2425 ATLANTIC AVENUE & 30 HAVENS PLACE

KINGS, COUNTY

BROOKLYN, NEW YORK

Remedial Action Work Plan

NYSDEC BCP Number: Cxxxxxx

Prepared for:

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MARCH 2026

CERTIFICATION STATEMENT

I, Ariel Czemerinski, certify that I am currently a NYS registered professional engineer and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and Green Remediation (DER-31).

NYS Professional Engineer #	Date	Signature

Final version will be certified

Remedial Action Work Plan

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LIST OF ACRONYMS

ACRONYM	DEFINITION
AOC	Area of Concern
AWQS	Ambient Water Quality Standards
AGV	Air Guidance Value
ASP	Analytical Services Protocol
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BGS	Below Grade Surface
CAMP	Community Air Monitoring Program
COC	Chain of Custody
CPP	Citizen Participation Program
CSM	Conceptual Site Model
CVOC	Chlorinated Volatile Organic Compounds
DER-10	Department of Remediation Technical Guidance
DUSR	Data Usability Summary Report
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
GPS	Global Positioning System
GPR	Ground Penetrating Radar
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
IRM	Interim Remedial Measures
MCL	Maximum Contaminant Limit
MDL	Method Detection Limit
ppm	Milligrams per Kilogram
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NAPL	Non-aqueous Phase Liquid
ng/L	Nanograms per Liter
NYCRR	New York Codes Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethylene
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid

PID	Photo Ionization Detector
PPB	Parts per Billion
PPM	Parts per Million
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/ Quality Control
QAPP	Quality Assurance Project Plan
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
REC	Recognized Environmental Condition
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
RL	Reporting Limit
RRSCO	Restricted Residential Use Soil Cleanup Objective
SCG	Standards, Criteria and Guidance
SCO	Soil Cleanup Objective
SMP	Site Management Plan
SVOC	Semi-volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compounds List
TCLP	Toxicity Characteristic Leaching Procedure
TOGS	Technical and Operational Guidance Series
µg/L	Micrograms per Liter
$\mu g/m^3$	Micrograms per Cubic Meter
USGS	United States Geological Survey
UST	Underground Storage Tank
UUSCOs	Unrestricted Use Soil Cleanup Objectives
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

This Remedial Action Work Plan (RAWP) was prepared on behalf of Atlantic Haven Realty LP & Haven Junction LP (the "Volunteer"), who entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) to investigate and remediate the property located at 2425 Atlantic Avenue, in the Brownsville/Broadway Junction neighborhood of Kings County, New York (the "Site"). This RAWP is submitted in conjunction with a BCP Application and Remedial Investigation Report.

This RAWP summarizes the nature and extent of contamination determined during previous investigations and provides an evaluation of a Track 1 cleanup (Alternative 1), a Track 2 cleanup (Alternative 2), and a Track 4 (Alternative 3) cleanup, their associated costs, and the preferred remedy. The remedy described in this document is consistent with the procedures defined in DER-10, DER-31, and complies with all applicable standards, criteria, and guidance. The remedy described in this document also complies with all applicable federal, state, and local laws, regulations, and requirements.

SITE DESCRIPTION/PHYSICAL SETTING/SITE HISTORY

The Site, addressed as 2425 Atlantic Avenue and 30 Havens Place, is located on the north side of Atlantic Avenue, between Havens Place to the east and Jardine Place to the west in the Borough of Brooklyn, Kings County, New York. The Site comprises two contiguous tax lots (Tax Block 1574, Lots 23 and 24) with a combined area of approximately 17,533 square feet. The two tax lots have been subdivided from former Lot 23.

Prior to the lot subdivision and building demolition, historic Lot 23 was developed with a 1-story commercial warehouse with a partial cellar (approximately 11,050 square feet), constructed in 1946 and a northern 1-story extension (approximately 6,450 square feet) constructed slab on grade in 2002. Presently, the cellar slab and northern slab on grade portions remain in place and a construction fence has been erected around the Site. The new southern parcel, Lot 24 encompasses 7,314 square feet and the new northern parcel, Lot 23 encompasses 10,219 square feet.

Former Lot 23 was undeveloped as early as 1888 until the former 1-story warehouse was developed in 1946. The Site has been utilized for commercial and industrial use (clothing/knitting store (1965-1976), metal products shop (1985-1997), archival storage facility (2004-2017), fabrication shop (2017-March 2025) and residential use. According to the Automated City Register Information System (ACRIS) operated by the New York City Department of Finance, the Site is currently owned by Atlantic Junction GP Inc. (Atlantic Haven Realty LP and Haven Junction LP).

SUMMARY OF THE REMEDIAL INVESTIGATION

A Remedial Investigation (RI) was completed at the Site in June, October, November and December 2025. The RI included the following scope of work:

- Geophysical survey to locate unidentified underground storage tanks (USTs) and identify utilities in the vicinity of the boring locations,
- Soil:
    - June 2025: Installed eight soil borings across the Site and collected seventeen soil samples in addition to one duplicate soil sample for chemical analysis to evaluate soil quality;
    - October 2025: Installed three soil borings across the Site and collected nine soil samples for chemical analysis to evaluate soil quality;
    - December 2025: Installed nine soil borings and collected 27 soil samples for chemical analysis to evaluate soil quality;
- Groundwater:
    - Installed two monitoring wells in the sidewalk adjacent to the Site, and collected two groundwater samples for chemical analysis to evaluate groundwater quality;
    - Installed four monitoring wells across the site and collected four groundwater samples for chemical analysis to evaluate groundwater quality;
- Soil Vapor:

- July 2025: Installed six soil vapor probes throughout the Site and collected four samples for chemical analysis to evaluate soil vapor quality;
- October 2025: Installed four sub-slab vapor probes throughout the Site and collected four samples for chemical analysis to evaluate sub-slab vapor quality;
- December 2025: Installed three sub-slab soil vapor samples and five soil vapor samples and collected eight samples for chemical analysis to evaluate sub-slab soil vapor quality;

Soil Findings

- Two VOCs, acetone (max. of 0.084 ppm in SB-7(8-10') and trichloroethene (max. of 1.6 ppm in SB-10(8-10') were identified above the UUSCO of 0.05 ppm and 0.47 ppm, respectively, but below the RRSCO of 100 ppm and 21 ppm, respectively. Acetone is a common laboratory contaminant and is not a contaminant of concern at the site.
- No SVOCs were detected exceeding their respective UUSCOs or RRSCOs.
- Five pesticides, 4,4'-DDD (max. of 0.00382 ppm in SB-7(8-10')), 4,4'-DDE (max. of 0.0519 ppm in SB-7(8-10')), 4,4'-DDT (max. of 0.00847 ppm in SB-5(0-2')), alpha-chlordane (max. of 0.0249 ppm in SB-5(0-2)), and dieldrin (max. of 0.0121 ppm in SB-5(0-2')) were detected at concentrations exceeding UUSCOs (0.0033 ppm for 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT and 0,005 ppm for dieldrin) but below RRSCOs (13 ppm for 4,4'-DDD, 8.9 ppm for 4,4'-DDE, 7.9 ppm for 4,4'-DDT, and 0.2 ppm for dieldrin.
- Total PCBs (max. of 0.142 ppm) were detected in SB-4(0-2') and SB-4(6-8') at concentrations exceeding the UUSCO of 0.1 ppm but below the RRSCO of 1 ppm.
- Three metals, copper (max. of 99.9 ppm in SB-4(0-2')), lead (max. of 159 ppm in SB-4(0-2')), and zinc (max. of 272 ppm in SB-4(0-2')) were detected at concentrations exceeding the UUSCOs of 50 ppm, 63 ppm, and 109 ppm, respectively but below the RRSCOs of 270 ppm, 400 ppm, and 10,000 ppm, respectively. One metal, manganese (2,100 ppm in the duplicate sample DUP-1, collected from the same boring as SB-3) was identified at a concentration exceeding the RRSCO of 2,000 ppm).

- No PFAS compounds were detected above respective UUSCOs in the one soil sample.

Based on the subsurface investigation results, PCBs and pesticides contamination generally appears to be present in shallow (0-2) and intermediate (8-10) soils in the northern and central portions of the site.

On-Site Groundwater Findings

- No SVOCs, PCBs, pesticides or metals were detected at concentrations exceeding their respective AWQS in any of the on-site groundwater wells.
- Two VOCs, chloroform (max. of 11.8 µg/L in SW-1) and methylene chloride (max. of 6.08 µg/L in SW-1) were detected at concentrations exceeding their respective AWQS (7 µg/L for chloroform and 5 µg/L for methylene chloride). It should be noted that chloroform and methylene chloride are common laboratory contaminants and chloroform was detected at an elevated concentration of 24.4 µg/L in the field blank collected during the sampling event. Chloroform and methylene chloride are not contaminants of concern at this site.

Off-Site Groundwater Findings

- Seven total metals were detected in SW-1 (located off-site in the sidewalk along Havens Place) at concentrations exceeding their respective AWQS. Specifically, chromium (476 µg/L exceeding 50 µg/L), copper (250 µg/L exceeding 200 µg/L), magnesium (35,500 µg/L exceeding 35,500 µg/L), manganese (12,300 µg/L exceeding 300 µg/L), nickel (368 µg/L exceeding 100 µg/L), sodium (92,300 µg/L exceeding 20,000 µg/L), and beryllium (3.82 µg/L exceeding 3 µg/L).
- Seven dissolved metals were detected in SW-1 at concentrations exceeding their respective AWQS. Specifically, chromium (1,270 µg/L exceeding 50 µg/L), copper (299 µg/L exceeding 200 µg/L), magnesium (42,800 µg/L exceeding 35,500 µg/L), manganese (4,590 µg/L exceeding 300 µg/L), nickel (258 µg/L exceeding 100 µg/L), sodium (77,000 µg/L exceeding 20,000 µg/L), and beryllium (3.41 µg/L exceeding 3 µg/L).

Soil Vapor Findings

Four soil vapor samples were collected on July 20, 2025. SV-1, SV-3, SV-4 and SV-5. SV-1 and SV-4 were installed to a depth of 7.5 and 7 feet, respectively. SV-2, SV-3, SV-5 and SV-6 were installed in the building cellar which was approximately 8 feet bgs. SV-2 and SV-6 were installed to a total depth of 15 feet and SV-3 and SV-5 were installed to a total depth of 12.5 feet. Two soil vapor samples (SV-2 and SV-6) were not analyzed due to improperly calibrated flow regulators.

- The total concentrations of benzene, toluene, ethyl benzene, and total xylenes (BTEX) ranged from 5.51 micrograms per cubic meter (ug/m^3) in SV-5 to 334 ug/m^3 in SV-1.
- Other petroleum compounds detected included Cyclohexane in SV-3 at 85.3 ug/m^3 in exceedance of the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3, and Isooctane in SV-4 at 267 ug/m^3 in exceedance of the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3.
- Concentrations of the chlorinated VOC Tetrachloroethene (PCE) were detected in exceedance of the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in SV-3 at 330 ug/m^3, and 191 ug/m^3 in SV-4. Concentrations of Trichloroethene (TCE) exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all four samples, with a maximum concentration of 418 ug/m^3 detected in SV-3. Concentrations of Cis-1,2-Dicholorethene, a common breakdown compound of solvents like TCE, was detected in exceedance of the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in SV-3 at 13.6 ug/m^3 and in SV-4 at 16.2 ug/m^3.

Four sub-slab soil vapor samples (SS-1 through SS-4) were collected on October 30, 2025, and three sub-slab soil vapor samples (25SS-5, 25SS-7 and 25SS-8) were collected on December 22, 2025.

- The total concentrations of benzene, toluene, ethyl benzene, and total xylenes (BTEX) ranged from 5.51 micrograms per cubic meter (ug/m^3) in SV-5 to 334 ug/m^3 in SV-1.
- Other petroleum compounds detected included Cyclohexane in SV-3 at 85.3 ug/m^3 in exceedance of the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3, and Isooctane in SV-4 at 267 ug/m^3 in exceedance of the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3.

- Concentrations of the chlorinated VOC Tetrachloroethene (PCE) were detected in exceedance of the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in SV-3 at 330 ug/m^3, and 191 ug/m^3 in SV-4. Concentrations of Trichloroethene (TCE) exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all four samples, with a maximum concentration of 418 ug/m^3 detected in SV-3. Concentrations of Cis-1,2-Dicholorethene, a common breakdown compound of solvents like TCE, was detected in exceedance of the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in SV-3 at 13.6 ug/m^3 and in SV-4 at 16.2 ug/m^3.

The concentrations of PCE and TCE detected in SS-1 through SS-3 yields a "Mitigate" action for the NYSDOH Indoor Air Matrices A and B, regardless of indoor air concentrations.

Five soil vapor samples [25SV-1 (10'), 25SV-2 (5'), 25SV-3 (2'), 25SV-4 (5') and 25SV-6 (2')] were collected on December 22, 2025, at varying depths. 25SV-1 (10'), 25SV-2 (5') and 25SV-3 (2') were collected in the building cellar along the western property boundary (adjacent to lot 32) and 25SV-4 (5') and 25SV-6 (2') were collected in the northern portion of the building cellar.

- The total concentrations of benzene, toluene, ethyl benzene, and total xylenes (BTEX) ranged from 136.9 ug/m^3 in 25SV-1 (10') to 501 ug/m^3 in 25SV-4 (5'). Concentrations of ethyl benzene exceeded the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3 in 25SV-2 (5') at 67 ug/m^3, 25SV-3 (2') at 62 ug/m^3 and 25SV-4 (5') at 88 ug/m^3. Concentrations of p&m-Xylenes exceeded the NYSDOH Decision Matrices minimum concentration value of 200 ug/m^3 in 25SV-2 (5') at 250 ug/m^3, 25SV-3 (2') at 230 ug/m^3 and 25SV-4 (5') at 320 ug/m^3.

- Concentrations of PCE exceeded the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in four samples, with a maximum concentration of 830 ug/m^3 in 25SV-4 (5')

- Concentrations of TCE exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all five samples, with concentrations ranging from 560 ug/m^3 in 25SV-1 (10') to 7,800 ug/m^3 in 25SV-4 (5').

QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

This qualitative assessment evaluates potential human exposure pathways to contaminants detected in soil, groundwater, and soil vapor at the Site. The qualitative exposure assessment identified potential routes of exposure to on-site workers through inhalation, ingestion, and dermal contact of VOCs, SVOCs, and heavy metals during excavation activities. The Health and Safety Plan (HASP) prepared for the Site identifies such exposures and provides instructions for on-Site workers to minimize potential exposure.

The five elements of an exposure pathway are the (1) source of contamination; (2) environmental media and transport mechanisms; (3) point of exposure; (4) route of exposure; (5) receptor population based on past, present or future events.

Media	Potential Receptor(s)	Exposure Mechanism	Pathway Status / Comments
Soil	Construction workers, future residents	Incidental ingestion, dermal contact, inhalation of dust	Potentially complete during construction; mitigated post-construction by hardscape.
Groundwater	Construction workers	Dermal contact or incidental ingestion	Incomplete. Groundwater not used for potable supply; exposure limited by construction health and safety controls.
Soil Vapor	Construction workers, future residents	Inhalation of vapors migrating to indoor air	Low potential. No significant chlorinated VOCs detected; future building will include a cover system.
Air / Dust	On-site workers, nearby community	Inhalation of fugitive dust during excavation	Short-term, controllable pathway managed through CAMP and dust suppression measures.

Current Conditions

Based on the analytical results of the remedial investigations, the primary contaminants of concern for the site are the chlorinated VOC trichloroethene, pesticides, PCBs and metals in soil, tetrachloroethene and trichloroethene in soil vapor requiring mitigation and petroleum compounds in soil vapor. Human exposure is unlikely under the current Site conditions as the

Site is currently vacant and capped with concrete slabs, groundwater within Kings County is not used as a potable source of water. Direct contact, ingestion, or dust inhalation exposure pathways are incomplete under current use.

Construction/Remediation

During construction and remediation activities, including but not limited to soil excavation, dewatering, disturbance of the contaminant sources (i.e.: soil and soil vapor) would create a potential exposure pathway to on-site workers and, to a lesser extent, the public and residents adjacent to the Site. Although the potential for complete exposure exists during construction and remediation, it is short term and controllable. The exposure will be minimized by implementation of a site-specific HASP to protect on-site workers and a site-specific Community Air Monitoring Program (CAMP).

Future Conditions

Once the remedial activities are completed, contaminant sources are expected to be removed. In the event that any residual contamination remains at the Site after remediation, institutional and engineering controls will be in place to prevent and mitigate completion of exposure pathways.

Based on the results of the QHHEA, this RAWP, which includes a site-specific HASP to protect on-site workers and a site-specific CAMP to protect the surrounding community, will be implemented during the remedial action and construction of the proposed Site buildings to ensure that the potential exposure pathways identified do not become complete. The proposed Track 2 remedy will effectively mitigate the soil impacts identified during the RI. Following remedy implementation, no significant human health exposure pathways will remain complete, and the Site will meet the remedial action objectives for protection of public health and the environment.

FISH AND WILDLIFE ASSESSMENT (FWIA)

The Site provides no wildlife habitat or food value. There are no natural waterways, wetlands, resources, or critical habitants of endangered species present on or adjacent to the Site. The Site

was evaluated in accordance with the Fish and Wildlife Resources Impact Analysis (FWRIA) Decision Key provided in DER-10, Appendix 3C, to determine if an FWRIA was required. It was determined that a FWRIA was not required.

SUMMARY OF THE REMEDY

The selected remedy Alternative 2- Track 2, would include the following:

1. A remedial 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 shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise™ (available in the Sustainable Remediation Forum [SURF] library) or similar Department accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial program, as appropriate. The project will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial program.

Additionally, the remedial program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

2. Development and implementation of a Construction Health and Safety Plan (CHASP) for the protection of on-site workers, and a Community Air Monitoring Plan (CAMP) for protection of community/residents and the environment during remediation and construction activities;

3. As part of the remedial action conduct full TCL groundwater sampling of the four on-Site groundwater monitoring wells to close the data gap remaining from the RI. Contingency will be made for appropriate in-situ groundwater treatment if necessary.

4. Excavation, stockpiling, and disposal of soil/fill exceeding Track 2 Restricted Residential SCOs listed in Table 1. During the remedial excavation, the top 2 feet of soil/fill will be

excavated, and additional excavation as needed will be performed for hotspot areas exceeding RRSCOs. Approximately 1,500 cubic yards of soil/fill will be removed;

5. Decommissioning of on-site monitoring wells in accordance with NYSDEC CP-43 Policy;
6. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;
7. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of Track 2 Restricted Residential SCOs. If endpoint samples do not meet RRSCOs, further excavation will be completed until they are met, otherwise a Track 4 Site Specific SCO will be pursued;
8. Appropriate off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;
9. Import of materials to be used for backfill and cover in compliance with: (1) chemical limits and other specifications included in Table 1, (2) all Federal, State and local rules and regulations for handling and transport of material;
10. Construction and maintenance of a site cover consisting of 6" concrete slab under the two buildings and a minimum of 2 ft of certified clean soil to prevent human exposure to residual contaminated soil/fill remaining under the Site;
11. Recording of an Environmental Easement, including Institutional Controls, to prevent future exposure to any residual contamination remaining at the Site (a copy of the Environmental Easement is provided in Appendix B);
12. Publication of a Site Management Plan for long term management of residual contamination as required by the Environmental Easement, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting;

All responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, will be addressed in accordance with all applicable Federal, State and local rules and regulations.

REMEDIAL ACTION WORK PLAN

1.0 INTRODUCTION

Atlantic Haven Realty LP & Haven Junction LP have submitted a BCP Application along with this RAWP and a RIR in March, 2026, to investigate and remediate a 0.402-acre property located at 2425 Atlantic Avenue in the Brownsville/Broadway Junction neighborhood of, Kings County, New York. Atlantic Haven Realty LP & Haven Junction LP is a Volunteer in the Brownfield Cleanup Program. Site usage type, i.e., Restricted Residential use is proposed for the property. When completed, the Site will contain two (2) thirteen-story residential buildings with an open space courtyard area. Refer to the Brownfield Cleanup Program (BCP) application for additional details.

This Remedial Action Work Plan (RAWP) summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI), performed during June, October, November and December 2025. It provides an evaluation of a Track 1 cleanup and other applicable Remedial Action alternatives, their associated costs, and the recommended and preferred remedy. The remedy described in this document is consistent with the procedures defined in DER-10, DER-31, and complies with all applicable standards, criteria and guidance. The remedy described in this document also complies with all applicable Federal, State and local laws, regulations and requirements.

The NYSDEC and New York State Department of Health (NYSDOH) have not yet determined whether this Site poses a significant threat to human health and the environment. The RI for this Site did not identify fish and wildlife resources.

A formal Remedial Design document will not be prepared.

1.1 Site Location and Description

The Site is located in the County of Kings, Brooklyn, New York and is identified as Block 1574, Lots 23 and 24 on the New York City Tax Map. A United States Geological Survey (USGS) topographical quadrangle map (Figure 1) shows the Site location. The Site is situated on

an approximately 0.40-acre area bounded by a two-story residential building to the north, Atlantic Avenue to the south, Havens Place to the east, and a commercial warehouse (occupied by an iron works, steel fabrication and auto repair shop) and six two-story residential buildings to the west (see Figure 2). A boundary map is attached to the BCA as required by Environmental Conservation Law (ECL) Title 14 Section 27-1419. The 0.40-acre property is fully described in Appendix A – Metes and Bounds. A global positioning system coordinate for the starting point is included.

1.2 Contemplated Redevelopment Plan

The Remedial Action to be performed under the RAWP is intended to make the Site protective of human health and the environment consistent with the contemplated end use. The proposed redevelopment plan and end use is described here to provide the basis for this assessment. However, the Remedial Action contemplated under this RAWP may be implemented independent of the proposed redevelopment plan.

The proposed redevelopment includes the construction of two 13-story residential buildings constructed slab on grade. Both buildings will contain 99 apartments each, and a combined open space courtyard area encompassing 5,525 SF located on the western portion of the Site. The affordable housing component of the development will include approximately 25% of the planned residential units. The proposed redevelopment plans are included in Appendix J.

1.3 Description of Surrounding Property

North	3-story residential buildings (14 &18 Havens Place and 1480-1488 Herkimer Street), followed by Herkimer Street
South	Atlantic Avenue followed by a single-story commercial building and yard (J. Stone Design Inc, 2432 Atlantic Avenue) and 4-story commercial building (Hotel, 2416 Atlantic Avenue).
West	2-story residential buildings (9-19 Jardine Place) and a single-story commercial building occupied by a metal fabrication shop, iron works and auto repair shop (2413 Atlantic Avenue) to the west
East	Havens Place, followed by an MTA owned parking lot

The Site is approximately 17,533-square feet and is bounded by residential buildings followed by Herkimer Street to the north, Atlantic Avenue to the south, Havens Place followed by a parking lot to the east, and residential and commercial buildings to the west followed by Jardine Place.

The nearest ecological receptors are Highland Park, located approximately 0.33 miles to the northeast of the Site and Jamaica Bay, located approximately 3 miles to the south of the Site. Other sensitive receptors, as defined in DER-10, within a half mile of the Site include the following:

Educational Facilities:

- Bushwick Ascend Middle School (2 Aberdeen Street, Brooklyn, NY 11207)
- Christopher Avenue Community School (51 Christopher Avenue 4th Floor, Brooklyn, NY 11212)
- Achievement First Brownsville CS (2021 Bergen Street RM 149, Brooklyn, NY 11233)
- William H. Maxwell Career and Technical Education High School (145 Pennsylvania Avenue, Brooklyn, NY 11207)

Childcare/Daycare Facilities:

- Trey Whitfield School (17 Hinsdale Street, Brooklyn, NY 11207)
- Christopher Avenue Community School (51 Christopher Avenue, Brooklyn, NY 11212)
- Brooklyn Kindergarten Society (1592 East New York Avenue, Brooklyn, NY 11212)
- Shirley Chisholm Day Care Center #4 (33 Sommers Street, Brooklyn, NY 11233)

Parks and Recreational Areas:

- Hull Street Garden (227 Hull Street, Brooklyn, NY 11233)
- Garden (45 Somers Street, Brooklyn, NY 11233)
- Phoenix Community Garden (2037 Fulton Street, Brooklyn, NY 11233)
- Fish Playground (231 Saratoga Avenue, Brooklyn, NY 11233)
- Thomas Boyland Park (16 Furman Avenue, Brooklyn, NY 11207)
- Granite St. Block Association (28 Granite Street, Brooklyn, NY 11207)
- SH'MA Yisrael (2084 Pacific Street, Brooklyn, NY 11233)
- Ocean Hill Playground (275 Hopkinson Avenue, Brookyln, NY 11233)

- Houston Playground (145 Glenmore Avenue, Brooklyn, NY 11233)
- TLC Sculpture Park Garden (271 Glenmore Avenue, Brooklyn, NY 11207)
- George Walker Jr. Park (57 Vermont Street, Brooklyn, NY 11207)

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

An application to enroll in the New York State Brownfield Cleanup Program (BCP) and a Remedial Investigation Report (RIR) is submitted along with this RAWP. The Site was investigated in accordance with the scope of work presented in the Remedial Investigation (RI) Work Plan dated June 6, 2025. The investigation was conducted during June 20, 2025, October 30, 2025, November 11, 2025, and December 16-18, 2025.

2.1 Summary Remedial Investigations Performed

The RI completed at the Site consisted of the collection of soil, groundwater and soil vapor samples for laboratory analysis as follows:

1. Geophysical survey to locate unidentified underground storage tanks (USTs) and identify utilities in the vicinity of the boring locations,

2. Installation of eight soil borings to between 8 and 12 feet across the site, depending on depth of refusal, and collection of 16 soil samples and additional quality assurance/quality control (QA/QC) samples from June 20 to June 22, 2025.

3. Installation of three soil borings across the site to a depth of 10 to 14 feet and collection of 11 soil samples on October 30, 2025.

4. Installation of five soil borings throughout the cellar portion of the site to a depth of 10 feet below basement grade (approximately 15 feet from grade surface) from December 16 to December 18, 2025, and collection of 27 soil samples.

5. Installation of two off-site monitoring wells in the sidewalk and collection of two groundwater samples on November 11, 2025.

6. Installation of four monitoring wells across the site and collection of four groundwater samples on December 22, 2025.

7. Installation of six soil vapor probes throughout the site on June 20, 2025, and collection of four soil vapor samples.

8. Installation of four sub-slab soil vapor probes throughout the site on October 30, 2025, and collection of four sub-slab soil vapor samples.

9. Installation of three sub-slab soil vapor probes throughout the site on December 22, 2025, and collection of three sub-slab soil vapor samples.

10. Installation of five soil vapor probes throughout the site on December 22, 2025, and collection of five soil vapor samples.

2.1.1 GEOPHYSICAL INVESTIGATION

Prior to intrusive sampling, a geophysical survey was performed by Coastal Environmental Solutions (Coastal) Medford, New York on June 20, 2025. A geophysical survey was performed by Coastal Environmental Solutions, Inc. (Coastal) of Bohemia, New York at the site on June 20, 2025. The purpose of the geophysical survey was to identify anomalies, located buried utilities, clear boring locations, and identify possible suspect underground storage tank areas. Coastal utilized a Geophysical Survey Systems Inc. SIR-3000 cart mounted Ground Penetrating Radar (GPR) unit with a 400 Mhz antenna, a radio-detection RD7000 precision utility locator, and a Fisher M-Scope TW-6 pipe and cable locator. The geophysical survey was conducted only in the accessible areas of the site. The geophysical scan did not identify any anomalies or areas of concern indicative of potential USTs.

2.1.2 SOIL INVESTIGATION

June 20, 2025 & October 30, 2025

Coastal Environmental Solutions, Inc. (Coastal) of Bohemia, New York, was retained to install soil borings at the site on June 20, 2025, and October 30, 2025. A direct-push GeoProbe 6011DT

was utilized on June 20, 2025, and a direct-push GeoProbe 6620DT was utilized on October 30, 2025.

Eleven borings designated as SB-1 through SB-11 were advanced to depths ranging between 7 to 14 feet bgs. Soil borings SB-1, SB-4, SB-5, and SB-9 were installed from grade in the northern portion of the building on the subject property where SB-1, SB-4, and SB-5 were installed to 8 feet bgs and SB-9 was installed to 10.5 feet. Soil borings SB-2, SB-3, SB-6, SB-7, SB-8, SB-10, and SB-11 were installed in the southern portion of the subject property building in the cellar. The cellar floor is approximately 8 feet below grade surface, and SB-2, SB-3, SB-6, SB-7, SB-8, and SB-11 were installed to 5 feet below the basement grade surface (bbgs) to a depth of approximately 13 feet below grade surface. SB-10 was installed to 6 feet bbgs, or approximately 14 feet below grade surface.

Refusals were encountered at depths of 8 feet bgs in the northern portion of the site and 14 feet bgs in the southern portion of the site. Soil samples were collected continuously into 5-foot acetate sleeves. The soil from each boring was field screened for the presence of volatile organic compounds (VOCs) with a photoionization detector (PID) and were inspected for visual and olfactory indications of contamination. Nominal PID readings ranged between 1.3 and 5.0 parts per million (ppm). Otherwise, no elevated PID readings were detected during soil screening activities. For SB-1 through SB-8, two samples were collected from each soil boring location. One sample was collected from each boring two-foot depth interval immediately below the slab; and one sample was collected from the two-foot depth interval at the bottom of the boring, prior to termination due to refusals. Three soil samples each were collected from SB-9, SB-10 and SB-11, for a total of nine samples. Soils logged during the RI were generally classified as brown fine to medium grained sand with varying amounts of gravel.

December16-19, 2025

Nine (9) soil borings, designated as 25SB-1 through 25SB-9 were advanced to depths ranging between 15 to 25 feet bgs. Soil borings 25SB-1 and 25SB-9 were installed from grade in the northern slab on grade portion of the building, where 25SB-1 was installed to 25 fbg and 25SB-9 was installed to 20 fbg. Soil borings 25SB-2 through 25SB-8 were installed in the cellar portion

of the building, approximately 8 feet below grade surface, where 25SB-2 was installed to 10 feet below basement grade (bbg) due to refusal, 25SB-3 and 25SB-4 were installed to 25 feet bbg, 25SB-5 through 25SB-8 were installed to 10 feet bbg.

A total of 27 soil samples were collected for chemical analysis. Three soil samples were collected from each boring at shallow, intermediate and deep intervals with depths that varied depending on if they were collected from the slab on grade portion of the site or within the partial cellar, approximately 8 feet below site grade.

All soil samples were collected using a dedicated, disposable sampling scoop to prevent cross-contamination

2.1.3 GROUNDWATER INVESTIGATION

Six (6) permanent groundwater monitoring wells designated SW-1, SW-2 and MW-1 through MW-4 were installed at on-site and off-site locations between November and December 2025.

Two off-site monitoring wells were installed during the performance of the RI. HRF and PG Environmental Services, Inc. utilized a GeoProbe 7822DT to install both wells. The initial 10 feet below grade was cleared via hand auger before direct push methodology was used to install the remainder of the well string. SW-1 was installed to 65.18 feet bgs within the adjacent sidewalk on Havens Place and SW-2 was installed to 71.09 feet bgs within the adjacent sidewalk on Atlantic Avenue. Both wells were installed with twenty feet of 10-mil slotted screen PVC at the bottom of each well.

Four monitoring wells were installed on December 16, 2025, during the supplemental RI sampling event. MW-1 was installed to approximately 75 feet bgs in the northern slab on grade portion of the Site, MW-2 was installed to approximately 68 feet bgs, and MW-3 and MW-4 were installed to approximately 70 feet bgs, all installed in the southern partial cellar portion of the Site. All four wells were installed with twenty feet of 10-mil slotted screen PVC at the bottom of each well.

A total of six groundwater samples were collected from each of the four on-Site and two off-Site monitoring wells.

2.1.4 SOIL VAPOR INVESTIGATION

Four soil vapor samples were collected on July 20, 2025. SV-1, SV-3, SV-4 and SV-5. SV-1 and SV-4 were installed to a depth of 7.5 and 7 feet, respectively. SV-2, SV-3, SV-5 and SV-6 were installed in the building cellar which was approximately 8 feet bgs. SV-2 and SV-6 were installed to a total depth of 15 feet and SV-3 and SV-5 were installed to a total depth of 12.5 feet. Two soil vapor samples (SV-2 and SV-6) were not analyzed due to improperly calibrated flow regulators.

- The total concentrations of benzene, toluene, ethyl benzene, and total xylenes (BTEX) ranged from 5.51 micrograms per cubic meter (ug/m^3) in SV-5 to 334 ug/m^3 in SV-1.
- Other petroleum compounds detected included Cyclohexane in SV-3 at 85.3 ug/m^3 in exceedance of the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3, and Isooctane in SV-4 at 267 ug/m^3 in exceedance of the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3.
- Concentrations of the chlorinated VOC Tetrachloroethene (PCE) were detected in exceedance of the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in SV-3 at 330 ug/m^3, and 191 ug/m^3 in SV-4. Concentrations of Trichloroethene (TCE) exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all four samples, with a maximum concentration of 418 ug/m^3 detected in SV-3. Concentrations of Cis-1,2-Dicholorethene, a common breakdown compound of solvents like TCE, were detected in exceedance of the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in SV-3 at 13.6 ug/m^3 and in SV-4 at 16.2 ug/m^3.

Four sub-slab soil vapor samples (SS-1 through SS-4) were collected on October 30, 2025, and three sub-slab soil vapor samples (25SS-5, 25SS-7 and 25SS-8) were collected on December 22, 2025.

- Of the seven sub-slab soil vapor samples collected in October and December 2025, no exceedances of BTEX or other petroleum compounds were identified.

- Concentrations of PCE exceeded the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in all seven samples, with concentrations ranging from 130 ug/m^3 in 25SS-7 to 1,800 ug/m^3 in SS-1 and SS-2.
- Concentrations of TCE exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all seven samples, with concentrations ranging from 380 ug/m^3 in 25SS-5 and SS-4 to 12,000 ug/m^3 in SS-2.
- Concentrations of Cis-1,2-Dichloroethene exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in three samples, with concentrations ranging from 16 ug/m^3 in SS-3 to 100 ug/m^3 in SS-2.

The concentrations of PCE and TCE detected in SS-1 through SS-3 yields a "Mitigate" action for the NYSDOH Indoor Air Matrices A and B, regardless of indoor air concentrations.

Five soil vapor samples [25SV-1 (10'), 25SV-2 (5'), 25SV-3 (2'), 25SV-4 (5') and 25SV-6 (2')] were collected on December 22, 2025, at varying depths. 25SV-1 (10'), 25SV-2 (5') and 25SV-3 (2') were collected in the building cellar along the western property boundary (adjacent to lot 32) and 25SV-4 (5') and 25SV-6 (2') were collected in the northern portion of the building cellar.

- The total concentrations of benzene, toluene, ethyl benzene, and total xylenes (BTEX) ranged from 136.9 ug/m^3 in 25SV-1 (10') to 501 ug/m^3 in 25SV-4 (5'). Concentrations of ethyl benzene exceeded the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3 in 25SV-2 (5') at 67 ug/m^3, 25SV-3 (2') at 62 ug/m^3 and 25SV-4 (5') at 88 ug/m^3. Concentrations of p&m-Xylenes exceeded the NYSDOH Decision Matrices minimum concentration value of 200 ug/m^3 in 25SV-2 (5') at 250 ug/m^3, 25SV-3 (2') at 230 ug/m^3 and 25SV-4 (5') at 320 ug/m^3.
- Concentrations of PCE exceeded the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in four samples, with a maximum concentration of 830 ug/m^3 in 25SV-4 (5')

- Concentrations of TCE exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all five samples, with concentrations ranging from 560 ug/m^3 in 25SV-1 (10') to 7,800 ug/m^3 in 25SV-4 (5').

2.1.5 CHEMICAL ANALYTICAL WORK PERFORMED

Sample Media	Analytical Analysis
Soil	Part 375 Target Compound List volatile organic compounds (VOCs) by EPA Method 8260, Part 375 Target Compound List semi-volatile organic compounds (SVOCs) by EPA Method 8270, Pesticides by EPA Method 8081, Polychlorinated biphenyls (PCBs) by EPA Method 8082, Metals by EPA Methods 6010 and 7471, 1,4-Dioxane by EPA Method 8270SIM, and 40 Per- and polyfluoroalkyl substances (PFAS) compounds via EPA Method 1633.
Groundwater	TCL VOCs by EPA Method 8260, TCL SVOCs by EPA Method 8270, Pesticides by EPA Method 8081, PCBs by EPA Method 8082, Metals (total and dissolved) via EPA Method 6010 and 7471, 40 Per- and polyfluoroalkyl substances (PFAS) compounds via EPA Method 1633,

	1,4-Dioxane via 8270SIM.
Soil Vapor	VOCs via USEPA Method TO-15.

2.1.6 BEST MANAGEMENT PRACTICES

Assessment of best management practices (BMP) implemented during the RI was performed in accordance with NYSDEC's *Green and Sustainable Remediation and Climate Resiliency Fact Sheet, dated June 2023*, and EPA's *Green Remediation BMPs fact sheet, dated September 2016*. The BMPs that were implemented during the RI included the following:

1. To help minimize mobilization for the RI, use of direct sensing equipment to collect real-time field measurements were used. Field equipment such as a PIDs, water quality meters, and interface probes were utilized.
2. The RI used minimally invasive drilling techniques such as direct-push or sonic technology in order to reduce drilling duration, avoid, or minimize use of water, and prevent or reduce generation of cuttings and associated disposal of investigative derived waste (IDW).
3. Whenever possible, all coordination meetings were held virtually to reduce energy consumption and air pollutants, and
4. Permanent monitoring wells were installed in a way that will allow maximum reuse for future groundwater sampling, monitoring, or remediation.

A SEFA footprint analysis of the activities completed under the Remedial Investigation generated the following wastes:

- Energy used (on and off-site): 317.8 MMBtu's
- Total NOx, SOx, and PM emissions: 458.4 pounds
- Total HAP emissions: 8.8 pounds

Total greenhouse gas emissions: 25.7 tons CO^2e

2.1.7 DOCUMENTATION

Below is a summary of the RI findings.

2.1.7.1 SOIL

Soil results were compared to the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives (SCOs) and Restricted Residential Use SCOs. Emerging contaminant results were compared to the guidance values established in the NYSDEC Guidance Document for Part 375 Remedial Programs. Table 2 shows exceedances of Track 1 and Track 2 SCOs in soil/fill samples. The location of soil borings is shown in Figure 3.

Volatile Organic Compounds

Two VOCs were detected above their Unrestricted Use SCOs.

Acetone, which is a common laboratory artifact, was detected in two samples above its UUSCO (max. of 0.084 ppm in SB-7(8-10'), and trichloroethylene (TCE) was detected above its UUSCO (max. of 1.6 ppm in SB-10(8-10') in two samples.

Semi-Volatile Organic Compounds

No SVOCs were detected above their respective UUSCOs or RRSCOs.

Pesticides & PCBs

Five pesticides were detected at concentrations exceeding UUSCOs but below RRSCOs: 4,4'-DDD was detected at a maximum concentration of 0.00382 ppm in SB-7 (8-10'), 4,4'-DDE was detected at a maximum concentration of 0.0519 ppm in SB-7(8-10'), 4,4'-DDT was detected at a maximum concentration of 0.00847 ppm in SB-5 (0-2'), dieldrin was detected at a maximum concentration of 0.0121 ppm in SB-5 (0-2'), and Alpha-Chlordane was detected at a maximum concentration of 0.0249 ppm in SB-5 (0-2').

Total PCBs were detected in SB-4(0-2') at 0.118 ppm and in SB-4(6-8') at 0.142 ppm exceeding the UUSCO of 0.1 ppm but below the RRSCO of 1 ppm.

Metals

One or more of up to four metals, including copper, lead, manganese and zinc, were detected at concentrations exceeding their respective UUSCOs in four soil samples. Of these only manganese also exceeded its respective Track 2 RRSCOs in one soil sample. The manganese exceedance was detected in the duplicate sample which originated from parent sample SB-3 (8-10). The table below provides concentration ranges of these exceedances.

Metals	Minimum Detected Concentration > SCOs		Maximum Detected Concentration> SCOs		UUSCO (ppm)	RRSCO (ppm)
Copper	12.2	SB-1 (0-2) & SB-3 (10-12)	99.9	SB-4 (0'-2')	50	270
Lead	1.88	SB-3 (10-12)	159	SB-4 (0'-2')	63	400
Zinc	11.9	SB-3 (10-12)	272	SB-4 (0'-2')	109	10,000
Manganese	179	SB-7 (8-10)	2,100	DUP -1	1,600	2,000

- No PFAS compounds were detected above respective UUSCOs in the one soil sample.

2.1.7.2 GROUNDWATER

Volatile Organic Compounds

One VOC, benzene (1.7 ppb in 25MW-8), was detected above its respective AWQS in one on-site groundwater sample. Two compounds identified as laboratory artifacts, Chloroform and methylene chloride, were detected above their respective AWQS in the off-site groundwater samples as follows:

Contaminant (VOC)	Monitoring Well ID	Concentration (ppb)	AWQS (ppb)
Benzene	25MW-4	1.32	1
Chloroform	SW-1	11.8	7
Methylene Chloride	SW-1	6.08	5

Semi-Volatile Organic Compounds

No SVOCs were detected in the groundwater samples above laboratory reporting limits.

Pesticides & Herbicides

No pesticides or herbicides were detected in the groundwater samples above laboratory reporting limits.

Polychlorinated Biphenyls

No PCBs were detected in the groundwater samples above laboratory reporting limits.

Total Metals

Six total metals, including beryllium, copper, magnesium, manganese, nickel and sodium, and one heavy metal, chromium, were identified at concentrations exceeding their respective AWQS in one off-site groundwater sample as follows:

Total Metals	Monitoring Well ID	Concentration (ppb)	AWQS (ppb)
Beryllium	SW-1	3.82	3
Chromium	SW-1	476	50
Copper	SW-1	250	200
Magnesium	SW-1	35,500	35,000
Manganese	SW-1	12,300	300
Nickel	SW-1	368	100
Sodium	SW-1	92,300	20,000

Dissolved Metals

Six dissolved metals, including beryllium, copper, magnesium, manganese, nickel and sodium, and one heavy metal, chromium, were identified at concentrations exceeding their respective AWQS in one off-site groundwater sample as follows:

Total Metals	Monitoring Well ID	Concentration (ppb)	AWQS (ppb)
Beryllium	SW-1	3.41	3
Chromium	SW-1	1,270	50
Copper	SW-1	299	200
Magnesium	SW-1	42,800	35,000
Manganese	SW-1	4,590	300
Nickel	SW-1	258	100
Sodium	SW-1	77,000	20,000

2.1.7.3 SOIL VAPOR

Results of the soil vapor and sub-slab soil vapor sampling showed elevated concentrations of chlorinated VOCs and petroleum related compounds.

Notably, of the five sub-slab soil vapor samples collected during the October 30, 2025, sampling event, the concentrations of PCE and TCE detected in sub-slab soil vapor samples SS-1, SS-2 and SS-3 yielded a mitigation action for the NYSDOH Indoor Air Matrices A and B, regardless of indoor air concentrations.

The highest detection of TCE was identified in sub slab soil vapor sample SS-2 located in the western portion of the partial cellar at 12,000 ug/m^3, and in SS-1 located in the northern portion of the partial cellar at 10,000 ug/m^3.

Soil vapor samples 25SV-1 (10'), 25SV-2 (5') and 25SV-3 (2') were collected along the western property boundary in the partial cellar, adjacent to the SS-2 sampling location; detections of TCE in these three samples ranged from 3,800 ug/m^3 in 25SV-3 (2') to 3,000 ug/m^3 in 25SV-2 (5') to 560 ug/m^3 in 25SV-1 (10').

Additionally, the CVOC trichloroethylene (TCE) was detected above its UUSCO (max. of 1.6 ppm in SB-10(8-10') in two soil samples.

VOCs	**Maximum Detected Concentration> AGVs (ug/m^3)**		**NYSDOH Minimum Matrix Concentrations (ug/m^3)**
Cis-1,2-Dichloroethene	100	25SV-3 (2')	6
Trichloroethene	12,000	SS-2	6
Tetrachloroethene	1,800	SS-1, SS-2	100
Cyclohexane	85.3	SV-3	60
Isooctane	267	SV-4	60
Ethyl Benzene	88	25SV-4 (5')	60
p-& m-Xylenes	320	25SV-4 (5')	200

2.2 Significant Threat

A significant threat determination to human health and the environment has not yet been made. Upon determination, notice will be provided for public review.

2.3 Site History

2.3.1 PAST USES AND OWNERSHIP

The property is currently unoccupied. The most recent tenant, Z-Studios, vacated the property in March 2025.

Based on the review of the available historical records, the Site was undeveloped as early as 1888 and consisted of eight adjacent tax parcels. In 1946, five out of the eight tax parcels were merged in the southern portion of the Site (former lot 23), and the southern portion was improved with a one-story building with a basement and utilized as a loft with a spray booth identified in the northwestern corner of the building. Sometime between 1995 and 2007, the southern building was converted to a warehouse, and the spray booth was no longer present. In 2001, the three tax parcels in the northern portion of the Site were merged and the northern portion of the Site was improved with a one-story slab on grade pre-fab structure. In 2007, the northern building was utilized as storage. The Site layout remained unchanged until the recent demolition in February 2026.

The tenants included private residents (1934), Polaray Co. Plastics, Pycolite Plastics Corp, Pilgrim Art Co and Art Quilting Co. (1949), clothing/knitting store (1960-1976), A-I-D Labs of NY Inc. (1980), metal products shop (1985-1997), Active World Solutions and Continental Mailing Incorporated (1999), an archival storage facility (2004-2017) and a mattress fabrication shop identified as Z-Studios (2017-March 2025).

According to the Automated City Register Information System (ACRIS) operated by the New York City Department of Finance, the Site is currently owned by Haven Junction GP Inc. (Atlantic Haven Realty LP and Haven Junction LP).

2.3.2 PHASE I AND PHASE II REPORTS

A Phase 2 ESA was performed by IE on July 26, 2001, which identified that former operations and maintenance of the UST adjacent to the north side of the existing building and discharges within the basement of the building had impacted the environmental quality of the property.

A Phase 3 ESA Letter/Report prepared by IE dated December 5, 2001, stated that a 1,100-gallon UST and contaminated soil was excavated and removed from the property under the auspices of the NYSDEC. Collected endpoint samples satisfied the NYSDEC soil cleanup objectives according to TAGM#HR-94-4046 and Spill No. 01-06974 was closed. Impacted sediments detected within the IUWs were excavated and removed from the property in accordance with a remediation plan approved by USEPA. Endpoint samples from the UIWs satisfied NYSDEC soil cleanup objectives according to TAGM#HR-94-4046.

A Phase I Environmental Site Assessment (ESA) Report prepared by Middleton Environmental Inc. (MEI) dated July 2022, indicated that the previous reports prepared by IE were reviewed. The Middleton Phase 1 ESA also indicated that a Phase 1 ESA prepared by GEI Consultants, dated August 2017, had been provided to MEI for review. According to MEI, the GEI report indicated that the previous actions conducted by IE were classified as HRECs not requiring further action and did not require any immediate testing. However, GEI noted that due to the properties E-Designation status, redevelopment would require detailed soil, groundwater and soil vapor testing as required by the City of New York. MEI concluded that based on the findings of the previous environmental reports, no further action was recommended.

2.3.3 SANBORN MAPS

Former Lot 23 was undeveloped as early as 1888 until the former 1-story warehouse was developed in 1946. The Site has been utilized for commercial and industrial use (clothing/knitting store (1965-1976), metal products shop (1985-1997), archival storage facility (2004-2017), fabrication shop (2017-March 2025)) and residential use. According to the Automated City Register Information System (ACRIS) operated by the New York City Department of Finance, the Site is currently owned by Atlantic Junction GP Inc. (Atlantic Haven Realty LP and Haven Junction LP).

All Sanborn Maps available for this Site were reviewed prior to preparation of the RAWP.

2.4 Geologic and Hydrogeologic Conditions

Based on the findings of the RI, the subsurface lithology generally consisted of sand and silty sand with varying amounts of fine- to coarse-grained gravel to approximately 25 feet below grade and limited/discontinuous shallow fill material in select soil borings. Bedrock was not encountered during the RI. Depth to bedrock is anticipated to be greater than 100 feet bgs. Geologic sections are shown in Figures 6A and 6B.

Ground surface elevation is relatively level at the Site, ranging from approximately 70.00 feet (NAVD88) in the southern portion to 72.00 feet (NAVD88) in the northern portion. Average depth to groundwater was observed at approximately 54 feet below grade surface or 9.00 (NAVD88) during the RI. Groundwater elevation beneath the Site ranged from approximately 8.32 feet to 9.31feet (NAVD88). Based on the synoptic groundwater gauging event, groundwater beneath the Site generally flows from northeast to southwest. Regionally, groundwater is expected to flow south-southeast towards Jamaica Bay. A Groundwater contour map is provided in Figure 7.

2.5 Contamination Conditions

The information collected during the RI was compared to the respective regulatory standards and were evaluated to determine the nature and extent of contamination at the Site.

2.5.1 CONCEPTUAL MODEL OF SITE CONTAMINATION

The Site was undeveloped as early as 1888 until 1946 when the 1-story warehouse building with a cellar was constructed, and in 2002 a northern extension was constructed slab on grade. Subsurface lithology below the Site generally consists of sand, silty sand, and gravel, with small amounts of fill material identified in select borings.

CVOCs were identified in soil vapor and sub slab soil vapor samples during the RI that require mitigation, however analytical results from soil sampling identified limited and nominal CVOC detections below Track 1 SCOs in 11 soil samples at intermediate and deeper depths, and above Track 1 SCOs in 2 soil samples in the 8-10 soil interval. In groundwater samples, CVOCs were detected below the NYSDEC TOGs guidance values in the 4 on-site groundwater wells and 2 off-site groundwater wells sampled during the RI.

No SVOCs were detected above Track 1 SCOs in any soil sample. Pesticides and PCBs were detected in three soil borings at various depths above Track 1 SCOs and the metals Copper Lead and Zinc were detected above Track 1 SCOs, and Manganese was detected above Track 2 SCOs in 4 soil samples.

Benzene was detected in one groundwater sample slightly exceeding the NYSDEC TOGs guidance value.

2.5.2 DESCRIPTION OF AREAS OF CONCERN

The following areas of concern (AOCs) were identified at the Site:

- AOC 1: Chlorinated VOC Impacts in Soil Vapor
- AOC 2: Localized Petroleum Contamination in Groundwater

2.5.2.1 AOC 1 – CHLORINATED VOC IMPACTS IN SOIL VAPOR

Soil vapor and sub-slab vapor results showed moderate to elevated concentrations of CVOCs detected across the Site.

Notably, of the five sub-slab soil vapor samples collected during the October 30, 2025, sampling event, the concentrations of PCE and TCE detected in sub-slab soil vapor samples SS-1, SS-2 and SS-3 yielded a mitigation action for the NYSDOH Indoor Air Matrices A and B, regardless of indoor air concentrations. The highest detection of TCE was identified in sub slab soil vapor sample SS-2 located in the western portion of the partial cellar at 12,000 ug/m^3, and in SS-1 located in the northern portion of the partial cellar at 10,000 ug/m^3. Soil vapor samples 25SV-1 (10'), 25SV-2 (5') and 25SV-3 (2') were collected along the western property boundary in the partial cellar, adjacent to the SS-2 sampling location; detections of TCE in these three samples ranged from 3,800 ug/m^3 in 25SV-3 (2') to 3,000 ug/m^3 in 25SV-2 (5') to 560 ug/m^3 in 25SV-1 (10').

Additionally, the CVOC trichloroethylene (TCE) was detected above its UUSCO (max. of 1.6 ppm in SB-10 (8-10') in two soil samples, however, were not detected above their RRSCO. Due to the historical use of the Site, the CVOCs in soil vapor could be attributed to a potential on-Site source.

2.5.2.3 AOC 2 – LOCALIZED PETROLEUM CONTAMINATION IN GROUNDWATER

One VOC exceedance of benzene (1.3 ppb) was identified in on-Site groundwater monitoring well 25MW-4, slightly above its AWQS of 1 ppb. Based on historical records this contamination appears to be associated with former USTs. However, based on off-site groundwater data there is no off-site migration of petroleum contamination.

2.5.3 IDENTIFICATION OF STANDARDS, CRITERIA AND GUIDANCE

The following remedial the Standards, Criteria and Guidance (SCGs) apply to the project and are the performance criteria used to determine if the RAOs have been met:

- 6 NYCRR Part 375-6 Soil Cleanup Objectives;
- NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation – May 2010;
- NYSDEC Draft BCP Guide – May 2004;
- NYSDOH Generic CAMP;
- NYSDOH Site-Specific CAMP;
- NYS Waste Transporter Permits – 6 NYCRR Part 364;
- NYS Solid Waste Management Requirements – 6 NYCRR Part 360 and Part 364;
- DER-23 (January 2010);
- 6 NYCRR Part 372 – Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities (November 1998);
- 6 NYCRR Subpart 374-1 – Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities (November 1998);
- 6 NYCRR Subpart 374-3 – Standards for Universal Waste (November 1998);
- 6 NYCRR Part 375 – Environmental Remediation Programs (December 2006);
- 6 NYCRR Part 612 – Registration of Petroleum Storage Facilities (February 1992);
- 6 NYCRR Part 613 – Handling and Storage of Petroleum (February 1992);
- 6 NYCRR Part 614 – Standards for New and Substantially Modified Petroleum Storage Tanks (February 1992);

- 40 CFR Part 280 – Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks;
- 29 CFR Part 1910.120 – Hazardous Waste Operations and Emergency Response;
- 40 CFR Part 144 – Underground Injection Control Program;
- NYSDOH Soil Vapor Intrusion Matrix – NYSDOH Sub-Slab Vapor Concentration which may require monitoring or mitigation as presented in the Matrix A, Matrix B, and Matrix C tables of the Final Guidance in the State of New York, dated October 2006 ("NYSDOH Vapor Intrusion Guidance Document"), updated May 2017; and
- Guidelines for Sampling, Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs (Updated in June 2021).

Additional regulations and guidance may be applicable, relevant, and appropriate to the remedial alternatives and will be complied with in connection with implementation of the remedial program. However, the list above is intended to represent the principal SCGs, which should be considered in evaluating the remedial alternatives for the BCP Site.

2.5.4 SOIL/FILL CONTAMINATION

The soil lithology beneath the site generally consisted of brown fine to medium silty sand with some gravel from below the slab to approximately 14 feet bgs. Bedrock was not encountered during the investigation. Trace amounts of fill (brick and asphalt) were identified in select soil borings but did not appear to be a continuous layer across the Site. Saturated conditions were observed at approximately 60 feet bgs.

2.5.4.1 SUMMARY OF SOIL/FILL DATA

- Sixteen (16) soil samples and one duplicate soil sample were analyzed for full-suite TCL analysis during the RI (June 2025). Nine (9) soil samples were collected and analyzed for VOCs during the October 2025 sampling event and twenty-seven (27) soil samples were analyzed for VOCs during the December 2025 sampling event.
- Two VOCs were detected above their Unrestricted Use SCOs. Acetone, which is a common laboratory artifact, was detected in two samples above its UUSCO (max. of 0.084 ppm in SB-

7 (8-10'), and trichloroethylene (TCE) was detected above its UUSCO (max. of 1.6 ppm in SB-10 (8-10') in two samples.

- Five pesticides, 4,4'-DDD 4,4'-DDE, 4,4'-DDT, alpha-chlordane and dieldrin were detected at concentrations exceeding UUSCOs but below RRSCOs. No SVOCs, PCBs, PFAS or 1,4-Dioxane were detected above UUSCOs in any soil sample.
- Three metals, copper, lead and zinc were detected at concentrations exceeding their respective UUSCOs. One metal, manganese, was detected at 2,100 ppm in the duplicate sample (DUP-1), exceeding the RRSCO of 2,000 ppm.
- No SVOCs, PCBs, PFAS or 1,4-Dioxane were detected above UUSCOs in any soil sample.

2.5.4.2 COMPARISON OF SOIL/FILL WITH SCGS

Soil results were compared to the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives (UUSCOs) and Restricted Residential Use SCOs (RRSCOs). Emerging contaminant results were compared to the guidance values as established in the NYSDEC Guidance Document for Part 375 Remedial Programs. In-text Table 1 (included below) provides soil boring and soil sample collection summary.

In-text Table 1: Soil Boring and Soil Sample Summary

Sample ID	Sample Intervals
SB-1	0-2 feet bgs, 6-8 feet, bgs
SB-2	8-10 feet bgs, 10-12 feet bgs
SB-3	8-10 feet bgs, 10-12 feet bgs
SB-4	0-2 feet bgs, 6-8 feet bgs
SB-5	0-2 feet bgs, 6-8 feet bgs
SB-6	8-10 feet bgs, 10-12 feet bgs
SB-7	8-10 feet bgs, 10-12 feet bgs
SB-8	8-10 feet bgs, 10-12 feet bgs
SB-9	0-2 feet bgs, 6-8 feet bgs, 8-10 feet bgs
SB-10	8-10 feet bgs, 10-12 feet bgs, 12-14 feet bgs
SB-11	8-10 feet bgs, 10-12 feet bgs, 12-13 feet bgs
25SB-1	4-6 feet bgs, 8-10 feet bgs, 14-16 feet bgs
25SB-2	8-10 feet bgs, 12-14 feet bgs, 16-18 feet bgs
25SB-3	8-10 feet bgs, 12-14 feet bgs, 16-18 feet bgs

Sample ID	Sample Intervals
25SB-4	8-10 feet bgs, 12-14 feet bgs, 16-18 feet bgs
25SB-5	8-10 feet bgs, 12-14 feet bgs, 16-18 feet bgs
25SB-6	8-10 feet bgs, 12-14 feet bgs, 16-18 feet bgs
25SB-7	8-10 feet bgs, 12-14 feet bgs, 16-18 feet bgs
25SB-8	8-10 feet bgs, 12-14 feet bgs, 16-18 feet bgs
25SB-9	4-6 feet bgs, 8-10 feet bgs, 14-16 feet bgs
DUP-1 (from parent sample SB-3)	8-10 feet bgs

The RI documented that the Site is underlain by sand and silty sand with varying amounts of fine- to coarse-grained gravel to approximately 25 feet below grade and limited/discontinuous shallow fill material (brick and asphalt) in select soil borings.

Two VOCs, acetone (max. of 0.084 ppm in SB-7 (8-10') and trichloroethene (max. of 1.6 ppm in SB-10 (8-10') were identified above the UUSCO of 0.05 ppm and 0.47 ppm, respectively, but below the RRSCO of 100 ppm and 21 ppm, respectively. Acetone is a common laboratory contaminant and is not a contaminant of concern at the site

Five pesticides, 4,4'-DDD (max. of 0.00382 ppm in SB-7 (8-10')), 4,4'-DDE (max. of 0.0519 ppm in SB-7 (8-10')), 4,4'-DDT (max. of 0.00847 ppm in SB-5 (0-2')), alpha-chlordane (max. of 0.0249 ppm in SB-5 (0-2)), and dieldrin (max. of 0.0121 ppm in SB-5 (0-2')) were detected at concentrations exceeding UUSCOs (0.0033 ppm for 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT and 0,005 ppm for dieldrin) but below RRSCOs (13 ppm for 4,4'-DDD, 8.9 ppm for 4,4'-DDE, 7.9 ppm for 4,4'-DDT, and 0.2 ppm for dieldrin.

Three metals, copper, lead and zinc were detected at concentrations exceeding their respective UUSCOs. One metal, manganese was detected at 2,100 ppm in the duplicate sample (DUP-1), exceeding the RRSCO of 2,000 ppm.

Table 2 shows exceedances from Track 1 Unrestricted SCOs for all soil/fill at the Site. Figure 3 is a spider map that shows the location and summarizes exceedances from Track 1 Unrestricted SCOs for all soil/fill.

2.5.5 ON-SITE AND OFF-SITE GROUNDWATER CONTAMINATION

2.5.5.1 Summary of Groundwater Data

During the RI a total of six groundwater samples were collected from six groundwater monitoring wells. Two (2) of the groundwater samples were collected from off-Site groundwater wells located in the sidewalk adjacent to the Site, and four (4) groundwater samples were collected from newly installed. In-text Table 2 (included below) provides soil boring and soil sample collection summary.

In-text Table 2: Groundwater Monitoring Wells and Sampling Summary

Monitoring Well ID	TOC Elevation (NAVD88)	Depth to Water	Groundwater Elevation (NAVD88)	Bottom of Screen	Top of Screen	Total Screen Depth
25MW-1	72.38	63.3	9.08	75.5 fbg	60.5 fbg	15 ft
25MW-2	63.11	53.8	9.31	68 fbg	48 fbg	20 ft
25MW-3	63.27	54.95	8.32	70 fbg	50 fbg	20 ft
25MW-4	63.26	54.32	8.94	69.5 fb	49.5 fbg	20 ft
SW-1	70.08	56.75	5.25	65 fbg	55 fbg	10 ft
SW-2	69.65	62.16	7.49	71 fbg	51 fbg	20 ft

One VOC, benzene, was detected above its respective AWQS in the groundwater samples at the Site as follows:

On-Site Groundwater VOC Analytical Results			
Contaminant (VOC)	**Monitoring Well ID**	**Concentration (ppb)**	**AWQS (ppb)**
Benzene	25MW-4	1.32	1

Two VOCs, chloroform and methylene chloride were detected above their respective AWQS in the groundwater samples at the Site as follows:

Off-Site Groundwater VOC Analytical Results			
Contaminant (VOC)	**Monitoring Well ID**	**Concentration (ppb)**	**AWQS (ppb)**
Chloroform	SW-1	11.8	7

	SW-2	8.78	
	FB-1	24.4	
Methylene Chloride	SW-1	6.08	5

*Chloroform and Methylene Chloride are typically laboratory artifacts

Off-Site Groundwater Metals Analytical Results			
Contaminant (Metals)	**Monitoring Well ID**	**Concentration (ppb)**	**AWQS (ppb)**
Beryllium, Dissolved	1	3.41	3
Chromium, Dissolved	1	1,270	50
Copper, Dissolved	1	299	200
Magnesium, Dissolved	1	42,800	35,000
Manganese, Dissolved	1	4,590	300
Beryllium, Total	1	3.82	3
Chromium, Total	1	476	50
Copper, Total	1	250	200
Magnesium, Total	1	35,500	35,000
Manganese, Total	1	12,300	300
Nickel, Total	1	368	100
Sodium, Total	1	92,300	20,000

No SVOCs, pesticides or PCBs were detected in the groundwater samples above laboratory reporting limits.

2.5.5.2 COMPARISON OF GROUNDWATER WITH SCGS

VOC contaminants in groundwater samples were relatively limited, with one nominal exceedance of benzene identified in 25MW-4. Two laboratory artifacts, chloroform and methylene chloride, were detected above their respective TOGS guidance values in off-Site groundwater monitoring wells SW-1 and SW-2. No exceedances of SVOCs, pesticides or PCBs were identified in any groundwater sample.

Of the heavy metals exceedances in off-site wells, chromium was identified in total and dissolved metals exceeding the TOGs guidance values.

A table that indicates exceedances of Class GA Ambient Water Quality Standards (AWQS) in monitoring wells prior to the remedy is shown in Table 3. A spider map that indicates the location(s) of and summarizes exceedances of AWQS prior to the remedy is shown in Figure 4.

2.5.6 ON-SITE SOIL VAPOR CONTAMINATION

Soil Vapor Sampling (July 2025)

Four soil vapor samples were collected on July 20, 2025. SV-1, SV-3, SV-4 and SV-5. SV-1 and SV-4 were installed to a depth of 7.5 and 7 feet, respectively. SV-2, SV-3 and SV-5 were installed in the building cellar, approximately 8 feet bgs. SV-2 was installed to a total depth of 15 feet and SV-3 and SV-5 were installed to a total depth of 12.5 feet. Two soil vapor samples (SV-2 and SV-6) were not analyzed due to improperly calibrated flow regulators.

- The total concentrations of benzene, toluene, ethyl benzene, and total xylenes (BTEX) ranged from 5.51 micrograms per cubic meter (ug/m^3) in SV-5 to 334 ug/m^3 in SV-1.
- Other petroleum compounds detected included Cyclohexane in SV-3 at 85.3 ug/m^3 in exceedance of the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3, and Isooctane in SV-4 at 267 ug/m^3 in exceedance of the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3.
- Concentrations of the chlorinated VOC Tetrachloroethene (PCE) were detected in exceedance of the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in SV-3 at 330 ug/m^3, and 191 ug/m^3 in SV-4. Concentrations of Trichloroethene (TCE) exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all four samples, with a maximum concentration of 418 ug/m^3 detected in SV-3. Concentrations of Cis-1,2-Dicholorethene, a common breakdown compound of solvents like TCE, was detected in exceedance of the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in SV-3 at 13.6 ug/m^3 and in SV-4 at 16.2 ug/m^3.

Sub-Slab Soil Vapor (October and December 2025)

Four sub-slab soil vapor samples (SS-1 through SS-4) were collected on October 30, 2025, and three sub-slab soil vapor samples (25SS-5, 25SS-7 and 25SS-8) were collected on December 22, 2025.

- Of the seven sub-slab soil vapor samples collected in October and December 2025, no exceedances of BTEX or other petroleum compounds were identified.

- Concentrations of PCE exceeded the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in all seven samples, with concentrations ranging from 130 ug/m^3 in 25SS-7 to 1,800 ug/m^3 in SS-1 and SS-2.
- Concentrations of TCE exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all seven samples, with concentrations ranging from 380 ug/m^3 in 25SS-5 and SS-4 to 12,000 ug/m^3 in SS-2.
- Concentrations of Cis-1,2-Dichloroethene exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in three samples, with concentrations ranging from 16 ug/m^3 in SS-3 to 100 ug/m^3 in SS-2.

The concentrations of PCE and TCE detected in SS-1 through SS-3 yields a "Mitigate" action for the NYSDOH Indoor Air Matrices A and B, regardless of indoor air concentrations.

Soil Vapor (December 2025)

Five soil vapor samples [25SV-1 (10'), 25SV-2 (5'), 25SV-3 (2'), 25SV-4 (5') and 25SV-6 (2')] were collected on December 22, 2025, at varying depths. 25SV-1 (10'), 25SV-2 (5') and 25SV-3 (2') were collected in the building cellar along the western property boundary (adjacent to lot 32) and 25SV-4 (5') and 25SV-6 (2') were collected in the northern portion of the building cellar.

- The total concentrations of benzene, toluene, ethyl benzene, and total xylenes (BTEX) ranged from 136.9 ug/m^3 in 25SV-1 (10') to 501 ug/m^3 in 25SV-4 (5'). Concentrations of ethyl benzene exceeded the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3 in 25SV-2 (5') at 67 ug/m^3, 25SV-3 (2') at 62 ug/m^3 and 25SV-4 (5') at 88 ug/m^3. Concentrations of p&m-Xylenes exceeded the NYSDOH Decision Matrices minimum concentration value of 200 ug/m^3 in 25SV-2 (5') at 250 ug/m^3, 25SV-3 (2') at 230 ug/m^3 and 25SV-4 (5') at 320 ug/m^3.

- Concentrations of PCE exceeded the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in four samples, with a maximum concentration of 830 ug/m^3 in 25SV-4 (5')
- Concentrations of TCE exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all five samples, with concentrations ranging from 560 ug/m^3 in 25SV-1 (10') to 7,800 ug/m^3 in 25SV-4 (5').

In-text Table 3 (included below) provides soil vapor points and soil vapor sample collection summary.

In-text Table 3: Soil Vapor Points and Sampling Summary

Soil Vapor Point ID	Sample Interval
SV-1	15 ft
SV-2	Not sampled due to faulty regulator
SV-3	15 ft
SV-4	15 ft
SV-5	15 ft
SV-6	Not sampled due to faulty regulator
25SV-1	15 ft
25SV-2	10 ft
25SV-3	15 ft
25SV-4	10 ft
25SV-5	Not sampled due to faulty regulator
25SV-6	7 ft
SS-1	~0.5 ft
SS-2	~0.5 ft
SS-3	~0.5 ft
SS-4	~0.5 ft
25SS-5	~0.5 ft
25SS-6	Not sampled due to faulty regulator
25SS-7	~0.5 ft
25SS-8	~0.5 ft

A summary table of the detected NYSDOH Decision Matrix compounds is provided below:

Analytes	Total Detections	Max. Detection (ug/m^3)	NYSDOH Air Matrices Min Concentrations
Petroleum VOCs			
Cyclohexane	1	85.3	60
Isooctane	1	267	200
Ethyl Benzene	3	88	60
p&m Xylenes	3	320	200
Chlorinated VOCs			
Cis-1,2-Dichloroethene	5	100	6
Tetrachloroethene	13	1,800	100
Trichloroethane	16	12,000	6

2.5.6.1 COMPARISON OF SOIL VAPOR WITH SCGS

In general, results showed elevated concentrations of CVOCs requiring mitigation in sub-slab soil vapor samples in the western portion of the partial cellar, regardless of indoor air concentration.

Of the seven sub-slab soil vapor samples collected in October and December 2025, no exceedances of BTEX or other petroleum compounds were identified. Concentrations of PCE exceeded the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in all seven samples, with concentrations ranging from 130 ug/m^3 in 25SS-7 to 1,800 ug/m^3 in SS-1 and SS-2. Concentrations of TCE exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all seven samples, with concentrations ranging from 380 ug/m^3 in 25SS-5 and SS-4

to 12,000 ug/m^3 in SS-2. Concentrations of Cis-1,2-Dichloroethene exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in three samples, with concentrations ranging from 16 ug/m^3 in SS-3 to 100 ug/m^3 in SS-2.

Soil vapor sample concentrations of ethyl benzene exceeded the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3 in 25SV-2 (5') at 67 ug/m^3, 25SV-3 (2') at 62 ug/m^3 and 25SV-4 (5') at 88 ug/m^3. Concentrations of p&m-Xylenes exceeded the NYSDOH Decision Matrices minimum concentration value of 200 ug/m^3 in 25SV-2 (5') at 250 ug/m^3, 25SV-3 (2') at 230 ug/m^3 and 25SV-4 (5') at 320 ug/m^3. Concentrations of PCE exceeded the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in four samples, with a maximum concentration of 830 ug/m^3 in 25SV-4 (5'). Concentrations of TCE exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all five samples, with concentrations ranging from 560 ug/m^3 in 25SV-1 (10') to 7,800 ug/m^3 in 25SV-4 (5').

A table of soil vapor data collected prior to the remedy is shown in Table 4. A spider map that indicates the location(s) of and summarizes soil vapor data prior to the remedy is shown in Figure 5.

2.6 Environmental and Public health assessments

2.6.1 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

This qualitative assessment evaluates potential human exposure pathways to contaminants detected in soil, groundwater, and soil vapor at the Site. The qualitative exposure assessment identified potential routes of exposure to on-site workers through inhalation, ingestion, and dermal contact of VOCs, SVOCs, and heavy metals during excavation activities. The Health and Safety Plan (HASP) prepared for the Site identifies such exposures and provides instructions for on-Site workers to minimize potential exposure.

The five elements of an exposure pathway are the (1) source of contamination; (2) environmental media and transport mechanisms; (3) point of exposure; (4) route of exposure; (5) receptor population based on past, present or future events.

Media	Potential Receptor(s)	Exposure Mechanism	Pathway Status / Comments
Soil	Construction workers, future residents	Incidental ingestion, dermal contact, inhalation of dust	Potentially complete during construction; mitigated post-construction by hardscape.
Groundwater	Construction workers	Dermal contact or incidental ingestion	Incomplete. Groundwater not used for potable supply; exposure limited by construction health and safety controls.
Soil Vapor	Construction workers, future residents	Inhalation of vapors migrating to indoor air	Low potential. No significant chlorinated VOCs detected; future building will include a cover system.
Air / Dust	On-site workers, nearby community	Inhalation of fugitive dust during excavation	Short-term, controllable pathway managed through CAMP and dust suppression measures.

Current Conditions

Based on the analytical results of the remedial investigation, the primary contaminants of concern for the site are chlorinated VOC impacts in soil vapor and pesticides, PCBs and metals impacts in soil. Human exposure is unlikely under the current Site conditions as the Site is currently vacant, capped with concrete slabs or asphalt pavement, and groundwater within Kings County is not used as a potable source of water. Direct contact, ingestion, or dust inhalation exposure pathways are incomplete under current use.

Construction/Remediation

During construction and remediation activities, including but not limited to soil excavation, dewatering, disturbance of the contaminant sources (i.e.: soil and soil vapor) would create a potential exposure pathway to on-site workers and, to a lesser extent, the public and residents adjacent to the Site. Although the potential for complete exposure exists during construction and remediation, it is short term and controllable. The exposure will be minimized by implementation of a site-specific HASP to protect on-site workers and a site-specific Community Air Monitoring Program (CAMP).

Future Conditions

Once the remedial activities are completed, contaminant sources are expected to be removed. In the event that any residual contamination remains at the Site after remediation, institutional and engineering controls will be in place to prevent and mitigate completion of exposure pathways.

Based on the results of the QHHEA, this RAWP, which includes a site-specific HASP to protect on-site workers and a site-specific CAMP to protect the surrounding community, will be implemented during the remedial action and construction of the proposed Site buildings to ensure that the potential exposure pathways identified do not become complete. The proposed Track 2 remedy will effectively mitigate the soil impacts identified during the RI. Following remedy implementation, no significant human health exposure pathways will remain complete, and the Site will meet the remedial action objectives for protection of public health and the environment.

2.6.2 FISH & WILDLIFE REMEDIAL IMPACT ANALYSIS

The Site provides no wildlife habitat or food value. There are no natural waterways, wetlands, resources, or critical habitants of endangered species present on or adjacent to the Site. Therefore, a fish and wildlife resource impact analysis is not required.

2.7 Remedial Action Objectives

Based on the results of the Remedial Investigation, the following Remedial Action Objectives (RAOs) have been identified for this Site.

2.7.1 GROUNDWATER

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Prevent the discharge of contaminants to surface water.

- Remove the source of ground or surface water contamination.

2.7.2 SOIL

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota due to ingestion/direct contact with contaminated soil that would cause toxicity or bioaccumulation through the terrestrial food chain.

2.7.3 SOIL VAPOR

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

3.0 Description of Remedial Action Plan

This section presents an analysis of the two proposed remedial alternatives that can be potentially achieved. The following alternatives were developed and are designed to satisfy the RAOs:

Alternative 1 – Track 1 Unrestricted Use Cleanup

This alternative requires removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs. It is expected that a Track 1 cleanup will be achieved by remedial excavation to approximately 12 to 15 feet below grade across the Site. This alternative would include excavation and removal of the pesticides, PCBs and metals identified to a depth of approximately 12 to 15 feet. Alternative 1 does not allow for the use of Institutional/Engineering Controls to achieve remedial action

objectives. Due to elevated concentrations of CVOCs in soil vapor, an active SSDS is required, and a Track 1 cleanup is not achievable.

Alternative 2 – Track 2 Restricted Residential SCOs

This alternative requires removal of all soil/full exceeding Track 2 Restricted Residential SCOs in the top 2 feet below grade. This alternative would include excavation and removal of the RRSCO metal exceedance identified in one soil boring location to a depth of approximately 11 feet. Alternative 2 does not allow for the use of Institutional/Engineering Controls to achieve remedial action objectives. However, the residual contamination below the top 2 to 11 feet will be subject to a Site Management Plan (SMP). Therefore, this alternative will require an Environmental Easement. In any areas that do not achieve Track 2 RRSCOs, a composite cover system will be constructed in areas that achieve a Track 4 cleanup. The composite cover system would consist of a minimum of 6-inch-thick concrete building slab over 5 to 6 inches of clean gravel to prevent human exposure to residual contaminated soil/fill remaining at the Site. Figure 14 provides the layout and detail composite cover system to be installed if required.

Alternative 3 – Track 4 Restricted Residential SCOs

This alternative requires excavation and removal of the top 2 feet of soil all soil/fill, installation of an active SSDS, vapor barrier and composite cover system. The composite cover system would consist of a minimum of 6-inch-thick concrete building slab over 5 to 6 inches of clean gravel to prevent human exposure to residual contaminated soil/fill remaining at the Site. Figure 14 provides the layout and detail composite cover system to be installed if required. Residual contamination below 2 feet will be subject to a Site Management Plan (SMP). Therefore, this alternative will require an Environmental Easement.

3.1 Evaluation of remedial alternatives

The goal of the remedy selection process under the BCP is to select a remedy that is protective of human health and the environment taking into consideration the current, intended and reasonably anticipated future use of the property. The remedy selection process begins by establishing remedial action objectives (RAOs) for media in which chemical constituents were found in

exceedance of NYSDEC standards, criteria, and guidance values (SCGs). The following performance measures were used to complete the evaluation of remedial alternatives:

- Protection of human health and the environment;
- Compliance with standards, criteria, and guidelines (SCGs);
- Short-term effectiveness and impacts;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness;
- Community Acceptance;
- Green and Sustainable Remediation (including climate resiliency); and
- Land use.

The following remedial SCGs apply to the project and are the performance criteria used to determine if the RAOs have been met:

- 6 NYCRR Part 375-6 Soil Cleanup Objectives;
- NYSDEC Ambient Water Quality Standards and Guidance Values – TOG 1.1.1;
- NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation – May 2010;
- NYSDEC Draft BCP Guide – May 2004;
- NYSDOH Generic CAMP;
- NYSDEC Groundwater Qualtiy Standandards – 6 NYCRR Part 703;
- NYSDOH Site-Specific CAMP;
- NYS Waste Transporter Permits – 6 NYCRR Part 364;
- NYS Solid Waste Management Requirements – 6 NYCRR Part 360 and Part 364;
- DER-23 (January 2010);

- 6 NYCRR Part 372 – Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities (November 1998);
- 6 NYCRR Subpart 374-1 – Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities (November 1998);
- 6 NYCRR Subpart 374-3 – Standards for Universal Waste (November 1998);
- 6 NYCRR Part 375 – Environmental Remediation Programs (December 2006);
- 6 NYCRR Part 612 – Registration of Petroleum Storage Facilities (February 1992);
- 6 NYCRR Part 613 – Handling and Storage of Petroleum (February 1992);
- 6 NYCRR Part 614 – Standards for New and Substantially Modified Petroleum Storage Tanks (February 1992);
- 40 CFR Part 280 – Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks;
- 29 CFR Part 1910.120 – Hazardous Waste Operations and Emergency Response;
- 40 CFR Part 144 – Underground Injection Control Program;
- Guidelines for Sampling, Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs (Updated in June 2021).

Additional regulations and guidance may be applicable, relevant, and appropriate to the remedial alternatives and will be complied with in connection with implementation of the remedial program. However, the list above is intended to represent the principal SCGs, which should be considered in evaluating the remedial alternatives for the BCP Site.

3.1.1 TECHNICAL DESCRIPTION OF ALTERNATIVE 1 – TRACK 1

Alternative 1, Track 1 remedy, would include the following:

1. Development and implementation of a Health and Safety Plan (HASP) for the protection of on-site workers, and a Community Air Monitoring Plan (CAMP) for protection of community/residents and the environment during remediation and construction activities.
2. As part of the remedial action conduct full TCL groundwater sampling of the four on-Site groundwater monitoring wells to close the data gap remaining from the RI. Contingency will be made for appropriate in-situ groundwater treatment if necessary.

3. Excavation, stockpiling, and off-site disposal of contaminated soil/fill and native soil exceeding Track 1 Unrestricted Use SCOs. It is expected that a Track 1 cleanup will be achieved by remedial excavation to approximately 12 feet with limited deeper excavation to 15 feet for hotspot areas. It is estimated that 7,790 to 8,200 cubic yards of materials will be removed from the Site in accordance with all Federal, State, and local rules and regulations for handling, transport, and disposal;
4. Design and installation of support of excavation (SOE) elements to enable excavation of contaminated soil to achieve a Track 1 cleanup;
5. Decommissioning of on-site monitoring wells in accordance with NYSDEC CP-43 Policy;
6. Dewatering of impacted groundwater in compliance with city, state, and federal laws and regulations. Dewatered fluids will be treated prior to discharge to the local sewer system under required discharge permits;
7. Screening for indications of contamination (by visual means, odor, and monitoring with a PID) of all excavated soil during any intrusive Site work.
8. Collection and laboratory analysis of post-excavation endpoint samples to evaluate the performance of the remedy with respect to attainment of Track 1 Unrestricted Use SCOs (UUSCOs).
9. Import of clean material (i.e.: soil meeting UUSCOs, virgin stone, native crushed stone) to backfill over-excavated areas to development depth.
10. Green remediation principles and techniques will be implemented, as the Green Remediation Implementation Plan, 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 shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis was completed. The environmental footprint analysis was completed using an accepted environmental footprint analysis calculator, SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA). Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction, and material use were estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial program as the Green Remediation Implementation Plan. The project includes detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during the implementation of the remedial action, under the Green Remediation Implementation Plan, and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial program.

Additionally, the remedial program will include a climate change vulnerability assessment to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress, and drought), flooding, and sea level rise will be identified, and the remedial program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

The extent of Alternative 1 remedial excavation is provided in Figure 9.

3.1.2 TECHNICAL DESCRIPTION OF ALTERNATIVE 2 – TRACK 2

Alternative 2, a Track 2 remedy, would include the following:

1. Development and implementation of a Health and Safety Plan (HASP) for the protection of on-site workers, and a Community Air Monitoring Plan (CAMP) for protection of community/residents and the environment during remediation and construction activities.
2. As part of the remedial action conduct full TCL groundwater sampling of the four on-Site groundwater monitoring wells to close the data gap remaining from the RI. Contingency will be made for appropriate in-situ groundwater treatment if necessary.
3. Excavation, stockpiling, and off-site disposal of all soil/fill exceeding RRSCOs in the top 15 feet to achieve Track 2 remedy. It is expected that a Track 2 cleanup will be achieved by remedial excavation to approximately 2 feet with limited deeper excavation to 11 feet for the hotspot area. It is estimated that 2,000 cubic yards of materials will be removed from the Site in accordance with all Federal, State, and local rules and regulations for handling, transport, and disposal;
4. Design and installation of support of excavation (SOE) elements to enable excavation of contaminated soil to achieve a Track 2 cleanup;
5. Decommissioning of on-site monitoring wells in accordance with NYSDEC CP-43 Policy;
6. Dewatering of impacted groundwater in compliance with city, state, and federal laws and regulations. Dewatered fluids will be treated prior to discharge to the local sewer system under required discharge permits;

7. Screening for indications of contamination (by visual means, odor, and monitoring with a PID) of all excavated soil during any intrusive Site work;
8. Collection and laboratory analysis of post-excavation endpoint samples to evaluate the performance of the remedy with respect to attainment of Track 2 Restricted Residential Use SCOs (RRSCOs). If endpoint samples do not meet RRSCOs, further excavation will be completed until they are met (as demonstrated by the collection of additional endpoint samples).
9. Import of clean material (i.e.: soil meeting UUSCOs or RRSCOs, virgin stone, native crushed stone) to backfill over-excavated areas to development depth, if required.
10. In areas that do not achieve Track 2 RRSCOs, a composite cover system will be constructed in areas that achieve a Track 4 cleanup.
11. Recording of an Environmental Easement (EE), including Institutional Control, to prevent future exposure to any residual contamination remaining at the Site.
12. Development and implementation a Site Management Plan (SMP) for long term management of residual contamination as required by the EE, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance, and (4) reporting. 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 shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis was completed. The environmental footprint analysis was completed using an accepted environmental footprint analysis calculator, SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA). Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction, and material use were estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial program as the Green Remediation Implementation Plan. The project includes detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during the implementation of the remedial action, under the Green Remediation Implementation Plan, and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial program.

Additionally, the remedial program will include a climate change vulnerability assessment to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress, and drought), flooding, and sea level rise will be

identified, and the remedial program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

The extent of Alternative 2 remedial excavation is provided in Figure 10. The RRSCOs required to achieve Alternative 2 –Track 2 cleanup are provided in Table 1.

3.1.3 TECHNICAL DESCRIPTION OF ALTERNATIVE 3 – TRACK 4

Alternative 3, a Track 4 remedy, would include the following:

1. Development and implementation of a Health and Safety Plan (HASP) for the protection of on-site workers, and a Community Air Monitoring Plan (CAMP) for protection of community/residents and the environment during remediation and construction activities.
2. As part of the remedial action conduct full TCL groundwater sampling of the four on-Site groundwater monitoring wells to close the data gap remaining from the RI. Contingency will be made for appropriate in-situ groundwater treatment if necessary.
3. Excavation, stockpiling, and off-site disposal of all soil/fill exceeding RRSCOs in the top 2 feet to achieve Track 4 remedy. It is estimated that 1,500 cubic yards of materials during the remedial excavation will be removed from the Site in accordance with all Federal, State, and local rules and regulations for handling, transport, and disposal;
4. Design and installation of support of excavation (SOE) elements to enable excavation of contaminated soil to achieve a Track 4 cleanup;
5. Decommissioning of on-site monitoring wells in accordance with NYSDEC CP-43 Policy;
6. Dewatering of impacted groundwater in compliance with city, state, and federal laws and regulations. Dewatered fluids will be treated prior to discharge to the local sewer system under required discharge permits;
7. Screening for indications of contamination (by visual means, odor, and monitoring with a PID) of all excavated soil during any intrusive Site work;
8. Collection and laboratory analysis of post-excavation endpoint samples to evaluate the performance of the remedy with respect to attainment of Track 2 Restricted Residential Use SCOs (RRSCOs). If endpoint samples do not meet RRSCOs, further excavation will

be completed until they are met (as demonstrated by the collection of additional endpoint samples).

9. Import of clean material (i.e.: soil meeting UUSCOs or RRSCOs, virgin stone, native crushed stone) to backfill over-excavated areas to development depth, if required.
10. In areas that do not achieve Track 4 RRSCOs, additional excavation will be conducted as necessary;
11. Recording of an Environmental Easement (EE), including Institutional Control, to prevent future exposure to any residual contamination remaining at the Site.
12. Development and implementation a Site Management Plan (SMP) for long term management of residual contamination as required by the EE, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance, and (4) reporting. 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 shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis was completed. The environmental footprint analysis was completed using an accepted environmental footprint analysis calculator, SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA). Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction, and material use were estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial program as the Green Remediation Implementation Plan. The project includes detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during the implementation of the remedial action, under the Green Remediation Implementation Plan, and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial program.

Additionally, the remedial program will include a climate change vulnerability assessment to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress, and drought), flooding, and sea level rise will be identified, and the remedial program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

The extent of Alternative 3 remedial excavation is provided in Figure 11. The RRSCOs required to achieve Alternative 3 –Track 4 cleanup are provided in Table 1.

3.2 Selection of the Preferred Remedy

The preferred remedy for the Site is Alternative 2, Track 2 cleanup.

3.2.1 COMPLIANCE WITH REMEDIAL GOALS, SCGS, AND RAOS

Alternative 1 will achieve compliance with the remedial goals, SCGs, and RAOs for soil through removal to UUSCOs to 12-15 feet below grade.

Alternative 2 will achieve compliance with the remedial goals, SCGs, and RAOs for soil through removal to RRSCOs in the top 2-11 feet below grade.

Alternative 3 will achieve compliance with the remedial goals, SCGs, and RAOs for soil through removal to RRSCOs in the top 2 feet below grade.

3.2.2 LONG TERM EFFECTIVENESS AND PERMANENCE

Alternative 1 achieves long term effectiveness and permanence by permanently removing and/or remediating all impacted soil/fill material above Track 1 UUSCOs by excavating to a depth of 12-15 feet bgs site wide. However, an active SSDS engineering control is required due to elevated CVOCs in soil vapor and a Track 1 cleanup is not attainable.

Alternative 2 achieves long term effectiveness and permanence by permanently removing all soil/fill above RRSCOs within the top 2 to 11 feet bgs site wide. However, since residual contamination will be left at the Site, and the Site will be subject to an EE and SMP for long term management. The Site would have use restrictions under this Alternative.

Alternative 3 achieves long term effectiveness and permanence by permanently removing all soil/fill above RRSCOs within the top 2 feet bgs site wide. However, since residual contamination will be left at the Site, and the Site will be subject to an EE and SMP for long term management. The Site would have use restrictions under this Alternative.

3.2.3 REDUCTION IN TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT

Remedial Alternative 1 achieves a greater reduction in the toxicity, mobility, and volume of contaminants present in soil and soil vapor through the excavation of a larger volume of impacted material.

Remedial Alternative 2 provides a reduction in the toxicity, mobility, and volume of contaminants in soil through the removal of fill materials exceeding RRUSCOs. Residual contamination remaining at the Site will be subject to an SMP.

Remedial Alternative 3 provides a reduction in the toxicity, mobility, and volume of contaminants in soil through the removal of the top 2 feet of soil, Residual contamination remaining at the Site will be subject to an SMP.

3.2.4 SHORT TERM EFFECTIVENESS

There is the potential for short-term adverse impacts and risks to workers, the community, and the environment during the implementation of both Alternatives. Short-term exposure to on-site workers during excavation and loading activities will be addressed with a HASP and mitigated through the use of personal protective equipment, monitoring and engineering controls. Potential short-term exposure to the surrounding community will be addressed through the use of odor and dust-suppression techniques and through the implementation of a CAMP which will require air monitoring activities during all excavation and soil disturbance activities.

Other potential impacts to the community such as construction-related noise, vibrations and traffic, will be controlled and regulated under the terms of the NYS Department of Buildings issued building permit which can place a Stop Work Order on the property for unsafe conditions, community impacts or violation of the terms and conditions of the permit. Decontamination procedures of equipment, including trucks transporting soil to off-site disposal facilities, will minimize the potential for impacted soil to be dispersed beyond the Site boundary. A truck traffic plan has also been prepared to minimize disturbance to the local roads and community.

3.2.5 IMPLEMENTABILITY

The techniques, materials, and equipment to implement both Alternatives are readily available and have been proven effective in remediating the contaminants associated with the Site. Excavation for the remediation of soils is both a "low tech" and reliable method which has a long and proven track record on the remediation of contaminated properties. Under both Alternatives, treatment of groundwater with activated carbon and discharging into the NYC combined sewer system during dewatering is a feasible method.

3.2.6 COST

Costs associated with Alternative 1 are estimated at approximately $4,273,800. This cost estimate is based on the following elements and assumptions:

- Excavation and removal of soil/fill exceeding Track 1 Unrestricted Use SCOs to 12-15 feet below grade. It is expected that a Track 1 cleanup will be achieved by remedial excavation across the entire footprint of the Site.
- Design and installation of SOE to accommodate remedial excavation to a depth of 12-15 feet,
- Off-site disposal of approximately 7,790-8,200 cubic yards of soil/fill,
- Import of 5,000 cubic yards of stone/backfill to return the site to development grade,
- Waste characterization and post-excavation endpoint verification sampling and analysis,
- HASP and CAMP monitoring for the duration of the remedial activities.

Potential costs associated with Alternative 1 are provided in Table 5.

Costs associated with Alternative 2 are lower than Alternative 1 as costs associated with the extent of excavation are lower. The estimated cost of Alternative 2 is $2,569,800. This cost estimate is based on the following elements and assumptions:

- Excavation and removal of soil/fill exceeding RRSCOs to 2 feet below grade with limited deeper excavation to 11 feet for a hotspot.
- Off-site disposal of approximately 7,790-8,200 cubic yards of soil/fill,
- Import of 1,000 cubic yards of stone/backfill,

- Waste characterization and post-excavation endpoint verification sampling and analysis,
- HASP and CAMP monitoring for the duration of the remedial activities,
- Final Engineering Report, PRR, and
- Recording an Environmental Easement, and Site Management Plan.

Potential costs associated with Alternative 2 are provided in Table 5.

Costs associated with Alternative 3 are about the same as Alternative 2. The estimated cost of Alternative 3 is $2,569,800. This cost estimate is based on the following elements and assumptions:

- Excavation and removal of soil/fill to 2 feet below grade.
- Off-site disposal of approximately 1,500 cubic yards of soil/fill,
- Import of 1,000 cubic yards of stone/backfill,
- Waste characterization and post-excavation endpoint verification sampling and analysis,
- HASP and CAMP monitoring for the duration of the remedial activities,
- Final Engineering Report, PRR, and
- Recording an Environmental Easement, and Site Management Plan.

Potential costs associated with Alternative 3 are provided in Table 6.

3.2.7 COMPATIBILITY WITH LAND USE

The proposed redevelopment of the Site is compatible with its current zoning. Following remediation, the Site is expected to achieve Track 2 Restricted Residential SCOs, which is appropriate for its planned restricted residential use. In the event that Alternative 2 is not achieved in all portions of the Site, achieving a Track 4 cleanup with Site Specific SCOs would still make the Site compatible with its current zoning.

3.2.8 COMMUNITY ACCEPTANCE

This RAWP will be subject to a 45-day public comment period to determine if the community had comments on the presented remedial alternatives and selected remedy.

3.2.9 ZONING

The Site zoning is C4-5D which allows for mixed commercial and residential development, and therefore, consisting with proposed use of the property. The preferred remedy will comply with current zoning.

3.2.10 APPLICABLE COMPREHENSIVE COMMUNITY MASTER PLANS OR LAND USE PLANS

The proposed redevelopment plan is consistent with land use patterns in the surrounding area. There are no applicable community master plans or land use plans for the Site area.

3.2.11 SURROUNDING PROPERTY USES

The Site is located in an urban, mixed industrial, commercial, and residential neighborhood with some institutional uses, including a public school. The proposed new residential building is compatible with the surrounding property uses.

3.2.12 CITIZEN PARTICIPATION

The CPP provides for ongoing updates to the public regarding the investigation and remediation and allows for involvement regarding the environmental investigation and cleanup of the Site. A Citizen Participation Plan has been prepared and is available for public review at the identified document repositories (Saratoga Branch of the Brooklyn Public Library, Brooklyn Community Board 4).

3.2.13 ENVIRONMENTAL JUSTICE

The Site is located in a Potential Environmental Justice Area with Census Block Group ID 15000US360470367001. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Environmental justice efforts focus on improving the environment in communities, specifically

minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities.

Since the goal of the remedy will achieve a level of cleanup that will remove contaminated materials from the community, the remedy poses no environmental justice concerns.

3.2.14 PROXIMITY TO NATURAL RESOURCES

No natural resources are located within 1.0 mile of the Site. The closest natural resource to the Site is Ridgewood Reservoir located approximately 1.15 miles to the northeast. The proposed remedy will not negatively impact natural resources.

3.2.15 OFF-SITE GROUNDWATER IMPACTS

No CVOCs were detected at concentrations exceeding their respective AWQS of 5 ug/L in the two off-site groundwater monitoring wells.

Laboratory artifacts chloroform and methylene chloride were detected exceeding their respective AWQS of 7 ug/L and 5 ug/L, respectively, in the two off-site groundwater monitoring wells.

No CVOCs were identified in the on-site groundwater samples, however concentrations of TCE were detected in two soil samples exceeding its UUSCO of 0.47 ppm. No impacts from the Site to off-site groundwater are present.

Municipal water supply wells are not present in this area of New York City; therefore, groundwater from the Site does not affect municipal water supplies. Groundwater is not a source of drinking water in Brooklyn.

3.2.16 PROXIMITY TO FLOODPLAINS

According to the FEMA National Flood Hazard Layer (NFHL), the Site is not within a special flood hazard area.

3.2.17 CURRENT INSTITUTIONAL CONTROLS

There are currently no Institutional Controls (ICs) at the Site.

3.3 Summary of selected Remedial Actions

Alternative 2, a Track 2 remedy, would include the following:

13. Development and implementation of a Health and Safety Plan (HASP) for the protection of on-site workers, and a Community Air Monitoring Plan (CAMP) for protection of community/residents and the environment during remediation and construction activities.
14. As part of the remedial action conduct full TCL groundwater sampling of the four on-Site groundwater monitoring wells to close the data gap remaining from the RI. Contingency will be made for appropriate in-situ groundwater treatment if necessary.
15. Excavation, stockpiling, and off-site disposal of all soil/fill exceeding RRSCOs in the top 15 feet to achieve Track 2 remedy. It is expected that a Track 2 cleanup will be achieved by remedial excavation to approximately 2 feet with limited deeper excavation to 11 feet for the hotspot area. It is estimated that 2,000 cubic yards of materials will be removed from the Site in accordance with all Federal, State, and local rules and regulations for handling, transport, and disposal;
16. Design and installation of support of excavation (SOE) elements to enable excavation of contaminated soil to achieve a Track 2 cleanup;
17. Decommissioning of on-site monitoring wells in accordance with NYSDEC CP-43 Policy;
18. Dewatering of impacted groundwater in compliance with city, state, and federal laws and regulations. Dewatered fluids will be treated prior to discharge to the local sewer system under required discharge permits;
19. Screening for indications of contamination (by visual means, odor, and monitoring with a PID) of all excavated soil during any intrusive Site work;
20. Collection and laboratory analysis of post-excavation endpoint samples to evaluate the performance of the remedy with respect to attainment of Track 2 Restricted Residential Use SCOs (RRSCOs). If endpoint samples do not meet RRSCOs, further excavation will be completed until they are met (as demonstrated by the collection of additional endpoint samples).
21. Import of clean material (i.e.: soil meeting UUSCOs or RRSCOs, virgin stone, native crushed stone) to backfill over-excavated areas to development depth, if required.

22. In areas that do not achieve Track 2 RRSCOs, a composite cover system will be constructed in areas that achieve a Track 4 cleanup.
23. Recording of an Environmental Easement (EE), including Institutional Control, to prevent future exposure to any residual contamination remaining at the Site.
24. Development and implementation a Site Management Plan (SMP) for long term management of residual contamination as required by the EE, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance, and (4) reporting. 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 shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis was completed. The environmental footprint analysis was completed using an accepted environmental footprint analysis calculator, SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA). Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction, and material use were estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial program as the Green Remediation Implementation Plan. The project includes detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during the implementation of the remedial action, under the Green Remediation Implementation Plan, and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial program.

Additionally, the remedial program will include a climate change vulnerability assessment to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress, and drought), flooding, and sea level rise will be identified, and the remedial program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

The extent of Alternative 2 remedial excavation is provided in Figure 10. The RRSCOs required to achieve Alternative 2 –Track 2 cleanup are provided in Table 1.

All responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, will be addressed in accordance with all applicable Federal, State and local rules and regulations

Remedial activities will be performed at the Site in accordance with this NYSDEC-approved RAWP and the NYSDEC-issued Decision Document. All deviations from the RAWP and/or

Decision Document will be promptly reported to NYSDEC for approval and fully explained in the FER.

4.0 Remedial Action Program

4.1 Governing Documents

During the remedial program, the following governing documents will be implemented as required:

- Health and Safety Plan
- Community Air Monitoring Plan
- Quality Assurance Project Plan
- Construction Quality Assurance Plan
- Soil/Materials Management Plan
- Stormwater Pollution Prevention Plan
- Contractors Site Operations Plan
- Community Participation Plan

Each of these documents are discussed in detail throughout this RAWP.

4.1.1 STANDARDS, CRITERIA AND GUIDANCE (SCGS)

The following standards, criteria, and guidance are typically applicable to Remedial Action projects in New York State, and will be consulted and adhered to as applicable:

- 6 NYCRR Part 364 - NYS Waste Transporter Permits
- 6 NYCRR Part 360 - NYS Solid Waste Management Requirements
- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
- 6 NYCRR Subpart 374-2 - Standards for the Management of Used Oil

- 6 NYCRR Part 375 - Environmental Remediation Programs
- 6 NYCRR Part 376 - Land Disposal Restrictions
- 6 NYCRR Part 613 - Petroleum Bulk Storage
- 6 NYCRR Part 661 - Tidal Wetlands - Land Use Regulations
- 6 NYCRR Part 663 - Freshwater Wetlands - Permit Requirements
- 6 NYCRR Parts 700-706 – Classes and Standards of Quality and Purity
- 6 NYCRR Part 750 - State Pollutant Discharge Elimination System (SPDES) Permits
- 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response
- 40 CFR Part 144 - Underground Injection Control Program
- CP-43 - Commissioner Policy on Groundwater Monitoring Well Decommissioning (December 2009)
- CP-49 – Climate Change and DEC Action (2022)
- CP-51- Soil Cleanup Guidance (2010)
- CP-60 – Screening and Assessment of Contaminated Sediment (2014)
- DER-2 - Making Changes to Selected Remedies (April 2008)
- DER-4 – Management of Coal Tar Waste & Coal Tar Contaminated Soils from Manufactured Gas Plants (2001)
- DER-10 – Technical Guidance for Site Investigation and Remediation (2010)
- DER-13 – Strategy for Evaluating Soil Vapor Intrusion at Remedial Sites in New York (2006)
- DER-23 – Citizen Participation Handbook for Remedial Programs (2010)
- DER-31 – Green Remediation (2010)

- DER-32 – Brownfield Cleanup Program Applications and Agreements (2017)
- DER-33 – Guide to Drafting and Recording Institutional Controls (2010)
- TAGM 3028 - "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997)
- TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations (1998, Addenda 2000, 2004 and 2023)
- TOGS 1.3.8 - New Discharges to Publicly Owned Treatment Works (1994)
- TOGS 2.1.2 - Underground Injection/Recirculation (UIR) at Groundwater Remediation Sites (1990)
- New York State Standards and Specifications for Erosion and Sediment Control (2016)
- DAR-1 (formerly Air Guide 1) - Guidelines for the Control of Toxic Ambient Air Contaminants (1997)
- U.S. EPA OSWER Directive 9200.4-17 - Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (December 1997)
- New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan
- NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (2006)
- New York State Climate Act (2019)
- NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (2023)

4.1.1.1 Green and Sustainable Remediation and Climate Resiliency

The remedy will incorporate several Best Management Practices (BMPs) consistent with green remediation principles established in DER-31: Green Remediation. These BMPs are intended to minimize energy and water use, reduce waste generation and air emissions, and limited impacts to the ecosystem and local community during the remediation. The practices will address five primary areas:

- Waste Generation
- Electrical Use
- Emissions
- Water Usage
- Land and/or Ecosystem

1. To protect the local ecosystem and ecosystem services, minimally invasive technologies will be used wherever practicable. Real-time data collecting technologies are minimally invasive, protecting the local ecosystem and ecosystem services. The BMPs implemented under this principle include:
    i. Implementation of a Community Air Monitoring Plan (CAMP) using portable Photoionization Detectors (PIDs) and real-time dust monitors to protect both on-site workers and the surrounding community while maintaining a minimal physical footprint.
    ii. Use of temporary erosion and sediment controls to prevent off-site migration of soil or stormwater.
2. Minimizing transportation distances and idling times for equipment will reduce fuel usage and air emissions associated with remedial construction. The BMPs implemented under this principle include:
    i. Ensuring all diesel-powered heavy trucks and equipment to have a Clean Idle Certification Label;
    ii. Scheduling material deliveries and exports to minimize queuing and eliminate unnecessary idling.
    iii. Requiring all operators to shut down engines when not in active use.

iv. Reusing clean, recyclable materials (e.g., crushed stone, certified clean fill) whenever possible to reduce the demand for virgin resources and to minimize transportation-related emissions.

v. Conducting coordination meetings virtually via videoconference or teleconference whenever feasible to reduce personal vehicle use, traffic congestion, and fuel consumption.

3. Reducing the use of unnecessary materials both on- and off-site will lower waste generation and associated emissions from material extraction, production, and disposal. The BMPs implemented under this principle include:

   i. Reducing paper usage by using electronic copies of plans and drawings;

   ii. When applicable, the reuse of clean, recyclable materials reduces consumption of non-renewable virgin resources;

   iii. Segregating waste streams for proper recycling and disposal to minimize landfill burden.

4. Requesting the Contractor tracks material use, material disposal, equipment use and associated emissions, water use, and transportation emissions of both material and personnel. The tracking data will be used in collaboration with the EPA's Spreadsheets for Environmental Footprint Analysis ("SEFA") to determine the footprint of activities on Site. Summaries of the activities are included in Appendix I.

Of the three Alternatives, Alternative 3, which achieves Track 4 use, generates a smaller footprint than Alternatives 1 and 2, which achieves a Track 2 use. Alternatives 1 and 2 use approximately 243.7% more energy and emits 188.7% more GHG emissions, 289.3% more NOx, 391% more SOx, 1,810.5% more particulate matter (PM), and 141% more hazardous air pollutants (HAPs) than Alternative 3.

Progress of green and sustainable remediation metrics will be tracked during the implementation of the remedial action under the Green Remediation Implementation Plan.

4.1.2 SITE SPECIFIC HEALTH & SAFETY PLAN (HASP)

All remedial work performed under this plan will be in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA.

The Volunteers and associated parties preparing the remedial documents submitted to the State and those performing the construction work, are completely responsible for the preparation of an appropriate Health and Safety Plan and for the appropriate performance of work according to that plan and applicable laws.

The Health and Safety Plan (HASP) and requirements defined in this Remedial Action Work Plan pertain to all remedial and invasive work performed at the Site until the issuance of a Certificate of Completion. A Site-specific HASP has been prepared for the Site and is included as Appendix B. All remedial work performed under this RAWP will be in compliance with governmental requirements, including Site and worker safety requirements mandated by the federal Occupational Health and Safety Administration (OSHA) Regulations, primarily 29 CFR Parts 1910 and 1926.

Contractors and subcontractors will have the option of adopting this HASP or developing their own Site-specific document. If a contractor or subcontractor chooses to prepare their own HASP, the Remedial Engineer will ensure that it meets the minimum requirements as detailed in the Site-specific HASP prepared for the Site. Modifications to the HASP may be made with the approval of the Remedial Engineer (RE), Site Safety Manager (SSM) and/or Project Manager (PM).

The Site Safety Coordinator will be Ms. Alex Keenan. Her resume is provided in Attachment F. If required, confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gasses.

4.1.3 QUALITY ASSURANCE PROJECT PLAN (QAPP)

Sampling associated with the Site will be conducted in accordance with the QAPP included as Appendix D, which details field screening and sampling methodologies, sample submittal to the laboratory, and reporting requirements. The QAPP includes the project team responsible for implementing the remediation requirements and provisions set forth in this RAWP. All samples will be reported with Category B deliverables and Environmental Quality Information System

(EQuIS)™ electronic data deliverables (EDDs), with the exception of disposal (waste characterization) sampling.

4.1.4 CONSTRUCTION QUALITY ASSURANCE PLAN (CQAP)

All construction work related to the remedy (i.e., soil excavation) will be monitored by Vektor / AMC field personnel under the direct supervision of the Remedial Engineer. Monitoring during soil excavation will be performed to protect the health of site workers and the surrounding community. A Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) have been specifically developed for this project. These plans specify the monitoring procedures, action levels, and contingency measures that are required to protect public health.

All intrusive and soil disturbance activities will be monitored by an environmental professional (EP) under the direct supervision of the Remedial Engineer who will record observations in the site field book and complete a photographic log of the daily activities. The EP will provide daily updates to the Project Manager and Remedial Engineer who will both make periodic visits to the site as needed to assure construction quality.

4.1.5 SOIL/MATERIALS MANAGEMENT PLAN (SMMP)

A Soil/Materials Management Plan (SMMP) is included in Section 5.4 of this document. The SMMP includes detailed plans for managing all soils/materials that are disturbed at the Site, including excavation, handling, storage, transport, and disposal. It also includes all of the procedures that will be applied to assure effective, nuisance-free performance in compliance with all applicable federal, state, and local laws and regulations.

4.1.6 EROSION AND SEDIMENT CONTROL PLAN (ESCP)]

The erosion and sediment controls will be in conformance with requirements presented in the New York State Standards and Specifications for Erosion and Sediment Control.

4.1.7 COMMUNITY AIR MONITORING PLAN (CAMP)

The site-specific Community Air Monitoring Program (CAMP) is provided in Appendix C. Community air monitoring will be performed via at least two fixed stations at the perimeter of the Site during all intrusive work. In addition to community air monitoring on the perimeter of the work zone, air monitoring will be performed periodically (at a minimum once per hour) on a roving basis with hand-held equipment based upon wind direction and the location of the intrusive work.

4.1.8 CONTRACTORS SITE OPERATIONS PLAN (SOP);

The Remedial Engineer has reviewed all plans and submittals for this remedial project (including those listed above and contractor and sub-contractor document submittals) and confirms that they comply with this RAWP. The Remedial Engineer is responsible to ensure that all later document submittals for this remedial project, including contractor and sub-contractor document submittals, comply with this RAWP. All remedial documents will be submitted to NYSDEC and NYSDOH in a timely manner and prior to the start of work.

4.1.9 CITIZEN PARTICIPATION PLAN

A certification of mailing will be sent by the Volunteer to the NYSDEC project manager following the distribution of all Fact Sheets and notices that includes: (1) certification that the Fact Sheets were mailed, (2) the date they were mailed; (3) a copy of the Fact Sheet, (4) a list of recipients (contact list); and (5) a statement that the repository was inspected and that it contained all of applicable project documents.

No changes will be made to approved Fact Sheets authorized for release by NYSDEC without written consent of the NYSDEC. No other information, such as brochures and flyers, will be included with the Fact Sheet mailing.

The approved Citizen Participation Plan for this project is attached in Appendix C.

Document repositories have been established at the following locations and contain all applicable project documents:

1. Brooklyn Community Board 4 2. Brooklyn Public Library – Saratoga Branch

1420 Bushwick Avenue Rm 370	8 Thomas S Boyland St. at Macon St
Brooklyn, New York	Brooklyn, New York
Phone: (718) 628-8400	Phone: (718) 573-5224

In addition, an electronic repository can be accessed via DECInfo Locator at the following link: [TBD].

4.2 General Remedial construction information

4.2.1 PROJECT ORGANIZATION

Resumes of key personnel involved in the Remedial Action are included in Appendix F. Personnel responsible for implementation of this RAWP are included on the Organization Chart provided in the QAPP.

4.2.2 REMEDIAL ENGINEER

The Remedial Engineer for this project will be Ariel Czemerinski. The Remedial Engineer is a registered professional engineer licensed by the State of New York. The Remedial Engineer will have primary direct responsibility for implementation of the remedial program for the 2425 Atlantic Avenue Site (NYSDEC BCA Index No. Xx-xxxx-xx-xx Site No. Cxxxxxx). The Remedial Engineer will certify in the Final Engineering Report that the remedial activities were observed by qualified environmental professionals under [his/her] supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved in full conformance with that Plan. Other Remedial Engineer certification requirements are listed later in this RAWP.

The Remedial Engineer will coordinate the work of other contractors and subcontractors involved in all aspects of remedial construction, including soil excavation, stockpiling, characterization, removal and disposal, air monitoring, emergency spill response services, import of back fill material, and management of waste transport and disposal. The Remedial Engineer will be responsible for all appropriate communication with NYSDEC and NYSDOH.

The Remedial Engineer will review all pre-remedial plans submitted by contractors for compliance with this RAWP and will certify compliance in the Final Engineering Report.

The Remedial Engineer will provide the certifications listed in Section 10.1 in the FER.

4.2.3 REMEDIAL ACTION CONSTRUCTION SCHEDULE

The remedial action will begin with mobilization of equipment and material to the Site, which will begin approximately 1-2 weeks following RAWP approval and Decision Document, and 10 days after the distribution of the remedial construction Fact Sheet. A pre-construction meeting will be held among NYSDEC, the Remedial Engineer, and the selected remedial contractor prior to site mobilization. The remedy is expected to take 9 months as part of the construction excavation and foundation. Table 7 provides the preliminary remedial action schedule.

4.2.4 WORK HOURS

The hours for operation of remedial construction will conform to the New York City Department of Buildings (DOB) construction code requirements or according to specific variances issued by that agency. NYSDEC will be notified by the Volunteer of any variances issued by DOB. NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 SITE SECURITY

The Site will be completely closed from public access by using secured construction fence. No unauthorized personnel will be able to access the Site. During off hours, the Site will be locked.

4.2.6 TRAFFIC CONTROL

It is not anticipated that traffic will be disrupted beyond normal contractor vehicle traffic going to and from the Site during construction. Any sidewalk closures that are required during the course of construction/remediation activities will be conducted in accordance with New York City Department of Transportation (NYCDOT) permits.

The Volunteer's construction management personnel will direct the arrival or departure of construction vehicles and provide flag services as needed to maintain safe travel exiting and

entering the Site from Franklin Avenue or Montgomery Street. Traffic related to on-going remedial activity will require the staging of trucks on Montgomery Street on a daily basis during soil excavation activity. Potential truck routes are shown on Figure 12.

4.2.7 CONTINGENCY PLAN

A contingency plan has been developed to describe the procedures to be followed upon discovery of an unknown source of contamination or AOC that may require remediation (USTs, stained soil, drums, etc.). The identification of a previously unknown source structure or unexpected contaminated media discovered by screening during invasive Site work will be promptly communicated by phone to the NYSDEC project manager. The findings will also be included in daily and monthly progress reports. If USTs or other previously unidentified contaminant sources are found during on-site remedial excavation or development-related construction, sampling will be performed on product, sediment, and/or surrounding soil/fill, etc., as applicable. Chemical analytical work will be for full scan parameters (TCL VOCs, SVOCs, PCBs, and pesticides; and TAL metals and PFAS). The analyses will not be limited to CP-51 parameters where tanks are identified without prior approval by the NYSDEC project manager.

4.2.8 WORKER TRAINING AND MONITORING

All those who enter the work area while intrusive activities are being performed must recognize and understand the potential hazards to health and safety. All construction personnel upon entering the Site must attend a brief training meeting, its purpose being to:

- Make workers aware of the potential hazards they may encounter;
- Instruct workers on how to identify potential hazards;
- Provide the knowledge and skills necessary for them to perform the work with minimal risk to health and safety;
- Make workers aware of the purpose and limitations of safety equipment; and
- Ensure that they can safely avoid or escape from emergencies.

The excavation contractor's on-site personnel engaged in this work will all have a minimum of 24-hour Hazardous Waste Operations and Emergency Response Operations training (40-hour preferred).

All field personnel involved in remedial activities will participate in training, if required under 29 CFR 1910.120, including 24 and 40-hour hazardous waste operator training and annual 8-hour refresher training. The Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign a HASP acknowledgment.

4.2.9 AGENCY APPROVALS

The Volunteer has addressed all SEQRA requirements for this Site. All permits or government approvals required for remedial construction have been, or will be, obtained prior to the start of remedial construction.

The planned end use for the Site is in conformance with the current zoning for the property as determined by the New York City Department of City Planning. A Certificate of Completion will not be issued for the project unless conformance with zoning designation is demonstrated.

A complete list of all federal, state and local governmental permits, certificates or other approvals or authorizations required to perform the remedial and development work will be provided in the Final Engineering Report.

4.2.10 NYSDEC BCP SIGNAGE

A project sign will be erected at the main entrance to the Site prior to the start of any remedial activities. The sign will indicate that the project is being performed under the New York State Brownfield Cleanup Program. The sign will meet the detailed specifications provided by the NYSDEC Project Manager.

4.2.11 PRE-CONSTRUCTION MEETING WITH NYSDEC

A pre-construction meeting or teleconference call with the Project Manager, Remedial Engineer, Construction Manager, Owner's Representative, the NYSDEC, and the NYSDOH will take place prior to the start of major construction activities.

4.2.12 EMERGENCY CONTACT INFORMATION

An emergency contact sheet with names and phone numbers is included in the Site-specific HASP provided in Appendix B. That document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

4.2.13 REMEDIAL ACTION COSTS

The total estimated cost of the Remedial Action is $2,569,800. An itemized and detailed summary of estimated costs for all remedial activity is attached in Table 7. This will be revised based on actual costs and submitted as an Appendix to the Final Engineering Report.

4.3 Site Preparation

Prior to conducting any intrusive activities, the work zone(s), designated entry points, soil/fill staging areas, decontamination zones, and truck routes will be established, as applicable. The Site plan will be updated as necessary to reflect any changes in operations during the course of the intrusive work. Airborne particulate and VOC control measures, if necessary, will be implemented. Additional details of Site preparation activities are provided in the following sections.

4.3.1 MOBILIZATION

Site mobilization involving security setup, equipment mobilization, utility mark outs, and marking and staking excavation areas will be performed prior to undertaking any Site remediation activities.

4.3.2 MONITORING WELL / VAPOR PROBE DECOMMISSIONING

Existing groundwater monitoring wells will either be protected during remediation and development for use in post-remedial monitoring or will be properly decommissioned in

accordance with NYSDEC Commissioners Policy CP-43. The only exception to this is if the full length of the well is to be excavated during remediation.

Similarly, existing soil vapor probes will be properly decommissioned.

4.3.3 EROSION AND SEDIMENTATION CONTROLS

Erosion and sediment control measures will be installed at the Site prior to conducting any ground-intrusive work. These measures will be installed according to all applicable federal, state, and/or local laws. The measures will provide for abatement and control of environmental pollution arising from proposed remediation and construction activities. The control measures will include procedures for perimeter Site controls, stabilized construction pads at each construction entrance/exit, equipment decontamination, drainage inlet protection, and particulate suppression. The RE, or representative, will conduct routine inspections; any repairs and/or maintenance of control measures will be completed in a timely fashion to maintain the controls in proper working order. All vehicles leaving the Site will be inspected to ensure that no soil/fill adheres to the wheels or undercarriage prior to leaving the Site. Any situations involving material spilled in transit, mud, and dust tracked off-site will be remedied. The access routes will be inspected for road conditions, overhead clearance, and weight restrictions.

4.3.4 STABILIZED CONSTRUCTION ENTRANCE(S)

A crushed stone path will be constructed at all truck entrances and exits. The stabilized entrances will be constructed of a 4 to 6-inch bed of crushed stone or crushed concrete, which will be sloped back toward the interior of the Site. The stabilized entrances will be inspected on a daily basis during soil loading activities and reinforced as needed with additional stone/concrete material to prevent the accumulation of ruts, mud or soil. A laborer will check the trucks as they leave, and will use a hose, shovel, and/or broom to clean the truck tires and body as it leaves the Site, as necessary.

4.3.5 UTILITY MARKER AND EASEMENTS LAYOUT

The Volunteer and its contractors are solely responsible for the identification of utilities that might be affected by work under the RAWP and implementation of all required, appropriate, or necessary

health and safety measures during performance of work under this RAWP. The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this RAWP. The Volunteer and its contractors must obtain any local, State or Federal permits or approvals pertinent to such work that may be required to perform work under this RAWP. Approval of this RAWP by NYSDEC does not constitute satisfaction of these requirements.

The presence of utilities and easements on the Site has been investigated by the Remedial Engineer. It has been determined that no risk or impediment to the planned work under this Remedial Action Work Plan is posed by utilities or easements on the Site.

4.3.6 SHEETING AND SHORING

Appropriate management of structural stability of on-Site or off-Site structures during on-Site activities include excavation is the sole responsibility of the Volunteer and its contractors. The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this RAWP. The Volunteer and its contractors must obtain any local, State or Federal permits or approvals that may be required to perform work under this RAWP. Further, the Volunteer and its contractors are solely responsible for the implementation of all required, appropriate, or necessary health and safety measures during performance of work under the approved RAWP.

4.3.7 EQUIPMENT AND MATERIAL STAGING

Staging and storage of equipment and materials will be contained within the secured Site or within a secured area on the street/sidewalk in accordance with a NYCDOT permit. By the nature of the work involved in this project, equipment and materials will be moved to different areas within the secured Site as work progresses.

4.3.8 DECONTAMINATION AREA

A temporary truck decontamination pad will be constructed to decontaminate trucks and other vehicles/equipment leaving the Site. The pad will be constructed by placing a 4 to 6-inch bed of

stone aggregate such as crushed rock or RCA. The pad will be bermed at the sides and sloped back to the interior of the Site. The truck pad will be sized to accommodate the largest construction vehicle used and located in line with the stabilized construction entrance. The pad will be inspected on a daily basis during soil loading activities and reinforced as needed with additional stone/concrete material to prevent the accumulation of ruts, mud or soil.

4.3.9 SITE FENCING

The Site will be secured with a NYDOB-approved 8-foot-high fence that is present around the entire perimeter. During all remedial activities, access to the Site will be limited, and all persons entering the Site will be required to sign a logbook and meet all applicable health and safety requirements. The Site will be secured during non-working hours.

4.3.10 DEMOBILIZATION

Demobilization will consist of the restoration of material staging areas and the disposal of materials and/or general refuse in accordance with acceptable rules and regulations**.** Materials used in remedial activities will be removed and disposed of properly. All equipment will be decontaminated prior to leaving the Site.

4.4 Reporting

All daily and monthly Reports will be included in the Final Engineering Report.

4.4.1 DAILY REPORTS

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers by noon of each day following the reporting period and will include:

- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and exported from the Site;
- References to alpha-numeric map for Site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);

- A summary of CAMP finding, including excursions;
- Photographs of site activities;
- An explanation of notable Site conditions.

Daily reports are not intended to be the mode of communication for notification to the NYSDEC of emergencies (accident, spill), requests for changes to the RAWP or other sensitive or time critical information. However, such conditions must also be included in the daily reports. Emergency conditions and changes to the RAWP will be addressed directly to NYSDEC Project Manager via personal communication.

Daily Reports will include a description of daily activities keyed to an alpha-numeric map for the Site that identifies work areas. These reports will include a summary of CAMP results, odor and dust excursions and corrective actions, and all complaints received from the public.

A Site map that shows a predefined alpha-numeric grid for use in identifying locations described in reports submitted to NYSDEC is attached in Figure 8.

The NYSDEC assigned project number will appear on all reports.

4.4.2 MONTHLY REPORTS

Monthly reports will be submitted to NYSDEC and NYSDOH Project Managers by the 10th day of each month following the reporting period and will include:

- Activities relative to the Site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (e.g., tons/cubic yards of material exported and imported, etc.);
- Description of approved activity modifications, including changes of work scope and/or schedule;
- Sampling results received following internal data review and validation, as applicable; and,

- An update of the remedial schedule including the percentage of project completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays.
- Tracking of GSR metrics determined during the design process should be included in monthly reports.

4.4.3 OTHER REPORTING

Photographs will be taken of all remedial activities and submitted to NYSDEC in digital (JPEG) format. Photos will illustrate all remedial program elements and will be of acceptable quality. Representative photos of the Site prior to any Remedial Actions will be provided. Representative photos will be provided of each contaminant source, source area and Site structures before, during and after remediation. Photos will be included in the daily reports as needed, and a comprehensive collection of photos will be included in the FER.

Progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the FER, including a comparison to the goals established during the remedial program. Regular updates to the metrics used (SEFA, SiteWise^{TM} or otherwise approved method) should be included.

The Climate Screening process and results will be documented in the form of a completed checklist and brief letter report. If the Climate Screening results indicate that a CVA is necessary, a complete CVA Report will be developed. The CVA Report will be included as an Appendix or Attachment in relevant documents and/or submitted as a standalone report.

Job-site record keeping for all remedial work will be appropriately documented. These records will be maintained on-Site at all times during the project and be available for inspection by NYSDEC and NYSDOH staff.

4.4.4 COMPLAINT MANAGEMENT PLAN

All complaints from citizens will be promptly reported to NYSDEC and NYSDOH. Complaints will be addressed, and outcomes will also be reported to NYSDEC and NYSDOH in daily

reports. Notices to NYSDEC and NYSDOH will include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems.

4.4.5 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

All deviations from this RAWP will require prior approval from NYSDEC. These deviations will be recorded in both the daily reports and the FER. At a minimum, the report of the deviation will include the following:

- Reasons for deviating from this RAWP;
- Approval process to be followed for changes/additions to this RAWP; and
- Effect of the deviations on overall remedy.

Major changes to the scope of work must be discussed with the NYSDEC and the NYSDOH prior to implementation. If the changes are considered to be significant enough, an addendum to the RAWP Work Plan will be prepared and submitted to NYSDEC / NYSDOH for review.

5.0 Remedial Action: Material Removal from Site

Excavation work includes removal and off-Site disposal of the top 2 feet of soil/fill material across the Site. Soil excavation will be performed using conventional equipment such as track-mounted excavators, backhoes, and loaders.

All excavation work will be performed in accordance with the Site-specific HASP and CAMP. If an underground storage tank (UST) is discovered during excavation the NYSDEC Project Manager will be immediately notified and the UST removed and closed in accordance with DER-10, NYSDEC PBS regulations and NYC Fire Department regulations. It is anticipated that the excavation of non-hazardous CVOC and petroleum impacted soil and historic fill will be performed by an excavation contractor using appropriately trained personnel (24 or 40 hr HAZWOPER).

Over excavated areas will be backfilled using imported material meeting RRSCOs. An excavation plan showing the excavation depths to achieve the Track 2 remedy is provided in Figure 10. Backfill placement locations are provided in Figure 19.

5.1 Soil Cleanup Objectives

The Soil Cleanup Objectives for this Site are listed in Table 1. Table 2 summarizes all soil samples that exceed the SCOs proposed for this Remedial Action. A spider map that shows all soil samples that exceed the SCOs proposed for this Remedial Action is shown in Figure 3.

Soil and materials management on-Site and off-Site will be conducted in accordance with the Soil/Materials Management Plan as described below. UST closures will, at a minimum, conform to criteria defined in DER-10.

5.2 Remedial Performance Evaluation (Post Excavation End-Point Sampling)

Post-excavation endpoint samples will be collected at the proposed locations shown in Figure 8 to verify that remedial goals have been achieved. Additional post-excavation soil samples will be collected around any USTs and/or other hotspots encountered on the Site.

5.2.1 END-POINT SAMPLING FREQUENCY

Based on the sampling frequency outlined in Section 5.4 of DER-10, endpoint sampling for the general remedial excavation will include one bottom soil sample for every 900 square feet across the Site and endpoint sampling to be completed at development depths with one bottom soil sample for every 900 square feet across the Site with one sidewall sample for every 30 linear feet of exposed excavation perimeter. As the total area of the Site footprint is approximately 17,533-square feet, 21 endpoint samples at 2 feet below grade are proposed to assess the performance with respect to attainment of Track 4 Restricted residential Use SCOs. All Site boundaries will utilize wooden lagging as a means of support of excavation therefore no sidewall samples are anticipated to be collected. The total number of bottom endpoint samples in this RAWP is estimated and the total samples collected in the field will rely on field conditions. However, if necessary, sidewall samples would be obtained around any petroleum storage tank encountered and for every 15 linear feet of trench for any associated piping. General excavation endpoint samples will be analyzed and compared to Track 2 Restricted Residential Use SCOs.

The proposed total amount of endpoint samples is 21 samples.

For locations that meet development depths shallower than 15' feet below grade, only one sample will be collected in that location.

Figure 8 shows the proposed endpoint sample locations for remedial excavation to achieve Track 4 RRSCOs, and at elevation 68 to 70 feet (NAVD88). Table 9 provides a summary of endpoint sampling rationale.

5.2.2 METHODOLOGY

The endpoint samples will be collected using disposable dedicated spoons to prevent cross contamination and placed directly into presterilized laboratory-issued containers. The sample containers will be properly labeled and immediately placed on ice within a cooler. Sample time, date, and location will be recorded on a chain of custody.

The samples will be submitted to an ELAP-certified laboratory for analysis of VOCs by EPA Method 8260, SVOCs by EPA Method 8270, PCBs by EPA Method 8082, pesticides by EPA Method 8081, TAL metals by EPA Method 6000/7000 series, 1,4-dioxane by EPA Method 8270, and the 40 compound PFAS list by EPA Method 1633. In accordance with NYSDEC requirements, QA/QC sampling will be performed; the laboratory will follow the NYSDEC Analytical Services Protocol (ASP) dated 1995; and Category B deliverables and EQuIS™ EDDs will be issued. Further details regarding the specific sampling methodology and analytical procedures are presented in the QAPP, included as Appendix C.

5.2.3 REPORTING OF RESULTS

The analytical results of the endpoint samples will be tabulated and compared to the UUSCOs. The tabulated data, as well as the laboratory reports, will be included in the FER. All analytical data will be submitted to the NYSDEC database in EDD format via EquIS™.

5.2.4 QA/QC

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision, and completeness requirements will be addressed by the laboratory for all data.

Collected samples will be appropriately packaged, placed in coolers, and either shipped or delivered directly to the analytical laboratory via a courier. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved to maintain a temperature of 4°C. Decontamination of non-dedicated sampling equipment will consist of the following: gently tap or scrape to remove adhered soil/fill; rinse with tap water; scrub/wash with tap water/Alconox® detergent solution and bristle brush; and rinse with tap water.

One trip blank, one field blank, one blind duplicate sample, and one matrix spike/matrix spike duplicate (MS/MSD) will be collected per every 20 samples and submitted for laboratory analysis with the accompanying field samples. The field blank(s), blind duplicate(s), and MS/MSD(s) will be analyzed for the same parameters as the field sample(s); the trip blank(s) will be analyzed for VOCs only. Additional QA/QC information is provided in the QAPP, included as Appendix C.

5.2.5 DUSR AND EDDS

Sampling associated with the Site will be conducted in accordance with the QAPP included as Appendix C which details field screening and sampling methodologies, sample submittal to the laboratory, and reporting requirements. The QAPP includes the project team responsible for implementing the remediation requirements and provisions set forth in this RAWP. All samples will be reported with Category B deliverables and Environmental Quality Information System (EQuIS)™ electronic data deliverables (EDDs), with the exception of disposal (waste characterization) sampling.

Verification and/or performance monitoring samples collected under this RAWP will be reviewed and evaluated in accordance with the Guidance for the Development of Data Usability Summary Reports as presented in Appendix 2B of DER-10. A third-party data validator will review the laboratory reports and prepare DUSRs. The validated data will be submitted to the NYSDEC database in EDD format via EquIS™. DUSRs and validated data will be included in the FER.

5.2.6 REPORTING OF END-POINT DATA IN FER

Chemical labs used for all end-point sample results and contingency sampling will be NYSDOH ELAP certified.

End point sampling, including bottom and side-wall sampling, will be performed in accordance with DER-10 sample frequency requirements. Side-wall samples will be collected a minimum of every 30 linear feet. Bottom samples will be collected at a rate of one for every 900 square feet from the base of the remedial excavation. The FER will provide a tabular and map summary of all end-point sample results and exceedances of SCOs.

5.3 Estimated Material Removal Quantities

The estimated quantity of soil/fill to be removed from the Site is 1,500 cubic yards for remedial excavation of the entire site to a depth of 2 feet for removal of soils exceeding Track 4 restricted residential SCOs.

The estimated quantity of soil to be imported into the Site for backfill and cover soil is 1,000 cubic yards. No soil/fill is expected to be reused/relocated on Site.

5.4 SOIL/MATERIALS MANAGEMENT PLAN

The SMMP describes the procedures to be performed during the handling of soil/fill materials on-site during all intrusive work.

Excavated soil will be secured and temporarily stored on-site until arrangements can be made for off-site disposal. As an alternative, based on the waste characterization soil samples, facilities will be pre-determined prior to commencement of excavation activities to allow the soil/fill to be loaded directly on to trucks for transport to the disposal facility.

5.4.1 SOIL SCREENING METHODS

Visual, olfactory and PID soil screening and assessment will be performed by a qualified environmental professional or experienced field geologist under the direction of the Remedial Engineer during all remedial and development excavations into known or potentially contaminated material. Soil screening will be performed regardless of when the invasive work is done and will

include all excavation and invasive work performed during the remedy and during development phase, such as excavations for foundations and utility work, prior to issuance of the COC.

All primary contaminant sources (including but not limited to tanks and hotspots) identified during Site Characterization, Remedial Investigation, and Remedial Action will be surveyed by a surveyor licensed to practice in the State of New York. This information will be provided on maps in the FER.

Screening will be performed by qualified environmental professionals. Resumes will be provided for all personnel responsible for field screening (e.g., those representing the Remedial Engineer) of invasive work for unknown contaminant sources during remediation and development work.

5.4.2 STOCKPILE METHODS

In order to implement BMP, stockpiling during remedial activities will be minimized and live-loading will be conducted as much as possible.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. At a minimum, a storm event should be considered a rainfall of three inches or greater in 12 hours. Judgement should be used to evaluate water infiltration, nearby waterbodies where runoff is likely, and engineering controls that may be affected.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Soil stockpiles will be continuously encircled with silt fences. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Water will be available on-site at suitable supply and pressure for use in dust control. To reduce the suspension of dust, vehicle speeds within the Site will be limited with the spraying of water in vulnerable areas prior to performance of work in which suspension of dust is likely to occur.

5.4.3 MATERIALS EXCAVATION AND LOAD OUT

The Remedial Engineer or a qualified environmental professional under his/her supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the Site has been investigated by the Remedial Engineer. It has been determined that no risk or impediment to the planned work under this Remedial Action Work Plan is posed by utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

Vehicles leaving the Site will not be overloaded. The Remedial Engineer's representative will make reasonable efforts to ensure that vehicles are not loaded beyond their NYSDOT weight rating and that all material is secured beneath the truck bed cover.

A truck wash will be operated on-Site. The Remedial Engineer will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the remedial construction is complete.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site sediment tracking.

The Remedial Engineer will be responsible for ensuring that all egress points for truck and equipment transport from the Site will be clean of dirt and other materials derived from the Site during Site remediation and development. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site -derived materials.

The Volunteer and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all invasive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations and bridge footings).

The Remedial Engineer will ensure that Site development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this Remedial Action Work Plan.

Each hotspot and structure to be remediated (USTs, vaults and associated piping, transformers, etc.) will be removed and end-point remedial performance sampling completed before excavations related to Site development commence proximal to the hotspot or structure.

Development-related grading cuts and fills will not be performed without NYSDEC approval and will not interfere with, or otherwise impair or compromise, the performance of remediation required by this plan.

Mechanical processing of historical fill and contaminated soil on-Site is prohibited.

All primary contaminant sources, including but not limited to tanks and hotspots, identified during Site Characterization, Remedial Investigation, and Remedial Action will be surveyed by a surveyor licensed to practice in the State of New York. The survey information will be shown on maps to be reported in the FER.

5.4.4 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Truck transport routes are as follows:

- The trucks will exit the site from 2425 Atlantic Avenue, turning right onto Atlantic Avenue;
- The trucks turn right onto Flatbush Avenue;
- The trucks continue straight onto the Manhattan Bridge towards New Jersey.

All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes.

Proposed in-bound and out-bound truck routes to the Site are shown in Figure 12. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off- Site queuing of trucks

entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site.

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation and development.

Queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.

Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas or mesh truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks will be washed prior to leaving the Site. Truck wash waters will be collected and disposed of off-Site in an appropriate manner.

5.4.5 MATERIALS DISPOSAL OFF-SITE

Following completion of the waste characterization sampling, properly permitted waste disposal facilities will be selected for off-site disposal. The proposed disposal facilities' information, including their location, will be reported to the NYSDEC project manager prior to commencing the disposal activities.

The estimated quantity of soil/fill to be removed from the Site during the RA is approximately 1,500 cubic yards for remedial excavation of the entire Site to a depth of 2 feet below grade for removal of soils exceeding Track 4 Restricted Residential SCOs, foundation installation and the installation of the SSDS. It is noted that additional material may require excavation and off-site disposal as part of the remedy if additional source areas are identified or confirmation sampling reveals the need to conduct additional remediation. It is anticipated that the soil will be classified as:

- Non-Hazardous - Contaminated (historic fill / native soil)

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-Site management of materials from this Site is prohibited without formal NYSDEC approval.

Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360.15 Registration Facility).

The following documentation will be obtained and reported by the Remedial Engineer for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter from the Remedial Engineer or BCP Volunteer to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be disposed is contaminated material generated at an environmental remediation Site in New York State. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported (including Site Characterization data); and (2) a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the FER.

Non-hazardous historic fill and contaminated soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360.2. The Remedial Engineer is responsible for assuring material is properly characterized and determining the appropriate disposal methods based on the characterization results.

Historical fill and contaminated soils from the Site are prohibited from being disposed at Part 360.15 Registration Facilities (also known as Soil Recycling Facilities).

Soils that are contaminated but non-hazardous and are being removed from the Site are considered by the NYSDEC Division of Materials Management (DMM) to be Construction and Demolition (C/D) materials with contamination not typical of virgin soils. These soils may be sent to a

permitted Part 360 landfill. They may be sent to a permitted C/D processing facility without permit modifications only upon prior notification of NYSDEC DMM. This material is prohibited from being sent or redirected to a Part 360-15 Registration Facility. In this case, as dictated by DMM, special procedures will include, at a minimum, a letter to the C/D facility that provides a detailed explanation that the material is derived from a DER remediation Site, that the soil material is contaminated and that it must not be redirected to on-Site or off-Site Soil Recycling Facilities. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported.

The FER will include an accounting of the destination of all material removed from the Site during this Remedial Action, including excavated soil, contaminated soil, historic fill, solid waste, and hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. This information will also be presented in a tabular form in the FER.

Bill of Lading system or equivalent will be used for off-Site movement of non-hazardous wastes and contaminated soils. This information will be reported in the FER.

Hazardous wastes derived from on-Site will be stored, transported, and disposed of in full compliance with applicable local, State, and Federal regulations.

Appropriately licensed haulers will be used for material removed from this Site and will be in full compliance with all applicable local, State and Federal regulations.

Waste characterization sampling will be performed exclusively for the purposes of off-Site soil disposal in a manner suitable to receiving facilities and in conformance with applicable federal, state and local laws rules and regulations and facility-specific permits. Sampling and analytical methods, sampling frequency, analytical results and QA/QC associated with waste characterization activities will be reported in the FER. All data available for soil/material to be disposed at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt. Waste characterization data will be used solely for complying with requirements for off-site disposal. Waste Characterization sampling cannot be utilized for:

- Delineating the extent of contamination required for remediation at a Site.
- Replacing or substituting data collected as part of Site Characterization and/or Remedial Investigation.
- Replacing or substituting confirmation or documentation sampling as described in NYSDEC DER-10, Section 5.4.
- To modify remedial decisions as formalized in a NYSDEC approved Decision Document or Record of Decision.

5.4.6 MATERIALS REUSE ON-SITE

Although the reuse of material on-site is not anticipated, chemical criteria for on-Site reuse of material must be approved by NYSDEC. These criteria are listed in Table 7. The Remedial Engineer will ensure that procedures defined for materials reuse in this RAWP are followed and that unacceptable material will not remain on-Site. Material proposed for reuse would be segregated for testing until determined acceptable for redistribution.

A "Request to Import/Reuse Fill Material" form will be filed with the NYSDEC project manager for review and approval prior to material reuse on the site. A copy of the form is presented in Appendix G. Acceptable demolition material proposed for reuse on-Site, if any, will be sampled for asbestos.

Concrete crushing or processing on-Site is prohibited, unless NYSDEC has specifically approved on-site processing and reuse of acceptable demolition material.

Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site is prohibited for reuse on-Site.

Contaminated on-Site material, including historic fill and contaminated soil, removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. This will be expressed in the Site Management Plan (SMP).

5.4.7 FLUIDS MANAGEMENT

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Liquids discharged into the New York City sewer system will be addressed through approval by NYCDEP.

Dewatered fluids will not be recharged back to the land surface or subsurface of the Site. Dewatering fluids will be managed off-Site.

Discharge of water generated during remedial construction to surface waters (i.e. a local pond, stream, river and/or storm sewer) is prohibited without a SPDES permit.

5.4.8 DEMARCATION

After the completion of soil removal and any other invasive remedial activities and prior to backfilling, a land survey will be performed by a New York State licensed surveyor. The survey will define the top elevation of residual contaminated soils. A physical demarcation layer, consisting of orange snow fencing material or equivalent material will be placed on this surface to provide a visual reference. This demarcation layer will constitute the top of the 'Residuals Management Zone', the zone that requires adherence to special conditions for disturbance of contaminated residual soils defined in the SMP. The survey will measure the grade covered by the demarcation layer before the placement of cover soils, pavement and sub-soils, structures, or other materials. This survey and the demarcation layer placed on this grade surface will constitute the physical and written record of the upper surface of the 'Residuals Management Zone' in the SMP. A map showing the survey results will be included in the FER and the SMP.

5.4.9 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the Site will be approved by the Remedial Engineer and will be in compliance with provisions in this RAWP prior to receipt at the Site.

Material from industrial sites, spill sites, other environmental remediation sites or other potentially contaminated sites will not be imported to the Site. Solid waste will not be imported onto the Site.

The FER will include the following certification by the Remedial Engineer: "I certify that all import of soils from off-Site, including source evaluation, approval and sampling, has been performed in a manner that is consistent with the methodology defined in the Remedial Action Work Plan".

All imported soils will meet NYSDEC approved backfill or cover soil quality objectives for this Site. These NYSDEC approved backfill or cover soil quality objectives are the lower of the protection of groundwater or the protection of public health soil cleanup objectives for restricted residential as set forth in Table 375-6.8(b) of 6 NYCRR Part 375 and listed in Table 1. Non-compliant soils will not be imported onto the Site without prior approval by NYSDEC. Nothing in the approved RAWP or its approval by NYSDEC should be construed as an approval for this purpose.

Soils that meet 'general fill' requirements under 6 NYCRR Part 360.13, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Nothing in this RAWP should be construed as an approval for this purpose.

A "Request to Import/Reuse Fill Material" form will be filed with the NYSDEC project manager for review and approval prior to import to the site. A copy of the form is presented in Appendix G.

5.4.10 STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the RAWP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the remedial construction area.

5.4.11 CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during on-Site remedial excavation or development related construction, sampling will be performed on product, sediment and surrounding soils, etc. in accordance with DER-10. Chemical analytical work will be for full scan parameters (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides, PCBs and PFAS). Analyses will not be otherwise limited without NYSDEC approval.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. These findings will be also included in daily and periodic electronic media reports.

5.4.11.1 ***Extreme Storm Preparedness and Response Contingency Plan***

Damage from flooding or storm surge can include dislocation of soil and stockpiled materials, dislocation of site structures and construction materials and equipment, and dislocation of support of excavation structures. Damage from wind during an extreme storm event can create unsafe or unstable structures, damage safety structures and cause downed power lines creating dangerous site conditions and loss of power. In the event of emergency conditions caused by an extreme storm event, the Volunteer will undertake the following steps for site preparedness prior to the event and response after the event.

Storm Preparedness

Preparations in advance of an extreme storm event will include the following: containerized hazardous materials and fuels will be removed from the property; loose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and

generators will be removed from excavated areas, trenches and depressions on the property to high ground or removed from the property; an inventory of the property with photographs will be performed to establish conditions for the site and equipment prior to the event; stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped stockpile covers will be replaced with competent covers; stockpiled hazardous wastes will be removed from the property; stormwater management systems will be inspected and fortified, including, as necessary: clean and reposition silt fences, hay bales; clean storm sewer filters and traps; and secure and protect pumps and hosing.

Storm Response

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A site inspection report will be submitted to NYSDEC at the completion of site inspection and after the site security is assessed. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures or equipment will be reported to public safety authorities via appropriate means such as calling 911.

Petroleum spills will be reported to NYSDEC within 2 hours of identification and consistent with State regulations. Public safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed.

Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will be collected and appropriately managed. Support of excavation structure will be inspected and fortified as necessary. Impacted stockpiles will be contained and damaged stockpile covers will be replaced. Stormwater control systems and structures will be inspected and maintained as necessary.

If soil or fill materials are discharged off site to adjacent properties, property owners and NYSDEC will be notified, and corrective measure plan designed to remove and clean dislocated material will be submitted to NYSDEC and implemented following approval by NYSDEC and granting of site

access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of NYSDEC.

If onsite petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYSDEC's spill hotline at (800) 457-7362 within statutory defined timelines. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYSDEC.

Storm Response Reporting

A site inspection report will be submitted to NYSDEC at the completion of site inspection. An inspection report will be used for this purpose. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. The site inspection report will be sent to the NYSDEC project manager and will include the site name, address, tax block and lot, site primary and alternate contact name and phone number.

Damage and soil release assessment will include: whether the project had stockpiles; whether stockpiles were damaged; photographs of damage and notice of plan for repair; report of whether soil from the site was dislocated and whether any of the soil left the site; estimates of the volume of soil that left the site, nature of impact, and photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the support of excavation; presence of onsite or offsite exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYSDEC; description of corrective actions; schedule for corrective actions.

This report should be completed and submitted to NYSDEC project manager with photographs within 24 hours of the time of safe entry to the property after the storm event.

5.4.12 COMMUNITY AIR MONITORING PLAN

A Site-specific CAMP has been prepared for the Site and is included in Appendix C. Community and roving air monitoring at the perimeter of the exclusion zone will be conducted during all intrusive Site activities in accordance with the NYSDOH Generic and Site-specific CAMPs.

All readings will be recorded and available for NYSDEC and NYSDOH project manager review. Any exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH project managers and will be included in the daily and monthly progress reports, and in the FER. Response actions for any exceedances will also be included in each report.

Volatile organic compounds (VOCs) must be monitored at the downwind and upwind perimeters of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified utilizing two RAE Systems MiniRAE 3000 Photoionization Detectors (PID) units or equivalent. Concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations utilizing two TSI DustTrak™ DRX Aerosol Monitors (DustTrak) or equivalent. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped, and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

CAMP stations will be placed strategically every day based on wind direction.

Exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers and included in the Daily Report.

5.4.13 ODOR, DUST AND NUISANCE CONTROL PLAN

The FER will include the following certification by the Remedial Engineer: “I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology defined in the Remedial Action Work Plan.” The following nuisances are described with the following prevention methodologies.

5.4.13.1 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-Site. Specific odor control methods to be used on a routine basis will include the use of a PID to screen for VOCs and olfactory observations by a field technician. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Volunteer's Remedial Engineer, who is responsible for certifying the FER.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils; [add other elements as appropriate]. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

Where odor nuisances have developed during remedial work and cannot be corrected, or where the release of nuisance odors cannot otherwise be avoided due to on-Site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering excavation and handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

5.4.13.2 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-Site work will include, at a minimum, the items listed below:

- Water will be available on-site at suitable supply and pressure for use in dust control.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.

- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water spraying.

5.4.13.3 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during Site clearing and Site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work and will conform, at a minimum, to NYCDEP noise control standards.

6.0 Residual Contamination to Remain On-site

Since residual soil vapor contamination will exist beneath the Site after the remedy is complete, Engineering and Institutional Controls (ECs and ICs) are required to protect human health and the environment. These ECs and ICs are described hereafter. Long-term management of EC/ICs and of residual contamination will be executed under a Site specific Site Management Plan (SMP) that will be developed and included in the FER.

ECs will be implemented to protect public health and the environment by appropriately managing residual contamination. The Controlled Property (the Site) will have [number] primary EC systems. These are:

(1) Composite Cover System

(2) Active Sub-Slab Depressurization System (SSDS)

(3) Soil Vapor Extraction System (SVE)

(4) Vapor Barrier

The FER will report residual contamination on the Site in tabular and map form. This will include presentation of exceedances of both Track 1 and Track 4 sites.

7.0 Engineering Controls: Site Cover System

The intent of this project is to achieve a Track 4 Restricted Residential Use Cleanup, and Engineering Controls (ECs) are anticipated for temporary use.

The following engineering control will be incorporated into the project as part of the development for a Track 4 cleanup:

(1) Composite Cover System

Composite Cover System

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. This composite cover system will be comprised of 6 inches of reinforced concrete slab-on-grade underlain by 6 inches of clean sub-base material in building areas.

A diagram showing the design detail for each cover type is shown in Figure 13.

An Excavation Plan will be included in the Site Management Plan and will outline the procedures to be followed if the site cover system and underlying residual contamination are disturbed after the Remedial Action is complete.

The components of the site cover system will be documented in the Final Engineering Report. Maintenance of this site cover system will be described in the SMP. The FER will include a PE-certified letter (on company letterhead) from the primary contractor responsible for installation oversight and field inspections and a copy of the manufacturer's certificate of warranty.

8.0 Engineering Controls: Treatment Systems

The intent of this project is to achieve a Track 4 Restricted Residential Use Cleanup, and Engineering Controls (ECs) are anticipated for temporary use.

The following engineering control will be incorporated into the project as part of the development as a temporary measure:

(1) Active Sub-Slab Depressurization System (SSDS)

(2) Soil Vapor Extraction System (SVE)

Active Sub-Slab Depressurization System

An active SSDS will be installed as an engineering control beneath the entirety of the cellar. The SSDS will consist of a network of horizontal pipe set in the middle of a gas permeable layer approximately 6-inches in depth and immediately beneath the concrete building slab and vapor barrier system, respectively. Based on soil vapor detections, the SSDS consists of eighteen (18) loops installed underneath the building foundation. The horizontal piping will consist of 4-inch Schedule 40 perforated PVC pipes connected to a 4-inch cast iron riser pipe that penetrates the slab and travels vertically through the building to the roof. The riser system will consist of six (6) risers for the 18 loops. The gas permeable layer will consist of a 6-inch thick layer of ¾-inch crushed bluestone located beneath the entirety of the cellar slab and surrounding the perforated pipe located in an SSDS trenching system. The SSDS trenches will be located at a depth of approximately 6-inches below the building slab and to be backfilled entirely with crushed bluestone. A Radon Away RP265 vacuum blowers or approved equal will be installed and hardwired on the roof line. The vertical risers will terminate at the roof line with a rain cap to prevent rain infiltration. The pressure gauges and alarms will consist of a magnehelic pressure gauge and a Radon Away alarm (or approved equal) and will be located on the first floor. The PE for the Remedial Action will inspect the system and confirm that the effluent discharge point is a minimum of 10 feet from any operable window or air intake for any building. Efficacy of the SSDS will be confirmed via the thirty-six (36) monitoring/vacuum points installed in the cellar. A baseline indoor air sampling prior to SSDS start-up will be conducted as well as a post start-up indoor air sampling. A sampling plan will be provided for NYSDEC review and approval prior to any sampling once the vacuum points are installed.

If results of the testing indicate that the active system is not needed, the system will be converted to a passive SSDS by means of removal of the electrically powered vacuum blowers and to be replaced with wind-powered inline centrifugal vent fans above the roof line for each riser/loop.

The SSDS is an engineering control. The system will be inspected, and its performance certified at specified intervals as required by the Site Management Plan. Maintenance of this SSDS will be described in the Site Management Plan in the Final Engineering Report.

The conceptual layout of the SSDS is shown in Figure 14. The details of the SSDS are shown in Figure 15. SSDS specification sheets are included in Appendix K.

Soil Vapor Extraction System

The target zone for the SVE is the unsaturated soil above the water table (i.e., vadose zone) across the entire footprint of the Site where elevated concentrations of CVOCs were identified in soil vapor. The conceptual design includes three SVE wells to be installed approximately 20 to 25 feet apart with an estimated radius of influence of 20. Each well will be installed 10.5 feet below the building slab and will consist of 2" SCH 40 PVC screen. The SVE wells will horizontally be connected with 3" SCH 40 PVC pipes under the slab. The SVE wells will be manifolded under the slab and will have a 12" cleanout. The manifolded wells will be connected to three SVE risers, which will extend through the cellar floor slab to the roof enclosed in sheetrock within the building footprint or to the roof secured to an outside wall of the building. The riser will route VOC-laden vapor through a knockout tank and a 1.5 horse power (HP) regenerative blower. Prior to exiting the building, the vapors from the SVE system will be treated by carbon. The final riser location will be determined based on new building conditions. Riser will be terminated at least 8 feet above the finished floor and will include a control panel to assist with automatic operation and remote observation of the system, and its own electrical panel for ease of installation. It is anticipated that the SVE system will require 208 Volt, three phase power. Prior to disposal, the knockout tank water and spent carbon will be sampled and analyzed. The wastewater will be disposed of in accordance with all applicable Federal, State, and Local laws and regulations.

A pre-design investigation/pilot study may be conducted, and a separate work plan may be submitted to the NYSDEC prior to the pilot study to determine the actual radius of influence (ROI) and size out the blower for the system.

The SVE is an engineering control. The system will be inspected, and its performance certified at specified intervals as required by the Site Management Plan. Maintenance of the SVE will be described in the Site Management Plan in the Final Engineering Report.

The conceptual layout of the SVE is shown in Figure 16. The details of the SVE are shown in Figure 17 and 18.

Track 1 cleanup is conditional only if the active SSDS and SVE (engineering controls) operate for no more than five years as long as it has been demonstrated to the NYSDEC and NYSDOH satisfaction that there has been a bulk reduction in soil vapor contamination. If a conditional Track 1 cleanup is not achieved, the Track 2 alternative will be implemented as a contingency. Track 2 alternative allows for the use of long-term ICs and ECs to address contamination related to soil vapor.

9.0 Criteria for Completion of Remediation/Termination of Remedial Systems

9.1 COMPOSITE COVER SYSTEM

The composite cover system is a permanent control, and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

9.2 SUB-SLAB DEPRESSURIZATION SYSTEM (SSDS)

The active SSD system will not be discontinued without written approval by NYSDEC and NYSDOH. A proposal to discontinue the active SSD system may be submitted by the property owner based on confirmatory data that justifies such request. Systems will remain in place and operational until permission to discontinue use is granted in writing by NYSDEC and NYSDOH.

9.3 SOIL VAPOR EXTRACTION SYSTEM (SVE)

The SVE system will not be discontinued without written approval by NYSDEC and NYSDOH. A proposal to discontinue the SVE system may be submitted by the property owner based on confirmatory data that justifies such request. Systems will remain in place and operational until permission to discontinue use is granted in writing by NYSDEC and NYSDOH.

10.0 Institutional Controls

After the remedy is complete, the Site will have residual contamination remaining in place. Engineering Controls (ECs) for the residual contamination have been incorporated into the remedy to render the overall Site remedy protective of public health and the environment. Two elements have been designed to ensure continual and proper management of residual contamination in perpetuity: an Environmental Easement and a Site Management Plan (SMP).

All as-built drawings, diagrams, calculation and manufacturer documentation for treatment systems will be presented in the FER. A Site -specific Environmental Easement will be recorded with NYC Office of the City Register to provide an enforceable means of ensuring the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It requires that the grantor of the Environmental Easement and the grantor's successors and assigns adhere to all Engineering and Institutional Controls (ECs/ICs) placed on this Site by this NYSDEC-approved remedy. ICs provide restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. The SMP describes appropriate methods and procedures to ensure compliance with all ECs and ICs that are required by the Environmental Easement. Once the SMP has been approved by the NYSDEC, compliance with the SMP is required by the grantor of the Environmental Easement and grantor's successors and assigns.

10.1 Environmental Easement

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left on-Site after the Remedial Action is complete. As part of this remedy, an Environmental Easement approved by NYSDEC will be filed and recorded with the NYC Office of the City Register. The Environmental Easement will be submitted as part of the Final Engineering Report.

The Environmental Easement renders the Site a Controlled Property. The Environmental Easement must be recorded with NYC Office of the City Register before the Certificate of Completion can be issued by NYSDEC. A series of Institutional Controls are required under this remedy to implement, maintain and monitor these Engineering Control systems, prevent future exposure to

residual contamination by controlling disturbances of the subsurface soil and restricting the use of the Site to restricted residential use(s) only. These Institutional Controls are requirements or restrictions placed on the Site that are listed in, and required by, the Environmental Easement. Institutional Controls can, generally, be subdivided between controls that support Engineering Controls, and those that place general restrictions on Site usage or other requirements. Institutional Controls in both of these groups are closely integrated with the SMP, which provides all of the methods and procedures to be followed to comply with this remedy.

The Institutional Controls that support Engineering Controls are:

- Compliance with the Environmental Easement by the Grantee and the Grantee's successors and adherence of all elements of the SMP is required;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- A site cover system consisting of asphalt covered roads, concrete covered sidewalks, and concrete building slabs must be inspected, certified and maintained as required in the SMP;
- A soil vapor mitigation system consisting of a sub-slab depressurization system under all building structures must be inspected, certified, operated and maintained as required by the SMP;
- All Engineering Controls on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP;
- Soil vapor, and other environmental or public health monitoring must be performed as defined in the SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP;
- On-Site environmental monitoring devices, including but not limited to, [groundwater monitor wells and soil vapor probes], must be protected and replaced as necessary to ensure proper functioning in the manner specified in the SMP;
- Engineering Controls may not be discontinued without an amendment or extinguishment of the Environmental Easement.

Adherence to these Institutional Controls for the Site is mandated by the Environmental Easement and will be implemented under the SMP (discussed in the next section). The Controlled Property (Site) will also have a series of Institutional Controls in the form of Site restrictions and requirements. The Site restrictions that apply to the Controlled Property are:

- Vegetable gardens and farming on the Controlled Property are prohibited;
- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose;
- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless they are conducted in accordance with the soil management provisions in the SMP;
- The Controlled Property may be used for restricted commercial use only, provided the long-term Engineering and Institutional Controls included in the SMP are employed;
- The Controlled Property may not be used for a higher level of use, such as residential use without an amendment or extinguishment of this Environmental Easement;
- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This yearly statement must be certified by an expert that the NYSDEC finds acceptable.

10.2 Site Management Plan

Site Management is the last phase of remediation and begins with the approval of the FER and issuance of the Certificate of Completion (COC) for the Remedial Action. The SMP is submitted as part of the FER but will be written in a manner that allows its removal and use as a complete

and independent document. Site Management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all Site Management responsibilities defined in the Environmental Easement and the SMP are performed.

The SMP should include methods to incorporate and track GSR. Measures should be taken to maintain a cost-effective, protective remedy that remains conscientious of the Site's environmental footprint. At a minimum, the following should be assessed: waste generation, energy usage, emissions, and water usage.

The SMP is intended to provide a detailed description of the procedures required to manage residual contamination left in place at the Site following completion of the Remedial Action in accordance with the BCA with the NYSDEC. This includes: (1) development, implementation, and management of all Engineering and Institutional Controls; (2) development and implementation of monitoring systems and a Monitoring Plan; (3) development of a plan to operate and maintain any treatment, collection, containment, or recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual); (4) submittal of Site Management Reports, performance of inspections and certification of results, and demonstration of proper communication of Site information to NYSDEC; and (5) defining criteria for termination of treatment system operation.

To address these needs, this SMP will include four plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. The SMP will be prepared in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation and the guidelines provided by NYSDEC.

Site management activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annually. The SMP will be based on the certifying period relative to the date of issuance of the COC. The first submission will be due16 months after

the issuance of the COC, and annually (or at another frequency as approved by NYSDEC) thereafter.

No exclusions for handling of residual contaminated soils will be provided in the SMP. All handling of residual contaminated material will be subject to provisions contained in the SMP.

11.0 Final Engineering Report

A Final Engineering Report (FER) will be submitted to NYSDEC following implementation of the Remedial Action defined in this RAWP. The FER provides the documentation that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The FER will provide a comprehensive account of the locations and characteristics of all material removed from the Site including the surveyed map(s) of all sources. The Final Engineering Report will include as-built drawings for all constructed elements, calculation and manufacturer documentation for treatment systems, certifications, manifests, bills of lading as well as the complete SMP. The FER will provide a description of the changes in the Remedial Action from the elements provided in the RAWP and associated design documents. The FER will provide a tabular summary of all performance evaluation sampling results and all material characterization results and other sampling, and chemical analysis performed as part of the Remedial Action. The FER will provide test results demonstrating that all mitigation and remedial systems are functioning properly. The FER will be prepared in conformance with DER-10.

Where determined to be necessary by NYSDEC, a Financial Assurance Plan will be required to ensure the sufficiency of revenue to perform long-term operations, maintenance and monitoring tasks defined in the Site Management Plan and Environmental Easement. This determination will be made by NYSDEC in the context of the FER review.

The FER will include written and photographic documentation of all remedial work performed under this remedy.

The FER will include an itemized tabular description of actual costs incurred during all aspects of the Remedial Action.

The FER will provide a thorough summary of all residual contamination left on the Site after the remedy is complete. Residual contamination includes all contamination that exceeds the Track 1 Unrestricted Use SCO in 6NYCRR Part 375-6. A table that shows exceedances from Track 1 Unrestricted SCOs for all soil/fill remaining at the Site after the Remedial Action and a map that shows the location and summarizes exceedances from Track 1 Unrestricted SCOs for all soil/fill remaining at the Site after the Remedial Action will be included in the FER.

The FER will provide a thorough summary of all residual contamination that exceeds the SCOs defined for the Site in the RAWP and must provide an explanation for why the material was not removed as part of the Remedial Action. A table that shows residual contamination in excess of Site SCOs and a map that shows residual contamination in excess of Site SCOs will be included in the FER.

The FER will include an accounting of the destination of all material removed from the Site, including excavated contaminated soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. It will provide an accounting of the origin and chemical quality of all material imported onto the Site.

The FER must include a discussion of the green remediation practices/technologies employed throughout the remedial program. A final footprint analysis using a DER accepted model, and any tracking methods used through the construction including restoration activities. Before approval of a FER and issuance of a COC, all project reports must be submitted in digital form on electronic media (PDF).

11.1 Certifications

The following certification will appear in front of the Executive Summary of the Final Engineering Report. The FER will be prepared, stamped and the following certification signed by an individual licensed or otherwise authorized in accordance with article 145 of the education law to practice the profession of engineering. The certification will include the following statements:

I, Ariel Czemerinski, am currently a registered professional engineer licensed by the State of New York, I had primary direct responsibility for implementation of the remedial program activities,

and I certify that the Remedial Action Work Plan was implemented and that all construction activities were completed in substantial conformance with the Department-approved Remedial Action Work Plan.

I certify that the data submitted to the Department with this Final Engineering Report demonstrates that the remediation requirements set forth in the Remedial Action Work Plan and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established for the remedy.

I certify that all use restrictions, Institutional Controls, Engineering Controls, and/or any operation and maintenance requirements applicable to the Site are contained in an environmental easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

I certify that a Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by Department.

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

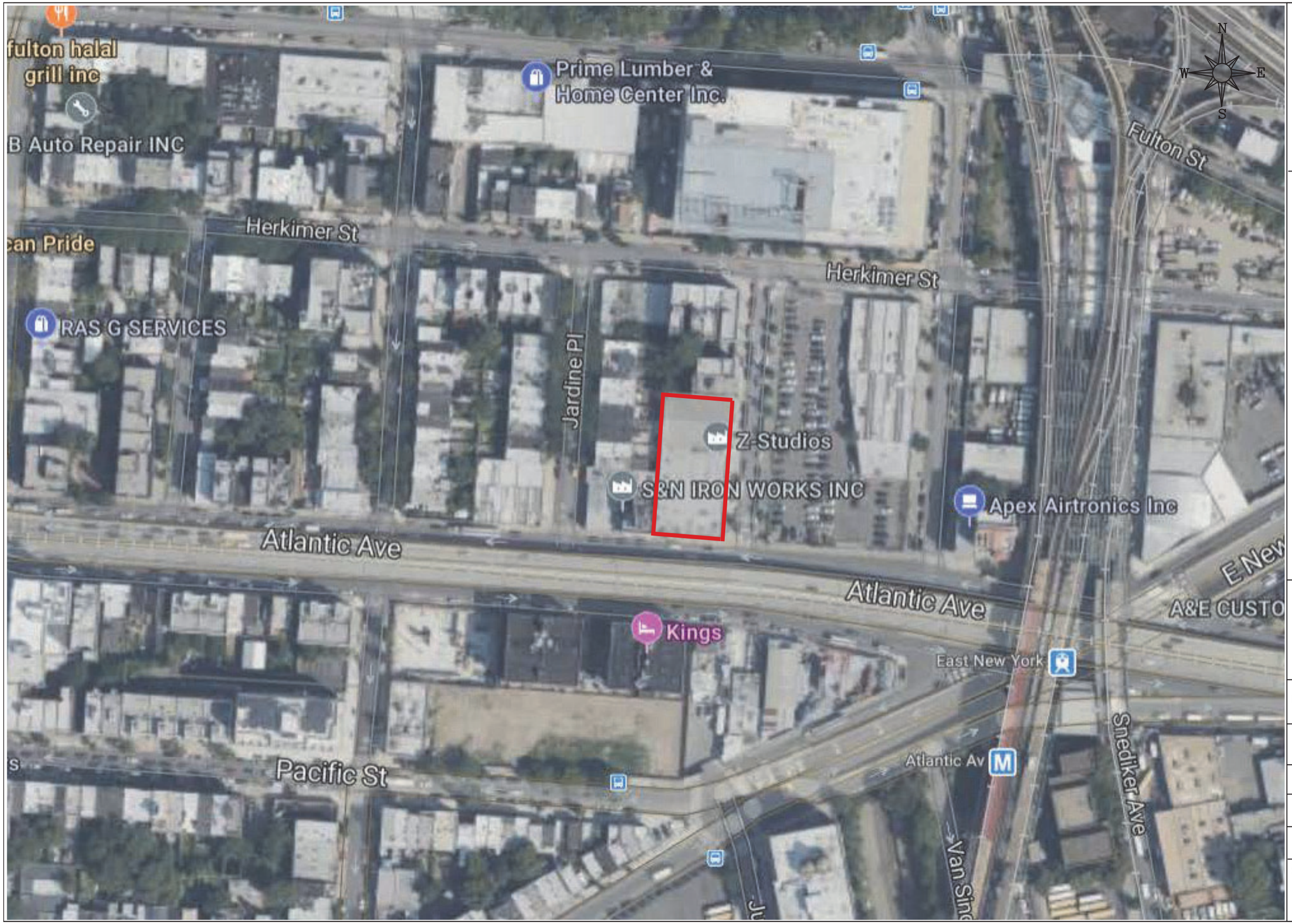
I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Ariel Czemerinski, of AMC Engineering, PLLC, am certifying as Owner’s Designated Site Representative: and I have been authorized and designated by all site owners to sign this certification for the site.

It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.

12.0 Schedule

The remedial action will begin with mobilization of equipment and material to the Site which will begin immediately after the RAWP approval. The remedy, which will be implemented in accordance with this RAWP, is anticipated to take approximately 5 months to complete. It is expected that the COC will be achieved in 2027. The estimated schedule for remedial activities is provided in Table 8.

