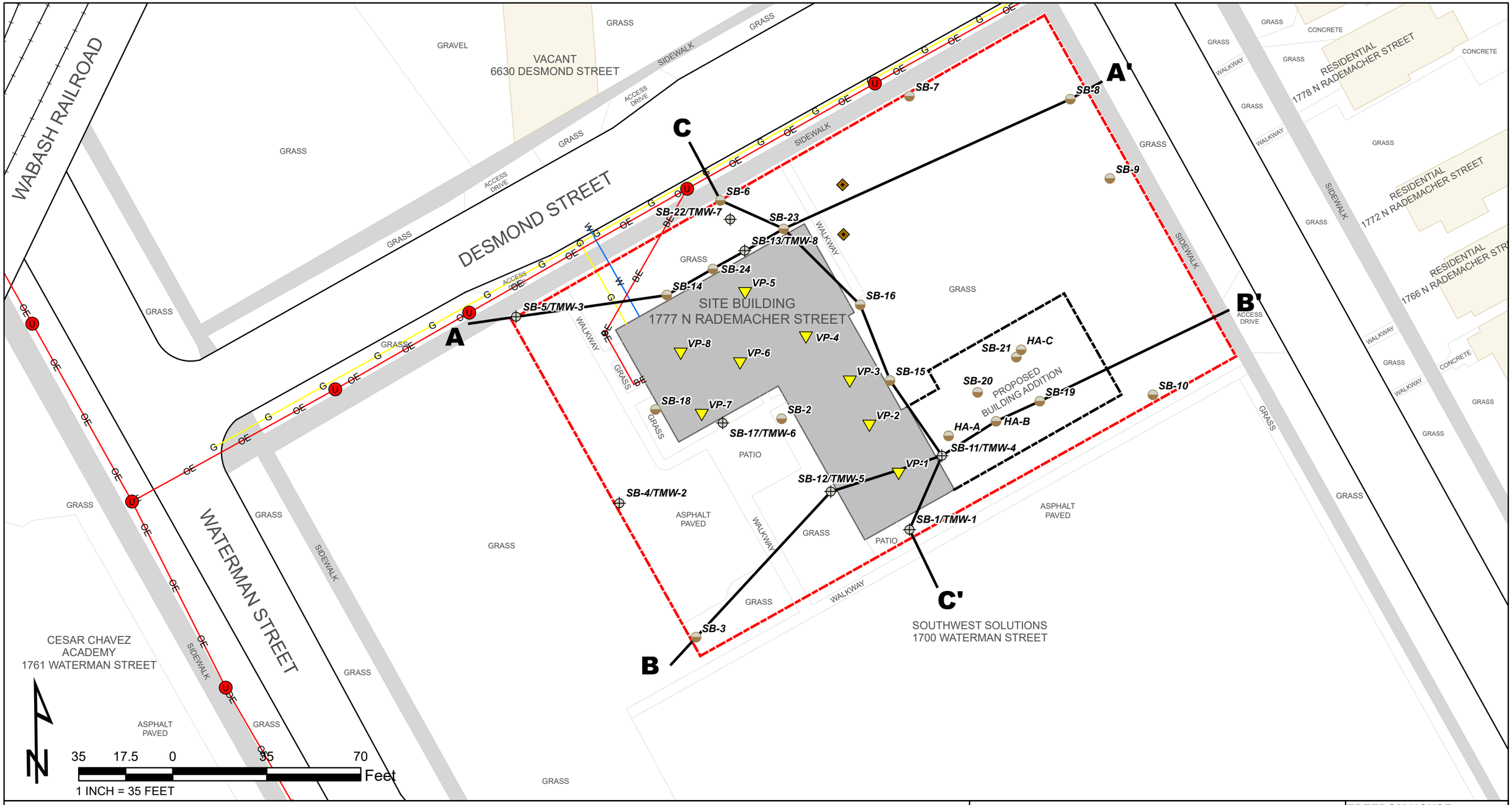

LEGEND

- Cross-Section Location
- Site Boundary
- Soil Boring
- Temporary Monitoring Well
- Surface Soil Sample
- Sub-Slab Vapor Pin
- Railroad

Utilities

- Utility Pole
- Overhead Electric
- Buried Electric
- Natural Gas
- Water

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FREEDOM HOUSE DETROIT

1777 N RADEMACHER STREET, DETROIT, MI

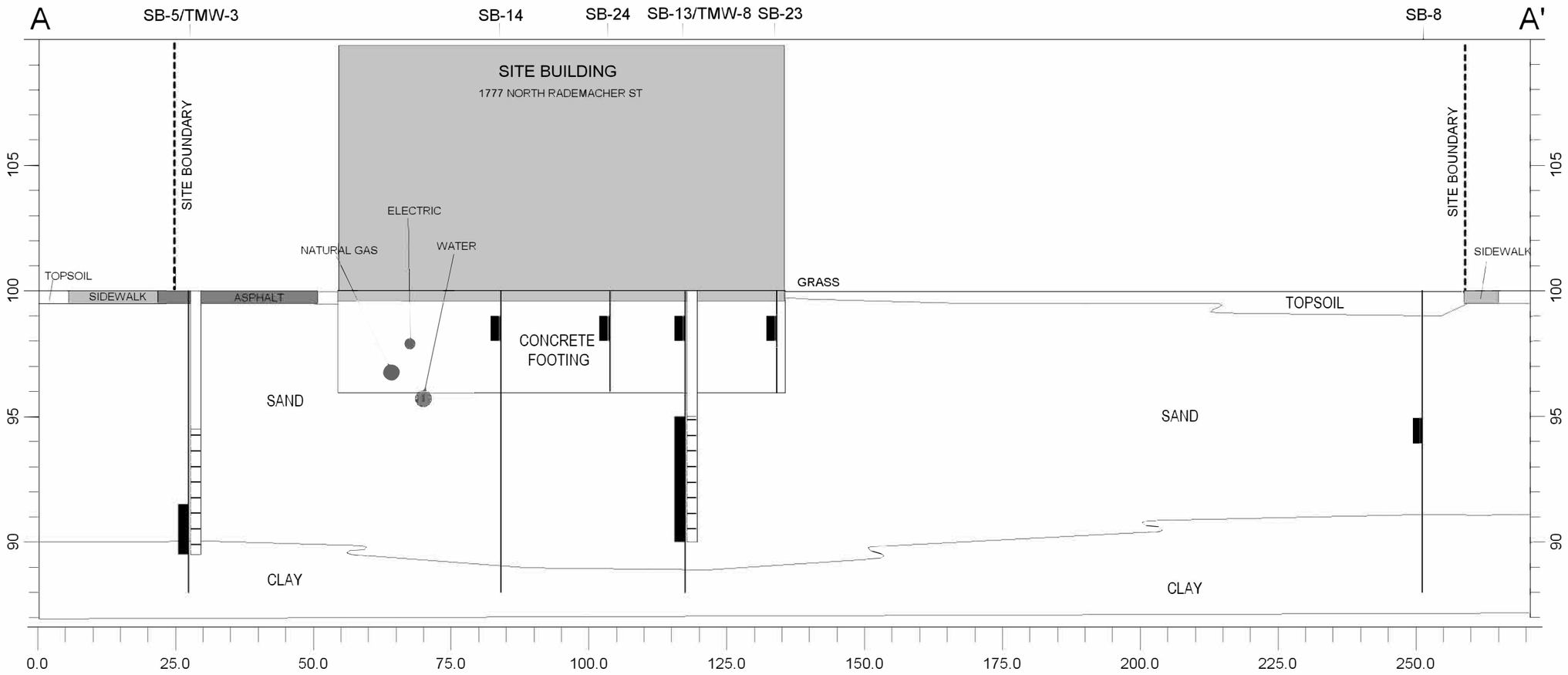
CROSS-SECTION LOCATION MAP

JOB NO.: 9665

BY: MMS DATE: 1/23/2025

FIGURE 9A

Cross-Section A-A'



TMW-3	
8/29/2022	
VOCs	BCC
PNAs	BCC
Metals	BCC

SB-14 (1-2)	
3/18/2024	
VOCs	ND

SB-24	
3/18/2024	
VOCs	ND

SB-13 (1-2)	
3/18/2024	
VOCs	ND

TMW-8	
3/18/2024	
BDCM	4
Chlo	7
Remaining VOCs	BCC

SB-23	
3/18/2024	
VOCs	ND

SB-8	
8/29/2022	
5-6'	
VOCs	ND
PNAs	ND
As	6,200
Cr	8,500
Remaining Metals	BCC

V.E. (V:H) = 4.5:1
VERTICAL SCALE: 1" = 4.5'
HORIZ. SCALE: 1" = 21'

Soil and Groundwater Data Legend

DATA LEGEND:

Highlighted screening level/criteria and sample results indicate results exceeding the screening level/criteria for that constituent

Red values indicate concentrations above Residential Site-Specific Volatilization to Indoor Air Criteria

B= Benzene
BDCM= Bromodichloromethane
CTC= Carbon Tetrachloride
Chlo= Chloroform
IPB= Isopropyl Benzene
E= Ethylbenzene
N= Naphthalene
2-M= 2-Methylnaphthalene
n-Prop= n-Propylbenzene
PCE= Tetrachloroethylene
TCE= Trichloroethylene
1,2,3-TMB= 1,2,3-Trimethylbenzene
1,2,4-TMB= 1,2,4-Trimethylbenzene
1,3,5-TMB= 1,3,5-Trimethylbenzene
X= Xylenes
B(a) Pyr= Benzo(a)pyrene
Phen= Phenanthrene
As= Arsenic
Cr= Chromium
Pb= Lead
Hg= Mercury
Se= Selenium
Ag= Silver
VOCs= Volatile Organic Compounds
PNAs= Polynuclear Aromatic Hydrocarbons

BCC= Below Cleanup Criteria
ND= Non-Detect

NOTES:

- Analytical Results Compared to EGLE Part 213 Risk-Based Screening Levels/Part 201 Generic Cleanup Criteria and/or Site-Specific Volatilization to Indoor Air Criteria
- All soil results in micrograms per kilogram (ug/kg).
- All groundwater results in micrograms per liter (ug/L).

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FREEDOM HOUSE DETROIT

1777 N RADEMACHER STREET, DETROIT, MI

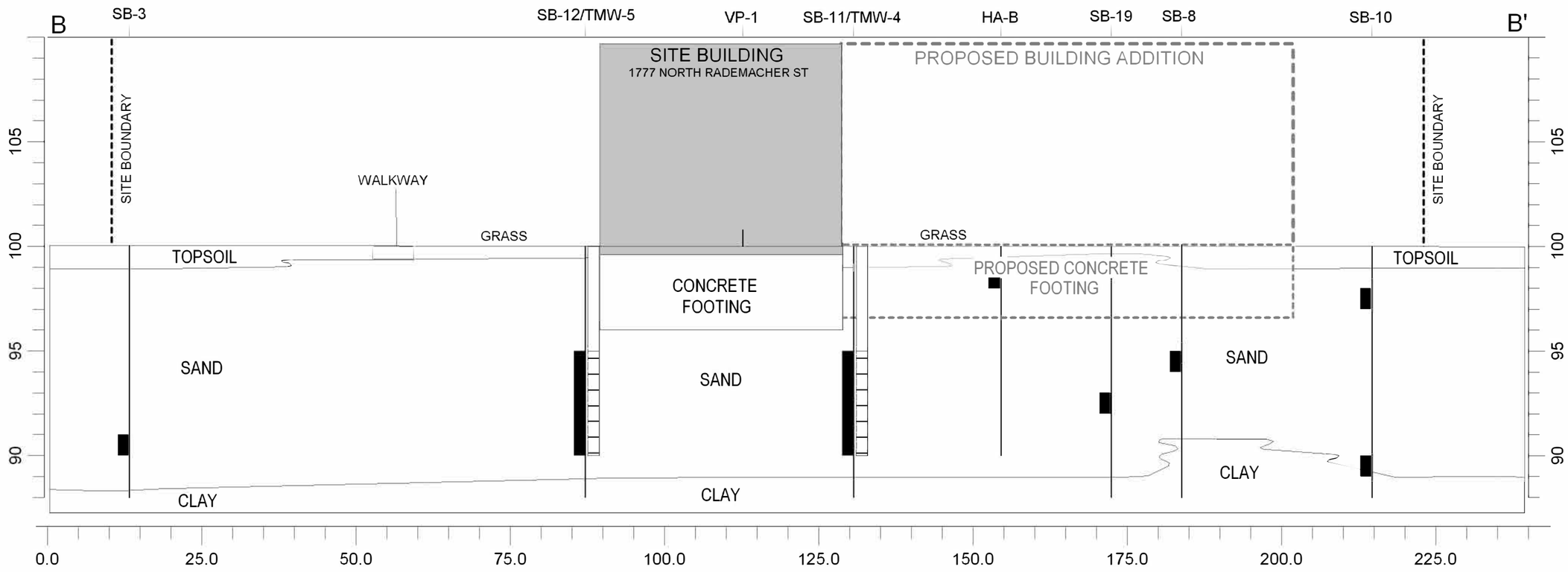
CROSS-SECTION A-A'

JOB NO: 9665

BY: MMS DATE: 1/23/2025

FIGURE 9B

Cross-Section B-B'



SB-3	
8/29/2022	
9-10'	
E	110
Remaining VOCs	BCC
PNAs	BCC
Cr	7,800
Remaining Metals	BCC

TMW-5	
3/18/2024	
VOCs	ND

VP-1	
9/14/2022	
CFC-12	24,000
Remaining VOCs	BCC

TMW-4	
3/18/2024	
IPB	13
Remaining VOCs	BCC

HA-B	
9/11/2024	
1.5'	
Trichloroethylene	2,530
Remaining VOCs	ND
PNAs	ND
Metals	ND

SB-19 (7-8)	
3/18/2024	
VOCs	ND

SB-8	
8/29/2022	
5-6'	
VOCs	ND
PNAs	ND
As	6,200
Cr	8,500
Remaining Metals	BCC

SB-10	
8/29/2022	
2-3'	
B	68
N	420
X	330
Remaining VOCs	BCC
B(a) Pyr	2,100
Remaining PNAs	BCC
As	11,000
Cr	11,000
Hg	280
Ag	540
Remaining Metals	BCC

Soil and Groundwater Data Legend

DATA LEGEND:

Highlighted screening level/criteria and sample results indicate results exceeding the screening level/criteria for that constituent

Red values indicate concentrations above Residential Site-Specific Volatilization to Indoor Air Criteria (SSVIAC)

B= Benzene
BDCM= Bromodichloromethane
CTC= Carbon Tetrachloride
Chlo= Chloroform
IPB= Isopropyl Benzene
E= Ethylbenzene
N= Naphthalene
2-M= 2-Methylnaphthalene
n-Prop= n-Propylbenzene
PCE= Tetrachloroethylene
TCE= Trichloroethylene
1,2,3-TMB= 1,2,3-Trimethylbenzene
1,2,4-TMB= 1,2,4-Trimethylbenzene
1,3,5-TMB= 1,3,5-Trimethylbenzene
X= Xylenes
B(a) Pyr= Benzo(a)pyrene
Phen= Phenanthrene
As= Arsenic
Cr= Chromium
Pb= Lead
Hg= Mercury
Se= Selenium
Ag= Silver
VOCs= Volatile Organic Compounds
PNAs= Polynuclear Aromatic Hydrocarbons
BCC= Below Cleanup Criteria
ND= Non-Detect

NOTES:

- Analytical Results Compared to EGLE Part 213 Risk-Based Screening Levels/Part 201 Generic Cleanup Criteria and/or Site-Specific Volatilization to Indoor Air Criteria
- All soil results in micrograms per kilogram (ug/kg).
- All groundwater results in micrograms per liter (ug/L).
- All soil gas results in micrograms per cubic meter (ug/m^3)

Soil Gas Data Legend

DATA LEGEND:

Bold - Concentrations exceed laboratory method detection limit

Red text indicates a constituent above Residential SSVIAC

CFC-12= Dichlorodifluoromethane
E= Ethylbenzene
X= Xylenes
VOCs= Volatile Organic Compounds
BCC= Below Cleanup Criteria

Notes:

Concentrations compared to Site-Specific Volatilization to Indoor Air Criteria (approved 12/18/24).

