DECISION DOCUMENT

19 Patchen Avenue
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224232
December 2019

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - DECISION DOCUMENT

19 Patchen Avenue
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224232
December 2019

Statement of Purpose and Basis

This document presents the remedy for the 19 Patchen Avenue site, a brownfield cleanup site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the 19 Patchen Avenue site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent

feasible in the future development at this site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Cover System

A site cover currently exists in areas not occupied by buildings and will be maintained to allow for restricted residential use of the site. Any site redevelopment will maintain the existing site cover. The site cover includes paved surfaces, a concrete building slab, the concrete slab in the rear of the building, and sidewalks. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

3. Engineering and Institutional Controls

Imposition of an institutional control in the form of an environmental easement and a Site Management Plan, as described below, will be required. The remedy will achieve a Track 4, restricted residential cleanup at a minimum and will include imposition of a site cover (as a contingency if soil greater than 2 feet but less than 15 feet deep does not meet the restricted residential SCOs, an environmental easement, and site management plan as described below.

4. Institutional Control

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

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

5. Site Management Plan

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

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

- Institutional Controls: The Environmental Easement discussed above.
- Engineering Controls: The site cover discussed in Paragraph 2 and the vapor mitigation systems (SSDSs) discussed in Section 6.2.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and groundwater;
- a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site or for buildings in off-site areas of contamination, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- a provision that should the owners of properties where sampling was previously declined request to have their properties sampled in the future, the NYSDEC, in consultation with the NYSDOH, shall assess the need for soil vapor intrusion sampling and take appropriate action;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 2 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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

- monitoring of indoor air, including provisions for implementing actions to address exposure, and groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any buildings, as may be required by the Institutional and Engineering Control Plan discussed above.

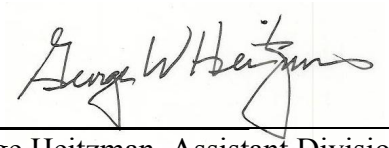
c. An Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system(s). The plan includes, but is not limited to:

- procedures for operating and maintaining the system(s); and
  compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.

Declaration

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protective of public health and the environment.

December 27, 2019



Date

George Heitzman, Assistant Division Director

DECISION DOCUMENT

19 Patchen Avenue
Brooklyn, Kings County
Site No. C224232
December 2019

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum.

The New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C224232

Brooklyn Public Library - Dekalb Branch
790 Bushwick Avenue
Brooklyn, NY 11221
Phone: (718) 455-3898

Brooklyn Community Board #3

Attn: Henry Butler
1360 Fulton Street
Brooklyn, NY 11216
Phone: (718) 622-6601

Receive Site Citizen Participation Information by Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location:
The site is located at 19 Patchen Avenue in an urban area, and is identified as Block 1618, Lot 8. The site is located at the southeast corner of Patchen Avenue and Van Buren Street in the Bedford Stuyvesant neighborhood of Brooklyn.

Site Features:
The site is developed with a four-story, commercial/residential building with commercial space on the first floor and basement, and residential spaces on floors one through four. Some building mechanicals and storage not associated with the commercial space are also located in the basement. A small at-grade yard is located on the eastern portion of the site.

Current Zoning and Land Use:
The site use is currently residential and commercial. The site is zoned residential (R6A) which denotes medium density areas with high lot coverage buildings. The adjacent properties are residential, mixed use (residential/commercial) and parking facilities.

Past Use of the Site:
The site use has been residential and commercial since at least 1908, with a dry-cleaning facility for at least 55 years. Documented impacts to soil vapor and groundwater have been attributed to prior use of the site as a dry cleaner.

Site Geology and Hydrogeology:
The surface topography slopes down to the northeast at an approximate elevation of 55 feet above mean sea level. The shallow soils include historic fill material of sands mixed with cobbles and brick, underlain by native silts and sands to bedrock which is approximately 350 feet bls. Groundwater has been measured at a depth of approximately 42 feet bls and flows toward the northwest.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to restricted-residential use (which allows for commercial use and industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the Remedial Investigation (RI) to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is available in the RI Report.