FIGURES



vEKtor consultants

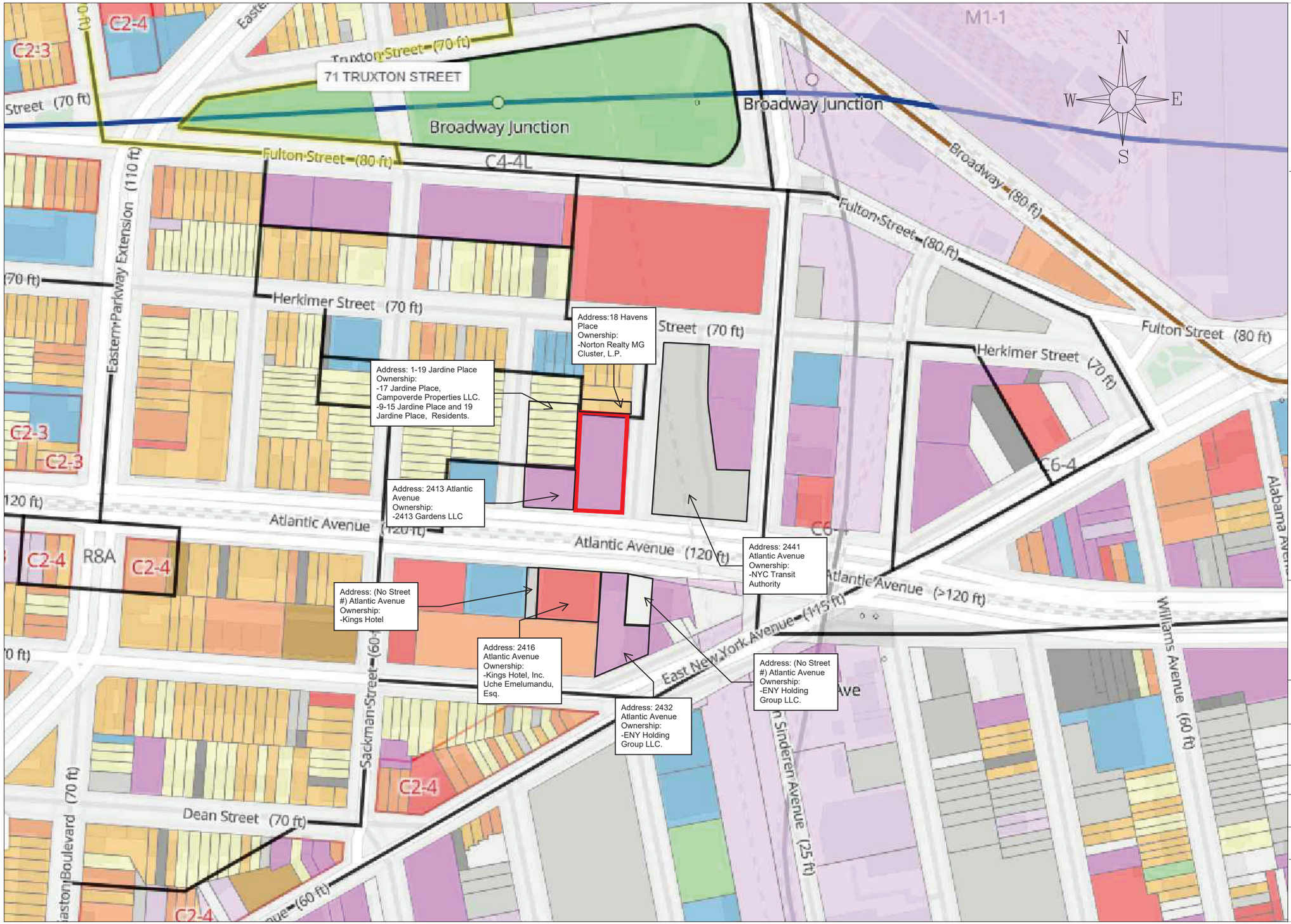
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e: info@vektorconsultants.com
www.vektorconsultants.com

LEGEND:

SITE BOUNDARY

SCALE: 0' 100' 200'

FIGURE NO.	1
FIGURE NAME:	SITE LOCATION MAP
REPORT:	CHASP
DATE:	03/17/2026
DRAWN BY:	AK
SITE ADDRESS:	2425 ATLANTIC AVENUE, BROOKLYN, NEW YORK 11233



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t: +1.347.871.0750
f: +1.347.402.7735
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Legend:

- Site Boundary
- One and Two Family Buildings
- Multi-Family Walk-Up Buildings
- Multi-Family Elevator Buildings
- Mixed Residential and Commercial Buildings
- Commercial and Office Buildings
- Industrial and Manufacturing
- Transportation and Utility
- Public Facilities and Institutions
- Open Space and Outdoor Recreation
- Parking Facilities
- Vacant Land
- Other

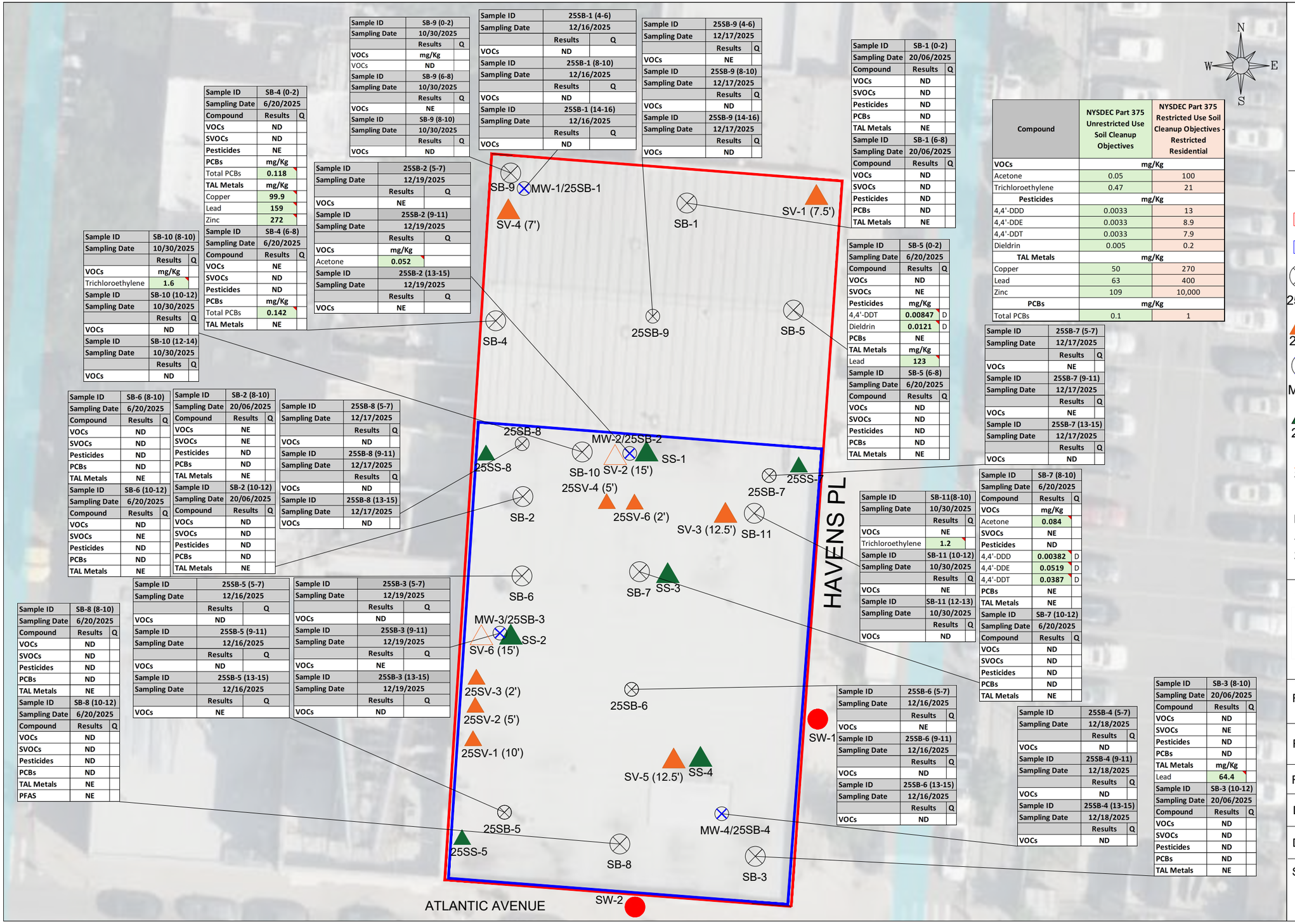
Notes:

1. Base Map provided by Google Maps

Scale:

0 200' 400'

Figure No.	2
Figure Name:	SURROUNDING AREA USAGE MAP
Report:	RAWP
Date:	3/24/26
Drawn By:	KB
Site Address:	2425 ATLANTIC AVENUE BROOKLYN, NY 11233



Sample ID	SB-9 (0-2)	
Sampling Date	10/30/2025	
	Results	Q
VOCs	mg/Kg	
VOCs	ND	
Sample ID	SB-9 (6-8)	
Sampling Date	10/30/2025	
	Results	Q
VOCs	NE	
Sample ID	SB-9 (8-10)	
Sampling Date	10/30/2025	
	Results	Q
VOCs	ND	

Sample ID	25SB-1 (4-6)	
Sampling Date	12/16/2025	
	Results	Q
VOCs	ND	
Sample ID	25SB-1 (8-10)	
Sampling Date	12/16/2025	
	Results	Q
VOCs	ND	
Sample ID	25SB-1 (14-16)	
Sampling Date	12/16/2025	
	Results	Q
VOCs	ND	

Sample ID	25SB-9 (4-6)	
Sampling Date	12/17/2025	
	Results	Q
VOCs	NE	
Sample ID	25SB-9 (8-10)	
Sampling Date	12/17/2025	
	Results	Q
VOCs	ND	
Sample ID	25SB-9 (14-16)	
Sampling Date	12/17/2025	
	Results	Q
VOCs	ND	

Sample ID	SB-1 (0-2)	
Sampling Date	20/06/2025	
Compound	Results	Q
VOCs	ND	
SVOCs	ND	
Pesticides	ND	
PCBs	ND	
TAL Metals	NE	
Sample ID	SB-1 (6-8)	
Sampling Date	20/06/2025	
Compound	Results	Q
VOCs	ND	
SVOCs	ND	
Pesticides	ND	
PCBs	ND	
TAL Metals	NE	

Compound	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	NYSDEC Part 375 Restricted Use Soil Cleanup Objectives - Restricted Residential
VOCs	mg/Kg	
Acetone	0.05	100
Trichloroethylene	0.47	21
Pesticides	mg/Kg	
4,4'-DDD	0.0033	13
4,4'-DDE	0.0033	8.9
4,4'-DDT	0.0033	7.9
Dieldrin	0.005	0.2
TAL Metals	mg/Kg	
Copper	50	270
Lead	63	400
Zinc	109	10,000
PCBs	mg/Kg	
Total PCBs	0.1	1

Sample ID	SB-4 (0-2)	
Sampling Date	6/20/2025	
Compound	Results	Q
VOCs	ND	
SVOCs	ND	
Pesticides	NE	
PCBs	mg/Kg	
Total PCBs	0.118	
TAL Metals	mg/Kg	
Copper	99.9	
Lead	159	
Zinc	272	
Sample ID	SB-4 (6-8)	
Sampling Date	6/20/2025	
Compound	Results	Q
VOCs	NE	
SVOCs	ND	
Pesticides	ND	
PCBs	mg/Kg	
Total PCBs	0.142	
TAL Metals	NE	

Sample ID	25SB-2 (5-7)	
Sampling Date	12/19/2025	
	Results	Q
VOCs	NE	
Sample ID	25SB-2 (9-11)	
Sampling Date	12/19/2025	
	Results	Q
VOCs	mg/Kg	
Acetone	0.052	
Sample ID	25SB-2 (13-15)	
Sampling Date	12/19/2025	
	Results	Q
VOCs	NE	

Sample ID	SB-5 (0-2)	
Sampling Date	6/20/2025	
Compound	Results	Q
VOCs	ND	
SVOCs	NE	
Pesticides	mg/Kg	
4,4'-DDT	0.00847	D
Dieldrin	0.0121	D
PCBs	NE	
TAL Metals	mg/Kg	
Lead	123	
Sample ID	SB-5 (6-8)	
Sampling Date	6/20/2025	
Compound	Results	Q
VOCs	ND	
SVOCs	ND	
Pesticides	ND	
PCBs	ND	
TAL Metals	NE	

Sample ID	SB-10 (8-10)	
Sampling Date	10/30/2025	
	Results	Q
VOCs	mg/Kg	
Trichloroethylene	1.6	
Sample ID	SB-10 (10-12)	
Sampling Date	10/30/2025	
	Results	Q
VOCs	ND	
Sample ID	SB-10 (12-14)	
Sampling Date	10/30/2025	
	Results	Q
VOCs	ND	

Sample ID	SB-6 (8-10)	
Sampling Date	6/20/2025	
Compound	Results	Q
VOCs	ND	
SVOCs	ND	
Pesticides	ND	
PCBs	ND	
TAL Metals	NE	
Sample ID	SB-6 (10-12)	
Sampling Date	6/20/2025	
Compound	Results	Q
VOCs	ND	
SVOCs	NE	
Pesticides	ND	
PCBs	ND	
TAL Metals	NE	

Sample ID	SB-2 (8-10)	
Sampling Date	20/06/2025	
Compound	Results	Q
VOCs	NE	
SVOCs	NE	
Pesticides	ND	
PCBs	ND	
TAL Metals	NE	
Sample ID	SB-2 (10-12)	
Sampling Date	20/06/2025	
Compound	Results	Q
VOCs	ND	
SVOCs	ND	
Pesticides	ND	
PCBs	ND	
TAL Metals	NE	

Sample ID	25SB-8 (5-7)	
Sampling Date	12/17/2025	
	Results	Q
VOCs	ND	
Sample ID	25SB-8 (9-11)	
Sampling Date	12/17/2025	
	Results	Q
VOCs	ND	
Sample ID	25SB-8 (13-15)	
Sampling Date	12/17/2025	
	Results	Q
VOCs	ND	

Sample ID	25SB-7 (5-7)	
Sampling Date	12/17/2025	
	Results	Q
VOCs	NE	
Sample ID	25SB-7 (9-11)	
Sampling Date	12/17/2025	
	Results	Q
VOCs	NE	
Sample ID	25SB-7 (13-15)	
Sampling Date	12/17/2025	
	Results	Q
VOCs	ND	

Sample ID	SB-11(8-10)	
Sampling Date	10/30/2025	
	Results	Q
VOCs	NE	
Trichloroethylene	1.2	
Sample ID	SB-11 (10-12)	
Sampling Date	10/30/2025	
	Results	Q
VOCs	NE	
Sample ID	SB-11 (12-13)	
Sampling Date	10/30/2025	
	Results	Q
VOCs	ND	

Sample ID	SB-7 (8-10)	
Sampling Date	6/20/2025	
Compound	Results	Q
VOCs	mg/Kg	
Acetone	0.084	
SVOCs	NE	
Pesticides	ND	
4,4'-DDD	0.00382	D
4,4'-DDE	0.0519	D
4,4'-DDT	0.0387	D
PCBs	NE	
TAL Metals	NE	
Sample ID	SB-7 (10-12)	
Sampling Date	6/20/2025	
Compound	Results	Q
VOCs	ND	
SVOCs	ND	
Pesticides	ND	
PCBs	ND	
TAL Metals	NE	

Sample ID	SB-8 (8-10)	
Sampling Date	6/20/2025	
Compound	Results	Q
VOCs	ND	
SVOCs	ND	
Pesticides	ND	
PCBs	ND	
TAL Metals	NE	
Sample ID	SB-8 (10-12)	
Sampling Date	6/20/2025	
Compound	Results	Q
VOCs	ND	
SVOCs	ND	
Pesticides	ND	
PCBs	ND	
TAL Metals	NE	
PFAS	NE	

Sample ID	25SB-5 (5-7)	
Sampling Date	12/16/2025	
	Results	Q
VOCs	ND	
Sample ID	25SB-5 (9-11)	
Sampling Date	12/16/2025	
	Results	Q
VOCs	ND	
Sample ID	25SB-5 (13-15)	
Sampling Date	12/16/2025	
	Results	Q
VOCs	NE	

Sample ID	25SB-3 (5-7)	
Sampling Date	12/19/2025	
	Results	Q
VOCs	ND	
Sample ID	25SB-3 (9-11)	
Sampling Date	12/19/2025	
	Results	Q
VOCs	NE	
Sample ID	25SB-3 (13-15)	
Sampling Date	12/19/2025	
	Results	Q
VOCs	ND	

Sample ID	25SB-6 (5-7)	
Sampling Date	12/16/2025	
	Results	Q
VOCs	NE	
Sample ID	25SB-6 (9-11)	
Sampling Date	12/16/2025	
	Results	Q
VOCs	ND	
Sample ID	25SB-6 (13-15)	
Sampling Date	12/16/2025	
	Results	Q
VOCs	ND	

Sample ID	25SB-4 (5-7)	
Sampling Date	12/18/2025	
	Results	Q
VOCs	ND	
Sample ID	25SB-4 (9-11)	
Sampling Date	12/18/2025	
	Results	Q
VOCs	ND	
Sample ID	25SB-4 (13-15)	
Sampling Date	12/18/2025	
	Results	Q
VOCs	ND	

Sample ID	SB-3 (8-10)	
Sampling Date	20/06/2025	
Compound	Results	Q
VOCs	ND	
SVOCs	NE	
Pesticides	ND	
PCBs	ND	
TAL Metals	mg/Kg	
Lead	64.4	
Sample ID	SB-3 (10-12)	
Sampling Date	20/06/2025	
Compound	Results	Q
VOCs	ND	
SVOCs	ND	
Pesticides	ND	
PCBs	ND	
TAL Metals	NE	

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Legend:

- SITE BOUNDARY
- CELLAR FOOTPRINT
- SOIL BORING LOCATION AND ID (2025) — 25SB-X
- SOIL VAPOR POINT LOCATION AND ID (2025) — 25SV-X
- MONITORING WELL AND SOIL BORING LOCATIONS AND ID — MW-X/25SB-X
- SUB-SLAB POINT LOCATION AND ID (2025) — 25SS-X
- SOIL VAPOR POINT LOCATION AND ID (2025) – NO SAMPLE COLLECTED DUE TO FAULTY REGULATORS — SV-X

Notes:

1. Base Map provided by Google Earth
2. Any Regulatory Exceedences are color coded by Regulation

Scale: 0 – 25' – 50'

Figure No.	3
Figure Name:	MAP OF SOIL CHEMISTRY RESULTS
Report:	RIR
Date:	02/18/2026
Drawn By:	KB
Site Address:	2425 ATLANTIC AVENUE BROOKLYN, NY 11233



Sample ID	25MW-1	
Sampling Date	12/22/2025	
Compound	Results	Q
VOCs	NE	
SVOCs	NE	

Sample ID	25MW-2	
Sampling Date	12/22/2025	
Compound	Results	Q
VOCs	NE	
SVOCs	ND	

Sample ID	25MW-3	
Sampling Date	12/22/2025	
Compound	Results	Q
VOCs	NE	
SVOCs	ND	

Sample ID	25MW-4	
Sampling Date	12/22/2025	
Compound	Results	Q
VOCs	ug/L	
Benzene	1.32	
SVOCs	ND	

Sample ID	SW-2	
Sampling Date	11/11/2025	
Compound	Result	Q
VOCs	ug/L	
Chloroform	8.78	
SVOCs	NT	
Pesticides	NT	
Total Metals	NT	
Dissolved Metals	NT	
PCBs	NT	
PFAS	NT	

Compound	NYSDEC TOGS 1.1.3
VOCs	ug/L
Benzene	1
Chloroform	7
Methylene chloride	5
Total & Dissolved Metals	ug/L
Beryllium	3
Chromium	50
Copper	200
Magnesium	35,000
Manganese	300
Nickel	100
Sodium	20,000

Sample ID	SW-1	
Sampling Date	11/11/2025	
Compound	Result	Q
VOCs	ug/L	
Chloroform	11.8	D
Methylene chloride	6.08	BD
SVOCs	NE	
Pesticides	ND	
Total Metals	ug/L	
Beryllium	3.82	
Chromium	476	
Copper	250	
Magnesium	35,500	
Manganese	12,300	
Nickel	368	
Sodium	92,300	
Dissolved Metals	ug/L	
Beryllium	3.41	
Chromium	1,270	
Copper	299	
Magnesium	42,800	
Manganese	4,590	
Nickel	258	
Sodium	77,000	
PCBs	ND	
PFAS	NT	

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Legend:

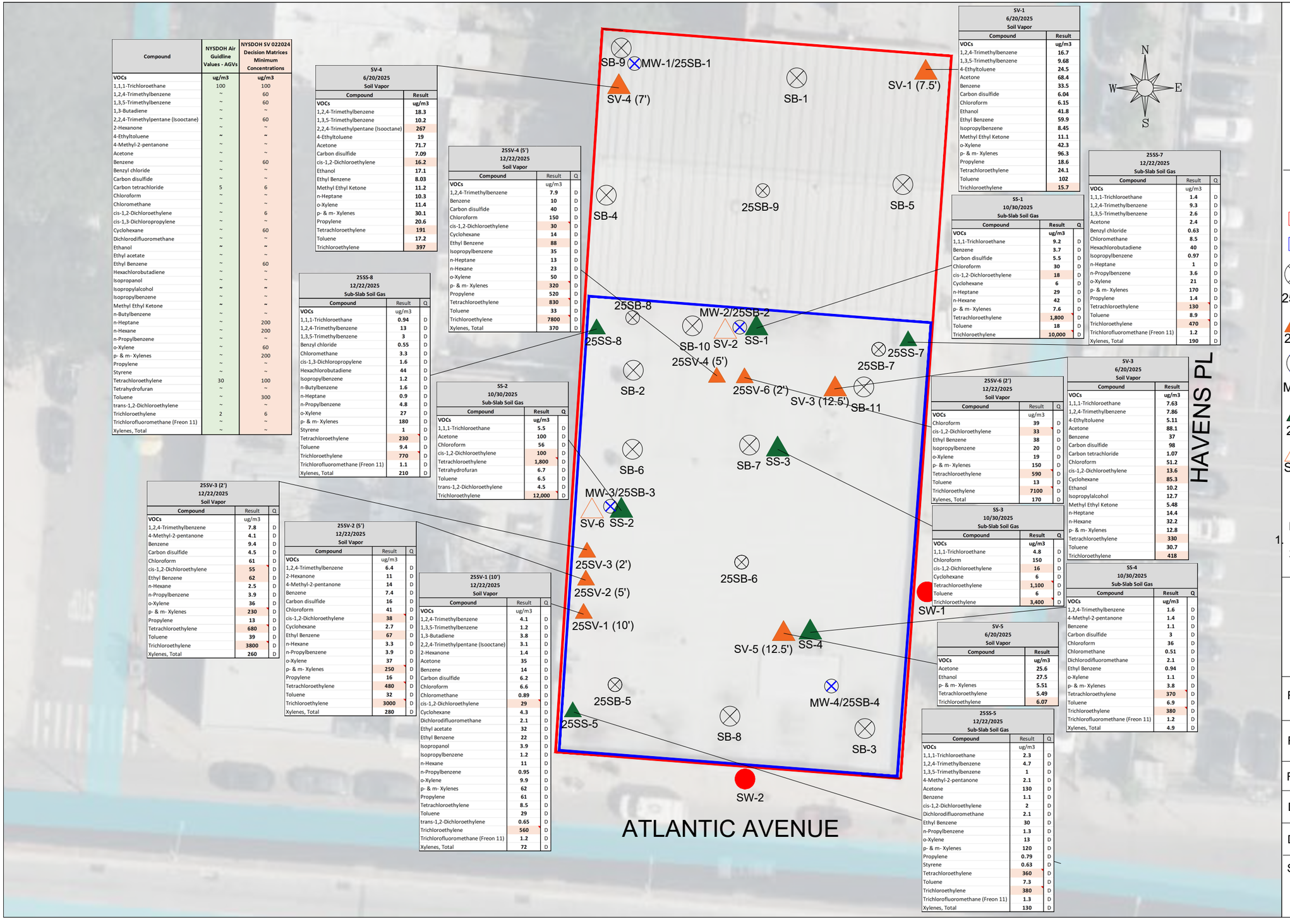
- SITE BOUNDARY
- CELLAR FOOTPRINT
- SOIL BORING LOCATION AND ID (2025) — 25SB-X
- SOIL VAPOR POINT LOCATION AND ID (2025) — 25SV-X
- MONITORING WELL AND SOIL BORING LOCATIONS AND ID — MW-X/25SB-X
- SUB-SLAB POINT LOCATION AND ID (2025) — 25SS-X
- SOIL VAPOR POINT LOCATION AND ID (2025) – NO SAMPLE COLLECTED DUE TO FAULTY REGULATORS — SV-X

Notes:

1. Base Map provided by Google Earth
2. Any Regulatory Exceedences are color coded by Regulation

Scale: 0 — 25' — 50'

Figure No.	4
Figure Name:	MAP OF GROUNDWATER CHEMISTRY RESULTS
Report:	RIR
Date:	01/14/2026
Drawn By:	KB
Site Address:	2425 Atlantic Avenue Brooklyn, NY 11233



Compound	NYSDOH Air Guidline Values - AGVs	NYSDOH SV 022024 Decision Matrices Minimum Concentrations
VOCs	**ug/m3**	**ug/m3**
1,1,1-Trichloroethane	100	100
1,2,4-Trimethylbenzene	~	60
1,3,5-Trimethylbenzene	~	60
1,3-Butadiene	~	~
2,2,4-Trimethylpentane (Isooctane)	~	60
2-Hexanone	~	~
4-Ethyltoluene	~	~
4-Methyl-2-pentanone	~	~
Acetone	~	~
Benzene	~	60
Benzyl chloride	~	~
Carbon disulfide	~	~
Carbon tetrachloride	5	6
Chloroform	~	~
Chloromethane	~	~
cis-1,2-Dichloroethylene	~	6
cis-1,3-Dichloropropylene	~	~
Cyclohexane	~	60
Dichlorodifluoromethane	~	~
Ethanol	~	~
Ethyl acetate	~	~
Ethyl Benzene	~	60
Hexachlorobutadiene	~	~
Isopropanol	~	~
Isopropylalcohol	~	~
Isopropylbenzene	~	~
Methyl Ethyl Ketone	~	~
n-Butylbenzene	~	~
n-Heptane	~	200
n-Hexane	~	200
n-Propylbenzene	~	~
o-Xylene	~	60
p- & m- Xylenes	~	200
Propylene	~	~
Styrene	~	~
Tetrachloroethylene	30	100
Tetrahydrofuran	~	~
Toluene	~	300
trans-1,2-Dichloroethylene	~	~
Trichloroethylene	2	6
Trichlorofluoromethane (Freon 11)	~	~
Xylenes, Total	~	~

SV-4
6/20/2025
Soil Vapor

Compound	Result
VOCs	**ug/m3**
1,2,4-Trimethylbenzene	**18.3**
1,3,5-Trimethylbenzene	**10.2**
2,2,4-Trimethylpentane (Isooctane)	**267**
4-Ethyltoluene	**19**
Acetone	**71.7**
Carbon disulfide	**7.09**
cis-1,2-Dichloroethylene	**16.2**
Ethanol	**17.1**
Ethyl Benzene	**8.03**
Methyl Ethyl Ketone	**11.2**
n-Heptane	**10.3**
o-Xylene	**11.4**
p- & m- Xylenes	**30.1**
Propylene	**20.6**
Tetrachloroethylene	**191**
Toluene	**17.2**
Trichloroethylene	**397**

25SV-4 (5')
12/22/2025
Soil Vapor

Compound	Result	Q
VOCs	ug/m3	
1,2,4-Trimethylbenzene	**7.9**	D
Benzene	**10**	D
Carbon disulfide	**40**	D
Chloroform	**150**	D
cis-1,2-Dichloroethylene	**30**	D
Cyclohexane	**14**	D
Ethyl Benzene	**88**	D
Isopropylbenzene	**35**	D
n-Heptane	**13**	D
n-Hexane	**23**	D
o-Xylene	**50**	D
p- & m- Xylenes	**320**	D
Propylene	**520**	D
Tetrachloroethylene	**830**	D
Toluene	**33**	D
Trichloroethylene	**7800**	D
Xylenes, Total	**370**	D

SV-1
6/20/2025
Soil Vapor

Compound	Result
VOCs	**ug/m3**
1,2,4-Trimethylbenzene	**16.7**
1,3,5-Trimethylbenzene	**9.68**
4-Ethyltoluene	**24.5**
Acetone	**68.4**
Benzene	**33.5**
Carbon disulfide	**6.04**
Chloroform	**6.15**
Ethanol	**41.8**
Ethyl Benzene	**59.9**
Isopropylbenzene	**8.45**
Methyl Ethyl Ketone	**11.1**
o-Xylene	**42.3**
p- & m- Xylenes	**96.3**
Propylene	**18.6**
Tetrachloroethylene	**24.1**
Toluene	**102**
Trichloroethylene	**15.7**

SS-1
10/30/2025
Sub-Slab Soil Gas

Compound	Result	Q
VOCs	**ug/m3**	
1,1,1-Trichloroethane	**9.2**	D
Benzene	**3.7**	D
Carbon disulfide	**5.5**	D
Chloroform	**30**	D
cis-1,2-Dichloroethylene	**18**	D
Cyclohexane	**6**	D
n-Heptane	**29**	D
n-Hexane	**42**	D
p- & m- Xylenes	**7.6**	D
Tetrachloroethylene	**1,800**	D
Toluene	**18**	D
Trichloroethylene	**10,000**	D

25SS-7
12/22/2025
Sub-Slab Soil Gas

Compound	Result	Q
VOCs	ug/m3	
1,1,1-Trichloroethane	**1.4**	D
1,2,4-Trimethylbenzene	**9.3**	D
1,3,5-Trimethylbenzene	**2.6**	D
Acetone	**2.4**	D
Benzyl chloride	**0.63**	D
Chloromethane	**8.5**	D
Hexachlorobutadiene	**40**	D
Isopropylbenzene	**0.97**	D
n-Heptane	**1**	D
n-Propylbenzene	**3.6**	D
o-Xylene	**21**	D
p- & m- Xylenes	**170**	D
Propylene	**1.4**	D
Tetrachloroethylene	**130**	D
Toluene	**8.9**	D
Trichloroethylene	**470**	D
Trichlorofluoromethane (Freon 11)	**1.2**	D
Xylenes, Total	**190**	D

25SS-8
12/22/2025
Sub-Slab Soil Gas

Compound	Result	Q
VOCs	ug/m3	
1,1,1-Trichloroethane	**0.94**	D
1,2,4-Trimethylbenzene	**13**	D
1,3,5-Trimethylbenzene	**3**	D
Benzyl chloride	**0.55**	D
Chloromethane	**3.3**	D
cis-1,3-Dichloropropylene	**1.6**	D
Hexachlorobutadiene	**44**	D
Isopropylbenzene	**1.2**	D
n-Butylbenzene	**1.6**	D
n-Heptane	**0.9**	D
n-Propylbenzene	**4.8**	D
o-Xylene	**27**	D
p- & m- Xylenes	**180**	D
Styrene	**1**	D
Tetrachloroethylene	**230**	D
Toluene	**9.4**	D
Trichloroethylene	**770**	D
Trichlorofluoromethane (Freon 11)	**1.1**	D
Xylenes, Total	**210**	D

SS-2
10/30/2025
Sub-Slab Soil Gas

Compound	Result	Q
VOCs	**ug/m3**	
1,1,1-Trichloroethane	**5.5**	D
Acetone	**100**	D
Chloroform	**56**	D
cis-1,2-Dichloroethylene	**100**	D
Tetrachloroethylene	**1,800**	D
Tetrahydrofuran	**6.7**	D
Toluene	**6.5**	D
trans-1,2-Dichloroethylene	**4.5**	D
Trichloroethylene	**12,000**	D

25SV-6 (2')
12/22/2025
Soil Vapor

Compound	Result	Q
VOCs	ug/m3	
Chloroform	**39**	D
cis-1,2-Dichloroethylene	**33**	D
Ethyl Benzene	**38**	D
Isopropylbenzene	**20**	D
o-Xylene	**19**	D
p- & m- Xylenes	**150**	D
Tetrachloroethylene	**590**	D
Toluene	**13**	D
Trichloroethylene	**7100**	D
Xylenes, Total	**170**	D

SV-3
6/20/2025
Soil Vapor

Compound	Result
VOCs	**ug/m3**
1,1,1-Trichloroethane	**7.63**
1,2,4-Trimethylbenzene	**7.86**
4-Ethyltoluene	**5.11**
Acetone	**88.1**
Benzene	**37**
Carbon disulfide	**98**
Carbon tetrachloride	**1.07**
Chloroform	**51.2**
cis-1,2-Dichloroethylene	**13.6**
Cyclohexane	**85.3**
Ethanol	**10.2**
Isopropylalcohol	**12.7**
Methyl Ethyl Ketone	**5.48**
n-Heptane	**14.4**
n-Hexane	**32.2**
p- & m- Xylenes	**12.8**
Tetrachloroethylene	**330**
Toluene	**30.7**
Trichloroethylene	**418**

SS-3
10/30/2025
Sub-Slab Soil Gas

Compound	Result	Q
VOCs	**ug/m3**	
1,1,1-Trichloroethane	**4.8**	D
Chloroform	**150**	D
cis-1,2-Dichloroethylene	**16**	D
Cyclohexane	**6**	D
Tetrachloroethylene	**1,100**	D
Toluene	**6**	D
Trichloroethylene	**3,400**	D

SS-4
10/30/2025
Sub-Slab Soil Gas

Compound	Result	Q
VOCs	**ug/m3**	
1,2,4-Trimethylbenzene	**1.6**	D
4-Methyl-2-pentanone	**1.4**	D
Benzene	**1.1**	D
Carbon disulfide	**3**	D
Chloroform	**36**	D
Chloromethane	**0.51**	D
Dichlorodifluoromethane	**2.1**	D
Ethyl Benzene	**0.94**	D
o-Xylene	**1.1**	D
p- & m- Xylenes	**3.8**	D
Tetrachloroethylene	**370**	D
Toluene	**6.9**	D
Trichloroethylene	**380**	D
Trichlorofluoromethane (Freon 11)	**1.2**	D
Xylenes, Total	**4.9**	D

SV-5
6/20/2025
Soil Vapor

Compound	Result
VOCs	**ug/m3**
Acetone	**25.6**
Ethanol	**27.5**
p- & m- Xylenes	**5.51**
Tetrachloroethylene	**5.49**
Trichloroethylene	**6.07**

25SS-5
12/22/2025
Sub-Slab Soil Gas

Compound	Result	Q
VOCs	ug/m3	
1,1,1-Trichloroethane	**2.3**	D
1,2,4-Trimethylbenzene	**4.7**	D
1,3,5-Trimethylbenzene	**1**	D
4-Methyl-2-pentanone	**2.1**	D
Acetone	**130**	D
Benzene	**1.1**	D
cis-1,2-Dichloroethylene	**2**	D
Dichlorodifluoromethane	**2.1**	D
Ethyl Benzene	**30**	D
n-Propylbenzene	**1.3**	D
o-Xylene	**13**	D
p- & m- Xylenes	**120**	D
Propylene	**0.79**	D
Styrene	**0.63**	D
Tetrachloroethylene	**360**	D
Toluene	**7.3**	D
Trichloroethylene	**380**	D
Trichlorofluoromethane (Freon 11)	**1.3**	D
Xylenes, Total	**130**	D

25SV-3 (2')
12/22/2025
Soil Vapor

Compound	Result	Q
VOCs	ug/m3	
1,2,4-Trimethylbenzene	**7.8**	D
4-Methyl-2-pentanone	**4.1**	D
Benzene	**9.4**	D
Carbon disulfide	**4.5**	D
Chloroform	**61**	D
cis-1,2-Dichloroethylene	**55**	D
Ethyl Benzene	**62**	D
n-Hexane	**2.5**	D
n-Propylbenzene	**3.9**	D
o-Xylene	**36**	D
p- & m- Xylenes	**230**	D
Propylene	**13**	D
Tetrachloroethylene	**680**	D
Toluene	**39**	D
Trichloroethylene	**3800**	D
Xylenes, Total	**260**	D

25SV-2 (5')
12/22/2025
Soil Vapor

Compound	Result	Q
VOCs	ug/m3	
1,2,4-Trimethylbenzene	**6.4**	D
2-Hexanone	**11**	D
4-Methyl-2-pentanone	**14**	D
Benzene	**7.4**	D
Carbon disulfide	**16**	D
Chloroform	**41**	D
cis-1,2-Dichloroethylene	**38**	D
Cyclohexane	**2.7**	D
Ethyl Benzene	**67**	D
n-Hexane	**3.3**	D
n-Propylbenzene	**3.9**	D
o-Xylene	**37**	D
p- & m- Xylenes	**250**	D
Propylene	**16**	D
Tetrachloroethylene	**480**	D
Toluene	**32**	D
Trichloroethylene	**3000**	D
Xylenes, Total	**280**	D

25SV-1 (10')
12/22/2025
Soil Vapor

Compound	Result	Q
VOCs	ug/m3	
1,2,4-Trimethylbenzene	**4.1**	D
1,3,5-Trimethylbenzene	**1.2**	D
1,3-Butadiene	**3.8**	D
2,2,4-Trimethylpentane (Isooctane)	**3.1**	D
2-Hexanone	**1.4**	D
Acetone	**35**	D
Benzene	**14**	D
Carbon disulfide	**6.2**	D
Chloroform	**6.6**	D
Chloromethane	**0.89**	D
cis-1,2-Dichloroethylene	**29**	D
Cyclohexane	**4.3**	D
Dichlorodifluoromethane	**2.1**	D
Ethyl acetate	**32**	D
Ethyl Benzene	**22**	D
Isopropanol	**3.9**	D
Isopropylbenzene	**1.2**	D
n-Hexane	**11**	D
n-Propylbenzene	**0.95**	D
o-Xylene	**9.9**	D
p- & m- Xylenes	**62**	D
Propylene	**61**	D
Tetrachloroethylene	**8.5**	D
Toluene	**29**	D
trans-1,2-Dichloroethylene	**0.65**	D
Trichloroethylene	**560**	D
Trichlorofluoromethane (Freon 11)	**1.2**	D
Xylenes, Total	**72**	D

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Legend:

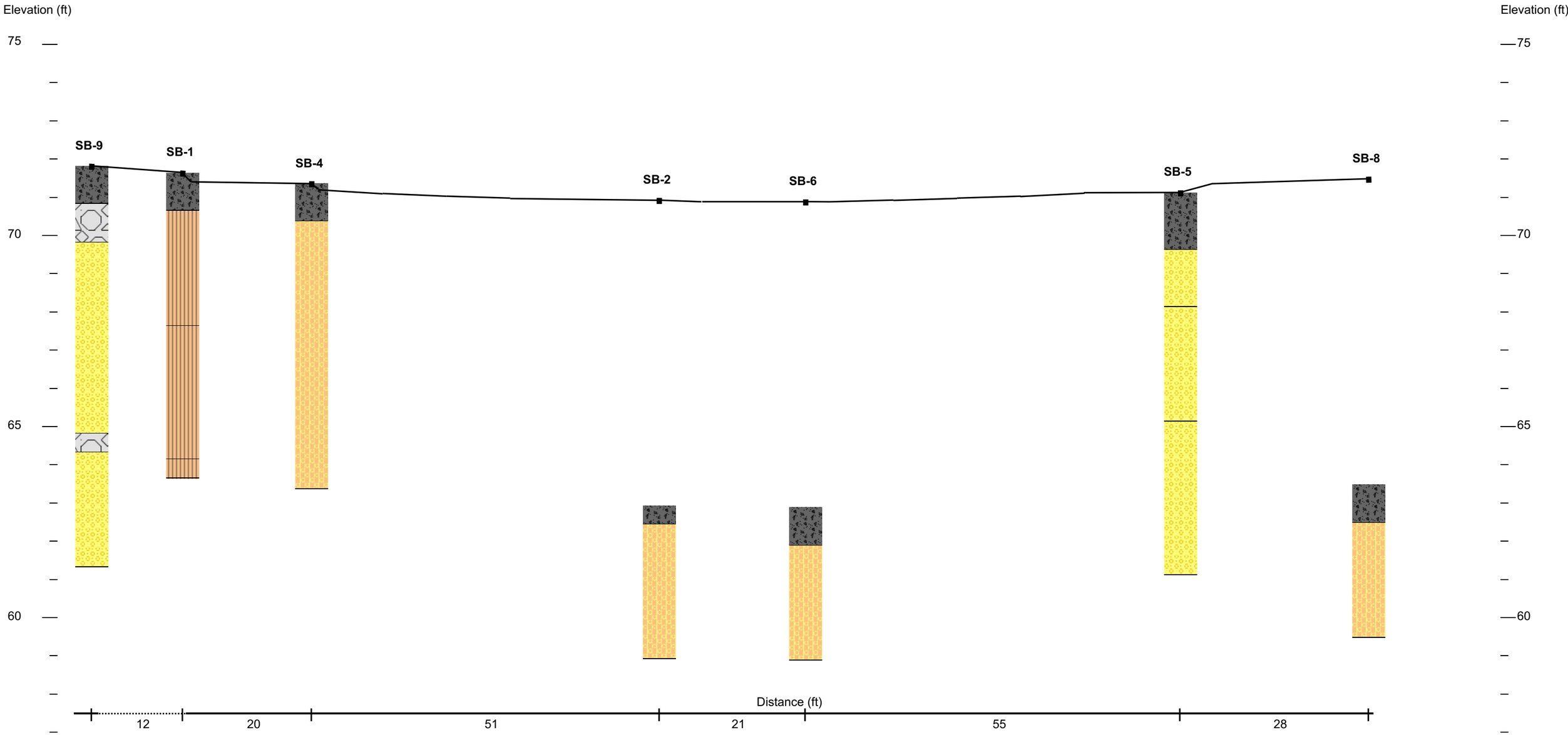
- SITE BOUNDARY
- CELLAR FOOTPRINT
- SOIL BORING LOCATION AND ID (2025) — 25SB-X
- SOIL VAPOR POINT LOCATION AND ID (2025) — 25SV-X
- MONITORING WELL AND SOIL BORING LOCATIONS AND ID — MW-X/25SB-X
- SUB-SLAB POINT LOCATION AND ID (2025) — 25SS-X
- SOIL VAPOR POINT LOCATION AND ID (2025) – NO SAMPLE COLLECTED DUE TO FAULTY REGULATORS — SV-X

Notes:

1. Base Map provided by Google Earth
2. Any Regulatory Exceedences are color coded by Regulation

Scale: 0 — 25' — 50'

Figure No.	5
Figure Name:	MAP OF SOIL VAPOR CHEMISTRY RESULTS
Report:	RIR
Date:	02/18/2026
Drawn By:	KB
Site Address:	2425 ATLANTIC AVENUE BROOKLYN, NY 11233



Legend

- CONCRETE
- FILL
- Well-graded SAND (SW)
- SILT (ML)
- Silty SAND (SM)

- Water Level During Drilling
- Water Level at End of Drilling
- Cap
- Screen
- Annular Seal
- Sanitary Seal
- Filter Pack
- Backfill

Built with Google Maps

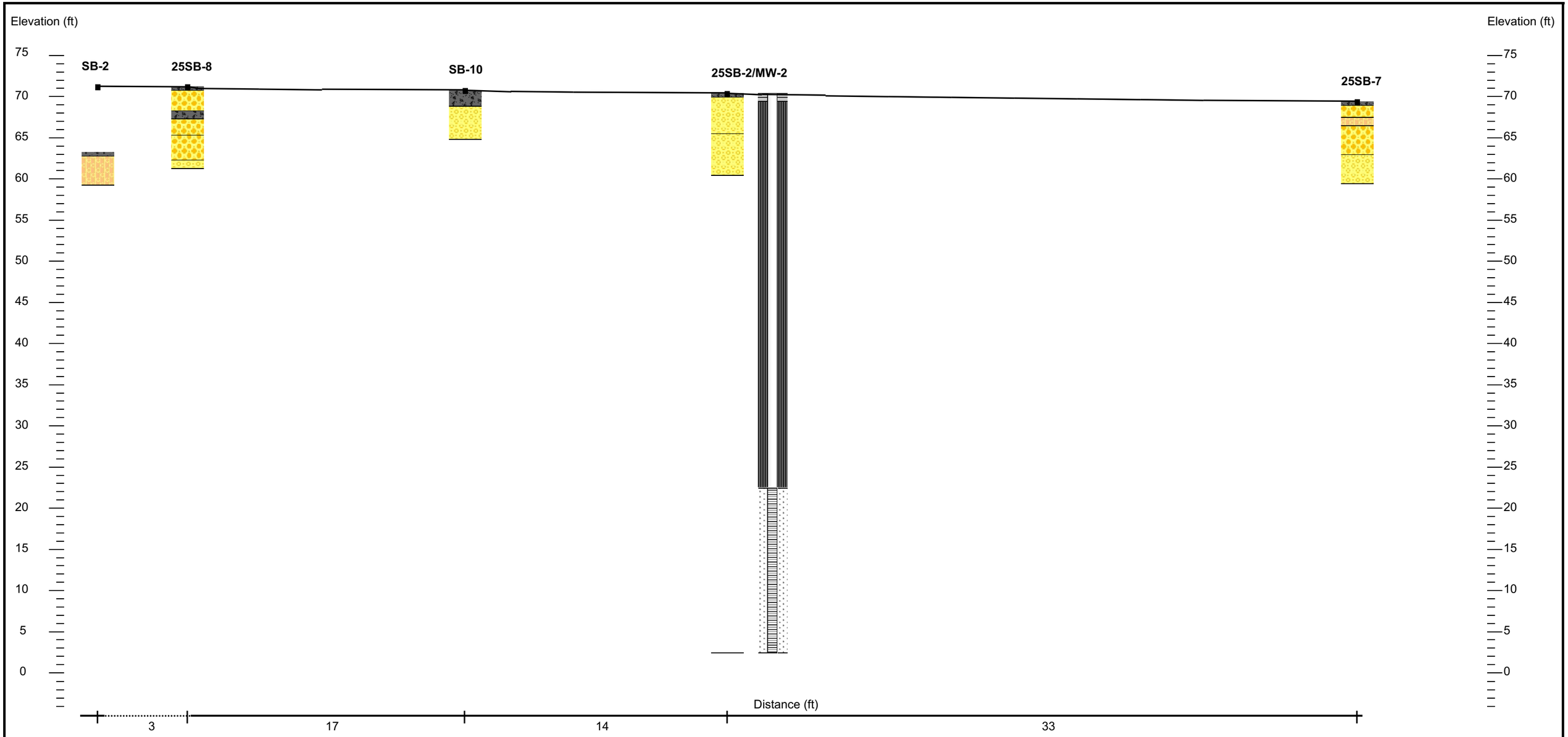


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FIGURE 6A
GEOLOGIC CROSS SECTION N-S

Atlantic Haven Realty LP
2425 Atlantic Avenue

2425 Atlantic Avenue
Brooklyn, New York



Legend

- CONCRETE
- Silty SAND (SM)
- Well-graded SAND (SW)
- Poorly graded SAND (SP)

- Water Level During Drilling
- Water Level at End of Drilling
- Cap
- Screen
- Annular Seal
- Sanitary Seal
- Filter Pack
- Backfill

Horizontal scale: 5 feet
Vertical scale: 10 feet

Built with Google Maps

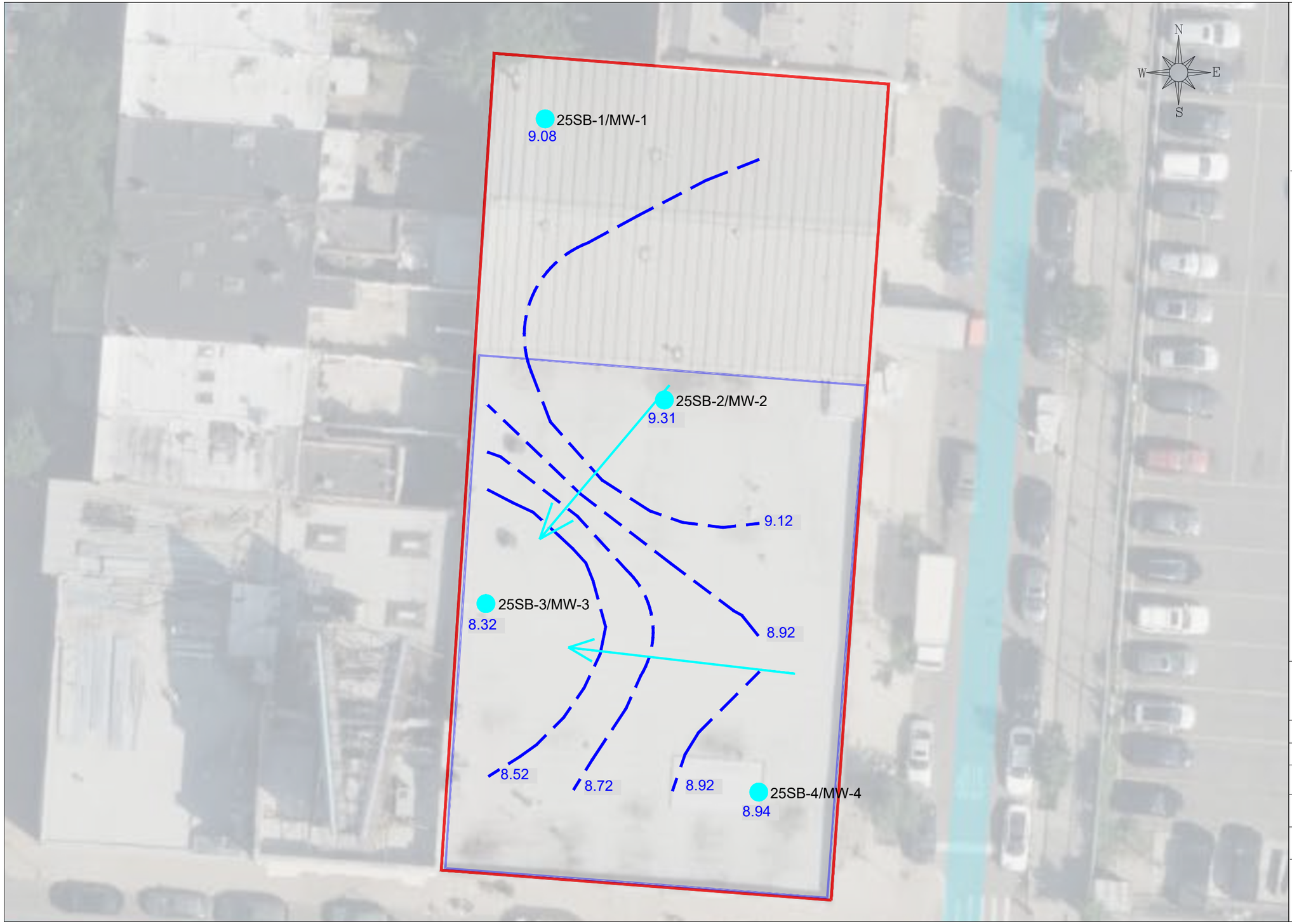


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FIGURE 6B
GEOLOGIC CROSS SECTION E-W

Atlantic Haven Realty LP
2425 Atlantic Avenue

2425 Atlantic Avenue
Brooklyn, New York



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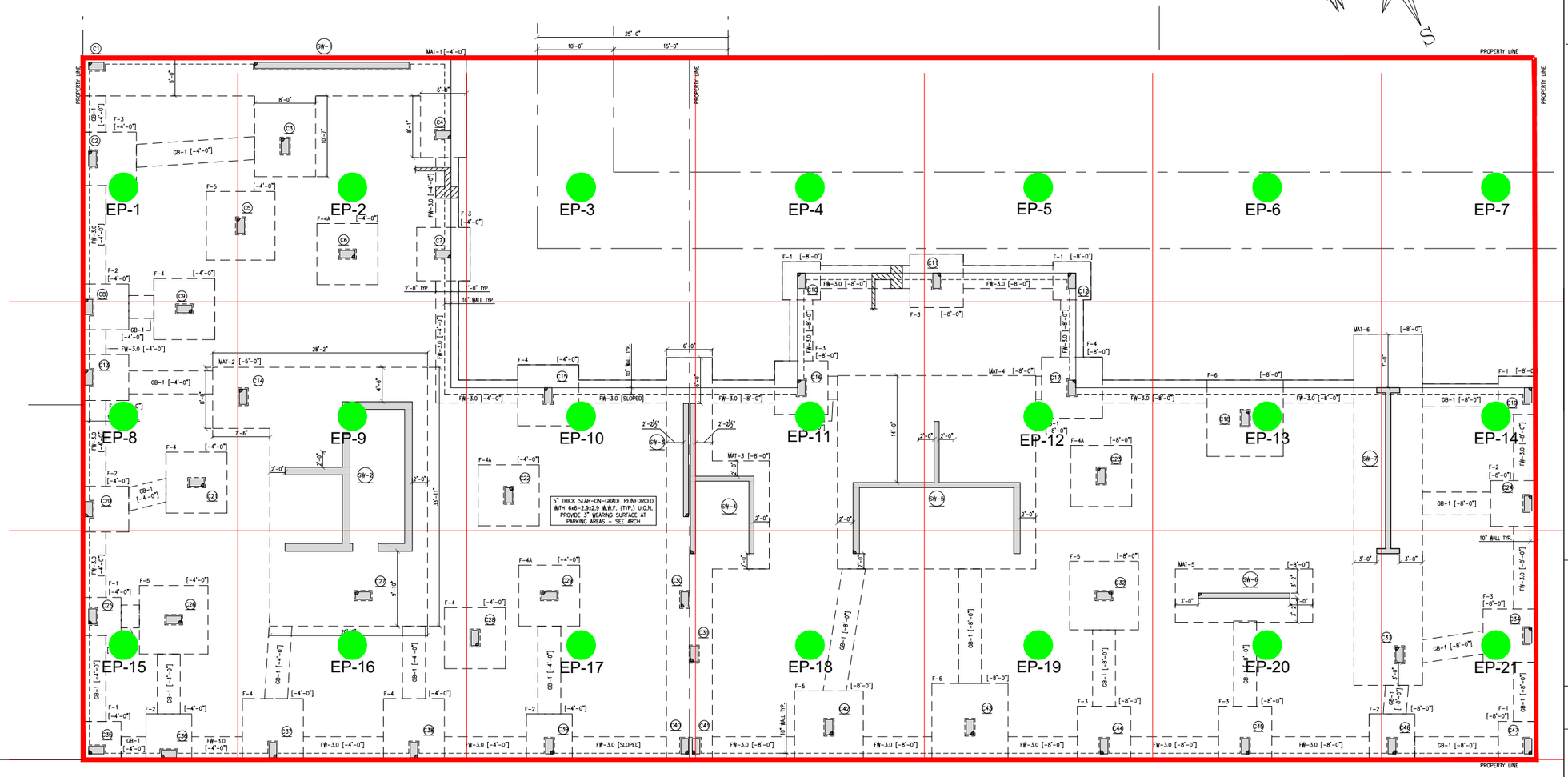
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Legend:

- SITE BOUNDARY
- 7.16 GROUNDWATER ELEVATION (FEET)
- GROUNDWATER ELEVATION CONTOUR LINE
- MW-X BOREHOLE
- CELLAR FOOTPRINT
- FLOW DIRECTION

Scale: 0 25' 50'

Figure No.	7
Figure Name:	GROUNDWATER CONTOUR
Report:	RAWP
Date:	2/27/26
Drawn By:	KB
Site Address:	2425 ATLANTIC AVENUE BROOKLYN, NY 11233



1 FOUNDATION PLAN
SCALE: 3/16"=1'-0"

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Legend:

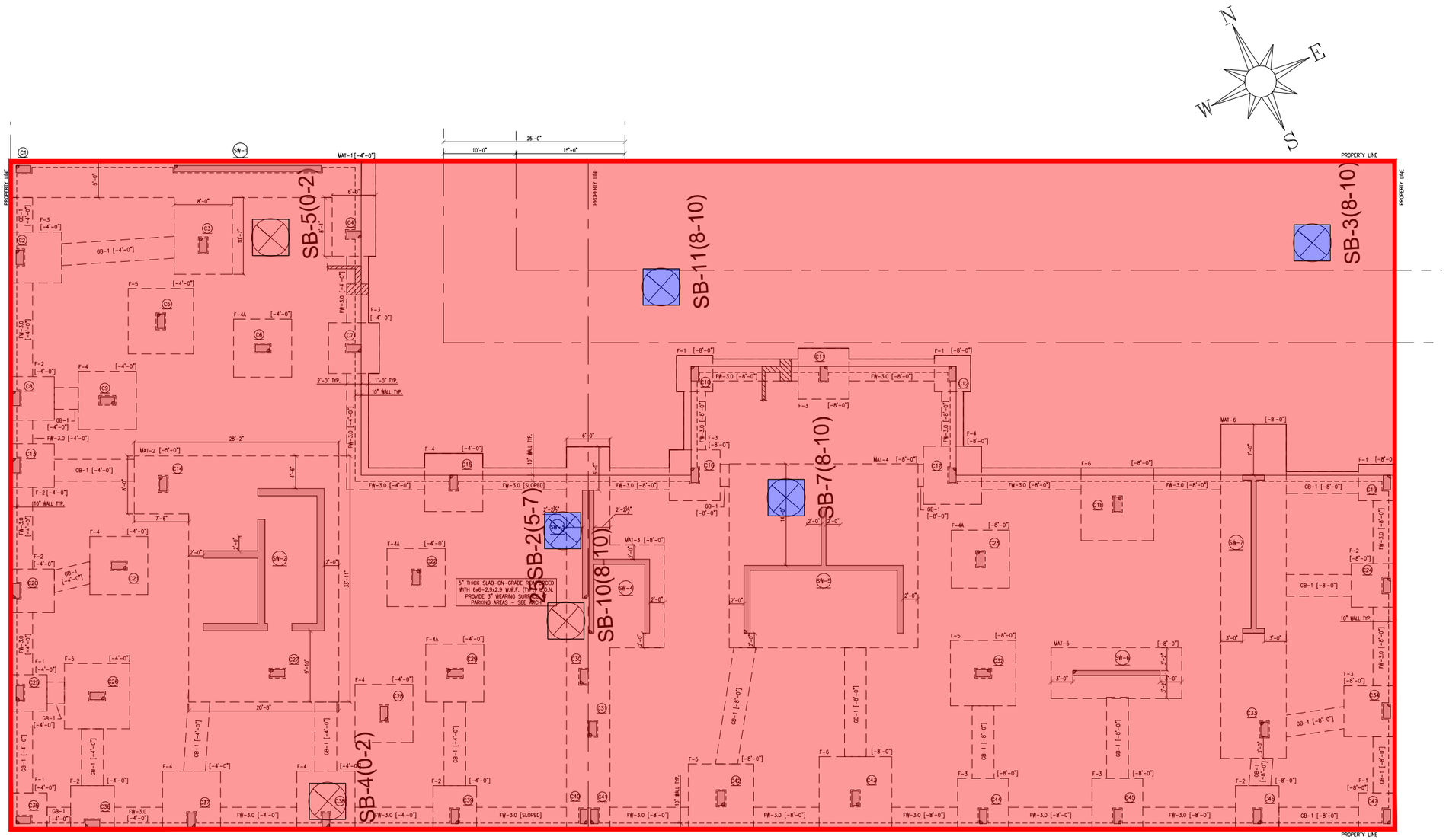
- SITE BOUNDARY
- EP-X — END POINT LOCATION AND ID

Notes:

1. All feature locations are approximate

Scale: 0 — 12.5' — 25'

Figure No.	8
Figure Name:	ALPHA NUMERIC GRID MAP & PROPOSED ENDPOINT SAMPLE LOCATIONS
Report:	RAWP
Date:	2/27/2026
Drawn By:	KB
Site Address:	2425 ATLANTIC AVENUE BROOKLYN, NY 11233



1 FOUNDATION PLAN
SCALE: 3/16"=1'-0"

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Legend:

- SITE BOUNDARY
- EXCAVATION TO 12FEET BGS
- EXTENT OF EXCEEDANCES WILL BE DELINEATED AND REMOVED DOWN TO 15 FEET

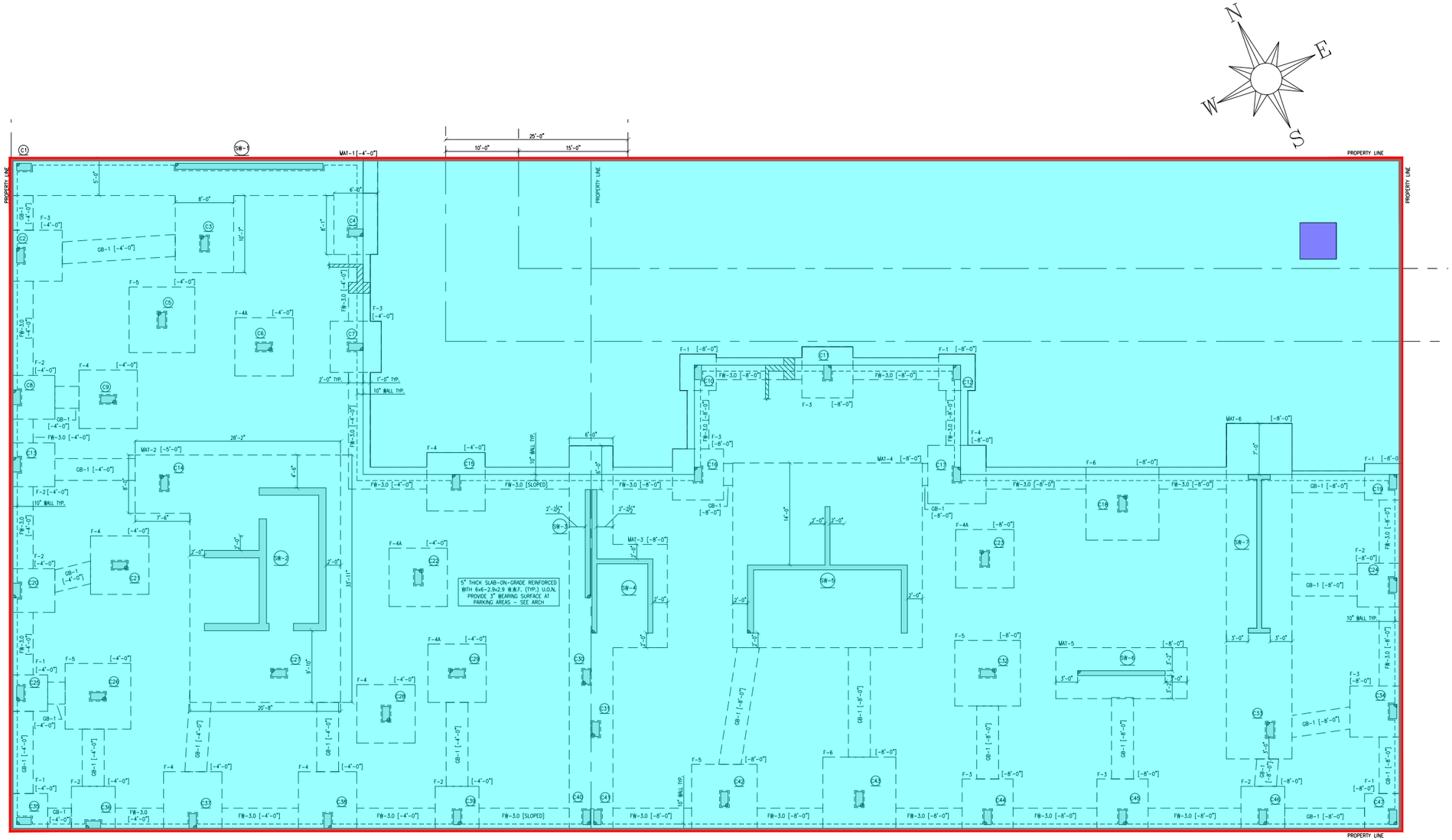
Notes:

1. All feature locations are approximate

Scale:

0 12.5' 25'

Figure No.	9
Figure Name:	ALTERNATİVE 1 TRACK 1 CLEANUP EXCAVATİON PLAN
Report:	RAWP
Date:	2/27/2026
Drawn By:	KB
Site Address:	2425 ATLANTIC AVENUE BROOKLYN, NY 11233



1 FOUNDATION PLAN
SCALE: 3/16"=1'-0"

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Legend:

- SITE BOUNDARY
- EXCAVATION TO 2 FEET BGS
- EXCAVATION TO 11 FEET BGS

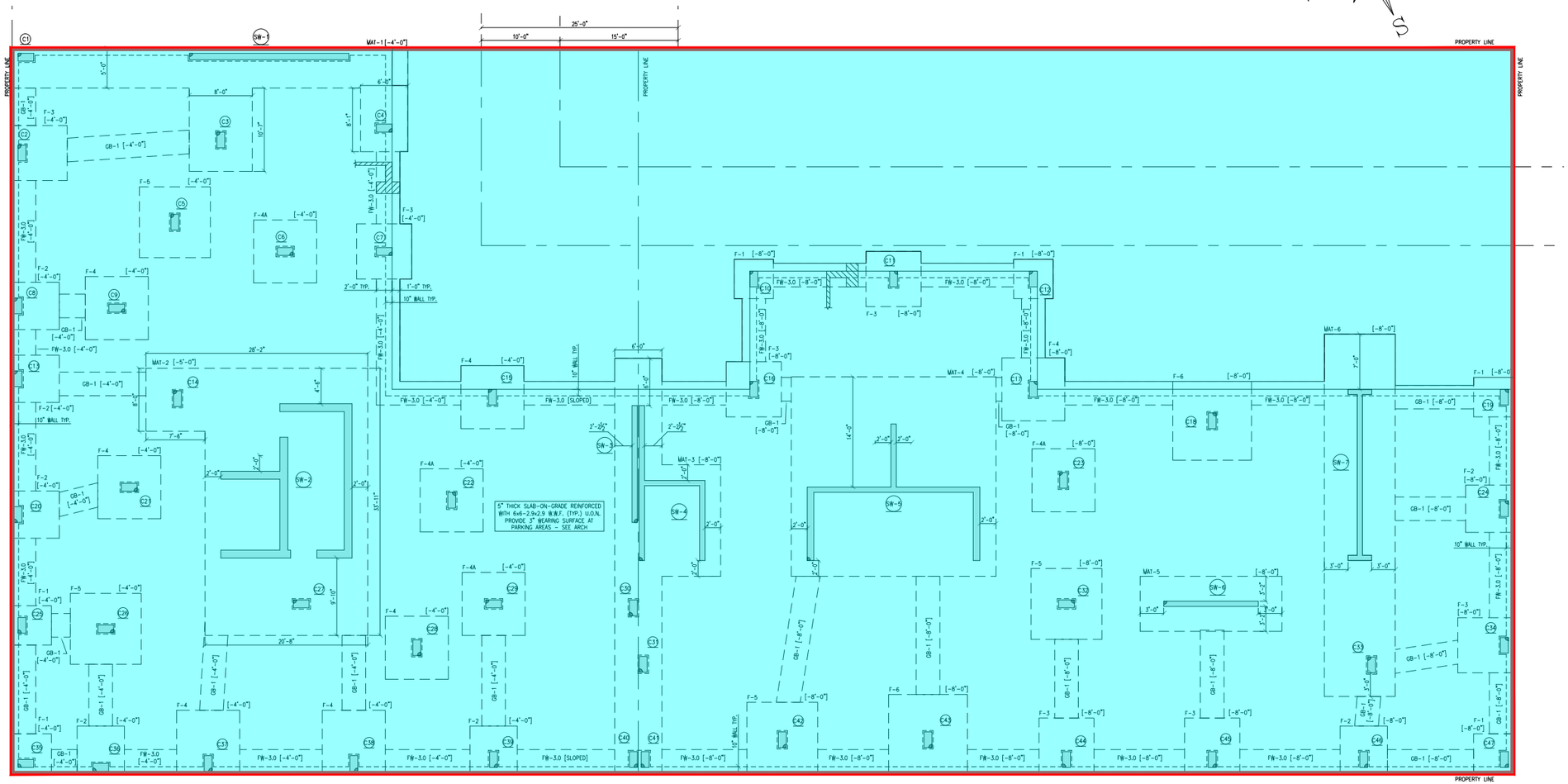
Notes:

1. All feature locations are approximate

Scale:

0 12.5' 25'

Figure No.	10
Figure Name:	ALTERNATİVE 2 TRACK 2 CLEANUP EXCAVATİON PLAN
Report:	RAWP
Date:	2/27/2026
Drawn By:	KB
Site Address:	2425 ATLANTIC AVENUE BROOKLYN, NY 11233



1 FOUNDATION PLAN
SCALE: 3/16"=1'-0"

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Legend:

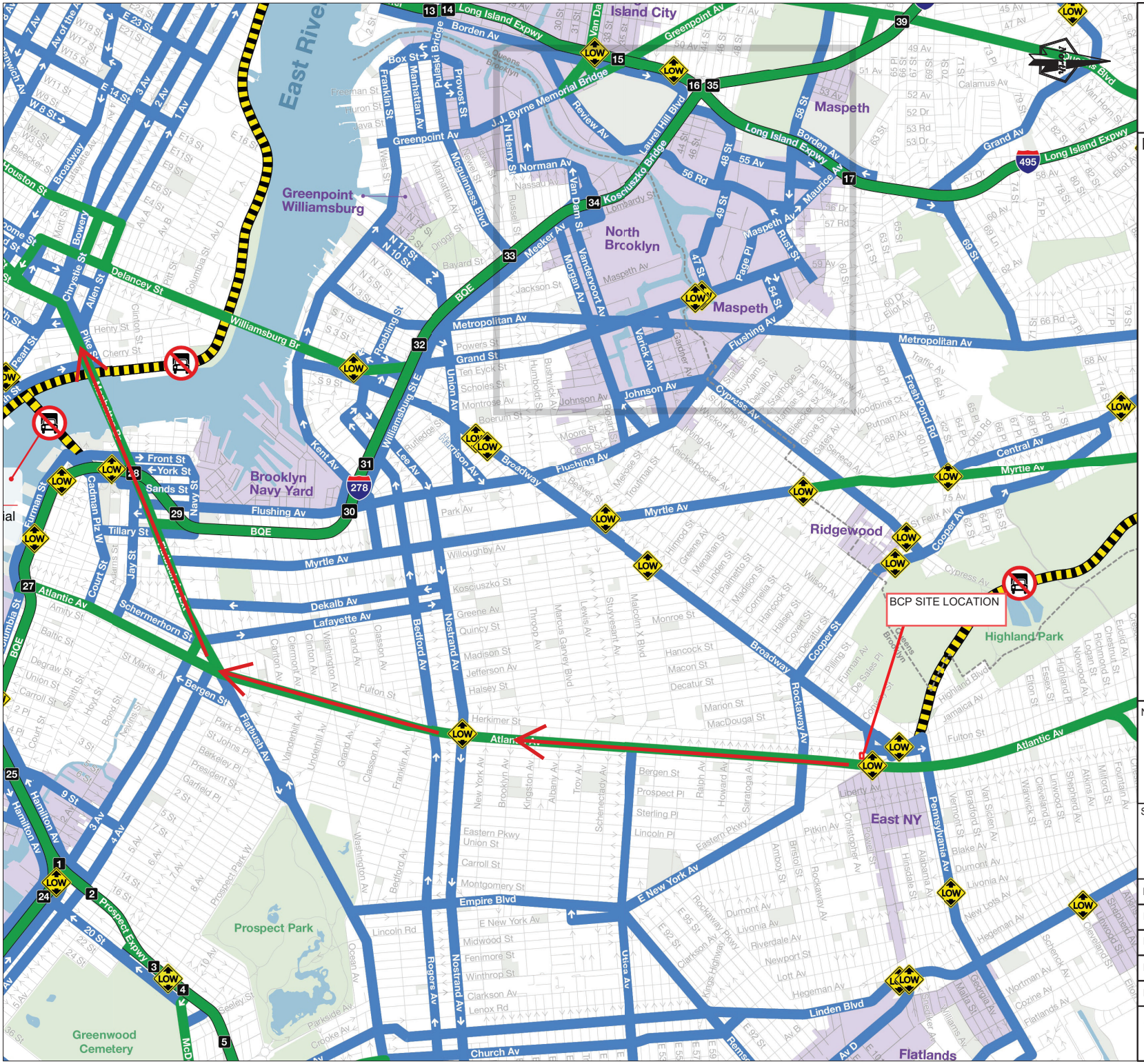
- SITE BOUNDARY
- EXCAVATION TO 2 FEET BGS

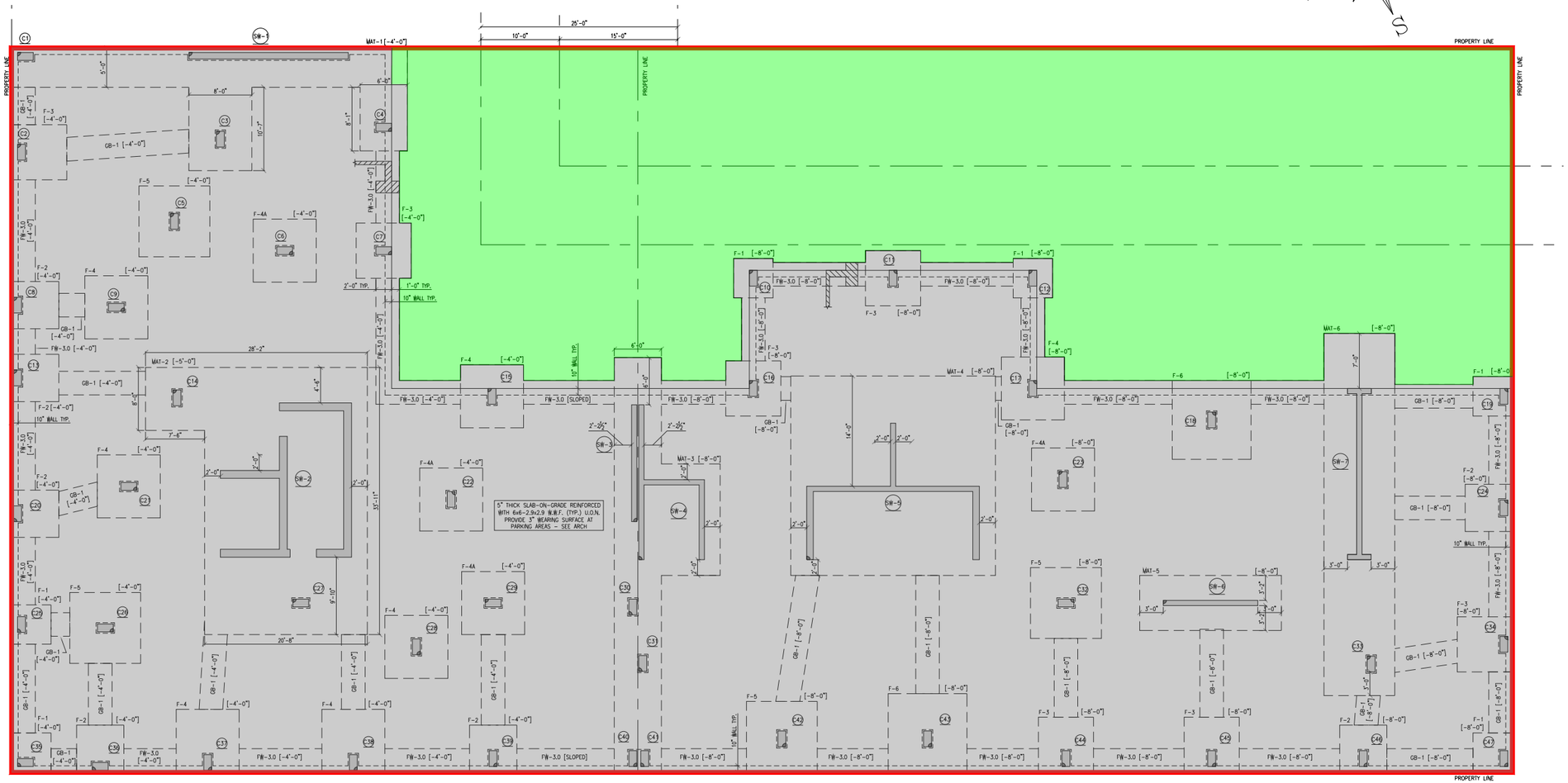
Notes:

1. All feature locations are approximate

Scale: 0 12.5' 25'

Figure No.	11
Figure Name:	ALTERNATİVE 2 TRACK 2 CLEANUP EXCAVATİON PLAN
Report:	RAWP
Date:	2/27/2026
Drawn By:	KB
Site Address:	2425 ATLANTIC AVENUE BROOKLYN, NY 11233


BCP SITE LOCATION
East River
Island City
Maspeth
Greenpoint
Williamsburg
North
Brooklyn
Brooklyn
Navy Yard
Ridgewood
Highland Park
East NY
Prospect Park
Greenwood
Cemetery
Flatlands
Long Island Expwy
Borden Av
Greenpoint Av
Metropolitan Av
Flushing Av
Myrtle Av
Broadway
Atlantic Av
Fulton St
Linden Blvd
Church Av
Empire Blvd
Williamsburg Br
Pulaski Bridge
J.J. Byrne Memorial Bridge
Kosciuszko Bridge
Laurel Hill Blvd
Review Av
Maurice Av
Grand Av
Delancey St
Bowery
Houston St
Broadway
Kent Av
Flushing Av
Tillary St
Myrtle Av
Dekalb Av
Lafayette Av
Bergen St
Flatbush Av
Nostrand Av
Bedford Av
Rockaway Av
Cooper St
Pennsylvania Av
Fresh Pond Rd
Cypress Av
Cooper Av
Central Av
Myrtle Av
Metropolitan Av
Flushing Av
Johnson Av
Meeker Av
Morgan Av
Vandervoort Av
Varick Av
Van Dam St
Maspeth Av
Rust St
Page Pl
47 St
49 St
54 St
56 Rd
55 Av
58 St
69 St
Grand Av
Long Island Expwy
Borden Av
Review Av
Laurel Hill Blvd
J.J. Byrne Memorial Bridge
Greenpoint Av
Box St
Manhattan Av
Franklin St
Provost St
Norman Av
N Henry St
Kosciuszko Bridge
Van Dam St
Meeker Av
Maspeth Av
Rust St
Page Pl
47 St
49 St
54 St
56 Rd
55 Av
58 St
69 St
Grand Av
Long Island Expwy
Maurice Av
Borden Av
Metropolitan Av
Flushing Av
Myrtle Av
Broadway
Atlantic Av
Fulton St
Linden Blvd
Church Av
Empire Blvd
Williamsburg Br
Pulaski Bridge



1 FOUNDATION PLAN
SCALE: 3/16"=1'-0"

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Legend:

- SITE BOUNDARY
- MINIMUM 6-INCH THICK BUILDING SLAB OVER 5-6 INCHES OF CLEAN GRAVEL
- 2-FOOT EXCAVATION BACKFILLED WITH 2 FEET OF CLEAN FILL (RECREATIONAL AREA)

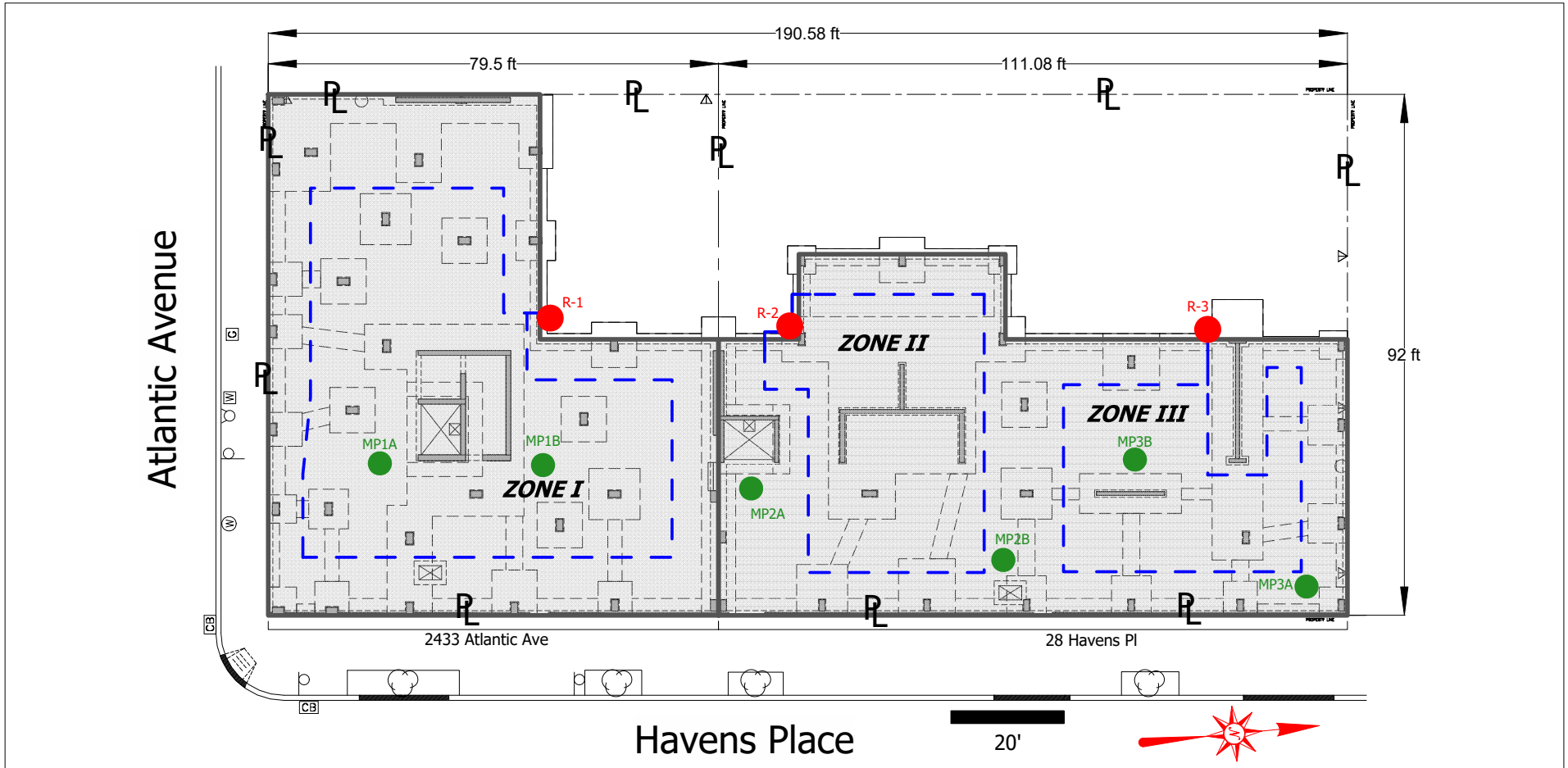
Notes:

1. All feature locations are approximate

Scale:

0 12.5' 25'

Figure No.	13
Figure Name:	COMPOSITE COVER SYSTEM
Report:	RAWP
Date:	2/27/2026
Drawn By:	KB
Site Address:	2425 ATLANTIC AVENUE BROOKLYN, NY 11233



LEGEND

- Monitoring Point
- SSDS Riser Location
- Property Boundary
- 4" Perforated PVC SSDS Pipe (Wrapped with Filter Fabric)
- 4" Solid PVC Pipe
- Building Footprint

NOTES:

1. The proposed active SSDS for the two (2) buildings consists of three (3) zones and six (6) monitoring points.
   a. 28 Havens Pl - two (2) zones and four (4) monitoring points
   b. 2433 Atlantic Ave - one (1) zone and two (2) monitoring points
2. Sleeves may need to be used through grade beams or footings depending on foundation layout.
3. Riser locations to be finalized after MEP and RA coordination.
4. See FIGURE 2 for R-1, R-2, and R-3 riser specifications.

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Astoria, NY 11105
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PROJECT

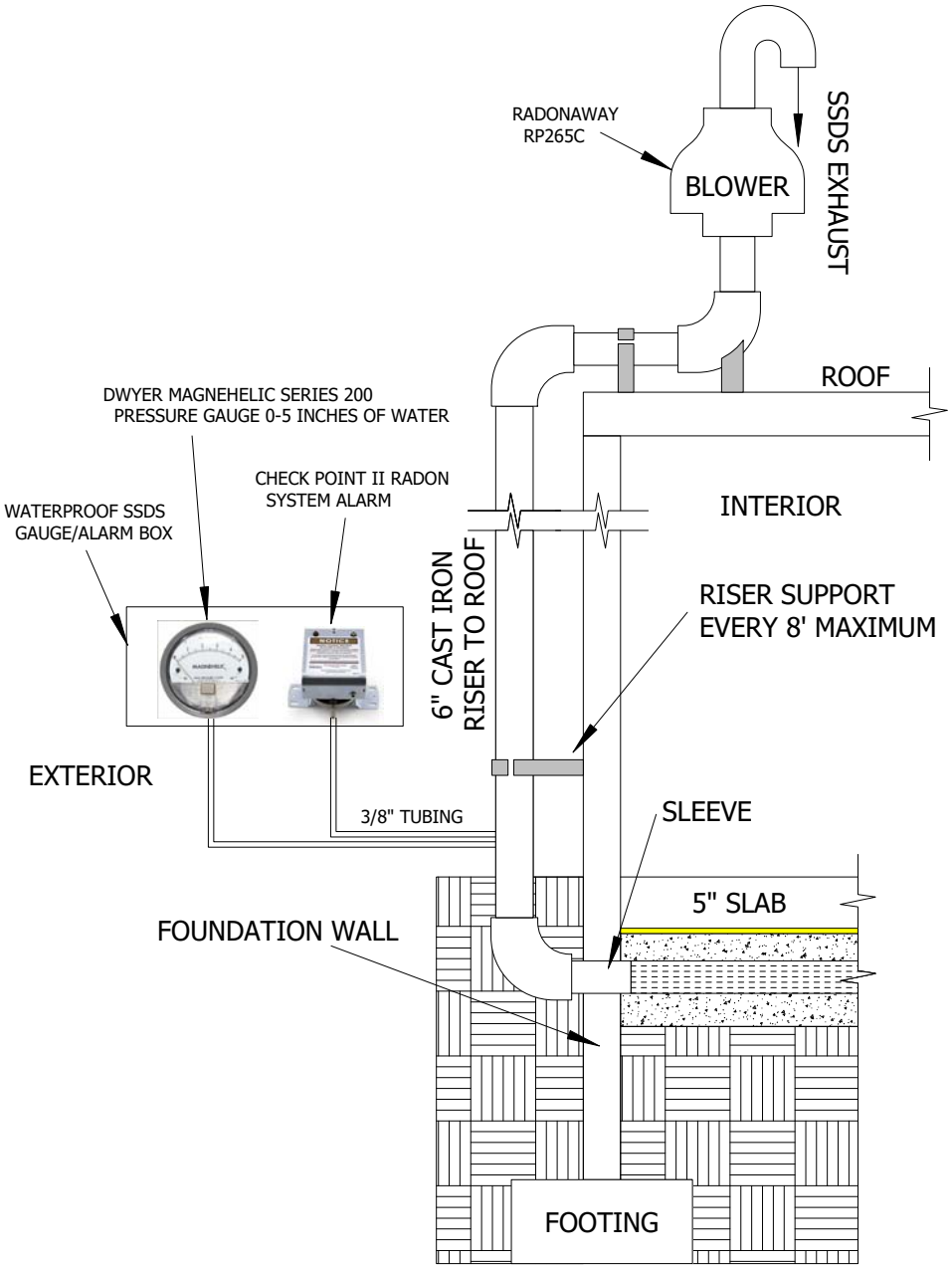
2433 ATLANTIC AVE
BROOKLYN, NY 11233

TITLE: FIGURE 14

PROPOSED ACTIVE SSDS LAYOUT

SEAL & SIGNATURE:

DATE: FEB. 27, 2026
PROJECT No:
DRAWING BY: NKC
CHK BY:
DWG No:
CADD FILE No:
3 of 3



LEGEND

- STEGO WRAP 20-MIL VAPOR BARRIER
- 6" COMPACT GRAVEL
- 4" PERFORATED PVC SSDS PIPE (WRAPPED WITH FILTER FABRIC)
- NATIVE/RESIDUAL SOIL

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PROJECT

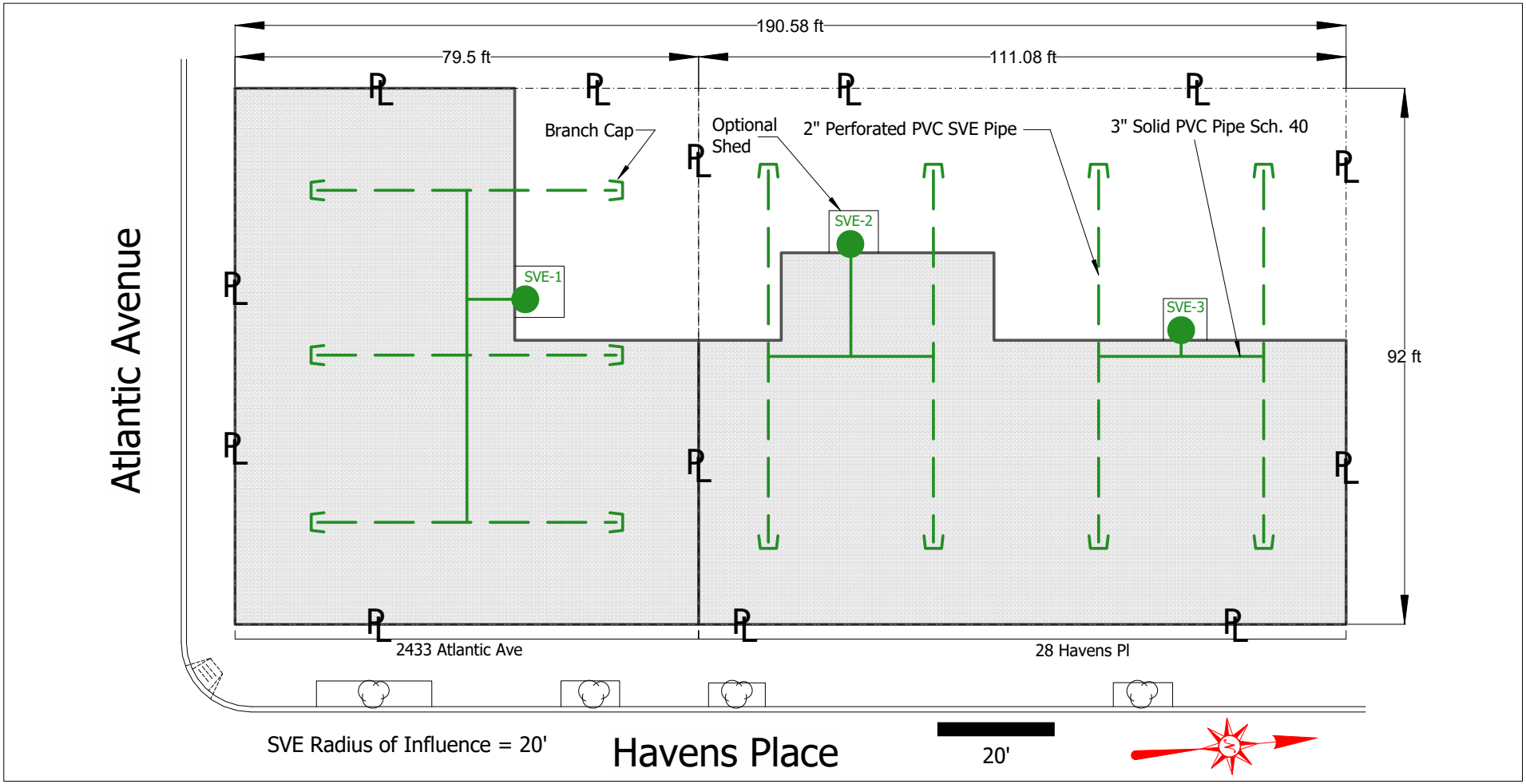
2433 ATLANTIC AVE
BROOKLYN, NY 11233

TITLE: FIGURE 15

PROPOSED ACTIVE SSDS
RISER DETAIL

SEAL & SIGNATURE:

DATE: FEB. 27, 2026
PROJECT No:
DRAWING BY: NKC
CHK BY:
DWG No:
CADD FILE No:



LEGEND

- SVE Riser Location
- Property Boundary
- Building Footprint

NOTES:

1. The proposed SVE for the two (2) buildings consists of three (3) risers.
   a. 28 Havens Pl - two (2) risers
   b. 2433 Atlantic Ave - one (1) riser
2. SVE design subject to change based on conductivity test.
3. Each perforated SVE branch must be capped at the end.
4. Riser locations to be finalized after MEP and RA coordination.
5. See Figures 4 and 5 for additional details.

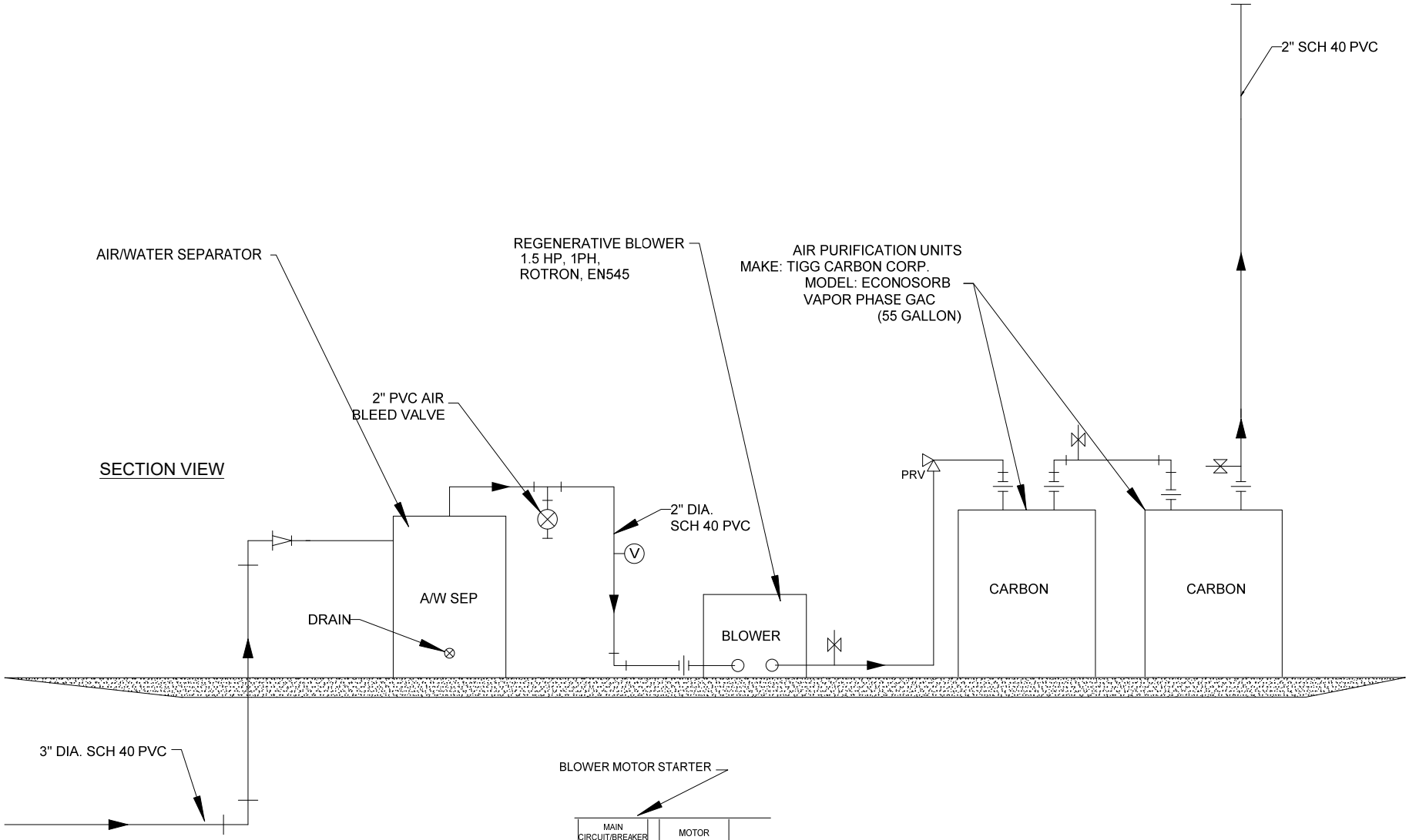
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PROJECT
2433 ATLANTIC AVE
BROOKLYN, NY 11233

TITLE: FIGURE 16
PROPOSED SVE LAYOUT

SEAL & SIGNATURE:

DATE: MAR. 18, 2026
PROJECT No:
DRAWING BY: NKC
CHK BY:
DWG No:
CADD FILE No:



LEGEND

- 3"x2" SCH 40 PVC REDUCER
- V — VACUUM GAUGE
- PRV — PRESSURE RELIEF VALVE
- 2" DIA. SCH 40 PVC BALL VALVE
- BRASS SAMPLE TAP
- UNION OR QUICK CONNECT
- FLOW DIRECTION

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PROJECT

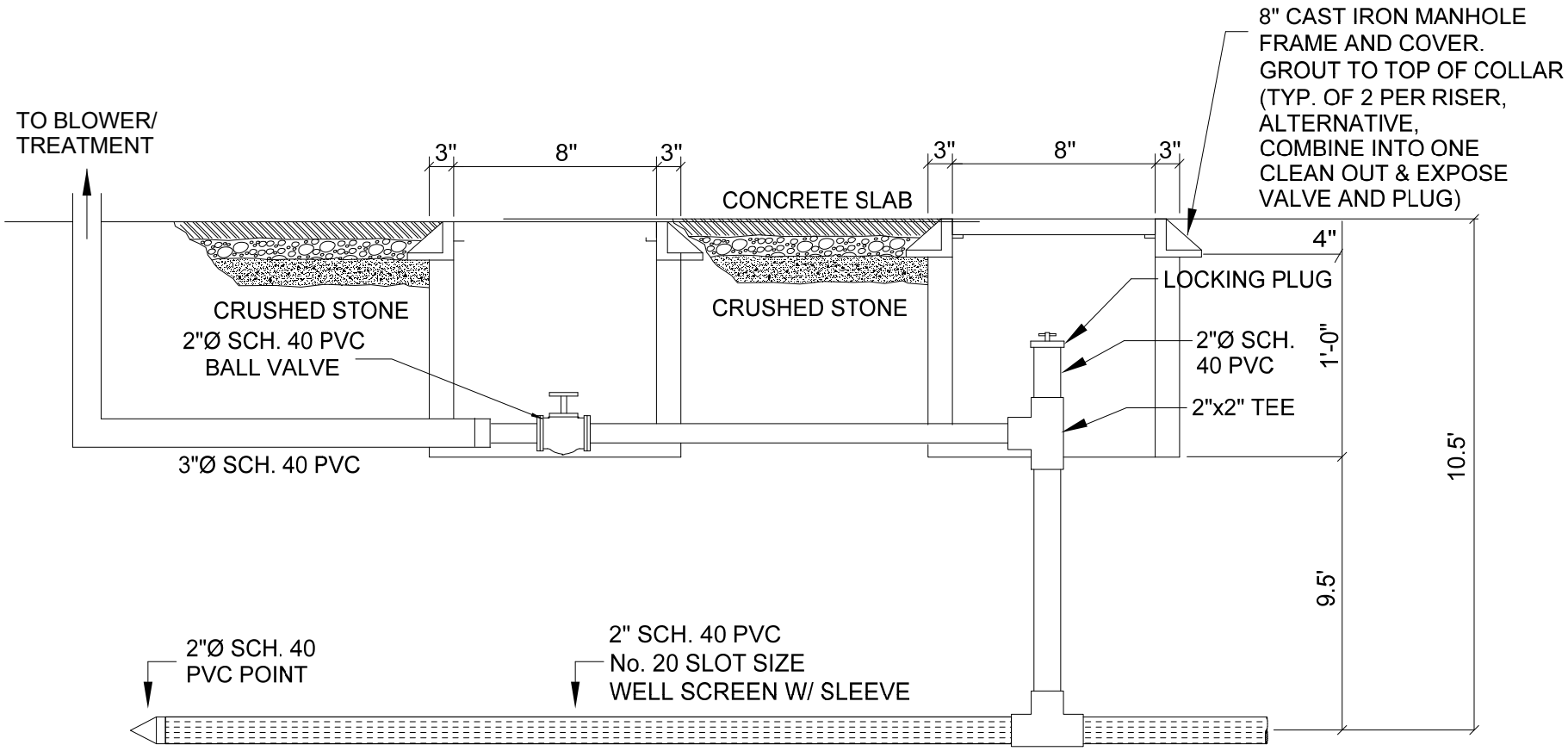
2433 ATLANTIC AVE
BROOKLYN, NY 11233

TITLE: FIGURE 17

PROPOSED SVE SYSTEM

SEAL & SIGNATURE:

DATE: MAR. 18, 2026
PROJECT No:
DRAWING BY: NKC
CHK BY:
DWG No:
CADD FILE No:



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PROJECT

2433 ATLANTIC AVE
BROOKLYN, NY 11233

TITLE: FIGURE 18

PROPOSED SVE WELL DETAIL

SEAL & SIGNATURE:

DATE: MAR. 18, 2026
PROJECT No:
DRAWING BY: NKC
CHK BY:
DWG No:
CADD FILE No:

TABLES

Table 1
Soil Cleanup Objectives
2425 Atlantic Avenue, Brooklyn, NY

COMPOUNDS	UUSCOs	RRSCOs
VOCs	ppm	ppm
1,1,1,2-Tetrachloroethane	~	~
1,1,1-Trichloroethane	0.68	100
1,1,2,2-Tetrachloroethane	~	~
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon	~	~
1,1,2-Trichloroethane	~	~
1,1-Dichloroethane	0.27	47
1,1-Dichloroethylene	0.24	0.98
1,2,3-Trichlorobenzene	~	~
1,2,3-Trichloropropane	~	~
1,2,4-Trichlorobenzene	~	~
1,2,4-Trimethylbenzene	5.9	100
1,2-Dibromo-3-chloropropane	~	~
1,2-Dibromoethane	~	~
1,2-Dichlorobenzene	1.1	100
1,2-Dichloroethane	0.02	5.8
1,2-Dichloropropane	~	~
1,3,5-Trimethylbenzene	3.1	100
1,3-Dichlorobenzene	2.6	38
1,4-Dichlorobenzene	1.8	24
1,4-Dioxane	0.1	5.7
2-Butanone	0.10	100
2-Hexanone	~	~
4-Methyl-2-pentanone	~	~
Acetone	0.03	100
Acrolein	~	~
Acrylonitrile	~	~
Benzene	0.06	3.7
Bromochloromethane	~	~
Bromodichloromethane	~	~
Bromoform	~	~
Bromomethane	~	~
Carbon disulfide	~	~
Carbon tetrachloride	0.76	7.1
Chlorobenzene	4.5	100
Chloroethane	~	~
Chloroform	0.37	24
Chloromethane	~	~
cis-1,2-Dichloroethylene	0.19	41
cis-1,3-Dichloropropylene	~	~
Cyclohexane	~	~
Dibromochloromethane	~	~
Dibromomethane	~	~
Dichlorodifluoromethane	~	~
Ethyl Benzene	1	76
Hexachlorobutadiene	~	~
Isopropylbenzene	~	~
Methyl acetate	~	~
Methyl tert-butyl ether (MTBE)	0.10	100
Methylcyclohexane	~	~
Methylene chloride	0.05	81
n-Butylbenzene	18	100
n-Propylbenzene	5	100
o-Xylene	~	~
p- & m- Xylenes	~	~
p-Isopropyltoluene	~	~
sec-Butylbenzene	25	100
Styrene	~	~
tert-Butyl alcohol (TBA)	~	~
tert-Butylbenzene	11	100
Tetrachloroethylene	1.3	18
Toluene	0.7	100
trans-1,2-Dichloroethylene	0.19	100
trans-1,3-Dichloropropylene	~	~
Trichloroethylene	0.47	6.4
Trichlorofluoromethane	~	~
Vinyl Chloride	0.03	0.48
Xylenes, Total	0.26	100

COMPOUNDS	UUSCOs	RRSCOs
SVOCs	ppm	ppm
1,1-Biphenyl	~	~
1,2,4,5-Tetrachlorobenzene	~	~
1,2,4-Trichlorobenzene	~	~
1,2-Dichlorobenzene	1.1	100
1,2-Diphenylhydrazine (as Azoben	~	~
1,3-Dichlorobenzene	2.6	38
1,4-Dichlorobenzene	1.8	24
2,3,4,6-Tetrachlorophenol	~	~
2,4,5-Trichlorophenol	~	~
2,4,6-Trichlorophenol	~	~
2,4-Dichlorophenol	~	~
2,4-Dimethylphenol	~	~
2,4-Dinitrophenol	~	~
2,4-Dinitrotoluene	~	~
2,6-Dinitrotoluene	~	~
2-Chloronaphthalene	~	~
2-Chlorophenol	~	~
2-Methylnaphthalene	~	~
2-Methylphenol	0.33	100
2-Nitroaniline	~	~
2-Nitrophenol	~	~
3- & 4-Methylphenols	0.33	100
3,3-Dichlorobenzidine	~	~
3-Nitroaniline	~	~
4,6-Dinitro-2-methylphenol	~	~
4-Bromophenyl phenyl ether	~	~
4-Chloro-3-methylphenol	~	~
4-Chloroaniline	~	~
4-Chlorophenyl phenyl ether	~	~
4-Nitroaniline	~	~
4-Nitrophenol	~	~
Acenaphthene	20	100
Acenaphthylene	100	100
Acetophenone	~	~
Aniline	0.04	8.1
Anthracene	100	100
Atrazine	~	~
Benzaldehyde	~	~
Benzidine	~	~
Benzo(a)anthracene	1	1.4
Benzo(a)pyrene	1	1
Benzo(b)fluoranthene	1	1.4
Benzo(g,h,i)perylene	0.64	4.9
Benzo(k)fluoranthene	0.8	4.9
Benzoic acid	~	~
Benzyl alcohol	~	~
Benzyl butyl phthalate	~	~
Bis(2-chloroethoxy)methane	~	~
Bis(2-chloroethyl)ether	~	~
Bis(2-chloroisopropyl)ether	~	~
Bis(2-ethylhexyl)phthalate	~	~
Caprolactam	~	~
Carbazole	~	~
Chrysene	1	4.9
Dibenzo(a,h)anthracene	0.33	0.33
Dibenzofuran	2.1	18
Diethyl phthalate	~	~
Dimethyl phthalate	~	~
Di-n-butyl phthalate	~	~
Di-n-octyl phthalate	~	~
Fluoranthene	85	100
Fluorene	30	100
Hexachlorobenzene	0.33	0.33
Hexachlorobutadiene	~	~
Hexachlorocyclopentadiene	~	~
Hexachloroethane	~	~
Indeno(1,2,3-cd)pyrene	0.5	1.4
Isophorone	~	~
Naphthalene	12	100
Nitrobenzene	0.08	1.8
N-Nitrosodimethylamine	~	~
N-nitroso-di-n-propylamine	~	~

COMPOUNDS	UUSCOs	RRSCOs
Pesticides	ppm	ppm
4,4'-DDD	0.0033	5
4,4'-DDD [2C]	0.0033	5
4,4'-DDE	0.0033	3.4
4,4'-DDT	0.0033	3.8
Aldrin	0.0048	0.044
alpha-BHC	0.02	0.18
alpha-Chlordane	0.014	0.65
beta-BHC	0.021	0.18
delta-BHC	0.04	100
Dieldrin	0.005	0.075
Endosulfan I	4.3	35
Endosulfan II	4.3	35
Endosulfan sulfate	4.3	35
Endrin	0.014	5.3
gamma-BHC (Lindane)	0.025	0.21
Heptachlor	0.013	0.53
Total Metals	ppm	ppm
Aluminum	~	~
Antimony	~	~
Arsenic	13	16
Barium	410	410
Beryllium	4.4	43
Cadmium	2.5	2.5
Calcium	~	~
Chromium	~	~
Cobalt	~	~
Copper	50	280
Iron	~	~
Lead	63	400
Magnesium	~	~
Manganese	1,600	2,000
Nickel	30	320
Potassium	~	~
Selenium	3.9	110
Silver	2	110
Sodium	~	~
Thallium	~	~
Vanadium	~	~
Zinc	109	6,600
TCLP Metals	-	-
Lead	~	~
Mercury	~	~
PFAS	ppm	ppm
PFOS	0.00088	0.044
PFOA	0.00066	0.033

Table 2
Exceedances of Track 1 and 2 SCOs in Soil
2425 Atlantic Avenue, Brooklyn, NY

Sample ID Laboratory ID Sampling Date Sample Matrix	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives	SB-7 (8-10) 25F1387-13 6/20/2025 Soil		25SB-2 (9-11) 25L1201-13 12/19/2025 Soil		SB-10 (8-10) 25J1851-06 10/30/2025 Soil		SB-11(8-10) 25J1851-09 10/30/2025 Soil	
Compound			**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
VOCs	**mg/Kg**	**mg/Kg**	mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Dilution Factor			1		1		1		1	
Acetone	0.03	100	**0.084**	J	**0.052**	J	0.0049	U	**0.0089**	
Trichloroethylene	0.47	6.4	**0.015**		**0.056**		**1.6**		**1.2**	

Sample ID Laboratory ID Sampling Date Sample Matrix	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives	SB-3 (8-10) 25F1387-05 6/20/2025 Soil	
Compound			**Result**	**Q**
SVOCs	mg/Kg	mg/Kg	mg/Kg	
Dilution Factor			2	
Phenanthrene	1.1	4.9	**2.15**	D

Sample ID Laboratory ID Sampling Date Sample Matrix	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives	SB-4 (0-2) 25F1387-07 6/20/2025 Soil		SB-4 (6-8) 25F1387-08 6/20/2025 Soil		SB-5 (0-2) 25F1387-09 6/20/2025 Soil		SB-7 (8-10) 25F1387-13 6/20/2025 Soil	
Compound			**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Pesticides	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Dilution Factor			5		5		5		5	
4,4'-DDD	0.0033	5	NT		NT		0.00176	U	**0.00382**	J+
4,4'-DDE	0.0033	3.4	0.00177	U	0.00168	U	0.00176	U	**0.0519**	D
4,4'-DDT	0.0033	3.8	0.00177	U	0.00168	U	**0.00847**	D	**0.0387**	D
alpha-Chlordane	0.014	0.65	0.00177	U	0.00168	U	**0.0249**	D	0.00167	U
Dieldrin	0.005	0.075	0.00177	U	0.00168	U	**0.0121**	D	**0.00352**	D
PCBs	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Dilution Factor			1		1		1		1	
Aroclor 1262	~	~	**0.118**		**0.142**	J+	NT		NT	
Total PCBs	0.1	1	**0.118**		**0.142**		**0.0512**		**0.0456**	

Sample ID Laboratory ID Sampling Date Sample Matrix	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives	SB-3 (8-10) 25F1387-05 6/20/2025 Soil		DUP-1 25F1387-17 6/20/2025 Soil		SB-4 (0-2) 25F1387-07 6/20/2025 Soil		SB-5 (0-2) 25F1387-09 6/20/2025 Soil	
Compound			**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
TAL Metals	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Dilution Factor			1		10		1		1	
Copper	50	280	**32.3**	J+	**34.3**	J+	**99.9**	J+	**30.8**	J+
Lead	63	400	**64.4**	J	**6.01**	J	**159**	J	**123**	J
Manganese	1,600	2,000	**482**	J	**2100**	J	**355**	J	**238**	J
Zinc	109	6,600	**44.8**	J	**36.5**	J	**272**	J	**84.8**	J

NOTES:

[Conc.] = Detected Concentration in Sample

Any Regulatory Exceedances are color coded by regulation:

[Conc.] = Exceedance of NYSDEC Part 375 UUSCO

[Conc.] = Exceedance of NYSDEC Part 375 RRSCO

Q = Laboratory Qualifiers:

~ = This indicates that no regulatory limit has been established for this analyte

U = Analyte not detected at or above the level indicated

D = Result is from an analysis that required a dilution

NT = This indicates the analyte was not a target for this sample

J = Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method (Biased High).

J = Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method.

Table 3
Exceedances in Groundwater Samples
2425 Atlantic Avenue, Brooklyn, NY

Sample ID Laboratory ID Sampling Date Sample Matrix	NYSDEC TOGS Standards and Guidance Values - GA	SW-1 25K0582-01 11/11/2025 Ground Water		SW-2 25K0582-02 11/11/2025 Ground Water		FB-1 25K0582-03 11/11/2025 Ground Water		25MW-1 25L1272-01 12/22/2025 Ground Water		25MW-2 25L1272-02 12/22/2025 Ground Water		25MW-3 25L1272-03 12/22/2025 Ground Water		25MW-4 25L1272-04 12/22/2025 Ground Water		TRIP BLANK 25L1272-05 12/19/2025 Water	
Compound		**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
VOCs	**ug/L**	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Dilution Factor		2		1		1		1		1		1		1		1	
Benzene	**1**	0.558	U	0.279	U	0.279	U	0.279	U	0.279	U	0.279	U	**1.32**		0.279	U
Chloroform	**7**	**11.8**	D	**8.78**		**24.4**		**1.5**		**3.15**		**3.06**		**3.46**		0.243	U
Methylene chloride	**5**	**6.08**	BD	0.397	U	0.397	U	0.397	U	0.397	U	0.397	U	0.397	U	0.397	U
Total Metals	**ug/L**	**ug/L**		NT		**ug/L**		NT		NT		NT		NT		NT	
Dilution Factor		**1**		NT		**1**		NT		NT		NT		NT		NT	
Beryllium	**3**	**3.82**		NT		0.333	U	NT		NT		NT		NT		NT	
Chromium	**50**	**476**		NT		5.56	U	NT		NT		NT		NT		NT	
Copper	**200**	**250**		NT		22.2	U	NT		NT		NT		NT		NT	
Magnesium	**35,000**	**35,500**		NT		66.7	U	NT		NT		NT		NT		NT	
Manganese	**300**	**12,300**		NT		5.56	U	NT		NT		NT		NT		NT	
Nickel	**100**	**368**		NT		11.1	U	NT		NT		NT		NT		NT	
Sodium	**20,000**	**92,300**		NT		1,110	U	NT		NT		NT		NT		NT	
Dissolved Metals	**ug/L**	**ug/L**		NT		**ug/L**		NT		NT		NT		NT		NT	
Dilution Factor		**1**		NT		**1**		NT		NT		NT		NT		NT	
Beryllium	**3**	**3.41**		NT		0.333	U	NT		NT		NT		NT		NT	
Chromium	**50**	**1,270**		NT		5.56	U	NT		NT		NT		NT		NT	
Copper	**200**	**299**		NT		22.2	U	NT		NT		NT		NT		NT	
Magnesium	**35,000**	**42,800**		NT		66.7	U	NT		NT		NT		NT		NT	
Manganese	**300**	**4,590**		NT		5.56	U	NT		NT		NT		NT		NT	
Nickel	**100**	**258**		NT		11.1	U	NT		NT		NT		NT		NT	
Sodium	**20,000**	**77,000**		NT		1,110	U	NT		NT		NT		NT		NT	

NOTES:
[Conc.] = Detected Concentration in Sample
Any Regulatory Exceedances are color coded by regulation:
[Conc.] = Exceedance of TOGS 1.1.1 AWQS
Q = Laboratory Qualifiers:
~ = This indicates that no regulatory limit has been established for this analyte
U = Analyte not detected at or above the level indicated
D = Result is from an analysis that required a dilution
B = Analyte found in the analysis batch blank
NT = This indicates the analyte was not a target for this sample

Table 4A
VOCs in Soil Vapor Samples
2425 Atlantic Avenue, Brooklyn, NY

Sample ID Laboratory ID Sampling Date Sample Matrix	NYSDOH Air Guidline Values - AGVs	NYSDOH SV 022024 Decision Matrices Minimum Concentrations	SV-1 CT58249 6/20/2025 Soil Vapor		SV-3 CT58247 6/20/2025 Soil Vapor		SV-4 CT58246 6/20/2025 Soil Vapor		SV-5 CT58248 6/20/2025 Soil Vapor	
Compound			Result	Q	Result	Q	Result	Q	Q	Q
VOCs	ug/m3	ug/m3	ug/m3		ug/m3		ug/m3		ug/m3	
1,1,1,2-Tetrachloroethane	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
1,1,1-Trichloroethane	100	100	< 5.00	U	7.63		< 5.00	U	< 5.00	U
1,1,2,2-Tetrachloroethane	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
1,1,2-Trichloroethane	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
1,1-Dichloroethane	~	~	< 5.02	U	< 5.02	U	< 5.02	U	< 5.02	U
1,1-Dichloroethene	~	6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U
1,2,4-Trichlorobenzene	~	~	< 5.00	UJ	< 5.00	UJ	< 5.00	UJ	< 5.00	UJ
1,2,4-Trimethylbenzene	~	60	16.7		7.86		18.3		< 5.01	U
1,2-Dibromoethane(EDB)	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
1,2-Dichlorobenzene	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
1,2-Dichloroethane	~	~	< 5.02	U	< 5.02	U	< 5.02	U	< 5.02	U
1,2-dichloropropane	~	~	< 4.99	U	< 4.99	U	< 4.99	U	< 4.99	U
1,2-Dichlorotetrafluoroethane	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
1,3,5-Trimethylbenzene	~	60	9.68		< 5.01	U	10.2		< 5.01	U
1,3-Butadiene	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
1,3-Dichlorobenzene	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
1,4-Dichlorobenzene	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
1,4-Dioxane	~	~	< 5.01	U	< 5.01	U	< 5.01	U	< 5.01	U
2-Hexanone(MBK)	~	~	< 4.99	U	< 4.99	U	< 4.99	U	< 4.99	U
4-Ethyltoluene	~	~	24.5		5.11		19		< 5.01	U
4-Isopropyltoluene	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
4-Methyl-2-pentanone(MIBK)	~	~	< 4.99	U	< 4.99	U	< 4.99	U	< 4.99	U
Acetone	~	~	68.4		88.1		71.7		25.6	
Acrylonitrile	~	~	< 5.01	U	< 5.01	U	< 5.01	U	< 5.01	U
Benzene	~	60	33.5		37		< 5.01	U	< 5.01	U
Benzyl chloride	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
Bromodichloromethane	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
Bromoform	~	60	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
Bromomethane	~	~	< 5.01	U	< 5.01	U	< 5.01	U	< 5.01	U
Carbon Disulfide	~	~	6.04		98		7.09		< 5.01	U
Carbon Tetrachloride	5	6	< 1.00	U	1.07		< 1.00	U	< 1.00	U
Chlorobenzene	~	~	< 5.01	U	< 5.01	U	< 5.01	U	< 5.01	U
Chloroethane	~	~	< 5.01	U	< 5.01	U	< 5.01	U	< 5.01	U
Chloroform	~	~	6.15		51.2		< 4.98	U	< 4.98	U
Chloromethane	~	~	< 4.99	U	< 4.99	U	< 4.99	U	< 4.99	U
Cis-1,2-Dichloroethene	~	6	< 1.00	U	13.6		16.2		< 1.00	U
cis-1,3-Dichloropropene	~	~	< 4.99	U	< 4.99	U	< 4.99	U	< 4.99	U
Cyclohexane	~	60	< 4.99	U	85.3		< 4.99	U	< 4.99	U
Dibromochloromethane	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
Dichlorodifluoromethane	~	~	< 4.99	U	< 4.99	U	< 4.99	U	< 4.99	U
Ethanol	~	~	41.8		10.2		17.1		27.5	
Ethyl acetate	~	~	< 5.01	U	< 5.01	U	< 5.01	U	< 5.01	U
Ethylbenzene	~	60	59.9		< 4.99	U	8.03		< 4.99	U
Heptane	~	200	< 5.00	U	14.4		10.3		< 5.00	U
Hexachlorobutadiene	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
Hexane	~	200	< 5.00	U	32.2		< 5.00	U	< 5.00	U
Isooctane	~	60	< 4.99	U	< 4.99	U	267		< 4.99	U
Isopropylalcohol	~	~	< 5.01	U	12.7		< 5.01	U	< 5.01	U
Isopropylbenzene	~	~	8.45		< 5.01	U	< 5.01	U	< 5.01	U
m,p-Xylene	~	200	96.3		12.8		30.1		5.51	
Methyl Ethyl Ketone	~	~	11.1		5.48		11.2		< 5.01	U
Methyl tert-butyl ether(MTBE)	~	~	< 5.01	U	< 5.01	U	< 5.01	U	< 5.01	U
Methylene Chloride	60	100	< 15.0	U	< 15.0	U	< 15.0	U	< 15.0	U
Naphthalene	~	60	< 5.23	UJ	< 5.23	UJ	< 5.23	UJ	< 5.23	UJ
n-Butylbenzene	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
o-Xylene	~	60	42.3		< 4.99	U	11.4		< 4.99	U
Propylene	~	~	18.6		< 5.01	U	20.6		< 5.01	U
sec-Butylbenzene	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
Styrene	~	~	< 4.98	U	< 4.98	U	< 4.98	U	< 4.98	U
Tetrachloroethene	30	100	24.1		330		191		5.49	
Tetrahydrofuran	~	~	< 5.01	U	< 5.01	U	< 5.01	U	< 5.01	U
Toluene	~	300	102		30.7		17.2		< 5.01	U
Trans-1,2-Dichloroethene	~	~	< 4.99	U	< 4.99	U	< 4.99	U	< 4.99	U
trans-1,3-Dichloropropene	~	~	< 4.99	U	< 4.99	U	< 4.99	U	< 4.99	U
Trichloroethene	2	6	15.7		418		397		6.07	
Trichlorofluoromethane	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
Trichlorotrifluoroethane	~	~	< 5.00	U	< 5.00	U	< 5.00	U	< 5.00	U
Vinyl Chloride	~	6	< 1.00	U	< 1.00	U	< 1.00	U	< 1.00	U

NOTES:

[Conc.] = Detected Concentration in Sample

Any Regulatory Exceedances are color coded by regulation:

[Conc.] = Exceedance of NYSDOH Decision Matrices Minimum Concentrations

[Conc.] = Exceedance of NYSDOH Air Guideline Values

Q = Laboratory Qualifiers:

~ = This indicates that no regulatory limit has been established for this analyte

U = Analyte not detected at or above the level indicated

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

Table 4B
VOCs in Soil Vapor Samples
2425 Atlantic Avenue, Brooklyn, NY

Sample ID Laboratory ID Sampling Date Sample Matrix	NYSDOH Air Guidline Values - AGVs	NYSDOH Decision Matrices Minimum Concentrations	25SV-1 (10') 25L1273-01 12/22/2025 Soil Vapor		25SV-2 (5') 25L1273-02 12/22/2025 Soil Vapor		25SV-3 (2') 25L1273-03 12/22/2025 Soil Vapor		25SV-4 (5') 25L1273-04 12/22/2025 Soil Vapor		25SV-6 (2') 25L1273-06 12/22/2025 Soil Vapor	
Compound			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
VOCs	ug/m3	ug/m3	ug/m3		ug/m3		ug/m3		ug/m3		ug/m3	
Dilution Factor			14.88		28.9		28.6		85.61		87.109	
1,1,1,2-Tetrachloroethane	~	~	1	U	5	U	4.9	U	11	U	11	U
1,1,1-Trichloroethane	100	100	0.81	U	3.9	U	3.9	U	8.7	U	8.9	U
1,1,2,2-Tetrachloroethane	~	~	1	U	5	U	4.9	U	11	U	11	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	~	~	1.1	U	5.5	U	5.5	U	12	U	12	U
1,1,2-Trichloroethane	~	~	0.81	U	3.9	U	3.9	U	8.7	U	8.9	U
1,1-Dichloroethane	~	~	0.6	U	2.9	U	2.9	U	6.5	U	6.6	U
1,1-Dichloroethylene	~	6	0.29	U	1.4	U	1.4	U	3.2	U	3.2	U
1,2,4-Trichlorobenzene	~	~	55	U	270	U	270	U	590	U	600	U
1,2,4-Trimethylbenzene	~	60	**4.1**	D	**6.4**	D	**7.8**	D	**7.9**	D	8	U
1,2-Dibromoethane	~	~	1.1	U	5.6	U	5.5	U	12	U	13	U
1,2-Dichlorobenzene	~	~	0.89	U	4.3	U	4.3	U	9.6	U	9.8	U
1,2-Dichloroethane	~	~	0.6	U	2.9	U	2.9	U	6.5	U	6.6	U
1,2-Dichloropropane	~	~	0.69	U	3.3	U	3.3	U	7.4	U	7.5	U
1,2-Dichlorotetrafluoroethane	~	~	1	U	5.1	U	5	U	11	U	11	U
1,3,5-Trimethylbenzene	~	60	**1.2**	D	3.6	U	3.5	U	7.9	U	8	U
1,3-Butadiene	~	~	**3.8**	D	4.8	U	4.8	U	11	U	11	U
1,3-Dichlorobenzene	~	~	0.89	U	4.3	U	4.3	U	9.6	U	9.8	U
1,3-Dichloropropane	~	~	0.69	U	3.3	U	3.3	U	7.4	U	7.5	U
1,4-Dichlorobenzene	~	~	0.89	U	4.3	U	4.3	U	9.6	U	9.8	U
1,4-Dioxane	~	~	2.7	U	13	U	13	U	29	U	29	U
2,2,4-Trimethylpentane	~	60	**3.1**	D	1.7	U	1.7	U	3.7	U	3.8	U
2-Butanone	~	~	22	U	110	U	110	U	240	U	240	U
2-Hexanone	~	~	**1.4**	D	**11**	D	5.9	U	13	U	13	U
3-Chloropropene	~	~	2.3	U	11	U	11	U	25	U	25	U
4-Methyl-2-pentanone	~	~	0.61	U	**14**	D	**4.1**	D	6.6	U	6.7	U
Acetone	~	~	**35**	D	86	U	85	U	190	U	190	U
Acrolein	~	~	0.34	U	1.7	U	1.6	U	3.7	U	3.7	U
Acrylonitrile	~	~	16	U	78	U	78	U	170	U	180	U
Benzene	~	60	**14**	D	**7.4**	D	**9.4**	D	**10**	D	5.2	U
Benzyl chloride	~	~	19	U	94	U	93	U	210	U	210	U
Bromodichloromethane	~	~	1	U	4.8	U	4.8	U	11	U	11	U
Bromoform	~	60	1.5	U	7.5	U	7.4	U	17	U	17	U
Bromomethane	~	~	0.58	U	2.8	U	2.8	U	6.2	U	6.3	U
Carbon disulfide	~	~	**6.2**	D	**16**	D	**4.5**	D	**40**	D	5.1	U
Carbon tetrachloride	5	6	0.28	U	1.4	U	1.4	U	3	U	3.1	U
Chlorobenzene	~	~	0.69	U	3.3	U	3.3	U	7.4	U	7.5	U
Chloroethane	~	~	0.39	U	1.9	U	1.9	U	4.2	U	4.3	U
Chloroform	~	~	**6.6**	D	**41**	D	**61**	D	**150**	D	**39**	D
Chloromethane	~	~	**0.89**	D	1.5	U	1.5	U	3.3	U	3.4	U
cis-1,2-Dichloroethylene	~	6	**29**	D	**38**	D	**55**	D	**30**	D	**33**	D
cis-1,3-Dichloropropylene	~	~	0.68	U	3.3	U	3.3	U	7.3	U	7.4	U
Cyclohexane	~	60	**4.3**	D	**2.7**	D	2.5	U	**14**	D	5.6	U
Dibromochloromethane	~	~	1.3	U	6.2	U	6.1	U	14	U	14	U
Dichlorodifluoromethane	~	~	**2.1**	D	3.6	U	3.6	U	7.9	U	8	U
Ethyl acetate	~	~	**32**	D	130	U	130	U	290	U	290	U
Ethyl Benzene	~	60	**22**	D	**67**	D	**62**	D	**88**	D	**38**	D
Hexachlorobutadiene	~	~	1.6	U	7.7	U	7.7	U	17	U	17	U
Isopropanol	~	~	**3.9**	D	11	U	11	U	24	U	24	U
Isopropylbenzene	~	~	**1.2**	D	3.6	U	3.5	U	**35**	D	**20**	D
Methyl Methacrylate	~	~	0.61	U	3	U	2.9	U	6.5	U	6.7	U
Methyl tert-butyl ether (MTBE)	~	~	0.54	U	2.6	U	2.6	U	5.8	U	5.9	U
Methylene chloride	60	100	3.1	U	15	U	15	U	33	U	34	U
Naphthalene	~	60	7.8	U	38	U	38	U	84	U	85	U
n-Butylbenzene	~	~	0.82	U	4	U	3.9	U	8.8	U	8.9	U
n-Heptane	~	200	0.61	U	3	U	2.9	U	**13**	D	6.7	U
n-Hexane	~	200	**11**	D	**3.3**	D	**2.5**	D	**23**	D	5.7	U
n-Propylbenzene	~	~	**0.95**	D	**3.9**	D	**3.9**	D	7.9	U	8	U
o-Xylene	~	60	**9.9**	D	**37**	D	**36**	D	**50**	D	**19**	D
p- & m- Xylenes	~	200	**62**	D	**250**	D	**230**	D	**320**	D	**150**	D
p-Ethyltoluene	~	~	0.73	U	3.6	U	3.5	U	7.9	U	8	U
p-Isopropyltoluene	~	~	0.82	U	4	U	3.9	U	8.8	U	8.9	U
Propylene	~	~	**61**	D	**16**	D	**13**	D	**520**	D	2.8	U
sec-Butylbenzene	~	~	0.82	U	4	U	3.9	U	8.8	U	8.9	U
Styrene	~	~	0.63	U	3.1	U	3.1	U	6.8	U	6.9	U
tert-Butylbenzene	~	~	0.82	U	4	U	3.9	U	8.8	U	8.9	U
Tetrachloroethylene	30	100	**8.5**	D	**480**	D	**680**	D	**830**	D	**590**	D
Tetrahydrofuran	~	~	0.88	U	4.3	U	4.2	U	9.4	U	9.6	U
Toluene	~	300	**29**	D	**32**	D	**39**	D	**33**	D	**13**	D
trans-1,2-Dichloroethylene	~	~	**0.65**	D	2.9	U	2.8	U	6.3	U	6.5	U
trans-1,3-Dichloropropylene	~	~	0.68	U	3.3	U	3.3	U	7.3	U	7.4	U
Trichloroethylene	2	6	**560**	D	**3000**	D	**3800**	D	**7800**	D	**7100**	D
Trichlorofluoromethane (Freon 11)	~	~	**1.2**	D	4.1	U	4	U	9	U	9.1	U
Vinyl acetate	~	~	0.52	U	2.5	U	2.5	U	5.6	U	5.7	U
Vinyl bromide	~	~	0.65	U	3.2	U	3.1	U	7	U	7.1	U
Vinyl Chloride	~	6	0.19	U	0.92	U	0.92	U	2	U	2.1	U
Xylenes, Total	~	~	**72**	D	**280**	D	**260**	D	**370**	D	**170**	D

NOTES:
[Conc.] = Detected Concentration in Sample
Any Regulatory Exceedances are color coded by regulation:
[Conc.] = Exceedance of NYSDOH Decision Matrices Minimum Concentrations
[Conc.] = Exceedance of NYSDOH Air Guideline Values

Q = Laboratory Qualifiers:
~ = This indicates that no regulatory limit has been established for this analyte
U = Analyte not detected at or above the level indicated
D = Result is from an analysis that required a dilution

Table 4C
VOCs in Sub-Slab Soil Vapor Samples
2425 Atlantic Avenue, Brooklyn, NY

Sample ID Laboratory ID Sampling Date Sample Matrix	NYSDOH Air Guidline Values - AGVs	NYSDOH SV 022024 Decision Matrices Minimum Concentrations	SS-1 25J1850-01 10/30/2025 Sub-Slab Soil Gas		SS-2 25J1850-02 10/30/2025 Sub-Slab Soil Gas		SS-3 25J1850-03 10/30/2025 Sub-Slab Soil Gas		SS-4 25J1850-04 10/30/2025 Sub-Slab Soil Gas		25SS-5 25L1273-05 12/22/2025 Sub-Slab Soil Gas		25SS-7 25L1273-07 12/22/2025 Sub-Slab Soil Gas		25SS-8 25L1273-08 12/22/2025 Sub-Slab Soil Gas	
Compound			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
VOCs	**ug/m3**	**ug/m3**	ug/m3		ug/m3		ug/m3		ug/m3		ug/m3		ug/m3		ug/m3	
Dilution Factor			81.755		76.455		29.1		3.104		5.908		6.996		15.67	
1,1,1,2-Tetrachloroethane	~	~	5.2	U	4.9	U	5	U	1.1	U	1	U	1.2	U	1.1	U
1,1,1-Trichloroethane	**100**	**100**	**9.2**	D	**5.5**	D	**4.8**	D	0.85	U	**2.3**	D	**1.4**	D	**0.94**	D
1,1,2,2-Tetrachloroethane	~	~	5.2	U	4.9	U	5	U	1.1	U	1	U	1.2	U	1.1	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	~	~	5.9	U	5.5	U	5.6	U	1.2	U	1.1	U	1.4	U	1.2	U
1,1,2-Trichloroethane	~	~	4.2	U	3.9	U	4	U	0.85	U	0.81	U	0.98	U	0.86	U
1,1-Dichloroethane	~	~	3.1	U	2.9	U	2.9	U	0.63	U	0.6	U	0.73	U	0.63	U
1,1-Dichloroethylene	~	**6**	1.5	U	1.4	U	1.4	U	0.31	U	0.29	U	0.36	U	0.31	U
1,2,4-Trichlorobenzene	~	~	280	U	260	U	270	U	58	U	55	U	67	U	58	U
1,2,4-Trimethylbenzene	~	**60**	3.8	U	3.5	U	3.6	U	**1.6**	D	**4.7**	D	**9.3**	D	**13**	D
1,2-Dibromoethane	~	~	5.9	U	5.5	U	5.6	U	1.2	U	1.1	U	1.4	U	1.2	U
1,2-Dichlorobenzene	~	~	4.6	U	4.3	U	4.4	U	0.93	U	0.89	U	1.1	U	0.94	U
1,2-Dichloroethane	~	~	3.1	U	2.9	U	2.9	U	0.63	U	0.6	U	0.73	U	0.63	U
1,2-Dichloropropane	~	~	3.5	U	3.3	U	3.4	U	0.72	U	0.68	U	0.83	U	0.72	U
1,2-Dichlorotetrafluoroethane	~	~	5.30	U	5	U	5.1	U	1.1	U	1	U	1.3	U	1.1	U
1,3,5-Trimethylbenzene	~	**60**	3.8	U	3.5	U	3.6	U	0.76	U	**1**	D	**2.6**	D	**3**	D
1,3-Butadiene	~	~	5.1	U	4.7	U	4.8	U	1	U	0.98	U	1.2	U	1	U
1,3-Dichlorobenzene	~	~	4.6	U	4.3	U	4.4	U	0.93	U	0.89	U	1.1	U	0.94	U
1,3-Dichloropropane	~	~	3.5	U	3.3	U	3.4	U	0.72	U	0.68	U	0.83	U	0.72	U
1,4-Dichlorobenzene	~	~	4.6	U	4.3	U	4.4	U	0.93	U	0.89	U	1.1	U	0.94	U
1,4-Dioxane	~	~	14	U	13	U	13	U	2.8	U	2.7	U	3.2	U	2.8	U
2,2,4-Trimethylpentane	~	**60**	1.8	U	1.7	U	1.7	U	0.36	U	0.35	U	0.42	U	0.37	U
2-Butanone	~	~	110	U	110	U	110	U	23	U	22	U	26	U	23	U
2-Hexanone	~	~	6.3	U	5.8	U	6	U	1.3	U	1.2	U	1.5	U	1.3	U
3-Chloropropene	~	~	12	U	11	U	11	U	2.4	U	2.3	U	2.8	U	2.5	U
4-Methyl-2-pentanone	~	~	3.1	U	2.9	U	3	U	**1.4**	D	**2.1**	D	**2.4**	D	0.64	U
Acetone	~	~	91	U	**100**	D	86	U	18	U	**130**	D	21	U	19	U
Acrolein	~	~	1.8	U	1.6	U	1.7	U	0.36	U	0.34	U	0.41	U	0.36	U
Acrylonitrile	~	~	83	U	77	U	79	U	17	U	16	U	19	U	17	U
Benzene	~	**60**	**3.7**	D	2.3	U	2.3	U	**1.1**	D	**1.1**	D	**0.63**	D	**0.55**	D
Benzyl chloride	~	~	99	U	92	U	94	U	20	U	19	U	23	U	20	U
Bromodichloromethane	~	~	5.1	U	4.8	U	4.9	U	1	U	0.99	U	1.2	U	1	U
Bromoform	~	**60**	7.9	U	7.4	U	7.5	U	2	U	1.5	U	1.9	U	1.6	U
Bromomethane	~	~	3	U	2.8	U	2.8	U	0.6	U	0.57	U	0.7	U	0.61	U
Carbon disulfide	~	~	**5.5**	D	2.2	U	2.3	U	**3**	D	0.46	U	0.56	U	0.49	U
Carbon tetrachloride	**5**	**6**	1.2	U	1.1	U	1.1	U	0.24	U	0.28	U	0.34	U	0.3	U
Chlorobenzene	~	~	3.5	U	3.3	U	3.3	U	0.71	U	0.68	U	0.83	U	0.72	U
Chloroethane	~	~	2	U	1.9	U	1.9	U	0.41	U	0.39	U	0.47	U	0.41	U
Chloroform	~	~	**30**	D	**56**	D	**150**	D	**36**	D	0.72	U	**8.5**	D	**3.3**	D
Chloromethane	~	~	1.6	U	1.5	U	1.5	U	**0.51**	D	0.31	U	0.37	U	0.32	U
cis-1,2-Dichloroethylene	~	**6**	**18**	D	**100**	D	**16**	D	0.31	U	**2**	D	0.36	U	**1.6**	D
cis-1,3-Dichloropropylene	~	~	3.5	U	3.2	U	3.3	U	0.7	U	0.67	U	0.81	U	0.71	U
Cyclohexane	~	**60**	**6**	D	2.5	U	**6**	D	0.53	U	0.51	U	0.62	U	0.54	U
Dibromochloromethane	~	~	6.5	U	6.1	U	6.2	U	1.3	U	1.3	U	1.5	U	1.3	U
Dichlorodifluoromethane	~	~	3.8	U	3.5	U	3.6	U	**2.1**	D	**2.1**	D	0.89	U	0.77	U
Ethyl acetate	~	~	140	U	130	U	130	U	28	U	27	U	32	U	28	U
Ethyl Benzene	~	**60**	3.3	U	3.1	U	3.2	U	**0.94**	D	**30**	D	**40**	D	**44**	D
Hexachlorobutadiene	~	~	8.1	U	7.6	U	7.8	U	1.7	U	1.6	U	1.9	U	1.7	U
Isopropanol	~	~	11	U	11	U	11	U	2.3	U	2.2	U	2.6	U	2.3	U
Isopropylbenzene	~	~	3.8	U	3.5	U	3.6	U	0.76	U	0.73	U	**0.97**	D	**1.2**	D
Methyl Methacrylate	~	~	3.1	U	2.9	U	3	U	0.64	U	0.6	U	0.73	U	0.64	U
Methyl tert-butyl ether (MTBE)	~	~	2.8	U	2.6	U	2.6	U	0.56	U	0.53	U	0.65	U	0.56	U
Methylene chloride	**60**	**100**	16	U	15	U	15	U	3.2	U	3.1	U	3.7	U	3.3	U
Naphthalene	~	**60**	40	U	37	U	38	U	8.1	U	7.7	U	9.4	U	8.2	U
n-Butylbenzene	~	~	4.2	U	3.9	U	4	U	0.85	U	0.81	U	0.98	U	**1.6**	D
n-Heptane	~	**200**	**29**	D	2.9	U	3	U	0.64	U	0.61	U	**1**	D	**0.9**	D
n-Hexane	~	**200**	**42**	D	2.5	U	2.6	U	0.55	U	0.52	U	0.63	U	0.55	U
n-Propylbenzene	~	~	3.8	U	3.5	U	3.6	U	0.76	U	**1.3**	D	**3.6**	D	**4.8**	D
o-Xylene	~	**60**	3.3	U	3.1	U	3.2	U	**1.1**	D	**13**	D	**21**	D	**27**	D
p- & m- Xylenes	~	**200**	**7.6**	D	6.2	U	6.3	U	**3.8**	D	**120**	D	**170**	D	**180**	D
p-Ethyltoluene	~	~	3.8	U	3.5	U	3.6	U	**1.4**	D	0.73	U	0.88	U	0.77	U
p-Isopropyltoluene	~	~	4.2	U	3.9	U	4	U	0.85	U	0.81	U	0.98	U	0.86	U
Propylene	~	~	1.3	U	1.2	U	1.3	U	0.27	U	**0.79**	D	**1.4**	D	0.27	U
sec-Butylbenzene	~	~	4.2	U	3.9	U	4	U	0.85	U	0.81	U	0.98	U	0.86	U
Styrene	~	~	3.3	U	3	U	3.1	U	0.66	U	**0.63**	D	0.76	U	**1**	D
tert-Butylbenzene	~	~	4.2	U	3.9	U	4	U	0.85	U	0.81	U	0.98	U	0.86	U
Tetrachloroethylene	**30**	**100**	**1,800**	D	**1,800**	D	**1,100**	D	**370**	D	**360**	D	**130**	D	**230**	D
Tetrahydrofuran	~	~	4.5	U	**6.7**	D	4.3	U	0.92	U	0.87	U	1.1	U	0.92	U
Toluene	~	**300**	**18**	D	**6.5**	D	**6**	D	**6.9**	D	**7.3**	D	**8.9**	D	**9.4**	D
trans-1,2-Dichloroethylene	~	~	3	U	**4.5**	D	2.9	U	0.62	U	0.59	U	0.71	U	0.62	U
trans-1,3-Dichloropropylene	~	~	3.5	U	3.2	U	3.3	U	0.7	U	0.67	U	0.81	U	0.71	U
Trichloroethylene	**2**	**6**	**10,000**	D	**12,000**	D	**3,400**	D	**380**	D	**380**	D	**470**	D	**770**	D
Trichlorofluoromethane (Freon 11)	~	~	4.3	U	4	U	4.1	U	**1.2**	D	**1.3**	D	**1.2**	D	**1.1**	D
Vinyl acetate	~	~	2.7	U	2.5	U	2.6	U	0.55	U	0.52	U	0.63	U	0.55	U
Vinyl bromide	~	~	3.3	U	3.1	U	3.2	U	0.7	U	0.65	U	0.78	U	0.69	U
Vinyl Chloride	~	**6**	0.98	U	0.91	U	0.93	U	0.2	U	0.19	U	0.23	U	0.2	U
Xylenes, Total	~	~	9.9	U	9.3	U	9.5	U	**4.9**	D	**130**	D	**190**	D	**210**	D

NOTES:

[Conc.] = Detected Concentration in Sample

Any Regulatory Exceedances are color coded by regulation:

[Conc.] = Exceedance of NYSDOH Decision Matrices Minimum Concentrations

[Conc.] = Exceedance of NYSDOH Air Guideline Values

Q = Laboratory Qualifiers:
~ = This indicates that no regulatory limit has been established for this analyte
U = Analyte not detected at or above the level indicated
D = Result is from an analysis that required a dilution

Table 5
2425 Atlantic Avenue (CXXXXXX)
Remedial Cost Estimate for Alternative 1
Track 1 Unrestricted Use Cleanup

Task No.	Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost
Site Preparation/Contractor Fees					
1	Mobilization/Demobilization, Fence, Security, Site Maintenance	LS			$500,000
2	Decontamination Area	LS			$10,000
3	Permitting	LS			$35,000
4	In-situ Waste Characterization	LS			$150,000
5	Soil Excavation	8,000	CY	$30	$240,000
6	Off-site Soil Disposal (Non-Hazardous)	12,000	Ton	$85	$1,020,000
7	Well Abandonment	LS			$10,000
8	Support of Excavation (SOE)	LS			$200,000
9	Dust, Odor, Vapor Control	5	Month	$10,000	$50,000
10	Import of Clean Fill	5,000	CY	$35	$175,000
11	Surveying	LS			$15,000
Engineering and Consulting Fees					
15	Project Management, Reporting (Daily Reports, Monthly Reports)	5	Month	$10,000	$50,000
16	Endpoint Sampling	21	Sample	$1,500	$31,500
17	Excavation Oversight and CAMP	5	Month	$30,000	$150,000
18	SOE Design and Special SOE Inspections	LS			$150,000
19	Final Engineering Report	LS			$25,000
				Subtotal	$2,811,500
				20% Contingency	$562,300
				Estimated Total	**$3,373,800**

Table 6
2425 Atlantic Avenue (CXXXXXX)
Remedial Cost Estimate for Alternatives 2 and 3
Track 2 and Track 4 Restricted Residential Cleanup

Task No.	Description	Estimated Quantity	Unit	Unit Cost	Estimated Cost
Site Preparation/Contractor Fees					
1	Mobilization/Demobilization, Fence, Security, Site Maintenance		LS		$500,000
2	Decontamination Area		LS		$10,000
3	Permitting		LS		$35,000
4	In-situ Waste Characterization		LS		$80,000
5	Soil Excavation	1,500	CY	$30	$45,000
6	Off-site Soil Disposal (Non-Hazardous)	2,100	Ton	$85	$178,500
7	Well Abandonment		LS		$10,000
8	Dust, Odor, Vapor Control	5	Month	$10,000	$50,000
9	Import of Clean Fill	1,000	CY	$35	$35,000
10	Surveying		LS		$15,000
Engineering and Consulting Fees					
11	Project Management, Reporting (Daily Reports, Monthly Reports)	5	Month	$10,000	$50,000
12	Endpoint Sampling	21	Sample	$1,500	$31,500
13	Excavation Oversight and CAMP	5	Month	$30,000	$150,000
14	Final Engineering Report, Environmental Easement, Site Management Plan		LS		$55,000
				Subtotal	$1,245,000
				20% Contingency	$249,000
				Estimated Total	**$1,494,000**

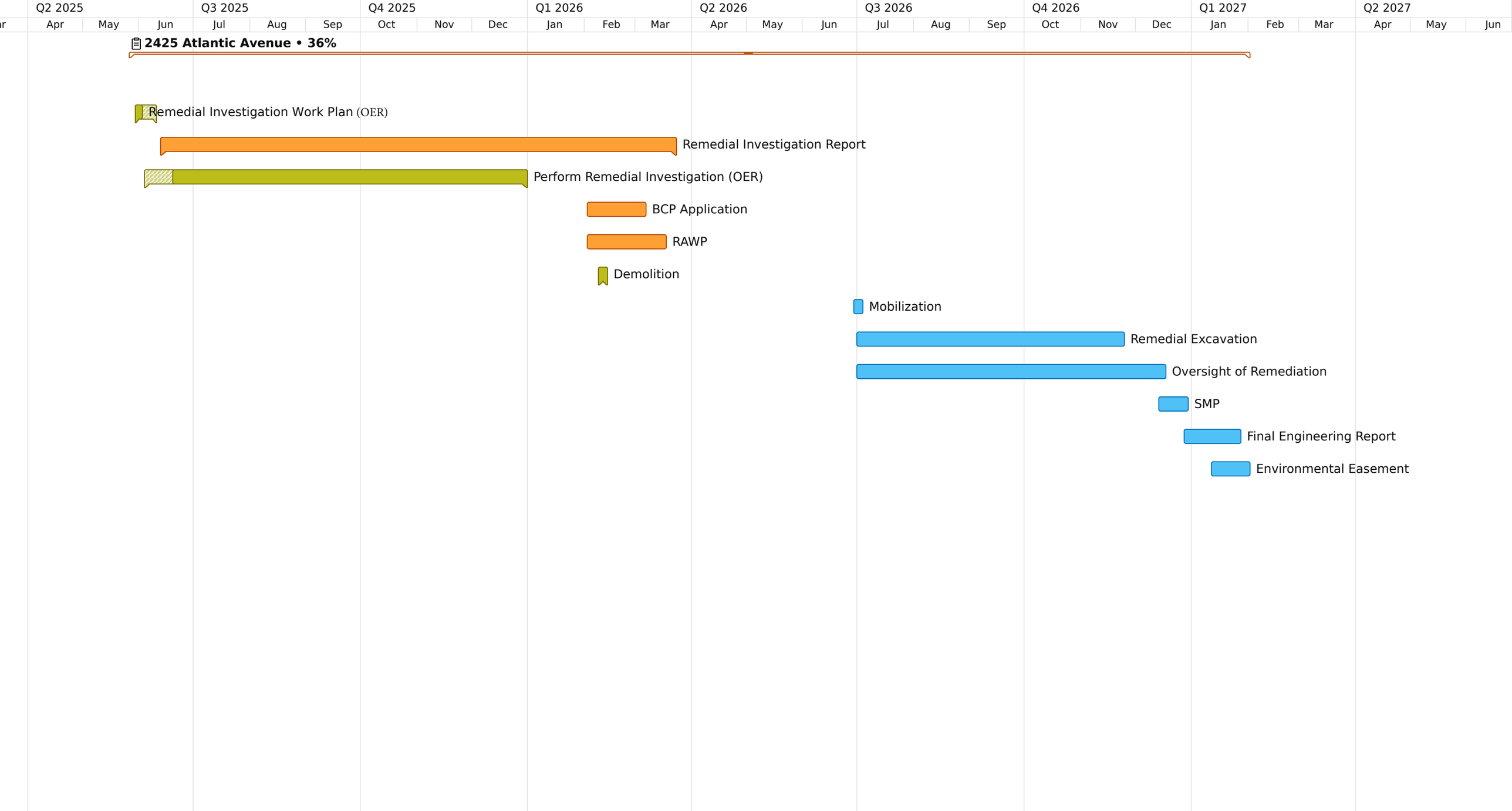

Q2 2025
Q3 2025
Q4 2025
Q1 2026
Q2 2026
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2425 Atlantic Avenue • 36%
Remedial Investigation Work Plan (OER)
Remedial Investigation Report
Perform Remedial Investigation (OER)
BCP Application
RAWP
Demolition
Mobilization
Remedial Excavation
Oversight of Remediation
SMP
Final Engineering Report
Environmental Easement

Table 8
Endpoint Sampling Rationale and Summary
2425 Atlantic Avenue, Brooklyn, New York

Sample Matrix	Sample ID	Sample Interval (feet below surface grade)	Rationale	Estimated Number of Samples	Analysis
SOIL	EP-1	Collect at 2 feet below grade and el. 61.25	To assess if Track 4 SCOs are achieved at the bottom of excavation	1	Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), Pesticides, Total Analyte List (TAL) Metals, Cyanide total, per- and poly-fluoroalkyl substances (PFAS), and 1,4-dioxane
	EP-2	Collect at 2 feet below grade and el. 61.25		1	
	EP-3	Collect at 2 feet below grade and el. 61.25		1	
	EP-4	Collect at 2 feet below grade and el. 61.25		1	
	EP-5	Collect at 2 feet below grade and el. 61.25		1	
	EP-6	Collect at 2 feet below grade and el. 69.5		1	
	EP-7	Collect at 2 feet below grade and el. 69.5		1	
	EP-8	Collect at 2 feet below grade and el. 61.25		1	
	EP-9	Collect at 2 feet below grade and el. 61.25		1	
	EP-10	Collect at 2 feet below grade and el. 61.25		1	
	EP-11	Collect at 2 feet below grade and el. 61.25		1	
	EP-12	Collect at 2 feet below grade and el. 61.25		1	
	EP-13	Collect at 2 feet below grade and el. 69.5		1	
	EP-14	Collect at 2 feet below grade and el. 69.5		1	
	EP-15	Collect at 2 feet below grade and el. 61.25		1	
	EP-16	Collect at 2 feet below grade and el. 61.25		1	
	EP-17	Collect at 2 feet below grade and el. 61.25		1	
	EP-18	Collect at 2 feet below grade and el. 61.25		1	
	EP-19	Collect at 2 feet below grade and el. 61.25		1	
	EP-20	Collect at 2 feet below grade and el. 69.5		1	
	EP-21	Collect at 2 feet below grade and el. 69.5		1	

* Additional soil samples may be collected based on field conditions (i.e: post excavation lab results, elevated PID readings, odor, sheen, etc.)

Table 8
Endpoint Sampling Rationale and Summary
2425 Atlantic Avenue, Brooklyn, New York

Sample Matrix	Sample ID	Sample Interval (feet below surface grade)	Rationale	Estimated Number of Samples	Analysis
SOIL	SB-MS/MSD-3 (Depth)	One per 20 soil samples	QA/QC	1	TCL VOCs, SVOCs, PCBs), Pesticides, Total Analyte List (TAL) Metals, Cyanide total, per- and poly-fluoroalkyl substances (PFAS), and 1,4-dioxane
	FB-1	Field Blank per 20 samples	QA/QC	1	
	FB-2	Field Blank per 20 samples	QA/QC	1	
Water	TB-1	Trip Blank: 1 per cooler per day (Lab-prepared)	QA/QC	10	TCL VOCs

Totals

Sample #s	Rationale	Total
EP-1 through EP-21	Assess Track 4 at Remedial Depth	21
Field Duplicate	QA/QC	2
MS/MSD		4
Field Blank		2
Trip Blank		10
Total Samples		39

* Additional soil samples may be collected based on field conditions (i.e: post excavation lab results, elevated PID readings, odor, sheen, etc.)

APPENDICES

APPENDIX A

METES & BOUNDS

Infinity Land Services as agent for Fidelity National Title Insurance Company

Title No: IL15898

Schedule A (Legal Description)

ALL that certain plot, piece or parcel of land, situate, lying and being in the Borough of Brooklyn, County of Kings, City and State of New York, bounded and described as follows:

BEGINNING at the corner formed by the intersection of the northerly side of Atlantic Avenue with the westerly side of Havens Place;

RUNNING THENCE northerly along the westerly side of Havens Place, 190 feet 7 inches;

THENCE westerly parallel with the northerly side of Atlantic Avenue, 92 feet;

THENCE southerly parallel with the westerly side of Havens Place, 190 feet 7 inches to the northerly side of Atlantic Avenue;

THENCE along the northerly side of Atlantic, 92 feet to the point or place of **BEGINNING**

FOR INFORMATIONAL PURPOSES ONLY:
2425 Atlantic Avenue a/k/a 2425-2435 Atlantic Avenue a/k/a 30-42 Havens Place, Brooklyn, NY 11233 a/k/a Block 1574 Lot 23 on the KINGS County Tax Map.

For conveyancing only:
TOGETHER with all the right, title and interest of the party of the first part, of, in and to the land lying in the street in front of and adjoining said premises.

APPENDIX B

HEALTH AND SAFETY PLAN

vEKtor consultants

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f: +1.347.402.7735 www.vektorconsultants.com

CONSTRUCTION HEALTH AND SAFETY PLAN

Prepared For: Atlantic Junction GP Inc.

Project Name: 2425 Atlantic Avenue & 30 Havens Place

Project Location: 2425 Atlantic Avenue, Brooklyn, New York

Date: March 2026

555 8th Avenue, Suite 2302, New York, NY 10018

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Figure 1: Site Location Map

Attachment 1: Job Hazard Analysis Worksheet

Attachment 2: Directions to Hospital

Emergency Contacts			
Position	**Name**	**Organization**	**Phone**
Project Director, QEP	Ezgi Karayel	Vektor Consultants	(347) 871-0750
Project Manager	Alex Keenan	Vektor Consultants	(347) 871-0750
Site Supervisor	TBD		
Site Health and Safety Supervisor	Alex Keenan	Vektor Consultants	(347) 871-0750
Client Contact	Abe Biller	Atlantic Junction GP Inc.	(845) 213 8361
Emergency Response		FDNY	911
Spill Hotline		NYSDEC	(800) 457-7362

Emergency Medical Facility	
Primary	***Alternate***
NYC Health + Hospitals – Gotham Health, Brownsville 259 Bristol Street, Brooklyn, NY 11212 Tel: (844) 692-4692 Open Monday-Friday 8:30am-4:30pm Closed Saturday and Sunday	Jamaica Hospital 3080 Atlantic Avenue, Brooklyn, NY 11208 Tel: (718) 647-0240 Open Monday-Friday 8am-8pm Closed Saturday and Sunday
Route to emergency medical facility map attached to back of this construction health & safety plan	

Sign-in Sheet

Name	Signature	Company	Date

1.0 INTRODUCTION

This Construction Health and Safety Plan (CHASP) has been prepared on behalf of Atlantic Junction GP Inc. for the implementation of a Remedial Action Work Plan (RAWP) by Vektor Consultants, LLC (Vektor) and its subcontractors at the property located at 2425 Atlantic Avenue, Brooklyn, New York (the Site). The Site is identified by the City of New York as Borough of Queens, Tax Block 1574 and Lots 23 and 24 (formerly Lot 23).

This CHASP describes lines of authority, responsibility, and communication as they pertain to health and safety functions at this site in compliance with *29 CFR 1910.120(b)(2) and 29 CFR 1926.65(b)(2)*. This plan also details key personnel who are responsible for the development and implementation of the CHASP. Vektor field personnel will implement this CHASP during the implementation of Remedial Action Work Plan (RAWP).

1.1 Site Location and Description

The Site is located at 2425 Atlantic Avenue, 2433 Atlantic Avenue and 28-42 Havens Place within the Broadway Junction/Brownsville neighborhood of Brooklyn, NY. It is located on the north side of Atlantic Avenue between Havens Place to the east and Jardine Place to the west. The site is legally identified as Kings County Tax Block 1574 Lots 23 and 24, where former lot 23 was subdivided into new Lots 23 and 24 on the New York City Tax Map. The Site is bound to the north by multiple 3 story residential buildings (14 &18 Havens Place and 1480-1488 Herkimer Street), followed by Herkimer Street, Atlantic Avenue to the south followed by a single story and a four story commercial building (2416 & 2432 Atlantic Avenue), Havens Place followed by a parking lot to the east (2441 Atlantic Avenue), and 2 story residential and single story commercial buildings to the west (2413 Atlantic Avenue and 9-19 Jardine Place) followed by Jardine Place.

A site location map is provided as Figure 1.

The former Site buildings have been demolished and the Site is capped by concrete slabs and secured with construction fencing.

1.2 Summary of Previous Investigations

The following reports were reviewed during the preparation of this CHASP in order to determine potential hazards:

Phase II Environmental Site Assessment Report by Impact Environmental, July 26, 2001

A Phase II ESA was conducted by Impact Environmental (IE) in 2001 on behalf of Comprehensive Archives, Inc. The scope of the Phase II consisted of: 1) a remote sensing survey to confirm the presence of any abandoned USTs and 2) an investigation to determine

what, if any, contaminants were released to the subsurface soil of the Site as a result of the on-Site operations.

A GPR survey was performed to identify the presence of abandoned USTs. Two subsurface anomalies were identified. One anomaly was detected on the northern side of the existing building immediately adjacent to a structure that contained a heating unit. The other anomaly was detected on the southern side of the building within the basement. Both anomalies had an east-west orientation.

Five boring locations, designated SP-1 through SP-5, were advanced at the site. One sample each was collected from the two tank areas and one sample each was collected from the four UIW structures for a total of 6 soil samples. Analytical results from the SP-2 UST location identified VOCs and total Xylenes above the TAGM #4046 guidelines and sample results from the SP-4 UST location were detected below the applicable guidance criteria. UIW sampling results identified exceedances of PAH SVOCs in UIW-1 and UIW-4 and Metals in all four UIW sample locations.

Following the Phase II ESA, IE then conducted closure activities in order to address the contaminated soil associated with the 1,100-gallon fuel oil UST and proper removal of same.

A 1,100-gallon UST and contaminated soil was excavated and removed from the property under the auspices of the NYSDEC. Endpoint samples were collected and the analytical results satisfied the NYSDEC soil cleanup objectives according to TAGM#HR-94-4046 and Spill No. 01-06974 was closed. Impacted sediments detected within the IUWs were excavated and removed from the property in accordance with a remediation plan approved by USEPA. Endpoint samples from the UIWs satisfied NYSDEC soil cleanup objectives according to TAGM#HR-94-4046.

Remedial Investigation Report was performed by Vektor Consultants, Inc. dated March 2026

On behalf of Haven Junction GP Inc., Vektor performed the following scope of work on June 20, 2025, October 30, 2025, November 11, 2025, and December 18-22, 2025:

8. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);

8. Performed a geophysical survey to locate unidentified underground storage tanks (USTs) and identify utilities in the vicinity of the boring locations;

8. Installed twenty soil borings across the entire project Site, and collected fifty-three soil samples in addition to one duplicate soil sample for chemical analysis to evaluate soil quality;

8. Installed two off-site monitoring wells in the sidewalk adjacent to the southern and eastern Site boundaries, four on-site monitoring wells, and collected six groundwater samples to evaluate groundwater quality;

8. Installed eleven soil vapor probes throughout the Site and collected nine samples for chemical analysis to evaluate soil vapor quality; and

8. Installed seven sub-slab vapor probes throughout the Site and collected seven samples for chemical analysis to evaluate sub-slab vapor quality.

Summary of Environmental Findings

1. Elevation of the property ranges from approximately 70 to 72 feet NAVD88.

2. Depth to groundwater ranges from 61.80 to 63.30 feet below grade surface (bgs) at the Site.

3. Groundwater flow is generally from northeast to southwest beneath the Site.

4. Bedrock was not encountered during this RI. However, based on data provided by the United States Geological Survey (USGS), depth to bedrock beneath the Site is anticipated to be greater than 100 feet bgs.

5. The stratigraphy of the site, from the surface down, generally consisted of sand and silty sand with varying amounts of fine- to coarse-grained gravel to approximately 25 feet below grade and limited/discontinuous shallow fill material in select soil borings.

6. Soil/fill samples collected during the RI were compared to the New York State Department of Environmental Conservation (NYSDEC) Part 375 Unrestricted Use Soil Cleanup Objectives (SCOs) and NYSDEC Part 375 Restricted Use Soil Cleanup Objectives Restricted Residential SCOs.

    - Two VOCs, acetone (max. of 0.084 ppm in SB-7 (8-10') and trichloroethene (max. of 1.6 ppm in SB-10 (8-10') were identified above the UUSCO of 0.05 ppm and 0.47 ppm, respectively, but below the RRSCO of 100 ppm and 21 ppm, respectively. Acetone is a common laboratory contaminant and is not a contaminant of concern at the site. Acetone, which is a common laboratory artifact, was detected in several samples at low concentrations.
    - No SVOCs were detected in the soil samples above the UUSCOs or RRSCOs.
    - Five pesticides, 4,4'-DDD (max. of 0.00382 ppm in SB-7 (8-10')), 4,4'-DDE (max. of 0.0519 ppm in SB-7 (8-10')), 4,4'-DDT (max. of 0.00847 ppm in SB-5 (0-2')), alpha-chlordane (max. of 0.0249 ppm in SB-5 (0-2)), and dieldrin (max. of 0.0121 ppm in SB-5 (0-2')) were detected at concentrations exceeding UUSCOs (0.0033 ppm for 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT and

0,005 ppm for dieldrin) but below RRSCOs (13 ppm for 4,4'-DDD, 8.9 ppm for 4,4'-DDE, 7.9 ppm for 4,4'-DDT, and 0.2 ppm for dieldrin.

- Total PCBs were detected at concentrations exceeding the UUSCO of 0.1 ppm in SB-4(0-2) (0.118 ppm) and SB-4(6-8) (0.142 ppm) but below the RRSCO of 1 ppm.
- Three metals, copper (max. of 99.9 ppm in SB-4(0-2')), lead (max. of 159 ppm in SB-4(0-2')), and zinc (max. of 272 ppm in SB-4(0-2')) were detected at concentrations exceeding the UUSCOs of 50 ppm, 63 ppm, and 109 ppm, respectively but below the RRSCOs of 270 ppm, 400 ppm, and 10,000 ppm, respectively. One metal, manganese (2,100 ppm in the duplicate sample DUP-1, collected from parent sample SB-3 (8-10) was identified at a concentration exceeding the RRSCO of 2,000 ppm).
- No PFAS compounds or 1,4-dioxane were detected in the soil samples above the UUSCOs or RRSCOs.

7. Groundwater samples collected during the RI were compared to the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS 1.1.1) Ambient Water Quality Standards (AWQS) and the Guidance Values published in "Sampling, Analysis and Assessment of PFAS under NYSDEC's Part 375 Remedial Programs"

- No SVOCs, PCBs, or pesticides were detected at concentrations exceeding their respective AWQS.
- Three VOCs, chloroform (max. of 11.8 µg/L in SW-1), methylene chloride (max. of 6.08 µg/L in SW-1), and benzene (max. of 1.32 µg/L in 25MW-4) were detected at concentrations exceeding their respective AWQS (7 µg/L for chloroform, 5 µg/L for methylene chloride, and 1 µg/L for benzene). It should be noted that chloroform and methylene chloride are common laboratory contaminants and chloroform was detected at an elevated concentration of 24.4 µg/L in the field blank collected during the sampling event. Chloroform and methylene chloride are not contaminants of concern at this site.
- Seven total metals were detected in SW-1 at concentrations exceeding their respective AWQS. Specifically, chromium (476 µg/L exceeding 50 µg/L), copper (250 µg/L exceeding 200 µg/L), magnesium (35,500 µg/L exceeding 35,500 µg/L), manganese (12,300 µg/L exceeding 300 µg/L), nickel (368 µg/L exceeding 100 µg/L), sodium (92,300 µg/L exceeding 20,000 µg/L), and beryllium (3.82 µg/L exceeding 3 µg/L).

- Seven dissolved metals were detected in SW-1 at concentrations exceeding their respective AWQS. Specifically, chromium (1,270 µg/L exceeding 50 µg/L), copper (299 µg/L exceeding 200 µg/L), magnesium (42,800 µg/L exceeding 35,500 µg/L), manganese (4,590 µg/L exceeding 300 µg/L), nickel (258 µg/L exceeding 100 µg/L), sodium (77,000 µg/L exceeding 20,000 µg/L), and beryllium (3.41 µg/L exceeding 3 µg/L).

8. Soil vapor samples collected during the RI were compared to the compounds listed in Table 3.1 of the Air Guideline Values derived by the NYSDOH located in the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006 and the revised NYSDOH Decision Matrices dated May 2017 and February 2024.

Soil Vapor (July 2025)

Four soil vapor samples were collected on July 20, 2025. SV-1, SV-3, SV-4 and SV-5. SV-1 and SV-4 were installed to a depth of 7.5 and 7 feet, respectively. SV-2, SV-3, SV-5 and SV-6 were installed in the building cellar which was approximately 8 feet bgs. SV-2 and SV-6 were installed to a total depth of 15 feet and SV-3 and SV-5 were installed to a total depth of 12.5 feet. Two soil vapor samples (SV-2 and SV-6) were not analyzed due to improperly calibrated flow regulators.

- The total concentrations of benzene, toluene, ethyl benzene, and total xylenes (BTEX) ranged from 5.51 micrograms per cubic meter (ug/m^3) in SV-5 to 334 ug/m^3 in SV-1.
- Other petroleum compounds detected included Cyclohexane in SV-3 at 85.3 ug/m^3 in exceedance of the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3, and Isooctane in SV-4 at 267 ug/m^3 in exceedance of the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3.
- Concentrations of the chlorinated VOC Tetrachloroethene (PCE) were detected in exceedance of the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in SV-3 at 330 ug/m^3, and 191 ug/m^3 in SV-4. Concentrations of Trichloroethene (TCE) exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all four samples, with a maximum concentration of 418 ug/m^3 detected in SV-3. Concentrations of Cis-1,2-Dicholorethene, a common breakdown compound of solvents like TCE, was detected in exceedance of the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in SV-3 at 13.6 ug/m^3 and in SV-4 at 16.2 ug/m^3.

Sub-Slab Soil Vapor (October and December 2025)

Four sub-slab soil vapor samples (SS-1 through SS-4) were collected on October 30, 2025, and three sub-slab soil vapor samples (25SS-5, 25SS-7 and 25SS-8) were collected on December 22, 2025.

- Of the seven sub-slab soil vapor samples collected in October and December 2025, no exceedances of BTEX or other petroleum compounds were identified.
- Concentrations of PCE exceeded the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in all seven samples, with concentrations ranging from 130 ug/m^3 in 25SS-7 to 1,800 ug/m^3 in SS-1 and SS-2.
- Concentrations of TCE exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all seven samples, with concentrations ranging from 380 ug/m^3 in 25SS-5 and SS-4 to 12,000 ug/m^3 in SS-2.
- Concentrations of Cis-1,2-Dichloroethene exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in three samples, with concentrations ranging from 16 ug/m^3 in SS-3 to 100 ug/m^3 in SS-2.

The concentrations of PCE and TCE detected in SS-1 through SS-3 yields a "Mitigate" action for the NYSDOH Indoor Air Matrices A and B, regardless of indoor air concentrations.