V.E. (V:H) = 3.5:1
VERTICAL SCALE: 1" = 5'
HORIZ. SCALE: 1" = 18'

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FREEDOM HOUSE DETROIT

1777 N RADEMACHER STREET, DETROIT, MI

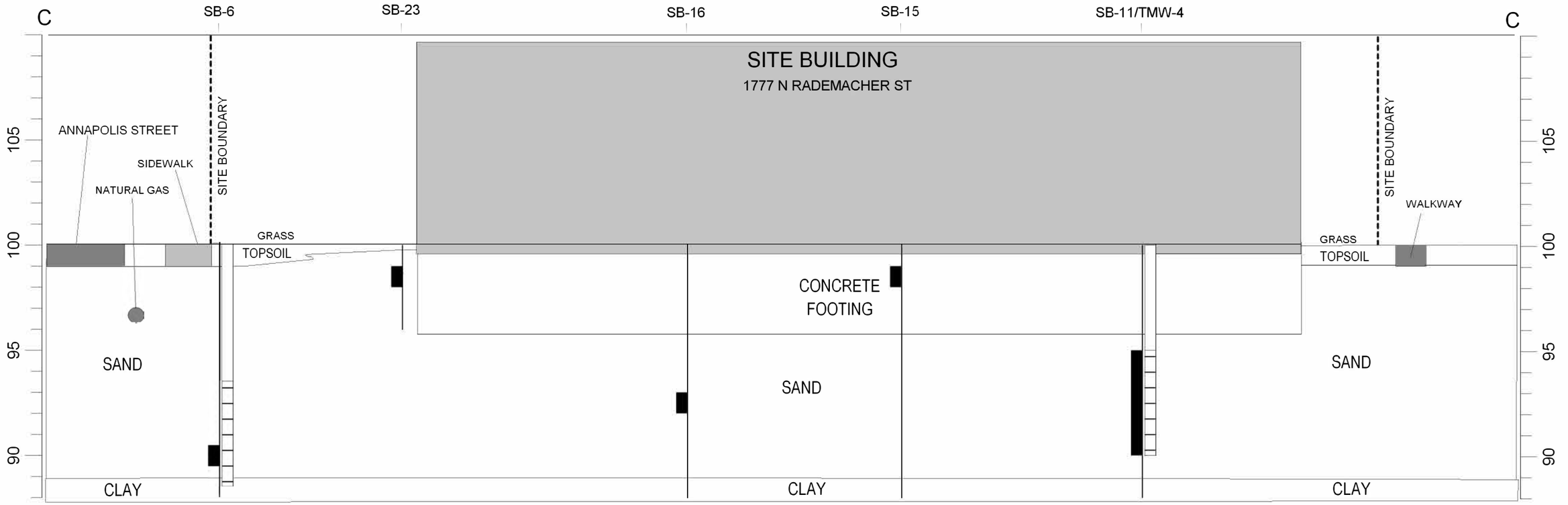
CROSS-SECTION B-B'

JOB NO: 9665

BY: MMS DATE: 1/23/2025

FIGURE 9C

Cross-Section C-C'



SB-6	
8/29/2022	
9.5-10.5'	
VOCs	ND
PNAs	ND
Cr	4,800
Remaining Metals	BCC

SB-23	
3/18/2024	
VOCs	ND

SB-16 (7-8)	
3/18/2024	
VOCs	ND

SB-15 (1-2)	
3/18/2024	
VOCs	ND

TMW-4	
3/18/2024	
IPB	13
Remaining VOCs	BCC

V.E. (V:H) = 3:1
VERTICAL SCALE: 1" = 5'
HORIZ. SCALE: 1" = 14'

Soil and Groundwater Data Legend

DATA LEGEND:

Highlighted screening level/criteria and sample results indicate results exceeding the screening level/criteria for that constituent

Red values indicate concentrations above Residential Volatilization to Indoor Air Criteria (SSVIAC)

B= Benzene
BDCM= Bromodichloromethane
CTC= Carbon Tetrachloride
Chlo= Chloroform
IPB= Isopropyl Benzene
E= Ethylbenzene
N= Naphthalene
2-M= 2-Methylnaphthalene
n-Prop= n-Propylbenzene
PCE= Tetrachloroethylene
TCE= Trichloroethylene
1,2,3-TMB= 1,2,3-Trimethylbenzene
1,2,4-TMB= 1,2,4-Trimethylbenzene
1,3,5-TMB= 1,3,5-Trimethylbenzene
X= Xylenes
B(a) Pyr= Benzo(a)pyrene
Phen= Phenanthrene
As= Arsenic
Cr= Chromium
Pb= Lead
Hg= Mercury
Se= Selenium
Ag= Silver
VOCs= Volatile Organic Compounds
PNAs= Polynuclear Aromatic Hydrocarbons
BCC= Below Cleanup Criteria
ND= Non-Detect

NOTES:

- Analytical Results Compared to EGLE Part 213 Risk-Based Screening Levels/Part 201 Generic Cleanup Criteria and/or Site-Specific Volatilization to Indoor Air Criteria
- All soil results in micrograms per kilogram (ug/kg).
- All groundwater results in micrograms per liter (ug/L).

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FREEDOM HOUSE DETROIT

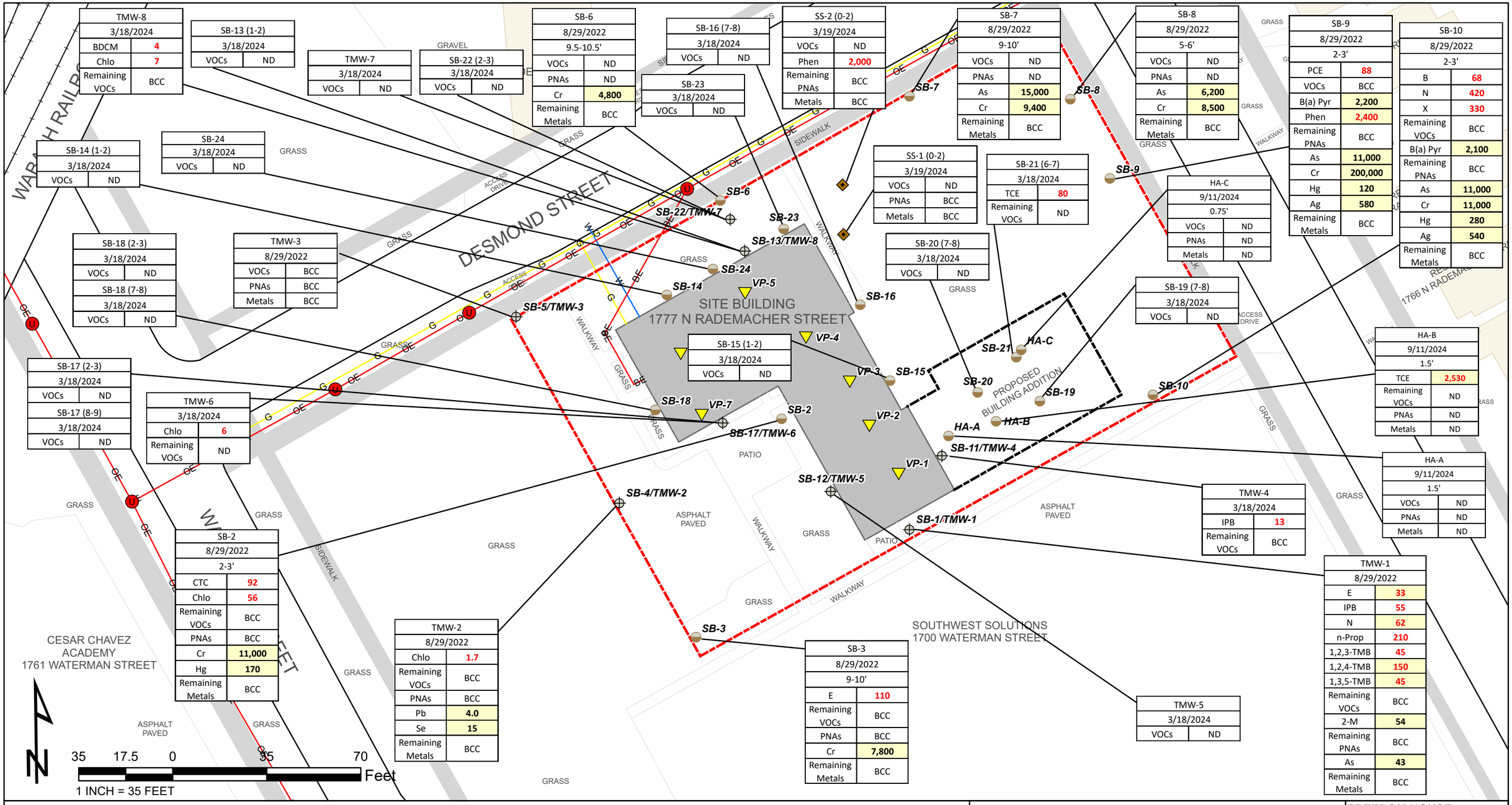
1777 N RADEMACHER STREET, DETROIT, MI

CROSS-SECTION C-C'

JOB NO: 9665

BY: MMS DATE: 1/23/2025

FIGURE 9D



TMW-8	
3/18/2024	
BDCM	4
Chlo	7
Remaining VOCs	BCC

SB-13 (1-2)	
3/18/2024	
VOCs	ND

TMW-7	
3/18/2024	
VOCs	ND

SB-22 (2-3)	
3/18/2024	
VOCs	ND

SB-6	
8/29/2022	
9.5-10.5'	
VOCs	ND
PNAs	ND
Cr	4,800
Remaining Metals	BCC

SB-16 (7-8)	
3/18/2024	
VOCs	ND

SB-23	
3/18/2024	
VOCs	ND

SS-2 (0-2)	
3/19/2024	
VOCs	ND
Phen	2,000
Remaining PNAs	BCC
Metals	BCC

SB-7	
8/29/2022	
9-10'	
VOCs	ND
PNAs	ND
As	15,000
Cr	9,400
Remaining Metals	BCC

SB-8	
8/29/2022	
5-6'	
VOCs	ND
PNAs	ND
As	6,200
Cr	8,500
Remaining Metals	BCC

SB-9	
8/29/2022	
2-3'	
PCE	88
VOCs	BCC
B(a) Pyr	2,200
Phen	2,400
Remaining PNAs	BCC
As	11,000
Cr	200,000
Hg	120
Ag	580
Remaining Metals	BCC

SB-10	
8/29/2022	
2-3'	
B	68
N	420
X	330
Remaining VOCs	BCC
B(a) Pyr	2,100
Remaining PNAs	BCC
As	11,000
Cr	11,000
Hg	280
Ag	540
Remaining Metals	BCC

SB-14 (1-2)	
3/18/2024	
VOCs	ND

SB-24	
3/18/2024	
VOCs	ND

SS-1 (0-2)	
3/19/2024	
VOCs	ND
PNAs	BCC
Metals	BCC

SB-21 (6-7)	
3/18/2024	
TCE	80
Remaining VOCs	ND

HA-C	
9/11/2024	
0.75'	
VOCs	ND
PNAs	ND
Metals	ND

SB-18 (2-3)	
3/18/2024	
VOCs	ND
SB-18 (7-8)	
3/18/2024	
VOCs	ND

TMW-3	
8/29/2022	
VOCs	BCC
PNAs	BCC
Metals	BCC

SB-20 (7-8)	
3/18/2024	
VOCs	ND

SB-19 (7-8)	
3/18/2024	
VOCs	ND

SB-15 (1-2)	
3/18/2024	
VOCs	ND

HA-B	
9/11/2024	
1.5'	
TCE	2,530
Remaining VOCs	ND
PNAs	ND
Metals	ND

SB-17 (2-3)	
3/18/2024	
VOCs	ND
SB-17 (8-9)	
3/18/2024	
VOCs	ND

TMW-6	
3/18/2024	
Chlo	6
Remaining VOCs	ND

HA-A	
9/11/2024	
1.5'	
VOCs	ND
PNAs	ND
Metals	ND

TMW-4	
3/18/2024	
IPB	13
Remaining VOCs	BCC

SB-2	
8/29/2022	
2-3'	
CTC	92
Chlo	56
Remaining VOCs	BCC
PNAs	BCC
Cr	11,000
Hg	170
Remaining Metals	BCC

TMW-2	
8/29/2022	
Chlo	1.7
Remaining VOCs	BCC
PNAs	BCC
Pb	4.0
Se	15
Remaining Metals	BCC

SB-3	
8/29/2022	
9-10'	
E	110
Remaining VOCs	BCC
PNAs	BCC
Cr	7,800
Remaining Metals	BCC

TMW-5	
3/18/2024	
VOCs	ND

TMW-1	
8/29/2022	
E	33
IPB	55
N	62
n-Prop	210
1,2,3-TMB	45
1,2,4-TMB	150
1,3,5-TMB	45
Remaining VOCs	BCC
2-M	54
Remaining PNAs	BCC
As	43
Remaining Metals	BCC

LEGEND

- Soil Boring
- Temporary Monitoring Well
- Surface Soil Sample
- Site Boundary
- Utility Pole
- OE — Overhead Electric
- BE — Buried Electric
- G — Natural Gas
- W — Water

DATA LEGEND:

Highlighted screening level/criteria and sample results indicate results exceeding the screening level/criteria for that constituent

Red values indicate concentrations above Site-Specific Volatilization to Indoor Air Criteria

BCC= Below Cleanup Criteria
ND= Non-Detect

B= Benzene
BDCM= Bromodichloromethane
CTC= Carbon Tetrachloride
Chlo= Chloroform
IPB= Isopropyl Benzene
E= Ethylbenzene
N= Naphthalene
2-M= 2-Methylnaphthalene
n-Prop= n-Propylbenzene
PCE= Tetrachloroethylene
TCE= Trichloroethylene
1,2,3-TMB= 1,2,3-Trimethylbenzene
1,2,4-TMB= 1,2,4-Trimethylbenzene
1,3,5-TMB= 1,3,5-Trimethylbenzene
X= Xylenes
B(a) Pyr= Benzo(a)pyrene
Phen= Phenanthrene
As= Arsenic
Cr= Chromium
Pb= Lead
Hg= Mercury
Se= Selenium
Ag= Silver
VOCs= Volatile Organic Compounds
PNAs= Polynuclear Aromatic Hydrocarbons

NOTES:

- Analytical Results Compared to EGLE Part 213 Risk-Based Screening Levels/Part 201 Generic Cleanup Criteria and/or Site-Specific Volatilization to Indoor Air Criteria
- All soil results in micrograms per kilogram (ug/kg).
- All groundwater results in micrograms per liter (ug/L).