SECTION 5: ENFORCEMENT STATUS

One or more of the Applicants under the Brownfield Cleanup Agreement is a Participant. The Participant(s) has/have an obligation to address on-site and off-site contamination. Accordingly, no enforcement actions are necessary.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings, or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor
- indoor air
- outdoor air
- sub-slab vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized below. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

tetrachloroethene (PCE)
trichloroethene (TCE)
benzo(a)anthracene
benzo(a)pyrene
barium
benzo(b)fluoranthene
dibenz[a,h]anthracene
indeno(1,2,3-CD)pyrene
lead

The contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil
- soil vapor intrusion
- indoor air

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Decision Document.

The findings of past environmental investigations indicate the presence of chlorinated solvents in indoor air, soil vapor and groundwater above regulatory levels. Based on the concentrations of PCE in soil vapor and indoor air, these impacts required mitigation. Following a remedial investigation completed in December of 2016 at both on- and off-site properties, an IRM Work Plan was submitted and approved by the Department and NYSDOH in February 2017.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

IRM - On-Site Sub-Slab Depressurization System (SSDS)

The on-site SSDS was installed and commenced operation in July 2017. In August 2017, a round of confirmatory indoor sampling was completed.

The SSDS consists of two suction pits installed beneath the basement slab that are connected to a fan on the roof. To create the suction pits, the existing slab was saw cut and the underlying soil was removed to a depth of at least 18 inches. The void space was lined with geotextile fabric and a layer of 3/4" clean stone aggregate (or similar material). The SSDS was designed to create a pressure differential of approximately -0.02 inches of water column (in-wc) beneath the basement slab, as compared to the basement air pressure.

A pre-design pressure field extension test was completed on February 7, 2017 to demonstrate the effectiveness of the system in preventing vapors from entering the building. A blower capable of creating the required vacuum flow was mounted on the roof. To size the fan, a blower test was performed after the sub-grade components were installed under the basement slab. An alarm system was installed that will notify the building management if a change in pressure indicates that the system is not operating as designed.

Soil removed from beneath the slab during the SSDS installation was placed in 55-gallon drums, labeled, and transported from the site for proper off-site disposal.

IRM - Dry Cleaner Exhaust Re-routing

The dry cleaner exhaust was re-routed, and a vapor barrier was installed in the commercial area of the cellar during November 2017. The final exhaust location is above the roof line and more than 25 feet from any window or air intake. A second round of sub-slab soil vapor and indoor air samples were collected approximately 30 days later, in December 2017, while the SSDS was active. These results showed decreasing levels of all contaminants, including PCE.

Filtration of Indoor Air

A portable carbon filtration unit was installed within one on-site residential apartment to address potential indoor air impacts. Indoor air samples that were collected after the carbon filtration unit installation and after the dry-cleaning operations ended, showed reduced levels of PCE. The filtration unit will remain in operation until sampling indicates that it is no longer required.

Off-Site SSDS

During the Summer of 2017, an off-site SSDS was also installed to address off-site soil vapor impacts at an adjacent building under the direction of the New York City Department of Environmental Protection (NYCDEP). This SSDS is currently in operation and will be maintained under the Site Management Plan.

Final Engineering Report (FER)

A FER was submitted in December 2019 in-lieu of a Construction Completion Report to document the work that was completed under the IRM and other site relate mitigation activities.

Site Management Plan (SMP)

A SMP was submitted in December 2019 detailing the long-term management of residual contamination as required by an Environmental Easement, including plans for: Institutional and Engineering Controls, operation and maintenance, monitoring, and reporting.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

Nature and Extent of Contamination:

Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and pesticides/herbicides. Groundwater samples were also analyzed for emerging contaminants (PFAS and 1,4-dioxane). Soil vapor samples were analyzed for VOCs. Based upon investigations conducted to date, the primary contaminants of concern include tetrachloroethene (PCE) and its breakdown compound trichloroethene (TCE).

Soils:

No VOCs were detected above the Unrestricted Use Soil Cleanup Objectives (SCOs). PCE was detected in nine soil samples, at a maximum concentration of 0.0023 parts per million (ppm), below the Restricted-Residential Use SCO of 19 ppm and the applicable Protection of Groundwater SCO of 1.3 ppm.