Soil Vapor (December 2025)

Five soil vapor samples [25SV-1 (10'), 25SV-2 (5'), 25SV-3 (2'), 25SV-4 (5') and 25SV-6 (2')] were collected on December 22, 2025, at varying depths. 25SV-1 (10'), 25SV-2 (5') and 25SV-3 (2') were collected in the building cellar along the western property boundary (adjacent to lot 32) and 25SV-4 (5') and 25SV-6 (2') were collected in the northern portion of the building cellar.

- The total concentrations of benzene, toluene, ethyl benzene, and total xylenes (BTEX) ranged from 136.9 ug/m^3 in 25SV-1 (10') to 501 ug/m^3 in 25SV-4 (5'). Concentrations of ethyl benzene exceeded the NYSDOH Decision Matrices minimum concentration value of 60 ug/m^3 in 25SV-2 (5') at 67 ug/m^3, 25SV-3 (2') at 62 ug/m^3 and 25SV-4 (5') at 88 ug/m^3. Concentrations of p&m-Xylenes exceeded the NYSDOH Decision Matrices minimum concentration value of 200 ug/m^3 in 25SV-2 (5') at 250 ug/m^3, 25SV-3 (2') at 230 ug/m^3 and 25SV-4 (5') at 320 ug/m^3.
- Concentrations of PCE exceeded the NYSDOH Decision Matrices minimum concentration value of 100 ug/m^3 in four samples, with a maximum concentration of 830 ug/m^3 in 25SV-4 (5')

- Concentrations of TCE exceeded the NYSDOH Decision Matrices minimum concentration value of 6 ug/m^3 in all five samples, with concentrations ranging from 560 ug/m^3 in 25SV-1 (10') to 7,800 ug/m^3 in 25SV-4 (5').

1.3 Remedial Action Work Plan

The planned remedial action achieves protection of public health and the environment for the intended use of the property. The remedial action will consist of:

- Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
- Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
- Selection of Unrestricted Use (Track 4) Soil Cleanup Objectives (SCOs).
- Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
- Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s).
- Excavation and removal of soil/fill exceeding Track 4 Soil Cleanup Objectives. The entire footprint of the building area (about 100% of the property) will be excavated to a depth of approximately 2 feet below grade for remedial purposes. Approximately 1,500 cubic yards (or 2,00 tons) of soil/fill will be removed from the Site and properly disposed at an appropriately licensed or permitted facility.
- Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
- Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
- Removal of all UST's that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and

appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.

- Transportation and off-Site disposal of all soil/fill material at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.

- Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of Track 4 SCOs.

- Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.

- Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.

- Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

- Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and lists any changes from this RAWP.

- As part of development, construction of an engineered composite cover consisting of a six-inch concrete mat slab with a six to ten-inch layer of ASTM #5 gravel beneath all building areas.

- As part of development, installation of a vapor barrier system consisting of vapor barrier beneath the building slab and outside of sub-grade foundation sidewalls to mitigate soil vapor migration into the building. The vapor barrier system will consist of 20-mil Stego Wrap manufactured by Stego Industries or approved equal below the slab throughout the full building area and outside all sub-grade foundation sidewalls. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration.

- As part of development, installation of an active sub-slab depressurization system (SSDS) consisting of three loops below the new building slab and will be installed as a mitigation system to prevent vapor migration into the new building. Each loop will consist of fabric wrapped, perforated 4" SCH 40 PVC that will be connected to a 4" solid PVC pipe below ground, which then will be connected to a 6" cast iron or vertical riser above the slab. Each loop will have its own riser for a total of three risers. Gas

permeable layer will consist of a 6 to 10-inch-thick layer of ASTM #5 gravel. The exhaust riser will be located at least 12 inches of the roof line, and 10 feet away from any fresh air intake or from any other building. A Radon Away RP265 vacuum blower or approved equal will be installed and hardwired on the roof line. The vertical risers will terminate at the roof line with a rain cap to prevent rain infiltration. Access panels, pressure gauge and alarm will consist of a magnehelic pressure gauge and a Radon Away alarm (or approved equal) and will be located in the cellar. The PE for the Remedial Action will inspect the system and confirm that the effluent discharge point is a minimum of 10 feet from any operable window or air intake for any building. The efficacy of the SSDS will be confirmed via monitoring/vacuum points installed in the cellar floor slab. SSDS risers will be labeled "sub-slab depressurization system" at least every 50 feet for identification. The active SSDS is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the active SSDS was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient across the building slab to prevent vapor migration into the building.

- Continued operation of the SSDS will be determined upon one year of active operation based on the results of a soil vapor intrusion (SVI) evaluation. SVI will include analysis of sub-slab soil gas samples, co-located indoor air samples, and one outdoor ambient air sample (OA-1) to evaluate the post-SSDS installation conditions and to determine the system's operation requirements.

  As part of development, a Soil Vapor Extraction System (SVE) will be constructed across the entire footprint of the Site where elevated concentrations of CVOCs were identified in soil vapor. The conceptual design includes three SVE wells to be installed approximately 20 to 25 feet apart with an estimated radius of influence of 20. Each well will be installed 10.5 feet below the building slab and will consist of 2" SCH 40 PVC screen. The SVE wells will horizontally be connected with 3" SCH 40 PVC pipes under the slab. The SVE wells will be manifolded under the slab and will have a 12" cleanout. The manifolded wells will be connected to three SVE risers, which will extend through the cellar floor slab to the roof enclosed in sheetrock within the building footprint or to the roof secured to an outside wall of the building. The riser will route VOC-laden vapor through a knockout tank and a 1.5 horse power (HP) regenerative blower. Prior to exiting the building, the vapors from the SVE system will be treated by carbon. The final riser location will be determined based on new building conditions. Riser will be terminated at least 8 feet above the finished floor and will include a control panel to assist with automatic operation and remote observation of the system, and its own electrical panel for ease of installation. It is anticipated that the SVE system will require 208 Volt, three phase power. Prior to

disposal, the knockout tank water and spent carbon will be sampled and analyzed. The wastewater will be disposed of in accordance with all applicable Federal, State, and Local laws and regulations.

- Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
- Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
- Submission of an approved Site Management Plan (SMP) in the Remedial Action Plan (RAR) for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
- The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

2.0 ORGANIZATIONAL STRUCTURE

Vektor will provide a copy of this CHASP to each contractor and subcontractor in accordance with 29 CFR 1910.120(b)(1)(iv) and 29 CFR 1926.65(b)(1)(iv) to inform them of site hazards and emergency procedures. All contractors and subcontractors are solely responsible for the safe and healthful performance of all work by each of its employees and/or support personnel who may enter the Site. Each contractor and subcontractor shall provide its own CHASP as required by 29 CFR 1910.120 and 29 CFR 1926.65. However, they need to submit a copy of their CHASP to Vektor or they can adopt this CHASP during the RI activities.

2.1 Site Supervisor

As required by *29 CFR 1910.120(b)(2)(i)(A) and 29 CFR 1926.65(b)(2)(i)(A)*, a Site Supervisor will be assigned prior to construction activities. The Site Supervisor is responsible for directing all hazardous waste operations. All other site personnel report directly to the Site Supervisor unless otherwise noted. The Site Supervisor is directly responsible for:

- Ensuring the pre-entry briefing and/or tailgate-safety meetings are held prior to initiating any site activity, and at such other times as necessary to ensure that employees are apprised of site hazards
- Ensuring that all work activities conducted are consistent with this CHASP and making any modifications as necessary
- Verifying all Job Hazard Analyses and ensuring that ongoing Hazard Analysis is conducted at this Site
- Overseeing the training program and ensuring that employees are trained for all tasks or operations they are asked to perform
- Providing a copy of this CHASP to each contractor and subcontractor
- Updating the Site Control Program as needed
- Granting site workers site and zone access approval
- Registering all site visitors
- Establishing and maintaining security measures for this Site
- Directing how each work zone is adjusted
- Notified if emergency assistance is needed
- Supervising PPE use on this Site
- Approving any changes in PPE used on this Site
- Notified when any hazardous-substance spill occurs
- Evaluating the quality and safety of response activities after every emergency incident or evacuation of this Site
- Providing site workers with notifications and training on changes to the emergency response plan

- Evaluating confined spaces and responsible for the confined space permit program
- Performing initial monitoring to identify and evaluate any hazardous atmospheres during confined space operations
- Implementing the thermal stress program
- Authorizing the hot-work plan and cutting and welding operations
- Inspecting the hot-work permit area before work is authorized
- Monitoring site activities as they pertain to health and safety at this site
- Stopping any unsafe acts that pose an immediate or imminent health and safety hazard to anyone at this site
- Ensuring that all elements of this CHASP are followed and correctly implemented
- Updating the Site Health and Safety Supervisor and other applicable personnel as to changes or work progress reports that may pertain to health and safety functions at this site
- Setting up decontamination lines and the solutions appropriate for the type of chemical contamination on Site
- Controlling the decontamination of all equipment, personnel, and samples from the contaminated areas
- Ensuring that all required decontamination equipment is available and in working order
- Providing for collection, storage, and disposal of decontamination waste (e.g., rinse water, contaminated sediment, etc.)

2.2 Site Health and Safety Supervisor

As required by *29 CFR 1910.120(b)(2)(i)(B) and 29 CFR 1926.65(b)(2)(i)(B)*, David Klein (or designated alternate) is the Site Health and Safety Supervisor who has the responsibility and authority for all functions that may pertain to health and safety at this site. This is the individual located on a hazardous waste site that is responsible to the Site Supervisor and has the authority and knowledge necessary to implement the CHASP and verify compliance with applicable safety and health requirements. The Site Health and Safety Supervisor is directly responsible for:

- Providing a copy of this CHASP to each contractor and subcontractor
- Updating the Site Control Program as needed
- Notified if emergency assistance is needed
- Supervising PPE use on this Site
- Approving any changes in PPE used on this Site
- Notified when any hazardous-substance spill occurs
- Providing site workers with notifications and training on changes to the emergency response plan
- Performing initial monitoring to identify and evaluate any hazardous atmospheres during confined space operations
- Developing and implementing the CHASP

- Monitoring site activities as they pertain to health and safety at this Site
- Stopping any unsafe acts that pose an immediate or imminent health and safety hazard to anyone at this Site
- Ensuring that all elements of this CHASP are followed and correctly implemented
- Verifying compliance of subcontractors with respect to this CHASP and reporting deviations to the Site Supervisor
- Evaluating site incidents including spills, releases of hazardous substances
- Determining the appropriate response including site evacuations
- Implementing the Emergency Response Plan
- Coordinating emergency response activities on this Site

2.3 Contractors and Subcontractors

Each contractor and subcontractor shall designate a Contractor Site Representative. The Contractor Site Representative will interface directly with the Site Supervisor, and Vektor Consultants, the Site Health and Safety Supervisor, with regards to all areas that relate to this CHASP and safe and healthful performance of work conducted by the contractor and/or subcontractor workforce. Contractor/Subcontractor Site Representatives for this site are listed in the Contact Summary Table at the end of this section.

2.4 Local/State/Federal Agency Representative

Local, state, and/or federal agencies are responsible for ensuring the Site is in compliance with appropriate regulatory requirements, permits, and/or legal ruling(s). Local/State/Federal Agency Representatives for this Site are listed in the Contact Summary Table at the end of this section.

The organizational structure shall be reviewed and updated as necessary to reflect the current status of site operations.

Contact Summary Table

Position	Name	Organization	Phone
Remedial Engineer, P.E.	Hilmi U. Aydin	Vektor Consultants	(347) 871-0750
Project Director, QEP	Ezgi Karayel	Vektor Consultants	(347) 871-0750
Project Manager	Alex Keenan	Vektor Consultants	(347) 871-0750
Site Supervisor	TBD		
Site Health and Safety Supervisor	Alex Keenan	Vektor Consultants	(347) 871-0750
Client Contact	Abe Biller	Atlantic Junction GP Inc.	(845) 213 8361
Emergency Response		FDNY	911
Spill Hotline		NYSDEC	(800) 457-7362

3.0 HAZARD ANALYSIS

This section describes the safety and health hazards associated with site work and the control measures selected to protect workers in compliance with *29 CFR 1910.120(b)(4)(ii)(A) and 29 CFR 1926.65(b)(4)(ii)(A)*. This is accomplished by creating a specific Job Hazard Analysis for each task and operation to be conducted at the Site.

The purpose of the Job Hazard Analysis is to identify and, to the extent practicable, quantify the health and safety hazards associated with each site task and operation, and to evaluate the risks of each hazard to workers. With this information, appropriate control methods are selected to eliminate the identified risks if possible, or to effectively control them. The control methods are documented in each task-specific Job Hazard Analysis.

Job Hazard Analyses contained in this CHASP have been developed by Vektor Consultants, the Site Health and Safety Supervisor. The Site Supervisor is the individual responsible for reviewing and "verifying" that all Job Hazard Analyses are complete and to ensure that ongoing hazard analyses are conducted at this site.

3.1 Hazard Notification Process

The information in the Job Hazard Analysis Worksheets, Hazardous Substance Profiles, and Safety Data Sheets (SDS) is made available to all employees who could be affected in the scope of their work at the Site. This shall be done prior to beginning work activities.

New, or modifications to existing, Job Hazard Analysis Worksheets, Hazardous Substance Profiles, or SDS are communicated during routine briefings.

Consistent with *29 CFR 1910.120(i) and 29 CFR 1926.65(i)*, this information will also be made available to contractors and subcontractors.

The Site Supervisor is the person responsible for providing Site information, this CHASP, and any modifications to this CHASP to contractors and/or subcontractors working on this Site.

3.2 Phases, Site Tasks and Hazard Analysis

This CHASP applies to the RAWP implementation phase at the Site. This CHASP will apply to the following Tasks and/or Operations that will be accomplished during the remediation:

- Drilling (installation of soil borings for waste characterization)
- Test pits, if necessary
- Decontamination
- Inspection
- Excavation

3.3 Chemical Hazards

Exposure to chemical hazards should always be avoided. When working around chemical hazards it is important to be protected by administrative and/or engineered controls or, if administrative and/or engineered controls are not practicable or fully protective, by use of proper personal protective equipment (PPE). A direct reading instrument must be used, as necessary, to establish potential worker exposure.

OSHA PEL. OSHA sets permissible exposure limits (PELs) to protect workers against the health effects of exposure to hazardous substances. PELs are regulatory limits on the amount or concentration of a substance in the air. They may also contain a skin designation. PELs are enforceable. OSHA PELs are based on an 8-hour time weighted average (TWA) exposure.

IDLH. Immediately dangerous to life or health (IDLH) is a regulatory value defined as the maximum exposure concentration in the workplace from which one could escape within 30 minutes without any escape-impairing symptoms or any irreversible health effects. This value should be referred to in respirator selection.

More specific chemical information is available in the Hazardous Substance Profiles included in this CHASP. The Hazardous Substance Profiles are designed to assist with "chemical guidelines" in which further information may be needed, including but not limited to an SDS. This information is not intended to replace an SDS, rather to augment one.

3.4 Physical Hazards

Below is a list of physical hazards that may be encountered during RI activities at this Site. Personal awareness, strict adherence to all safety requirements, and the use of proper PPE when applicable will help keep this work site safe.

- Hand Tool Use
- Heavy Manual Lifting/Moving
- Material Handling
- Noise (Sound Pressure Level), dBA
- Sharp Objects
- Slips/Trips/Falls
- Traffic - On or Near Site
- Utilities (electrical, gas, water, etc.) – Overhead
- Utilities (electrical, gas, water, etc.) – Underground

3.5 Biological Hazards

Below is a list of biological hazards that may be encountered during the remedial activities at this Site. Personal awareness, strict adherence to all safety requirements, and the use of proper PPE when applicable will help keep this work site safe.

- Chlorinated Volatile Organic Compounds in soil vapor

3.6 Radiological Hazards

Job hazard analysis indicates that workers are not expected to encounter radiological hazards at this Site for the phases, tasks and/or operations and work locations covered by this CHASP.

3.7 Job Hazard Analysis Worksheets

The site-specific Job Hazard Analysis Worksheet is included in Attachment 1. A single Job Hazard Analysis Worksheet may be used for multiple locations provided that the task or operation, and hazards and control measures, are the same in each location.

The Job Hazard Analysis Worksheet lists the following information:

- Phase description
- Specific task or operation
- Specific location for task or operation
- Hazard analysis date(s) of task or operation
- Task or operation date(s)
- Person responsible for developing Job Hazard Analysis
- Person responsible for reviewing the Job Hazard Analysis
- Chemical, physical, biological, and radiological hazards for each task or operation
- Specific control measures for each task or operation
- Required permit(s), if any

The Job Hazard Analysis Worksheet should be kept updated as information changes and previous copies should be retained.

3.0 TRAINING PROGRAM

The Site Safety and Health Training Program is designed to provide workers with the training necessary to work safely on this Site in compliance with *29 CFR 1910.120(b)(4)(ii)(B) and 29 CFR 1926.65(b)(4)(ii)(B)*. Training requirements for this site are based on the Job Hazard Analysis, contained in Attachment 1 of this CHASP, and relevant OSHA requirements. Employees who have not been trained to a level required by their job function and responsibility are not permitted to participate in or supervise field activities.

3.1 Initial HazWoper Training

Initial training requirements for field personnel are based on the personnel's potential for exposure and compliance with the requirements of *29 CFR 1910.120(e)(3) and 29 CFR 1926.65(e)(3)*.

General Site Workers (such as equipment operators, general laborers, and supervisory personnel) engaged in hazardous substance removal or other activities that expose, or potentially expose, them to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off site, and a minimum of three days of actual field experience under direct supervision of a trained, experienced supervisor as per *29 CFR 1910.120(e)(3)(i) and 29 CFR 1926.65(e)(3)(i)*.

Specific Limited Task Workers on site only occasionally for a specific limited task (such as, but not limited to, field sampling, land surveying, geophysical surveying, or drilling) and who are unlikely to be exposed over permissible exposure limits and published exposure limits shall receive a minimum of 24 hours of instruction off site, and a minimum of one day of actual field experience under direct supervision of a trained, experienced supervisor as per *29 CFR 1910.120(e)(3)(ii) and 29 CFR 1926.65(e)(3)(ii)*.

3.2 Site-Specific Training

In addition to the initial HAZWOPER training requirements outlined above, site personnel shall be trained on the following site-specific elements:

- Names of personnel and alternates responsible for site safety and health
- Health, safety, and other hazards present
- Use of specific personal protective equipment (PPE) detailed in this CHASP
- Standard work practices by which the personnel can minimize risks from the hazards detailed in this CHASP
- Safe use of administrative and/or engineering controls and equipment detailed in this CHASP
- Medical surveillance requirements detailed in this CHASP
- Decontamination procedures detailed in this CHASP
- The emergency response plan detailed in this CHASP
- Heat and cold stress prevention
- Working safely around heavy equipment

3.3 Site Briefings

A site-specific briefing shall be provided to visitors who enter this Site beyond the designated entry point. For visitors, the site-specific briefing shall include information about site hazards, the site layout including work zones and places of refuge, the emergency alarm system and emergency evacuation procedures, and other pertinent safety and health requirements, as appropriate.

4.0 MEDICAL SURVEILLANCE PROGRAM

The Medical Surveillance Program is designed to medically monitor worker health to ensure that personnel are not adversely affected by site hazards in compliance with *29 CFR 1910.120(b)(4)(ii)(D) and 29 CFR 1926.65(b)(4)(ii)(D)*.

Medical surveillance is not required at this site due to:

- There is NO potential for worker exposure to hazardous substances at levels above OSHA permissible exposure limits or other published limits for 30 days or more per year, without regard to use of respiratory protection.
- Personnel DO NOT wear a respirator for 30 days or more a year or as required by *29 CFR 1910.134 and 29 CFR 1926.103*.

Any worker who is injured, becomes ill, or develops signs or symptoms of possible over-exposure to hazardous substances or health hazards on this Site shall receive a medical examination as soon as possible after the occurrence, with follow-up examinations provided as required by the attending physician. Physical Exams shall be consistent with *29 CFR 1910.120(f) and 29 CFR 1926.65(f)*.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) will be used at this Site to protect employees from biological, chemical, and physical hazards in compliance with *29 CFR 1910.120(b)(4)(ii)(C) and 29 CFR 1926.65(b)(4)(ii)(C)*. This includes hazards associated with, but not limited to, remedial activities.

With employee safety being the number one priority, site health hazards will be eliminated or reduced to the greatest extent possible through administrative and/or engineering controls and safe work practices. Where hazards are still present, a combination of administrative and/or engineering controls, work practices, and PPE will be used to protect employees.

The Site Supervisor and/or Health and Safety Supervisor are responsible for PPE use on this Site.

5.1 PPE Selection Criteria

PPE shall be selected and used to protect site workers from the hazards and potential hazards they are likely to encounter, as identified during the site characterization and Job Hazard Analysis (see Attachment 1). A PPE ensemble shall be assigned to each work task or operation.

PPE selection shall be based upon many factors. Materials providing the greatest duration of protection shall be used. Tear and seam strength of the PPE shall also be considered to ensure ensemble durability while work is performed.

When necessary, multiple layers of protection shall be used to accommodate the range of hazards that may be encountered. All PPE shall be properly fitted.

PPE selection criteria shall also include:

- Level of PPE required (Level A, B, C, or D)
- PPE components
- Chemical suit and glove compatibility

All PPE ensembles shall be consistent with Appendix B of *29 CFR 1910.120 and 29 CFR 1926.65* and used in accordance with manufacturers' recommendations.

The following criteria were used to select PPE levels at this Site:

<u>Level D Protection was selected due to the following:</u>

- The atmosphere contains no known or suspected hazardous substances at concentrations that meet or exceed the published exposure limits

- Contact with hazardous levels of any chemicals through splashes, immersion, or by other means will not occur
- There is no potential for unexpected inhalation or contact with hazardous levels of any chemical

Training In Use of PPE

Employees receive general training regarding proper selection, use and inspection of PPE during initial HAZWOPER training and subsequent refresher training. Site-specific PPE requirements, including task-specific PPE, ensemble components, cartridge and canister service times, and inspection and maintenance procedures, as applicable, shall be communicated as identified in the Training Program.

Because chemical exposure levels present do not create a substantial possibility of immediate death, immediate serious illness, or injury, or impair the ability to escape, positive pressure self-contained breathing apparatus or positive-pressure air-line respirators equipped with an escape air supply are not required.

6.0 ENVIRONMENTAL MONITORING

This section of the CHASP describes how site worker exposures to hazardous substances will be monitored in compliance with *29 CFR 1910.120(b)(4)(ii)(E) and 29 CFR 1926.65(b)(4)(ii)(E)*.

6.1 Air Monitoring Procedures

Exposures to airborne hazardous substances shall be fully characterized throughout site operations to ensure that exposure controls are effectively selected and modified as needed. Air monitoring shall be used to identify and quantify airborne levels of hazardous substances and safety and health hazards to determine the appropriate level of site worker protection needed on site. Air monitoring procedures shall be consistent with OSHA requirements in *29 CFR 1910.120(c)(6) and 29 CFR 1926.65(c)(6)*.

Air monitoring shall be conducted using direct-reading instruments. Air monitoring includes:

- Initial monitoring prior to the beginning of remedial activities to identify conditions that may cause serious harm and to permit preliminary selection of site controls
- Periodic monitoring throughout remediation (i.e., excavation)

6.2 Initial Monitoring Procedures

Upon initial entry, representative air monitoring shall be conducted to identify any IDLH condition, exposure over permissible exposure limits or published exposure levels, exposure over a radioactive material's dose limits, or other dangerous condition such as the presence of flammable atmospheres or oxygen-deficient environments.

6.3 Periodic Monitoring

Periodic monitoring shall be conducted when the possibility of an IDLH condition or flammable atmosphere has developed, or when there is indication that exposure may have risen over permissible exposure limits or published exposure levels since previous monitoring was conducted. Situations where it shall be considered that the possibility exposures have risen are as follows:

- When work begins on a portion of the Site that has not been previously monitored
- When contaminants other than those previously identified are being handled
- When a change in environmental conditions exist
- When site workers handle leaking drums or containers, or work in areas with obvious liquid contamination
- When site workers report or exhibit signs of exposure

6.4 Direct-Reading Instrument Monitoring Procedures

Direct-reading instrument monitoring will be used on this site as follows:

- VOCs by photoionization detector (PID)

Monitoring equipment calibration and maintenance procedures on this site are:

- Every morning

7.0 DECONTAMINATION

This CHASP element describes procedures for decontaminating site workers and equipment when exiting the Exclusion Zone in compliance with *29 CFR 1910.120(b)(4)(ii)(G) and 29 CFR 1926.65(b)(4)(ii)(G)*. This section also describes disposal of waste from decontamination processes. Site decontamination procedures are designed to achieve a safe, logical removal or neutralization of contaminants that may accumulate on site workers and/or equipment. The Site Supervisor is responsible for decontamination procedures at this site.

These procedures are intended to minimize site worker contact with contaminants and protect against the transfer of contamination to clean areas of the site and away from the site. They may also extend the useful life of personal protective equipment (PPE) by reducing the amount of time that contaminants contact and permeate or otherwise affect the surfaces of PPE.

Decontamination procedures shall be communicated to site workers and implemented before any site workers or equipment are permitted to enter areas on site where potential for exposure to hazardous substances exists.

Emergency decontamination procedures are detailed in Section 8, the Emergency Response Plan of this CHASP.

The decontamination procedures described below are designed to meet the requirements of *29 CFR 1910.120(k) and 29 CFR 1926.65(k)* and include site-specific information about:

- General and Specific Decontamination Procedures for Personnel and PPE
- General and Specific Decontamination Procedures for Equipment
- Location and Type of Site Decontamination Procedures
- Disposal of Residual Waste from Decontamination
- Monitoring the Effectiveness of Decontamination Procedures

7.1 General and Specific Decontamination Procedures for Site Workers and PPE

All site workers and PPE leaving a contaminated area shall be appropriately decontaminated. General decontamination guidelines for site workers and PPE include:

- Decontamination is required for all site workers exiting a contaminated area. Site workers may only re-enter uncontaminated areas after undergoing the decontamination procedures described in the next section.
- Protective clothing is decontaminated, cleaned, laundered, maintained and/or replaced as needed to ensure its effectiveness.
- PPE used at this site is decontaminated or prepared for proper disposal.

- The site requires and trains site workers that if their permeable clothing is splashed or becomes wetted with a hazardous substance, they will immediately exit the work zone, perform applicable decontamination procedures, shower, and change into uncontaminated clothing.

7.2 General and Specific Decontamination Procedures for Equipment

All contaminated clothing and equipment leaving a contaminated area shall be appropriately disposed of or decontaminated. General decontamination guidelines for equipment include:

- Decontamination is required for all equipment exiting a contaminated area. Equipment may only re-enter uncontaminated areas after undergoing specific decontamination as described in the Job Hazard Analysis Worksheets.
- Particular attention is given to decontaminating tires, scoops, and other parts of heavy equipment that are directly exposed to contaminants and contaminated soil.

7.3 Location and Type of Site Decontamination Procedures

Decontamination shall be performed in areas that will minimize the exposure of uncontaminated site workers or equipment to contaminated site workers or equipment. Decontamination on this site shall be conducted in the Contamination Reduction Zone. The Contamination Reduction Zone acts as a buffer between the Exclusion Zone and Support Zone. The location and design of decontamination stations minimize the spread of contamination beyond these stations.

7.4 Disposal of Waste from Decontamination

Procedures for disposal of decontamination waste shall meet applicable local, State, and Federal regulations.

7.5 Monitoring the Effectiveness of Decontamination Procedures

Decontamination procedures shall be monitored by a representative of Vektor Consultants, the Site Health and Safety Supervisor, to determine effectiveness. If procedures are found to be deficient, appropriate steps shall be taken to correct any deficiencies.

8.0 EMERGENCY RESPONSE PLAN

This section describes the site-specific Emergency Response Plan in compliance with *29 CFR 1910.120(b)(4)(ii)(H) and 29 CFR 1926.65(b)(4)(ii)(H)*. Specifically, the Emergency Response Plan addresses potential emergencies at this site, procedures for responding to these emergencies, roles and responsibilities during emergency response, and training. This element also describes the provisions this site has made to coordinate its emergency response planning with other contractors on site and with off-site emergency response organizations.

This Emergency Response Plan shall be available for inspection and copying by site workers, their representatives, OSHA personnel, and other governmental agencies with relevant responsibilities as required by *29 CFR 1910.120(l)(1)(i) and 29 CFR 1926.65(l)(1)(i)*.

In accordance with *29 CFR 1910.120(l)(3)(ii) and 29 CFR 1926.65(l)(3)(ii)*, this Emergency Response Plan is a separate section of the CHASP.

8.1 Pre-Emergency Planning

This Emergency Response Plan is compatible and integrated with the disaster, fire and/or emergency response plans of local, state, and federal agencies.

This Site has been evaluated for potential emergency occurrences based on site hazards, the tasks within the work plan, the site topography, and prevailing weather conditions.

8.2 Personnel Roles, Lines of Authority, and Communication

Anyone may activate the Emergency Response Plan; however, David Klein (or designated alternate), Site Health and Safety Supervisor, is responsible for implementing the Emergency Response Plan and coordinating emergency response activities on this Site. David Klein (or designated alternate) also provides specific direction for emergency action based upon information available regarding the incident and response capabilities, initiates emergency procedures including protection of the public, and ensures appropriate authorities are notified.

In accordance with *29 CFR 1910.38(a) and 29 CFR 1926.35*, in the event of an emergency, site workers are evacuated and do not participate in emergency response activities.

This Site relies upon the off-site emergency response organizations listed in the Emergency Response Contact Information list to respond to site emergencies. These organizations are appropriately trained, staffed, and equipped to provide emergency response to this site.

These organizations are contacted at least annually to verify the accuracy of phone numbers and contact names.

Communication on this site will be conducted by the following methods:

- Face to face
- Cell phone
- Hand signals

8.3 Site Security and Control

In case of an on-site emergency, site security and control for this site shall be provided by:

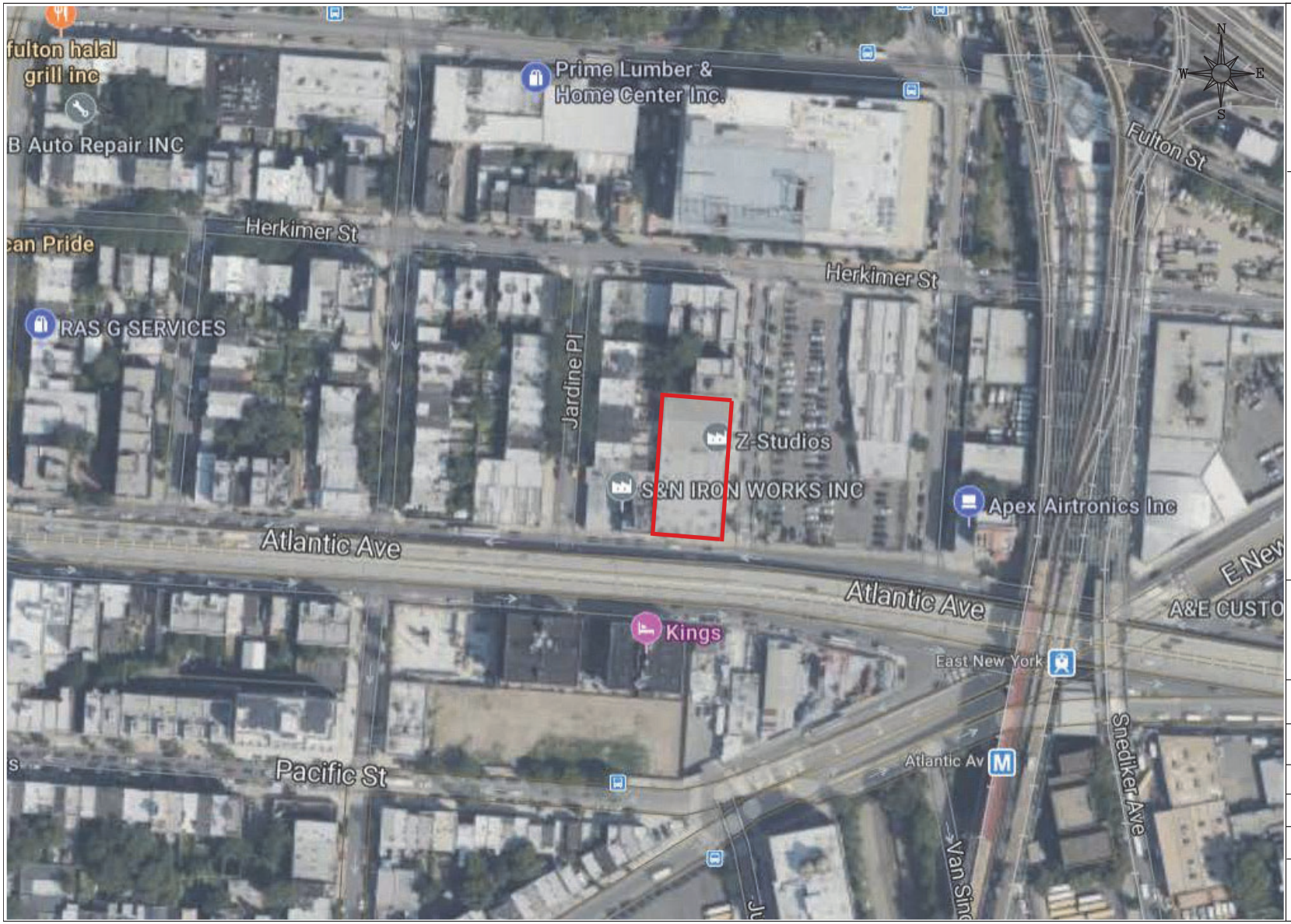
- Warning Signs
- Barrier Tape
- Locked Doors and Gates

8.4 Emergency Medical Treatment and First Aid

Any site worker who requires medical care and/or is transferred to a medical facility shall be accompanied by Hazardous Substance Profiles included in this CHASP and other applicable information to apprise caregivers of the chemicals and hazards to which the victim has potentially been exposed. The emergency medical care facility for this site is:

Queens Health Center
37-11 Queens Blvd, Long Island City, NY 11101
Tel: (718) 606-3863
Open Monday-Friday 8am-5:45pm
Closed Saturday and Sunday

The route to the facility is shown in on the map included in Attachment 2 of this CHASP.



vEKtor consultants

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f: +1.347.402.7735
e: info@vektorconsultants.com
www.vektorconsultants.com

LEGEND:

SITE BOUNDARY

SCALE: 0' 100' 200'

FIGURE NO.	1
FIGURE NAME:	SITE LOCATION MAP
REPORT:	CHASP
DATE:	03/17/2026
DRAWN BY:	AK
SITE ADDRESS:	2425 ATLANTIC AVENUE, BROOKLYN, NEW YORK 11233

Attachment 1

Job Hazard Analysis Worksheets

JOB HAZARD ANALYSIS WORKSHEET			
Phase Description:	All Phases		
Task or Operation:	Construction, Decontamination, Demolition, Excavation, Inspection, Mobilization, Sampling - subsurface soil, Site survey, Traffic control, Welding, cutting, brazing		
Specific Location:	40-10 Crescent Street, Queens, NY		
Task or Operation Start Date(s):	TBD	**Task or Operation Duration:**	24 Months
Date of Hazard Analysis:	07/27/2025		
Job Hazard Analysis Developed by:	DK		
Job Hazard Analysis Reviewed by:	DK		

POTENTIAL HAZARDS DURING THIS TASK and/or OPERATION			
Chemical*	**Physical**	**Biological**	**Radiological**
	» Demolition Operations » Electrical » Excavation/Trenching Operations » Flammable Liquids - Storage and Use » Hand Tool Use » Heavy Manual Lifting/Moving » Hot Surfaces » Ladder Use » Material Handling » Noise (Sound Pressure Level), dBA » Scaffolding Use » Sharp Objects » Slips/Trips/Falls » Traffic - On or Near Site » Utilities (electrical, gas, water, etc.) - Overhead » Utilities (electrical, gas, water, etc.) - Underground » Welding/Cutting/Burn ing Operations		

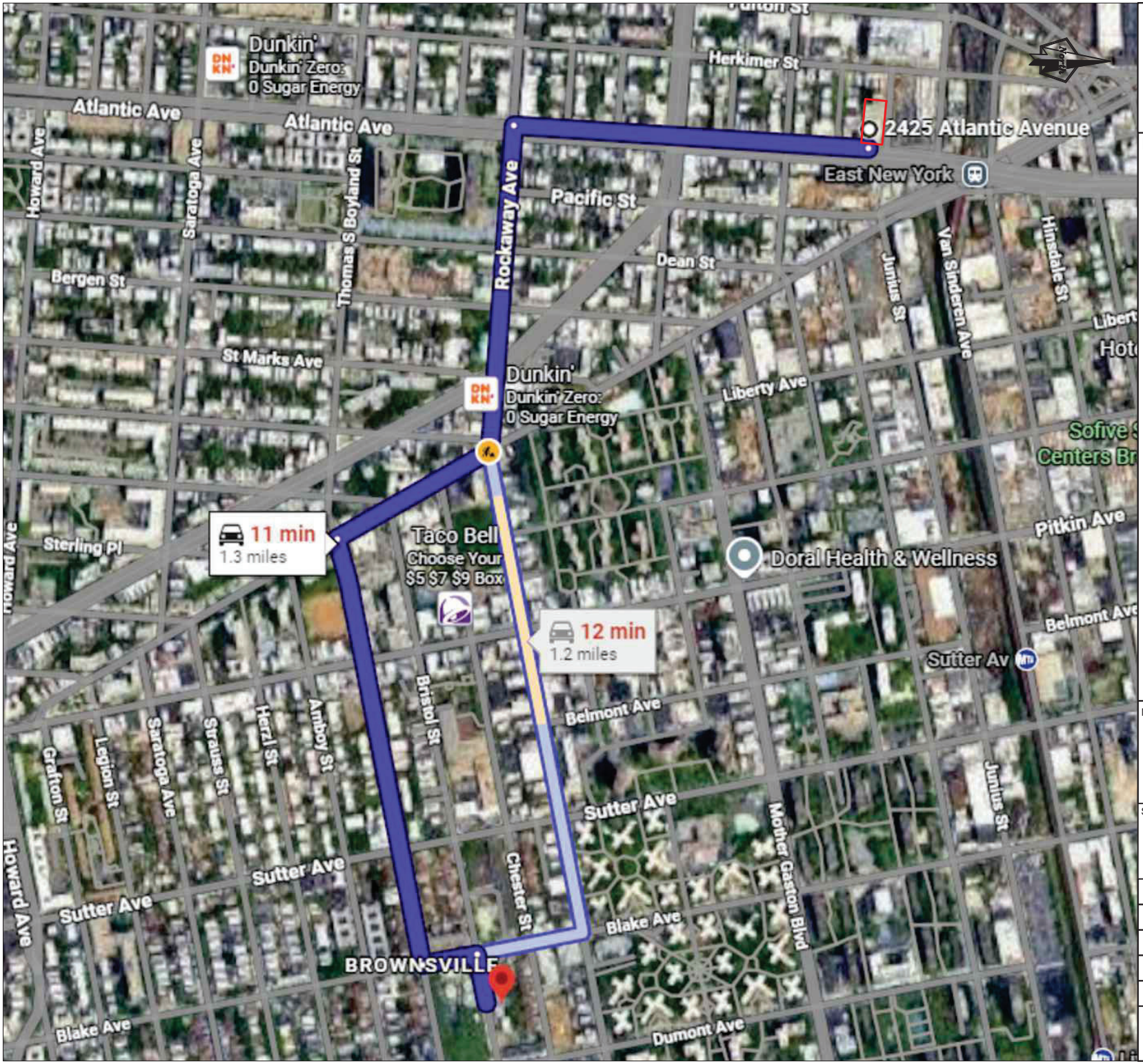
HAZARD CONTROL MEASURES USED DURING THIS TASK and/or OPERATION	
Administrative Controls:	Log In/Out Sheets
Engineering Controls:	N/A

PPE Description:

Component	Description
Level A Ensemble	
Boots, chemical-resistant, steel toe and shank	
Gloves, inner, chemical-resistant	
Gloves, outer, chemical-resistant	
Supplied Air Respirator - air-line	
Totally-encapsulating vapor tight chemical protective suit	
Level B Ensemble	
Boots, chemical-resistant, steel toe and shank	
Disposable one-piece hooded chemical resistant splash clothing suit	
Gloves, inner, chemical-resistant	
Gloves, outer, chemical-resistant	

Attachment 2

Directions to Hospital



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Legend:

- BCP SITE BOUNDARY
- HOSPITAL ROUTE

Notes:

1. ALL FEATURE LOCATIONS ARE APPROXIMATE.
2. ROUTE IS SHOWN LEAVING THE SITE TOWARDS THE NEAREST HOSPITAL.

Scale:

Figure Number:	2
Figure Name:	HOSPITAL ROUTE
Report:	CHASP
Date:	03/16/26
Drawn By:	AK
Site Address:	2425 ATLANTIC AVENUE, BROOKLYN, NY 11233

APPENDIX C

COMMUNITY AIR MONITORING PLAN

vEKtor consultants

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COMMUNITY AIR MONITORING PLAN

Prepared For: Atlantic Junction GP Inc.

Project Name: 2425 Atlantic Avenue & 30 Havens Place

Project Location: 2425 Atlantic Avenue, Brooklyn, NY

Date: March 2026

555 8th Avenue, Suite 2302, New York, NY 10018

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COMMUNITY AIR MONITORING PLAN 2

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Appendix A: Action Limit Report

1.0 INTRODUCTION

This site-specific Community Air Monitoring Plan (CAMP) has been prepared on behalf of Atlantic Junction GP Inc. for the implementation of a Remedial Action Work Plan (RAWP) by Vektor Consultants, LLC (Vektor), AMC Engineering, PLLC (AMC), and their subcontractors at the property located at 2425 Atlantic Avenue, Brooklyn, New York (the Site). The Site is identified by the City of New York as Borough of Brooklyn, Block 1574, Lots 23 and 24.

This CAMP was developed in accordance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan included within DER-10 Technical Guidance for Site Investigation and Remediation (May 2010). All instruments will be operated and calibrated as per the manufacturer's specifications.

A CAMP requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind and upwind perimeters of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

COMMUNITY AIR MONITORING PLAN

Previous limited subsurface investigations were conducted by Impact Environmental in a Phase II Environmental Site Assessment Report dated July 26, 2001. A remedial investigation was conducted by Vektor Consultants, Inc. (Vektor) in 2025, and the findings of the assessments were provided in a Remedial Investigation Report dated March 2026. Based on the results of the previous assessments and the recent investigation, the primary contaminant of concern at the Site is chlorinated VOCs in soil vapor. Elevated concentrations of trichloroethene (TCE), tetrachlorethylene (PCE), and Cis-1,2-Dichloroethane (DCE) were detected in soil vapor samples in the western and central portions of the Site. Therefore, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary.

Continuous monitoring will be required for all ground-intrusive activities. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test

pitting or trenching, and the installation of soil borings, soil vapor points, or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

Meteorological monitoring including temperature, wind direction and speed will be conducted by the field personnel and the data will be logged in the field book on a daily basis. CAMP station(s) will be relocated based on the direction of the wind.

2.0 VOC MONITORING, RESPONSE LEVELS, AND ACTIONS

Volatile organic compounds (VOCs) must be monitored at the downwind and upwind perimeters of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.
- All 15-minute readings must be recorded and be available for the NYSDEC and NYSDOH personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

3.0 PARTICULATE MONITORING, RESPONSE LEVELS, AND ACTIONS

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations (i.e.: DustTrak). The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped, and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.
- All readings must be recorded and be available for the NYSDEC and NYSDOH personnel to review.

Dust suppression will be achieved by applying water as needed.

CAMP exceedances will immediately be reported to the NYSDEC and NYSDOH Project Managers at the time of exceedance via email, in addition to inclusion in the daily status reports. The NYSDEC Project Manager and NYSDOH Project Manager for the Site have not been chosen at the time of the work plan.

APPENDIX D

QUALITY ASSURANCE PROJECT PLAN

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QUALITY ASSURANCE PROJECT PLAN

Prepared For: Atlantic Junction GP Inc.

Project Name: 2425 Atlantic Avenue & 30 Havens Place

Project Location: 2425 Atlantic Avenue, Brooklyn, NY

Date: March 2026

555 8th Avenue, Suite 2302, New York, NY 10018

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1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) has been prepared on behalf of Atlantic Junction GP. Inc for the implementation of a Remedial Action Work Plan (RAWP) by Vektor Consultants, LLC (Vektor), AMC Engineering, PLLC (AMC), and their subcontractors at the property located at 2425 Atlantic Avenue & 30 Havens Place, Brooklyn, New York (the Site). The Site is identified by the City of New York as Borough of Brooklyn, Block 1574, Lots 23 and 24.

A Brownfields Cleanup Program Application is submitted in conjunction with a Remedial Investigation Report (RIR) and Remedial Action Work Plan (RAWP).

This QAPP describes the protocols and procedures to be followed during the implementation of the RAWP. This QAPP was prepared in accordance with the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation and the NYSDEC BCP Guide.

1.1 Scope of Work

The proposed scope of work covered under this QAPP includes the collection and analysis of post-remedial endpoint soil samples.

The objective of the QAPP is to detail the policies, organization, objectives, functional activities, and specific quality assurance/quality control activities designed to achieve the data quality goals or objectives of the Remedial Action Work Plan. This QAPP addresses how the acquisition and handling of samples, as well as the review and reporting of data, will be documented for quality control (QC) purposes. Specifically, this QAPP addresses the following:

- The procedures to be used to collect, preserve, package, and transport samples;
- Field data collection and record keeping;
- Data management;
- Chain-of-custody procedures; and,
- Determination of precision, accuracy, completeness, representativeness, decision rules, comparability and level of quality control effort.

2.0 PROJECT TEAM

Vektor's and AMC's team of trained and experienced environmental scientists, geologists, and engineers, along with their licensed subcontractors, will perform the below-listed tasks in a manner consistent with DER-10 Technical Guidance for Site Investigation and Remediation (DER-10).

Remedial Engineer, P.E.	Ariel Czemerinski	AMC Engineering PLLC
Project Director, QEP	Ezgi Karayel	Vektor Consultants
Project Manager	Alex Keenan	Vektor Consultants
Field Leader	Ben Neumann	Vektor Consultants
Laboratory QA/QC Officer	Sarah Widomski	York Analytical Laboratories, Inc.
Third-party Data Validator	Don Anne	Alpha Geoscience

2.1 Principal Engineer

Ariel Czemerinski, Professional Engineer, will act as the Remedial Engineer and will oversee the successful completion of this project. He will have direct responsibility for the preparation and certification of the Remedial Action Work Plan (RAWP). A field scientist/geologist, under the supervision of the PE, will provide full-time oversight during the implementation of the RAWP. Although the QEP and PE are each separately contracted by the Applicant (i.e., remedial party), the PE will oversee and certify all work performed by the QEP under this RAWP. Work conducted in accordance with this RAWP will be documented in daily field reports, monthly progress reports, and in the FER.

2.2 Project Director

Ezgi Karayel, Qualified Environmental Professional, will act as the Project Director and Quality Assurance/Quality Control (QA/QC) officer and will ensure the successful implementation of the RAWP.

2.3 Project Manager

Alex Keenan of Vektor will act as the Project Manager. She will oversee the field activities and coordinate for all elements of implementation of the RAWP. She will be responsible for coordinating with the field leader and other field crew as necessary.

2.4 Field Leader

Ben Neumann of Vektor will lead the field activities and ensure the implementation of the Health and Safety Plan (HASP) during all field work. He has the authority to stop all work if unsafe conditions are observed. He will be responsible for coordinating with all subcontractors. He will oversee the subcontractors in the field and collect samples outlined in the RAWP and in this QAPP in coordination with the Project Manager.

2.5 Laboratory Quality Assurance/Quality Control Officer

Laboratory analysis will be completed by York Analytical Laboratories (York) of Stratford, CT. York is a New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) certified laboratory (NY Cert. Numbers 10854 and 12058). Lea Sherman is the Client Manager who will ensure that all glassware including laboratory prepared trip blanks and chain of custodies are properly packaged and shipped. QA/QC Officer is Sarah Widomski who will ensure that quality assurance procedures are followed. Quality Assurance requirements for analytical laboratory data include accuracy, precision, sensitivity, representativeness, and completeness. Data will be supplied in Analytical Services Protocol (ASP) Category B Data Packages.

2.6 Third-Party Data Validator

Don Anne of Alpha Geoscience will be the third-party validator. Data validation will be performed in accordance with the EPA validation guidelines for organic and inorganic data review. A Data Usability Summary Report (DUSR) will be prepared by Don Anne upon receipt of the analytical laboratory reports. The DUSR will present the results of the data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness of each analytical method.

3.0 SAMPLING METHODS PROCEDURES

This section describes the field protocol and procedures to be followed during the collection of endpoint samples during the implementation of the Remedial Action Work Plan.

Table 1 provides a copy of the endpoint sampling summary. Figure 1 provides a copy of the proposed endpoint sampling plan.

3.1 Soil Sampling

A total of 21 endpoint samples are proposed to be collected; 21 endpoint samples at 2 feet below grade are proposed to assess the performance with respect to the attainment of Track 4 Restricted Residential SCOs. The total number of bottom endpoint samples in this QAPP is estimated and the total samples collected in the field will rely on field conditions.

- A Geologist will be on Site to log the soils, visually characterize them, and field screen them with a photo ionization detector (PID) equipped with 10.6 electron Volt (eV) lamp for the presence of petroleum contamination.
- All soil samples will be collected with disposable dedicated spoons to prevent cross contamination.
- All soil samples will immediately be placed in laboratory supplied glassware and labeled properly. Sample labels include Site address, sample identification and depth, date and time of sampling, analysis to be performed, and sampler's initials.
- Soil samples will be placed in coolers with ice to maintain a temperature of 4^{o} C.
- A chain of custody that includes Site name and address, sample identification and depth, analysis to be performed, glassware summary, sampler's name and signature, turn-around-time and any additional notes will be prepared.
- All field observations including boring logs and PID readings will be recorded in a field book.
- Sampling equipment will be decontaminated between borings as further described in Section 3.0.
- All samples will be picked up from the Site on a daily basis by the laboratory's courier. The courier will sign the chain of custody upon pick up and provide a copy to Vektor or AMC.

The soil samples will be analyzed for:

- Target Compound List (TCL) volatile organic compounds (VOCs) via Environmental Protection Agency (EPA) Method 8260C/5035
- TCL semi-volatile organic compounds (SVOCs) via EPA Method 8270D
- Total analyte list (TAL) metals via EPA Method 6010D/7471B
- Polychlorinated biphenyls (PCBs) via EPA Method 8082A

- TLC pesticides via EPA Method 8081B
- NYSDEC list per and polyfluoroalkyl substances (PFAS) via EPA Method 1633
- 1,4-dioxane via EPA Method 8270 SIM.

3.2 PFAS Sampling Procedures

- PFAS samples will be collected first in order to prevent cross-contamination since sample containers for other methods may have PFAS present on the containers.
- Nitrile gloves will be using during sampling.
- No food or drink will be present during PFAS sampling.
- No waterproof field notebooks, plastic clipboards, sharpies, or adhesives will be used.
- PFAS samples will be kept in a separate cooler away from other sampling containers that may contain PFAS.
- Coolers will be filled with regular ice only.
- Only Alconox will be used for decontamination.
- Sampler will not wear clothing washed with fabric softener or containing Tyvek or PVC.
- Sampler will not use cosmetics, moisturizer, hand cream or other similar products on the day of the sampling.
- Sampler will not wear sunscreen or insect repellants.

Attachment 1 provides a copy of the NYSDEC Guidance document for sampling and analysis, and assessment of PFAS under NYSDEC's Part 375 Remedial Programs.

Attachment 2 provides a copy of York Analytical Laboratories' Standard Operating Procedure Summary for PFAS in Groundwater, Surface Water, and Soils.

Attachment 3 provides a copy of York Analytical Laboratories' PFOS/PFOA Certification and Reporting Limits for PFAS.

Attachment 4 provides a copy of blank chain of custody samples.

3.3 Quality Assurance (QA)/ Quality Control (QC) Sampling

The accuracy, precision and completeness of the samples will be addressed by the certified laboratory for all data generated. One blind duplicate sample and one matrix spike/matrix spike duplicate (MS/MSD) sample will be collected for every 20 samples media and submitted to the laboratory for analysis of the same parameters. One field blank per sampling media will be collected and analyzed for the same parameters as the respective media. Trip blanks will be included in each cooler whenever samples are collected and transported to the laboratory for analysis of VOCs.

3.3.1 Trip Blanks

A trip blank consisting of two 40-ml vials filled with distilled, deionized water, will be provided by the laboratory. Trip blanks will be included in each cooler and will be analyzed for VOCs.

3.3.2 Field Blanks

Field blanks will be collected at a rate of one per 20 soil samples. Field blanks will be analyzed for the same analysis as the soil samples collected on the day of the sampling.

3.3.3 PFAS Field Blank

A PFAS field blank will be prepared on each day that PFAS sampling occurs. The laboratory will provide PFAS blank bottles as well as pre-filled PFAS field blank water containers. The contents of the PFAS field blank water container will be transferred into the PFAS field blank bottle. Both bottles will be returned to the laboratory along with the PFAS samples that were collected.

3.3.4 Blind Duplicate

A blind duplicate sample will be collected at a rate of one per 20 soil samples. Blind duplicates will be analyzed for the same analysis as the soil and samples collected on the day of the sampling.

3.3.5 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD samples will be collected at a rate of one per 20 soil samples. MS/MSD samples will be analyzed for the same analysis as the soil samples collected on the day of the sampling.

Table 2 provides laboratory analytical methods, glassware, and holding times for each analysis.

3.4 Field Instrumentation

The field instruments to be used during the implementation of the remedial action work plan will be calibrated at the beginning of each day as per the manufacturers' specifications. Calibration records will be recorded in the field book.

4.0 DECONTAMINATION

All sampling equipment will be decontaminated between sampling locations unless they are dedicated disposable tools. Decontamination of non-dedicated sampling equipment will consist of the following procedure:

- Gently tap or scrape to remove adhered soil
- Rinse with tap water
- Wash with Alconox detergent solution and scrub
- Rinse with tap water
- Rinse with distilled or deionized water

TABLES

Table 1
Endpoint Sampling Rationale and Summary
2425 Atlantic Avenue, Brooklyn, New York

Sample Matrix	Sample ID	Sample Interval (feet below surface grade)	Rationale	Estimated Number of Samples	Analysis
SOIL	EP-1	Collect at 2 feet below grade and el. 61.25	To assess if Track 4 SCOs are achieved at the bottom of excavation	1	Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), Pesticides, Total Analyte List (TAL) Metals, Cyanide total, per- and poly-fluoroalkyl substances (PFAS), and 1,4-dioxane
	EP-2	Collect at 2 feet below grade and el. 61.25		1	
	EP-3	Collect at 2 feet below grade and el. 61.25		1	
	EP-4	Collect at 2 feet below grade and el. 61.25		1	
	EP-5	Collect at 2 feet below grade and el. 61.25		1	
	EP-6	Collect at 2 feet below grade and el. 69.5		1	
	EP-7	Collect at 2 feet below grade and el. 69.5		1	
	EP-8	Collect at 2 feet below grade and el. 61.25		1	
	EP-9	Collect at 2 feet below grade and el. 61.25		1	
	EP-10	Collect at 2 feet below grade and el. 61.25		1	
	EP-11	Collect at 2 feet below grade and el. 61.25		1	
	EP-12	Collect at 2 feet below grade and el. 61.25		1	
	EP-13	Collect at 2 feet below grade and el. 69.5		1	
	EP-14	Collect at 2 feet below grade and el. 69.5		1	
	EP-15	Collect at 2 feet below grade and el. 61.25		1	
	EP-16	Collect at 2 feet below grade and el. 61.25		1	
	EP-17	Collect at 2 feet below grade and el. 61.25		1	
	EP-18	Collect at 2 feet below grade and el. 61.25		1	
	EP-19	Collect at 2 feet below grade and el. 61.25		1	
	EP-20	Collect at 2 feet below grade and el. 69.5		1	
	EP-21	Collect at 2 feet below grade and el. 69.5		1	

* Additional soil samples may be collected based on field conditions (i.e: post excavation lab results, elevated PID readings, odor, sheen, etc.)

Table 1
Endpoint Sampling Rationale and Summary
2425 Atlantic Avenue, Brooklyn, New York

Sample Matrix	Sample ID	Sample Interval (feet below surface grade)	Rationale	Estimated Number of Samples	Analysis
SOIL	SB-MS/MSD-3 (Depth)	One per 20 soil samples	QA/QC	1	TCL VOCs, SVOCs, PCBs), Pesticides, Total Analyte List (TAL) Metals, Cyanide total, per- and poly-fluoroalkyl substances (PFAS), and 1,4-dioxane
	FB-1	Field Blank per 20 samples	QA/QC	1	
	FB-2	Field Blank per 20 samples	QA/QC	1	
Water	TB-1	Trip Blank: 1 per cooler per day (Lab-prepared)	QA/QC	10	TCL VOCs

Totals

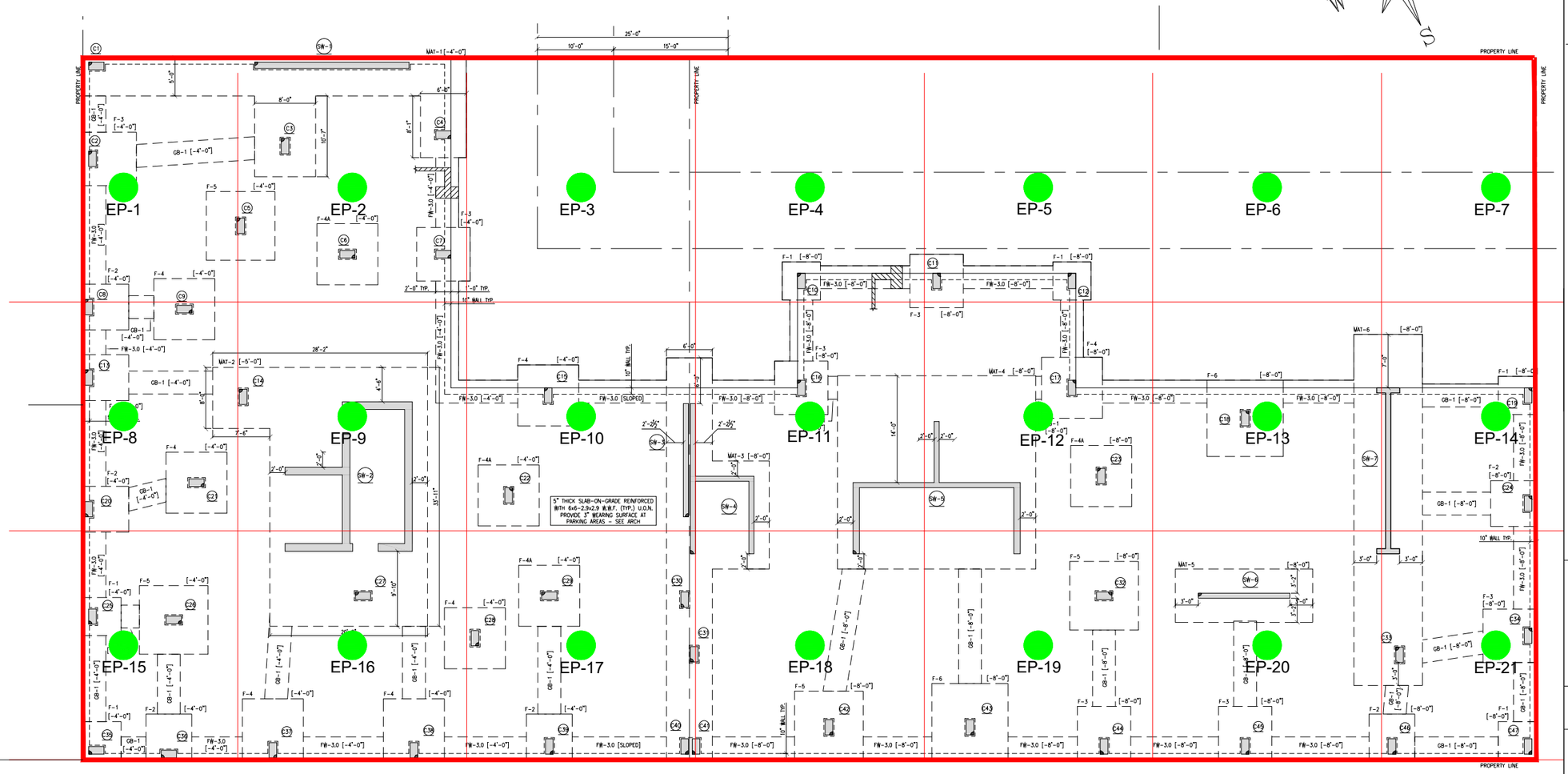
Sample #s	Rationale	Total
EP-1 through EP-21	Assess Track 4 at Remedial Depth	21
Field Duplicate	QA/QC	2
MS/MSD		4
Field Blank		2
Trip Blank		10
Total Samples		39

* Additional soil samples may be collected based on field conditions (i.e: post excavation lab results, elevated PID readings, odor, sheen, etc.)

Table 2
Preservation and Holding Times
2425 Atlantic Avenue, Brooklyn, NY

Sample Matrix	Analysis	Container	Preservation	Holding Time
Soil and Soil QA/QC Samples	VOCs	Glass, Four 40-ml vials with teflon-lined cap: 2 VOA vials with 5-ml H_2O, 1 VOA vial with MeOH, and 1 blank vial or 5-g Encore samplers	Cool, 4°C	14 days
	SVOCs	Glass, 8-oz teflon-line cap	Cool, 4°C	14 days to extract, 40 days after extraction to analyze
	PCBs & Pesticides	Glass, 100-g tefloned-lined cap	Cool, 4°C	14 days to extract, 40 days after extraction to analyze
	Metals	Glass, 2-oz teflon-lined cap	Cool, 4°C	6 months (except for mercury 28 days)
	PFAS	8-oz HDPE bottles	Cool, 4°C	28 days
	1,4-Dioxane	Glass, Four 40-ml vials with teflon-lined cap: 2 VOA vials with 5-ml H2O, 1 VOA vial with MeOH, and 1 blank vial or 5-g Encore samplers	Cool, 4°C	14 days

FIGURES



1 FOUNDATION PLAN
SCALE: 3/16"=1'-0"

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Legend:

- SITE BOUNDARY
- END POINT LOCATION AND ID
  EP-X

Notes:

1. All feature locations are approximate

Scale:

0 12.5' 25'

Figure No.	1
Figure Name:	ALPHA NUMERIC GRID MAP & PROPOSED ENDPOINT SAMPLE LOCATIONS
Report:	QAPP
Date:	2/27/2026
Drawn By:	KB
Site Address:	2425 ATLANTIC AVENUE BROOKLYN, NY 11233

ATTACHMENTS

ATTACHMENT 1

NYSDEC Guidance for PFAS Sampling

NEW YORK STATE OF OPPORTUNITY.

Department of Environmental Conservation

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Under NYSDEC's Part 375 Remedial Programs

April 2023



www.dec.ny.gov

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ERRATA SHEET for

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) Under NYSDEC's Part 375 Remedial Programs Issued January 17, 2020

Citation and Page Number	Current Text	Corrected Text	Date
Title of Appendix I, page 32	Appendix H	Appendix I	2/25/2020
Document Cover, page 1	Guidelines for Sampling and Analysis of PFAS	Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs	9/15/2020
Data Assessment and Application to Site Cleanup Page 3	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published	Until such time as Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published	3/28/2023
Water Sample Results Page 3	PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water if PFOA or PFOS is detected in any water sample at or above 10 ng/L (ppt) and is determined to be attributable to the site, either by a comparison of upgradient and downgradient levels, or the presence of soil source areas, as defined below.	NYSDEC has adopted ambient water quality guidance values for PFOA and PFOS. Groundwater samples should be compared to the human health criteria of 6.7 ng/l (ppt) for PFOA and 2.7 ng/l (ppt) for PFOS. These guidance values also include criteria for surface water for PFOS applicable for aquatic life, which may be applicable at some sites. Drinking water sample results should be compared to the NYS maximum contaminant level (MCL) of 10 ng/l (ppt).Analysis to determine if PFOA and PFOS concentrations are attributable to the site should include a comparison between upgradient and downgradient levels, and the presence of soil source areas, as defined below.	3/28/2023
Soil Sample Results Page 3	Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values:	NYSDEC will delay adding soil cleanup objectives for PFOA and PFOS to 6 NYCRR Part 375-6 until the PFAS rural soil background study has been completed. Until SCOs are in effect, the following are to be used as guidance values:	3/28/2023
Protection of Groundwater Page 3	PFOA (ppb) 1.1 PFOS (ppb) 3.7	PFOA (ppb) 0.8 PFOS (ppb) 1.0	3/28/2023

Citation and Page Number	Current Text	Corrected Text	Date
Footnote 2 Page 3	The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	The Protection of Groundwater values are based on the above referenced ambient groundwater guidance values. Details on that calculation are available in the following document, prepared for the February 2022 proposed changes to Part 375 (https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375techsupport.pdf). The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	3/28/2023
Testing for Imported Soil Page 4	If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable.	If the concentrations of PFOA and PFOS in leachate are at or above the ambient water quality guidance values for groundwater, then the soil is not acceptable.	3/28/2023
Routine Analysis, page 9	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1 or ISO 25101."	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1, ISO 25101, or Method 533."	9/15/2020
Additional Analysis, page 9, new paragraph regarding soil parameters	None	"In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (EPA Method 9060), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils."	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Data Assessment and Application to Site Cleanup Page 10	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFAS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Target levels for cleanup of PFAS in other media, including biota and sediment, have not yet been established by the DEC.	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.	9/15/2020
Water Sample Results Page 10	PFAS should be further assessed and considered as a potential contaminant of concern in groundwater or surface water (…) If PFAS are identified as a contaminant of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water (…) If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Soil Sample Results, page 10	"The extent of soil contamination for purposes of delineation and remedy selection should be determined by having certain soil samples tested by Synthetic Precipitation Leaching Procedure (SPLP) and the leachate analyzed for PFAS. Soil exhibiting SPLP results above 70 ppt for either PFOA or PFOS (individually or combined) are to be evaluated during the cleanup phase."	"Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values. " [Interim SCO Table] "PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP. As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf. "	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Testing for Imported Soil Page 11	Soil imported to a site for use in a soil cap, soil cover, or as backfill is to be tested for PFAS in general conformance with DER-10, Section 5.4(e) for the PFAS Analyte List (Appendix F) using the analytical procedures discussed below and the criteria in DER-10 associated with SVOCs. If PFOA or PFOS is detected in any sample at or above 1 µg/kg, then soil should be tested by SPLP and the leachate analyzed for PFAS. If the SPLP results exceed 10 ppt for either PFOA or PFOS (individually) then the source of backfill should be rejected, unless a site-specific exemption is provided by DER. SPLP leachate criteria is based on the Maximum Contaminant Levels proposed for drinking water by New York State's Department of Health, this value may be updated based on future Federal or State promulgated regulatory standards. Remedial parties have the option of analyzing samples concurrently for both PFAS in soil and in the SPLP leachate to minimize project delays. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable. PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Footnotes	None	[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances. [2] The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the soil cleanup objective for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	9/15/2020
Additional Analysis, page 9	In cases… soil parameters, such as Total Organic Carbon (EPA Method 9060), soil…	In cases… soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil…	1/8/2021
Appendix A, General Guidelines, fourth bullet	List the ELAP-approved lab(s) to be used for analysis of samples	List the ELAP- certified lab(s) to be used for analysis of samples	1/8/2021
Appendix E, Laboratory Analysis and Containers	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by ISO Method 25101.	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101	1/8/2021
Water Sample Results Page 9	"In addition, further assessment of water may be warranted if either of the following screening levels are met: a. any other individual PFAS (not PFOA or PFOS) is detected in water at or above 100 ng/L; or b. total concentration of PFAS (including PFOA and PFOS) is detected in water at or above 500 ng/L"	Deleted	6/15/2021

Citation and Page Number	Current Text	Corrected Text	Date
Routine Analysis, Page XX	Currently, New York State Department of Health's Environmental Laboratory Approval Program (ELAP)… criteria set forth in the DER's laboratory guidelines for PFAS in non-potable water and solids (Appendix H - Laboratory Guidelines for Analysis of PFAS in Non-Potable Water and Solids).	Deleted	5/31/2022
Analysis and Reporting, Page XX	As of October 2020, the United States Environmental Protection Agency (EPA) does not have a validated method for analysis of PFAS for media commonly analyzed under DER remedial programs (non-potable waters, solids). DER has developed the following guidelines to ensure consistency in analysis and reporting of PFAS.	Deleted	5/31/2022
Routine Analysis, Page XX	LC-MS/MS analysis for PFAS using methodologies based on EPA Method 537.1 is the procedure to use for environmental samples. Isotope dilution techniques should be utilized for the analysis of PFAS in all media.	EPA Method 1633 is the procedure to use for environmental samples.	
Soil Sample Results, Page XX	Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6	Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6	
Appendix A	"Include in the text… LC-MS/MS for PFAS using methodologies based on EPA Method 537.1"	"Include in the text ….EPA Method 1633"	
Appendix A	"Laboratory should have ELAP certification for PFOA and PFOS in drinking water by EPA Method 537, 537.1, EPA Method 533, or ISO 25101"	Deleted	
Appendix B	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	

Citation and Page Number	Current Text	Corrected Text	Date
Appendix C	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix D	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix G		Updated to include all forty PFAS analytes in EPA Method 533	
Appendix H		Deleted	
Appendix I	Appendix I	Appendix H	
Appendix H	"These guidelines are intended to be used for the validation of PFAS analytical results for projects within the Division of Environmental Remediation (DER) as well as aid in the preparation of a data usability summary report."	"These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER)."	
Appendix H	"The holding time is 14 days…"	"The holding time is 28 days…"	
Appendix H, Initial Calibration	"The initial calibration should contain a minimum of five standards for linear fit…"	"The initial calibration should contain a minimum of six standards for linear fit…"	
Appendix H, Initial Calibration	Linear fit calibration curves should have an R^2 value greater than 0.990.	Deleted	
Appendix H, Initial Calibration Verification	Initial Calibration Verification Section	Deleted	
Appendix H	secondary Ion Monitoring Section	Deleted	
Appendix H	Branched and Linear Isomers Section	Deleted	

Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs

Objective

New York State Department of Environmental Conservation's Division of Environmental Remediation (DER) performs or oversees sampling of environmental media and subsequent analysis of PFAS as part of remedial programs implemented under 6 NYCRR Part 375. To ensure consistency in sampling, analysis, reporting, and assessment of PFAS, DER has developed this document which summarizes currently accepted procedures and updates previous DER technical guidance pertaining to PFAS.

Applicability

All work plans submitted to DEC pursuant to one of the remedial programs under Part 375 shall include PFAS sampling and analysis procedures that conform to the guidelines provided herein.

As part of a site investigation or remedial action compliance program, whenever samples of potentially affected media are collected and analyzed for the standard Target Analyte List/Target Compound List (TAL/TCL), PFAS analysis should also be performed. Potentially affected media can include soil, groundwater, surface water, and sediment. Based upon the potential for biota to be affected, biota sampling and analysis for PFAS may also be warranted as determined pursuant to a Fish and Wildlife Impact Analysis. Soil vapor sampling for PFAS is not required.

Field Sampling Procedures

DER-10 specifies technical guidance applicable to DER's remedial programs. Given the prevalence and use of PFAS, DER has developed "best management practices" specific to sampling for PFAS. As specified in DER-10 Chapter 2, quality assurance procedures are to be submitted with investigation work plans. Typically, these procedures are incorporated into a work plan, or submitted as a stand-alone document (e.g., a Quality Assurance Project Plan). Quality assurance guidelines for PFAS are listed in Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS.

Field sampling for PFAS performed under DER remedial programs should follow the appropriate procedures outlined for soils, sediments, or other solids (Appendix B), non-potable groundwater (Appendix C), surface water (Appendix D), public or private water supply wells (Appendix E), and fish tissue (Appendix F).

QA/QC samples (e.g. duplicates, MS/MSD) should be collected as specified in DER-10, Section 2.3(c). For sampling equipment coming in contact with aqueous samples only, rinsate or equipment blanks should be collected. Equipment blanks should be collected at a minimum frequency of one per day per site or one per twenty samples, whichever is more frequent.

Analysis and Reporting

The investigation work plan should describe analysis and reporting procedures, including laboratory analytical procedures for the methods discussed below. As specified in DER-10 Section 2.2, laboratories should provide a full Category B deliverable. In addition, a Data Usability Summary Report (DUSR) should be prepared by an independent, third-party data validator. Electronic data submissions should meet the requirements provided at: https://www.dec.ny.gov/chemical/62440.html.

DER has developed a *PFAS Analyte List* (Appendix G) for remedial programs to understand the nature of contamination at sites. It is expected that reported results for PFAS will include, at a minimum, all the compounds listed. If lab and/or matrix specific issues are encountered for any analytes, the DER project manager, in consultation with the DER chemist, will make case-by-case decisions as to whether certain analytes may be temporarily or permanently discontinued from analysis at each site. As with other contaminants that are analyzed for at a site, the *PFAS Analyte List* may be refined for future sampling events based on investigative findings.

Routine Analysis

EPA Method 1633 is the procedure to use for environmental samples. Reporting limits for PFOA and PFOS in aqueous samples should not exceed 2 ng/L. Reporting limits for PFOA and PFOS in solid samples should not exceed 0.5 µg/kg. Reporting limits for all other PFAS in aqueous and solid media should be as close to these limits as possible. If laboratories indicate that they are not able to achieve these reporting limits for the entire *PFAS Analyte List*, site-specific decisions regarding acceptance of elevated reporting limits for specific PFAS can be made by the DER project manager in consultation with the DER chemist. Data review guidelines were developed by DER to ensure data comparability and usability (Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids).

Additional Analysis

Additional laboratory methods for analysis of PFAS may be warranted at a site, such as the Synthetic Precipitation Leaching Procedure (SPLP) and Total Oxidizable Precursor Assay (TOP Assay).

In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils.

SPLP is a technique used to determine the mobility of chemicals in liquids, soils and wastes, and may be useful in determining the need for addressing PFAS-containing material as part of the remedy. SPLP by EPA Method 1312 should be used unless otherwise specified by the DER project manager in consultation with the DER chemist.

Impacted materials can be made up of PFAS that are not analyzable by routine analytical methodology. A TOP Assay can be utilized to conceptualize the amount and type of oxidizable PFAS which could be liberated in the environment, which approximates the maximum concentration of perfluoroalkyl substances that could be generated if all polyfluoroalkyl substances were oxidized. For example, some polyfluoroalkyl substances may degrade or transform to form perfluoroalkyl substances (such as PFOA or PFOS), resulting in an increase in perfluoroalkyl substance concentrations as contaminated groundwater moves away from a source. The TOP Assay converts, through oxidation, polyfluoroalkyl substances (precursors) into perfluoroalkyl substances that can be detected by routine analytical methodology.[1]

[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances.

Commercial laboratories have adopted methods which allow for the quantification of targeted PFAS in air and biota. The EPA's Office of Research and Development (ORD) is currently developing methods which allow for air emissions characterization of PFAS, including both targeted and non-targeted analysis of PFAS. Consult with the DER project manager and the DER chemist for assistance on analyzing biota/tissue and air samples.

Data Assessment and Application to Site Cleanup

Until such time as Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.

Water Sample Results

NYSDEC has adopted ambient water quality guidance values for PFOA and PFOS. Groundwater samples should be compared to the human health criteria of 6.7 ng/l (ppt) for PFOA and 2.7 ng/l (ppt) for PFOS. These human health criteria should also be applied to surface water that is used as a water supply. This guidance also includes criteria for surface water for PFOS applicable for aquatic life, which may be applicable at some sites. Drinking water sample results should be compared to the NYS maximum contaminant level (MCL) of 10 ng/l (ppt). Analysis to determine if PFOA and PFOS concentrations are attributable to the site should include a comparison between upgradient and downgradient levels, and the presence of soil source areas, as defined below.

If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.

Soil Sample Results

NYSDEC will delay adding soil cleanup objectives for PFOA and PFOS to 6 NYCRR Part 375-6 until the PFAS rural soil background study has been completed. Until SCOs are in effect, the following are to be used as guidance values:

Guidance Values for Anticipated Site Use	PFOA (ppb)	PFOS (ppb)
Unrestricted	0.66	0.88
Residential	6.6	8.8
Restricted Residential	33	44
Commercial	500	440
Industrial	600	440
Protection of Groundwater[2]	0.8	1.0

PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These

[2] The Protection of Groundwater values are based on the above referenced ambient groundwater guidance values. Details on that calculation are available in the following document, prepared for the February 2022 proposed changes to Part 375 (https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375techsupport.pdf). The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).

additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP.

As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf.

Testing for Imported Soil

Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above the ambient water quality guidance values for groundwater, then the soil is not acceptable.

PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.

Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS

The following guidelines (general and PFAS-specific) can be used to assist with the development of a QAPP for projects within DER involving sampling and analysis of PFAS.

General Guidelines in Accordance with DER-10

- Document/work plan section title – Quality Assurance Project Plan
- Summarize project scope, goals, and objectives
- Provide project organization including names and resumes of the project manager, Quality Assurance Officer (QAO), field staff, and Data Validator
    - The QAO should not have another position on the project, such as project or task manager, that involves project productivity or profitability as a job performance criterion
- List the ELAP certified lab(s) to be used for analysis of samples
- Include a site map showing sample locations
- Provide detailed sampling procedures for each matrix
- Include Data Quality Usability Objectives
- List equipment decontamination procedures
- Include an "Analytical Methods/Quality Assurance Summary Table" specifying:
    - Matrix type
    - Number or frequency of samples to be collected per matrix
    - Number of field and trip blanks per matrix
    - Analytical parameters to be measured per matrix
    - Analytical methods to be used per matrix with minimum reporting limits
    - Number and type of matrix spike and matrix spike duplicate samples to be collected
    - Number and type of duplicate samples to be collected
    - Sample preservation to be used per analytical method and sample matrix
    - Sample container volume and type to be used per analytical method and sample matrix
    - Sample holding time to be used per analytical method and sample matrix
- Specify Category B laboratory data deliverables and preparation of a DUSR

Specific Guidelines for PFAS

- Include in the text that sampling for PFAS will take place
- Include in the text that PFAS will be analyzed by EPA Method 1633
- Include the list of PFAS compounds to be analyzed (*PFAS Analyte List*)
- Include the laboratory SOP for PFAS analysis
- List the minimum method-achievable Reporting Limits for PFAS
    - Reporting Limits should be less than or equal to:
        - Aqueous – 2 ng/L (ppt)
        - Solids – 0.5 µg/kg (ppb)
- Include the laboratory Method Detection Limits for the PFAS compounds to be analyzed
-
- Include detailed sampling procedures
    - Precautions to be taken
    - Pump and equipment types
    - Decontamination procedures
    - Approved materials only to be used
- Specify that regular ice only will be used for sample shipment
- Specify that equipment blanks should be collected at a minimum frequency of 1 per day per site for each matrix

Appendix B - Sampling Protocols for PFAS in Soils, Sediments and Solids

General

The objective of this protocol is to give general guidelines for the collection of soil, sediment and other solid samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Containers

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in to contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel spoon
- stainless steel bowl
- steel hand auger or shovel without any coatings

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Sampling is often conducted in areas where a vegetative turf has been established. In these cases, a pre-cleaned trowel or shovel should be used to carefully remove the turf so that it may be replaced at the conclusion of sampling. Surface soil samples (e.g. 0 to 6 inches below surface) should then be collected using a pre-cleaned, stainless steel spoon. Shallow subsurface soil samples (e.g. 6 to ~36 inches below surface) may be collected by digging a hole using a pre-cleaned hand auger or shovel. When the desired subsurface depth is reached, a pre-cleaned hand auger or spoon shall be used to obtain the sample.

When the sample is obtained, it should be deposited into a stainless steel bowl for mixing prior to filling the sample containers. The soil should be placed directly into the bowl and mixed thoroughly by rolling the material into the middle until the material is homogenized. At this point the material within the bowl can be placed into the laboratory provided container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A soil log or sample log shall document the location of the sample/borehole, depth of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix C - Sampling Protocols for PFAS in Monitoring Wells

General

The objective of this protocol is to give general guidelines for the collection of groundwater samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including plumbers tape and sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel inertia pump with HDPE tubing
- peristaltic pump equipped with HDPE tubing and silicone tubing
- stainless steel bailer with stainless steel ball
- bladder pump (identified as PFAS-free) with HDPE tubing

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Monitoring wells should be purged in accordance with the sampling procedure (standard/volume purge or low flow purge) identified in the site work plan, which will determine the appropriate time to collect the sample. If sampling using standard purge techniques, additional purging may be needed to reduce turbidity levels, so samples contain a limited amount of sediment within the sample containers. Sample containers that contain sediment may cause issues at the laboratory, which may result in elevated reporting limits and other issues during the sample preparation that can compromise data usability. Sampling personnel should don new nitrile gloves prior to sample collection due to the potential to contact PFAS containing items (not related to the sampling equipment) during the purging activities.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Additional equipment blank samples may be collected to assess other equipment that is utilized at the monitoring well
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A purge log shall document the location of the sample, sampling equipment, groundwater parameters, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix D - Sampling Protocols for PFAS in Surface Water

General

The objective of this protocol is to give general guidelines for the collection of surface water samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel cup

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Where conditions permit, (e.g. creek or pond) sampling devices (e.g. stainless steel cup) should be rinsed with site medium to be sampled prior to collection of the sample. At this point the sample can be collected and poured into the sample container.

If site conditions permit, samples can be collected directly into the laboratory container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A sample log shall document the location of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix E - Sampling Protocols for PFAS in Private Water Supply Wells

General

The objective of this protocol is to give general guidelines for the collection of water samples from private water supply wells (with a functioning pump) for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101. The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials (e.g. plumbers tape), including sample bottle cap liners with a PTFE layer.

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Locate and assess the pressure tank and determine if any filter units are present within the building. Establish the sample location as close to the well pump as possible, which is typically the spigot at the pressure tank. Ensure sampling equipment is kept clean during sampling as access to the pressure tank spigot, which is likely located close to the ground, may be obstructed and may hinder sample collection.

Prior to sampling, a faucet downstream of the pressure tank (e.g., washroom sink) should be run until the well pump comes on and a decrease in water temperature is noted which indicates that the water is coming from the well. If the homeowner is amenable, staff should run the water longer to purge the well (15+ minutes) to provide a sample representative of the water in the formation rather than standing water in the well and piping system including the pressure tank. At this point a new pair of nitrile gloves should be donned and the sample can be collected from the sample point at the pressure tank.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- If equipment was used, collect one equipment blank per day per site and a minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers.
- A field reagent blank (FRB) should be collected at a rate of one per 20 samples. The lab will provide a FRB bottle containing PFAS free water and one empty FRB bottle. In the field, pour the water from the one bottle into the empty FRB bottle and label appropriately.
- Request appropriate data deliverable (Category B) and an electronic data deliverable
- For sampling events where multiple private wells (homes or sites) are to be sampled per day, it is acceptable to collect QC samples at a rate of one per 20 across multiple sites or days.

Documentation

A sample log shall document the location of the private well, sample point location, owner contact information, sampling equipment, purge duration, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate and available (e.g. well construction, pump type and location, yield, installation date). Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appendix F - Sampling Protocols for PFAS in Fish

This appendix contains a copy of the current SOP developed by the Division of Fish and Wildlife (DFW) entitled "General Fish Handling Procedures for Contaminant Analysis" (Ver. 8). This SOP should be followed when collecting fish for contaminant analysis. Note, however, that the Bureau of Ecosystem Health will not be supplying bags or tags. All supplies are the responsibility of the collector

Procedure Name: General Fish Handling Procedures for Contaminant Analysis

Number: FW-005

Purpose: This procedure describes data collection, fish processing and delivery of fish collected for contaminant monitoring. It contains the chain of custody and collection record forms that should be used for the collections.

Organization: Environmental Monitoring Section
Bureau of Ecosystem Health
Division of Fish and Wildlife (DFW)
New York State Department of Environmental Conservation (NYSDEC)
625 Broadway
Albany, New York 12233-4756

Version: 8

Previous Version Date: 21 March 2018

Summary of Changes to this Version: Updated bureau name to Bureau of Ecosystem Health. Added direction to list the names of all field crew on the collection record. Minor formatting changes on chain of custody and collection records.

Originator or Revised by: Wayne Richter, Jesse Becker

Date: 26 April 2019

Quality Assurance Officer and Approval Date: Jesse Becker, 26 April 2019

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

GENERAL FISH HANDLING PROCEDURES FOR CONTAMINANT ANALYSES

A. Original copies of all continuity of evidence (i.e., Chain of Custody) and collection record forms must accompany delivery of fish to the lab. A copy shall be directed to the Project Leader or as appropriate, Wayne Richter. All necessary forms will be supplied by the Bureau of Ecosystem Health. Because some samples may be used in legal cases, it is critical that each section is filled out completely. Each Chain of Custody form has three main sections:

   1. The top box is to be filled out **and signed** by the person responsible for the fish collection (e.g., crew leader, field biologist, researcher). This person is responsible for delivery of the samples to DEC facilities or personnel (e.g., regional office or biologist).

   2. The second section is to be filled out **and signed** by the person responsible for the collections while being stored at DEC, before delivery to the analytical lab. This may be the same person as in (1), but it is still required that they complete the section. Also important is the **range of identification numbers** (i.e., tag numbers) included in the sample batch.

   3. Finally, the bottom box is to record any transfers between DEC personnel and facilities. Each subsequent transfer should be **identified, signed, and dated**, until laboratory personnel take possession of the fish.

B. The following data are required on each **Fish Collection Record** form:

   1. Project and Site Name.

   2. DEC Region.

   3. All personnel (and affiliation) involved in the collection.

   4. Method of collection (gill net, hook and line, etc.)

   5. Preservation Method.

C. The following data are to be taken on each fish collected and recorded on the **Fish Collection Record** form:

   1. Tag number - Each specimen is to be individually jaw tagged at time of collection with a unique number. Make sure the tag is turned out so that the number can be read without opening the bag. Use tags in sequential order. For small fish or composite samples place the tag inside the bag with the samples. The Bureau of Ecosystem Health can supply the tags.

   2. Species identification (please be explicit enough to enable assigning genus and species). Group fish by species when processing.

   3. Date collected.

   4. Sample location (waterway and nearest prominent identifiable landmark).

   5. Total length (nearest mm or smallest sub-unit on measuring instrument) and weight (nearest g or

smallest sub-unit of weight on weighing instrument). Take all measures as soon as possible with calibrated, protected instruments (e.g. from wind and upsets) and prior to freezing.

6. Sex - fish may be cut enough to allow sexing or other internal investigation, but do not eviscerate. Make any incision on the right side of the belly flap or exactly down the midline so that a left-side fillet can be removed.

D. General data collection recommendations:

1. It is helpful to use an ID or tag number that will be unique. It is best to use metal striped bass or other uniquely numbered metal tags. If uniquely numbered tags are unavailable, values based on the region, water body and year are likely to be unique: for example, R7CAY11001 for Region 7, Cayuga Lake, 2011, fish 1. If the fish are just numbered 1 through 20, we have to give them new numbers for our database, making it more difficult to trace your fish to their analytical results and creating an additional possibility for errors.

2. Process and record fish of the same species sequentially. Recording mistakes are less likely when all fish from a species are processed together. Starting with the bigger fish species helps avoid missing an individual.

3. If using Bureau of Ecosystem Health supplied tags or other numbered tags, use tags in sequence so that fish are recorded with sequential Tag Numbers. This makes data entry and login at the lab and use of the data in the future easier and reduces keypunch errors.

4. Record length and weight as soon as possible after collection and before freezing. Other data are recorded in the field upon collection. An age determination of each fish is optional, but if done, it is recorded in the appropriate “Age” column.

5. For composite samples of small fish, record the number of fish in the composite in the Remarks column. Record the length and weight of each individual in a composite. All fish in a composite sample should be of the same species and members of a composite should be visually matched for size.

6. Please submit photocopies of topographic maps or good quality navigation charts indicating sampling locations. GPS coordinates can be entered in the Location column of the collection record form in addition to or instead for providing a map. These records are of immense help to us (and hopefully you) in providing documented location records which are not dependent on memory and/or the same collection crew. In addition, they may be helpful for contaminant source trackdown and remediation/control efforts of the Department.

7. When recording data on fish measurements, it will help to ensure correct data recording for the data recorder to call back the numbers to the person making the measurements.

E. Each fish is to be placed in its own individual plastic bag. For small fish to be analyzed as a composite, put all of the fish for one composite in the same bag but use a separate bag for each composite. It is important to individually bag the fish to avoid difficulties or cross contamination when processing the fish for chemical analysis. Be sure to include the fish’s tag number inside the bag, preferably attached to the fish with the tag number turned out so it can be read. Tie or otherwise secure the bag closed. **The Bureau of Ecosystem Health will supply the bags.** If necessary, food grade bags may be procured from a suitable vendor (e.g., grocery store). It is preferable to redundantly label each bag with a manila tag tied between the knot and the body of the bag. This tag should be labeled with the project name, collection location, tag number, collection date, and fish species. If scales are collected, the scale envelope should be labeled with

the same information.

F. Groups of fish, by species, are to be placed in one large plastic bag per sampling location. **The Bureau of Ecosystem Health will supply the larger bags.** Tie or otherwise secure the bag closed. Label the site bag with a manila tag tied between the knot and the body of the bag. The tag should contain: project, collection location, collection date, species and **tag number ranges**. Having this information on the manila tag enables lab staff to know what is in the bag without opening it.

G. Do not eviscerate, fillet or otherwise dissect the fish unless specifically asked to. If evisceration or dissection is specified, the fish must be cut along the exact midline or on the right side so that the left side fillet can be removed intact at the laboratory. If filleting is specified, the procedure for taking a standard fillet (SOP PREPLAB 4) must be followed, including removing scales.

H. Special procedures for PFAS: Unlike legacy contaminants such as PCBs, which are rarely found in day to day life, PFAS are widely used and frequently encountered. Practices that avoid sample contamination are therefore necessary. While no standard practices have been established for fish, procedures for water quality sampling can provide guidance. The following practices should be used for collections when fish are to be analyzed for PFAS:

No materials containing Teflon.
No Post-it notes.
No ice packs; only water ice or dry ice.
Any gloves worn must be powder free nitrile.
No Gore-Tex or similar materials (Gore-Tex is a PFC with PFOA used in its manufacture).
No stain repellent or waterproof treated clothing; these are likely to contain PFCs.
Avoid plastic materials, other than HDPE, including clipboards and waterproof notebooks.
Wash hands after handling any food containers or packages as these may contain PFCs.
Keep pre-wrapped food containers and wrappers isolated from fish handling.
Wear clothing washed at least six times since purchase.
Wear clothing washed without fabric softener.
Staff should avoid cosmetics, moisturizers, hand creams and similar products on the day of sampling as many of these products contain PFCs (Fujii et al. 2013). Sunscreen or insect repellent should not contain ingredients with “fluor” in their name. Apply any sunscreen or insect repellent well downwind from all materials. Hands must be washed after touching any of these products.

I. All fish must be kept at a temperature <45° F (<8° C) immediately following data processing. As soon as possible, freeze at -20° C ± 5° C. Due to occasional freezer failures, daily freezer temperature logs are required. The freezer should be locked or otherwise secured to maintain chain of custody.

J. In most cases, samples should be delivered to the Analytical Services Unit at the Hale Creek field station. Coordinate delivery with field station staff and send copies of the collection records, continuity of evidence forms and freezer temperature logs to the field station. For samples to be analyzed elsewhere, non-routine collections or other questions, contact Wayne Richter, Bureau of Ecosystem Health, NYSDEC, 625 Broadway, Albany, New York 12233-4756, 518-402-8974, or the project leader about sample transfer. Samples will then be directed to the analytical facility and personnel noted on specific project descriptions.

K. A recommended equipment list is at the end of this document.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF FISH AND WILDLIFE
FISH COLLECTION RECORD

Project and Site Name _____ DEC Region _____

Collections made by (include all crew) _____

Sampling Method: □Electrofishing □Gill netting □Trap netting □Trawling □Seining □Angling □Other _____

Preservation Method: □Freezing □Other _____ Notes (SWFDB survey number): _____

FOR LAB USE ONLY- LAB ENTRY NO.	COLLECTION OR TAG NO.	SPECIES	DATE TAKEN	LOCATION	AGE	SEX &/OR REPROD. CONDIT	LENGTH ( )	WEIGHT ( )	REMARKS

richter: revised 2011, 5/7/15, 10/4/16, 3/20/17; becker: 3/23/17, 4/26/19

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CHAIN OF CUSTODY

I, _____, of _____ collected the
(Print Name) (Print Business Address)

following on _____, 20____ from _____
(Date) (Water Body)

in the vicinity of _____
(Landmark, Village, Road, etc.)

Town of _____, in _____ County.

Item(s) _____

_____

Said sample(s) were in my possession and handled according to standard procedures provided to me prior to collection. The sample(s) were placed in the custody of a representative of the New York State Department of Environmental Conservation on _____, 20_____.

_____ _____
Signature Date

I, _____, received the above mentioned sample(s) on the date specified and assigned identification number(s) _____ to the sample(s). I have recorded pertinent data for the sample(s) on the attached collection records. The sample(s) remained in my custody until subsequently transferred, prepared or shipped at times and on dates as attested to below.

_____ _____
Signature Date

SECOND RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
THIRD RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
FOURTH RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
RECEIVED IN LABORATORY BY (Print Name)	TIME & DATE	REMARKS
SIGNATURE	UNIT	
LOGGED IN BY (Print Name)	TIME & DATE	ACCESSION NUMBERS
SIGNATURE	UNIT	

richter: revised 21 April 2014; becker: 23 March 2017, 26 April, 2019

NOTICE OF WARRANTY

By signature to the chain of custody (reverse), the signatory warrants that the information provided is truthful and accurate to the best of his/her ability. The signatory affirms that he/she is willing to testify to those facts provided and the circumstances surrounding the same. Nothing in this warranty or chain of custody negates responsibility nor liability of the signatories for the truthfulness and accuracy of the statements provided.

HANDLING INSTRUCTIONS

On day of collection, collector(s) name(s), address(es), date, geographic location of capture (attach a copy of topographic map or navigation chart), species, number kept of each species, and description of capture vicinity (proper noun, if possible) along with name of Town and County must be indicated on reverse.

Retain organisms in manila tagged plastic bags to avoid mixing capture locations. Note appropriate information on each bag tag.

Keep samples as cool as possible. Put on ice if fish cannot be frozen within 12 hours. If fish are held more than 24 hours without freezing, they will not be retained or analyzed.

Initial recipient (either DEC or designated agent) of samples from collector(s) is responsible for obtaining and recording information on the collection record forms which will accompany the chain of custody. This person will seal the container using packing tape and writing his signature, the time and the date across the tape onto the container with indelible marker. Any time a seal is broken, for whatever purpose, the incident must be recorded on the Chain of Custody (reason, time, and date) in the purpose of transfer block. Container then is resealed using new tape and rewriting signature, with time and date.

EQUIPMENT LIST

Scale or balance of appropriate capacity for the fish to be collected.

Fish measuring board.

Plastic bags of an appropriate size for the fish to be collected and for site bags.

Individually numbered metal tags for fish.

Manila tags to label bags.

Small envelops, approximately 2” x 3.5”, if fish scales are to be collected.

Knife for removing scales.

Chain of custody and fish collection forms.

Clipboard.

Pens or markers.

Paper towels.

Dish soap and brush.

Bucket.

Cooler.

Ice.

Duct tape.

Appendix G – PFAS Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonic acids	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluoropentanesulfonic acid	PFPeS	2706-91-4
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanesulfonic acid	PFOS	1763-23-1
	Perfluorononanesulfonic acid	PFNS	68259-12-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
	Perfluorododecanesulfonic acid	PFDoS	79780-39-5
Perfluoroalkyl carboxylic acids	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUnA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTeDA	376-06-7
Per- and Polyfluoroether carboxylic acids	Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6
	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4
	Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1
	Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5
	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6
Fluorotelomer sulfonic acids	4:2 Fluorotelomer sulfonic acid	4:2-FTS	757124-72-4
	6:2 Fluorotelomer sulfonic acid	6:2-FTS	27619-97-2
	8:2 Fluorotelomer sulfonic acid	8:2-FTS	39108-34-4
Fluorotelomer carboxylic acids	3:3 Fluorotelomer carboxylic acid	3:3 FTCA	356-02-5
	5:3 Fluorotelomer carboxylic acid	5:3 FTCA	914637-49-3
	7:3 Fluorotelomer carboxylic acid	7:3 FTCA	812-70-4
Perfluorooctane sulfonamides	Perfluorooctane sulfonamide	PFOSA	754-91-6
	N-methylperfluorooctane sulfonamide	NMeFOSA	31506-32-8
	N-ethylperfluorooctane sulfonamide	NEtFOSA	4151-50-2
Perfluorooctane sulfonamidoacetic acids	N-methylperfluorooctane sulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethylperfluorooctane sulfonamidoacetic acid	N-EtFOSAA	2991-50-6
Perfluorooctane sulfonamide ethanols	N-methylperfluorooctane sulfonamidoethanol	MeFOSE	24448-09-7
	N-ethylperfluorooctane sulfonamidoethanol	EtFOSE	1691-99-2

Group	Chemical Name	Abbreviation	CAS Number
Ether sulfonic acids	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (F-53B Major)	9Cl-PF3ONS	756426-58-1
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (F-53B Minor)	11Cl-PF3OUdS	763051-92-9
	Perfluoro(2-ethoxyethane) sulfonic acid	PFEESA	113507-82-7

Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids

General

These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER). Data reviewers should understand the methodology and techniques utilized in the analysis. Consultation with the end user of the data may be necessary to assist in determining data usability based on the data quality objectives in the Quality Assurance Project Plan. A familiarity with the laboratory's Standard Operating Procedure may also be needed to fully evaluate the data. If you have any questions, please contact DER's Quality Assurance Officer, Dana Barbarossa, at dana.barbarossa@dec.ny.gov.

Preservation and Holding Time

Samples should be preserved with ice to a temperature of less than 6°C upon arrival at the lab. The holding time is 28 days to extraction for aqueous and solid samples. The time from extraction to analysis for aqueous samples is 28 days and 40 days for solids.

Temperature greatly exceeds 6ºC upon arrival at the lab*	Use professional judgement to qualify detects and non-detects as estimated or rejected
Holding time exceeding 28 days to extraction	Use professional judgement to qualify detects and non-detects as estimated or rejected if holding time is grossly exceeded

*Samples that are delivered to the lab immediately after sampling may not meet the thermal preservation guidelines. Samples are considered acceptable if they arrive on ice or an attempt to chill the samples is observed.

Initial Calibration

The initial calibration should contain a minimum of six standards for linear fit and six standards for a quadratic fit. The relative standard deviation (RSD) for a quadratic fit calibration should be less than 20%.

The low-level calibration standard should be within 50% - 150% of the true value, and the mid-level calibration standard within 70% - 130% of the true value.

%RSD >20%	J flag detects and UJ non detects

Continuing Calibration Verification

Continuing calibration verification (CCV) checks should be analyzed at a frequency of one per ten field samples. If CCV recovery is very low, where detection of the analyte could be in question, ensure a low level CCV was analyzed and use to determine data quality.

CCV recovery <70 or >130%	J flag results

Blanks

There should be no detections in the method blanks above the reporting limits. Equipment blanks, field blanks, rinse blanks etc. should be evaluated in the same manner as method blanks. Use the most contaminated blank to evaluate the sample results.

Blank Result	Sample Result	Qualification
Any detection	<Reporting limit	Qualify as ND at reporting limit
Any detection	>Reporting Limit and >10x the blank result	No qualification
>Reporting limit	>Reporting limit and <10x blank result	J+ biased high

Field Duplicates

A blind field duplicate should be collected at rate of one per twenty samples. The relative percent difference (RPD) should be less than 30% for analyte concentrations greater than two times the reporting limit. Use the higher result for final reporting.

RPD >30%	Apply J qualifier to parent sample

Lab Control Spike

Lab control spikes should be analyzed with each extraction batch or one for every twenty samples. In the absence of lab derived criteria, use 70% - 130% recovery criteria to evaluate the data.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects

Matrix Spike/Matrix Spike Duplicate

One matrix spike and matrix spike duplicate should be collected at a rate of one per twenty samples. Use professional judgement to reject results based on out of control MS/MSD recoveries.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only
RPD >30%	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only

Extracted Internal Standards (Isotope Dilution Analytes)

Problematic analytes (e.g. PFBA, PFPeA, fluorotelomer sulfonates) can have wider recoveries without qualification. Qualify corresponding native compounds with a J flag if outside of the range.

Recovery <50% or >150%	Apply J qualifier
Recovery <25% or >150% for poor responding analytes	Apply J qualifier
Isotope Dilution Analyte (IDA) Recovery <10%	Reject results

Signal to Noise Ratio

The signal to noise ratio for the quantifier ion should be at least 3:1. If the ratio is less than 3:1, the peak is discernable from the baseline noise and symmetrical, the result can be reported. If the peak appears to be baseline noise and/or the shape is irregular, qualify the result as tentatively identified.

Reporting Limits

If project-specific reporting limits were not met, please indicate that in the report along with the reason (e.g. over dilution, dilution for non-target analytes, high sediment in aqueous samples).

Peak Integrations

Target analyte peaks should be integrated properly and consistently when compared to standards. Ensure branched isomer peaks are included for PFAS where standards are available. Inconsistencies should be brought to the attention of the laboratory or identified in the data review summary report.

ATTACHMENT 2

Laboratory Standard Operating Procedure Summary for PFAS

Standard Operating Procedure - Summary
PFAS in Groundwater, Surface water and Soils

1.0 Summary

Target PFAS compounds are prepared and analyzed using EPA Method 537.1 modified. Aqueous and Soil samples are fortified with isotopic surrogates of the target PFAS compounds, extracted and concentrated to a known volume. The extracts are then analyzed employing LC-MSMS techniques.

Each preparation batch (per matrix) includes a preparation blank, lab control sample (blank spike), sample matrix spike and matrix spike duplicate and up to 20 samples.

2.0 Sample Preparation

Sample preparation involves extraction/clean-up and final concentration to a known volume before analysis. Isotopic surrogates are added to all preparation batch samples/QC.

2.1 Aqueous Samples

A known volume of sample is spiked with isotopic surrogates and extracted using Solid Phase Extraction (SPE) techniques. The SPE tubes are eluted with solvent and the eluant is then concentrated using nitrogen evaporation to a final volume of 1.0 mL. The final concentrated extract is fortified with Internal Standard and analyzed by LC-MSMS.

2.2 Soil Samples

A known weight of sample is fortified with isotopic surrogates, mixed then extracted in methanolic potassium hydroxide employing vortex mixing, followed by orbital shaking and finally ultrasonic extraction.

The extract is centrifuged and the supernatant solvent is quantitatively poured off and a small volume of PFAS free water is added to the solvent. The solvent mixture is evaporated using nitrogen evaporation and the remaining aqueous extract is brought to a known volume with PFAS free water.

The aqueous extract is then pH adjusted to 6-8 using glacial acetic acid and the resulting aqueous solution is extracted using SPE techniques. The SPE tube is eluted with solvent and the eluant is then concentrated using nitrogen evaporation to a final volume of 2.0 mL. The final concentrated extract is fortified with Internal Standard and analyzed by LC-MSMS.

3.0 **Analysis**

Analysis is conducted utilizing an Agilent Infinity 1290 HPLC system interfaced to an Agilent 6470AAR LC-MSMS with an Agilent Jet Stream-ElectroSpray Ionization (AJS-ESI)interface. The system is operated in the dynamic MRM (multiple reaction monitoring) mode for specific PFAS target isotopes and native analogs.

Where possible, multiple MRM transitions are used for targets and isotopes. Some species only exhibit single MRM transitions. Precursors and product ions are used for Quantitative and Qualitative purposes respectively.

3.1 Initial Calibration

The LC-MSMS is calibrated with 7 standards of a total of 40 isotopes and analog target PFAS compounds. Calibration is conducted from 0.25 to 20 ng/mL. Calibration employs internal standard techniques and either average response factor or quadratic regression is used depending upon the best calibration model based upon accuracy across the calibration range.

3.2 Continuing Calibration Verification

Each analytical sequence includes an opening continuing calibration verification (CCV) and a CCV after every 10 injections and at the end of the analysis sequence.

The CCV acceptance criteria are $\pm$ 30% of the expected value. Internal Standard areas are acceptable when -50% to +50% of the average response in the initial calibration.

3.3 Isotopic Surrogates (Isotope Dilution Analytes (IDA)

18 IDAs are utilized for this procedure. These isotopes are used to correct for recovery of detected target analog PFAS compounds through the preparation/analysis processes. The recovery limits currently are 25-150 % recovery and these limits are adjusted based upon laboratory determined control limits when sufficent data points per matrix are available.

3.4 Method Blanks (MBLK)

Each preparation batch includes a laboratory method blank. Any result greater than the Reporting Limit or 2 ng/L (aqueous) or 0.5 ug/kG (soil) is "B" flagged according with the exception of any detection of PFOA, PFOS or PFNA above the RL will require re-extraction of the batch.

3.5 Blank Spike (LCS)

Each preparation batch includes and BS/LCS. Recoveries are calculated and based upon isotope dilution. Recovery acceptance limits are 50-150% with RPD of 30% for a BSD if performed.

3.6 Matrix Spike/Matrix Spike Duplicates (MS/MSD)

Each preparation batch includes and MS/MSD pair. Recoveries are calculated and based upon isotope dilution. Recovery acceptance limits are 25-150% with RPD of 35% for samples.

4.0 Data Review and Reporting

All quantitation reports and LIMS output files are generated using the Agilent Mass Hunter reporting programs. The Quant reports include all Quantitative data and MRM transition data which are reviewed. The LIMS output file is in a format that allows upload to Element LIMS.

Isotope Dilution calculations are performed using our custom PFAS.mdb program which automatically uploads to the LIMS output file for upload to Element LIMS.

Once uploaded to ELEMENT, any exceptions/outliers are noted, flagged and set to reviewed.

All data reported are isotopically corrected for all QC and samples.

5.0 Revision History

May 1, 2019 Revision 1.0 First Issue

6.0 Approvals:

Laboratory Director Ben Gulizia

Corp. Technical Director Robert Bradley

Corp. QA Officer Sarah Widomski

ATTACHMENT 3

Laboratory Certification and Reporting Limits for PFAS

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2020
Issued April 01, 2019
Revised April 30, 2019

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. KRZYSZTOF TRAFALSKI
YORK ANALYTICAL LABORATORIES, INC. (II)
132-02 89TH AVENUE SUITE 217
RICHMOND HILL, NY 11418

NY Lab Id No: 12058

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Perfluorinated Alkyl Acids

Perfluorooctanesulfonic acid (PFOS)	EPA 537
Perfluorooctanoic acid (PFOA)	EPA 537

NEW YORK STATE | Department of Health

Serial No.: 60182

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

NELAP RECOGNIZED TNI ACCREDITATION BODY

York Analytical Laboratories, Inc.

10/30/2019

Analytical Method Information

PFAS Target compounds by LC/MS-MS

Dept.: PFAS

Analyte	MDL	Reporting Limit	Surrogate %R	Duplicate RPD	Matrix Spike %R	Matrix Spike RPD	Blank Spike / LCS %R	Blank Spike / LCS RPD
PFAS, NYSDEC Target List in Water (EPA 537m)					Units: ng/L			
Preservation: Cool 4°C						**Hold Time to Analysis** 28 days		
Container: 10_250mL Plastic Cool to 4° C		**Amount Required:** 250 mL				**Hold Time to Extr.** 14 days		
1H,1H,2H,2H-Perfluorodecanesulfonic aci	0.877	2.00 ng/L		30	25 - 150	35	50 - 130	30
1H,1H,2H,2H-Perfluorooctanesulfonic aci	1.16	5.00 ng/L		30	25 - 150	35	50 - 130	30
surr: d3-N-MeFOSAA			25 - 150					
surr: d5-N-EtFOSAA			25 - 150					
surr: M2-6:2 FTS			25 - 150					
surr: M2-8:2 FTS			25 - 150					
surr: M2PFTeDA			10 - 150					
surr: M3PFBS			25 - 150					
surr: M3PFHxS			25 - 150					
surr: M4PFHpA			25 - 150					
surr: M5PFHxA			25 - 150					
surr: M6PFDA			25 - 150					
surr: M7PFUdA			25 - 150					
surr: M9PFNA			25 - 150					
MPFOA		0.100 ng/L						
N-EtFOSAA	0.436	2.00 ng/L		30	25 - 150	35	50 - 130	30
N-MeFOSAA	0.364	2.00 ng/L		30	25 - 150	35	50 - 130	30
surr: Perfluoro-1-[13C8]octanesulfonamid			10 - 150					
surr: Perfluoro-1-[13C8]octanesulfonic aci			25 - 150					
Perfluoro-1-decanesulfonic acid (PFDS)	0.491	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.418	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluoro-1-octanesulfonamide (FOSA)	0.877	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorobutanesulfonic acid (PFBS)	0.436	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorodecanoic acid (PFDA)	0.493	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorododecanoic acid (PFDoA)	0.611	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluoroheptanoic acid (PFHpA)	0.447	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorohexanesulfonic acid (PFHxS)	0.494	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorohexanoic acid (PFHxA)	0.442	2.00 ng/L		30	25 - 150	35	50 - 130	30
surr: Perfluoro-n-[1,2-13C2]dodecanoic ac			25 - 150					
surr: Perfluoro-n-[13C4]butanoic acid (MF			25 - 150					
surr: Perfluoro-n-[13C5]pentanoic acid (M			25 - 150					
surr: Perfluoro-n-[13C8]octanoic acid (M8			25 - 150					
Perfluoro-n-butanoic acid (PFBA)	1.01	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorononanoic acid (PFNA)	0.361	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorooctanesulfonic acid (PFOS)	0.472	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorooctanoic acid (PFOA)	0.360	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluoropentanoic acid (PFPeA)	0.511	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorotetradecanoic acid (PFTA)	0.701	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorotridecanoic acid (PFTrDA)	0.660	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluoroundecanoic acid (PFUnA)	0.534	2.00 ng/L		30	25 - 150	35	50 - 130	30

York Analytical Laboratories, Inc.

10/30/2019

Analytical Method Information

PFAS Target compounds by LC/MS-MS

Dept.: PFAS

Analyte	MDL	Reporting Limit	Surrogate %R	Duplicate RPD	Matrix Spike %R	Matrix Spike RPD	Blank Spike / LCS %R	Blank Spike / LCS RPD
PFAS, NYSDEC Target List in Soil (EPA 537m)					Units: ug/kg			
Preservation: Cool 4°C						**Hold Time to Analysis** 28 days		
Container: 10_250mL Plastic Cool to 4° C		**Amount Required:** 250 mL				**Hold Time to Extr.** 14 days		
1H,1H,2H,2H-Perfluorodecanesulfonic aci	0.344	0.750 ug/kg		30	25 - 150	35	50 - 130	30
1H,1H,2H,2H-Perfluorooctanesulfonic aci	0.521	0.750 ug/kg		30	25 - 150	35	50 - 130	30
surr: d3-N-MeFOSAA			25 - 150					
surr: d5-N-EtFOSAA			25 - 150					
surr: M2-6:2 FTS			25 - 150					
surr: M2-8:2 FTS			25 - 150					
surr: M2PFTeDA			10 - 150					
surr: M3PFBS			25 - 150					
surr: M3PFHxS			25 - 150					
surr: M4PFHpA			25 - 150					
surr: M5PFHxA			25 - 150					
surr: M6PFDA			25 - 150					
surr: M7PFUdA			25 - 150					
surr: M9PFNA			25 - 150					
MPFOA								
N-EtFOSAA	0.109	0.750 ug/kg		30	25 - 150	35	50 - 130	30
N-MeFOSAA	0.0910	0.750 ug/kg		30	25 - 150	35	50 - 130	30
surr: Perfluoro-1-[13C8]octanesulfonamid			10 - 150					
surr: Perfluoro-1-[13C8]octanesulfonic aci			25 - 150					
Perfluoro-1-decanesulfonic acid (PFDS)	0.177	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.198	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluoro-1-octanesulfonamide (FOSA)	0.455	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorobutanesulfonic acid (PFBS)	0.109	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorodecanoic acid (PFDA)	0.123	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorododecanoic acid (PFDoA)	0.110	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluoroheptanoic acid (PFHpA)	0.112	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorohexanesulfonic acid (PFHxS)	0.106	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorohexanoic acid (PFHxA)	0.111	0.750 ug/kg		30	25 - 150	35	50 - 130	30
surr: Perfluoro-n-[1,2-13C2]dodecanoic ac			25 - 150					
surr: Perfluoro-n-[13C4]butanoic acid (MF			25 - 150					
surr: Perfluoro-n-[13C5]pentanoic acid (M			25 - 150					
surr: Perfluoro-n-[13C8]octanoic acid (M8			25 - 150					
Perfluoro-n-butanoic acid (PFBA)	0.278	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorononanoic acid (PFNA)	0.0900	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorooctanesulfonic acid (PFOS)	0.118	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorooctanoic acid (PFOA)	0.0900	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluoropentanoic acid (PFPeA)	0.211	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorotetradecanoic acid (PFTA)	0.192	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorotridecanoic acid (PFTrDA)	0.132	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluoroundecanoic acid (PFUnA)	0.133	0.750 ug/kg		30	25 - 150	35	50 - 130	30

ATTACHMENT 4

Chain of Custody Examples

York Analytical Laboratories, Inc.
120 Research Drive, Stratford, CT 06615
132-02 89th Ave, Queens, NY 11418
clientservices@yorklab.com
www.yorklab.com

YORK
ANALYTICAL LABORATORIES INC

Field Chain-of-Custody Record

NOTE: YORK's Standard Terms & Conditions are listed on the back side of this document.
This document serves as your written authorization for YORK to proceed with the analyses requested below.
Your signature binds you to YORK's Standard Terms & Conditions.

YORK Project No.

Page _____ of _____

YOUR Information	Report To:	Invoice To:
Company:	Company:	Company:
Address:	Address:	Address:
Phone.:	Phone.:	Phone.:
Contact:	Contact:	Contact:
E-mail:	E-mail:	E-mail:

YOUR Project Number

YOUR Project Name

YOUR PO#:

Turn-Around Time

RUSH - Next Day	
RUSH - Two Day	
RUSH - Three Day	
RUSH - Four Day	
Standard (5-7 Day)	

Please print clearly and legibly. All information must be complete. Samples will not be logged in and the turn-around-time clock will not begin until any questions by YORK are resolved.

Samples Collected by: (print your name above and sign below)

Matrix Codes

S - soil / solid
GW - groundwater
DW - drinking water
WW - wastewater
O - Oil ⋮ Other

Samples From

New York	
New Jersey	
Connecticut	
Pennsylvania	
Other	

Report / EDD Type (circle selections)

Summary Report	CT RCP	Standard Excel EDD
QA Report	CT RCP DQA/DUE	EQuIS (Standard)
NY ASP A Package	NJDEP Reduced Deliverables	NYSDEC EQuIS
NY ASP B Package		NJDEP SRP HazSite
	NJDKQP	Other:

YORK Reg. Comp.

Compared to the following Regulation(s): (please fill in)

Sample Identification	Sample Matrix	Date/Time Sampled	Analysis Requested	Container Description

Comments:

Preservation: (check all that apply)

HCl ___ MeOH ___ HNO_3 ___ H_2SO_4 ___ NaOH ___ ZnAc ___
Ascorbic Acid ___ Other: _____

Special Instruction

Field Filtered ____
Lab to Filter _____

Samples Relinquished by / Company	Date/Time	Samples Received by / Company	Date/Time	Samples Relinquished by / Company	Date/Time
Samples Received by / Company	**Date/Time**	**Samples Relinquished by / Company**	**Date/Time**	**Samples Received by / Company**	**Date/Time**
Samples Relinquished by / Company	**Date/Time**	**Samples Received by / Company**	**Date/Time**	**Samples Received in LAB by**	**Date/Time**

Temp. Received at Lab

Degrees C

ATTACHMENT 5

Resumes

AMC Engineering PLLC
18-36 42nd Street
Astoria, NY 11105
Phone: (516) 417-8588

ARIEL CZEMERINSKI, P.E.
Email: Ariel@AMC-Engineering.com

SUMMARY:

New York State Professional Engineer. Chemical and Environmental Engineer, with 29 years of experience in the chemical and environmental areas. Areas of expertise include inspections and sign off on Large Scale Vapor Barrier Installations at Various NYC schools, Design and inspections of Sub Slab Depressurization Systems, wastewater treatment systems, Large scale dewatering system design for construction, process control and automation, process optimization, productivity improvement, quality systems, environmental compliance, Phase I Environmental Site Assessments, Phase II Environmental Investigations, Phase III: Remedial Activities, process and plant safety, and management of a production facility. Special Inspector with New York City Department of Buildings. Registered PE in NY.

Professional Experience:

AMC: 18 Years
Prior: 6 years

Education

Master of Science in Chemical Engineering, Columbia University, New York, NY, Feb. 1990.
Bachelor of Science in Chemical Engineering, University Of Buenos Aires, Buenos Aires, Argentina, May 1987

Areas of Expertise

- Vapor Intrusion - Barrier and Sub Slab Venting System Design
- Environmental Assessment Statements under CEQR, ULURP
- Remedial Program Design and Management
- Environmental Compliance, Clean Water Act, Clean Air Act, Hazardous Materials
- Dewatering & Treatment System Design
- SWPPP design and implementation. Preparation and Submittal of NOIs.
- NYCDEP Sewer Discharge Permitting
- Transfer Station Permitting and Compliance
- Wastewater Treatment Systems and Permitting, SPDES, LI Well permit, Water Withdrawal Permit.
- Air Permits and Registration
- Zoning Regulations and Permitting
- Safety and Environmental Training
- Waste Management Plans
- Professional Certifications
- OSHA 40-hr HAZWOPER
- OSHA 10-hr Construction Safety and Health

AMC Engineering PLLC
18-36 42nd Street
Astoria, NY 11105
Phone: (516) 417-8588

Project Experience

Project: Bergen Basin Sewer - CS-JA-BBS -Queens, NY
Project Description: NYC infrastructure (sewer, water) upgrade, drainage channel installation. Dewatering Design. Permits with NYCDEP and NYSDEC. Soil contaminated with petroleum requiring excavation, soil management and disposal under a Materials Handling Plan, Construction Health and Safety Plan. SWPPP design and implementation.
Client: JR Cruz - NYCDDC
Regulatory Authority: NYSDEC, NYCDEP
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: SER002326- Storm and Sanitary Sewers in Wardwell Avenue, Staten Island, New York
Project Description: NYC infrastructure (sewer, water) upgrade.
Dewatering Design. Permits with NYCDEP and NYSDEC. SWPPP design and implementation.
Client: E.E. Cruz - NYCDDC
Regulatory Authority: NYSDEC, NYCDEP
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: HED568-Installation of New 20" Subaqueous water main extension, and new 12" sub-aqueous high pressure gas main from the Bronx to Randall's Island, New York
Project Description: NYC infrastructure (gas, water) upgrade.
Soil contaminated with petroleum requiring excavation, soil management and disposal under a Materials Handling Plan, Construction Health and Safety Plan. Dewatering Design. Permits with NYCDEP and NYSDEC.
Client: E.E. Cruz - NYCDDC
Regulatory Authority: NYSDEC, NYCDEP
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: Domsey Fiber Corp. - 431 Kent Avenue, Brooklyn NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: Express Builders
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: SE-807 –Construction of Storm and Sanitary Sewers and Water Main in 20th Ave between 126th St and US Bulkhead Line Area, College Point, Queens, NY
Project Description: NYC Residential infrastructure (sewer, water) upgrade, outfall reconstruction, Soil characterization, soil management and disposal under a Materials Handling Plan, Construction Health and Safety Plan and Community Air Monitoring Plan. SWPPP design and implementation, Public Participation Plan, Marine HASP, Dewatering Design and permit application.

Client: EIC Associates
Regulatory Authority: NYCDDC
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: Springfield Gardens Residential Area BMP - Springfield Gardens, Queens, NY
Project Description: NYC Residential infrastructure (sewer, gas, water) upgrade, drainage channel installation and pond restoration. Soil contaminated with, petroleum and heavy metals requiring excavation, soil management and disposal under a Materials Handling Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: EIC Associates - NYCEDC
Regulatory Authority: NYSDEC, NYCParks
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: Former Domino Sugar Site - Kent Avenue, Brooklyn NY
Project Description: NYC E-Designation. Soil contaminated with semi-volatile organic compounds and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: Two Trees Management
Regulatory Authority: NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former Uniforms For Industry Site - Jamaica Avenue, Queens NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum, mop oil and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: The Arker Companies
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project

Project: Former Sunbelt Equipment Site – 25 Kent Avenue, Brooklyn, NY
Project Description: NYS Brownfield cleanup project. Soil contaminated with petroleum, and heavy metals and coal tar, requiring deep excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan, Dewatering Design and implementation, SWPPP design and implementation
Client: 19 Kent Acquisition LLC
Regulatory Authority: NYSDEC
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

AMC Engineering PLLC
18-36 42nd Street
Astoria, NY 11105
Phone: (516) 417-8588

Project Experience

Project: Former Charles Pfizer & Co. Site - 407 Marcy Avenue, Brooklyn, NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: The Rabsky Group
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former East Coast Industrial Uniforms Site - 39 Skillman Street, Brooklyn, NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: Riverside Builders
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former BP Amoco Service Station Site - 1800 Southern Boulevard, Bronx, NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: SoBro, Joy Construction
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former Dico G Auto & Truck Repair Site - 3035 White Plains Road, Bronx, NY
Project Description: NYS Brownfield cleanup project. Soil contaminated with petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: The Arker Companies
Regulatory Authority: NYSDEC
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Ezgi Karayel

Principal

Contact

347.871.0750
ezgi@vektorconsultants.com

Ezgi Karayel is an environmental engineer with extensive experience in brownfield redevelopment. She is the founder and Principal of Vektor Consultants and serves as Operations Officer of the firm. Ms. Karayel guides firm's clients through their due diligence processes. She manages all aspects of the firm strongly focusing on brownfield redevelopment and E-Designation projects across New York Metropolitan area. She has worked with major real estate developers and shareholders by developing strategic approaches to the environmental challenges of complex real estate transactions and brownfield redevelopment. Her experience also includes a broad range of environmental services including regulatory compliance, due diligence assessments, acquisition support, design and implementation of engineering controls and remediation systems, excavation support and soil disposal plans, and facility decommissioning.
She is the chair of the Partnership's Scholarship Program and works closely with committee members to support the education and training of students who are pursuing environmental careers.

Education

B.S. Environmental Engineering
University at Buffalo

Professional Registration

OSHA 10-hour Construction and 40-hour General Industry
OSHA 40-hour HAZWOPER and 8-hour HAZWOPER Refresher
Certified Environmental Manager and Certified Environmental Inspector

Affiliations

New York City Brownfield Partnership, President

Brownfield Coalition of the Northeast, Advisory Board Member

Select Projects

Linden Boulevard, Queens, New York – Site Investigation and Remediation of a 7-acre former landfill with a Restrictive Declaration. The scope of work for the project included preparation of a Remedial Investigation Work Plan for review and approval by the NYCOER, NYSDEC and NYCDOH, implementation of Remedial Investigation, preparation of Remedial Investigation Report, Remedial Action Work Plan, preparation and implementation of a waste characterization plan for soils for proper disposal, supervision of site remediation activities, coordination with remediation engineer to design a methane mitigation system as well as vapor barrier system and managing field staff during remediation.

Ezgi Karayel, Principal

Former Tunnel Diner, Jersey City, New Jersey – Remedial Investigation (RI) of a 1⁄2-acre property in accordance with the New Jersey Technical Requirements for Site Remediation. Ms. Karayel worked closely with the Licensed Site Remediation Professional (LSRP) of the project. Followed by the approval of the RAWP prepared by her, Ms. Karayel directed remediation activities at the site and managed field staff on a daily basis. Upon completion of remediation, she has prepared Remedial Action Outcome for review and certification of the LSRP.

249 North 7th Street, Brooklyn, New York – As a Project Director for a Remedial Investigation of a former auto repair shop with an active spill, Ms. Karayel was responsible for remediation of the property under the direct supervision of NYCOER and NYSDEC. Her responsibilities consisted of preparing the required reports and supervision of remediation including excavation, and installation of engineering controls. By successful coordination with NYCOER, she has managed to enroll the project in City's Clean Soil Bank program and saving the client over $160,000 for soil disposal.

9029 Flatlands Avenue, Brooklyn, New York – E-Designation for HazMat. She conducted a Phase I ESA prior to development, followed by remedial investigation and preparation of Remedial Investigation Report and Remedial Action Work Plan for the remediation. Remediation for the project included design and implementation of an active sub-slab depressurization system. For the engineering controls design and implementation, Ms. Karayel worked closely with the Professional Engineer for the project and performed all required pilot tests, initial start-up and inspections.

37-23 33rd Street, Queens, New York – Removal of "P" Designation. Ms. Karayel managed to prevent the property from becoming a Class II site by performing a thorough due-diligence and disproving the prior consultant's findings and recommendations. Furthermore, her due-diligence study and evaluation saved the client over $1,000,000 clean-up costs, regulatory and legal fees.

261 Grand Concourse, Bronx, New York – Brownfield Redevelopment
1-9 Wythe Avenue, Brooklyn, New York – Brownfield Redevelopment
42 Reeve Place, Brooklyn, New York – Spill Closure
21-01 21st Street, Queens, New York – Former Gasoline Station Decommissioning and Storage Tank Removal
260-262 Van Brunt Street, Brooklyn, New York – Brownfield Cleanup
299 East 161st Street, Bronx, New York – Voluntary Cleanup Program
122 East 32nd Street, New York, New York – Community Center, Remediation under Voluntary Cleanup Program
346 Metropolitan Avenue, Brooklyn, New York – Voluntary Cleanup Program
574 Broome Street, New York, New York – Voluntary Cleanup Program
173-175 McGuinness Boulevard, Brooklyn, New York – Voluntary Cleanup Program
4790 Broadway, New York, New York – Voluntary Cleanup Program

Alex Keenan

Project Manager

Contact

347.871.0750
akeenan@vektorconsultants.com

Alex Keenan is a Project Manager with Vektor Consultants. Alex is responsible for managing construction activities, drilling teams, excavations, tank removals, and waste disposals at multiple sites concurrently, as well as preparation of Remedial Action Work Plans, Remedial Investigation Reports, Remedial Action Reports, Final Engineering Reports, Noise Sampling Reports, Soil Vapor/Air Sampling Work Plans, Construction Health and Safety Plans, Summary Reports, Brownfield Cleanup Program Applications, Volunteer Cleanup Program Applications, Disposal Facility Applications, Petroleum Bulk Storage Applications, Underground Storage Tank Closure Reports, Phase I and Phase II Environmental Site Assessment Reports.

Education

B.S. Geology
Virginia Polytechnic and State University

Professional Registration

OSHA 30-hour Construction
OSHA 40-hour HAZWOPER and 8-hour HAZWOPER Refresher
10-Hour Site Safety Training

Affiliations

New York City Brownfield Partnership

Select Projects & Prior Experience

Gowanus Redevelopment Projects, Brooklyn, New York:
Prior to joining Vektor, Alex was responsible for implementation and oversight of field investigations and delineation of MGP Coal tar at Significant Threat Sites, oversight of In-Situ Stabilization applications, preparation of Remedial Investigation Reports, Remedial Action Work Plans, Source Removal Work Plans, Remedial Action Reports, Final Engineering Reports, various NYSDEC technical submittals and daily reports for multiple sites in the Gowanus Redevelopment area, as well as project coordination and oversight of drilling, excavation, and waste disposal and ensuring compliance with EPA hazardous waste reporting requirements.
251 Douglass Street, Brooklyn, New York – Brownfield Redevelopment
318 Nevins Street, Brooklyn, New York – Brownfield Redevelopment
585 Union Street, Brooklyn, New York – Brownfield Redevelopment

Ben Neumann

Assistant Project Manager

Contact

347.871.0750
bneumann@vektorconsultants.com

Ben Neumann is an Assistant Project Manager with Vektor Consultants. He is responsible for conducting and overseeing field investigations and site assessments. In addition, Ben authors Phase I and Phase II Environmental Site Assessments, Remedial Investigation Workplans, Remedial Investigation Reports, Remedial Action Workplans, Remedial Action Reports, and Installation Reports. His responsibilities include providing environmental oversight at construction project sites in the New York City Metropolitan area, performing site visits, conducting subsurface investigations and waste characterization sampling. Ben's experience and education in environmental remediation and project management provides valuable knowledge and insight for navigating projects through different regulatory programs.

Education

B.S. Environmental Science
Environmental Engineering & Technology Focus
Union College, Schenectady, NY

Professional Registration

Project Management Professional (PMP)

OSHA 30-hour Construction

OSHA 40-hour HAZWOPER

10-Hour Site Safety Training (SST)

Affiliations

The New York City Brownfield Partnership

Select Projects & Prior Experience

1533-1541 60th Street – Voluntary Cleanup Program
1547-1555 60th Street – Voluntary Cleanup Program
601 Union Street – Brownfield Cleanup Program

Prior to joining Vektor, Ben assisted Licensed Site Remediation Professionals (LSRPs) and carried out project management duties on over 100 projects within the New Jersey Department of Environmental Protection's (NJDEP) Site Remediation Program (SRP). Ben performed and oversaw Site Investigation, Remedial Investigation, and Remedial Action activities to achieve site remediation goals and obtain project closure via the issuance of Response Action Outcome (RAO) and No Further Action (NFA) Letters.

Spencer Berlin

Environmental Scientist

Contact

216.212.2033
sberlin@vektorconsultants.com

Spencer Berlin is an environmental scientist with Vektor Consultants, he is responsible for conducting field investigations and site assessments. His responsibilities include providing environmental oversight at construction project sites in New York City Metropolitan area, performing site visits and preparing Phase I Environmental Site Assessments, as well as, performing Phase II Environmental Site Assessments, Remedial Investigations, waste characterization sampling, and preparing associated reports. His experience and education with environmental due diligence and science provides knowledge and insight for navigating projects through different regulatory programs.

Education

B.A. Environmental Studies
Certificate in Public Health
University of Colorado Boulder

Professional Registration

OSHA 30-hour Construction

OSHA 40-hour HAZWOPER

10-Hour Site Safety Training (SST)

NYSDEC SWPPP Certification

Affiliations

Select Projects

Prior to joining Vektor, Spencer played a key role in the $19 billion redevelopment of John F. Kennedy Airport, where he oversaw a wide range of critical field operations. His responsibilities included performing construction oversight, waste classification sampling, stockpile sampling, groundwater sampling, and soil loadouts, as well as conducting air and vibration monitoring and communication surveying. In addition to executing these tasks in the field, he authored comprehensive technical reports for each activity, ensuring regulatory compliance and clear communication with project stakeholders.

50-18 Vernon Boulevard, Queens, New York – Brownfield Cleanup Program
1-9 Wythe Avenue, Brooklyn, New York – Brownfield Cleanup Program

APPENDIX E

CITIZEN PARTICIPATION PLAN

NEW YORK STATE | Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan
for
2425 Atlantic Avenue & 30 Havens Place

March 2026

CXXXXXX
2425 Atlantic Avenue,
Brooklyn, NY 11233

Contents

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* * * * *

Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

Applicant: **Atlantic Junction GP Inc. ("Applicant")**
Site Name: 2425 Atlantic Avenue **Site ("Site")**
Site Address: **2425 Atlantic Avenue, Brooklyn, New York 11233**
Site County: **Brooklyn**
Site Number: **TBD**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants who conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at:
http://www.dec.ny.gov/chemical/8450.html .

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well-being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interested in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment

- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process

- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community

- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.
The site contact list includes, at a minimum:

- Chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- Residents, owners, and occupants of the site and properties adjacent to the site;
- The public water supplier which services the area in which the site is located;
- Any person who has requested to be placed on the site contact list;
- The administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility;
- Location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

Note: The first site fact sheet (usually related to the draft Remedial Investigation Work Plan) is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the site. See [Link]

Subsequent fact sheets about the site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC site project manager identified in Appendix A if that is the case. Paper mailings may continue during the investigation and cleanup process for some sites, based on public interest and need.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the site investigation

and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

As of the date the declaration (page 2) was signed by the NYSDEC project manager, **the significant threat determination for the site had not yet been made**.

To verify the significant threat status of the site, the interested public may contact the NYSDEC project manager identified in Appendix A.

For more information about TAGs, go online at
http://www.dec.ny.gov/regulations/2590.html

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

Citizen Participation Activities	Timing of CP Activity(ies)
Application Process:	
•Prepare site contact list •Establish document repository(ies)	At time of preparation of application to participate in the BCP.
•Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period •Publish above ENB content in local newspaper •Mail above ENB content to site contact list •Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement (BCA):	
•Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation **Note:** Applicant must submit CP Plan to NYSDEC for review and approval within 20 days of the effective date of the BCA.
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan •Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
•Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
•Distribute fact sheet to site contact list about draft RWP and announcing 45-day public comment period •Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) •Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
•Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
•Distribute fact sheet to site contact list that announces that cleanup action has been completed and that NYSDEC is reviewing the Final Engineering Report •Distribute fact sheet to site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC)	At the time the cleanup action has been completed. **Note:** The two fact sheets are combined when possible if there is not a delay in issuing the COC.

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

As the date of this plan, no major issues of public concern were identified since direct contract to soil and/or groundwater contamination is not readily present. However, in the future, major issues of public concern, including but not limited to nuisance odors, noise, and construction-related traffic, may be identified. These potential issues will be addressed during the remedial program.

Contaminants of concern that have been identified to date include chlorinated volatile organic compounds in soil vapor and limited petroleum contamination in groundwater. Contaminants are discussed in further detail in Section 4 below. The identified contaminants will be assessed, delineated, and remediated in accordance with NYSDEC-approved work plans.

Site information is available through Project Contacts mentioned in Section 2 and Appendix A. The BCP Application, which includes the previous site investigations and identifies future reports that will be prepared for the NYSDEC, is available in the document repository discussed above in Section 2 and in Appendix A.

4. Site Information

Appendix C contains a map identifying the location of the site.

Site Description

The Site is located on the northwest corner of the Atlantic Avenue and Havens Place intersection. The Site consists of two contiguous tax lots totalling approximately 17,533-square feet (0.402 acres), The legal description of the Site is Tax Block 1574, Lots 23 and 24. The structures at the Site were recently demolished and the site is currently capped with a cellar slab on the southern portion of the site and a slab on grade in the northern portion of the site. The Site is secured with a construction fence along the site perimeters.

The proposed future use of the Site will consist of two new 13-story residential buildings with an open space in the western portion. According to the New York City Planning's Zoning and Land Use Map, the current zoning of the Site is C4-5D, which is generally characterized as commercial contextual zoning district allowing for various commercial, community facility, and residential uses. C4-5D has a residential equivalent of R7D. Contextual zoning districts are required to comply with the Quality Housing Program for residential use. A floor area ratio (FAR) of 4.2 is permitted in C4-5D districts, and height and setback distances are controlled by a sky exposure plan. Accessory parking is permitted in C4-5D districts at a ratio of 1 parking space per 1,000 square feet. The new buildings are subject to mandatory inclusionary housing (MIH) requirements and will provide affordable housing.

The Site is located within a Disadvantaged Community identified as GEOID 36047036700, and a Potential Environmental Justice Area identified as Census Block Group 15000US360470367001. The Site is not located in an En-Zone. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

The site is located in an area with a moderate African-American population nearby (approximately 53%) and a Hispanic population (approximately 29%). Future fact sheets should be translated into Spanish.

For additional information, visit:
https://statisticalatlas.com/tract/New-York/Kings-County/036700/Race-and-Ethnicity

History of Site Use, Investigation, and Cleanup

The Site was undeveloped as early as 1888 until 1946 when a one-story brick warehouse building was constructed with a cellar on the southern portion of the Site. A northern extension was constructed slab on grade in 2002. Since 1946, the Site has been utilized for commercial and industrial use (clothing/knitting store (1965-1976), metal products shop (1985-1997), archival storage facility (2004-2017), fabrication shop (2017-March 2025) and residential use. Both the former Site buildings were demolished in February 2026.

The previous investigations performed at the Site include the following:

- Phase II Environmental Site Assessment Report by Impact Environmental dated July 26, 2001;
- Phase III Environmental Site Assessment Letter Report by Impact Environmental dated December 5, 2001;
- Phase I Environmental Site Assessment Report by Middleton Environmental Inc. dated July 2022;
- Remedial Investigation Report by Vektor Consultants dated March 2026.

5. Investigation and Cleanup Process

The Applicant has applied for the New York's Brownfield Cleanup Program as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination onsite, and must conduct a "qualitative exposure assessment," a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the site and to contamination that has migrated from the

site.

The Applicant in its Application proposed that the site will be used for restricted residential purposes.

To achieve this goal, the Applicant will conduct investigation and cleanup activities at the site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement executed by NYSDEC, and the Applicant sets forth the responsibilities of each party in conducting these activities at the site.

Investigation

The Applicant has conducted an investigation of the site, which was officially called a "remedial investigation" (RI). This investigation was performed with NYSDEC oversight. The Applicant developed a remedial investigation work plan, which was subject to public comment.

The site investigation has several goals:
1) Define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
2) Identify the source(s) of the contamination;
3) Assess the impact of the contamination on public health and the environment; and
4) Provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

When the investigation was completed, the Applicant prepared and submitted a report that summarizes the results. This report also recommend that cleanup action is needed to address site-related contamination. The investigation report was subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the site poses a significant threat to public health or the environment. If the site is a "significant threat," it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Interim Remedial Measures

An Interim Remedial Measure (IRM) is an action that can be undertaken at a site when a source of contamination or exposure pathway can be effectively addressed before the site investigation and analysis of alternatives are completed. If an IRM is likely to represent all or a significant part of the final remedy, NYSDEC will require a 30-day public comment period.

Remedy Selection

When the investigation of the site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a "Certificate of Completion" (described below) to the Applicant.

Or

2. The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a "Remedial Work Plan". The Remedial Work Plan describes the Applicant's proposed remedy for addressing contamination related to the Site.
3. The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a "Remedial Work Plan". The Remedial Work Plan describes the Applicant's proposed remedy for addressing contamination related to the Site.

When the Applicant submits a draft Remedial Work Plan for approval, NYSDEC would announce the availability of the draft plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy. The selected remedy is formalized in the site Decision Document.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a final engineering report that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the final engineering report. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant. The COC states that cleanup goals have been achieved and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the site after it receives a COC.

Site Management

The purpose of site management is to ensure the safe reuse of the property if contamination will remain in place. Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An *institutional control* is a non-physical restriction on use of the site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the site suitable for some, but not all uses.

An *engineering control* is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that pumps and treats groundwater. Site management continues until NYSDEC determines that it is no longer needed.

Appendix A -
Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

TBD
Project Manager
NYSDEC
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233-7016

TBD
Public Participation Specialist
NYSDEC
Division of Communications, Education and Engagement
47-40 21st Street
Long Island City, NY 11101

New York State Department of Health (NYSDOH):

TBD
Bureau Director
NYSDOH
Empire State Plaza
Corning Tower Rm 1787
Albany, NY 12237
(518) 402-0445

TBD
Project Manager
NYSDOH
Empire State Plaza
Corning Tower Rm 1787
Albany, NY 12237
(518) 402-7867

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents

Brooklyn Community Board 4
1420 Bushwick Ave Room 370
Brooklyn, NY 11207
(718) 628-8400
bk04@cb.nyc.gov
Celestina Leon -District Manager

Brooklyn Public Library – Saratoga Branch
8 Thomas S. Boyland St at Macon St
Brooklyn, NY 11233
(718) 573-5224
ADiaz@bklynlibrary.org
Arean Diaz -Community Engagement Coordinator

Appendix B - Site Contact List

Chief Executive Officer
NYC Mayor
Hon. Zohran
Mamdani
City Hall
New York, NY 10007

Hon. Mark Levine
NYC Comptroller
1 Centre Street
New York, NY 10007

Hon. Jumaane Williams
Public Advocate
1 Centre Street
New York, NY 10007

New York City Planning
Sideya Sherman -
Commissioner, NYC Dept. of City Planning

NYC Dept. of City Planning
120 Broadway, 31st Floor
New York, NY 10271

Public Water Supplier
Lisa F. Garcia
Commissioner, NYC Dept. of Environmental Protection
59-17 Junction Boulevard
Flushing, NY 11373

Brooklyn Borough
President
Hon. Antonio Reynoso
209 Joralemon Street
Brooklyn, NY 11201

NYC Department of Planning and Development
Brooklyn Borough Office - Department of City Planning
Sideya Sherman- Director

120 Broadway
31st FloorNew York, NY 10271

Mayor's Office of Environmental Remediation
Shaminder Chawla, Esq, Acting Director/General
Counsel 100 Gold Street, 2nd Floor
New York, NY 10038

Hon Charles Schumer
U.S. Senator
780 Third Avenue, Suite 2301
New York, NY 10017

Hon. Kirsten Gillibrand
U.S. Senator
780 Third Avenue, Suite 2601
New York, NY 10017

Hon. Crystal Hudson
NYC Councilmember
55 Hanson Place – Suite 778
Brooklyn, NY 11217

Hon. Zellnor Myrie
NYS Senator
1077 Nostrand
Avenue Ground Floor
Brooklyn, NY 11225

Hon. Phara Souffrant Forrest
NYS Assembly member
55 Hanson Place
Brooklyn, NY 11217

Hon. Yvette D. Clark
U.S. House of Representatives
222 Lenox Road, Suites 1 & 2
Brooklyn, NY 11226

Hon. Nancy T. Sunshine
Kings County Clerk
360 Adams Street – Room 189
Brooklyn, NY 11201

Residents, owners, and occupants of the site and properties adjacent to the site

There are no residents or occupants at the site.

Adjacent Properties:

RESIDENT/BUSINESS OWNER
2413 Atlantic Avenue
Brooklyn, NY 11233

RESIDENT/BUSINESS OWNER
2441 Atlantic Avenue
Brooklyn, NY 11233

RESIDENT/BUSINESS OWNER
2416 Atlantic Avenue
Brooklyn, NY 11233

RESIDENT/BUSINESS OWNER
2432 Atlantic Avenue
Brooklyn, NY 11233

RESIDENT/BUSINESS OWNER
19 Jardine Place
Brooklyn, NY 11233

RESIDENT/BUSINESS OWNER
17 Jardine Place
Brooklyn, NY 11233

RESIDENT/BUSINESS OWNER
15 Jardine Place
Brooklyn, NY 11233

RESIDENT/BUSINESS OWNER
13 Jardine Place
Brooklyn, NY 11233

RESIDENT/BUSINESS OWNER
11 Jardine Place
Brooklyn, NY 11233

RESIDENT/BUSINESS OWNER
9 Jardine Place
Brooklyn, NY 11233

RESIDENT/BUSINESS OWNER
18 Havens Place
Brooklyn, NY 11233

NYC DEPT OF CITY PLANNING
136 Montgomery Street
Brooklyn, NY 11225

NYC DEPT OF CITY PLANNING
120 Montgomery Street
Brooklyn, NY 11225

Local News Media:

The Brooklyn Eagle
195 Montague Street,
Suite 1414
Brooklyn, New York 11201

New York Post
1211 Avenue of the Americas
New York, NY 10036

Spectrum NY 1 News
75 9th Avenue
New York, NY 10011

New York Daily News
PO Box 7180 New
York, NY 10008

The Brooklyn Papers
1 Metrotech Center
Brooklyn, NY 11201

Courier-Life Publications
1 Metrotech Center #10T
Brooklyn, NY 1120

Schools and Daycare Facilities

Bushwick Ascend Middle School
President/Executive Director/Principal
2 Aberdeen Street
Brooklyn, NY 11207
(718)744-6100
https://www.ascendlearning.org/middle-schools/bushwick-ascend-middle

Christopher Avenue Community School
President/Executive Director/Principal
51 Christopher Avenue, 4th Floor
Brooklyn, NY 11212
(718) 495-5761
https://www.christopheravenuecommunityschool.org/

Achievement First Brownsville CS
President/Executive Director/Principal
2021 Bergen Street RM 149
Brooklyn, NY 11233
(347) 471-2600
https://www.achievementfirst.org/school/achievement-first-brownsville-elementary-school

William H. Maxwell Carrer and Technical Education High School
President/Executive Director/Principal
145 Pennsylvania Avenue
Brooklyn, NY 11207
(718) 345-9100
https://www.whmaxwell.com/

Trey Whitfield School
President/Executive Director/Principal
17 Hinsdale Street
Brooklyn, NY 11207
(718) 342-7722
https://www.treywhitfieldschool.org/

Brooklyn Kindergarten Society
President/Executive Director/Principal
1592 East New York Avenue
Brooklyn, NY 11212
(718) 623-9803
https://bksny.org/

Shirley Chisholm Day Care Center #4
President/Executive Director/Principal
33 Sommers Street
Brooklyn, NY 11233
(718) 756-1720
https://www.schools.nyc.gov/schools/KBNT

Community, Civic, Religious and Other Environmental Organizations

New York City Police Department - 73rd Precinct
Anthony Newerls - President
1470 East New York Avenue
Brooklyn, NY 11212

FDNY
Engine 233/Ladder 176
25 Rockaway Avenue
Brooklyn, NY 11207

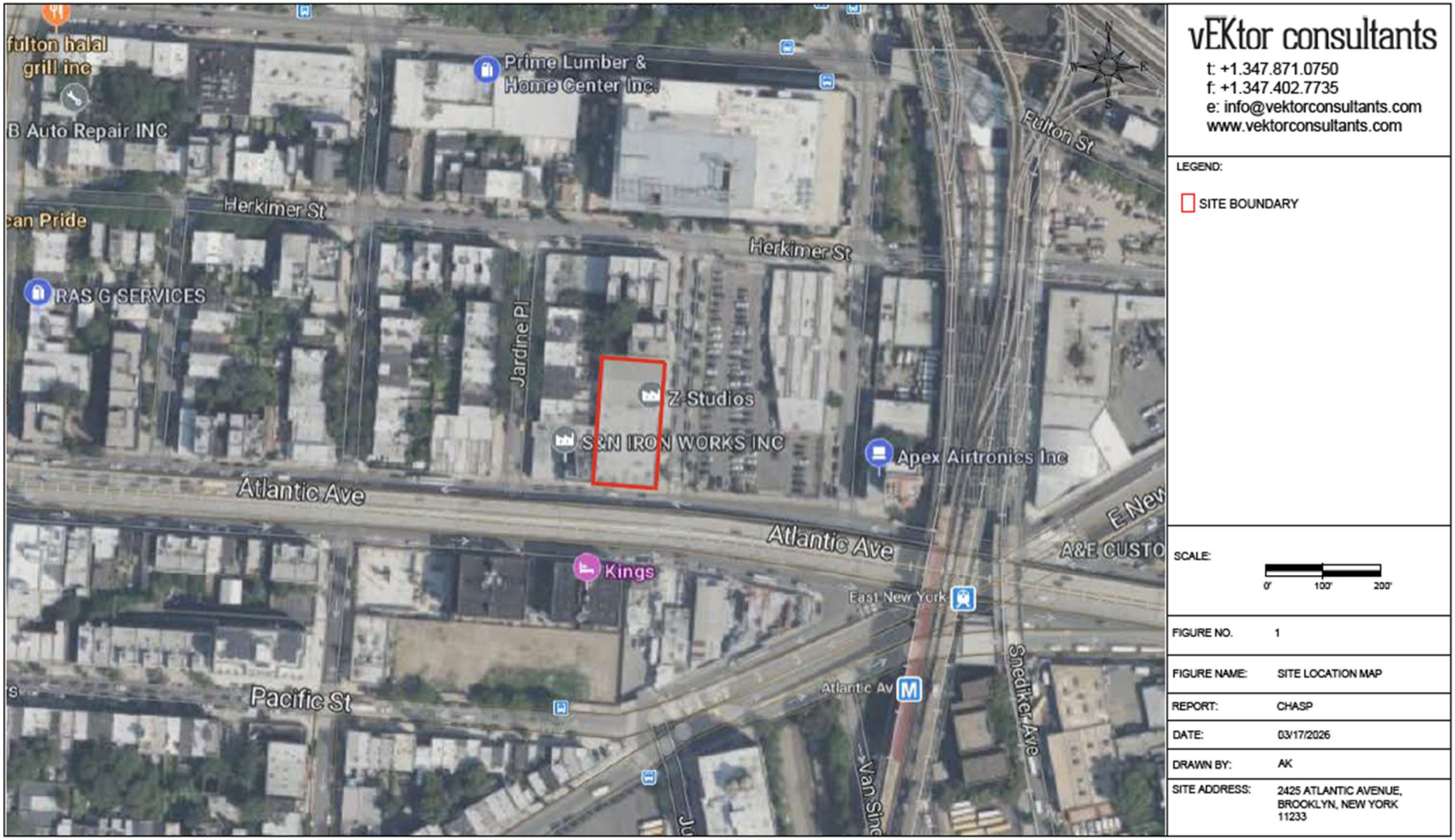
United Christian Assembly Church
2401 Atlantic Avenue
Brooklyn, NY 11233

Kingdom Life Christian Center
1466 Herkimer Street
Brooklyn, New York 11233

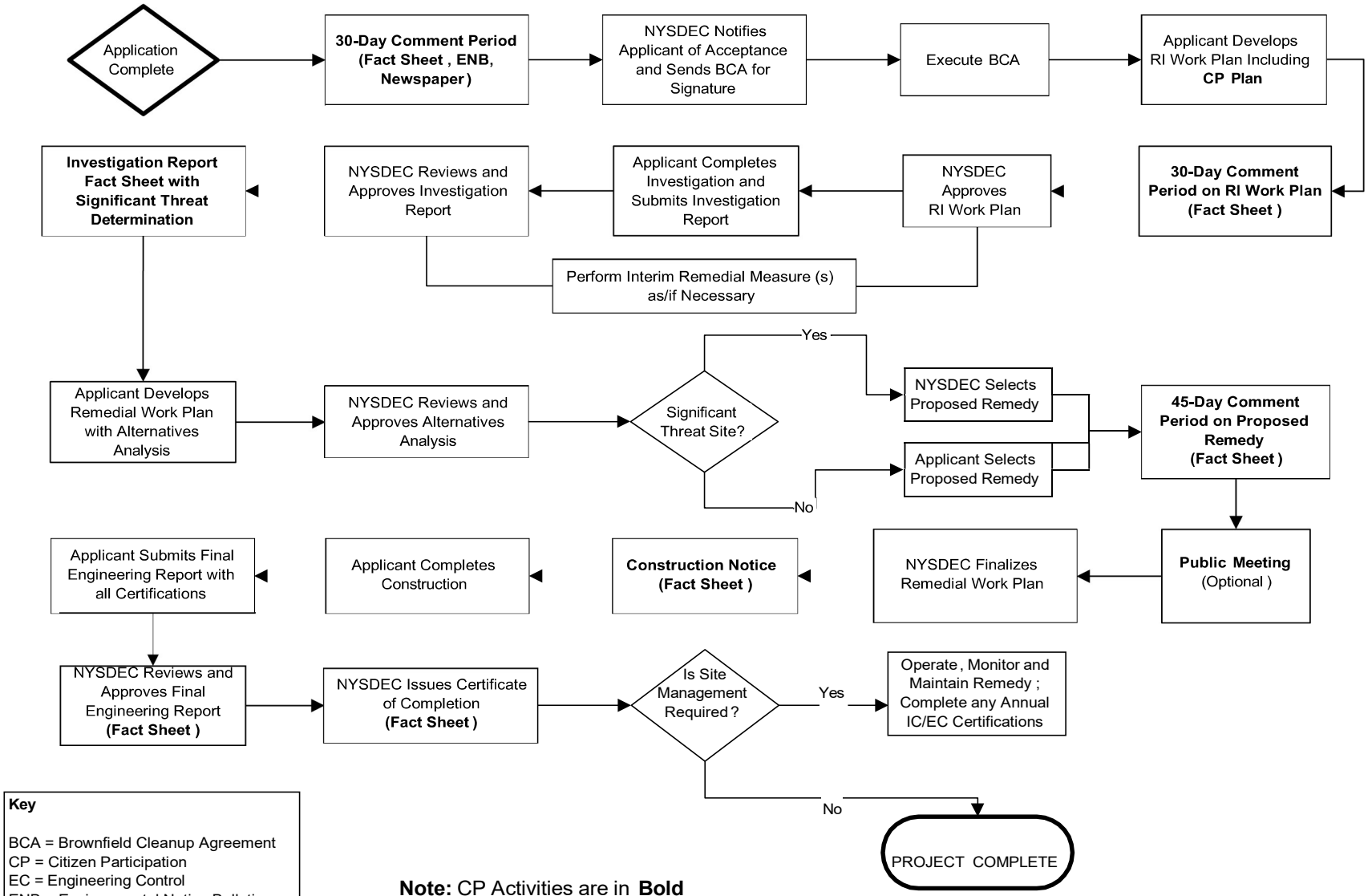
Cavalry Free Will Baptist Church
1520 Herkimer Street
Brooklyn, New York 11207

Appendix C - Site Location Map

2425 Atlantic Avenue Site
New York City, Kings County
Site No. TBD



Appendix D– Brownfield Cleanup Program Process



Note: CP Activities are in **Bold**

APPENDIX F

RESUMES OF KEY PERSONNEL

AMC Engineering PLLC
18-36 42nd Street
Astoria, NY 11105
Phone: (516) 417-8588

ARIEL CZEMERINSKI, P.E.
Email: Ariel@AMC-Engineering.com

SUMMARY:

New York State Professional Engineer. Chemical and Environmental Engineer, with 29 years of experience in the chemical and environmental areas. Areas of expertise include inspections and sign off on Large Scale Vapor Barrier Installations at Various NYC schools, Design and inspections of Sub Slab Depressurization Systems, wastewater treatment systems, Large scale dewatering system design for construction, process control and automation, process optimization, productivity improvement, quality systems, environmental compliance, Phase I Environmental Site Assessments, Phase II Environmental Investigations, Phase III: Remedial Activities, process and plant safety, and management of a production facility. Special Inspector with New York City Department of Buildings. Registered PE in NY.

Professional Experience:

AMC: 18 Years
Prior: 6 years

Education

Master of Science in Chemical Engineering, Columbia University, New York, NY, Feb. 1990.
Bachelor of Science in Chemical Engineering, University Of Buenos Aires, Buenos Aires, Argentina, May 1987

Areas of Expertise

- Vapor Intrusion - Barrier and Sub Slab Venting System Design
- Environmental Assessment Statements under CEQR, ULURP
- Remedial Program Design and Management
- Environmental Compliance, Clean Water Act, Clean Air Act, Hazardous Materials
- Dewatering & Treatment System Design
- SWPPP design and implementation. Preparation and Submittal of NOIs.
- NYCDEP Sewer Discharge Permitting
- Transfer Station Permitting and Compliance
- Wastewater Treatment Systems and Permitting, SPDES, LI Well permit, Water Withdrawal Permit.
- Air Permits and Registration
- Zoning Regulations and Permitting
- Safety and Environmental Training
- Waste Management Plans
- Professional Certifications
- OSHA 40-hr HAZWOPER
- OSHA 10-hr Construction Safety and Health

AMC Engineering PLLC
18-36 42nd Street
Astoria, NY 11105
Phone: (516) 417-8588

Project Experience

Project: Bergen Basin Sewer - CS-JA-BBS -Queens, NY
Project Description: NYC infrastructure (sewer, water) upgrade, drainage channel installation. Dewatering Design. Permits with NYCDEP and NYSDEC. Soil contaminated with petroleum requiring excavation, soil management and disposal under a Materials Handling Plan, Construction Health and Safety Plan. SWPPP design and implementation.
Client: JR Cruz - NYCDDC
Regulatory Authority: NYSDEC, NYCDEP
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: SER002326- Storm and Sanitary Sewers in Wardwell Avenue, Staten Island, New York
Project Description: NYC infrastructure (sewer, water) upgrade.
Dewatering Design. Permits with NYCDEP and NYSDEC. SWPPP design and implementation.
Client: E.E. Cruz - NYCDDC
Regulatory Authority: NYSDEC, NYCDEP
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: HED568-Installation of New 20" Subaqueous water main extension, and new 12" sub-aqueous high pressure gas main from the Bronx to Randall's Island, New York
Project Description: NYC infrastructure (gas, water) upgrade.
Soil contaminated with petroleum requiring excavation, soil management and disposal under a Materials Handling Plan, Construction Health and Safety Plan. Dewatering Design. Permits with NYCDEP and NYSDEC.
Client: E.E. Cruz - NYCDDC
Regulatory Authority: NYSDEC, NYCDEP
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: Domsey Fiber Corp. - 431 Kent Avenue, Brooklyn NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: Express Builders
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: SE-807 –Construction of Storm and Sanitary Sewers and Water Main in 20th Ave between 126th St and US Bulkhead Line Area, College Point, Queens, NY
Project Description: NYC Residential infrastructure (sewer, water) upgrade, outfall reconstruction, Soil characterization, soil management and disposal under a Materials Handling Plan, Construction Health and Safety Plan and Community Air Monitoring Plan. SWPPP design and implementation, Public Participation Plan, Marine HASP, Dewatering Design and permit application.

Client: EIC Associates
Regulatory Authority: NYCDDC
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: Springfield Gardens Residential Area BMP - Springfield Gardens, Queens, NY
Project Description: NYC Residential infrastructure (sewer, gas, water) upgrade, drainage channel installation and pond restoration. Soil contaminated with, petroleum and heavy metals requiring excavation, soil management and disposal under a Materials Handling Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: EIC Associates - NYCEDC
Regulatory Authority: NYSDEC, NYCParks
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: Former Domino Sugar Site - Kent Avenue, Brooklyn NY
Project Description: NYC E-Designation. Soil contaminated with semi-volatile organic compounds and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: Two Trees Management
Regulatory Authority: NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former Uniforms For Industry Site - Jamaica Avenue, Queens NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum, mop oil and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: The Arker Companies
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project

Project: Former Sunbelt Equipment Site – 25 Kent Avenue, Brooklyn, NY
Project Description: NYS Brownfield cleanup project. Soil contaminated with petroleum, and heavy metals and coal tar, requiring deep excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan, Dewatering Design and implementation, SWPPP design and implementation
Client: 19 Kent Acquisition LLC
Regulatory Authority: NYSDEC
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

AMC Engineering PLLC
18-36 42nd Street
Astoria, NY 11105
Phone: (516) 417-8588

Project Experience

Project: Former Charles Pfizer & Co. Site - 407 Marcy Avenue, Brooklyn, NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: The Rabsky Group
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former East Coast Industrial Uniforms Site - 39 Skillman Street, Brooklyn, NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: Riverside Builders
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former BP Amoco Service Station Site - 1800 Southern Boulevard, Bronx, NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: SoBro, Joy Construction
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former Dico G Auto & Truck Repair Site - 3035 White Plains Road, Bronx, NY
Project Description: NYS Brownfield cleanup project. Soil contaminated with petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: The Arker Companies
Regulatory Authority: NYSDEC
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Ezgi Karayel

Principal

Contact

347.871.0750
ezgi@vektorconsultants.com

Ezgi Karayel is an environmental engineer with extensive experience in brownfield redevelopment. She is the founder and Principal of Vektor Consultants and serves as Operations Officer of the firm. Ms. Karayel guides firm's clients through their due diligence processes. She manages all aspects of the firm strongly focusing on brownfield redevelopment and E-Designation projects across New York Metropolitan area. She has worked with major real estate developers and shareholders by developing strategic approaches to the environmental challenges of complex real estate transactions and brownfield redevelopment. Her experience also includes a broad range of environmental services including regulatory compliance, due diligence assessments, acquisition support, design and implementation of engineering controls and remediation systems, excavation support and soil disposal plans, and facility decommissioning.
She is the chair of the Partnership's Scholarship Program and works closely with committee members to support the education and training of students who are pursuing environmental careers.

Education

B.S. Environmental Engineering
University at Buffalo

Professional Registration

OSHA 10-hour Construction and 40-hour General Industry
OSHA 40-hour HAZWOPER and 8-hour HAZWOPER Refresher
Certified Environmental Manager and Certified Environmental Inspector

Affiliations

New York City Brownfield Partnership, President

Brownfield Coalition of the Northeast, Advisory Board Member

Select Projects

Linden Boulevard, Queens, New York – Site Investigation and Remediation of a 7-acre former landfill with a Restrictive Declaration. The scope of work for the project included preparation of a Remedial Investigation Work Plan for review and approval by the NYCOER, NYSDEC and NYCDOH, implementation of Remedial Investigation, preparation of Remedial Investigation Report, Remedial Action Work Plan, preparation and implementation of a waste characterization plan for soils for proper disposal, supervision of site remediation activities, coordination with remediation engineer to design a methane mitigation system as well as vapor barrier system and managing field staff during remediation.

Ezgi Karayel, Principal

Former Tunnel Diner, Jersey City, New Jersey – Remedial Investigation (RI) of a 1⁄2-acre property in accordance with the New Jersey Technical Requirements for Site Remediation. Ms. Karayel worked closely with the Licensed Site Remediation Professional (LSRP) of the project. Followed by the approval of the RAWP prepared by her, Ms. Karayel directed remediation activities at the site and managed field staff on a daily basis. Upon completion of remediation, she has prepared Remedial Action Outcome for review and certification of the LSRP.

249 North 7th Street, Brooklyn, New York – As a Project Director for a Remedial Investigation of a former auto repair shop with an active spill, Ms. Karayel was responsible for remediation of the property under the direct supervision of NYCOER and NYSDEC. Her responsibilities consisted of preparing the required reports and supervision of remediation including excavation, and installation of engineering controls. By successful coordination with NYCOER, she has managed to enroll the project in City's Clean Soil Bank program and saving the client over $160,000 for soil disposal.

9029 Flatlands Avenue, Brooklyn, New York – E-Designation for HazMat. She conducted a Phase I ESA prior to development, followed by remedial investigation and preparation of Remedial Investigation Report and Remedial Action Work Plan for the remediation. Remediation for the project included design and implementation of an active sub-slab depressurization system. For the engineering controls design and implementation, Ms. Karayel worked closely with the Professional Engineer for the project and performed all required pilot tests, initial start-up and inspections.

37-23 33rd Street, Queens, New York – Removal of "P" Designation. Ms. Karayel managed to prevent the property from becoming a Class II site by performing a thorough due-diligence and disproving the prior consultant's findings and recommendations. Furthermore, her due-diligence study and evaluation saved the client over $1,000,000 clean-up costs, regulatory and legal fees.

261 Grand Concourse, Bronx, New York – Brownfield Redevelopment
1-9 Wythe Avenue, Brooklyn, New York – Brownfield Redevelopment
42 Reeve Place, Brooklyn, New York – Spill Closure
21-01 21st Street, Queens, New York – Former Gasoline Station Decommissioning and Storage Tank Removal
260-262 Van Brunt Street, Brooklyn, New York – Brownfield Cleanup
299 East 161st Street, Bronx, New York – Voluntary Cleanup Program
122 East 32nd Street, New York, New York – Community Center, Remediation under Voluntary Cleanup Program
346 Metropolitan Avenue, Brooklyn, New York – Voluntary Cleanup Program
574 Broome Street, New York, New York – Voluntary Cleanup Program
173-175 McGuinness Boulevard, Brooklyn, New York – Voluntary Cleanup Program
4790 Broadway, New York, New York – Voluntary Cleanup Program

Alex Keenan

Project Manager

Contact

347.871.0750
akeenan@vektorconsultants.com

Alex Keenan is a Project Manager with Vektor Consultants. Alex is responsible for managing construction activities, drilling teams, excavations, tank removals, and waste disposals at multiple sites concurrently, as well as preparation of Remedial Action Work Plans, Remedial Investigation Reports, Remedial Action Reports, Final Engineering Reports, Noise Sampling Reports, Soil Vapor/Air Sampling Work Plans, Construction Health and Safety Plans, Summary Reports, Brownfield Cleanup Program Applications, Volunteer Cleanup Program Applications, Disposal Facility Applications, Petroleum Bulk Storage Applications, Underground Storage Tank Closure Reports, Phase I and Phase II Environmental Site Assessment Reports.

Education

B.S. Geology
Virginia Polytechnic and State University

Professional Registration

OSHA 30-hour Construction
OSHA 40-hour HAZWOPER and 8-hour HAZWOPER Refresher
10-Hour Site Safety Training

Affiliations

New York City Brownfield Partnership

Select Projects & Prior Experience

Gowanus Redevelopment Projects, Brooklyn, New York:
Prior to joining Vektor, Alex was responsible for implementation and oversight of field investigations and delineation of MGP Coal tar at Significant Threat Sites, oversight of In-Situ Stabilization applications, preparation of Remedial Investigation Reports, Remedial Action Work Plans, Source Removal Work Plans, Remedial Action Reports, Final Engineering Reports, various NYSDEC technical submittals and daily reports for multiple sites in the Gowanus Redevelopment area, as well as project coordination and oversight of drilling, excavation, and waste disposal and ensuring compliance with EPA hazardous waste reporting requirements.
251 Douglass Street, Brooklyn, New York – Brownfield Redevelopment
318 Nevins Street, Brooklyn, New York – Brownfield Redevelopment
585 Union Street, Brooklyn, New York – Brownfield Redevelopment

Ben Neumann

Assistant Project Manager

Contact

347.871.0750
bneumann@vektorconsultants.com

Ben Neumann is an Assistant Project Manager with Vektor Consultants. He is responsible for conducting and overseeing field investigations and site assessments. In addition, Ben authors Phase I and Phase II Environmental Site Assessments, Remedial Investigation Workplans, Remedial Investigation Reports, Remedial Action Workplans, Remedial Action Reports, and Installation Reports. His responsibilities include providing environmental oversight at construction project sites in the New York City Metropolitan area, performing site visits, conducting subsurface investigations and waste characterization sampling. Ben's experience and education in environmental remediation and project management provides valuable knowledge and insight for navigating projects through different regulatory programs.

Education

B.S. Environmental Science
Environmental Engineering & Technology Focus
Union College, Schenectady, NY

Professional Registration

Project Management Professional (PMP)

OSHA 30-hour Construction

OSHA 40-hour HAZWOPER

10-Hour Site Safety Training (SST)

Affiliations

The New York City Brownfield Partnership

Select Projects & Prior Experience

1533-1541 60th Street – Voluntary Cleanup Program
1547-1555 60th Street – Voluntary Cleanup Program
601 Union Street – Brownfield Cleanup Program

Prior to joining Vektor, Ben assisted Licensed Site Remediation Professionals (LSRPs) and carried out project management duties on over 100 projects within the New Jersey Department of Environmental Protection's (NJDEP) Site Remediation Program (SRP). Ben performed and oversaw Site Investigation, Remedial Investigation, and Remedial Action activities to achieve site remediation goals and obtain project closure via the issuance of Response Action Outcome (RAO) and No Further Action (NFA) Letters.

Spencer Berlin

Environmental Scientist

Contact

216.212.2033
sberlin@vektorconsultants.com

Spencer Berlin is an environmental scientist with Vektor Consultants, he is responsible for conducting field investigations and site assessments. His responsibilities include providing environmental oversight at construction project sites in New York City Metropolitan area, performing site visits and preparing Phase I Environmental Site Assessments, as well as, performing Phase II Environmental Site Assessments, Remedial Investigations, waste characterization sampling, and preparing associated reports. His experience and education with environmental due diligence and science provides knowledge and insight for navigating projects through different regulatory programs.