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FREEDOM HOUSE DETROIT

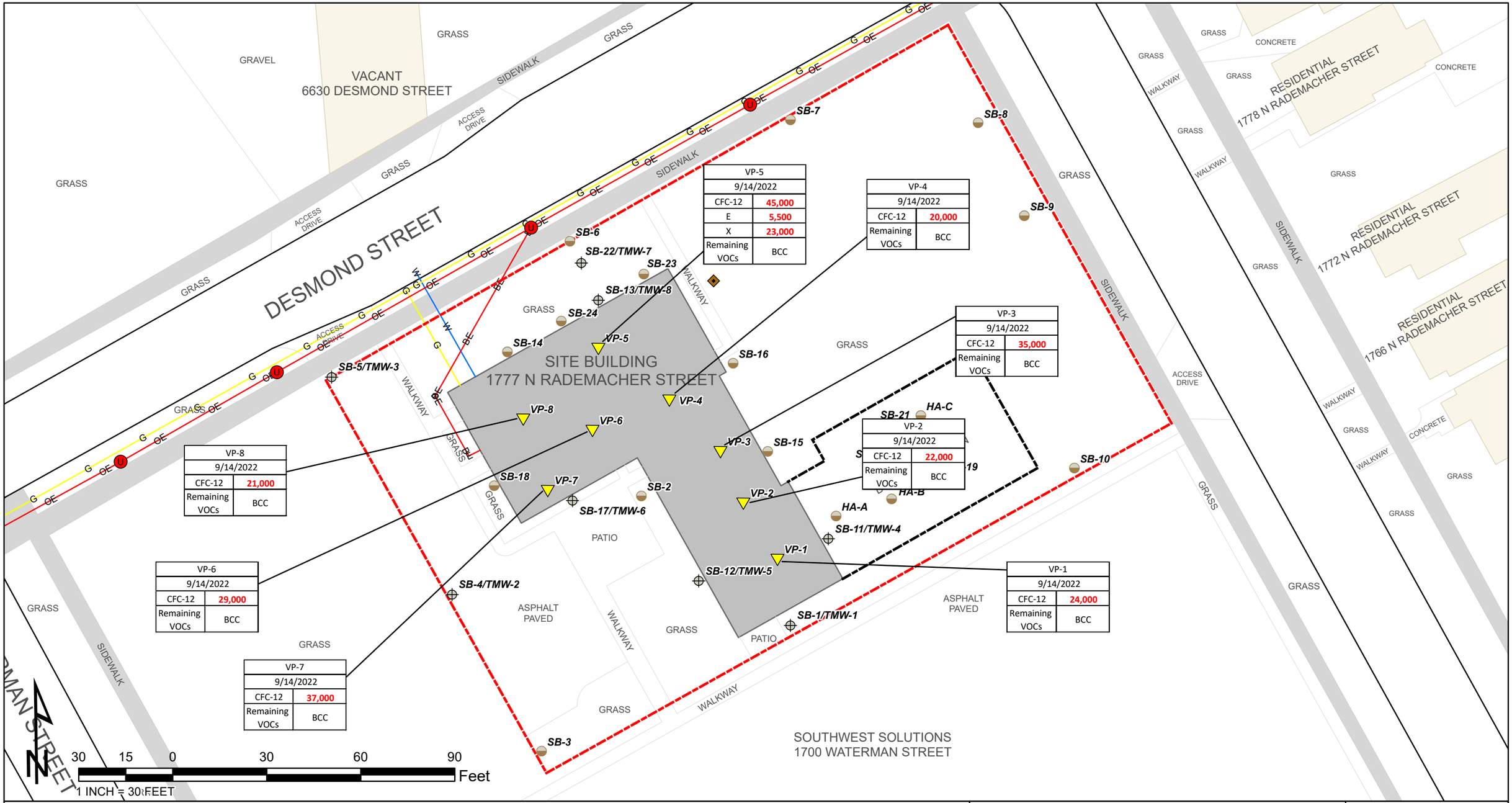
1777 N RADEMACHER STREET, DETROIT, MI

SOIL AND GROUNDWATER ANALYTICAL MAP

JOB NO.: 9665

BY: MMS DATE: 1/24/2025

FIGURE 10



LEGEND

- Site Boundary
- Soil Boring
- Temporary Monitoring Well
- Surface Soil Sample
- Sub-Slab Vapor Pin
- Railroad
- Utilities
- Utility Pole
- OE Overhead Electric
- BE Buried Electric
- G Natural Gas
- W Water

DATA LEGEND:

Bold - Concentrations exceed laboratory method detection limit

Red text indicates a constituent above Site-Specific Volatilization to Indoor Air Criteria

CFC-12= Dichlorodifluoromethane E= Ethylbenzene X= Xylenes VOCs= Volatile Organic Compounds

BCC= Below Cleanup Criteria

Notes:

Concentrations compared to Site-Specific Volatilization to Indoor Air Criteria (approved 12/18/24).

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FREEDOM HOUSE DETROIT

1777 N RADEMACHER STREET, DETROIT, MI

SOIL GAS ANALYTICAL MAP

JOB NO.: 9665

BY: MMS DATE: 2/6/2025

FIGURE 11

EXCAVATION & BACKFILLING REQUIREMENTS

1. **EXCAVATION**
   - 1.1. EXCAVATE TO SPECIFIED DEPTH, REMOVING A MINIMUM OF 12 INCHES OF EXISTING SOIL AND ANY VEGETATION.
   - 1.2. SURVEY BASE OF EXCAVATION. RECORD GPS COORDINATES OF ELEVATION POINTS FOR POST-CONSTRUCTION MONITORING AS PART OF OM&M PROGRAM.
2. **GEOTEXTILE INSTALLATION**
   - 2.1. INSTALL BRIGHTLY COLORED ORANGE GEOTEXTILE DEMARCATION FABRIC AT BASE OF EXCAVATION.
   - 2.2. FABRIC SHALL INCLUDE "DANGER DO NOT DIG" IN ENGLISH AND SPANISH.
3. **BACKFILLING**
   - 3.1. PLACE AND COMPACT 6 INCHES OF MDOT CLASS II SAND (OR APPROVED EQUIVALENT) OVER GEOTEXTIL FABRIC.
   - 3.2. PLACE 6 INCHES OF TOPSOIL OVER COMPACTED SAND. TOPOSIL DEPTH AT HARDSCAPE TRANSITIONS ARE TO MATCH FINAL ELEVATIONS AND SUPPORT VEGETATION GROWTH.
4. **SEEDING/VEGETATION**
   - 4.1. SEED WITH DROUGHT-TOLERANT, HIGH TRAFFIC GRASS SEED MIX (E.G., MICHIGAN WILDFOWER FARM'S ECO-TURF LOW MAINTENANCE MIX) OR PLACE SOD, AS SPECIFIED.
5. **IRRIGATION**
   - 5.1. INITIAL IRRIGATION SHALL BE PERFORMED AT SEEDING. SITE MAINTENANCE PERSONNEL SHALL WATER WEEKLY AS NEEDED FOR THE FIRST 45 DAYS POST-CONSTRUCTION OR UNTIL 90% GERMINATION IS ACHIEVED.

BACKFILL MATERIAL AND SOURCE TESTING

1. **MATERIAL SOURCE INFORMATION**
   - 1.1. CONTRACTOR SHALL SUBMIT THE FOLLOWING FOR REVIEW AND APPROVAL TO DELIVERY OF BACKFILL MATERIAL:
     - -NAME AND ADDRESS OF SOURCE
     - -FACILITY OPERATION DETAILS
     - VOLUME OF SOIL FROM EACH SOURCE
     - -NAME OF TESTING FORM AND LABORATORY PERFORMING ANALYSES
2. **MATERIAL TESTING**
   - 2.1. CONTRACTOR SHALL PROVIDE ANALYTICAL TEST RESULTS CONFIRMING COMPLIANCE WITH MICHIGAN RESIDENTIAL SCREENING CRITERIA:
     - -MICHIGAN 10 METALS, VOCs, AND PNAs
     - -SOIL SHALL BE FREE FROM VISIBLE DEBRIS AND POTENTIAL ASBESTOS-CONTAINING MATERIALS (ACMs)
3. **SAMPLING FREQUENCY**
   - 3.1. THE SOURCE MATERIAL WILL BE SAMPLED BASED ON THE VOLUME OF MATERIAL NECESSARY TO COMPLETE THE EXCAVATION AS SHOWN BELOW:
     - •UP TO 500 CUBIC YARDS (CY) = 2 SAMPLES
     - •UP TO 1,000 CY = 2 SAMPELS FOR THE FIRST 500 CY + 1 ADDITION SAMPLE PER 250 CY
4. **MATERIAL ACCEPTANCE**
   - 4.1. NO BACKFILL SHALL BE ACCEPTED FROM SITES WITH KNOWN CONTAMINATION, INDUSTRIAL/COMMERCIAL HISTORY, OR CORRECTIVE ACTIONS UNDER CERCLA, RCRA, OR SIMILAR.
   - 4.2. TEST RESULTS MUST BE SUBMITTED AT LEAST 2 WEEKS PRIOR TO MATERIAL USE FOR OWNER REVIEW AND APPROVAL.
   - 4.3. CONTRACTOR SHALL PROVIDE AN OPINION FROM A LISCENSED PROFESSIONAL ENGINEER CONFIRMING COMPLIANCE WITH STATED CRITERIA.

TOPSOIL SPECIFICATIONS

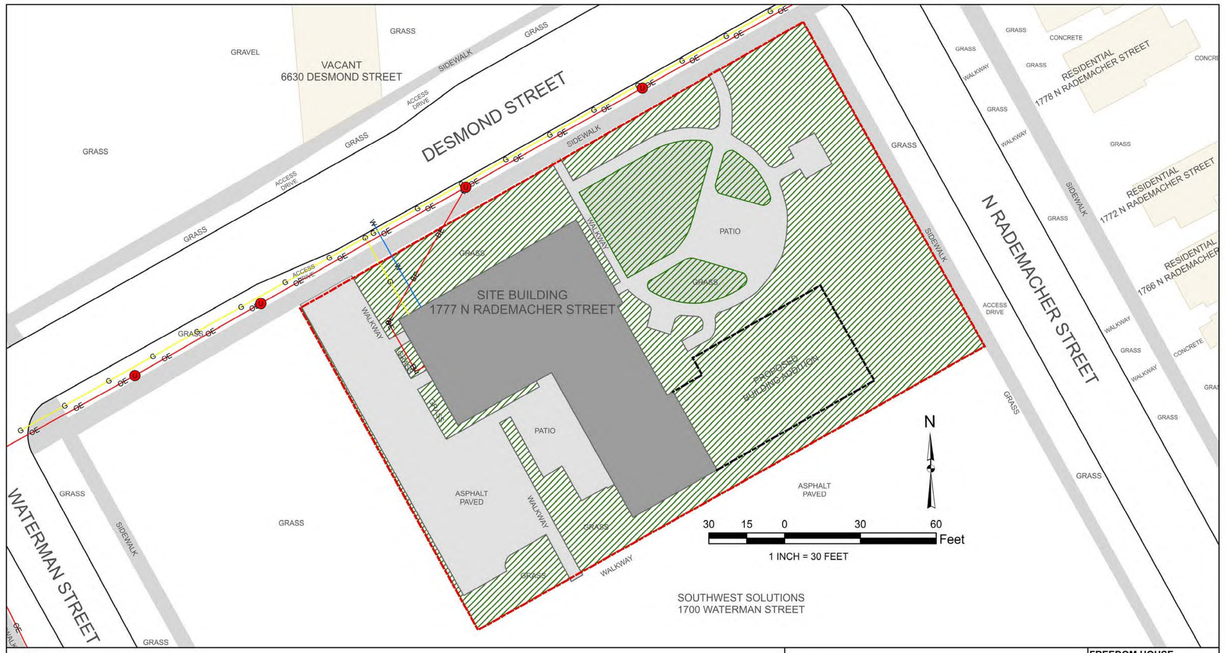
1. **TOPSOIL REQUIREMENTS**
   - 1.1. TOPSOIL SHALL BE SANDY LOAM OR CLAY LOAM WITH 5-20% ORGANIC MATTER BY WEIGHT.
   - 1.2. TOPSOIL SHALL HAVE THE FOLLOWING CHARACTERISTICS:
     - -pH : 6.0 - 8.0
     - -SOLUBLE SALT CONTENT: <500 PPM.
   - 1.3. TOPSOIL SHALL BE FREE OF CLAY, CLUMPS, STONES, ROOTS, AND DEBRIS.

SEEDING & EROSION CONTROL

1. **GRASS SEED MIX:**
   - 1.1. USE ECO-TURB DROUGHT-RESISTANT SEED MIX FOR VEGETATIVE COVER.
   - 1.2. AFTER PLANTING, APPLY A SINGLE NET STRAW EROSION CONTROL BLANKED TO PREVENT EROSION.
2. **ACCESS RESTRICTIONS**
   - 2.1. RESTRICT ACCESS TO NEWLY SEEDED AREAS FOR 45 DAYS USING TEMPORARY BARRIERS.
3. **IRRIGATION**
   - 3.1. PERFORM 1 IRRIGATION AT SEEDING.
   - 3.2. WATER WEEKLY DURING POST-CONSTRUCTION INSPECTIONS FOR THE FIRST 45 DAYS, OR UNTIL 90% GERMINATION IS ACHIEVED.
   - 3.3. ADDITIONAL IRRIGATION MAY BE REQUIRED BY SITE MAINTENANCE PERSONEL BASED ON GRASS AND WEATHER CONDITIONS.

CONSTRUCTION DOCUMENTATION

1. **CONTRACTOR SHALL MAINTAIN DAILY REPORTS, PHOTO LOGS, SURVEY DATA, AND TRUCK TICKETS.**
2. **A FINAL GRADE ELEVATION SURVEY SHALL BE CONDUCTED TO COFIRM THE ENGINEERED SOIL BARRIER ACHIEVES THE REQUIRED 12-INCH VERTICAL THICKNESS.**
3. **GPS COORDINATES SHALL BE RECORDED FOR OM&M PURPOSES.**



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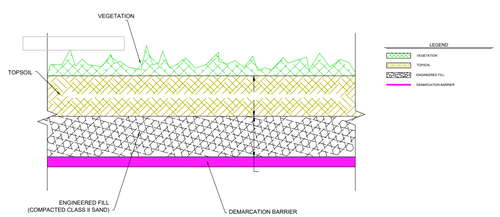
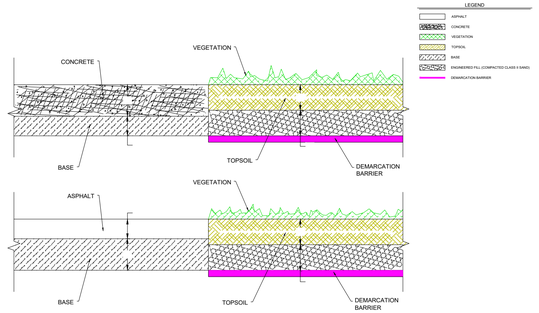
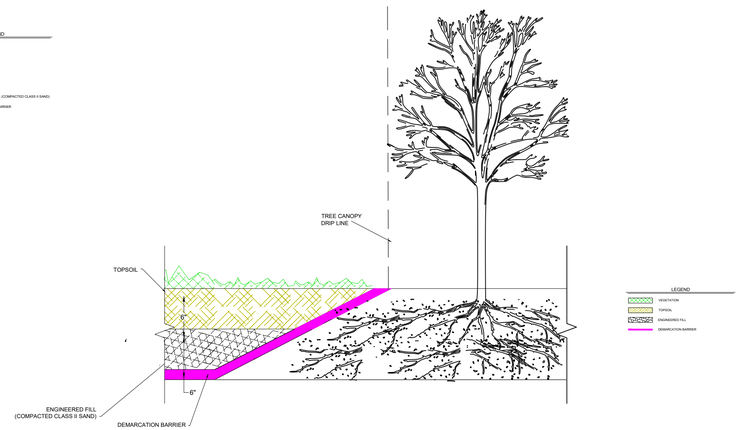
FREEDOM HOUSE DETROIT
1777 N. RADEMACHER STREET, DETROIT, MI
EXPOSURE BARRIER LOCATION MAP
JOB NO.: 9665
BY: CJB DATE: 2/10/25
SHEET: FIGURE 12



ENGINEERED SOIL AND DEMARCATION BARRIER DETAIL



HARDSCAPE TRANSITION DETAILS (TYPICAL)



LANDSCAPE TRANSITION DETAIL (TYP)

ENGINEERED SOIL AND DEMARCATION BARRIER TO BE CONSTRUCTED OVER ALL PROPERTY AREAS OUTSIDE OF EXISTING AND PROPOSED BUILDING FOOTPRINT, PAVED SIDEWALK, AND PARKING AREAS (SEE GREEN HATCH AREAS)

#	mm/yyyy	DESCRIPTION	.	.	.	.
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE
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FREEDOM HOUSE DETROIT
1777 N RADEMACHER, DETROIT, MI 48209
RESPONSE ACTIVITY PLAN

EXPOSURE BARRIER LOCATION MAP

DRAWING **12**
PROJECT NO. 9665

TABLES

Table 1 - Soil Analytical Summary

Freedom House Detroit
1777 North Rademacher Street
Detroit, Michigan 48209
ERG Project NO.: 9665