Several SVOCs were detected above the Restricted Residential Use SCOs (RRSCOs), including benzo(a)anthracene at a maximum concentration of 3.5 ppm (RRSCO is 1.0 ppm), benzo(a)pyrene at 3.3 ppm (RRSCO is 1.0 ppm), benzo(b)fluoranthene at 4.2 ppm (RRSCO is 1.0 ppm), dibenzo(a,h)anthracene at 0.48 ppm (RRSCO is 0.33 ppm) and indeno(1,2,3-cd)pyrene at 2.3 ppm (RRSCO is 0.5 ppm).

Two metals were detected above the RRSCOs. Barium was detected at a maximum concentration of 620 ppm (RRSCO is 400 ppm) and lead was detected at a maximum concentration of 740 ppm (RRSCO is 400 ppm).

No pesticides, herbicides or PCBs were detected above the RRSCOs.

Data does not indicate any off-site impacts in soil related to this site.

Groundwater:

PCE was detected in on-site shallow groundwater monitoring wells at concentrations up to 26 parts per billion (ppb), which exceeds the Ambient Water Quality Standard (AWQS) of 5 ppb. PCE was not detected above the AWQS in the on-site deep well. 2-Butanone was detected slightly above the AWQS in the deep well. Upgradient well MW-3 contained 1.4 ppb of PCE and an estimated 0.25 ppb trichloroethylene (TCE). No other VOCs were detected above the AWQSs.

One SVOC, bis(2-ethylhexyl)phthalate was detected at a concentration of 5.9 ppb, above the AWQS of 5 ppb. No other SVOCs were detected above the AWQSs.

No pesticides, herbicides or PCBs were detected above the AWQSs.

PFAS compounds were detected in all groundwater samples collected, with a total combined maximum concentration of 196.3 ppt. Perfluorooctanoic acid (PFOA) was identified at a concentration of 80.4 ppt in one monitoring well, above the US EPA Drinking Water Health Advisory level of 70 ppt. 1,4-Dioxane was not detected in any groundwater samples.

Data does not indicate any off-site impacts in groundwater related to this site.

Soil vapor, Sub-slab Soil Vapor, Indoor Air and Outdoor Air:

During the RI (2016-2017) and prior to the IRM, sub-slab soil vapor at the site contained PCE up to 5,380 micrograms per cubic meter (ug/m3) and TCE at up to 48.6 ug/m3. PCE was detected in on-site indoor air samples at up to 5,400 ug/m3, TCE at up to 9.3 ug/m3. PCE was detected in outdoor air at 1550 ug/m3. PCE was detected in the adjacent off-site building in sub-slab soil vapor at up to 38,500 ug/m3, and in indoor air up to 547 ug/m3. The levels of PCE and TCE detected in the indoor air on-site were above the NYSDOH air guideline values of 30 ug/m3 and 2 ug/m3, respectively, and immediate actions were recommended to reduce exposures.

Because immediate actions were recommended, the NYC Department of Health and Mental Hygiene (NYC Health) separately collected indoor air sampling data, which resulted in a shut-down the on-site commercial dry cleaner in March 2017. (NYC Health allowed the dry cleaner to re-open in September 2017.)

Off-site soil vapor was investigated at five locations surrounding the site. PCE was detected at all five locations (133 to 1880 ug/m3) and TCE at four locations (4.47 to 45.3 ug/m3).

In 2017, four off-site buildings were evaluated for soil vapor intrusion. The concentrations of PCE detected in sub-slab soil vapor ranged from non-detect (ND) to 24.9 ug/m3; TCE was detected in one sub-slab soil vapor sample at 1.16 ug/m3. PCE concentrations in indoor air ranged from 0.542 to 7.73 ug/m3; TCE ranged from ND to 0.263 ug/m3. Outdoor air samples were collected near all

four locations. PCE was detected in all four samples and was significantly elevated (155 ug/m3) in one location. TCE was detected in one outdoor air sample at 0.263 ug/m3. Based on the sample results no actions were recommended to address soil vapor intrusion at these four off-site buildings.

Installation of the on-site sub-slab depressurization system, vapor barrier, and rerouting of the dry cleaner exhaust; and the off-site SSDS was completed by November 2017. A follow up round of sub-slab soil vapor and indoor air samples were collected approximately 30 days later, in December 2017 (while the SSDS were active) from the on-site building and the adjacent off-site building. PCE was detected in six of the seven follow up indoor air samples below the NYSDOH AGV of 30 ug/m3 at concentrations ranging from 5.31 to 25.7 ug/m3. PCE was detected in one sample, at a concentration of 54.7 ug/m3. TCE was detected in five out of seven on-site indoor air samples at concentrations ranging from 0.124 to 0.365 ug/m3, below the AGV of 2 ug/m3.