Education

B.A. Environmental Studies
Certificate in Public Health
University of Colorado Boulder

Professional Registration

OSHA 30-hour Construction

OSHA 40-hour HAZWOPER

10-Hour Site Safety Training (SST)

NYSDEC SWPPP Certification

Affiliations

Select Projects

Prior to joining Vektor, Spencer played a key role in the $19 billion redevelopment of John F. Kennedy Airport, where he oversaw a wide range of critical field operations. His responsibilities included performing construction oversight, waste classification sampling, stockpile sampling, groundwater sampling, and soil loadouts, as well as conducting air and vibration monitoring and communication surveying. In addition to executing these tasks in the field, he authored comprehensive technical reports for each activity, ensuring regulatory compliance and clear communication with project stakeholders.

50-18 Vernon Boulevard, Queens, New York – Brownfield Cleanup Program
1-9 Wythe Avenue, Brooklyn, New York – Brownfield Cleanup Program

APPENDIX G

REQUEST TO IMPORT/REUSE FILL MATERIAL FORM

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Request to Import/Reuse Fill or Soil

This form is based on the information required by DER-10, Section 5.4(e) and 6NYCRR Part 360.13. Use of this form is not a substitute for reading the applicable regulations and Technical Guidance document.

SECTION 1 – SITE BACKGROUND

The allowable site use is: Choose an item

Have Ecological Resources been identified? Choose an item

Is this soil originating from the site? Choose an item

How many cubic yards of soil will be imported/reused? Choose an item

If greater than 1000 cubic yards will be imported, enter volume to be imported:

SECTION 2 – MATERIAL OTHER THAN SOIL

Is the material to be imported gravel, rock or stone? Choose an item

Does it contain less than 10%, by weight, material that passes a size 100 sieve? Choose an item

Is this virgin material from a permitted mine or quarry? Choose an item

Is this material recycled concrete or brick from a DEC registered processing facility? Choose an item

SECTION 3 - SAMPLING

Provide a brief description of the number and type of samples collected in the space below:

Example Text: 5 discrete samples were collected and analyzed for VOCs. 2 composite samples were collected and analyzed for SVOCs, Inorganics & PCBs/Pesticides.

If the material meets requirements of DER-10 section 5.4(e)5 (other material), no chemical testing needed.

SECTION 3 CONT'D - SAMPLING

Provide a brief written summary of the sampling results or attach evaluation tables (compare to DER-10, Appendix 5):

Example Text: Arsenic was detected up to 17 ppm in 1 (of 5) samples; the allowable level is 16 ppm.

If Ecological Resources have been identified use the "If Ecological Resources are Present" column in Appendix 5.

SECTION 4 – SOURCE OF FILL

Name of person providing fill and relationship to the source:

Location where fill was obtained:

Identification of any state or local approvals as a fill source:

If no approvals are available, provide a brief history of the use of the property that is the fill source:

Provide a list of supporting documentation included with this request:

The information provided on this form is accurate and complete.

_____ _____

Signature Date

_____

Print Name

_____

Firm

Revised April 2023

APPENDIX H

GREEN AND SUSTAINABLE REMEDIATION CALCULATIONS

Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX 2425 Atlantic Avenue Site - RAWP - Alternative 1 - Track 1 Cleanup

Environmental Footprint Summary

Core Element	Metric		Unit of Measure	Footprint			
				Excavation	Post-Construction	<Component 3>	Total
Materials & Waste	M&W-1	Refined materials used on-site	Tons	559.0	375.0	0.0	934.0
	M&W-2	% of refined materials from recycled or reused material	%	1.6%	0.0%		1.0%
	M&W-3	Unrefined materials used on-site	Tons	10.000	10.000	0.000	20.0
	M&W-4	% of unrefined materials from recycled or reused material	%	0.0%	0.0%		0.0%
	M&W-5	On-site hazardous waste disposed of off-site	Tons	0.0	0.0	0.0	0.0
	M&W-6	On-site non-hazardous waste disposed of off-site	Tons	12,000.0	50,000.0	0.0	62,000.0
	M&W-7	Recycled or reused waste	Tons	0.0	0.0	0.0	0.0
	M&W-8	% of total potential waste recycled or reused	%	0.0%	0.0%		0.0%
Water (used on-site)	W-1	Public water use	MG	0.0	0.1	0.0	0.1
	W-2	Groundwater use	MG	0.0	0.0	0.0	0.0
	W-3	Surface water use	MG	0.0	0.0	0.0	0.0
	W-4	Reclaimed water use	MG	0.0	0.0	0.0	0.0
	W-5	Storm water use	MG	0.0	0.0	0.0	0.0
	W-6	User-defined water resource #1	MG	0.0	0.0	0.0	0.0
	W-7	User-defined water resource #2	MG	0.0	0.0	0.0	0.0
	W-8	Wastewater generated	MG	0.0	0.0	0.0	0.0
Energy	E-1	Total energy used (on-site and off-site)	MMBtu	6,247.6	11,302.3	0.0	17,549.9
	E-2	Energy voluntarily derived from renewable resources					
	E-2A	On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	0.0	0.0	0.0	0.0
	E-2B	Voluntary purchase of renewable electricity	MWh	0.0	0.0	0.0	0.0
	E-3	Voluntary purchase of RECs	MWh	0.0	0.0	0.0	0.0
	E-4	On-site grid electricity use	MWh	0.000	0.000	0.000	0.0
Air	A-1	On-site NOx, SOx, and PM emissions	Pounds	4,118.4	0.0	0.0	4,118.4
	A-2	On-site HAP emissions	Pounds	0.1	0.0	0.0	0.1
	A-3	Total NOx, SOx, and PM emissions	Pounds	12,364.2	34,552.1	0.0	46,916.3
	A-3A	Total NOx emissions	Pounds	5,951.6	10,264.4	0.0	16,216.0
	A-3B	Total SOx emissions	Pounds	1,404.6	4,137.3	0.0	5,541.9
	A-3C	Total PM emissions	Pounds	5,008.0	20,150.4	0.0	25,158.4
	A-4	Total HAP emissions	Pounds	66.7	97.9	0.0	164.6
	A-5	Total greenhouse gas emissions	Tons CO2e*	519.4	910.2	0.0	1,429.6
Land & Ecosystems	Qualitative Description						

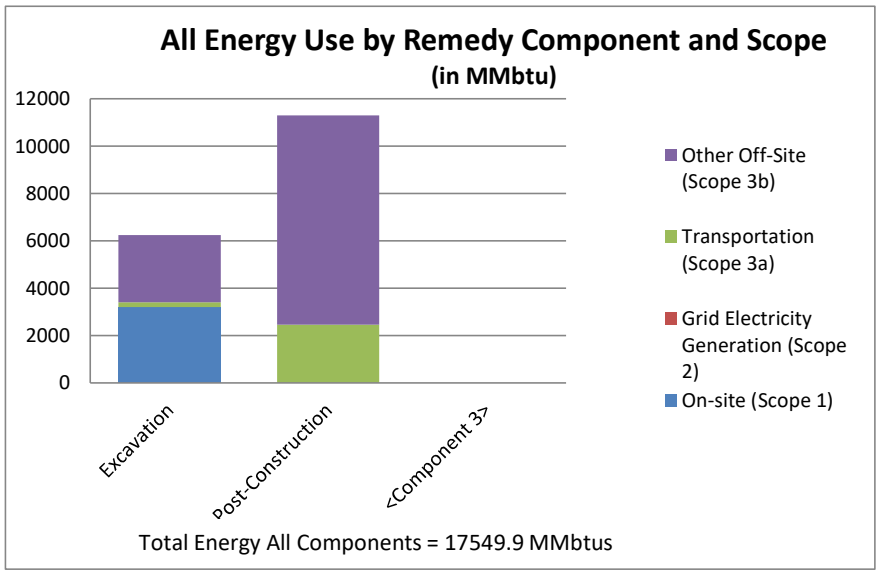
** Total greenhouse gases emissions (in CO2e) include consideration of CO2, CH4, and N2O (Nitrous oxide) emissions.*
"MMBtu" = millions of Btus
"MG" = millions of gallons
"CO2e" = carbon dioxide equivalents of global warming potential
"MWh" = megawatt hours (i.e., thousands of kilowatt-hours or millions of Watt-hours)
"Tons" = short tons (2,000 pounds)

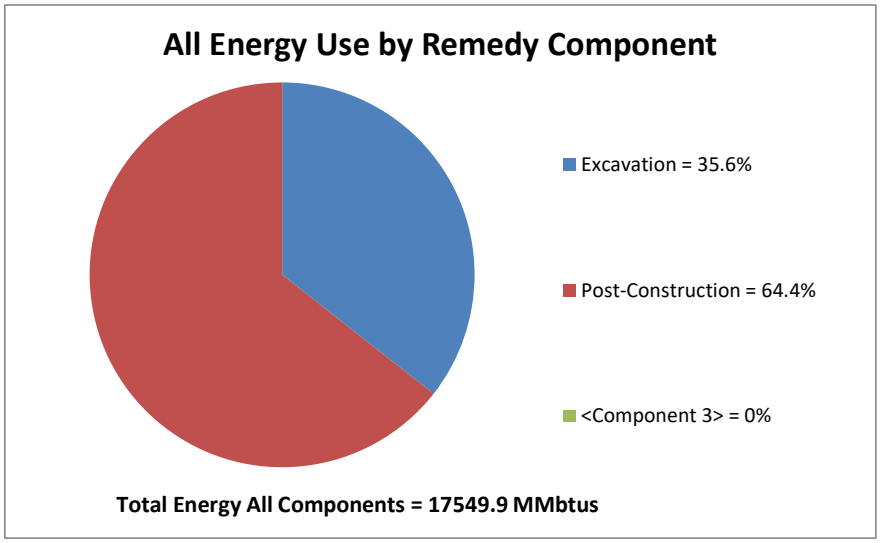
for Understanding and Reducing a Project's Environmental Footprint (EPA 542-R-12-002), February

Notes:

Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX 2425 Atlantic Avenue Site - RAWP - Alternative 1 - Track 1 Cleanup





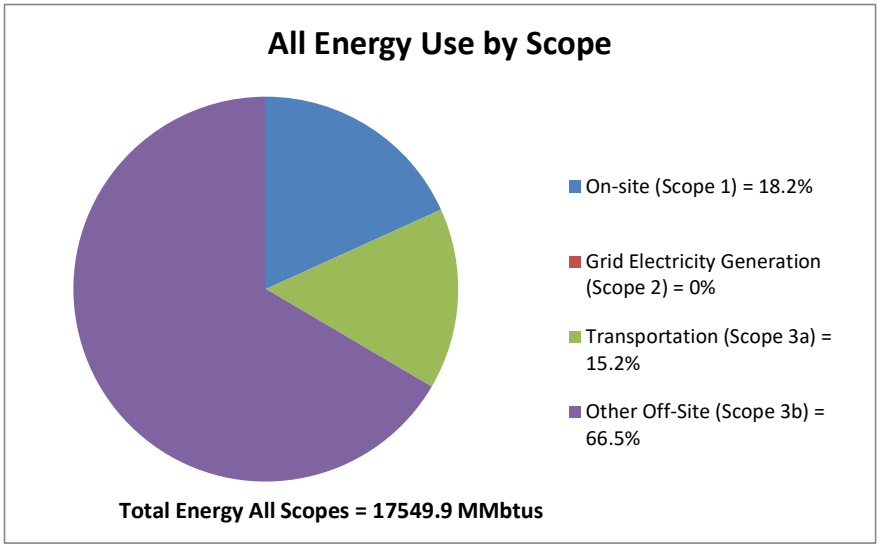


Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

Total Energy MMbtus	Excavation	Post-Const	<Compone	< Compon	< Compon	< Compon	Total	
On-site (Scope 1)	3,198.4	0.0	0.0	0.0	0.0	0.0	3,198.4	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	d Electricity
nsportation (Scope 3a)	210.3	2,462.7	0.0	0.0	0.0	0.0	2,673.0	Tran
ner Off-Site (Scope 3b)	2,839.0	8,839.6	0.0	0.0	0.0	0.0	11,678.5	Oth
Total	6,247.6	11,302.3	0.0	0.0	0.0	0.0	17,549.9	

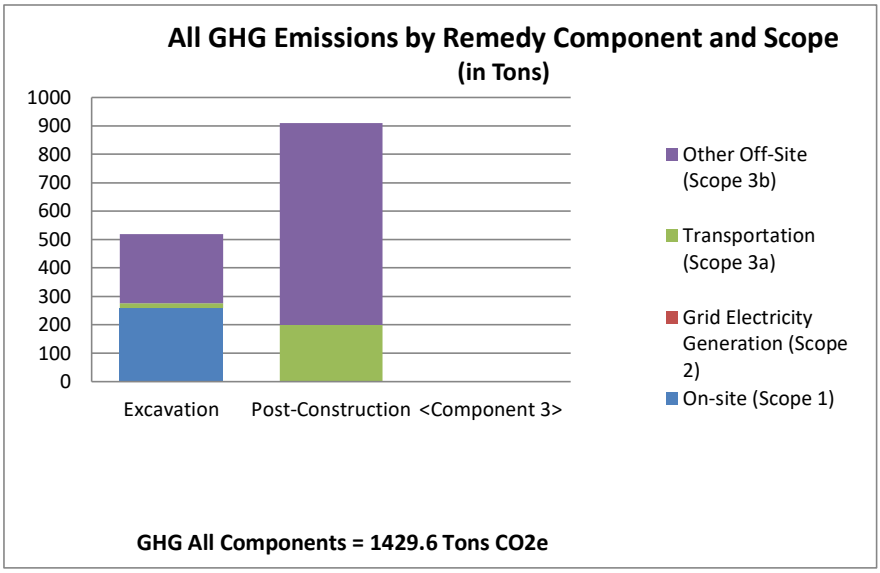
Excavation = 35.6%
Post-Construction = 64.4%
<Component 3> = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

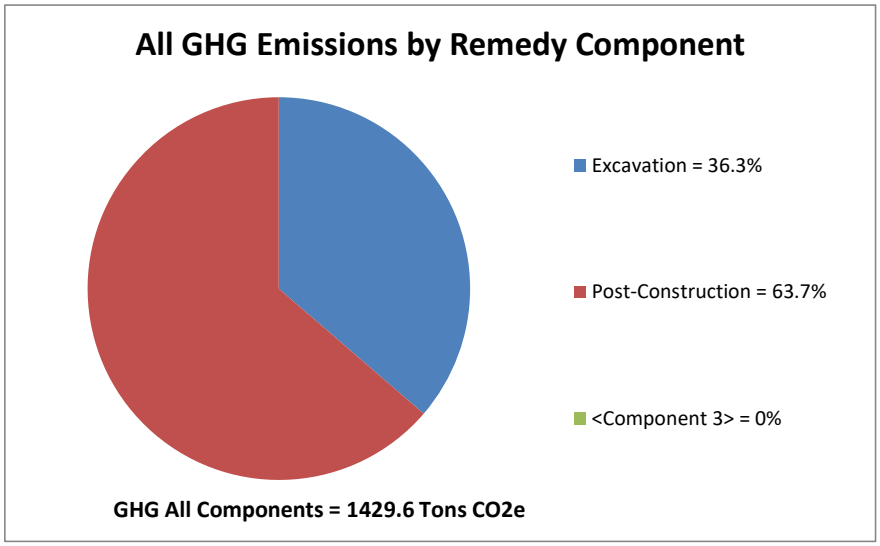
On-site (Scope 1) = 18.2%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 15.2%
Other Off-Site (Scope 3b) = 66.5%

Total Energy All Components = 17549.9 MMbtus
Total Energy All Scopes = 17549.9 MMbtus

Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX 2425 Atlantic Avenue Site - RAWP - Alternative 1 - Track 1 Cleanup





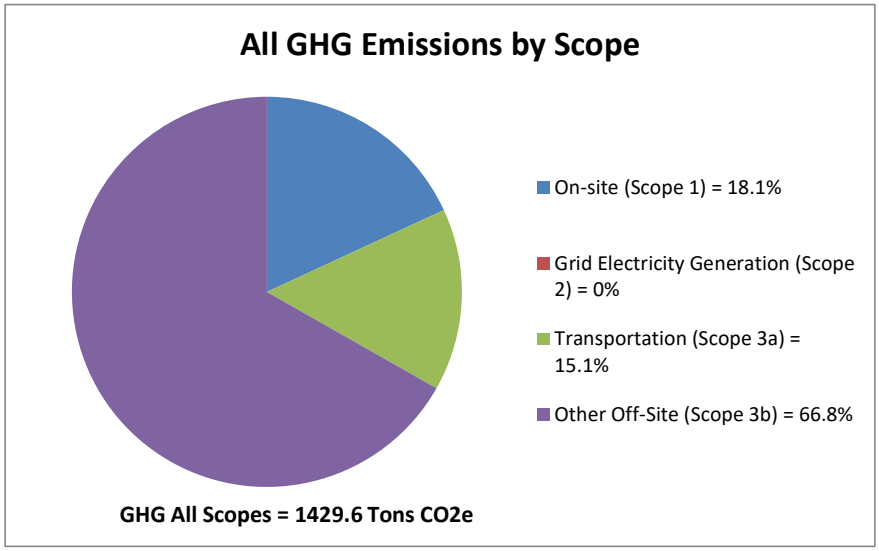


Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

GHG Tons CO2e	Excavation	Post-Const	<Compone	< Compon	< Compon	< Compon	Total	
On-site (Scope 1)	258.7	0.0	0.0	0.0	0.0	0.0	258.7	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	d Electricity
sportation (Scope 3a)	16.8	199.3	0.0	0.0	0.0	0.0	216.1	Tran
er Off-Site (Scope 3b)	243.9	710.8	0.0	0.0	0.0	0.0	954.7	Oth
Total	519.4	910.2	0.0	0.0	0.0	0.0	1,429.6	

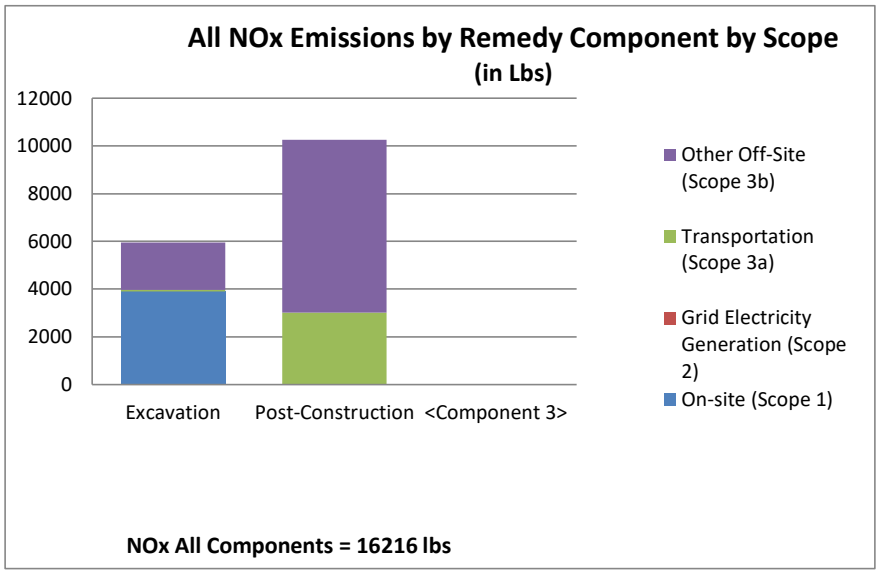
Excavation = 36.3%
Post-Construction = 63.7%
<Component 3> = 0%
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< Component 5 > = 0%
< Component 6 > = 0%

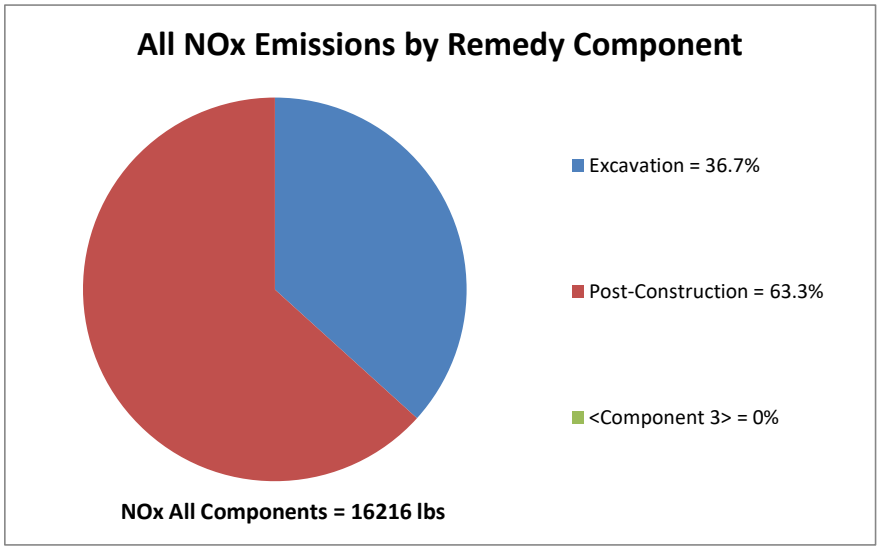
On-site (Scope 1) = 18.1%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 15.1%
Other Off-Site (Scope 3b) = 66.8%

GHG All Components = 1429.6 Tons CO2e
GHG All Scopes = 1429.6 Tons CO2e

Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX 2425 Atlantic Avenue Site - RAWP - Alternative 1 - Track 1 Cleanup





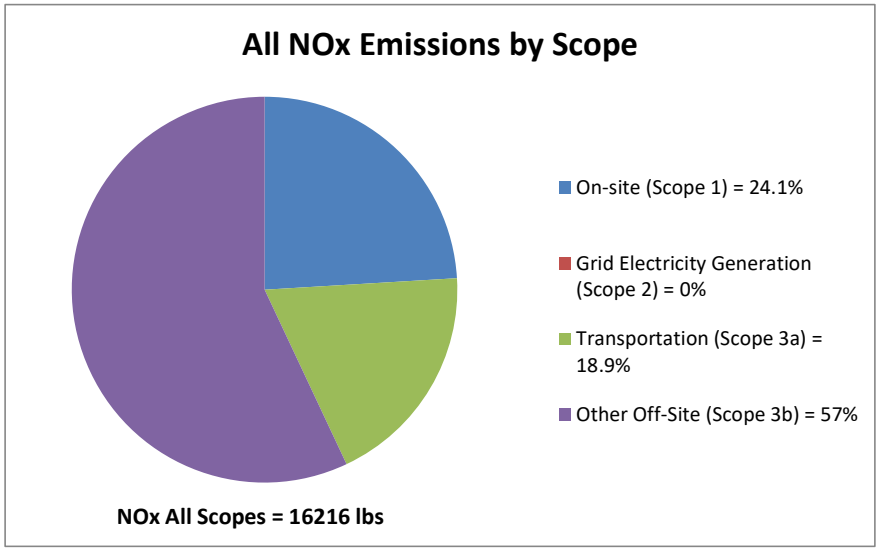


Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

NOx lbs	Excavation	Post-Const	<Compone	< Compon	< Compon	< Compon	Total	
On-site (Scope 1)	3,900.4	0.0	0.0	0.0	0.0	0.0	3,900.4	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	d Electricity
sportation (Scope 3a)	64.8	3,007.9	0.0	0.0	0.0	0.0	3,072.8	Tran
er Off-Site (Scope 3b)	1,986.4	7,256.4	0.0	0.0	0.0	0.0	9,242.9	Oth
Total	5,951.6	10,264.4	0.0	0.0	0.0	0.0	16,216.0	

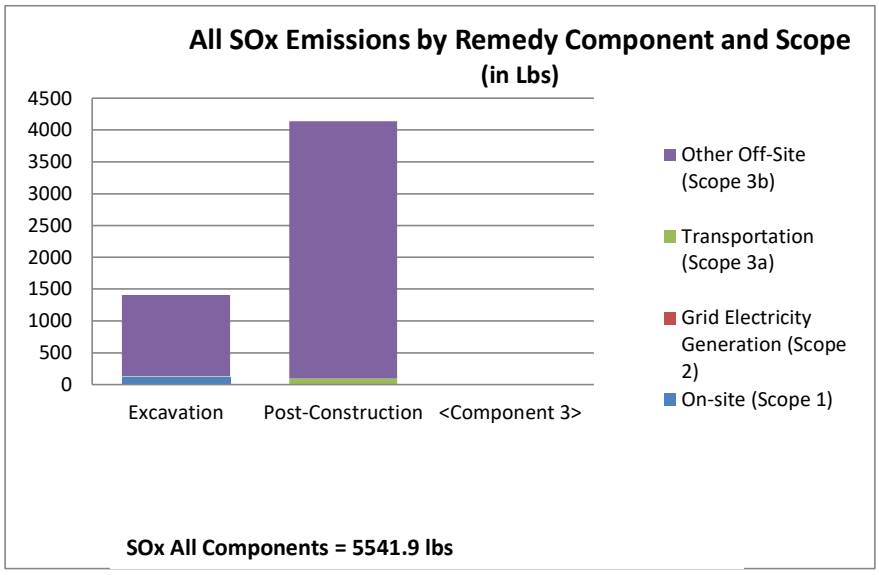
Excavation = 36.7%
Post-Construction = 63.3%
<Component 3> = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

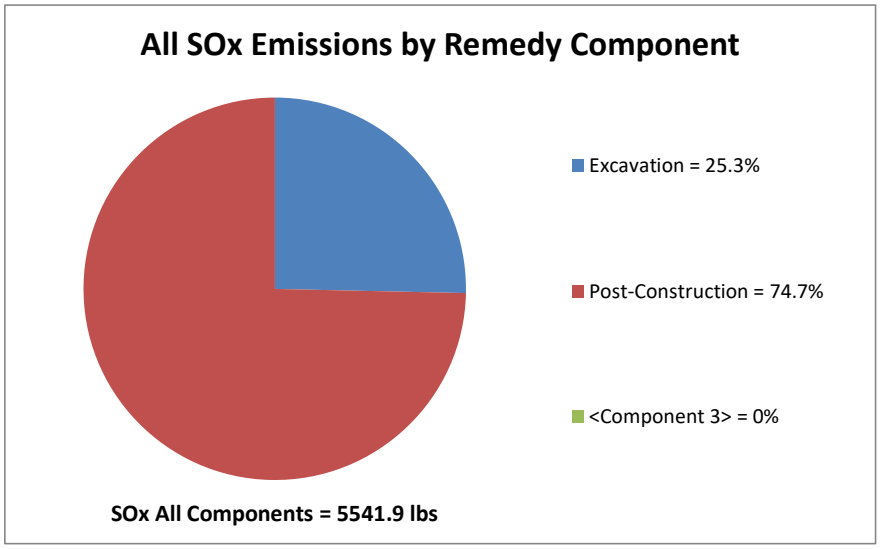
On-site (Scope 1) = 24.1%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 18.9%
Other Off-Site (Scope 3b) = 57%

NOx All Components = 16216 lbs
NOx All Scopes = 16216 lbs

Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX 2425 Atlantic Avenue Site - RAWP - Alternative 1 - Track 1 Cleanup





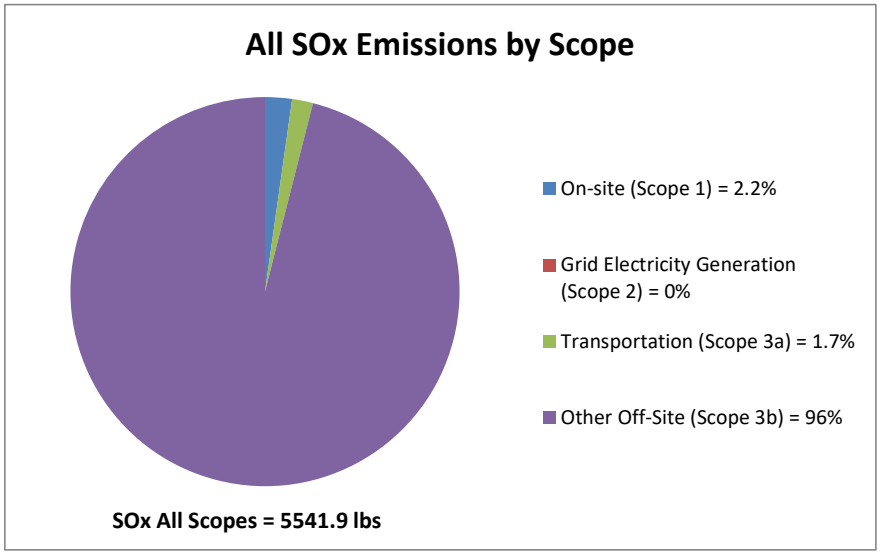


Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

SOx lbs	Excavation	Post-Const	<Compone	< Compon	< Compon	< Compon	Total	
On-site (Scope 1)	123.8	0.0	0.0	0.0	0.0	0.0	123.8	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	d Electricity
sportation (Scope 3a)	1.2	95.5	0.0	0.0	0.0	0.0	96.7	Tran
er Off-Site (Scope 3b)	1,279.6	4,041.8	0.0	0.0	0.0	0.0	5,321.4	Oth
Total	1,404.6	4,137.3	0.0	0.0	0.0	0.0	5,541.9	

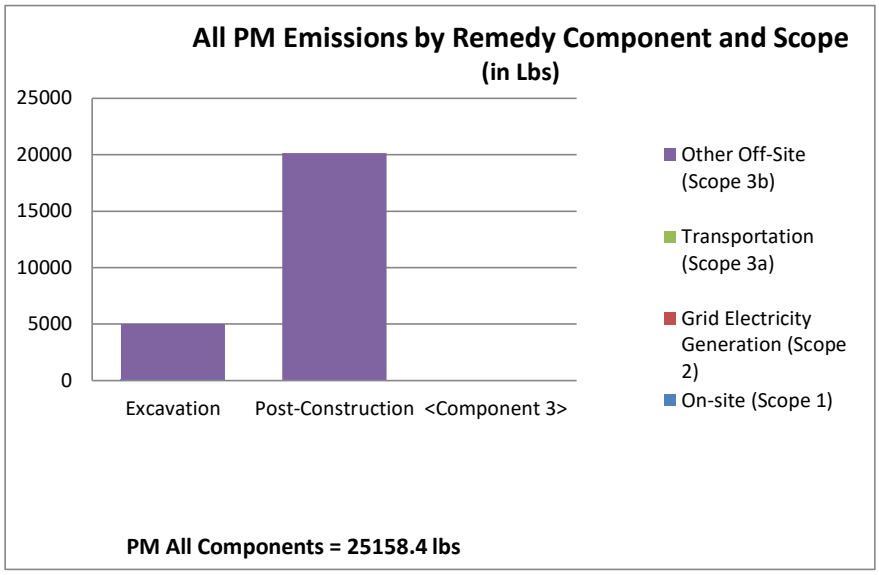
Excavation = 25.3%
Post-Construction = 74.7%
<Component 3> = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

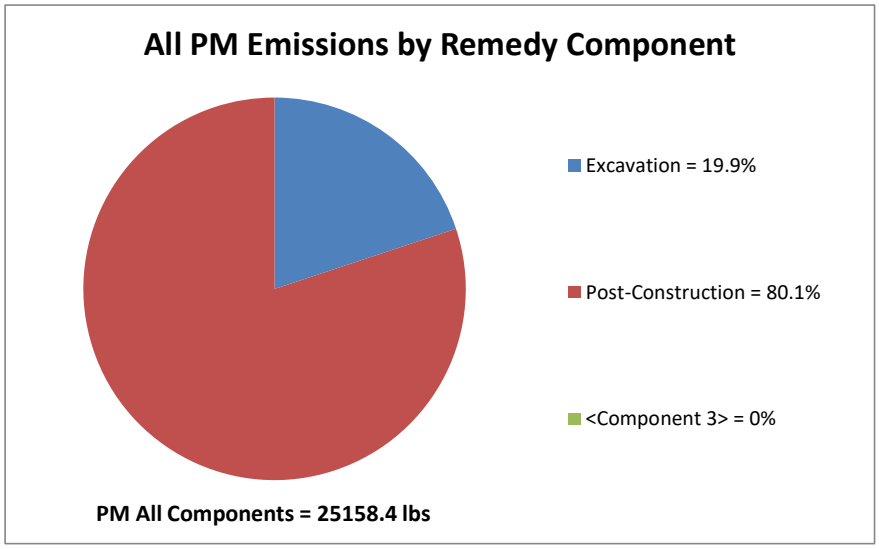
On-site (Scope 1) = 2.2%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 1.7%
Other Off-Site (Scope 3b) = 96%

SOx All Components = 5541.9 lbs
SOx All Scopes = 5541.9 lbs

Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX 2425 Atlantic Avenue Site - RAWP - Alternative 1 - Track 1 Cleanup





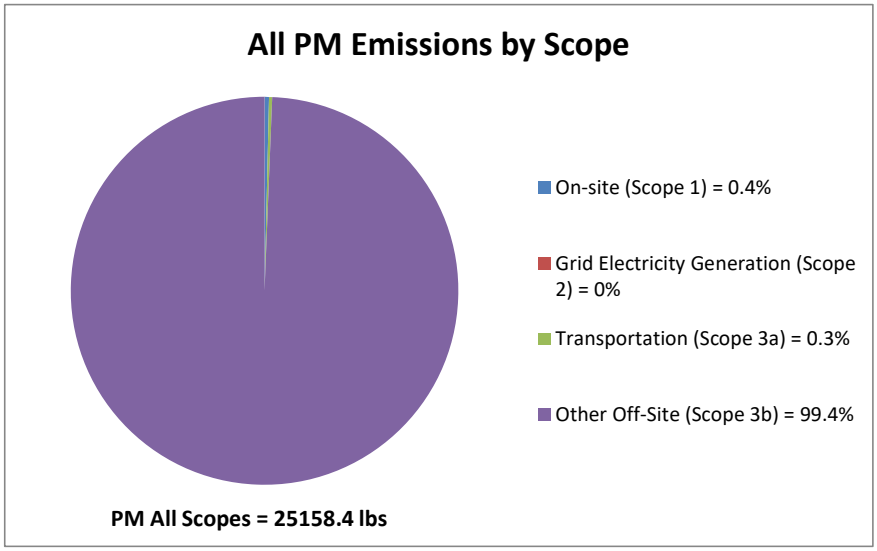


Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

PM lbs	Excavation	Post-Const	<Compone	< Compon	< Compon	< Compon	Total	
On-site (Scope 1)	94.2	0.0	0.0	0.0	0.0	0.0	94.2	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	d Electricity
sportation (Scope 3a)	5.4	60.2	0.0	0.0	0.0	0.0	65.6	Tran
er Off-Site (Scope 3b)	4,908.4	20,090.2	0.0	0.0	0.0	0.0	24,998.5	Oth
Total	5,008.0	20,150.4	0.0	0.0	0.0	0.0	25,158.4	

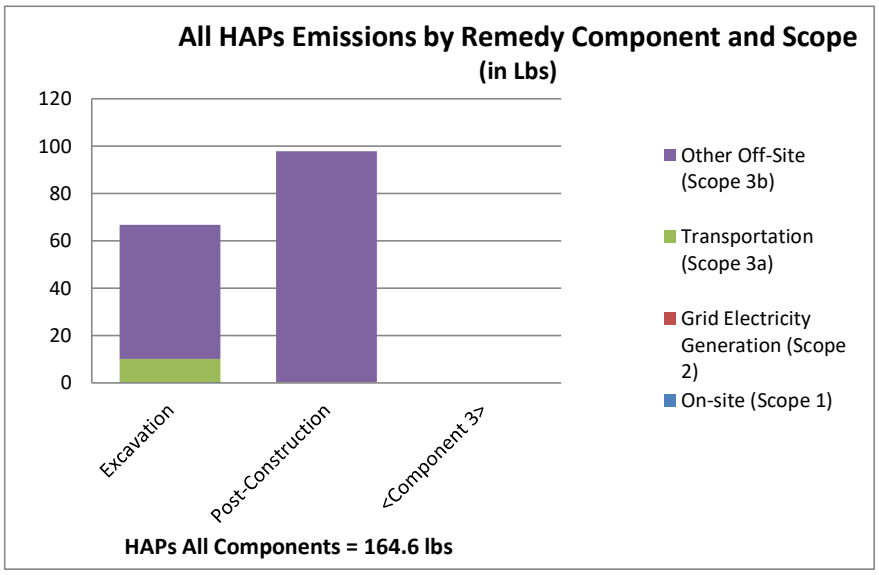
Excavation = 19.9%
Post-Construction = 80.1%
<Component 3> = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

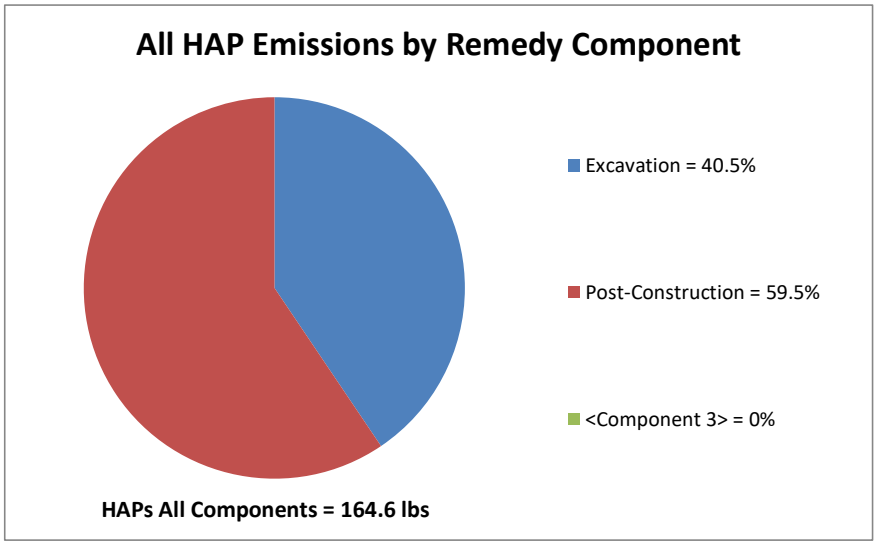
On-site (Scope 1) = 0.4%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 0.3%
Other Off-Site (Scope 3b) = 99.4%

PM All Components = 25158.4 lbs
PM All Scopes = 25158.4 lbs

Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX 2425 Atlantic Avenue Site - RAWP - Alternative 1 - Track 1 Cleanup





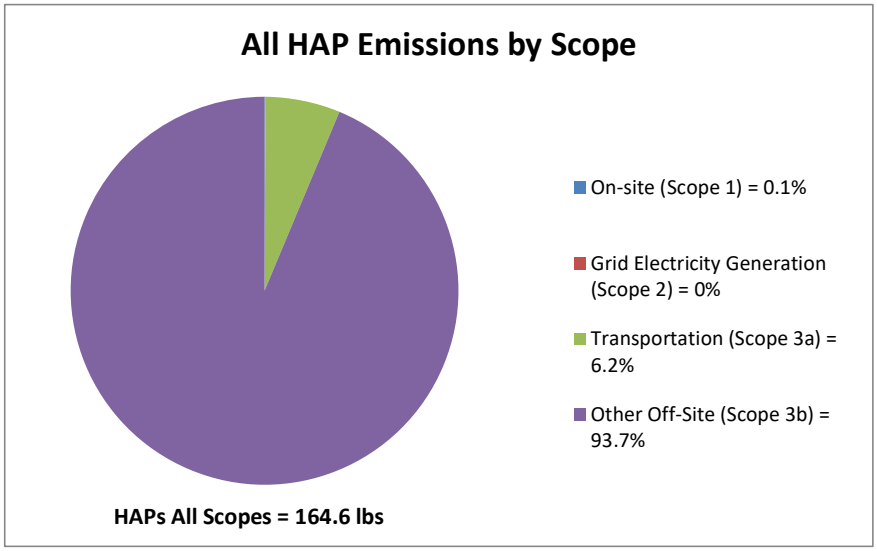


Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

HAPs lbs	Excavation	Post-Const	<Compone	< Compon	< Compon	< Compon	Total
On-site (Scope 1)	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
sportation (Scope 3a)	9.9	0.3	0.0	0.0	0.0	0.0	10.2
er Off-Site (Scope 3b)	56.7	97.5	0.0	0.0	0.0	0.0	154.2
Total	66.7	97.9	0.0	0.0	0.0	0.0	164.6

Excavation = 40.5%
Post-Construction = 59.5%
<Component 3> = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

On-site (Scope 1) = 0.1%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 6.2%
Other Off-Site (Scope 3b) = 93.7%

HAPs All Components = 164.6 lbs
HAPs All Scopes = 164.6 lbs

Table 11
GSR Summary, Alternative 1
2425 Atlantic Avnue, Brooklyn, NY

Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX 2425 Atlantic Avenue Site - RAWP - Alternative 1 - Track 1 Cleanup

All - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**3,198**	**517,467**	**3,900**	**124**	**94**	**4,118**	**0**
Grid Electricity Generation (Scope 2)	**0.000**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**2,673**	**432,241**	**3,073**	**97**	**66**	**3,235**	**10**
Other Off-Site (Scope 3b)	**11,679**	**1,909,481**	**9,243**	**5,321**	**24,999**	**39,563**	**154**
Remedy Totals	**17,550**	**2,859,189**	**16,216**	**5,542**	**25,158**	**46,916**	**165**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
SEFA_calculations_(71525)-Track 1.xlsx

Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX 2425 Atlantic Avenue Site - RAWP - Alternative 1 - Track 1 Cleanup

Excavation - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	3,198	517,467	3,900	124	94	4,118	0
Grid Electricity Generation (Scope 2)	0.000	0	0	0	0	0	0
Transportation (Scope 3a)	210	33,609	65	1	5	71	10
Other Off-Site (Scope 3b)	2,839	487,811	1,986	1,280	4,908	8,174	57
Remedy Totals	6,248	1,038,887	5,952	1,405	5,008	12,364	67

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	0	
On-site biodiesel use	MMBtu	0	
Biodiesel and other renewable resource use for transportation	MMBtu	0	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	0	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	0	
Voluntary purchase of RECs	MWh	0	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
SEFA_calculations_(71525)-Track 1.xlsx

Table 11
GSR Summary, Alternative 1
2425 Atlantic Avenue, Brooklyn, NY

Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX 2425 Atlantic Avenue Site - RAWP - Alternative 1 - Track 1 Cleanup

Post-Construction - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM	NOx + SOx + PM	HAPs
	MMbtus	lbs CO2e	lbs	lbs	lbs	lbs	lbs
On-site (Scope 1)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Grid Electricity Generation (Scope 2)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**2,463**	**398,632**	**3,008**	**96**	**60**	**3,164**	**0**
Other Off-Site (Scope 3b)	**8,840**	**1,421,670**	**7,256**	**4,042**	**20,090**	**31,388**	**98**
Remedy Totals	**11,302**	**1,820,302**	**10,264**	**4,137**	**20,150**	**34,552**	**98**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit	Quantity	
On-site renewable energy generation or use	MMBtu	**0**	
On-site biodiesel use	MMBtu	**0**	
Biodiesel and other renewable resource use for transportation	MMBtu	**0**	
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	**0**	*(This value is the sum of the three rows above)*
Voluntary purchase of renewable electricity	MWh	**0**	
Voluntary purchase of RECs	MWh	**0**	

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
SEFA_calculations_(71525)-Track 1.xlsx

Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY

Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX - 2425 Atlantic Avenue - RAWP - Alternative 2 and 3- Track 2 and 4 Cleanup

Environmental Footprint Summary

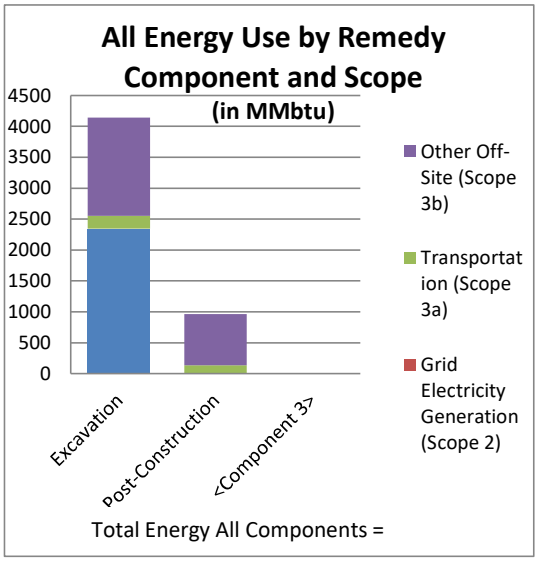
Core Element	Metric		Unit of Measure	Footprint		
				Excavation	Post-Construction	Total
Materials & Waste	M&W-1	Refined materials used on-site	Tons	896.5	887.5	1,784.0
	M&W-2	% of refined materials from recycled or reused material	%	1.0%	0.0%	0.5%
	M&W-3	Unrefined materials used on-site	Tons	24.150	24.150	48.3
	M&W-4	% of unrefined materials from recycled or reused material	%	0.0%	0.0%	0.0%
	M&W-5	On-site hazardous waste disposed of off-site	Tons	0.0	0.0	0.0
	M&W-6	On-site non-hazardous waste disposed of off-site	Tons	2,100.0	0.0	2,100.0
	M&W-7	Recycled or reused waste	Tons	0.0	0.0	0.0
	M&W-8	% of total potential waste recycled or reused	%	0.0%		0.0%
Water (used on-site)	W-1	Public water use	MG	10.0	0.1	10.1
	W-2	Groundwater use	MG	0.0	0.0	0.0
	W-3	Surface water use	MG	0.0	0.0	0.0
	W-4	Reclaimed water use	MG	0.0	0.0	0.0
	W-5	Storm water use	MG	0.0	0.0	0.0
	W-6	User-defined water resource #1	MG	0.0	0.0	0.0
	W-7	User-defined water resource #2	MG	0.0	0.0	0.0
	W-8	Wastewater generated	MG	0.0	0.0	0.0
Energy	E-1	Total energy used (on-site and off-site)	MMBtu	4,144.3	961.2	5,105.5
	E-2	Energy voluntarily derived from renewable resources				
	E-2A	On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	0.0	0.0	0.0
	E-2B	Voluntary purchase of renewable electricity	MWh	0.0	0.0	0.0
	E-3	Voluntary purchase of RECs	MWh	0.0	0.0	0.0
	E-4	On-site grid electricity use	MWh	0.000	0.000	0.0
Air	A-1	On-site NOx, SOx, and PM emissions	Pounds	3,017.3	0.0	3,017.3
	A-2	On-site HAP emissions	Pounds	0.1	0.0	0.1
	A-3	Total NOx, SOx, and PM emissions	Pounds	5,745.3	863.3	6,608.7
	A-3A	Total NOx emissions	Pounds	3,725.3	439.2	4,164.5
	A-3B	Total SOx emissions	Pounds	811.2	316.1	1,127.3
	A-3C	Total PM emissions	Pounds	1,208.8	108.1	1,316.8
	A-4	Total HAP emissions	Pounds	54.8	13.5	68.3
	A-5	Total greenhouse gas emissions	Tons CO2e*	384.6	110.6	495.2
Land & Ecosystems		Qualitative Description				

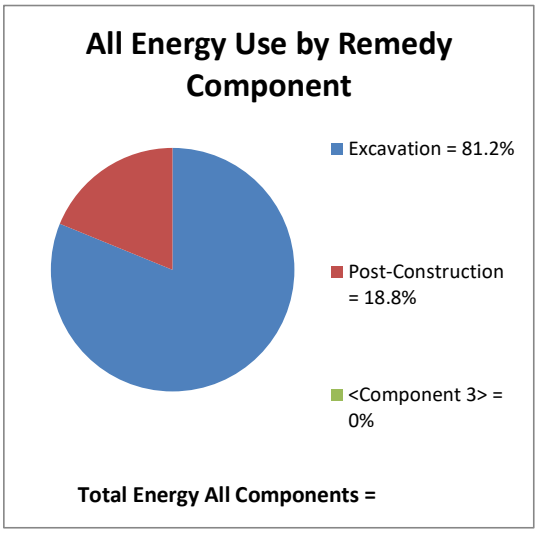
** Total greenhouse gases emissions (in CO2e) include consideration of CO2, CH4, and N2O (Nitrous oxide) emissions.*
"MMBtu" = millions of Btus
"MG" = millions of gallons
"CO2e" = carbon dioxide equivalents of global warming potential
"MWh" = megawatt hours (i.e., thousands of kilowatt-hours or millions of Watt-hours)
"Tons" = short tons (2,000 pounds)

...the above metrics are consistent with EPA's Methodology for Understanding and Reducing a

Notes:

Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY
ets for Environmental Footprint Analysis (SEFA) Version 3.0, Noven
XXXXX - 2425 Atlantic Avenue - RAWP - Alternative 2 and 3- Track





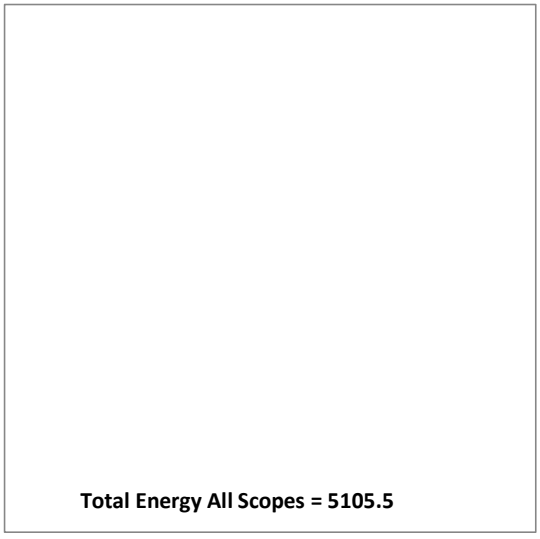


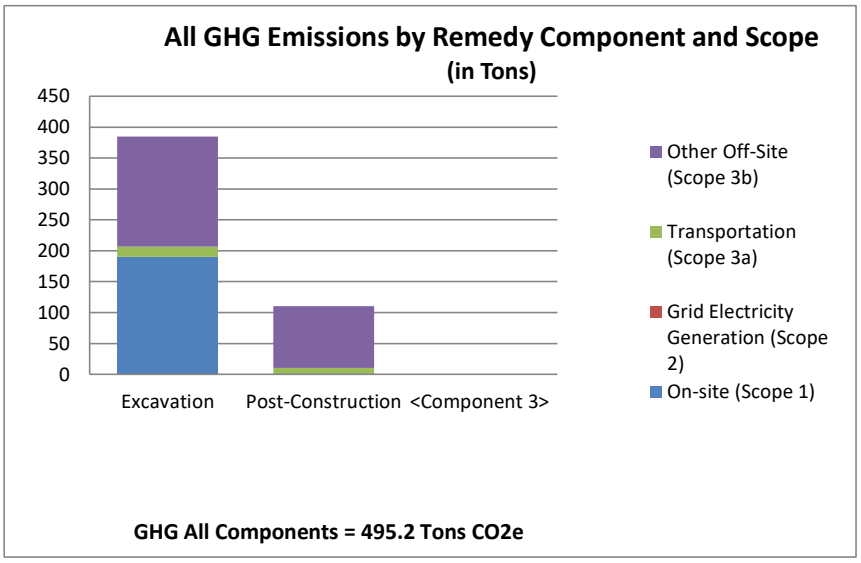
Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY

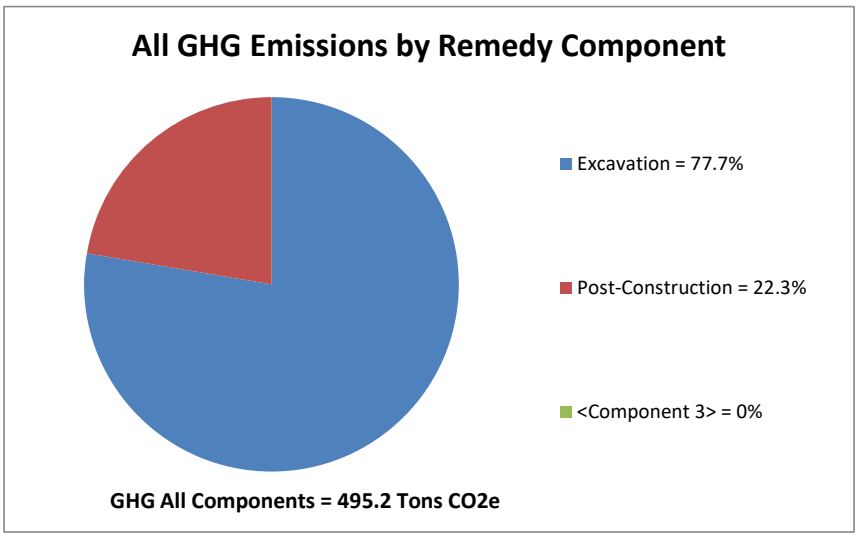
Total Energy MMbtus	Excavation	Post-Const	<Compone	< Compone
On-site (Scope 1)	2,345.6	0.0	0.0	0.0
' Generation (Scope 2)	0.0	0.0	0.0	0.0
ısportation (Scope 3a)	207.6	134.0	0.0	0.0
ıer Off-Site (Scope 3b)	1,591.1	827.2	0.0	0.0
Total	4,144.3	961.2	0.0	0.0

Excavation = 81.2%
Post-Construction = 18.8%
<Component 3> = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

Total Energy All Components = 5105.5 MMbt
Total Energy All Scopes = 5105.5 MMbtus

Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY
Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX - 2425 Atlantic Avenue - RAWP - Alternative 2 and 3- Track 2 and 4 Cleanup





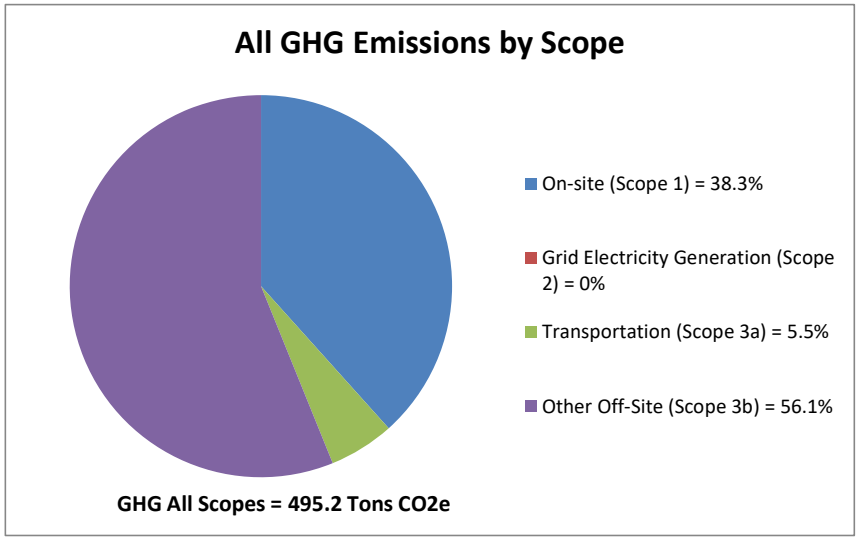


Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY

GHG Tons CO2e	Excavation	Post-Const	<Compone	< Compon	< Compon	< Compon	Total	
ɛnt 4 >								
On-site (Scope 1)	189.8	0.0	0.0	0.0	0.0	0.0	189.8	
' Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	d Electricity
ısportation (Scope 3a)	16.6	10.8	0.0	0.0	0.0	0.0	27.4	Tran
ıer Off-Site (Scope 3b)	178.2	99.8	0.0	0.0	0.0	0.0	277.9	Oth
Total	384.6	110.6	0.0	0.0	0.0	0.0	495.2	

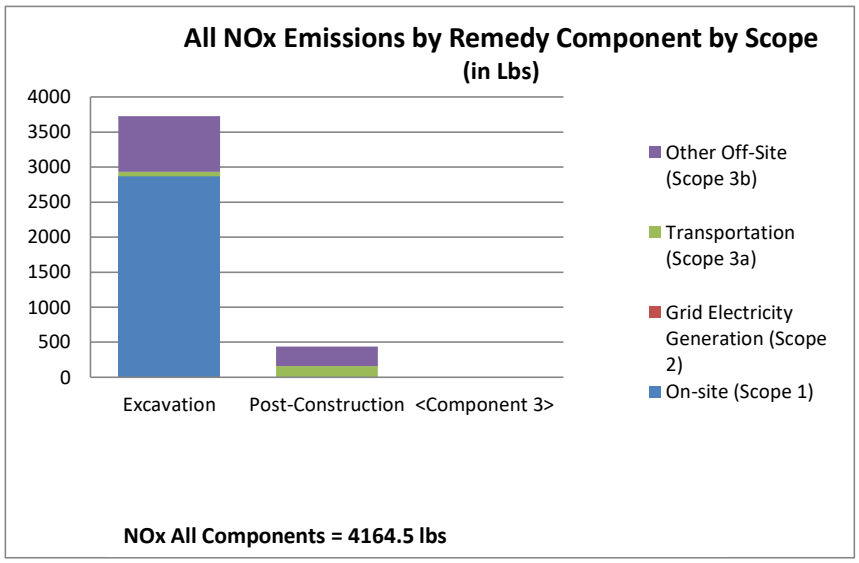
Excavation = 77.7%
Post-Construction = 22.3%
<Component 3> = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

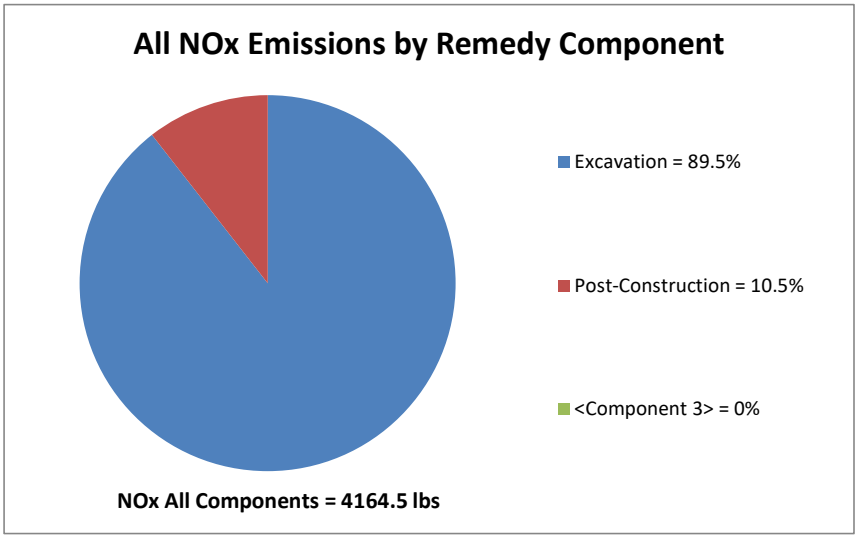
On-site (Scope 1) = 38.3%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 5.5%
Other Off-Site (Scope 3b) = 56.1%

ɪus

GHG All Components = 495.2 Tons CO2e
GHG All Scopes = 495.2 Tons CO2e

Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY
Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX - 2425 Atlantic Avenue - RAWP - Alternative 2 and 3- Track 2 and 4 Cleanup





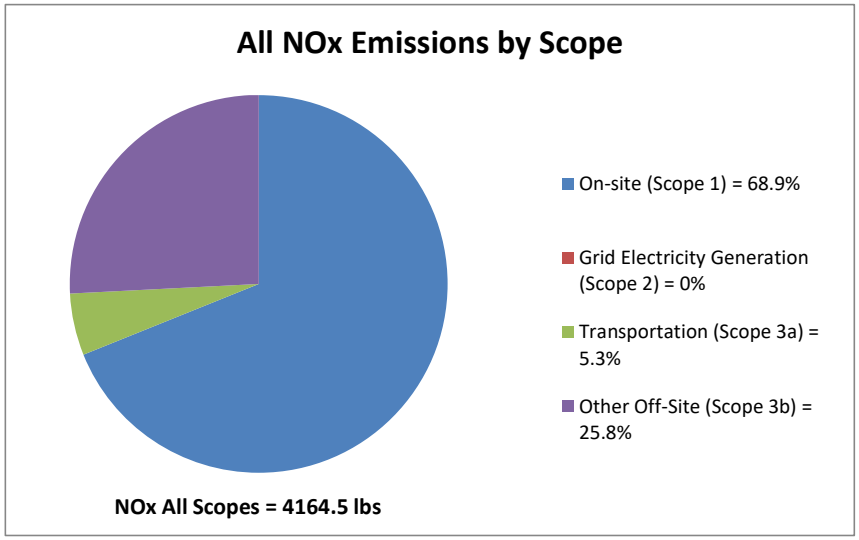


Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY

NOx
lbs

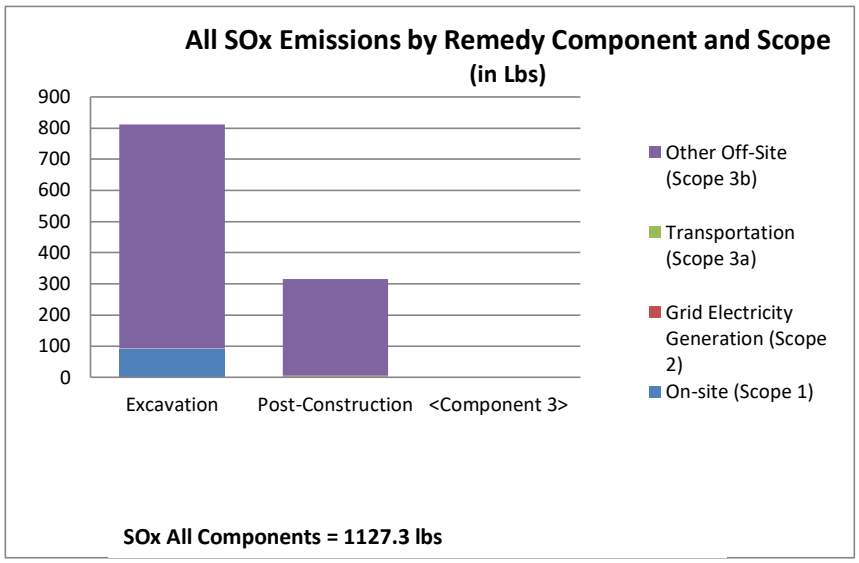
	Excavation	Post-Const	<Compone	< Compon	< Compon	< Compon	Total	
On-site (Scope 1)	2,868.8	0.0	0.0	0.0	0.0	0.0	2,868.8	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	d Electricity
sportation (Scope 3a)	61.5	159.9	0.0	0.0	0.0	0.0	221.3	Tran
er Off-Site (Scope 3b)	795.1	279.3	0.0	0.0	0.0	0.0	1,074.4	Oth
Total	3,725.3	439.2	0.0	0.0	0.0	0.0	4,164.5	

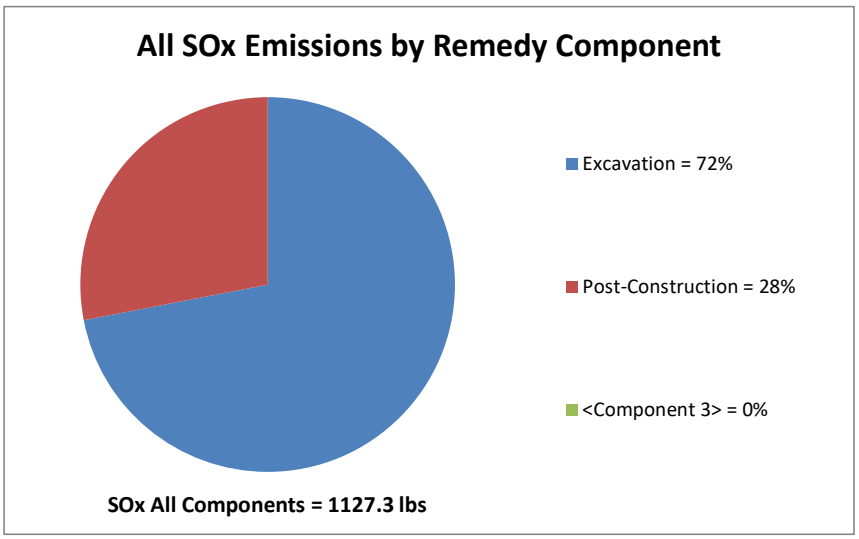
Excavation = 89.5%
Post-Construction = 10.5%
<Component 3> = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

On-site (Scope 1) = 68.9%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 5.3%
Other Off-Site (Scope 3b) = 25.8%

NOx All Components = 4164.5 lbs
NOx All Scopes = 4164.5 lbs

Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY
Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX - 2425 Atlantic Avenue - RAWP - Alternative 2 and 3- Track 2 and 4 Cleanup





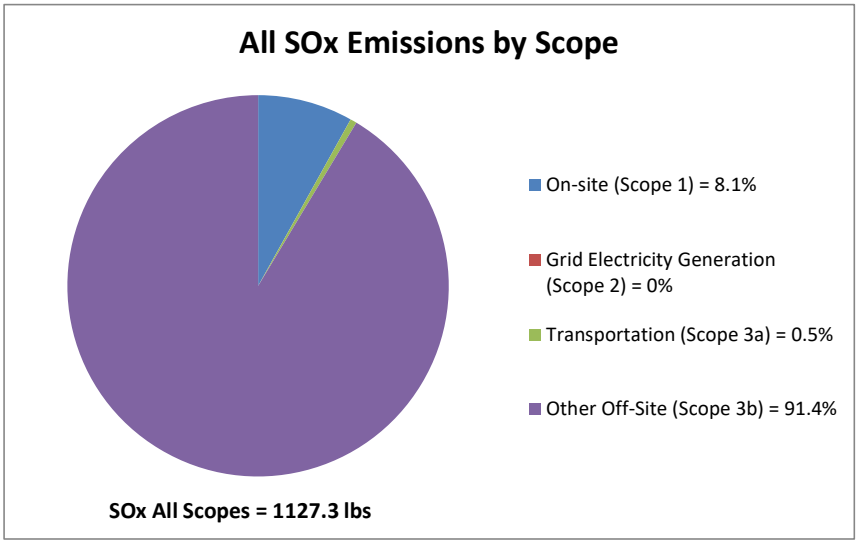


Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY

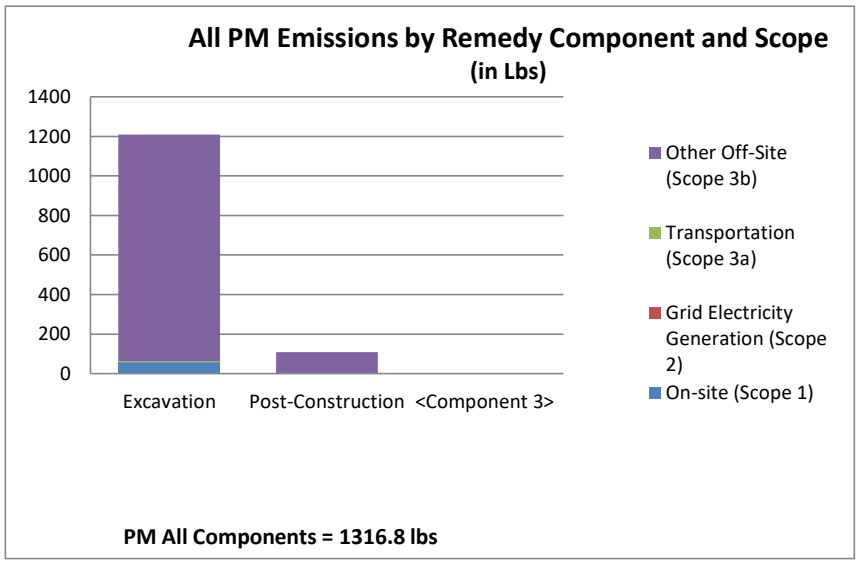
SOx lbs	Excavation	Post-Const	<Compone	< Compon	< Compon	< Compon	Total	
On-site (Scope 1)	91.1	0.0	0.0	0.0	0.0	0.0	91.1	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	d Electricity
sportation (Scope 3a)	1.1	5.1	0.0	0.0	0.0	0.0	6.1	Tran
er Off-Site (Scope 3b)	719.0	311.0	0.0	0.0	0.0	0.0	1,030.1	Oth
Total	811.2	316.1	0.0	0.0	0.0	0.0	1,127.3	

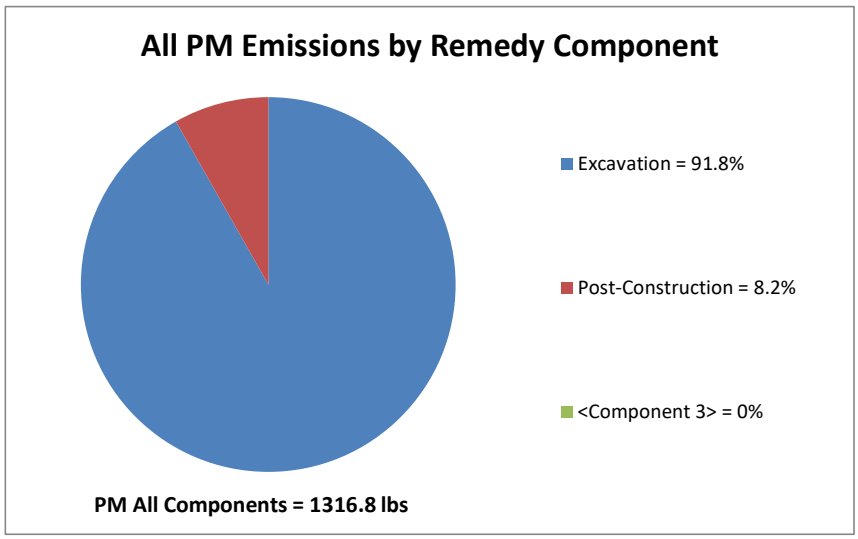
Excavation = 72%
Post-Construction = 28%
<Component 3> = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

On-site (Scope 1) = 8.1%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 0.5%
Other Off-Site (Scope 3b) = 91.4%

SOx All Components = 1127.3 lbs
SOx All Scopes = 1127.3 lbs

Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY
Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX - 2425 Atlantic Avenue - RAWP - Alternative 2 and 3- Track 2 and 4 Cleanup





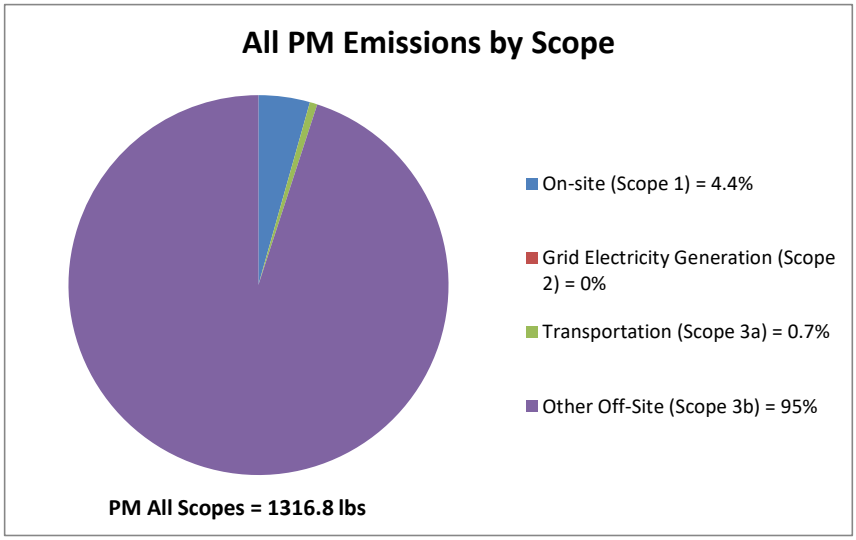


Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY

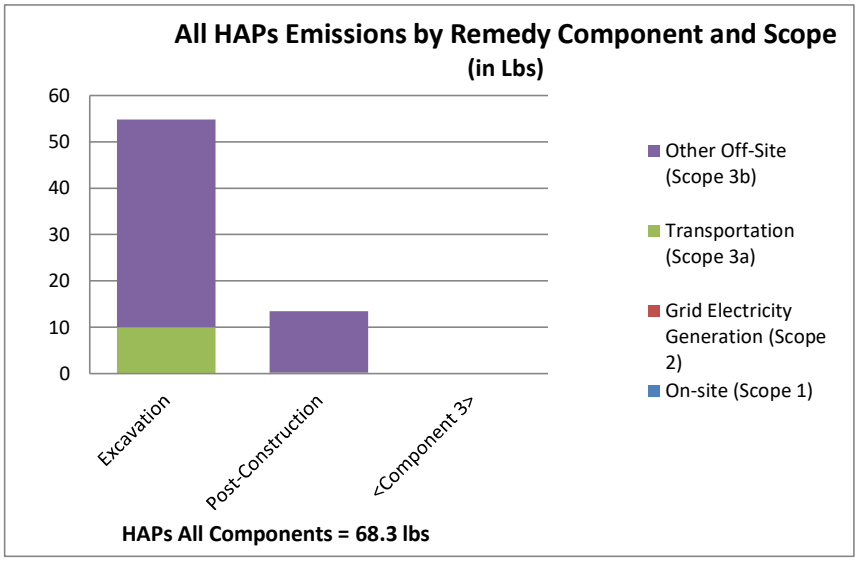
PM lbs	Excavation	Post-Const	<Compone	< Compon	< Compon	< Compon	Total	
On-site (Scope 1)	57.4	0.0	0.0	0.0	0.0	0.0	57.4	
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	d Electricity
sportation (Scope 3a)	5.3	3.3	0.0	0.0	0.0	0.0	8.6	Tran
er Off-Site (Scope 3b)	1,146.1	104.8	0.0	0.0	0.0	0.0	1,250.9	Oth
Total	1,208.8	108.1	0.0	0.0	0.0	0.0	1,316.8	

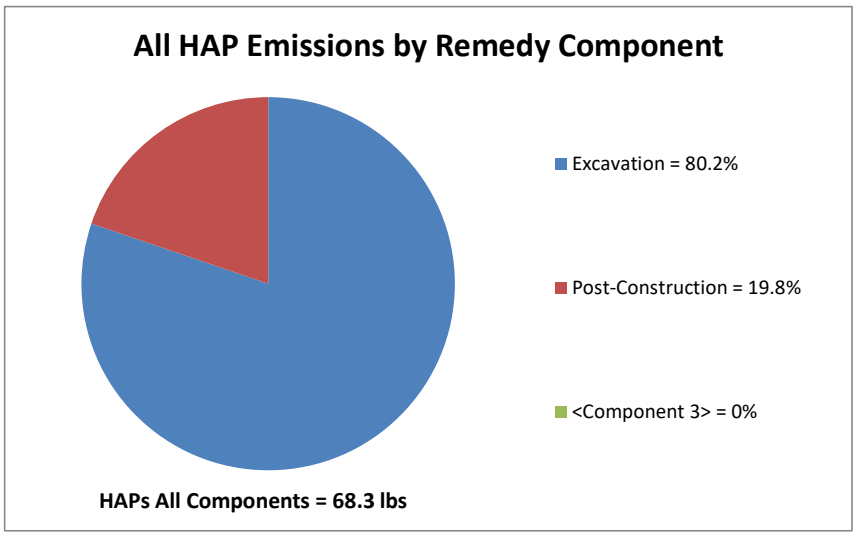
Excavation = 91.8%
Post-Construction = 8.2%
<Component 3> = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

On-site (Scope 1) = 4.4%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 0.7%
Other Off-Site (Scope 3b) = 95%

PM All Components = 1316.8 lbs
PM All Scopes = 1316.8 lbs

Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY
Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019
NYSDEC BCP CXXXXXX - 2425 Atlantic Avenue - RAWP - Alternative 2 and 3- Track 2 and 4 Cleanup





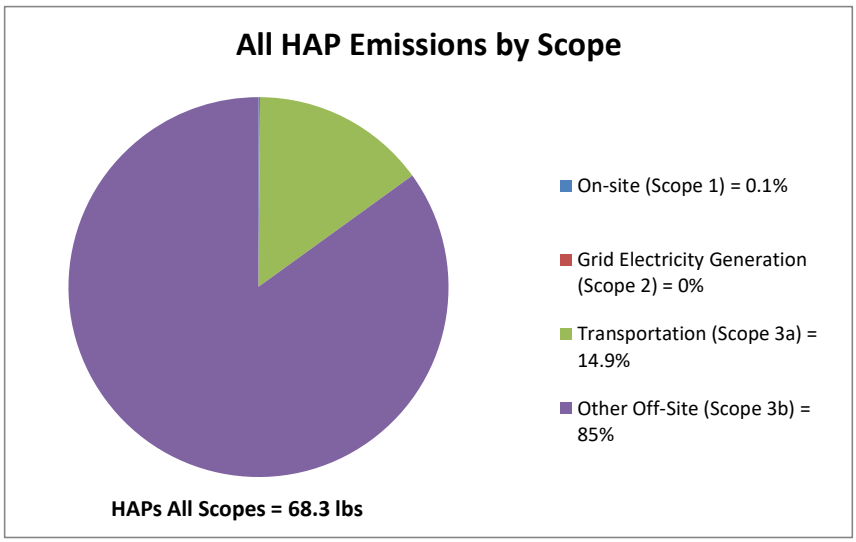


Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY

HAPs lbs	Excavation	Post-Const	<Compone	< Compon	< Compon	< Compon	Total
On-site (Scope 1)	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Generation (Scope 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
sportation (Scope 3a)	9.9	0.2	0.0	0.0	0.0	0.0	10.2
er Off-Site (Scope 3b)	44.8	13.3	0.0	0.0	0.0	0.0	58.0
Total	54.8	13.5	0.0	0.0	0.0	0.0	68.3

Excavation = 80.2%
Post-Construction = 19.8%
<Component 3> = 0%
< Component 4 > = 0%
< Component 5 > = 0%
< Component 6 > = 0%

On-site (Scope 1) = 0.1%
Grid Electricity Generation (Scope 2) = 0%
Transportation (Scope 3a) = 14.9%
Other Off-Site (Scope 3b) = 85%

HAPs All Components = 68.3 lbs
HAPs All Scopes = 68.3 lbs

Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY

All - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM
	MMbtus	lbs CO2e	lbs	lbs	lbs
On-site (Scope 1)	**2,346**	**379,688**	**2,869**	**91**	**57**
Grid Electricity Generation (Scope 2)	**0.000**	**0**	**0**	**0**	**0**
Transportation (Scope 3a)	**342**	**54,849**	**221**	**6**	**9**
Other Off-Site (Scope 3b)	**2,418**	**555,882**	**1,074**	**1,030**	**1,251**
Remedy Totals	**5,106**	**990,419**	**4,164**	**1,127**	**1,317**

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit
On-site renewable energy generation or use	MMBtu
On-site biodiesel use	MMBtu
Biodiesel and other renewable resource use for transportation	MMBtu
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu
Voluntary purchase of renewable electricity	MWh
Voluntary purchase of RECs	MWh

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
SEFA_calculations_(71525)-Track 2.xlsx

Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY

Excavation - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM
	MMbtus	lbs CO2e	lbs	lbs	lbs
On-site (Scope 1)	2,346	379,688	2,869	91	57
Grid Electricity Generation (Scope 2)	0.000	0	0	0	0
Transportation (Scope 3a)	208	33,168	61	1	5
Other Off-Site (Scope 3b)	1,591	356,327	795	719	1,146
Remedy Totals	4,144	769,183	3,725	811	1,209

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit
On-site renewable energy generation or use	MMBtu
On-site biodiesel use	MMBtu
Biodiesel and other renewable resource use for transportation	MMBtu
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu
Voluntary purchase of renewable electricity	MWh
Voluntary purchase of RECs	MWh

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
SEFA_calculations_(71525)-Track 2.xlsx

Table 11
GSR Summary, Alternative 2 and 3
2425 Atlantic Avenue, Brooklyn, NY

Post-Construction - Energy & Air Compiled Results

Category	Total Energy	GHG	NOx	SOx	PM
	MMbtus	lbs CO2e	lbs	lbs	lbs
On-site (Scope 1)	0	0	0	0	0
Grid Electricity Generation (Scope 2)	0	0	0	0	0
Transportation (Scope 3a)	134	21,681	160	5	3
Other Off-Site (Scope 3b)	827	199,555	279	311	105
Remedy Totals	961	221,236	439	316	108

Values that are forwarded to the "Summary" tab are indicated in orange.

Voluntary Renewable Energy Use	Unit
On-site renewable energy generation or use	MMBtu
On-site biodiesel use	MMBtu
Biodiesel and other renewable resource use for transportation	MMBtu
On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu
Voluntary purchase of renewable electricity	MWh
Voluntary purchase of RECs	MWh

This worksheet is not intended for user input. Values on this worksheet are obtained from the following file:
SEFA_calculations_(71525)-Track 2.xlsx

APPENDIX I

REDEVELOPMENT PLANS

2433 ATLANTIC AVENUE APARTMENTS

2433 ATLANTIC AVENUE BROOKLYN,NY11233

13 STORY MASONRY BUILDING

99 FAMILY MULTIPLE DWELLING

BLOCK # 1574 LOT # 23



ITEMS FILED UNDER SEPARATE APPLICATION:

SOE	TBD
FOUNDATION	TBD
STRUCTURAL	TBD
MECHANICAL	TBD
PLUMBING	TBD
SPRINKLER	TBD
FENCE	TBD
CURB CUT	TBD
FIRE ALARM	FILED WITH FDNY
BUILDERS PAVEMENT PLAN -	TBD
SITE CONNECTION -	TBD
DEMOLITION -	TBD

P. GEORGOPOULOS ARCHITECT PC
33-12 FRANCIS LEWIS BLVD
FLUSHING, NEW YORK 11358
TEL (718) 359-5577 FAX (718) 359-1411
PGARCHITECT@VERIZON.NET

PROJECT:

PROPOSED NEW BUILDING
2433 ATLANTIC AVENUE
BROOKLYN,NY 11233

OWNER INFORMATION:
5308 13TH AVE #515
BROOKLYN NY 11219
BILLER46@YAHOO.COM
TEL: 845-213-8361

#	ISSUED FOR	DATE

#	REVISIONS	DATE

DRAWING TITLE:

TITLE SHEET

SEAL & SIGNATURE

REGISTERED ARCHITECT Angelos Georgopoulos STATE OF NEW YORK 044836

DATE : 7/18/2025
PROJ. NO : 25-210
DWN BY : AS
CHK BY : PG
DWG NO :
T-001.00

EXAMINER'S STAMP AND SIGNATURE :

DOB STICKER :

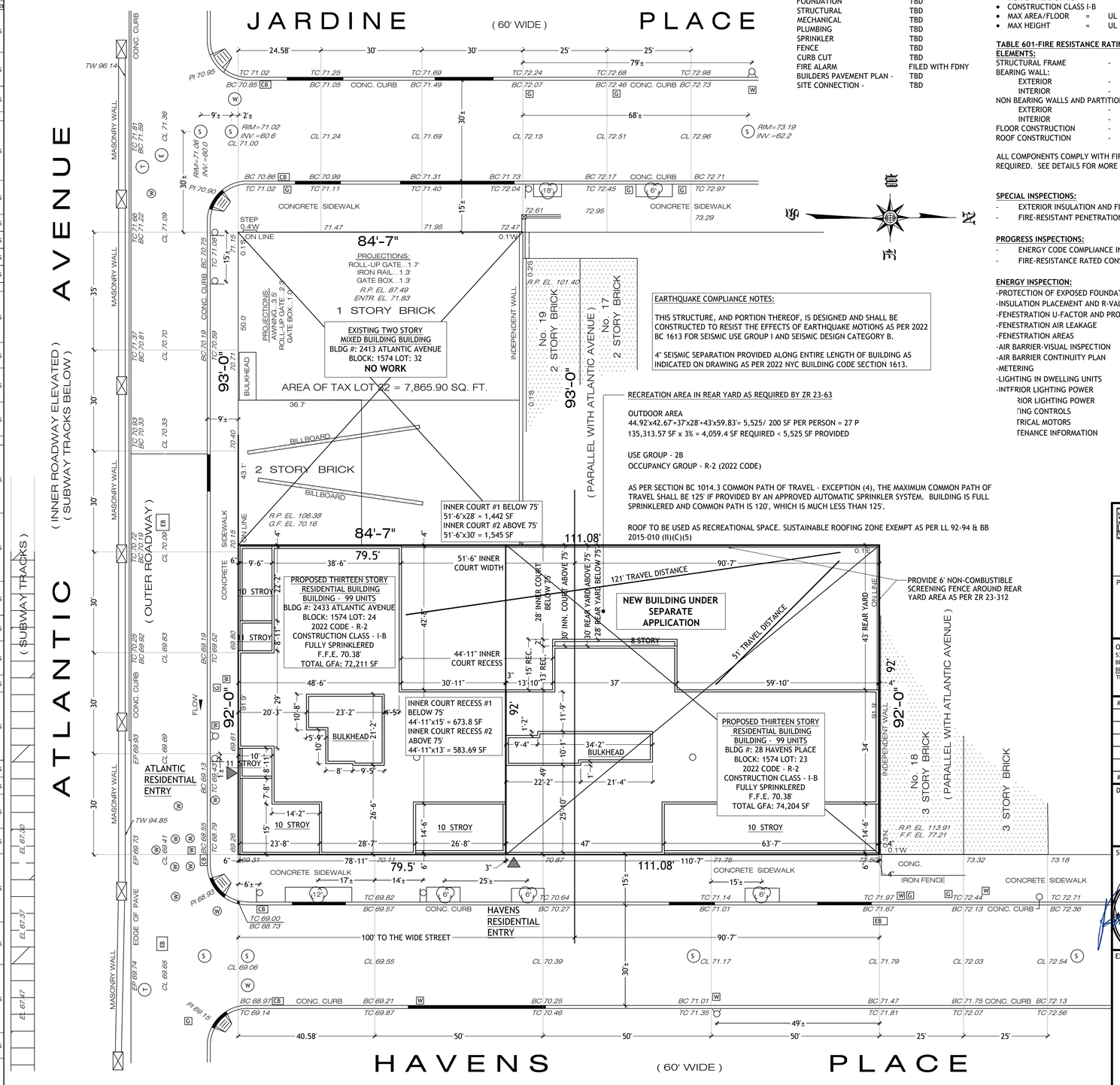
B01256572-I1

Zoning Analysis

2433 Atlantic Avenue & 28 Havens Place & 2413 Atlantic Avenue, Brooklyn, NY 11233
ZONING: C4-5D / R5B MAP: 17c
BLOCK: 1574 LOT: 23/24/32

SCOPE OF WORK: PROPOSED NEW 13 STORY RESIDENTIAL BUILDING.

ZR Section	Required Item	Requirement/ Allowance	Provided	Comments
23-12	MINIMUM LOT WIDTH AND AREA	MINIMUM LOT WIDTH IS 18' MINIMUM LOT AREA IS 1,700 SF	92' WIDTH HAS BEEN PROVIDED 25,399.26 SF PROVIDED R5B = 426.25 SF C4-5D = 24,973.01 SF SEE BREAKDOWN ON Z-104	COMPLIES
34-112	RESIDENTIAL BULK REGULATION IN COMMERCIAL DISTRICTS	C4-5D APPLICABLE RESIDENTIAL EQUIVALENT R7D	R7D	COMPLIES
22-121 32-201	USE REGS - RESIDENTIAL COMMERCIAL	FOR PROPERTIES LOCATED IN C4-5D, USE GROUP II, X IS PERMITTED	USE GROUP II,X IS PROPOSED	COMPLIES
COMMERCIAL PORTION				
32-201	USE REGS - COMMERCIAL	The following table includes uses classified as Use Group X and sets forth their allowances by Commercial District. Notations found in the table are further described in Section 32-10 (USE ALLOWANCES). Included in the use table, for reference purposes only, are the three-digit subsector categories from the manufacturing sector (sectors 31-33) of the 2022 North American Industry Classification System (NAICS). For each use under the three-digit subsector categories in manufacturing, the four-digit industry group, five-digit NAICS industry or six-digit U.S. detail code is referenced. However, where such four-digit, five-digit or six-digit categories are not referenced after a use, the specified use is not a specific NAICS industry sector category or includes a group of existing categories.	EXISTING USE NO CHANGE	COMPLIES
33-122	C4-5D COMMERCIAL FLOOR AREA REGULATION	THE MAX FLOOR AREA RATIO FOR COMMERCIAL SHALL BE 4.2. MAX FL. AREA PERMITTED = 24,973.04x4.2 = 104,887 SF	EXISTING COMMERCIAL AREA AS APPROVED DRAWING: 43'x84.58'=3,636.94 SF << 104,887 SF	COMPLIES
35-51	FRONT YARD- C4-5D	NO FRONT YARD IS REQUIRED	NO FRONT YARD PROVIDED	COMPLIES
35-52	SIDE YARD - C4-5D	NO SIDE YARD IS REQUIRED	NO SIDE YARD PROVIDED	COMPLIES
35-53	REAR YARD - C4-5D	NO REAR YARD IS REQUIRED	NO REAR YARD PROVIDED	COMPLIES
36-21 36-25	PARKING- C4-5D	NO PARKING IS REQUIRED	NO REAR YARD PROVIDED	COMPLIES
RESIDENTIAL PORTION				
23-21 23-22 27-131(a)(1)(i)	R7D FLOOR AREA REGULATIONS	THIS LOT WILL BE DEVELOPED IN PURSUIT OF THE QUALIFYING AFFORDABLE HOUSING RESIDENCE. THIS LOT IS LOCATED ON A WIDE STREET OUTSIDE THE MANHATTAN CORE,THE FAR FOR THIS LOT IS 5.6. MAX RESIDENTIAL FL. AREA PERMITTED= 24,973.01x5.6 FAR + 426.25 x1.5 FAR= 140,488.2 SF THIS IS A MIH AREA. THE APPICABLE 25% AFFORDABLE AREA SHALL BE PROVIDED IN COMPLIANCE WITH ZONING AND HPD REGULATIONS.	65,503.69F (PROP LOT 23) + 67,479.52 SF (PROP LOT 24)+ 1,505 SF (EXIST LOT 32) = 134,488.2 SF < 140,488.2 SF (MAXIMUM ALLOWABLE) 134,488.2/25,399.26=5.236	COMPLIES
23-52	DENSITY	THE FACTOR FOR DWELLING UNITS IN ZONING R7D IS 680 SF PER APARTMENT	140,488.2 / 680 SF PER APT = 206 UNITS (ALLOWABLE) LOT 23/24 -> 198 UNITS (PROP) + LOT 32 -> 1 UNIT = 199 UNITS < 206 UNITS	COMPLIES
25-222	PARKING - RESIDENTIAL	ZR 25-222, - REQUIREMENTS FOR DEVELOPMENTS OR ENLARGEMENTS IN THE OUTER TRANSIT ZONE IS 1 CAR PER 15% OF THE DWELLING UNITS. REQUIREMENT FOR AFFORDABLE HOUSING IS 0.MAXIMUM WAIVER IS 25 CARS	20 AFFORDABLE UNITS FOR EACH BUILDUNG , TOTAL 40 AFFORDABLE UNITS. (198 - 40) x 15% = 24 CARS 0 PARKING PROVIDED	COMPLIES
25-811	BICYCLE PARKING - RESIDENTIAL	IN R7D ZONING, 1 BICYCLE IS REQUIRED FOR EVERY 2 UNITS	198 UNITS / 2 = 99 BICYCLES REQUIRED AND PROVIDED SEE BOTH BUILDING A-101 THRU A-107 DRAWINGS 68(ATLANTIC AVENUE)+31(HAVENS PLACE)=99 SPACES 5% HANDICAPPED (5 SPACES) PROVIDED AT 1ST FLOOR	COMPLIES
ENTIRE BUILDING				
77-02, 77-22	Special Provisions for Zoning Lots Divided by District Boundaries	Each such floor area ratio shall be multiplied by the percentage of the zoning lot to which such floor area ratio applies. The sum of the products thus obtained shall be the adjusted maximum floor area ratio applicable to such zoning lot. The floor area resulting from application of the adjusted maximum floor area ratio may be located anywhere on the zoninglot, subject to all other regulations of this Resolution, and provided that the floor area ratio for any portion of the zoning lot within one district shall not exceed the maximum floor area ratio, specified for that district, or the adjusted maximum floor area ratio for the zoning lot, whichever is greater, except that the portion of the zoning lot fronting on and within100 feet of a wide street and permitting the greater maximum permitted residential floor area ratio may exceed the maximum permitted residential floor area ratio for the portion of the zoning lot by up to 20	Separate areas shall be caculated for the property. Atlantic Avenue is a wide street. Anaysis diagram and calculation see Z-104. R5B IS 1.68%, C4-5D 98.32% in entire lot. The area transferred from the R5B district is much less than 20%.	COMPLIES
23-21 23-22 27-131(a)(1)(i) 33-122	C4-5D/R7D FLOOR AREA REGULATIONS	THE MAX FLOOR AREA RATIO FOR COMMERCIAL SHALL BE 4.2. MAX FL. AREA PERMITTED = 24,973.04x4.2 = 104,887 SF THIS LOT WILL BE DEVELOPED IN PURSUIT OF THE QUALIFYING AFFORDABLE HOUSING RESIDENCE. THIS LOT IS LOCATED ON A WIDE STREET OUTSIDE THE MANHATTAN CORE,THE FAR FOR THIS LOT IS 5.6. MAX RESIDENTIAL FL. AREA PERMITTED= 24,973.01x5.6 FAR + 426.25 x1.5 FAR= 140,488.2 SF THIS IS A MIH AREA. THE APPICABLE 25% AFFORDABLE AREA SHALL BE PROVIDED IN COMPLIANCE WITH ZONING AND HPD REGULATIONS.	MAX ENTRIE BUILDING FL. AREA PERMITTED= 24,973.01x5.6 FAR + 426.25 x1.5 FAR= 140,488.2 SF 3,636.94 SF(EXISTING COMMERICAL AREA)+134,488.2(PROPOSED TOTLA RESIDENTIAL AREA) SF = 138,125.14 < 140,488.2 SF (MAXIMUM ALLOWABLE) 138,125.14/25,399.26=5.438<5.6	COMPLIES
23-52 35-40	DENSITY	THE FACTOR FOR DWELLING UNITS IN ZONING R7D IS 680 SF PER APARTMENT	140,488.2 / 680 SF PER APT = 206 UNITS (ALLOWABLE) LOT 23/24 -> 198 UNITS (PROP) + LOT 32 -> 1 UNIT = 199 UNITS < 206 UNITS	COMPLIES
36-31, 25-222	PARKING - RESIDENTIAL	ZR 25-222, - REQUIREMENTS FOR DEVELOPMENTS OR ENLARGEMENTS IN THE OUTER TRANSIT ZONE IS 1 CAR PER 15% OF THE DWELLING UNITS. REQUIREMENT FOR AFFORDABLE HOUSING IS 0.MAXIMUM WAIVER IS 25 CARS	20 AFFORDABLE UNITS FOR EACH BUILDUNG , TOTAL 40 AFFORDABLE UNITS. (198 - 40) x 15% = 24 CARS 0 PARKING PROVIDED	COMPLIES
36-70	BICYCLE PARKING - RESIDENTIAL	IN R7D ZONING, 1 BICYCLE IS REQUIRED FOR EVERY 2 UNITS	198 UNITS / 2 = 99 BICYCLES REQUIRED AND PROVIDED SEE BOTH BUILDING A-101 THRU A-107 DRAWINGS 68(ATLANTIC AVENUE)+31(HAVENS PLACE)=99 SPACES 5% HANDICAPPED (5 SPACES) PROVIDED AT 1ST FLOOR	COMPLIES
33-04 26-41	STREET TREE ANALYSIS	ONE STREET TREE PER 25' OF FRONTAGE AREA IS REQUIRED. (190.58'+92'+93'+84.65')/ 25' = 18 TREES	(4) TREES TO REMAIN (14) TREES WILL BE PAID TO TREE FUND	COMPLIES
23-362(a)	LOT COVERAGE - C4-5D,R7D	FOR CORNER LOT THE MAXIMUM LOT COVERAGE R7D IS 100%, FOR INTERIOR LOT THE MAXIMUM LOT COVERAGE R7D IS 80%.	CORNER LOT AREA IS 17,065.90 SF, INTERIOR LOT AREA IS 8,333.36 SF. PROPOSED LOT COVERAGE REQUIRED: 8,333.36/25,399.26X0.8+17,065.9/25,399.26=93.44% CORNER LOT PROPOSED COVERAGE IS 76%, INTERIOR LOT PROPOSED COVERAGE IS 58%, ENTIRE LOT PROPOSED COVERAGE IS 70% << 93.44% SEE Z-102,Z-103,Z-104 FOR DIAGRAM	COMPLIES
35-51 23-322	FRONT YARD - C4-5D, R7D	NO FRONT YARD IS REQUIRED	NO FRONT YARD PROVIDED	COMPLIES
35-52 23-335	SIDE YARD - C4-5D, R7D	ALL OTHER BUILDING EXCEPT SINGE-FAMILY, TWO-FAMILY, DETACHED RESIDENCES. NO SIDE YARD IS REQUIRED	NO SIDE YARD PROVIDED	COMPLIES
35-53 23-342(a)(1)	REAR YARD C4-5D, R7D BEYOND 100 FEET	PORTIONS BELOW 75', 20' REAR YARD IS REQUIRED. PROTIONS ABOVE 75', 30' REAR YARD IS REQUIRED.	PROPOSED BUILDING HEIGHT BELOW 75' 28' REAR YARD PROVIDED PROPOSED BUILDING ABOVE HEIGHT 75' 30' REAR YARD PROVIDED	COMPLIES
35-53 23-343(b)	REAR YARD C4-5D, R7D WITHIN 100 FEET	WITHIN ONE HUNDRED FEET OF CORNERS IN THE DISTRICTS INDICATED, NO REAR YARD SHALL BE REQUIRED WITHIN 100 FEET OF THE POINT OF INTERSECTION OF TWO STREET LINES INTERSECTING AT AN ANGLE OF 135 DEGREES OR LESS.	NO REAR YARD PROVIDED WITHIN 100 FEET	COMPLIES
23-352(a)(c)	INNER COURT REGULATIONS	(a) WHERE LEGALLY REQUIRED WINDOWS FACE ONTO AN INNER COURT, FOR BUILDINGS OR PORTIONS THEREOF AT OR BELOW A HEIGHT OF 75 FEET, THE AREA OF AN INNER COURT SHALL NOT BE LESS THAN 800 SQUARE FEET, AND THE MINIMUM DIMENSION OF SUCH INNER COURT SHALL NOT BE LESS THAN 20 FEET, AND ABOVE A HEIGHT OF 75 FEET, WHERE PERMITTED, THE AREA OF AN INNER COURT SHALL NOT BE LESS THAN 1,200 SQUARE FEET, AND THE MINIMUM DIMENSION OF SUCH INNER COURT SHALL NOT BE LESS THAN 30 FEET; (C) THE WIDTH OF AN INNER COURT RECESS SHALL BE AT LEAST EQUAL TO THE DEPTH OF THE INNER COURT RECESS, EXCEPT THAT SUCH WIDTH NEED NOT EXCEED THE MINIMUM DIMENSION FOR AN INNER COURT, RELATIVE TO THE HEIGHT.	PROPOSED INNER COURT #1 BELOW 75' 51'-6"x28' = 1,442 SF INNER COURT #2 ABOVE 75' 51'-6"x30' = 1,545 SF PROPOSED INNER COURT RECESS #1 BELOW 75' 44'-11" WIDTH >> 15' DEPTH INNER COURT RECESS #2 ABOVE 75' 44'-11" WIDTH >> 13' DEPTH	COMPLIES
23-231	FLOOR AREA PROVISIONS FOR AMENITIES	FLOOR SPACE IN A BUILDING ALLOCATED TO RESIDENTIAL AMENITIES MAY BE EXEMPTED FROM THE DEFINITION OF FLOOR AREA, IN AN AMOUNT NOT TO EXCEED FIVE PERCENT OF THE RESIDENTIAL FLOOR AREA OF THE BUILDING. SUCH AMENITIES MAY INCLUDE RECREATION SPACES, INCLUDING THOSE REQUIRED PURSUANT TO SECTION 23-63, OR OTHER AMENITIES, INCLUDING, BUT NOT BE LIMITED TO, CO-WORKING AREAS, LIBRARY OR READING ROOMS, OR MUSIC PRACTICE ROOMS, PACKAGE OR STORAGE ROOMS, LAUNDRY FACILITIES, OR PET-RELATED FACILITIES.	LAUNDRY EXEMPTED FROM FLOOR AREA SEE DEDUCTION PLANS ON Z-102 AND Z-103.	COMPLIES
ZR 23-232	CORRIDOR	(a) CORRIDORS TERMINATION FIFTY PERCENT OF THE FLOOR SPACE OF A CORRIDOR MAY BE EXEMPTED FROM THE DEFINITION OF FLOOR AREA WHERE ONE OF THE FOLLOWING CRITERIA ARE MET: (1) THE CORRIDOR PROVIDES DIRECT ACCESS TO OUTDOOR SPACE ON A BALCONY OR TERRACE ON THE SAME STORY THAT IS ACCESSIBLE TO RESIDENTS OF THE STORY; (3) THE CORRIDOR TERMINATES WITH A DWELLING UNIT THAT CONTAINS AT LEAST THREE BEDROOMS. (b) LENGTH OF CORRIDOR FIFTY PERCENT OF THE FLOOR SPACE OF A CORRIDOR MAY BE EXEMPTED FROM THE DEFINITION OF FLOOR AREA, WHERE THE LENGTH OF THE CORRIDOR, AS MEASURED FROM THE ELEVATOR CORE TO THE DOOR OF THE FURTHEST DWELLING UNIT ON THE STORY, DOES NOT EXCEED 100 LINEAR FEET.	A THREE BEDROOM HAS BEEN PROVIDED AT THE END OF THE CORRIDORS. THE LENGTH OF THE END OF THE CORRIDOR TO THE ELEVATOR CORE IS LESS THAN 100' SEE DEDUCTION PLANS ON Z-102 AND Z-103.	COMPLIES
23-233	REFUSE STORAGE AND DISPOSAL	FLOOR SPACE IN A BUILDING ALLOCATED TO REFUSE STORAGE AND DISPOSAL MAY BE EXEMPTED FROM THE DEFINITION OF FLOOR AREA IN AN AMOUNT NOT TO EXCEED A MAXIMUM OF THREE SQUARE FEET PER DWELLING UNIT IN THE BUILDING.	SEE DEDUCTION PLANS ON Z-102 AND Z-103	COMPLIES
23-413	DORMER REGULATIONS	AS PER SECTION ZR 23-413(B)(1) DORMERS SHALL BE ALLOWED AS A PERMITTED OBSTRUCTION, (i) THE AGGREGATE WIDTH OF ALL DORMERS AT THE MAXIMUM BASE HEIGHT DOES NOT EXCEED 80 PERCENT OF THE WIDTH OF THE STREET WALL OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT. FOR EACH FOOT ABOVE THE MAXIMUM BASE HEIGHT, THE AGGREGATE WIDTH OF ALL DORMERS SHALL BE DECREASED BY ONE PERCENT OF THE STREET WALL WIDTH OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT; OR (ii) THE AGGREGATE WIDTH OF ALL DORMERS AT THE MAXIMUM BASE HEIGHT DOES NOT EXCED 40 PERCENT OF THE WIDTH OF THE STREET WALL OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT. SUCH DORMERS NEED NOT DECREASE IN WIDTH AS THE HEIGHT ABOVE THE MAXIMUM BASE HEIGHT INCREASES.	SEE ELEVATION ON A-201 AND A-203 ON SHOWING DORMER WITHIN ALLOWABLE AREA	COMPLIES
23-432 TABLE STANDARD BUILDING	HEIGHT REGULATIONS	MIN BASE HEIGHT = 60' (ALLOWABLE) MAX BASE HEIGHT = 95' (ALLOWABLE) MAX BLDG HEIGHT = 125' (ALLOWABLE)	< 95' (PROPOSED) = 95' (PROPOSED) > 124' (PROPOSED)	COMPLIES
23-63	RECREATION AREA	3% OF FLOOR AREA 138,125.14 SF x 3% = 4,143.75 SF REQUIRED	OUTDOOR RECREATION AREA PROVIDED WITH REAR OF FIRST FLOOR SPACE - DETAILS SEE Z-101. AREA PROVIDED IS MORE THAN 225 SF AND 15' IN ANY DIMENSION. 5,525 SF PROVIDED	COMPLIES



ITEMS FILED UNDER SEPARATE APPLICATION:

SOE	TBD
FOUNDATION	TBD
STRUCTURAL	TBD
MECHANICAL	TBD
PLUMBING	TBD
SPRINKLER	TBD
FENCE	TBD
CURB CUT	TBD
FIRE ALARM	FILED WITH FDNY
BUILDERS PAVEMENT PLAN -	TBD
SITE CONNECTION -	TBD

OCCUPANCY/ CONST. COMPLIANCE:

- OCCUPANCY GROUP R-2 (MULTI-FAMILY)
- INSIDE FIRE DISTRICT
- CONSTRUCTION CLASS I-B
- MAX AREA/FLOOR = UL
- MAX HEIGHT = UL

TABLE 601-FIRE RESISTANCE RATING REQ'S FOR BLDG ELEMENTS:

STRUCTURAL FRAME	-	2 HR (N.C.)
BEARING WALL:		
EXTERIOR	-	2 HR (N.C.)
INTERIOR	-	2 HR (N.C.)
NON BEARING WALLS AND PARTITIONS:		
EXTERIOR	-	2 HR (N.C.)
INTERIOR	-	0 HR (N.C.)
FLOOR CONSTRUCTION	-	2 HR (N.C.)
ROOF CONSTRUCTION	-	1 HR (N.C.)

ALL COMPONENTS COMPLY WITH FIRE RATINGS AS REQUIRED. SEE DETAILS FOR MORE INFORMATION.

SPECIAL INSPECTIONS:

-	EXTERIOR INSULATION AND FINISH SYSTEMS(EIFS)	BC 1704.13
-	FIRE-RESISTANT PENETRATIONS AND JOINTS	BC 1704.27

PROGRESS INSPECTIONS:

-	ENERGY CODE COMPLIANCE INSPECTIONS	BC 110.3.5
-	FIRE-RESISTANCE RATED CONSTRUCTION	BC 110.3.4

ENERGY INSPECTION:

-PROTECTION OF EXPOSED FOUNDATION	(IA1)(IIA1)
-INSULATION PLACEMENT AND R-VALUES	(IA2)(IIA2)
-FENESTRATION U-FACTOR AND PRODUCT RATINGS	(IA3)(IIA3)
-FENESTRATION AIR LEAKAGE	(IA4)(IIA4)
-FENESTRATION AREAS	(IA5)(IIA5)
-AIR BARRIER-VISUAL INSPECTION	(IA6)(IIA6)
-AIR BARRIER CONTINUITY PLAN	(IIA8)
-METERING	(IC1)(IIC1)
-LIGHTING IN DWELLING UNITS	(IIC2)
-INTFRIOR LIGHTING POWER	(IC2)(IIC3)
RIOR LIGHTING POWER	(IIC4)
?ING CONTROLS	(IIC5)
?RICAL MOTORS	(IIC6)
?ENANCE INFORMATION	(ID1)(IID1)

EARTHQUAKE COMPLIANCE NOTES:

THIS STRUCTURE, AND PORTION THEREOF, IS DESIGNED AND SHALL BE CONSTRUCTED TO RESIST THE EFFECTS OF EARTHQUAKE MOTIONS AS PER 2022 BC 1613 FOR SEISMIC USE GROUP I AND SEISMIC DESIGN CATEGORY B.

4" SEISMIC SEPARATION PROVIDED ALONG ENTIRE LENGTH OF BUILDING AS INDICATED ON DRAWING AS PER 2022 NYC BUILDING CODE SECTION 1613.

RECREATION AREA IN REAR YARD AS REQUIRED BY ZR 23-63

OUTDOOR AREA
44.92'x42.67'+37'x28'+43'x59.83'= 5,525/ 200 SF PER PERSON = 27 P
135,313.57 SF x 3% = 4,059.4 SF REQUIRED < 5,525 SF PROVIDED

USE GROUP - 2B
OCCUPANCY GROUP - R-2 (2022 CODE)

AS PER SECTION BC 1014.3 COMMON PATH OF TRAVEL - EXCEPTION (4), THE MAXIMUM COMMON PATH OF TRAVEL SHALL BE 125' IF PROVIDED BY AN APPROVED AUTOMATIC SPRINKLER SYSTEM. BUILDING IS FULL SPRINKLERED AND COMMON PATH IS 120', WHICH IS MUCH LESS THAN 125'.

ROOF TO BE USED AS RECREATIONAL SPACE. SUSTAINABLE ROOFING ZONE EXEMPT AS PER LL 92-94 & BB 2015-010 (II)(C)(5)

SITE PLAN

SCALE: 1/16" = 1'-0"

PROPERTY IS NOT IN A SPECIAL FLOOD HAZARD AREA

STREET TREE PLANTING
18 TREES HAS BEEN REQUIRED BY ZR 23-03. (4) EXISTING TREES TO REMAIN, (14) TREES TO BE PAID INTO TREE FUND.

AVERAGE BASE PLANE EL. OF ENTIRE SITE:
(70.15+69.80+69.61+69.26+69.31+70.11+70.67+71.75')/8 = **70.38'**

P. GEORGOPOULOS ARCHITECT PC
33-12 FRANCIS LEWIS BLVD
FLUSHING, NEW YORK 11358
TEL (718) 359-5577 FAX (718) 359-1411
PGARCHITECT@VERIZON.NET

PROJECT:

PROPOSED NEW BUILDING
2433 ATLANTIC AVENUE
BROOKLYN,NY 11233

OWNER INFORMATION:
5308 13TH AVE #515
BROOKLYN NY 11219
BILLER46@YAHOO.COM
TEL: 845-213-8361

#	ISSUED FOR	DATE
#	REVISIONS	DATE

DRAWING TITLE:

SITE PLAN, ZONING ANALYSIS , ZONING MAP

SEAL & SIGNATURE

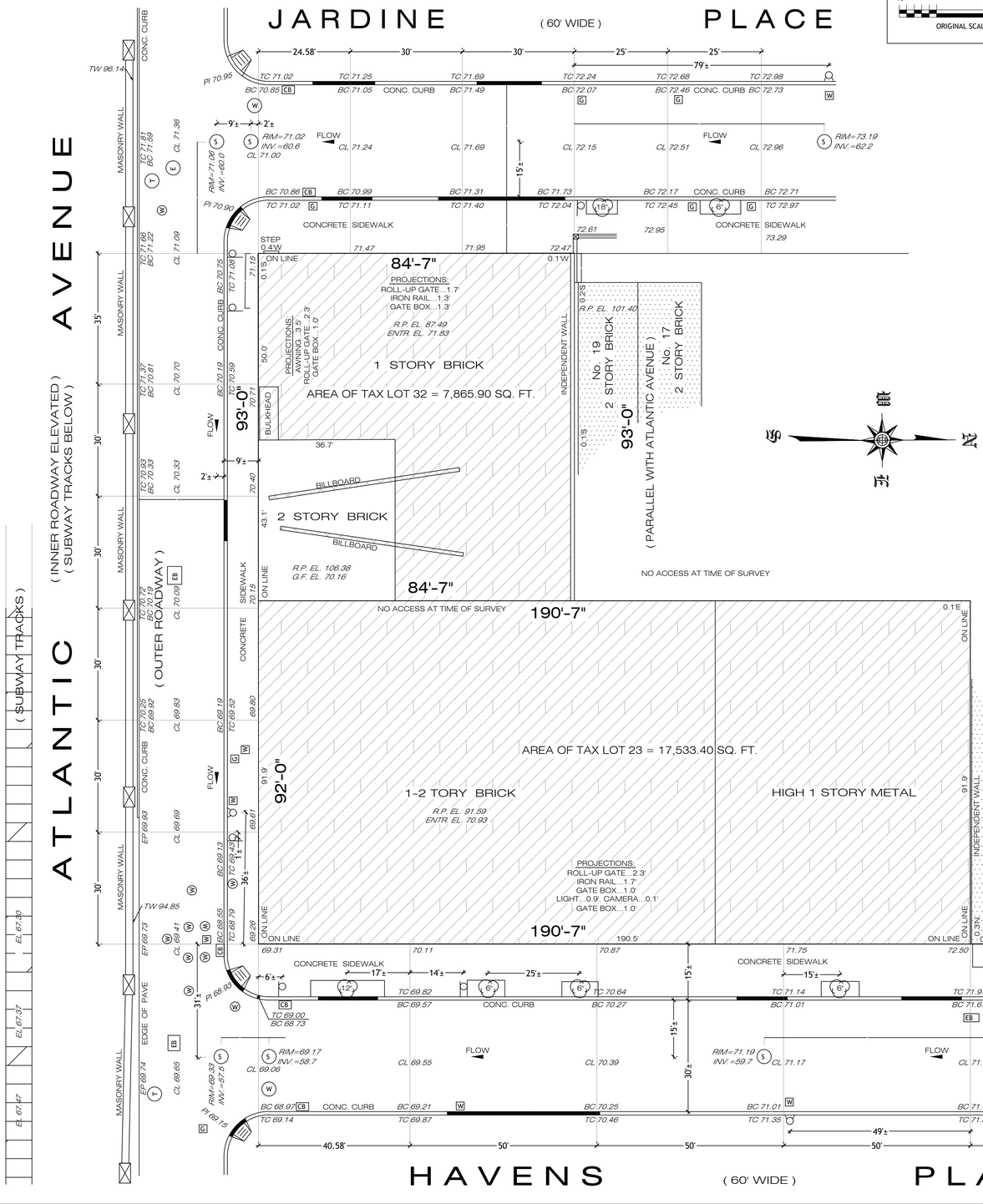
REGISTERED ARCHITECT JOANNIS GEORGOPOULOS STATE OF NEW YORK

DATE : 7/18/2025
PROJ. NO : 25-210
DWN BY : AS
CHK BY : PG
DWG NO : Z-101.00

EXAMINER'S SEAL AND SIGNATURE :

DOB STICKER :

B01256572-I1



10 0 20 40

ORIGINAL SCALE: 1" = 20'

ARCHITECTURAL SURVEY
FOR MUNICIPAL PURPOSE

SURVEY OF PROPERTY AT
KINGS COUNTY, N.Y.
TAX BLOCK: 1574 TAX LOTS: 23 & 32

NOTES:
1. THERE ARE NO VISIBLE STREAMS NOR NATURAL WATER COURSES IN THE PROPERTY EXCEPT AS SHOWN ON THIS SURVEY.
2. PROPERTY CORNER MONUMENTS WERE NOT PLACED AS PART OF THIS SURVEY.
3. IT IS A VIOLATION OF THE STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED LAND SURVEYOR TO ALTER AN ITEM IN ANY WAY.
4. ARCHITECTS MUST ORDER A TOPOGRAPHICAL MAP SPECIFYING THEIR EXACT NEEDS.
5. CONSULT WITH THE HIGHWAY DEPARTMENT BEFORE DESIGNING, INSTALLING, OR MODIFYING ANY NEW OR EXISTING CURBS, WALKS, OR ROADWAYS IN THE STREETS SHOWN HEREON.
6. SUBSURFACE INFORMATION SHOWN HEREON WAS OBTAINED FROM VARIOUS CITY DEPARTMENTS AND/OR PRIVATE UTILITY COMPANIES. THE SURVEYOR ACCEPTS NO RESPONSIBILITY FOR ANY OF THIS DATA.
7. EASEMENTS OF RECORD ARE ONLY GUARANTEED IF AN ABSTRACT OF TITLE IS FURNISHED TO THE SURVEYOR.
8. ALL ELEVATIONS SHOWN REFER TO THE 1988 NAVD.
9. FEMA FLOOD INFORMATION THIS PROPERTY IS LOCATED ON PANEL 3604970217F ZONE "X" DATED SEPTEMBER 5, 2007.
10. SEWER & WATER INFORMATION MUST BE VERIFIED WITH DEP.
11. NEW YORK STATE LAW REQUIRES BEFORE EXCAVATE CALL 811, & DIGNET AT 800-272-4480

UTILITY STATEMENT
THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

CERTIFIED TO:
NEW YORK CITY DEPARTMENT OF BUILDINGS

STOP - CALL 811 - YOU DIG!

REFERENCE DATUM
(BROOKLYN DATUM)
(SURVEY DATUM)
(NAVD 1988)
(NGVD 1929)

LEGEND
- FIRE HYDRANT
- DROP CURB
- G - GAS VALVE
- W - WATER VALVE
- SIGN
- CB - CATCH BASIN
- EB - ELECTRIC BOX
- TREE
- E - ELECTRIC MANHOLE
- M - UNKNOWN MANHOLE
- U - UTILITY POLE
- S - SEWER MANHOLE
- T - TELEPHONE MANHOLE
- W - WATER MANHOLE

TC - TOP OF CURB ELEVATION
BC - BOTTOM OF CURB ELEVATION
CL - CENTER LINE ELEVATION
72.03 - SPOT ELEVATION
G.F - GARAGE FLOOR ELEVATION
F.F - FIRST FLOOR ELEVATION
R.P - ROOF PARAPET ELEVATION

DATE:- MAY 10, 2025

SURVEY No:- COC-2025-319

COC MAPPING.COM
COORDINATES OF CONSTRUCTION
91-22 215th PLACE
QUEENS VILLAGE, N.Y. 11428
TELEPHONE (347)239-9844
EMAIL:- COCMAPPING@GMAIL.COM

COMPUTED:-MJ	DRAFTED:-CA	CHECKED:- SK

ADRIAN S. LALSA LIC.# 050936
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TEL: 845-213-8361

#	ISSUED FOR	DATE
#	REVISIONS	DATE

DRAWING TITLE:
EXISTING SURVEY

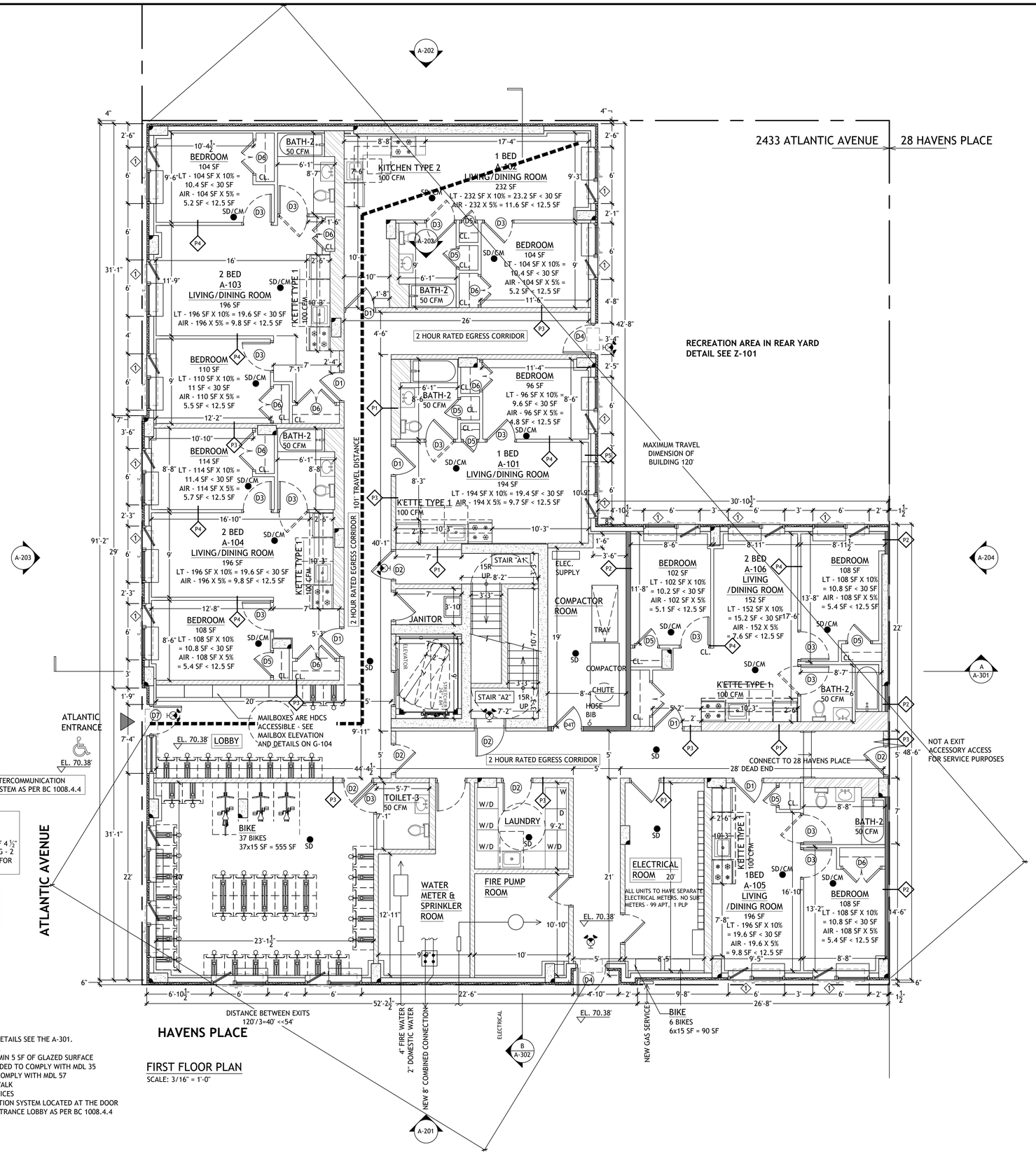
SEAL & SIGNATURE

REGISTERED ARCHITECT
PANOS GEORGOPOULOS
154574
STATE OF NEW YORK

DATE : 7/18/2025
PROJ. NO : 25-210
DWN BY : AS
CHK BY : PG
DRWG NO :
Z-106.00

EXAMINER'S NAME AND SIGNATURE :

DOB STICKER :
B01256572-I1



LOBBY IS SEPARATED FROM ALL APARTMENTS AND SPACES, BOTH VERTICALLY AND HORIZONTALLY. TYPICAL FLOOR CONSTRUCTION OF 4 ½" CONCRETE THROUGHOUT BUILDING - 2 HOUR RATED. SEE FLOOR DETAILS FOR MORE INFORMATION.

ALL COMPONENTS TO COMPLY WITH ADA REGULATIONS
1. MAILBOXES
2. INTERCOMMUNICATION SYS.
3. DOOR PUSH BUTTON CONT.

ENTRY DOORS SHALL BE EQUIPPED WITH HEAVY DUTY LOCK SETS AND WILL COMPLY WITH BC 1008.4.1

ENTRANCE NOTES:

- ENTRY DOOR DIMENSION DETAILS SEE THE A-301.
- TO BE SELECTED BY OWNER
- ENTRANCE DOOR TO HAVE MIN 5 SF OF GLAZED SURFACE
- (2) EXTERIOR LIGHTS PROVIDED TO COMPLY WITH MDL 35
- MAILBOXES AND BELLS TO COMPLY WITH MDL 57
- FIRST FL LEVEL WITH SIDEWALK
- PROVIDE SELF-CLOSING DEVICES
- PROVIDE INTERCOMMUNICATION SYSTEM LOCATED AT THE DOOR GIVING ACCESS TO MAIN ENTRANCE LOBBY AS PER BC 1008.4.4

FIRST FLOOR PLAN

SCALE: 3/16" = 1'-0"

STAIR ENCLOSURE CONSTRUCTION MASONRY EQUIVALENT:

A. WALL CONSTRUCTION IS AS PER 20014 NYC BC 1015.2.1.3.2.
B. (2) HOUR RATED WITH IMPACT RESISTANT GYPSUM BOARD LAYER AS PER ASTM C 1629-06, IMPACT CLASSIFICATION LEVEL 2.
C. INTERIOR LAYER GYPSUM BOARD OF STAIR TO BE USG MOLD TOUGH VHI FIRECODE CORE AND ONE LAYER ⅝" GYPSUM BOARD.
D. EXTERIOR LAYER GYPSUM BOARD OF STAIR TO BE 2-LAYERS ⅝" GYPSUM BOARD.
E. WALL STUDS SHALL BE 3 ½" 20 GAUGE MTL STUDS AT 16" O.C.
F. RUNNERS SHALL BE SECURELY ATTACHED TO THE FLOOR AND CEILING TO STRUCTURAL ELEMENTS.
G. WALL BOARDS SHALL BE ATTACHED WITH NO. 8 SELF-DRILLING BUGLE-HEAD SCREWS, 12 INCHES (305 MM), ON CENTER MAXIMUM, WITH A MINIMUM DEPTH OF ⅝ INCH (16 MM) PENETRATION INTO THE WALL CAVITY.
H. JOINTS BETWEEN ADJOINING SHEETS OF WALL BOARD SHALL BE STAGGERED FROM BASE LAYER WITH FACE PANEL LAYER.
I. PROVIDE 3" SPRAY FOAM INSULATION BETWEEN STUDS. MINIMUM STC RATING OF 50 FOR STAIR.

STANDBY POWER/EMERGENCY BACKUP SYSTEM FOR ELEVATOR:

3002.4.1 STANDBY POWER REQUIRED FOR ELEVATORS.
STANDBY POWER SHALL BE PROVIDED TO ELEVATORS IN THE FOLLOWING CATEGORIES:
1. ELEVATOR(S) IN HIGH-RISE BUILDINGS COVERED BY SECTION 403.1, OTHER THAN R-2 OCCUPANCIES, AS REQUIRED BY SECTION 403.4.8.1; - NOT APPLICABLE
2. ELEVATOR(S) IN HIGH-RISE BUILDINGS IN R-2 OCCUPANCIES MORE THAN 125 FEET (38 100 MM) IN HEIGHT, AS REQUIRED BY SECTION 403.4.8.2; - BUILDING LESS THAN 125'
3. ELEVATOR(S) IN UNDERGROUND BUILDINGS, AS REQUIRED BY SECTION 405.4.3; - NOT APPLICABLE - NOT APPLICABLE - NO CELLAR
4. ELEVATOR(S) IN GROUPS B, E, AND R-1 OCCUPANCIES THAT ARE SUBJECT TO SECTION 2702.2.20; AND - NOT APPLICABLE
5. ELEVATOR(S) SERVING AS ACCESSIBLE MEANS OF EGRESS PURSUANT TO SECTION 1007.4 - NOT APPLICABLE - WIDER STAIRS PROVIDED

TRASH COMPACTOR ROOM NOTES:

- TRASH COMPACTOR ROOM LOCATION, CLEARLY MARKED "TRASH COMPACTOR ROOM", AND THE ROOM'S DIMENSIONS. INDICATED IN FIRST FLOOR PLAN.
- TRASH COMPACTOR SIZE, DIMENSIONS AND LOCATION. INDICATED IN FIRST FLOOR PLAN.
- CLEARANCE SPACE SURROUNDING THE TRASH COMPACTOR. INDICATED IN FIRST FLOOR PLAN.
- SPRINKLER LOCATIONS IN THE TRASH COMPACTOR ROOM. INDICATED IN FIRST FLOOR PLAN.
- ELECTRICAL POWER ACCESS FOR TRASH COMPACTOR EQUIPMENT. POWER SUPPLY INDICATED IN FIRST FLOOR PLAN.
- VENTILATION ACCESS TO FRESH AIR (VIA POWER VENTILATION OR WINDOW DUCT). VENTILATION PROVIDED TO EXTERIOR VIA MECHANICAL VENTILATION.
- FLOOR DRAIN CONNECTED TO THE BUILDING DRAIN IN THE TRASH COMPACTOR ROOM. INDICATED IN CELLAR PLAN.
- HOSE BIB LOCATION IN THE TRASH COMPACTOR ROOM. INDICATED IN CELLAR PLAN.
- A MINIMUM FIRE RESISTIVE RATING OF THREE HOURS FOR THE COMPACTOR ROOM WALLS AND CEILING MATERIAL ASSEMBLIES. (GYPSUM MASONRY MAY NOT BE USED.) 6" CMU WITH CELLS FILLED SOLID HAS BEEN USED - 3 HR RATED.
- A FIRE-PROTECTIVE SELF-CLOSING DOOR WITH A MINIMUM FIRE RESISTIVE RATING OF 1 ½ HOURS. INDICATED IN CELLAR PLAN.
- CONSTRUCTION DETAILS FOR WALL MATERIAL ASSEMBLIES. PROVIDED ON WALL DETAILS. SHAFTS HAVE STC VALUE OF 54.
- SOUND TRANSMISSION CLASS (STC) RATINGS ARE REQUIRED FOR: ALL COMPACTOR ROOM WALLS; AND ALL TRASH-CHUTE WALLS AND TRASH DISPOSAL ROOM WALLS. SHAFTS HAVE STC VALUE OF 54.
- STC AND IMPACT INSULATING CLASS RATINGS FOR FLOOR CONSTRUCTION ABOVE THE COMPACTOR ROOM. ALL FLOORS / CEILINGS TO BE 4 ½" CONCRETE INSULATED WITH 3" SPRAY FOAM INSULATION. STC VALUE OF 50.

MECHANICAL EQUIPMENT SCHEDULE SEE MH DRAWINGS
LIGHTING AND ELECTRICAL FIXTURES, SCHEDULE SEE REFLECTED CEILING PLAN
SPRINKLER AND FIRE ALARM FILE SEPARATELY.
WINDOWS/DOOR SCHEDULE SEE G-103
WALL DETAILS SEE G-102
RECREATION AREA SEE Z-101

P. GEORGOPOULOS ARCHITECT PC
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PROJECT:

PROPOSED NEW BUILDING
2433 ATLANTIC AVENUE
BROOKLYN, NY 11233

OWNER INFORMATION:
ABE BILLER
5308 13TH AVE #515
BROOKLYN NY 11219
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TEL: 845-213-8361

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#	REVISIONS	DATE

DRAWING TITLE:

FIRST FLOOR PLAN

SEAL & SIGNATURE

REGISTERED ARCHITECT PANAGIOTIS GEORGOPOULOS STATE OF NEW YORK 15870

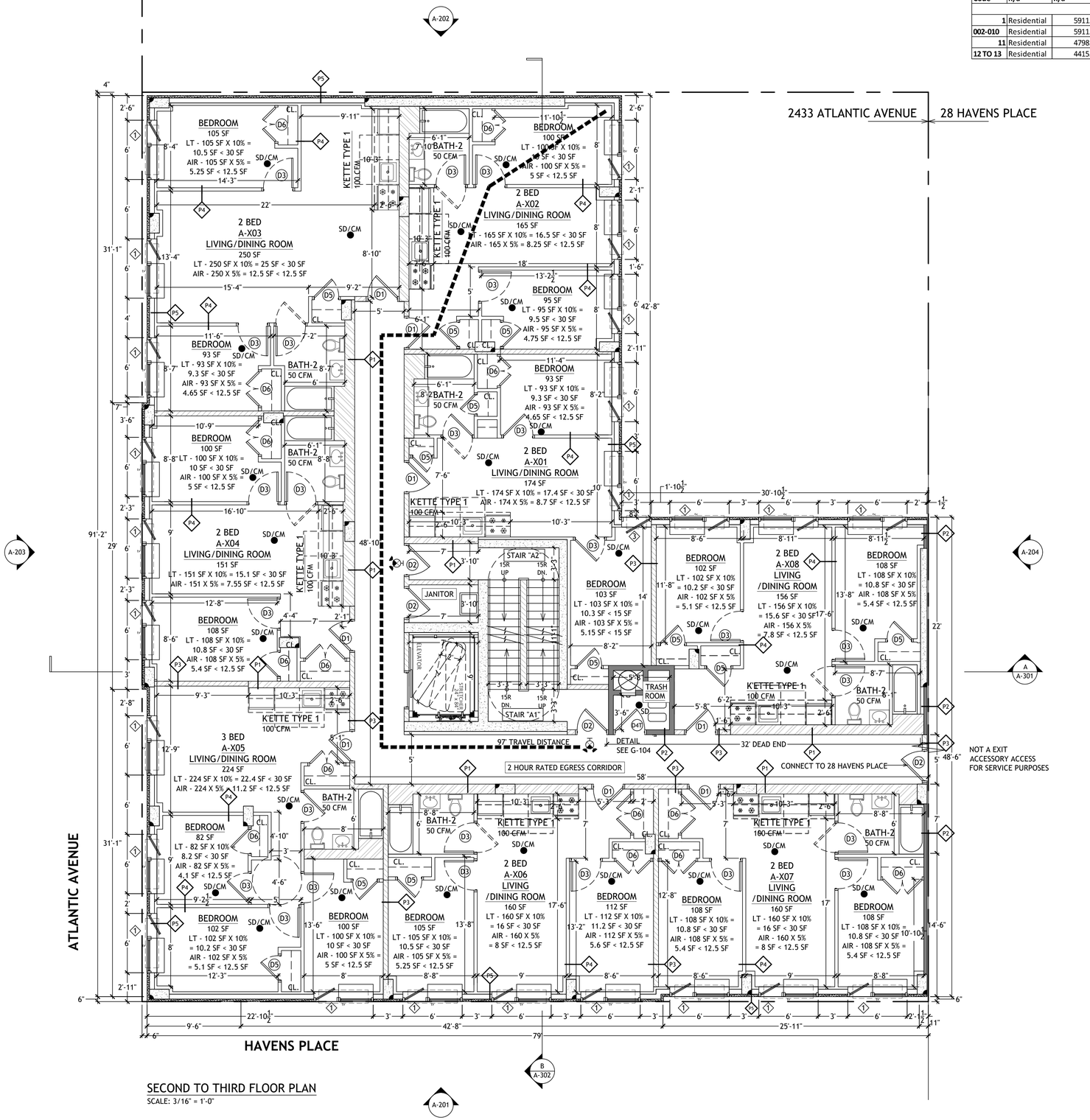
DATE : 7/18/25
PROJ. NO : 25-210-A
DWN BY : AS
CHK BY : PG
DWG NO :
A-101.00

EXAMINER STAMP AND SIGNATURE :

DOB JOB NUMBER :

B01256572-I1

Floor	Description	Area (SF)	SF/Person	# People	Stair Egress Width (in)		Door Egress Width (in)		Corridor Width (in)		Travel Dist (ft)		Common Path (ft)		Dead End (ft)	
Code	n/a	n/a	Table 1004.1.1	n/a	Section 1005.1 / 1009.1		Section 1005.1		1018.2 Ex. 4		Section 1016.1		1014.3 Ex. 4		1018.4 Ex. 4	
					Req @ .3"/P	Proposed	Req @ .2"/P	Proposed	Allowable	Proposed	Allowable	Proposed	Allowable	Proposed	Allowable	Proposed
1	Residential	5911.18	200	30	8.9	(2) @ 36" = 72	5.9	(2) @ 36" = 72	36	60	200	101	125	58	80	40
002-010	Residential	5911.18	200	30	8.9	(2) @ 36" = 72	5.9	(2) @ 36" = 72	36	60	200	97	125	58	80	40
11	Residential	4798.88	200	24	7.2	(2) @ 36" = 72	4.8	(2) @ 36" = 72	36	60	200	97	125	58	80	40
12 TO 13	Residential	4415.22	200	22	6.6	(2) @ 36" = 72	4.4	(2) @ 36" = 72	36	60	200	97	125	58	80	40



SECOND TO THIRD FLOOR PLAN

SCALE: 3/16" = 1'-0"

SMOKE AND CARBON MONOXIDE DETECTORS NOTES:

1. SMOKE AND CARBON DETECTORS IN DWELLING UNITS SHALL BE INSTALLED AS PER 2014 NYC BC 908.7.1.1.
2. MINIMUM 15' AWAY FROM THE ENTRANCE OF ANY ROOM USED AS SLEEPING PURPOSES.
3. IN ANY ROOMS USED FOR SLEEPING PURPOSES.
4. ON ANY STORY WITHIN A DWELLING UNIT, INCLUDING BELOW-GRADE STORIES AND PENTHOUSES OF ANY AREA, BUT NOT INCLUDING CRAWL SPACES.

FIRE PROTECTION:

CORRIDOR COMPLIANCE AS PER 2014 NYC BC 1018

1. BOTH INTERIOR AND PUBLIC CORRIDOR COMPLY WITH TABLE 1018.1.1 AND 1018.1.2. TWO HOUR RATED PARTITION OF MASONRY EQUIVALENT AS INDICATED ON PARTITION DETAIL P3 THROUGHOUT.
2. MINIMUM CORRIDOR WIDTH AS PER 1018.2 EXEMPTION 2 FOR SPACES WITH OCCUPANT CAPACITY OF 50 OR LESS IS 36". WIDTHS OF GREATER THAN 36" HAVE BEEN PROVIDED AT ALL STAIRS AND CORRIDORS. AS PER BC 1004.1.1 ENTIRE BUILDING OCCUPANT CAPACITY IS 6,287/200 = 32 P.
3. SECTION 1018.4, DEAD ENDS, EXCEPTION #4, FOR CORRIDORS ENCLOSED IN 2 HOUR CONSTRUCTION, THE DEAD END LENGTH SHALL NOT EXCEED 80'.

INTERIOR STAIR ENCLOSURE COMPLIANCE 2014 NYC BC 1022.1

1. FIRE RATING OF INTERIOR STAIR TO BE 2 HOUR RATED.
2. SEE NOTES FOR MASONRY EQUIVALENT WALL.

FIRE / PARTY WALL - TABLE 706.4

1. 3 HOUR RATED PARTITION IS PROVIDED AT THE PROPERTY LINE FOR I-B CONSTRUCTION.
2. ALL BUILDING COMPLY WITH 601 AND 602, FIRE RATING OF COMPONENTS THROUGHOUT BUILDING.

ALL APARTMENT DOORS TO COMPLY WITH BC 1008.4.2 - DOORS TO DWELLING UNITS SHALL BE EQUIPPED WITH A HEAVY DUTY LATCH SET AND A HEAVY DUTY DEAD BOLT OPERABLE BY A KEY FROM THE OUTSIDE AND A THUMB-TURN FROM THE INSIDE. THOSE DOORS SHALL ALSO BE EQUIPPED WITH A CHAIN GUARD SO AS TO PERMIT PARTIAL OPENING OF THE DOOR. DWELLING UNIT ENTRANCE DOORS SHALL ALSO BE EQUIPPED WITH A VIEWING DEVICE LOCATED SO AS TO ENABLE A PERSON ON THE INSIDE OF THE ENTRANCE DOOR TO VIEW A PERSON IMMEDIATELY OUTSIDE.

NOTE:
TWO HOUR FIRE SEPARATION HAS BEEN PROVIDED BETWEEN ALL TENANTS THROUGHOUT BUILDING.

HANDICAPPED NOTE:
ALL UNITS IN BUILDING ARE TYPE B DWELLING UNITS WITH APPENDIX P BATHROOMS. SEE HANDICAPPED DETAIL SHEET FOR MORE INFORMATION.

PUBLIC CORRIDOR NOTE:
COMPLIES WITH WITH TABLE 1018.1.2 - 2 HR RATED
WITH MC TABLE 403.3 - 506 SF
0.06CFM/SF X 506 SF= 30.36 CFM

EGRESS CAPACITY SUMMARY:
LARGEST FLOOR
5,911 SF
OCCUPANCY CAPACITY AS PER 2022 NYC BC TABLE 1004.1.1 -
5,911 SF/200 SF = 30 PEOPLE

AS PER 2022 NYCBC 1021.1, MINIMUM EXIT FROM FLOORS -
FOR OCCUPANTS 0-500, 2 EXITS REQUIRED.

AS PER 2022 NYCBC 1009.1, STAIRWAY -
36" STAIRWAY PERMITTED THAT PROVIDES EGRESS TO THE EXIT DISCHARGE SOLELY FOR THE USE OF GROUP R-2 OCCUPANCIES, PROVIDED THE BUILDING IT SERVES IS 125 FEET OR LESS IN HEIGHT, AND PROVIDED SUCH A STAIRWAY SERVES NOT MORE THAN 30 OCCUPANTS PER FLOOR.

(2) 36" STAIRWAYS HAVE BEEN PROVIDED ON EACH FLOOR - 240 P MAX
(2) 36" DOORSWAYS HAVE BEEN PROVIDED ON EACH FLOOR - 360 P MAX
(2) 36" DOORSWAYS HAVE BEEN PROVIDED ON THE FIRST FLOOR - 360 P MAX

COMMON PATH OF TRAVEL AND TRAVEL DISTANCE:
AS PER 2022 NYCBC 1014.3 EXCEPTION 4
THE MAXIMUM COMMON PATH OF TRAVEL IS 125' FOR A SPRINKLERED R-2 BUILDING
THE MAXIMUM TRAVEL DISTANCE IN THE BUILDING IS 91'. SEE FLOOR PLANS FOR MORE INFORMATION. COMMON PATH IS 58' MAXIMUM.

AS PER 2022 NYCBC TABLE 1016.1, FOR SPRINKLERED R OCCUPANCIES, THE MAXIMUM TRAVEL DISTANCE IS 200'. PROVIDED TRAVEL DISTANCE IS 91'.

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DRAWING TITLE:

2ND AND 3RD FLOOR PLAN

SEAL & SIGNATURE

REGISTERED ARCHITECT PANAGIS GEORGOPOULOS 015870 STATE OF NEW YORK

DATE : 7/18/25
PROJ. NO : 25-210-A
DWN BY : AS
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DWG NO :
A-102.00

EXAMINER STAMP AND SIGNATURE :

DOB JOB NUMBER :

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WINDOWS NOT REQUIRED TO COMPLY WITH LEGAL LIGHT & AIR(TYP.)
AREA OF FLOOR: 9.5' x 48' = 456 SF
456 SF x 10% = 45.6 SF MAX AREA OF WINDOWS AREA PROVIDED = 6'x5' = 30 SF OK

PROVIDE RELIABLE WP SERIES WINDOW SPRINKLER HEAD - CURTAIN TYPE AT PROTECTED OPENING WITHIN 6" OF WINDOW - TYPICAL

2433 ATLANTIC AVENUE

28 HAVENS PLACE

ATLANTIC AVENUE

HAVENS PLACE

3 BED A-X03 LIVING/DINING ROOM 204 SF
LT - 204 SF X 10% = 20.4 SF < 30 SF
AIR - 204 X 5% = 10.2 SF < 12.5 SF

BEDROOM 105 SF
LT - 105 SF X 10% = 10.5 SF < 30 SF
AIR - 105 SF X 5% = 5.25 SF < 12.5 SF

BEDROOM 122 SF
LT - 122 SF X 10% = 12.2 SF < 30 SF
AIR - 122 SF X 5% = 6.1 SF < 12.5 SF

BATH-2 50 CFM

K'ETTE TYPE 1 100 CFM

BEDROOM 93 SF
LT - 93 SF X 10% = 9.3 SF < 30 SF
AIR - 93 SF X 5% = 4.65 SF < 12.5 SF

BEDROOM 100 SF
LT - 100 SF X 10% = 10 SF < 30 SF
AIR - 100 SF X 5% = 5 SF < 12.5 SF

2 BED A-X04 LIVING/DINING ROOM 151 SF
LT - 151 SF X 10% = 15.1 SF < 30 SF
AIR - 151 X 5% = 7.55 SF < 12.5 SF

BEDROOM 108 SF
LT - 108 SF X 10% = 10.8 SF < 30 SF
AIR - 108 SF X 5% = 5.4 SF < 12.5 SF

3 BED A-X05 LIVING/DINING ROOM 224 SF
LT - 224 SF X 10% = 2.24 SF < 30 SF
AIR - 224 X 5% = 11.2 SF < 12.5 SF

BEDROOM 82 SF
LT - 82 SF X 10% = 8.2 SF < 30 SF
AIR - 82 SF X 5% = 4.1 SF < 12.5 SF

BEDROOM 102 SF
LT - 102 SF X 10% = 10.2 SF < 30 SF
AIR - 102 SF X 5% = 5.1 SF < 12.5 SF

BEDROOM 100 SF
LT - 100 SF X 10% = 10 SF < 30 SF
AIR - 100 SF X 5% = 5 SF < 12.5 SF

BEDROOM 105 SF
LT - 105 SF X 10% = 10.5 SF < 30 SF
AIR - 105 SF X 5% = 5.25 SF < 12.5 SF

2 BED A-X06 LIVING /DINING ROOM 160 SF
LT - 160 SF X 10% = 16 SF < 30 SF
AIR - 160 X 5% = 8 SF < 12.5 SF

BEDROOM 112 SF
LT - 112 SF X 10% = 11.2 SF < 30 SF
AIR - 112 SF X 5% = 5.6 SF < 12.5 SF

2 BED A-X07 LIVING /DINING ROOM 160 SF
LT - 160 SF X 10% = 16 SF < 30 SF
AIR - 160 X 5% = 8 SF < 12.5 SF

BEDROOM 108 SF
LT - 108 SF X 10% = 10.8 SF < 30 SF
AIR - 108 SF X 5% = 5.4 SF < 12.5 SF

2 BED A-X08 LIVING /DINING ROOM 156 SF
LT - 156 SF X 10% = 15.6 SF < 30 SF
AIR - 156 X 5% = 7.8 SF < 12.5 SF

BEDROOM 103 SF
LT - 103 SF X 10% = 10.3 SF < 15 SF
AIR - 103 SF X 5% = 5.15 SF < 15 SF

2 BED A-X01 LIVING/DINING ROOM 174 SF
LT - 174 SF X 10% = 17.4 SF < 30 SF
AIR - 174 X 5% = 8.7 SF < 12.5 SF

2 BED A-X02 LIVING/DINING ROOM 165 SF
LT - 165 SF X 10% = 16.5 SF < 30 SF
AIR - 165 X 5% = 8.25 SF < 12.5 SF

BEDROOM 95 SF
LT - 95 SF X 10% = 9.5 SF < 30 SF
AIR - 95 SF X 5% = 4.75 SF < 12.5 SF

BEDROOM 93 SF
LT - 93 SF X 10% = 9.3 SF < 30 SF
AIR - 93 SF X 5% = 4.65 SF < 12.5 SF

BEDROOM 100 SF
LT - 100 SF X 10% = 10 SF < 30 SF
AIR - 100 SF X 5% = 5 SF < 12.5 SF

BATH-2 50 CFM

K'ETTE TYPE 1 100 CFM

STAIR "A2"

STAIR "A1"

ELEVATOR

JANITOR

TRASH ROOM

97' TRAVEL DISTANCE

DETAIL SEE G-104

32' DEAD END

2 HOUR RATED EGRESS CORRIDOR

CONNECT TO 28 HAVENS PLACE

NOT A EXIT ACCESSORY ACCESS FOR SERVICE PURPOSES

FORTH TO TENTH FLOOR PLAN
SCALE: 3/16" = 1'-0"

MECHANICAL EQUIPMENT SCHEDULE SEE MH DRAWINGS
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BROOKLYN, NY 11233

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TEL: 845-213-8361

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DRAWING TITLE:

4TH TO 10TH FLOOR PLAN

SEAL & SIGNATURE

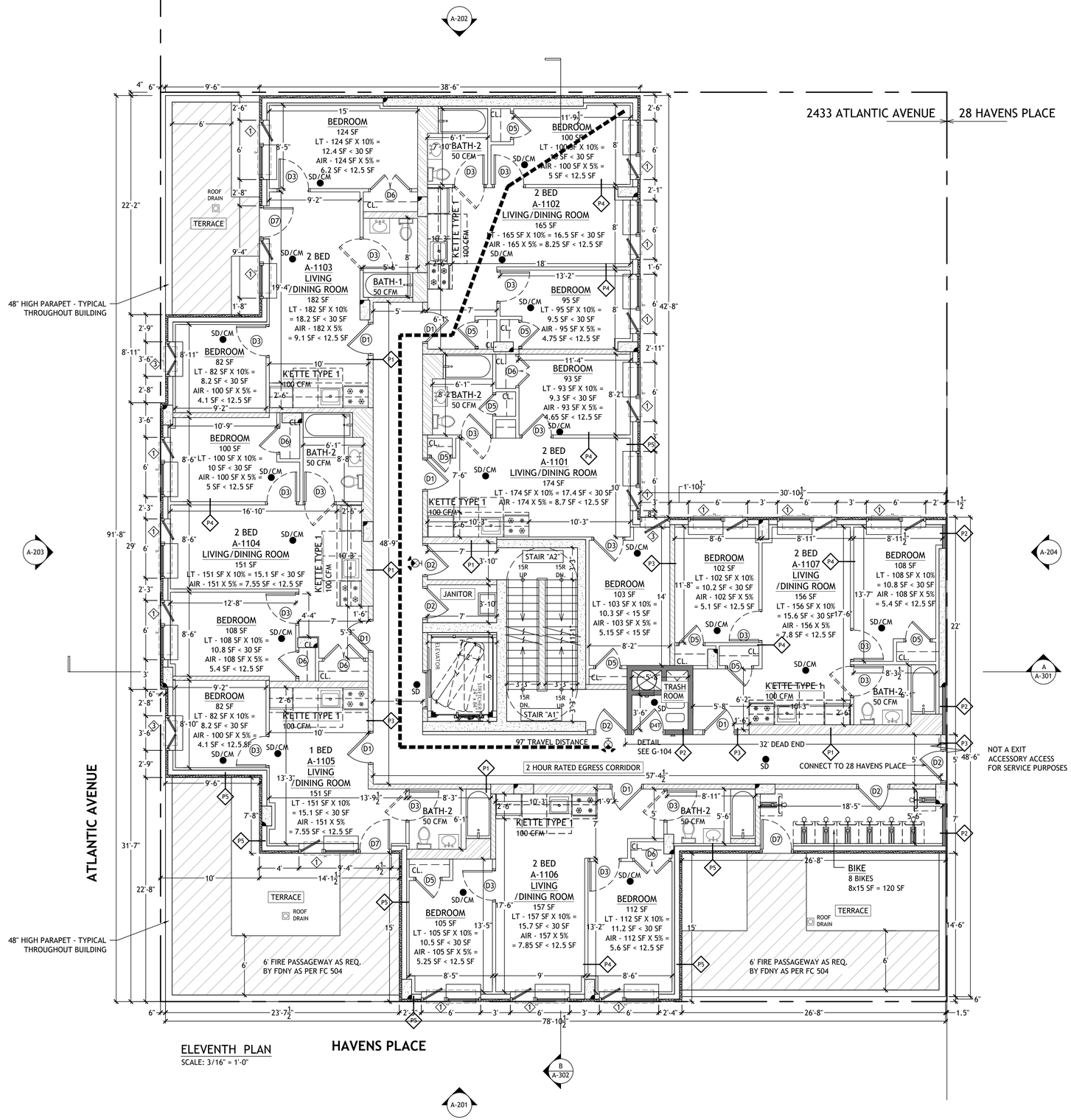
REGISTERED ARCHITECT PANAGIS GEORGOPOULOS 015870 STATE OF NEW YORK

DATE : 7/18/25
PROJ. NO : 25-210-A
DWN BY : AS
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DWG NO :
A-103.00

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DOB JOB NUMBER :

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ELEVENTH PLAN
SCALE: 3/16" = 1'-0"

MECHANICAL EQUIPMENT SCHEDULE SEE MH DRAWINGS
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11TH FLOOR PLAN

SEAL & SIGNATURE

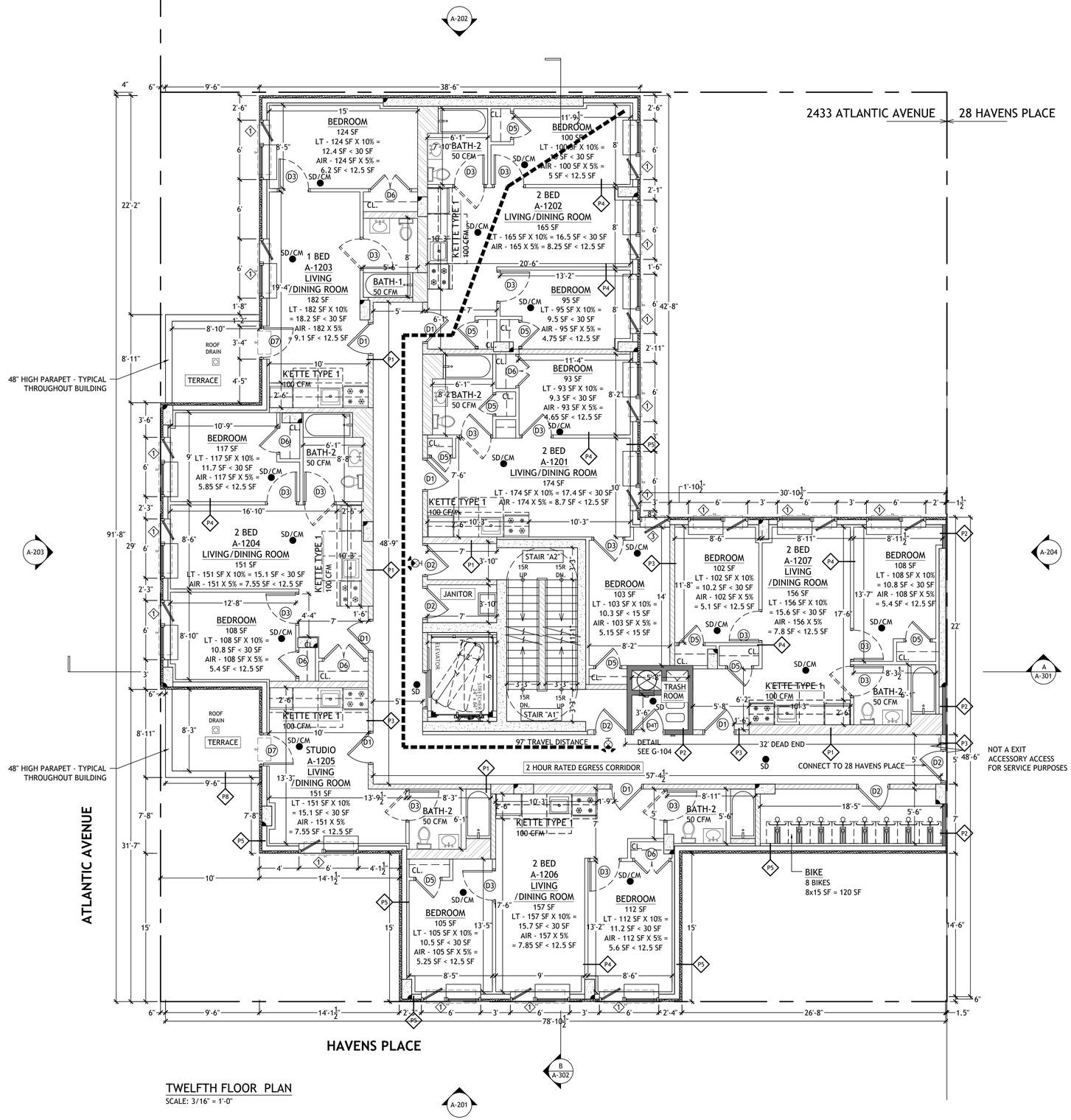
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DOB JOB NUMBER :

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TWELFTH FLOOR PLAN

SCALE: 3/16" = 1'-0"

MECHANICAL EQUIPMENT SCHEDULE SEE MH DRAWINGS
LIGHTING AND ELECTRICAL FIXTURES, SCHEDULE SEE REFLECTED CEILING PLAN
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WINDOWS/DOOR SCHEDULE SEE G-103
WALL DETAILS SEE G-102
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2433 ATLANTIC AVENUE
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TEL: 845-213-8361

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12TH FLOOR PLAN

SEAL & SIGNATURE

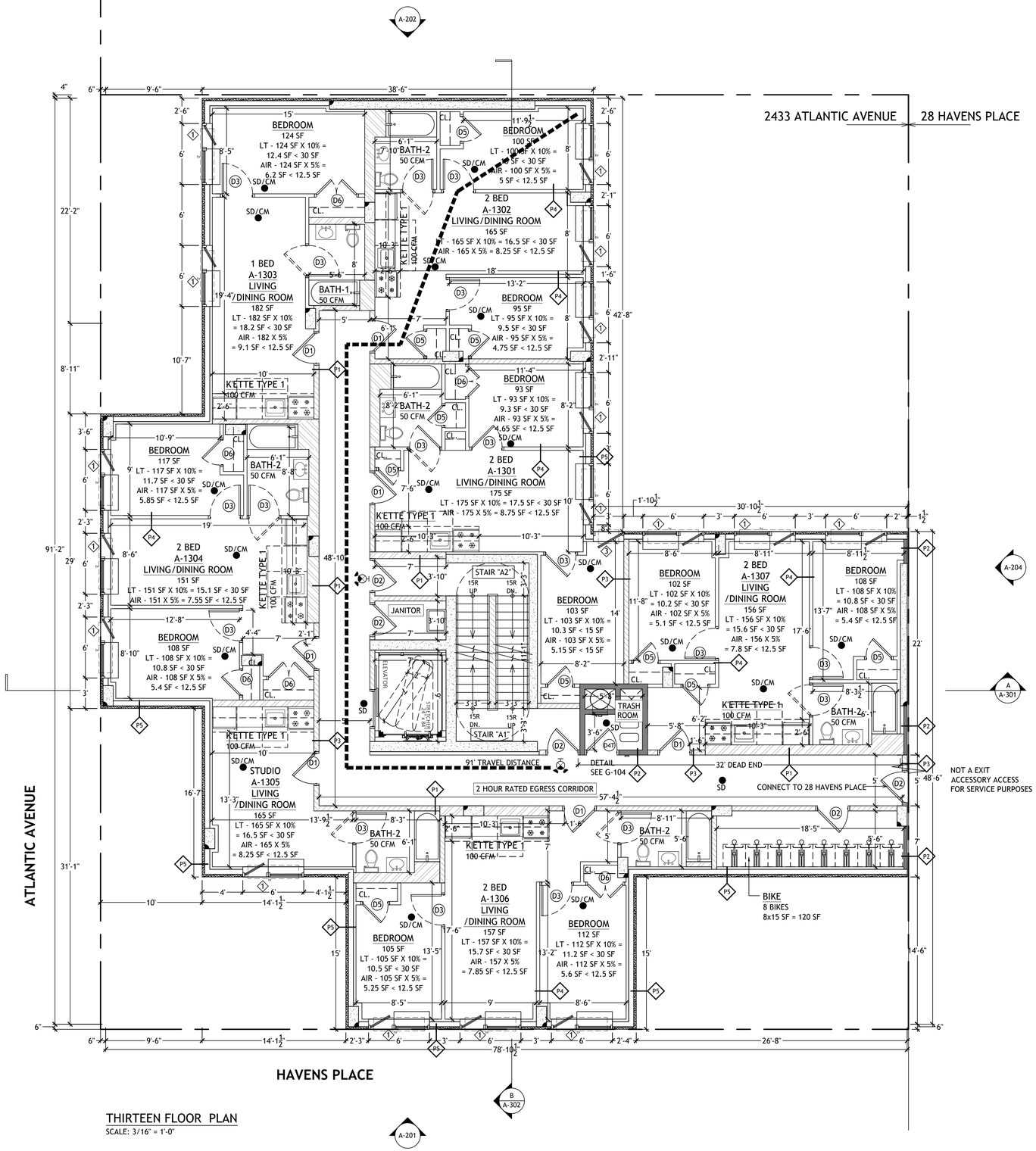
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THIRTEEN FLOOR PLAN

SCALE: 3/16" = 1'-0"

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LIGHTING AND ELECTRICAL FIXTURES, SCHEDULE SEE REFLECTED CEILING PLAN
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13TH FLOOR PLAN

SEAL & SIGNATURE

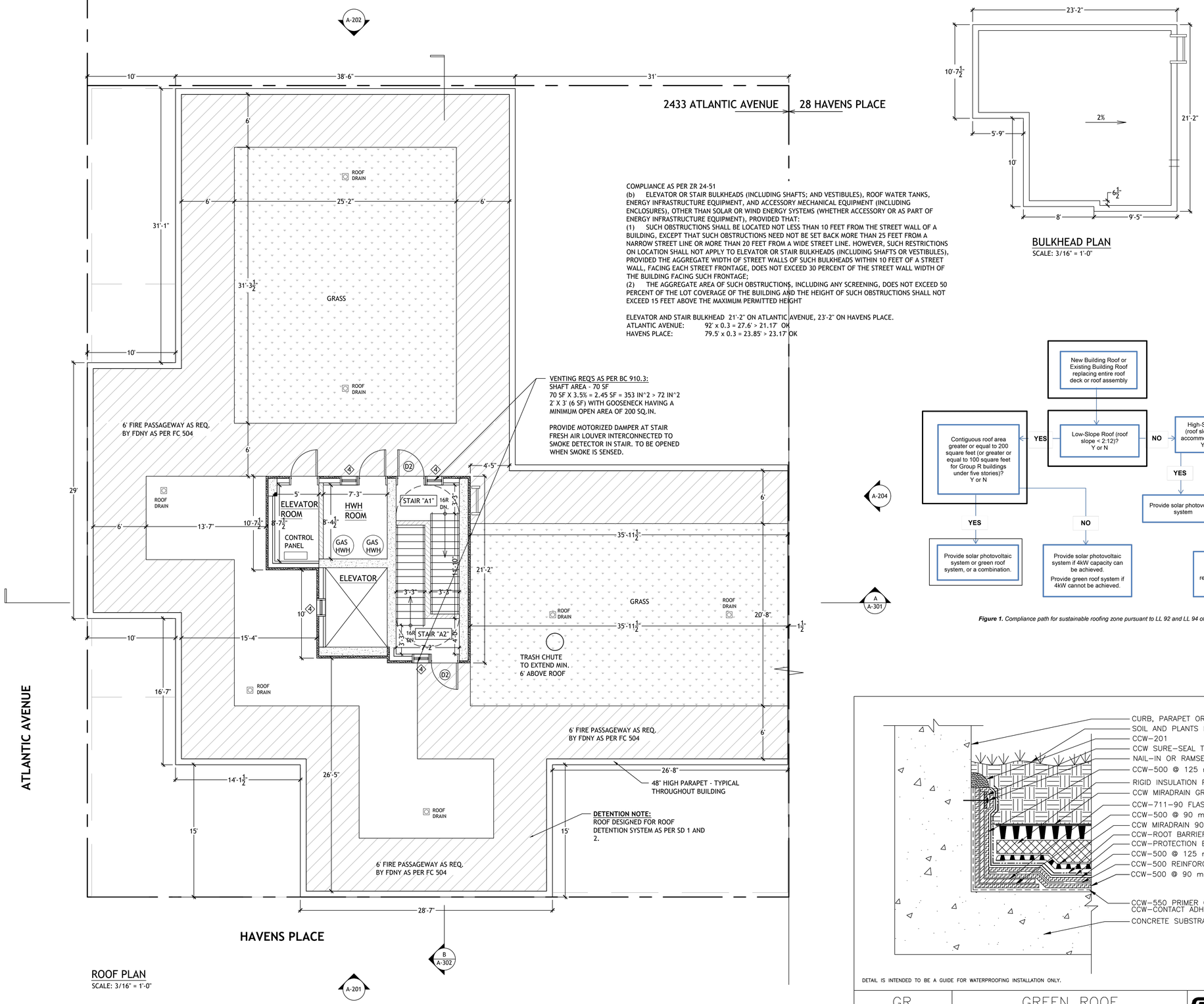
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ROOF PLAN
SCALE: 3/16" = 1'-0"

COMPLIANCE AS PER ZR 24-51
(b) ELEVATOR OR STAIR BULKHEADS (INCLUDING SHAFTS; AND VESTIBULES), ROOF WATER TANKS, ENERGY INFRASTRUCTURE EQUIPMENT, AND ACCESSORY MECHANICAL EQUIPMENT (INCLUDING ENCLOSURES), OTHER THAN SOLAR OR WIND ENERGY SYSTEMS (WHETHER ACCESSORY OR AS PART OF ENERGY INFRASTRUCTURE EQUIPMENT), PROVIDED THAT:
(1) SUCH OBSTRUCTIONS SHALL BE LOCATED NOT LESS THAN 10 FEET FROM THE STREET WALL OF A BUILDING, EXCEPT THAT SUCH OBSTRUCTIONS NEED NOT BE SET BACK MORE THAN 25 FEET FROM A NARROW STREET LINE OR MORE THAN 20 FEET FROM A WIDE STREET LINE. HOWEVER, SUCH RESTRICTIONS ON LOCATION SHALL NOT APPLY TO ELEVATOR OR STAIR BULKHEADS (INCLUDING SHAFTS OR VESTIBULES), PROVIDED THE AGGREGATE WIDTH OF STREET WALLS OF SUCH BULKHEADS WITHIN 10 FEET OF A STREET WALL, FACING EACH STREET FRONTAGE, DOES NOT EXCEED 30 PERCENT OF THE STREET WALL WIDTH OF THE BUILDING FACING SUCH FRONTAGE;
(2) THE AGGREGATE AREA OF SUCH OBSTRUCTIONS, INCLUDING ANY SCREENING, DOES NOT EXCEED 50 PERCENT OF THE LOT COVERAGE OF THE BUILDING AND THE HEIGHT OF SUCH OBSTRUCTIONS SHALL NOT EXCEED 15 FEET ABOVE THE MAXIMUM PERMITTED HEIGHT

ELEVATOR AND STAIR BULKHEAD 21'-2" ON ATLANTIC AVENUE, 23'-2" ON HAVENS PLACE.
ATLANTIC AVENUE: 92' x 0.3 = 27.6' > 21.17' OK
HAVENS PLACE: 79.5' x 0.3 = 23.85' > 23.17' OK

VENTING REQ'S AS PER BC 910.3:
SHAFT AREA - 70 SF
70 SF X 3.5% = 2.45 SF = 353 IN^2 > 72 IN^2
2' X 3' (6 SF) WITH GOOSENECK HAVING A MINIMUM OPEN AREA OF 200 SQ.IN.

PROVIDE MOTORIZED DAMPER AT STAIR FRESH AIR LOUVER INTERCONNECTED TO SMOKE DETECTOR IN STAIR. TO BE OPENED WHEN SMOKE IS SENSED.

BULKHEAD PLAN
SCALE: 3/16" = 1'-0"

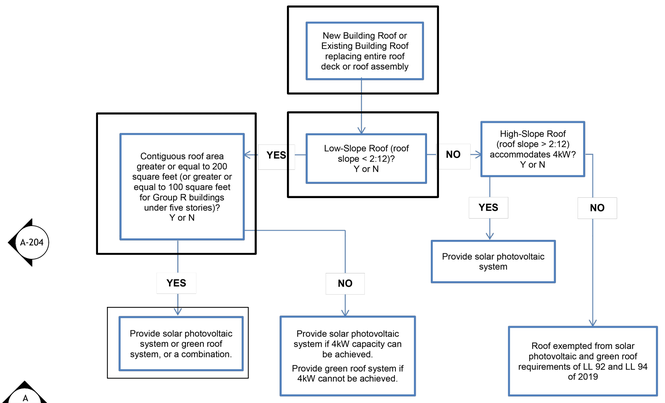
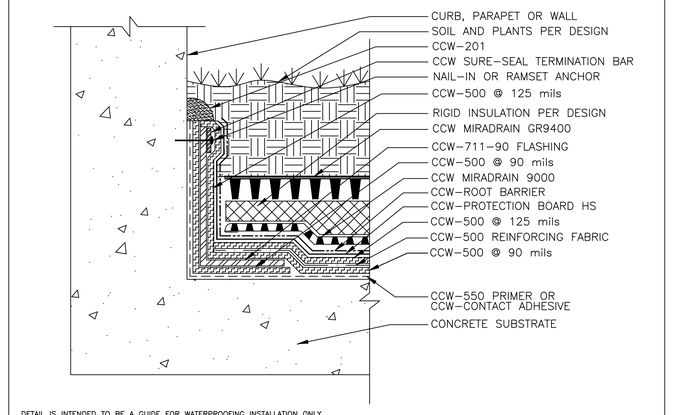


Figure 1. *Compliance path for sustainable roofing zone pursuant to LL 92 and LL 94 of 2019.*



DETAIL IS INTENDED TO BE A GUIDE FOR WATERPROOFING INSTALLATION ONLY.