Constituent*	Chemical Abstract Service Number	Statewide Default Background Levels	Residential						Sample Location	SB-2	SB-3	SB-6	SB-7	SB-8	SB-9	SB-10	SB-13	SB-14	SB-15	SB-16	SB-17		SB-18		SB-19	SB-20	SB-21	SB-22	SB-23	SB-24	SS-1	SS-1	HA-A	HA-B	HA-C
			Groundwater Protection		Indoor Air	Ambient Air		Contact	Collection Date	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/19/2024	3/19/2024	9/11/2024	9/11/2024	9/11/2024
(Refer to detailed laboratory report for method reference data)			Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Site-Specific Volatilization to Indoor Air Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Depth	2-3'	9-10'	9.5-10.5'	9-10'	5-6'	2-3'	2-3'	1-2'	1-2'	1-2'	7-8'	2-3'	8-9'	2-3'	7-8'	7-8'	7-8'	6-7'	2-3'	1-2'	1-2'	0-2'	0-2'	1.5'	1.5'	0.75'
Volatiles																																	
Acetone (I)	67-64-1	NA	15,000	34,000	2.6E+5 (EE)	1.30E+08	3.90E+11	2.30E+07		<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,001	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<3000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Acrylonitrile (I)	107-13-1	NA	100 (M); 52	100 (M); 40	1.2 (M)	5,000	4.60E+07	16,000		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
t-Amyl methyl ether (TAME)	994-05-8	NA	3,900	NA		3.40E+05	4.10E+09	2.9E+7 (C)		<250	<250	<250	<250	<250	<250	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene (I)	71-43-2	NA	100	4,000 (X)	1.7 (M)	13,000	3.80E+08	1.80E+05		<50	<50	<50	<50	<50	<50	68	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Benzyl chloride	100-44-7	NA	150	NA		14,000	6.20E+07	48,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene (I)	108-86-1	NA	550	NA	1.60E+02	4.50E+05	5.30E+08	5.40E+05		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Bromochloromethane	74-97-5									<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Bromodichloromethane	75-27-4	NA	1,600 (W)	ID	0.61 (M)	9,100	8.40E+07	1.10E+05		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Bromoform	75-25-2	NA	1,600 (W)	ID	45 (M)	9.00E+05	2.80E+09	8.20E+05		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Bromomethane	74-83-9	NA	200	100	0.90 (M)	11,000	3.30E+08	3.20E+05		<200	<200	<200	<200	<200	<200	<200	<200	<300	<300	<200	<200	<300	<200	<200	<200	<300	<200	<200	<200	<300	<200	<200	<200	<200
2-Butanone (MEK) (I)	78-93-3	NA	2.60E+05	44,000	31,000 (DD)	2.90E+07	6.70E+10	1.2E+8 (C,DD)		<750	<750	<750	<750	<750	<750	<750	<860	<970	<1100	<930	<850	<1000	<850	<910	<860	<950	<850	<840	<950	<930	<900	<930	<860	<860	<860
t-Butyl alcohol	75-65-0	NA	78,000	NA		9.70E+07	1.30E+11	1.2E+8 (C)		<2,500	<2,500	<2,500	<2,500	<2,500	<2,500	<2,501	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	104-51-8	NA	1,600	ID	550	ID	2.00E+09	2.50E+06		<50	110	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
sec-Butylbenzene	135-98-8	NA	1,600	ID	3,800	ID	4.00E+08	2.50E+06		<50	91	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
tert-Butylbenzene (I)	98-06-6	NA	1,600	ID	0.64 (M)	ID	6.70E+08	2.50E+06		<50	<50	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Carbon disulfide (LR)	75-15-0	NA	16,000	ID	52 (M)	1.30E+06	4.70E+10	7.2E+6 (C,DD)		<250	<250	<250	<250	<250	<250	<250	<300	<300	<400	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300
Carbon tetrachloride	56-23-5	NA	100	760 (X)	0.31 (M)	3,500	1.30E+08	96,000		92	<50	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Chlorobenzene (I)	108-90-7	NA	2,000	500	8.20E+01	7.70E+05	4.70E+09	4.3E+6 (C)		<50	<50	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Chloroethane	75-00-3	NA	8,600	22,000 (X)	330	3.00E+07	6.70E+11	2.6E+6 (C)		<250	<250	<250	<250	<250	<250	<250	<300	<300	<400	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300
Chloroform	67-66-3	NA	1,600 (W)	7,000	0.26 (M)	45,000	1.30E+09	1.20E+06		56	<50	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Chloromethane (I)	74-87-3	NA	5,200	ID	6.9 (M)	40,000	4.90E+09	1.60E+6 (C)		<250	<250	<250	<250	<250	<250	<250	<300	<300	<400	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300
Dibromochloromethane	124-48-1	NA	1,600 (W)	ID	0.40 (MM) (M)	24,000	1.30E+08	1.10E+05		-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Dibromochloropropane	96-12-8	NA	10 (M); 4.0	ID		260	5.60E+05	4,400 (C)		<100	<100	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromomethane	74-95-3	NA	1,600	NA	3.5 (M)	ID	ID	2.5E+6 (C)		<250	<250	<250	<250	<250	<250	<250	<300	<300	<400	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300
1,2-Dichlorobenzene	95-50-1	NA	14,000	280	1,500	3.90E+07	1.00E+11	1.9E+7 (C)		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	541-73-1	NA	170	680	10 (M)	79,000	2.00E+08	2.0E+5 (C)		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	106-46-7	NA	1,700	360	23 (M)	77,000	4.50E+08	4.00E+05		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
trans-1,4-Dichloro-2-butene	110-57-6									-	-	-	-	-	-	-	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Dichlorodifluoromethane	75-71-8	NA	95,000	ID	12 (M)	5.30E+07	3.30E+12	5.2E+7 (C)		<250	<250	<250	<250	<250	<250	<250	<300	<300	<400	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300
1,1-Dichloroethane	75-34-3	NA	18,000	15,000	2.6 (M)	2.10E+06	3.30E+10	2.7E+7 (C)		<50	<50	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
1,2-Dichloroethane (I)	107-06-2	NA	100	7,200 (X)	0.82 (M)	6,200	1.20E+08	91,000		<50	<50	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
cis-1,2-Dichloroethylene	156-59-2	NA	1,400	12,000	2.1 (M)	1.80E+05	2.30E+09	2.5E+6 (C)		<50	<50	<50	<50	<50	<50	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethylene	156-60-5	NA	2,000	30,000 (X)	12 (M)	2.80E+05	4.70E+09	3.8E+6 (C)		<50	<50	<50	<50	<50	<50	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethylene (I)	75-35-4	NA	140	2,600	12 (M)	1,100	6.20E+07	2.00E+05		<50	<50	<50	<50	<50	<50	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane (I)	78-87-5	NA	100	4,600 (X)	2.1 (M)	25,000	2.70E+08	1.40E+05		<50	<50	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
cis-1,3-Dichloropropylene	10061-01-5				3.1 (M) (J)					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<60	<60	<60
trans-1,3-Dichloropropylene	10061-02-6				3.1 (M) (J)					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<60	<60	<60
Diethyl ether	60-29-7	NA	200	ID		8.50E+07	8.00E+11	1.1E+8 (C)		<200	<200	<200	<200	<200	<200	<200	<200	<300	<300	<200	<200	<300	<200	<200	<200	<300	<200	<200	<300	<200	<200	<200	<200	<200
Diisopropyl ether	108-20-3	NA	600	ID		3.40E+05	4.10E+09	9.2E+5 (C)		<250	<250	<250	<250	<250	<250	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene (I)	100-41-4	NA	1,500	360	12 (M)	7.20E+05	1.00E+10	2.2E+7 (C)		<250	110	<250	<250	<250	<250	<250	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Ethylene dibromide	106-93-4	NA	20 (M); 1.0	110 (X)	0.074 (M)	1,700	1.40E+07	92		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl-tert-butyl ether (ETBE)	637-92-3	NA	980	ID		1.90E+06	2.50E+10	ID		<250	<250	<250	<250	<250	<250	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	591-78-6	NA	20,000	ID	210 (M)	1.10E+06	2.70E+09	3.2E+7 (C)		<2,500	<2,500	<2,500	<2,500	<2,500	<2,500	<2,501	<3000	<3000	<4000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000
Isopropyl benzene	98-82-8	NA	91,000	3,200	3.8 (M)	1.70E+06	5.80E+09	2.5E+7 (C)		<250	<250	<250	<250	<250	<250	<250	<300	<300	<400	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300
p-Isopropyltoluene	99-87-6									<150	<150	<150	<150	<150	<150	<150	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Methyl iodide	74-88-4									-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
4-Methyl-2-pentanone (MIBK) (I)	108-10-1	NA	36,000	ID	3,300	4.50E+07	1.40E+11	5.6E+7 (C)		<2,500	<2,500	<2,500	<2,500	<2,500	<2,500	<2,501	<3000	<3000	<4000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000	<3000
Methylene chloride	75-09-2	NA	100	30,000 (X)	130	2.10E+05	6.60E+09	1.30E+06		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Methyl-tert-butyl ether (MTBE)	1634-04-4	NA	800	1.4E+5 (X)	74 (M)	2.50E+07	2.00E+11	1.50E+06		<250	<250	<250	<250	<250	<250	<250	<200	<300	<300	<200	<200	<300	<200	<200	<200	<300	<200	<200	<200	<300	<200	<200	<200	<200
Naphthalene	91-20-3	NA	35,000	730	67 (M)	3.00E+05	2.00E+08	1.60E+07		<330	<330	<330	<330	<330	<330	420	<300	<300	<400	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300
n-Propylbenzene (I)	103-65-1	NA	1,600	ID	1,800 (DD)	ID	1.30E+09	2.50E+06		<100	570	<100	<100	<100	<100	<100	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Styrene	100-42-5	NA	2,700	2,100 (X)	150	9.70E+05	5.50E+09	4.00E+05		<50	<50	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
1,1,1,2-Tetrachloroethane	630-20-6	NA	1,500	ID	3.2 (M)	36,000	4.20E+08	4.8E+5 (C)		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
1,1,2,2-Tetrachloroethane	79-34-5	NA	170	1,600 (X)	2.7 (M)	10,000	5.40E+07	53,000		<50	<50	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Tetrachloroethylene	127-18-4	NA	100	1,200 (X)	0.2 (M) (EE)	1.70E+05	2.70E+09	2.0E+5 (C)		<50	<50	<50	<50	<50	<50	88	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Toluene (I)	108-88-3	NA	16,000	5,400	3,700	2.80E+06	2.70E+10	5.0E+7 (C)		72	<50	<50	<50	<50	<50	190	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
1,2,3-Trichlorobenzene	87-61-6									<250	<250	<250	<250	<250	<250	<250	<380	<430	<490	<410	<370	<440	<370	<400	<380	<420	<370	<370	<420	<410	<390	<410	<380	<380	<380
1,2,4-Trichlorobenzene	120-82-1	NA	4,200	5,900 (X)	53 (M)	2.80E+07	2.50E+10	9.9E+5 (DD)		<250	<250	<250	<250	<250	<250	<250	<380	<430	<490	<410	<370	<440	<370	<400	<380	<420	<370	<370	<420	<410	<390	<410	<380	<380	<380
1,1,1-Trichloroethane	71-55-6	NA	4,000	1,800	450 (EE)	3.80E+06	6.70E+10	5.0E+8 (C)		<50	<50	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
1,1,2-Trichloroethane	79-00-5	NA	100	6,600 (X)	0.37 (M)	17,000	1.90E+08	1.80E+05		<50	<50	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Trichloroethylene	79-01-6	NA	100	4,000 (X)	0.33 (M) (DD)	11,000	1.30E+08	1.1E+5 (DD)		<50	<50	<50	<50	<50	<50	<50	<60	<60	<70	<60	<60	<70	<60	<60	<60	89	<60	<60	<60	<60	<60	<60	1,130	<60
Trichlorofluoromethane	75-69-4	NA	52,000	NA	19 (M)	9.20E+07	3.80E+12	7.9E+7 (C)		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
1,2,3-Trichloropropane	96-18-4	NA	840	NA	2.6 (M)	9,200	2.00E+07	1.3E+6 (C)		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
1,2,3-Trimethylbenzene	526-73-8				270 (JT)					<250	<250	<250	<250	<250	<250	<250	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
1,2,4-Trimethylbenzene (I)	95-63-6	NA	2,100	570	150 (JT)	2.10E+07	8.20E+10	3.2E+7 (C)		<100	<100	<100	<100	<100	<100	110	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
1,3,5-Trimethylbenzene (I)	108-67-8	NA	1,800	1,100	100 (JT)	1.60E+07	8.20E+10	3.2E+7 (C)		<100	<100	<100	<100	<100	<100	<100	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Vinyl chloride	75-01-4	NA	40	260 (X)	0.082 (MM) (M)	4,200	3.50E+08	3,800		<40	<40	<40	<40	<40	<40	<40	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
m&p-Xylene	108-38-3									-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
o-Xylene	95-47-6									-	-	-	-	-	-	-	<60	<60	<70	<60	<60	<70	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60
Xylenes (I)	1330-20-7	NA	5,600	980	280 (I)	4.60E+07	2.90E+11	4.1E+8 (C)		270	<150	<150	<150	<150	<150	330	<160	<160	-	<160	<160	-	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160

Table 1 - Soil Analytical Summary

Freedom House Detroit
1777 North Rademacher Street
Detroit, Michigan 48209
ERG Project NO.: 9665