Indoor air sampling conducted during March and April 2019 revealed that levels of PCE and TCE in the indoor air of the on-site building continue to be a concern. Concentrations of both PCE and TCE were above the NYSDOH air guideline values. Based on the operational status of the SSDS, the impacts were attributed to the former dry cleaner and uncontained process vapors. It has been confirmed that the dry cleaner's lease terminated in May 2019 and the business has vacated the on-site building. Continued monitoring will be conducted to assess how indoor air quality improves as a result of the removal of the indoor air source, the effectiveness of the existing engineering controls, and to determine if additional action may be needed.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

People are not drinking the groundwater because the area is served by a public water supply that is not affected by this contamination. People will not come into contact with contaminated soil since the site is covered with buildings and pavement. Volatile organic compounds in the soil may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Environmental sampling has identified impacts to indoor air quality and actions have been taken to address exposures to soil vapor intrusion at the on-site building and the adjacent off-site building. Additional monitoring is recommended to ensure these actions remain effective.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

SECTION 7: ELEMENTS OF THE SELECTED REMEDY

The alternatives developed for the site and the evaluation of the remedial criteria are presented in the Alternative Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375.

The selected remedy is a Track 4: Restricted use with site-specific soil cleanup objectives remedy.

The selected remedy is referred to as the Cover System and Site Management remedy.

The elements of the selected remedy include the IRMs and other actions discussed in Section 6.2, above, and the institutional and engineering controls listed below:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;

- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Cover System

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

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
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- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

5. Site Management Plan

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This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and groundwater;
- a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site or for buildings in off-site areas of contamination, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- a provision that should the owners of properties where sampling was previously declined request to have their properties sampled in the future, the NYSDEC, in consultation with the NYSDOH, shall assess the need for soil vapor intrusion sampling and take appropriate action;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 2 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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

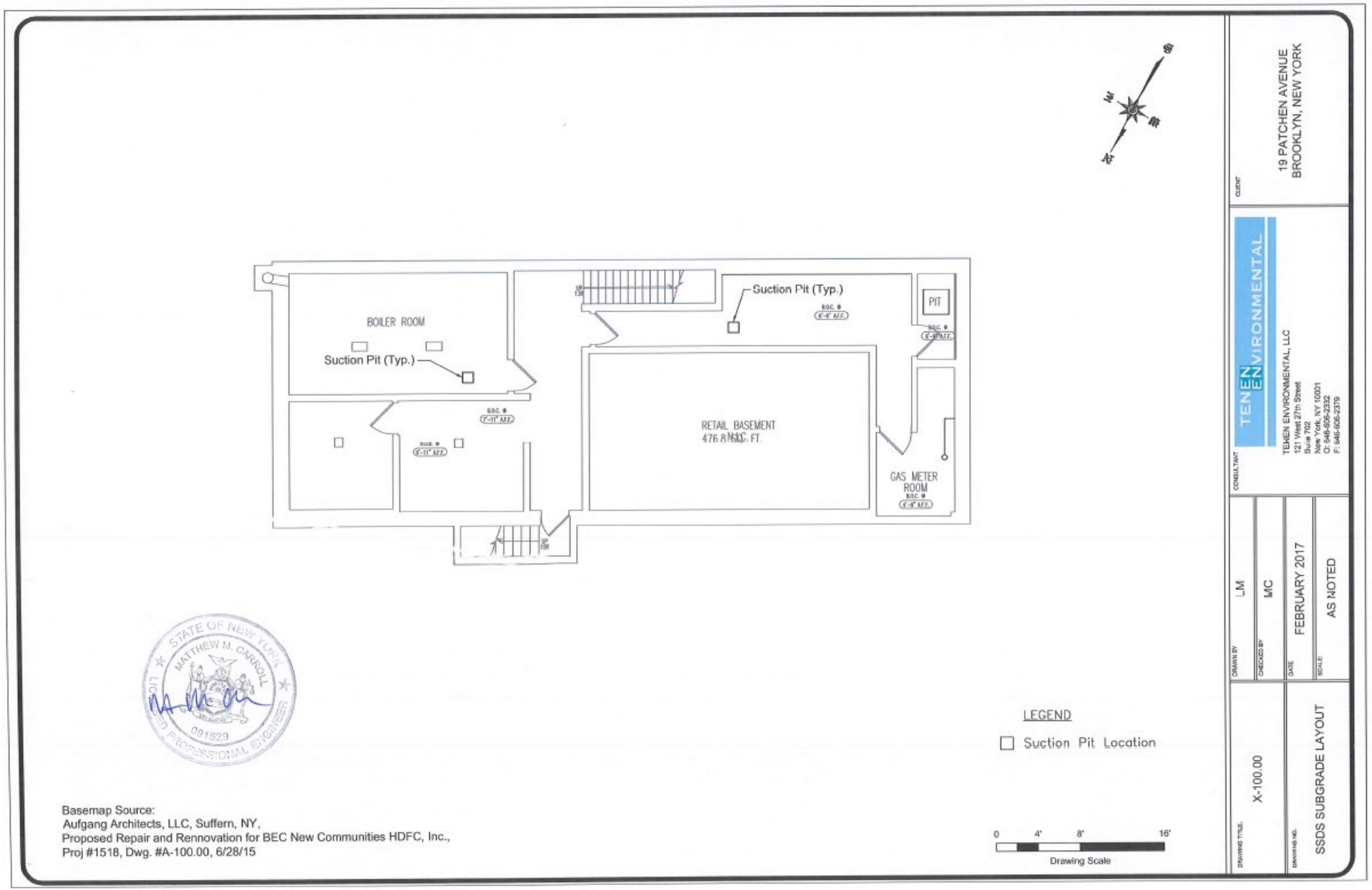
- monitoring of indoor air, including provisions for implementing actions to address exposure, and groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any buildings, as may be required by the Institutional and Engineering Control Plan discussed above.