GR 500–4B	GREEN ROOF PERIMETER FLASHING	CARLI-L COATINGS & WATERPROOFING ©2013 CARLISLE CORPORATION

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DRAWING TITLE:
ROOF PLAN

SEAL & SIGNATURE

REGISTERED ARCHITECT PANAGIS GEORGOPOULOS 015870 STATE OF NEW YORK

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ELEVATION ALONG HAVENS PLACE
SCALE: 1/8" = 1'-0"

DORMER CALCULATIONS AS PER ZR 23-413 (b)(1)
DORMERS SHALL BE ALLOWED AS A PERMITTED OBSTRUCTION,

(i)THE AGGREGATE WIDTH OF ALL DORMERS AT THE MAXIMUM BASE HEIGHT DOES NOT EXCEED 60 PERCENT OF THE WIDTH OF THE STREET WALL OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT. FOR EACH FOOT ABOVE THE MAXIMUM BASE HEIGHT, THE AGGREGATE WIDTH OF ALL DORMERS SHALL BE DECREASED BY ONE PERCENT OF THE STREET WALL WIDTH OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT; OR

(ii)THE AGGREGATE WIDTH OF ALL DORMERS AT THE MAXIMUM BASE HEIGHT DOES NOT EXCEED 40 PERCENT OF THE WIDTH OF THE STREET WALL OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT. SUCH DORMERS NEED NOT DECREASE IN WIDTH AS THE HEIGHT ABOVE THE MAXIMUM BASE HEIGHT INCREASES.

MAXIMUM DORMER WIDTH:
190.58' X 40% = 76.232' (ALLOWABLE) > (28.58'+47')=75.58' (PROVIDED) OK

SEE DIMENSIONS ON FRONT ELEVATION AS PER ABOVE SECTION.

PERMITTED OBSTRUCTIONS AS PER ZR 23-412 (c)(1)
ELEVATORS SHALL ARE PERMITTED OBSTRUCTIONS AS INDICATED IN THIS SECTION.
(1) THE ELEVATOR IS LOCATED FURTHER THAN 10' FROM THE STREET WALL.
(3)(ii) IN R7D WHERE THE MAXIMUM PERMITTED HEIGHT OF A BUILDING IS GREATER THAN 120 FEET, A HEIGHT OF 55 FEET ABOVE THE MAXIMUM PERMITTED HEIGHT.

LEGEND:

FIXED GLAZING OPERABLE GLAZING

Glazing Specification	
Series/Model	Class B UPVC
Type	Fixed Window
Glazing (Nominal Dimensions)	1-7/8" IG(5/8" laminated exterior, 3/4" argon, 1/2" laminated interior Glass temperature 75F
DATA file No.	P6860.01C
STC	45
OITC	38
Series/Model	Upvc Super 82
Type	Tilt-Turn Window
Glazing (Nominal Dimensions)	49.6 mm IG(16 mm laminated exterior, 20mm argon, 12.8 mm laminated interior Glass temperature 75F
DATA file No.	L1561.01D
STC	46
OITC	41

P. GEORGOPOULOS ARCHITECT PC
33-12 FRANCIS LEWIS BLVD
FLUSHING, NEW YORK 11358
TEL (718) 359-5577 FAX (718) 359-1411
PGARCHITECT@VERIZON.NET

PROJECT:
PROPOSED NEW BUILDING
2433 ATLANTIC AVE
BROOKLYN, NY 11233

OWNER INFORMATION:
ABE BILLER
5308 13TH AVE #515
BROOKLYN NY 11219
BILLER46@YAHOO.COM
TEL: 845-213-8361

#	ISSUED FOR	DATE
#	REVISIONS	DATE

DRAWING TITLE:
ELEVATION ALONG HAVENS PLACE

SEAL & SIGNATURE



DATE : 5/22/25
PROJ. NO : 25-210
DWN BY : AS
CHK BY : PG
DWG NO :
A-201.00

EXAMINER STAMP AND SIGNATURE :

DOB STICKER :
B01256572-I1

28 HAVENS PLACE/ 2433 ATLANTIC AVENUE

UNDER SEPARATE APPLICATION



REAR ELEVATION ALONG HAVENS PLACE
SCALE: 1/8" = 1'-0"

NOTE:
LOT LINE WINDOW
CALCULATIONS SEE A-103

LEGEND:

FIXED GLAZING OPERABLE GLAZING

Glazing Specification	
Series/Model	Class B UPVC
Type	Fixed Window
Glazing (Nominal Dimensions)	1-7/8" IG(5/8" laminated exterior, 3/4" argon, 1/2" laminated interior Glass temperature 75F
DATA file No.	P6860.01C
STC	45
OITC	38
Series/Model	Upvc Super 82
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TEL: 845-213-8361

#	ISSUED FOR	DATE

#	REVISIONS	DATE

DRAWING TITLE:

REAR HAVENS PLACE ELEVATION

SEAL & SIGNATURE

REGISTERED ARCHITECT PANOS GEORGOPOULOS 015870 STATE OF NEW YORK

DATE : 5/22/25	
PROJ. NO : 25-210	
DWN BY : AS	
CHK BY : PG	
DWG NO :	A-202.00

EXAMINER STAMP AND SIGNATURE :

DOB STICKER :

B01256572-I1

28 HAVENS PLACE APARTMENTS

28 HAVENS PLACE BROOKLYN,NY11233

13 STORY MASONRY BUILDING

99 FAMILY MULTIPLE DWELLING

BLOCK # 1574 LOT # 24



ITEMS FILED UNDER SEPARATE APPLICATION:

SOE	TBD
FOUNDATION	TBD
STRUCTURAL	TBD
MECHANICAL	TBD
PLUMBING	TBD
SPRINKLER	TBD
FENCE	TBD
CURB CUT	TBD
FIRE ALARM	FILED WITH FDNY
BUILDERS PAVEMENT PLAN -	TBD
SITE CONNECTION -	TBD

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PROJECT:

PROPOSED NEW BUILDING
28 HAVENS PLACE
BROOKLYN, NY 11233

OWNER INFORMATION:
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BROOKLYN NY 11219
BILLER46@YAHOO.COM
TEL: 845-213-8361

#	ISSUED FOR	DATE

#	REVISIONS	DATE

DRAWING TITLE:

TITLE SHEET

SEAL & SIGNATURE

REGISTERED ARCHITECT PANAGIS GEORGOPOULOS 025870 STATE OF NEW YORK

DATE : 7/21/25
PROJ. NO : 25-2108
DWN BY : AS
CHK BY : PG
DWG NO :
T-001.00

EXAMINER STAMP AND SIGNATURE :

DOB STICKER :

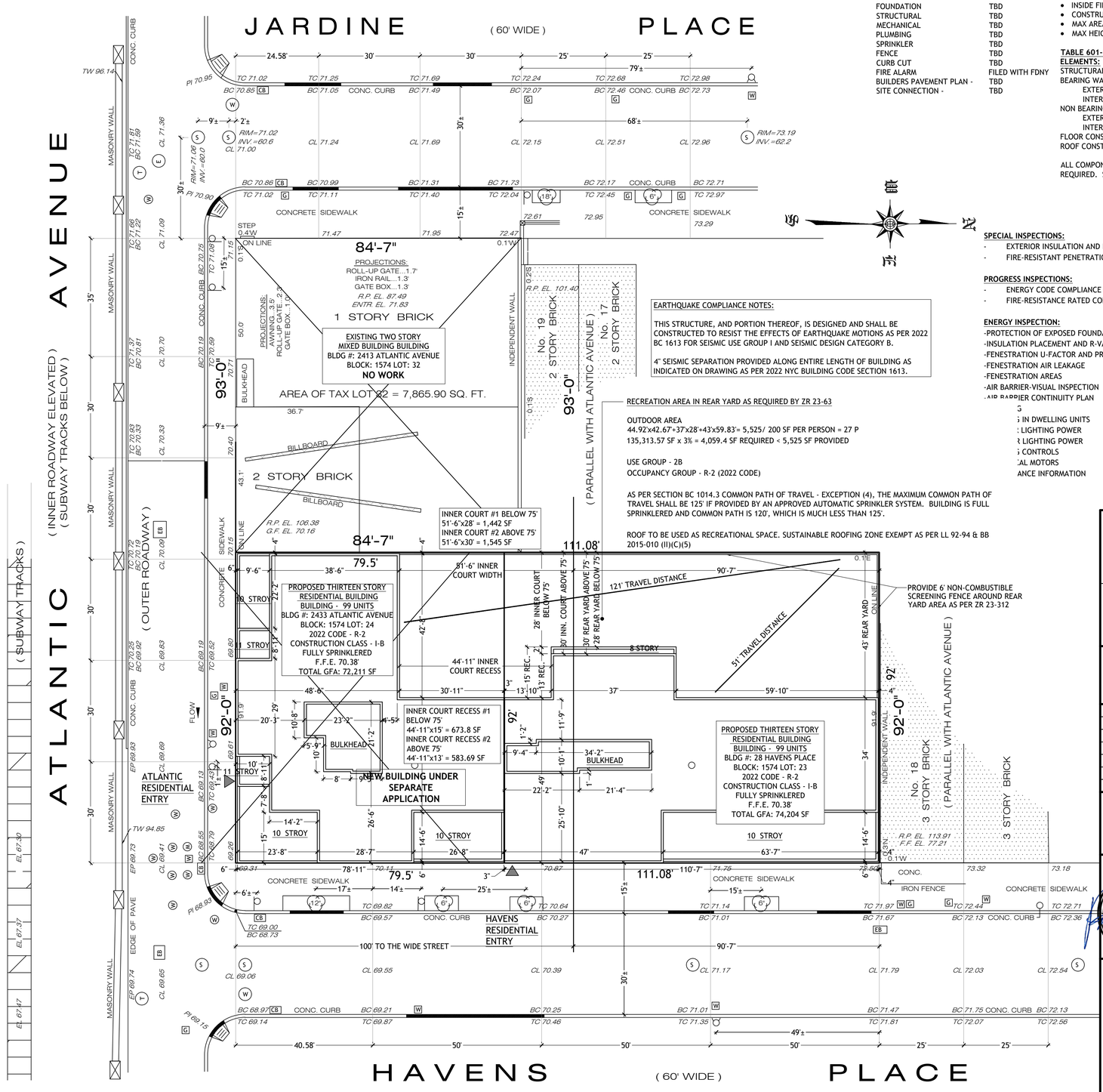
B01261070-I1

Zoning Analysis

2433 Atlantic Avenue & 28 Havens Place & 2413 Atlantic Avenue, Brooklyn, NY 11233
ZONING: C4-5D / R5B MAP: 17c
BLOCK: 1574 LOT: 23/24/32

SCOPE OF WORK: PROPOSED NEW 13 STORY RESIDENTIAL BUILDING.

ZR Section	Required Item	Requirement/ Allowance	Provided	Comments
23-12	MINIMUM LOT WIDTH AND AREA	MINIMUM LOT WIDTH IS 18' MINIMUM LOT AREA IS 1,700 SF	92' WIDTH HAS BEEN PROVIDED 25,399.26 SF PROVIDED R5B = 426.25 SF C4-5D = 24,973.01 SF SEE BREAKDOWN ON Z-104	COMPLIES
34-112	RESIDENTIAL BULK REGULATION IN COMMERCIAL DISTRICTS	C4-5D APPLICABLE RESIDENTIAL EQUIVALENT R7D	R7D	COMPLIES
22-121 32-201	USE REGS - RESIDENTIAL COMMERCIAL	FOR PROPERTIES LOCATED IN C4-5D, USE GROUP II, X IS PERMITTED	USE GROUP II,X IS PROPOSED	COMPLIES
COMMERCIAL PORTION				
32-201	USE REGS - COMMERCIAL	The following table includes uses classified as Use Group X and sets forth their allowances by Commercial District. Notations found in the table are further described in Section 32-10 (USE ALLOWANCES). Included in the use table, for reference purposes only, are the three-digit subsector categories from the manufacturing sector (sectors 31-33) of the 2022 North American Industry Classification System (NAICS). For each use under the three-digit subsector categories in manufacturing, the four-digit industry group, five-digit NAICS industry or six-digit U.S. detail code is referenced. However, where such four-digit, five-digit or six-digit categories are not referenced after a use, the specified use is not a specific NAICS industry sector category or includes a group of existing categories.	EXISTING USE NO CHANGE	COMPLIES
33-122	C4-5D COMMERCIAL FLOOR AREA REGULATION	THE MAX FLOOR AREA RATIO FOR COMMERCIAL SHALL BE 4.2. MAX FL. AREA PERMITTED = 24,973.04x4.2 = 104,887 SF	EXISTING COMMERCIAL AREA AS APPROVED DRAWING: 43'x84.58'=3,636.94 SF << 104,887 SF	COMPLIES
35-51	FRONT YARD- C4-5D	NO FRONT YARD IS REQUIRED	NO FRONT YARD PROVIDED	COMPLIES
35-52	SIDE YARD - C4-5D	NO SIDE YARD IS REQUIRED	NO SIDE YARD PROVIDED	COMPLIES
35-53	REAR YARD - C4-5D	NO REAR YARD IS REQUIRED	NO REAR YARD PROVIDED	COMPLIES
36-21 36-25	PARKING- C4-5D	NO PARKING IS REQUIRED	NO REAR YARD PROVIDED	COMPLIES
RESIDENTIAL PORTION				
23-21 23-22 27- 131(a)(1)(i)	R7D FLOOR AREA REGULATIONS	THIS LOT WILL BE DEVELOPED IN PURSUIT OF THE QUALIFYING AFFORDABLE HOUSING RESIDENCE. THIS LOT IS LOCATED ON A WIDE STREET OUTSIDE THE MANHATTAN CORE,THE FAR FOR THIS LOT IS 5.6. MAX RESIDENTIAL FL. AREA PERMITTED= 24,973.01x5.6 FAR + 426.25 x1.5 FAR= 140,488.2 SF THIS IS A MIH AREA. THE APPICABLE 25% AFFORDABLE AREA SHALL BE PROVIDED IN COMPLIANCE WITH ZONING AND HPD REGULATIONS.	65,503.69F (PROP LOT 23) + 67,479.52 SF (PROP LOT 24)+ 1,505 SF (EXIST LOT 32) = 134,488.2 SF < 140,488.2 SF (MAXIMUM ALLOWABLE) 134,488.2/25,399.26=5.236	COMPLIES
23-52	DENSITY	THE FACTOR FOR DWELLING UNITS IN ZONING R7D IS 680 SF PER APARTMENT	140,488.2 / 680 SF PER APT = 206 UNITS (ALLOWABLE) LOT 23/24 -> 198 UNITS (PROP) + LOT 32 -> 1 UNIT = 199 UNITS < 206 UNITS	COMPLIES
25-222	PARKING - RESIDENTIAL	ZR 25-222, - REQUIREMENTS FOR DEVELOPMENTS OR ENLARGEMENTS IN THE OUTER TRANSIT ZONE IS 1 CAR PER 15% OF THE DWELLING UNITS. REQUIREMENT FOR AFFORDABLE HOUSING IS 0.MAXIMUM WAIVER IS 25 CARS	20 AFFORDABLE UNITS FOR EACH BUILDING , TOTAL 40 AFFORDABLE UNITS. (198 - 40) x 15% = 24 CARS 0 PARKING PROVIDED	COMPLIES
25-811	BICYCLE PARKING - RESIDENTIAL	IN R7D ZONING, 1 BICYCLE IS REQUIRED FOR EVERY 2 UNITS	198 UNITS / 2 = 99 BICYCLES REQUIRED AND PROVIDED SEE BOTH BUILDING A-101 THRU A-107 DRAWINGS 6R(ATLANTIC AVENUE)+31(HAVENS PLACE)=99 SPACES 5% HANDICAPPED (5 SPACES) PROVIDED AT 1ST FLOOR	COMPLIES
ENTIRE BUILIDNG				
77-02, 77-22	Special Provisions for Zoning Lots Divided by District Boundaries	Each such floor area ratio shall be multiplied by the percentage of the zoning lot to which such floor area ratio applies. The sum of the products thus obtained shall be the adjusted maximum floor area ratio applicable to such zoning lot. The floor area resulting from application of the adjusted maximum floor area ratio may be located anywhere on the zoninglot, subject to all other regulations of this Resolution, and provided that the floor area ratio for any portion of the zoning lot within one district shall not exceed the maximum floor area ratio, specified for that district, or the adjusted maximum floor area ratio for the zoning lot, whichever is greater, except that the portion of the zoning lot fronting on and within100 feet of a wide street and permitting the greater maximum permitted residential floor area ratio may exceed the maximum permitted residential floor area ratio for the portion of the zoning lot by up to 20	Separate areas shall be caculated for the property. Atlantic Avenue is a wide street. Anaysis diagram and calculation see Z-104. R5B IS 1.68%, C4-5D 98.32% in entire lot. The area transferred from the R5B district is much less than 20%.	COMPLIES
23-21 23-22 27- 131(a)(1)(i) 33-122	C4-5D/R7D FLOOR AREA REGULATIONS	THE MAX FLOOR AREA RATIO FOR COMMERCIAL SHALL BE 4.2. MAX FL. AREA PERMITTED = 24,973.04x4.2 = 104,887 SF THIS LOT WILL BE DEVELOPED IN PURSUIT OF THE QUALIFYING AFFORDABLE HOUSING RESIDENCE. THIS LOT IS LOCATED ON A WIDE STREET OUTSIDE THE MANHATTAN CORE,THE FAR FOR THIS LOT IS 5.6. MAX RESIDENTIAL FL. AREA PERMITTED= 24,973.01x5.6 FAR + 426.25 x1.5 FAR= 140,488.2 SF THIS IS A MIH AREA. THE APPICABLE 25% AFFORDABLE AREA SHALL BE PROVIDED IN COMPLIANCE WITH ZONING AND HPD REGULATIONS.	MAX ENTRIE BUILDING FL. AREA PERMITTED= 24,973.01x5.6 FAR + 426.25 x1.5 FAR= 140,488.2 SF 3,636.94 SF(EXISTING COMMERCIAL AREA)+134,488.2(PROPOSED TOTLA RESIDENTIAL AREA) SF = 138,125.14 < 140,488.2 SF (MAXIMUM ALLOWABLE) 138,125.14/25,399.26=5.438<5.6	COMPLIES
23-52 35-40	DENSITY	THE FACTOR FOR DWELLING UNITS IN ZONING R7D IS 680 SF PER APARTMENT	140,488.2 / 680 SF PER APT = 206 UNITS (ALLOWABLE) LOT 23/24 -> 198 UNITS (PROP) + LOT 32 -> 1 UNIT = 199 UNITS < 206 UNITS	COMPLIES
36-31, 25-222	PARKING - RESIDENTIAL	ZR 25-222, - REQUIREMENTS FOR DEVELOPMENTS OR ENLARGEMENTS IN THE OUTER TRANSIT ZONE IS 1 CAR PER 15% OF THE DWELLING UNITS. REQUIREMENT FOR AFFORDABLE HOUSING IS 0.MAXIMUM WAIVER IS 25 CARS	20 AFFORDABLE UNITS FOR EACH BUILDING , TOTAL 40 AFFORDABLE UNITS. (198 - 40) x 15% = 24 CARS 0 PARKING PROVIDED	COMPLIES
36-70	BICYCLE PARKING - RESIDENTIAL	IN R7D ZONING, 1 BICYCLE IS REQUIRED FOR EVERY 2 UNITS	198 UNITS / 2 = 99 BICYCLES REQUIRED AND PROVIDED SEE BOTH BUILDING A-101 THRU A-107 DRAWINGS 6R(ATLANTIC AVENUE)+31(HAVENS PLACE)=99 SPACES 5% HANDICAPPED (5 SPACES) PROVIDED AT 1ST FLOOR	COMPLIES
33-04 26-41	STREET TREE ANALYSIS	ONE STREET TREE PER 25' OF FRONTAGE AREA IS REQUIRED. (190.58'+92'+93'+84.65')/ 25' = 18 TREES	(4) TREES TO REMAIN (14) TREES WILL BE PAID TO TREE FUND	COMPLIES
23-362(a)	LOT COVERAGE - C4-5D,R7D	FOR CORNER LOT THE MAXIMUM LOT COVERAGE R7D IS 100%, FOR INTERIOR LOT THE MAXIMUM LOT COVERAGE R7D IS 80%.	CORNER LOT AREA IS 17,065.90 SF, INTERIOR LOT AREA IS 8,333.36 SF. PROPOSED LOT COVERAGE REQUIRED: 8,333.36/25,399.26X0.8+17,065.9/25,399.26x93.44% CORNER LOT PROPOSED COVERAGE IS 76%, INTERIOR LOT PROPOSED COVERAGE IS 58%, ENTIRE LOT PROPOSED COVERAGE IS 70% << 93.44% SEE Z-102,Z-103,Z-104 FOR DIAGRAM	COMPLIES
35-51 23-322	FRONT YARD - C4-5D, R7D	NO FRONT YARD IS REQUIRED	NO FRONT YARD PROVIDED	COMPLIES
35-52 23-335	SIDE YARD - C4-5D, R7D	ALL OTHER BUILDING EXCEPT SINGE-FAMILY, TWO-FAMILY, DETACHED RESIDENCES. NO SIDE YARD IS REQUIRED	NO SIDE YARD PROVIDED	COMPLIES
35-53 23- 342(a)(1)	REAR YARD C4-5D, R7D BEYOND 100 FEET	PORTIONS BELOW 75', 20' REAR YARD IS REQUIRED. PROTIONS ABOVE 75', 30' REAR YARD IS REQUIRED.	PROPOSED BUILDING HEIGHT BELOW 75' 28' REAR YARD PROVIDED PROPOSED BUILDING ABOVE HEIGHT 75' 30' REAR YARD PROVIDED	COMPLIES
35-53 23-343(b)	REAR YARD C4-5D, R7D WITHIN 100 FEET	WITHIN ONE HUNDRED FEET OF CORNERS IN THE DISTRICTS INDICATED, NO REAR YARD SHALL BE REQUIRED WITHIN 100 FEET OF THE POINT OF INTERSECTION OF TWO STREET LINES INTERSECTING AT AN ANGLE OF 135 DEGREES OR LESS.	NO REAR YARD PROVIDED WITHIN 100 FEET	COMPLIES
23-352(a)(c)	INNER COURT REGULATIONS	(a) WHERE LEGALLY REQUIRED WINDOWS FACE ONTO AN INNER COURT, FOR BUILDINGS OR PORTIONS THEREOF AT OR BELOW A HEIGHT OF 75 FEET, THE AREA OF AN INNER COURT SHALL NOT BE LESS THAN 800 SQUARE FEET, AND THE MINIMUM DIMENSION OF SUCH INNER COURT SHALL NOT BE LESS THAN 20 FEET, AND ABOVE A HEIGHT OF 75 FEET, WHERE PERMITTED, THE AREA OF AN INNER COURT SHALL NOT BE LESS THAN 1,200 SQUARE FEET, AND THE MINIMUM DIMENSION OF SUCH INNER COURT SHALL NOT BE LESS THAN 30 FEET; (C) THE WIDTH OF AN INNER COURT RECESS SHALL BE AT LEAST EQUAL TO THE DEPTH OF THE INNER COURT RECESS, EXCEPT THAT SUCH WIDTH NEED NOT EXCEED THE MINIMUM DIMENSION FOR AN INNER COURT, RELATIVE TO THE HEIGHT.	PROPOSED INNER COURT #1 BELOW 75' 51'-6"x28' = 1,442 SF INNER COURT #2 ABOVE 75' 51'-6"x30' = 1,545 SF PROPOSED INNER COURT RECESS #1 BELOW 75' 44'-11" WIDTH >> 15' DEPTH INNER COURT RECESS #2 ABOVE 75' 44'-11" WIDTH >> 13' DEPTH	COMPLIES
23-231	FLOOR AREA PROVISIONS FOR AMENITIES	FLOOR SPACE IN A BUILDING ALLOCATED TO RESIDENTIAL AMENITIES MAY BE EXEMPTED FROM THE DEFINITION OF FLOOR AREA, IN AN AMOUNT NOT TO EXCEED FIVE PERCENT OF THE RESIDENTIAL FLOOR AREA OF THE BUILDING. SUCH AMENITIES MAY INCLUDE RECREATION SPACES, INCLUDING THOSE REQUIRED PURSUANT TO SECTION 23-63, OR OTHER AMENITIES, INCLUDING, BUT NOT BE LIMITED TO, CO-WORKING AREAS, LIBRARY OR READING ROOMS, OR MUSIC PRACTICE ROOMS, PACKAGE OR STORAGE ROOMS, LAUNDRY FACILITIES, OR PET-RELATED FACILITIES.	LAUNDRY EXEMPTED FROM FLOOR AREA SEE DEDUCTION PLANS ON Z-102 AND Z-103.	COMPLIES
ZR 23-232	CORRIDOR	(a) CORRIDORS TERMINATION FIFTY PERCENT OF THE FLOOR SPACE OF A CORRIDOR MAY BE EXEMPTED FROM THE DEFINITION OF FLOOR AREA WHERE ONE OF THE FOLLOWING CRITERIA ARE MET: (1) THE CORRIDOR PROVIDES DIRECT ACCESS TO OUTDOOR SPACE ON A BALCONY OR TERRACE ON THE SAME STORY THAT IS ACCESSIBLE TO RESIDENTS OF THE STORY; (3) THE CORRIDOR TERMINATES WITH A DWELLING UNIT THAT CONTAINS AT LEAST THREE BEDROOMS. (b) LENGTH OF CORRIDOR FIFTY PERCENT OF THE FLOOR SPACE OF A CORRIDOR MAY BE EXEMPTED FROM THE DEFINITION OF FLOOR AREA, WHERE THE LENGTH OF THE CORRIDOR, AS MEASURED FROM THE ELEVATOR CORE TO THE DOOR OF THE FURTHEST DWELLING UNIT ON THE STORY, DOES NOT EXCEED 100 LINEAR FEET.	A THREE BEDROOM HAS BEEN PROVIDED AT THE END OF THE CORRIDORS. THE LENGTH OF THE END OF THE CORRIDOR TO THE ELEVATOR CORE IS LESS THAN 100' SEE DEDUCTION PLANS ON Z-102 AND Z-103.	COMPLIES
23-233	REFUSE STORAGE AND DISPOSAL	FLOOR SPACE IN A BUILDING ALLOCATED TO REFUSE STORAGE AND DISPOSAL MAY BE EXEMPTED FROM THE DEFINITION OF FLOOR AREA IN AN AMOUNT NOT TO EXCEED A MAXIMUM OF THREE SQUARE FEET PER DWELLING UNIT IN THE BUILDING.	SEE DEDUCTION PLANS ON Z-102 AND Z-103	COMPLIES
23-413	DORMER REGULATIONS	AS PER SECTION ZR 23-413(B)(1) DORMERS SHALL BE ALLOWED AS A PERMITTED OBSTRUCTION, (ii) THE AGGREGATE WIDTH OF ALL DORMERS AT THE MAXIMUM BASE HEIGHT DOES NOT EXCEED 60 PERCENT OF THE WIDTH OF THE STREET WALL OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT. FOR EACH FOOT ABOVE THE MAXIMUM BASE HEIGHT, THE AGGREGATE WIDTH OF ALL DORMERS SHALL BE DECREASED BY ONE PERCENT OF THE STREET WALL WIDTH OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT; OR (iii) THE AGGREGATE WIDTH OF ALL DORMERS AT THE MAXIMUM BASE HEIGHT DOES NOT EXCEED 40 PERCENT OF THE WIDTH OF THE STREET WALL OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT. SUCH DORMERS NEED NOT DECREASE IN WIDTH AS THE HEIGHT ABOVE THE MAXIMUM BASE HEIGHT INCREASES.	SEE ELEVATION ON A-201 AND A-203 ON SHOWING DORMER WITHIN ALLOWABLE AREA	COMPLIES
23-432 TABLE STANDARD BUILDING	HEIGHT REGULATIONS	MIN BASE HEIGHT = 60' (ALLOWABLE) MAX BASE HEIGHT = 95' (ALLOWABLE) MAX BLDG HEIGHT = 125' (ALLOWABLE)	< 95' (PROPOSED) = 95' (PROPOSED) > 124' (PROPOSED)	COMPLIES
23-63	RECREATION AREA	3% OF FLOOR AREA 138,125.14 SF x 3% = 4,143.75 SF REQUIRED	OUTDOOR RECREATION AREA PROVIDED WITH REAR OF FIRST FLOOR SPACE - DETAILS SEE Z-101. AREA PROVIDED IS MORE THAN 225 SF AND 15' IN ANY DIMENSION. 5,525 SF PROVIDED	COMPLIES



ITEMS FILED UNDER SEPARATE APPLICATION:

SOE	TBD
FOUNDATION	TBD
STRUCTURAL	TBD
MECHANICAL	TBD
PLUMBING	TBD
SPRINKLER	TBD
FENCE	TBD
CURB CUT	TBD
FIRE ALARM	FILED WITH FDNY
BUILDERS PAVEMENT PLAN -	TBD
SITE CONNECTION -	TBD

OCCUPANCY/ CONST. COMPLIANCE:

- OCCUPANCY GROUP R-2 (MULTI-FAMILY)
- INSIDE FIRE DISTRICT
- CONSTRUCTION CLASS I-B
- MAX AREA/FLOOR = UL
- MAX HEIGHT = UL

TABLE 601-FIRE RESISTANCE RATING REQ'S FOR BLDG ELEMENTS:

STRUCTURAL FRAME	-	2 HR (N.C.)
BEARING WALL:		
EXTERIOR	-	2 HR (N.C.)
INTERIOR	-	2 HR (N.C.)
NON BEARING WALLS AND PARTITIONS:		
EXTERIOR	-	2 HR (N.C.)
INTERIOR	-	0 HR (N.C.)
FLOOR CONSTRUCTION	-	2 HR (N.C.)
ROOF CONSTRUCTION	-	1 HR (N.C.)

ALL COMPONENTS COMPLY WITH FIRE RATINGS AS REQUIRED. SEE DETAILS FOR MORE INFORMATION.

SPECIAL INSPECTIONS:

-	EXTERIOR INSULATION AND FINISH SYSTEMS(EIFS)	BC 1704.13
-	FIRE-RESISTANT PENETRATIONS AND JOINTS	BC 1704.27

PROGRESS INSPECTIONS:

-	ENERGY CODE COMPLIANCE INSPECTIONS	BC 110.3.5
-	FIRE-RESISTANCE RATED CONSTRUCTION	BC 110.3.4

ENERGY INSPECTION:

-PROTECTION OF EXPOSED FOUNDATION	(IA1)(IIA1)
-INSULATION PLACEMENT AND R-VALUES	(IA2)(IIA2)
-FENESTRATION U-FACTOR AND PRODUCT RATINGS	(IA3)(IIA3)
-FENESTRATION AIR LEAKAGE	(IA4)(IIA4)
-FENESTRATION AREAS	(IA5)(IIA5)
-AIR BARRIER-VISUAL INSPECTION	(IA6)(IIA6)
-AIR BARRIER CONTINUITY PLAN	(IIA8)
G	(IC1)(IIC1)
IN DWELLING UNITS	(IIC2)
LIGHTING POWER	(IC2)(IIC3)
LIGHTING POWER	(IIC4)
CONTROLS	(IIC5)
AL MOTORS	(IIC6)
ANCE INFORMATION	(ID1)(IID1)

EARTHQUAKE COMPLIANCE NOTES:

THIS STRUCTURE, AND PORTION THEREOF, IS DESIGNED AND SHALL BE CONSTRUCTED TO RESIST THE EFFECTS OF EARTHQUAKE MOTIONS AS PER 2022 BC 1613 FOR SEISMIC USE GROUP I AND SEISMIC DESIGN CATEGORY B.

4" SEISMIC SEPARATION PROVIDED ALONG ENTIRE LENGTH OF BUILDING AS INDICATED ON DRAWING AS PER 2022 NYC BUILDING CODE SECTION 1613.

RECREATION AREA IN REAR YARD AS REQUIRED BY ZR 23-63

OUTDOOR AREA
44.92'x42.67'+37'x28'+43'x59.83'= 5,525/ 200 SF PER PERSON = 27 P
135,313.57 SF x 3% = 4,059.4 SF REQUIRED < 5,525 SF PROVIDED

USE GROUP - 2B
OCCUPANCY GROUP - R-2 (2022 CODE)

AS PER SECTION BC 1014.3 COMMON PATH OF TRAVEL - EXCEPTION (4), THE MAXIMUM COMMON PATH OF TRAVEL SHALL BE 125' IF PROVIDED BY AN APPROVED AUTOMATIC SPRINKLER SYSTEM. BUILDING IS FULL SPRINKLERED AND COMMON PATH IS 120', WHICH IS MUCH LESS THAN 125'.

ROOF TO BE USED AS RECREATIONAL SPACE. SUSTAINABLE ROOFING ZONE EXEMPT AS PER LL 92-94 & BB 2015-010 (II)(C)(5)

SITE PLAN

SCALE: 1/16" = 1'-0"

PROPERTY IS NOT IN A SPECIAL FLOOD HAZARD AREA

STREET TREE PLANTING
18 TREES HAS BEEN REQUIRED BY ZR 23-03. (4) EXISTING TREES TO REMAIN, (14) TREES TO BE PAID INTO TREE FUND.

AVERAGE BASE PLANE EL. OF ENTIRE SITE:
(70.15'+69.80'+69.61'+69.26'+69.31'+70.11'+70.67'+71.75')/8 = **70.38'**

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PROJECT:

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#	ISSUED FOR	DATE

#	REVISIONS	DATE

DRAWING TITLE:

SITE PLAN, ZONING ANALYSIS , ZONING MAP

SEAL & SIGNATURE

REGISTERED ARCHITECT GEORGE GEORGOPOULOS 015870 STATE OF NEW YORK

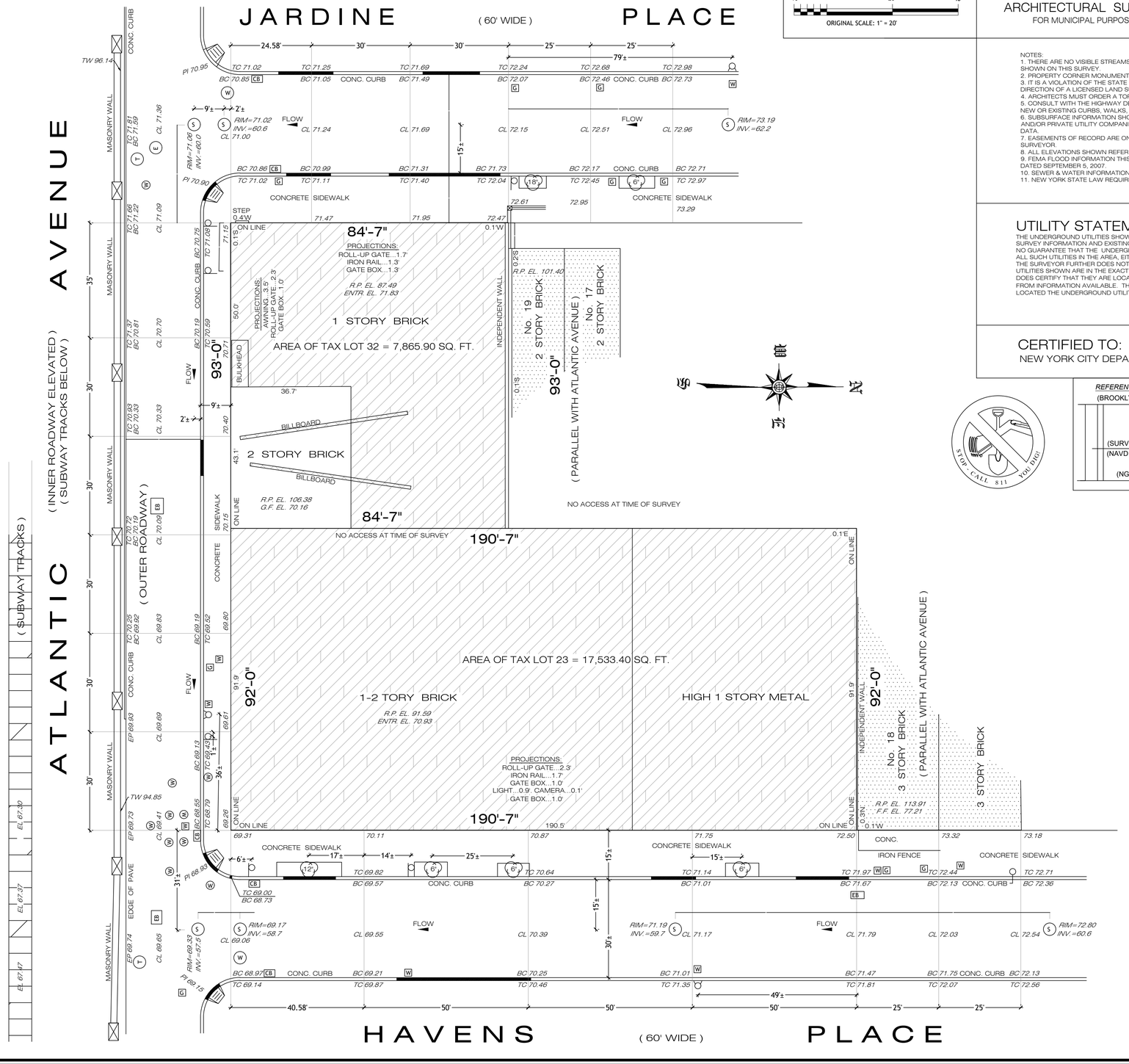
DATE : 7/21/25
PROJ. NO : 25-210B
DWN BY : AS
CHK BY : PG
DWG NO :

Z-101.00

EXAMINER STAMP AND SIGNATURE :

DOB STICKER :

B01261070-I1



10 0 20 40

ORIGINAL SCALE: 1" = 20'

ARCHITECTURAL SURVEY
FOR MUNICIPAL PURPOSE

SURVEY OF PROPERTY AT
KINGS COUNTY, N.Y.
TAX BLOCK: 1574 TAX LOTS: 23 & 32

NOTES:
1. THERE ARE NO VISIBLE STREAMS NOR NATURAL WATER COURSES IN THE PROPERTY EXCEPT AS SHOWN ON THIS SURVEY.
2. PROPERTY CORNER MONUMENTS WERE NOT PLACED AS PART OF THIS SURVEY.
3. IT IS A VIOLATION OF THE STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED LAND SURVEYOR TO ALTER AN ITEM IN ANY WAY.
4. ARCHITECTS MUST ORDER A TOPOGRAPHICAL MAP SPECIFYING THEIR EXACT NEEDS.
5. CONSULT WITH THE HIGHWAY DEPARTMENT BEFORE DESIGNING, INSTALLING, OR MODIFYING ANY NEW OR EXISTING CURBS, WALKS, OR ROADWAYS IN THE STREETS SHOWN HEREON.
6. SUBSURFACE INFORMATION SHOWN HEREON WAS OBTAINED FROM VARIOUS CITY DEPARTMENTS AND/OR PRIVATE UTILITY COMPANIES. THE SURVEYOR ACCEPTS NO RESPONSIBILITY FOR ANY OF THIS DATA.
7. EASEMENTS OF RECORD ARE ONLY GUARANTEED IF AN ABSTRACT OF TITLE IS FURNISHED TO THE SURVEYOR.
8. ALL ELEVATIONS SHOWN REFER TO THE 1988 NAVD.
9. FEMA FLOOD INFORMATION THIS PROPERTY IS LOCATED ON PANEL 3604970217F ZONE "X" DATED SEPTEMBER 5, 2007.
10. SEWER & WATER INFORMATION MUST BE VERIFIED WITH DEP.
11. NEW YORK STATE LAW REQUIRES BEFORE EXCAVATE CALL 811, & DIGNET AT 800-272-4480

UTILITY STATEMENT
THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

CERTIFIED TO:
NEW YORK CITY DEPARTMENT OF BUILDINGS

STOP - CALL 811 - YOU DIG!

REFERENCE DATUM
(BROOKLYN DATUM)
(SURVEY DATUM)
(NAVD 1988)
(NGVD 1929)

LEGEND
- FIRE HYDRANT
- DROP CURB
- G - GAS VALVE
- W - WATER VALVE
- SIGN
- CB - CATCH BASIN
- EB - ELECTRIC BOX
- TREE
- E - ELECTRIC MANHOLE
- M - UNKNOWN MANHOLE
- U - UTILITY POLE
- S - SEWER MANHOLE
- T - TELEPHONE MANHOLE
- W - WATER MANHOLE
- *TC* - TOP OF CURB ELEVATION
- *BC* - BOTTOM OF CURB ELEVATION
- *CL* - CENTER LINE ELEVATION
- *72.03* - SPOT ELEVATION
- *G.F* - GARAGE FLOOR ELEVATION
- *F.F* - FIRST FLOOR ELEVATION
- *R.P* - ROOF PARAPET ELEVATION

DATE:- MAY 10, 2025

SURVEY No:- COC-2025-319

COC MAPPING COM
COORDINATES OF CONSTRUCTION
91-22 215th PLACE
QUEENS VILLAGE, N.Y. 11428
TELEPHONE (347)239-9844
EMAIL:- COCMAPPING@GMAIL.COM

COMPUTED:-MJ | DRAFTED:-CA | CHECKED:- SK

ADRIAN S. LALSA LIC.# 050936
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ARCHITECT PC
33-12 FRANCIS LEWIS BLVD
FLUSHING, NEW YORK 11358
TEL (718) 359-5577 FAX (718) 359-1411
PGARCHITECT@VERIZON.NET

PROJECT:
PROPOSED NEW BUILDING
28 HAVENS PLACE
BROOKLYN, NY 11233

OWNER INFORMATION:
ABE BILLER
5308 13TH AVE #515
BROOKLYN NY 11219
BILLER46@YAHOO.COM
TEL: 845-213-8361

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DRAWING TITLE:
EXISTING SURVEY

SEAL & SIGNATURE

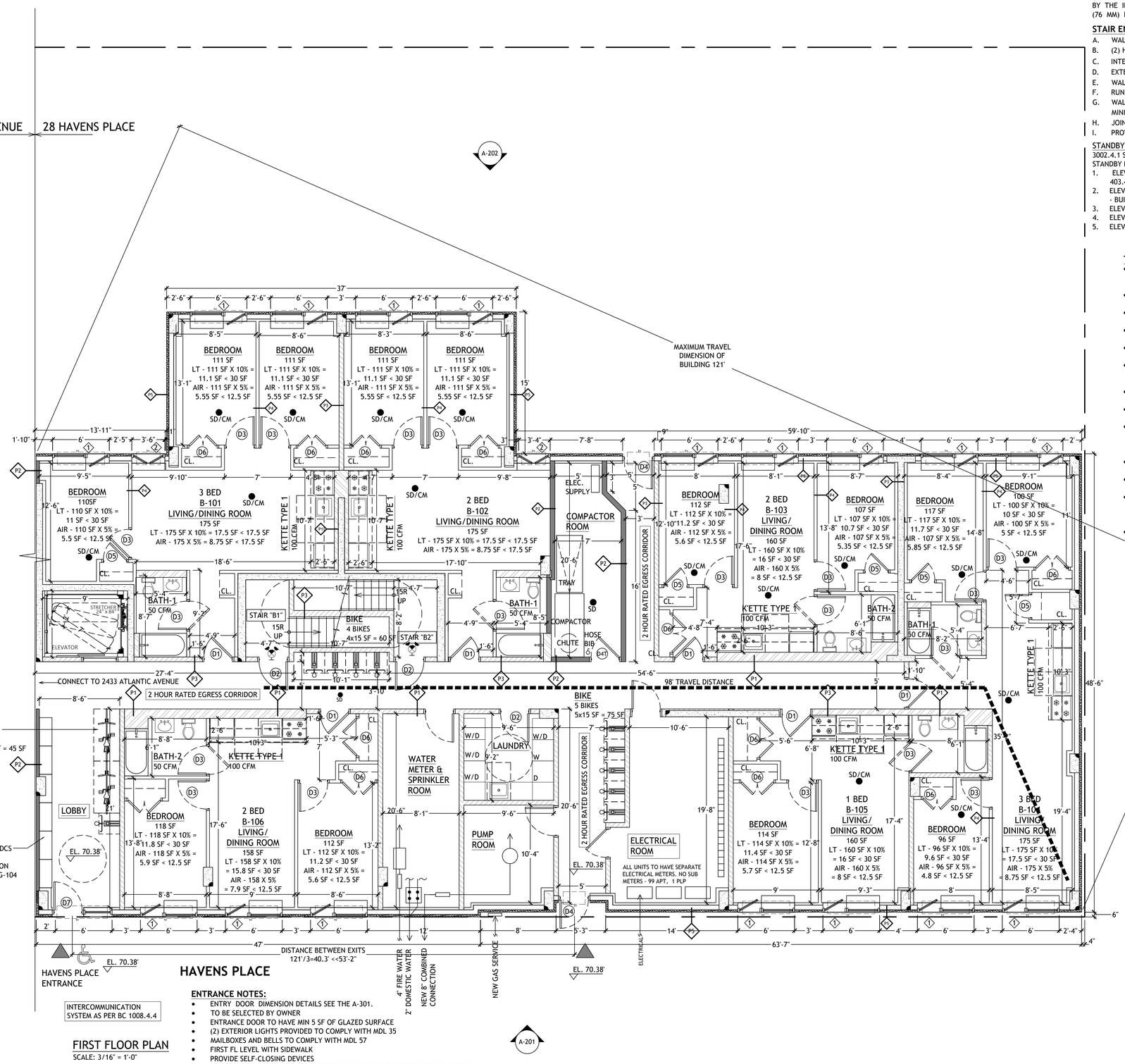
REGISTERED ARCHITECT — ADRIAN S. LALSA — 050936 — STATE OF NEW YORK

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B01261070-I1

2433 ATLANTIC AVENUE 28 HAVENS PLACE



LOBBY IS SEPARATED FROM ALL APARTMENTS AND SPACES, BOTH VERTICALLY AND HORIZONTALLY. TYPICAL FLOOR CONSTRUCTION OF 4 ½" CONCRETE THROUGHOUT BUILDING - 2 HOUR RATED. SEE FLOOR DETAILS FOR MORE INFORMATION.

ALL COMPONENTS TO COMPLY WITH ADA REGULATIONS
1. MAILBOXES
2. INTERCOMMUNICATION SYS.
3. DOOR PUSH BUTTON CONT.

ENTRY DOORS SHALL BE EQUIPPED WITH HEAVY DUTY LOCK SETS AND WILL COMPLY WITH BC 1008.4.1

MAILBOXES ARE HDCS ACCESSIBLE - SEE MAILBOX ELEVATION AND DETAILS ON G-104

INTERCOMMUNICATION SYSTEM AS PER BC 1008.4.4

FIRST FLOOR PLAN

SCALE: 3/16" = 1'-0"

HAVENS PLACE

ENTRANCE NOTES:

- ENTRY DOOR DIMENSION DETAILS SEE THE A-301.
- TO BE SELECTED BY OWNER
- ENTRANCE DOOR TO HAVE MIN 5 SF OF GLAZED SURFACE
- (2) EXTERIOR LIGHTS PROVIDED TO COMPLY WITH MDL 35
- MAILBOXES AND BELLS TO COMPLY WITH MDL 57
- FIRST FL LEVEL WITH SIDEWALK
- PROVIDE SELF-CLOSING DEVICES
- PROVIDE INTERCOMMUNICATION SYSTEM LOCATED AT THE DOOR GIVING ACCESS TO MAIN ENTRANCE LOBBY AS PER BC 1008.4.4

ELEVATOR NOTE:

BUILDING IS PROVIDED WITH AN ELEVATOR CAR OF SUCH A SIZE AND ARRANGEMENT TO ACCOMMODATE AN AMBULANCE STRETCHER 24-INCHES BY 84 INCHES, WITH NOT LESS THAN 5-INCH (127 MM)RADIUS CORNERS, IN THE HORIZONTAL, OPEN POSITION AND SHALL BE IDENTIFIED BY THE INTERNATIONAL SYMBOL FOR EMERGENCY MEDICAL SERVICES (STAR OF LIFE). THE SYMBOL SHALL NOT BE LESS THAN 3 INCHES (76 MM) HIGH AND SHALL BE PLACED ON BOTH JAMBS OF THE HOISTWAY ENTRANCES ON EACH FLOOR.

STAIR ENCLOSURE CONSTRUCTION MASONRY EQUIVALENT:

A. WALL CONSTRUCTION IS AS PER 20014 NYC BC 1015.2.1.3.2.
B. (2) HOUR RATED WITH IMPACT RESISTANT GYPSUM BOARD LAYER AS PER ASTM C 1629-06, IMPACT CLASSIFICATION LEVEL 2.
C. INTERIOR LAYER GYPSUM BOARD OF STAIR TO BE USG MOLD TOUGH VHI FIRECODE CORE AND ONE LAYER ⅝" GYPSUM BOARD.
D. EXTERIOR LAYER GYPSUM BOARD OF STAIR TO BE 2-LAYERS ⅝" GYPSUM BOARD.
E. WALL STUDS SHALL BE 3 ½" 20 GAUGE MTL STUDS AT 16" O.C.
F. RUNNERS SHALL BE SECURELY ATTACHED TO THE FLOOR AND CEILING TO STRUCTURAL ELEMENTS.
G. WALL BOARDS SHALL BE ATTACHED WITH NO. 8 SELF-DRILLING BUGLE-HEAD SCREWS, 12 INCHES (305 MM), ON CENTER MAXIMUM, WITH A MINIMUM DEPTH OF ⅝ INCH (16 MM) PENETRATION INTO THE WALL CAVITY.
H. JOINTS BETWEEN ADJOINING SHEETS OF WALL BOARD SHALL BE STAGGERED FROM BASE LAYER WITH FACE PANEL LAYER.
I. PROVIDE 3" SPRAY FOAM INSULATION BETWEEN STUDS. MINIMUM STC RATING OF 50 FOR STAIR.

STANDBY POWER/EMERGENCY BACKUP SYSTEM FOR ELEVATOR:

3002.4.1 STANDBY POWER REQUIRED FOR ELEVATORS.
STANDBY POWER SHALL BE PROVIDED TO ELEVATORS IN THE FOLLOWING CATEGORIES:
1. ELEVATOR(S) IN HIGH-RISE BUILDINGS COVERED BY SECTION 403.1, OTHER THAN R-2 OCCUPANCIES, AS REQUIRED BY SECTION 403.4.8.1; - NOT APPLICABLE
2. ELEVATOR(S) IN HIGH-RISE BUILDINGS IN R-2 OCCUPANCIES MORE THAN 125 FEET (38 100 MM) IN HEIGHT, AS REQUIRED BY SECTION 403.4.8.2; - BUILDING LESS THAN 125'
3. ELEVATOR(S) IN UNDERGROUND BUILDINGS, AS REQUIRED BY SECTION 405.4.3; - NOT APPLICABLE - NOT APPLICABLE - NO CELLAR
4. ELEVATOR(S) IN GROUPS B, E, AND R-1 OCCUPANCIES THAT ARE SUBJECT TO SECTION 2702.2.20; AND - NOT APPLICABLE
5. ELEVATOR(S) SERVING AS ACCESSIBLE MEANS OF EGRESS PURSUANT TO SECTION 1007.4 - NOT APPLICABLE - WIDER STAIRS PROVIDED

TRASH COMPACTOR ROOM NOTES:

- TRASH COMPACTOR ROOM LOCATION, CLEARLY MARKED "TRASH COMPACTOR ROOM", AND THE ROOM'S DIMENSIONS. INDICATED IN FIRST FLOOR PLAN.
- TRASH COMPACTOR SIZE, DIMENSIONS AND LOCATION. INDICATED IN FIRST FLOOR PLAN.
- CLEARANCE SPACE SURROUNDING THE TRASH COMPACTOR. INDICATED IN FIRST FLOOR PLAN.
- SPRINKLER LOCATIONS IN THE TRASH COMPACTOR ROOM. INDICATED IN FIRST FLOOR PLAN.
- ELECTRICAL POWER ACCESS FOR TRASH COMPACTOR EQUIPMENT. POWER SUPPLY INDICATED IN FIRST FLOOR PLAN.
- VENTILATION ACCESS TO FRESH AIR (VIA POWER VENTILATION OR WINDOW DUCT). VENTILATION PROVIDED TO EXTERIOR VIA MECHANICAL VENTILATION.
- FLOOR DRAIN CONNECTED TO THE BUILDING DRAIN IN THE TRASH COMPACTOR ROOM. INDICATED IN CELLAR PLAN.
- HOSE BIB LOCATION IN THE TRASH COMPACTOR ROOM. INDICATED IN CELLAR PLAN.
- A MINIMUM FIRE RESISTIVE RATING OF THREE HOURS FOR THE COMPACTOR ROOM WALLS AND CEILING MATERIAL ASSEMBLIES. (GYPSUM MASONRY MAY NOT BE USED.) 6" CMU WITH CELLS FILLED SOLID HAS BEEN USED - 3 HR RATED.
- A FIRE-PROTECTIVE SELF-CLOSING DOOR WITH A MINIMUM FIRE RESISTIVE RATING OF 1 ½ HOURS. INDICATED IN CELLAR PLAN.
- CONSTRUCTION DETAILS FOR WALL MATERIAL ASSEMBLIES. PROVIDED ON WALL DETAILS. SHAFTS HAVE STC VALUE OF 54.
- SOUND TRANSMISSION CLASS (STC) RATINGS ARE REQUIRED FOR: ALL COMPACTOR ROOM WALLS; AND ALL TRASH-CHUTE WALLS AND TRASH DISPOSAL ROOM WALLS. SHAFTS HAVE STC VALUE OF 54.
- STC AND IMPACT INSULATING CLASS RATINGS FOR FLOOR CONSTRUCTION ABOVE THE COMPACTOR ROOM. ALL FLOORS / CEILINGS TO BE 4 ½" CONCRETE INSULATED WITH 3" SPRAY FOAM INSULATION. STC VALUE OF 50.

MECHANICAL EQUIPMENT SCHEDULE SEE MH DRAWINGS
LIGHTING AND ELECTRICAL FIXTURES, SCHEDULE SEE REFLECTED CEILING PLAN
SPRINKLER AND FIRE ALARM FILE SEPARATELY.
WINDOWS/DOOR SCHEDULE SEE G-103
WALL DETAILS SEE G-102
RECREATION AREA SEE Z-101

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TEL: 845-213-8361

#	ISSUED FOR	DATE
#	REVISIONS	DATE

DRAWING TITLE:

FIRST FLOOR PLAN

SEAL & SIGNATURE

REGISTERED ARCHITECT PANAGIS GEORGOPOULOS 015870 STATE OF NEW YORK

DATE : 5/22/25
PROJ. NO : 25-210-B
DWN BY : AS
CHK BY : PG
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A-101.00

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DOB JOB NUMBER :

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Floor	Description	Area (SF)	SF/Person	# People	Stair Egress Width (in)		Door Egress Width (in)		Corridor Width (in)		Travel Dist (ft)		Common Path (ft)		Dead End (ft)	
Code	n/a	n/a	Table 1004.1.1	n/a	Section 1005.1 / 1009.1		Section 1005.1		1018.2 Ex. 4		Section 1016.1		1014.3 Ex. 4		1018.4 Ex. 4	
					Req @ .3"/P	Proposed	Req @ .2"/P	Proposed	Allowable	Proposed	Allowable	Proposed	Allowable	Proposed	Allowable	Proposed
1	Residential	5943	200	30	8.9	(2) @ 36" = 72	5.9	(2) @ 36" = 72	36	60	200	98	125	92	80	46
002-008	Residential	5943	200	30	8.9	(2) @ 36" = 72	5.9	(2) @ 36" = 72	36	60	200	98	125	92	80	46
009-010	Residential	5869	200	29	8.8	(2) @ 36" = 72	5.9	(2) @ 36" = 72	36	60	200	98	125	92	80	46
011-013	Residential	4948	200	25	7.4	(2) @ 36" = 72	4.9	(2) @ 36" = 72	36	60	200	115	125	90	80	65

2433 ATLANTIC AVENUE 28 HAVENS PLACE

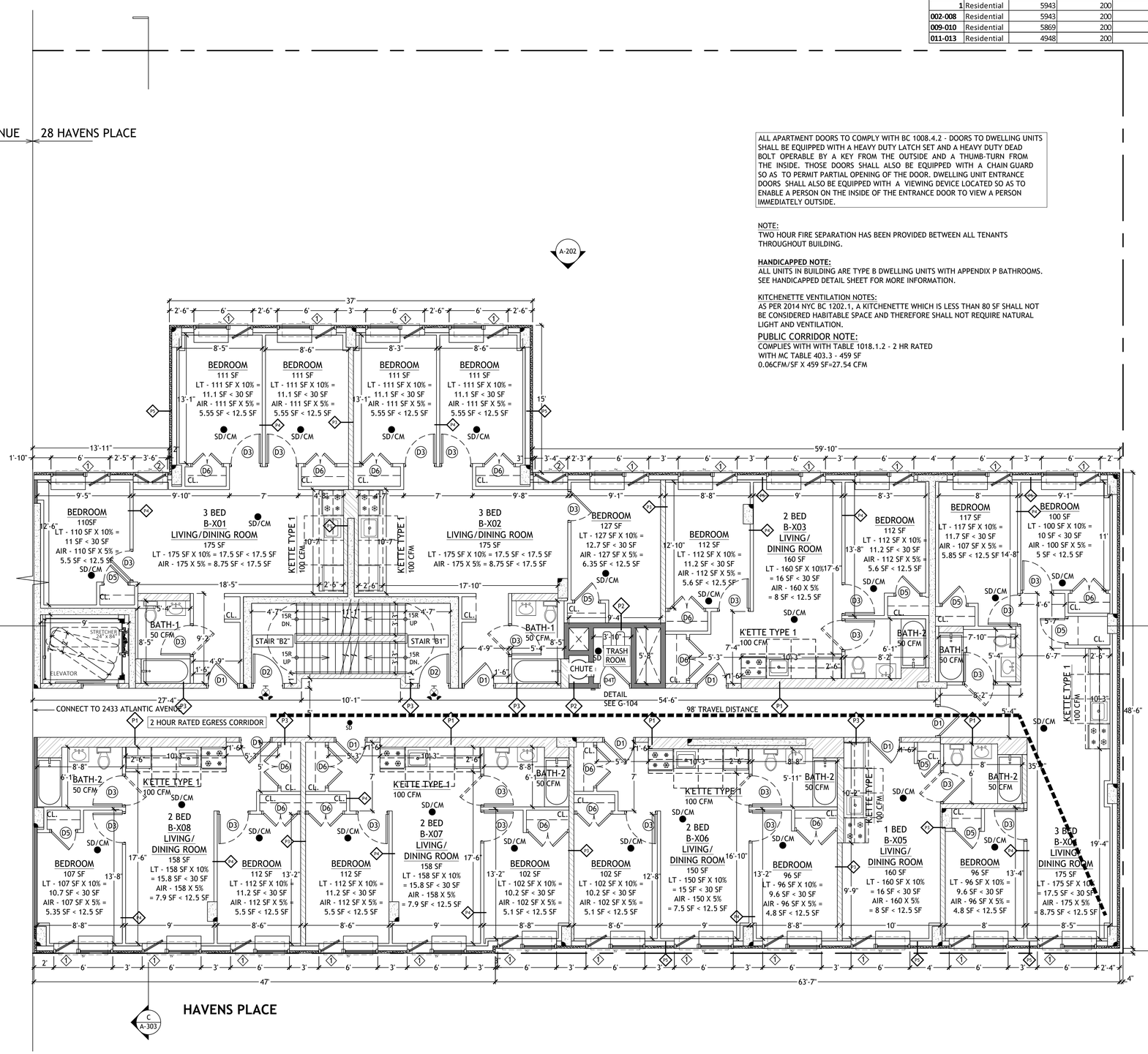
ALL APARTMENT DOORS TO COMPLY WITH BC 1008.4.2 - DOORS TO DWELLING UNITS SHALL BE EQUIPPED WITH A HEAVY DUTY LATCH SET AND A HEAVY DUTY DEAD BOLT OPERABLE BY A KEY FROM THE OUTSIDE AND A THUMB-TURN FROM THE INSIDE. THOSE DOORS SHALL ALSO BE EQUIPPED WITH A CHAIN GUARD SO AS TO PERMIT PARTIAL OPENING OF THE DOOR. DWELLING UNIT ENTRANCE DOORS SHALL ALSO BE EQUIPPED WITH A VIEWING DEVICE LOCATED SO AS TO ENABLE A PERSON ON THE INSIDE OF THE ENTRANCE DOOR TO VIEW A PERSON IMMEDIATELY OUTSIDE.

NOTE:
TWO HOUR FIRE SEPARATION HAS BEEN PROVIDED BETWEEN ALL TENANTS THROUGHOUT BUILDING.

HANDICAPPED NOTE:
ALL UNITS IN BUILDING ARE TYPE B DWELLING UNITS WITH APPENDIX P BATHROOMS. SEE HANDICAPPED DETAIL SHEET FOR MORE INFORMATION.

KITCHENETTE VENTILATION NOTES:
AS PER 2014 NYC BC 1202.1, A KITCHENETTE WHICH IS LESS THAN 80 SF SHALL NOT BE CONSIDERED HABITABLE SPACE AND THEREFORE SHALL NOT REQUIRE NATURAL LIGHT AND VENTILATION.

PUBLIC CORRIDOR NOTE:
COMPLIES WITH WITH TABLE 1018.1.2 - 2 HR RATED
WITH MC TABLE 403.3 - 459 SF
0.06CFM/SF X 459 SF=27.54 CFM



SECOND TO EIGHTH FLOOR PLAN
SCALE: 3/16" = 1'-0"

SMOKE AND CARBON MONOXIDE DETECTORS NOTES:
1. SMOKE AND CARBON DETECTORS IN DWELLING UNITS SHALL BE INSTALLED AS PER 2014 NYC BC 908.7.1.1.
2. MINIMUM 15' AWAY FROM THE ENTRANCE OF ANY ROOM USED AS SLEEPING PURPOSES.
3. IN ANY ROOMS USED FOR SLEEPING PURPOSES.
4. ON ANY STORY WITHIN A DWELLING UNIT, INCLUDING BELOW-GRADE STORIES AND PENTHOUSES OF ANY AREA, BUT NOT INCLUDING CRAWL SPACES.

FIRE PROTECTION:

CORRIDOR COMPLIANCE AS PER 2014 NYC BC 1018
1. BOTH INTERIOR AND PUBLIC CORRIDOR COMPLY WITH TABLE 1018.1.1 AND 1018.1.2. TWO HOUR RATED PARTITION OF MASONRY EQUIVALENT AS INDICATED ON PARTITION DETAIL P3 THROUGHOUT.
2. MINIMUM CORRIDOR WIDTH AS PER 1018.2 EXEMPTION 2 FOR SPACES WITH OCCUPANT CAPACITY OF 50 OR LESS IS 36". WIDTHS OF GREATER THAN 36" HAVE BEEN PROVIDED AT ALL STAIRS AND CORRIDORS. AS PER BC 1004.1.1 ENTIRE BUILDING OCCUPANT CAPACITY IS 6,287/200 = 32 P.
3. SECTION 1018.4, DEAD ENDS, EXCEPTION #4, FOR CORRIDORS ENCLOSED IN 2 HOUR CONSTRUCTION, THE DEAD END LENGTH SHALL NOT EXCEED 80'.

INTERIOR STAIR ENCLOSURE COMPLIANCE 2014 NYC BC 1022.1
1. FIRE RATING OF INTERIOR STAIR TO BE 2 HOUR RATED.
2. SEE NOTES FOR MASONRY EQUIVALENT WALL.

FIRE / PARTY WALL - TABLE 706.4
1. 3 HOUR RATED PARTITION IS PROVIDED AT THE PROPERTY LINE FOR I-B CONSTRUCTION.
2. ALL BUILDING COMPLY WITH 601 AND 602, FIRE RATING OF COMPONENTS THROUGHOUT BUILDING.

MECHANICAL EQUIPMENT SCHEDULE SEE MH DRAWINGS
LIGHTING AND ELECTRICAL FIXTURES, SCHEDULE SEE REFLECTED CEILING PLAN
SPRINKLER AND FIRE ALARM FILE SEPARATELY.
WINDOWS/DOOR SCHEDULE SEE G-103
WALL DETAILS SEE G-102
RECREATION AREA SEE Z-101

EGRESS CAPACITY SUMMARY:
LARGEST FLOOR
4,867 SF
OCCUPANCY CAPACITY AS PER 2022 NYC BC TABLE 1004.1.1 -
5,944 SF/200 SF = 30 PEOPLE

AS PER 2022 NYCBC 1021.1, MINIMUM EXIT FROM FLOORS -
FOR OCCUPANTS 0-500, 2 EXITS REQUIRED.

AS PER 2022 NYCBC 1009.1, STAIRWAY -
36" STAIRWAY PERMITTED THAT PROVIDES EGRESS TO THE EXIT DISCHARGE SOLELY FOR THE USE OF GROUP R-2 OCCUPANCIES, PROVIDED THE BUILDING IT SERVES IS 125 FEET OR LESS IN HEIGHT, AND PROVIDED SUCH A STAIRWAY SERVES NOT MORE THAN 30 OCCUPANTS PER FLOOR.

(2) 36" STAIRWAYS HAVE BEEN PROVIDED ON EACH FLOOR - 240 P MAX
(2) 36" DOORSWAYS HAVE BEEN PROVIDED ON EACH FLOOR - 360 P MAX
(2) 36" DOORSWAYS HAVE BEEN PROVIDED ON THE FIRST FLOOR - 360 P MAX

COMMON PATH OF TRAVEL AND TRAVEL DISTANCE:
AS PER 2022 NYCBC 1014.3 EXCEPTION 4
THE MAXIMUM COMMON PATH OF TRAVEL IS 125' FOR A SPRINKLERED R-2 BUILDING
THE MAXIMUM TRAVEL DISTANCE IN THE BUILDING IS 98'. SEE FLOOR PLANS FOR MORE INFORMATION. COMMON PATH IS 54' MAXIMUM.

AS PER 2022 NYCBC TABLE 1016.1, FOR SPRINKLERED R OCCUPANCIES, THE MAXIMUM TRAVEL DISTANCE IS 200'. PROVIDED TRAVEL DISTANCE IS 98'.

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DRAWING TITLE:
2ND TO 8TH FLOOR PLAN

SEAL & SIGNATURE

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DOB JOB NUMBER :
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2433 ATLANTIC AVENUE

28 HAVENS PLACE

A-202

37'

2'-6" 6' 2'-6" 6' 3' 6' 2'-6" 6' 2'-6"

2'

8'-5" 8'-6" 8'-3" 8'-6"

BEDROOM 94 SF — LT - 94 SF X 10% = 9.4 SF < 30 SF; AIR - 94 SF X 5% = 4.7 SF < 12.5 SF

11'-1"

13'

13'-11"

59'-10"

1'-9" 6' 2'-5" 3'-6" 3'-4" 2'-3" 6' 3' 6' 3' 6' 3' 6' 4' 6' 3' 6' 2'

9'-5" 9'-8" 7' 7' 7' 9'-8" 9'-1" 8'-8" 9' 8'-3" 8' 9'-1"

BEDROOM 110SF — LT - 110 SF X 10% = 11 SF < 30 SF; AIR - 110 SF X 5% = 5.5 SF < 12.5 SF

3 BED B-901 LIVING/DINING ROOM 175 SF — LT - 175 SF X 10% = 17.5 SF < 17.5 SF; AIR - 175 X 5% = 8.75 SF < 17.5 SF

3 BED B-902 LIVING/DINING ROOM 175 SF — LT - 175 SF X 10% = 17.5 SF < 17.5 SF; AIR - 175 X 5% = 8.75 SF < 17.5 SF

K'ETTE TYPE 1 100 CFM

BEDROOM 127 SF — LT - 127 SF X 10% = 12.7 SF < 30 SF; AIR - 127 SF X 5% = 6.35 SF < 12.5 SF

BEDROOM 112 SF — LT - 112 SF X 10% = 11.2 SF < 30 SF; AIR - 112 SF X 5% = 5.6 SF < 12.5 SF

2 BED B-903 LIVING/DINING ROOM 160 SF — LT - 160 SF X 10% = 16 SF < 30 SF; AIR - 160 X 5% = 8 SF < 12.5 SF

BEDROOM 112 SF — LT - 112 SF X 10% = 11.2 SF < 30 SF; AIR - 112 SF X 5% = 5.6 SF < 12.5 SF

BEDROOM 117 SF — LT - 117 SF X 10% = 11.7 SF < 30 SF; AIR - 107 SF X 5% = 5.85 SF < 12.5 SF

BEDROOM 100 SF — LT - 100 SF X 10% = 10 SF < 30 SF; AIR - 100 SF X 5% = 5 SF < 12.5 SF

12'-2" 18'-5" 18'-10" 10'-7" 12'-10" 13'-8" 17'-6" 11'

BATH-1 50 CFM

STAIR "B2" 15R UP 15R DN.

STAIR "B1" 15R UP 15R DN.

ELEVATOR

STRETCHER 24" x 84"

TRASH ROOM

CHUTE

DETAIL SEE G-104

BATH-2 50 CFM

K'ETTE TYPE 1 100 CFM

2 BED B-908 LIVING/DINING ROOM 158 SF — LT - 158 SF X 10% = 15.8 SF < 30 SF; AIR - 158 X 5% = 7.9 SF < 12.5 SF

2 BED B-907 LIVING/DINING ROOM 158 SF — LT - 158 SF X 10% = 15.8 SF < 30 SF; AIR - 158 X 5% = 7.9 SF < 12.5 SF

2 BED B-906 LIVING/DINING ROOM 150 SF — LT - 150 SF X 10% = 15 SF < 30 SF; AIR - 150 X 5% = 7.5 SF < 12.5 SF

1 BED B-905 LIVING/DINING ROOM 160 SF — LT - 160 SF X 10% = 16 SF < 30 SF; AIR - 160 X 5% = 8 SF < 12.5 SF

3 BED B-904 LIVING/DINING ROOM 175 SF — LT - 175 SF X 10% = 17.5 SF < 17.5 SF; AIR - 175 X 5% = 8.75 SF < 12.5 SF

BEDROOM 107 SF — LT - 107 SF X 10% = 10.7 SF < 30 SF; AIR - 107 SF X 5% = 5.35 SF < 12.5 SF

BEDROOM 112 SF — LT - 112 SF X 10% = 11.2 SF < 30 SF; AIR - 112 SF X 5% = 5.5 SF < 12.5 SF

BEDROOM 102 SF — LT - 102 SF X 10% = 10.2 SF < 30 SF; AIR - 102 SF X 5% = 5.1 SF < 12.5 SF

BEDROOM 96 SF — LT - 96 SF X 10% = 9.6 SF < 30 SF; AIR - 96 SF X 5% = 4.8 SF < 12.5 SF

27'-5" 10'-1" 53'-11" 48'-6"

CONNECT TO 2433 ATLANTIC AVENUE

2 HOUR RATED EGRESS CORRIDOR

98' TRAVEL DISTANCE

8'-9" 9' 8'-6" 8'-6" 9' 8'-8" 8'-6" 9' 8'-8" 10' 8' 8'-5"

2' 47' 63'-7" 6" 4"

C A-303

HAVENS PLACE

A A-301

A-203

A-201

NINTH FLOOR PLAN

SCALE: 3/16" = 1'-0"

MECHANICAL EQUIPMENT SCHEDULE SEE MH DRAWINGS
LIGHTING AND ELECTRICAL FIXTURES, SCHEDULE SEE REFLECTED CEILING PLAN
SPRINKLER AND FIRE ALARM FILE SEPARATELY..
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#	REVISIONS	DATE

DRAWING TITLE:

9TH FLOOR PLAN

SEAL & SIGNATURE

REGISTERED ARCHITECT — JAMES GEORGOPOULOS — 015870 — STATE OF NEW YORK

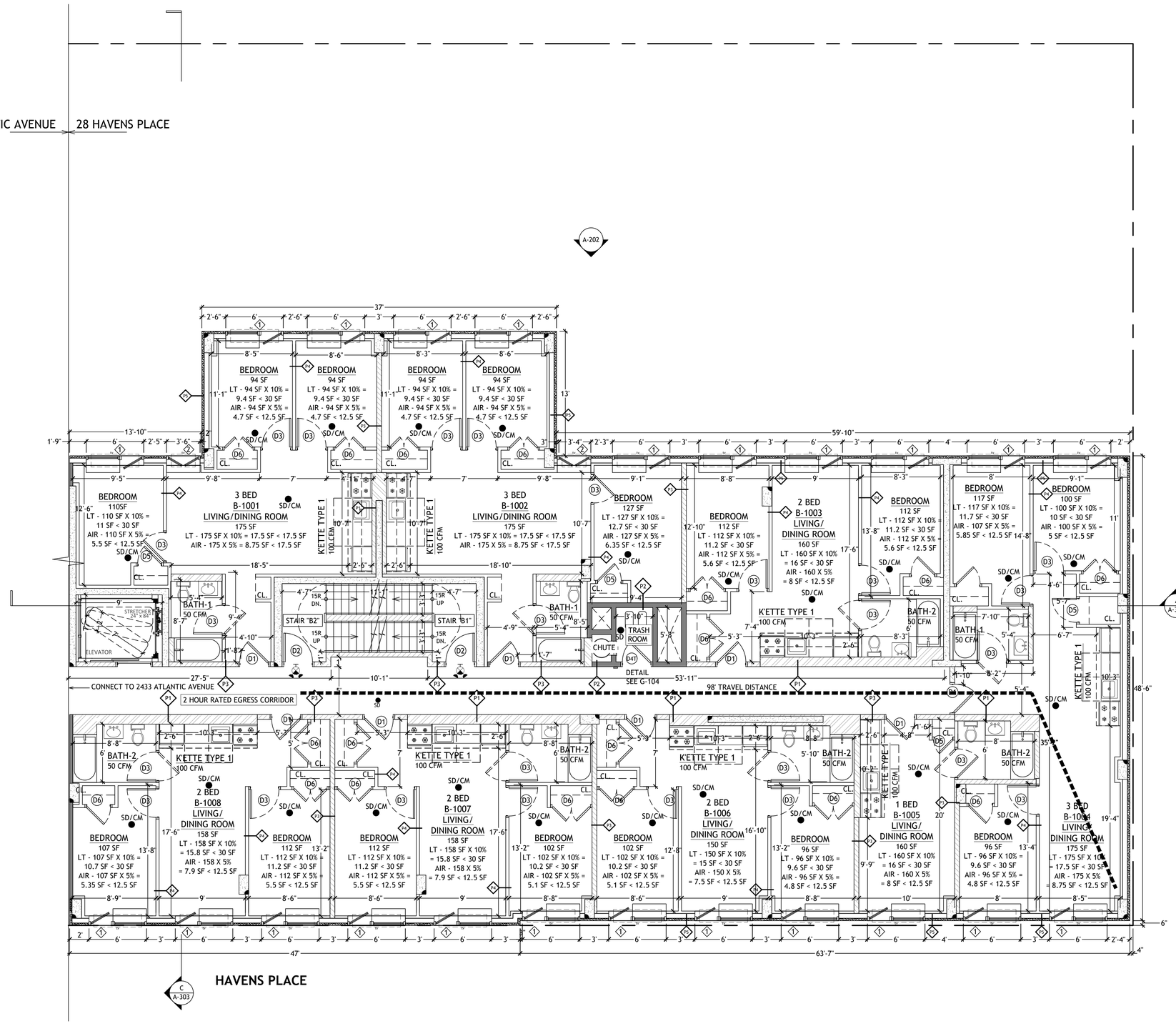
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2433 ATLANTIC AVENUE 28 HAVENS PLACE



TENTH FLOOR PLAN
SCALE: 3/16" = 1'-0"

MECHANICAL EQUIPMENT SCHEDULE SEE MH DRAWINGS
LIGHTING AND ELECTRICAL FIXTURES, SCHEDULE SEE REFLECTED CEILING PLAN
SPRINKLER AND FIRE ALARM FILE SEPARATELY..
WINDOWS/DOOR SCHEDULE SEE G-103
WALL DETAILS SEE G-102
RECREATION AREA SEE Z-101

P. GEORGOPOULOS ARCHITECT PC
33-12 FRANCIS LEWIS BLVD
FLUSHING, NEW YORK 11358
TEL (718) 359-5577 FAX (718) 359-1411
PGARCHITECT@VERIZON.NET

PROJECT:

PROPOSED NEW BUILDING
28 HAVENS PLACE
BROOKLYN, NY 11233

OWNER INFORMATION:
ABE BILLER
5308 13TH AVE #515
BROOKLYN NY 11219
BILLER46@YAHOO.COM
TEL: 845-213-8361

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DRAWING TITLE:

10TH FLOOR PLAN

SEAL & SIGNATURE

REGISTERED ARCHITECT PANAGIS GEORGOPOULOS 015870 STATE OF NEW YORK

DATE :	5/22/25
PROJ. NO :	25-210-B
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2433 ATLANTIC AVENUE

28 HAVENS PLACE

A-202

BEDROOM 94 SF — LT - 94 SF X 10% = 9.4 SF < 30 SF; AIR - 94 SF X 5% = 4.7 SF < 12.5 SF

3 BED B-1101 LIVING/DINING ROOM 175 SF — LT - 175 SF X 10% = 17.5 SF < 17.5 SF; AIR - 175 X 5% = 8.75 SF < 17.5 SF

3 BED B-1102 LIVING/DINING ROOM 175 SF — LT - 175 SF X 10% = 17.5 SF < 17.5 SF; AIR - 175 X 5% = 8.75 SF < 17.5 SF

BEDROOM 110SF — LT - 110 SF X 10% = 11 SF < 30 SF; AIR - 110 SF X 5% = 5.5 SF < 12.5 SF

BEDROOM 127 SF — LT - 127 SF X 10% = 12.7 SF < 30 SF; AIR - 127 SF X 5% = 6.35 SF < 12.5 SF

1 BED B-1103 LIVING/DINING ROOM 188 SF — LT - 188 SF X 10% = 18.8 SF < 30 SF; AIR - 188 X 5% = 9.4 SF < 12.5 SF

STUDIO B-1104 LIVING/DINING ROOM 194 SF — LT - 194 SF X 10% = 19.4 SF < 30 SF; AIR - 194 X 5% = 9.7 SF < 12.5 SF

2 BED B-1105 LIVING/DINING ROOM 214 SF — LT - 214 SF X 10% = 21.4 SF < 30 SF; AIR - 214 X 5% = 10.7 SF < 12.5 SF

2 BED B-1107 LIVING/DINING ROOM 158 SF — LT - 158 SF X 10% = 15.8 SF < 30 SF; AIR - 158 X 5% = 7.9 SF < 12.5 SF

1 BED B-1106 LIVING/DINING ROOM 205 SF — LT - 205 SF X 10% = 20.5 SF < 30 SF; AIR - 205 X 5% = 10.25 SF < 12.5 SF

BEDROOM 109 SF — LT - 109 SF X 10% = 10.9 SF < 30 SF; AIR - 109 SF X 5% = 5.45 SF < 12.5 SF

BATH-1 50 CFM · BATH-2 50 CFM · KITETTE TYPE 1 100 CFM · STAIR "B2" · STAIR "B1" · TRASH ROOM · CHUTE · ELEVATOR · STRETCHER 24" x 84"

DETAIL SEE G-104

CONNECT TO 2433 ATLANTIC AVENUE

2 HOUR RATED EGRESS CORRIDOR

115' TRAVEL DISTANCE

39' TRAVEL DISTANCE

BIKE 15 BIKES 5x15 SF = 75 SF

TERRACE

6' FIRE PASSAGEWAY AS REQ. BY FDNY AS PER FC 504

C A-303

HAVENS PLACE

A-201

A A-301

A-203

ELEVENTH FLOOR PLAN

SCALE: 3/16" = 1'-0"

TERRACE

63.58'x14.5'= 921 SF/ 200 SF PER PERSON = 5 P

USE GROUP - 2B
OCCUPANCY GROUP - R-2 (2022 CODE)

AS PER SECTION BC 1014.3 COMMON PATH OF TRAVEL - EXCEPTION (4), THE MAXIMUM COMMON PATH OF TRAVEL SHALL BE 125' IF PROVIDED BY AN APPROVED AUTOMATIC SPRINKLER SYSTEM. BUILDING IS FULL SPRINKLERED AND COMMON PATH IS 61', WHICH IS MUCH LESS THAN 125'.

ROOF TO BE USED AS RECREATIONAL SPACE. SUSTAINABLE ROOFING ZONE EXEMPT AS PER LL 92-94 & BB 2015-010 (II)(C)(5)

MECHANICAL EQUIPMENT SCHEDULE SEE MH DRAWINGS
LIGHTING AND ELECTRICAL FIXTURES, SCHEDULE SEE REFLECTED CEILING PLAN
SPRINKLER AND FIRE ALARM FILE SEPARATELY.
WINDOWS/DOOR SCHEDULE SEE G-103
WALL DETAILS SEE G-102
RECREATION AREA SEE Z-101

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PROJECT:

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28 HAVENS PLACE
BROOKLYN, NY 11233

OWNER INFORMATION:
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TEL: 845-213-8361

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DRAWING TITLE:

11TH FLOOR PLAN

SEAL & SIGNATURE

REGISTERED ARCHITECT PANAGIS GEORGOPOULOS 015870 STATE OF NEW YORK

DATE :	5/22/25
PROJ. NO :	25-210-B
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2433 ATLANTIC AVENUE

28 HAVENS PLACE

A-202

BEDROOM
94 SF
LT - 94 SF X 10% = 9.4 SF < 30 SF
AIR - 94 SF X 5% = 4.7 SF < 12.5 SF

BEDROOM
110SF
LT - 110 SF X 10% = 11 SF < 30 SF
AIR - 110 SF X 5% = 5.5 SF < 12.5 SF

3 BED
B-X01
LIVING/DINING ROOM
175 SF
LT - 175 SF X 10% = 17.5 SF < 17.5 SF
AIR - 175 X 5% = 8.75 SF < 17.5 SF

3 BED
B-X02
LIVING/DINING ROOM
175 SF
LT - 175 SF X 10% = 17.5 SF < 17.5 SF
AIR - 175 X 5% = 8.75 SF < 17.5 SF

KETTE TYPE 1
100 CFM

BEDROOM
127 SF
LT - 127 SF X 10% = 12.7 SF < 30 SF
AIR - 127 SF X 5% = 6.35 SF < 12.5 SF

1 BED
B-X03
LIVING/
DINING ROOM
214 SF
LT - 214 SF X 10% = 21.4 SF < 30 SF
AIR - 214 X 5% = 10.7 SF < 12.5 SF

BEDROOM
127 SF
LT - 127 SF X 10% = 12.7 SF < 30 SF
AIR - 127 SF X 5% = 6.35 SF < 12.5 SF

STUDIO
B-X04
LIVING/
DINING ROOM
194 SF
LT - 194 SF X 10% = 19.4 SF < 30 SF
AIR - 194 X 5% = 9.7 SF < 12.5 SF

BEDROOM
94 SF
LT - 94 SF X 10% = 9.4 SF < 30 SF
AIR - 94 SF X 5% = 4.7 SF < 12.5 SF

2 BED
B-X05
LIVING/
DINING ROOM
214 SF
LT - 214 SF X 10% = 21.4 SF < 30 SF
AIR - 214 X 5% = 10.7 SF < 12.5 SF

BATH-1
50 CFM

BATH-2
50 CFM

STAIR "B2"
STAIR "B1"
15R DN.
15R UP (7TH FL.)
16R UP (13TH FL.)

ELEVATOR
STRETCHER 24" x 84"

TRASH ROOM
CHUTE

DETAIL SEE G-104

CONNECT TO 2433 ATLANTIC AVENUE

2 HOUR RATED EGRESS CORRIDOR

115' TRAVEL DISTANCE

BIKE
5 BIKES
5x15 SF = 75 SF

2 BED
B-X07
LIVING/
DINING ROOM
158 SF
LT - 158 SF X 10% = 15.8 SF < 30 SF
AIR - 158 X 5% = 7.9 SF < 12.5 SF

1 BED
B-X06
LIVING/
DINING ROOM
205 SF
LT - 205 SF X 10% = 20.5 SF < 30 SF
AIR - 205 X 5% = 10.25 SF < 12.5 SF

BEDROOM
109 SF
LT - 109 SF X 10% = 10.9 SF < 30 SF
AIR - 109 SF X 5% = 5.45 SF < 12.5 SF

HAVENS PLACE

A-203

A-201

TWELFTH AND THIRTEEN FLOOR PLAN
SCALE: 3/16" = 1'-0"

MECHANICAL EQUIPMENT SCHEDULE SEE MH DRAWINGS
LIGHTING AND ELECTRICAL FIXTURES, SCHEDULE SEE REFLECTED CEILING PLAN
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BROOKLYN, NY 11233

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TEL: 845-213-8361

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12TH AND 13TH FLOOR PLAN

SEAL & SIGNATURE

REGISTERED ARCHITECT
PANAGIS GEORGOPOULOS
045870
STATE OF NEW YORK

DATE :	5/22/25
PROJ. NO :	25-210-B
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DWG NO :	A-106.00

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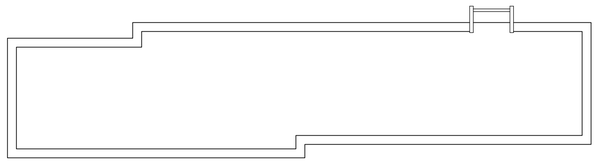
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2433 ATLANTIC AVENUE

28 HAVENS PLACE

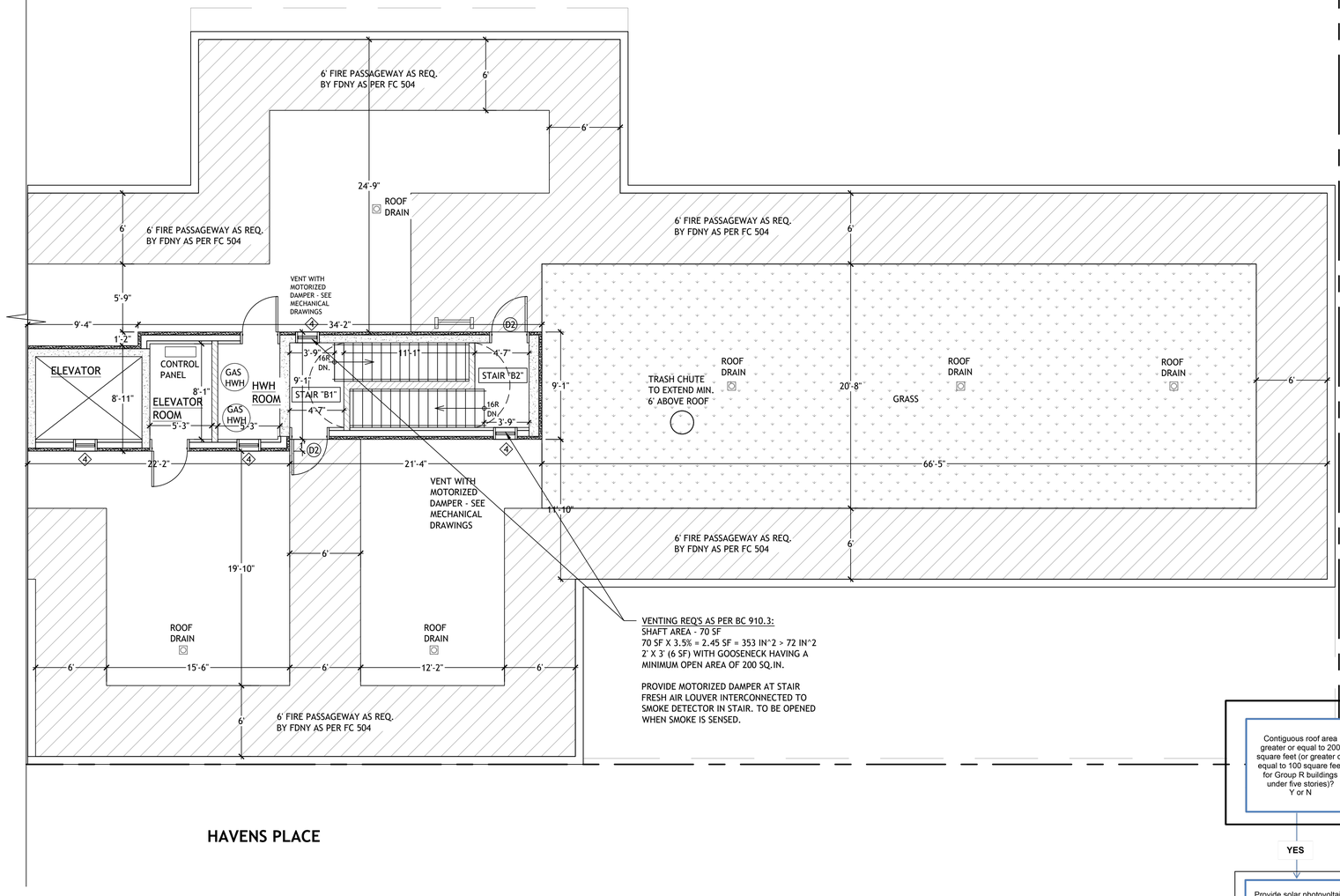
COMPLIANCE AS PER ZR 24-51
(b) ELEVATOR OR STAIR BULKHEADS (INCLUDING SHAFTS; AND VESTIBULES), ROOF WATER TANKS, ENERGY INFRASTRUCTURE EQUIPMENT, AND ACCESSORY MECHANICAL EQUIPMENT (INCLUDING ENCLOSURES), OTHER THAN SOLAR OR WIND ENERGY SYSTEMS (WHETHER ACCESSORY OR AS PART OF ENERGY INFRASTRUCTURE EQUIPMENT), PROVIDED THAT:
(1) SUCH OBSTRUCTIONS SHALL BE LOCATED NOT LESS THAN 10 FEET FROM THE STREET WALL OF A BUILDING, EXCEPT THAT SUCH OBSTRUCTIONS NEED NOT BE SET BACK MORE THAN 25 FEET FROM A NARROW STREET LINE OR MORE THAN 20 FEET FROM A WIDE STREET LINE. HOWEVER, SUCH RESTRICTIONS ON LOCATION SHALL NOT APPLY TO ELEVATOR OR STAIR BULKHEADS (INCLUDING SHAFTS OR VESTIBULES), PROVIDED THE AGGREGATE WIDTH OF STREET WALLS OF SUCH BULKHEADS WITHIN 10 FEET OF A STREET WALL, FACING EACH STREET FRONTAGE, DOES NOT EXCEED 30 PERCENT OF THE STREET WALL WIDTH OF THE BUILDING FACING SUCH FRONTAGE;
(2) THE AGGREGATE AREA OF SUCH OBSTRUCTIONS, INCLUDING ANY SCREENING, DOES NOT EXCEED 50 PERCENT OF THE LOT COVERAGE OF THE BUILDING AND THE HEIGHT OF SUCH OBSTRUCTIONS SHALL NOT EXCEED 15 FEET ABOVE THE MAXIMUM PERMITTED HEIGHT

ELEVATOR AND STAIR BULKHEAD 21'-2" ON ATLANTIC AVENUE, 23'-2" ON HAVENS PLACE.
ATLANTIC AVENUE: 92' x 0.3 = 27.6' > 21.17' OK
HAVENS PLACE: 79.5' x 0.3 = 23.85' > 23.17' OK



A-202

BULKHEAD PLAN
SCALE: 3/16" = 1'-0"



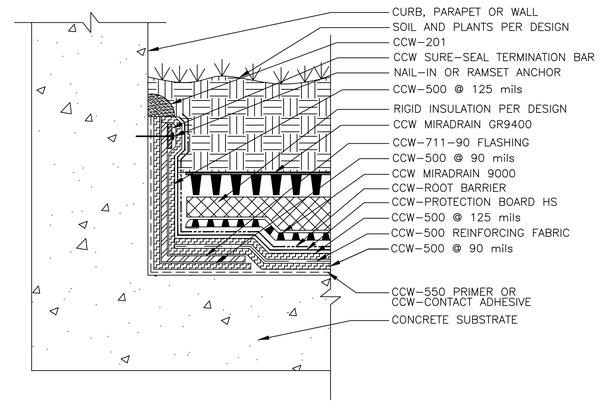
VENTING REQ'S AS PER BC 910.3:
SHAFT AREA - 70 SF
70 SF X 3.5% = 2.45 SF = 353 IN^2 > 72 IN^2
2' X 3' (6 SF) WITH GOOSENECK HAVING A MINIMUM OPEN AREA OF 200 SQ.IN.

PROVIDE MOTORIZED DAMPER AT STAIR FRESH AIR LOUVER INTERCONNECTED TO SMOKE DETECTOR IN STAIR. TO BE OPENED WHEN SMOKE IS SENSED.

ROOF FLOOR PLAN
SCALE: 3/16" = 1'-0"

A-201

A-203



DETAIL IS INTENDED TO BE A GUIDE FOR WATERPROOFING INSTALLATION ONLY.

GR 500-4B	GREEN ROOF PERIMETER FLASHING	CARLISLE COATINGS & WATERPROOFING ©2013 CARLISLE CORPORATION

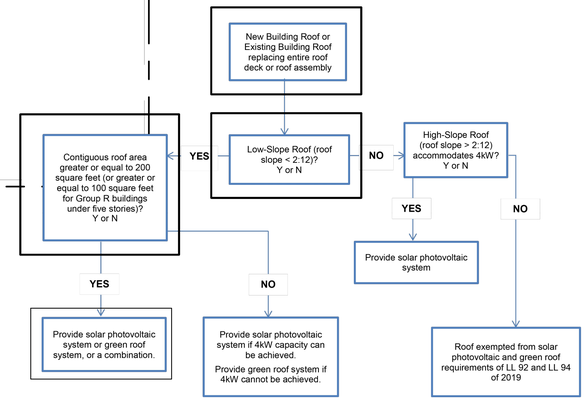


Figure 1. *Compliance path for sustainable roofing zone pursuant to LL 92 and LL 94 of 2019.*

MECHANICAL EQUIPMENT SCHEDULE SEE MH DRAWINGS
LIGHTING AND ELECTRICAL FIXTURES, SCHEDULE SEE REFLECTED CEILING PLAN
SPRINKLER AND FIRE ALARM FILE SEPARATELY.
WINDOWS/DOOR SCHEDULE SEE G-103
WALL DETAILS SEE G-102
RECREATION AREA SEE Z-101

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PROJECT:

PROPOSED NEW BUILDING
28 HAVENS PLACE
BROOKLYN, NY 11233

OWNER INFORMATION:
ABE BILLER
5308 13TH AVE #515
BROOKLYN NY 11219
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ROOF PLAN

SEAL & SIGNATURE

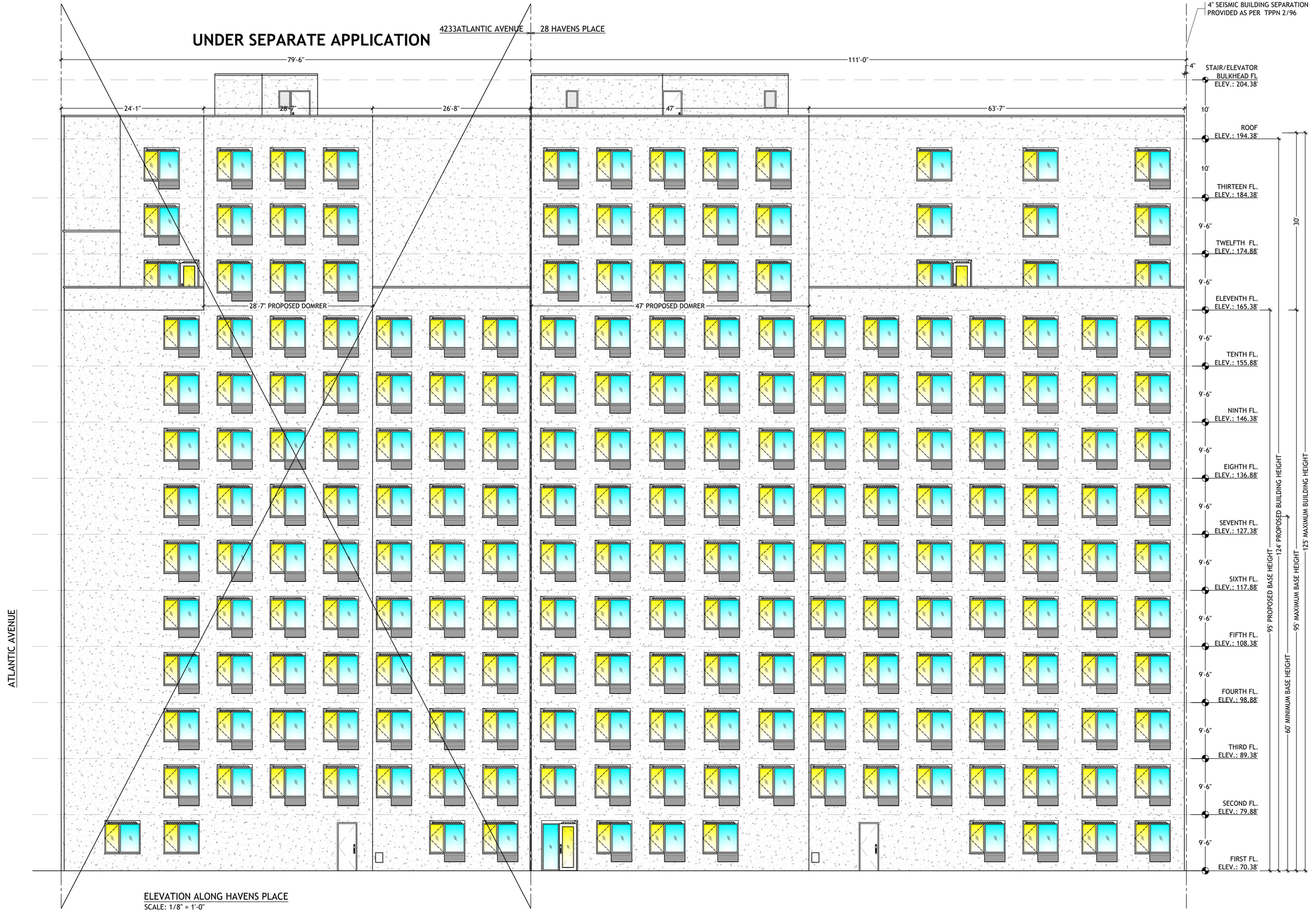
REGISTERED ARCHITECT ANGELA GEORGOPOULOS 015870 STATE OF NEW YORK

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ELEVATION ALONG HAVENS PLACE
SCALE: 1/8" = 1'-0"

DORMER CALCULATIONS AS PER ZR 23-413 (b)(1)
DORMERS SHALL BE ALLOWED AS A PERMITTED OBSTRUCTION,

(i)THE AGGREGATE WIDTH OF ALL DORMERS AT THE MAXIMUM BASE HEIGHT DOES NOT EXCEED 60 PERCENT OF THE WIDTH OF THE STREET WALL OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT. FOR EACH FOOT ABOVE THE MAXIMUM BASE HEIGHT, THE AGGREGATE WIDTH OF ALL DORMERS SHALL BE DECREASED BY ONE PERCENT OF THE STREET WALL WIDTH OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT; OR

(ii)THE AGGREGATE WIDTH OF ALL DORMERS AT THE MAXIMUM BASE HEIGHT DOES NOT EXCEED 40 PERCENT OF THE WIDTH OF THE STREET WALL OF THE HIGHEST STORY ENTIRELY BELOW THE MAXIMUM BASE HEIGHT. SUCH DORMERS NEED NOT DECREASE IN WIDTH AS THE HEIGHT ABOVE THE MAXIMUM BASE HEIGHT INCREASES.

MAXIMUM DORMER WIDTH:
190.58' X 40% = 76.232' (ALLOWABLE) > (28.58'+47')=75.58' (PROVIDED) OK

SEE DIMENSIONS ON FRONT ELEVATION AS PER ABOVE SECTION.

PERMITTED OBSTRUCTIONS AS PER ZR 23-412 (c)(1)
ELEVATORS SHALL ARE PERMITTED OBSTRUCTIONS AS INDICATED IN THIS SECTION.
(1) THE ELEVATOR IS LOCATED FURTHER THAN 10' FROM THE STREET WALL.
(3)(ii) IN R7D WHERE THE MAXIMUM PERMITTED HEIGHT OF A BUILDING IS GREATER THAN 120 FEET, A HEIGHT OF 55 FEET ABOVE THE MAXIMUM PERMITTED HEIGHT.

LEGEND:

FIXED GLAZING OPERABLE GLAZING

Glazing Specification	
Series/Model	Class B UPVC
Type	Fixed Window
Glazing (Nominal Dimensions)	1-7/8" IG(5/8" laminated exterior, 3/4" argon, 1/2" laminated interior Glass temperature 75F
DATA file No.	P6860.01C
STC	45
OITC	38
Series/Model	Upvc Super 82
Type	Tilt-Turn Window
Glazing (Nominal Dimensions)	49.6 mm IG(16 mm laminated exterior, 20mm argon, 12.8 mm laminated interior Glass temperature 75F
DATA file No.	L1561.01D
STC	46
OITC	41

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ELEVATION ALONG HAVENS PLACE

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REGISTERED ARCHITECT JAMES GEORGOPOULOS 025870 STATE OF NEW YORK

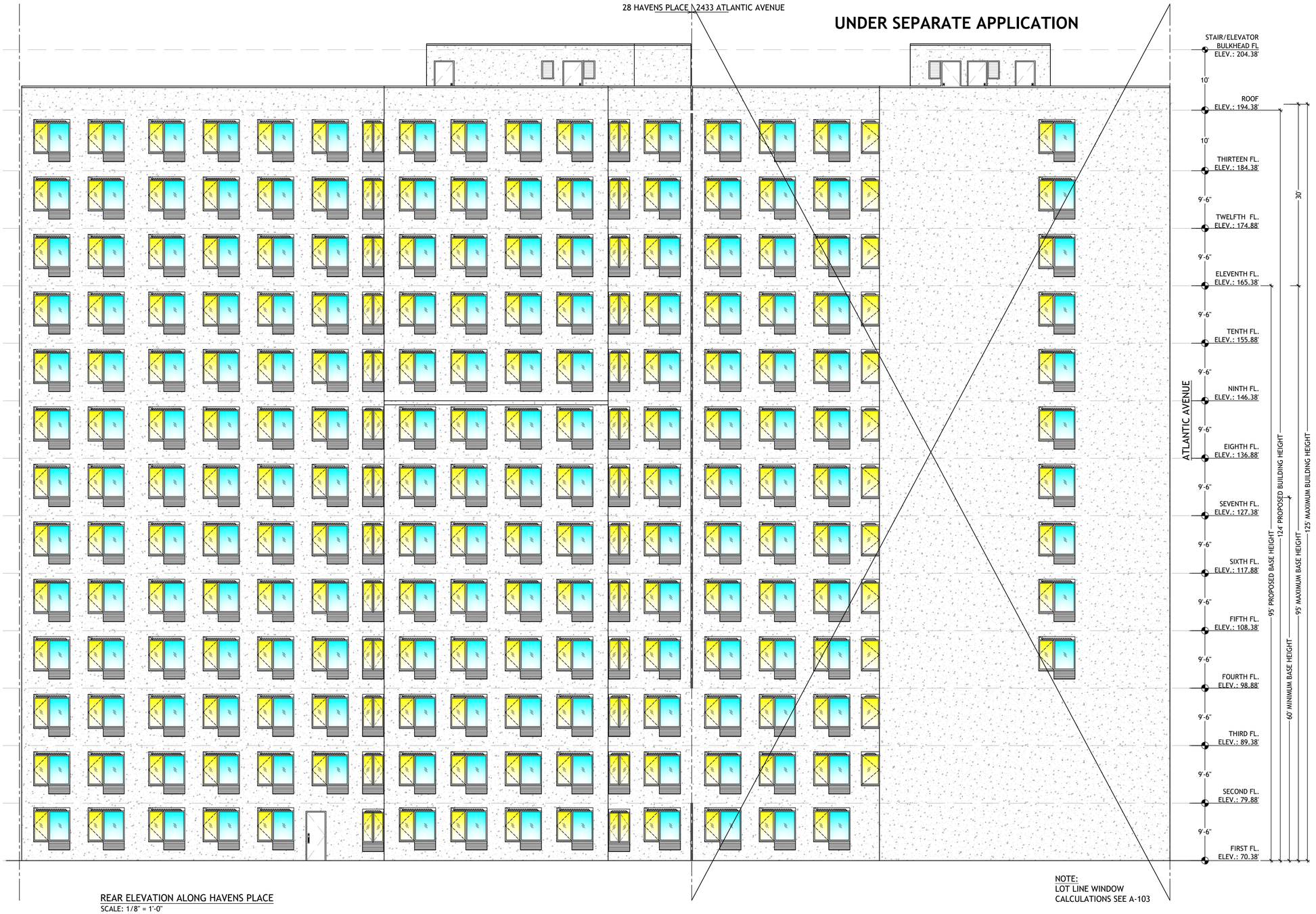
DATE : 7/21/25
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DWG NO :
A-201.00

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DOB STICKER :
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28 HAVENS PLACE \ 2433 ATLANTIC AVENUE

UNDER SEPARATE APPLICATION



REAR ELEVATION ALONG HAVENS PLACE
SCALE: 1/8" = 1'-0"

NOTE:
LOT LINE WINDOW
CALCULATIONS SEE A-103

LEGEND:

FIXED GLAZING

OPERABLE GLAZING

Glazing Specification	
Series/Model	Class B UPVC
Type	Fixed Window
Glazing (Nominal Dimensions)	1-7/8" IG(5/8" laminated exterior, 3/4" argon, 1/2" laminated interior Glass temperature 75F
DATA file No.	P6860.01C
STC	45
OITC	38
Series/Model	Upvc Super 82
Type	Tilt-Turn Window
Glazing (Nominal Dimensions)	49.6 mm IG(16 mm laminated exterior, 20mm argon, 12.8 mm laminated interior Glass temperature 75F
DATA file No.	L1561.01D
STC	46
OITC	41

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REAR HAVENS PLACE ELEVATION

SEAL & SIGNATURE

REGISTERED ARCHITECT PANOS GEORGOPOULOS 015870 STATE OF NEW YORK

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A-202.00

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APPENDIX J

SSDS & SVE MANUFACTURER SPECIFICATIONS

SELECTION GUIDE
pages 2-15

TYPICAL APPLICATIONS
pages 16-17

PRESSURE SENSOR ACCURACY
pages 18-19



Differential Pressure Gages
pages 20-27, 31-33



Manometers, Stationary
pages 28-30



Differential Pressure Gages/Switches, Transmitters
pages 34-37



Differential Pressure Gages/Switches, Dial
pages 38-44



Differential Pressure Switches
pages 45-57



Differential Pressure Transmitters, Air & Gas
pages 58-69



Differential Pressure Transmitters, Liquid & Gas
pages 70-80



Single Pressure Gages, Dial
pages 81-83



Single Pressure Gages, Digital
pages 84-86



Single Pressure Gages/ Switches/Transmitters, Digital
pages 87-89



Single Pressure Switches
pages 90-98



Single Pressure Transmitters
pages 98-110

FEATURED PRODUCTS

DIFFERENTIAL PRESSURE TRANSMITTER

SERIES 629HLP | page 77



- Rugged, versatile, high accuracy device
- Compact, lightweight, capable to be installed in any arrangement making installation very simple

INDUSTRIAL PRESSURE TRANSMITTER

SERIES 626 & 628 | pages 102-103



- High precision transmitter ensures stability and control to meet the needs of the most demanding applications
- Wide selection of models, ranges, accuracy, connections, and outputs to meet exacting pressure measurement specifications

Dwyer

DIFFERENTIAL PRESSURE
Pressure Gages

			
SERIES	**2000** - pages 20-21	**DM-1000** - page 25	**2-5000** - pages 26-27
Ranges	-0.05 to 0.2 in w.c.(-10 to 50 Pa) up to 0 to 30 psi (0 to 30 kPa)	0.25 to 100 in w.c. (60 Pa to 24.88 kPa) (Bi-directional ranges available)	0.5 in w.c. to 5 psi (125 Pa to 3 kPa)
Service	Air and non-combustible, compatible gases	Air and non-combustible, compatible gases	Air and compatible gases
Wetted Materials	Consult factory	Consult factory	Consult factory
Housing	Die cast aluminum case and bezel	Glass filled plastic	Glass filled nylon
Lens	Clear acrylic	N/A	Clear acrylic
Accuracy	±2 to 4% FS for most models. ±1 to 2% FS with HA option	±1% FS (2% FS for ranges 1 in w.c. and below)	±5% FS
Pressure Limits	-20″ Hg to 15 psig (-0.677 bar to 1.034 bar); MP option: 35 psig (2.41 bar); HP option: 80 psig (5.52 bar).	2 psi (14 kPa) for ≤5 in w.c. 11 psi (75 kPa) for ≥10 in w.c.	30 psig (2.067 bar)
Temperature Limits	20 to 140°F (-6.67 to 60°C)	0 to 140°F (-18 to 60°C)	20 to 120°F (-6.67 to 48.9°C)
Process Connection	1/8″ female NPT duplicate high and low pressure taps	1/8″ (3 mm) ID tubing	Barbed for 3/16″ ID tubing or 1/8″ male NPT
Enclosure Rating	N/A	NEMA 4X (IP66)	N/A

DIFFERENTIAL PRESSURE
Bezels

				
SERIES	**2000-SS** - page 22	**2000-SB** - page 22	**2000-CB** - page 22	**DH3-SS/3000MR(S)-SS/ 605-SS** - pages 36, 42 & 64
Accessory	Bezel	Bezel	Bezel	Bezel
Material	304 brushed stainless steel	304 stainless steel	Chrome plated aluminum	304 brushed stainless steel
Dimensions	4-3/4″ (120.7 mm) OD	4-3/4″ (120.7 mm) OD	4-3/4″ (120.7 mm) OD	4-3/4″ (120.7 mm) OD
Aesthetics/Function	Tapered brushed/matte SS finish	Electro polished Ra 16	Chrome finish	Tapered brushed/matte SS finish
Part Sold Separately	Yes	Yes	Yes	Yes
Part Number	420141-40	420141-10	420141-00	815999-10

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.

DIFFERENTIAL PRESSURE
Pressure Gages

			
SERIES	**4000** - page 31	**PTGD** - page 32	**PFG2** - page 33
Ranges	0 to 5 in w.c. up to 0 to 20 psid	5 to 150 psid (0.25 to 10 bar)	5 to 25 psid
Service	Air and compatible gases and oil based liquids	Compatible gases and liquids	Liquids/gases compatible with SS, GFN, and fluoropolymer
Wetted Materials	Consult factory	Aluminum or 316 SS piston; Buna-N, PTFE, or ceramic magnet seals	Aluminum mounting block
Housing	Die cast aluminum with impregnated hard coating	Aluminum or 316 SS	Glass filled nylon
Lens	N/A	Acrylic	Polyester
Accuracy	±3% FS (±2% or 4% for certain ranges)	±2% FS	±5% FS
Pressure Limits	-20″ Hg to 500 psig (-0.68 to 34.4 bar)	Aluminum: 3000 psi (206 bar); SS: 6000 psi (413 bar)	300 psig (20.7 bar)
Temperature Limits	20 to 200°F (-6.7 to 93.3°C)	N/A	200°F (93°C)
Process Connection	1/4″ female NPT duplicate high and low pressure taps	1/4″ female NPT	1/8″ female NPT
Enclosure Rating	N/A	N/A	N/A

DIFFERENTIAL PRESSURE
Accessories

				
SERIES	**AHU1/2** - page 22	**A-464** - page 23	**A-320-A** - page 23	**Scale Customization** - Consult Factory
Accessory	Surface mounting kit	Flush mounting kit	Enclosure	Customized logos/company name
Material	ABS plastic	White ABS plastic	ABS	Printed on aluminum scale
Dimensions	4-1/2″ x 4-1/2″	6-1/2″ x 6-1/2″	4-23/32″ x 3-37/64″ x 6-19/64″	As per customer requirement
Enclosure Rating	N/A	N/A	NEMA 1 (IP10)	N/A
Mounting Orientation	Surface	Flush	Wall	N/A
Aesthetics/Function	Quick Install accessory	Cleanroom mount	Quick install kit	Customize your application
Part Sold Separately	Yes	Yes	Yes	N/A
Part Number	A-607/A-607 with A-481	A-464	A-320-A	N/A

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.

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DIFFERENTIAL PRESSURE
Pressure Gages/Switches

				
SERIES	**DHII** - page 34	**DH** - page 35	**DH3** - page 36	**A3000** - pages 38-39
Ranges	0.25 to 100 in w.c. (60 Pa to 24.88 kPa) (Bi-directional ranges available)	0.25 to 100 in w.c. (60 Pa to 24.88 kPa) (Bi-directional ranges available)	0.25 to 100 in w.c. (60 Pa to 24.88 kPa) (Bi-directional ranges available)	0 to 0.25 in w.c. (0 to 60 Pa) up to 0 to 150 in w.c. (0 to 30 kPa)
Service	Air and non-combustible, compatible gases	Air and non-combustible, compatible gases	Air and non-combustible, compatible gases	Air and non-combustible, compatible gases
Wetted Materials	Consult factory	Consult factory	Consult factory	Consult factory
Housing	Aluminum, glass	ABS plastic, UL approved 94 V-0	Die cast aluminum case and bezel	N/A
Switch Type	(2) SPDT	(2) SPDT	(2) SPDT	(2) DPDT
Accuracy	±0.5% FS	±0.5% FS	±0.5% FS (±1% or ±1.5 for certain ranges)	±2% FS (±3% or 4% for certain ranges)
Pressure Limits	2 psi (≤2.5 in w.c.); 5 psi (5 to 50 in w.c.); 9 psi (100 in w.c.)	2 psi (≤2.5 in w.c.); 5 psi (5 to 50 in w.c.); 9 psi (100 in w.c.)	2 psi (≤2.5 in w.c.); 5 psi (5 to 50 in w.c.); 9 psi (100 in w.c.)	-20″ Hg to 25 psig (-0.677 bar to 1.72 bar); MP option: 35 psig (2.41 bar); HP option: 80 psig (5.52 bar).
Temperature Limits	32 to 140°F (0 to 60°C)	32 to 140°F (0 to 60°C)	32 to 140°F (0 to 60°C)	20 to 120°F (-6.67 to 48.9°C)
Process Connection	1/8″ female NPT	Compression fitting for 1/8″ ID tubing or barbed fitting for 3/16″ ID tubing	1/8″ female NPT	1/8″ female NPT
Enclosure Rating	NEMA 4 (IP66)	NEMA 4X (IP66)	N/A	N/A

LOW DIFFERENTIAL PRESSURE
Pressure Switches

				
SERIES	**ADPS** - page 45	**EDPS** - page 45	**1800** - page 47	**1900** - page 49
Set Point Range	.08 to 20 in w.c. (20 to 5000 Pa)	.08 to 20 in w.c. (20 to 5000 Pa)	.07 to 85 in w.c. (.017 to 21 kPa)	.07 to 20 in w.c. (.017 to 5 kPa)
Service	Compatible gases	Compatible gases	Compatible gases	Compatible gases
Wetted Materials	Silicone, PA 6.6, and Polystyrene	Silicone, PA 6.6, and materials UL 94 V-0 rated	Consult factory	Consult factory
Temperature Limits	-4 to 185°F (-20 to 85°C)	-4 to 185°F (-20 to 85°C)	-30 to 180°F (-34 to 82°C)	-30 to 180°F (-34 to 82°C)
Pressure Limits	40 in w.c. (10 kPa)	40 in w.c. (10 kPa)	10 psig (69 kPa)	45 in w.c. (11.2 kPa)
Power Requirement	None	None	None	None
Repeatability	1%	1%	2%	3%
Adjustable Deadband	No	No	No	No
Set Point Indication	Yes	Yes	No	No
Enclosure Rating	GP	UL 94 V-0 rated	GP, WP, or EXP	GP, WP, or EXP
Switch Type	SPDT	SPDT	SPDT	SPDT
Multiple Stages	No	No	No	No
Process Connection	Hose connection for 5/16″ OD and 1/4″ ID tubing	Hose connection for 5/16″ OD and 1/4″ ID tubing	1/8″ female NPT	1/8″ female NPT

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.

DIFFERENTIAL PRESSURE
Pressure Gages/Switches

				
SERIES	**43000** - page 41	**3000MR** - page 42	**3000MRS** - page 42	**MP** - page 44
Ranges	0 to 0.5 in w.c. up to 0 to 500 in w.c.	0 to 0.25 in w.c. (0 to 60 Pa) up to 0 to 100 in w.c. (0 to 4 kPa)	0 to 0.25 in w.c. (0 to 60 Pa) up to 0 to 100 in w.c. (0 to 4 kPa)	0 to 0.5 in w.c. (0 to 125 kPa) up to 0 to 20 in w.c. (0 to 3 kPa)
Service	Compatible gases and liquids	Air and non-combustible compatible gases	Air and non-combustible compatible gases	Air and non-combustible, compatible gases
Wetted Materials	Consult factory	Consult factory	Consult factory	Consult factory
Housing	N/A	N/A	N/A	N/A
Switch Type	(2) DPDT	SPDT	Solid state relay	(2) SPDT
Accuracy	±3% FS (±4% for certain ranges)	±2% FS (±3% or 4% for certain ranges)	±2% FS (±3% or 4% for certain ranges)	±5% FS
Pressure Limits	-20″ Hg to 500 psig (-0.677 bar to 34.5 bar)	-20″ Hg to 25 psig (-0.677 bar to 1.72 bar)	-20″ Hg to 25 psig (-0.677 bar to 1.72 bar)	30 psig (2.067 bar)
Temperature Limits	20 to 120°F (-6.67 to 48.9°C)	20 to 120°F (-6.67 to 48.9°C)	20 to 120°F (-6.67 to 48.9°C)	20 to 120°F (-6.67 to 49°C)
Process Connection	1/4″ female NPT	1/8″ female NPT	1/8″ female NPT	Barbed for 3/16″ ID tubing or 1/8″ male NPT
Enclosure Rating	N/A	N/A	N/A	N/A

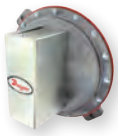
LOW DIFFERENTIAL PRESSURE
Pressure Switches

				
SERIES	**MDS** - page 51	**MDA** - page 51	**1831** - page 52	**1640** - page 52
Set Point Range	.5 to 50 in w.c. (.12 to 12.5 kPa)	.1 to 100 in w.c. (.25 to 249.1 mbar)	2.5 to 23 in w.c. (.62 to 5.7 kPa)	.01 to 12 in w.c. (.003 to 3 kPa)
Service	Air or compatible fluids on “high side”	Air or compatible fluids on “high side”	Compatible gases	Compatible gases
Wetted Materials	Polycarbonate and polyurethane	Polycarbonate and polyurethane	Consult factory	Consult factory
Temperature Limits	40 to 150°F (4 to 66°C)	40 to 150°F (4 to 66°C)	-30 to 180°F (-34 to 82°C)	-30 to 110°F (-34 to 43°C)
Pressure Limits	15 psig (1 bar)	15 psig (1 bar)	10 psig (69 kPa)	10 psig (69 kPa)
Power Requirement	None	None	None	None
Repeatability	Consult factory	Consult factory	4%	Consult factory
Adjustable Deadband	No	No	No	No
Set Point Indication	No	No	No	Yes
Enclosure Rating	GP	GP	GP	GP, WP, or EXP
Switch Type	SPST NO	SPST NO	DPDT	SPDT
Multiple Stages	No	No	No	Yes
Process Connection	Hose barb for 1/8″-3/16″ ID tubing	Smooth port for 1/8″ ID tubing	1/8″ female NPT	1/8″ female NPT

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.

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LOW DIFFERENTIAL PRESSURE
Pressure Switches

				
SERIES	**1620** - page 53	**1630** - page 53	**PG** - page 54	**1950** - page 55
Set Point Range	.15 to 24 in w.c. (.04 to 6 kPa)	.05 to 12 in w.c. (.012 to 3 kPa)	1 in w.c. to 5 psig (.25 kPa to 3.4 bar)	.03 to 20 in w.c. (.007 to 5 kPa)
Service	Compatible gases	Compatible gases	Compatible gases	Compatible gases
Wetted Materials	Consult factory	Consult factory	Fairprene, brass, steel, and aluminum	Consult factory
Temperature Limits	-30 to 130°F (-34 to 54°C)	-30 to 110°F (-34 to 43°C)	-10 to 180°F (-23 to 82°C)	-40 to 140°F (-40 to 60°C)
Pressure Limits	50 in w.c. (12.41 kPa)	10 psig (69 kPa)	Consult factory	45 in w.c. (11.2 kPa)
Power Requirement	None	None	None	None
Repeatability	1%	1%	1%	Consult factory
Adjustable Deadband	No	No	No	No
Set Point Indication	No	Yes	Yes	No
Enclosure Rating	GP and WP	GP and WP	GP, WP, or EXP	WP and EXP
Switch Type	(2) SPDT	SPDT	SPDT or DPDT	SPDT
Multiple Stages	Yes	No	No	No
Process Connection	1/8″ female NPT	1/8″ female NPT	1/8″ female and 1/2″ male NPT	1/8″ female NPT

LOW DIFFERENTIAL PRESSURE - NON-INDICATING
Pressure Transmitters and Transducers

			
SERIES	**616KD** - page 58	**668B/D** - page 60	**608** - page 74
Ranges	1 to 20 in w.c. (250 to 5000 Pa) to 5000 Pa (Bi-directional available)	.1 to 100 in w.c. (25 to 25000 Pa) (Bi-directional available)	0.1 to 25 in w.c. (25 to 6200 Pa) (Bi-directional available)
Accuracy	616KD-A: ±0.25% FS; 616KD-B: ±1% FS; 616KD-C: ±2% FS	±0.8% FS	±0.5% or ±0.25% FS
Wetted Materials	Consult factory	Consult factory	Consult factory
Comp. Temp. Limits	20 to 122°F (-6.67 to 50°C)	40 to 170°F (4.4 to 77°C)	0 to 160°F (-18 to 71°C)
Oper. Temp. Limits	0 to 140°F (-17.8 to 60°C)	0 to 170°F (-18 to 77°C)	-20 to 185°F (-28 to 85°C)
Output Signal	4 to 20 mA or field selectable 0 to 10/0 to 5/2 to 10/1 to 5 V	4 to 20 mA, 0 to 10 VDC, or 0 to 5 VDC	4 to 20 mA
Elec. Connection	Screw-type terminal block	Screw-type terminal block	Screw-type terminal block, Two 1/2″ female NPT conduit
Process Connection	Barbed for 1/8″ and 3/16″ ID rubber or vinyl tubing	3/16″ OD barbed brass for 1/8″ ID push-on tubing	1/4″ female NPT
Enclosure Rating	NEMA 1 (IP20)	UL 94 V-0 rated	NEMA 4X (IP66)

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.

LOW DIFFERENTIAL PRESSURE
Pressure Switches

			
SERIES	**1950G** - page 55	**H3** - page 56	**DX** - page 57
Set Point Range	.07 to 20 in w.c. (.017 to 5 kPa)	180 in w.c. to 200 psid (0.5 to 13.5 bar)	2.5 to 75 psi (.17 to 5.2 bar)
Service	Compatible gases	Compatible liquids or gases	Compatible liquids or gases
Wetted Materials	Consult factory	Aluminum/Nitrile or SS/ Fluoroelastomer	Brass and fluoroelastomer
Temperature Limits	0 to 140°F (-18 to 60°C)	-4 to 220°F (-20 to 104°F)	30 to 140°F (-1 to 60°C)
Pressure Limits	45 in w.c. (11.2 kPa)	1500 psig (103 bar)	200 psig (13.8 bar)
Power Requirement	24 VDC, 120 or 240 VAC	None	None
Repeatability	Consult factory	Consult factory	2%
Adjustable Deadband	No	No	Yes
Set Point Indication	No	No	No
Enclosure Rating	WP and EXP	EP	WP
Switch Type	SPDT	SPDT or DPDT	SPDT
Multiple Stages	No	No	No
Process Connection	1/8″ female NPT	1/8″ female NPT	1/4″ female NPT

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.

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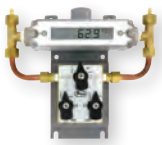
LOW DIFFERENTIAL PRESSURE – INDICATING

Pressure Transmitters and Transducers

			
SERIES	**616W** - page 62	**DM-2000** - page 63	**605** - page 64
Ranges	6 in w.c. to 2.5 kPa	.1 to 5 in w.c. (Bi-directional available)	Vacuum, .5 to 50 in w.c. (60 to 1500 Pa)
Accuracy	±0.25% FS, display accuracy ±0.5%	±1% FS	±0.5% or ±2% FS
Wetted Materials	Consult factory	Consult factory	Consult factory
Comp. Temp. Limits	N/A	N/A	32 to 120°F (0 to 48.9°C)
Oper. Temp. Limits	0 to 150°F (-17.8 to 66°C)	20 to 120°F (-7 to 49°C)	20 to 120°F (-6.67 to 48.9°C)
Output Signal	4-20 mA (2-wire), 0-5 VDC, or 0-10 VDC (3-wire)	4-20 mA	4-20 mA
Elec. Connection	3-wire terminal block for 16 to 26 AWG	Screw-type terminal block	Screw-type terminal block
Process Connection	Barbed for 1/8″ and 3/16″ ID rubber or vinyl tubing	1/8″ ID tubing	1/8″ female NPT
Enclosure Rating	NEMA 4X (IP66)	N/A	N/A

WET-WET DIFFERENTIAL PRESSURE

Pressure Transmitters and Transducers

				
SERIES	**3100** - pages 70-71	**636D** - page 75	**629C** - page 76	**629C-3V** - page 76
Ranges	6 in w.c. to 0-1000 psig	15 to 300 psi	5 to 500 psid (0.5 to 30 bar)	5 to 500 psid (0.5 to 30 bar)
Accuracy	±0.075% FS	±0.5% FS	±0.50% FS	±0.50% FS
Wetted Materials	316L SS	316L SS	316, 316L SS	316, 316L SS, Brass 360, Copper, Reinforced acetal copolymer
Comp. Temp. Limits	N/A	-20 to 180°F (-29 to 82°C)	0 to 175°F (-18 to 79°C)	0 to 175°F (-18 to 79°C)
Oper. Temp. Limits	-40 to 185°F (-40 to 85°C)	-40 to 212°F (-40 to 100°C)	0 to 200°F (-18 to 93°C)	0 to 200°F (-18 to 93°C)
Output Signal	4-20 mA or HART® Communication	4-20 mA or 1 to 5 VDC	2-wire: 4-20 mA; 3-wire: Selectable 0-5, 1-5, 0-10, or 2-10 VDC	2-wire: 4-20 mA; 3-wire: Selectable 0-5, 1-5, 0-10, or 2-10 VDC
Elec. Connection	(2) 1/2″ female NPT conduit, screw terminal	2′ (61 cm) cable, 3/4″ female NPT conduit	Screw-type removable terminal block; 1/2″ female NPT conduit	Screw-type removable terminal block; 1/2″ female NPT conduit
Process Connection	1/4″ female NPT	1/2″ female NPT	1/4″ female NPT	1/4″ female NPT
Enclosure Rating	NEMA 4X (IP66)	NEMA 4 (IP66)	NEMA 4X (IP66)	Non-LCD designed to meet NEMA 4X (IP66)

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LOW DIFFERENTIAL PRESSURE - INDICATING
Pressure Transmitters and Transducers





SERIES	MS2 - page 66	ISDP - page 69
Ranges	0.1 in w.c. to 28 in w.c. (25 Pa to 6975 Pa) (Bi-directional available)	0.1 to 100 in w.c. (Bi-directional available)
Accuracy	±1% or ±2% FS	±0.5% FS
Wetted Materials	Consult factory	Consult factory
Comp. Temp. Limits	N/A	32 to 140°F (0 to 60°C)
Oper. Temp. Limits	0 to 150°F (-18 to 66°C)	32 to 140°F (0 to 60°C)
Output Signal	4-20 mA (2-wire), 0-5 VDC, 0-10 VDC (3-wire)	4-20 mA DC
Elec. Connection	3-wire terminal block for 16 to 22 AWG	M-12 4-pin connector
Process Connection	3/16″ I.D. tubing (5 mm ID); Max OD 9 mm	1/8″ female NPT
Enclosure Rating	NEMA 4X (IP66)	NEMA 4X (IP66)

WET-WET DIFFERENTIAL PRESSURE
Pressure Transmitters and Transducers









SERIES	629HLP - page 77	647 - page 78	645 - page 79	WWDP - page 80
Ranges	15 to 90 psi (1 to 6 bar)	1 in w.c. to 0-30 psid (245 Pa to 0-2.0 bar)	1 to 100 psid (0.07 to 6.5 bar) (Bi-directional ranges available)	5 to 250 psi
Accuracy	±1% FS	±1% FS	±0.25% FS	±1% FS
Wetted Materials	304 SS	Brass, vinyl, glass-filled polyester, silicon, florosilicone	17-4 PH SS, Fluoroelastomer, Silicone	Consult factory
Comp. Temp. Limits	-5 to 60°C (23 to 140°F)	N/A	30 to 150°F (-1 to 65°C)	32 to 130°F (0 to 54°C)
Oper. Temp. Limits	-10 to 80°C (14 to 176°F)	32 to 122°F (0 to 50°C)	0 to 175°F (-18 to 80°C)	-4 to 185°F (-20 to 85°C)
Output Signal	4-20 mA, 0-10 VDC	4-20 mA	4-20 mA	Selectable 0-5, 0-10, and 0-5 VDC; 4-20 mA
Elec. Connection	Form A DIN 43650	Screw-type terminal block	Screw-type terminal block	1/2″ conduit
Process Connection	1/4″ female NPT, 1/4″ female BSPT	1/8″ female NPT	1/4″ female NPT	1/8″ female NPT internal
Enclosure Rating	IP65	N/A	NEMA 4X (IP66)	NEMA 4 (IP66)

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.

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SINGLE PRESSURE
Pressure Gages

			
SERIES	**LPG4/LPG5** - pages 81-82	**SGY & SGZ** - pages 83	**765** - page 83
Ranges	-235 to 160 in w.c. (-60 to 40 kPa)	-30″ Hg to 1000 psi (-1 to 70 bar)	30″ Hg to 20,000 psi (-100 to 135,000 kPa)
Service	Compatible gases/liquids	Compatible gases/liquids	Compatible gases/liquids
Wetted Materials	Brass, bronze or SS	Brass, bronze or SS	316L SS, Bourdon tube
Housing	LPG4: Drawn Steel; LPG5: Chrome plated	304 SS	Phenolic plastic with safety blow-out back
Accuracy	LPG4 ±1.5% FS; LPG5 ±3%-2%-3% FS	±1.5 to ±2.5% FS	±0.5% FS ANSI/ASME (Grade 2A)
Pressure Limits	100% FS	100% FS	110 to 125% FS
Temperature Limits	Ambient: -40 to 140°F (-40 to 60°C); LPG5 -4 to 140°F (-20 to 60°C)	-4 to 140°F (-20 to 60°C)	-40 to 200°F (-40 to 93°C)
Process Connection	1/4″ male NPT	1/4″ male NPT	1/4″ or 1/2″ male NPT
Enclosure Rating	N/A	NEMA 3 (IP54)	IP65 (NEMA 4)

HIGH SINGLE PRESSURE - INDICATING
Pressure Transmitters and Transducers

					
SERIES	**DSGT** - page 87	**EDA** - page 89	**626/628-CB** - pages 102-103	**IWP** - page 105	**3200G** - pages 106-107
Ranges	30 to 20,000 psig and compound ranges	20 to 3000 psig	Up to 300 psia, 8000 psig, 16 bar abs, 550 bar	30 to 1000 psig	-14.5 psig to 8500 psig
Accuracy	±0.25% FS	±1% FS	626: ±0.25% FS; 628: ±1% FS	±0.5% FS	±0.075% FS
Wetted Materials	17-4 SS, 316 SS	316L SS	316, 316L SS	304 and 316 SS	316L SS
Comp. Temp. Limits	N/A	32 to 122°F (0 to 50°C)	0 to 175°F (0 to 79°C)	-22 to 203°F (-30 to 95°C)	N/A
Oper. Temp. Limits	14 to 140°F (-10 to 60°C)	20 to 140°F (-6.6 to 60°C)	0 to 200°F (0 to 94°C)	32 to 158°F (0 to 70°C)	-40 to 185°F (-40 to 85°C)
Output Signal	4-20 mA	4-20 mA, 1-6 VDC, 1-5 VDC, 0-5 VDC, or 0-10 VDC	4-20 mA	4-20 mA	4-20 mA or HART® Communication
Elec. Connection	3′ flying leads	Screw-type removable terminal blocks with (2) 1/2″ female NPT conduit connections	Terminal block, 1/2″ female NPT conduit	1/2″ female NPT	(2) 1/2″ female NPT conduit, screw terminal
Process Connection	1/2″ male NPT	1/4″ male NPT, 1/4″ male BSPT, or 7/16″ SAE	1/4″ male or female NPT or BSPT	1/2″ female NPT	1/2″ female NPT
Enclosure Rating	NEMA 4X	NEMA 4X (IP66)	NEMA 4X (IP66)	IP65	NEMA 4X (IP66)

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DIGITAL SINGLE PRESSURE
Pressure Gages

					
SERIES	**DPGA** - page 84	**DPGW** - page 84	**DPG-000** - page 85	**DPG-100** - page 85	**DPG-200** - page 87
Ranges	-30″ Hg to 500 psig (-1.013 to 34.47 bar)	-30″ Hg to 500 psig (-1.013 to 34.47 bar)	-14.7 to 8000 psig (-1.0 to 550 bar)	-14.7 to 8000 psig (-1.0 to 550 bar)	5 to 8000 psig (0.3 to 550 bar)
Service	Air and compatible gases	Compatible gases/liquids	Compatible liquids and combustible gases	Compatible liquids and combustible gases	Liquids and non-combustible compatible gases
Wetted Materials	316L SS, silicone sensor	316L SS	Type 316L SS	Type 316L SS	Type 316L SS
Housing	ABS plastic	ABS plastic	Polycarbonate front and back cover, anodized aluminum housing, polycarbonate overlay, Buna-N O-rings, 316L SS sensor construction	Polycarbonate front and back cover, anodized aluminum housing, polycarbonate overlay, Buna-N O-rings, 316L SS sensor construction	Polycarbonate front and back cover, anodized aluminum housing, polycarbonate overlay, Buna-N O-rings, 316L SS sensor construction
Accuracy	±1% FS	±1% FS	±0.5% FS	±0.25% FS	±0.25% FS
Pressure Limits	200% FS; 30 psig for vacuum models	200% FS; 30 psig for vacuum models	200% FS (≤1000 psi); 5000 psi (3000 psi); 7500 psi (5000 psi)	200% FS (≤1000 psi); 5000 psi (3000 psi); 7500 psi (5000 psi)	200% FS (≤1000 psi); 5000 psi (3000 psi); 7500 psi (5000 psi)
Temperature Limits	30 to 120°F (-1 to 49°C)	30 to 120°F (-1 to 49°C)	0 to 130°F (-18 to 55°C)	0 to 130°F (-18 to 55°C)	0 to 158°F (-18 to 70°C)
Process Connection	1/4″ male NPT	1/4″ male NPT	1/4″ male NPT	1/4″ male NPT	1/4″ male NPT
Enclosure Rating	N/A	N/A	NEMA 4/4X (IP66)	NEMA 4/4X (IP66)	NEMA 4X (IP66)

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.

Dwyer

SINGLE PRESSURE
Pressure Switches

						
SERIES	**EDA** - page 89	**DA/DS** - pages 90	**SA1100** - page 92	**1000W/E** - page 93	**A1F** - page 94	**A1PS/A1VS** - page 95
Set Point Range	20 to 3000 psig (1.38 to 206 bar)	30″ Hg VAC to 8000 psig (762 mm Hg VAC to 551 bar)	10 to 500 psig (.7 to 34 bar)	5 to 1400 psig (.48 to 96.5 bar)	2 to 450 psig (.14 to 10.3 bar)	28″ Hg VAC to 500 psig (711 mm Hg VAC to 34.5 bar)
Service	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases
Wetted Materials	316 SS	Brass, 403 SS, or 316 SS	Aluminum, brass, or 316 SS with Buna-N or fluorocarbon	Aluminum or 316 SS with polyamide, 316 SS, or Teflon®	Fluorocarbon and 316 SS	Zinc and Buna-N
Temperature Limits	20 to 140°F (-6.6 to 60°C)	-10 to 180°F (-23 to 82°C)	-30 to 180°F (-35 to 77°C)	-30 to 170°F (-35 to 77°C)	-40 to 175°F (-40 to 80°C)	-31 to 185°F (-35 to 85°C)
Pressure Limits	4500 psig (310 bar)	8000 psig (551 bar)	3000 psig (207 bar)	3000 psig (207 bar)	750 psig (51 bar)	600 psig (41 bar)
Power Requirement	12-30 VDC/AC	None	None	None	None	None
Repeatability	0.5%	1%	Consult factory	Consult factory	Consult factory	Consult factory
Adjustable Deadband	Yes	Yes	Yes	No	No	No
Set Point Indication	Yes	Yes	Yes	Yes	Yes	Yes
Enclosure Rating	WP	GP, WP, or EXP	WP and EXP	WP or EXP	GP or WP	GP
Switch Type	(2) SPDT	SPDT or DPDT	SPDT or DPDT	SPDT or DPDT	SPDT	SPDT
Multiple Stages	No	Yes	No	No	No	No
Process Connection	1/4″ male NPT	GP/WP: 1/4″ male NPT or 1/2″ male NPT; EXP: 1/2″ male NPT and 1/4″ female NPT	1/4″ or 1/2″ female NPT	1/4″ female NPT	1/4″ female and 1/2″ male NPT	1/4″ male NPT

Teflon® is a registered trademark of E.I. Dupont De Nemours and Company

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.

SINGLE PRESSURE
Pressure Switches

SERIES	APS/AVS - page 95	A6 - page 96	AP - page 96	A2 - page 97	MVS - page 97	CXA - page 98
						
Set Point Range	28″ Hg VAC to 500 psig (711 mm Hg VAC to 34.5 bar)	.5 to 150 psig (.03 to 10.3 bar)	10 in w.c. VAC to 125 psig (2.5 kPa VAC to 8.6 bar)	5 to 150 psig (.34 to 10 bar)	3 to 330 in w.c. VAC (8 to 822 mbar VAC)	15 to 150 psig (1.0 to 10.3 bar)
Service	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases	Compatible liquids or gases
Wetted Materials	17-4 PH SS and 303 SS	Polyimide with brass or 304 SS	Steel and Buna-N 04 316 SS and Teflon®	Kapton® and brass	Polycarbonate and polyurethane	Silicone, steel, and SS
Temperature Limits	-65 to 225°F (-54 to 107°C)	-40 to 248°F (-40 to 120°C)	-30 to 150°F (-35 to 66°C)	-40 to 250°F (-40 to 121°C)	40 to 150°F (4 to 66°C)	140°F (60°C)
Pressure Limits	750 psig (51 bar)	500 psig (34 bar)	160 psig (11 bar)	500 psig (34 bar)	330 in w.c. (822 mbar)	204 psig (14.1 bar)
Power Requirement	None	None	None	None	None	None
Repeatability	Consult factory	±10%	Consult factory	5%	20%	±5 psig (.3 bar)
Adjustable Deadband	No	No	No	No	No	Yes
Set Point Indication	Yes	No	Yes	No	No	No
Enclosure Rating	GP	GP or WP	GP, WP, or EXP	GP or submersible	GP	GP
Switch Type	SPDT	(1) SPST NO and (1) SPST NC	SPDT or DPDT	SPST	SPDT	SPST NO or NC
Multiple Stages	No	No	No	No	No	No
Process Connection	1/8″ mail NPT	1/4″ male NPT	1/4″ female NPT	1/8″ male NPT	Consult factory	1/4″ female NPT

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Dwyer

HIGH SINGLE PRESSURE - NON-INDICATING

Pressure Transmitters and Transducers

					
SERIES	**681** - page 98	**644** - page 99	**682** - page 100	**672** - page 100	**673** - page 101
Ranges	1 to 100 psi	Vacuum, 15 to 1000 psig	25 to 10,000 psi	10 to 400 in w.c.	Compound, 1 to 1000 psi
Accuracy	±0.20% FS	±0.05% FS	±0.13% FS	±0.25% FS	±0.25% FS
Wetted Materials	316L SS	17-4 PH SS	17-4 PH SS	318 Duplex SS, Ceramic, fluoroelastomer	17-4 PH SS
Comp. Temp. Limits	20 to 180°F (-7 to 80°C)	-4 to 140°F (-20 to 60°C)	-4 to 176°F (-20 to 80°C)	-5 to 140°F (-20 to 60°C)	4 to 212°F (-20 to 100°C)
Oper. Temp. Limits	-40 to 260°F (-40 to 125°C)	-40 to 185°F (-40 to 85°C)	-40 to 260°F (-40 to 125°C)	-40 to 212°F (-40 to 100°C)	-40 to 260°F (-40 to 125°C)
Output Signal	4-20 mA	0-10 VDC (4-wire) or 4-20 mA (2-wire)	4-20 mA	4-20 mA or 0-5 VDC	4-20 mA
Elec. Connection	15 ft (4.5 m) multi-conduit cable	3´ cable or 6-pin male bayonet connector	2 ft (61 cm) multi-conductor cable	Large DIN 43650 connector with mating plug	2 ft (61 cm) multi-conductor cable
Process Connection	1-1/2˝ or 2˝ sanitary clamp	1/4˝ male NPT	1/4˝ male or female NPT or BSPT	1/4˝-18 male NPT	1/4˝ male NPT
Enclosure Rating	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)

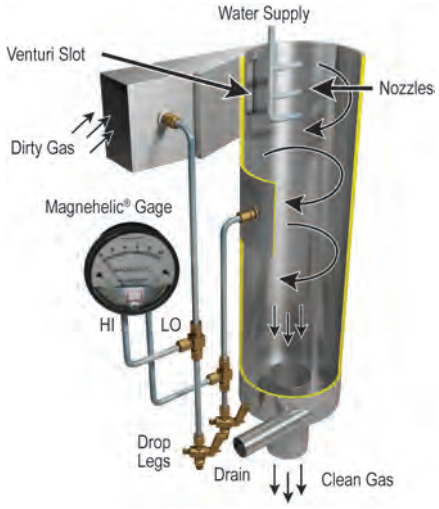
These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.

HIGH SINGLE PRESSURE - NON-INDICATING

Pressure Transmitters and Transducers

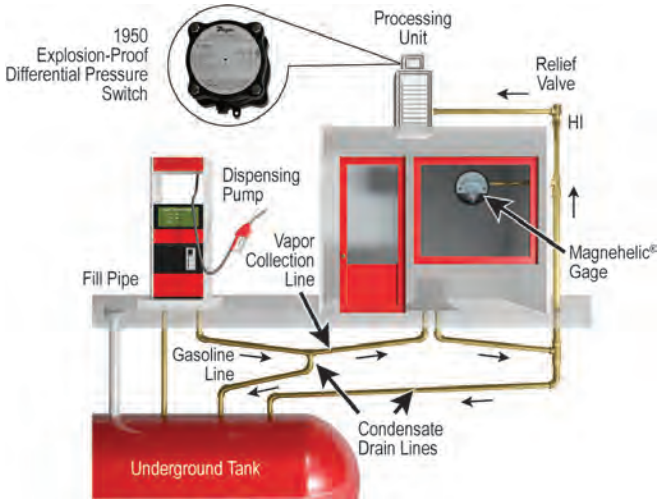
					
SERIES	**638R** - page 99	**FDT** - page 101	**626/628-GH** - pages 102-103	**636** - page 104	**IS626** - page 110
Ranges	75 to 667 psia (5.2 to 46 bar(a))	100 to 10,000 psi (7 to 690 bar)	Up to 300 psia, 8000 psig, 16 bar abs, 550 bar	15 to 300 psi (1 to 20 bar)	15 to 8000 psig (1 to 550 bar); 15 to 30 psia (1 to 3 bara)
Accuracy	±1.2% FS	±0.5% FS	626: ±0.25% FS; 628: ±1% FS	±0.30% FS	±0.25% FS; 0.5% FS for absolute ranges
Wetted Materials	Brass, aluminum, or 316 SS	316 and 15-5 SS	316, 316L SS	316L SS	316 and 316L SS
Comp. Temp. Limits	-40 to 275°F (-40 to 135°C)	0 to 170°F (-18 to 77°C)	0 to 175°F (0 to 79°C)	-20 to 180°F (-29 to 82°C)	0 to 176°F (-18 to 80°C)
Oper. Temp. Limits	-40 to 275°F (-40 to 135°C)	-40 to 200°F (-40 to 93°C)	0 to 200°F (0 to 94°C)	-40 to 212°F (-40 to 100°C)	0 to 176°F (-18 to 80°C)
Output Signal	0.5-4.5 VDC ratiometric	4-20 mA or 0-5 VDC	4-20 mA	4-20 mA or 1-5 VDC	4-20 mA
Elec. Connection	Packard connection	4-pin	Cable, DIN connector, or 4-pin M12	2 ft (61 cm) cable, 3/4″ female NPT conduit	3´ cable or 4-pin M-12 connector
Process Connection	7/16″ 20 UNF (female) or 1/4″ NPT (female)	7/16-20 UNF male flush diaphragm; 1/4″ male NPT	1/4″ male or female NPT or BSPT	1/2″ female NPT	1/4″ male or female NPT or BSPT
Enclosure Rating	IP67	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)	NEMA 4X (IP66)

These Selection Guides are for quick comparison of similar products. Please refer to the catalog page number referenced for complete product information and specifications.



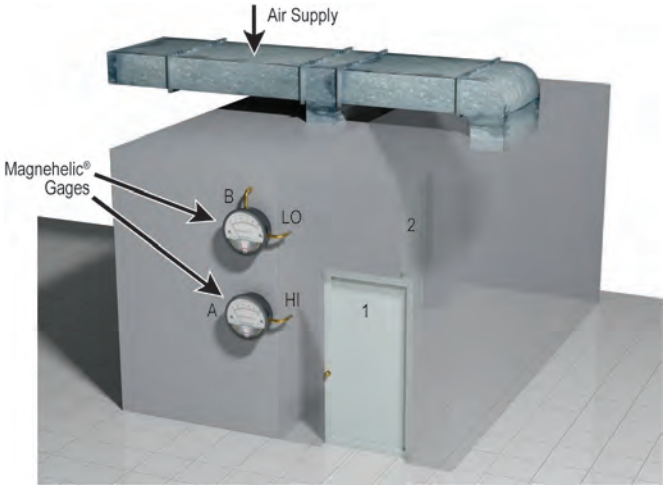
Differential pressure gage assists operator in adjusting venturi pressure drop in dust scrubber.

This scrubber design removes unwanted dust or particulate matter from air or gas using an adjustable throat venturi. To adjust the pressure drop across the venturi, a jack-screw-actuated sliding vane varies the slot width. A permanently mounted Dwyer® Magnehelic® differential pressure gage indicates the venturi pressure drop while the operator adjusts to the desired or design setting. Where water may possibly enter the gage sensing lines, as in this application, drop legs with drain valves are needed to permit draining the lines at their lowest point. Good engineering practice dictates that the Magnehelic® gage always be mounted above the sensing tap when possible to prevent moisture accumulation in the lines and gage. At minimum, mount the gage above the lowest point in the sensing lines.



Gasoline vapor recovery system.

Some area pollution control agencies require that 90% or more of gasoline vapor vented at service stations when fuel is dispensed must be prevented from venting to atmosphere. Using a dual hose dispenser, this vapor recovery system is a vacuum assist, vapor burnoff type. The blower creates a low vacuum at the nozzle, routing vapor from the automobile tank to underground storage tanks. As uncondensed vapor pressure reaches 2 in to 3 in w.c. pressure, a Dwyer® 1950 Series explosion-proof differential pressure switch activates a rooftop burnoff unit, which ignites excess vapor. The Magnehelic® differential pressure gage mounted on the station wall monitors tank pressure to verify system operation. The gage is calibrated in inches of gasoline, from +6 to -2. This allows the operator to determine the necessary level correction due to tank pressure prior to dipsticking the tanks through the fill pipe.



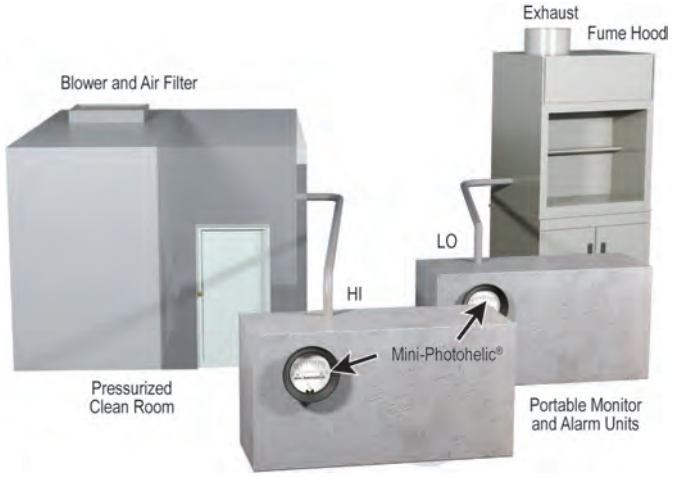
Dwyer® gages indicate pressurization of special rooms.

A zero-center Dwyer® Magnehelic® differential pressure gage with an 0.25 in w.c. range either side of zero makes an effective monitor for proper operation of room pressurization systems. In the example, differential gage B has its high pressure port open to room 2 and its low pressure port to room 1; gage A has its high pressure port open to room 1 and its low pressure port open to the atmosphere. With the makeup air supply damper adjusted properly, room 2 will be a higher pressure than room 1 which is at higher than atmospheric pressure; both gages will read positive. Should the air supply to room 2 be obstructed, gage B will read negative. If the air supply fails entirely, both gages will read zero. For even better security, a Photohelic® switch/gage will provide automatic alarm or start-up of a backup system.



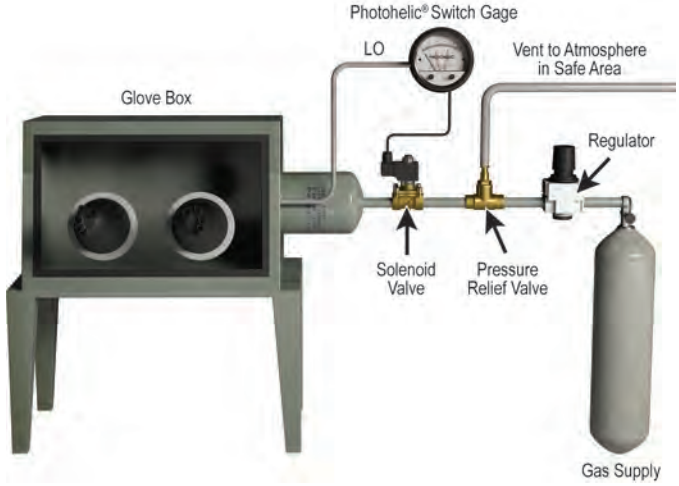
Filling scuba diver air tanks.

The Dwyer® Series DPG with oxygen cleaning and 5000 psi range is used in gas blending applications for filling scuba diver's air tanks. The DPG is the master mixing gage in this manifold apparatus. Two or three gases may be blended with the manifold to produce the appropriate blend of breathable gas depending on the diver and the depths they will reach. With the flow adjustment knobs and the 0.25% full-scale accuracy DPG, precise tank charging rates are maintained.



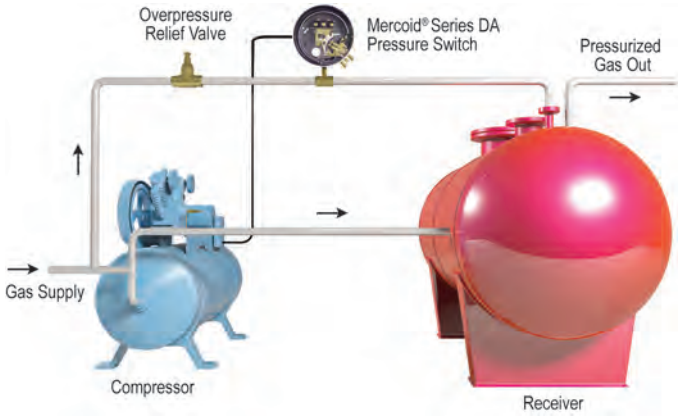
Compact switch/gage monitors pressure, actuates alarm.

This portable pressure monitor alarm utilizes a Dwyer® Mini-Photohelic® differential pressure switch/gage to monitor either positive pressure, as in a clean room, or negative pressure, as in a fume or paint spray hood. It sounds an alarm, both audible and visual, when pressure exceeds either a preset high or low limit. The unit can be used temporarily to verify proper operation after initial installation. Or it can be mounted permanently for continuous monitoring. In applications where a single fixed alarm pressure level is sufficient, a differential pressure switch can be used instead.



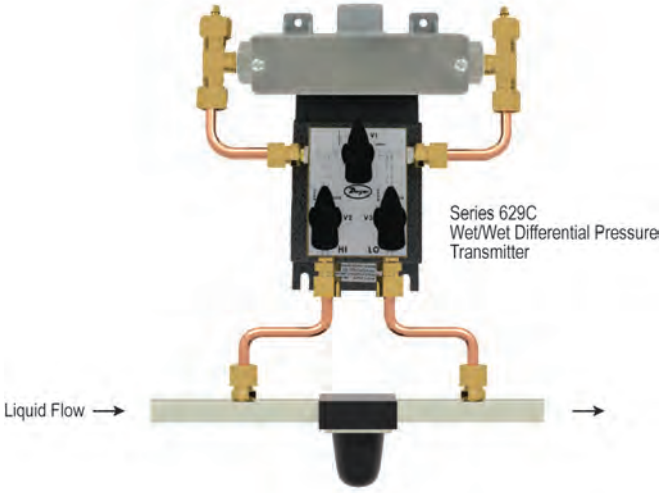
Zero-center switch/gage controls the inert atmosphere in glove box.

A controlled inert atmosphere “glove-box” is used in the fields of physical chemistry and metallurgy for handling and welding special or hazardous materials. A Dwyer® Photohelic® differential pressure switch/gage serves as an automatic and readily adjustable pressure control for the helium, argon or nitrogen gas used in the system. The box is first evacuated, then pressurized with the required gas. Therefore, a zero-center Photohelic® switch/gage is used, permitting both pressure and vacuum to be read and controlled by a single gage. Use of the low pressure gage connection (rear chamber of gage) and a Buna-N diaphragm is suggested to minimize leaks from or to the atmosphere.



Mercoid® Series DA pressure switch maintains desired gas pressure in tank.

Demand for compressed gas varies in this gas line. So a Mercoid® Series DA adjustable deadband pressure switch is included to turn the compressor on at low pressure and off when the maximum pressure is reached.



Three-valve manifold simplifies installation of wet/wet differential pressure transmitter.

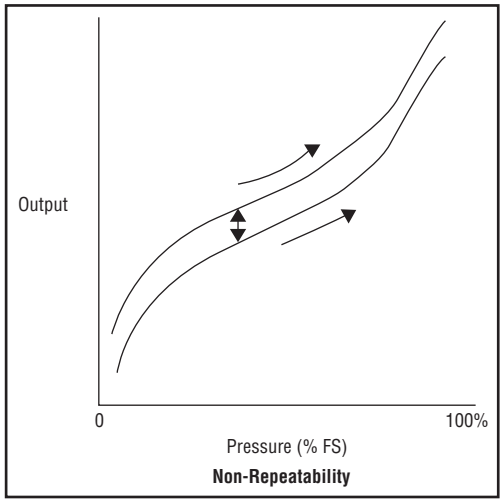
When using differential pressure transmitters in fluid applications, it is essential to periodically make sure that there is no air in the system, as this can cause erroneous readings. Unfortunately, the necessary three-valve bleed system is often expensive and large, making installation difficult and bulky. For this reason, Dwyer Instruments, Inc. offers the 3V option on all 629C Wet/Wet Differential Pressure Transmitters. This compact, lightweight, and economical bleed manifold is shipped factory-installed on the 629C, eliminating the hassle of constructing a custom apparatus. The 629C, when combined with the three-valve option, makes for an ideal setup to monitor hydraulic filter clogging or other fluid pressure sensing applications.

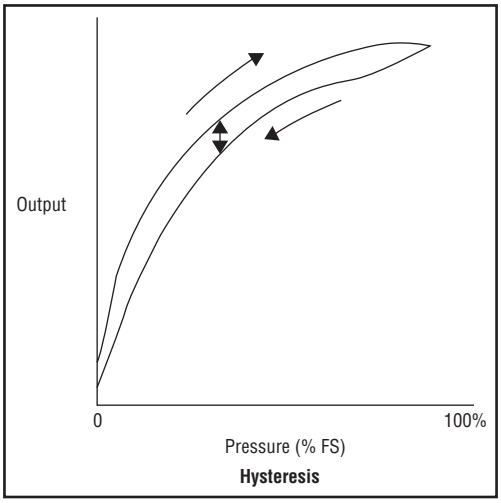
Dwyer

PRESSURE SENSOR ACCURACY

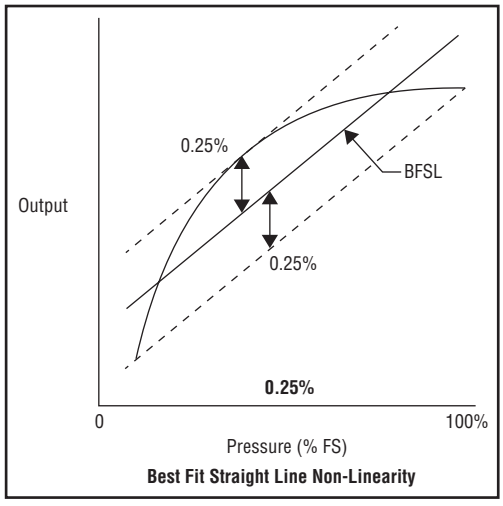
What is accuracy? The International Electrotechnical Commission (IEC) definition of accuracy is maximum positive and negative deviation from the specified characteristic curve observed in testing a device under specified conditions and by a specified procedure. Unfortunately when it comes to defining accuracy for a pressure sensor it's more complicated. Accuracy has a large effect on the cost of a pressure sensor or even more importantly, the quality or efficiency of the process it is measuring. It is important to understand what factors determine accuracy and what questions to ask when selecting a sensor so that an apples-to-apples comparison can be made instead of apples-to-oranges.

Even though there isn't a defined standard for pressure sensor accuracy there is an IEC standard that defines factors that make-up accuracy. IEC 61298-2 states that accuracy must include Hysteresis, Non-Repeatability and Non-Linearity. Non-Repeatability and Hysteresis are well defined. Hysteresis is the maximum difference in sensor output at a pressure when that pressure is first approached with pressure increasing and then approached with pressure decreasing during a full span pressure cycle. Non-Repeatability is the maximum difference in output when the same pressure is applied, consecutively, under the same conditions and approaching from the same direction.

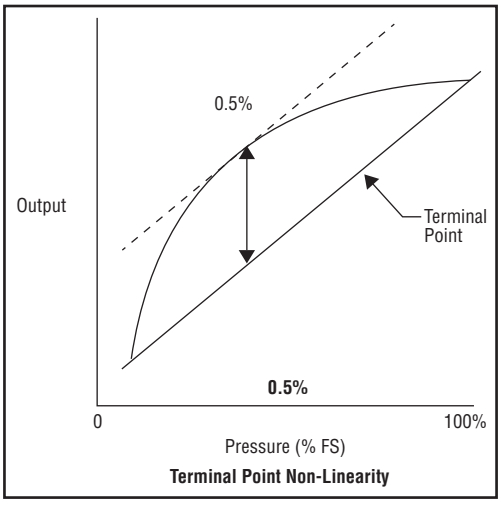




Where manufactures start to differentiate is with Non-Linearity. IEC 61298-2 lists three methods of Non-Linearity, the two most popular methods used by sensor manufactures are the Best Fit Straight Line Non-Linearity and Terminal Point Non-Linearity. Usually the method of non-linearity used will be specified with the sensors accuracy as BFSL or Terminal Point Method. Why is it important to understand the difference between these two methods? Based on the Non-Linearity characteristics of a sensor, it could have two vastly different Non-Linearity percentages. The following diagram shows how the same sensor can have two Non-Linearity percentages.



=



PRESSURE SENSOR ACCURACY

IEC 61298-2 identifies which factors make up accuracy (Non-Linearity, Non-Repeatability, Hysteresis) but the IEC standard does not specify how these factors are combined into a single accuracy. The methods in which the values are combined have a substantial impact on the total accuracy. Some manufactures simply sum the three factors while others use mathematical equations such as Root of the Sum Squared or Root of the Mean Squared to combine Non-Linearity, Non-Repeatability, and Hysteresis into a total accuracy percentage. The following examples show how the same transmitter can have three accuracy percentages depending on which equation is used.

Non-Linearity – 0.5% BFSL
Non-Repeatability – 0.05% FS.
Hysteresis – 0.1% FS.

$$RSS = \sqrt{(\text{Non-Linearity})^2 + (\text{Hysteresis})^2 + (\text{Non-Repeatability})^2}$$

$$RSS = \sqrt{(0.50)^2 + (0.10)^2 + (0.05\%)^2}$$

$$RSS = 0.51\%$$

Root of the Sum Squared

$$RMS = \sqrt{\frac{(\text{Non-Linearity})^2 + (\text{Hysteresis})^2 + (\text{Non-Repeatability})^2}{3}}$$

$$RMS = \sqrt{\frac{(0.50)^2 + (0.10)^2 + (0.05\%)^2}{3}}$$

$$RMS = 0.30\%$$

Root of the Mean Squared

Sum = Non-Linearity + Hysteresis + Non-Repeatability
Sum = 0.5 + 0. + 0.05
Sum = 0.65%
Summed Factors

So why is this important? Accuracy has a price. The cost of a pressure sensor is a function of its accuracy, the more accurate the sensor the more expensive it will be. From a manufacturing point of view, the wrong sensors can cause expensive quality or efficiency problems. That is why it is important to understand how manufacturers calculate accuracy and recognize what parameters to look at when comparing pressure sensors. By understanding how manufacturers calculate accuracy, you will be able to make a more informed decision when evaluating pressure sensors, ensuring the next sensor you select will have the required accuracy at the right price for the application.

Dwyer

SERIES 2000

MAGNEHELIC® DIFFERENTIAL PRESSURE GAGES

Indicate Positive, Negative or Differential, Accurate within 1%

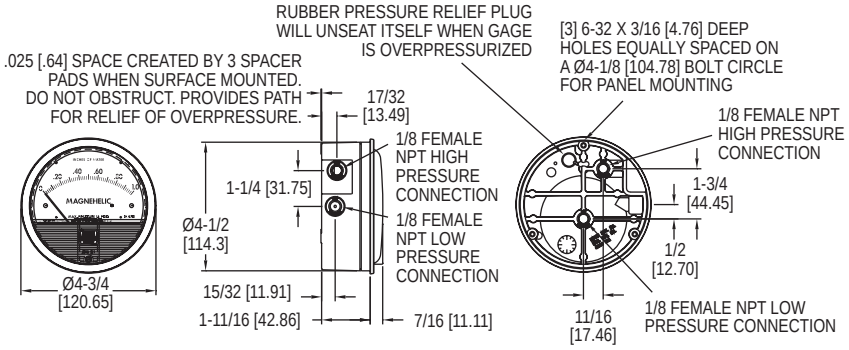
5 YEAR LIMITED WARRANTY

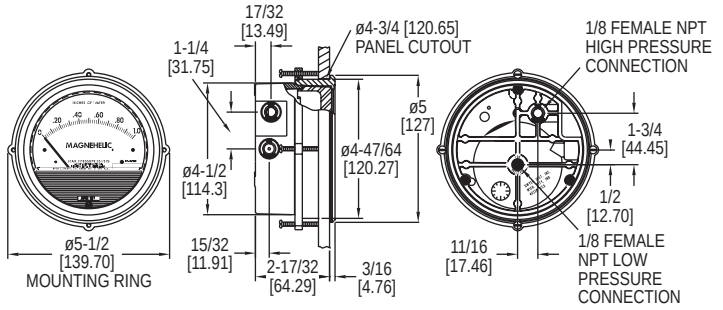


Standard Magnehelic® gage



High Accuracy Magnehelic® gage
Note: Shown with optional -SS bezel





Select the **Series 2000 Magnehelic® Differential Pressure Gages** for a versatile low differential pressure gage with a wide choice of 81 models and 27 options to choose from. Using Dwyer's simple, frictionless Magnehelic® gage movement, it quickly indicates air or non-corrosive gas pressures--either positive, negative (vacuum) or differential. The design resists shock, vibration, over-pressures and is weatherproof to IP67.

Select the –HA High Accuracy Magnehelic® gage option for an accuracy within 1% of full-scale. Also included with the –HA option at no extra cost are a mirrored scale overlay and a 6 point calibration certificate.

FEATURES/BENEFITS

- Easy to read gage through undistorted plastic face permits viewing from far away
- Patented design provides quick response to pressure changes means no delay in assessing critical situations
- Durable and rugged housing and high-quality components combine to provide long-service life and minimized down-time
- High accuracy option is twice as accurate as the standard Magnehelic® gage

APPLICATIONS

- Filter monitoring
- Air velocity with Dwyer pitot tube
- Blower vacuum monitoring
- Fan pressure indication
- Duct, room or building pressures
- Clean room positive pressure indication

ACCESSORIES

Model	Description
A-432	Portable kit; combine carrying case with any Magnehelic® gage of standard range, except high pressure connection. Includes 9 ft (2.7 m) of 3/16″ ID rubber tubing, standhang bracket and terminal tube with holder
A-605	Air filter gage accessory kit; adapts any standard Magnehelic® gage for use as an air filter gage. Includes aluminum surface mounting bracket with screws, two 5 ft (1.5 m) lengths of 1/4″ aluminum tubing, two static pressure tips and two molded plastic vent valves, integral compression fittings on both tips and valves
A-605B	Air filter gage accessory kit; air filter kit with two plastic open/close valves, two 4″ steel static tips, plastic tubing and mounting flange
A-605C	Air filter gage accessory kit; air filter kit with two plastic open/close valves, two plastic static tips, plastic tubing and mounting flange

SPECIFICATIONS

Service: Air and non-combustible, compatible gases (natural gas option available).
Note: May be used with hydrogen. Order a Buna-N diaphragm. Pressures must be less than 35 psi.
Wetted Materials: Consult factory.
Housing: Die cast aluminum case and bezel, with acrylic cover. Exterior finish is coated gray to withstand 168 hour salt spray corrosion test.
Accuracy: ±2% (-HA model ±1) of FS (±3% (-HA ±1.5%) on -0, -100PA, -125PA, -10MM and ±4% (-HA ±2%) on -00, -60PA, -6MM ranges), throughout range at 70°F (21.1°C).
Pressure Limits: -20 in Hg to 15 psig (-0.677 to 1.034 bar); MP option: 35 psig (2.41 bar); HP option: 80 psig (5.52 bar).
Enclosure Rating: IP67.
Overpressure: Relief plug opens at approximately 25 psig (1.72 bar), standard gages only.❶
Temperature Limits: 20 to 140°F*
(-6.67 to 60°C). -20°F (-28°C) with low temperature option.
Size: 4″ (101.6 mm) diameter dial face.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Process Connections: 1/8″ female NPT duplicate high and low pressure taps - one pair side and one pair back.
Weight: 1 lb 2 oz (510 g), MP & HP 2 lb 2 oz (963 g).
Standard Accessories: Two 1/8″ NPT plugs for duplicate pressure taps, two 1/8″ pipe thread to rubber tubing adapter, and three flush mounting adapters with screws. (Mounting and snap ring retainer substituted for three adapters in MP & HP gage accessories.)
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II). **Note:** -SP models not RoHS approved.