Constituent*	Chemical Abstract Service Number	Statewide Default Background Levels	Residential						Sample Location	SB-2	SB-3	SB-6	SB-7	SB-8	SB-9	SB-10	SB-13	SB-14	SB-15	SB-16	SB-17		SB-18		SB-19	SB-20	SB-21	SB-22	SB-23	SB-24	SS-1	SS-1	HA-A	HA-B	HA-C
			Groundwater Protection		Indoor Air	Ambient Air		Contact	Collection Date	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/19/2024	3/19/2024	9/11/2024	9/11/2024	9/11/2024
(Refer to detailed laboratory report for method reference data)			Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Site-Specific Volatilization to Indoor Air Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC)	Particulate Soil Inhalation Criteria	Direct Contact Criteria	Depth	2-3'	9-10'	9.5-10.5'	9-10'	5-6'	2-3'	2-3'	1-2'	1-2'	1-2'	7-8'	2-3'	8-9'	2-3'	7-8'	7-8'	7-8'	6-7'	2-3'	1-2'	1-2'	0-2'	0-2'	1.5'	1.5'	0.75'
Polynuclear Aromatic Hydrocarbons																																	
Acenaphthene	83-32-9	NA	3.00E+05	8,700	2.50E+05	8.10E+07	1.40E+10	4.10E+07		<330	<330	<330	<330	<330	<330	<330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<300	<300	-	-	-
Acenaphthylene	208-96-8	NA	5,900	ID		2.20E+06	2.30E+09	1.60E+06		<330	<330	<330	<330	<330	**450**	**990**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<300	<300	-	-	-
Anthracene	120-12-7	NA	41,000	ID	1.30E+07	1.40E+09	6.70E+10	2.30E+08		<330	<330	<330	<330	<330	**700**	**380**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<300	**300**	-	-	-
Benzo(a)anthracene (G)	56-55-3	NA	NLL	NLL	1.6E+5 (MM)	NLV	ID	20,000		<330	<330	<330	<330	<330	**2,100**	**1,300**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<300	**1,000**	-	-	-
Benzo(a)pyrene (G)	50-32-8	NA	NLL	NLL	NLV	NLV	1.50E+06	2,000		<330	<330	<330	<330	<330	**2,200**	**2,100**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<300	**900**	-	-	-
Benzo(b)fluoranthene (G)	205-99-2	NA	NLL	NLL	NLV	ID	ID	20,000		**360**	<330	<330	<330	<330	**2,800**	**2,100**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**600**	**1,000**	-	-	-
Benzo(g,h,i)perylene	191-24-2	NA	NLL	NLL	NLV	NLV	8.00E+08	2.50E+06		<330	<330	<330	<330	<330	**1,200**	**1,500**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<300	**500**	-	-	-
Benzo(k)fluoranthene (G)	207-08-9	NA	NLL	NLL	NLV	NLV	ID	2.00E+05		<330	<330	<330	<330	<330	**1,100**	**750**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**600**	**900**	-	-	-
Chrysene (G)	218-01-9	NA	NLL	NLL	NLV	ID	ID	2.00E+06		<330	<330	<330	<330	<330	**2,100**	**1,300**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**300**	**1,100**	-	-	-
Dibenzo(a,h)anthracene (G)	53-70-3	NA	NLL	NLL	NLV	NLV	ID	2,000		<330	<330	<330	<330	<330	**330**	**370**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<300	<300	-	-	-
Fluoranthene	206-44-0	NA	7.30E+05	5,500	NLV	7.40E+08	9.30E+09	4.60E+07		**480**	<330	<330	<330	<330	**4,100**	**1,200**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<300	**2,200**	-	-	-
Fluorene	86-73-7	NA	3.90E+05	5,300	4.70E+05	1.30E+08	9.30E+09	2.70E+07		<330	<330	<330	<330	<330	<330	<330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**500**	<300	-	-	-
Indeno(1,2,3-cd)pyrene (G)	193-39-5	NA	NLL	NLL	NLV	NLV	ID	20,000		<330	<330	<330	<330	<330	**1,400**	**1,500**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<300	**400**	-	-	-
2-Methylnaphthalene	91-57-6	NA	57,000	4,200	1,700	1.50E+06	6.70E+08	8.10E+06		<330	<330	<330	<330	<330	<330	<330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<300	<300	-	-	-
Phenanthrene	85-01-8	NA	56,000	2,100	1,700	1.60E+05	6.70E+06	1.60E+06		<330	<330	<330	<330	<330	***2,400***	**650**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**400**	***2,000***	-	-	-
Pyrene	129-00-0	NA	4.80E+05	ID	2.50E+07	6.50E+08	6.70E+09	2.90E+07		**420**	<330	<330	<330	<330	**3,300**	**1,800**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**500**	**2,200**	-	-	-
Metals																																	
Arsenic	7440-38-2	5,800	4,600	4,600	NLV	NLV	7.20E+05	7,600		**3,500**	**4,400**	**1,600**	***11,000***	***6,200***	***11,000***	***11,000***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5,300**	**5,680**	-	-	-
Barium (B)	7440-39-3	75,000	1.30E+06	(G)	NLV	NLV	3.30E+08	3.70E+07		**24,000**	**16,000**	**10,000**	**26,000**	**28,000**	**140,000**	**62,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**80,700**	**124,000**	-	-	-
Cadmium (B)	7440-43-9	1,200	6,000	(G,X)	NLV	NLV	1.70E+06	5.50E+05		**190**	**130**	**120**	**74**	**100**	**1,700**	**610**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1,550**	**740**	-	-	-
Chromium, Total	7440-47-3	18,000 (total)	30,000	3,300	NLV	NLV	2.60E+05	2.50E+06		**11,000**	**7,800**	**4,800**	**9,400**	**8,500**	***200,000***	**11,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	***37,700***	**17,800**	-	-	-
Copper (B)	7440-50-8	32,000	5.80E+06	(G)	NLV	NLV	1.30E+08	2.00E+07		**13,000**	**8,600**	**6,100**	**6,400**	**6,300**	**79,000**	**38,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**36,500**	**26,800**	-	-	-
Lead (B)	7439-92-1	21,000	7.00E+05	(G,X)	NLV	NLV	1.00E+08	4.00E+05		**20,000**	**4,500**	**2,600**	**5,200**	**5,200**	**180,000**	**94,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**58,200**	**48,800**	-	-	-
Mercury, Total	7439-97-6	130	1,700	50 (M); 1.2	22 (M)	52,000	2.00E+07	1.60E+05		***170***	<50	<50	<50	<50	***120***	***280***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**114**	**115**	-	-	-
Selenium (B)	7782-49-2	410	4,000	400	NLV	NLV	1.30E+08	2.60E+06		<200	<200	<200	<200	<200	**580**	**540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<400	<400	-	-	-
Silver (B)	7440-22-4	1,000	4,500	100 (M); 27	NLV	NLV	6.70E+06	2.50E+06		<200	<200	<200	<200	<200	***580***	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<200	<200	-	-	-
Zinc (B)	7440-66-6	47,000	2.40E+06	(G)	NLV	NLV	ID	1.70E+08		**38,000**	**25,000**	**14,000**	**22,000**	**20,000**	**190,000**	**71,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**85,300**	**95,700**	-	-	-

LEGEND:

Bold values indicate concentrations at or above laboratory detection limits.

Shaded values indicate concentrations above Drinking Water Protection criteria.

Italicized values indicate concentrations above Groundwater-Surfacewater Interface Protection (GSIP) criteria.

Red values indicate concentrations above Site-Specific Volatilisation to Indoor Air Criteria (SSVIAC).

Underlined values indicate concentrations above Direct Contact criteria.

NOTES:

Concentrations were compared to EGLE Part 201 Generic Residential Cleanup Criteria and SSVIAC (approved by EGLE December 18, 2024)

All results in micrograms per kilogram (µg/kg)

Refer to R 299.49 FOOTNOTES FOR GENERIC CLEANUP CRITERIA TABLES for footnotes and abbreviations in screening level/criteria columns

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Table 2 - Groundwater Analytical Summary

Freedom House Detroit
1777 North Rademacher Street
Detroit, Michigan 48209
ERG Project No.: 9665

Constituent* *(Refer to detailed laboratory report for method reference data)*	Chemical Abstract Service Number	Groundwater Surface Water Interface Criteria	Water Solubility	Flammability and Explosivity Screening Level	Residential		Sample Location	TMW-1	TMW-2	TMW-3	TMW-4	TMW-5	TMW-6	TMW-7	TMW-8
					Drinking Water Criteria	Site-Specific Volatilization to Indoor Air Criteria	Collection Date	8/29/2022	8/29/2022	8/29/2022	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024
							Screen Interval (depth)	7-12'	7-12'	5.5-10.5'	6.5-11.5'	5-10'	5-10'	5-10'	5-10'
Volatiles															
Acetone (I)	67-64-1	1,700	1.00E+09	1.50E+07	730	50,000 (FF)		<50	<50	<50	<50	<50	<50	<50	**66**
Acrylonitrile (I)	107-13-1	2.0 (M); 1.2	7.50E+07	6.40E+06	2.6	4.6		<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Benzene (I)	71-43-2	200 (X)	1.75E+06	68,000	5.0 (A)	1.0		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromobenzene (I)	108-86-1	NA	4.13E+05	ID	18	62		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromochloromethane	74-97-5	-	-	-	-	-		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	75-27-4	ID	6.74E+06	ID	80 (A,W)	1.2		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**4.0**
Bromoform	75-25-2	ID	3.10E+06	ID	80 (A,W)	89		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	74-83-9	5.0 (M); 4.2	1.45E+07	ID	10	2.1 (M)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Butanone (MEK) (I)	78-93-3	2,200	2.40E+08	ID	13,000	2,600 (DD)		<25	<25	<25	<25	<25	<25	<25	<25
n-Butylbenzene	104-51-8	ID	NA	ID	80	44		**17**	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
sec-Butylbenzene	135-98-8	ID	NA	ID	80	270		**15**	<1.0	<1.0	**6.0**	<1.0	<1.0	<1.0	<1.0
tert-Butylbenzene (I)	98-06-6	ID	NA	ID	80	7.7E-02 (M)		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon disulfide (I,R)	75-15-0	ID	1.19E+06	13,000	800	92		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon tetrachloride	56-23-5	38 (X)	7.93E+05	ID	5.0 (A)	0.41 (M)		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene (I)	108-90-7	25	4.72E+05	1.60E+05	100 (A)	33		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	75-00-3	1,100 (X)	5.74E+06	1.10E+05	430	620		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroform	67-66-3	350	7.92E+06	ID	80 (A,W)	0.49 (M)		<2.5	**1.7**	<1.0	<1.0	<1.0	**6.0**	<1.0	**7.0**
Chloromethane (I)	74-87-3	ID	6.34E+06	36,000	260	15		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
o-Chlorotoluene (I)	95-49-8	ID	3.73E+05	ID	150	50		<5.0	<5.0	<5.0	-	-	-	-	-
Dibromochloromethane	124-48-1	ID	2.60E+06	ID	80 (A,W)	0.78 (MM) (M)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromochloropropane	96-12-8	ID	1,230	NA	0.2 (A)	4.5E-04 (MM) (M)		<2.5	<1.0	<1.0	-	-	-	-	-
Dibromomethane	74-95-3	NA	1.10E+07	ID	80	8.8		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene	95-50-1	13	1.56E+05	NA	600 (A)	370		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	541-73-1	28	1.11E+05	ID	6.6	2.6		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	106-46-7	17	73,800	NA	75 (A)	5.9		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,4-Dichloro-2-butene	110-57-6	-	-	-	-	-		-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	75-71-8	ID	3.00E+05	ID	1,700	13		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane	75-34-3	740	5.06E+06	3.80E+05	880	4.7		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane (I)	107-06-2	360 (X)	8.52E+06	2.50E+06	5.0 (A)	1.4		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethylene (I)	75-35-4	130	2.25E+06	97,000	7.0 (A)	18		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethylene	156-59-2	620	3.50E+06	5.30E+05	70 (A)	3.4		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethylene	156-60-5	1,500 (X)	6.30E+06	2.30E+05	100 (A)	16		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane (I)	78-87-5	230 (X)	2.80E+06	5.50E+05	5.0 (A)	2.6		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropylene	10061-01-5	-	-	-	-	-		<2.5	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropylene	10061-02-6	-	-	-	-	-		<2.5	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0
Diethyl ether	60-29-7	ID	6.10E+07	6.50E+05	10 (E)	1,200		-	-	-	<10	<10	<10	<10	<10
Ethylbenzene (I)	100-41-4	18	1.69E+05	43,000	74 (E)	2.8		***33***	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylene dibromide	106-93-4	5.7 (X)	4.20E+06	ID	0.05 (A)	0.13		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Hexanone	591-78-6	ID	1.60E+07	NA	1,000	660		<50	<50	<50	<50	<50	<50	<50	<50
Isopropyl benzene	98-82-8	28	56,000	29,000	800	0.60 (M)		***55***	<5.0	<5.0	**13**	<5.0	<5.0	<5.0	<5.0
p-Isopropyltoluene	99-87-6	-	-	-	-	-		-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl Iodide	74-88-4	-	-	-	-	-		-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
4-Methyl-2-pentanone (MIBK) (I)	108-10-1	ID	2.00E+07	ID	1,800	200		<50	<50	<50	<50	<50	<50	<50	<50
Methyl-tert-butyl ether (MTBE)	1634-04-4	7,100 (X)	4.68E+07	ID	40 (E)	250		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methylene chloride	75-09-2	1,500 (X)	1.70E+07	ID	5.0 (A)	79 (FF)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Methylnaphthalene	91-57-6	19	24,600	ID	260	66		-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	91-20-3	11	31,000	NA	520	4.2 (M)		**62**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
n-Propylbenzene (I)	103-65-1	ID	NA	ID	80	43 (DD)		**210**	<1.0	**1.3**	**40**	<1.0	<1.0	<1.0	<1.0
Styrene	100-42-5	80 (X)	3.10E+05	1.40E+05	100 (A)	33		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1,2-Tetrachloroethane	630-20-6	ID	1.10E+06	ID	77	3.1		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	79-34-5	78 (X)	2.97E+06	ID	8.5	2.4		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethylene	127-18-4	60 (X)	2.00E+05	ID	5.0 (A)	1.5 (FF)		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrahydrofuran	109-99-9	11,000 (X)	1.00E+09	60,000	95	45,000		-	-	-	<90	<90	<90	<90	<90
Toluene (I)	108-88-3	270	5.26E+05	61,000	790 (E)	300 (FF)		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-Trichlorobenzene	87-61-6	-	-	-	-	58		-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,4-Trichlorobenzene	120-82-1	99 (X)	3.00E+05	NA	70 (A)	3.8 (M)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,1-Trichloroethane	71-55-6	89	1.33E+06	ID	200 (A)	180 (FF)		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	79-00-5	330 (X)	4.42E+06	NA	5.0 (A)	0.47 (M)		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethylene	79-01-6	200 (X)	1.10E+06	ID	5.0 (A)	7.3E-02 (M) (DD)		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	75-69-4	NA	1.10E+06	ID	2,600	22		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-Trichloropropane	96-18-4	NA	1.90E+06	NA	42	1.9		<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-Trimethylbenzene	526-73-8	-	-	-	-	43 (JT)		**45**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (I)	95-63-6	17	55,890	56,000 (S)	63 (E)	25 (JT)		***150***	**1.4**	**2.1**	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene (I)	108-67-8	45	61,150	ID	72 (E)	18 (JT)		-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl chloride	75-01-4	13 (X)	2.76E+06	33,000	2.0 (A)	0.12 (MM) (M)		-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
m&p-Xylene	108-38-3	-	-	-	-	-		-	-	-	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	95-47-6	-	-	-	-	-		-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes (I)	1330-20-7	49	1.86E+05	70,000	280 (E)	75 (J)		**22**	<3.0	<3.0	-	-	-	-	-
Semivolatiles															
Acenaphthene	83-32-9	38	4,240	ID	1,300	3,900 (S)		<5.0	<5.0	<5.0	-	-	-	-	-
Acenaphthylene	208-96-8	ID	3,930	ID	52	65		<5.0	<5.0	<5.0	-	-	-	-	-
Anthracene	120-12-7	ID	43.4	ID	43 (S)	43 (S)		<5.0	<5.0	<5.0	-	-	-	-	-
Benzo(a)anthracene (Q)	56-55-3	ID	9.4	ID	2.1	9.4 (S) (MM)		<1.0	<1.0	<1.0	-	-	-	-	-
Benzo(b)fluoranthene (Q)	205-99-2	ID	1.5	ID	1.5 (S, AA)	NA		<1.0	<1.0	<1.0	-	-	-	-	-
Benzo(k)fluoranthene (Q)	207-08-9	NA	0.8	ID	1.0 (M); 0.8 (S)	NA		<1.0	<1.0	<1.0	-	-	-	-	-
Benzo(g,h,i)perylene	191-24-2	ID	0.26	ID	1.0 (M); 0.26 (S)	NA		<1.0	<1.0	<1.0	-	-	-	-	-
Benzo(a)pyrene (Q)	50-32-8	ID	1.62	ID	5.0 (A)	NA		<1.0	<1.0	<1.0	-	-	-	-	-
Chrysene (Q)	218-01-9	ID	1.6	ID	1.6 (S)	NA		<1.0	<1.0	<1.0	-	-	-	-	-
Dibenzo(a,h)anthracene (Q)	53-70-3	ID	2.49	ID	2.0 (M); 0.21	NA		<2.0	<2.0	<2.0	-	-	-	-	-
Fluoranthene	206-44-0	1.6	206	ID	210 (S)	NA		<1.0	<1.0	<1.0	-	-	-	-	-
Fluorene	86-73-7	12	1,980	ID	880	1,700 (S)		<5.0	<5.0	<5.0	-	-	-	-	-
Indeno(1,2,3-cd)pyrene (Q)	193-39-5	ID	0.022	ID	2.0 (M); 0.022 (S)	NA		<2.0	<2.0	<2.0	-	-	-	-	-
2-Methylnaphthalene	91-57-6	19	24,600	ID	260	66		***54***	<5.0	<5.0	-	-	-	-	-
Phenanthrene	85-01-8	2.0 (M); 1.7	1,000	ID	52	9.5		<2.0	<2.0	<2.0	-	-	-	-	-
Pyrene	129-00-0	ID	135	ID	140 (S)	140 (S)		<5.0	<5.0	<5.0	-	-	-	-	-
Metals															
Arsenic	7440-38-2	10	NA	ID	10 (A)	NA		***43***	<5.0	<5.0	-	-	-	-	-
Barium (B)	7440-39-3	(G)	NA	ID	2,000 (A)	NA		**120**	**140**	<100	-	-	-	-	-
Cadmium (B)	7440-43-9	(G,X)	NA	ID	5.0 (A)	NA		<1.0	<1.0	<1.0	-	-	-	-	-
Chromium, Total	7440-47-3	-	-	-	100 (A)	-		<10	<10	<10	-	-	-	-	-
Copper (B)	7440-50-8	(G)	NA	ID	1,000 (E)	NA		<4.0	**17**	**4.6**	-	-	-	-	-
Lead (B)	7439-92-1	(G,X)	NA	ID	4.0 (L)	NA		**3.2**	**4.0**	<3.0	-	-	-	-	-
Mercury, Total	7439-97-6	0.0013	56	ID	2.0 (A)	8.80E-02		<0.20	<0.20	<0.20	-	-	-	-	-
Selenium (B)	7782-49-2	5.0	NA	ID	50 (A)	NA		<5.0	***15***	<5.0	-	-	-	-	-
Silver (B)	7440-22-4	0.2 (M); 0.06	NA	ID	34	NA		<0.20	<0.20	<0.20	-	-	-	-	-
Zinc (B)	7440-66-6	(G)	NA	ID	2,400	NA		<50	<50	<50	-	-	-	-	-

LEGEND:

Bold value indicates a concentration that exceeds Laboratory Detection Limits

Shaded values indicate concentrations above Drinking Water criteria.