c. An Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system(s). The plan includes, but is not limited to:

- procedures for operating and maintaining the system(s); and
  compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.

Figures

Site Location Map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Suction Pit (Typ.)
Suction Pit (Typ.)
PIT
RETAIL BASEMENT
476 R.N.S.F.
GAS METER ROOM
LEGEND
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Proposed Repair and Rennovation for BEC New Communities HDFC, Inc.,
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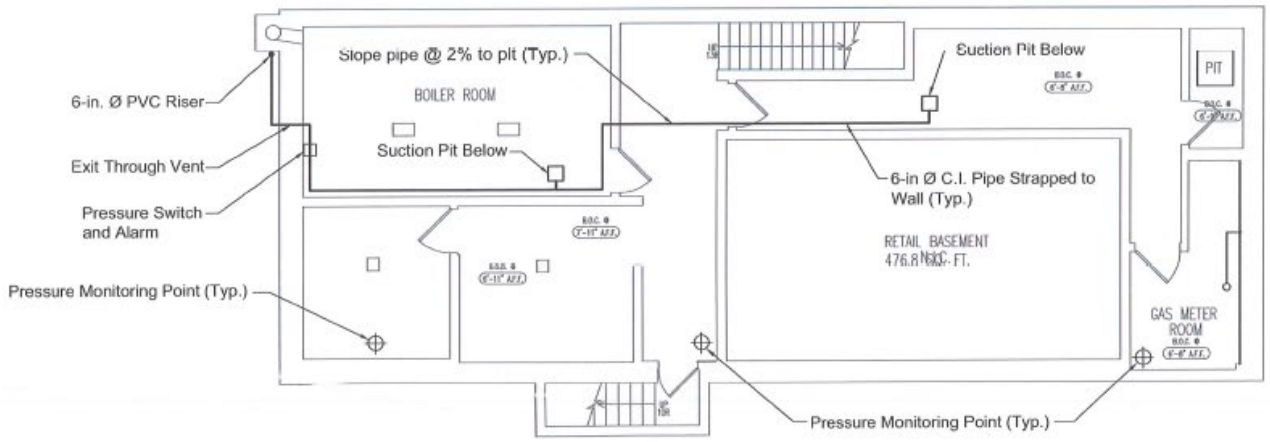
8'
16'
Drawing Scale
19 PATCHEN AVENUE
BROOKLYN, NEW YORK
TENEN ENVIRONMENTAL
TENEN ENVIRONMENTAL, LLC
121 West 27th Street
Suite 702
New York, NY 10001
O: 646-505-2332
F: 646-505-2379
LM
MC
FEBRUARY 2017
AS NOTED
X-100.00
SSDS SUBGRADE LAYOUT