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

*Low temperature models available as special options.



A-432



A-605

❶**Over Protection Note: See page 21 (Series 2000)**

Dwyer

SERIES 2000

MAGNEHELIC® DIFFERENTIAL PRESSURE GAGES

Indicate Positive, Negative or Differential, Accurate within 1%

Bezel provides flange for flush mounting in panel.

Clear plastic face is highly resistant to breakage. Provides undistorted viewing of pointer and scale.

Precision litho-printed scale is accurate and easy to read.

Calibrated range spring is flat spring steel. Small amplitude of motion assures consistency and long life. It reacts to pressure on diaphragm. Live length adjustable for calibration.

Red tipped pointer of heat treated aluminum tubing is easy to see. It is rigidly mounted on the helix shaft.

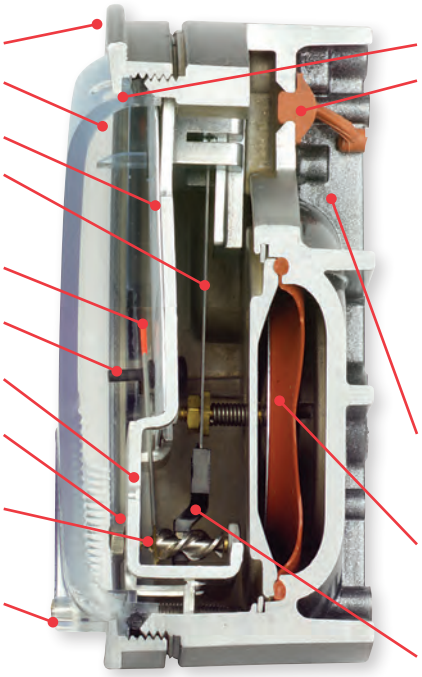
Pointer stops of molded rubber prevent pointer over-travel without damage.

"Wishbone" assembly provides mounting for helix, helix bearings and pointer shaft.

Jeweled bearings are shock-resistant mounted; provide virtually friction-free motion for helix. Motion damped with high viscosity silicone fluid.

Helix is precision made from an alloy of high magnetic permeability. Mounted in jeweled bearings, it turns freely, following the magnetic field to move the pointer across the scale.

Zero adjustment screw is conveniently located in the plastic cover, and is accessible without removing cover. O-ring seal provides pressure tightness.



O-ring seal for cover assures pressure integrity of case.

OVERPRESSURE PROTECTION
Blowout plug is comprised of a rubber plug on the rear which functions as a relief valve by unseating and venting the gage interior when over pressure reaches approximately 25 psig (1.7 bar). To provide a free path for pressure relief, there are four spacer pads which maintain 0.023″ clearance when gage is surface mounted. Do not obstruct the gap created by these pads.
The blowout plug is not used on models above 180″ of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm.
The blowout plug should not be used as a system overpressure control. High supply pressures may still cause the gage to fail due to over pressurization, resulting in property damage or serious injury. Good engineering practices should be utilized to prevent your system from exceeding the ratings of any component.

Die cast aluminum case is precision made and iridite-dipped to withstand 168 hour salt spray corrosion test. Exterior finished in baked dark gray hammerloid. One case size is used for all standard pressure options, and for both surface and flush mounting.

Silicone rubber diaphragm with integrally molded O-ring is supported by front and rear plates. It is locked and sealed in position with a sealing plate and retaining ring. Diaphragm motion is restricted to prevent damage due to overpressures.

Samarium Cobalt magnet mounted at one end of range spring rotates helix without mechanical linkages.

MODEL CHART

Model	Range, Inches of Water
2000-00N†••	.05-0-.2
2000-00†••	0-.25
2000-0†•	0-.50
2001	0-1.0
2002	0-2.0
2003	0-3.0
2004	0-4.0
2005	0-5.0
2006	0-6.0
2008	0-8.0
2010	0-10
2012	0-12
2015	0-15
2020	0-20
2025	0-25
2030	0-30
2040	0-40
2050	0-50
2060	0-60
2080	0-80
2100	0-100
2120	0-120
2150	0-150
2160	0-160
2180*	0-180
2250*	0-250
Zero Center Ranges	
2300-00†••	0.125-0-0.125
2300-0†•	.25-0-.25
2301	.5-0-.5
2302	1-0-1
2304	2-0-2
2310	5-0-5
2320	10-0-10
2330	15-0-15

Model	Range, PSI
2201	0-1
2202	0-2
2203	0-3
2204	0-4
2205	0-5
2210*	0-10
2215*	0-15
2220*	0-20
2230**	0-30
Model	**Range, CM of Water**
2000-15CM	0-15
2000-20CM	0-20
2000-25CM	0-25
2000-50CM	0-50
2000-80CM	0-80
2000-100CM	0-100
2000-150CM	0-150
2000-200CM	0-200
2000-250CM	0-250
2000-300CM	0-300
Zero Center Ranges	
2300-4CM	2-0-2
2300-10CM	5-0-5
2300-30CM	15-0-15

Model	Range, MM of Water
2000-6MM†••	0-6
2000-10MM†•	0-10
2000-15MM	0-15
2000-25MM	0-25
2000-30MM	0-30
2000-50MM	0-50
2000-80MM	0-80
2000-100MM	0-100
2000-125MM	0-125
2000-150MM	0-150
2000-200MM	0-200
2000-250MM	0-250
2000-300MM	0-300
Zero Center Ranges	
2300-6MM†••	3-0-3
2300-10MM†•	5-0-5
2300-20MM†•	10-0-10
Model	**Range, Pa**
2000-60NPA†••	10-0-50
2000-60PA†••	0-60
2000-100PA†•	0-100
2000-125PA†•	0-125
2000-250PA	0-250
2000-300PA	0-300
2000-500PA	0-500
2000-750PA	0-750
2000-1000PA	0-1000
Zero Center Ranges	
Model	**Range, Pa**
2300-60PA†••	30-0-30
2300-100PA†•	50-0-50
2300-120PA	60-0-60
2300-200PA	100-0-100
2300-250PA	125-0-125
2300-300PA	150-0-150
2300-500PA	250-0-250
2300-1000PA	500-0-500

Model	Range, kPa
2000-0.5KPA	0-0.5
2000-1KPA	0-1
2000-1.5KPA	0-1.5
2000-2KPA	0-2
2000-2.5KPA	0-2.5
2000-3KPA	0-3
2000-4KPA	0-4
2000-5KPA	0-5
2000-8KPA	0-8
2000-10KPA	0-10
2000-15KPA	0-15
2000-20KPA	0-20
2000-25KPA	0-25
2000-30KPA	0-30
Zero Center Ranges	
2300-1KPA	.5-0-.5
2300-2KPA	1-0-1
2300-2.5KPA	1.25-0-1.25
2300-3KPA	1.5-0-1.5

Dual Scale Air Velocity Units
For use with pitot tube

Model	Range, in w.c./ Velocity F.P.M.
2000-00AV†••	0-.25/ 300-2000
2000-0AV†•	0-.50/ 500-2800
2001AV	0-1.0/ 500-4000
2002AV	0-2.0/ 1000-5600
2005AV	0-5.0/ 2000-8800
2010AV	0-10/ 2000-12500

Dual Scale English/Metric Models

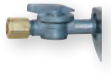
Model	Range, in w.c.	Range, Pa or kPa
2000-00D†••	0-.25	0-62 Pa
2000-0D†•	0-0.5	0-125 Pa
2001D	0-1.0	0-250 Pa
2002D	0-2.0	0-500 Pa
2003D	0-3.0	0-750 Pa
2004D	0-4.0	0-1.0 kPa
2005D	0-5.0	0-1.25 kPa
2006D	0-6.0	0-1.5 kPa
2008D	0-8.0	0-2.0 kPa
2010D	0-10	0-2.5 kPa
2015D	0-15	0-3.7 kPa
2020D	0-20	0-5 kPa
2025D	0-25	0-6.2 kPa
2050D	0-50	0-12.4 kPa
2060D	0-60	0-15 kPa

†These ranges calibrated for vertical scale position • Accuracy ±3% •• Accuracy ±4% *MP option standard **HP option standard

VELOCITY AND VOLUMETRIC FLOW UNITS
Scales are available on the Magnehelic® gage that read in velocity units (FPM, m/s) or volumetric flow units (SCFM, m^3/s, m^3/h). Stocked velocity units with dual range scales in inches w.c. and feet per minute are shown above. For other ranges contact the factory.
When ordering volumetric flow scales please specify the maximum flow rate and its corresponding pressure.
Example: 0.5 in w.c. = 16,000 CFM.

ACCESSORIES

Model	Description
A-321	Safety relief valve
A-448	3-piece magnet kit for mounting Magnehelic® gage directly to magnetic surface
A-135	Rubber gasket for panel mounting
A-401	Plastic carry case
A-310A	3-way vent valves. In applications where pressure is continuous and the Magnehelic® gage is connected by metal or plastic tubing which cannot be easily removed, we suggest using Dwyer A-310A vent valves to connect gage. Pressure can then be removed to check or re-zero the gage

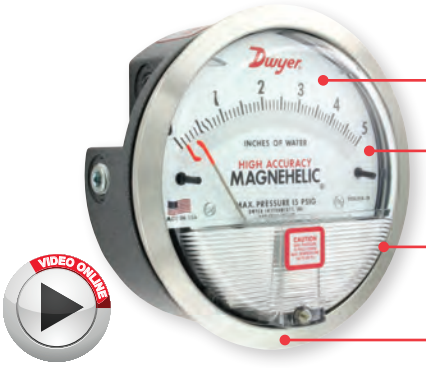


A-310A

Dwyer

HIGH ACCURACY MAGNEHELIC® DIFFERENTIAL PRESSURE GAGE

5 YEAR LIMITED WARRANTY



- Twice as accurate as the standard Magnehelic® gage
- Mirrored scale overlay eliminates parallax error
- IP67 weatherproof housing
- Optional brushed SS bezel



6-point calibration certificate included

OPTIONS - HIGH ACCURACY MAGNEHELIC® GAGE	
To order add suffix:	Description
-HA	High Accuracy Magnehelic® Gage. Accuracy within 1% and weatherproof. Also includes mirrored scale overlay and a six point calibration certificate
-SS	Corrosion resistant brushed 304 stainless steel bezel

Accuracy Specifications: See page 20 (Series 2000)

ADDITIONAL GAGE OPTIONS



OPTIONS - OTHER OPTIONAL BEZELS	
To order add suffix:	Description
-CB	Chrome bezel option: A chrome plated aluminum bezel for an aesthetically pleasing finish when mounting on metal surfaces such as control panels.
-SB	Stainless steel bezel option: 304 stainless steel electro polished Ra 16 finished bezel.
-SS	Corrosion resistant brushed 304 stainless steel bezel



LED set point indicator



Adjustable signal flag



Transparent overlay



Mirrored scale overlay



Integrated mounting plate

OPTIONS - LED SET POINT INDICATOR	
To order add suffix:	Description
-SP	Bright red LED on right scale shows when set point is reached. Field adjustable from gage face, unit operates on 12-24 VDC. Set point indicator option comes with medium pressure (MP) bezel.
Note: 4-13/16″ hole for flush mounting.	
OPTIONS - ADJUSTABLE SIGNAL FLAG	
To order add suffix:	**Description**
-ASF	Integral with plastic gage cover. Available for most models except those with medium or high pressure construction. Can be ordered with gage or separate.
OPTIONS - TRANSPARENT OVERLAYS	
To order add suffix:	**Description**
-G	Green (to highlight and emphasize critical pressures)
-R	Red (to highlight and emphasize critical pressures)
-Y	Yellow (to highlight and emphasize critical pressures)
OPTIONS - MIRRORED SCALE OVERLAY	
To order add suffix:	**Description**
-M	A mirrored scale overlay is also available to assist in reducing parallax error.
OPTIONS - INTEGRATED MOUNTING PLATE	
To order add suffix:	**Description**
-AHU1	Furnished with attached surface mounting plate
-AHU2	Furnished with attached surface mounting plate and including A-481 installer kit (2 plastic static pressure tips and 7´of PVC tubing)



OPTIONS - FOR HIGH STATE PRESSURE APPLICATIONS	
To order add suffix:	Description
-HP	High pressure option: for pressures to 80 psig
-MP	Medium pressure option: for pressures to 35 psig

OPTIONS	
To order add suffix:	Description
-FC	Factory calibration certificate
-LT	Low temperatures to -20°F (-28°C)
-NIST	NIST traceable calibration certificate

MAGNEHELIC® GAGE MOUNTING ACCESSORIES



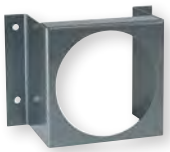
A-610



A-369



A-464



A-299



A-286



A-300



A-368



A-371

A single case size is used for most models of Magnehelic® gages. They can be flush or surface mounted with standard hardware supplied. Complete mounting and connection fittings plus instructions are furnished with each instrument. A 4-9/16″ hole is required for flush panel mounting.

Flush mounting is easily accomplished with the new A-300 Flush Mounting bracket. This bracket provides a solution to quickly and conveniently flush mount the Magnehelic® gage. The A-300 is ideal for mounting the Magnehelic® gage on control panel doors.

The A-368 is a simple bracket for quickly surface mounting the Magnehelic® gage. After securing the Magnehelic® gage to the A-368 bracket, mount the bracket on any flat surface.

The A-369 allows the Magnehelic® gage to be easily carried to locations where pressure readings need to be taken. The A-369 can stand on its own or hang on a nail or hook.

ACCESSORIES	
Model	**Description**
A-610	Pipe mounting kit for installing on 1-1/4″ to 2″ horizontal or vertical pipe
A-286	Magnehelic® gage panel mounting flange
A-369	Stand-hang bracket, aluminum, for Magnehelic® gage
A-300	Flush mounting bracket
A-464	Flush mount kit for Magnehelic® gage
A-368	Surface mounting plate, aluminum, for Magnehelic® gage
A-299	Mounting bracket, flush mount for Magnehelic® gage, bracket is then surface mounted, steel with gray hammerloid epoxy finish
A-371	Surface mounting bracket, use with medium pressure (-MP) or high pressure (-HP) models only

SERIES A-320

INSTRUMENT ENCLOSURES

Protects Various Instruments



A-320-A1



A-320-B1



A-320-BC



A-320-A-SS



A-320-B-SS

The **Series A-320 Instrument Enclosures** protect instruments in all applications. The enclosures, available in plastic and stainless steel, fit a variety of gages including the Series 605 transmitter, DM-2000, 3000MR/MRS and DH3. All models include silicone tubing, Banjo fittings, and threaded pressure connections pre-installed. The threaded pressure connections allow the user to easily change the connection type through the use of fittings or adapters. This modification can be implemented to allow connection to a wide variety of plastic or metal tubing.

SPECIFICATIONS
Housing Material: ABS plastic or 304 SS.
Process Connection: 1/8″ female NPT (-SS models: 1/8″ BSPT).
Enclosure Rating: Plastic models: IP66.
Weight: A-320-A1: 1.1 lb (0.5 kg); A-320-B1: 1.4 lb (0.65 kg); A-320-BC: 1.4 lb (0.65 kg); A-320-A-SS: 2.3 lb (1.05kg); A-320-B-SS: 3.0 lb (1.35 kg).

MODEL CHART	
Model	**Description**
A-320-A1*	2000 Magnehelic® gage, DM-2000 differential pressure transmitter
A-320-B1**	3000MR/MRS Photohelic® switch/gage, Series 605 Magnehelic® differential pressure transmitter, DH3 Digihelic® pressure controller, 2000 Magnehelic® gage with medium and high pressure options
A-320-BC	2000 Magnehelic® gage, DM-1000 DigiMag® digital differential pressure gage, DM-2000 differential pressure transmitter, instruments with backwards compatible bezel option
A-320-A-SS	2000 Magnehelic® gage
A-320-B-SS	2000 Magnehelic® gage, DM-2000 differential pressure transmitter
*DM-2000 must be mounted horizontally in A-320-A1 enclosure.	
**For DH3 to fit on A-320-B1 the casing on the electrical plug must be removed.	

ACCESSORIES	
Model	**Description**
A-339-SS	1/8″ male BSPT to 3/16″ hose barb

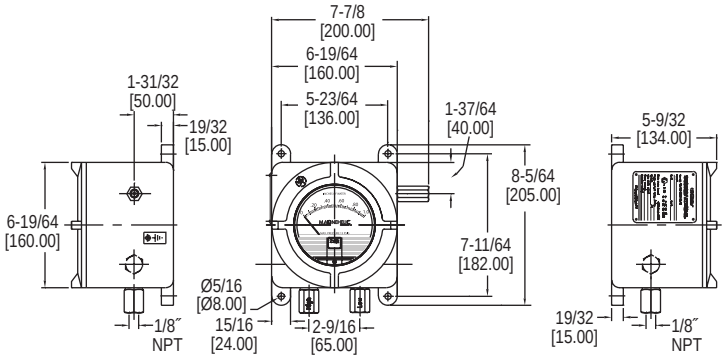
Dwyer

SERIES AT22000

ATEX/IECEX APPROVED SERIES 2000 MAGNEHELIC® DIFFERENTIAL PRESSURE GAGE

Magnehelic® Gage in Flame-Proof ATEX/IECEx Enclosure





The **Series AT22000 ATEX/IECEx Approved Series 2000 Magnehelic® Differential Pressure Gage** combines the popular Magnehelic® line with a flameproof enclosure to extend usage to hazardous locations. This gage can indicate positive, negative or differential pressures and is accurate within 2%.

FEATURES/BENEFITS

- ATEX/IECEx housing provides all the capabilities and value of the Magnehelic® in a flame & explosion proof enclosure
- Quick response to pressure changes means no delay in assessing critical situations
- Durable and rugged housing and high-quality components combined provides long-service life and minimized down-time
- High impact strength and high temperature rated for applications where hazardous environments exist

APPLICATIONS

- Fan and blower pressures
- Filter resistance
- Air velocity
- Furnace draft
- Liquid levels with bubbler systems
- Pressure in fluid amplifier or fluidic systems

Attention: Check local safety rules and warnings on unit and manual for a correct use of the instrument in hazardous area.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Magnehelic® Housing: Die cast aluminum case & bezel with acrylic cover; Exterior finish is coated gray to withstand 168 hour salt spray corrosion test.
Housing Material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Accuracy: ±2% of FS (±3% on -0, -100PA, -125PA, -10MM and ±4% on -00, -60PA, -6MM ranges), throughout range at 70°F (21.1°C).
Pressure Limits: -20 in Hg to 15 psig (-0.677 bar to 1.034 bar); MP option; 35 psig (2.41 bar), HP option; 80 psig (5.52 bar).
Overpressure: Relief plug opens at approximately 25 psig (1.72 bar), standard gages only.❶
Temperature Limits: 20 to 140°F (-6.67 to 60°C); Low temperature option: -20°F (-28.8°C) (**Note:** Product temperature limits are less than case limits).
Mounting Orientation: Diaphragm in vertical position.
Enclosure Rating: IP66. IP65 with option OPV, overpressure relief valve.
Process Connections: 1/8″ NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Weight: 8.6 lb (3.9 kg).
ATEX Certificate: BVI 14ATEX0072.
Agency Approvals: ATEX Compliant CE 1370 Ex II 2G Ex d IIC T6 Gb / II 2D Ex tb IIIC T85°C Db, -60°C≤Tamb≤+60°C IECEx Compliant: Ex d IIC T6 Gb / Ex tb IIIC T85°C Db.

RANGE CHART

Model	Range in w.c.	Model	Range in w.c.	Model	Range in w.c.
2000-00N	.05 to 0 to .2	**2006**	0 to 6.0	**2040**	0 to 40
2000-00	0 to .25	**2008**	0 to 8.0	**2050**	0 to 50
2000-0	0 to .50	**2010**	0 to 10	**2060**	0 to 60
2001	0 to 1.0	**2012**	0 to 12	**2080**	0 to 80
2002	0 to 2.0	**2015**	0 to 15	**2100**	0 to 100
2003	0 to 3.0	**2020**	0 to 20	**2120**	0 to 120
2004	0 to 4.0	**2025**	0 to 25	**2150**	0 to 150
2005	0 to 5.0	**2030**	0 to 30	**2160**	0 to 160

MODEL CHART

Example	AT2	2001	-X	X	-A	O	1	X	T2	AT22001-XX-AO1XT2
Housing	AT2									ATEX/IECEx approved Series 2000 Magnehelic® differential pressure gage
Range		2XXX								Specify range by using Magnehelic® model number. See range chart.
Pressure Rating			X MP HP							Standard from -20 in Hg to 15 psig static pressure Medium pressure-max. static 35 psig High pressure-max. static 80 psig
Temperature Rating				X LT						Standard temperature limits -6.67 to 60°C Low temperature limit to -28.8°C
Housing Material					A					Aluminum
Cover						O				Glass cover
Process Connection							1 2			1/8″ NPT female brass ports 1/8″ NPT female SS ports
Overpressure Plug								X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as ports
Tag									T2	SS information label
For other engineering unit ranges contact the factory.										

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

❶**Over Protection Note: See page 21 (Series 2000)**

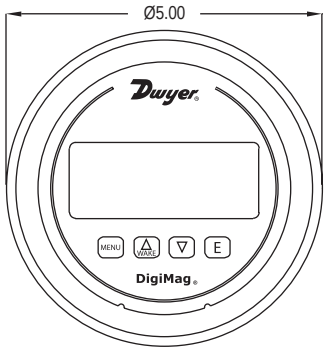
Dwyer

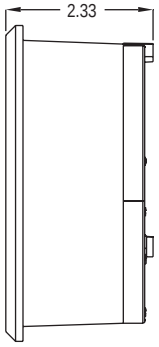
SERIES DM-1000

DIGIMAG® DIGITAL DIFFERENTIAL PRESSURE AND FLOW GAGE

24 Volt or Battery Powered, Fits in Magnehelic® Gage Cut-Out







The **Series DM-1000 DigiMag® Digital Differential Pressure and Flow Gage** monitors the pressure of air and compatible gases just as its famous analog predecessor the Magnehelic® differential pressure gage. All models are factory calibrated to specific ranges. The 4-digit LCD can display readings in common English and metric units so conversions are not necessary. The simplified four button operation reduces set up time and simplifies calibration with its digital push-button zero and span.

FEATURES/BENEFITS

- Field programmed reduces installation time
- User selectable parameters for pressure, air velocity or flow permits same device for multiple applications
- Specialized filter set point for alerts when maintenance is due
- Security levels permit matches the correct access to right skill
- Power versatility works with 9-24 VDC or 9 V battery allows deployment in a variety of spaces wired or not

APPLICATIONS

- Filter monitoring
- Air velocity or flow
- Blower vacuum monitoring
- Fan pressure indication
- Duct, room or building pressures
- Clean room positive pressure indication

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Housing Materials: Glass filled plastic.
Accuracy: ±1% FS including linearity, hysteresis and repeatability; ±2% FS for ranges 1 in w.c. and below.
Temperature Limits: 0 to 140°F (-18 to 60°C).
Compensated Temperature Limits: 32 to 122°F (0 to 50°C).
Long Term Stability: ±1% FS per year.
Thermal Effect: ±0.05% FS/°F typ.; ±0.10% FS/°F for ranges 1 in w.c. and below.
Display: 4-digit LCD (digits: 0.60H x 0.33W).
Display Update: Selectable for 1 second to 10 minutes or update only from button push.
Pressure Limits: Normal and bi-directional ranges 5 in w.c. and lower = 2 psi (13.7 kPa); Normal and bi-directional ranges 10 in w.c. and higher = 11 psi (75 KPa).
Selectable Engineering Units: in w.c., psi, kPa, Pa, mm w.c., mBar, in Hg, mm Hg, FS (0-100%).
Power Requirements: 9 V alkaline battery, included, user replaceable or external power supply 9-24 VDC.
Battery Service Life: Battery life depending on the display update setting: 150 hours (typical) if display update = 1 second; 9 month (typical) if display update = 10 minutes; 1.5 years (typical) if display update is disabled. Battery may last up to four times longer when using lithium-based battery ULTRALIFE U9VL-J.
Current Consumption: 5 mA max.
Electrical Connections: Removable terminal block for 16 to 26 AWG.
Electrical Entry: Cable gland for 0.114 to 0.250″ (2.9 to 6.4 mm) diameter cable.
Process Connections: 1/8″ (3 mm) ID tubing.
Enclosure Rating: NEMA 4X (IP66).
Weight: 1.18 lb (535 g).
Size: 5″ (127 mm) OD front face.
Agency Approvals: CE.

ACCESSORIES

Model	Description
A-300	Flat flush mounting bracket
A-286	4-1/2″ gage panel mounting flange
A-489	4″ straight static pressure tip with flange
A-480	Plastic static pressure tip

MODEL CHART

Model	Range									Resolution
	in w.c.	psi	kPa	Pa	mbar	mm w.c.	in Hg	mm Hg	% of FS	in w.c.
DM-1102	0.250	–	0.062	62.20	0.622	6.35	–	0.467	100.0	0.001
DM-1103	0.500	–	0.124	124.5	1.245	12.70	–	0.934	100.0	0.001
DM-1104	1.000	–	0.249	249.1	2.492	25.40	–	1.868	100.0	0.001
DM-1105	2.000	–	0.498	498.2	4.982	50.80	–	3.736	100.0	0.001
DM-1107	5.000	0.181	1.245	1245	12.45	127.0	0.368	9.34	100.0	0.002
DM-1108	10.00	0.361	2.491	2491	24.91	254.0	0.736	18.68	100.0	0.010
DM-1109	15.00	0.543	3.738	3738	37.38	381.0	1.104	28.02	100.0	0.010
DM-1110	25.00	0.903	6.227	6227	62.27	635.0	1.839	46.71	100.0	0.010
DM-1111	50.00	1.806	12.45	–	124.5	1270	3.678	93.42	100.0	0.020
DM-1112	100.0	3.613	24.91	–	249.1	2540	7.355	186.8	100.0	0.100

Contact the factory for available bi-directional ranges from ±0.25 to ±10 in w.c.
Note: For air flow models change -11XX to -12XX.

OPTIONS

To order add suffix:	Description
-NIST	NIST traceable calibration certificate
Example: DM-1103-NIST	

Process Tubing Options: See page 455 (Gage Tubing Accessories)

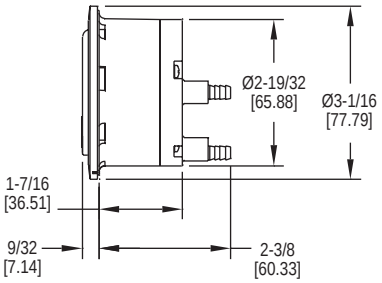
Dwyer

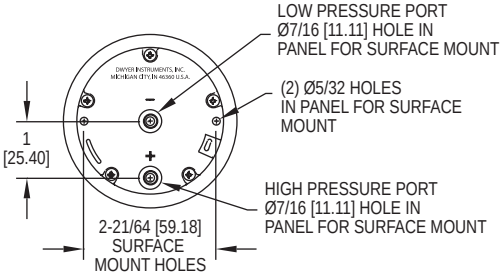
SERIES 2-5000

MINIHELIC® II DIFFERENTIAL PRESSURE GAGE

Combining High Accuracy, Compactness, Dependability, and Low Cost









Combining clean design, small size and low cost with enough accuracy for all but the most demanding applications our **Series 2-5000 Minihelic® II Differential Pressure Gage** offers the latest in design features for a dial type differential pressure gage. It is our most compact gage but is easy to read and can safely operate at total pressures up to 30 psig.

FEATURES/BENEFITS

- Removable lens and rear-housing provides easy, cost-effective servicing
- Accuracy and value provides an excellent solution for OEM and user applications
- Durable housing materials make it well-suited for rough environments and total high pressure

APPLICATIONS

- Room positive pressure sensing
- Cabinet air-purging
- Medical respiratory equipment
- Air samplers
- Electronic air cooling systems
- Laminar flow hoods
- Local indication on filter status
- Face velocity on fume hood
- Duct pressures

SPECIFICATIONS
Service: Air and compatible gases.
Wetted Materials: Consult factory.
Housing: Glass filled nylon; polycarbonate lens.
Accuracy: ±5% of FS at 70°F (21.1°C).
Pressure Limits: 30 psig (2.067 bar) continuous to either pressure connection.
Temperature Limits: 20 to 120°F (-6.67 to 48.9°C).
Size: 2-1/16″ (52.39 mm) diameter dial face.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Process Connections: Barbed, for 3/16″ ID tubing (standard); 1/8″ male NPT (optional).
Weight: 6 oz (170.1 g).
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).
Caution: For use only with air or compatible non-corrosive gases.

Dwyer

SERIES 2-5000

MINIHELIC® II DIFFERENTIAL PRESSURE GAGE

Combining High Accuracy, Compactness, Dependability, and Low Cost

Housing is molded from strong mineral and glass filled nylon.

Pointer stops of molded rubber prevent pointer over-travel without damage.

Full view lens is removable and molded of acrylic.

Aluminum scale litho-printed black on white, enhances readability.

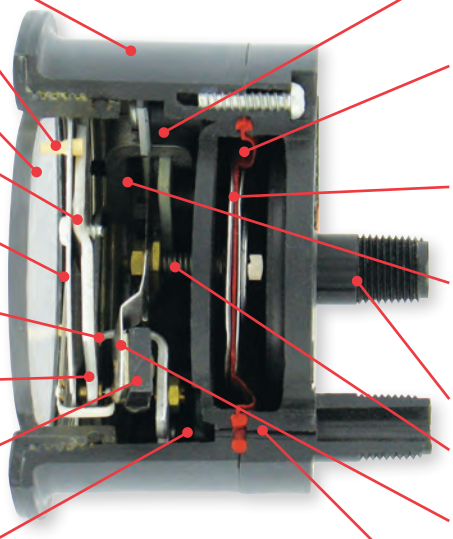
Red tipped aluminum pointer, rigidly mounted to helix is easy to see.

Wishbone assembly provides mounting for helix, helix bearings, and pointer shaft.

Jewel bearings provide virtually friction-free helix motion.

Helix is free to rotate in jewel bearings. It aligns with magnetic field of magnet to transmit pressure indications to pointer.

Zero adjustment screw, located behind the removable lens, eliminates tampering.



Range spring calibration clamp fixes live length of spring for proper gage calibration and is factory set and sealed.

Silicone rubber diaphragm allows accurate response to a broad range of temperatures and at extremely low pressure. Incorporates blow out area for overpressure protection.

Diaphragm support plates of lightweight aluminum on each side of the diaphragm minimize position or attitude sensitivity and help define pressure area.

Flat leaf range spring reacts to pressure on the diaphragm. Live length is adjustable for calibration. Small amplitude of motion minimizes inaccuracies and assures long life.

Low pressure tap connects to rear chamber.

Coil spring link provides a resilient connection between the diaphragm and the range spring.

Ceramic magnet mounted on a molded bracket at the end of the range spring rotates the helix without direct mechanical linkage.

High pressure tap connects with the front chamber through passageway in the plastic case and a sealing ring molded into the edge of the diaphragm.

MODEL CHART

Model	Range, Inches of Water	Model	Range, MM of Water
2-5000-0	0-0.5	**2-5000-25MM**	0-25
2-5001	0-1.0	**2-5000-50MM**	0-50
2-5002	0-2.0	**2-5000-100MM**	0-100
2-5003	0-3.0	**Model**	**Range, Pascals**
2-5005	0-5.0	**2-5000-125PA**	0-125
2-5010	0-10	**2-5000-250PA**	0-250
2-5020	0-20	**2-5000-500PA**	0-500
2-5040	0-40	**Model**	**Range, kPa**
2-5060	0-60	**2-5000-1KPA**	0-1
2-5100	0-100	**2-5000-3KPA**	0-3
Model	**Range, PSI**		
2-5205	0-5		

OPTIONS

To order add suffix:	Description
-NPT	1/8″ male NPT connections
Example: 2-5001-NPT	
-BB	Bottom barbed surface mount
Example: 2-5001-BB	
-NIST	NIST traceable calibration certificate
Example: 2-5001-NIST	
-FC	Factory calibration certificate
Example: 2-5001-FC	

ACCESSORIES

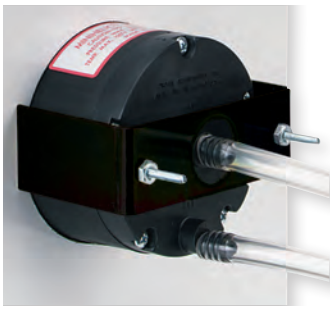
Model	Description
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16″ ID rubber or plastic tubing; 4″ insertion depth; includes mounting screws
A-434	Portable kit
A-489	4″ straight static pressure tip with flange
A-497	Surface mounting bracket
A-609	Air filter kit
A-480	Plastic static pressure tip

SURFACE MOUNTING



Optional surface mounting with back mounting plate allows for quick installation to any surface. Process connections are barbed and point downwards. Add -BB for bottom barbed surface mount option.

PANEL MOUNTING



Mounting hardware is supplied with the Minihelic® II gage for panel mounting through a single hole, 2-5/8″ (67 mm) in diameter. Panel thickness up to 1/2″ (13 mm) can be accommodated with the hardware supplied. If necessary, surface mounting of the gage can be accomplished by means of two 4-40 screws into the tapped mounting bracket stud holes in the rear of the gage. Surface mounting requires clearance holes in the panel for the two pressure taps.

Process Tubing Options: See page 455 (Gage Tubing Accessories)

Dwyer

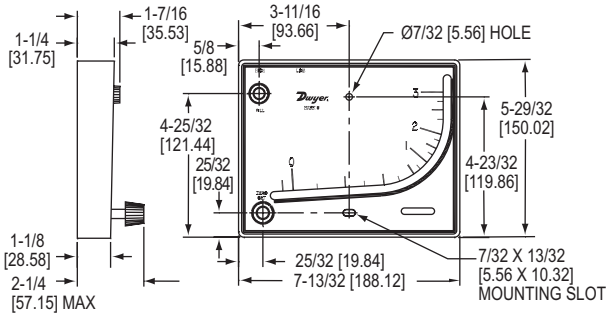
SERIES MARK II

MARK II MOLDED PLASTIC MANOMETERS

3% Accuracy For Stationary And Portable Applications

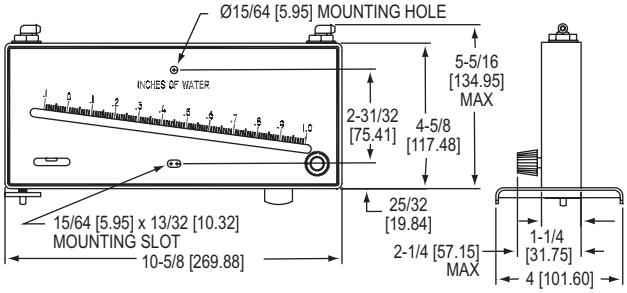


Mark II Model No. 25 inclined-vertical manometer. (shown with optional A-612 portable stand)





Mark II Model No. 40-1 inclined manometer



Series Mark II Molded Plastic Manometers are of the inclined and inclined-vertical types. The curved inclined-vertical tube of the Model 25 gage provides higher ranges with more easily read increments at low readings. The Model 25 is excellent for general purpose work. The Model 40 inclined gage provides linear calibration and excellent resolution throughout its range. The Model 40 is ideally suited for air velocity and air filter gage applications. Both gage types are capable of pressure measurements above and below atmospheric as well as differential pressure measurements.

Included with each Mark II manometer are two tubing connectors for 1/8˝ pipe or sheet metal ducts, two mounting screws, 1 ounce bottle of indicating fluid, red and green pointer flags and complete instructions.

The Model 25 also includes 8´ of flexible double column plastic tubing. Portable operation of the Model 25 is made possible by the use of the optional A-612 portable stand. A short piece of tubing can be slipped over the Model 25 pressure connections to contain the gage fluid in transit.

The Model 40 contains two 4-1/2´ lengths of clear plastic tubing, a plastic swing-out stand and leveling screw for portable operation. It also features convenient rapid shutoff pressure connections and integral overpressure safety traps.

FEATURES/BENEFITS

- Broad ranging in easy to read calibrated increments
- Gages ideally suited for general measurements and specific air applications
- Compact, stationary or portable device, make it a simple to use tool for pressure measurement in OEM or user applications

APPLICATIONS

- Paint booths
- Air velocity measurement
- Air filter gage

OEM SPECIALS

All Dwyer® Mark II molded plastic manometers can be supplied in OEM quantities with your name or special graphics and scales.

SPECIFICATIONS
INCLINED/VERTICAL
Accuracy: ±3% FS.
Temperature Limits: 140°F (60°C).
Pressure Limits: 10 psi (70 kPa).
Weight: 1.04 lb (472 g).
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).
INCLINED
Accuracy: ±3% FS.
Temperature Limits: 150°F (65°C).
Pressure Limits: 15 psi (100 kPa).
Scale Length: Approx. 8-1/4˝ (21 cm).
Weight: 1.23 lb (558 g).
Agency Approvals: Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

MODEL CHART		
Model	**Range**	**Fluid Used**
Mark II 25	0-3 in w.c	Red fluid, .826 s.g.
Mark II 26	0-7 in w.c.	Blue oil, 1.91 s.g.
Mark II 27*	0-7000 fpm	Red fluid, .826 s.g.
Mark II MM-80	0-80 mm w.c.	Red fluid, .826 s.g.
Mark II M-700PA	10-0-700 Pa	Red fluid, .826 s.g.
Mark II 40-1	.1-0-1.0 in w.c.	Red fluid, .826 s.g.
Mark II 40-25MM	0-26 mm w.c.	Red fluid, .826 s.g.
Mark II 40-250PA	10-0-250 Pa	Red fluid, .826 s.g.
Mark II 41-60MM	0-60 mm w.c.	Blue oil, 1.91 s.g.
Mark II 41-600PA	20-0-600 Pa	Blue oil, 1.91 s.g.
*Require Pitot tube at additional cost.❶		

ACCESSORIES	
Model	**Description**
A-612	Portable stand
A-606	Air filter kit
A-480	Plastic static pressure tip
A-489	4˝ straight static pressure tip with flange

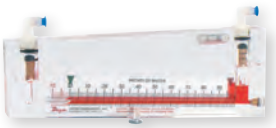
❶Pitot tube: See pages 186-188 (Test & Data section)
Process Tubing Options: See page 455 (Gage Tubing Accessories)

Dwyer

SERIES 250-AF

INCLINED MANOMETER AIR FILTER GAGES

Precision Machined, Solid Acrylic Plastic Gages, Accurate To ±1% Of Full-Scale



Model 250.5-AF



Model 452-AF

Dwyer® Durablock® **Series 250-AF Inclined Manometer Air Filter Gages** are precision machined 1″ thick solid acrylic plastic, virtually unbreakable and free of distortion. The fluid bore is precision drilled to ±.0002″ to assure life-long accuracy. A glass spirit level is built into the body and encapsulated to prevent damage or tampering. The scale is mirror polished chrome plated brass to assure parallax free reading by alignment of the meniscus with its reflection. Safety traps are incorporated in the body to prevent loss of fluid due to pressure surges. Red and green signal flags indicate clearly when a filter change is necessary. Gages are suitable for use in ambient temperatures of -20 to 150°F. Connection fittings are positively sealed but easily removed for zeroing or addition of fluid.

FEATURES/BENEFITS
- High-accuracy and easy to use make it a dependable device for many years of service
- Easy to read polished inclined scale allows pressure minute pressure differences to be read
- No moving parts mean no calibration or nothing to wear out

APPLICATIONS
- Air filter gage

ACCESSORIES	
Model	**Description**
A-310B	3-way vent valve, 1/8″ NPT to 1/4″ metal tubing, 10 psi rating
A-317	Gage connecter, 1/8″ pipe thread opening, less OD thread, for slip fit in 3/4″ diameter opening in Series 250-AF gages

▲ Economy Model 452-AF is similar to the 250 Series except they are not equipped with over pressure traps. Two A-324 1/4″ compression fittings are included with each gage but not shown. Bodies are of 5/8″ thick acrylic and scales are mirror polished, epoxy coated aluminum.

MODEL CHART				
Model	**Range: Water Column**	**Minor Divisions**	**Scale Length Inclined (Inches)**	**Overall Size (Inches)**
250-AF	.10-0-1.0″	.02″	5-1/2	8-1/2 x 4-1/8 x 1
250.5-AF	.10-0-1.0″	.01″	8	11-3/8 x 4 x 1
251-AF	.05-0-.50″	.01″	5-1/2	8-1/4 x 3-3/8 x 1
252-AF	.20-0-2.0″	.02″	8	11-1/8 x 6-1/2 x 1
452-AF▲	0-2″	.02″	8	11 x 4 x 5/8
▲ 2 PSI maximum working pressure				

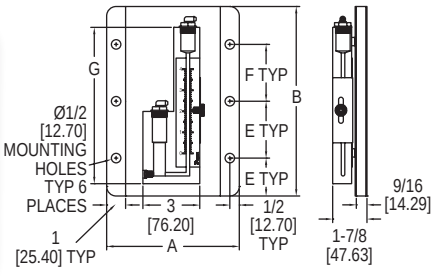
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SERIES 200 & 300

DURABLOCK® SOLID PLASTIC STATIONARY GAGES

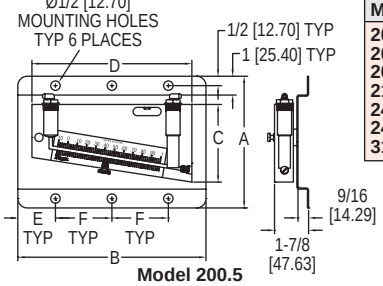
Suitable for Total Pressures Up to 100 psig, Temperatures Up to 150°F, Accuracy ±2% of Full-Scale (1% on Models 215, 244, 246 Only)





Model 310





Model 200.5

	Dimensions, Inches						
Model	**A**	**B**	**C**	**D**	**E**	**F**	**G**
200.5	7	13	3-15/16	11-3/8	2	4-1/2	-
202.5	9	13	5-5/8	12	2	4-1/2	-
209	9	13	7	11-1/4	2	4-1/2	-
215	7	10	3-1/16	9-1/2	2	3	-
244	11	16-1/2	3-1/8	15-5/8	4	8-1/2	-
246	13-1/2	23	11	22	4	15	-
310	7	16	-	-	4	4	15-1/4

Dwyer® **Series 200 & 300 Durablock® Solid Plastic Stationary Gages**, or draft gages, are offered in inclined and vertical (well-type) styles for highly accurate laboratory or general industrial service, for measurement of low range gas and air pressures, positive, negative or differential. To assure the accuracy required in instruments of this type, all machining of bores and wells is to the highest standards of precision backed by Dwyer's years of experience in the fabrications of acrylic instruments.

FEATURES/BENEFITS
- High-accuracy measurement of low range gas and air pressure suitable for laboratory or general industry
- Precision built assures device meets the highest standards
- No moving parts mean no calibration or nothing to wear out
- Over-pressure trap prevents liquid from being expelled from gage, preventing disruption of operation

APPLICATIONS
- Low pressure laboratory and industrial service applications



Exclusive Dwyer® over-pressure safety traps assure that over range pressures whether gradual or a sudden surge will not force the liquid out of the gage. Over-pressures simply raise the float, force the O-ring over the opening and seal the fluid in the gage. When pressure is reduced, the float drops down releasing the O-ring safety trap which allows the gage to continue operation.

MODEL CHART				
Incline Type Model	**Range Inches of Water**	**Minor Scale Divisions**	**Scale Length**	**Weight lb-oz**
200.5	.10-0-1.0	.01	8-1/4	3-11
202.5	.20-0-2.0	.01	8-3/4	4-7
209	.20-0-3.0	.02	8-3/4	4-11
215	.05-0-.25	.005	6	2-14
244	0-4	.02	13-1/4	9-11
246	0-6	.02	20	13-14
Vertical or Well-Type Model	**Range Inches of Water**	**Minor Scale Divisions**	**Scale Length**	**Weight lb-oz**
310	0-10	.10	11-1/8	3-10
Note: Model 200.5 replaces Model 200. Model 202.5 replaces Model 202.				

OPTIONS	
To order add suffix:	**Description**
-NIST	NIST traceable calibration certificate
Example: 244-NIST	

Dwyer

SERIES 420

DURABLOCK® INCLINED-VERTICAL MANOMETERS

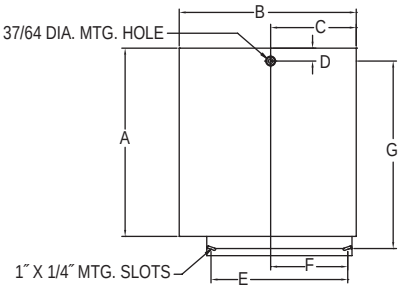
Accuracy To ±0.25%



Inclined-vertical manometer single column



Inclined-vertical manometer double column



RANGES AND DIMENSIONS - SUITABLE FOR TOTAL PRESSURE UP TO 100 PSIG, TEMPERATURES UP TO 150°F																
Model	Description	Inclined Range Inches of Water	Inclined Minor Div.	Length of Inclined Scale	Vertical Range Inches of Water	Vertical Minor Div.	Length of Vertical Scale	Dimensions							Weight lb-oz
								A	B	C	D	E	F	G	
424-10	Single column	0-2.0	.01	20″	2.1-10	.10	9″	16-1/2″	25-1/4″	12-5/8″	1″	10-1/2″	5-3/8″	16″	22-12
421-5	Single column	0-1.0	.01	6-1/2″	1.1- 5	.10	4-5/8″	9-7/8″	9-5/8″	4-7/8″	5/8″	6-1/2″	3-1/4″	9-7/8″	4-12
421-10	Single column	0-1.0	.01	6-1/2″	1.1-10	.10	10-1/8″	15-1/2″	9-5/8″	4-7/8″	5/8″	6-1/2″	3-1/4″	15-1/2″	6-10
422-5	Double column	0-1.0	.01	6-1/2″	1.1-5	.10	4-5/8″	10-1/2″	11-1/2″	5-1/8″	5/8″	6-1/2″	3-1/4″	10-1/2″	6-10
422-10	Double column	0-1.0	.01	6-1/2″	1.1-10	.10	10-1/8″	16-1/8″	11-1/2″	5-1/8″	5/8″	6-1/2″	3-1/4″	16-1/8″	10-13
*Single column metric-ranges and divisions in millimeters.															

Dwyer® **Series 420 Durablock® Inclined-Vertical Manometers** are extremely accurate instruments designed and made especially for precision measurement of low differential pressures in laboratory and test applications. The inclined range bore has a length of 20″ to provide ample multiplication of indicating fluid movement in this critical lower part of the range.

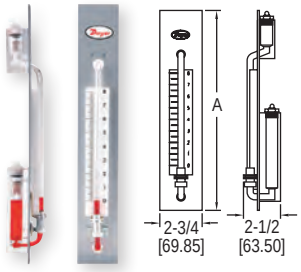
FEATURES/BENEFITS
- High-accuracy measurement of low range gas and air pressure suitable for laboratory and test applications
- Long bore length provides ample room for fluid movement for low range sensing
- Precision built to assure device meets the highest standards

APPLICATIONS
- Low pressure laboratory and test applications

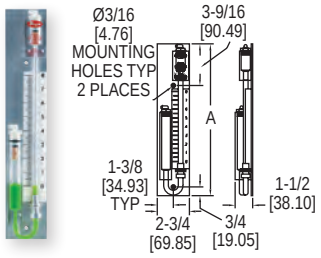
ACCESSORIES - STANDARD
Description
Include two 1 oz bottles of .826 red gage fluid (1.91 blue gage oil for models 421-23 and 422-23), rapid shut-off type “a” connections, two 3 ft lengths of clear plastic tubing and two 1/8″ NPT tubing adapters — two sets for double column models.

SERIES 1230 & 1235

FLEX-TUBE® WELL-TYPE MANOMETERS



Series 1235 panel mounting



Series 1230 wall mounting

Model	Scale in Inches of Water or Mercury	Dimensions A W/M	Dimensions A D	Mercury Required to Fill (Wt.)
1230-8	0-8	15-13/16	16-3/4	12 oz
1230-12	0-12	19-3/8	21-7/8	14 oz
1230-16	0-16	23-1/2	27	16 oz
1230-20	0-20	27-9/16	32-1/8	18 oz
1230-36	0-36	43-1/8	51-1/4	26 oz

Model	Scale in Inches of Water or Mercury	Dimensions A W/M	Dimensions A D	Mercury Required to Fill (Wt.)
1235-20	0-20	29-5/16	33-9/16	18 oz

Dwyer® **Series 1230 & 1235 Flex-Tube® Well Type Manometers** are designed to meet the need for a direct reading single column instrument providing highly accurate pressure readings; positive, negative or differential. Unlike other makes, Dwyer manometers have no hidden wells or packing glands. These instruments are constructed of shatter-proof clear plastic tubing permanently bonded to well assemblies with leak-proof glued joints. Well assemblies are precisely machined from solid acrylic plastic. Over-pressure safety traps assure protection against loss of fluid. Scales are adjusted with quick-acting positive mechanism. These manometers are rated to 100 psig (6.89 bar). Not recommended for vacuum service beyond 5″ Hg (68 in w.c.).

FEATURES/BENEFITS
- High-accuracy pressure measurement suitable for laboratory or general industry
- Precision built assures device meets the highest standards
- No moving parts mean no calibration or nothing to wear out
- Over-pressure trap prevents liquid from being expelled from gage, preventing disruption of operation

APPLICATIONS
- Laboratory and industrial service applications

MODEL CHART
Model
1230-8-W/M
1230-12-W/M
1230-16-W/M
1230-20-W/M
1230-36-W/M
1235-20-W/M
Note: Water/mercury models. For 0.826 S.P. gage fluid models change -W/M to a -D.

OPTIONS	
To order add suffix:	**Description**
-NIST	NIST traceable calibration certificate
Example: 1222-8-W/M-NIST	

ACCESSORIES - STANDARD
Description
Include one set of type “a” connections, .826 sp. gr. red gage fluid for “D” style or fluorescein green dye concentrate with wetting agent for “W/M” styles, two 3 ft lengths of clear vinyl tubing and two 1/8″ NPT tubing adapters.

Dwyer

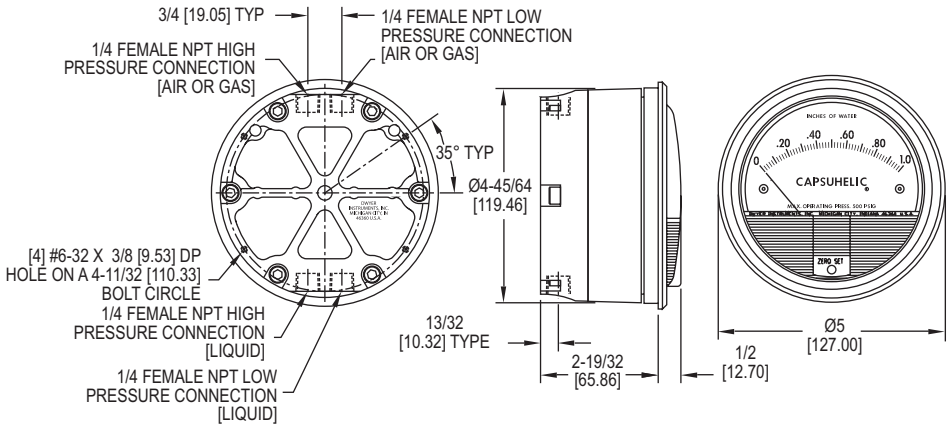
SERIES 4000

CAPSUHELIC® DIFFERENTIAL PRESSURE GAGE

Measures Pressure, Vacuum or Differential, Suitable for Internal Pressures to 500 psig



Capsuhelic® pressure gage has a large, easy-to-read 4″ (102 mm) dial.



The **Series 4000 Capsuhelic® Differential Pressure Gage** is designed to give fast, accurate indication of differential pressures. The gage may be used as a readout device when measuring flowing fluids, pressure drop across filters, liquid levels in storage tanks and many other applications involving pressure, vacuum or differential pressure.

The pressure being measured is held within a capsule which is an integral part of the gage. This containment of the pressure permits the use of the gage on system pressures of up to 500 psig, even when differentials to be read are less than 0.1 in w.c.

FEATURES/BENEFITS

- Gage capsule permits high-pressure usage with small differentials
- Zero and range adjustments outside of gage means no disassembly in normal service
- Time-proven, simple, frictionless movement that permits full-scale readings as low as 0.5 in w.c.
- Diaphragm-actuated versus liquid filled gage supports outdoor use

APPLICATIONS

- Fluid flow
- Liquid storage tanks
- Filter pressure drops
- Vacuum or differential pressure

Note: May be used with hydrogen where pressures are less than 35 psi. Order with a Buna-N diaphragm.

MODEL CHART			
Model	**Range**	**Model**	**Range**
4005*	0-5.0 in w.c.	**4310**	5-0-5 in w.c.
4006*	0-6.0 in w.c.	**4330**	15-0-15 in w.c.
4010*	0-10 in w.c.	**4205**	0-5 psid
4015*	0-15 in w.c.	**4210**	0-10 psid
4020*	0-20 in w.c.	**4215**	0-15 psid
4025*	0-25 in w.c.	**4220**	0-20 psid
4030*	0-30 in w.c.	**4616B****	0-16 ft w.c.
4040*	0-40 in w.c.	**4635**	0-35 ft w.c.
4050*	0-50 in w.c.		
4060*	0-60 in w.c.		
4080*	0-80 in w.c.		
4100*	0-100 in w.c.		
4200*	0-200 in w.c.		

*These ranges available for vertical scale position only.
**Available only with the brass case for water service.
Note: Scales reading directly in flow, heights, etc., are also available.

SPECIFICATIONS

Service: Aluminum case: Air and compatible gases and oil based liquids; Brass case: Air and compatible gases and water based liquids.
Wetted Materials: Consult factory.
Housing: Die cast aluminum with impregnated hard coating, standard. Optional forged brass housing is required for water or water based fluids. Special material diaphragms available, contact factory.
Accuracy: ±3% of FS at 70°F (21.1°C). (±4% on 4200, 4210, 4215, 4220, 4300, 4400, and 4500).
Pressure Limits: -20″ Hg to 500 psig (-0.677 bar to 34.4 bar).
Temperature Limits: 20 to 200°F (-6.67 to 93.3°C).
Size: 4″ (101.6 mm) diameter dial face.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Process Connections: 1/4″ female NPT high and low pressure taps, duplicated - one pair top for air and gas, and one pair bottom for liquids.
Weight: 3 lb, 3 oz (1.45 kg) aluminum case; 7 lb, 13 oz (3.54 kg) brass case.

OPTIONS	
To order add suffix:	**Description**
-ASF	Adjustable signal flag
B	Brass case
Scale Overlays	Red, green, mirrored or combination; specify locations
-NIST	NIST traceable calibration certificate

ACCESSORIES - STANDARD
Description
Two 1/4″ NPT plugs for duplicate pressure taps, four flush mounting adapters with screws and four surface mounting screws.

ACCESSORIES	
Model	**Description**
A-298	Flat flush mounting bracket
A-309	3-way manifold valve
A-314	Bleed fitting
A-370	Mounting bracket
A-471	Portable kit
A-496	Flush mount bracket
A-610	Pipe mount kit

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Process Tubing Options: See page 455 (Gage Tubing Accessories)

Dwyer

SERIES PTGD

DIFFERENTIAL PRESSURE PISTON-TYPE GAGES

Excellent Accuracy and Over-Pressure Ratings



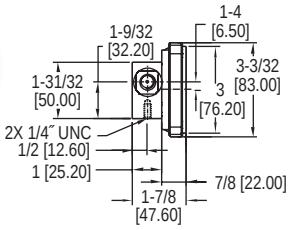


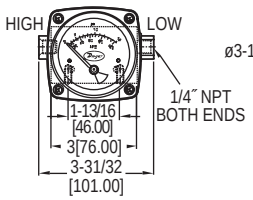
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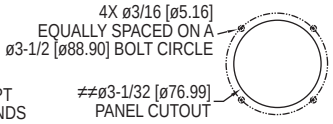
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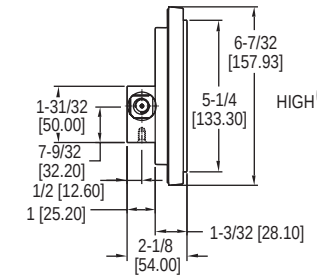


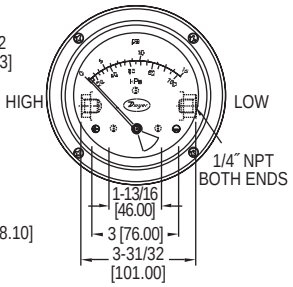
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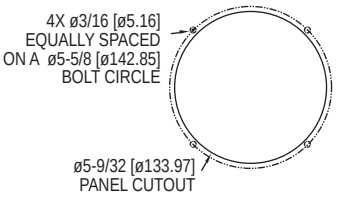












The **Series PTGD Differential Pressure Piston-Type Gages** can be used to measure the pressure drop across filters, strainers, pump performance testing, and heat exchanger pressure drop monitoring. Its simple, rugged design possesses weather and corrosion resistant gage front with a shatter resistant lens. The Series PTGD contains a piston-sensing element which provides different differential pressure ranges with full-scale accuracies of ±2%. Constructed with aluminum or 316 SS and available with two 1/4″ female NPT end connections, the Series PTGD provides over-range protection rated to 3000 psig (200 bar) or 6000 psig (400 bar) depending on model. Standard models come with in-line connections. Back or bottom connections are also available.

FEATURES/BENEFITS

- Rugged, weather and corrosion proof design supports use in harsh environments
- Over-protection range depending on model, up to 6000 psig (400 bar) allows high-pressure applications
- Flexibility of connection selection fits the most sophisticated designs

APPLICATIONS

- Filter pressure drop
- Strainers
- Pump performance testing
- Heat exchanger pressure drop

OPTIONS	
To order add suffix:	**Description**
-V	FKM fluoroelastomer seals
-N	EPDM seals
-PY	Glycerine fill
-PF	Pointer follower
-RP	Reverse port
-SP1	1 0.5A SPDT DIN plug
-SP2	2 0.25A SPDT DIN plugs
Use order code:	**Description**
NISTCAL-PG1	NIST traceable calibration certificate

SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Gage body: Aluminum or 316 SS; Piston: Aluminum or 316 SS; Spring: 302 SS; Seals: Buna-N (standard); PTFE, Ceramic magnet; Dial case: Nylon 6 30% glass filled gage case.
Window: Acrylic.
Accuracy: ±2% FS.
Temperature Limit: 176°F (80°C).
Pressure Limits: 3000 psi (206 bar) for aluminum body; 6000 psi (413 bar) for SS body.
Size: 2.5″ (63 mm) or 4.5″ (115 mm).
Mounting Orientation: Mount in any position.
Process Connections: 1/4″ female NPT end connections standard; 1/4″ female NPT back or bottom connections available. All styles available with 1/4″ BSP.
Weight: Aluminum: 2.5″ 0.88 lb (399 g); 4.5″ 1.35 lb (612 g); Stainless steel: 2.5″ 1.75 lb (794 g); 4.5″ 2.3 lb (1.04 kg).

MODEL CHART		
Model	**Description**	**Range**
PTGD-AA01A	2.5″ aluminum	0-5 psid (0.25 bar)
PTGD-AA02A	2.5″ aluminum	0-10 psid (0.75 bar)
PTGD-AA03A	2.5″ aluminum	0-15 psid (1 bar)
PTGD-AA04A	2.5″ aluminum	0-20 psid (1.6 bar)
PTGD-AA05A	2.5″ aluminum	0-25 psid (1.6 bar)
PTGD-AA06A	2.5″ aluminum	0-30 psid (2 bar)
PTGD-AA07A	2.5″ aluminum	0-40 psid (3 bar)
PTGD-AA08A	2.5″ aluminum	0-50 psid (3.5 bar)
PTGD-AA09A	2.5″ aluminum	0-60 psid (4 bar)
PTGD-AA10A	2.5″ aluminum	0-80 psid (5.5 bar)
PTGD-AA11A	2.5″ aluminum	0-100 psid (7 bar)
PTGD-AA12A	2.5″ aluminum	0-150 psid (10 bar)
PTGD-SA01A	2.5″ stainless steel	0-5 psid (0.25 bar)
PTGD-SA02A	2.5″ stainless steel	0-10 psid (0.75 bar)
PTGD-SA03A	2.5″ stainless steel	0-15 psid (1 bar)
PTGD-SA04A	2.5″ stainless steel	0-20 psid (1.6 bar)
PTGD-SA05A	2.5″ stainless steel	0-25 psid (1.6 bar)
PTGD-SA06A	2.5″ stainless steel	0-30 psid (2 bar)
PTGD-SA07A	2.5″ stainless steel	0-40 psid (3 bar)
PTGD-SA08A	2.5″ stainless steel	0-50 psid (3.5 bar)
PTGD-SA09A	2.5″ stainless steel	0-60 psid (4 bar)
PTGD-SA10A	2.5″ stainless steel	0-80 psid (5.5 bar)
PTGD-SA11A	2.5″ stainless steel	0-100 psid (7 bar)
PTGD-SA12A	2.5″ stainless steel	0-150 psid (10 bar)
Note: For 4.5″ dial face, change -AA to -AC for aluminum and -SA to -SC for stainless steel.		
For back or bottom connections as well as female BSP threads, contact the factory.		

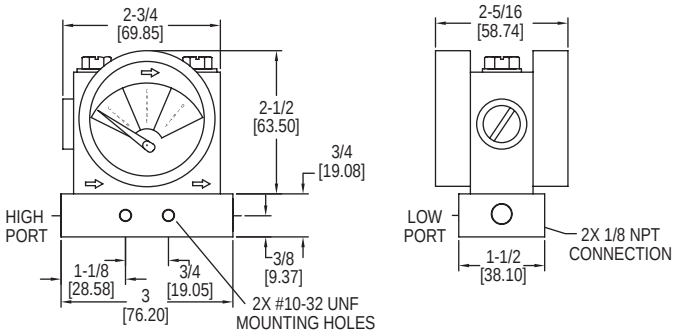
Dwyer

SERIES PFG2

PROCESS FILTER GAGE

Indicates Process Filter Status, In-Line or Bottom Connect Mounting





The **Series PFG2 Process Filter Gage** is designed for determining the state of an inline filter. The differential pressure indicator determines the pressure drop on either side of a filter and relates the value to one of three zones: clean (green), change (yellow), or dirty (red). The Series PFG2 is perfectly suited for filter applications, line loss, valve drop, and many other differential pressure applications where a simple indicator is needed. The direction of process flow is indicated on the dial, with the arrow pointing to the low pressure port. The PFG2 can be connected in-line through the side process connections, or can also be directly mounted through the outlet/inlet.

FEATURES/BENEFITS
- Simple easy to understand indicator means no guessing filter status
- Removable mounting block provides direct mounting options especially in difficult filter access locations
- Quick installation reduces time to operation

APPLICATIONS
- Filter pressure drop
- Filter status
- Valve drop
- Line loss

SPECIFICATIONS
Service: Liquids/gases compatible with SS, GFN, and fluoropolymer.
Wetted Materials: Aluminum, SS, glass filled nylon, and fluoropolymer.
Accuracy: ±5% FS.
Temperature Limit: 200°F (93°C).
Pressure Limit: 300 psig (20.7 bar).
Materials: Body: Glass filled nylon; Mounting Block: Aluminum; Lens: Polyester; Elastomers: Fluoroelastomer.
Process Connection: 1/8″ female NPT.
Mounting Orientation: Any orientation with 10-32 threaded holes 3/4″ apart.
Weight: 9.6 oz (272.2 g).

MODEL CHART				
Model	**Full Range**	**Green Zone**	**Yellow Zone**	**Red Zone**
PFG2-02	0 to 5 psid	0 to 2.5 psid	2.5 to 3.75 psid	3.75 to 5 psid
PFG2-03	0 to 10 psid	0 to 5 psid	5 to 7.5 psid	7.5 to 10 psid
PFG2-06	0 to 25 psid	0 to 11 psid	11 to 18.5 psid	18.5 to 25 psid

MODEL DIGIHELIC LINKS™

DATA ACQUISITION AND LOGGING SOFTWARE

Designed for Communication with Series DH & DHII Digihelic® Differential Pressure Controllers









The **Model Digihelic Links™ Data Acquisition and Logging Software** is an easy to use Windows® based program. Data logging and graphing can be set up by the individual control with varying logging periods. Event logging, live instrument status, remote calibration as well as uploading pre-saved configuration files are some of the higher end capabilities the Digihelic Links™ Communications Software provides. The Digihelic Links™ Communications Software is compatible with all Series DH and DHII Digihelic® Differential Pressure Controllers.

FEATURES/BENEFITS
- Log and graph data up to 10 units simultaneously; view up to 40 units
- Easy to use Windows® based operator interface
- Data logging at individually adjustable rates
- On-screen graphing of process values
- Upload and download saved control configuration profiles
- Remote calibration of controls

MODEL CHART	
Model	**Description**
Digihelic Links™	Communications software CD

ACCESSORIES	
Model	**Description**
MN-1	Mini-Node™ USB/RS-485 converter

REQUIRED EQUIPMENT COMPUTER REQUIREMENTS
The Digihelic Links™ Communications Software application will run on Windows® 95/98 and Windows® NT Workstation 4.0 (Service Pack 3 recommended), Windows® 2000 and Windows® XP software. The hardware requirements for each of these operating systems can be found in the documentation provided with that operating system. One available RS-485 port is needed to communicate with the control(s). A minimum of 4 MB of hard disk space is needed for the Digihelic Links™ Communications Software application files, and additional hard disk space is needed to store data log files. Log file size will vary depending on the duration and rate selected for the controls and the number of controls on line.

COMMUNICATION REQUIREMENTS
To communicate with the Digihelic® Differential Pressure Controller from a PC with an RS-232 Serial Communications Port, an RS-485 to RS-232 converter is required to convert the signal from the Digihelic® controller RS-485 format to the RS-232 input of the PC. Recommended converters are the Models 351-9 RS-485 to RS-232 converter or Model MN-21 RS-485 to USB converter. For RS-485 systems a 120 Ω resistor is also needed to terminate the last control on the control network. Shielded twisted pair cable is recommended for wiring the controls together.

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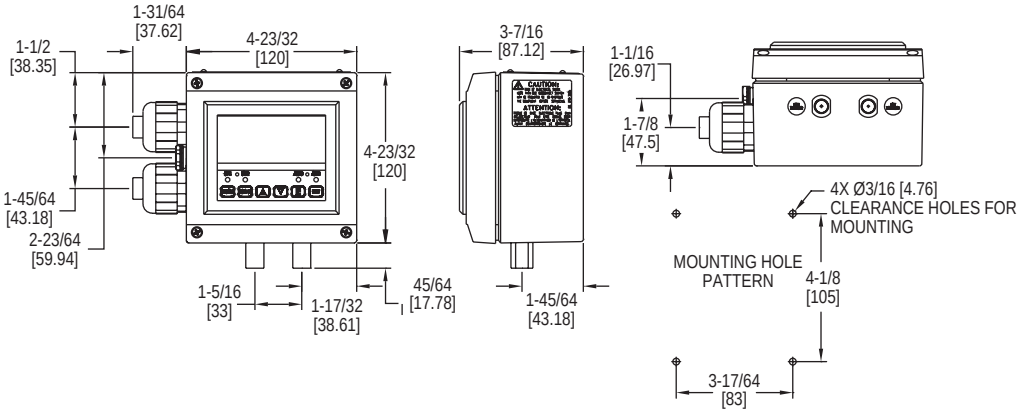
Dwyer

SERIES DHII

DIGIHELIC® II DIFFERENTIAL PRESSURE CONTROLLER

NEMA 4 (IP66) Housing With Large, Bright LCD, Square Root Output for Flow





The **Series DHII Digihelic® II Differential Pressure Controller** takes all the features of the standard Digihelic® Pressure Controller and packages them in a robust NEMA 4 (IP66) housing.

The Digihelic® II Pressure Controller combines the 2 SPDT control relays, 4 to 20 mA process output and Modbus® communications with a large, brightly backlit 4 digit LCD display that can easily be seen from long distances. The electrical wiring has also been enhanced in the DHII with its detachable terminal blocks. The removable terminals allow the install to easily wire the terminal block outside the housing and then attach to the circuit board, reducing wiring difficulties and installation time on the process.

The Digihelic® II Differential Pressure Control in the NEMA 4 (IP66) enclosure enables this product to be the perfect choice when mounting pressure controls outdoors in such applications as rooftop air handlers. This housing also makes it the ideal solution for surface mounting in clean rooms or facilities where water or a cleaning solution is utilized in maintaining plant cleanliness.

FEATURES/BENEFITS

- NEMA 4 housing enables a range of uses both outdoors or indoors where water is present
- Large backlight LCD display provides local reading from a distance
- Detachable terminal blocks reduce wiring difficulties saving installation time

APPLICATIONS

- Air handlers
- Clean rooms

ACCESSORIES

Model	Description
MN-1	Mini-Node™ USB/RS-485 converter
A-301	Static pressure tip for 1/4″ metal tubing connection
A-302	Static pressure tip for 3/16″ and 1/8″ I.D. plastic or rubber tubing
A-438	Surface mounting brackets
A-489	4″ straight static pressure tip with flange
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16″ ID rubber or plastic tubing; 4″ insertion depth; includes mounting screws
Digihelic Links™	Communications software

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Housing Material: Aluminum, glass.
Accuracy: ±0.5% at 77°F (25°C) including hysteresis and repeatability (after 1 hour warm-up).
Stability: < ±1% per year.
Pressure Limits: Ranges ≤ 2.5 in w.c. = 2 psi; 5″: 5 psi; 10″: 5 psi; 25″: 5 psi; 50″: 5 psi, 100″: 9 psi.
Temperature Limits: 32 to 140°F (0 to 60°C).
Compensated Temperature Limits: 32 to 140°F (0 to 60°C).
Thermal Effects: 0.020%/°F (0.036/°C) from 77°F (25°C).
Power Requirements: High voltage power = 100 to 240 VAC, 50 to 400 Hz or 132 to 240 VDC; Low voltage power = 24 VDC ±20%.
Power Consumption: Low voltage power = 24 VDC - 130 mA max; High voltage power = 100 to 240 VAC, 132 to 240 VDC - 7 VA max.
Output Signal: 4 to 20 mA DC into 900 Ω max.
Zero & Span Adjustments: Accessible via menus.
Response Time: 250 ms (dampening set to 1).
Display: 4 digit backlit LCD 0.6″ height. LED indicators for set point and alarm status.
Electrical Connections: Euro type removable terminal blocks with watertight conduit fittings for 1/2″ watertight conduit.
Process Connections: 1/8″ female NPT.
Enclosure Rating: Designed to meet NEMA 4 (IP66).
Mounting Orientation: Mount unit in horizontal plane.
Weight: 2 lb 10 oz (1.19 kg).
Serial Communications: Modbus® RTU, RS485, 9600 baud.
Agency Approvals: CE, UL.

SWITCH SPECIFICATIONS

Switch Type: 2 SPDT relays.
Electrical Rating: 8 amps at 240 VAC resistive.
Set Point Adjustment: Adjustable via keypad on face.

MODEL CHART - AVAILABLE PRESSURE ENGINEERING UNITS

Model	in w.c.	ft w.c.	mm w.c.	cm w.c.	psi	in Hg	mm Hg	mbar	Pa	kPa	hPa	oz/in²
DHII-002	.2500	-	6.350	0.635	-	-	0.467	0.623	62.28	-	0.623	0.144
DHII-004	1.000	-	25.40	2.540	-	-	1.868	2.491	249.1	0.249	2.491	0.578
DHII-006	5.000	.4167	127.0	12.70	.1806	.3678	9.342	12.45	1245	1.245	12.45	2.890
DHII-007	10.00	.8333	254.0	25.40	.3613	.7356	18.68	24.91	2491	2.491	24.91	5.780
DHII-008	25.00	2.083	635.0	63.50	.9032	1.839	46.71	62.27	6227	6.227	62.27	14.45
DHII-009*	50.00	4.167	1270	127.0	1.806	3.678	93.42	124.5	-	12.45	124.5	28.90
DHII-010*	100.0	8.333	2540	254.0	3.613	7.356	186.8	249.1	-	24.91	249.1	57.80

*Velocity and volumetric flow not available on bi-directional range units and models DHII-009 & DHII-010.

MODEL CHART - BI-DIRECTIONAL* RANGES

Model	Range
DHII-012	0.25 to 0 to 0.25 in w.c.
DHII-014	1.0 to 0 to 1.0 in w.c.
DHII-015	2.5 to 0 to 2.5 in w.c.
DHII-016	5 to 0 to 5 in w.c.
DHII-017	10 to 0 to 10 in w.c.

*Velocity and volumetric flow not available on bi-directional range units and models DHII-009 & DHII-010.

OPTIONS

Use order code:	Description
-NIST	NIST calibration certificate

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Process Tubing Options: See page 455 (Gage Tubing Accessories)

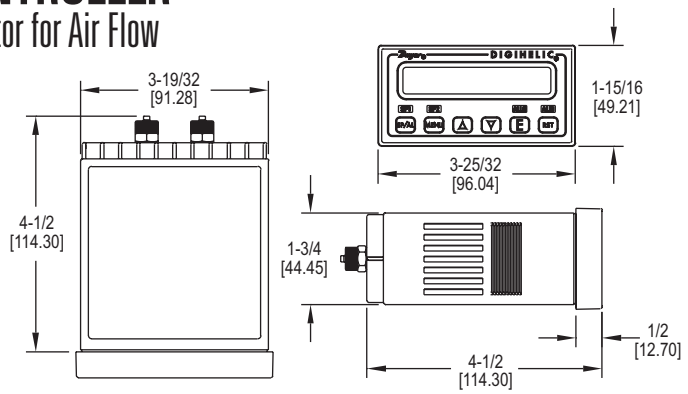
Dwyer

SERIES DH

DIGIHELIC® DIFFERENTIAL PRESSURE CONTROLLER

3-in-1 Instrument: Gage, Switch and Transmitter, Square Root Extractor for Air Flow





The **Series DH Digihelic® Differential Pressure Controller** is a 3-in-1 instrument possessing a digital display gage, control relay switches, and a transmitter with current output. The Digihelic® controller is the ideal instrument for pressure, velocity and flow applications, achieving a 0.5% full-scale accuracy on ranges from 0.25 to 100 in w.c. The Digihelic® controller allows the selection of pressure, velocity or volumetric flow operation in several commonly used engineering units. Two SPDT control relays with adjustable dead bands are provided along with a scalable 4 to 20 mA process output. The Series DH provides extreme flexibility in power usage by allowing 120/220 VAC and also 24 VDC power which is often used in control panels.
Programming is easy using the menu key to access 5 simplified menus which provide access to: security level; selection of pressure, velocity or flow operation; selection of engineering units; K-factor for use with flow sensors; rectangular or circular duct for inputting area in flow applications; set point control or set point and alarm operation; alarm operation as a high, low or high/low alarm; automatic or manual alarm reset; alarm delay; view peak and valley process readings; digital damping for smoothing erratic process applications; scaling the 4 to 20 mA process output to fit your application's range; Modbus® communications; and field calibration.

FEATURES/BENEFITS

- 3-in-1 instrument allows the reduction of several instruments with one product, saving inventory, installation time and money
- Velocity of flow modes, a square root output coincides with the actual flow curve for greater precision
- Power usage of 120/220 VAC or 24 VDC provides flexibility to incorporate device in control panel
- Secure menu program provides access to device operation only for the right skill level
- Modbus® communications supports Process and HVAC system integration and control

APPLICATIONS

- SCFM duct flow
- Industrial ovens air flow
- Filter status
- Clean room pressurization
- Fume hood air flow
- Surgical and medical room pressurization
- Damper and fan control

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Housing Material: ABS plastic, UL approved 94 V-0.
Accuracy: ±0.5% at 77°F (25°C) including hysteresis and repeatability.
Stability: < ±1% per year.
Pressure Limits: Ranges ≤ 2.5 in w.c. = 2 psi; 5″: 5 psi; 10″: 5 psi; 25″: 5 psi; 50″: 5 psi, 100″: 9 psi.
Temperature Limits: 32 to 140°F (0 to 60°C).
Compensated Temperature Limits: 32 to 140°F (0 to 60°C).
Thermal Effects: 0.020%/°F (0.036/°C) from 77°F (25°C).
Power Requirements: High voltage power = 100 to 240 VAC, 50 to 400 Hz or 132 to 240 VDC. Low voltage power = 24 VDC ±20%.
Power Consumption: Low voltage power = 24 VDC - 130 mA max; High voltage power = 100 to 240 VAC, 132 to 240 VDC - 7VA max.
Output Signal: 4 to 20 mA DC into 900 Ω max.
Zero & Span Adjustments: Accessible via menus.
Response Time: 250 ms.
Display: 4 digit LCD 0.4″ height. LED indicators for set point and alarm status.
Electrical Connections: Screw terminals.
Process Connections: Compression fitting for use with 1/8″ ID X 1/4″ OD tubing (3.175 mm ID x 6.35 mm OD). Optional barbed fitting for 3/16″ ID tubing.
Enclosure Rating: Face designed to meet NEMA 4X (IP66).
Mounting Orientation: Mount unit in horizontal plane.
Size: 1/8 DIN.
Panel Cutout: 1.772 x 3.620 in (45 x 92 mm).
Weight: 14.4 oz (408 g).
Serial Communications: Modbus® RTU, RS485, 9600 baud.
Agency Approvals: CE, UL.

SWITCH SPECIFICATIONS

Switch Type: 2 SPDT relays.
Electrical Rating: 8 amps at 240 VAC resistive.
Set Point Adjustment: Adjustable via keypad on face.

OPTIONS

To order add suffix:	Description
-B	Barbed fitting for 3/16″ ID tubing
-NIST	NIST traceable calibration certificate
Example: DH-004-NIST	
-FC	Factory calibration certificate
Example: DH-004-FC	

ACCESSORIES

Model	Description
MN-1	Mini-Node™ USB/RS-485 converter; the Mini-Node™ converters are an easy solution for utilizing the Digihelic® controller's RS-485 serial communication and connecting to virtually any PC.
A-266	Digihelic® surface mounting bracket
A-203	1/8″ ID x 1/4″ OD PVC tubing
Digihelic Links™	Communications Software

MODEL CHART - AVAILABLE PRESSURE ENGINEERING UNITS

Model	in w.c.	ft w.c.	mm w.c.	cm w.c.	psi	in Hg	mm Hg	mbar	Pa	kPa	hPa	oz/in²
DH-002	.2500	-	6.350	0.635	-	-	0.467	0.623	62.28	-	0.623	0.144
DH-004	1.000	-	25.40	2.540	-	-	1.868	2.491	249.1	0.249	2.491	0.578
DH-006	5.000	.4167	127.0	12.70	.1806	.3678	9.342	12.45	1245	1.245	12.45	2.890
DH-007	10.00	.8333	254.0	25.40	.3613	.7356	18.68	24.91	2491	2.491	24.91	5.780
DH-008	25.00	2.083	635.0	63.50	.9032	1.839	46.71	62.27	6227	6.227	62.27	14.45
DH-009*	50.00	4.167	1270	127.0	1.806	3.678	93.42	124.5	-	12.45	124.5	28.90
DH-010*	100.0	8.333	2540	254.0	3.613	7.356	186.8	249.1	-	24.91	249.1	57.80

*Velocity and volumetric flow not available on bi-directional range units and models DH-009 & DH-010.

MODEL CHART - BI-DIRECTIONAL* RANGES

Model	Range
DH-012	0.25 to 0 to 0.25 in w.c.
DH-014	1.0 to 0 to 1.0 in w.c.
DH-015	2.5 to 0 to 2.5 in w.c.
DH-016	5 to 0 to 5 in w.c.
DH-017	10 to 0 to 10 in w.c.

*Velocity and volumetric flow not available on bi-directional range units and models DH-009 & DH-010.

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Process Tubing Options: See page 455 (Gage Tubing Accessories)

Dwyer

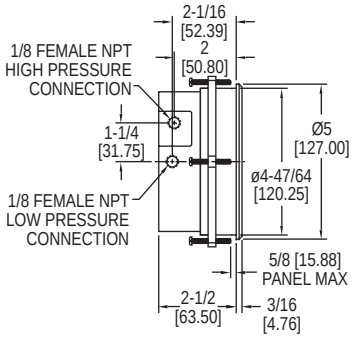
SERIES DH3

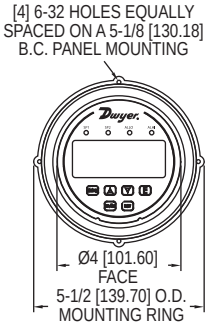
DIGIHELIC® 3 DIFFERENTIAL PRESSURE CONTROLLERS

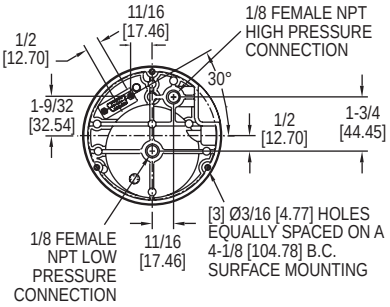
Digihelic® Controller in Photohelic® Gage, Square Root Output for Flow











VIDEO ONLINE

Note: Shown with optional -SS bezel.
Backward compatible⁺ with Magnehelic® gage.

The **Series DH3 Digihelic® 3 Differential Pressure Controllers** are 3-in-1 instruments possessing a digital display gage, control relay switches, and a transmitter with current output all packed in the popular Photohelic® gage style housing. Combining these 3 features allows the reduction of several instruments with one product, saving inventory, installation time and money. The Digihelic® controller is the ideal instrument for pressure, velocity and flow applications, achieving a 1% full-scale accuracy on ranges down to the extremely low 0.25 in w.c. to 2.5 in w.c. full-scale. Ranges of 5 in w.c. and greater maintain 0.5% FS accuracy. Bi-directional ranges are also available.
The Series DH3 Digihelic® controller allows the selection of pressure, velocity or volumetric flow operation in several commonly used engineering units. 2 SPDT control relays with adjustable deadbands are provided along with a scalable 4 to 20 mA process output.
Programming is easy using the menu key to access 5 simplified menus which provide access to: security level; selection of pressure, velocity or flow operation; selection of engineering units; K-factor for use with flow sensors; rectangular or circular duct for inputting area in flow applications; set point control or set point and alarm operation; alarm operation as a high, low or high/low alarm; automatic or manual alarm reset; alarm delay; view peak and valley process reading; digital damping for smoothing erratic process applications; scaling the 4 to 20 mA process output to fit your applications range and field calibration.

FEATURES/BENEFITS

- 3-in-1 instrument allows the reduction of several instruments with one product, saving inventory, installation time and money
- Full-scale accuracy of 1% even on extremely low ranges, and 0.5% for ranges above 5 in w.c. provide for greater measurement precision
- Secure menu program provides access to device operation only for the right skill level
- Optional stainless steel bezel is the same installation diameter as Magnehelic® gage and simplifies field upgrade to DH3 pressure controller

APPLICATIONS

- SCFM duct flow
- Filter status
- Duct or building static pressure
- Damper and fan control

MODEL CHART			
Model	**Ranges**	**Model**	**Ranges**
DH3-002	0 to 0.25 in w.c.	***DH3-010**	0 to 50 in w.c.
DH3-003	0 to 0.5 in w.c.	***DH3-011**	0 to 100 in w.c.
DH3-004	0 to 1 in w.c.	***DH3-013**	0 to ±0.25 in w.c.
DH3-005	0 to 2.5 in w.c.	***DH3-014**	0 to ±0.5 in w.c.
DH3-006	0 to 5 in w.c.	***DH3-015**	0 to ±1 in w.c.
DH3-007	0 to 10 in w.c.	***DH3-016**	0 to ±2.5 in w.c.
DH3-009	0 to 25 in w.c.	***DH3-017**	0 to ±5 in w.c.
		***DH3-018**	0 to ±10 in w.c.
*Velocity and volumetric flow not available on bi-directional range units and models DH3-010 and DH3-011.			

SPECIFICATIONS	
Service: Air and non-combustible, compatible gases. **Wetted Materials:** Consult factory. **Housing Material:** Die cast aluminum case and bezel. **Accuracy:** ±1.5% for 0.25 in and ±0.25 in w.c. ranges. Ranges 0.5 in to 5 in w.c. and corresponding bi-directional (except ±2.5 in w.c.) ±1%; All other ranges: ±0.5% @ 77°F (25°C) including hysteresis and repeatability (after 1 hour warm-up). **Stability:** < ±1% per year. **Pressure Limits:** Ranges ≤ 2.5 in w.c.: 25 psi; ±2.5″, 5 in w.c.: 5 psi; 10 in w.c.: 5 psi; 25 in w.c.: 5 psi; 50 in w.c.: 5 psi; 100 in w.c.: 9 psi. **Temperature Limits:** 32 to 140°F (0 to 60°C). **Compensated Temperature Limits:** 32 to 140°F (0 to 60°C). **Thermal Effects:** 0.020%/°F (0.036/°C) from 77°F (25°C). For 0.25 in and ±0.25 in w.c. ranges: ±0.03%/°F (±0.054%/°C). **Power Requirements:** 12-28 VDC, 12-28 VAC 50 to 400 Hz. **Power Consumption:** 3 VA max.	**Output Signal:** 4 to 20 mA DC into 900 Ω max. **Zero & Span Adjustments:** Accessible via menus. **Response Time:** 250 ms (damping set to 1). **Display:** Backlit 4 digit LCD 0.4″ height LED indicators for set point and alarm status. **Electrical Connections:** 15 pin male high density D-sub connection. 18″ (46 cm) cable with 10 conductors included. **Process Connections:** 1/8″ female NPT. Side or back connections. **Mounting Orientation:** Mount unit in vertical plane. **Size:** 5″ (127 mm) OD x 3-1/8″ (79.38 mm); -SS bezel: 4-3/4″ (120.7 mm) OD x 2-21/32 (67.5 mm). **Weight:** 1.75 lb (794 g). **Agency Approvals:** CE. **SWITCH SPECIFICATIONS** **Switch Type:** 2 SPDT relays. **Electrical Rating:** 1 A @ 30 VAC/VDC. **Set Point Adjustment:** Adjustable via keypad on face.

ACCESSORIES	
Model	**Description**
A-298	Flat aluminum bracket for flush mounting
A-301	Static pressure tip for 1/4″ metal tubing connection
A-302	Static pressure tip for 3/16″ and 1/8″ I.D. plastic or rubber tubing
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16″ ID rubber or plastic tubing; 4″ insertion depth; includes mounting screws
A-370	Mounting bracket flush mount bracket; bracket is then surface mounted; steel with gray hammertone epoxy finish
A-489	4″ straight static pressure tip with flange

OPTIONS	
To order add suffix:	**Description**
-SS	304 brushed stainless steel bezel. ⁺Backward compatible with standard Magnehelic® gage installation diameter
Example: DH3-004-SS	
-NIST	NIST traceable calibration certificate
Example: DH3-004-NIST	
-FC	Factory calibration certificate
Example: DH3-004-FC	

Process Tubing Options: See page 455 (Gage Tubing Accessories)

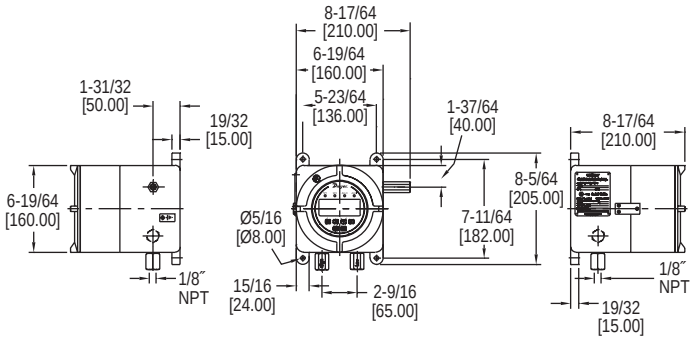
Dwyer

SERIES AT2DH3

ATEX/IECEX APPROVED DH3 DIFFERENTIAL PRESSURE CONTROLLER

Digihelic® Pressure Control in Flame-Proof ATEX/IECEx Enclosure





The **Series AT2DH3 ATEX/IECEx Approved DH3 Differential Pressure Controller** is a 3-in-1 instrument possessing a digital display gage, control relay switches, and a transmitter with current output. Combining these three features allows the reduction of several instruments with one product, saving inventory, installation time and money. The Digihelic® controller is the ideal instrument for hazardous area pressure, velocity and flow applications by allowing for the selection of pressure, velocity or volumetric flow operation in several commonly used engineering units. Two SPDT control relays with adjustable dead bands are provided along with a scalable 4-20 mA process output. In velocity or flow modes, a square root output is provided on the 4-20 mA signal to coincide with the actual flow curve. Flame-proof enclosures are available in aluminum and can include a glass window for viewing process information and set point status on digital display.

FEATURES/BENEFITS

- 3-in-1 instrument allows the reduction of several instruments with one product, saving inventory, installation time and money
- Flame-proof enclosure with optional glass window and aluminum housing protects the device in hazardous areas while giving local visibility to process pressure and set point status

APPLICATIONS

- Hazardous area pressure measurement and switching

Attention: Check local safety rules and warnings on unit and manual for a correct use of the instrument in hazardous area.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
DH3 Housing Material: Die cast aluminum case and bezel.
Housing Material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Accuracy: < 5 in w.c. (except ±2.5 in w.c.): ±1%; All other ranges: ±0.5% at 77°F (25°C) including hysteresis and repeatability (after 1 hour warm-up).
Stability: < ±1% per year.
Pressure Limits: Ranges ≤ 2.5 in w.c.: 25 psi; ±2.5″, 5 in w.c.: 5 psi; 10 in w.c.: 5 psi; 25 in w.c.: 5 psi; 50 in w.c.: 5 psi; 100 in w.c.: 9 psi.
Temperature Limits: 32 to 140°F (0 to 60°C) (**Note:** Product temperature limits differ from case).
Compensated Temperature Limits: 32 to 140°F (0 to 60°C).
Thermal Effects: 0.020%/°F (0.036/°C) from 77°F (25°C).
Power Requirements: 12-28 VDC, 12-28 VAC 50 to 400 Hz.
Power Consumption: 3 VA max.
Output Signal: 4-20 mA DC into 900 Ω max.
Zero & Span Adjustments: Accessible via menus in safe zone only.
Response Time: 250 ms (damping set to 1).
Display: Backlit 4 digit LCD 0.4″ height LED indicators for set point and alarm status.
Process Connections: 1/8″ NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Electrical Connections: Two 1/2″ NPT female. Cable gland not included.
Weight: 12.3 lb (5.6 kg).
Electrical Wiring: Screw terminal.
Mounting Orientation: Mount unit in vertical plane.
Enclosure Rating: (IP66). IP65 with option OPV, overpressure relief valve.
Dial Size: 5″ (127 mm) OD x 3-1/8″ (79.38 mm).
ATEX Certificate: BVI 14ATEX0072.
Agency Approvals: ATEX Compliant CE 1370 Ex II 2G Ex d IIC T6 Gb / II 2D Ex tb IIIC T85°C Db, -60°C≤Tamb≤+60°C IECEx Compliant: Ex d IIC T6 Gb / Ex tb IIIC T85°C Db.

SWITCH SPECIFICATIONS
Switch Type: 2 SPDT relays.
Electrical Rating: 1 A @ 30 VAC/VDC.
Set Point Adjustment: Adjustable via keypad on face in safe zone only.

MODEL CHART

Example	AT2DH3	-002	-A	O	1	X	T2	AT2DH3-002-AO1XT2
Series	AT2DH3							ATEX/IECEx approved DH3 differential pressure controller
Range		002 003 004 005 006 007 009 010 011 013 014 015 016 017 018						0 to 0.25 in w.c. (0 to 62.2 Pa) 0 to 0.5 in w.c. (0 to 124.4 Pa) 0 to 1 in w.c. (0 to 248.8 Pa) 0 to 2.5 in w.c. (0 to 622.1 Pa) 0 to 5 in w.c. (0 to 1244.2 Pa) 0 to 10 in w.c. (0 to 2488.4 Pa) 0 to 25 in w.c. (0 to 6221 Pa) 0 to 50 in w.c. (0 to 12442 Pa) 0 to 100 in w.c. (0 to 24884 Pa) 0.25 to 0 to 0.25 in w.c. (62.2 to 0 to 62.2 Pa) 0.5 to 0 to 0.5 in w.c. (124.4 to 0 to 124.4 Pa) 1 to 0 to 1 in w.c. (248.8 to 0 to 248.8 Pa) 2.5 to 0 to 2.5 in w.c. (622.1 to 0 to 622.1 Pa) 5 to 0 to 5 in w.c. (1244.2 to 0 to 1244.2 Pa) 10 to 0 to 10 in w.c. (2488.4 to 0 to 2488.4 Pa)
Housing Material			A					Aluminum
Cover				B O				Blind Glass top cover
Process Connection					1 2			1/8″ NPT F brass ports 1/8″ NPT F SS ports
Overpressure Plug						X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as port
Tag							T2	SS information label

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm
www.P65Warnings.ca.gov

Dwyer

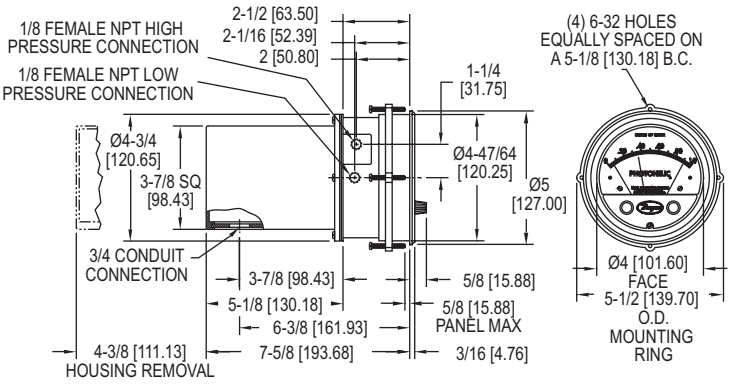
SERIES A3000

PHOTOHELIC® PRESSURE SWITCH/GAGE

3-in-1 Indicating Gage, Lo-Limit and Hi-Limit Control



Set points are instantly adjusted with front knobs



The **Series A3000 Photohelic® Pressure Switch/Gage** functions as versatile, highly repeatable pressure switches combined with a precise pressure gage employing the time-proven Magnehelic® gage design. The Photohelic® switch/gage measures and controls positive, negative or differential pressures of air and compatible gases. Standard models are rated to 25 psig (1.7 bar) with options to 35 (2.4) or 80 (5.5 bar) psig. Two phototransistor actuated, DPDT relays are included for low/high limit control. Easy to adjust set point indicators are controlled by knobs located on the gage face. Individual set point deadband is one pointer width - less than 1% of full-scale. Set points can be interlocked to provide variable deadband - ideal for control of fans, dampers, etc. Gage reading is continuous and unaffected by switch operation, even during loss of electrical power. Choose from full-scale pressure ranges from a low 0-.25 in (0-6 mm) w.c. up to 30 psi (21 bar).

FEATURES/BENEFITS

- 3-in-1 instrument allows the reduction of several instruments with one product, saving inventory, installation time and money
- Patented design and 1% full-scale dead band provides quick response to pressure changes means no delay in switching and chatter-free operation
- A wide range of models that can meet pressure measurement specifications from low to very high

APPLICATIONS

- Air conditioning systems
- Clean rooms
- Fume exhaust systems

SPECIFICATIONS

GAGE SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: ±2% of FS at 70°F (21.1°C). ±3% on -0 and ±4% on -00 models.
Pressure Limits: -20″ Hg to 25 psig (-0.677 to 1.72 bar); MP option: 35 psig (2.41 bar); HP option: 80 psig (5.52 bar).
Temperature Limits: 20 to 120°F (-6.67 to 48.9°C). Low temperature option available.
Process Connections: 1/8″ female NPT.
Size: 4″ (101.6 mm) dial face, 5″ (127 mm) OD x 8-1/4″ (209.55 mm).
Weight: 4 lb (1.81 kg).

SWITCH SPECIFICATIONS

Switch Type: Each set point has 2 form C relays (DPDT).
Repeatability: ±1% of FS.
Electrical Rating: 10 A @ 28 VDC, 10 A @ 120, 240 VAC.
Electrical Connections: Screw terminals. Use 167°F (75°C) copper conductors only.
Power Requirements: 120 VAC, 50/60 Hz; 240 VAC and 24 VAC power optional.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Adjustable knobs on face.
Agency Approvals: CE, CSA, UL.

Dwyer

SERIES A3000

PHOTOHELIC® PRESSURE SWITCH/GAGE

3-in-1 Indicating Gage, Lo-Limit and Hi-Limit Control

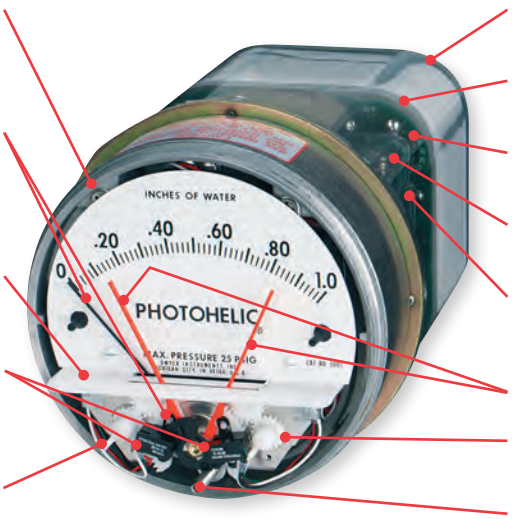
Bezel and front cover (with set point knobs and zero adjustment screw) removed to expose Photohelic® gage set point mechanism. Cover is clear polycarbonate plastic.

Gage pointer and light shutter are mounted on helix and balancing counterweight. Shutter passes through slot in optical limit switch to expose phototransistors to integral infrared light source or mask them depending on applied pressure.

Light shield effectively protects phototransistors from strong outside light sources yet allows free pointer movement. It also gives interior a clean "finished" look.

Optical limit switches are used for reliability and long service life. Attached directly to set pointers, they are individually aligned to assure precise switching accuracy.

Semi-Flexible drive shaft connects to set point knobs.



Plastic enclosure protects electronic components and electrical connections.

Polycarbonate connection or terminal board is self-extinguishing.

Glass-epoxy printed circuit boards for durability and performance.

Load relays are DPDT with latching feature for maximum application versatility.

Electronics are designed to operate on 50/60 Hz, 120 volt current with 10% over or under voltage. Special units for other voltages are available.

Switch set pointers show switch settings at all times.

Spring loaded friction clutch prevents operator damage of set point mechanism.

Zero adjustment screw connects to screw in cover to adjust zero pressure reading.

MODEL CHART

Model	Range, in w.c.
A3000-00	0-.25
A3000-0	0-.50
A3001	0-1.0
A3002	0-2.0
A3003	0-3.0
A3004	0-4.0
A3005	0-5.0
A3006	0-6.0
A3008	0-8.0
A3010	0-10
A3015	0-15
A3020	0-20
A3025	0-25
A3030	0-30
A3040	0-40
A3050	0-50
A3060	0-60
A3080	0-80
A3100	0-100
A3150	0-150
Bi-Directional Range	
A3000-00N	.05-.20

Zero Center Ranges	
Model	Range in w.c.
A3300-0	.25-0-.25
A3301	.5-0-.5
A3302	1-0-1
A3304	2-0-2
A3310	5-0-5
A3320	10-0-10
A3330	15-0-15
Model	Range in w.c. /Air Velocity, F.P.M.
A3000-00AV	0-.25/300-2000
A3000-0AV	0-.50/500-2800
A3001AV	0-1.0/500-4000
A3002AV	0-2.0/1000-5600
A3010AV	0-10/2000-12500
Pitot tube required	

Model	Range, mm w.c.
A3000-6MM	0-6
A3000-10MM	0-10
A3000-25MM	0-25
A3000-50MM	0-50
A3000-80MM	0-80
A3000-100MM	0-100
Zero Center	
A3300-20MM	10-0-10
A3300-30MM	15-0-15
Model	Range, Pascals
A3000-60PA	0-60
A3000-125PA	0-125
A3000-250PA	0-250
A3000-500PA	0-500
A3000-750PA	0-750

Zero Center Ranges	
Model	Range, Pa
A3300-250PA	125-0-125
A3300-500PA	250-0-250
Model	Range, kPa
A3000-1KPA	0-1
A3000-1.5KPA	0-1.5
A3000-2KPA	0-2
A3000-3KPA	0-3
A3000-4KPA	0-4
A3000-5KPA	0-5
A3000-8KPA	0-8
A3000-10KPA	0-10
A3000-15KPA	0-15
A3000-20KPA	0-20
A3000-25KPA	0-25
A3000-30KPA	0-30
Zero Center Ranges	
Model	Range, kPa
A3300-1KPA	.5-0- .5
A3300-3KPA	1.5-0-1.5

OPTIONS

To order add suffix:	Description
-SRH	Single relay activates on increase
-SRL	Single relay activates on decrease
-OLS	OEM model
-RMR	Remote mounted relay
-TAMP	Tamper proof knobs
-MP	Medium pressure
-HP	High pressure
-LT	Low temperature (-20°F)
-NIST	NIST traceable calibration certificate

ACCESSORIES

Model	Description
A-298	Flat flush mounting bracket
A-601	Manual reset switch net

Note: Special models can be built to OEM customers' specifications with scales reading in special pressure units like ounces per square inch, inches of mercury, etc. Square Root Scales reading in FPM or SCFM are also available. Custom logos and special graduations can also be included. Contact factory for minimum quantities and pricing.

Process Tubing Options: See page 455 (Gage Tubing Accessories)

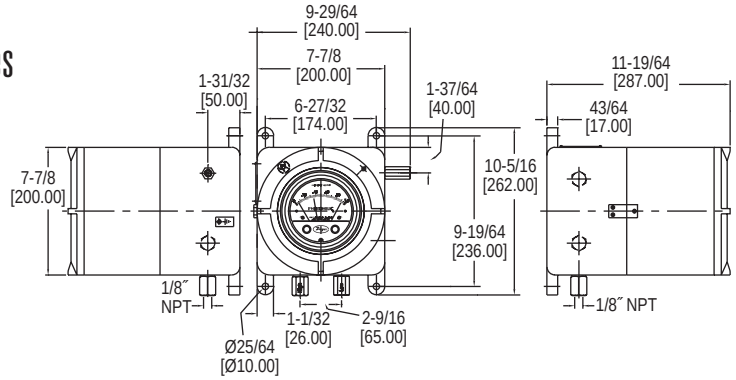
Dwyer

SERIES AT3A3000

ATEX/IECEX APPROVED PHOTOHELIC® SWITCH/GAGE WITH 120, 240 OR 24 VAC POWER

Photohelic® Switch/Gages in Flame-Proof ATEX/IECEx Enclosures





Flame-proof approved **Series AT3A3000 ATEX/IECEx Approved Photohelic® Switch/Gage with 120, 240 or 24 VAC Power** functions as versatile, highly repeatable pressure switches combined with a precise pressure gage employing the time-proven Magnehelic® gage design. The Photohelic® switch/gage measures and controls positive, negative or differential pressures of air and compatible gases. Standard models are rated to 25 psig (1.7 bar) with options to 35 psig (2.4 bar) or 80 psig (5.5 bar). Two phototransistor actuated, DPDT relays are included for low/high limit control. Easy to adjust set point indicators are controlled by knobs located on the gage face (accessible opening case after de-energizing instrument). Set points can be interlocked to provide variable dead band– ideal for control of fans, dampers, etc. Gage reading is continuous and unaffected by switch operation, even during loss of electrical power. Flame-proof enclosures are available in aluminum with glass window which allows for viewing of set point needles and process pressure.

FEATURES/BENEFITS

- 3-in-1 ATEX/IECEx approved instrument allows the reduction of several instruments with one product, saving inventory, installation time and money
- Flame-proof enclosure with optional glass window and aluminum housing protects the device in hazardous areas while giving local visibility to process pressure and set point status

APPLICATIONS

- Hazardous area pressure measurement and switching
- Air conditioning systems
- Clean rooms
- Fume exhaust systems

Attention: Check local safety rules and warnings on unit and manual for a correct use of the instrument in hazardous area.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Housing material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Accuracy: ±2% of FS at 70°F (21.1°C); ±3% on -0 and ±4% on -00 models.
Pressure Limits: -20 in Hg to 25 psig (-0.677 to 1.72 bar). MP option; 35 psig (2.41 bar), HP option; 80 psig (5.52 bar).
Temperature Limits: 20 to 120°F (-6.67 to 48.9°C) LT low temperature option to -20°F available (**Note:** Product temperature limits differ from case).
Dial Size: 4″ (101.6 mm).
Mounting Orientation: Diaphragm in vertical position.
Set Point Adjustment: Adjustable knobs on Photohelic® gage face behind enclosure cover. Follow instructions and safety warnings to open cover.

SWITCH SPECIFICATIONS

Switch Type: Each set point has 2 Form C relays (DPDT).
Repeatability: ±1% of FS.
Electrical Rating: 10 A @ 28 VDC, 10 A @ 120, 240 VAC.
Electrical Wiring: Screw terminals.
Power Requirements: 120 VAC, 50/60 Hz; 240 VAC & 24 VAC power optional.
Enclosure Rating: IP66. IP65 with option OPV, overpressure relief valve.
Process Connections: 1/8″ NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Electrical Connections: Three 1/2″ NPT female. Cable gland not included.
Weight: 28.4 lb (12.9 kg).
ATEX Certificate: BVI 14ATEX0072.
Agency Approvals: ATEX Compliant CE 1370 Ex II 2G Ex d IIC T6 Gb / II 2D Ex tb IIIC T85°C Db, -60°C≤Tamb≤+60°C IECEx Compliant: Ex d IIC T6 Gb / Ex tb IIIC T85°C Db.

RANGE CHART

Model	Range in w.c.	Model	Range in w.c.	Model	Range in w.c.
A3000-00	0 to .25	**A3006**	0 to 6.0	**A3040**	0 to 40
A3000-0	0 to .50	**A3008**	0 to 8.0	**A3050**	0 to 50
A3001	0 to 1.0	**A3010**	0 to 10	**A3060**	0 to 60
A3002	0 to 2.0	**A3015**	0 to 15	**A3080**	0 to 80
A3003	0 to 3.0	**A3020**	0 to 20	**A3100**	0 to 100
A3004	0 to 4.0	**A3025**	0 to 25	**A3150**	0 to 150
A3005	0 to 5.0	**A3030**	0 to 30		

MODEL CHART

Example	AT3	A3001	-120VAC	-X	X	X	-A	B	1	X	T2	AT3A3001-120VAC-XXX-AB1XT2
Housing	AT3											ATEX/IECEx approved Photohelic® switch/gages
Range		A3XXX										Specify range by wiring Photohelic® model number. See range chart.
Power			120VAC 240VAC 24VAC									Power requirement 120 VAC Power requirement 240 VAC Power requirement 24 VAC
Pressure Rating				X MP HP								Standard -25 in Hg to 25 psig Medium pressure max. static 35 psig High pressure max. static 80 psig
Construction					X							Standard silicone construction
Temperature Rating						X LT						Standard temperature 20 to 120°F Low temperature to -20°F
Housing Material							A					Aluminum
Cover								B O				Blind Glass cover
Process Connection									1 2			1/8″ NPT female brass ports 1/8″ NPT female SS ports
Overpressure Plug										X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as ports
Tag											T2	SS information label

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES 43000

CAPSU-PHOTOHELIC® PRESSURE SWITCH/GAGES

Lo-Limit and Hi-Limit Control, Aluminum or Brass Case Available

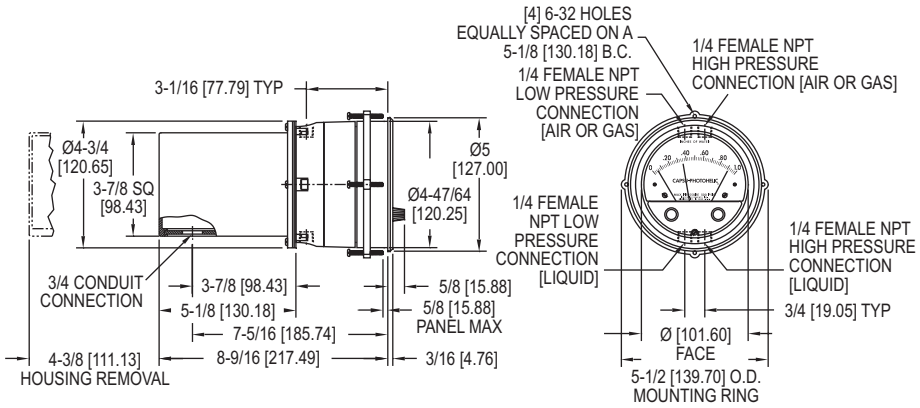
Set points are instantly adjusted with front knobs.



Series 43000
Capsu-Photohelic® switch/gage



Series 43000
Capsu-Photohelic® switch/gage with brass body



Series 43000 Capsu-Photohelic® Pressure Switch/Gages function as versatile, highly repeatable pressure switches combined with a precise pressure gage employing the time-proven Magnehelic® gage design. The Capsu-Photohelic® switch/gage employs an encapsulated sensing element for use with both liquids and gases at pressures to 500 psig (34 bar). Optional cast brass case is available for water or water based liquids. Two phototransistors actuated, DPDT relays are included for low/high limit control. Easy to adjust set point indicators are controlled by knobs located on the gage face. Individual set point deadband is one pointer width — less than 1% of full-scale. Set points can be interlocked to provide variable deadband — ideal for control of pumps.

FEATURES/BENEFITS

- Gage capsule permits high-pressure usage with small differentials
- Zero and range adjustments outside of gage means no disassembly in normal service
- Time-proven, simple, frictionless movement that permits full-scale readings as low as 0.5 in w.c.
- Photo-electronic relays provide fast-acting switching with variable deadband control for chatter-free operation

APPLICATIONS

- Pump control
- Pumping systems
- Waste water
- Compatible liquid or gas applications

MODEL CHART			
Model	**Range in w.c.**	**Model**	**Range in w.c.**
43000-0	0-.5	**43050**	0-50
43001	0-1.0	**43060**	0-60
43002	0-2.0	**43080**	0-80
43003	0-3.0	**43100**	0-100
43004	0-4.0	**43150**	0-150
43005	0-5.0	**43200**	0-200
43006	0-6.0	**43300**	0-300
43008	0-8.0	**43400**	0-400
43010	0-10	**43500**	0-500
43015	0-15	**43302**	1-0-1
43020	0-20	**43304**	2-0-2
43025	0-25	**43310**	5-0-5
43030	0-30	**43320**	10-0-10
43040	0-40	**43330**	15-0-15

ACCESSORIES	
Model	**Description**
A-298	Flat aluminum bracket for flush mounting

SPECIFICATIONS
GAGE SPECIFICATIONS
Service: Compatible gases and liquids. Brass case option required for water based liquids.
Wetted Materials: Consult factory.
Accuracy: ±3% of FS at 70°F (21.1°C). ±4% on 43215, 43220 and 43500.
Pressure Limits: -20 Hg to 500 psig (-0.677 to 34.5 bar).
Temperature Limits: 20 to 120°F (-6.67 to 48.9°C). Low temperature option available.
Process Connections: 1/4˝ female NPT.
Size: 4˝ (101.6 mm) dial face, 5˝ (127 mm) OD x 9-3/16˝ (233.36 mm).
Weight: 5 lb, 8 oz (2.49 kg). Brass 11 lb, 2 oz (5.05 kg).
SWITCH SPECIFICATIONS
Switch Type: Each set point has 2 form C relays (DPDT).
Repeatability: ±1% of FS.
Electrical Rating: 10 A @ 120 VAC, 6 A @ 240 VAC, 60 Hz res. 10 A @ 28 VDC.
Electrical Connections: Screw terminals.
Power Requirements: 120 VAC, 50/60 Hz; 240 VAC and 24 VAC power optional.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Adjustable knobs on face.

OPTIONS	
To order add suffix:	**Description**
-SRH	Single relay activates on increase
-SRL	Single relay activates on decrease
-24VAC	24 VAC relay pack
-240VAC	240 VAC relay pack
-RMR	Remote mounted relay
-TAMP	Tamper proof knobs
-WP	Weatherproof (NEMA 4)
-EXPL	Explosion-proof (NEMA 7 C, D, 9 E, F, G; NEC Class I, Div. 1 & 2, Groups C, D, Class II, Div. 1 & 2, Groups E, F, G, Class III
-NIST	NIST traceable calibration certificate
Example: 43001-NIST	
B	Brass body; For water based liquids order optional brass case
Example: 43001B	
Contact Customer Service for detailed dimension drawings.	

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Process Tubing Options: See page 455 (Gage Tubing Accessories)

Dwyer

SERIES 3000MR & 3000MRS

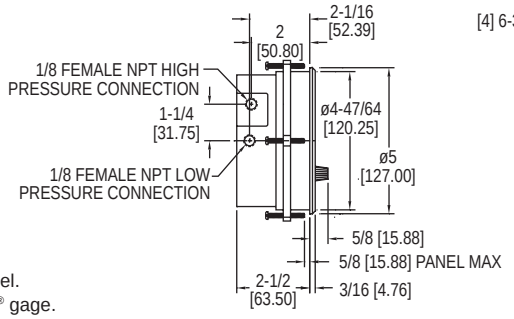
PHOTOHELIC® SWITCH/GAGES

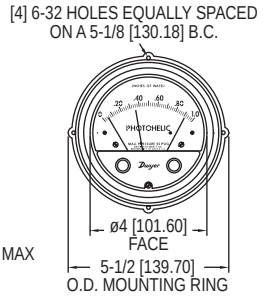
Combines Differential Pressure Gage with Low/High Set-Points, Compact Size





Note: Shown with optional -SS bezel.
Backward compatible+ with Magnehelic® gage.





Using solid state technology, the **Series 3000MR & 3000MRS Photohelic® Switch/Gages** combine the functions of a precise, highly repeatable differential pressure switch with a large easy-to-read analog pressure gage employing the durable, time-proven Magnehelic® gage design. Switch setting is easy to adjust with large external knobs on the gage face. Gage reading is unaffected by switch operation - will indicate accurately even if power is interrupted. Solid state design now results in greatly reduced size and weight. Units can be flush mounted or surface mounted with hardware supplied. 3000MR models employ versatile electromechanical relays with gold over silver contacts - ideal for dry circuits. For applications requiring high cycle rates, choose 3000MRS models with SPST (N.O.) solid state relays. All models provide both low and high limit control and include 18-inch (45 cm) cable assemblies for electrical connections.
Compatible with air and other non-combustible, non-corrosive gases, they can be used in systems with pressures to 25 psig (1.725 bar). Optional construction is available for use to either 35 psig (2.42 bar) or 80 psig (5.51 bar).

FEATURES/BENEFITS

- Gage reading unaffected by switch operation and will continue to read pressure even during power loss
- Zero and range adjustments outside of gage means no disassembly in normal service
- Solid-state design allows for switching in high cycle rate applications without degradation
- Optional stainless steel bezel is the same installation diameter as Magnehelic® gage and simplifies field upgrade to Photohelic® switch/gage

APPLICATIONS

- Pneumatic conveying
- Air conditioning systems
- Clean rooms

SPECIFICATIONS

GAGE SPECIFICATIONS
Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: ±2% of FS (3000-0 ±3% of FS). (3000-00 ±4% of FS).
Pressure Limit: -20″ Hg. to 25 psig (-0.677 bar to 1.72 bar). MP option: 35 psig (2.41 bar), HP option: 80 psig (5.52 bar).
Temperature Limits: 20 to 120°F (-6.67 to 48.9°C).
Process Connections: 1/8″ female NPT (duplicated side and back).
Size: 4″ (101.6 mm) dial face, 5″ (127 mm) OD x 3-1/8″ (79.38 mm); -SS bezel: 4-3/4″ (120.7 mm) OD x 2-21/32 (67.5 mm).
Weight: 1.8 lb (816 g).

SWITCH SPECIFICATIONS 3000MR
Switch Type: Each set point has 1 form C relays (SPDT).
Relay Contacts: (Resistive load) 1 form C rated 1.0A @ 30 VDC, 0.3A @ 110 VDC or 0.5A @ 125 VAC. Gold over clad silver - suitable for dry circuits.
Electrical Connections: 18″ (46 cm) cable assembly with 8 conductors. Optional lengths to 100′ (30.5 m).
Power Requirements: 24 VDC, regulated ±10%.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Adjustable knobs on face.
Agency Approvals: CE.

SWITCH SPECIFICATIONS 3000MRS
Switch Type: Each set point has a solid state relay.
Switching Voltage: 20-280 VAC (47-63 Hz).
Switching Current: 1.0 amp (AC) max., 0.01 mA (AC) min., (2) SPST NO.
Electrical Connections: 18″ (46 cm) cable assembly with 6 conductors, optional lengths to 100′ (30.5 m).
Power Requirements: 24 VDC, regulated ±10%.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Adjustable knobs on face.
Agency Approvals: CE.

MODEL CHART

Model	Range, in w.c.	Minor Divs.	Model	Range, in w.c.	Minor Divs.
3000MR-00	0-0.25	.005	**3000MRS-00****	0-0.25	.005
3000MR-0	0-0.5	.01	**3000MRS-0***	0-0.5	.01
3001MR	0-1.0	.02	**3001MRS**	0-1.0	.02
3002MR	0-2.0	.05	**3002MRS**	0-2.0	.05
3003MR	0-3.0	.10	**3003MRS**	0-3.0	.10
3005MR	0-5.0	.10	**3005MRS**	0-5.0	.10
3010MR	0-10	.20	**3010MRS**	0-10	.20
3015MR	0-15	.50	**3015MRS**	0-15	.50
3020MR	0-20	.50	**3020MRS**	0-20	.50
3030MR	0-30	1.0	**3030MRS**	0-30	1.0
3050MR	0-50	1.0	**3050MRS**	0-50	1.0
3100MR	0-100	2.0	**3100MRS**	0-100	2.0
Model	**Range, Pascals**	**Minor Divs.**	**Model**	**Range, Pascals**	**Minor Divs.**
3000MR-60PA**	0-60	2.0	**3000MRS-60PA****	0-60	2.0
3000MR-125PA*	0-125	5.0	**3000MRS-125PA***	0-125	5.0
3000MR-250PA	0-250	5.0	**3000MRS-250PA**	0-250	5.0
3000MR-500PA	0-500	10.0	**3000MRS-500PA**	0-500	10.0
Model	**Range, kPa**	**Minor Divs.**	**Model**	**Range, kPa**	**Minor Divs.**
3000MR-1KPA	0-1.0	.02	**3000MRS-1KPA**	0-1.0	.02
3000MR-3KPA	0-3.0	.10	**3000MRS-3KPA**	0-3.0	.10
3000MR-4KPA	0-4.0	.10	**3000MRS-4KPA**	0-4.0	.10
Model	**Range, mm w.c.**	**Minor Divs.**	**Model**	**Range, mm w.c.**	**Minor Divs.**
3000MR-6MM**	0-6	.20	**3000MRS-6MM****	0-6	.20
3000MR-10MM*	0-10	.50	**3000MRS-10MM***	0-10	.50
3000MR-25MM	0-25	.50	**3000MRS-25MM**	0-25	.50
3000MR-50MM	0-50	1.0	**3000MRS-50MM**	0-50	1.0
3000MR-100MM	0-100	2.0	**3000MRS-100MM**	0-100	2.0
Model	**Range, cm w.c.**	**Minor Divs.**	**Model**	**Range, cm w.c.**	**Minor Divs.**
3000MR-20CM	0-20	.50	**3000MRS-20CM**	0-20	.50

*±3% of full-scale. **± 4% of full-scale.

Note: To order, select either MR or MRS suffix to Series 3000 number.
Examples: 3001MR or 3001MRS

ACCESSORIES

Model	Description
A-298	Flat aluminum bracket for flush mounting 3000MR/MRS
A-370	Mounting bracket flush mount 3000MR/MRS bracket. Bracket is then surface mounted. Steel with gray hammertone epoxy finish
A-600	R/C snubber recommended for inductive loads like a solenoid or contactor

ACCESSORIES - STANDARD

Description
Mounting ring, snap ring, 18″ (45 cm) cable assembly, (2) 3/16″ tubing to 1/8″ NPT adapters, (2) 1/8″ NPT pipe plugs, (4) 6-32 x 1-1/4″ RH machine screws (panel mounting), (3) 6-32 x 5/16″ RH machine screws (surface mounting)

OPTIONS

To order add suffix:	Description
-SS	304 brushed stainless steel bezel. +Backward compatible with standard Magnehelic® gage installation diameter
Example: 3001MR-SS	
-TAMP	Tamper-proof knobs; require spanner key (supplied) to change set points
-LT	Low temperature option; for use under 20°F (-6.7°C)
-MP	Medium pressure; increases maximum rated pressure to 35 psig (2.41 bar)
-HP	High pressure; increases maximum rated pressure to 80 psig (5.5 bar)
-WP	Weatherproof housing option
-NIST	NIST traceable calibration certificate
Example: 3001MR-NIST	

Process Tubing Options: See page 455 (Gage Tubing Accessories)

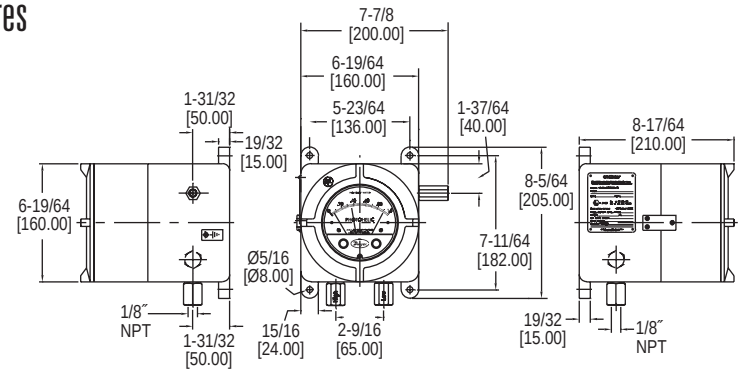
Dwyer

SERIES AT23000MR & AT23000MRS

ATEX/IECEX APPROVED PHOTOHELIC® SWITCH/GAGES WITH 24 VDC POWER

3000MR or 3000MRS Series in Flame-Proof ATEX/IECEx Enclosures





Using solid state technology, the **Series AT23000MR & AT23000MRS ATEX/IECEx Approved Photohelic® Switch/Gage with 24 VDC Power** combines the functions of a precise, highly repeatable differential pressure switch with a large easy-to-read analog pressure gage. Gage reading is unaffected by switch operation and will indicate accurately even if power is interrupted. AT23000MR series employ versatile electromechanical relays with low amperage ratings-ideal for dry circuits. For applications requiring high cycle rates, choose AT23000MRS models with SPST (NO) solid state relays. Easy to adjust set point indicators are controlled by knobs located on the gage face (accessible opening case after de-energizing instrument). All models provide both low and high limit control. Compatible with air and other non-combustible, non-corrosive gases, they can be used in systems with pressures to 25 psig (1.725 bar). Optional construction is available for use to either 35 psig (2.42 bar) or 80 psig (5.51 bar). Flame-proof enclosures are available with glass window which allows for viewing of set point needles and process pressure. Compatible with air and other non-combustible, non-corrosive gases, they can be used in systems with pressures to 25 psig (1.725 bar). Optional construction is available for use to either 35 psig (2.42 bar) or 80 psig (5.51 bar).

FEATURES/BENEFITS

- Gage reading unaffected by switch operation and will continue to read pressure even during power loss
- Zero and range adjustments outside of gage means no disassembly in normal service
- Solid-state design allows for switching in high cycle rate applications without degradation
- Flame-proof enclosure with optional glass window and aluminum housing protects the device in hazardous areas while giving local visibility to process pressure and set point status

APPLICATIONS

- Hazardous area pressure measurement and switching
- Pneumatic conveying
- Air conditioning systems
- Clean rooms
- Fume exhaust systems

Attention: Check local safety rules and warnings on unit and manual for a correct use of the instrument in hazardous area.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Housing Material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Accuracy: ±2% of FS at 70°F (21.1°C). ±3% on -0, -60 Pa and ±4% on -00 models.
Pressure Limits: -20 in Hg to 25 psig (-0.677 bar to 1.72 bar). MP option: 35 psig (2.41 bar), HP option: 80 psig (5.52 bar).
Temperature Limits: 20 to 120°F. (-6.67 to 48.9°C). Option LT low temperature to -20°F (28.8°C) (**Note:** Product temperature limits differ from case).
Power Requirements: 24 VDC, regulated ±10%.
Electrical Wiring: Screw terminals.
Mounting Orientation: Diaphragm in vertical position.
Enclosure Rating: IP66. IP65 with option OPV, overpressure relief valve.
Process Connections: 1/8″ NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Electrical Connections: Two 1/2″ NPT female. Cable gland not included.
Dial Size: 4″ (101.6 mm).
Set Point Adjustment: Adjustable knobs on face behind enclosure cover. Follow instructions and safety warnings to open cover.
Weight: 12.5 lb (5.7 kg).
ATEX Certificate: BVI 14ATEX0072.
Agency Approvals: ATEX Compliant CE 1370 Ex II 2G Ex d IIC T6 Gb / II 2D Ex tb IIIC T85°C Db, -60°C≤Tamb≤+60°C IECEx Compliant: Ex d IIC T6 Gb / Ex tb IIIC T85°C Db.

SWITCH SPECIFICATIONS (3000MR)
Switch Type: Each set point has 1 Form C relay (SPDT).
Relay Contacts: (resistive load) 1 Form C rated 1.0 A @ 30 VDC, 0.3 A @ 110 VDC or 0.5 A @ 125 VAC. Gold over clad silver - suitable for dry circuits.

SWITCH SPECIFICATIONS (3000MRS)
Switch Type: Each set point has a solid state relay.
Switching Voltage: 20 to 280 VAC (47 to 63 Hz).
Switching Current: 1.0 amp (AC) max., 0.01 mA (AC) min., (2) SPST NO.

RANGE CHART

Model	Range in w.c.	Minor Divis.	Model	Range, Pa	Minor Divis.
3000-00	0 to 0.25	.005	**3000-60PA**	0 to 60	2.0
3000-0	0 to 0.5	.01	**3000-125PA**	0 to 125	5.0
3001	0 to 1.0	.02	**3000-250PA**	0 to 250	5.0
3002	0 to 2.0	.05	**3000-500PA**	0 to 500	10.0

MODEL CHART

Example	AT2	3001	MR	-X	X	X	-A	B	1	X	T2	AT23001MR-XXX-AB1XT2
Housing	AT2											ATEX/IECEx approved Photohelic® switch/gages
Range		3XXX										Specify range by using Photohelic® model number. See range chart.
Relay			MR MRS									Electromechanical relay Solid state relay
Pressure Rating				X MP HP								Standard -25 in Hg to 25 psig Medium pressure max. static 35 psig High pressure max. static 80 psig
Construction					X							Standard silicone construction
Temperature Rating						X LT						Standard temperature 20 to 120°F Low temperature to -20°F
Housing Material							A					Aluminum
Cover								B O				Blind Glass top cover
Process Connection									1 2			1/8″ NPT female brass ports 1/8″ NPT female SS ports
Overpressure Plug										X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as ports
Tag											T2	SS information label

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

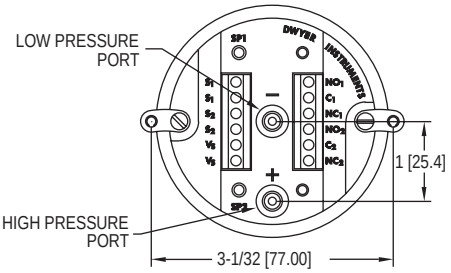
Dwyer

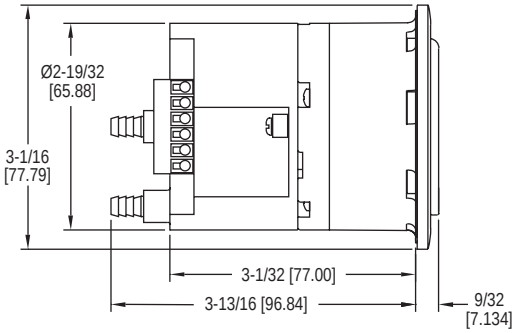
SERIES MP

MINI-PHOTOHELIC® DIFFERENTIAL PRESSURE SWITCH/GAGE

Compact, Low Cost Switch Gage







The **Series MP Mini-Photohelic® Differential Pressure Switch/Gage** combines the time proven Minihelic® II differential pressure gage with two SPDT switching set points. The Mini-Photohelic® switch/gage is designed to measure and control positive, negative, or differential pressures consisting of non-combustible and non-corrosive gases. Gage reading is independent of switch operation. Switching status is visible by LED indicators located on the front and rear of the gage. Set points are adjusted with push-buttons on the back of the unit.

FEATURES/BENEFITS

- Gage reading unaffected by switch operation and will continue to read pressure even during power loss
- Visible switch status LED provides indication of set point switching state
- Compact design but with the power of larger devices can meet the same application specifications

APPLICATIONS

- Fume hoods
- Dust collection
- Pneumatic conveying
- Clean room

SPECIFICATIONS

GAGE SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: ±5% of FS @ 70ºF (21.1ºC). Gage face mounted in vertical position.
Pressure Limits: 30 psig (2.067 bar).
Temperature Limits: 20 to 120ºF (-6.7 to 49ºC).
Process Connections: Barbed for 3/16″ ID tubing (STD); 1/8″ male NPT (optional).
Size: 4-1/8″ (104.78 mm) depth x 3-1/16″ (77.79 mm) diameter.
Weight: 23 oz (652 g).

SWITCH SPECIFICATIONS

Switch Type: (2) SPDT relays.
Electrical Rating: 5 A @ 120/240 VAC resistive; 5 A @ 30 VDC.
Electrical Connections: Screw type terminal block. Accepts 22-12 AWG wire.
Power Requirements: 24 VDC / 24 VAC 50/60 Hz 4 watts.
Mounting Orientation: Gage face in vertical position.
Set Point Adjustment: Push-buttons.
Standard Accessories: (2) mounting screws, (1) .050″ hex allen wrench.
Agency Approvals: CE, cULus.

MODEL CHART

Model	Range, Inches of Water	Model	Range, Pa
MP-000	0-0.5	**MP-125PA**	0-125
MP-001	0-1.0	**MP-250PA**	0-250
MP-002	0-2.0	**MP-500PA**	0-500
MP-003	0-3.0		
MP-005	0-5.0	**Model**	**Range, kPa**
MP-010	0-10	**MP-1KPA**	0-1
MP-020	0-20	**MP-3KPA**	0-3

OPTIONS

To order add suffix:	Description
-NPT	1/8″ male NPT connections
Example: MP-000-NPT; **Note:** Allow additional lead time	
-NIST	NIST traceable calibration certificate
Example: MP-005-NIST	

ACCESSORIES

Model	Description
A-301	Static pressure tip for 1/4″ metal tubing connection
A-302	Static pressure tip for 3/16″ and 1/8″ I.D. plastic or rubber tubing
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16″ ID rubber or plastic tubing; 4″ insertion depth; includes mounting screws
A-489	4″ straight static pressure tip with flange

Process Tubing Options: See page 455 (Gage Tubing Accessories)

Dwyer

SERIES ADPS/EDPS/BDPA

HVAC DIFFERENTIAL PRESSURE SWITCHES

With Dual Scale Field Adjustable Set Point Knob

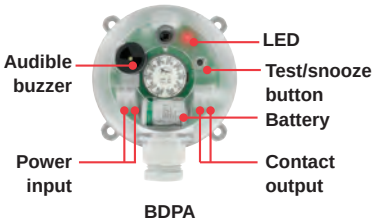
5 YEAR LIMITED WARRANTY



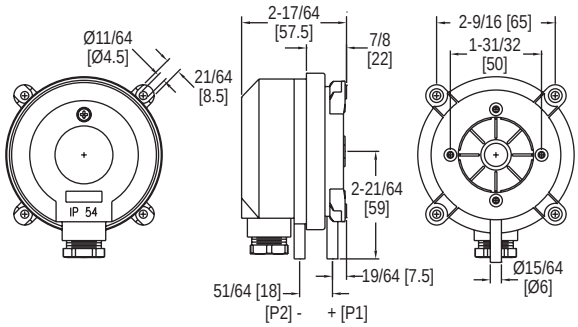
ADPS



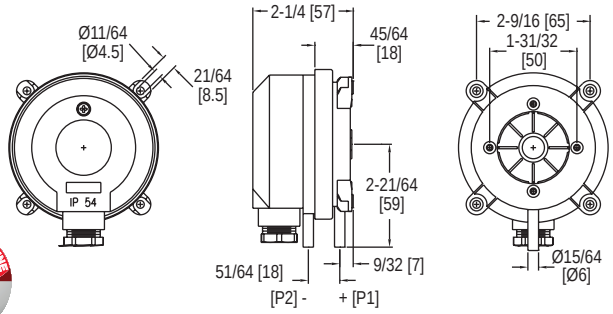
EDPS



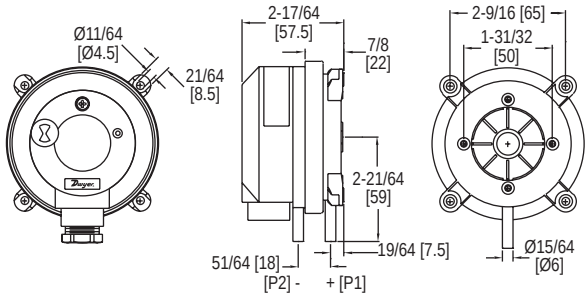
BDPA



ADPS



EDPS



BDPA

VIDEO ONLINE

The **Series ADPS/EDPS/BDPA HVAC Differential Pressure Switches** are designed for pressure, vacuum, and differential pressures. The dual scaled adjustment knob in inches water column and pascals allows changes to the switching pressure to be made without a pressure gage. The ADPS/EDPS/BDPA are available with settings from 0.08 in w.c. (20 Pa) up to 20 in w.c. (5000 Pa). The silicone diaphragm and PA 6.6 body make the series ADPS ideal for use with air and other noncombustible gases. Series EDPS models meet UL508 and are constructed of plenum rated plastics. The series BDPA Adjustable Differential Pressure Alarms offer a versatile range of configurations allowing utilization of their many features including buzzer and LED notification, and battery or line powered. The compact size, adjustment knob and low cost make the ADPS/EDPS/BDPA the perfect choice for HVAC applications.

FEATURES/BENEFITS

- Adjustment knob changes switching pressure easily with a pressure gage reducing components for application
- Low cost device makes it an excellent solution in BAS and HVAC applications requiring duct control and monitoring
- Relay contact allows simple integration with DDC or building systems

APPLICATIONS

- Air filter and ventilator monitoring
- Industrial cooling circuits
- Fire-protection damper control
- Ventilation duct monitoring
- Fan heater overheating protection
- Heat exchanger frost protection

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: ADPS: Diaphragm material: Silicone; Housing material: POM; Switch body: PA 6.6; Cover: Polystyrene; EDPS: Diaphragm material: Silicone; Housing material: Switch body: PA 6.6; Cover: Polystyrene; Materials UL 94 V-0 rated.
Temperature Limits: Process and ambient temperature from -4 to 185°F (-20 to 85°C).
Pressure Limits: Max. operating pressure: 40 in w.c. (10 kPa) for all pressure ranges.
Switch Type: Single-pole double-throw (SPDT).
Electrical Rating: Max. 1.5 A res./0.4 A ind./250 VAC, 50/60 Hz; Max. switching rate: 6 cycles/min.
Electrical Connections: Push-on screw terminals. M20x1.5 with cable strain relief or optional 1/2″ NPT.
Process Connections: 5/16″ (7.94 mm) outside diameter tubing, 1/4″ (6.0 mm) inside diameter tubing.
Enclosure Rating: NEMA 13 (IP54).
Mounting Orientation: Vertically, with pressure connections pointing downwards.
Mechanical Working Life: Over 10^6 switching operations.
Weight: 5.6 oz (160 g).
Agency Approvals: ETL approved to UL508 and CSA C22.2#14 (EDPS only).

MODEL CHART - ADPS

Model	Set Point Range in w.c. (Pa)	Approx. Dead Band @ Min Set Point in w.c. (Pa)	Approx. Deadband @ Max Set Point in w.c. (Pa)
ADPS-08-2-N	0.08 to 1.20 (20-300)	0.04 (10)	0.05 (12)
ADPS-04-2-N	0.12 to 1.60 (30-400)	0.06 (15)	0.09 (23)
ADPS-03-2-N	0.20 to 2.00 (50-500)	0.08 (20)	0.09 (23)
ADPS-05-2-N	0.80 to 4.00 (200-1000)	0.4 (100)	0.5 (130)
ADPS-06-2-N	2.00 to 10.00 (500-2500)	0.6 (150)	0.8 (200)
ADPS-07-2-N	4.00 to 20.00 (1000-5000)	1.0 (250)	1.4 (350)

Note: For optional 1/2″ NPT conduit connection, change -2-N to-1-N. Models that include installer kit add -C to the end of the model number (-2-N cable gland models only). Installer kit includes two static tips and 7 ft of PVC tubing. Order installer kit separately with 1/2″ NPT conduit connection models. See A-481 in the accessories list. Consult factory for bulk packaging option.

MODEL CHART - EDPS

Model	Set Point Range in w.c. (Pa)	Approx. Dead Band @ Min Set Point in w.c. (Pa)	Approx. Dead Band @ Max Set Point in w.c. (Pa)
EDPS-08-1-N	0.08 to 1.20 (20-300)	0.04 (10)	0.05 (12)
EDPS-04-1-N	0.12 to 1.60 (30-400)	0.06 (15)	0.09 (23)
EDPS-03-1-N	0.20 to 2.00 (50-500)	0.08 (20)	0.09 (23)
EDPS-05-1-N	0.80 to 4.00 (200-1000)	0.4 (100)	0.5 (130)
EDPS-06-1-N	2.00 to 10.00 (500-2500)	0.6 (150)	0.8 (200)
EDPS-07-1-N	4.00 to 20.00 (1000-5000)	1.0 (250)	1.4 (350)

Note: For optional M20 cable gland connection, change -1-N to-2-N.

MODEL CHART - BDPA

Model	Set Point Range in w.c. (Pa)	Approx. Dead Band @ Min Set Point in w.c. (Pa)	Approx. Dead Band @ Max Set Point in w.c. (Pa)
BDPA-08-2-N	0.08 to 1.20 (20 to 300)	0.04 (10)	0.05 (12)
BDPA-04-2-N	0.12 to 1.60 (30 to 400)	0.06 (15)	0.09 (23)
BDPA-03-2-N	0.20 to 2.00 (50 to 500)	0.08 (20)	0.09 (23)
BDPA-05-2-N	0.80 to 4.00 (200 to 1000)	0.4 (100)	0.5 (130)
BDPA-06-2-N	2.00 to 10.00 (500 to 2500)	0.6 (150)	0.8 (200)
BDPA-07-2-N	4.00 to 20.00 (1000 to 5000)	1.0 (250)	1.4 (350)

ACCESSORIES

Model	Description
A-288	"L" type metal mounting bracket with screws
A-289	"S" type metal mounting bracket with screws
A-480	Plastic static pressure tip
A-481	Installer kit, includes 2 plastic static pressure tips & 7′ (2.1 m) of PVC tubing
A-489	4″ straight static pressure tip with flange



A-480

Process Tubing Options: See page 455 (Gage Tubing Accessories)

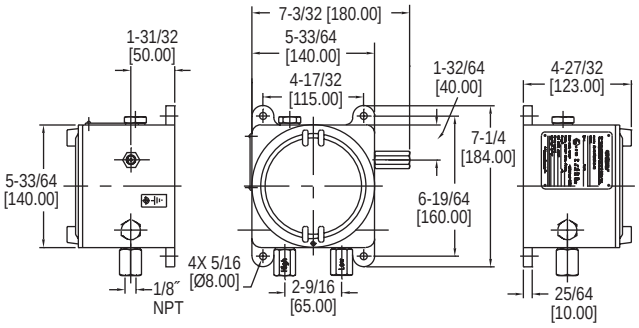
Dwyer

SERIES AT1ADPS

ATEX/IECEX APPROVED ADPS ADJUSTABLE DIFFERENTIAL PRESSURE SWITCH

The ADPS in Flame-Proof ATEX/IECEx Enclosure





The **Series AT1ADPS ATEX/IECEx Approved ADPS Adjustable Differential Pressure Switch** is designed for pressure, vacuum, and differential pressure applications in hazardous areas. The dual scaled adjustment knob in inches water column and Pascals allows changes to the switching pressure to be made without a pressure gage. The switch is available with settings from 0.08 in w.c. (20 Pa) up to 16 in w.c. (4000 Pa). The silicone diaphragm makes this series ideal for use with air and other noncombustible gases. Flame-proof enclosures are available in aluminum and can include a glass window for viewing set point status on the adjustment knob.

FEATURES/BENEFITS

- Flame-proof enclosure with optional glass window and aluminum housing protects the device in hazardous areas while giving local visibility to set point status

APPLICATIONS

- Hazardous area pressure switch
- Air filter and ventilator monitoring
- Ventilation duct monitoring
- Industrial cooling circuits
- Fan heater overheating protection
- Fire-protection damper control
- Heat exchanger frost protection

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Diaphragm material: Silicone; Housing material: Switch body: PA 6.6 and POM; Cover: Polystyrene; Brass or SS depending on pressure connections chosen.
Temperature Limits: Process and ambient temperature from -4 to 185°F (-20 to 85°C) (**Note:** Product temperature limits differ from case).
Pressure Limits: 40 in w.c. (10 kPa).
Switch Type: SPDT.
Electrical Rating: Standard: Max. 1.5 A @ 250 VAC, max. switching rate: 6 cycles/min.
Set Point Adjustment: Hand knob on pressure switch inside case. (De-energize before opening case).
Mounting Orientation: Vertically, with pressure connections pointing downwards.
Mechanical Working Life: Over 10^6 switching operations.
Enclosure Rating: IP66. IP65 with option OPV, overpressure relief valve.
Housing Material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Process Connections: 1/8″ NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Electrical Connections: Two 1/2″ NPT female. Cable gland not included.
Weight: 7 lb (3.2 kg).
ATEX Certificate: BVI 14ATEX0072.
Agency Approvals: ATEX Compliant CE 1370 Ex II 2G Ex d IIC T6 Gb / II 2D Ex tb IIIC T85°C Db, -60°C≤Tamb≤+60°C IECEx Compliant: Ex d IIC T6 Gb / Ex tb IIIC T85°C Db.

MODEL CHART

Example	AT1ADPS	-08	-2	-N	-A	O	1	X	T2	AT1ADPS-08-2-N-AO1XT2
Series	AT1ADPS									ATEX/IECEx approved ADPS adjustable differential pressure switch
Range		08 04 03 05 06 07								.08 to 1.2 in w.c. (20 to 300 Pa) .12 to 1.6 in w.c. (30 to 400 Pa) .2 to 2 in w.c. (50 to 500 Pa) .8 to 4 in w.c. (200 to 1000 Pa) 2 to 10 in w.c. (500 to 2500 Pa) 4 to 20 in w.c. (1000 to 5000 Pa)
Connection			2							Internal cable gland
Switch				N						1.5 A @ 250 VAC
Housing Material					A					Aluminum
Cover						B O				Blind Glass top cover
Process Connection							1 2			1/8″ NPT female brass ports 1/8″ NPT female SS ports
Overpressure Plug								X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as ports
Tag									T2	SS information label

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

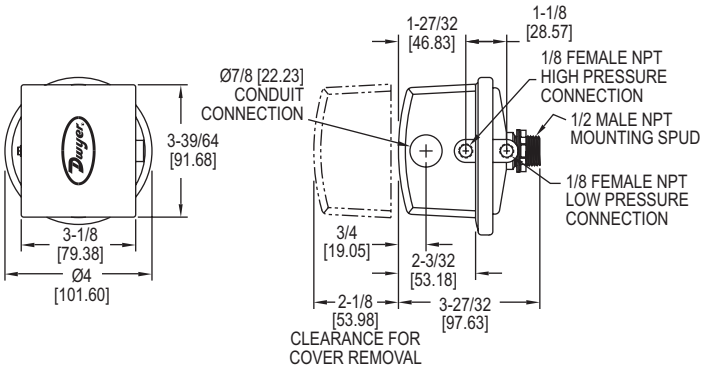
SERIES 1800

LOW DIFFERENTIAL PRESSURE SWITCH FOR GENERAL INDUSTRIAL SERVICE

Set Points from 0.07 in w.c. to 85 in w.c. Repetitive Accuracy within 2%









Essential for industrial environments, the **Series 1800 Low Differential Pressure Switch for General Industrial Service** combines small size and low price with 2% repeatability for all but the most demanding applications. Set point adjustment inside the mounting stud permits mounting the switch on one side of a wall or panel with adjustment easily accessible on the opposite side. UL and CSA listed, and FM approved.

FEATURES/BENEFITS

- Compact size and repeatability provide a high-value switch useful in many industrial applications
- Designed for panel and wall mounting to easily meet mounting requirements in most industrial settings
- Pressure ranges from 0.07 in w.c. to 85 in w.c. make this switch suitable for a wide range of applications

APPLICATIONS

- Process applications
- Mechanical equipment control

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Temperature Limits: -30 to 180°F (-34 to 82.2°C); 1823-00: -20 to 180°F (-28.9 to 82.2°C).
Pressure Limits: 10 psig (68.95 kPa) continuous, 25 psig (172.4 kPa) surge.
Switch Type: Single-pole double-throw (SPDT).
Repeatability: ±2%.
Electrical Rating: 15 A @ 120-480 VAC, 60 Hz. Resistive 1/8 HP @125 VAC, 1/4 HP @ 250 VAC, 60 Hz. De-rate to 10 A for operation at high cycle rates.
Electrical Connections: 3 screw type, common, normally open and normally closed.
Process Connections: 1/8″ female NPT.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Screw type inside mounting spud.
Weight: 1 lb 5 oz (595 g).
Agency Approvals: CE, CSA, FM, UL. Optional-EXPL explosion-proof enclosure does not possess any agency approvals.

OPTIONS

Weatherproof Housing

16 ga. steel enclosure with gasketed cover (NEMA 4, IP66) for wet or oily conditions. Withstands 200 hour salt spray test. Wt. 5-1/2 lb (2.5 kg). Switch must be factory installed.

Note: To order, change 1823 base number to 1824 and add -WP suffix. **Example:** 1824-1-WP

Explosion-Proof Housing

Cast iron base with aluminum cover. Rated Class I, Div. 1 & 2, Group D; Class II, Div. 1 & 2, Groups E, F, G; Class III and NEMA 7 CD, 9 EFG. Wt. 7-1/2 lb (3.4kg). Switch must be factory installed.

Note: To order, change 1823 base number to 1824 and add -EXPL suffix. **Example:** 1824-1-EXPL

MIL Environmental Construction

Unlisted Model 1820 can be furnished with a special sealed snap switch for protection against high humidity, fungus and/or military applications. Similar to Model 1823 except deadband is slightly greater and some lower setpoints may not be possible.

Note: To order, add -MIL suffix. **Example:** 1820-2-MIL

MODEL CHART

Model	Operating Range, in w.c.	Approximate Deadband At Min. Set Point	Approximate Deadband At Max. Set Point
1823-00	0.07 to 0.22	0.05	0.05
1823-0	0.15 to 0.5	0.06	0.06
1823-1	0.3 to 1.0	0.08	0.08
1823-2	0.5 to 2.0	0.10	0.12
1823-5	1.5 to 5.0	0.14	0.28
1823-10	2.0 to10	0.18	0.45
1823-20	3 to 22	0.35	0.70
1823-40	5 to 44	0.56	1.10
1823-80	9 to 85	1.30	3.0

ACCESSORIES

Model	Description
A-389	Mounting bracket; 16 ga. steel, zinc plated and dichromate dipped for corrosion resistance; provides rugged, permanent mounting and speeds installation
A-489	4″ straight static pressure tip with flange
A-491	6″ straight static pressure tip with flange
A-493	8″ straight static pressure tip with flange
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16″ ID rubber or plastic tubing; 4″ insertion depth; includes mounting screws
A-302F-B	303 SS static pressure tip with mounting flange; for 3/16″ rubber or plastic tubing; 6″ insertion depth; includes mounting screws
A-302F-C	303 SS static pressure tip with mounting flange; for 3/16″ rubber or plastic tubing; 8″ insertion depth; includes mounting screws

Process Tubing Options: See page 455 (Gage Tubing Accessories)

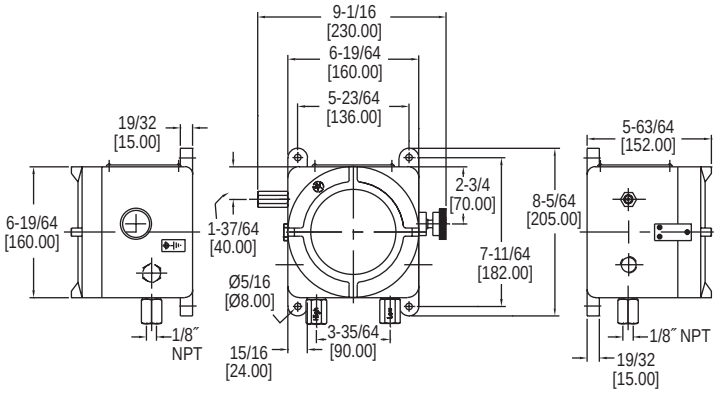
Dwyer

SERIES AT21823

ATEX/IECEX APPROVED 1823 DIFFERENTIAL PRESSURE SWITCH

The 1823 in Flame-Proof ATEX/IECEx Enclosure





Essential for industrial environments, the **Series AT21823 ATEX/IECEx Approved 1823 Differential Pressure Switch** combines small size with 2% repeatability. Set point adjustment inside the switch allows for set point settings across 9 ranges from the low of .07 in w.c. to a maximum 85 in w.c. differential pressure. Series AT21823 flame-proof enclosures are available in aluminum and are ideal for low pressure hazardous area applications. Various housing options such as an overpressure relief valve or external set point adjustment knob are available. External set point knob allows adjustment without opening the enclosure.

FEATURES/BENEFITS

- Compact size and repeatability, provides a high-value switch for many industrial applications
- External set point knob provides easy access that simplifies making adjustments without opening enclosure
- Flame-proof enclosure protects the device in hazardous areas

APPLICATIONS

- Hazardous area pressure switch
- Process applications
- Mechanical equipment control

Attention: Check local safety rules and warnings on unit and manual for a correct use of the instrument in hazardous area.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Temperature Limits: -30 to 180°F (-34 to 82.2°C); 1823-00, -20 to 180°F (-28.9 to 82.2°C) (**Note:** Product temperature limits differ from case).
Pressure Limits: 10 psig (68.95 kPa) continuous, 25 psig (172.4 kPa) surge.
Switch Type: SPDT.
Repeatability: ±2% FS.
Electrical Rating: 15 A @ 120-480 VAC, 60 Hz. Resistive 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC, 60 Hz. De-rate to 10 A for operation at high cycle rates.
Mounting Orientation: Diaphragm in vertical position.
Set Point Adjustment: Screw type inside mounting spud internal to switch. External set point adjustment knob optional.
Enclosure Rating: IP66. IP65 with option OPV, overpressure relief valve or external set point adjustment knob.
Housing Material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Process Connections: 1/8″ NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Electrical Connections: Two 1/2″ NPT female. Cable gland not included.
Weight: 11.9 lb (5.4 kg).
ATEX Certificate: BVI 14ATEX0072.
Agency Approvals: ATEX Compliant CE 1370 Ex II 2G Ex d IIC T6 Gb / II 2D Ex tb IIIC T85°C Db, -60°C≤Tamb≤+60°C IECEx Compliant: Ex d IIC T6 Gb / Ex tb IIIC T85°C Db.

MODEL CHART

Example	AT21823	-00	-A	O	K1	1	X	T2	AT21823-00-AOK11XT2
Series	AT21823								ATEX/IECEx approved 1823 differential pressure switch
Range		00 0 1 2 5 10 20 40 80							.08 to .22 in w.c. (18 to 56 Pa) .15 to .5 in w.c. (38 to 127 Pa) .3 to 1 in w.c. (76 to 254 Pa) 0.5 to 2 in w.c. (127 to 508 Pa) 1.5 to 5 in w.c. (381 to 1270 Pa) 2 to 10 in w.c. (.5 to 2.5 kPa) 3 to 22 in w.c. (.76 to 5.6 kPa) 5 to 44 in w.c. (1.27 to 11.17 kPa) 9 to 85 in w.c. (2.28 to 21.6 kPa)
Housing Material			A						Aluminum
Cover				B O					Blind Glass top cover
Set point Adjustment					K1 K2				Without external set point adjustment knob With external set point adjustment knob
Process Connection						1 2			1/8″ NPT female brass ports 1/8″ NPT female SS ports
Overpressure Plug							X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as ports
Tag								T2	SS information label

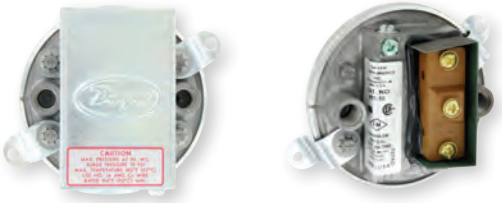
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

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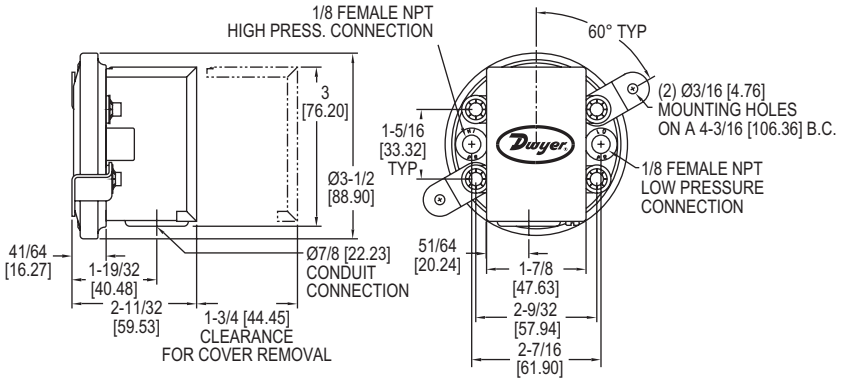
SERIES 1900

COMPACT LOW DIFFERENTIAL PRESSURE SWITCHES

Set Points from 0.07 to 20 in w.c. Repetitive Accuracy within 3%



Series 1910 switch with conduit enclosure off. Shows electric switch and set point adjustment screw located on same side for easy installation.



The Dwyer-engineered force-motion amplifier increases the leverage of diaphragm movement and results in a switch with excellent sensitivity and repeatability.

VIDEO ONLINE

Our most popular **Series 1900 Compact Low Differential Pressure Switches** combine advanced design and precision construction to make these switches able to perform many of the tasks of larger, costlier units. Designed for air conditioning service, they also serve many fluidics, refrigeration, oven and dryer applications. Series 1900 switches have set points from 0.07 to 20 in w.c. (1.8 to 508 mm). Set point adjustment is easy with range screw located inside conduit enclosure. Internal location helps prevent tampering. UL, CE and CSA listed, and FM approved. For use with air or compatible gages.

FEATURES/BENEFITS

- Compact size and repeatability, provides a high-value switch for many industrial and OEM applications
- Wide range of models from 0.07 in w.c. to 20 in w.c. can meet exacting OEM specifications for a low pressure switch
- Range screw protected inside enclosure provides simplifies making adjustments but prevents tampering

APPLICATIONS

- Air conditioning refrigeration coil icing detection; defrost cycle initiation
- Clogged filter detection
- Variable air volume controller

SPECIFICATIONS	
Service: Air and non-combustible, compatible gases. **Wetted Materials:** Consult factory. **Temperature Limits:** -30 to 180°F (-34 to 82.2°C). **Pressure Limits:** 45 in w.c. (11.2 kPa) continuous, 10 psig (68.95 kPa) surge. **Switch Type:** Single-pole double-throw (SPDT). **Repeatability:** ±3%. **Electrical Rating:** 15 A @ 120-480 VAC, 60 Hz. Resistive 1/8 HP @125 VAC, 1/4 HP @ 250 VAC, 60 Hz. Derate to 10 A for operation at high cycle rates.	**Electrical Connections:** 3 screw type, common, normally open and normally closed. **Process Connections:** 1/8″ female NPT. **Mounting Orientation:** Diaphragm in vertical position. Consult factory for other position orientations. **Set Point Adjustment:** Screw type inside conduit enclosure. **Weight:** 1 lb 4.5 oz (581 g). **Agency Approvals:** CE, CSA, FM, and UL. Optional-EXPL explosion-proof enclosure does not possess any agency approvals.

OPTIONS
Weatherproof Housing
16 ga. steel enclosure with gasketed cover (NEMA 4, IP66) for wet or oily conditions. Withstands 200 hour salt spray test. Wt. 5-1/2 lb (2.5 kg). Switch must be factory installed.
Note: To order, change 1910 base number to 1911, add -WP suffix. **Example:** 1911-1-WP
Explosion-Proof Housing
Cast iron base with brass cover. Rated Class I, Groups D; Class II, Div. 2, Groups E, F, G; Class III and NEMA 7, 9 NEMA 3. (7 lb). Switch must be factory installed.
Note: To order, change 1910 base number to 1911, add -EXPL suffix. **Example:** 1911-1-EXPL
Manual Reset Option (Model 1900 MR)
Includes special snap switch which latches on pressure increase above the setpoint. Switch must be manually reset after pressure drops below the setpoint. Available on -1, -5,-10 or -20 ranges only. Option is not UL, CSA or FM listed. For use only in single positive pressure applications.
Note: To order, change 1910 base number to 1900, add -MR suffix. **Example:** 1900-10-MR

MODEL CHART			
		Approximate Deadband	
Model	Operating Range in w.c.	At Min. Set Point	At Max. Set Point
1910-00	0.07 to 0.15	0.04	0.04
1910-0	0.15 to 0.5	0.10	0.10
1910-1	0.40 to 1.6	0.15	0.16
1910-5	1.40 to 5.5	0.30	0.30
1910-10	3.0 to 11.75	0.40	0.40
1910-20	4.0 to 20.0	0.40	0.50

ACCESSORIES	
Model	**Description**
A-399	Duct pressure monitor kit; for use with standard or manual reset model switches; includes mounting flange, tubing and adapters
A-329	Street ell; brass adapter for applications requiring right angle connections; two required for differential pressures
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16″ ID rubber or plastic tubing; 4″ insertion depth; includes mounting screws
A-489	4″ straight static pressure tip with flange



Manual reset option

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Process Tubing Options: See page 455 (Gage Tubing Accessories)

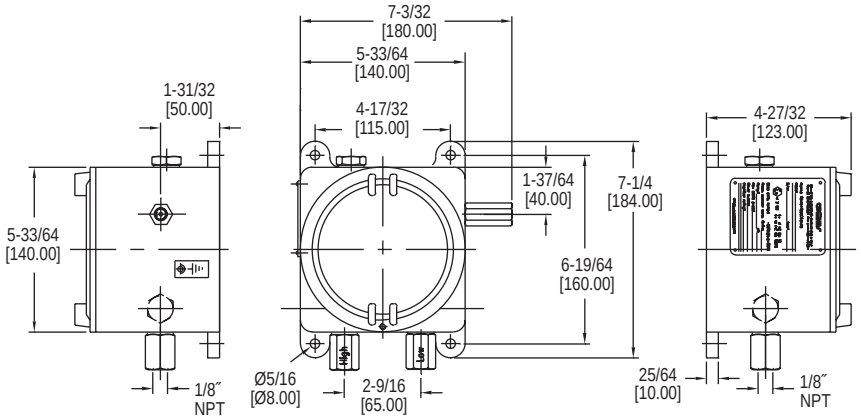
Dwyer

SERIES AT11910

ATEX/IECEX APPROVED 1910 DIFFERENTIAL PRESSURE SWITCH

The 1910 in Flame-Proof ATEX/IECEx Enclosure





Series AT11910 ATEX/IECEx Approved 1910 Differential Pressure Switch is our most popular switch and is now available in a flame-proof package. This pressure switch combines advanced design and precision construction to make these switches able to perform many of the tasks of larger, costlier units. For air and non-combustible compatible gases, the AT11910 Series switches have set points from 0.07 to 20 in w.c. (1.8 to 508 mm). Set point adjustment is easy with range screw located inside the switch enclosure. Series AT11910 enclosures are available in aluminum enclosures and ideal for low pressure, hazardous area applications.

FEATURES/BENEFITS

- Flame-proof enclosure protects the device in hazardous areas
- Compact size and repeatability, provides a high-value switch for many industrial and OEM applications
- Wide range of models from 0.07 in w.c. to 20 in w.c. can meet exacting OEM specifications for a low pressure switch
- Range screw protected inside switch enclosure prevents tampering

APPLICATIONS

- Hazardous area low pressure applications
- Air conditioning refrigeration coil icing detection; defrost cycle initiation
- Clogged filter detection
- Variable air volume controller

Attention: Check local safety rules and warnings on unit and manual for a correct use of the instrument in hazardous area.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Temperature Limits: -30 to 180°F (-34 to 82.2°C) (**Note:** Product temperature limits differ from case).
Pressure Limits: 45 in w.c. (11.2 kPa) continuous, 10 psig (68.95 kPa) surge.
Switch Type: SPDT.
Repeatability: ±3% FS.
Electrical Rating: 15 A @ 120 to 480 VAC, 60 Hz. Resistive 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC, 60 Hz. Derate to 10 A for operation at high cycle rates.
Mounting Orientation: Diaphragm in vertical position.
Set Point Adjustment: Screw type on pressure switch inside the enclosure accessible by hole with plug on housing. Set point regulation must be done with instrument de-energized. Follow instructions and safety warning to open cover.
Enclosure Rating: IP66. IP65 with option OPV, overpressure relief valve.
Housing Material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Process Connections: 1/8″ NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Electrical Connections: Two 1/2″ NPT female. Cable gland not included.
Weight: 7.49 lb (3.4 kg).
ATEX Certificate: BVI 14ATEX007.
Agency Approvals: ATEX Compliant CE 1370 Ex II 2G Ex d IIC T6 Gb / II 2D Ex tb IIIC T85°C Db, -60°C≤Tamb≤+60°C IECEx Compliant: Ex d IIC T6 Gb / Ex tb IIIC T85°C Db.

MODEL CHART

Example	AT11910	-00	-A	B	1	X	T2	AT11910-00-AB1XT2
Series	AT11910							ATEX/IECEx approved 1910 differential pressure switch
Range		00 0 1 5 10 20						.07 to .15 in w.c. (17.5 to 37 Pa) .15 to .55 in w.c. (37.5 to 137 Pa) .4 to 1.6 in w.c. (100 to 398 Pa) 1.4 to 5.5 in w.c. (348.5 to 1368 Pa) 3 to 11.75 in w.c. (747 to 2924 Pa) 4 to 20 in w.c. (996 to 4977 Pa)
Housing Material			A					Aluminum
Cover				B				Blind
Process Connection					1 2			1/8″ NPT female brass ports 1/8″ NPT female SS ports
Overpressure Plug						X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as ports
Tag							T2	SS information label

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

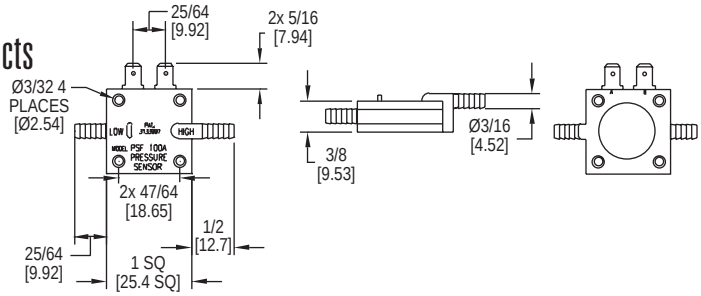
Dwyer

SERIES MDS

MINIATURE PRESSURE SWITCH

Shock and Vibration Resistant, Lightweight and Compact, Gold Contacts





The **Series MDS Miniature Pressure Switch** is designed with a double diaphragm to protect false actuation due to shock and vibration. This low cost pressure switch has a minimum 20 million cycle life expectancy, and an extremely fast response time, making this an ideal device for OEM orders.

FEATURES/BENEFITS
- Low cost, long service life and fast response time is suitable for a wide range of OEM uses
- Lightweight but shock and vibration resistant for tough applications
- Gold contacts help ensure a clean connection without dirt or oxidation

APPLICATIONS
- Air proving
- Cleaning and purification
- Ventilation flow
- Heavy equipment and machinery
- Pressure monitoring
- Exhaust ducts

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SPECIFICATIONS

Switch Type: SPST normally open.
Switching Media: Air or compatible fluids on "high" side.
Pressure Limits: Set point <3.0 in w.c.: 8 psi; Set point >3.0 in w.c.: 15 psi.
Current Rating: Gold contact switch providing maximum 40 mA resistive load allowing for life in excess of 20 million cycles.
Temperature Limits: 40 to 150°F (4 to 66°C).
Electrical Connections: Brass tab-type for use with quick disconnections.
Pressure Connections: Two barbed ports for use with 1/8″-3/16″ ID tubing.
Housing: Polycarbonate.
Diaphragm Material: Polyurethane.
Operating Voltage: AC/DC - 30 V or less with resistive load.
Weight: Less than 0.353 oz (10 g).

MODEL CHART

Model	Set Point in w.c.	Model	Set Point in w.c.
MDS-0	0.5	**MDS-6**	6.0
MDS-1	1.0	**MDS-8**	10.0
MDS-2	1.5	**MDS-10**	15.0
MDS-3	2.0	**MDS-12**	30.0
MDS-4	3.0	**MDS-14**	50.0

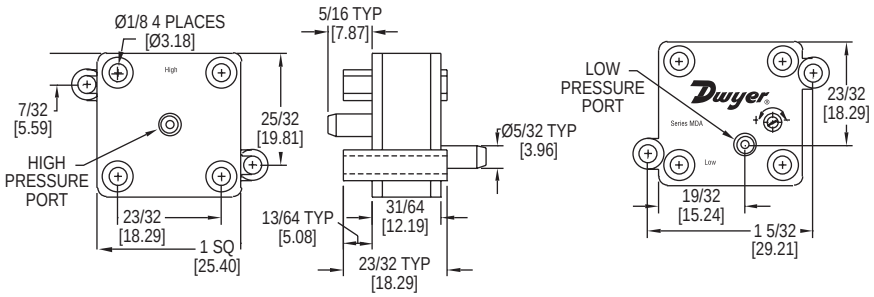
Process Tubing Options: See page 455 (Gage Tubing Accessories)

SERIES MDA

MINIATURE ADJUSTABLE PRESSURE SWITCH

Adjustable Set Points from 0.1 to 100 in w.c.





Series MDA Miniature Adjustable Pressure Switch is used to sense differential pressure. The switch features field adjustable set point and gold inlay contacts. Air or other compatible fluids can be used on the "high side". The lightweight and compact size make the MDA ideal for any application with space constraints. Applications include industrial, HVAC, pump and motor control, medical, automotive, pools and spas.