Italicized values indicate concentrations above Groundwater-Surfacewater Interface criteria.

Red values indicate concentrations above Site-Specific Volatilization to Indoor Air Criteria (SSVIAC).

NOTES:

- Analytical Results Compared to EGLE Part 201 Generic Residential Cleanup Criteria and SSVIAC (approved by EGLE December 18, 2024)
- All results in micrograms per liter (µg/L).
- Refer to R 299.49 FOOTNOTES FOR GENERIC CLEANUP CRITERIA TABLES for footnotes and abbreviations in screening level/criteria columns

Table 3 - Soil Gas Analytical Summary

Freedom House Detroit
1777 North Rademacher Street
Detroit, Michigan 48209
ERG Project No.: 9665

Parameters*	Chemical Abstract Service Number	Residential Site-Specific Volatilization to Indoor Air Criteria	Sample Location	VP-1	VP-2	VP-3	VP-4	VP-5	VP-6	VP-7	VP-8
(Refer to detailed laboratory report for method reference data)			Sample Date	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022
Volatiles											
Acetone	67-64-1	1.0E+06 (EE)		**180**	**260**	<24	**460**	**27,000**	<24	**63**	**170**
Benzene	71-43-2	110		<19	**55**	<19	**51**	<19	<19	<19	<19
Benzyl Chloride	100-44-7	17		<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
Bromodichloromethane	75-27-4	48		<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
Bromoform	75-25-2	770		<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0
Bromomethane	74-83-9	350		<6.0	<23	<23	<23	<6.0	<6.0	<6.0	<6.0
1,3-Butadiene	106-99-0			<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
2-Butanone	78-93-3	1.7E+05 (DD)		<35	<35	<35	<35	**38**	<35	<35	<35
Carbon Disulfide	75-15-0	24,000		<37	<37	<37	<37	<37	<37	<37	<37
Carbon Tetrachloride	56-23-5	150		<1.2	<1.2	<1.2	<1.2	<1.2	**1.8**	<1.2	<1.2
Chlorobenzene	108-90-7	1,700		<28	<28	<28	<28	<28	<28	<28	<28
Chloroethane	75-00-3	1.40E+05		<16	<16	<16	<16	<16	<16	<16	<16
Chloroform	67-66-3	37		<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9
Chloromethane	74-87-3	3,100		<12	<12	<12	<12	<12	<12	<12	<12
Cyclohexane	110-82-7	2.10E+05		<41	<41	<41	<41	<41	<41	<41	<41
Dibromochloromethane	124-48-1	14 (MM)		<0.48	<4.1	<4.1	<4.1	<0.48	<0.48	<0.48	<0.48
1,2-Dichlorobenzene	95-50-1	10,000		<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0
1,3-Dichlorobenzene	541-73-1	100		<36	<36	<36	<36	<36	<36	<36	<36
1,4-Dichlorobenzene	106-46-7	220		<36	<36	<36	<36	<36	<36	<36	<36
Dichlorodifluoromethane	75-71-8	11,000		**24,000**	**22,000**	**35,000**	**20,000**	**45,000**	**29,000**	**37,000**	**21,000**
1,1-Dichloroethane	75-34-3	530		<24	<24	<24	<24	<24	<24	<24	<24
1,2-Dichloroethane	107-06-2	33		<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,1-Dichloroethene	75-35-4	7,000		<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0
cis-1,2-Dichloroethene	156-59-2	280		<24	<24	<24	<24	<24	<24	<24	<24
trans-1,2-Dichloroethene	156-60-5	2,800		<24	<24	<24	<24	<24	<24	<24	<24
1,2-Dichloropropane	78-87-5	140		<28	<28	<28	<28	<28	<28	<28	<28
cis-1,3-Dichloropropene	10061-01-5	210 (J)		<27	<27	<27	<27	<27	<27	<27	<27
trans-1,3-Dichloropropene	10061-02-6	210 (J)		<27	<27	<27	<27	<27	<27	<27	<27
1,4-Dioxane	123-91-1	170		<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0
Ethyl Acetate	141-78-6	2,400		<12	<12	<12	<12	<12	<12	<12	<12
Ethylbenzene	100-41-4	340		<12	<12	<12	<12	**5,500**	**160**	<12	<12
Ethylene Dibromide	106-93-4	1.4		<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
n-Heptane	142-82-5	1.20E+05		<12	<12	<12	**54**	<12	<12	<12	<12
Hexachlorobutadiene	87-68-3	39		<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
n-Hexane	110-54-3	24,000		<12	<12	<12	**68**	<12	<12	<12	<12
2-Hexanone	591-78-6	1,000		<12	<12	<12	<12	<12	<12	<12	<12
Isopropanol	67-63-0	7,000		<12	<12	<12	<12	**140**	<12	<12	**66**
Methylene Chloride	75-09-2	21,000		<12	<12	<12	<12	<12	<12	<12	<12
2-Methylnaphthalene	91-57-6	350		<24	<24	<24	<24	<24	<24	<24	<24
4-Methyl-2-pentanone	108-10-1	27,000		<12	<49	<49	<49	<12	<12	<12	<12
MTBE	1634-04-4	3,300		<22	<22	<22	<22	<22	<22	<22	<22
Naphthalene	91-20-3	25		<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6
Styrene	100-42-5	1,500		<12	<12	<12	<12	<12	<12	<12	<12
1,1,2,2-Tetrachloroethane	79-34-5	15		<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Tetrachloroethene	127-18-4	1,400 (EE)		<6.0	<6.0	<6.0	<6.0	**58**	<6.0	<6.0	<6.0
Tetrahydrofuran	109-99-9	70,000		<3.5	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5
Toluene	108-88-3	1.70E+05		<6.0	**110**	**27**	**120**	<6.0	**38**	<6.0	<6.0
1,2,4-Trichlorobenzene	120-82-1	70		<12	<12	<12	<12	<12	<12	<12	<12
1,1,1-Trichloroethane	71-55-6	1.70E+05		<33	<33	<33	<33	<33	<33	<33	<33
1,1,2-Trichloroethane	79-00-5	7.0		<1.2	<6.5	<6.5	<6.5	<1.2	<1.2	<1.2	<1.2
Trichloroethene	79-01-6	67 (DD)		<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Trichlorofluoromethane	75-69-4	15,000		<6.0	<6.0	**40**	<6.0	<6.0	<6.0	<6.0	<6.0
1,1,2-Trichlorotrifluoroethane	76-13-1	6.60E+05		<6.0	<46	<46	<46	<6.0	<6.0	<6.0	<6.0
1,2,4-Trimethylbenzene	95-63-6	2,100		<6.0	<6.0	<6.0	<6.0	**97**	<6.0	<6.0	<6.0
1,3,5-Trimethylbenzene	108-67-8	2,100 (JT)		<6.0	<6.0	<6.0	<6.0	**41**	<6.0	<6.0	<6.0
Vinyl Acetate	108-05-4	7,000		<42	<42	<42	<42	<42	<42	<42	<42
Vinyl Chloride	75-01-4	54 (MM)		<15	<15	<15	<15	<15	<15	<15	<15
Xylenes	1330-20-7	7,600 (J)		<12	<12	<12	**61**	**23,000**	**500**	<12	<12

NOTES:
Concentrations compared to Site-Specific Volatilization to Indoor Air Criteria (SSVIAC), approved by EGLE December 18, 2024
All units measured in µg/m^3
Bold - Concentrations exceed laboratory method detection limit
Red text indicates a constituent above Residential SSVIAC.

APPENDIX A

BUILDING SURVEY AND EXISTING SITE PHOTOGRAPHS

ATTACHMENT 1 – BUILDING SURVEY

Survey performed by: Jacob Henning Date: 1/23/2024
Address: 1777 N. Rademacher Street, Detroit, Michigan

1. OCCUPANT
Owner Occupied: □ Yes X No

2. OWNER OR LANDLORD
Name: Freedom House Detroit
Address:1777 N. Rademacher Street
City and State: Detroit, MI
County: Wayne
Home Phone:
Office Phone:313-964-4320

3. BUILDING CHARACTERISTICS
General description of property use:

□ Residential X Multi-family Residential X Office
□ Strip Mall □ Commercial □ Industrial
□ School □ Restaurant □ Other:

Building Description:
Building Footprint: 8,036 ft^2
Year Constructed: 1992
Number of floors at or above grade: 2
Number of floors below grade: 0

General Description of structure(s) below grade:

□ Basement □ Crawl space X Slab on grade
□ Not Applicable □ Other:

If the property includes any structures (besides footings) below grade:
Depth of structure below grade: _____ft
Footprint _____ ft^2

If the property includes residential, which of the following describes the property?

□ Ranch X Multi-family □ Two-story single family
□ Duplex □ Split Level □ Mobile Home
□ Apartment □ Townhouses/Condos □ Modular
□ Log Home □ Other:

If the property includes commercial use:
Business type(s): Assists asylum seekers with housing and paperwork
Does it include residences (i.e., multi-use)? X Yes □ No *If yes, how many units?* 16

If the property includes Industrial use:

Type:

Level	General Use (e.g., family room, bedroom, laundry, workshop, storage)
Basement	
1st Floor	Office, laundry, bedrooms, community space, utility rooms
2nd Floor	bedrooms
3rd Floor	
4th Floor	

Use additional page(s) as necessary

4. CONSTRUCTION CHARACTERISTICS

General description of above grade construction

☒ Wood frame ☒ Concrete/Cement □ Stone
□ Brick □ Other:

General Description of structure(s) below grade structures

□ Basement □ Crawl space □ Slab on grade
□ Not Applicable □ Foundation/Footings □ Other:

General Description of below grade construction

□ Wood frame □ Concrete/Cement □ Stone
□ Brick □ Other:

General Description of basement type

□ Full □ Crawlspace □ Slab
□ Other:

General Description of Lowest level flooring

☒ Concrete □ Dirt □ Stone
□ Other:

General Description of foundation walls:

□ Block □ Stone ☒ Poured concrete/cement
□ Other:

Is there an attached garage? □ Yes ☒ No

If yes, does it have a separate heating unit? □ Yes □ No

Sumps present? □ Yes ☒ No

If yes, how many?

Sumps sealed: □ Yes □ No □ Not Applicable
Water in Sump: □ Yes □ No □ Not Applicable
General description of location of each sump:

Type of ground cover outside of building:

☒ Grass ☒ Concrete ☒ Asphalt
□ Other:

5. HEATING, VENTING, and AIR CONDITIONING

General Description of heating system(s) used in this building:

☒ Hot Air Circulation □ Heat Pump □ Hot Water Baseboard
□ Space Heaters □ Steam Radiation □ Radiant Floor
□ Electric Baseboard □ Wood Stove □ Outdoor Wood Boiler
☒ Other: Ductless mini-split system on 2F

General Description primary fuel type used:

☒ Natural Gas	□ Fuel Oil	□ Kerosene
□ Electric	□ Propane	□ Solar
□ Wood	□ Coal	

General location of boiler/furnace:

□ Basement	□ Outdoors	☒ Main Floor
□ Other:		

General location of hot water heater:

□ Basement	□ Outdoors	☒ Main Floor
□ Other:		

Type of venting for HVAC components and hot water heater:

☒ Direct-vent □ Power-vent

Air Conditioning present? ☒ Yes □ No

Whole house or attic fan? □ Yes ☒ No

6. UTILITIES

Identify all utilities that enter below grade into the structure:

□ Electric	□ Gas	☒ Sewer
□ Cable	□ Communications	□ Other:

7. DOCUMENTATION

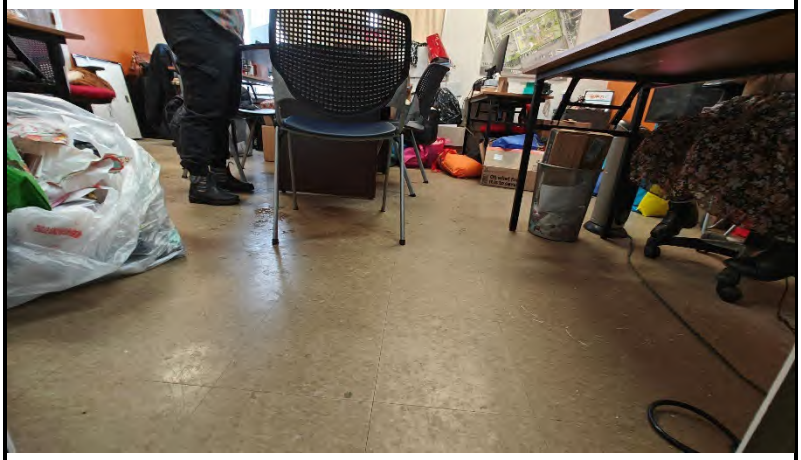
Pictures that document items 3-6 above and the conditions at the time of the survey

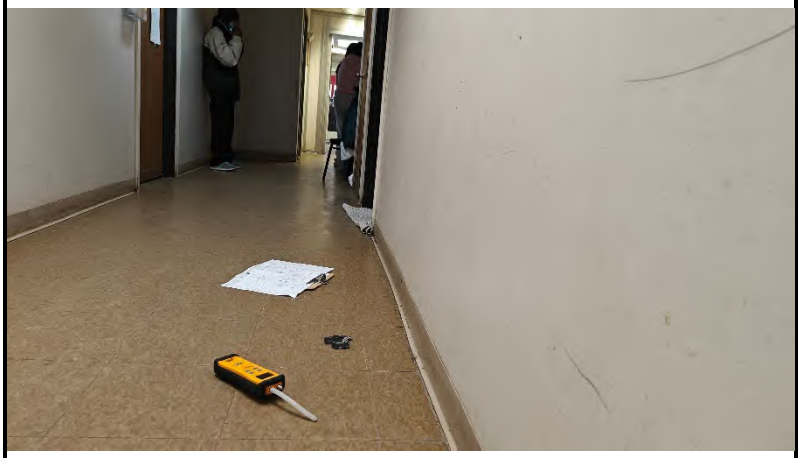
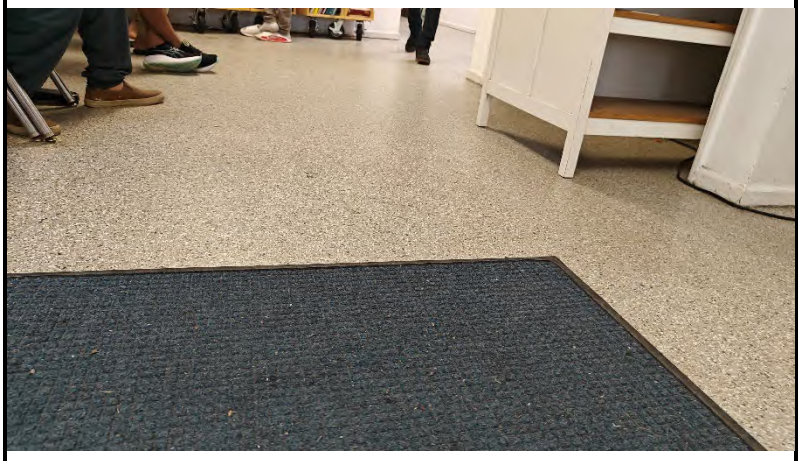
Pictures attached: ☒ Yes □ No