LEGEND

- ☐ Suction Pit Location
- ⊕ Pressure Monitoring Point Location

0 4' 8' 16'

Drawing Scale

Basemap Source:
Aufgang Architects, LLC, Suffern, NY,
Proposed Repair and Rennovation for BEC New Communities HDFC, Inc.,
Proj #1518, Dwg. #A-100.00, 6/28/15

CLIENT: 19 PATCHEN AVENUE BROOKLYN, NEW YORK

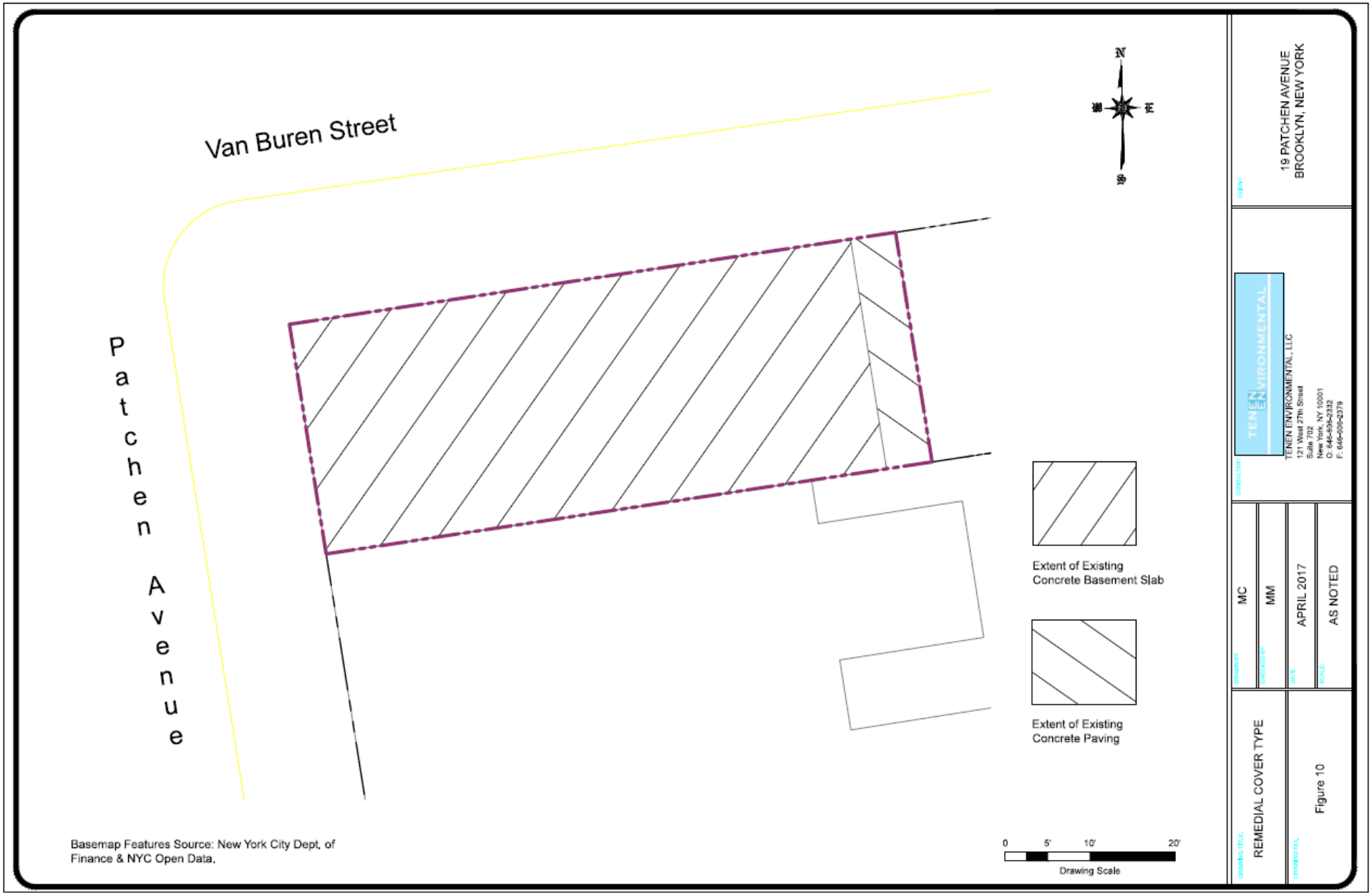
CONSULTANT: TENEN ENVIRONMENTAL

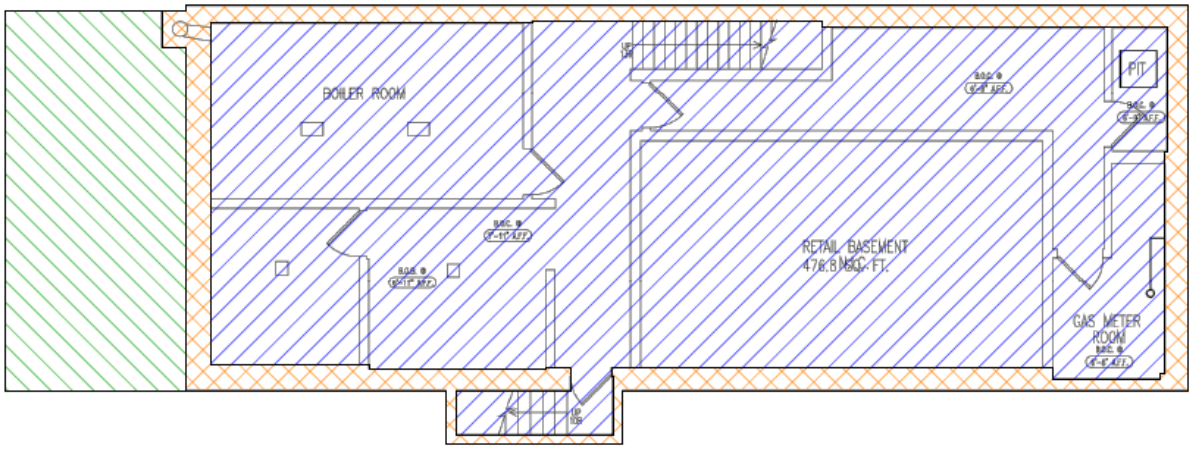
TENEN ENVIRONMENTAL, LLC
121 West 27th Street
Suite 702
New York, NY 10001
O: 646-606-2332
F: 646-606-2379

DRAWN BY	CHECKED BY	DATE	SCALE
LM	MC	FEBRUARY 2017	AS NOTED

DRAWING TITLE: SSDS CELLAR LAYOUT

DRAWING NO.: X-101.00


Van Buren Street
Patchen Avenue
N
W
E
S
Extent of Existing
Concrete Basement Slab
Extent of Existing
Concrete Paving
Basemap Features Source: New York City Dept. of
Finance & NYC Open Data.
0
5'
10'
20'
Drawing Scale
19 PATCHEN AVENUE
BROOKLYN, NEW YORK
TENEN ENVIRONMENTAL
TENEN ENVIRONMENTAL, LLC
121 West 27th Street
Suite 702
New York, NY 10001
O: 646-605-2332
F: 646-605-2379
MC
MM
APRIL 2017
AS NOTED
REMEDIAL COVER TYPE
Figure 10



Legend

- 4-6 inch concrete slab on grade
- 4-6 inch concrete slab at 10 feet below grade
- 4-6 inch concrete subgrade walls from 0-10 feet below grade

0 4' 8' 16'

Drawing Scale

Basemap Source:
Aufgang Architects, LLC, Suffern, NY,
Proposed Repair and Rennovation for BEC New Communities HDFC, Inc.,
Proj #1518, Dwg. #A-100.00, 6/28/15

SITE: 19 Patchen Avenue

CONSULTANT: TENEN ENVIRONMENTAL

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121 West 27th Street
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DRAWN BY	CHECKED BY	DATE	SCALE:
LM	CZ	12/17/2019	As Noted

DRAWING TITLE: Vertical Extent of Composite Cover System

DRAWING NO.: Figure 8