FEATURES/BENEFITS
- Air or fluid on high side permits multiple uses where both air and liquids exist
- Small and lightweight for applications where space is constrained
- Gold contacts help ensure a clean connection without dirt or oxidation

APPLICATIONS
- Industrial
- Medical
- HVAC
- Pump and motor control
- Automotive
- Pools and spas

SPECIFICATIONS

Switch Type: SPST normally open.
Switching Media: Air or compatible fluids on "high side".
Pressure Limits: MDA-011: 4 psi; MDA-111: 8 psi; MDA-211: 8 psi; MDA-311: 15 psi; MDA-411: 30 psi.
Current Rating: 40 mA resistive for life in excess of 20 million cycles.
Temperature Limits: 40 to 150°F (4 to 66°C).
Contacts: 18K gold inlay.
Electrical Connections: Terminals - 0.187″ x 0.20: spade (recessed) for use with quick disconnects.
Pressure Connections: Smooth port 5/32″ diameter for 1/8″ ID tubing.
Housing: Polycarbonate.
Diaphragm Material: Polyurethane.
Operating Voltage: AC/DC - 30 V or less with resistive load.
Mounting: Use #4 screws through mounting lugs or #2 screws through eyelets.
Weight: Less than 0.353 oz (10 g).

MODEL CHART

Model	Min. Set Point in w.c. (mbar)	Max. Set Point in w.c. (mbar)
MDA-011	0.1 (0.25)	0.5 (1.25)
MDA-111	0.5 (1.25)	2.0 (4.98)
MDA-211	2.0 (4.98)	15 (37.37)
MDA-311	15 (37.37)	60 (149.3)
MDA-411	60 (149.3)	100 (249.10)

Process Tubing Options: See page 455 (Gage Tubing Accessories)

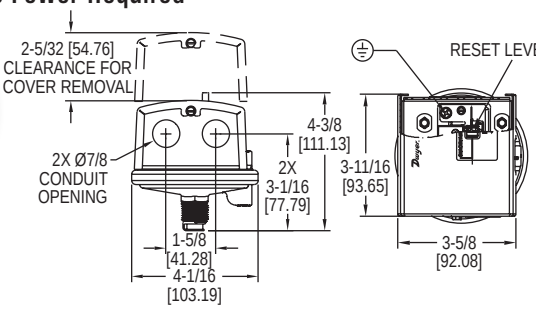
Dwyer

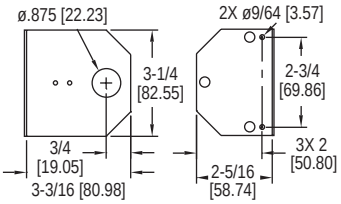
SERIES 1831

DPDT LOW DIFFERENTIAL PRESSURE SWITCHES

Manual Reset, No Power Required







A-389 mounting bracket



Note: Shown with included mounting bracket. Bracket can rotate and be tightened at any angle.

5 YEAR LIMITED WARRANTY

VIDEO ONLINE

One of our most popular differential pressure switches is now available with a DPDT switch and manual reset. The **Series 1831 DPDT Low Differential Pressure Switches** combine small size with 4% set point repeatability. Absolutely no power is required to operate the DPDT switch. Set point adjustment on the switch is easily accessible for modifying the set point.

The Series 1831 DPDT Low Differential Pressure Switches with Manual Reset eliminate common problems associated with typical high duct static cutout installations. Since the 1831 requires absolutely no power to drive its outputs, a separate power loop and its associated additional wiring and conduit is alleviated, reducing material and labor installation costs. Both control contacts of the Series 1831 activate at the same time. The potential of the lead switch shutting down the fan preventing the lag switch from sending an alarming signal to the DDC is no longer a probable system liability. Potential costly maintenance calls are diminished. Unlike typical switches that possess only a single conduit entry for both control loops, the Series 1831 provides two conduit connections simplifying wiring while eliminating additional conduit tees.

FEATURES/BENEFITS

- No power to operate DPDT switch means no additional wiring or conduit reduces material and installation labor costs
- Easy access for modifying set point simplifies adjustment
- Both control contacts activate at the same time eliminating system issues where lead switch activities prevent the lagging switch from sending a signal

APPLICATIONS

- High duct static cutout applications
- HVAC

MODEL CHART		
Model	**Description**	**Range (in w.c.)**
1831-1-RA-S	Manual reset DPDT, activate on increase	2.5 to 9
1831-2-RA-S	Manual reset DPDT, activate on increase	7.5 to 23

SPECIFICATIONS	
Service: Air and non-combustible, compatible gases. **Wetted Materials:** Consult factory. **Temperature Limits:** -30 to 180°F (-34 to 82.2°C). **Pressure Limits:** 10 psig (68.95 kPa) continuous, 25 psig (172.4 kPa) surge. **Switch Type:** 2 SPDT. **Actuation Time Difference:** 1 millisecond maximum actuation delay between contacts. **Repeatability:** ±4% max.	**Electrical Rating:** 4 A @ 125/250 VAC. **Electrical Connections:** Screw type terminal block. **Process Connections:** 1/8″ female NPT. **Mounting Orientation:** Diaphragm in vertical position. Consult factory for other position orientations. **Set Point Adjustment:** Screw type inside mounting spud. **Weight:** 1 lb 2 oz (522 g).

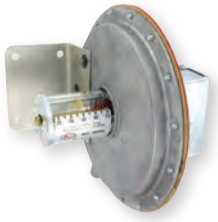
ACCESSORIES	
Model	**Description**
A-489	4″ straight static pressure tip with flange
A-491	6″ straight static pressure tip with flange
A-493	8″ straight static pressure tip with flange
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16″ ID rubber or plastic tubing; 4″ insertion depth; includes mounting screws
A-302F-B	303 SS static pressure tip with mounting flange; for 3/16″ rubber or plastic tubing; 6″ insertion depth; includes mounting screws
A-302F-C	303 SS static pressure tip with mounting flange; for 3/16″ rubber or plastic tubing; 8″ insertion depth; includes mounting screws

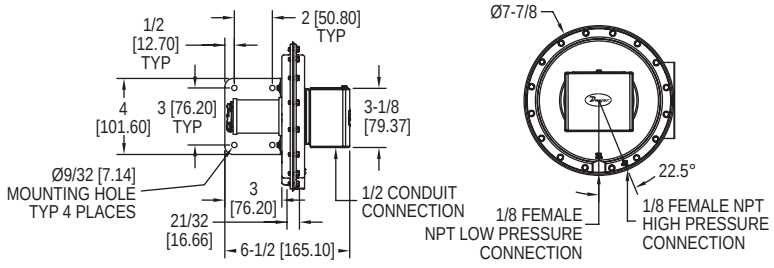
Process Tubing Options: See page 455 (Gage Tubing Accessories)

SERIES 1640

FLOATING CONTACT NULL SWITCH FOR HIGH AND LOW ACTUATION

Visual Set Point Adjustment, Adjustable Null Zone





The unique electric switch design in the **Series 1640 Floating Contact Null Switch for High and Low Actuation** is another Dwyer Instrument, Inc. innovation. The Dwyer® Model 1640 Differential Pressure Switch resembles the high precision large diaphragm Series 1630 switches. However, the Model 1640 is equipped with a single pole, double throw floating contact switch (not snap acting) so it functions as a null switch.

As the diaphragm moves in response to pressure changes, it moves the floating contact to cause switching action at two preset points with no switching action between these points. The “high” circuit will be closed when rising pressure differential reaches the preset level. The “low” circuit will be closed when falling pressure differential reaches the preset level.

FEATURES/BENEFITS

- Floating “null” switch supports applications requiring two set point actions such as open and close damper control
- Visible set point indicator simplifies operation and trouble shooting
- Large diaphragm provides low range accuracy providing precise control

APPLICATIONS

- Damper positioning
- Duct air control

SPECIFICATIONS	
Service: Air and non-combustible, compatible gases. **Wetted Materials:** Consult factory. **Temperature Limits:** -30 to 110°F (-34.4 to 43.3°C). **Pressure Limits:** 10 psig (68.95 kPa) continuous, 25 psig (172.4 kPa) surge. **Switch Type:** SPDT floating contact (not snap action). **Electrical Rating:** Non-inductive — 2.5 A @ 110 VAC; 1.5 A @ 220 VAC; 1 A @ 24 VDC; 0.5 A @ 110 VAC; Inductive —	1 A @ 110 VAC; 0.5 A @ 220 VAC; 0.5 A @ 24 VDC (de-rate 70-80% for very slow pressure changes). **Electrical Connections:** 3 screw type. **Process Connections:** 1/8″ female NPT. **Mounting Orientation:** Diaphragm in vertical position. Consult factory for other position orientations. **Set Point Adjustment:** Screw type. **Weight:** 4 lb 13 oz (2.18 kg). **Agency Approvals:** CE.

MODEL CHART			
	Ranges	**Adjustable Null Span**	
Model	**in w.c.**	**Min. Set Point**	**Max. Set Point**
1640-0	.01 to 0.2	.01	.03
1640-1	0.2 to 1.0	.02	.06
1640-2	1.0 to 4.0	.03	.12

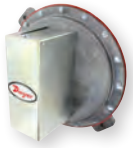
Process Tubing Options: See page 455 (Gage Tubing Accessories)

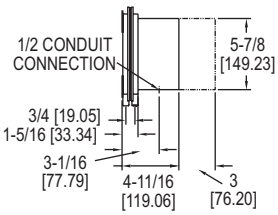
Dwyer

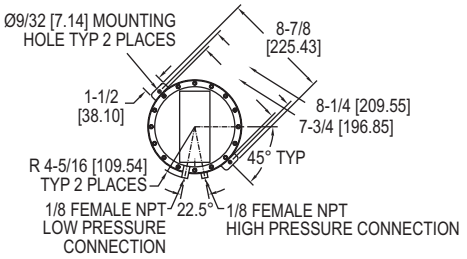
SERIES 1620

SINGLE AND DUAL PRESSURE SWITCH

High Reliability, Repetitive Accuracy within ±1%







On the **Series 1620 Single and Dual Pressure Switch** our old faithful switch design is still best where highest precision combined with diaphragm sealed leak proof construction and mounting simplicity are required. Model 1626 and 1627 differential pressure switches are identical in design and construction except that Model 1626 has a single electric switch and Model 1627 has dual electric switches. Model 1627 can therefore provide dual control when required. It can be set to open or close two independent electrical circuits, each preset for its own actuation pressure. Both units have diaphragm sealed motion take outs providing maximum protection against leakage.

FEATURES/BENEFITS
- Single or dual action switches support consistent designs with similar models, but with the ability to match specific application needs
- Sealed diaphragm provides leak-proof construction for high accuracy and precision control

APPLICATIONS
- Damper positioning
- Duct air control

MODEL CHART

Model	Operating Range in w.c.	Approximate Deadband		Adj. Diff. Between Set Points
		Min. Set Point	Max. Set Point	
1626-1	.15 to 1.5	.10	.20	-
1626-5	.5 to 6.0	.15	.35	-
1626-10	2.0 to 11	.25	.65	-
1626-20	8.0 to 24	.50	1.20	-
1627-1	.15 to 1.5	.10	.20	0.5
1627-5	.5 to 6.0	.15	.35	1.2
1627-10	2.0 to 11	.25	.65	2.3
1627-20	8.0 to 24	.50	1.20	5.0

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Temperature Limits: -30 to 130°F (-34.4 to 54.4°C).
Pressure Limits: Max. 50 in w.c. (12.44 kPa) continuous, 2 psig (13.79 kPa) surge.
Switch Type: 1626 SPDT; 1627, (2) SPDT.
Repeatability: ±1%.
Electrical Rating: 15 A @ 120-480 VAC, 60 Hz. Resistive, 1/8 HP @ 125 VAC,1/4 HP @ 250 VAC, 60 Hz.
Electrical Connections: 3 screw type, common, normally open and normally closed.
Process Connections: 1/8″ female NPT.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Screw adjustment.
Weight: Model 1626, 3 lb, 9.8 oz (1.64 kg); Model 1627, 3 lb, 11.8 oz (1.69 kg).
Agency Approvals: CE.

ACCESSORIES

Model	Description
A-489	4″ straight static pressure tip with flange
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16″ ID rubber or plastic tubing; 4″ insertion depth; includes mounting screws

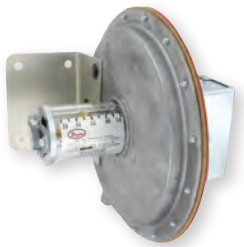
OPTIONS

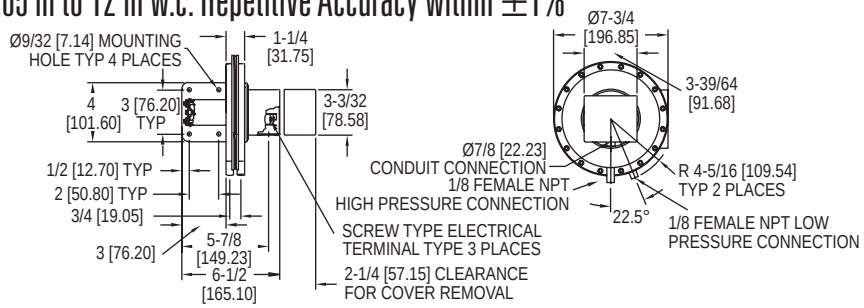
To order add suffix:	Description
-MIL	MIL environmental construction

SERIES 1630

LARGE DIAPHRAGM PRESSURE SWITCH

Visual Set Point Adjustment in 5 Standard Ranges, 0.05 in to 12 in w.c. Repetitive Accuracy within ±1%





On the **Series 1630 Large Diaphragm Pressure Switch** our highest precision conventional large diaphragm pressure switch provides maximum dependability. In addition, it incorporates a visible set point indicator for maximum convenience. UL and CSA listed, FM approved for general service. Electrical capability of 15 amps handles most small electrical loads. For use only with air or compatible gases.

FEATURES/BENEFITS
- Visible set point indicator simplifies operation and trouble shooting
- Large diaphragm provides low range accuracy providing precise control
- Current loads of up to 15 amps supports most small electrical loads supporting a broader range of HVAC and Process applications without the need for additional relays and components

APPLICATIONS
- Damper positioning
- Air conditioning
- Duct air control
- Industrial service

MODEL CHART

Model	Operating Range in w.c.	Approximate Deadband	
		Min. Set Point	Max. Set Point
1638-0	0.05 to 0.25	0.04	0.05
1638-1	0.20 to 1.0	0.04	0.06
1638-2	1.0 to 3.0	0.06	0.08
1638-5	2.0 to 6.0	0.07	0.25
1638-10	3.0 to 12	0.11	0.30

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Temperature Limits: -30 to 110°F (-34.4 to 43.3°C).
Pressure Limits: 10 psig (68.95 kPa) continuous, 25 psig (172.4 kPa) surge.
Switch Type: SPDT.
Repeatability: ±1%.
Electrical Rating: 15 A @ 120-480 VAC, 60 Hz. Resistive 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC, 60 Hz.
Electrical Connections: 3 screw type, common, normally open and normally closed.
Process Connections: 1/8″ female NPT.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Screw type with enclosed scale.
Weight: 3 lb 3 oz (1.50 kg).
Agency Approvals: CSA, FM, UL.

ACCESSORIES

Model	Description
A-489	4″ straight static pressure tip with flange
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16″ ID rubber or plastic tubing; 4″ insertion depth; includes mounting screws

OPTIONS

MIL Environmental Construction

Unlisted Model 1635 can be furnished with a special sealed snap switch for protection against high humidity, fungus and/or military applications. Similar to Model 1638 except deadband is slightly greater and some lower setpoints may not be available.

Note: To order, specify Model 1635-(Range No.)-MIL and required set point.

Process Tubing Options: See page 455 (Gage Tubing Accessories)

Dwyer

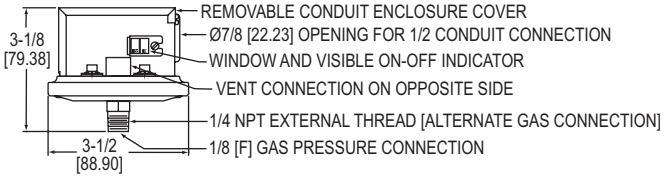
SERIES 1996

GAS PRESSURE SWITCH

Compact, Low Cost, 1.4 to 20 in w.c. Range







Reliable and convenient, the **Series 1996 Gas Pressure Switch** serves as a compact, low cost switch for gas fired furnaces and equipment. Pressure ranges for both models are ideal for high or low gas pressure interlock. Visible set point and on-off indicators add convenience in servicing. Use either NO or NC contacts on SPDT switch. Bottom connection has both 1/8″ female and 1/4″ male threads for pipe nipple or coupling. Top connection vents diaphragm chamber to outside or to furnace combustion chamber. Mount switch with diaphragm in a horizontal position and gas pressure connection at bottom. Used with natural, manufactured or LP gas.❶❷

FEATURES/BENEFITS
- Visible set point and on-off indicator simplifies operation and trouble shooting
- Compact size and low cost make it ideal for gas fired or gas equipment OEM applications

APPLICATIONS
- Gas furnaces
- Natural, manufactured or LP gas applications

MODEL CHART

Model	Range (in w.c.)	Model	Range (in w.c.)
1996-5	1.4 to 5.5	**1996-20**	4-20

SPECIFICATIONS

Service: Air, natural & manufactured gas, LP gas.
Wetted Materials: Consult factory.
Temperature Limits: 32 to 110°F (0 to 43.3°C). -30 to 110°F (-34.4 to 43.3°C) for dry gas or dry air.
Pressure Limits: 45 in w.c. (11.2 kPa) continuous; 10 psig (68.95 kPa) surge.
Switch Type: SPDT.
Electrical Rating: 15A @ 120-480 VAC, 60 Hz. Resistive 1/8 H.P. @ 125 VAC, 1/4 H.P. @ 250 VAC 60 Hz.
Electrical Connections: 3 screw type, common, normally open, normally closed.
Process Connections: 1/8″ female NPT or 1/4″ male NPT.
Vent Connection: 1/8″ female NPT.
Mounting Orientation: Diaphragm in horizontal position. Consult factory for other position orientations.
Set Point Adjustment: Screw type with visible indicator, inside conduit enclosure.
Weight: 1 lb 2.3 oz (349 g).
Agency Approvals: CE, CSA, FM, UL.

❶**Explosion-Proof Alternative: See page 55 (Series 1950)**
❷**Explosion-Proof Alternative: See page 55 (Series 1950G)**
Process Tubing Options: See page 455 (Gage Tubing Accessories)

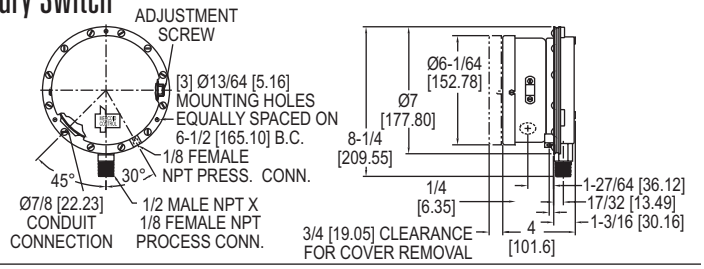
SERIES PG | MERCOID® BY DWYER

GAS PRESSURE/DIFFERENTIAL PRESSURE SWITCHES

External Adjustment, Visible Dial, Hermetically Sealed Snap or Mercury Switch







The **Series PG Gas Pressure/Differential Pressure Switch** has a large sensitive diaphragm and a reliable time proven mechanical design. For use with air and other compatible gases, they feature excellent ±1% of full-scale repeatability, clear easy-to-read scale and convenient external set point adjustment.
Application flexibility is assured by a large variety of switching options including SPST, SPDT, DPST and DPDT; opening or closing on increasing pressure, vacuum or differential. PR and PRL models add manual reset operation on increasing or decreasing pressure. Mercury switches or hermetically sealed snap switches are available where high humidity would be a problem. If vibration or other factors preclude the use of mercury, snap switches can be provided. Standard housing is NEMA 1. Optional enclosures can be supplied for weather resistant and explosion-proof requirements.

FEATURES/BENEFITS
- Clear easy-to-read scale and external set point adjustment simplifies operation and trouble shooting
- Large diaphragm provides accuracy for precise control
- Multiple switching options meet the design of applications

APPLICATIONS
- Natural, manufactured or LP gas applications

SPECIFICATIONS

Wetted Materials: Fairprene, brass, steel, and aluminum.
Temperature Limits: -10 to 180°F (-23 to 82°C).
Pressure Limit: Single pressure use on high side: Sustained pressure: 15 psig (1.0 bar); Surge limit: 20 psig (1.4 bar). Differential pressure use: Sustained pressure, range P1: 2 psig (.14 bar); Sustained pressure, range P2: 10 psig (0.7 bar).
Enclosure Rating: General purpose. Weatherproof and explosion-proof optional.
Repeatability: ±1% of full range.
Switch Type: SPST mercury switch, SPDT mercury switch, SPDT snap switch, or SPDT hermetically sealed snap switch. Optional DPDT.
Electrical Rating: SPDT mercury: 4A @ 120 VAC/VDC, 2A @ 240 VAC/VDC. SPST mercury: 6A @ 120 VAC/VDC, 3A @ 240 VAC/VDC. SPDT Snap: 15A @ 120 VAC, 8A @ 240 VAC, 0.5A @ 120 VDC, 0.25A @ 240 VDC. SPDT H.S. Silver Snap: 5A @ 125/250 VAC, 30 VDC resistive. SPDT H.S. Gold Snap: 1A @ 125 VAC, 30 VDC resistive.
Electrical Connections: Screw type.
Conduit Connection: 7/8″ (22.23 mm) hole for 1/2″ (12.7 mm) conduit hub.
Process Connection: 1/2″ male NPT and 1/8″ female NPT used for single positive pressure or high differential pressure, 1/8″ female NPT used for single vacuum or low differential pressure.
Mounting Orientation: Vertical.
Set Point Adjustment: External screw.
Weight: 4.5 lb (2 kg).
Deadband: See model chart.
Agency Approvals: FM, UL for mercury switch models. UL only on snap switch models.

MODEL CHART

Model	Range	Max. Deadband	Switch Type	Model	Range	Max. Deadband	Switch Type
PG-153-P1	1-30 in w.c. (.25-7.47 kPa)	1.9 in w.c. (0.47 kPa)	SPDT mercury	**PG-7000-153-P1**	1-30 in w.c. (.25-7.45 kPa)	4 in w.c. (1.0 kPa)	SPDT snap
PG-153-P2	0.5-5 psid (0.3-.345 bar)	0.4 psid (0.38 bar)	SPDT mercury	**PG-7000-153-P2**	0.5-5 psid (.03-.345 bar)	.5 psid (.035 bar)	SPDT snap
PG-3-P1	1-30 in w.c. (.25-7.47 kPa)	1.3 in w.c. (0.32 kPa)	SPST mercury*	**PG-7000-153HS-P1**	1-30 in w.c. (.25-7.47 kPa)	4 in w.c. (1.0 kPa)	SPDT hermetically sealed silver snap
PG-3-P2	0.5-5 psid (.03-.345 bar)	0.3 psid (0.21 kPa)	SPST mercury*	**PG-7000-153HG-P1**	1-30 in w.c. (.25-7.47 kPa)	4 in w.c. (1.0 kPa)	SPDT hermetically sealed gold snap

*SPST switches shown are close on increase of pressure.
For open on increase of pressure replace 3 in middle of model number with 2. **Example:** PG-2-P1.

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

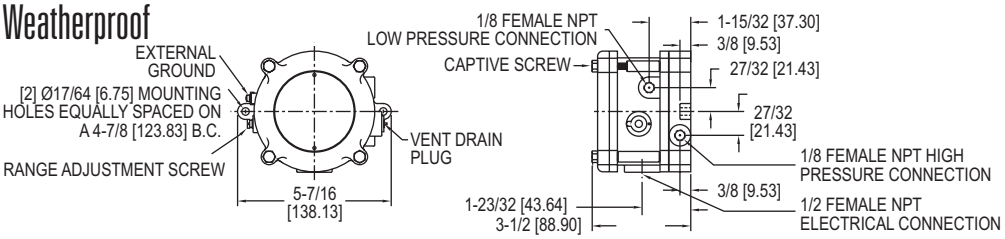
Dwyer

SERIES 1950

EXPLOSION-PROOF DIFFERENTIAL PRESSURE SWITCH

Compact, Low Cost, Explosion-proof and Weatherproof





Series 1950 Explosion-Proof Differential Pressure Switch combines the best features of the popular Dwyer® Series 1900 Pressure Switch with an integral explosion-proof and weatherproof housing, making it an exceptional value for either application. It is CE, UL and CSA listed, FM approved for use in Class I, Div 1, Groups C and D, Class II Groups E, F, and G and Class III hazardous atmospheres NEMA 7 & 9. Rain tight NEMA 3 (IP54), weatherproof features include a drain plug and O-ring seal in cover. Electrical connections are easily made by removing front cover. For convenience the set point adjustment screw is located on the outside of the housing. Twelve models offer set points from .03 to 20 in w.c. (0.0075 to 5 kPa) and from .5 to 60 psi (0.035 to 3.5 bar). The unit is very light and compact - about half the weight and bulk of other explosion-proof or weatherproof switches with separate enclosures. CAUTION: For use only with air or compatible gases. Applications with hazardous atmospheres and a single positive pressure may require special venting.

FEATURES/BENEFITS

- Explosion-proof and weatherproof housing provides device protection for outdoor use or harsh environment operation
- External set point screw provides easy access that simplifies making adjustments without opening or disassembling enclosure
- Easily accessible electrical connection simplifies the installation

APPLICATIONS

- HVAC applications
- Process applications
- All-weather applications

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Temperature Limits: -40 to 140°F (-40 to 60°C); 0 to 140°F (-17.8 to 60°C) for 1950P-8, 15, 25, and 50. -30 to 130°F (-34.4 to 54.4°C) for 1950-02.
Pressure Limits: Continuous: 1950's - 45 in w.c. (0.11 bar); 1950P's - 35 psi (2.41 bar); 1950P-50 only - 70 psi (4.83 bar). Surge: 1950's - 10 psi (0.69 bar), 1950P's - 50 psi (3.45 bar), 1950P-50 only - 90 psi (6.21 bar).
Enclosure Rating: NEMA 3 (IP54), NEMA 7 & 9.
Switch Type: Single-pole double-throw (SPDT).
Electrical Rating: 15 A @, 125, 250, 480 VAC, 60 Hz. Resistive 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC, 60 Hz.
Electrical Connections: 3 screw type, common, normally open and normally closed.
Process Connections: 1/8″ female NPT.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Screw type on top of housing.
Weight: 3.25 lb (1.5 kg); 1950-02 model, 4.4 lb (2 kg).
Agency Approvals: CE, CSA, FM, UL.

MODEL CHART

Model	Range, psid	Approximate Deadband: Min. Set Point	Approximate Deadband: Max. Set Point	Model*	Range*	Approximate Deadband: Min. Set Point	Approximate Deadband: Max. Set Point	Model	Range, in w.c.	Approximate Deadband: Min. Set Point	Approximate Deadband: Max. Set Point
1950P-2-2F	0.5 to 2	0.3	0.3	**1950P-50-2F**	15 to 50	1.0	1.5	**1950-1-2F**	.4 to 1.6	.15	.20
1950P-8-2F	1.5 to 8	1.0	1.0	**1950-02-2S**	.03 to .10	.025	.05	**1950-5-2F**	1.4 to 5.5	.30	.40
1950P-15-2F	3 to 15	0.9	0.9	**1950-00-2F**	.07 to .15	.04	.05	**1950-10-2F**	3 to 11	.40	.50
1950P-25-2F	4 to 25	0.7	0.7	**1950-0-2F**	.15 to .50	.10	.15	**1950-20-2F**	4 to 20	.40	.60

*P=PSID range models. Other ranges in w.c.

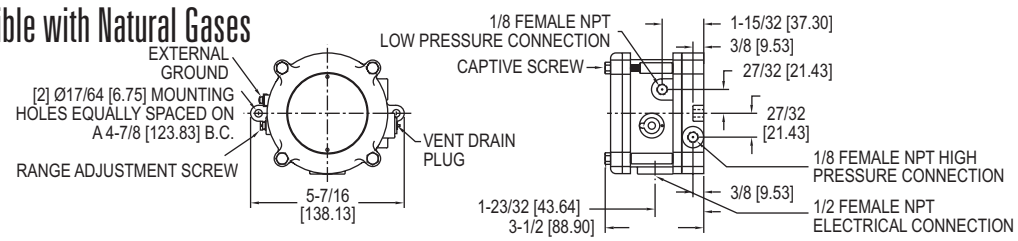
Caution: For use only with air or compatible gases. Applications with hazardous atmospheres and a single positive pressure may require special venting.

SERIES 1950G

EXPLOSION-PROOF DIFFERENTIAL PRESSURE SWITCH

Explosion-proof, Weatherproof, Compatible with Natural Gases





Series 1950G Explosion-Proof Differential Pressure Switch combines the best features of the popular Dwyer® Series 1950 Pressure Switch with the benefit of natural gas compatibility. Units are rain-tight for outdoor installations, and are UL listed for use in Class I, Groups A, B, C, & D; Class II, Groups E, F, & G and Class III atmospheres, Directive 2014/34/EU (ATEX) Compliant for CE Ex II 2G Exd IIB+H2 T6, CSA & FM approved for Class I, Div. 1, Groups B, C, D; Class II, Div. 1, Groups E, F, G and Class III atmospheres IECEx Ex d IIB+H2 T6 (-40°C < Ta < +60°C). The 1950G is very compact, about half the weight and bulk of equivalent conventional explosion-proof switches.
Easy access to the SPDT relay and power supply terminals is provided by removing the top plate of the aluminum housing. A supply voltage of 24 VDC, 120 or 240 VAC is required. A captive screw allows the cover to swing aside while remaining attached to the unit. Adjustment to the set point of the switch can be made without disassembly of the housing.

FEATURES/BENEFITS

- Compatible with natural gas making it suitable for use in those applications
- External set point screw provides easy access that simplifies making adjustments without opening or disassembling enclosure
- Easily accessible electrical connection simplifies the installation

APPLICATIONS

- Natural gas applications
- Process applications
- All-weather applications

SPECIFICATIONS

Service: Air and compatible combustible gases.
Wetted Materials: Contact factory.
Temperature Limits: 0 to 140°F (-17 to 60°C). **Note:** Set point drift may occur with ambient temperature changes.
Pressure Limits: 45 in w.c. (11.2 kPa) continuous; 10 psig (68.95 kPa) surge.
Enclosure Rating: NEMA 3 (IP54), NEMA 7 & 9.
Switch Type: 1 Form C relay (SPDT).
Electrical Rating: 10 A, 120/240 VAC, 28 VDC. Resistive 50 mA, 125 VDC.
Power Requirements: 24 VDC ±10%. 120 or 240 VAC ±10% optional.
Electrical Connections: Internal terminal block.
Process Connections: 1/8″ female NPT.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Screw type on top of housing.
Weight: 2 lb 15.7 oz (1.35 kg).
Agency Approvals: ATEX, CE, CSA, FM, IECEx, UL.

MODEL CHART

UL, CSA, FM Model	ATEX Model	Range in w.c.	Approximate Deadband: Min. Set Point	Approximate Deadband: Max. Set Point
1950G-00-B-24-NA	**1950G-00-B-24**	.07 to .15	.04	.06
1950G-0-B-24-NA	**1950G-0-B-24**	.15 to .50	.06	.11
1950G-1-B-24-NA	**1950G-1-B-24**	.4 to 1.6	.11	.29
1950G-5-B-24-NA	**1950G-5-B-24**	1.4 to 5.5	.4	.9
1950G-10-B-24-NA	**1950G-10-B-24**	3 to 11	.9	1.8
1950G-20-B-24-NA	**1950G-20-B-24**	4 to 20	1.2	3.0

240 VAC Models: 1950G-XX-B-240-NA; 120 VAC Models: 1950G-XX-B-120-NA

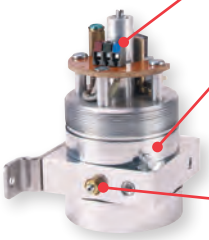
Dwyer

SERIES H3 | W. E. ANDERSON™ BY DWYER

EXPLOSION-PROOF DIFFERENTIAL PRESSURE SWITCH

Set points from 10 in w.c. to 200 psid, Rated 1500 psig, Weatherproof



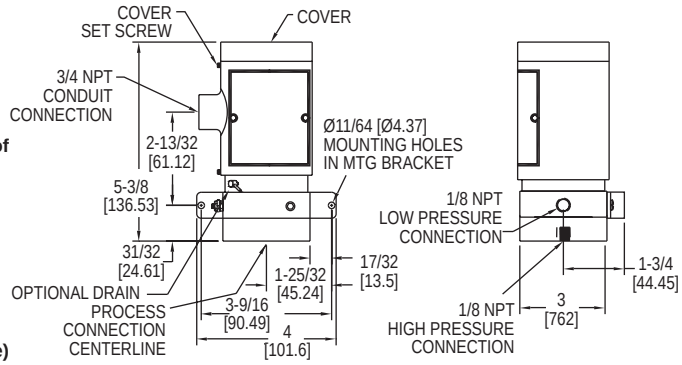


Shown without enclosure and cover

Internal terminal blocks for conductors up to 18 gage are optional

Optional NEMA 3 (IP54) enclosure includes explosion-proof drain; Standard NEMA 4X (IP56) version is without drain

External ground connection standard (internal ground connection also standard, use either one)



VIDEO ONLINE

The **Series H3 Explosion-Proof Differential Pressure Switch** is a heavy duty, industrial unit with a unique new design which provides sensitivity to differential pressures as low as 10 inches of water (254 mm w.c.), yet handles total pressure of 1500 psi (103 bar). Unlike common differential pressure switches that use a piston-type motion transfer, the Series H3 utilizes a rotary motion transfer shaft that prevents a change in total pressure from causing a set point shift. Unit yields deadbands approximately 5% of range, with zero set point shift due to variation in working pressures. Friction is minimized and repeatability increased by allowing range spring to act directly on diaphragm plate. Rolling diaphragm design maintains constant effective area to further reduce friction. Diaphragm is allowed to "seat", allowing application of full rated pressure, up to 1500 psi (103 bar), on either high or low pressure port, without damage. Special over-travel feature prevents overtightening of range adjust screw. Choose optional 316 SS chamber for water and water-based fluids or harsher applications.

FEATURES/BENEFITS

- Rotary motion design prevents set point shifts
- Explosion-proof housing for use in applications where protection of process and personnel is needed
- Option for use with water and water-based solution makes this a versatile switch

APPLICATIONS

- Water flow proving with an orifice plate
- Differential pressure across chiller
- Liquid filter status

SPECIFICATIONS

Wetted Materials: See pressure chamber and diaphragm material in model chart.
Temperature Limit: -4 to 220°F (-20 to 104°C), ATEX: -20 to 90°C (-4 to 194°F).
Pressure Limit: 1500 psig (103 bar).
Enclosure Rating: Standard meets NEMA 4X (IP56), drain option meets NEMA 3 (IP54). For hazardous use see the hazardous location ratings chart.
Switch Type: SPDT or DPDT snap switch.
Electrical Rating: 5 A @ 125/250 VAC, 30 VDC.
Electrical Connections: See model chart.
Conduit Connection: 3/4″ female NPT.
Process Connection: 1/8″ female NPT.
Mounting Orientation: Vertical.
Set Point Adjustment: Internal screw.
Weight: 4 lb 2 oz (2 kg).
Deadband: Approximately 5% of range.
Agency Approvals: ATEX, CE, CSA, UL see ratings chart.

MODEL CHART

Example	H3	S	-2	S	C	-MV	H3S-2SC-MV
Series	H3						Explosion-proof differential pressure switch
Pressure Chamber & Diaphragm Material (Wetted)		A S					Aluminum chamber with Nitrile diaphragm 316 SS chamber with Fluoroelastomer diaphragm
Adjustable Operating Range			1 2 3 4				10-180 in. w.c. (2.48-44.78 kPa) 0.5-15 psid (0.03-1 bar) 5-70 psid (.34-4.8 bar) 10-200 psid (.7-13.8 bar)
Circuit (Switch) Options				S D			SPDT snap action switch rated 5 A @ 125/250 VAC, 30 VDC DPDT snap action switch rated 5 A @ 125/250 VAC, 30 VDC
Electrical Connection					L T C		18 AWG x 18 inch lead wires UL, CSA approved internal terminal block ATEX approved internal terminal block
Options						Drain MV VIT	Enclosure with drain - allows condensate to be drained from inside (meets NEMA 3 instead of 4X) Gold contacts on snap switch for dry circuits rated 1 A @ 125 VAC, 1A resistive or 0.5 A inductive @ 30 VDC Fluoroelastomer diaphragm option where not standard

HAZARDOUS LOCATION RATINGS

Model	UL	CSA	Directive 2014/34/EU ATEX Compliant
H3 _ – _ _ C	-	-	CE 0344 Ex II 2 G EEx d IIB -20°C≤ T amb ≤ 75°C T6 EC-Type Certificate No. KEMA 03ATEX 2584
H3 _ – _ _ L	Cl. I, Gr.B, C & D Cl. II, Gr.E, F & G	Cl. I, Gr.B, C & D Cl. II, Gr.E, F & G	-
H3 _ – _ _ T	Cl. I, Gr.B, C & D Cl. II, Gr.E, F & G	Cl. I, Gr.B, C & D Cl. II, Gr.E, F & G	-
H3 _ – _ _ C-DRAIN	-	-	CE 0344 Ex II 2 G EEx d IIB -20°C≤ T amb ≤ 75°C T6 EC-Type Certificate No. KEMA 03ATEX 2584
H3 _ – _ _ L-DRAIN	Cl. I, Gr.B, C & D Cl. II, Gr.E, F & G	-	-

ACCESSORIES

Model	Description
A-610	Pipe mounting kit for 1-1/4 to 2″ pipe

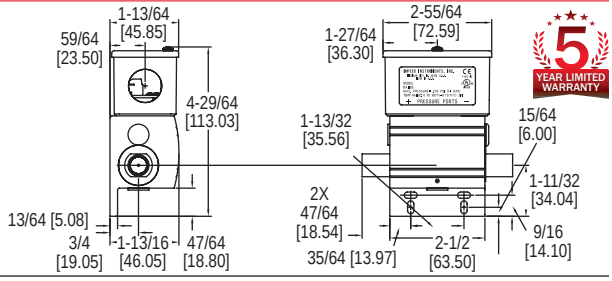
Dwyer

SERIES DX

WET/WET DIFFERENTIAL PRESSURE SWITCH

NEMA 4X Enclosure, Low Differential Set Points





The **Series DX Wet/Wet Differential Pressure Switch** makes a contact output based on the differential between two pressure sources. Wetted materials of brass and fluoroelastomer are suitable for use with most gases and water based solutions. The switch can be used for low differential pressure indication with set point on a decrease of pressure as low as 1 psid (0.07 bar). Differential set point ranges are available from 2.5 to 75 psid (0.17 to 5.17 bar) on increasing differential pressure and 1.0 to 67 psid (0.07 to 4.62 bar) on decreasing differential pressure. Unit features a high static pressure rating of 200 psig (13.8 bar). Weatherproof, UL type 4X, enclosure for dust laden, outdoor, or wash-down installation environments. Externally adjustable set point, integral mounting flange and a removable electrical terminal block for quick and easy installation.

FEATURES/BENEFITS

- Differential pressure switch that is suitable for most gas and water-based applications allows multiple uses in the most sophisticated designs
- Weatherproof housing provides protection in the harsh, wet or dirty environments ensuring switch's long-service life
- Removable terminal block reduces installation time

APPLICATIONS

- Indicating filter condition
- Proof of flow indicator monitoring
- Proving flow through a pump
- Proving flow through a chiller
- Proving flow through a heat pump or AC unit

OPTIONS	
To order add suffix:	**Description**
-PRESET	Preset unit
Example: DXW-11-153-1-PRESET	

USA: California Proposition 65

⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Connection: Brass; Diaphragm: Fluoroelastomer.
Temperature Limits: 30 to 140°F (-1 to 60°C).
Pressure Limits: 200 psig (13.8 bar). Continuous single side only pressure should not exceed 1.25 x full differential range.
Enclosure Rating: Weatherproof UL type 4X (IP65).
Repeatability: ±2% of full range.
Switch Type: SPDT snap switch.
Electrical Rating: 5 A @ 125/250 VAC (~), 5 A res. @ 30 VDC (⎓).
Electrical Connection: Removable terminal block.
Conduit Connection: 0.871″ diameter hole for 1/2″ conduit fitting.
Process Connection: 1/4″ NPT female.
Mounting Orientation: Ports on horizontal plane, ±10°.
Set Point Adjustment: External screw.
Housing Materials: Body: Aluminum; Housing: Polycarbonate; Cover: 300 SS.
Vibration and Shock: Set point repeats after 2.5 Gs, 5 to 500 Hz. Set point repeats after a 15 Gs, 10 millisecond duration.
Humidity Limit: 80% (non-condensing).
Pollution Degree: 2.
Environment: Intended for indoor and outdoor use.
Weight: 1 lb 3 oz (0.54 kg).
Agency Approvals: CE, cULus.

MODEL CHART

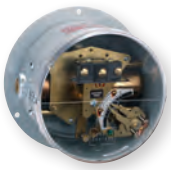
Model	Adjustable Differential Range (on increase) [psid (bar)]	Fixed Deadband [psid (bar)] Low Set Point	Fixed Deadband [psid (bar)] High Set Point
DXW-11-153-1	2.5 to 10 (0.17 to 0.69)	1.5 (0.10)	2.5 (0.17)
DXW-11-153-2	10 to 25 (0.69 to 1.72)	2.5 (0.17)	3.5 (0.24)
DXW-11-153-3	25 to 50 (1.72 to 3.45)	3.5 (0.24)	6.0 (0.41)
DXW-11-153-4	50 to 75 (3.46 to 5.17)	6.0 (0.41)	8.0 (0.55)

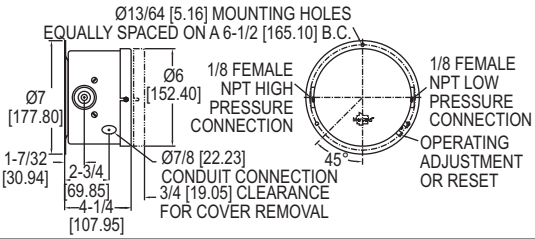
Note: Set points on decrease will be the range minus the deadband.

SERIES DP | MERCOID® BY DWYER

DOUBLE BELLOWS DIFFERENTIAL PRESSURE SWITCH

Visible Set Points, Adjustable or Fixed Deadband, High Pressure Ranges





Two opposing bellows combine maximum sensitivity and vibration resistance at a moderate cost in the **Series DP Double Bellows Differential Pressure Switch**. Both set and reset points are easily adjustable through non-interactive, externally accessible controls. Visible set point indicators simplify changes. SPDT snap action switch, 316 stainless steel or brass bellows, flanged steel housing. Rated pressures to 600 psig.

FEATURES/BENEFITS

- Bellows switch design provides sensitivity to pressure changes but resists vibration preventing out of range switching
- External access to set and rest controls makes for easy adjustments
- Visible set point indicators simplify changes

APPLICATIONS

- Accurate switch triggers in high pressure applications

SPECIFICATIONS

Wetted Materials: Brass on ranges 61, 62, 63 or 316 SS on ranges 62E, 64E, 65E.
Temperature Limits: -10 to 180°F (-23 to 82°C).
Pressure Limit: Maximum pressure of the operating range.
Enclosure Rating: General purpose. Weatherproof or explosion-proof optional.
Switch Type: Snap switch. (Contact factory for mercury switch).
Electrical Rating: See model chart.
Electrical Connection: Screw terminal.
Conduit Connection: General purpose: 1/2″ hole for conduit hub; Weatherproof: 1/2″ conduit hub; Explosion-proof: 3/4″ female NPT.
Process Connection: General purpose and weatherproof: 1/8″ female NPT, explosion-proof: 1/4″ male NPT.
Mounting Orientation: Vertical.
Set Point Adjustment: Thumbscrew.
Weight: General purpose: 5 lb (2.3 kg), weatherproof: 7 lb (3 kg), explosion-proof: 25 lb (11 kg).
Deadband: See model chart.
Agency Approvals: CE, cULus.

MODEL CHART

Bellows Material	Range, psid (bar)	Max. Press, psig (bar)	Adjustable Deadband: Snap Action Switch SPDT, 15A @ 120/240 VAC — Min. D.B. psid (bar)	Adjustable Deadband: Snap Action Switch SPDT, 15A @ 120/240 VAC — Model	Fixed Deadband: Snap Action Switch SPDT, 15A @ 120/240 VAC — Fixed D.B. psid (bar)	Fixed Deadband: Snap Action Switch SPDT, 15A @ 120/240 VAC — Model
Brass	0-10 (0-0.7)	50 (3.5)	1.5 (.10)	**DPA-7033-153-61**	0.5 (.03)	**DPS-7233-153-61**
Brass	0-20 (0-1.4)	100 (6.9)	2.5 (.17)	**DPA-7033-153-62**	1.0 (.07)	**DPS-7233-153-62**
Brass	0-30 (0-2.1)	300 (20.7)	6.0 (.41)	**DPA-7033-153-64**	1.5 (.10)	**DPS-7233-153-64**
316 SS	0-20 (0-1.4)	100 (6.9)	3.0 (.21)	**DPA-7043-153-62E**	1.5 (.10)	**DPS-7243-153-62E**
316 SS	0-30 (0-2.1)	300 (20.7)	6.0 (.41)	**DPA-7043-153-64E**	2.0 (.14)	**DPS-7243-153-64E**
316 SS	0-80 (0-5.5)	600 (41.4)	20(1.4)	**DPA-7043-153-65E**	6.0 (.41)	**DPS-7243-153-65E**

OPTIONS	
To order add suffix:	**Description**
W	Weatherproof enclosure
Example: DPAW-7033-153-61	
E	Explosion-proof enclosure
Example: DPAE-7033-153-61	

USA: California Proposition 65

⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

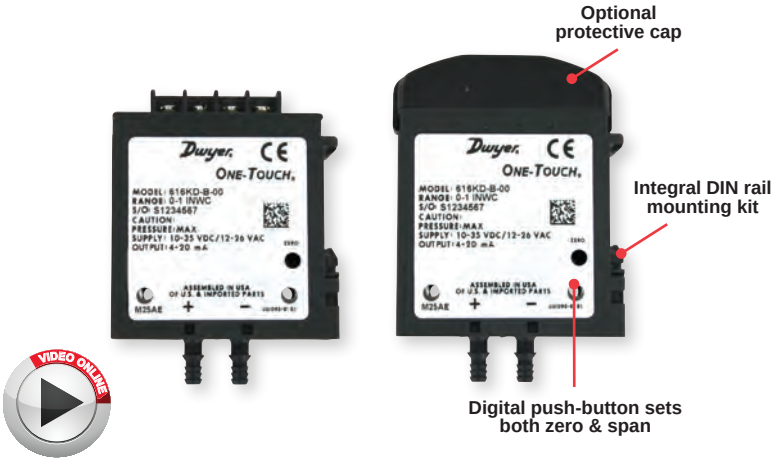
Dwyer

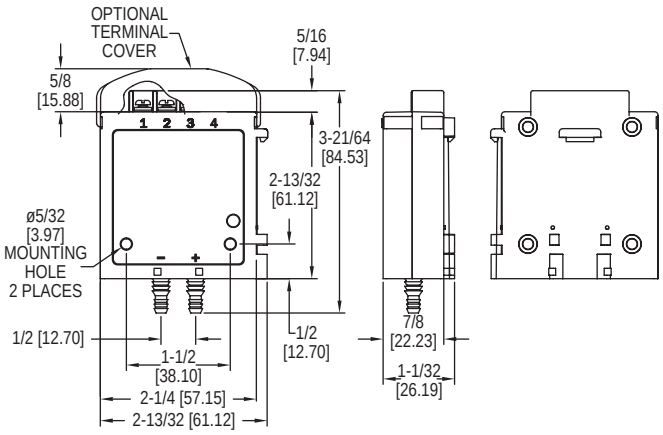
SERIES 616KD

DIFFERENTIAL PRESSURE TRANSMITTERS ±0.25, ±1, OR ±2% ACCURACY

One-Touch® Digital Push-Button Calibration Technology

5 YEAR LIMITED WARRANTY





The **Series 616KD Differential Pressure Transmitters ±0.25, ±1, or ±2% Accuracy** with One-Touch® Digital Push-Button Calibration Technology are designed for simplicity, making them the ideal choice for installers and maintenance professionals. These instruments not only alleviate cumbersome turn pots typically found in most transmitters, but eliminate entirely the need to span the instruments during calibration. With a single digital push-button, both ZERO AND SPAN are calibrated properly, nothing else is required. No additional reference pressure sources or separate calibration devices are necessary.

FEATURES AND BENEFITS

- Simple calibration push-button sets back zero and span, saving time installing and over the service life
- Cost effective and compact device suitable for OEM applications where space, simplicity, and value are key
- Ranges and accuracy selection cover a wide range of applications minimizing components and determining standardizing on design
- Optional 1/8″ NPT process connection allows for use with metal barbed fittings or compression fittings for use with metal tubing
- Optional plenum rated units meeting UL Standard 2043 are available

APPLICATIONS

- Air handlers
- Variable air volume
- Duct pressure
- Filter monitoring

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: 616KD-A: ±0.25% FS; 616KD-B: ±1% FS, 616KD: ±2% FS.
Stability: ±1% FS/year.
Temperature Limits: 0 to 140°F (-17.8 to 60°C).
Compensated Temperature Range: 20 to 122°F (-6.67 to 50°C).
Pressure Limits: 2 psig (ranges 5 in w.c. or lower); 5 psig (ranges 10 to 40 in w.c.).
Thermal Effect: 616KD-A: ±0.02% FS/°F; 616KD-B: ±0.04% FS/°F; 616KD: ±0.06% FS/°F, includes zero and span.
Power Requirements: 4-20 mA output: 10-35 VDC (2 wire) or 12-26 VAC (4 wire); 5V output: 10-35 VDC (3 wire) or 12-26 VAC (4 wire); 10V output: 13-35 VDC (3 wire) or 12-26 VAC (4 wire) for 616KD A and B. 16-36 VDC (2 or 3 wire): 20-28 VAC (3 wire) for 616KD.
Output Signal: 4-20 mA or option with field selectable 0-10, 0-5, 2-10, 1-5 V.
Zero and Span Adjustments: Push button.
Loop Resistance: 4-20 mA output (DC): 0 to 1250 Ω max. Rmax = 50 (VpsDC -10) Ω; 4-20 mA output (AC): 0 to 1200 Ω max. Rmax = 50 (1.4 VpsAC -12) Ω; Voltage output: 5K Ω minimum.
Current Consumption: 24 mA max for 616KD A and B. 21 mA max for 616KD.
Electrical Connections: Screw-type terminal block.
Process Connections: Barbed, dual size to fit 1/8″ & 3/16″ (3 mm and 5 mm) ID rubber or vinyl tubing.
Enclosure Rating: NEMA 1 (IP20).
Mounting Orientation: Vertical with pressure connections pointing down.
Weight: 1.8 oz (51 g).
Agency Approvals: CE, optional plenum rated units meet UL Standard 2043.

MODEL CHART

Example	616KD	-A	-12	-AT	616KD-A-12-AT
Series	616KD				Differential pressure transmitter
Accuracy		A			0.25% full-scale accuracy
		B			1.0% full-scale accuracy
					2.0% full-scale accuracy
Range			00		0 to 1 in w.c.
			01		0 to 2 in w.c.
			02		0 to 3 in w.c.
			03		0 to 5 in w.c.
			04		0 to 10 in w.c.
			05		0 to 15 in w.c.
			06		0 to 20 in w.c.
			07		0 to 25 in w.c.
			08		0 to 40 in w.c.
			10		0 to 250 Pa
			11		0 to 500 Pa
			12		0 to 750 Pa
			13		0 to 1250 Pa
			14		0 to 2500 Pa
			15		0 to 5000 Pa
			50		0 to ±1 in w.c.
			51		0 to ±2 in w.c.
			57		0 to ±3 in w.c.
			52		0 to ±5 in w.c.
			53		0 to ±10 in w.c.
			54		0 to ±250 Pa
			55		0 to ±500 Pa
			56		0 to ±750 Pa
			58		0 to ±1250 Pa
Options				AT	Aluminum tag
				FC	Factory calibration
				NIST	NIST certification
				TC	Terminal cover
				V	Voltage output 0-5, 1-5, 0-10, 2-10 VDC (field selectable)
				N	1/8″ female NPT
				PR	Plenum rated

Note: 0.25% FS accuracy is not available in the following ranges 00, 01, 10, 11, 50, 51, 54, 55

ACCESSORIES

Model	Description
A-360	Aluminum DIN rail 1 m
A-618	Protective terminal cap



Optional NPT connection block

Dwyer

SERIES 616KD-LR

DIFFERENTIAL PRESSURE TRANSMITTERS - LOW RANGES

High Accuracy, Ranges Down to 0.1 in w.c. (25 Pa)

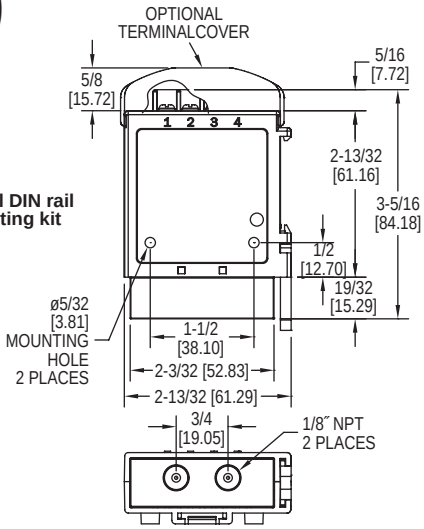


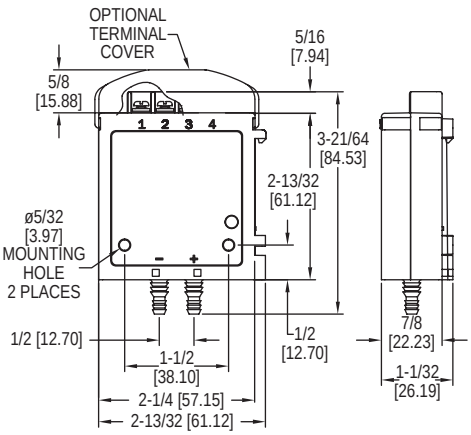


Integral DIN rail mounting kit

Optional NPT connection block

Digital push buttons set both zero and span





The **Series 616KD-LR Differential Pressure Transmitters - Low Ranges** are designed for simplicity, making it the ideal choice for installers and maintenance professionals. These low range instruments not only alleviate cumbersome turn pots typically found in most transmitters, but eliminate entirely the need to span the instruments during calibration. With single digital push-button, both ZERO AND SPAN are calibrated properly, nothing else is required. No additional reference pressure sources or separate calibration devices are necessary.

FEATURES/BENEFITS

- Wide selection of low ranges and accuracy cover numerous applications minimizing components and standardizing on design
- Simple calibration push-buttons to set zero and span, saving time installing and maintaining over the service life
- Cost effective and compact device suitable for OEM applications where space, simplicity, and value are key
- Simultaneous current and voltage outputs
- Optional 1/8″ NPT process connection allows for use with metal barbed fittings or compression fittings for use with metal tubing
- Optional plenum rated units meeting UL Standard 2043 are available

APPLICATIONS

- Air handlers
- Variable air volume
- Duct pressure
- Filter monitoring

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: ±0.25% FS for ±0.4″ (100 Pa) and ±0.5″ (125 Pa), ±0.5% FS for ±0.25″ (60 Pa), and ±1% FS for ±0.1″ (25 Pa).
Stability: ±1% / year FSO.
Temperature Limits: 0 to 140°F (-17.8 to 60°C).
Pressure Limits: 1 psi max., operation; 10 psi burst.
Power Requirements: 10-35 VDC (2 wire), 17-36 VDC or isolated 21.6-33 VAC (3 wire).
Output Signal: 4-20 mA (2-wire), 0-5 VDC, 0-10 VDC (3-wire).
Response Time: 2.5 Hz sample rate.
Zero and Span Adjustments: Push buttons.
Loop Resistance: Current Output: 0 to 1250Ω max; Voltage Output: Min. load resistance 1kΩ.
Current Consumption: 40 mA max.
Electrical Connections: Screw-type terminal block.
Process Connections: Barbed, dual size to fit 1/8″ & 3/16″ (3 mm & 5 mm) ID rubber or vinyl tubing, or 1/8″ NPT.
Enclosure Rating: NEMA1 (IP20).
Mounting Orientation: Vertical with pressure connections pointing down.
Weight: 1.8 oz (51 g).
Agency Approvals: CE, optional plenum rated units meet UL Standard 2043.

MODEL CHART

Example	616KD-LR	-A	34	-B	D1	-FC	616KD-LR-A34-BD1-FC
Series	616KD-LR						Differential pressure transmitter
Accuracy		A B D					0.25% FS accuracy 1.0% FS accuracy 0.5% FS accuracy
Range			31 32 34 35 41 42 44 45 61 62 64 65 71 72 74 75				0 to 0.1 in w.c.① 0 to 0.25 in w.c.② 0 to 0.4 in w.c. 0 to 0.5 in w.c. 0 to ±0.1 in w.c.① 0 to ±0.25 in w.c.② 0 to ±0.4 in w.c. 0 to ±0.5 in w.c. 25 Pa① 60 Pa② 100 Pa 125 Pa 0 to ±25 Pa① 0 to ±60 Pa② 0 to ±100 Pa 0 to ±125 Pa
Process Connection				B N			Plastic barb 1/8″ female NPT with front push-button
Output					D1 D2 D3 D4		4-20 mA and 0-10 V 4-20 mA and 0-5 V 4-20 mA and 2-10 V 4-20 mA and 1-5 V
Options						AT COC FC NIST TC PR	Aluminum tag Certificate of Conformance Factory calibration certificate NIST traceable calibration certificate Terminal cover Plenum rated

①B accuracy only. ②B and D accuracies only.

ACCESSORIES

Model	Description
A-360	Aluminum DIN rail 1 m
A-618	Protective terminal cap



A-618 installed on unit

Dwyer

SERIES 668B/D

COMPACT DIFFERENTIAL PRESSURE TRANSMITTERS

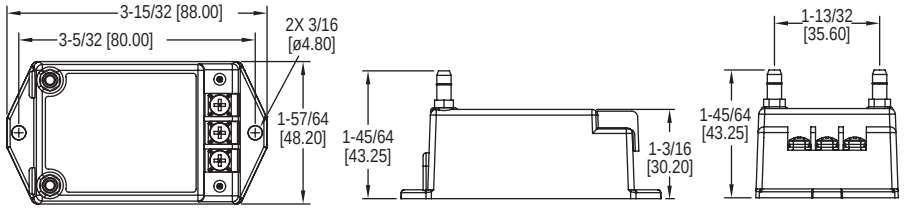
Ranges from 0.1 to 100 in w.c., Overpressure Protection to 15 psig, ±0.8% Accuracy



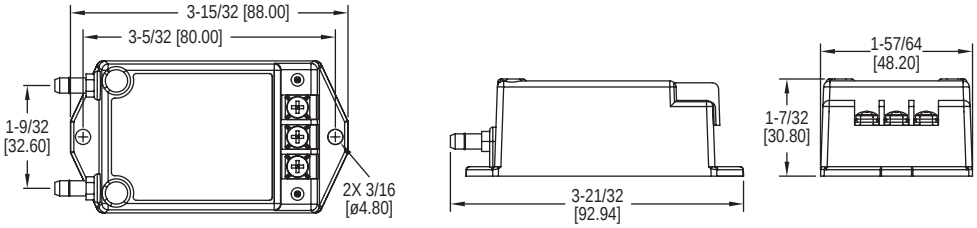
668B



668D



668B



668D

Our low cost **Series 668B/D Compact Differential Pressure Transmitters** are capable of sensing differential gage pressure with ±0.8% FS accuracy, and converts this pressure difference to a proportional high level analog output for both unidirectional and bi-directional pressure ranges. These transmitters can withstand up to 15 psig overpressure with no damage to the unit. The compact, lightweight design makes installation simple and easy. Units are protected against incorrect wiring, and include a protective terminal cover.

FEATURES/BENEFITS

- Protection from 15 psi overpressure & incorrect wiring
- High accuracy at low pressure ranges
- Two package selections allows easy device mounting to best fit application pressure connections

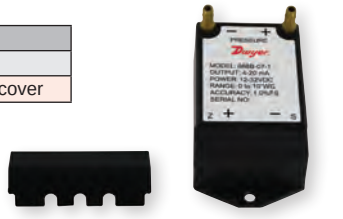
APPLICATIONS

- HVAC and VAV control
- Clean rooms and isolation rooms
- Duct static pressure measurement

SPECIFICATIONS
Service: Air and non-conductive gases.
Accuracy: ±0.8% FS.
Temperature Limits: Operating: 0 to 170°F (-18 to 77°C); Storage: -40 to 185°F (-40 to 85°C).
Pressure Limits: 15 psig (1.0 bar).
Thermal Effects: ±0.03% FS/°F (±0.054% FS/°C).
Compensated Range: From 40 to 170°F (4.4 to 77°C).
Power Requirements: 12-32 VDC.
Output Signals: 4-20 mA (2-wire), 0-10 VDC (3-wire), or 0-5 VDC (3-wire).
Zero Adjustment: Accessible under the small terminal cover.
Electrical Connection: Terminal strip.
Process Connection: 3/16″ OD barbed brass for 1/8″ ID push-on tubing.
Enclosure: Stainless steel and PC+ABS alloy, UL 94 V-0 rated.
Weight: 4.0 oz (113 g).

MODEL CHART					
Example	**668**	**B**	**-08**	**-1**	**668B-08-1**
Series	668				Compact differential pressure transmitter
Connection		B			Front
		D			Bottom
Unidirectional Pressure Ranges			01		0 to 0.1 in w.c.
			21		0 to 0.2 in w.c.
			02		0 to 0.25 in w.c.
			22		0 to 0.4 in w.c.
			03		0 to 0.5 in w.c.
			04		0 to 1 in w.c.
			05		0 to 2.5 in w.c.
			06		0 to 5 in w.c.
			07		0 to 10 in w.c.
			08		0 to 25 in w.c.
			09		0 to 50 in w.c.
			10		0 to 100 in w.c.
			12		0 to ±0.1 in w.c.
			13		0 to ±0.25 in w.c.
			14		0 to ±0.5 in w.c.
			15		0 to ±1 in w.c.
			16		0 to ±2.5 in w.c.
			17		0 to ±5 in w.c.
			18		0 to ±10 in w.c.
			19		0 to ±25 in w.c.
Output				1	4 to 20 mA
				2	0 to 10 VDC
				3	0 to 5 VDC

ACCESSORIES	
Model	**Description**
A-TC	Replacement protective terminal cover



A-TC shown attached

OPTIONS	
Use order code:	**Description**
NISTCAL-PT1	NIST traceable calibration certificate

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

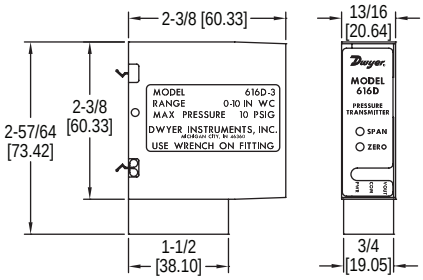
Dwyer

SERIES 616D

DIN RAIL DIFFERENTIAL PRESSURE TRANSMITTER

Mounts on 35 mm DIN Rail, ±0.25% Full-Scale Accuracy





The **Series 616D Din Rail Differential Pressure Transmitter** senses the pressure of air and compatible gases and sends a standard 4-20 mA or 0-10 VDC output signal. The 616D enclosure is specifically designed to mount on a 35 mm DIN rail in a panel. This mounting style allows for several units to be mounted closely together reducing required space. The span and zero controls are for use when checking calibration. They are not intended for re-ranging. Versatile circuit design enables operation in 2-wire current loops.

FEATURES/BENEFITS

- Simple calibration push-buttons to set zero and span
- Cost effective and compact device suitable for OEM applications where space, simplicity, and value are key

APPLICATIONS

- Air handlers
- Variable air volume
- Duct pressure
- Filter monitoring

MODEL CHART		
Model	**Range**	**Max. Pressure**
616D-2	0 to 6 in w.c.	10 psig
616D-3	0 to 10 in w.c.	10 psig
616D-4	0 to 20 in w.c.	20 psig
616D-5	0 to 40 in w.c.	20 psig
616D-6	0 to 100 in w.c.	15 psig
616D-7	0 to 200 in w.c.	45 psig
616D-8	0 to 10 psid	45 psig

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: ±0.25% FS @ 77°F (25°C).
Thermal Effect: ±0.02 FS/°F (±0.036% FS/°C).
Stability: ±1% FS/yr.
Temperature Limits: 14 to 185°F (-10 to 85°C).
Pressure Limits: See chart.
Power Requirements: 10-35 VDC (2-wire); 17-36 VDC, or isolated 21.6-33 VAC (3-wire).
Output Signal: 4-20 mA (2-wire); 0-10 VDC (3-wire).
Zero and Span Adjustments: Push-buttons.
Loop Resistance: Current output: 0 to 1250 Ω max; Voltage output: Load resistance 1 kΩ min.
Current Consumption: 40 mA max.
Electrical Connections: Screw-type terminal block.
Process Connections: 1/8″ female NPT. Accessories included are 2 barbed fittings for 1/8″ (3.12 mm) and 3/16″ (4.77 mm) ID rubber or vinyl tubing.
Mounting Orientation: Vertical, on a 1.378″ (35 mm) DIN rail.
Weight: 4.8 oz (136 g).
Agency Approvals: CE.

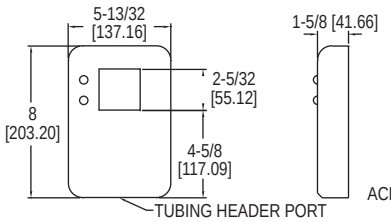
ACCESSORIES	
Model	**Description**
A-360	Aluminum DIN Rail 1 m

SERIES RSM

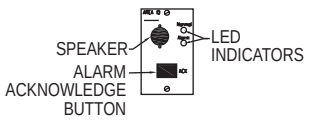
ROOM STATUS MONITOR

For Sensing Low Pressure Using High Accuracy





Room status monitor



Remote annunciator

Series RSM Room Status Monitor is designed for critical low differential pressure applications that require stringent pressure monitoring and alarming. The Series RSM can be configured to monitor positive or negative pressure in protected environments and hospital isolation rooms per CDC guidelines. The RSM is a complete system with a graphic user interface which enables access to pressure, security, calibration, and alarm setup. The RSM has a NEMA 1 (IP20) rated fire retardant plastic for indoor applications.

FEATURES/BENEFITS

- Accurately monitors protective environments for negative or positive pressure ensuring safety and reducing risk of catastrophic events
- Audible and visual alarm provides immediate local alerts allowing corrective action to be taken quicker to eliminate the problem from becoming widespread
- Password protected set up menu ensures no errors by untrained personnel
- Optional BACnet communication from devices provides integration into building control system for automated control and centralized monitoring and alarming

APPLICATIONS

- Hospital isolation wards
- Clean rooms
- Pharmaceutical
- Manufacturing
- Research labs
- Animal facilities

MODEL CHART			
Model*	**Operating Range**	**Model****	**Operating Range**
RSM-1-A	±0.05 in w.c.	**RSM-1-B**	±0.05 in w.c.
RSM-2-A	±0.1 in w.c.	**RSM-2-B**	±0.1 in w.c.
RSM-3-A	±0.25 in w.c.	**RSM-3-B**	±0.25 in w.c.
RSM-4-A	±0.5 in w.c.	**RSM-4-B**	±0.5 in w.c.
RSM-5-A	±1 in w.c.	**RSM-5-B**	±1 in w.c.
RSM-6-A	±2.5 in w.c.	**RSM-6-B**	±2.5 in w.c.
***Excitation/Output: 24 VAC/4-20 mA or 0-5 or 0-10 VDC. **Excitation/Output: 120 VAC/4-20 mA or 0-5 or 0-10 VDC.			
Note: For optional BACnet communication change end from -A to -C for 24 VAC power or from -B to -D for 120 VAC power models.			

SPECIFICATIONS

Service: Air or non-conductive, nonexplosive gases.
Accuracy: ±0.5% FS.
Temperature Limits: 32 to 120°F (0 to 50°C).
Humidity Limits: 5 to 95% relative humidity (non-condensing).
Thermal Effects: ±0.03% FS/°F (± 0.05% FS/°C).
Pressure Limits: ±15 in w.c. (±3.7 kPa).
Supply Voltage: Order code A (24 VAC): 18-32 VAC, 50 to 60 Hz; Order code B (120 VAC): 85-265 VAC, 50 to 60 Hz; Main supply voltage fluctuations up to 10%.
Power Requirements: 5 W.
Power Consumption (Voltage output): 5 W.
Output Signal: Selectable 4-20 mA (2-wire), 0-5 VDC (3-wire), or 0-10 VDC (3-wire).
Switch Type: SPST.
Loop Resistance (4-20 mA output): 0 to 510 Ω.
Electrical Connection: Removable terminal block.
Process Connections: Barbed fittings for 3/16″ ID tubing.
Enclosure Rating: NEMA 1 (IP20) rated for indoor applications.
Housing: Fire retardant plastic.
Mounting: Mount to standard double gang metal electrical box using 4x4″ plaster ring adapter.
Dimensions: 8″ H x 5.4″ W x 1.8″ D (20.3 H x 13.7 W x 4.1 D cm).
Weight: 1.5 lb (680 g).
Communications: BACnet MSTP ASC optional.
Agency Approvals: CE, CSA (RSM only).

ACCESSORIES	
Model	**Excitation/Output**
A-285	Remote alarm annunciator with visible/audible alarm and acknowledge switch

Process Tubing Options: See page 455 (Gage Tubing Accessories)

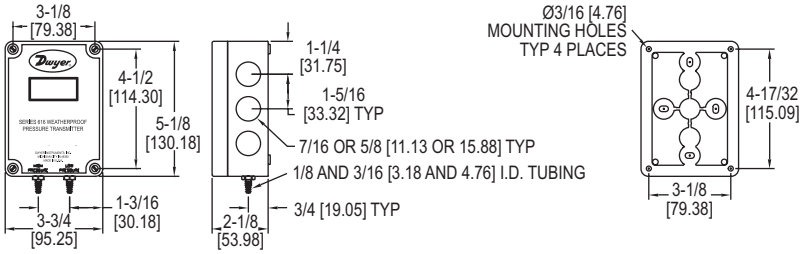
Dwyer

SERIES 616W

DIFFERENTIAL PRESSURE TRANSMITTER

NEMA 4X Enclosure, 0.25% FS Accuracy





Positive, negative and differential pressures can be measured within a full span accuracy of ±0.25 with the **Series 616W Differential Pressure Transmitter**. Units are enclosed in a polycarbonate case, rated NEMA 4X (IP66) and operate by sensing the pressure of air and compatible gases then sending a standard 4-20 mA output signal. Design enables operation in 2-wire current loops. A wide range of models are available factory calibrated to specific ranges. The span and zero controls are for use when checking calibration. They are not intended for re-ranging to a significantly different span. The LCD display allows local indication of pressure.

FEATURES/BENEFITS

- NEMA 4X rated enclosure provides protection in harsh environments permitting outdoor monitoring or in areas where dust and particulate matter exists
- Easy to read LCD display provides immediate local alerts allowing corrective action to be taken quicker to eliminate the problem from becoming widespread
- Zero and span controls provides easy calibration checks and shorter installation time to get device running and monitoring

APPLICATIONS

- Dust collection
- Outdoor HVAC
- Roof-top equipment

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: ±0.25% FS @ 77°F (25°C), display accuracy ±0.5%.
Stability: ±1% FS/yr.
Temperature Limits: 14 to 185°F (-10 to 85°C).
Pressure Limits: See chart.
Power Requirements: 10-35 VDC (2-wire), 17-36 VDC, or isolated 21.6-33 VAC (3-wire).
Output Signal: 4-20 mA (2-wire), 0-5 VDC, or 0-10 VDC (3-wire).
Zero and Span Adjustments: Push-buttons.
Loop Resistance: Current output: 0 to 1250 Ω max; Voltage output: Load resistance 1 kΩ (min).
Current Consumption: 40 mA (max).
Electrical Connections: 3-wire removable European style terminal block for 16 to 26 AWG.
Process Connections: Barbed, dual size to fit 1/8″ and 3/16″ (3.12 and 4.76 mm) ID rubber or vinyl tubing.
Enclosure Rating: NEMA 4X (IP66).
Mounting Orientation: Any orientation.
Weight: Without LCD 8.8 oz. (249 g); with LCD 9.6 oz (272 g).
Agency Approvals: CE.

MODEL CHART

Model	Range	Max. Pressure
616W-2-LCD	0 to 6 in w.c.	10 psig
616W-3-LCD	0 to 10 in w.c.	10 psig
616W-4-LCD	0 to 20 in w.c.	20 psig
616W-5-LCD	0 to 40 in w.c.	20 psig
616W-6-LCD	0 to 100 in w.c.	15 psig
616W-7-LCD	0 to 200 in w.c.	45 psig
616W-20B-LCD	0 to ±10 in w.c.	10 psig
616W-3M-LCD	0 to 2.5 kPa	68.9 kPa

Note: Units with "M" in the model number are metric units.

OPTIONS

To order add suffix:	Description
-NIST	NIST traceable calibration certificate
Example: 616W-3-LCD-NIST	

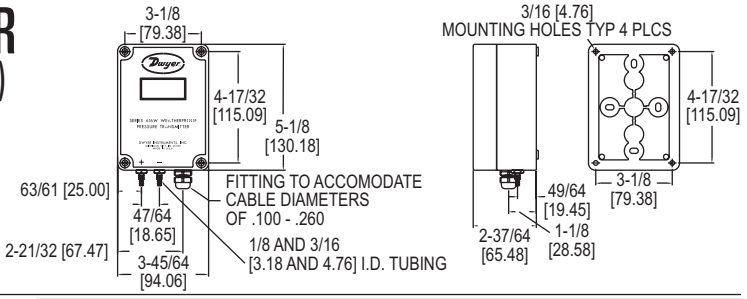
Process Tubing Options: See page 455 (Gage Tubing Accessories)

SERIES 616WL

DIFFERENTIAL PRESSURE TRANSMITTER

Low Ranges Down to 0.25 in w.c. (60 Pa), NEMA 4X Housing (IP66)





The **Series 616WL Differential Pressure Transmitter** senses very low pressures of air and non-combustible, compatible gases and sends a standard 4-20 mA output signal. All models, including those featuring the 3 digit LCD digital read-out, are factory calibrated to specific ranges as listed in the chart below. Positive, negative and differential pressures can be measured within a full span accuracy of ±0.50%. This weatherproof unit is enclosed in a polycarbonate case, designed to meet (IP66/NEMA 4X). Internal digital push-button zero and span allow for quick and simple field calibration.

FEATURES/BENEFITS

- NEMA 4X rated enclosure provides protection in harsh environments permitting outdoor monitoring or in areas where dust and particulate matter exists
- Easy to read LCD display provides immediate local alerts allowing corrective action to be taken quicker to eliminate the problem from becoming widespread
- Zero and span controls provides easy calibration checks and shorter installation time to get device running and monitoring
- High precision accuracy at low pressure ranges provides exceptional accuracy for insuring tight-control and minimizing costly out of specification conditions

APPLICATIONS

- Low pressure applications
- Dust collection
- Outdoor HVAC
- Roof-top equipment

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: ±0.50% FS, display accuracy ±0.5%.
Stability: ±1% FS/yr.
Temperature Limits: 0 to 140°F (-17.8 to 60°C).
Compensated Temperature Limits: 20 to 120°F (-6.67 to 48.9°C).
Pressure Limits: See chart.
Thermal Effect: ±0.02% FS/°F (0.036% FS/°C).
Power Requirements: 12-30 VDC (2-wire).
Output Signal: 4-20 mA.
Zero and Span Adjustments: Digital, push-button adj.
Loop Resistance: DC; 0 to 900 Ω max.
Current Consumption: DC; 38 mA max.
Electrical Connections: Screw-type terminal block.
Process Connections: Barbed, dual size to fit 1/8″ and 3/16″ (3.12 and 4.76 mm) ID rubber or vinyl tubing.
Enclosure Rating: NEMA 4X (IP66).
Mounting Orientation: Vertical, consult factory for other position orientations.
Weight: Without LCD 17 oz (482 g); with LCD 18 oz (510 g).
Agency Approvals: CE.

MODEL CHART

Model	Range	Max. Pressure
616WL-2-LCD	0 to 0.25 in w.c.	2 psig
616WL-4-LCD	0 to 1 in w.c.	4 psig
616WL-12-LCD	0 to ±0.25 in w.c.	2 psig
616WL-14-LCD	0 to ±1 in w.c.	4 psig
616WL-22-LCD	0 to 60 Pa	2 psig
616WL-32-LCD	0 to ±60 Pa	2 psig
616WL-25-LCD	0 to 250 Pa	4 psig
616WL-35-LCD	0 to ±250 Pa	4 psig

OPTIONS

To order add suffix:	Description
-NIST	NIST traceable calibration certificate
Example: 616WL-4-LCD-NIST	

Process Tubing Options: See page 455 (Gage Tubing Accessories)

Dwyer

SERIES DM-2000

DIFFERENTIAL PRESSURE TRANSMITTERS

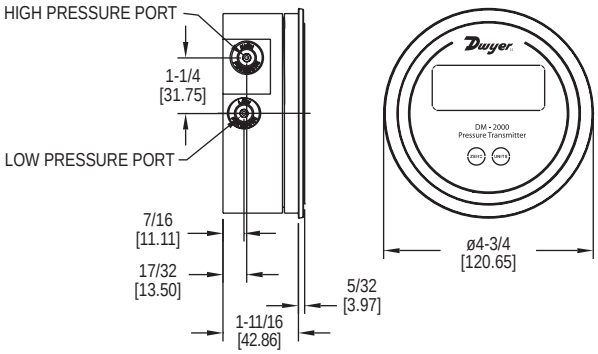
Same Size as Standard Magnehelic® Differential Pressure Gage



DM-2000-LCD



DM-2100-LCD



The Dwyer **Series DM-2000 Differential Pressure Transmitters** sense the pressure of air and compatible gases and sends a standard 4-20 mA output signal. The DM-2000 housing is specifically designed to mount in the same diameter cutout as a standard Magnehelic® gage. A wide range of models are available factory calibrated to specific ranges.

Pressure connections are inherent to the glass filled plastic molded housing making installation quick and easy. Digital push-button zero and span simplify calibration over typical turn-potentiometers. An optional 3.5 digit LCD shows process and engineering units. A single push-button allows field selection of 4 to 6 engineering units depending on range.

FEATURES/BENEFITS

- Zero and span controls provide easy calibration checks and shorter installation time to get device running and monitoring
- Quick response to pressure changes means no delay in signaling and alerting to critical situations
- Easy to read LCD display provides immediate local alerts allowing corrective action to be taken quicker to eliminate the problem from becoming widespread
- Same size as Magnehelic® simplifies field upgrade to digital pressure gage by reducing install steps
- Tamper proof button configuration to prevent accidental changes to the settings

APPLICATIONS

- Differential pressure across filters
- Fan control
- Static pressures in ducts or buildings

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: ±1% FS at 70°F.
Stability: ±1% FS/yr.
Temperature Limits: 20 to 120°F (-6.67 to 48.9°C).
Pressure Limits: 10 psig (0.69 bar).
Thermal Effect: ±0.055% FS/°F (0.099% FS/°C).
Power Requirements: 10-35 VDC (2 wire).
Output Signal: 4-20 mA.
Zero and Span Adjustments: Digital push-button zero and span.
Loop Resistance: DC: 0 to 1250 Ω maximum.
Current Consumption: DC: 38 mA max.
Electrical Connections: Screw-type terminal block.
Display: 3.5 digit LCD, 0.7″ H.
Process Connections: 1/8″ ID tubing.
Mounting Orientation: Vertical.
Weight: 4.8 oz (136 g).

MODEL CHART

Model	Range (in w.c.)	Pa	mm w.c.	mBar	kPa	psi
DM-2001-LCD	0 to .100	24.9	2.54	.249	-	-
DM-2002-LCD	0 to .250	62.2	6.35	.622	-	-
DM-2003-LCD	0 to .500	124.3	12.70	1.243	.124	-
DM-2004-LCD	0 to 1.000	249	25.4	2.49	.249	-
DM-2005-LCD	0 to 2.00	497	50.8	4.97	.497	-
DM-2006-LCD	0 to 3.00	746	76.2	7.46	.746	.108
DM-2007-LCD	0 to 5.00	1243	127-0	12.43	1.243	.180
DM-2012-LCD	0 to ±.250	0 to ±62.2	0 to ±6.35	0 to ±.622	-	-
DM-2013-LCD	0 to ±.500	0 to ±124.3	0 to ±12.70	0 to ±1.243	-	-
DM-2019-LCD	0 to ±.200	49.8	5.08	.498	-	-

Note: For white overlay change -20 to -21. **Example:** DM-2102-LCD

ACCESSORIES

Model	Description
A-299	Surface mounting bracket
A-300	Flat flush mounting bracket
A-302F-A	303 SS static pressure tip with mounting flange; for 3/16″ ID rubber or plastic tubing; 4″ insertion depth; includes mounting screws
A-320-A	Instrument enclosure
A-489	4″ straight static pressure tip with flange
SCD-PS	100-240 VAC/VDC to 24 VDC power supply

OPTIONS

To order add suffix:	Description
-NIST	NIST traceable calibration certificate
Example: DM-2002-LCD-NIST	
-FC	Factory calibration certificate
Example: DM-2002-LCD-FC	

Process Tubing Options: See page 455 (Gage Tubing Accessories)

Dwyer

SERIES 605

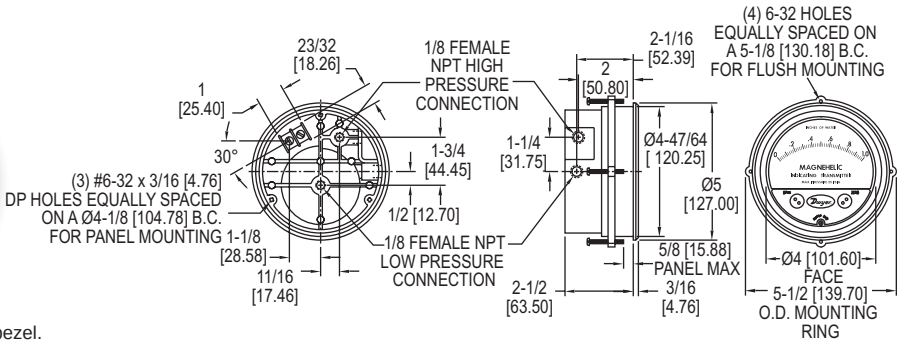
MAGNEHELIC® DIFFERENTIAL PRESSURE INDICATING TRANSMITTER

Same Size as Standard Magnehelic® Differential Pressure Gage





Note: Shown with optional -SS bezel.
Backward compatible+ with Magnehelic® gage.



The **Series 605 Magnehelic® Differential Pressure Indicating Transmitter** provides for both visual monitoring and electronic control of very low differential pressure. The Series 605 is ideal for control applications in building HVAC systems where local indication is desired during routine maintenance checks or necessary when trouble shooting the system. The easily read dial gage is complimented by the two-wire, 4-20 mA control signal utilizing the time-proven Dwyer® Magnehelic® gage mechanical design and Series 600 transmitter technology. The two-wire design with terminal strip on the rear simplifies connection in any 4-20 mA control loop powered by a 10-35 VDC supply.

FEATURES/BENEFITS

- Easy to read gage permits viewing from far away
- Patented design provides quick response to pressure changes means no delay in signaling and alerting to critical situations
- Durable and rugged housing and high-quality components combined provides long-service life and minimized down-time
- Optional stainless steel bezel is the same installation diameter as Magnehelic® gage and simplifies field upgrade to 605 indicating transmitter

APPLICATIONS

- Monitor pressures in ducts, rooms, or total building pressures
- Filter monitoring
- Local indication of clean room pressures with process signal sent to control room

SPECIFICATIONS

GAGE SPECIFICATIONS
Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: See chart.
Stability: ±1% FS/yr.
Pressure Limits: See chart.
Temperature Limits: 20 to 120°F (-6.67 to 48.9°C).
Process Connections: 1/8″ female NPT.
Size: 4″ (101.6 mm) dial face, 5″ (127 mm) OD x 2-11/16″ (68.3 mm); -SS bezel: 4-3/4″ (120.7 mm) OD x 2-21/32 (67.5 mm).
Weight: 1 lb 12.6 oz (811 g).
Agency Approvals: CE.

TRANSMITTER SPECIFICATIONS
Accuracy: See chart (includes linearity, hysteresis, repeatability).
Temperature Limits: 20 to 120°F (-6.67 to 48.9°C).
Compensated Temperature Range: 32 to 120°F (0 to 48.9°C).
Thermal Effect: ±0.025% FS/°F (0.045% FS/°C).
Power Requirements: 10-35 VDC (2-wire).
Output Signal: 4-20 mA.
Zero and Span Adjustments: Protected potentiometers.
Loop Resistance: DC: 0 to 1250 Ω max.
Current Consumption: DC: 38 mA max.
Electrical Connections: Screw terminal block.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.

MODEL CHART

Model	Range in w.c.	Maximum Pressure	Electrical Accuracy ±%	Mechanical Accuracy ±%
605-00N	0.05-0-0.2	25 psi (1.7 bar)	4	4
605-11	0 to ±.25	25 psi (1.7 bar)	2	3
605-0	0 to .50	25 psi (1.7 bar)	2	3
605-1	0 to 1.0	25 psi (1.7 bar)	2	2
605-2	0 to 2.0	2 psi (13.79 kPa)	0.5	2
605-3	0 to 3.0	2 psi (13.79 kPa)	0.5	2
605-6	0 to 6.0	2 psi (13.79 kPa)	0.5	2
605-10	0 to 10	2 psi (13.79 kPa)	0.5	2
605-20	0 to 20.0	11 psi (75.8 kPa)	0.5	2
605-30	0 to 30	11 psi (75.8 kPa)	0.5	2
605-50	0 to 50	11 psi (75.8 kPa)	0.5	2
Model	**Range in Pa**	**Maximum Pressure**	**Electrical Accuracy ±%**	**Mechanical Accuracy ±%**
605-12	0 to ±60	25 psi (1.7 bar)	4	4
605-13	0 to ±100	25 psi (1.7 bar)	2	2
605-60PA	0 to 60	25 psi (1.7 bar)	2	4
605-125PA	0 to 125	25 psi (1.7 bar)	2	3
605-250PA	0 to 250	25 psi (1.7 bar)	2	2
605-500PA	0 to 500	2 psi (13.79 kPa)	0.5	2

OPTIONS

To order add suffix:	Description
-SS	304 brushed stainless steel bezel. +Backward compatible with standard Magnehelic® gage installation diameter
Example: 605-3-SS	
-NIST	NIST traceable calibration certificate
Example: 605-3-NIST	

ACCESSORIES

Model	Description
A-298	Flat aluminum bracket for flush mounting
A-370	Mounting bracket; flush mount Series 605 transmitter in bracket; bracket is then surface mounted; steel with gray hammertone epoxy finish

Static Fitting Options: See page 454 (Static Pressure Tips)
Process Tubing Options: See page 455 (Gage Tubing Accessories)

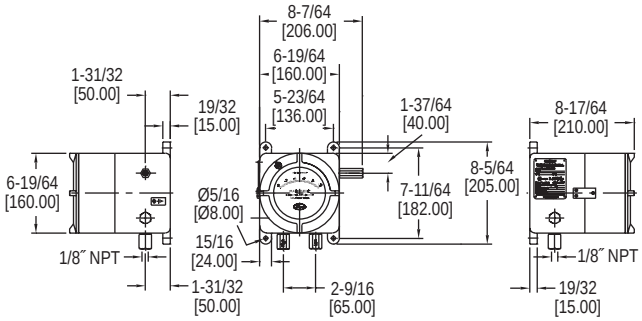
Dwyer

SERIES AT2605

ATEX/IECEX APPROVED 605 DIFFERENTIAL PRESSURE INDICATING TRANSMITTER

Series 605 in Flame-Proof ATEX/IECEx Enclosure





The **Series AT2605 ATEX/IECEx Approved 605 Differential Pressure Indicating Transmitter** provides for both visual monitoring and electronic control of very low differential pressure in hazardous locations. The easily read dial gage is complimented by the two-wire, 4-20 mA control signal utilizing the time-proven Dwyer® Magnehelic® gage mechanical design and Series 600 transmitter technology. The two-wire design simplifies any 4-20 mA control loop powered by a 10-35 VDC supply. Flame-proof enclosures are available in aluminum and can include a glass window for viewing process pressure on gage face.

FEATURES/BENEFITS

- ATEX/IECEx housing provides all the capabilities and value of the Magnehelic® 605 in a flame & explosion proof enclosure
- Quick response to pressure changes means no delay in assessing critical situations
- Durable and rugged housing and high-quality components combined provides long-service life and minimized down-time
- High impact strength and high temperature rated for applications where hazardous environments exist

APPLICATIONS

- Monitor pressures in ducts, rooms, or total building pressures
- Filter monitoring
- Local indication of clean room pressures with process signal sent to control room
- Hazardous area pressure measurement and transmitter

SPECIFICATIONS

GAGE SPECIFICATIONS
Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: See page reference ❶ below.
Pressure Limits: See page reference ❶ below.
Temperature Limits: 20 to 120°F (-6.67 to 48.9°C) (**Note:** Product temperature limits differ from case).
Size: 4″ (101.6 mm) dial face.

TRANSMITTER SPECIFICATIONS
Accuracy: See page reference ❶ below. Includes linearity, hysteresis, repeatability.
Compensated Temperature Range: 32 to 120°F (0 to 48.9°C).
Thermal Effect: ±0.025% FS/°F (0.045% FS/°C).
Stability: ±1% FS/year.
Power Requirements: 10-35 VDC (2-wire).
Output Signal: 4-20 mA.
Zero and Span Adjustments: Protected potentiometers on 605 face. Can access those by opening case. Allowed only in safe zone.
Loop Resistance: DC: 0 to 1250 Ω max.
Current Consumption: DC: 38 mA max.
Electrical Connections: Screw terminal block.
Mounting Orientation: Diaphragm in vertical position.
Enclosure Rating: IP66. IP65 with option OPV, overpressure relief valve.
Housing Material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Process Connections: 1/8″ NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Electrical Connections: Two 1/2″ NPT female. Cable gland not included.
Weight: 12.6 lb (5.7 kg).
ATEX Certificate: BVI 14ATEX0072.
Agency Approvals: ATEX Compliant CE 1370 Ex II 2G Ex d IIC T6 Gb / II 2D Ex tb IIIC T85°C Db, -60°C≤Tamb≤+60°C IECEx Compliant: Ex d IIC T6 Gb / Ex tb IIIC T85°C Db.

MODEL CHART

Example	AT2605	-00N	-X	-A	B	1	X	T2	AT2605-00N-X-AB1XT2
Series	AT2605								ATEX/IECEx approved 605 differential pressure indicating transmitter
Range		00N 11 0 1 2 3 6 10 20 30 50 60Pa 125Pa 250Pa 500Pa							.05 to 0 to .20 in w.c. .25 to 0 to .25 in w.c. 0 to .50 in w.c. 0 to 1.0 in w.c. 0 to 2.0 in w.c. 0 to 3.0 in w.c. 0 to 6.0 in w.c. 0 to 10.0 in w.c. 0 to 20.0 in w.c. 0 to 30 in w.c. 0 to 50 in w.c. 0 to 60 Pa 0 to 125 Pa 0 to 250 Pa 0 to 500 Pa
Construction			X						Standard construction
Housing				A					Aluminum
Cover					B O				Blind Glass top cover
Process Connection						1 2			1/8″ NPT female brass ports 1/8″ NPT female SS ports
Overpressure Plug							X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as ports
Tag								T2	SS information label

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

❶605 Ordering Page: See page 64 (Series 605)

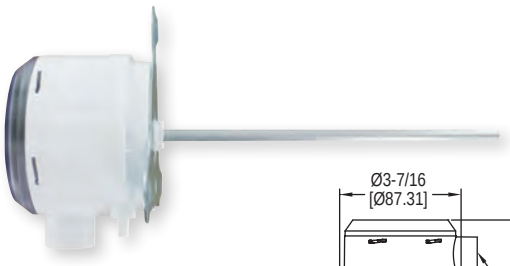
Dwyer

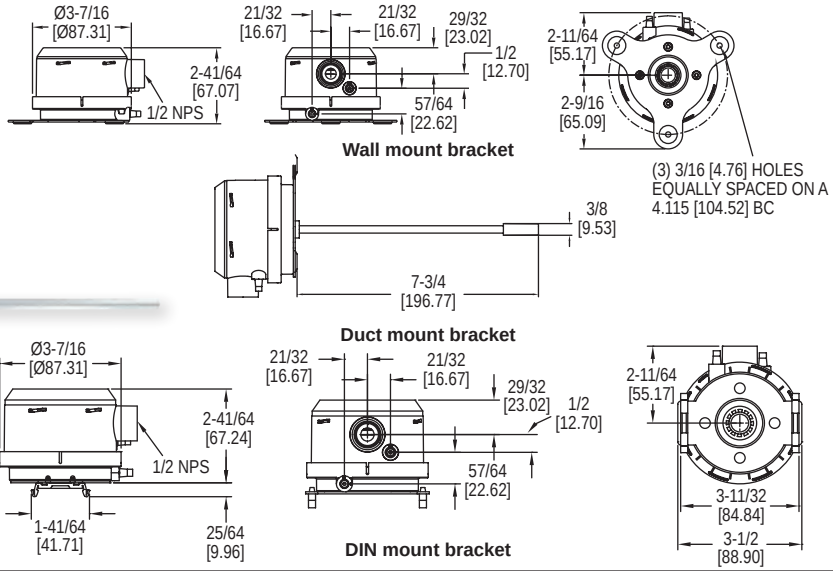
SERIES MS2

MAGNESENSE® II DIFFERENTIAL PRESSURE TRANSMITTER

Monitors Pressure, Air Velocity and Air Flow, BACnet or Modbus® Communications









The **Series MS2 Magnesense® II Differential Pressure Transmitter** combines the proven stable piezo technology and the versatility of our original Series MS with additional features to reduce installation time and simplify ordering. Like the original Series MS, the second generation transmitter can be used as a linear pressure output or a linear velocity output with the square root extraction done in the transmitter. Additional parameters have been included to expand the square root capability to include flow measurements.

FEATURES/BENEFITS

- Field selectable ranges and output signal reduce inventory and the chances of ordering an incorrect part
- BACnet or Modbus® serial communications reduce wiring cost by daisy-chaining the transmitters
- Our integral field-upgradeable display or plug-in remote display tool save upfront material cost and allow for local viewing of measurements

APPLICATIONS

- Filter monitoring in air handler units
- Building pressure in pharmaceutical-semi-conductor clean rooms
- Duct static pressure in commercial buildings
- Air velocity/flow in VAV systems

SPECIFICATIONS

Supported Baud Rates: 9600, 19200, 38400, 57600, 76800, 115200.
Data Size: 8.
Parity: None.
Stop Bits: 1.
Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Typical Accuracy: ±1% FS for 0.15 in w.c. (40 Pa), 0.25 in w.c. (50 Pa), 0.5 in w.c. (125 Pa), 2 in w.c. (500 Pa), 3 in w.c. (750 Pa), 5 in w.c. (1250 Pa), 10 in w.c. (2 kPa), 15 in w.c. (3 kPa), 25 in w.c. (5 kPa), 28 in w.c. (6.975 kPa); ±2% FS for 0.1 in w.c. (25 Pa), 1 in w.c. (250 Pa), and all bi-directional ranges.
Stability: ±1% / year FSO.
Temperature Limits: 0 to 150°F (-18 to 66°C).
Pressure Limits: 1 psi max., operation; 10 psi burst.
Power Requirements: 10-35 VDC (2-wire), 17-36 VDC or isolated 21.6-33 VAC (3-wire).
Output Signals: 4-20 mA (2-wire), 0-5 VDC, 0-10 VDC (3-wire).
Response Time: Adjustable: 0.5 to 15 sec. time constant. Provides a 95% response time of 1.5 to 45 seconds.
Zero & Span Adjustments: Digital push-buttons.
Loop Resistance: Current output: 0 to 1250 Ω max; Voltage output: Min. load resistance 1 kΩ.
Current Consumption: 40 mA max.
Display (Optional): 5 digit LCD.
Electrical Connections: 3-wire removable European style terminal block for 16 to 22 AWG.
Electrical Entry: 1/2″ NPS thread.
Process Connection: 3/16″ ID tubing (5 mm ID); Max. OD 9 mm.
Enclosure Rating: IP66.
Mounting Orientation: Not position sensitive.
Weight: 8.0 oz (230 g).
Agency Approvals: BTL, CE.

MODEL CHART

Model	in w.c.	Pa	mm w.c.	kPa
MS2-W101	0.10, 0.15, 0.25, 0.50	25, 40, 50, 125	2.5, 4, 6, 10	0.025, 0.04, 0.05, 0.125
MS2-W111	±0.10, ±0.15, ±0.25, ±0.50	±25, ±40, ±50, ±125	±2.5, ±4, ±6, ±10	±0.025, ±0.04, ±0.05, ±0.125
MS2-W102	1, 2, 3, 5	250, 500, 750, 1250	25, 50, 75, 125	0.25, 0.5, 0.75, 1.25
MS2-W112	±1, ±2, ±3, ±5	±250, ±500, ±750, ±1250	25, 50, 75, 125	0.25, 0.5, 0.75, 1.25
MS2-W103	10, 15, 25, 28	2500, 3500, 5000, 6975	250, 350, 500, 697.5	2.5, 3.5, 5.0, 6.975
	±10, ±15, ±25, ±28	±2500, ±3500, ±5000, ±6975	±250, ±350, ±500, ±697.5	±2.5, ±3.5, ±5.0, ±6.975

Note: For duct mount static probe change W to D. **Example:** MS2-D101
For DIN rail mounting change W to N. **Example:** MS2-N101

OPTIONS

To order add suffix:	Description
-LCD	Units with display
Example: MS2-W101-LCD	
-BC	BACnet Communications
Example: MS2-W101-BC	
-MC	Modbus® Communications
Example: MS2-W101-MC	
-NIST	NIST traceable calibration certificate
Example: MS2-W101-NIST	
-FC	Factory calibration certificate
Example: MS2-W101-FC	

ACCESSORIES

Model	Description
A-151	Cable gland for 5 to 10 mm diameter cable
A-MS2-LCD	Field upgradeable display
A-435-A	Remote display tool
A-480	Plastic static pressure tip
A-481	Installer kit; includes 2 plastic static pressure tips and 7 ft (2.1 m) of PVC tubing
A-489	4″ 303 SS straight static pressure tip with flange
A-302F-A	4″ 303 SS static pressure tip with mounting flange; for 3/16″ ID rubber or plastic tubing
SCD-PS	100 to 240 VAC/VDC to 24 VDC power supply

Modbus® is a registered trademark of Schneider Automation, Inc.

Process Tubing Options: See page 455 (Gage Tubing Accessories)

Dwyer

SERIES MS

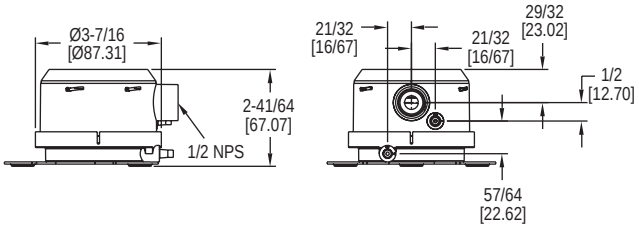
MAGNESENSE® DIFFERENTIAL PRESSURE TRANSMITTER

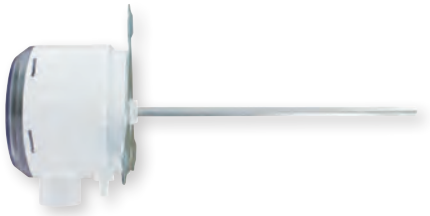
Monitors Pressure and Air Velocity

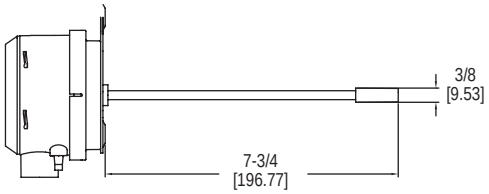
5 YEAR LIMITED WARRANTY



Standard MS with optional LCD







MS with optional LCD and static probe

The **Series MS Magnesense® Differential Pressure Transmitter** is an extremely versatile transmitter for monitoring pressure and air velocity. This compact package is loaded with features such as:

FEATURES/BENEFITS
- Field selectable English or Metric ranges
- Field upgradeable LCD display
- Adjustable damping of output signal (with optional display)
- Ability to select a square root output for use with pitot tubes and other similar flow sensors

APPLICATIONS
- Building pressure monitoring
- Duct pressure monitoring
- Fan velocity measurement
- Zone differential pressure monitoring
- Filter condition monitoring

Along with these features, the patented magnetic sensing technology provides exceptional long term performance and enables the Magnesense® Differential Pressure Transmitter to be the single solution for your pressure and flow applications.

SPECIFICATIONS	
Service: Air and non-combustible, compatible gases. **Wetted Materials:** Consult factory. **Accuracy:** ±1% for 0.25″ (50 Pa), 0.5″ (100 Pa), 2″ (500 Pa), 5″ (1250 Pa), 10″ (2 kPa), 15″ (3 kPa), 25″ (5 kPa); ±2% for 0.1″ (25 Pa), 1″ (250 Pa) and all bi-directional ranges. **Stability:** ±1% FS/year. **Temperature Limits:** 0 to 150°F (-18 to 66°C). **Pressure Limits:** 1 psi maximum, operation; 10 psi, burst. **Power Requirements:** 10-35 VDC (2-wire); 17-36 VDC or isolated 21.6-33 VAC (3-wire). **Output Signals:** 4-20 mA (2-wire); 0-5 V, 0-10 V (3-wire). **Response Time:** Adjustable 0.5 to 15 s time constant. Provides a 95% response time of 1.5 to 45 seconds.	**Zero & Span Adjustments:** Digital push-button. **Loop Resistance:** Current output: 0-1250 Ω max; Voltage output: min. load resistance 1 kΩ. **Current Consumption:** 40 mA max. **Display (optional):** 4 digit LCD. **Electrical Connections:** 4-20 mA, 2-Wire: European style terminal block for 16 to 26 AWG; 0-10 V, 3-Wire: European style terminal block for 16 to 22 AWG. **Electrical Entry:** 1/2″ NPS thread; Accessory (A-151): Cable gland for 5 to 10 mm diameter cable. **Process Connections:** 3/16″ (5 mm) ID tubing. Maximum OD 9 mm. **Enclosure Rating:** NEMA 4X (IP66). **Mounting Orientation:** Diaphragm in vertical position. **Weight:** 8.0 oz (230 g). **Agency Approvals:** CE.

MODEL CHART		
Model	**Output**	**Selectable Ranges**
MS-121*	4-20 mA	0.1 in, 0.25 in, 0.5 in w.c. (25, 50, 100 Pa)
MS-321*	0-10 V	0.1 in, 0.25 in, 0.5 in w.c. (25, 50, 100 Pa)
MS-721*	0-5 V	0.1 in, 0.25 in, 0.5 in w.c. (25, 50, 100 Pa)
MS-111*	4-20 mA	1 in, 2 in, 5 in w.c. (250, 500, 1250 Pa)
MS-311*	0-10 V	1 in, 2 in, 5 in w.c. (250, 500, 1250 Pa)
MS-711*	0-5 V	1 in, 2 in, 5 in w.c. (250, 500, 1250 Pa)
MS-131	4-20 mA	10 in w.c. (2 kPa)
MS-141	4-20 mA	15 in w.c. (3 kPa)
MS-151	4-20 mA	25 in w.c. (5 kPa)
MS-331	0-10 V	10 in w.c. (2 kPa)
MS-341	0-10 V	15 in w.c. (3 kPa)
MS-351	0-10 V	25 in w.c. (5 kPa)
MS-021	4-20 mA	±0.1 in, 0.25 in, 0.5 in w.c. (±25, 50, 100 Pa)
MS-221	0-10 V	±0.1 in, 0.25 in, 0.5 in w.c. (±25, 50, 100 Pa)
MS-621	0-5 V	±0.1 in, 0.25 in, 0.5 in w.c. (±25, 50, 100 Pa)
***Note:** For duct mount static pressure probe, change last digit from 1 to 2. **Example:** MS-122		

ACCESSORIES	
Model	**Description**
A-435	Field upgradeable LCD
A-480	Plastic static pressure tip
A-481	Installer kit. Includes 2 plastic static pressure tips and 7 ft (2.1 m) of PVC tubing
A-489	4″ straight static pressure tip with flange
A-302F-A	303 SS Static Pressure Tip with mounting flange. For 3/16″ ID rubber or plastic tubing. 4″ insertion depth. Includes mounting screws
SCD-PS	100-240 VAC/VDC to 24 VDC Power supply

OPTIONS	
To order add suffix:	**Description**
-LCD	Units with display
Example: MS-121-LCD	
-NIST	NIST traceable calibration certificate
Example: MS-021-NIST	
-FC	Factory calibration certificate
Example: MS-021-FC	

Process Tubing Options: See page 455 (Gage Tubing Accessories)

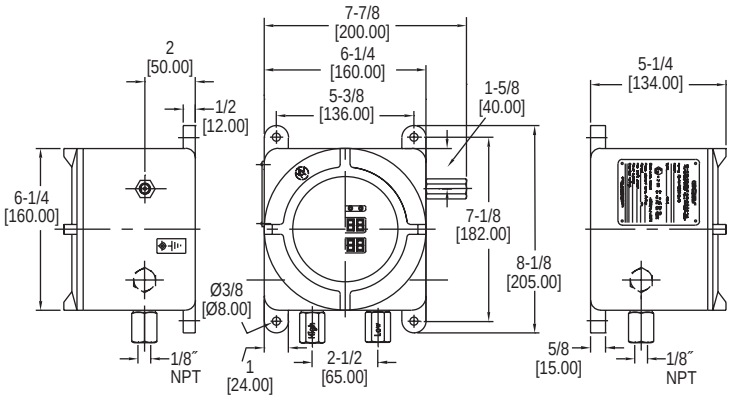
Dwyer

SERIES AT2MS

ATEX/IECEX APPROVED MAGNESENSE® DIFFERENTIAL PRESSURE TRANSMITTER

Series MS in Flame-Proof ATEX/IECEx Enclosure





The **Series AT2MS ATEX/IECEx Approved Magnesense® Differential Pressure Transmitter** is an extremely versatile transmitter for monitoring pressure and air velocity in hazardous areas. This transmitter is loaded with features such as: field selectable English or metric ranges, field upgradeable LCD display, adjustable dampening of output signal and the ability to select a square root output for use with pitot tubes and other similar flow sensors. Along with these features, the magnetic sensing technology provides exceptional long term performance and enables the Magnesense® transmitter to be the solution for a myriad of pressure and flow applications. Flame-proof enclosures are available in aluminum and can include a glass window for viewing process on the LCD.

FEATURES/BENEFITS

- ATEX/IECEx housing provides all the capabilities and value of the MS2 in a flame & explosion proof enclosure
- Durable and rugged housing and high-quality components combined provides long-service life and minimized down-time
- High impact strength and high temperature rated for applications where hazardous environments exist

APPLICATIONS

- Monitor pressures in ducts, rooms, or total building pressures
- Filter monitoring
- Local indication of clean room pressures with process signal sent to control room
- Hazardous area pressure measurement and transmitter

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: MS-X21: 0.5 in w.c. & 0.25 in w.c.: ±1%; 0.1 in w.c.: ±2%; 100 Pa & 50 Pa: ±1%; 25 Pa: ±2%. MS-X11: 5 in w.c. & 2 in w.c.: ±1%; 1 in w.c.: ±2%; 1250 Pa & 500 Pa: ±1%; 250 Pa: ±2% (@ standard conditions).
Stability: ±1% FS/year.
Temperature Limits: 0 to 150°F (-18 to 66°C) (**Note:** Product temperature limits differ from case).
Pressure Limits: 1 psi max., operation; 10 psi, burst.
Power Requirements: 10-35 VDC (2-wire); 17-36 VDC or isolated 21.6-33 VAC (3-wire).
Output Signals: 4-20 mA (2-wire); 0-5 V, 0-10 V (3-wire).
Response Time: Field adjustable 0.5 to 15 s time constant. Provides a 95% response time of 1.5 to 45 seconds.
Zero & Span Adjustments: Digital push-button. In safe zone only.
Loop Resistance: Current output: 0 to 1250 Ω max.; Voltage output: min. load resistance 1 k Ω.
Current Consumption: 40 mA max.
Display: 4 digit LCD.
Electrical Wiring: 4-20 mA, 2-wire: European style terminal block for 16 to 26 AWG. 0 to 10 V, 3-wire: European style terminal block 16 to 22 AWG.
Mounting Orientation: Diaphragm in vertical position.
Enclosure Rating: 4X IP66, IP65 with option OPV overpressure relief valve.
Housing Material: Aluminum.
Finishing: Texture epoxy coat RAL7038.
Process Connections: 1/8″ NPT female brass (SS optional). In presence of acetylene it is necessary to use SS.
Electrical Connections: Two 1/2″ NPT female. Cable gland not included.
Weight: 11 lb (5 kg).
ATEX Certificate: BVI 14ATEX0072.
Agency Approvals: ATEX Compliant CE 1370 Ex II 2G Ex d IIC T6 Gb / II 2D Ex tb IIIC T85°C Db, -60°C≤Tamb≤+60°C IECEx Compliant: Ex d IIC T6 Gb / Ex tb IIIC T85°C Db.

MODEL CHART

Example	AT2MS	-0	-1	1	-LCD	-A	O	1	X	T2	AT2MS-0-11-LCD-AO1XT2
Series	AT2MS										ATEX/IECEx approved Magnesense® differential pressure transmitter
Output		0 1 2 3 6 7 8 9									Bidirectional, 4-20 mA Positive range, 4-20 mA Bidirectional, 0-10 VDC Positive range, 0-10 VDC Bidirectional, 0-5 VDC Positive range, 0-5 VDC Bidirectional, 0-5 VDC, 12 volt in Positive range, 0-5 VDC, 12 volt in
Range			1 2 3 4 5								1, 2, 5 in w.c. (200, 500, 1000 Pa) .1, .25, .5 in w.c. (25, 50, 100 Pa) 10 in w.c. (2 kPa) 15 in w.c. (3 kPa) 25 in w.c. (5 kPa)
Mounting				1							Wall
Display					LCD						With LCD
Housing						A					Aluminum
Cover							B O				Blind Glass top cover
Process Connection								1 2			1/8″ NPT female brass ports 1/8″ NPT female SS ports
Overpressure Plug									X OPV		Standard without overpressure relief valve Overpressure relief valve Material same as ports
Tag										T2	SS information label

*Add on applies to range -2 only.

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

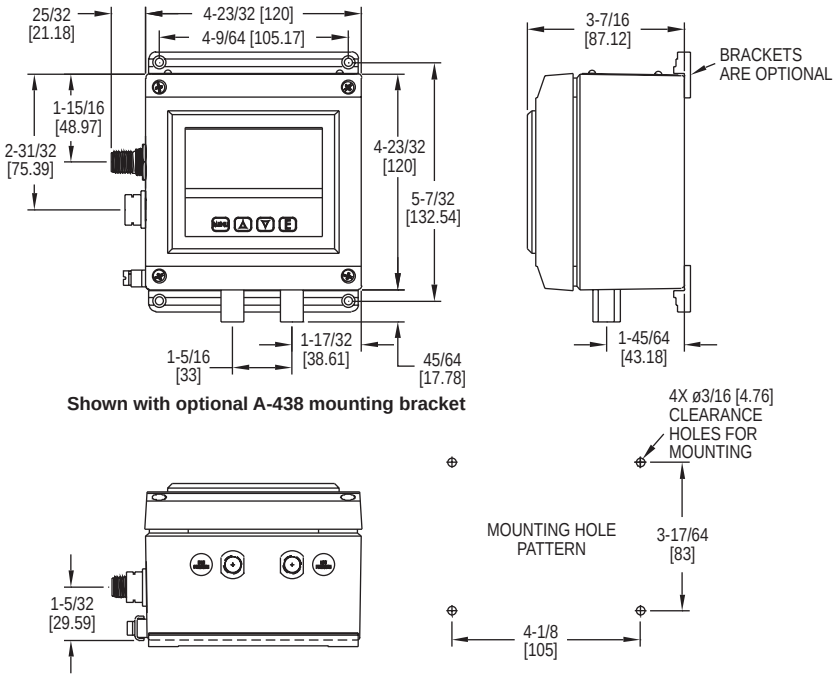
Dwyer

SERIES ISDP

INTRINSICALLY SAFE DIFFERENTIAL PRESSURE TRANSMITTER

For Hazardous Zone Pressure and Flow Applications





The **Series ISDP Intrinsically Safe Differential Pressure Transmitter** provides a 4-20 mA process output, a robust NEMA 4X enclosure, plus a large LCD display that can be programmed to read in pressure, velocity or flow. The ISDP offers simplified programming via a Menu key that enables the user to select: security level; English or Metric engineering units; pressure, velocity or flow operation, K-factor for use with various Pitot tubes and flow sensors, circular or rectangular duct size for volumetric flow operation plus many more. The Series ISDP Differential Pressure Transmitter is powered on its two wire loop with 10-35 VDC via its integral M-12 four pin male connector. The ISDP provides a 0.5% full-scale accuracy on ranges from 0.25 in w.c. to 100 in w.c. as well as bi-directional models up to 10 in w.c. These features make the Series ISDP Differential Pressure Transmitter the ideal instrument for monitoring pressures or air flows in hazardous zones having a Class I Div. I Groups A, B, C, D; Class II Div. I Groups E, F, G; Class III Div. I ratings.

FEATURES/BENEFITS

- NEMA 4X rated enclosure provides protection in harsh environments permitting outdoor monitoring or in areas where dust and particulate matter exists
- Easy to read LCD display provides immediate local alerts allowing corrective action to be taken quicker to eliminate the problem from becoming widespread
- Intrinsically safe for use in the specified hazardous locations meets specifications where pressure transmission and safety cannot be compromised
- Password protected set up menu helps to insure no errors by untrained personnel when accessing the powerful measurement capabilities of this device

APPLICATIONS

- Hazardous zone pressure control applications
- Hazardous flow and control applications

MODEL CHART			
Model	**Range (in w.c.)**	**Model**	**Range (in w.c.)**
ISDP-002	0 to 0.25	**ISDP-012**	0 to ±0.25
ISDP-004	0 to 1	**ISDP-014**	0 to ±1.0
ISDP-006	0 to 5	**ISDP-015**	0 to ±2.5
ISDP-007	0 to 10	**ISDP-016**	0 to ±5.0
ISDP-008	0 to 25	**ISDP-017**	0 to ±10
ISDP-009	0 to 50		
ISDP-010	0 to 100		

OPTIONS	
To order add suffix:	**Description**
-NIST	NIST traceable calibration certificate
Example: ISDP-004-NIST	
-FC	Factory calibration certificate
Example: ISDP-004-FC	

SPECIFICATIONS

Service: Air and non-combustible gases.
Wetted Materials: Ranges 5 in w.c. and greater: glass, PVC, silicon, alumina ceramic, epoxy, RTV, gold, aluminum, stainless steel and nickel; Ranges 1 in w.c. and lower: stainless steel, silicone, gold and ceramic.
Housing Materials: Aluminum, glass.
Accuracy: ±0.5% at 77°F (25°C) including hysteresis and repeatability (after 1 hour warm-up).
Stability: < ±1% per year.
Pressure Limits: Ranges ≤ 2.5 in w.c. = 2 psi; 5 in w.c.: 5 psi; 10 in w.c.: 5 psi; 25 in w.c.: 5 psi; 50 in w.c.: 5 psi; 100 in w.c.: 9 psi.
Temperature Limits: 32 to 140°F (0 to 60°C).
Compensated Temperature Limits: 32 to 140°F (0 to 60°C).
Thermal Effects: 0.020%/°F (0.036/°C) from 77°F (25°C).
Power Requirements: 10-35 VDC.
Output Signal: 4-20 mA DC.
Zero & Span Adjustments: Accessible via menus.
Response Time: 250 ms (damping set to 1).
Display: 4 digit LCD 0.6˝ H.
Electrical Connections: M-12 4 PIN Connector.
Process Connections: 1/8˝ female NPT.
Enclosure Rating: Designed to meet NEMA 4X (IP66).
Mounting Orientation: Mount unit in vertical plane.
Weight: 2 lb 10 oz (1.19 kg).
Agency Approvals: CE: CENELEC EN 61326/55024: 2003; IEC 61000-4-2/3/4/6: 2001/2006/2004/2005; CENELEC EN 55011: 2006; 2004/108/EC EMC Directive. FM Intrinsically Safe CLI Div I GR: A, B, C, D; CLII Div I GR: E, F, G; CLIII Div I.

ACCESSORIES	
Model	**Description**
A-231	16´ (5 m) shielded cable with 4 pin female M-12 connection
A-486	4.9´ (1 m) shielded cable with 4 pin female M-12 connection
A-487	9.8´ (3 m) shielded cable with 4 pin female M-12 connection
A-488	33´ (10 m) shielded cable with 4 pin female M-12 connection
A-295	Female 4 pin M-12 to cable gland connector
MTL5541	Intrinsically safe galvanic isolator
MTL7706	Intrinsically safe zener barrier
A-438	Surface mounting brackets

Process Tubing Options: See page 455 (Gage Tubing Accessories)

Dwyer

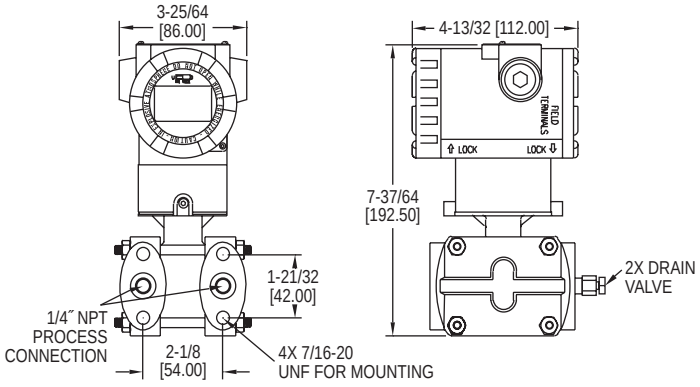
SERIES 3100 | MERCOID® BY DWYER

EXPLOSION-PROOF DIFFERENTIAL PRESSURE TRANSMITTER

HART®, Push-Button Configuration, Rangeability (100:1)



3100D



3100D

Mercoid® **Series 3100 Explosion-Proof Smart Pressure Transmitter** is a microprocessor-based high performance transmitter, which has flexible pressure calibration, push-button configuration, and programmable using HART® Communication. The Series 3100 is capable of being configured for differential pressure or level applications with the zero and span buttons. A field calibrator is not required for configuration. The transmitter software compensates for thermal effects, improving performance. EEPROM stores configuration settings and stores sensor correction coefficients in the event of shutdowns or power loss.
The Series 3100 is FM or ATEX approved for use in hazardous (classified) locations. The 100:1 rangeability allows the smart transmitter to be configured to fit any application.

FEATURES/BENEFITS

- Configurable using zero/span buttons means no calibrator required reducing time to install and running
- Range-ability and selectable engineering units, allows transmitter to fit many applications reducing the number of different transmitters to meet specifications
- High accuracy (±0.075%) provides exceptional measurement for ensuring tight-control and minimizing costly out of specification conditions
- Automatic sensor temperature compensation improves performance of device for accurate measurement under different operating environments
- Fail-mode process function stores configuration settings in the event of shutdown or power-loss provides for faster restart to getting application back on-line
- A HART® Communication programmable device provides a reliable, long-term solution for plant operators who seek the benefits of intelligent devices with digital communication

APPLICATIONS

- Flow measurement
- Level monitoring
- Filter or pump differential pressure
- Critical process monitoring

SPECIFICATIONS

Service: Compatible gases, steam, liquids or vapors.
Wetted Materials: 316L SS, fluoroelastomer.
Accuracy: ±0.075% FS (@ 20°C).
Rangeability: 100:1 turn down.
Stability: ±0.125% FSO/yr.
Temperature Limits: Process: -40 to 248°F (-40 to 120°C); Ambient: Without LCD: -40 to 185°F (-40 to 85°C); With LCD: -22 to 176°F (-30 to 80°C).
Pressure Limits: Max pressure: Range: -14.5 to 2000 psi; Burst pressure: 10000 psi.
Thermal Effect: ±0.125% span/32°C.
Power Requirements: 11.9-45 VDC.
Output Signal: 4-20 mA / HART® Communication.
Response Time: 0.12 s.
Damping Time: 0.25 to 60 s.
Loop Resistance: Operation: 0 to 1500 Ω; HART® Communication: 250 to 500 Ω.
Electrical Connection: Two 1/2" female NPT conduit, screw terminal.
Process Connection: 1/4" female NPT.
Display: Optional 5 digit LCD.
Enclosure Rating: NEMA 4X (IP66) and explosion-proof for Class I, Div I, Groups A, B, C and D.
Weight: 8.6 lb (3.9 kg).
Agency Approvals: CE, FM, ATEX option available (consult factory).

MODEL CHART

Model	Calibrated Span (Min. to Max.)		Lower Range Limit		Upper Range Limit		LCD Display
3100D-2-FM-1-1	0.6 to 30 in w.c.	0.15 to 7.5 kPa	-30 in w.c.	-7.5 kPa	30 in w.c.	7.5 kPa	No
3100D-3-FM-1-1	1.5 to 150 in w.c.	0.373 to 37.3 kPa	-150 in w.c.	-37.3 kPa	150 in w.c.	37.3 kPa	No
3100D-4-FM-1-1	7.5 to 750 in w.c.	1.865 to 186.5 kPa	-750 in w.c.	-186.5 kPa	750 in w.c.	186.5 kPa	No
3100D-5-FM-1-1	1 to 100 psi	6.9 to 690 kPa	-100 psi	-690 kPa	100 psi	690 kPa	No
3100D-6-FM-1-1	3 to 300 psi	20.68 to 2068 kPa	-300 psi	-2068 kPa	300 psi	2068 kPa	No
3100D-2-FM-1-1-LCD	0.6 to 30 in w.c.	0.15 to 7.5 kPa	-30 in w.c.	-7.5 kPa	30 in w.c.	7.5 kPa	Yes
3100D-3-FM-1-1-LCD	1.5 to 150 in w.c.	0.373 to 37.3 kPa	-150 in w.c.	-37.3 kPa	150 in w.c.	37.3 kPa	Yes
3100D-4-FM-1-1-LCD	7.5 to 750 in w.c.	1.865 to 186.5 kPa	-750 in w.c.	-186.5 kPa	750 in w.c.	186.5 kPa	Yes
3100D-5-FM-1-1-LCD	1 to 100 psi	6.9 to 690 kPa	-100 psi	-690 kPa	100 psi	690 kPa	Yes
3100D-6-FM-1-1-LCD	3 to 300 psi	20.68 to 2068 kPa	-300 psi	-2068 kPa	300 psi	2068 kPa	Yes

Note: Consult factory for custom calibration.

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EXPLOSION-PROOF DIFFERENTIAL PRESSURE TRANSMITTER

HART®, Push-Button Configuration, Rangeability (100:1)

MODEL CHART															
Example	**3100D**	**-2**	**-FM**	**-3**	**-1**	**-LEC**	**S2**	**A1**	**05**	**S**	**2**	**-05**	**-10**	**-LCD**	**3100D-2-FM-3-1-LECS2A105S2-05-10-LCD**
Series	3100D														Explosion-proof differential pressure transmitter
Range		1 2 3 4 5 6 7													0 to 6 in w.c. 0 to 30 in w.c. 0 to 150 in w.c. 0 to 750 in w.c. 0 to 100 psi 0 to 300 psi 0 to 1000 psi
Approval			FM ATEX WP												FM approved ATEX approved Weatherproof only (only available with 316 SS housing)
Process Connection				1 3											1/4″ female NPT Diaphragm seal
Electrical Connection					1										1/2″ female NPT
Diaphragm Seal Type						LEC LED LEH LEL LFC LFD LFH LFL									2 extended diaphragm seals capillary type 1 extended diaphragm seal direct mount high side 1 extended diaphragm seal capillary type high side 1 extended diaphragm seal capillary type low side 2 flush diaphragm seals capillary type 1 flush diaphragm seal direct mount high side 1 flush diaphragm seal capillary type high side 1 flush diaphragm seal capillary type low side
Mounting Flange							S2 S3								2″ (50 mm) 316L SS 3″ (80 mm) 316L SS
Mounting Flange Rating								A1 A2 D1 D2 J1 J2							ANSI class 150# ANSI class 300# DIN PN 10/16 DIN PN 25/40 JIS 10 K JIS 20 K
Extension Length									00 05 10 15						No extension [standard for flush mount] 2″ extension 4″ extension 6″ extension
Diaphragm Material										S P H T					316L SS diaphragm PTFE and 316L SS diaphragm Hastelloy C-276 diaphragm Tantallum diaphragm
Fill Fluid											2				Silicon oil (-40 to 400°F)
Capillary Length High Side												XX			0 to 20 feet
Capillary Length Low Side													XX		0 to 20 feet
Options														LCD SSH NIST CC	5 digit LCD 316 SS housing (Only available with WP approval) NIST calibration Custom calibration

CUSTOM CALIBRATION VALUES	
Primary Units	in w.c., ft in w.c., mm in w.c., in Hg, psig, g/cm^2 , kg/cm^2, MPa, Pa, kPa, bar, mbar, Torr, Atm, mm Hg
Upper Range Limit	20 mA value
Lower Range Limit	4 mA value
Output	Linear or square root
Damping Time	0 to 60 seconds
Display Mode	Unit, %, mA, rotate
Display Units	Primary unit or Engineering unit
Engineering Units*	**Volumetric Flow Units** US gal/s, US gpm, US gal/hr, US gpd, imp gal/s, imp gpm, imp gal/hr, imp gpd, l/s, l/min, l/hour, ft/s, m/s, metric gal/day, metric l/day, ft^3/s, ft^3/min, ft^3/h, ft^3/day, m^3/s, m^3/min, m^3/hr, m^3/day, normal l/hr, normal m^3/hr, standard ft^3/min, barrels/s, barrels/min, barrels/hr, barrels/day **Mass Flow Units** g/s, g/min, g/hr, kg/s, kg/min, kg/hr, kg/day, metric ton/min, metric ton/hour, metric ton/day, lb/s, lb/min, lb/hr, lb/day, short ton/min, short ton/hr, short ton/day, long ton/hr, long ton/day **Volume Units** gallons, liters, imp gallons, m^3, barrels, bushels, yd^3, ft^3, in^3, bbl liq, normal cubic meter, normal liter, standard cubic feet, hectoliters
Engr. Upper Range Limit*	Engr. upper value
Engr. Lower Range Limit*	Engr. lower value
Engr Function*	Linear or square root
*Engineering Units, Engr. Upper Range Limit, Engr. Lower Range Limit and Engr. Function values are only required if engineering unit is selected.	

ACCESSORIES	
Model	**Description**
A-630	Stainless steel angle type bracket with SS bolts
A-631	Stainless steel flat type bracket with SS bolts
BBV-1F	Flanged 3-valve block manifold
BBV-22F	Flanged 5-valve block manifold
DevCom2000	HART® Communication Protocol Software

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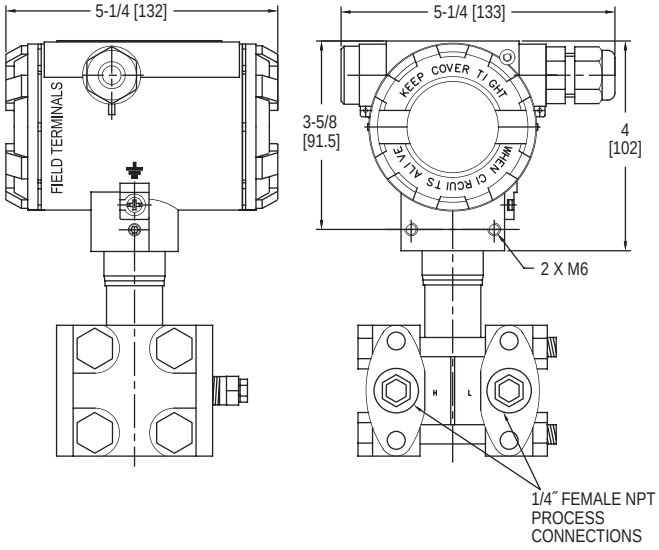
Dwyer

SERIES 3500

SMART DIFFERENTIAL PRESSURE TRANSMITTER

HART® Communication, Push Button Configuration, Rangeability (Up to 25:1)





VIDEO ONLINE

The **Series 3500 Smart Differential Pressure Transmitter** is a microprocessor-based high performance transmitter, which has flexible pressure calibration, push button configuration, and is programmable using HART® Communication. The Series 3500 is capable of being configured for differential pressure or level applications with the zero and span buttons. A field calibrator is not required for configuration. The transmitter software compensates for thermal effects, improving performance. EEPROM stores configuration settings and stores sensor correction coefficients in the event of shutdowns or power loss. The Series 3500 can be configured to be ATEX or IECEX approved for use in hazardous (classified) locations. The rangeability allows the smart transmitter to be configured to fit any application.

FEATURES/BENEFITS

- High accuracy (±0.075% FS)
- Rangeability (up to 25:1)
- Configurable using zero/span buttons (no calibrator required)
- Fail-mode process function
- Automatic ambient temperature compensation

APPLICATIONS

- Flow measurement
- Level monitoring
- Filter or pump differential pressure
- Critical process monitoring

MODEL CHART	
Model	**Range**
3500-AL-02-NF-2	-10 to 10 in w.c.
3500-AL-04-NF-2	0 to 30 in w.c.
3500-AL-08-NF-2	0 to 100 in w.c.
3500-AL-10-NF-2	-200 to 200 in w.c.
3500-AL-15-NF-2	0 to 1000 in w.c.
3500-AL-20-NF-2	0 to 15 psi
3500-AL-25-NF-2	0 to 100 psi
Note: Bar ranges are also available.	

SPECIFICATIONS

Service: Compatible gases, steam, liquids or vapors.
Wetted Materials: 316L SS and FPM; with diaphragm seal: 316L SS.
Accuracy: ±0.075% FS (@ 20°C).
Rangeability: Up to 25:1 turn down.
Stability: ≤0.075% FSO/3 years.
Temperature Limits: Ambient: -40 to 185°F (-40 to 85°C); Process with -DS: -40 to 400°F (-40 to 204°C).
Thermal Effect: < ±0.05% span/10°C.
Power Requirements: 10-55 VDC.
Output Signal: 4-20 mA.
Response Time: 16 to 480 ms (programmable).
Damping Time: 0 to 60 seconds.
Electrical Connection: Packing gland M20x1.5, two 1/2″ female NPT conduit, screw terminal.
Process Connections: 1/4″ female NPT.
Enclosure Rating: NEMA 4X IP66/IP67.
Agency Approvals: CE; -IS, -FP suffix: ATEX Compliant CE 0518 II 2G Ex ia/db IIC T6/T5 Gb Ta<80°C, T5 / II 2D Ex ia/tb IIIC T85°C/T100°C Db. Type Certificate No. KDB 17ATEX0056X. ATEX Standards: EN 60079-0:2012+A11:2013, EN 60079-1:2014, EN 60079-11:2012, EN 60079-26:2015, EN 60079-31:2014 IECEx Compliant: Ex ia/db IIC T6/T5 Gb / Ex ia/tb IIIC T85°C/T100° Db. Certificate of Conformity IECEx KDB 17.0008X. IECEx Standards: IEC 60079-0:2011, IEC 60079-1:2014-06, IEC 60079-11:2011, IEC 60079-26:2006, IEC 60079-31:2013.

HART® is a registered trademark of Hart Communication Foundation

Dwyer

SERIES 3500

SMART DIFFERENTIAL PRESSURE TRANSMITTER

HART® Communication, Push-Button Configuration, Rangeability (Up to 25:1)

MODEL CHART												
Example	**3500**	**-AL**	**-01**	**-DS**	**-1**	**-SPRB**	**A**	**0**	**-1**	**-1**	**-NIST**	**3500-AL-01-DS-1-SPRBA0-1-1-NIST**
Series	3500											Smart differential pressure smart transmitter
Housing		AL AS										Aluminum housing Stainless steel housing
Range			02 04 08 10 15 20 25 38 40 50 60									-10 to 10 in w.c. 0 to 30 in w.c. 0 to 100 in w.c. -200 to 200 in w.c. 0 to 1000 in w.c. 0 to 15 psi 0 to 100 psi 0 to 230 psi 0 to 1000 psi -2.5 to 2.5 in w.c. -1.5 to 1.5 psi
Process Connections				NF DS								1/4″ female NPT adapter Diaphragm seal selection
Electrical Connections					1 2							Packing gland M20x1.5 Thread 1/2″ female NPT
Diaphragm Seal Type						SPDH SPRB SPRH STDH STRB STRH						S-P flush diaphragm seal direct mount high side S-PK flush diaphragm seal capillary type both sides S-PK flush diaphragm seal capillary type high side S-T extended diaphragm seal direct mount high side S-TK extended diaphragm seal capillary type both sides S-TK extended diaphragm seal capillary type high side
Mounting Flange							A B C D					2″ ANSI 2″ DN50 3″ ANSI 3″ DN80
Extension Length								0 2 4 6				No extension, flush mount 2″ (50 mm) 4″ (100 mm) 6″ (150 mm)
Capillary Length High Side									#			High side capillary length, 1 to 20 ft (increments of 1)
Capillary Length Low Side										#		Low side capillary length, 1 to 20 ft (increments of 1)
Options											FP IS MT NIST GB SB ST	ATEX/IECEx flameproof ATEX/IECEx intrinsically safe Stainless steel tag plate mounted on wire NIST traceable calibration certificate 2″ galvanized steel mounting bracket 2″ SS mounting bracket Stainless steel plate riveted to the housing

ACCESSORIES	
Model	**Description**
A-630	Stainless steel angle type bracket with SS bolts
A-631	Stainless steel flat type bracket with SS bolts
BBV-0N	2-valve block manifold
DevCom2000	HART® communication protocol software

HART® is a registered trademark of Hart Communication Foundation

Dwyer

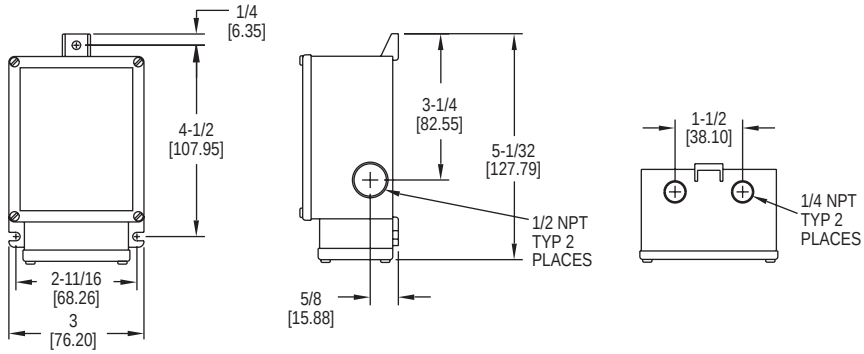
SERIES 608

FM APPROVED

INTRINSICALLY SAFE DIFFERENTIAL PRESSURE TRANSMITTER

Ranges Down to 0.1 in w.c., FM Approved, NEMA 4X





The Dwyer **Series 608 Intrinsically Safe Differential Pressure Transmitter** converts positive, negative (vacuum), or differential pressures of clean, dry air or other non-conductive, non-corrosive gases into a standard two wire, 4 to 20 mA output signal. The use of an ultra-thin silicon diaphragm enables precision measurement of differential pressures as low as 0.1 in w.c. while withstanding high static working pressures up to 100 psig (6.89 bar). The Series 608 transmitters are FM approved intrinsically safe for use in the specified hazardous locations when used with an approved intrinsic safety barrier. The rugged NEMA 4X, stainless steel housing makes this transmitter ideal for use in industrial and process plant environments.

FEATURES/BENEFITS

- High accuracy at low pressure ranges provides exceptional measurement for ensuring tight-control and minimizing costly out of specification conditions
- Intrinsically safe for use in the specified hazardous locations meets specifications where pressure transmission and safety cannot be compromised
- NEMA 4X rated enclosure provides protection in harsh environments permitting outdoor monitoring or in areas where dust and particulate matter exists

APPLICATIONS

- Lab fume hood control
- Clean room applications
- Flow measurements and control
- Filter monitoring
- Furnace draft measurement
- Process control

SPECIFICATIONS

Service: Clean/dry air and compatible, combustible gases. (see Agency Approvals for FM ratings).
Wetted Materials: Consult factory.
Accuracy: ±0.5% or ±0.25% full-scale.
Stability: ±0.5% FS/year.
Pressure Limits: 100 psig (6.89 bar); 15 psid (1.03 bar).
Temperature Limits: -20 to 185°F (-28 to 85°C).
Compensated Temperature Range: 0 to 160°F (-18 to 71°C).
Thermal Effect: 0.5% Accuracy: ±0.02% FS/°F; 0.25% Accuracy: ±0.01% FS/°F.
Power Requirements: 12 to 36 VDC (2-wire).
Output Signal: 4 to 20 mA DC.
Zero and Span Adjustments: Potentiometers for zero and span.
Response Time: 250 ms.
Loop Resistance: DC: 0 to 1045 Ω max.
Electrical Connections: Screw terminal: Two 1/2″ female NPT conduit.
Process Connections: Two 1/4″ female NPT.
Enclosure Rating: NEMA 4X (IP66).
Weight: 2 lb (0.9 kg).
Agency Approvals: FM approved intrinsically safe for use in Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III, Div. 1 when wired with approved intrinsically safe barrier. Entity parameters: V_{max}= 36 VDC; I_{max}= 250 mA; C_i=12 nF; L_i=0 mH.

MODEL CHART

Model	Range (in w.c.)
608-02	0 to 0.5
608-03	0 to 1.0
608-04	0 to 2.0
608-05	0 to 5.0
608-06	0 to 10.0
608-07	0 to 25.0
608-01B	0 to ±0.25
608-13B*	0 to ±1.0
608-04B	0 to ±2.0

*Models have a ±0.25% FS accuracy.

OPTIONS

Use order code:	Description
NISTCAL-PT1	NIST traceable calibration certificate

ACCESSORIES

Model	Description
MTL5541	Intrinsically safe galvanic isolator
MTL7706	Intrinsically safe zener barrier

Static Fitting Options: See page 454 (Static Pressure Tips)
Process Tubing Options: See page 455 (Gage Tubing Accessories)

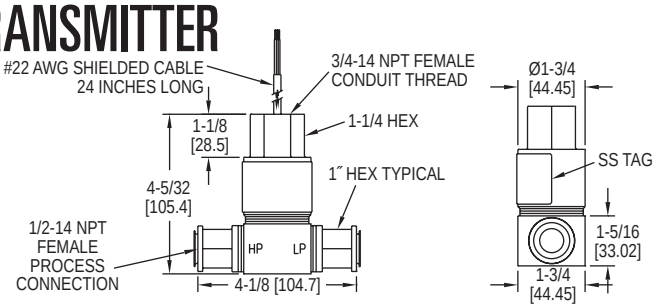
Dwyer

SERIES 636D

FIXED RANGE DIFFERENTIAL PRESSURE TRANSMITTER

Explosion-Proof, 0.5% Accuracy





Series 636D Fixed Range Differential Pressure Transmitter can be used for measuring pressures of liquids, gases & vapors. All available ranges have an excellent 0.5% FS accuracy with a 4-20 mA Output standard or optional 1-5 VDC output. The NEMA 4 housing is an all 316 welded construction that is designed to withstand the harshest environmental conditions. With all 316L wetted materials, this transmitter is compatible with most media. These units are CSA approved explosion-proof for use in the specified hazardous locations and meet NACE standards for off-shore applications.

FEATURES/BENEFITS
- NEMA 4X rated enclosure provides protection in harsh environments permitting outdoor monitoring or in areas where dust and particulate matter exists
- Explosion-proof device for use in hazardous areas
- Versatile, high-accuracy device for liquid or gas supports designs requiring more precise measurements in support of application

APPLICATIONS
- Pump differential pressure
- Critical process monitoring
- Off shore applications

MODEL CHART

Model 4 to 20 mA Out	Range	Model 1 to 5 VDC Out	Range
636D-0	0 to 6 psid	**636D-0-LP**	0 to 6 psid
636D-1	0 to 15 psid	**636D-1-LP**	0 to 15 psid
636D-2	0 to 30 psid	**636D-2-LP**	0 to 30 psid
636D-3	0 to 60 psid	**636D-3-LP**	0 to 60 psid
636D-4	0 to 100 psid	**636D-4-LP**	0 to 100 psid
636D-5	0 to 150 psid	**636D-5-LP**	0 to 150 psid
636D-6	0 to 200 psid	**636D-6-LP**	0 to 200 psid
636D-7	0 to 300 psid	**636D-7-LP**	0 to 300 psid
636D-8	0 to 500 psid	**636D-8-LP**	0 to 500 psid

SPECIFICATIONS

Service: Compatible gases, liquids, or vapors.
Wetted Materials: Types 316L SS.
Accuracy: BFSL: ±0.5% FS (includes linearity, hysteresis, and repeatability).
Stability: ±1.0 FS/yr.
Pressure Limits: 3 x full-scale differential pressure; Burst: 2500 psig.
Temperature Limits: Ambient operating: -40 to 140°F (-40 to 60°C); Process interface: -40 to 212°F (-40 to 100°C); Storage: -40 to 212°F (-40 to 100°C).
Compensated Temperature Range: -20 to 160°F (-29 to 71°C).
Thermal Effect: ±2% FS/50°F (reference to 77°F).
Power Requirements: 12-30 VDC for 4-20 mA outputs; 8-14 VDC for 1-5 VDC outputs, both with reverse polarity protection.
Output Signal: 4-20 mA DC or 1-5 VDC.
Zero and Span Adjustment: Fixed.
Response Time: 20 ms.
Loop Resistance: 900 Ω max @ 30 VDC for current outputs. For voltage outputs, minimum lead resistance 50k ohms.
Current Consumption: 4-20 mA for current output models; 3 mA for voltage output models.
Electrical Connections: 2 ft, 22 AWG cable; 3/4˝ female NPT conduit.
Process Connections: Two 1/2˝ female NPT.
Enclosure Rating: NEMA 4 (IP56).
Mounting Orientation: ±0.05 psi/90° rotation from horizontal.
Weight: 1.8 lb (0.82 kg).
Agency Approvals: CSA approved explosion-proof for Class I, Division 1, Groups B, C, and D; Class II, Groups E, F, and G; Class III.

OPTIONS

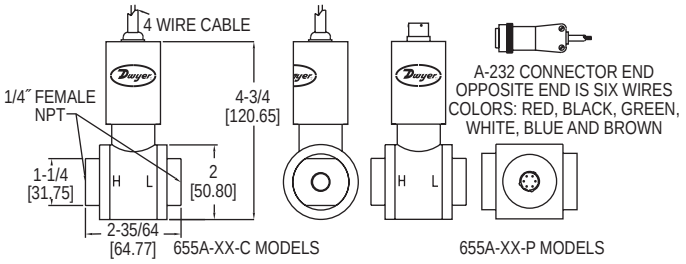
Use order code:	Description
NISTCAL-PT1	NIST traceable calibration certificate

SERIES 655A

316 WET/WET DIFFERENTIAL PRESSURE TRANSMITTER

Ranges Down to 3 in w.c., 6-Point NIST Certificate Included





The **Series 655A 316 Wet/Wet Differential Pressure Transmitter** is designed for high static/low DP applications designed especially for the End Users and OEM's where extreme overpressure and high performance of 0.25% accuracy and stability are required at ranges down to 3 in w.c. Each unit includes a 6-point NIST certificate of calibration which demonstrates the unit's high level of performance.

FEATURES/BENEFITS
- Extreme overpressure and stability at low ranges provides durable device for OEM and end-user applications
- High-accuracy device for low differential pressure designs requiring more precise measurements in support of application
- NIST certificate available to demonstrate high-level of performance

APPLICATIONS
- Pump differential pressure
- Critical process monitoring
- High accuracy/low differential pressure OEM applications

MODEL CHART

Model	Range	Model	Range
655A-00-C	0 to 3 in w.c.	**655A-00-P**	0 to 3 in w.c.
655A-01-C	0 to 5 in w.c.	**655A-01-P**	0 to 5 in w.c.
655A-02-C	0 to 8 in w.c.	**655A-02-P**	0 to 8 in w.c.
655A-03-C	0 to 10 in w.c.	**655A-03-P**	0 to 10 in w.c.
655A-04-C	0 to 15 in w.c.	**655A-04-P**	0 to 15 in w.c.
655A-05-C	0 to 20 in w.c.	**655A-05-P**	0 to 20 in w.c.
655A-06-C	0 to 1 psid	**655A-06-P**	0 to 1 psid
655A-07-C	0 to 2 psid	**655A-07-P**	0 to 2 psid

Note: Change 'C' to 'P' for optional 6 pin male connection.

SPECIFICATIONS

Service: Compatible gases or liquids.
Wetted Materials: 316L SS.
Accuracy: ±0.25% BFSL, RSS (combined effect of non-linearity, hysteresis, and repeatability).
Stability: ≤ ±0.25% FSO/yr.
Temperature Limits: -20 to 200°F (-29 to 93°C).
Compensated Temperature Limits: 0 to 170°F (-17.8 to 76.7°C).
Pressure Limits: 1000 psi (68.95 bar) continuous; 3000 psi (206.8 bar) burst.
Thermal Effects: ≤ ±1.5% FS oven comp. temperature range.
Power Requirements: 8-38 VDC.
Output Signal: 4-20 mA.
Static Pressure Effects: On zero: ≤ ±0.25% FSO per 1000 psi; on span: ≤ ±0.5% of reading per 1000 psi.
Response Time: < 10 ms.
Loop Resistance: 1500 Ω.
Electrical Connections: Cable exit with 24˝ cable; optional 6-pin connector.
Process Connections: 1/4˝ NPT female.
Enclosure Rating: Designed to meet NEMA 4X (IP66).
Mounting Orientation: Mount in vertical position: zero shifts up to ±1 in w.c. depending on orientation.
Weight: 18 oz (510 g).

ACCESSORIES

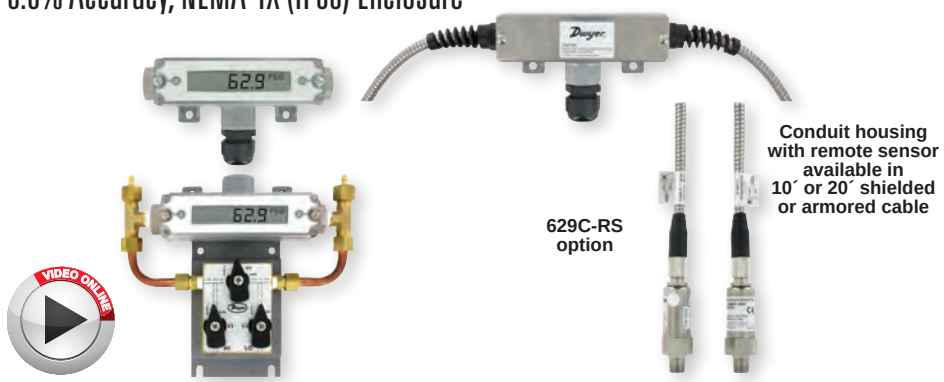
Model	Description
A-232	Connection with cable (3´); for 6 pin connection models

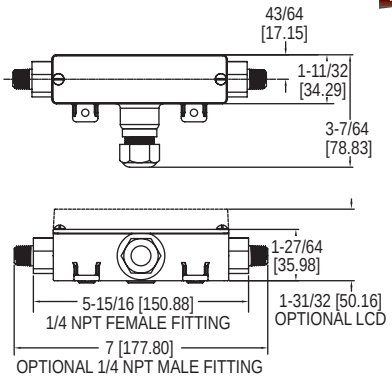
Dwyer

SERIES 629C

WET/WET DIFFERENTIAL PRESSURE TRANSMITTERS

0.5% Accuracy, NEMA 4X (IP66) Enclosure





The **Series 629C Wet/Wet Differential Pressure Transmitters** monitor differential pressure of air and compatible gases and liquids with 0.5% accuracy. The design employs dual pressure sensors converting pressure changes into a standard 4-20 mA output signal or field selectable voltage. Small internal volume and minimal moving parts result in exceptional response and reliability. The terminal block, as well as a zero adjustment button, are easily accessed under the top cover. The Series 629C Differential Pressure Transmitter is designed to meet NEMA 4X (IP66) construction.

FEATURES/BENEFITS

- Powered by either DC or AC - take advantage of most readily available power source reducing installation costs
- Optional LCD does not need a separate power supply - lowers installed cost
- Selectable voltage range - provides flexible choice for changing design or inputs for process/HVAC controllers being used to monitor and control
- Push-button zero (versus trim pot) - more simple zeroing provides easy install and calibration reducing installation time and possibility of operator error
- Optional LCD indicator provides local status to identify operational condition
- Remote sensor option reduces installation labor and material

APPLICATIONS

- Flow elements
- Heat exchangers
- Filters
- Coils
- Chiller
- Pumps

SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Without valve: 316, 316L SS. Additional wetted parts with valve option: Buna-N, silicone grease, PTFE, brass 360, copper, and reinforced copolymer.
Accuracy: ±0.5% FS (includes linearity, hysteresis & repeatability).
Stability: ±1% FS/year.
Temperature Limits: 0 to 200°F (-18 to 93°C).
Compensated Temperature Limits: 0 to 175°F (-18 to 79°C).
Pressure Limits: See Table 1.
Thermal Effects: Avg 0.04%/°F (0.072%/°C) (includes zero and span).
Power Requirements: 2-wire: 10-35 VDC; 3-wire: 13-35 VDC or isolated 16-33 VAC (reverse polarity protected).
Output Signal: 2-wire: 4-20 mA; 3-wire: Field selectable 0-5, 1-5, 0-10, or 2-10 VDC.
Zero and Units: Push-buttons inside conduit enclosure.
Response Time: 400 msec.
Loop Resistance: Current output: 0 to 1250 Ω (max), Rmax = 50(Vps-10); Voltage output: Minimum load resistance = 5 kΩ.
Current Consumption: 28 mA (max).
Electrical Connections: Removable terminal block; 1/2″ female NPT conduit.
Process Connections: 1/4″ female or male NPT.
Display: Optional 4-1/2 digit LCD field attachable display.
Enclosure Rating: Designed to meet NEMA 4X.
Mounting Orientation: Not position sensitive.
Weight: 629C-XX-CH: 10.1 oz (286 g); 629C-XX-R2-P1-E5-XX: 2.3 lbs (1.04 kg); 629C-XX-R6-P1-E5-XX: 4.55 lbs (2.06 kg).
Agency Approvals: CE.

MODEL CHART

Example	629C	-01	-CH	-P1	-E1	-S1	-3V	629C-01-CH-P1-E1-S1-3V
Series	629C							Wet/wet differential pressure transmitter
Range		01 02 03 04 05 06 07 08 09 11 12 13 14 15 16 17 18 19						0 to 5 psid 0 to 10 psid 0 to 25 psid 0 to 50 psid 0 to 100 psid 0 to 150 psid 0 to 200 psid 0 to 300 psid 0 to 500 psid 0 to 0.5 bar differential 0 to 1 bar differential 0 to 2 bar differential 0 to 4 bar differential 0 to 6 bar differential 0 to 10 bar differential 0 to 15 bar differential 0 to 20 bar differential 0 to 30 bar differential
Housing			CH R1 R2 R5 R6					Conduit housing, NEMA 4X (IP66) Conduit housing, NEMA 4X (IP66) with Remote Sensor and 10´ shielded cable Conduit housing, NEMA 4X (IP66) with Remote Sensor and 20´ shielded cable Conduit housing, NEMA 4X (IP66) with Remote Sensor and 10´ armored cable Conduit housing, NEMA 4X (IP66) with Remote Sensor and 20´ armored cable
Process Connection				P1 P2 P3 P4				1/4″ male NPT 1/4″ female NPT 1/4″ male BSPT 1/4″ female BSPT
Electrical Connection					E1 E2 E3 E5 E9			Cable gland with 3´ of prewired cable Cable gland with 6´ of prewired cable Cable gland with 9´ of prewired cable 1/2″ female NPT conduit M-12 4 pin connector
Signal Output						S1 S3		4-20 mA Field selectable 0-5, 1-5, 0-10, 2-10 VDC
Options							3V AT FC LCD NIST	3-way valve Aluminum tag Factory calibration certificate LCD indication NIST traceable certificate

RANGE

Range Number	Range	Working Pressure*	Over Pressure
01	0 to 5 psid	10 psi	50 psi
02	0 to 10 psid	20 psi	50 psi
03	0 to 25 psid	50 psi	120 psi
04	0 to 50 psid	100 psi	250 psi
05	0 to 100 psid	200 psi	500 psi
06	0 to 150 psid	300 psi	750 psi
07	0 to 200 psid	400 psi	1000 psi
08	0 to 300 psid	600 psi	1200 psi
09	0 to 500 psid	1000 psi	2000 psi
11	0 to 0.5 bar differential	1 bar	3 bar
12	0 to 1 bar differential	2 bar	8 bar
13	0 to 2 bar differential	4 bar	8 bar
14	0 to 4 bar differential	8 bar	18 bar
15	0 to 6 bar differential	12 bar	18 bar
16	0 to 10 bar differential	20 bar	50 bar
17	0 to 15 bar differential	30 bar	60 bar
18	0 to 20 bar differential	40 bar	80 bar
19	0 to 30 bar differential	60 bar	120 bar

*Pressures exceeding the working pressure limit may cause a calibration shift of up to ±3% of full-scale.

Note: Over pressure of all models with 3-way valve is 100 psi.

ACCESSORIES

Model	Description
A-155	Cable gland with 1/2″ NPT male
A-228	12″ SS flex hose
A-62X-LCD	Field-upgradeable LCD
BBV-1B	Mini SS 3-valve block manifold

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm
www.P65Warnings.ca.gov

Dwyer

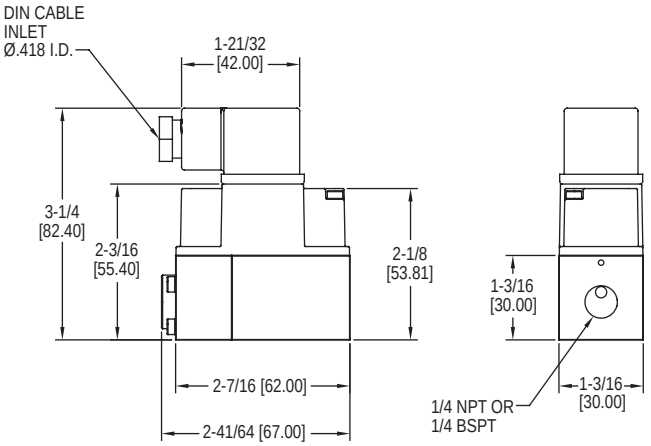
SERIES 629HLP

DIFFERENTIAL PRESSURE TRANSMITTERS

High Accuracy, IP65 Enclosure







The **Series 629HLP Differential Pressure Transmitters** are suitable for measuring over-pressure, under-pressure, and differential pressure in compatible gases and liquids with 1% accuracy. The 629HLP is suitable for all measuring tasks in commercial, industrial or sanitary applications. Its single sensor design, allows it to measure small increment pressure changes, and converts them to a linear analog output signal from 4-20 mA or 0-10 VDC.

FEATURES/BENEFITS

- Rugged, versatile, high accuracy device
- For liquid or gas systems requiring precise measurements
- Provide excellent response and reliability
- Suitable for static and dynamic measurements
- Converts pressure changes into 4-20 mA or 0-10 VDC output
- Compact, lightweight, capable to be installed in any arrangement making installation very simple

APPLICATIONS

- Heat exchangers
- Fan coils/air handlers
- Core testing applications
- Hydraulic systems
- High line pressures/low DP
- Pumps
- Commercial/industrial processes
- Sanitary process

SPECIFICATIONS

Service: Compatible gases or liquids.
Wetted Material: 304 SS.
Housing Material: ABS.
Enclosure Rating: IP65.
Accuracy: ±1% from -5 to 60°C (23 to 140°F).
Stability: ±1% FS/year.
Temperature Limits: Ambient: -10 to 60°C (14 to 122°F); Process: -10 to 80°C (14 to 176°F).
Relative Humidity: 10% to 90% non-condensing.
Installation Position: Not position sensitive.
Pressure Limits: See Pressure Range Limits chart.
Burst Pressure: See Pressure Range Limits chart.
Static Pressure Limits: See Pressure Range Limits chart.
Output Signal: 4-20 mA, 0-10 VDC.
Response Time: 50 ms.
Rated Supply Voltage: 0-10 VDC Output: 12-36 VDC or 12-32 VAC (@ Max load of 2k Ω) 4-20 mA output: 8-36 VDC.
Max Loop resistance: (Supply Voltage – 8 V) / 0.02 for 4-20mA output.
Power Consumption: V_{out} = 13 mA max, I_{out} = 24 mA max.
Electrical Connections: Form A DIN 43650.
Process Connections: 1/4″ female NPT, 1/4″ female BSPT.
Weight: 1 lb 4 oz (567 g).
Approvals: CE, RCM.

MODEL CHART

Example	629HLP	-01	-P2	-S1	-FC	629HLP-01-P2-S1-FC
Series	629HLP					Differential pressure transmitter
Range		01 02 04 06 15 30 60 90				0 to 1 bar 0 to 2.5 bar 0 to 4 bar 0 to 6 bar 0 to 15 psi 0 to 30 psi 0 to 60 psi 0 to 90 psi
Process Connections			P2 P4			1/4″ female NPT 1/4″ female BPST
Output Signal				S1 S5		4-20 mA 0-10 VDC
Options					FC NIST	Factory calibration NIST certificate

Note: Psi ranges available upon request. Contact factory for details.

PRESSURE RANGE LIMITS

Pressure Range	Maximum Static Pressure (bars)	*Maximum Differential Over Pressure	**Burst Differential Pressure
0 to 1 bar	25 bar	5 bar	8 bar
0 to 2.5 bar	25 bar	5 bar	8 bar
0 to 4 bar	25 bar	12 bar	18 bar
0 to 6 bar	25 bar	12 bar	18 bar
0 to 15 psi	360 psi	70 psi	115 psi
0 to 30 psi	360 psi	70 psi	115 psi
0 to 60 psi	360 psi	174 psi	260 psi
0 to 90 psi	360 psi	174 psi	260 psi

Note: *The differential pressure limit, between high and low ports, that the transmitter can withstand without affecting transmitter performance
**Differential pressures between high and low ports that exceed overpressure limits will result in permanent diaphragm deformation, and any pressure higher than the burst pressure limits will rupture the diaphragm.

ACCESSORIES

Model	Description
A-629HLP-BKT	Mounting bracket kit
BBV-1B	3-Valve block manifold
A-228	12″ SS flex hose

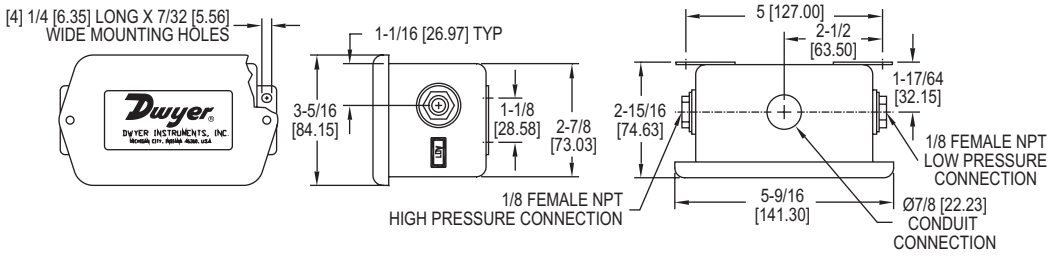
Dwyer

SERIES 647

WET/WET DIFFERENTIAL PRESSURE TRANSMITTER

±1.0% Accuracy, NEMA 4 (IP56) Enclosure, 2-Wire





Monitor differential pressure in air/liquid flow systems, HVAC automation, pneumatic systems and process control with the **Series 647 Wet/Wet Differential Pressure Transmitter**. Units are temperature compensated and provide a 4-20 mA output signal which can be interfaced with chart recorders, data loggers and computerized monitoring and control systems.

FEATURES/BENEFITS

- Versatile for liquid or gas supports designs requiring more precise measurements in support of application
- Temperature compensated improves performance of device for accurate measurement under different operating environments.
- Output signal provides capability to interface with automation systems to centralize monitoring

APPLICATIONS

- Flow
- HVAC automation
- Process control
- Pneumatic systems

MODEL CHART	
Model	**Range**
647-0	0 to 1 in w.c.
647-1	0 to 3 in w.c.
647-2	0 to 25 in w.c.
647-3	0 to 5 in w.c.
647-4	0 to 10 in w.c.

OPTIONS	
Use order code:	**Description**
NISTCAL-PT1	NIST traceable calibration certificate

SPECIFICATIONS

Service: Compatible gases or liquids on both pressure and reference sides.
Wetted Materials: Brass, vinyl, glass-filled polyester, silicon, and fluorosilicone.
Accuracy: ±1.0% FS.
Stability: ±1.5% FS output/year.
Temperature Limits: 32 to 122°F (0 to 50°C).
Pressure Limits: Ranges 1 in w.c. to 5 psi: 20 psi, 15 psi range: 45 psi, 30 psi range: 60 psi.
Thermal Effects: Zero: ±0.05% FS/°F, Span: ±0.05% rdg/°F.
Power Requirements: 18-30 VDC.
Output Signal: 4-20 mA, 2-wire.
Zero and Span Adjustments: Adjustable, ±10%.
Loop Resistance: 400Ω @ 18 VDC, 600Ω @ 24 VDC, 1000Ω @ 30 VDC.
Electrical Connection: Screw terminals, reverse polarity protected.
Process Connections: Two 1/8″ female NPT.
Housing: Gasketed steel epoxy painted, NEMA 4 (IP56).
Weight: 14 oz (397 g).

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

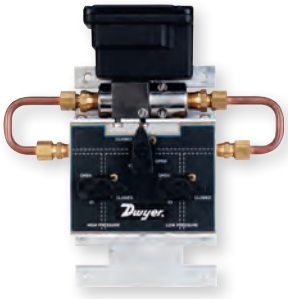
Dwyer

SERIES 645

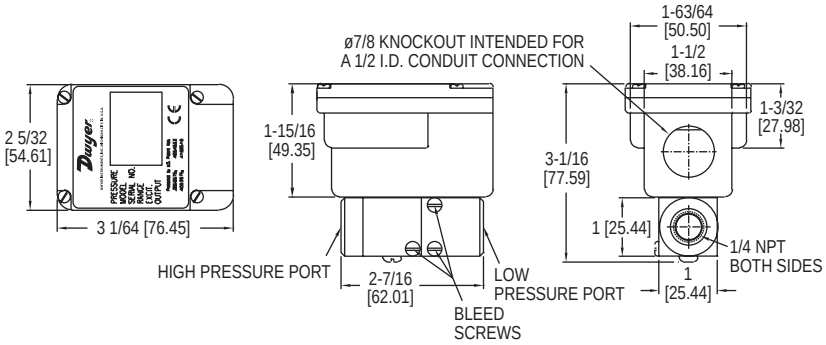
WET/WET DIFFERENTIAL PRESSURE TRANSMITTERS

±0.25% Accuracy, Quick Response, 2-Wire Design





Optional 3-valve manifold assembly



Series 645 Wet/Wet Differential Pressure Transmitters are designed for use with compatible gases and liquids which can be applied to both the pressure and reference ports. Quick response capacitance sensor delivers a 4-20 mA output signal proportional to differential pressure with ±.25% accuracy. The Series 645 transmitters are ideal for process control, filter condition monitoring, refrigeration equipment, pump speed control, HVAC equipment, and liquid level measurement. For ease of installation and maintenance, order optional 3-valve manifold assembly. Bleed ports allow for total elimination of air in the line and pressure cavities.

FEATURES/BENEFITS

- Versatile, high-accuracy device for liquid or gas supports designs requiring more precise measurements in support of application
- Optional 3-way valve manifold supports simplifying installation or removal of transmitter without interrupting process

APPLICATIONS

- Process control
- Refrigeration equipment
- HVAC equipment
- Filter monitoring
- Pump speed control
- Liquid level measurement

MODEL CHART	
Model	**Range**
645-0	0 to 1 psid
645-1	0 to 2 psid
645-2	0 to 5 psid
645-3	0 to 10 psid
645-4	0 to 25 psid
645-5	0 to 50 psid
645-6	0 to 100 psid
Note: For optional 3-valve manifold assembly, add -3V to end of model number.	

OPTIONS	
Use order code:	**Description**
NISTCAL-PT1	NIST traceable calibration certificate

SPECIFICATIONS

Service: Compatible gases or liquids on both pressure and reference sides.
Wetted Materials: 17-4 PH stainless steel, 300 Series stainless steel, fluoroelastomer and silicone O-rings and bleed screw seals.
Accuracy: ±0.25% FS (RSS).
Temperature Limits: Operating: 0 to 175°F (-22 to 80°C); Storage: -65 to 260°F (-54 to 126°C).
Pressure Limits: (High side) 1 to 5 psi: 20 x FS, 10 to 25 psi: 10 x FS, 50 psi: 5 x FS, 100 psi: 2.5 x FS; (low side) 2.5 x FS.
Thermal Effects: (includes zero and span) ±0.02% FS/°F, 30 to 150°F (-1 to 65°C).
Power Requirements: 11-30 VDC.
Output Signal: 4-20 mA, 2-wire.
Zero and Span Adjustments: Adjustable, ±1 mA, non-interactive.
Response Time: 30 to 50 ms.
Loop Resistance: 0 to 1000Ω.
Electrical Connection: Barrier strip terminal block with conduit enclosure and .875″ (22 mm) diameter conduit opening.
Process Connection: 1/4″-18 female NPT.
Housing: Stainless steel/aluminum, NEMA 4X (IP56).
Weight: 14.4 oz (0.4 kg).
Agency Approvals: CE.

3-VALVE MANIFOLD ASSEMBLY
Manifold: Brass.
Valve Type: 90° on/off.
Process Connection: 1/4″-18 female NPT.

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

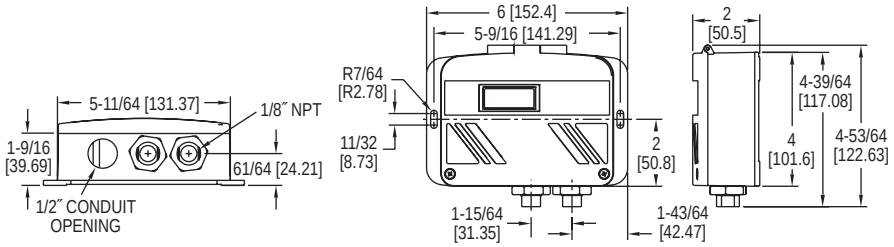
Dwyer

SERIES WWDP

DIFFERENTIAL PRESSURE TRANSMITTER

Selectable Ranges of Uni-Directional or Bi-Directional, Selectable Outputs





The **Series WWDP Differential Pressure Transmitter** offers everything in one package by having 30 field selectable variations in just 3 models. The WWDP provides field selectable unidirectional and bidirectional pressure ranges, configurable 0-5, 1-5, 0-10 VDC, and 4 to 20 mA output. It also provides an auto-zero capability. The field selectable port swap feature eliminates costly re-plumbing if the unit is improperly installed or if the transmitter is simply replaced. An optional LCD display is available for on-sight indication of line and differential pressure. The all cast aluminum housing is rated NEMA 4 (IP66). These features make the WWDP transmitter an ideal instrument for measuring the flow of various liquids and gases, pressure drop across filters, measurement of liquid level or pressurized vessels, and for use in energy management and process control systems.