To scale drawings of the building floor plan and configuration at the time of the survey

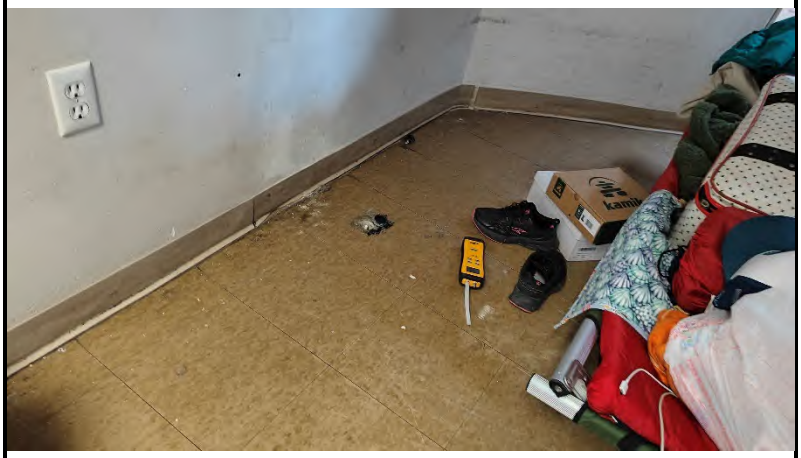
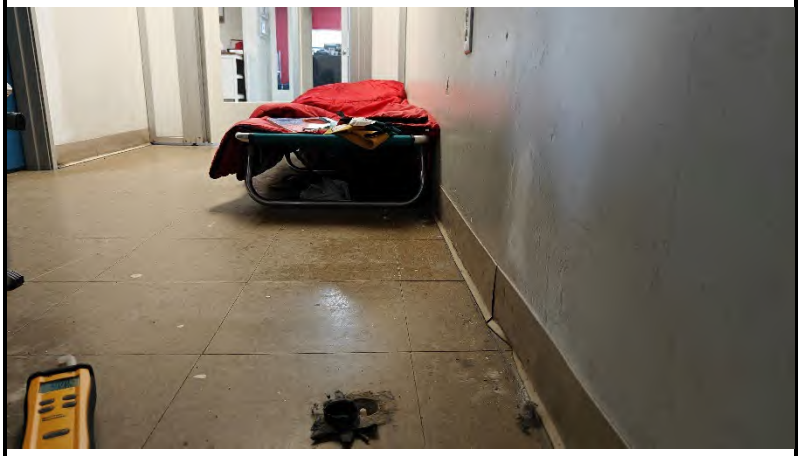
Figures attached: ☒ Yes □ No

Photograph Date: January 23, 2025
Photo taken by: J. Henning
Site: Freedom House Detroit
ERG Project No.: 9665

	1. Representative view of floor in recreation room.
	2. Representative view of floor in kitchen where hole greater than ½" was observed – will be filled with concrete.
	3. Representative view of floor in southeast corridor (VP-2).

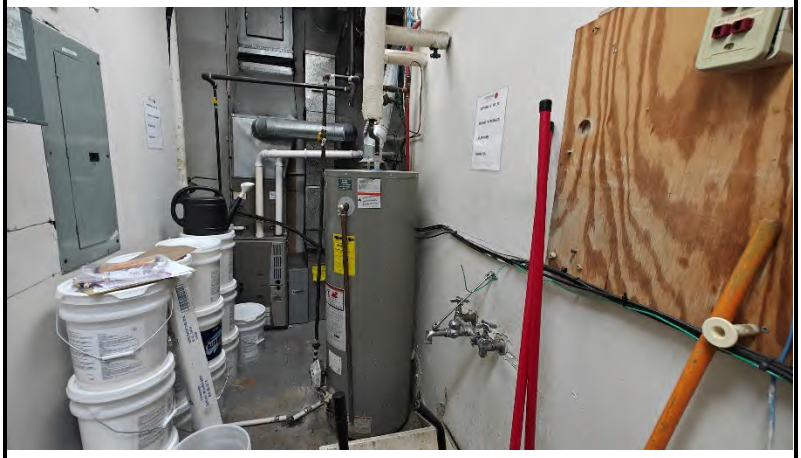
	4. Representative view of floor in southeast corridor (facing NW).
	5. Representative view of floor in southeast corridor (VP-1).
	6. Representative view of floor in main lobby entrance.

Photograph Date: January 23, 2025
Photo taken by: J. Henning
Site: Freedom House Detroit
ERG Project No.: 9665

	7. Representative view of floor in living area.
	8. Representative view of floor in corridor (VP-3).
	9. Representative view of floor in lobby (facing south).

Photograph Date: January 23, 2025
Photo taken by: J. Henning
Site: Freedom House Detroit
ERG Project No.: 9665

	10. Representative view of slab in west corridor
	11. Representative view of floor in dining room (facing east)
	12. Representative view of floor in dining room (facing south)

	13. View of furnace system on first floor.
	14. View of water heater on first floor.
	15. View of natural gas exterior utility.

	16. Representative view of OBAR fan (Fan I) and vertical vent piping.
	17. Representative view of exhaust point (Fan I)
	18. View of exhaust point for Fan F – to be repaired to be in compliance with AARST SGM-SF guidance.

APPENDIX B

VAPOR CONTROL SOLUTIONS VAPOR INTRUSION SYSTEM O&M PLAN

September 30th, 2024

Ms. Anne Zobel
Freedom House

Re: Vapor Intrusion System Operation & Maintenance (O & M) Plan
1777 Rademacher St.
Detroit, MI 48209
Job# 1173-23

Dear Ms. Zobel,

On September 27th, 2024, Vapor Control Solutions ("VCS") installed and completed the installation and start-up of a Sub-Slab Depressurization System at the property on 1777 Rademacher St. Detroit, MI 48209. This Operation and Maintenance Plan (O &M) includes the post-mitigation summary, SSD(s) system construction details, assessment practices and post-mitigation start-up details.

VAPOR CONTROL SOLUTIONS

Headquartered in Michigan, Vapor Control Solutions is an environmental solutions provider, specializing in vapor intrusion and vapor mitigation. The Vapor Control Solutions team brings over twenty-five years of vapor mitigation expertise to each project.

VAPOR INTRUSION SYSTEM OPERATION & MAINTENANCE (O&M) PLAN

- Objective:
  - To maintain proper functionality of the soil vapor extraction systems.
- Inspection Schedule and Logging:
  - The condition of the systems shall be checked on a bi-monthly basis under normal operation and after every power outage. The inspection shall ascertain that the extraction fans are functioning properly.
  - The inspection shall include visually inspecting the manometer/vacuum pressure gauges to ensure that the system's fans are operating as designed and shall include visually inspecting the exhaust ports if vacuum readings vary from normal operating levels.
  - All inspections will be recorded in a simple log book and kept in the building's facilities/maintenance department for future reference.
- Monitoring Systems:
  - A differential pressure gauge will be utilized to verify the system's performance.
  - In order to ensure accurate sub-slab pressure measurements, the manometer will need to be operated in accordance with the manufacturer's recommendations. See the attached diagram.
- Record Keeping:
  - The following records will be recorded on a bi-monthly basis and after any power outages by the building's maintenance personnel.
  - Records shall include the following information. Date, time, Magnehelic gauge and/or manometer readings, and any additional observations.

POST MITIGATION SUMMARY

Diagnostic (PFE) Pressure Field Extension testing was used to determine airflow characteristics as affected by soil density under the floor of the property. This type of testing is often referred to as communication testing, which is a diagnostic test designed to quantitively measure the ability of a suction field and airflow to extend through the material beneath the concrete slab floor and thus evaluate the potential effectiveness of a sub-slab depressurization system.

Initial sub-slab inspection during the installation process indicates a sand-based aggregate under the slab in all areas inspected.

Vapor Control Solutions (VCS) has prepared the following As-Built for the Sub-Slab Depressurization System (SSDS) installed at the property addressed as 1777 Rademacher St, Detroit, MI 48209. The subject property is a temporary housing facility.

This SSDS system(s) was installed in response to the findings of sub-slab vapor investigations performed which investigations indicated volatile organic compound (VOC) concentrations that exceeded the Michigan Department of Environmental, Great Lakes and Energy (EGLE) Nonresidential Volatilization to Indoor Air Pathway (VIAP) Screening Levels.

SYSTEM CONFIGURATION

The SSD system consists of nine (9) Obar Systems GBR 76 UD fans mounted on nine (9) sub-slab suction points routed from the building's slab to aid in the mitigation of areas of the building that exhibited VOC concentration that exceeded the VIAP screening levels. The SSD's system(s) are powered by nine (9) OBAR Systems GBR series inline extraction fans capable of drawing 40" of WC at a maximum flow of 65 CFM. Conveyance piping is routed along the exterior wall and is above the roofline by 24".

The fans are equipped with continuously variable potentiometers to control the direct current motor speed; no additional controls or variable frequency drives are required. The blowers are thermally and electrically protected to initiate shutdown in the event of overheating or power spikes. Dwyer Magnehelic vacuum gauges were installed within the protective fan casing on the single terminal extraction pipes to measure vacuum pressure (0-16 inches WC).

Upon start-up, the SSD was balanced to achieve appropriate radial influence beneath the sub-slab. The intent of the system balancing procedures was to establish a target sub-slab vacuum pressure beneath the slab and verify that coverage across the area of interest is adequately provided.

Following start-up, VCS regulated the fan speeds to achieve an optimal balance between energy input and vacuum pressure across the sub-slab. To demonstrate the sub-slab radial influence, vacuum measurements were recorded at six (6) locations. Pressure measurements in the water column "H2O" were recorded from magnehelic gauges mounted inside the fan housing.

Post mitigation PFE testing was completed on September 27th, 2024, and utilized a digital micro manometer to measure the amount of vacuum created by the soil vapor extraction systems below the slab. According to the U.S. Environmental Protection Agency, sub-slab depressurization in the range of

0.025-0.035 inches of water column (in wc) is generally sufficient to maintain downward pressure gradients (USEPA, 1993). All readings taken indicate that the Soil Vapor Systems are effectively mitigating the soil vapors under the slab as indicated by the pressure field extension. Following the system balancing procedures, the nine (9) fans were set to operate at 10.0" inches of water column. These operating speeds provided sufficient pressure gradients and vacuum pressures to mitigate the area of interest at the subject property.

POST MITIGATION VACUUM AND PRESSURE FIELD EXTENSION LOG

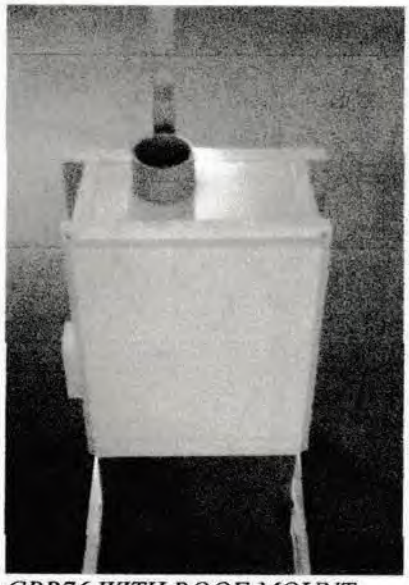
Fan Pressure	Vacuum Reading (in W.C.)
A	10.0"
B	10.0"
C	10.0"
D	10.0"
E	10.0"
F	10.0"
G	10.0"
H	10.0"
I	10.0"
Test Point ID/Location	**Pressure Readings (in W.C.)**
1	-0.13"
2	-0.10"
3	-2.13"
4	-0.07"
5	-0.16"
6	-0.25"
7	-0.10"
8	-0.44"
9	-0.27"
10	-0.12"

VAPOR MITIGATION SYSTEM(S) BI-MONTHLY LOG BOOK

DATE	VACUUM READINGS	OBSERVATION NOTES
9/27/2024	FAN A-I: 10.0"	System(s) on and functioning normally. All fans are set to 10.0" vacuum
11/27/2024	FAN A-I:	
1/27/2025	FAN A-I:	
3/27/2025	FAN A-I:	

THE OBAR GBR76
COMPACT RADIAL BLOWER

Based on 25 years of experience and 2 years of research and development, the patent pending GBR series of compact radial blowers provide the perfect combination of performance and design.



GBR76 WITH ROOF MOUNT

PERFORMANCE

- GBR76 SOE 16" WC @ 0 Max flow 155 CFM.
- GBR76 UD 40" WC @ 0 Max flow 195 CFM.
- Built in speed control to customize performance.
- Condensate bypass built in.
- 12 month warranty - 40,000 hr sealed bearings.

DESIGN

- Our modular design means the blower and manifold assembly can be removed and replaced as a unit. This makes repairs cost effective and easy and allows contractors to upgrade systems simply by swapping assemblies.
- The GBR series is based on a bypass blower designed to handle combustible materials.
- The housing is not required to be air tight, so you can add gauges and alarms without compromising the system.
- Built in condensate bypass.
- Built in speed control.
- Quick disconnect electrical harness.
- All UL listed components including UL listed enclosure for outside use.
- Wall fastening lugs included.
- GBR series roof and wall mounts available to quickly configure the blowers for your installation while providing a custom built look.
- Compact design 16"x 14"x 8" weighing only 18 lbs.
- 3" schedule 40 inlet and exhaust.
- Universal Drive model accepts voltage from 120-240V without alteration

OBAR SYSTEMS INC 2969 ROUTE 23 SOUTH NEWFOUNDLAND NJ 07435 800 949 6227

Distributed by Obar Systems

Installation & Warranty

Read these instructions completely and retain for future reference.

1. Warning! The use of this fan may affect combustion devices, always check for a backdraft on all combustion devices before and after installation.
2. Warning! This fan is not intended for use in hazardous environments where a motor spark could ignite combustible or flammable materials.
3. All wiring must be performed by a licensed electrical contractor in accordance with the National Electrical Code and all local and state codes governing the municipality in which it is installed.
4. The GBR series blowers are intended for use and installation by professionals familiar with installation and design of systems for the remediation of radon and volatile organic compounds. Unqualified or unlicensed individuals should not undertake the installation or service of this product.

INSTALLATION

The installation instructions provided are for guidance only, any installation should meet all state and local codes and guidelines.

1. Temperature restrictions: The GBR SOE/UD will run and start in a temperature range from -20 to 180 degrees F. The GBR HA will run at a temperature of -20 to 180 degrees F but may not start if the motor temperature is below 0 degrees F at time of startup.
2. Ground water restrictions: The blower should not be installed at a height above water table that is less than the vacuum setting for the blower, if the water table is unknown then the base of the slab should be used as a default. The GBR series is a high vacuum blower and will draw water into the assembly and damage the impeller and motor if not properly installed.
3. Speed control: The GBR series blowers have a built in speed control that can be used to field adjust the vacuum on your system. These should only be adjusted by an experienced installer familiar advanced systems design and installation. For information regarding on site adjustments please contact Obar Systems for further information.
4. Enclosure: It is not recommended that the enclosure be opened except for repairs and adjustments. Contact Obar Systems before removing the cover.
5. Mounting: The fan should be mounted in a vertical orientation with the discharge pointing

upward. The inlet and discharge should be attached with a PipeConx or similar flexible connector of the appropriate size. The connector should provide a gap of 1.5 inches between the inlet pipe and inlet fitting and discharge pipe and discharge fitting. This will allow for motor assembly replacement in future repairs. The GBR comes with wall fastening lugs that provide for a flush installation on a flat even surface. Optional roof and wall mounts are available and are designed to reduce installation times dramatically. Contact Obar Systems for additional information on mounting systems. The fan should be located in an area that provides easy access and does not obstruct the operations of the building to which it is attached.

6. Discharge: Make sure the discharge meets or exceeds National guidelines and local codes for the installation and venting of Radon and or VOCs (Volatile Organic Compounds). In the event that there is the possibility of debris entering the discharge of the fan, it is recommended that a guard be installed to protect the blower from damage.

Warranty

Subject to any applicable consumer protection legislation, Obar Systems warrants the GBR series fans for 12 months from the date of purchase.

Obar systems will repair or replace any fan which fails due to defects in materials and workmanship. A RMA must be obtained and proof of purchase is required to be serviced by this warranty.

This warranty is contingent upon the fan having been installed as per the installation requirements set forth by Obar Systems and in accordance with the requirements of federal and state authorities governing the installation systems designed for radon and volatile organic compounds.

Obar systems is not responsible for the installation, removal or delivery costs associated with this warranty.

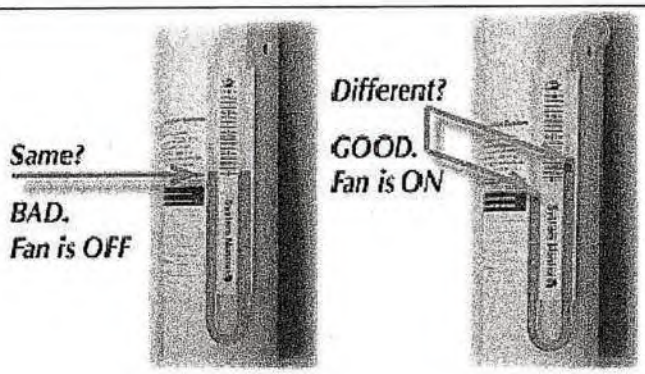
Except as stated, the GBR series are provided without warranty of any kind, either expressed or implied, including without limitation, implied warranties of merchantability and fitness for a particular use.

Obar systems is in no way responsible for any direct or indirect damages relating to the performance of the GBR series fan. Any liability shall not exceed the purchase price of the unit. The sole remedy under this warranty shall be the repair or replacement of the unit

Contact Obar Systems to obtain a RMA (Return Material Authorization) number for any and all warranties. If return is required, the customer is responsible for all freight charges.

Obar Systems Inc.
2969 Route 23 South
Newfoundland NJ 07435
800 949 6227

Attachment A



If Fan Failure is indicated by vacuum guage:

- **Check that electrical power is on which may include switches, breakers, GFCI breakers or other wiring.**
- **Check that the small hose at the top of the gauge is connected and not crimped or fowled with debris.**
- **Contact our office if it then appears service is needed.**

BULLETIN NO. A-27B

Magnehelic® Differential Pressure Gage

OPERATING INSTRUCTIONS

SPECIFICATIONS

Dimensions: 4-3/4" dia. x 2-3/16" deep.

Weight: 1 lb. 2 oz. (510 g)

Finished: Baked dark gray enamel.

Connections: 1/8" female NPT high and low pressure taps, duplicated, one pair side and one pair back.

Accuracy: Plus or minus 2% of full scale, at 70°F (21.1°C). (Model 2000-0, 3%; 2000-00, 4%).

Pressure Rating: 15 PSI (1.03 bar)

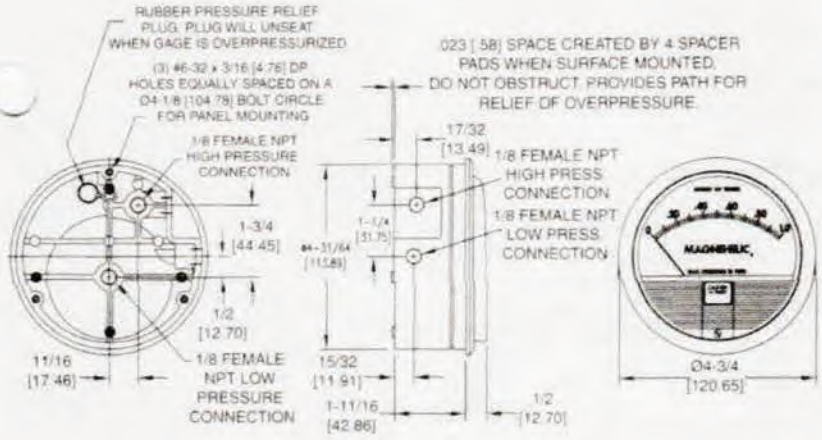
Ambient Temperature Range: 20° to 140°F (-7 to 60°C).

Standard gage accessories include two 1/8" male NPT plugs for duplicate pressure taps, two 1/8" male NPT pipe thread to rubber tubing adapters, and three flush mounting adapters with screws.

Caution: For use with air or compatible gases only.

For repeated over-ranging or high cycle rates, contact factory.

Not for use with Hydrogen gas. Dangerous reactions will occur.



DWYER INSTRUMENTS, INC.
P.O. BOX 373 • MICHIGAN CITY, INDIANA 46361, U.S.A.
Phone: 219/879-8000 www.dwyer-inst.com
Fax: 219/872-9057 e-mail: info@dwyer-inst.com
Lit-By Fax: 888/891-4963

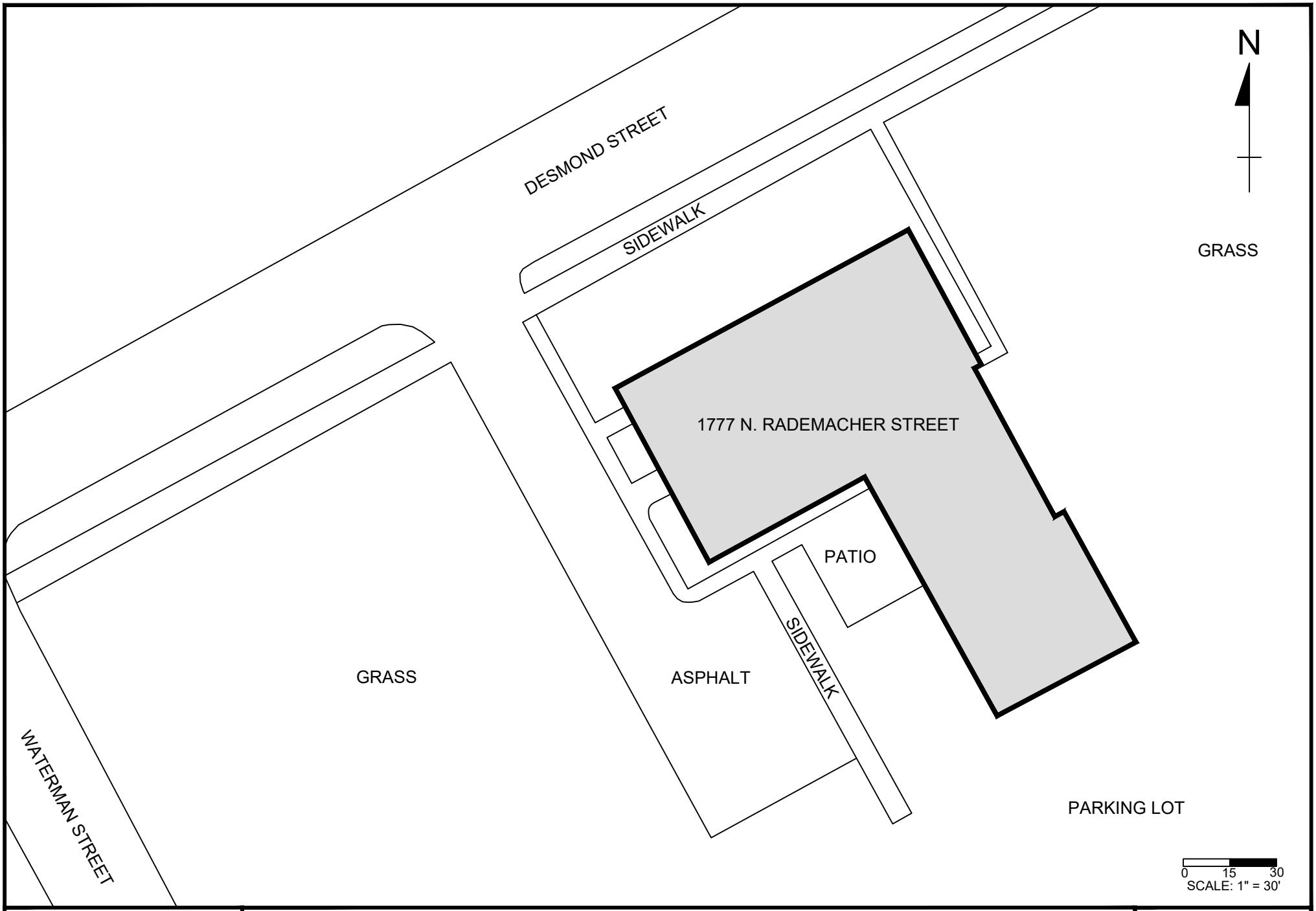
Magnehelic Gauge Operation

Zero Reading on Magnehelic gauge indicates zero air flow.

BAD

GOOD

Fan Failure is indicated by vacuum gauge.
• **Check that Electrical power is on which may include breakers, on off switches or GFCI outlets.** • **Check that the small clear vacuum hose is properly inserted into the PVC suction piping and not blocked with debris.** • **Contact our office in the event service is needed.**



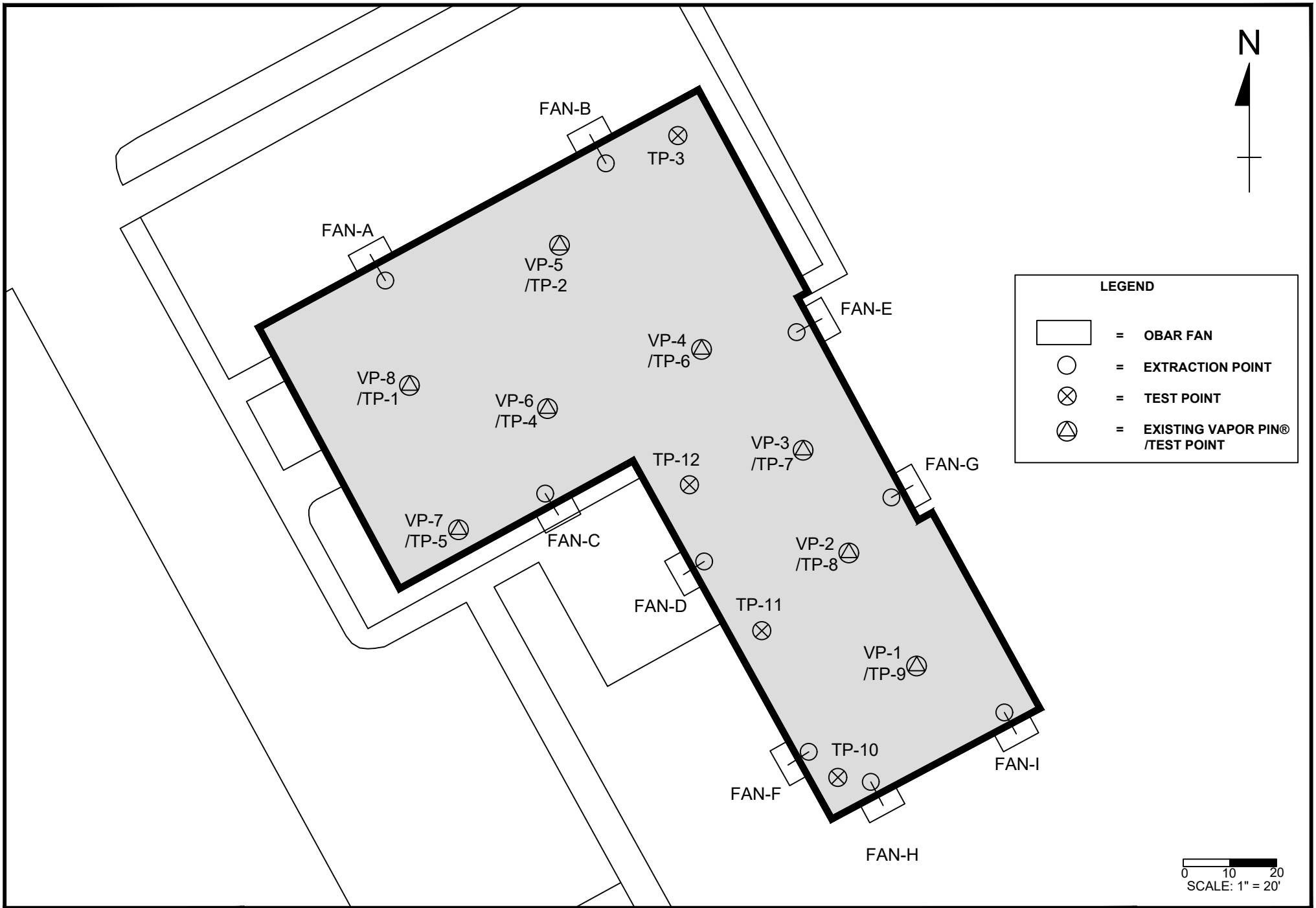
VAPOR CONTROL SOLUTIONS
455 E. CADY STREET, NORTHVILLE, MI 48167
WWW.VAPORCONTROLSOLUTIONS.COM

PROPERTY MAP

1777 N. RADEMACHER STREET
DETROIT, MICHIGAN
PROJECT NUMBER: 1173-24

DRAWN BY: MST
DATE: 10/01/24

FIGURE 1



VAPOR CONTROL SOLUTIONS
455 E. CADY STREET, NORTHVILLE, MI 48167
WWW.VAPORCONTROLSOLUTIONS.COM

PROPERTY MAP WITH SUB-SLAB DEPRESSURIZATION SYSTEM AND TEST POINTS

1777 N. RADEMACHER STREET
DETROIT, MICHIGAN
PROJECT NUMBER: 1173-24

DRAWN BY: MST
DATE: 10/18/24

FIGURE 2

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
REMEDIATION AND REDEVELOPMENT DIVISION

GRETCHEN WHITMER
GOVERNOR

PHILLIP D. ROOS
DIRECTOR

February 18, 2025

VIA EMAIL

Anne Zobel
Freedom House Detroit
1777 North Rademacher Street
Detroit, Michigan 48209

Dear Anne Zobel:

SUBJECT: Notice of Approval of the Response Activity Plan to Comply with 7a(1)(b)
1777 North Rademacher Street, Detroit, Wayne County, Michigan
Parcel ID Number: 18008161.004
Facility ID Number: 82008890

The Department of Environment, Great Lakes, and Energy (EGLE) Remediation and Redevelopment Division (RRD) has reviewed the Response Activity Plan (ResAP) to Comply with Section 20107a(1)(b) of Part 201 Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) for the above-referenced property. The ResAP outlines the response activities to be undertaken at the above-referenced address and was submitted on your behalf pursuant to Section 20114b of the NREPA on December 18, 2024, by Donald Klinger and Charles Badgerow of Environmental Resource Group (ERG). The final revised version was received by EGLE on February 14, 2025.

Based upon the representations and information contained in the submittal, the ResAP is approved. EGLE expresses no opinion on the adequacy of the proposed response activities to address conditions that are not represented, described, or contained within the submittal. If environmental contamination is found to exist that is not addressed by the ResAP and you are otherwise liable for the contamination, additional response activities may be necessary.

The owner and operator of this property may also have responsibility under applicable state and federal laws, including but not limited to, Part 201, Environmental Remediation; Part 111, Hazardous Waste Management; Part 211, Underground Storage Tank Regulations; Part 213, Leaking Underground Storage Tanks; Part 615, Supervisor of Wells, of the NREPA; and the Michigan Fire Prevention Code, 1941 PA 207, as amended.

This approval is pursuant to the applicable requirements of the NREPA. The Michigan State Housing Development Authority may have additional site selection requirements

beyond the NREPA statutory obligations for site characterization and remedial actions or response activities necessary to prevent, minimize, or mitigate injury to public health, safety, or welfare, or to the environment.

If you should have further questions or concerns, please contact April Hehir, RRD, Brownfield Assessment and Redevelopment Section, at 517-290-8614, or by email at HehirA@Michigan.gov.

Sincerely,

acting for

Carrier Geyer, Manager
Brownfield Assessment and Redevelopment Section
Remediation and Redevelopment Division
GeyerC1@Michigan.gov

cc: Charles Badgerow, ERG
Donald Klinger, ERG
Paul Owens, EGLE
Martha Thompson, EGLE
April Hehir, EGLE
Jarrett McFeters, EGLE