FEATURES/BENEFITS

- Versatile device for liquid or gas supports designs requiring more precise measurements in support of application
- Field selectable port swap eliminates costly re-plumbing if unit is re-installed or replaced
- Uni-directional and bi-directional pressure selection with configurable output provides a single device that can meet broad application needs without having to specify multiple devices
- Optional LCD display provides local status to identify operational conditions
- NEMA 4 rated enclosure provides protection in harsh environments permitting outdoor monitoring or in areas where dust and particulate matter exists

APPLICATIONS

- Chiller monitoring
- Pressure vessels
- Filter monitoring
- Process control
- Energy management
- Liquid level

SPECIFICATIONS

Service: Gases or liquids compatible with 17-4 PH stainless steel.
Accuracy: All pressure ranges have ±1% full-scale accuracy except the lowest selectable range of each unit is ±2% full-scale.
Stability: ±0.5% per year.
Temperature Limits: Compensated temperature range: 32 to 130°F (0 to 54°C); Operating temperature range: -4 to 185°F (-20 to 85°C).
Pressure Limits: Max working pressure: WWDP-1: 50 psi; WWDP-2: 100 psi; WWDP-3: 250 psi; Proof pressure: 2.2X of full-scale; Burst pressure: 40X of full-scale.
Thermal Effect: 2% FS/100°F (50°C) includes zero and span.
Power Requirements: 12-30 VDC/18-28 VAC (reverse excitation protected). **Note:** 4-20 mA output cannot be powered with AC voltage.
Output Signal: Selectable 0-5, 0-10 and 1-5 VDC; 4-20 mA.
Zero & Span: Digital “re” zero button (should be used when changing ranges). Span can be adjusted by changing between field selectable ranges.
Response Time: 1 to 5 s (selectable).
Loop Resistance: 1000 Ω.
Current Consumption: VDC power: 0-5, 1-5 VDC output 4 mA (typ); 0-10 VDC output 5 mA (typ); 4-20 mA output 20 mA max. Current consumption will equal the transmitter output in current mode. VAC power: 0-5, 1-5, 0-10 VDC output 40 mA (typ).
Electrical Connections: 1/2″ conduit.
Process Connections: 1/8″ female NPT internal.
Enclosure Rating: Designed to meet NEMA 4 (IP56).
Mounting Orientation: Vertical; mount the pressure ports down (keeps debris from building up inside the pressure port).
Weight: 1.5 lb (680.4 g).
Agency Approvals: CE.

MODEL CHART

Model	Description (psid)	Max. Working Pressure (psi)
WWDP-1	Selectable 5, 10, 25, 50	50
WWDP-2	Selectable 10, 20, 50,100	100
WWDP-3	Selectable 25, 50,125, 250	250
WWDP-1-LCD	Selectable 5, 10, 25, 50	50
WWDP-2-LCD	Selectable 10, 20, 50,100	100
WWDP-3-LCD	Selectable 25, 50,125, 250	250

OPTIONS

Use order code:	Description
NISTCAL-PT1	NIST traceable calibration certificate

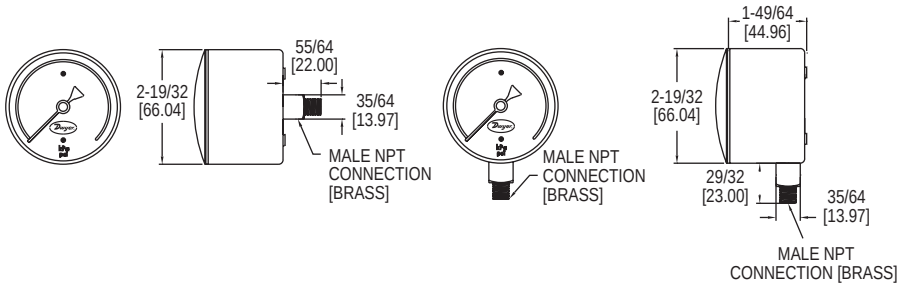
Dwyer

SERIES LPG5

2.5″ LOW PRESSURE GAGE

3-2-3% Full-Scale Accuracy in a 2.5″ Gage





The **Series LPG5 2.5″ Low Pressure Gage** offers top of the line performance for pressure applications from 10 in w.c. to 10 psi. The LPG5 gages possess dual scales with 3-2-3% full-scale accuracy on a 2.5″ dial. Units are made with a chrome plated steel housing and brass wetted parts. Units can withstand temperatures of -4 to 140°F (-20 to 60°C). This series is meant for the measurement of low pressures of gases and liquids and is ideal for air flow indication, liquid level and draft measurement. Series LPG5 gages are available with either a bottom or back connection option.

FEATURES/BENEFITS

- Chrome plated steel housing and brass wetted parts resist ambient for longer service life in harsh environments
- Low pressure gage provides a selection to meet specific applications
- Specified with high ambient and process temperature ratings mean more robust uses and longer service-life
- Good accuracy gage for value-sensitive applications requiring more precise measurement and where vibration is a concern

APPLICATIONS

- Air flow indication
- Liquid level
- Draft measurement

SPECIFICATIONS
Service: Compatible gases and liquids.
Wetted Materials: Brass connection, bronze tube.
Housing: Chrome plated steel.
Lens: Polycarbonate.
Accuracy: ± 3-2-3% FS.
Pressure Limits: Full-scale range.
Temperature Limits: -4 to 140°F (-20 to 60°C).
Size: 2.5″ (63 mm).
Process Connections: 1/4″ male NPT.
Weight: 8 oz (227 g).

MODEL CHART

Model	Range in w.c. (kPa)	Model	Range psi (kPa)
LPG5-D8022N	0 to 10 (0 to 2.5)	**LPG5-D9922N**	0 to 5 (0 to 35)
LPG5-D8122N	0 to 15 (0 to 3.75)	**LPG5-D0022N**	0 to 10 (0 to 70)
LPG5-D8222N	0 to 35 (0 to 8.75)		
LPG5-D8422N	0 to 60 (0 to 15)		
LPG5-D8622N	0 to 100 (0 to 25)		
LPG5-D8822N	0 to 200 (0 to 50)		

Note: Change 22N to 42N for back connection option.

OPTIONS	
Use order code:	**Description**
NISTCAL-PG1	NIST traceable calibration certificate

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

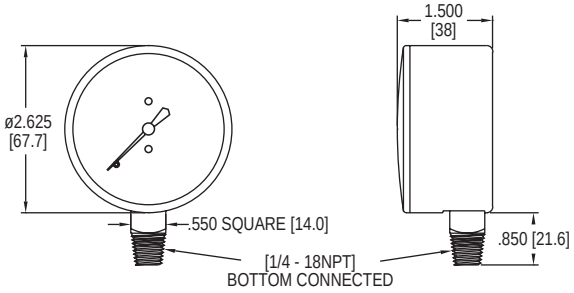
Dwyer

SERIES LPG4

2.5″ LOW PRESSURE GAGE

1.5% Full-Scale Accuracy in a 2.5″ Gage





Our **Series LPG4 2.5″ Low Pressure Gage** offers top of the line performance and accuracy for pressure and vacuum applications up to and including 160 in w.c. The LPG4 is constructed from a single beryllium-copper diaphragm affixed to a precision-machined brass plate. This innovative design, together with a high-precision, milled-teeth brass movement and nickel-silver pinion and bearing surface, provide the user with a top of the line low pressure instrument.

FEATURES/BENEFITS

- Low pressure gage provides a selection to meet specific applications
- Specified with high ambient and process temperature ratings mean more robust uses and longer service-life
- High accuracy gage for applications requiring more precise measurement is a concern

APPLICATIONS

- Air flow indication
- Liquid level
- Draft measurement

SPECIFICATIONS
Service: Compatible gases & liquids.
Wetted Materials: Brass and beryllium copper.
Housing: Drawn steel, black finish.
Lens: Polycarbonate (removable).
Accuracy: ±1.5% FS.
Pressure Limit: 100% of range scale.
Temperature Limits: Process: -40 to 160°F (-40 to 70°C); Ambient: -40 to 140°F (-40 to 60°C).
Size: 2.5″ (63 mm).
Process Connections: 1/4″ male NPT.
Enclosure Rating: NEMA 3 (IP54).
Weight: 7.3 oz (0.21 kg).

MODEL CHART

Model	Range	Model	Range
LPG4-D7122N	-10 to 0 in w.c. (-2.5 to 0 kPa)	**LPG4-D8322N**	0 to 40 in w.c. (0 to 10 kPa)
LPG4-D7222N	-15 to 0 in w.c. (-4 to 0 kPa)	**LPG4-D8422N**	0 to 60 in w.c. (0 to 15 kPa)
LPG4-D7322N	-25 to 0 in w.c. (-6 to 0 kPa)	**LPG4-D8522N**	0 to 80 in w.c. (0 to 20 kPa)
LPG4-D7422N	-40 to 0 in w.c. (-10 to 0 kPa)	**LPG4-D8622N**	0 to 100 in w.c. (0 to 25 kPa)
LPG4-D7522N	-60 to 0 in w.c. (-15 to 0 kPa)	**LPG4-D8722N**	0 to 160 in w.c. (0 to 40 kPa)
LPG4-D7622N	-80 to 0 in w.c. (-20 to 0 kPa)	**LPG4-D8922N**	-4 to 0 to 6 in w.c. (-1 to 0 to 1.5 kPa)
LPG4-D7722N	-100 to 0 in w.c. (-25 to 0 kPa)	**LPG4-D9022N**	-6 to 0 to 10 in w.c. (-1.5 to 0 to 2.5 kPa)
LPG4-D7822N	-160 to 0 in w.c. (-40 to 0 kPa)	**LPG4-D9122N**	-8 to 0 to 16 in w.c. (-2 to 0 to 4 kPa)
LPG4-D7922N	-235 to 0 in w.c. (-60 to 0 kPa)	**LPG4-D9222N**	-16 to 0 to 24 in w.c. (-4 to 0 to 6 kPa)
LPG4-D8022N	0 to 10 in w.c. (0 to 2.5 kPa)	**LPG4-D9322N**	-24 to 0 to 40 in w.c. (-6 to 0 to 10 kPa)
LPG4-D8122N	0 to 15 in w.c. (0 to 3.75 kPa)	**LPG4-D9422N**	-30 to 0 to 50 in w.c. (-7.5 to 0 to 12.5 kPa)
LPG4-D8222N	0 to 25 in w.c. (0 to 6 kPa)	**LPG4-D9522N**	-40 to 0 to 60 in w.c. (-10 to 0 to 15.0 kPa)

OPTIONS

Use order code:	Description
NISTCAL-PG1	NIST traceable calibration certificate

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

Dwyer

SERIES SGY & SGZ

2.5″ INDUSTRIAL PRESSURE GAGES

1.5% FS Accuracy, 316 SS or Brass Wetted Parts, Dual Psi/Bar x100 kPa Scales



SGZ bottom



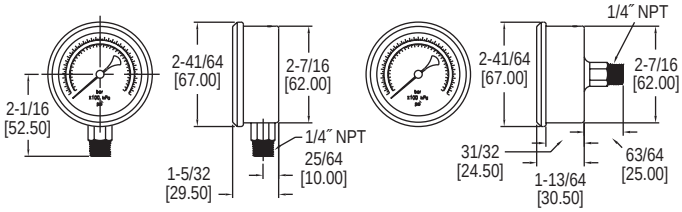
SGZ back with accessory pointers



SGY bottom



SGY back with accessory pointers



The **Series SGY & SGZ 2″ Industrial Pressure Gages** have dual psi and bar (x100 kPa) scales with ±1.5% full-scale accuracy. The Series SGZ and SGY gages are designed with 304 SS housings and the SGZ is designed with 316 SS wetted parts for excellent chemical compatibility or SGY brass wetted parts for compatible gases. These gages cover a wide variety of ranges in either bottom or back connection configurations. Series SGZ gages employ an easy-open breather plug on top, which allows liquid filled units to breathe, relieving any built up internal pressures. Plug easily pops open and does not need to be entirely removed or cut like a typical gages' rubber plug grommet.

FEATURES/BENEFITS

- Stainless steel housing and wetted parts to resist ambient corrosion for longer service life in harsh environments
- Higher accuracy gage for value-sensitive applications requiring more precise measurement and where vibration is a concern
- Optional sliding pointer clearly mark to make visible critical ranges and high and low points
- Liquid fillable gage with easy open breather plug provides smoother damped movement of pointer
- Back or bottom mounting and compact size provides for mounting with dimensional limitations

APPLICATIONS

- Vacuums in pneumatic conveying lines
- Positive pressure in compressed air headers
- Corrosive ambient environments

ACCESSORIES	
Model	**Description**
A-445D	U-bracket mounting kit for 2.5″ gage
A-499R	Red sliding color pointer
A-499Y	Yellow sliding color pointer
A-499G	Green sliding color pointer

OPTIONS	
Use order code:	**Description**
NISTCAL-PG1	NIST traceable calibration certificate

SPECIFICATIONS	
Service: Compatible gases and liquids. **Wetted Materials:** SGZ: 316 L SS Tube, 316 SS connector; SGY: Brass connection, bronze tube. **Housing:** 304 SS. **Lens:** Polycarbonate. **Accuracy:** ±1.5% FS. **Pressure Limit:** FS range.	**Temperature Limits:** -4 to 140°F (-20 to 60°C). **Size:** 2.5″ (63 mm). **Process Connections:** 1/4″ male NPT. **Weight:** 4.9 oz (141 g) bottom, 5.8 oz (164 g) back. Add 3.7 oz (104 g) for glycerin fill.

MODEL CHART			
Model	**Range**	**Model**	**Range**
SGZ-D10122N	30″ Hg to 0	**SGY-D10122N**	30″ Hg to 0
SGZ-D10322N	0 to 30 psi	**SGY-D10322N**	0 to 30 psi
SGZ-D10422N	0 to 60 psi	**SGY-D10422N**	0 to 60 psi
SGZ-D10522N	0 to 100 psi	**SGY-D10522N**	0 to 100 psi
SGZ-D10622N	0 to 160 psi	**SGY-D10622N**	0 to 160 psi
SGZ-D10722N	0 to 200 psi	**SGY-D10722N**	0 to 200 psi
SGZ-D11022N	0 to 300 psi	**SGY-D11022N**	0 to 300 psi
SGZ-D11122N	0 to 500 psi	**SGY-D11122N**	0 to 500 psi
SGZ-D11222N	0 to 1000 psi	**SGY-D11222N**	0 to 1000 psi
Note: To order with glycerin fill, add -GF to the end of the model. For back connect, change 22N to 42N.			

USA: California Proposition 65

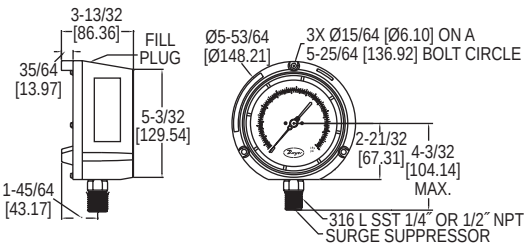
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SERIES 765

PROCESS GAGE WITH DAMPENED MOVEMENT

±0.5% Accuracy, Safety Blow-Out Back





The **Series 765 Process Gage with Dampened Movement** minimizes effects of vibration without liquid filling. With this dampened movement the 765 gages are ideal for use in any application where high pulsation or vibration exists. The 765 gages offer dual scale range (psi/kPa) with ±0.5% full-scale accuracy. They are designed with a Phenolic safety-case and have a solid front with a blow-out back. Excellent chemical compatibility is insured with the 316L SS socket and Bourdon tube. A wide offering of ranges are available from full vacuum to 20,000 psi. The 765 process gage comes standard with bottom 1/4″ or 1/2″ male NPT connections.

FEATURES/BENEFITS

- Liquid-free dampened movement minimizes effect of vibration and cost to maintain
- Stainless steel socket and Bourdon tube permit use in chemical applications
- High accuracy gage for applications requiring more precise measurement
- Models that support vacuum to high pressure ranges provide a selection to meet specific applications
- Specified with high ambient and process temperature ratings mean more robust uses and longer service-life

APPLICATIONS

- Process applications
- Chemical
- Refinery
- Fertilizer
- Petrochemical
- Power
- Pharmaceutical
- Pulp and paper
- Cement

OPTIONS	
Use order code:	**Description**
NISTCAL-PG1	NIST traceable calibration certificate

SPECIFICATIONS	
Service: Compatible gases & liquids. **Wetted Materials:** 316L SS socket and Bourdon tube. **Housing:** Phenolic plastic with safety blow-out back. **Lens:** Polycarbonate. **Accuracy:** ±0.5% ANSI/ASME Grade 2A. **Pressure Limit:** 125% FS < 1500 psi, 115% FS for 2000 to 5000 psi, 110% FS > 10,000 psi.	**Temperature Limits:** -40 to 200°F (-40 to 93°C). **Size:** 4-1/2″ (114.3 mm) dial face. **Process Connections:** 1/4″ or 1/2″ NPT male. **Enclosure Rating:** IP65 (NEMA 4). **Weight:** 37 oz (1040 g). **Agency Approval:** Meets the technical requirements of EU Directive 2011/65/EU (RoHS II).

MODEL CHART					
Example	**765**	**-01**	**2N**	**-FMR**	**765-012N-FMR**
Series	765				4.5″ process gage
Range		01 02 03 04 05 06 07 08 09 10 11			30″ Hg-0 VAC (-100 to 0 kPa) 0 to 30 psi (0 to 206 kPa) 0 to 60 psi (0 to 410 kPa) 0 to 100 psi (0 to 680 kPa) 0 to 160 psi (0 to 1100 kPa) 0 to 200 psi (0 to 1370 kPa) 0 to 300 psi (0 to 2060 kPa) 0 to 400 psi (0 to 2770 kPa) 0 to 500 psi (0 to 3400 kPa) 0 to 600 psi (0 to 4100 kPa) 0 to 1000 psi (0 to 6800 kPa)
Process Connection			2N 4N		1/4″ male NPT 1/2″ male NPT
Additional Options				FMR SG45	Flush mounted ring Safety glass lens
For additional ranges contact factory.					

Dwyer

SERIES DPGA/DPGW/DPGWB/DPGAB

0.5% & 1% DIGITAL PRESSURE GAGES

Economic Gage With Selectable Engineering Units, Rubber Boot



DPGA



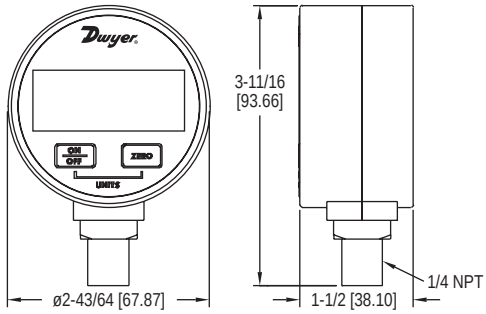
DPGW



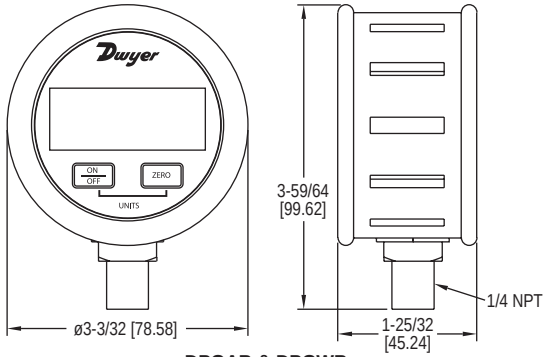
DPGAB



DPGWB



DPGA & DPGW



DPGAB & DPGWB

The **Series DPGA 1% Digital Pressure Gage** is the only economic digital pressure gage with selectable engineering units on the market. With its 1% accuracy and digital push-button zero, the DPGA is the perfect choice for digitally monitoring the pressures of air and compatible gases.

The **Series DPGW 1% Digital Pressure Gage** is the only economic digital pressure gage for liquids with the ability to select engineering units on the market. With its 1% accuracy and digital push-button zero, the DPGW is the perfect choice for digitally monitoring the pressures of air and compatible liquids and gases.

The **Series DPGWB/DPGAB 0.5% Digital Pressure Gage** offers full-scale accuracy in a rugged, easy-to-use unit at prices comparable to mechanical gages. The DPGWB stainless steel wetted material makes it suitable for a wide variety of liquids or gases. The gages feature user-selectable units of measure allowing one gage to be used for a variety of pressure scales. The DPGWB/DPGAB come with a protective rubber boot to protect against short drops and rough handling.

FEATURES/BENEFITS
- Push-button zero reduce installation and service time
- High accuracy provides exceptional measurement for minimizing costly out of specification conditions
- Selectable unit button provides reading in easily recognizable units
- Well-suited gage for compatible gas (DPGA) or liquid (DPGW) applications specifying simple operation and accuracy

APPLICATIONS
- Process applications
- Process start-up
- OEM applications

SPECIFICATIONS	
Service: DPGA & DPGAB: Air and compatible gases; DPGW & DPGWB: Liquids and compatible gases. **Wetted Materials:** DPGA & DPGAB: 316L SS, silicone sensor; DPGW & DPGWB: 316L SS. **Housing Materials:** ABS plastic. **Accuracy:** DPGA & DPGW: ±1.0% FS (includes linearity, hysteresis, repeatability); DPGAB & DPGWB: ±0.5% FS (includes linearity, hysteresis, repeatability).	**Pressure Limits:** 2X pressure range. Vacuum range max. pressure is 30 psig. **Temperature Limits:** 30 to 120°F (-1 to 49°C). **Thermal Effect:** 0.05% FS/°F. **Size:** 2.62″ OD x 1.52″ deep. **Process Connections:** 1/4″ male NPT. **Display:** 4-digit LCD (.425″ H x .234″ W digits). **Power Requirements:** 9 V alkaline battery, included, user replaceable. **Auto Shut-off:** 20 minute auto shut-off. **Weight:** 5.6 oz (160 g).

ACCESSORIES	
Model	**Description**
A-293	Protective rubber boot

OPTIONS	
To order add suffix:	**Description**
-NIST	NIST traceable calibration certificate
Example: DPGA-04-NIST, DPGAB-04-NIST	

MODEL CHART

Model	Model	Range	Pressure Ranges											Resolution
			psig	kg/cm²	bar	in Hg	ft w.c.	kPa	oz/in²	in w.c.	mbar	cm w.c.	mm Hg	psi
DPGA-00	**DPGW-00**	30″ Hg to 0 (psi)	-14.70	-1.033	-1.013	-29.93	-33.94	-101.4	-235.2	-407.3	-1013	-1034	-761	0.01
DPGA-04	**DPGW-04**	0 to 5 psi	5.000	.3515	.3447	10.18	11.53	34.47	80.0	138.4	344.7	351.5	258.6	0.002
DPGA-05	**DPGW-05**	0 to 15 psi	15.00	1.055	1.034	30.54	34.60	103.4	240.0	415.2	1034	1055	776	0.01
DPGA-06	**DPGW-06**	0 to 30 psi	30.00	2.109	2.068	61.1	69.2	206.8	480.0	830	2068	2109	1551	0.01
DPGA-07	**DPGW-07**	0 to 50 psi	50.00	3.515	3.447	101.8	115.3	344.7	800	1384	3447	3515	2586	0.02
DPGA-08	**DPGW-08**	0 to 100 psi	100.0	7.03	6.89	203.6	230.7	689	1600	2768	-	-	-	0.1
DPGA-09	**DPGW-09**	0 to 200 psi	200.0	14.06	13.79	407.2	461.3	1379	3200	-	-	-	-	0.1
DPGA-10	**DPGW-10**	0 to 300 psi	300.0	21.09	20.68	611	692	2068	4800	-	-	-	-	0.1
DPGA-11	**DPGW-11**	0 to 500 psi	500.0	35.15	34.47	1018	1153	3447	-	-	-	-	-	0.2
Compound range available: DPGW-12: 30″ Hg-0-100 psi.														

MODEL CHART

Model	Model	Range	Pressure Ranges											Resolution
			psig	kg/cm²	bar	in Hg	ft w.c.	kPa	oz/in²	in w.c.	mbar	cm w.c.	mm Hg	psi
DPGAB-00	**DPGWB-00**	30″ Hg to 0 (psi)	-14.70	-1.033	-1.013	-29.93	-33.94	-101.4	-235.2	-407.3	-1013	-1034	-761	0.01
DPGAB-04	**DPGWB-04**	0 to 5 psi	5.000	.3515	.3447	10.18	11.53	34.47	80.0	138.4	344.7	351.5	258.6	0.002
DPGAB-05	**DPGWB-05**	0 to 15 psi	15.00	1.055	1.034	30.54	34.60	103.4	240.0	415.2	1034	1055	776	0.01
DPGAB-06	**DPGWB-06**	0 to 30 psi	30.00	2.109	2.068	61.1	69.2	206.8	480.0	830	2068	2109	1551	0.01
DPGAB-07	**DPGWB-07**	0 to 50 psi	50.00	3.515	3.447	101.8	115.3	344.7	800	1384	3447	3515	2586	0.02
DPGAB-08	**DPGWB-08**	0 to 100 psi	100.0	7.03	6.89	203.6	230.7	689	1600	2768	-	-	-	0.1
DPGAB-09	**DPGWB-09**	0 to 200 psi	200.0	14.06	13.79	407.2	461.3	1379	3200	-	-	-	-	0.1
DPGAB-10	**DPGWB-10**	0 to 300 psi	300.0	21.09	20.68	611	692	2068	4800	-	-	-	-	0.1
DPGAB-11	**DPGWB-11**	0 to 500 psi	500.0	35.15	34.47	1018	1153	3447	-	-	-	-	-	0.2
Compound range available: DPGWB-12: 30″ Hg-0-100 psi														

Dwyer
SERIES DPG

DIGITAL PRESSURE GAGES

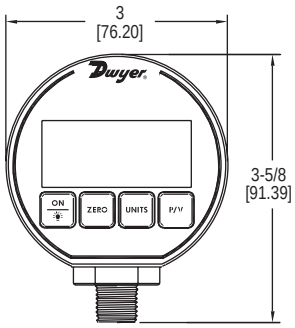
±0.25% or ±0.5% FS Accuracy, NEMA 4X (IP66) Aluminum Housing

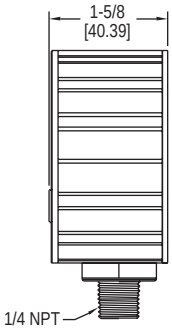


DPG-000



DPG-100





Replace your outdated analog gages with the new **Series DPG Digital Pressure Gages**. The Series DPG has a high ±0.25% or ±0.5% full-scale accuracy. The 4 digit digital display will reduce the potential for errors in readings by eliminating parallax error commonly produced with analog gages. Series DPG is battery powered and has an auto-shut off to conserve battery life. Battery life, on average, will last 2000 hours. A 4 button key pad allows easy access to features without the need to work through complex menus or difficult key combinations. These features include backlight, peak and valley, tare or auto zero and conversion of the pressure units.

FEATURES/BENEFITS

- High accuracy provides exceptional measurement minimizing costly out of specification conditions
- Backlit 4-digit display provides clear parallax-free reading reducing potential for errors
- Battery-powered gage with auto-shutoff eliminates wiring and prolongs battery life reducing service calls
- Push-button zero reduce installation and service time

APPLICATIONS

- Process applications
- Replacement for legacy analog gages
- OEM applications

ACCESSORIES	
Model	**Description**
A-183	Protective rubber boot
A-184	Carrying case

SPECIFICATIONS

Service: Compatible liquids and combustible gases (for FM listing see Agency Approvals below).
Wetted Materials: Type 316L SS.
Housing Materials: Polycarbonate front & back cover, anodized aluminum extruded housing with recessed grooves, polycarbonate overlay, Buna-N O-rings, 316L SS sensor construction.
Accuracy: DPG-000: ±0.5% FS; DPG-100: 0.25% FS; ±1 least significant digit @ 70°F (21°C) (includes linearity, hysteresis, repeatability).
Pressure Limit: 2x pressure range for models ≤1000 psi; 5000 psi for 3000 psi range; 7500 psi for 5000 psi range.
Enclosure Rating: Designed to meet NEMA 4/4X (IP66).
Temperature Limits: 0 to 130°F (-18 to 55°C).
Thermal Effect: Between 70 to 130°F is 0.016%/F; Between 32 to 70°F is 0.026%/F; Between 10 to 32°F is 0.09%/F.
Size: 3.00″ OD x 1.90″ deep (max).
Process Connection: 1/4″ male NPT.
Weight: 8.84 oz (275 g).
Display: 4 digit (.425″ H x .234″ W digits).
Power Requirements: (2) AAA alkaline batteries, included, user replaceable.
Battery Life: 2000 hours typical; Low battery indicator (60 hours in continuous use).
Auto Shut-Off: Gage: 60 minute auto shut off. Auto shut-off may be disengaged; Backlight: 2 minute auto shut-off.
Agency Approvals: DPG-000: CE; DPG-100: CE, FM approved to be intrinsically safe for Class I, Division I, Groups A, B, C and D, for ranges 0-15 to 0-3000 psi.

OPTIONS	
To order add suffix:	**Description**
-NIST	NIST traceable calibration certificate
Example: DPG-002-NIST	



DPG-100 with protective rubber boot



Protective carrying case

MODEL CHART

Model ±0.5%	Model ±0.25%	Range psi	Pressure Ranges										
			kg/cm²	bar	in Hg	ft w.c.	kPa	oz/in²	in w.c.	mbar	cm w.c.	mm Hg
DPG-000*	-	-14.70 to 0	-1.033	-1.013	-29.93	-33.94	-101.4	-235.2	-407.3	-1013	-1034	-760.7
DPG-002*	**DPG-102**	15.00	1.055	1.034	30.54	34.61	103.4	240	415.2	1034	1055	775.7
DPG-003*	**DPG-103**	30.00	2.109	2.069	61.08	69.21	206.9	480	830.4	2069	2109	1551
DPG-004*	**DPG-104**	50.00	3.515	3.448	101.8	115.4	344.8	800	1384	3448	3515	2586
DPG-005*	**DPG-105**	100.0	7.03	6.895	203.6	230.7	689.5	1600	2768	6895	7031	5172
DPG-006*	**DPG-106**	200.0	14.06	13.79	407.2	461.4	1379	3200	5536	-	-	-
DPG-007*	**DPG-107**	300.0	21.09	20.69	610.8	692.1	2069	4800	8304	-	-	-
DPG-008*	**DPG-108**	500.0	35.15	34.48	1018	1154	3448	8000	-	-	-	-
DPG-009*	**DPG-109**	1000	70.3	68.98	2036	2307	6895	-	-	-	-	-
DPG-010*	**DPG-110**	3000	210.9	206.9	6108	6921	-	-	-	-	-	-
DPG-011*	**DPG-111***	5000	351.5	344.8	-	-	-	-	-	-	-	-
DPG-020*	-	-14.70 to 15.00	-1.033 to 1.055	-1.013 to 1.034	-29.93 to 30.54	-33.94 to 34.61	-101.4 to 103.4	-235.2 to 240	-407.3 to 415.2	-1013 to 1034	-1034 to 1055	-760.7 to 775.7
DPG-021*	-	-14.70 to 30.00	-1.033 to 2.109	-1.013 to 2.069	-29.93 to 61.08	-33.94 to 69.21	-101.4 to 206.9	-235.2 to 480	-407.3 to 830.4	-1013 to 2069	-1034 to 2109	-760.7 to 1551
DPG-022*	-	-14.70 to 45.00	-1.033 to 3.164	-1.013 to 3.103	-29.93 to 91.63	-33.94 to 103.8	-101.4 to 310.3	-235.2 to 720	-407.3 to 1245	-1013 to 3102	-1034 to 3164	-760.7 to 2327
DPG-023*	-	-14.70 to 60.00	-1.033 to 4.218	-1.013 to 4.137	-29.93 to 122.2	-33.94 to 138.4	-101.4 to 413.7	-235.2 to 960	-407.3 to 1661	-1013 to 4137	-1034 to 4218	-760.7 to 3103
DPG-024*	-	-14.70 to 100.0	-1.033 to 7.03	-1.013 to 6.895	-29.93 to 203.6	-33.94 to 230.7	-101.4 to 689.5	-235.2 to 1600	-407.3 to 2768	-1013 to 6895	-1034 to 7031	-760.7 to 5172

*Model is not FM approved.

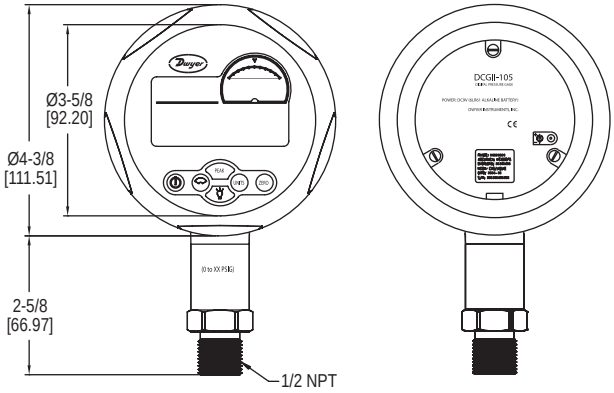
Dwyer

SERIES DCGII

DIGITAL CALIBRATION PRESSURE GAGE

±0.05% FS Accuracy, 316 SS Wetted Parts





The **Series DCGII Digital Calibration Pressure Gage** offers a complete pressure gage with calibration capabilities. With a precise 0.05% full-scale accuracy and large 5 digit resolution, this gage can be used in critical industrial applications where precision is most important. This versatile gage only requires one 9V battery or power adapter and can operate up to 5,000 working hours. The Series DCGII 0.05% Digital Pressure Gage can display percent of range, pressure swings or alarm set points. This pressure gage comes complete with eleven selectable pressure units, backlight and zeroing capability.

FEATURES/BENEFITS

- Highest accuracy provides exceptional measurement for calibration minimizing costly out of specification conditions
- Stainless steel housing resists ambient corrosion for longer service life in harsh environments
- Lightweight and slim, yet large easy to read battery-powered gage make them easy to carry and read
- Specified with high ambient temperature rating means more robust uses and longer service-life
- Indicator can display pressure swings, minimum and maximum peak detection with alarm set points provides a multipurpose tool where critical calibration is needed

APPLICATIONS

- Field gage calibration
- Permanent installation
- Burst disc testing
- Torque data logging
- Pressure regulator testing and hydrostatic leak testing

SPECIFICATIONS

Service: Compatible, non-combustible liquids and gases.
Wetted Materials: 316 SS.
Other Materials: Housing: Aluminum alloy; Display: Acrylic MR200; Buttons: Silicon gel; Back plate: 304 SS; Back seal: Oil-proof latex.
Accuracy: 0.05% FS; ±1 least significant digit.
Temperature Accuracy: ±1°C.
Pressure Limits: 120% FS.
Temperature Limits: 14 to 122°F (-10 to 50°C).
Compensated Limits: 32 to 122°F (0 to 50°C).
Process Connection: 1/2″ male NPT.
Display: 5-digit LCD with blue backlight.
Power Requirements: 9 V alkaline battery, not included, or power adapter accessory.
Battery Life: Up to 10,000 hours (600 working hours @ default 3 times/s).
Auto Shut-Off: Backlight: On/off, 10 s, 20 s, 30 s.
Weight: 1.28 lb (0.58 kg).
Agency Approvals: CE.

MODEL CHART

Model	Range (psig)	kPa	mPa	kgf/cm²	in H₂O	in Hg	mm Hg	psi	mbar	bar
DCGII-100	-14.7 to 0	-101.35	-0.1013	-1.0335	-406.90	-29.929	-760.21	-14.700	1013.5	-1.0135
DCGII-101	0 to 15	103.42	0.1034	1.0546	415.20	30.540	775.72	15.000	1034.2	1.0342
DCGII-102	0 to 30	206.84	0.2067	2.1092	830.40	61.080	1551.4	30.000	2068.4	2.0684
DCGII-103	0 to 60	413.69	0.4134	4.2184	1660.8	122.16	3102.9	60.000	4136.9	4.1369
DCGII-104	0 to 100	689.48	0.6890	7.0307	2768.0	203.60	5171.5	100.00	6894.8	6.8948
DCGII-105	0 to 200	1379.0	1.3780	14.061	5536.0	407.20	1034.3	200.00	1379.0	13.790
DCGII-106	0 to 300	2068.4	2.0670	21.092	8304.0	610.80	1551.4	300.00	2068.4	20.684
DCGII-107	0 to 500	3447.4	3.4450	35.153	1384.0	1018.0	2585.7	500.00	3447.4	34.474
DCGII-108	0 to 1000	6894.8	6.8900	70.307	2768.0	2036.0	5171.5	1000.00	6894.8	68.948
DCGII-109	0 to 2000	1379.0	13.780	140.61	5536.0	4072.0		2000.00		137.90

ACCESSORIES

Model	Description
A-644	9 V DC power adapter
BBV-0N	2-valve block manifold
PCHP-1❶	Pneumatic calibration pump

OPTIONS

Use order code:	Description
NISTCAL-PG2	NIST traceable pressure calibration certificate

❶See page 198 (Series PCHP)

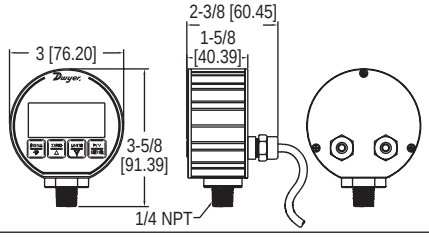
Dwyer

SERIES DPG-200

DIGITAL PRESSURE GAGE

3-in-1: Gage, Transmitter and Switch





The **Series DPG-200 Digital Pressure Gage** has a precise ±0.25% full-scale accuracy. The 4 digit digital display will reduce the potential for errors in readings by eliminating parallax error commonly produced with analog gages. The DPG-200 is packaged in a durable extruded aluminum case designed to meet NEMA 4X (IP66). The unit is powered by 12-24 VDC/VAC and contains two alarm set points along with a 4-20 mA process output. A four-button keypad allows easy access to features. These features include backlight, peak and valley, auto zero and conversion of the pressure units. Pressure ranges also in mbar, kg/cm^2, oz/in^2, in Hg, mm Hg, ft w.c. and ft sw for various models.

FEATURES/BENEFITS
- High accuracy provides exceptional measurement minimizing costly out of specification conditions
- Backlit 4-digit display provides clear parallax-free reading reducing potential for errors
- Durable aluminum case to meet NEMA 4X (IP66) requirements supports use in harsh or outdoor environments
- Push-button zero reduce installation and service time

APPLICATIONS
- Process control
- Compressor control

MODEL CHART

Model	Range (psig)	Pressure Ranges				
		bar	ft w.c.	kPa	in w.c.	cm w.c.
DPG-200	-14.70-0	-1.013	-33.94	-101.4	-407.3	-1034
DPG-202	15.00	1.034	34.61	103.4	415.2	1055
DPG-203	30.00	2.069	69.21	206.9	830.4	2109
DPG-204	50.00	3.448	115.4	344.8	1384	3515
DPG-205	100.0	6.895	230.7	689.5	2768	7031
DPG-206	200.0	13.79	461.4	1379	5536	-
DPG-207	300.0	20.69	692.1	2069	8304	-
DPG-208	500.0	34.48	1154	3448	-	-
DPG-209	1000	68.98	2307	6895	-	-
DPG-210	3000	206.9	6921	-	-	-
DPG-211	5000	344.8	-	-	-	-

Compound range available: DPG-220 range: 30˝ Hg-0-15 psi.

SPECIFICATIONS

DIGITAL GAGE SPECIFICATIONS
Service: Liquids and non-combustible compatible gases.
Wetted Materials: Type 316L SS.
Enclosure: Black polycarbonate front & back cover, anodized aluminum extruded enclosure with recessed grooves, polycarbonate overlay, Buna-N O-rings, 316L SS sensor construction.
Accuracy: 0.25% FS ±1 least significant digit (includes linearity, hysteresis, repeatability).
Pressure Limit: 2x pressure range for models ≤ 1000 psi; 5000 psi for 3000 psi range; 7500 psi for 5000 psi range.
Temperature Limits: 32 to 158°F (0 to 70°C).
Process Connection: 1/4˝ male NPT.
Display: 4 digit (.425˝ H x .234˝ W digits).
Size: 3.00˝ OD x 1.90˝ deep (not including cables).
Weight: 8.84 oz (275 g).

SWITCH SPECIFICATIONS
Switch Type: 2 SPDT form C contacts.
Electrical Rating: 0.5 A @ 125 VAC resistive, 1 A @ 24 VDC.
Relay Differential: 1 least significant digit.
Electrical Connections: 3 ft (.91 m) cable.
Mounting Orientation: Mount in any position.
Set Point Adjustment: Via menu.

TRANSMITTER SPECIFICATIONS
Temperature Limits: 0 to 158°F (0 to 70°C).
Thermal Effect: Between 70 to 158°F = 0.016%/°F. Between 0 to 70°F = 0.026%/°F.
Power Requirements: 12-24 VAC ±20% 50 to 400 Hz, 12-24 VDC ±20%.
Output Signal: 4-20 mA.
Loop Resistance: 600 Ω max.
Power Consumption: 0.8 W max.
Electrical Connections: 3 ft (.91 m) cable.
Enclosure Rating: Designed to meet NEMA 4X (IP66).

OPTIONS

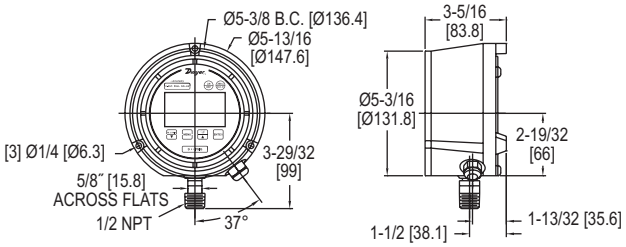
Use order code:	Description
-NIST	NIST traceable calibration certificate

SERIES DSGT

DIGITAL INDICATING TRANSMITTER

±0.25% Full-Scale Accuracy





The **Series DSGT Digital Indicating Transmitter** is a versatile multi-function process gage that features an excellent 0.25% full-scale accuracy. This all-in-one digital gage package is designed to reduce installation costs, instrument cost, and save space where an application requires a gage, transmitter, and switches. The Series DSGT gage comes standard with a loop-powered 4-20 mA transmitter. The Series DSGT gage is enclosed in a durable fiberglass reinforced thermoplastic case that is designed to meet NEMA 4 IP56 requirements. The gage features a menu-driven display for easy customization. User selectable features include 12 engineering units of measure, password protected calibration and disable functions, as well as an adjustable bar graph and update/dampening rates.

FEATURES/BENEFITS
- All-in-one digital gage package is designed to reduce installation costs, instrument cost, and save space where an application requires a gage, transmitter, and switches
- Durable fiberglass reinforced thermoplastic case to meet NEMA 4 (IP56) requirements supports use in harsh environments
- Password protected calibration and disable functions helps to insure no errors by untrained personnel

APPLICATIONS
- Process
- Compressor
- Outdoor
- OEM

SPECIFICATIONS

GAGE SPECIFICATIONS
Service: Compatible, non-combustible liquids & gases.
Wetted Materials: 17 to 4 stainless steel sensor, 316 SS socket.
Housing Materials: Fiberglass reinforced thermoplastic case.
Accuracy: 0.25% FS (includes linearity, hysteresis, repeatability).
Pressure Limit: 2 x FS range.
Process Connection: 1/2˝ male NPT.
Display: 5 digit (0.88˝ high).

TRANSMITTER SPECIFICATIONS
Power Requirements: 12-36 VDC (loop powered).
Memory Back Up Supply: (2) C alkaline batteries, installed functional, user replaceable.
Output Signal: 4-20 mA.
Response Time: 100 ms.
Temperature Limits: 14 to 140ºF (-10 to 60ºC).
Thermal Effects: 0.04% FS/°F.
Electrical Connections: 3 ft flying leads.
Loop Resistance: DC; 0 to 1090 Ω max.
Set Point Adjustments: Adjustable through menu selections.
Weight: 1.45 lb (.66 kg).

OPTIONS

Use order code:	Description
NISTCAL-PT1	NIST traceable calibration certificate

MODEL CHART

Model	Range (psig)	Model	Range (psig)	Model	Range (psig)	Model	Range (psig)
DSGT-101-C0S	30˝ Hg-0 to 15	**DSGT-106-C0S**	0 to 100	**DSGT-109-C0S**	0 to 300	**DSGT-116-C0S**	0 to 5000
DSGT-102-C0S	30˝ Hg-0 to 30	**DSGT-107-C0S**	0 to 160	**DSGT-110-C0S**	0 to 600	**DSGT-117-C0S**	0 to 8000
DSGT-104-C0S	0 to 30	**DSGT-108-C0S**	0 to 200	**DSGT-112-C0S**	0 to 1000	**DSGT-118-C0S**	0 to 10000
DSGT-105-C0S	0 to 60						

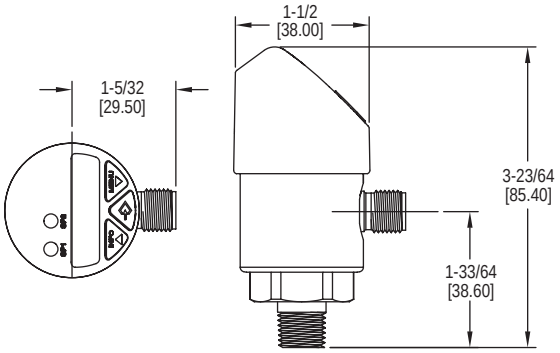
Dwyer

SERIES DPT

DIGITAL PRESSURE TRANSMITTER WITH SWITCHES

Two Solid State Switches, LED Display





The **Series DPT Digital Pressure Transmitter with Switches** combines a large, 14-segment LED display with two programmable solid state switches into one compact unit. A unique, 3-way rotating design allows the DPT to meet specific installation requirements without any retrofitting. The display and electrical connection can be rotated independently to maximize visibility while still orienting the electrical connection in the best position for the cable connector. Large, ergonomically designed push-buttons allow for quick/easy programming and thin-film piezoresistive sensor technology guarantees long-term reliability and stability.

FEATURES/BENEFITS

- Compact size, lightweight, and high accuracy supports multiple installation methods to support application need and footprint
- Rotating display and electrical connection to maximize visibility while orienting the electrical connection in the best position for the cable connector

APPLICATIONS

- Calibration
- Hydraulics and pneumatics
- Machine tools
- Compressors and pumps
- Machine building

SPECIFICATIONS

Service: Compatible gases, liquids or vapors.
Wetted Materials: Pressure connection: 316 L SS; Pressure sensor: 316 L SS (13-8 PH for ranges above 150 psi).
Housing: 316 L lower body, heat and chemical resistant fiberglass reinforced plastic (PBT) plastic head, TPE-E keyboard, PC display window.
Accuracy: 1.0% FS (includes non-linearity, hysteresis, zero point).
Pressure Limit: See table.
Temperature Limits: 32 to 176°F (0 to 80°C).
Process Connections: 1/4″ male NPT.
Display: Red LED 4-digit (0.35″ H digits).
Weight: 7 oz (0.2 kg).

SWITCH SPECIFICATIONS
Switch Type: PNP.
Electrical Rating: 250 mA.
Electrical Connections: M 12x1, 5-pin.
Mounting Orientation: Mount in any position.

TRANSMITTER SPECIFICATIONS
Temperature Limits: 32 to 176°F (0 to 80°C).
Thermal Effect: 0.2% FS / 10k.
Power Requirements: 15-35 VDC.
Output Signal: DPT-A: 4-20 mA; DPT-V: 0-10 VDC.
Loop Resistance: DPT-A: ≤ 0.5k; DPT-V: > 10k.
Power Consumption: ≤ 100 mA.
Electrical Connections: M 12x1, 5-pin.
Enclosure Rating: IP67.

MODEL CHART

0-10 VDC Model	4-20 mA Model	Range (psig)	Maximum Pressure (psig)	Burst Pressure (psig)	Pressure Ranges bar	MPa	kPa	kg/cm²
DPT-V00	DPT-A00	-14.5 to 0	30	75	1.034	.1034	103.4	1.055
DPT-V01	DPT-A01	0 to 15	30	75	1.034	.1034	103.4	1.055
DPT-V02	DPT-A02	0 to 25	60	150	1.724	.1724	172.4	1.758
DPT-V03	DPT-A03	0 to 30	60	150	2.068	.2068	206.8	2.109
DPT-V04	DPT-A04	0 to 50	100	250	3.447	.3447	344.7	3.515
DPT-V05	DPT-A05	0 to 100	200	500	6.895	.6895	689.5	7.031
DPT-V06	DPT-A06	0 to 160	290	500	11.03	1.103	1103	11.25
DPT-V07	DPT-A07	0 to 200	400	1500	13.79	1.378	1378	14.06
DPT-V08	DPT-A08	0 to 300	600	1500	20.68	2.068	2068	21.09
DPT-V09	DPT-A09	0 to 500	1000	2500	34.47	3.447	3447	35.15
DPT-V10	DPT-A10	0 to 1000	1740	7975	68.95	6.895	6895	70.31

OPTIONS

Use order code:	Description
NISTCAL-PT1	NIST traceable calibration certificate

ACCESSORIES

Model	Description
A-195	6′ (2 m) shielded cable with 5 pin female M-12 connections

Dwyer

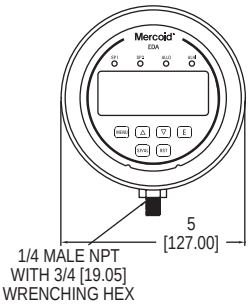
SERIES EDA | MERCOID® BY DWYER

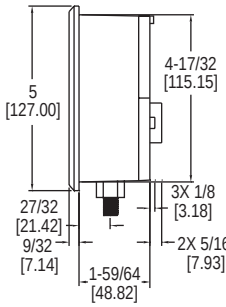
ELECTRONIC PRESSURE CONTROLLER

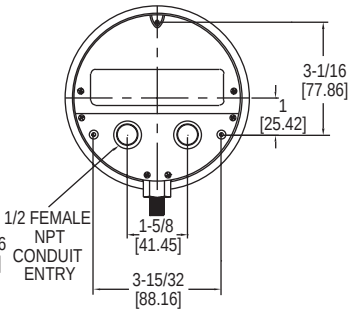
2 Switches, Indicating Gage, and Transmitter in One Package











Series EDA Electronic Pressure Controller is an extremely versatile compact package that can replace a separate gage, two switches, and a transmitter in a system saving money, installation time, and panel space. The EDA incorporates two SPDT relays that have the on and off points fully adjustable over the range for control or alarm use. Front face has LED indicators for switch status and a large backlight two-line display showing process value and indication units. Programming is easy with simple menu structure, two-line display, and external programming buttons. Weatherproof housing is ideal for a wide variety of applications with panel mount, flush mount, or pipe mount ability. Features include zero set, adjustable dampening, menu lock out, peak and valley indication, removable terminal blocks, adjustable time delay, and scalable transmitter output.

FEATURES/BENEFITS

- Versatile compact package that can replace a separate gage, two switches, and a transmitter in a system saving money, installation time, and panel space
- Fully programmable to meet simple or complex application needs
- Test mode function simulates input over the range without pressuring to easily test switches and transmitter output function
- Fail-safe relay output choices in case of sensor failure, over pressure, high temperature limit, low temperature limit, or keypad short
- Selectable alternation of set points between the relays for even wear on duplex pump applications
- Weatherproof housing is ideal for a wide variety of applications with panel mount, flush mount, or pipe mount ability

APPLICATIONS

- Process control
- Compressor control
- Filter status
- Duct or building static pressure
- Damper and fan control

SPECIFICATIONS

Service: Compatible liquids and gases.
Wetted Materials: 316L SS.
Housing: Polycarbonate.
Accuracy: ±1% of FS including linearity, hysteresis, and repeatability (indicator and transmitter).
Stability: < ±2% of FS per year.
Pressure Limits: 1.5 x range.
Temperature Limits: Ambient: 20 to 140°F (-6.6 to 60°C); Process: 0 to 176°F (-18 to 80°C).
Compensated Temperature Limits: 32 to 122°F (0 to 50°C).
Thermal Effect: ±0.05% of FS/°F.
Display: 4-digit backlit LCD (digits: 0.60″H x 0.33″ W).
Power Requirements: 12-30 VDC/AC.
Power Consumption: 2.5 watts.
Electrical Connections: Removable terminal blocks with two 1/2″ female NPT conduit connections.
Enclosure Rating: Meets NEMA 4X (IP66).
Warm Up Time: <10 s.
Mounting Orientation: Any position.
Weight: 1.18 lb (535 g).
Agency Approvals: CE, UL.

SWITCH SPECIFICATIONS

Switch Type: 2 SPDT relays.
Electrical Rating: 5 A @ 120/240VAC, 1 A @ 30 VDC.
Repeatability: ±1% of FS (switching only).
Set Points: Adjustable 0-100% of FS.
Switch Indication: External LED for each relay on the front panel.
Switch Reset: Manual or automatic.

TRANSMITTER SPECIFICATIONS

Output Signal: 4-20 mA, 1-6 VDC, 1-5 VDC, 0-5 VDC, or 0-10 VDC (direct or reverse output selection).
Minimum Excitation: 14 VDC.
Zero and Span Adjustments: Menu scalable within the range.

MODEL CHART

Example	EDA	W	-N1	E1	-02	T0	-AT	EDAW-N1E1-02T0-AT
Series	EDA							Electronic pressure controller
Housing		W						Weatherproof
Process Connection			N1					1/4″ NPT male bottom
Electrical Connection				E1				Two 1/2″ female NPT conduit connections
Range					02 03 04 05 06 07 08 09 10			0-20 psi (1.379 bar) 0-60 psi (4.14 bar) 0-100 psi (6.89 bar) 0-150 psi (10.34 bar) 0-300 psi (20.68 bar) 0-600 psi (41.4 bar) 0-1000 psi (68.9 bar) 0-1500 psi (103.4 bar) 0-3000 psi (206.8 bar)
Transmitter Output						T0 T1 T2 T3 T4 T5		None 4-20 mA 1-5 VDC 0-5 VDC 1-6 VDC 0-10 VDC
Options							AT NIST 23444	Aluminum adhesive tag NIST certificate Oxygen cleaning

ACCESSORIES

Model	Description
A-590	1/2″ conduit plug, watertight
A-EDA-BRK	Flush mount bracket for EDA, bracket is then surface mounted, steel with gray hammertone epoxy finish



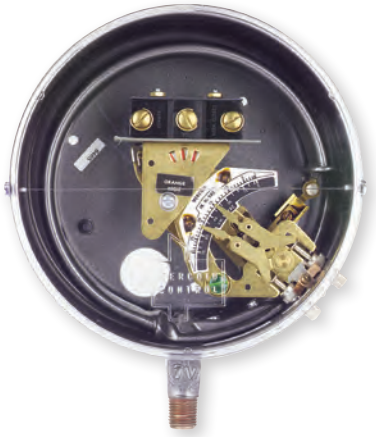
A-EDA-BRK with EDA installed

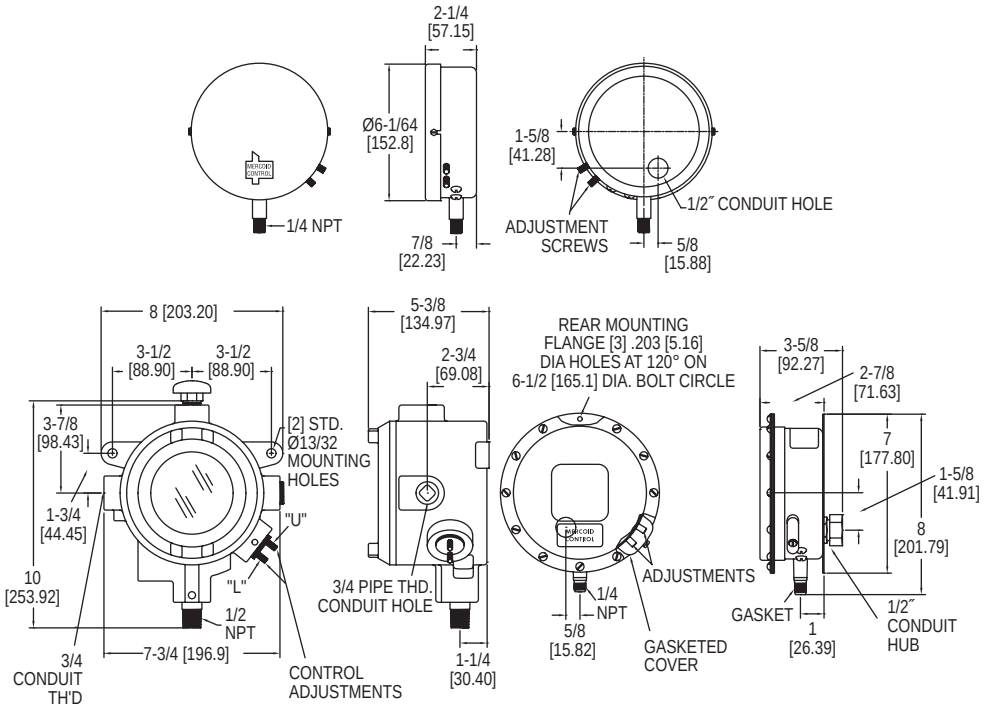
Dwyer

SERIES DA/DS | MERCOID® BY DWYER

BOURDON TUBE PRESSURE SWITCH

Pressure Ranges to 8000 psi (551.6 bar)





DAH **DAW**

VIDEO ONLINE

Customers tell us that the **Series DA/DS Bourdon Tube Pressure Switch** is the best pressure switch made. The Mercoid DA/DS Series is one of the world's broadest lines of pressure switches. The DA/DS Series has extremely high sensitivity and great repeatability. The DA Models are equipped with two external adjustments, one for setting high pressure operating point, the other for setting low pressure operating point. Deadband, the difference between high and low setpoints, is adjustable over the full-scale. The DS Models are equipped with a single external adjustment for setting operating point only. For mercury-free switches, choose between the snap action switch or hermetically sealed snap action switch. Hermetically sealed mercury switch also available.

FEATURES/BENEFITS

- Visible calibrated dial provides an easy and fast check without having to open device causing dangerous conditions to operators
- On/off indication (except hermetically sealed snap switch models) gives operator clear indication of state of switched equipment that could be located in another location
- Adjustable or fixed deadband supports control applications by reducing equipment wear-out by unnecessary recycling
- External switch set point adjustment reduces set-up time
- Pressure ranges of full vacuum to 8000 psig gives application designers the ability to specify standard equipment, simplifying install and training, and reducing servicing costs
- UL listed, CSA approved, many models FM approved to support rigorous process applications and regulations
- General purpose, weatherproof or explosion-proof enclosures for a variety of indoor or outdoor environments meeting the needs of multiple applications and uses

APPLICATIONS

- Compressors
- Mechanical HVAC or process equipment
- Pump control

SPECIFICATIONS

Wetted Materials: Brass, 403 SS, or 316 SS.
Temperature Limit: 180°F (82°C).
Pressure Limit: Maximum pressure of the operating range.
Enclosure Rating: General purpose, weatherproof or explosion-proof.
Repeatability: ±1% of full operating range, ±1.5% on DS-7300 models.
Switch Type: SPST mercury switch, SPDT mercury switch, SPDT snap switch, or SPDT hermetically sealed snap switch. Other circuit types available.
Electrical Rating: See model charts.
Electrical Connections: Screw terminal.
Conduit Connection: General purpose: 1/2″ hole for conduit hub; Weatherproof: 1/2″ conduit hub; Explosion-proof: 3/4″ female NPT.
Process Connection: General purpose and weatherproof: 1/4″ male NPT, 1/2″ male NPT on ranges 15S and 16S; Explosion-proof: 1/2″ male NPT and 1/4″ female NPT.
Mounting Orientation: Vertical.
Set Point Adjustment: Thumbscrew.
Weight: General purpose: 4 lb (1.8 kg); Weatherproof: 6 lb (2.7 kg); Explosion-proof: 8 lb (3.5 kg).
Deadband: See model chart.
Agency Approvals: CSA, FM, UL (mercury switch units are not CE approved) (Consult factory for FM approved models).

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

BOURDON TUBE PRESSURE SWITCH

Pressure Ranges to 8000 psi (551.6 bar)

MODEL CHART - D SERIES PRESSURE SWITCH WITH SNAP ACTION SWITCH AND GENERAL PURPOSE ENCLOSURE

		Adjustable Deadband SPDT: 10 A @ 120/240 VAC		Fixed Deadband SPDT: 15 A @ 120/240 AC		Hermetically Sealed, Fixed Deadband SPDT: 5 A @ 120/240 VAC, 5 A res. @ 30 VDC	
Bourdon Tube Material	Adjustable Operating Range (psig)	Minimum Deadband (psig)	Model	Fixed	Model	Fixed	Model
Brass	0 to 30″ Hg VAC	13.5″ Hg	DA-7031-153-2	3″ Hg	DS-7231-153-2	5″ Hg	DS-7331-153-2
Brass	10″ Hg VAC to 12	6	DA-7031-153-3	1.5	DS-7231-153-3	3	DS-7331-153-3
Brass	25″ Hg VAC to 50	12	DA-7031-153-27	2.5	DS-7231-153-27	3.75	DS-7331-153-27
Brass	1/8 to 15	6	DA-7031-153-1	1.5	DS-7231-153-1	3	DS-7331-153-1
Brass	1/8 to 20	6	DA-7031-153-3A	1.5	DS-7231-153-3A	3	DS-7331-153-3A
Brass	1 to 35	7.5	DA-7031-153-4	1.5	DS-7231-153-4	3	DS-7331-153-4
Brass	2 to 60	9	DA-7031-153-5	2	DS-7231-153-5	3	DS-7331-153-5
Brass	5 to 100	13.5	DA-7031-153-6	2.5	DS-7231-153-6	3.75	DS-7331-153-6
Brass	5 to 150	24	DA-7031-153-7	3	DS-7231-153-7	5.25	DS-7331-153-7
Brass	10 to 200	24	DA-7031-153-8	4	DS-7231-153-8	6.75	DS-7331-153-8
Brass	10 to 300	37.5	DA-7031-153-9	5	DS-7231-153-9	9	DS-7331-153-9
403 stainless steel	30″ Hg VAC to 60	18	DA-7021-153-25S	3.5	DS-7221-153-25S	5.25	DS-7321-153-25S
403 stainless steel	30″ Hg VAC to 75	22.5	DA-7021-153-26S		DS-7221-153-26S	5.25	DS-7321-153-26S
403 stainless steel	2 to 60	13.5	DA-7021-153-5S	3	DS-7221-153-5S	4.5	DS-7321-153-5S
403 stainless steel	5 to 100	19.5	DA-7021-153-6S	3.5	DS-7221-153-6S	5.25	DS-7321-153-6S
403 stainless steel	10 to 200	22.5	DA-7021-153-8S	4	DS-7221-153-8S	7.125	DS-7321-153-8S
403 stainless steel	10 to 300	28.5	DA-7021-153-9S	6	DS-7221-153-9S	10.5	DS-7321-153-9S
403 stainless steel	40 to 350	30	DA-7021-153-9AS	6	DS-7221-153-9AS	10.5	DS-7321-153-9AS
403 stainless steel	25 to 600	67.5	DA-7021-153-10S	10	DS-7221-153-10S	18	DS-7321-153-10S
403 stainless steel	50 to 1000	142.5	DA-7021-153-11S	20	DS-7221-153-11S	33	DS-7321-153-11S
403 stainless steel	100 to 1500	195	DA-7021-153-12S	30	DS-7221-153-12S	52.5	DS-7321-153-12S
403 stainless steel	300 to 2500	390	DA-7021-153-13S	60	DS-7221-153-13S	90	DS-7321-153-13S
403 stainless steel	500 to 5000	1350	DA-7021-153-15S	200	DS-7221-153-15S	300	DS-7321-153-15S
403 stainless steel	800 to 8000	2250	DA-7021-153-16S	500	DS-7221-153-16S	5.25	DS-7341-153-26E
316 stainless steel	30″ Hg VAC to 75	15	DA-7041-153-26E	3.5	DS-7241-153-26E	6	DS-7341-153-23E
316 stainless steel	5 to 75	12	DA-7041-153-23E	4	DS-7241-153-23E	5.25	DS-7341-153-6E
316 stainless steel	10 to100	15	DA-7041-153-6E	3.5	DS-7241-153-6E	6.75	DS-7341-153-24E
316 stainless steel	10 to 150	16.5	DA-7041-153-24E	4	DS-7241-153-24E	12	DS-7341-153-9E
316 stainless steel	10 to 300	42	DA-7041-153-9E	8	DS-7241-153-9E	18	DS-7341-153-21E
316 stainless steel	30 to 400	78	DA-7041-153-21E	10	DS-7241-153-21E	37.5	DS-7341-153-22E
316 stainless steel	75 to 800	180	DA-7041-153-22E	25	DS-7241-153-22E	52.5	DS-7341-153-11E
316 stainless steel	100 to 1000	285	DA-7041-153-11E	35	DS-7241-153-11E	112.5	DS-7341-153-13E
316 stainless steel	200 to 2500	600	DA-7041-153-13E	75	DS-7241-153-13E		

MODEL CHART - D SERIES PRESSURE SWITCH WITH MERCURY SWITCH AND GENERAL PURPOSE ENCLOSURE

		Adjustable Deadband			
Bourdon Tube Material	Adjustable Operating Range (psig)	Minimum Deadband (psig)	SPDT 4 A @ 120 V, 2 A @ 240 V AC/DC	SPST Open on Increase 10 A @ 120 V, 5 A @ 240 V AC/DC	SPST Close on Increase 10 A @ 120 V 5 A @ 240 V AC/DC
Brass	30″ to 0 Hg VAC	2″ Hg	DA-31-153-2	DA-31-2-2	DA-31-3-2
Brass	10″ Hg VAC to 12	1	DA-31-153-3	DA-31-2-3	DA-31-3-3
Brass	25″ Hg VAC to 50	3.5	DA-31-153-27	DA-31-2-27	DA-31-3-27
Brass	1/8 to 15	1	DA-31-153-1	DA-31-2-1	DA-31-3-1
Brass	1/8 to 20	1	DA-31-153-3A	DA-31-2-3A	DA-31-3-3A
Brass	1 to 35	1.75	DA-31-153-4	DA-31-2-4	DA-31-3-4
Brass	2 to 60	3	DA-31-153-5	DA-31-2-5	DA-31-3-5
Brass	5 to 100	3.75	DA-31-153-6	DA-31-2-6	DA-31-3-6
Brass	5 to 150	6	DA-31-153-7	DA-31-2-7	DA-31-3-7
Brass	10 to 200	8	DA-31-153-8	DA-31-2-8	DA-31-3-8
Brass	10 to 300	12	DA-31-153-9	DA-31-2-9	DA-31-3-9
403 stainless steel	30″ Hg VAC to 60	6	DA-21-153-25S	DA-21-2-25S	DA-21-3-25S
403 stainless steel	30″ Hg VAC to 75	8	DA-21-153-26S	DA-21-2-26S	DA-21-3-26S
403 stainless steel	2 to 60	4	DA-21-153-5S	DA-21-2-5S	DA-21-3-5S
403 stainless steel	5 to 100	6	DA-21-153-6S	DA-21-2-6S	DA-21-3-6S
403 stainless steel	10 to 200	8	DA-21-153-8S	DA-21-2-8S	DA-21-3-8S
403 stainless steel	10 to 300	14	DA-21-153-9S	DA-21-2-9S	DA-21-3-9S
403 stainless steel	40 to 350	14	DA-21-153-9AS	DA-21-2-9AS	DA-21-3-9AS
403 stainless steel	25 to 600	25	DA-21-153-10S	DA-21-2-10S	DA-21-3-10S
403 stainless steel	50 to 1000	60	DA-21-153-11S	DA-21-2-11S	DA-21-3-11S
403 stainless steel	100 to 1500	90	DA-21-153-12S	DA-21-2-12S	DA-21-3-12S
403 stainless steel	300 to 2500	150	DA-21-153-13S	DA-21-2-13S	DA-21-3-13S
403 stainless steel	500 to 5000	450	DA-21-153-15S	DA-21-2-15S	DA-21-3-15S
403 stainless steel	800 to 8000	750	DA-21-153-16S	DA-21-2-16S	DA-21-3-16S
316 stainless steel	30″ Hg VAC to 75	7	DA-41-153-26E	DA-41-2-26E	DA-41-3-26E
316 stainless steel	5 to 75	3	DA-41-153-23E	DA-41-2-23E	DA-41-3-23E
316 stainless steel	10 to100	7	DA-41-153-6E	DA-41-2-6E	DA-41-3-6E
316 stainless steel	10 to 150	6	DA-41-153-24E	DA-41-2-24E	DA-41-3-24E
316 stainless steel	10 to 300	18	DA-41-153-9E	DA-41-2-9E	DA-41-3-9E
316 stainless steel	30 to 400	30	DA-41-153-21E	DA-41-2-21E	DA-41-3-21E
316 stainless steel	75 to 800	75	DA-41-153-22E	DA-41-2-22E	DA-41-3-22E
316 stainless steel	100 to 1000	100	DA-41-153-11E	DA-41-2-11E	DA-41-3-11E
316 stainless steel	200 to 2500	210	DA-41-153-13E	DA-41-2-13E	DA-41-3-13E

OPTIONS

Weatherproof Enclosure - Series DAW

Note: To order, add "W" to model number after DA or DS, change 1 to 3.
Example: DAW-33-153-7

Explosion-Proof Enclosure - Series DAH

Suitable for Class I, Groups C and D; NEMA 7; Class II, Groups E, F, G; Class III NEMA 9 and 9A, Division 1.

Note: To order, add "H" to model number after DA or DS. **Example:** DAH-31-153-7

FM Approved

For general purpose and explosion-proof models see agency approvals.

Note: To order, add "F" to model number after DA, DS, DAH or DSH.
Examples: DAF-31-153-7 or DAHF-31-153-7

Other Options (Consult Factory)

DPDT switches or other switch types, fixed deadband mercury switch units for low deadband applications, manual reset operation, two-stage operation, acetal bushed movement for applications with high amounts of vibration and/or pulsation, fungus proofing, siphon, diaphragm seals, mounting flange and remote connection.

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

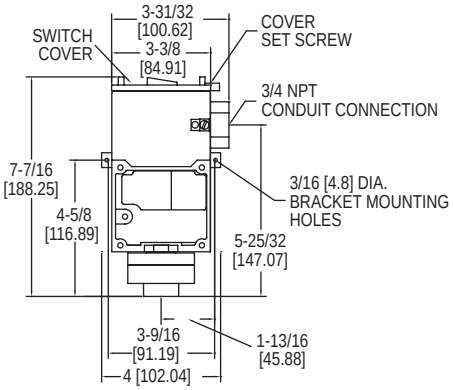
Dwyer

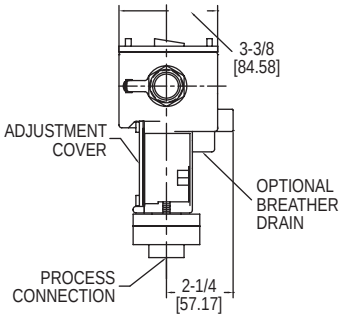
SERIES SA1100 | MERCOID® BY DWYER

DIAPHRAGM OPERATED PRESSURE SWITCH

Visible Set point, Adjustable Deadband, Hermetically Sealed Snap Switch, Weatherproof and Explosion-Proof







The **Series SA1100 Diaphragm Operated Pressure Switch** is weatherproof and explosion-proof in one economical enclosure. Extremely rugged construction assures excellent reliability in chemical, petroleum and industrial plants. New design also provides burst pressure protection to 3000 psi (206 bar). The rolling diaphragm design maintains a constant effective area to minimize friction. This results in a minimum deadband as low as 5% of full-scale. Since many applications require higher deadbands, the SA1100 includes a separate adjustment of this when necessary. A pump being used to control liquid level in a tank would be a typical situation where this feature would be important. Both set point and deadband adjustments are protected, yet clearly visible behind a clear polycarbonate window and are fully isolated from the electrical components for additional safety. A 7/16″ open-end wrench is the only tool required to change settings. Terminal blocks are provided for switch wiring connections and both internal and external ground screws are included. Standard housing is weatherproof to NEMA standards 1 through 4X and 13; explosion-proof to NEMA 7, Class I, Groups B, C & D; NEMA 9, Class II, Groups E, F & G. Optional construction adds drain to meet NEMA 3R IP54.

FEATURES/BENEFITS

- Explosion-proof and weatherproof housing provides device protection for outdoor use or harsh environment operation
- Burst pressure protection prevents device failure where high-pressure surges may damage device costing down-time and repair/replacement
- Adjustable deadband reduces equipment cycling and potential failure
- Visible set point and deadband adjustments provide an easy and fast check without having to open device causing dangerous conditions to operators

APPLICATIONS

- Chemical, petroleum, food and drug processing industries
- Used indoor, outdoor or in explosion-proof area
- Pump control

SPECIFICATIONS

Wetted Materials: See pressure chamber and diaphragm material in model chart.
***Temperature Limits:** -30 to 180°F (-35 to 82°C) standard; ATEX compliant at Ambient Temperature: -4 to 167°F (-20 to 75°C); Process Temperature: -4 to 167°F (-20 to 75°C).
Pressure Limit: 1200 psig (82.6 bar).
***Enclosure Rating:** Weatherproof and Explosion-proof. Listed with UL and CSA for Class I, Groups B, C and D; Class II Groups E, F, and G. ATEX Compliant CE 0344 Ex II 2 G EEx d IIC T6 Process Temperature 75°C. Weatherproof UL Rated Type 4. Meets NEMA 4X (IP66).
Switch Type: SPDT or DPDT snap switch.
Electrical Rating: See model chart.
Electrical Connections: Screw terminal.
Conduit Connection: 3/4″ female NPT.
Process Connection: 1/2″ female NPT.
Mounting Orientation: Within 20° of vertical.
Set Point Adjustment: Internal 7/16″ hex nuts.
Weight: 3.5 lb (1.6 kg).
Deadband: See deadband chart.
***Agency Approvals:** ATEX, CE, CSA, UL.

*Options that do not have ATEX.

SWITCH DEADBAND CHART

Range Number	Adjustable Operating Range		Approximate Minimum Deadband				Approximate Maximum Deadband	
			Low		High			
	psig	bar	psig	bar	psig	bar	psig	bar
11	10-150	0.7-10	4.0	0.28	7.5	0.52	75	5.2
12	20-250	1.4-17.2	5.0	0.35	12.5	0.86	150	10
13	30-500	2.0-34	12	0.83	45	3.1	300	21

MODEL CHART

Example	SA11	13	E	-A	4	-K	2		SA1113E-A4-K2
Construction	SA11								Series designator, weatherproof NEMA 4X, explosion-proof NEMA 7, 9
Adjustable Pressure Ranges		11							Adjustable range 10 to 150 psig (0.7-10 bar)
		12							Adjustable range 20 to 250 psig (1.4-17.2 bar)
		13							Adjustable range 30 to 500 psig (2.0-34.0 bar)
Circuit (Switch) Options			E						Snap action switch rated 15 A @ 125/250/480 VAC, 1/8 HP @ 125 VAC, 1/4 HP @ 250 VAC, 1/2 A @ 125 VDC resistive, 1/4 A @ 250 VDC resistive
			HS						Hermetically sealed snap action switch rated 5 A @ 125/250 VAC, 5 A resistive @ 30 VDC*
			HG						Hermetically sealed snap action switch with gold contacts rated 1A @ 125 VAC, 1 A resistive @ 30 VDC*
Pressure Chamber Material (Wetted)				A					Aluminum
				S					316 SS
Diaphragm Material (Wetted)					4				Buna-N diaphragm and O-ring
					5				Fluorocarbon diaphragm and O-ring
Circuit (Switch) Type						K			SPDT
						L			DPDT (not available with HS or HG switch options)
Process Connection							2		1/2 inch female NPT
***Options**								AT	ATEX certified construction
								DRAIN	Housing with drain - allows condensate to be drained from inside enclosure (meets NEMA 3R instead of 4X)

*Options that do not have ATEX

Examples: SA1111E-A4-K2; SA1111E-S5-K2

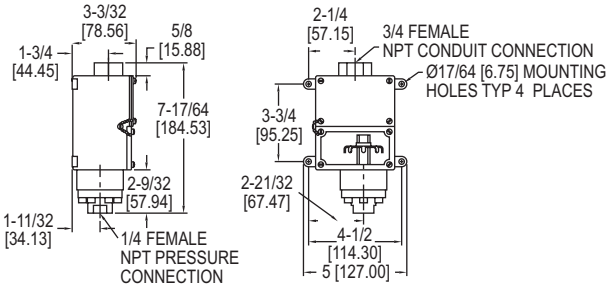
Dwyer

SERIES 1000W | MERCOID® BY DWYER

WEATHERPROOF DIAPHRAGM OPERATED PRESSURE SWITCH

Visible Set point, Fixed Deadband, Pressure Ranges to 1400 psi





With extremely rugged construction the **Series 1000W Weatherproof Diaphragm Operated Pressure Switch** provides excellent reliability in chemical, petroleum and industrial plants. Bellville spring movement permits mounting of control in any position and helps prevent contact chatter. New design also provides high over-pressure protection. Weatherproof housing is standard.

FEATURES/BENEFITS
- Weatherproof housing is ideal for a wide variety of applications where dust or water is present
- Spring movement design provides for control in any mounting position and prevents contact chatter reducing false or inconsistent switching

APPLICATIONS
- Chemical, petroleum, food and drug processing industries
- Process and Industrial applications

SPECIFICATIONS

Wetted Materials: See pressure chamber and diaphragm material in model chart.
Temperature Limits: -30 to 170°F (-35 to 77°C).
Pressure Limit: 3000 psig (206.8 bar).
Enclosure Rating: Weatherproof, meets NEMA 4X (IP66).
Switch Type: SPDT snap switch.
Electrical Rating: 15 A @ 125/250 VAC resistive.
Electrical Connections: Screw type.
Conduit Connection: 3/4″ female NPT.
Process Connection: 1/4″ female NPT.
Mounting Orientation: Any position.
Set Point Adjustment: Internal thumbwheel.
Weight: 3 lb (1.4 kg).
Deadband: See model chart.
Agency Approvals: CE, UL.

MODEL CHART

Aluminum Pressure Chamber Polyamide Diaph. Model	316 SS Pressure Chamber FEP Diaph. Model	Adjustable Operating Range psig (bar)	Approx.* Deadband (Fixed) psig (bar)
1003W-A1-D	**1003W-B3-D**	5 to 40 (.48 to 2.8)	2 (.14)
1004W-A1-D	**1004W-B3-D**	10 to 70 (.69 to 4.8)	4 (.28)
1005W-A1-D	**1005W-B3-D**	25 to 200 (1.7 to 13.8)	8 (.55)
1006W-A1-D	**1006W-B3-D**	50 to 350 (3.5 to 24.1)	15 (1.0)
1007W-A1-D	**1007W-B3-D**	75 to 550 (5.2 to 37.9)	30 (2.1)
1008W-A1-D	**1008W-B3-D**	100 to 900 (6.9 to 62.1)	50 (3.5)
1009W-A1-D	**1009W-B3-D**	200 to 1400 (13.8 to 96.5)	75 (5.2)

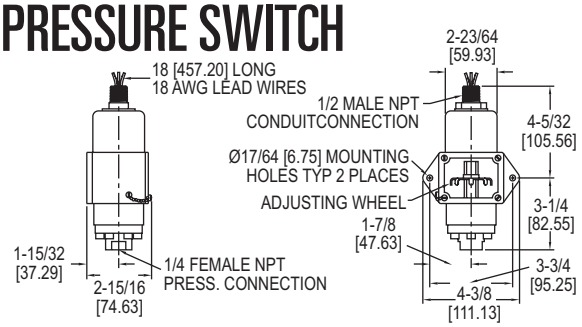
*Deadband 10-15% larger when using 316 SS diaphragm.
Note: To order, change A1 to B2 for 316 SS diaphragm and pressure chamber.
Example: 1003W-B2-D. Values shown are for mid-scale.

SERIES 1000E | MERCOID® BY DWYER

EXPLOSION-PROOF DIAPHRAGM OPERATED PRESSURE SWITCH

Visible Set point, Fixed Deadband, Pressure Ranges to 1400 psi





The **Series 1000E Explosion-Proof Diaphragm Operated Pressure Switch** has the same rugged construction as used in Series 1000W plus explosion-proof design are combined in this new unit. UL listed for Class I, Groups A, B, C & D; Class II, Groups E, F & G. Bellville spring movement permits mounting of control in any position and helps prevent contact chatter. High over-pressure protection and vibration resistance are also featured.

FEATURES/BENEFITS
- Weatherproof housing is ideal for a wide variety of applications where dust or water is present
- Spring movement design provides for control in any mounting position and prevents contact chatter reducing false or inconsistent switching
- UL listed to support rigorous process applications and regulations

APPLICATIONS
- Chemical, petroleum, food and drug processing industries
- Process and industrial applications

SPECIFICATIONS

Wetted Materials: See pressure chamber and diaphragm material in model chart.
Temperature Limits: -30 to 170°F (-35 to 77°C).
Pressure Limit: 3000 psig (206.8 bar).
Enclosure Rating: Explosion-proof, UL listed for Class I, Groups A, B, C and D; Class II, Groups E, F, and G.
Switch Type: SPDT snap switch. Hermetically sealed optional.
Electrical Rating: 15 A @ 125/250/480 VAC res., 0.5 A @ 125 VDC, 0.25 A @ 250 VDC.
Wiring Connections: 18 AWG, 18″ (460 mm) color-coded leads: N.O. (yellow), N.C. (black), and common (red).
Conduit Connection: 1/2″ male NPT.
Process Connection: 1/4″ female NPT.
Mounting Orientation: Any position.
Set Point Adjustment: Internal thumbwheel.
Weight: 3 lb (1.4 kg).
Deadband: See model chart.
Agency Approvals: CE, UL.

MODEL CHART

Aluminum Pressure Chamber Polyamide Diaph. Model	316 SS Pressure Chamber FEP Diaph. Model	Adjustable Operating Range psig (bar)	Approx.* Deadband (Fixed) psig (bar)
1003E-A1-J	**1003E-B3-J**	5 to 40 (.48 to 2.8)	2.5 (.17)
1004E-A1-J	**1004E-B3-J**	10 to 70 (.69 to 4.8)	5 (.34)
1005E-A1-J	**1005E-B3-J**	25 to 200 (1.7 to 13.8)	10 (.69)
1006E-A1-J	**1006E-B3-J**	50 to 350 (3.5 to 24.1)	18 (1.2)
1007E-A1-J	**1007E-B3-J**	75 to 550 (5.2 to 37.9)	36 (2.5)
1008E-A1-J	**1008E-B3-J**	100 to 900 (6.9 to 62.1)	60 (4.1)
1009E-A1-J	**1009E-B3-J**	200 to 1400 (13.8 to 96.5)	90 (6.2)

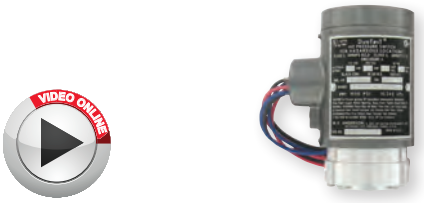
*Deadband 10-15% larger when using 316 SS diaphragm.
Note: To order, change A1 to B2 for 316 SS diaphragm and pressure chamber.
Example: 1003E-B2-J. Values shown are for mid-scale.

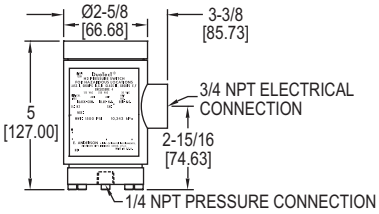
Dwyer

SERIES H2 | W. E. ANDERSON™ BY DWYER

DUAL-ACTION EXPLOSION-PROOF PRESSURE SWITCH

Explosion-proof and Weatherproof Enclosure





Explosion-Proof, UL & CSA Listed for Class I, Groups B, C & D and Class II, Groups E, F & G. The **Series H2 Dual-Action Explosion-Proof Pressure Switch** is designed for sequencing two different actions as pressure of a liquid or gas increases or decreases. The design consists of two concentric pistons operated by a single diaphragm with one pressure chamber. Each piston actuates a separate switch independent of the other. The switches may be adjusted to operate together, at opposite ends of the range or at two intermediate set points. The threaded top is removed to field adjust or service switches without disturbing electrical or pressure connections. The Duotect® switch is explosion-proof and weatherproof. It can be mounted in any position and is not affected by vibration.

FEATURES/BENEFITS
- Explosion-proof and weather-proof housing provides device protection for outdoor use or harsh environment operation
- UL listed, CSA approved to support rigorous process applications and regulations
- Independent piston action design for either gas or liquid allows switches to active together or independently based on settings
- Mounting in any position and not affected by vibration provides reliable switching for equipment

APPLICATIONS
- Mechanical HVAC or process equipment
- Chemical, petroleum, food and drug processing industries
- Process and Industrial applications

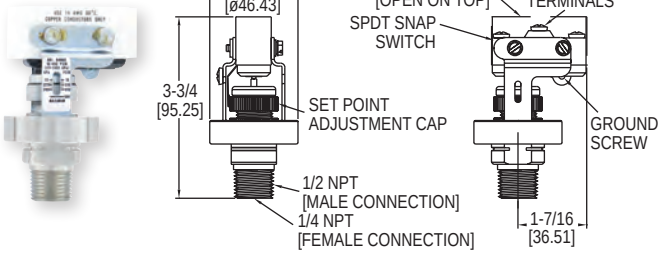
SPECIFICATIONS	
Wetted Materials: 316 SS chamber with FEP diaphragm and Buna-N O-ring standard. Fluoroelastomer or EPDM O-ring optional. **Temperature Limit:** 275°F (135°C). CSA approved: -20 to 90°C (-4 to 184°F). **Pressure Limit:** 1500 psig (103 bar). **Enclosure Rating:** UL listed explosion-proof, Class I, Groups B, C, and D. Class II Groups E, F, and G. Meets NEMA 4X (IP66). CSA optional. Class I, Groups B, C & D. Class II, Groups E, F, & G -20°C ≤ Tamb ≤ 75°C T6 [optional -20°C ≤ Tamb ≤ 40°C T5] Type 4.	**Switch Type:** Two SPDT snap switches. **Electrical Rating:** 5 A @ 125/250 VAC. 5 A res., 3 A ind. @ 30 VDC. Gold contacts optional. **Electrical Connections:** 18 AWG, 18″ (460 mm) long. **Conduit Connection:** 3/4″ female NPT. **Process Connection:** 1/4″ female NPT. **Mounting Orientation:** Any position. **Set Point Adjustment:** Internal nut. **Weight:** 2 lb (.9 kg). **Deadband:** Approximately 10% of range. **Agency Approvals:** CSA, UL.

MODEL CHART		
Model	**Low Range psig (bar)**	**High Range psig (bar)**
H2S-1	3 to 40 (0.21 to 2.76)	5 to 75 (0.35 to 5.17)
H2S-2	25 to 250 (1.72 to 17.2)	30 to 400 (2.07 to 27.6)
H2S-3	100 to 1000 (6.89 to 68.9)	150 to 1500 (10.3 to 103)

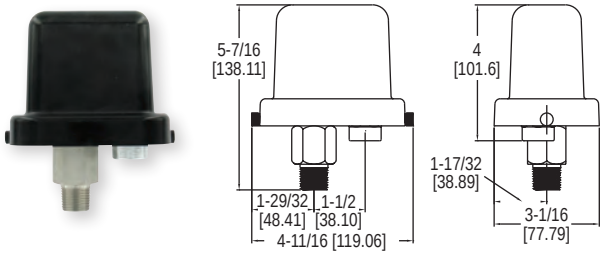
SERIES A1F | MERCOID® BY DWYER

OEM PRESSURE SWITCH

Field Adjustable with Weather-Proof Enclosure



A1F



A1F with weatherproof enclosure

Low cost and precision made, the **Series A1F Low Cost OEM Pressure Switch** is ideal for OEM industrial applications. Wetted materials of 316 SS and fluorocarbon ensure great chemical compatibility with a wide range of process media. The open case style is perfect for panel mounting applications like pump skids. Weatherproof enclosure is available in polycarbonate offering a low cost weatherproof switch. Superior 15 A contact allows direct control of motors or pumps without the use of external relays, a true cost savings. Features include a convenient indicating scale for quick and easy field adjustment.

FEATURES/BENEFITS
- 15 A contact allows direct control reducing costs and reliability by having to introduce additional contacts and relays
- Case style allows use for panel mounting application with optional weather-proof enclosure for use in outdoor environments
- Field adjustable reduces installation time bring application on-line faster
- Wetted material provides support for wider range of process media

APPLICATIONS
- OEM
- Compressors
- Motor control
- Process equipment
- Pump control

SPECIFICATIONS
Service: Compatible liquids and gases. **Wetted Materials:** Pressure chamber: 316 SS; Diaphragm: Fluorocarbon. **Temperature Limit:** -40 to 175°F (-40 to 80°C). **Pressure Limits:** 500 psig (34 bar). **Enclosure Rating:** No rating for open construction. Installed properly within an optional weatherproof enclosure meets NEMA 4X (IP66) standards. **Switch Type:** SPDT snap switch. **Electrical Rating:** 15 A @ 120/240/480 VAC; 1/8 HP @ 125 VAC; 1/4 HP @ 250 VAC. **Electrical Connection:** Screw terminals. **Process Connection:** 1/4″ female NPT and 1/2″ male NPT. **Mounting Orientation:** Within 20° of vertical. **Set Point Adjustment:** Knurled screw cap with indicating scale. **Deadband:** Fixed. See deadband chart. **Weight:** 10.5 oz (297 g). **Agency Approvals:** cULus.

MODEL CHART			
Model	**Range psg (bar)**	**Deadband at Min. Range psg (bar)**	**Deadband at Max. Range psg (bar)**
A1F-O-SS-1-1	2 to 15 (0.14 to 1.03)	2 (0.14)	3 (0.21)
A1F-O-SS-1-2	4 to 75 (0.28 to 5.17)	4 (0.27)	15 (1.0)
A1F-O-SS-1-3	8 to 225 (0.55 to 15.5)	8 (0.55)	25 (1.7)
A1F-O-SS-1-4	16 to 450 (1.1 to 31.0)	15 (1.0)	50 (3.5)
Note: Optional enclosure factory installed. To order, change O to PC.			
Example: A1F-PC-SS-1-1			

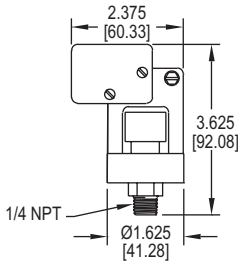
Dwyer

SERIES A1PS/A1VS

ECONOMICAL PRESSURE SWITCH

Vacuum and Compound Ranges Available, Adjustable Set Point





The **Series A1PS/A1VS Economical Pressure Switch** is designed with a 15 Amp SPDT switch for direct control of pumps and motors. Available in pressure, vacuum, or compound ranges, the switches offer a field adjustable set point. Easily adjust the switch by aligning the top of the self locking adjusting nut with the desired setting indicated on the adjacent range scale. Connection is 1/4″ male NPT for quick installation and can be mounted in any position.

FEATURES/BENEFITS
- 15 A contact allows direct control reducing costs and reliability by having to introduce additional contacts and relays
- Field adjustable reduces installation time bring application on-line faster

APPLICATIONS
- OEM
- Compressors
- Process equipment
- Motor control
- Pump control

SPECIFICATIONS

Service: Compatible liquids or gases.
Wetted Materials: Diaphragm: Buna-N; Body with fitting: Zinc alloy, chromate finish.
Temperature Limits: -31 to 185°F (-35 to 85°C).
Pressure Limits: 600 psig.
Vacuum Limits: 29.9″ Hg (vacuum and compound models only).
Switch Type: SPDT snap action.
Electrical Ratings: 15 A (resistive) @ 250 VAC, 1/2 HP @ 250 VAC.
Electrical Connections: Three screw terminals.
Process Connection: 1/4″ male NPT.
Set Point: Field adjustable via knurled screw cap.
Cycling: Not to exceed 1 Hz.
Sensor Element: Diaphragm.
Weight: 7.4 oz (209 g).
Agency Approvals: UL.

MODEL CHART

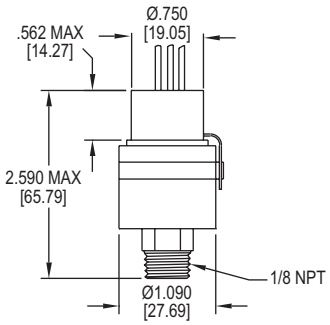
Model	Set Point Range (kPa)	Repeatability (kPa)	Deadband (approx.) (kPa)	Model	Set Point Range (kPa)	Repeatability (kPa)	Deadband (approx.) (kPa)
A1PS-14	1.5 to 3.5 psi (10 to 24)	±0.15 psi (1)	0.5 to 1.7 psi (3 to 11)	**A1VS-14**	6-28″ Hg (-20 to -94)	±1.2″ Hg (-4)	3-14″ Hg (-10 to -47)
A1PS-24	3 to 40 psi (21 to 276)	±1.0 psi (7)	2 to 5 psi (14 to 34)	**A1VS-24**	28″ Hg to 3.5 psig (-94 to 24)	±1.2″ Hg (-4), ±0.15 psi (1)	6″ Hg - 1.5 psi (-20 to 10)
A1PS-34	30 to 150 psi (207 to 1034)	±5.0 psi (34)	5 to 30 psi (34 to 207)				
A1PS-44	100 to 500 psi (689 to 3445)	±20.0 psi (138)	30 to 120 psi (207 to 827)				

SERIES APS/AVS

ADJUSTABLE PRESSURE SWITCH

Vacuum and Pressure Ranges, 5 A Switch, Compact Size





Miniature **Series APS/AVS Adjustable Pressure Switch** offers reliable switching for pressure/vacuum alarm, shutdown or control. The units are readily adjustable throughout their range using the locking adjusting ring and indicating pointer. The body is constructed of stainless steel for durability in harsh environments. Switches include 12″ (30 cm) wire leads sealed with epoxy for additional protection.

FEATURES/BENEFITS
- Field adjustable with simple indicating pointer reduces installation time bring application on-line faster
- Stainless steel construction provides a durable solution in harsh environments

APPLICATIONS
- OEM
- Process equipment
- Compressors
- Motor control
- Pump control

SPECIFICATIONS

Service: Compatible liquids or gases.
Wetted Materials: Capsule: 17-7 PH SS; Fitting: 303 SS.
Temperature Limits: -65 to 225°F (-54 to 107°C), a set point change of up to 2% when used below -10°F (-23°C) or above 125°F (52°C).
Pressure/Vacuum Limits: 150% of range.
Switch Type: SPDT snap action.
Electrical Ratings: 5 A @ 250 VAC, 3 A @ 28 VDC.
Electrical Connections: 3-wire, 20 AWG insulated with PVC, 12″ (30 cm) length.
Process Connection: 1/8″ male NPT.
Set Point: Field adjustable.
Cycling: Not to exceed 20 CPM.
Sensor Element: Capsule.
Weight: 3 oz (85 g).
Agency Approvals: UR.

MODEL CHART

Model	Set Point Range psi (bar)		Repeatability psi (bar)	Deadband psi (bar)	Model	Set Point Range ″Hg (cm Hg) VAC		Repeatability ″Hg (cm Hg)
	Decreasing	Increasing				Decreasing	Increasing	
APS-150	0.8 to 28.5 (.06 to 2.0)	1.6 to 30.0 (.11 to 2.1)	±0.6 (.04)	0.8 to 1.3 (.06 to .09)	**AVS-150**	1.6 to 27.1 (4.1 to 68.6)	2.7 to 28.2 (6.9 to 71.6)	±1.2 (3.1)
APS-250	2.0 to 48.0 (.14 to 3.3)	3.0 to 50.0 (.21 to 3.5)	±1.0 (0.7)	1 to 1.7 (.07 to .12)				
APS-350	3.0 to 96.5 (.21 to 6.7)	4.5 to 100 (.31 to 6.9)	±2.0 (.14)	1.6 to 4 (.11 to .28)	**AVS-250**	4.0 to 24.8 (10.2 to 63.0)	5.1 to 28.2 (13.0 to 71.6)	±2.0 (5.1)
APS-450	7.5 to 242 (.52 to 16.7)	9.7 to 250 (.67 to 17.2)	±5.0 (.35)	2.5 to 9 (.17 to .62)				
APS-550	15.0 to 485 (1.0 to 33.4)	20.0 to 500 (1.4 to 34.5)	±10.0 (.69)	5 to 22 (.35 to 1.5)	**AVS-350**	6.0 to 21.5 (15.2 to 54.6)	8.4 to 28.2 (21.3 to 71.6)	±4.0 (10.2)

Dwyer

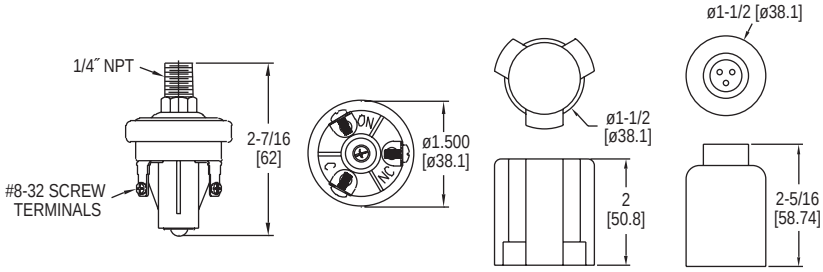
SERIES A6 | MERCOID® BY DWYER

DURABLE PRESSURE SWITCHES

Designed for Extended Duty, Simple and Reliable



A-439 A-440



A-439 A-440

Series A6 Durable Pressure Switches have been specifically designed to stand up to extended duty applications. These switches are constructed with a polyimide film diaphragm and are compatible with a variety of fluids. For ease of installation, the switches come with a 1/4˝ male NPT process connection and can be mounted in any orientation. The Series A6 pressure switches are compact and have great set point integrity, and feature simple, easy set point field adjustment.

FEATURES/BENEFITS
- High switch cycle means long life for extended duty applications
- Mounting in any position and feature simple makes a reliable switching for equipment and OEM applications

APPLICATIONS
- OEM
- Process equipment
- Process applications

MODEL CHART

Model	Set Point Range psi (bar)	
	NC	NO
A6-153221	0.5 to 1 (0.03 to 0.07)	1.1 to 3.1 (0.08 to 0.21)
A6-253221	1.1 to 3 (0.08 to 0.21)	2.27 to 6.05 (0.16 to 0.42)
A6-353221	3.1 to 7 (0.21 to 0.48)	4.22 to 10.75 (0.29 to 0.74)
A6-453221	8 to 13 (0.55 to 0.90)	12.3 to 17.5 (0.85 to 1.21)
A6-553221	14 to 24 (0.97 to 1.66)	18.6 to 31.8 (1.28 to 2.19)
A6-653221	25 to 50 (1.73 to 3.45)	33.1 to 61 (2.28 to 4.21)
A6-753221	51 to 90 (3.52 to 6.21)	65.6 to 112.3 (4.53 to 7.75)
A6-853221	91 to 150 (6.28 to 10.35)	114.7 to 198.3 (7.94 to 13.68)

SPECIFICATIONS

Service: Air, motor oils, transmission oils, jet fuels, and similar hydrocarbon media. (Not for water use)
Wetted Materials: Base: 304 SS; Diaphragm: Polyamide film.
Temperature Limits: -40 to 248°F (-40 to 120°C).
Pressure Limits: Operating pressure: 150 psi (10.3 bar) for 0.5-24 psi set point ranges, 250 psi (17.2 bar) for 25 to150 psi set point ranges; Proof pressure: 500 psi (34.5 bar); Burst pressure: 750 psi (51.7 bar) for 0.5-24 psi set point ranges, 1250 psi (86.2 bar) for 25-150 psi set point ranges.
Enclosure Rating: General purpose or with cover: IP65 - weatherproof.
Repeatability: ±10% of set point.
Set Point Tolerance: ±15% of range.
Switch Type: 1 SPST NO, 1 SPST NC. NO and NC switch independent from each other.
Electrical Ratings: Resistive: 15 A @ 6 VDC, 8 A @ 12 VDC, 4 A @ 24 VDC; Inductive: 1 A @ 120 VAC, 0.5 A @ 240 VAC.
Electrical Connections: #8-32 screw terminals.
Process Connection: 1/4˝ NPT male.
Mounting Orientation: Switch can be installed in any position.
Set point Adjustment: Screw.
Weight: 0.13 lb (0.06 kg).

ACCESSORIES

Model	Description
A-439	Weatherproof IP65 cover
A-440	Weatherproof IP65 with fly-wire holes

USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

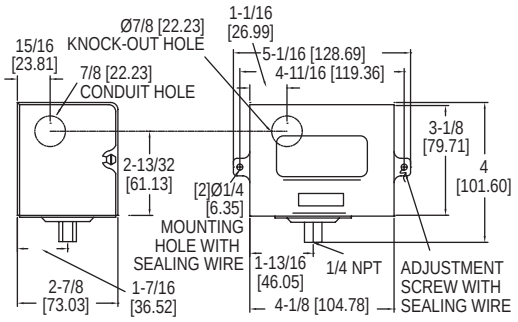
SERIES AP | MERCOID® BY DWYER

FM APPROVED UL LISTED

DIAPHRAGM OPERATED PRESSURE SWITCH

Visible Set point Adjustment, Compact





Reliable and convenient, the **Series AP Diaphragm Operated Pressure Switch** is a compact switch for instrument air or other low pressure applications. Visible set point and external adjustment add convenience. Used on air, non-corrosive gas or liquid service compatible with wetted parts. Units are available in weather-proof and explosion-proof housing.

FEATURES/BENEFITS
- Explosion-proof and weatherproof housing provides device protection for outdoor use or harsh environment operation
- External switch set point adjustment reduces set-up time

APPLICATIONS
- Low pressure applications
- Instrument air

SPECIFICATIONS

Wetted Materials: Nylon reinforced Buna-N and steel. PTFE and 316 SS optional.
Temperature Limits: -30 to 150°F (-35 to 66°C).
Pressure Limit: See model chart.
Enclosure Rating: General purpose. Weatherproof and explosion-proof optional.
Switch Type: SPDT mercury switch or SPDT snap switch. Other switch types available.
Electrical Rating: Mercury switch: 4 A @ 120 VAC/DC, 2 A @ 240 VAC/DC; Snap switch: 15 A @ 120 VAC, 8 A @ 240 VAC, 0.5 A @ 120 VDC, 0.25 A @ 240 VDC.
Electrical Connections: Screw terminal.
Conduit Connection: 7/8˝ (22.23 mm) hole for 1/2˝ (12.7 mm) conduit hub.
Process Connection: 1/4˝ female NPT.
Mounting Orientation: Vertical for mercury switch models, any position for snap switch models.
Set Point Adjustment: External screw.
Weight: General purpose: 2 lb (0.9 kg).
Deadband: See model chart.
Agency Approvals: FM, UL. For FM consult factory.

MODEL CHART

Model	Switch* Type SPDT	Ranges	Switch Deadband		Max. Press. psig(bar)
			Low	High	
AP-153-33	Mercury	10 in VAC to 50 in w.c. (2.5 to 12.4 kPa)	5 in w.c. (1.2 kPa)	6 in w.c. (1.49 kPa)	15 (1.03)
AP-153-37	Mercury	1 to 30 psig (.07 to 2.1 bar)	0.4 psig (0.03 bar)	0.75 psig (0.05 bar)	60 (4.14)
AP-153-39	Mercury	10 to 125 psig (.69 to 8.6 bar)	2 psig (0.14 bar)	6 psig (0.04 bar)	160 (11.0)
AP-7021-153-33	Snap	10 in VAC to 50 in w.c. (2.5 to 12.4 kPa)	8 in w.c. (2.0 kPa)	10 in w.c. (2.49 kPa)	15 (1.03)
AP-7021-153-37	Snap	1 to 30 psig (.07 to 2.1 bar)	0.75 psig (0.05 bar)	1.5 psig (0.10 bar)	60 (4.14)
AP-7021-153-39	Snap	10 to 125 psig (.69 to 8.6 bar)	3 psig (0.21 bar)	7 psig (0.48 bar)	160 (11.0)

*Mercury switch units are not CE approved.

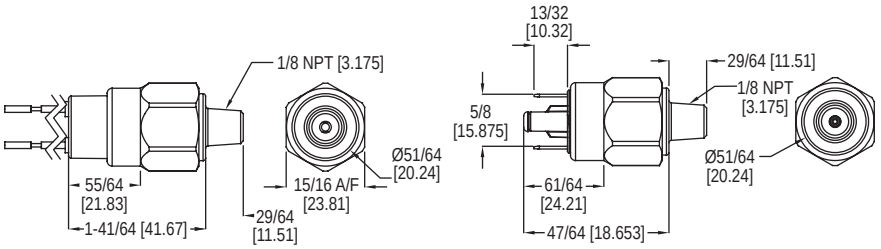
Dwyer

SERIES A2

SUBMINIATURE PRESSURE SWITCH

Field Adjustable





Designed for OEM applications, the **Series A2 Subminiature Pressure Switch** is economical and is equipped with high proof pressure capabilities for demanding applications. The A2 is available with either spade terminals or flying leads (submersible). Switches with spade terminals can be easily adjusted in the field.

FEATURES/BENEFITS
- High-proof pressure to meet application demands
- Easy adjustment reduces installation and service times

APPLICATIONS
- OEM

SPECIFICATIONS

Service: Compatible liquids and gases.
Wetted Materials: Polyamide film and brass.
Temperature Limits: -40 to 230°F (-40 to 110°C).
Pressure Limits: 350 psi (24 bar).
Enclosure Rating: IP69 (flying lead models only).
Repeatability: ±3% of highest set point at 70°F (21°C).
Switch Type: SPST, 100 VA, 42 VDC.
Electrical Connection: 1/4″ (6.3 mm) spade terminals or flying leads.
Process Connection: 1/8″ male NPT, or 1/4″ male NPT.
Weight: 0.15 lb (0.07 kg).
Deadband: <10% of actuation point.
Agency Approvals: CE.

MODEL CHART

Model	Range psi (bar)	Electrical Connection	NO/NC	Model	Range psi (bar)	Electrical Connection	NO/NC
A2-5801	2 to 20 (0.14 to 1.4)	Spade terminals	NO	**A2-6811**	15 to 100 (1.03 to 6.9)	Spade terminals	NC
A2-5803	2 to 20 (0.14 to 1.4)	Flying leads	NO	**A2-6813**	15 to 100 (1.03 to 6.9)	Flying leads	NC
A2-5811	2 to 20 (0.14 to 1.4)	Spade terminals	NC	**A2-7801**	50 to 150 (3.5 to 10.3)	Spade terminals	NO
A2-5813	2 to 20 (0.14 to 1.4)	Flying leads	NC	**A2-7803**	50 to 150 (3.5 to 10.3)	Flying leads	NO
A2-6801	15 to 100 (1.03 to 6.9)	Spade terminals	NO	**A2-7811**	50 to 150 (3.5 to 10.3)	Spade terminals	NC
A2-6803	15 to 100 (1.03 to 6.9)	Flying leads	NO	**A2-7813**	50 to 150 (3.5 to 10.3)	Flying leads	NC

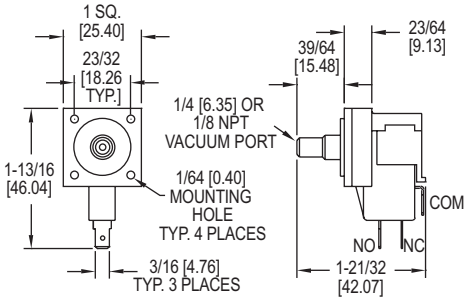
USA: California Proposition 65
⚠WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

SERIES MVS

MINIATURE VACUUM SWITCH

SPDT N/O or N/C Switch, Adjustable Set Point, Ideal for OEM's





Compact, lightweight, and adjustable, the **Series MVS Miniature Vacuum Switch** is specially designed for OEM applications. This low cost switch has a minimum life expectancy of 10 million cycles and has an extremely fast response time. Typical applications for the MVS are HVAC, home appliance, dairy systems, medical, office equipment, and pump control.

FEATURES/BENEFITS
- High switch cycle means long life for extended duty applications

APPLICATIONS
- OEM
- HVAC applications
- Medical equipment
- Dairy equipment
- Pump control

SPECIFICATIONS

Service: Air or compatible fluids.
Wetted Materials: Enclosure: Polycarbonate; Diaphragm: Polyurethane.
Temperature Limits: 40 to 150°F (4 to 66°C).
Pressure Limits: Up to maximum range.
Repeatability: ±20%.
Switch Type: SPDT normally open or normally closed.
Electrical Rating: Range 3 to 8 in w.c.: 3 A, 125/250 VAC; Range 9 to 80 in w.c.: 10 A, 125/250 VAC; Range 81 to 330 in w.c.: 15 A, 125/250 VAC.
Contacts: Silver with brass terminals.
Electrical Connections: Terminals 0.187″ x 0.20″ spade for use with quick disconnects.
Process Connections: Models MVS 1 to MVS 3: Smooth port 0.25″ diameter; Models MVS 4 to MVS 6: 1/8″ male NPT.
Mounting: Use #2 screws through eyelets.
Weight: Less than 0.671 oz (19 g.)
Agency Approvals: cULus.

MODEL CHART

Model	Set Point in H_2O (mbar)	
	Minimum	Maximum
MVS-1	3 (8)	8 (20)
MVS-2	9 (21)	80 (199)
MVS-3	81 (200)	330 (822)
MVS-4*	3 (8)	8 (20)
MVS-5*	9 (21)	80 (199)
MVS-6*	81 (200)	330 (822)

*Models have 1/8″ male NPT process connections

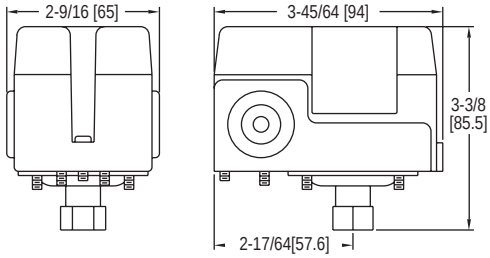
Dwyer

SERIES CXA | MERCOID® BY DWYER

WATER PUMP PRESSURE SWITCH

Simple, Reliable, Adjustable Set Point and Deadband





The **Series CXA Water Pump Pressure Switch** has been proven reliable for controlling automatic water systems. These switches are very popular for use on water well pumps and pumping systems. The set point and dead-band are both easily adjustable via screws inside the cover. For ease of installation, the switches come with a 1/4″ female NPT process connection and can be mounted in any orientation. The series CXA's simple design makes it a great switch for an installer at any skill level.

FEATURES/BENEFITS
- The set point and deadband are both easily adjustable reducing time to install and operation
- Mounting in any position and feature simple makes a reliable switch that can be installed by any skill level

APPLICATIONS
- Electric water pumps
- Water system applications
- Well pumps
- Pumping systems

SPECIFICATIONS

Service: Compatible liquids and gases.
Wetted Materials: Silicone, steel, and SS.
Temperature Limits: 140°F (60°C).
Pressure Limits: See model chart.
Enclosure Rating: General purpose.
Repeatability: ±5 psig (±0.3 bar).
Switch Type: DPST snap action (see model chart).
Electrical Ratings: 20 A @ 120 VAC, 12 A @ 240 VAC, 9.6 A @ 240 VAC (3 phase), 8.6 A @ 32 VDC, 3.1 A @ 120 VDC, 1.6 A @ 240 VDC.
Electrical Connections: Screw terminal.
Conduit Connection: 7/8″ hole for 1/2″ conduit hub (2 places).
Process Connection: 1/4″ female NPT.
Mounting Orientation: Switch can be installed in any position.
Set Point Adjustment: Internal screws.
Weight: 0.75 lb (0.34 kg).
Deadband: See model chart.

MODEL CHART

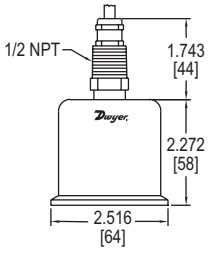
Model	Switch Type	Range psig (bar)	Approx. Adjustable Deadband psig (bar)	Max. Pressure psig (bar)
CXA-S1	NC	15 to 80 (1.0 to 5.5)	15 to 30 (1.0 to 2.1)	129 (8.9)
CXA-S2	NC	30 to 100 (2.1 to 6.9)	20 to 35 (1.4 to 2.4)	179 (12.3)
CXA-S3	NC	35 to 150 (2.4 to 10.3)	30 to 40 (2.1 to 2.8)	204 (14.1)
CXA-R1	NO	15 to 80 (1.0 to 5.5)	15 to 30 (1.0 to 2.1)	129 (8.9)
CXA-R2	NO	30 to 100 (2.1 to 6.9)	20 to 35 (1.4 to 2.4)	179 (12.3)
CXA-R3	NO	35 to 150 (2.4 to 10.3)	30 to 40 (2.1 to 2.8)	204 (14.1)

SERIES 681

SANITARY PRESSURE TRANSMITTER

No Liquid Fill Diaphragm, Sanitary Clamp Fitting





The **Series 681 Sanitary Pressure Transmitter** is designed to meet 3A standards for applications in food, dairy, beverage and pharmaceutical processing, liquid level control, and sanitary pipelines. The unit is fully sealed to withstand high pressure wash-down in Clean-in-Place (CIP) and Sterilize-in-Place (SIP) installations. The Series 681 is designed with a unique, no liquid fill diaphragm and a sanitary clamp pressure fitting for easy installation with negligible clamping effect. A conduit fitting, shielded cable with vent tube and sealed screws for zero and span adjustment combine to make the Series 681 completely watertight.

FEATURES/BENEFITS
- Fully sealed to withstand Clean-in-Place and Sterilize-in-Place installations supports regulatory conditions for sanitary processes
- Sanitary clamp fitting makes for easy installation

APPLICATIONS
- Sanitary process applications
- Food and beverage processing
- Water processing
- Dairy processing
- Pharmaceutical processing

SPECIFICATIONS

Service: Compatible liquids and gases.
Wetted Parts: 316L SS.
Accuracy: ±.20% FS (includes non-linearity, hysteresis and non-repeatability).
Temperature Limits: -40 to 260°F (-40 to 125°C) 10 to 90% RH, non-condensing.
Pressure Limits: See table.
Compensated Temperature Range: 20 to 180°F (-7 to 80°C).
Thermal Effect: Zero and span shift: ±2.0% FS/100°F.
Power Requirements: 9-30 VDC.
Output Signal: 4-20 mA, 2-wire.
Zero and Span Adjustment: ±0.5 mA, non-interactive.
Response Time: ≤ 10 ms.
Loop Resistance: 800 Ω.
Electrical Connections: 1/2″ conduit fitting and strain relief with 15 ft (4.5 m) cable.
Process Connection: 2″ or 1-1/2″ sanitary clamp fitting male NPT.
Clamping Effect: Zero and span shift: ±0.15% FS for ranges up to 30 psi; ±0.25% FS for ranges >30 psi.
Weight: 8 oz (227 g).

MODEL CHART

Model	Range	Overpressure	Sanitary Clamp Connection
681-02	0 to 1 psi	50 psi	2″
681-12	0 to 2 psi	100 psi	2″
681-42	0 to 15 psi	150 psi	2″
681-52	0 to 30 psi	150 psi	2″
681-62	0 to 60 psi	180 psi	2″

OPTIONS

Use order code:	Description
NISTCAL-PT1	NIST traceable calibration certificate for pressure transmitters

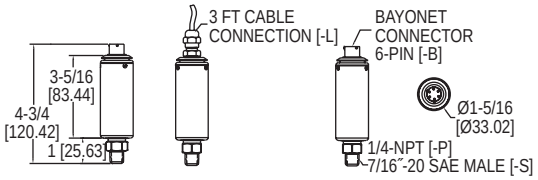
Dwyer

SERIES 644

HIGH ACCURACY PRESSURE TRANSMITTER

±0.05% FS, <±0.25% FS Total Error Band





The **Series 644 High Accuracy Pressure Transmitter** is a robust transmitter designed for high accuracy pressure applications. Boasting an accuracy of ±0.05% FS RSS (<±0.25% TEB), the 644 is intended for precise measurements in the critical applications.

FEATURES/BENEFITS
- High accuracy provides exceptional measurement for insuring tight-control and minimizing costly out of specification conditions
- NIST calibrated to provide traceability for regulated processes where production and documentation is monitored
- Low thermal error over a wide range of temperatures helps to insure accurate pressure measurement and process operation

MODEL CHART						
Example	**644**	**-L**	**-V**	**-00**	**-P**	**644-L-V-00-P**
Series	644					Industrial pressure transmitter
Electrical Connection		L B				3 ft cable Male 6-pin bayonet
Signal Output			V C			0-10 V 4-20 mA
Range				00 01 02 03 04 05 06 07 08 09 10 11		0 to -14.7 psig 0 to 15 psig 0 to 25 psig 0 to 50 psig 0 to 100 psig 0 to 150 psig 0 to 200 psig 0 to 300 psig 0 to 500 psig 0 to 750 psig 0 to 1000 psig 0 to 15 psia
Process Connection					P S	1/4˝ male NPT 7/16˝-20 SAE male

SPECIFICATIONS	
Service: Compatible gases and liquids. **Wetted Materials:** 17- 4 PH SS. **Accuracy:** ±0.05% FS RSS. **Total Error Band (Includes all thermal effects):** <±0.25% FS over entire temperature compensated range. **Stability:** < 0.15% FS/year. **Temperature Limits:** -40 to 185°F (-40 to 85°C). **Pressure Limits:** Proof pressure and burst pressure: See pressure limits table below. **Compensated Temperature Range:** -4 to 140°F (-20 to 60°C). **Power Requirements:** 9-30 VDC for current output; 15-30 VDC for voltage output.	**Minimum Supply Voltage:** Min. supply voltage (VDC) for current output = 9 + 0.02 x loop resistance Ω (loop resistance Ω = line resistance + receiver resistance). **Output Signal:** 0-10 VDC (4-wire); 4-20 mA (2-wire). **Response Time:** < 10 ms (voltage output), < 80 ms (current output). **Max Current Consumption:** 4-20 mA: 22 mA; 0-10 VDC: 20 mA. **Electrical Connections:** 3 ft cable or 6-pin male bayonet connector. **Process Connection:** 1/4˝ male NPT or 7/16˝-20 male SAE with O-ring. **Enclosure Rating:** NEMA 4X (IP65). **Mounting Orientation:** Vertical. **Weight:** 9 oz (254 g). **Agency Approvals:** CE.

APPLICATIONS
- Calibration equipment
- Hydraulic/pneumatic controls
- Test benches
- Transportation
- Pulp and paper mills
- Power generation

ACCESSORIES	
Model	**Description**
A-495	6-pin female bayonet mate connector

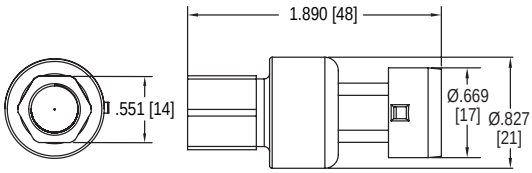
SERIES 638R

OEM PRESSURE TRANSMITTER

Excellent Pressure Surge Resistance, Fast Response







The **Series 638R OEM Pressure Transmitter** is a high-accuracy, low-cost pressure transmitter designed for industrial equipment markets. This transmitter is designed to work with all liquids and gases that are compatible with the wetted materials. The series features a number of configurable options including wetted materials, process connections, and pressure ranges. Whether the application involves aggressive fluids or extreme temperatures, this transmitter is a great option for most applications.

FEATURES/BENEFITS
- High-accuracy pressure transmitter with a fast response time and excellent pressure surge protection
- Suitable for use in applications with extreme temperatures and aggressive fluids
- Highly configurable cost-effective transmitter with a compact design

APPLICATIONS
- HVAC equipment
- Refrigeration equipment
- Refrigerant recovery
- Leak detection systems
- Building pressurization
- Isolated diaphragm packages
- Closed loop hydraulics
- Paint and agriculture spraying

SPECIFICATIONS	
Service: Compatible gases and liquids. **Wetted/Housing Materials:** Brass, aluminum, or 316 SS. **Accuracy:** ±1.2% FS (includes linearity, hysteresis, repeatability and calibration); Static error band @ 25°C, 5.0 VDC supply voltage. **Cycle Life:** 10 million FS cycles. **Storage Temperature:** -40 to 302°F (-40 to 150°C). **Operating Temperature:** -40 to 275°F (-40 to 135°C). **Pressure Limit:** see model chart. **Thermal Effect:** ± 0.013% FS/°C. **Power Supply:** 5 VDC.	**Output Signal:** 0.5-4.5 VDC ratiometric. **Response Time:** 10 ms typical. **Output Load:** 20 k Ω min. (pull-up or pull-down). **Current Consumption:** < 10 mA @ 5.5 VDC (8.5 mA typical). **Electrical Connection:** Packard connection. **Process Connection:** 7/16˝ 20 UNF (female) or 1/4˝ NPT (female). **Enclosure Rating:** IP67 (with IP67 plug). **Mounting Orientation:** Mount in any position. **Weight:** 1.1 oz (30 g). **Agency Approvals:** CE.

MODEL CHART							
Example	**638R**	**-00**	**-P2**	**-E1**	**-S2**	**-SS**	**638R-00-P2-E1-S1-SS**
Series	638R						OEM pressure transmitter
Pressure Range		00 01 02 03 04 05 06					0 to 75 psia (0 to 5.2 bar(a)) 0 to 150 psia (0 to 10.3 bar(a)) 0 to 200 psia (0 to 13.8 bar(a)) 14.5 to 265 psia (1 to 18.3 bar) 14.5 to 315 psia (1 to 21.7 bar(a)) 14.5 to 515 psia (1 to 35.5 bar(a)) 14.5 to 667 psia (1 to 46 bar(a))
Process Connection			P1 P2				7/16˝ 20 UNF (female) 1/4˝ NPT (female)
Electrical Connection				E1			Packard connection
Electrical Output					S2		0.5-4.5 V ratiometric
Housing Material						AL BR SS	Aluminum Brass 316L SS

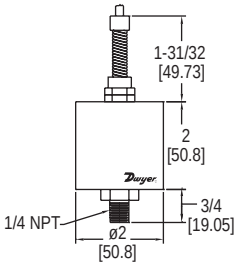
Dwyer

SERIES 682

INDUSTRIAL PRESSURE TRANSMITTER

±0.13% FS Accuracy, External Adjustments, 4-20 mA Output





The **Series 682 Industrial Pressure Transmitter** is designed to withstand environmental effects such as shock, vibration, temperature, and EMI/RFI. The electronics and capacitive sensor are packaged in a welded stainless steel housing and meets NEMA 4 (IP65) protection ratings.

FEATURES/BENEFITS
- Weather-proof welded housing provides device protection for outdoor use or harsh environment operation
- Not affected by environmental effects such as temperature, shock, vibration, and EMI/RFI provides reliable switching for equipment
- External span and zero adjustments reduce installation and service time

APPLICATIONS
- Off-road equipment
- Compressor control
- Industrial refrigeration
- Hydraulic systems
- Industrial engines

SPECIFICATIONS	
Service: Compatible liquids and gases. **Wetted Parts:** 17-4 PH SS. **Accuracy:** ±.13% FS (includes non-linearity, hysteresis and non-repeatability). **Temperature Limits:** -40 to 260°F (-40 to 125°C) 10 to 90% RH, non-condensing. **Pressure Limit:** See table. **Compensated Temperature Range:** -4 to 176°F (-20 to 80°C). **Thermal Effect: Zero shift:** 1.0% FS/100°F span shift: ±1.5% FS/100°F.	**Power Requirements:** 9-30 VDC. **Output Signal:** 4-20 mA, 2-wire. **Zero and Span Adjustment:** ±0.5 mA, non-interactive. **Response Time:** 5 ms. **Loop Resistance:** 800 Ω. **Electrical Connections:** 2 ft (51 cm) multiconductor cable. **Process Connection:** 1/4˝ male NPT. **Weight:** 8 oz (227 g). **Shock:** 200 g operating. **Vibration:** 20 g 50-2000 Hz.

MODEL CHART					
Model*	**Range**	**Overpressure**	**Model***	**Range**	**Overpressure**
682-1	0 to 50 psi	150 psi	**682-3**	0 to 250 psi	500 psi
682-2	0 to 100 psi	300 psi	**682-4**	0 to 500 psi	1000 psi
*Units calibrated in bar also available. Consult factory.					

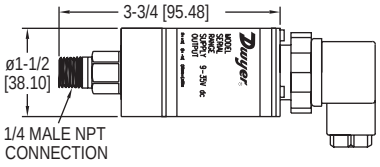
OPTIONS	
Use order code:	**Description**
NISTCAL-PT1	NIST traceable calibration certificate

SERIES 672

LOW PRESSURE TRANSDUCER

Single Pressure Connection, Ranges down to 10 in w.c.





The **Series 672 Low Pressure Transducer** is a perfect solution to any The Series 672 Low Pressure Transducer is a perfect solution to any application where a very accurate low pressure transducer is necessary. Using variable capacitance technology, the Series 672 is designed to measure pressures as low as 10 in w.c. up to 400 in w.c., very low ranges for a single connection pressure transducer. The 672 also features a 0.25% FS accuracy. Use the Series 672 in liquid level, flood warning, waste water, clean room, and open channel flow applications.

FEATURES/BENEFITS
- Low range high accuracy provides precise control for process applications

APPLICATIONS
- Liquid level
- Flood warning
- Waste water
- Clean room
- Open flow applications

SPECIFICATIONS
Service: Compatible liquids and gases. **Wetted Materials:** 318 duplex SS, ceramic, fluoroelastomer (FKM). **Housing Material:** 318 stainless steel. **Accuracy:** ±0.25% FS (RSS). Includes non-linearity, hysteresis, and non-repeatability. **Stability:** 0.25% FS/1 year. **Temperature Limits:** -40 to 212°F (-40 to 100°C). **Compensated Temperature Limits:** -5 to 140°F (-20 to 60°C). **Pressure Limits:** 29 psi (2 bar) for up to 85 in w.c. (0.2 bar) ranges; 58 psi (4 bar) for 85 to 140 in w.c. (0.2 to 0.35 bar); 73 psi (5 bar) for 141 to 400 in w.c. (0.35 to 1 bar). **Thermal Effects:** Zero: 1.0%FS/100°F (2.0%FS/100°C); Span: 1.0%FS/100°F (2.0%FS/100°C). **Power Requirements:** 4-20 mA: 9-35 VDC; 0-5 VDC: 7.5-35 VDC. **Output Signal:** 4-20 mA (2-wire) or 0-5 VDC (3-wire). **Zero & Span Adjustment:** ±10% FS each (by potentiometer). **Response Time:** 5 ms. **Max Loop Resistance:** 1.325 kΩ. **Electrical Connections:** Large DIN 43650 connector with mating plug. **Process Connection:** 1/4˝-18 NPT male. **Enclosure Rating:** NEMA 4X (IP66). **Weight:** 11.6 oz (330 g).

MODEL CHART		
Model	**Operating Range**	**Output**
672-1-A	0 to 10 in w.c.	4-20 mA, 2-wire
672-2-A	0 to 15 in w.c.	4-20 mA, 2-wire
672-3-A	0 to 25 in w.c.	4-20 mA, 2-wire
672-4-A	0 to 50 in w.c.	4-20 mA, 2-wire
672-5-A	0 to 100 in w.c.	4-20 mA, 2-wire
672-6-A	0 to 150 in w.c.	4-20 mA, 2-wire
672-7-A	0 to 200 in w.c.	4-20 mA, 2-wire
672-8-A	0 to 300 in w.c.	4-20 mA, 2-wire
672-9-A	0 to 400 in w.c.	4-20 mA, 2-wire
Note: For voltage output models change -A to -V.		

OPTIONS	
Use order code:	**Description**
NISTCAL-PT1	NIST traceable calibration certificate

Dwyer

SERIES 673

PRESSURE TRANSMITTER

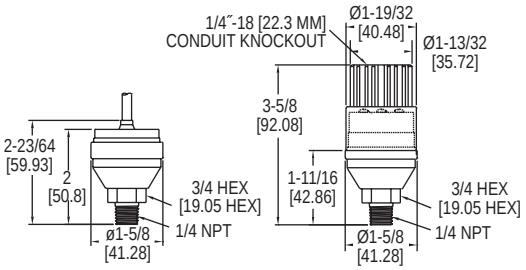
±0.25% FS Accuracy, 4-20 mA Signal, Ranges to 1000 psi



Cable anchor



Conduit version



Cable anchor Conduit version

The low cost **Series 673 Pressure Transmitter** is a fixed range transmitter designed for harsh environments and suitable for high shock and vibration applications. Constructed of stainless steel, the Series 673 provides a 4-20 mA output signal with 0.25% accuracy. Use the Series 673 in industrial OEM equipment, hydraulic systems, HVAC equipment, industrial engines and compressor control.

FEATURES/BENEFITS

- High-shock and vibration resistant insures stability in controlling pressure for process applications

APPLICATIONS

- OEM
- Industrial engines
- Hydraulic systems
- Compressors
- HVAC equipment

MODEL CHART			
Model	**Range psi**	**Model**	**Range psi**
673-1	0 to 1	**673-1C**	0 to 1
673-2	0 to 2	**673-2C**	0 to 2
673-3	0 to 5	**673-3C**	0 to 5
673-4	0 to 10	**673-4C**	0 to 10
673-5	0 to 25	**673-5C**	0 to 25
673-6	0 to 50	**673-6C**	0 to 50
673-7	0 to 100	**673-7C**	0 to 100
673-8	0 to 200	**673-8C**	0 to 200
673-9	0 to 500	**673-9C**	0 to 500
673-10	0 to 1000	**673-10C**	0 to 1000
673-14	-14.7 to 100	**673-14C**	-14.7 to 100

*The model numbers followed by a “C” represent the conduit version, which is hand tightened to ensure proper electrical seal.

SPECIFICATIONS
Service: Liquid, gas, or vapor.
Wetted Materials: 17-4 PH SS.
Accuracy: ±0.25% FS (RSS), (includes non-linearity, hysteresis and non-repeatability).
Temperature Limits: -40 to 185°F (-40 to 85°C).
Compensated Temperature Limits: -40 to 176°F (-40 to 80°C).
Pressure Limits: 2 x max range.
Thermal Errors: Zero: ±3.6% FS/100°F(100°C); Span: ±2.7% FS/100°F(100°C).
Power Requirements: 9-30 VDC.
Output: 4-20 mA, 2-wire.
Zero & Span Adjustment: Fixed.
Response Time: 5 ms.
Loop Resistance: 0 to 800 Ω.
Stability: 0.5% FS/year.
Shock: 200 g.
Vibration: 20 g.
Electrical Connections: 2 ft (61 cm) multiconductor cable.
Conduit Connection: 1/4˝-18 (22.3 mm) knockout.
Enclosure: Stainless steel and Valox.
Weight: 2.3 oz (65 g).

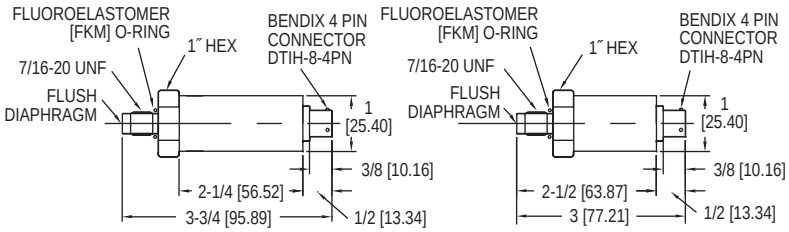
OPTIONS	
Use order code:	**Description**
NISTCAL-PT1	NIST traceable calibration certificate

SERIES FDT

FLUSH DIAPHRAGM TRANSMITTER

Non-Liquid Filled, ±0.5% FS Accuracy, SS Wetted Parts





FDT-V FDT-A

The **Series FDT Flush Diaphragm Transmitter** is designed for highly cyclical conditions. Flush sensor feature prevents any potential inaccuracies due to build-up or blockage which is a typical problem found in most non-flush transmitter sensors.

FEATURES/BENEFITS

- Performs well in high cyclical environments with the presence of water-hammering or spiking for long service life

APPLICATIONS

- OEM
- Hydraulic systems
- Process systems

MODEL CHART					
Example	**FDT**	**-A**	**-01**	**-NPT**	**FDT-A-01-NPT**
Series	FDT				Flush diaphragm transmitter
Output		A V			4-20 mA 0-5 VDC
Range			01 02 03 04 06 11 12 15		100 psi 150 psi 200 psi 300 psi 500 psi 1000 psi 2000 psi 5000 psi
Options				-NPT -C08	1/4˝ male NPT 0.25% FS accuracy
Note: Contact factory for additional range availability.					

SPECIFICATIONS	
Service: Compatible liquids and gases, adhesives, slurries, materials that can harden, or where a pressure cavity is not desired. **Wetted Materials:** 316 & 15-5 SST. **Accuracy:** ±0.5% FS (includes non-linearity, hysteresis, and repeatability). **Stability:** ±0.25% FS per year. **Temperature Limits:** -40 to 200°F (-40 to 93°C). **Compensated Temperature Limits:** 0 to 170°F (-18 to 77°C). **Pressure Limit:** 150% FS; Burst: 200% FS. **Thermal Effect:** ±1.5% FSO over compensated range.	**Power Requirements:** 8-38 VDC. **Output Signal:** FDT-A: 4-20 mADC; FDT-V: 0-5 VDC. **Response Time:** <1 ms. **Loop Resistance:** FDT-A: 0 to 1.5 Ω; FDT-V: 100 Ω. **Electrical Connections:** 4-pin. **Process Connection:** 7/16-20 UNF male flush diaphragm. Optional 1/4˝ male NPT. **Enclosure Rating:** NEMA 4X (IP66). **Mounting Orientation:** Mount in any position. **Weight:** 2 oz (57 g). **Agency Approvals:** CE.

ACCESSORIES	
Model	**Description**
A-168	Mating connector for 4 pin M-12

OPTIONS	
Use order code:	**Description**
NISTCAL-PT1	NIST traceable calibration certificate

Dwyer

SERIES 626 & 628

INDUSTRIAL PRESSURE TRANSMITTERS

Complete Offering of Ranges, Connections and Outputs



626/628 pressure transmitters with general purpose housing (-GH)



626/628 pressure transmitters with conduit box housing (-CB) and LCD display

VIDEO ONLINE

***Please see our website for dimensional drawings.**

The **Series 626 Industrial Pressure Transmitters** possess a highly precise 0.25% full-scale accuracy piezo-resistive sensor contained in a compact, rugged, NEMA 4X (IP66) stainless steel general purpose housing or cast aluminum conduit housing. The **Series 628 Industrial Pressure Transmitters** are ideal for OEMs with 1% full-scale accuracy sensors. The corrosion resistant 316L stainless steel wetted parts allow the Series 626 and 628 transmitters to measure the pressure in a multitude of processes from hydraulic oils to chemicals. The Series 626 and 628 are available in absolute and pressure ranges with a variety of optional outputs, process connections and electrical terminations to allow you to select the right transmitter for your application.

FEATURES/BENEFITS

- NEMA 4X rated enclosure provides protection in harsh environments permitting outdoor monitoring or in areas where dust and particulate matter exists
- Robust 316 SS oil filled sensor provides shock and vibration resistance insuring stability in controlling pressure for process applications
- A wide range of models and connections that can meet pressure measurement specifications from low to very high

APPLICATIONS

- Compressors
- Pumping systems
- Irrigation equipment
- Hydraulic
- Industrial process monitoring

SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Type 316L SS.
Accuracy: 626: 0.25% FS; 626: 0.20% RSS; 628: 1.0% FS; 628: 0.5% RSS; 626 Absolute Ranges: 0.5% FS; 626 absolute ranges: 0.30% RSS. (Includes linearity, hysteresis, and repeatability.)
Temperature Limit: 0 to 200°F (-18 to 93°C).
Compensated Temperature Range: 0 to 175°F (-18 to 79°C).
Thermal Effect: ±0.02% FS/°F (includes zero and span).
Pressure Limits: See table.
Power Requirements: 10-30 VDC (for 4-20 mA, 0-5, 1-5, 1-6 VDC outputs); 13-30 VDC (for 0-10, 2-10 VDC outputs); 5 VDC ±0.5 VDC (for 0.5-4.5 VDC ratio-metric output), 10-35 VDC (for 4-20 mA with -CB option); 13-35 VDC or isolated 16-33 VAC (for selectable output with -CB option).
Output Signal: 4-20 mA, 0-5 VDC,1-5 VDC, 0-10 VDC, or 0.5-4.5 VDC, or selectable 0-5, 1-5, 0-10, 2-10 VDC for -CB option.
Response Time: 300 ms.
Loop Resistance: 0 to 1000 Ω max. R max = 50 (Vps-10) Ω (4-20 mA output), 0-1250 Ω max. Rmax = 50(Vps-10) Ω (4-20 mA output with -CB option), 5K Ω (0-5, 1-5, 1-6, 0-10, 2-10, 0.5-4.5 VDC output).
Stability: 1.0% FS/year (Typ.).
Current Consumption: 38 mA maximum (for 4-20 mA output); 10 mA maximum (for 0-5, 1-5, 1-6, 0-10, 2-10, 0.5-4.5 VDC output); 140 mA maximum (for all 626/628/629-CH with optional LED).
Electrical Connections: Conduit Housing (-CH): terminal block, 1/2″ female NPT conduit; General Purpose Housing (-GH): cable DIN EN 175801-803-C.
Process Connection: 1/4″ male or female NPT and BSPT.
Enclosure Rating: NEMA 4X (IP66).
Mounting Orientation: Mount in any position.
Weight: 10 oz (283 g).
Agency Approvals: CE, NSF, UL.

Dwyer

SERIES 626 & 628

INDUSTRIAL PRESSURE TRANSMITTERS

Complete Offering of Ranges, Connections and Outputs

MODEL CHART								
Example	**626**	**-00**	**-CH**	**-P1**	**-E1**	**-S1**	**-AT**	**626-00-CH-P1-E1-S1-AT**
Accuracy	626 628							0.25% full-scale accuracy 1.0% full-scale accuracy
Range		00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 22 15 16 18 19 26 67 71 75 81						0 to 15 psia⑤ 0 to 30 psia⑤ 0 to 50 psia⑤ 0 to 100 psia⑤ 0 to 200 psia⑤ 0 to 300 psia⑤ 0 to 5 psi 0 to 15 psi 0 to 30 psi 0 to 50 psi 0 to 100 psi 0 to 150 psi 0 to 200 psi⑥ 0 to 300 psi⑥ 0 to 500 psi⑥ 0 to 600 psi⑥ 0 to 1000 psi 0 to 1500 psi⑥ 0 to 3000 psi 0 to 5000 psi 0 to 8000 psi 0 to 0.5 bar 0 to 2.5 bar 0 to 10 bar 0 to 40 bar
Housing			CB GH					Conduit box housing General purpose housing
Process Connection				P1 P2 P3 P5 P9				1/4″ male NPT 1/4″ female NPT 1/4″ male BSPT 1/4″ female SAE with refrigerant valve depressor① 1/2″ male NPT①
Electrical Connection					E1 E3 E4 E5 E6 E8 E9			Cable gland with 3´ of prewired cable Cable gland with 9´ of prewired cable DIN EN 175801-803-C① 1/2″ female NPT conduit② M-12 4 pin connector-UL④ Packard connector M-12 4 pin connector non-UL
Signal Output						S1 S2 S4 S5 S7 S8		4-20 mA 1-5 VDC 0-5 VDC 0-10 VDC 0.5-4.5 VDC①③ Selectable 0-5, 1-5, 0-10, 2-10 VDC②
Options							AT LCD NIST NW	Aluminum tag LCD indication② NIST traceable certificate NSF/ANSI 61/372 certified

①Available with -GH housing only, NEMA 4 (IP65) ②Available with -CB housing only ③Power requirement: 5 VDC ±10%
④Available with -GH housing only ⑤Absolute ranges for 626 are 0.5% FS accuracy and for 628 are 2% FS accuracy
⑥UL listed pump controllers, fire-component - See online certificate for information and limitations

Note: Bar and absolute ranges are only available with -GH housing.

PRESSURE LIMITS							
Range Number	**Pressure Range**	**Maximum Pressure (psig)**	**Over Pressure (psig)**	**Range Number**	**Pressure Range (psig)**	**Maximum Pressure (psig)**	**Over Pressure (psig)**
00	0 to 15 psia	30	45	12	0 to 200	400	1000
30	15 to 0 psia	30	45	13	0 to 300	600	1500
06	0 to 5 psig	10	50	14	0 to 500	1000	2500
07	0 to 15 psig	30	150	15	0 to 1000	2000	5000
08	0 to 30 psig	60	300	16	0 to 1500	3000	5000
09	0 to 50 psig	100	300	18	0 to 3000	6000	7500
10	0 to 100 psig	200	500	19	0 to 5000	7500	10000
11	0 to 150 psig	300	750	26	0 to 8000	10000	12000

ACCESSORIES	
Model	**Description**
A-164	16.4´ (5 m) cable with M-12 4-pin female connector
A-62X-LCD	Field-upgradeable LCD
A-960	3´ packard cable
A-961	9´ packard cable
A-962	20´ packard cable

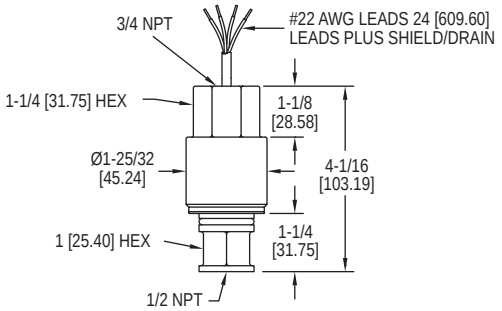
Dwyer

SERIES 636

FIXED RANGE PRESSURE TRANSMITTER

Stainless Steel, Explosion-Proof, Accuracy ±0.30%, 4-20 mA or 1-5 VDC Signal





The **Series 636 Fixed Range Pressure Transmitter** is a low cost, fixed range, stainless steel transmitter with ±0.30% accuracy. It is designed to continuously measure pressure for years in even the toughest environmental and media conditions. Transmitters are explosion-proof, (FM approved) and meet NACE standards for off-shore applications.

FEATURES/BENEFITS

- Long service life and lower cost to maintain reduces total cost of ownership
- Explosion-proof housing for use in applications where protection of process and personnel is needed

APPLICATIONS

- Off-shore
- Process applications

MODEL CHART			
4-20 mA OUT	**1-5 VDC OUT**	**Operating Range, psi**	**Operating Range, Bar**
636-0	**636-0-LP**	0 to 15	0 to 1
636-1	**636-1-LP**	0 to 30	0 to 2
636-2	**636-2-LP**	0 to 100	0 to 7
636-3	**636-3-LP**	0 to 300	0 to 20

OPTIONS	
Use order code:	**Description**
NISTCAL-PT1	NIST traceable calibration certificate

SPECIFICATIONS

Service: Liquid, gas or vapor.
Wetted Materials: 316 L SS.
Fill Fluid: DC 200 silicone (standard).
Accuracy: ±0.30% of calibrated span.
Stability: ±0.5% of upper range limit for six months.
Temperature Limits: Electronics (ambient): -40 to 140°F (-40 to 60°C); Process interface: -40 to 212°F (-40 to 100°C).
Pressure Limits: 300% upper range limit.
Compensated Temperature Range: -20 to 180°F (-29 to 82°C).
Thermal Effect: (includes zero and span). Between -20 and 180°F (-29 and 82°C). ±2.0% per 50°F (28°C).
Power Requirements: 12-30 VDC (636), 8-14 VDC (636LP), reverse polarity protection.
Output Signal: 4-20 mA DC, limited to 30 mA DC (636), 1-5 VDC (636LP).
Zero & Span Adjustments: Null: 4.0 mA ±2% span (636),1 VDC ±1% span (636LP); Span: 16.0 mA ±1% span (636), 4 VDC ±1% span (636LP).
Loop Resistance: 900 Ω max @ 30 V.
Electrical Connection: 3/4″ female NPT 24″ (61 cm), 22 AWG.
Process Connection: 1/2″ female NPT.
Enclosure Rating: NEMA 4 (IP56).
Weight: 0.83 lb (374 g).
Agency Approvals: CSA, FM.
FM and CSA approved explosion-proof for Class I, Division 1, Groups B, C, & D, Class II Groups E, F, & G Class III.

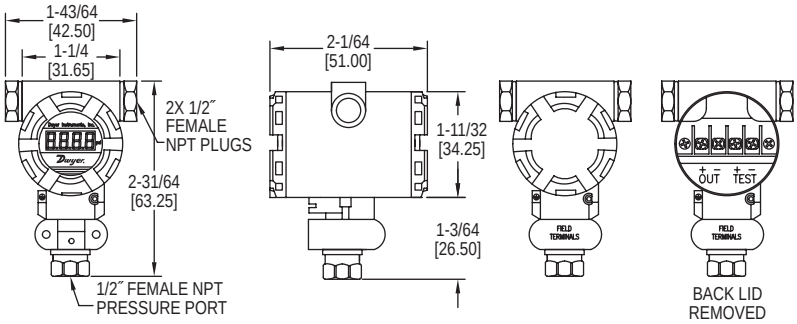
Dwyer

SERIES IWP

INDUSTRIAL WEATHERPROOF PRESSURE TRANSMITTER

Exceptional Reliability for Harsh Environments





The **Series IWP Industrial Weatherproof Pressure Transmitter** provides an exceptional value solution to pressure measurement in industrial conditions requiring high-performance, stability and long service life. The precise operation under dirty and wet conditions, make the Series IWP an ideal choice for petroleum, chemical and metallurgical industry applications.

FEATURES/BENEFITS

- Rugged, weather-proof design supports use in harsh environments

APPLICATIONS

- Harsh environments
- Process
- Chemical
- Petroleum
- Metallurgical

SPECIFICATIONS
Service: Gases and liquids compatible with wetted materials.
Wetted Materials: 304 and 316 stainless steel.
Accuracy: 0.5% FS.
Stability: <0.2% FS per year.
Temperature Limits: -22 to 203°F (-30 to 95°C).
Compensated Temperature Limits: 32 to 158°F (0 to 70°C).
Pressure Limits: 1.5 x pressure range.
Temperature Coefficient: 0.3% FS per 10°C.
Power Requirements: 12-36 VDC.
Output Signal: 4-20mA.
Loop Resistance: 1200 Ω max.
Electrical Conduit Connection: 1/2″ female NPT.
Process Connection: 1/2″ female NPT.
Enclosure Rating: IP65.

MODEL CHART			
Model	**Pressure Range**	**Model**	**Pressure Range**
IWP-00	0 to 30 psig	**IWP-04**	0 to 300 psig
IWP-01	0 to 50 psig	**IWP-05**	0 to 500 psig
IWP-02	0 to 100 psig	**IWP-06**	0 to 1000 psig
IWP-03	0 to 200 psig	**IWP-10**	0 to 30 psia

OPTIONS	
Use order code:	**Description**
NISTCAL-PT1	NIST traceable calibration certificate

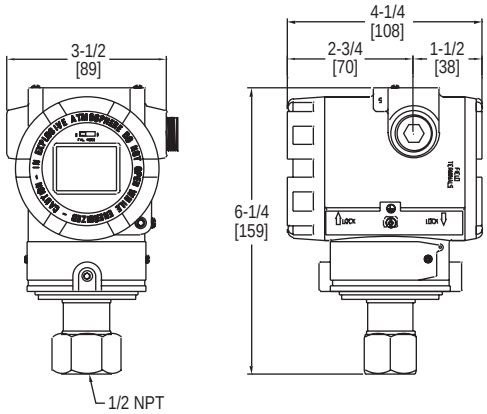
Dwyer

SERIES 3200G | MERCOID® BY DWYER

EXPLOSION-PROOF PRESSURE TRANSMITTER

HART®, Push-Button Configuration, Rangeability (100:1)





The Mercoid® **Series 3200G Explosion-Proof Smart Pressure Transmitter** is a microprocessor-based high performance transmitter, which has flexible pressure calibration, push-button configuration, and programmable using HART® Communication. The Series 3200G is capable of being configured with the zero and span buttons, a field calibrator is not required for configuration. The transmitter software compensates for thermal effects, improving performance. EEPROM stores configuration settings and stores sensor correction coefficients in the event of shutdowns or power loss. The Series 3200G is FM approved for use in hazardous (Classified) locations. The 100:1 rangeability allows the smart transmitter to be configured to fit any application.

FEATURES/BENEFITS

- Completely configurable using zero/span buttons (no calibrator required)
- Rangeability (100:1)
- High accuracy (±0.075%)
- Automatic sensor temperature compensation
- Fail-mode process function

APPLICATIONS

- Water and wastewater
- Chemical and petrochemical
- Pulp and paper
- Oil and gas
- Food and beverage

SPECIFICATIONS

Service: Compatible gases, steam, liquids or vapors.
Wetted Materials: 316L SS.
Accuracy: ±0.075% FS (@ 20°C).
Rangeability: 100:1 turn down.
Stability: ±0.125% FSO/yr.
Temperature Limits: Process: -40 to 248°F (-40 to 120°C); Ambient: Without LCD -40 to 185°F (-40 to 85°C); With LCD -22 to 176°F (-30 to 80°C).
Thermal Effect: ±0.125% span/32°C.
Power Requirements: 11.9 to 45 VDC.
Output Signal: 4 to 20 mA / HART® Communication.
Response Time: 0.12 s.
Damping Time: 0.25 to 60 s.
Loop Resistance: Operation: 0 to 1500 Ω; HART® Communication: 250 to 500 Ω.
Electrical Connection: Two 1/2″ female NPT conduit, screw terminal.
Process Connections: 1/2″ female NPT.
Display: Optional 5 digit LCD.
Enclosure Rating: NEMA 4X (IP66) and explosion proof for Class I, Div I Groups A, B, C and D.
Weight: 5.5 lb (2.5 kg).
Agency Approvals: ATEX, CE, FM.

MODEL CHART

Model	Range psi (kPa)	Calibrated Span (Min. to Max.) psi (kPa)	Max. Pressure psi (bar)	LCD Display
3200G-1-FM-1-1	-14.5 to 21 (-100 to 150)	0.22 to 21 (1.5 to 150)	58 (4)	No
3200G-2-FM-1-1	-14.5 to 217 (-100 to 1500)	2 to 217 (15 to 1500)	580 (40)	No
3200G-3-FM-1-1	0 to 725 (0 to 5000)	7.25 to 725 (50 to 5000)	2000 (138)	No
3200G-4-FM-1-1	0 to 3600 (0 to 25000)	36 to 3600 (250 to 25000)	10000 (690)	No
3200G-5-FM-1-1	0 to 8500 (0 to 60000)	87 to 8700 (600 to 60000)	11600 (800)	No
3200G-1-FM-1-1-LCD	-14.5 to 21 (-100 to 150)	0.22 to 21 (1.5 to 150)	58 (4)	Yes
3200G-2-FM-1-1-LCD	-14.5 to 217 (-100 to 1500)	2 to 217 (15 to 1500)	580 (40)	Yes
3200G-3-FM-1-1-LCD	0 to 725 (0 to 5000)	7.25 to 725 (50 to 5000)	2000 (138)	Yes
3200G-4-FM-1-1-LCD	0 to 3600 (0 to 25000)	36 to 3600 (250 to 25000)	10000 (690)	Yes
3200G-5-FM-1-1-LCD	0 to 8500 (0 to 60000)	87 to 8700 (600 to 60000)	11600 (800)	Yes

Note: Contact factory for custom calibration.

ACCESSORIES

Model	Description
A-630	Stainless steel angle type bracket with SS bolts
A-631	Stainless steel flat type bracket with SS bolts
BBV-0N	2-valve block manifold
DevCom2000	HART® Communication Protocol Software

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Dwyer

SERIES 3200G | MERCOID® BY DWYER

EXPLOSION-PROOF PRESSURE TRANSMITTER

HART®, Push-Button Configuration, Rangeability (100:1)

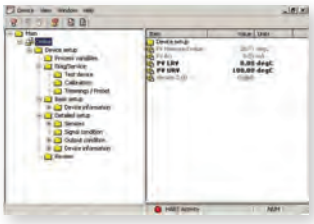
MODEL CHART														
Example	**3200G**	**-2**	**-FM**	**-3**	**-1**	**-LES**	**S2**	**A1**	**05**	**S**	**2**	**-05**	**-LCD**	**3200G-2-FM-3-1-LESS2A105S2-05-LCD**
Series	3200G													Explosion-proof pressure transmitter
Range		1 2 3 4 5												-14.5 to 21 psig (factory set 0 to 21 psig) -14.5 to 217 psig (factory set 0 to 217 psig) 0 to 725 psig 0 to 3600 psig 0 to 8500 psig
Approval			FM ATEX WP											FM approved ATEX approved Weatherproof only (Only available with 316 SS housing)
Process Connection				1 3										1/2″ female NPT Diaphragm seal
Electrical Connection					1									1/2″ female NPT
Diaphragm Seal Type						LED LES LFD LFS								1 extended diaphragm seal direct mount 1 extended diaphragm seal capillary type high 1 flush diaphragm seal direct mount 1 flush diaphragm seal capillary type
Mounting Flange							S2 S3							2″ (50 mm) 316L SS 3″ (80 mm) 316L SS
Mounting Flange Rating								A1 A2 D1 D2 J1 J2						ANSI class 150# ANSI class 300# DIN PN 10/16 DIN PN 25/40 JIS 10 K JIS 20 K
Extension Length									00 05 10 15					No extension (standard for flush mount) 2″ extension 4″ extension 6″ extension
Diaphragm Material										S P H T				316L SS diaphragm PTFE and 316L SS diaphragm Hastelloy C-276 diaphragm Tantallum diaphragm
Fill Fluid											2			Silicon oil (-40 to 400°F)
Capillary Length												XX		0 to 20 feet
Options													LCD SSH NIST CC	5 digit LCD 316 SS housing (only available with WP approval) NIST calibration Custom calibration

CUSTOM CALIBRATION VALUES	
Primary Units	in w.c., ft w.c., mm w.c., in Hg, psig, g/cm², kg/cm², Pa, kPa, bar, mbar, Torr, Atm, mm Hg
Upper Range Limit	20 mA value
Lower Range Limit	4 mA value
Damping Time	0 to 60 seconds
Display Mode	Primary unit, %, mA, rotate

MODEL DEVCOM2000

HART® COMMUNICATION PROTOCOL SOFTWARE

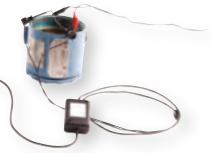
Includes USB HART Modem



DevCom2000 software



HART field device



Windows®-based PC **USB HART modem**

The **Model DEVCOM2000 HART® Communication Protocol Software** turns your PC into a full-featured HART® communicator. Now it is possible to configure transmitters and control valves at the desktop or in the field. DevCom2000 uses device descriptions (DDs) to retrieve data that is stored in the memory of smart field devices. This software is a simple, reliable and secure method to add new measurement values to control systems without the need of additional wires. This software eliminates the need to purchase and maintain a separate handheld HART® communicator.

FEATURES/BENEFITS
- Complete DD library
- Includes USB HART modem
- USB 1.1 and 2.0 compatible
- Self powered modem

APPLICATIONS
- For use with pressure transmitters and control-valves in:
  - Water and wastewater
  - Chemical and petrochemical
  - Oil and gas
  - Pulp and paper
  - Food and beverage

MODEL CHART	
Model	**Description**
COM-PC	DevCom2000 Hart® software and modem

SPECIFICATIONS

HART® Communicator Software
DD Library: Included.
Generic DD: Included.
Operating System: Windows NT®, Windows® 2000, Windows XP®, Windows® Vista (32/64), Windows® 7 (32/64).

USB HART MODEM
Material: High strength ABS plastic.
Temperature Limits: 0 to 50°C (32 to 122°F).
Storage Temperature: -40 to 85°C (-40 to 185°F).
Humidity: 0 to 99% (non-condensing).
HART® Cable Length: 4′ (1.2 m).
HART® Cable Connectors: Mini-grabber.
USB Cable Length: 18″ (0.5 m).
USB Cable Connector: USB Type A.
USB: USB 1.1, USB 2.0.
Power: USB port provides power to unit.
Current Draw: 20 mA.
Output: 600 mVpp.
Leakage: < 10 uA.
Isolation Voltage: 1500 VDC.
HART®: HART® 4, HART® 5, HART® 6, HART® 7, HART® Physical Layer Spec HCF_SPEC-54.
Weight: 3 oz (85 g).
Agency Approvals: CE.

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Windows®, Windows NT®, and Windows Vista® are registered trademarks of Microsoft Corporation.

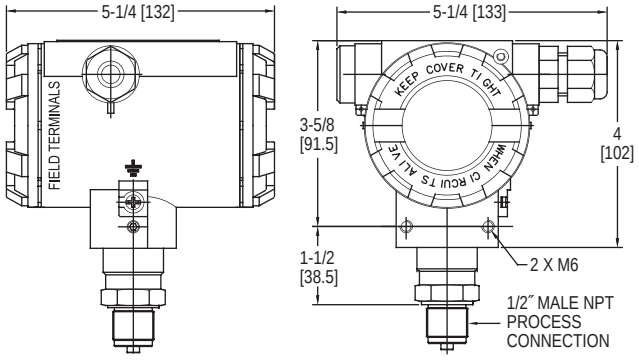
Dwyer

SERIES 3400

SMART PRESSURE TRANSMITTER

HART® Communication, Push-Button Configuration, Rangeability (Up to 100:1)





VIDEO ONLINE

The **Series 3400 Smart Pressure Transmitter** is a microprocessor-based high performance transmitter, which has flexible pressure calibration, push-button configuration, and is programmable using HART® Communication. The Series 3400 is capable of being configured with the zero and span buttons (a field calibrator is not required for configuration). The transmitter software compensates for thermal effects, improving performance. EEPROM stores configuration settings and stores sensor correction coefficients in the event of shutdowns or power loss. The Series 3400 can be configured to be ATEX or IECEX approved for use in hazardous (classified) locations. The rangeability allows the smart transmitter to be configured to fit most applications.

FEATURES/BENEFITS

- High accuracy (±0.075% FS)
- Rangeability (up to 100:1)
- Configurable using zero/span buttons (no calibrator required)
- Fail-mode process function
- Automatic ambient temperature compensation

APPLICATIONS

- Water and wastewater
- Chemical and petrochemical
- Pulp and paper
- Oil and gas
- Food and beverage

SPECIFICATIONS

Service: Compatible gases, steam, liquids or vapors.
Wetted Materials: 316L SS.
Accuracy: ±0.075% FS (@ 20°C).
Rangeability: Up to 100:1 turn down.
Stability: ≤0.075% FSO/3 years.
Temperature Limits: Ambient: -40 to 185°F (-40 to 85°C); Process with -DS: -40 to 400°F (-40 to 204°C).
Thermal Effect: < ±0.05% span/10°C.
Power Requirements: 10-55 VDC.
Output Signal: 4-20 mA.
Response Time: 16 to 480 ms (programmable).
Damping Time: 0 to 60 s.
Electrical Connection: Packing gland M20x1.5, two 1/2″ female NPT conduit, screw terminal.
Process Connections: 1/2″ female or male NPT.
Enclosure Rating: NEMA 4X IP66/IP67.
Agency Approvals: CE; -IS, -FP suffix: ATEX Compliant CE 0518 II 2G Ex ia/db IIC T6/T5 Gb Ta<80°C, T5 / II 2D Ex ia/tb IIIC T85°C/T100°C Db. Type Certificate No. KDB 17ATEX0056X. ATEX Standards: EN 60079-0:2012+A11:2013, EN 60079-1:2014, EN 60079-11:2012, EN 60079-26:2015, EN 60079-31:2014 IECEx Compliant: Ex ia/db IIC T6/T5 Gb / Ex ia/tb IIIC T85°C/T100° Db. Certificate of Conformity IECEx KDB 17.0008X. IECEx Standards: IEC 60079-0:2011, IEC 60079-1:2014-06, IEC 60079-11:2011, IEC 60079-26:2006, IEC 60079-31:2013.

MODEL CHART

Model	Range	Min. Set Range	Overpressure limit
3400-AL-10-NM-2	0 to 15 psi	1.45 psi	30 psi
3400-AL-13-NM-2	0 to 100 psi	1.45 psi	200 psi
3400-AL-15-NM-2	0 to 350 psi	3.6 psi	725 psi
3400-AL-20-NM-2	0 to 2300 psi	14.5 psi	6525 psi
3400-AL-23-NM-2	0 to 4350 psi	43.5 psi	6525 psi

Note: Bar ranges are also available.

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Dwyer
SERIES 3400

SMART PRESSURE TRANSMITTER

HART® Communication, Push-Button Configuration, Rangeability (Up to 100:1)

MODEL CHART											
Example	**3400**	**-AL**	**-01**	**-DS**	**-1**	**-SPD**	**A**	**0**	**-1**	**-NIST**	**3400-AL-01-DS-1-SPDA0-1-NIST**
Series	3400										Single pressure smart transmitter
Housing		AL AS									Aluminum housing Stainless steel housing
Range			01 03 05 07 10 11 13 15 17 20 23 26 29								0 to 18 psia 0 to 100 psia 0 to 350 psia 0 to 1000 psia 0 to 15 psi 0 to 30 psi 0 to 100 psi 0 to 350 psi 0 to 1000 psi 0 to 2300 psi 0 to 4350 psi 0 to 8700 psi 0 to 14500 psi
Process Connections				NM NF DS							1/2″ male NPT 1/2″ female NPT Diaphragm seal selection
Electrical Connections					1 2						Packing gland M20x1.5 Thread 1/2″ female NPT
Diaphragm Seal Type						SPD SPR STD STR					S-P flush diaphragm seal direct mount S-PK flush diaphragm seal capillary mount S-T extended diaphragm seal direct mount S-TK extended diaphragm seal capillary mount
Mounting Flange							A B C D				2″ ANSI 2″ DN50 3″ ANSI 3″ DN80
Extension Length								0 2 4 6			No extension, flush mount 2″ (50 mm) 4″ (100 mm) 6″ (150 mm)
Capillary Length									#		Capillary length, 1 to 20 ft (increments of 1)
Options										FP IS MT NIST GM SM ST	ATEX/IECEx flameproof ATEX/IECEx intrinsically safe Stainless steel tag plate mounted on wire NIST traceable calibration certificate 2″ galvanized steel mounting bracket 2″ SS mounting bracket Stainless steel plate riveted to the housing

ACCESSORIES	
Model	**Description**
A-630	Stainless steel angle type bracket with SS bolts
A-631	Stainless steel flat type bracket with SS bolts
BBV-0N	2-valve block manifold
DevCom2000	HART® communication protocol software

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Dwyer

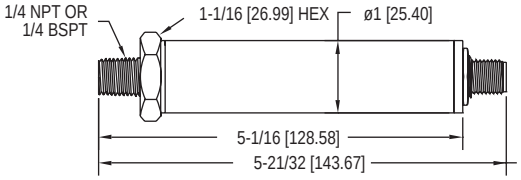
SERIES IS626

INTRINSICALLY SAFE PRESSURE TRANSMITTERS

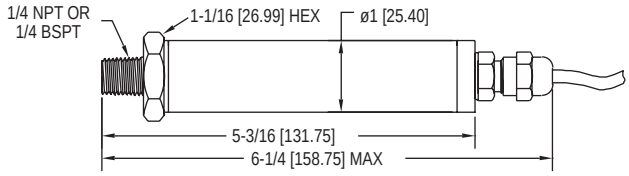
For Use In Hazardous Locations



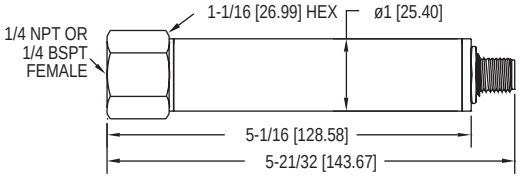




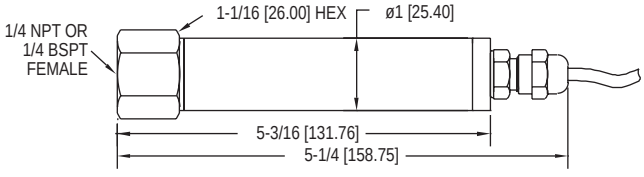
Male NPT/BSPT connector with male M-12 connector



Male NPT/BSPT connector with cable gland



Female NPT/BSPT connector with male M-12 connector



Female NPT/BSPT connector with cable gland



The Dwyer **Series IS626 Intrinsically Safe Pressure Transmitters** can be used to accurately measure compatible gases and liquids compatible with its 316/316L stainless steel wetted parts. Series IS626 full-scale accuracy is 0.25%. Designed for industrial environments with a NEMA 4X (IP66) housing, this transmitter resists most effects of shock and vibration. Models are available with a 3´ cable or M-12 4 pin connection.

The IS626 is UL listed for use in Hazardous (Classified) Locations. The protection method is by Intrinsic Safety, "ia". It was investigated by UL under UL Standard 913 Sixth Edition and CSA Standard No. 157-92.

FEATURES/BENEFITS

- Exceptional accuracy for insuring tight-control and minimizing costly out of specification conditions
- NEMA 4x rated enclosure provides protection in harsh environments permitting outdoor monitoring or in areas where dust and particulate matter exists
- Robust sensor provides shock and vibration resistance insuring stability in controlling pressure for process applications

APPLICATIONS

- Monitoring pressure in hazardous environments
- Process

SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Type 316, 316L SS.
Accuracy: 0.25% FS.
Temperature Limit: 0 to 176°F (-18 to 80°C).
Compensated Temperature Range: 0 to 176°F (-18 to 80°C).
Thermal Effect: ±0.02% FS/°F (includes zero and span).
Pressure Limits: See Pressure Range Table.
Power Requirements: 10-28 VDC.
Output Signal: 4-20 mA.
Response Time: 50 ms.
Loop Resistance: 0-900 Ω max.
Current Consumption: 38 mA (max).
Electrical Connections: 3 ft cable or 4-pin M-12 connector.
Process Connection: 1/4˝ male or female NPT and BSPT.
Enclosure Rating: NEMA 4X (IP66).
Mounting Orientation: Mount in any position.
Weight: 8.9 oz (252 g).
Agency Approvals: CE, cULus Intrinsically Safe to UL Standard 913.

For use in Hazardous (Classified) Locations:
Class I Div. 1 Groups A,B,C,D
Class II Div. 1 Groups E,F,G
Class III Div. 1
Temperature Code: T4 @ 80°C ambient
Install in accordance with control drawing 01-700797-00.
WARNING To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.
Use with approved safety barriers using entity evaluation.

MODEL CHART

Model	Range	Maximum Pressure (psig)	Over Pressure (psig)
IS626-07-GH-P1-E1-S1	15 psig	30	150
IS626-08-GH-P1-E1-S1	30 psig	60	300
IS626-09-GH-P1-E1-S1	50 psig	100	300
IS626-10-GH-P1-E1-S1	100 psig	200	500
IS626-11-GH-P1-E1-S1	150 psig	300	750
IS626-12-GH-P1-E1-S1	200 psig	400	1000
IS626-13-GH-P1-E1-S1	300 psig	600	1500
IS626-14-GH-P1-E1-S1	500 psig	1000	2500

Note: For optional M-12 4 pin electrical connection, change E1 to E6.

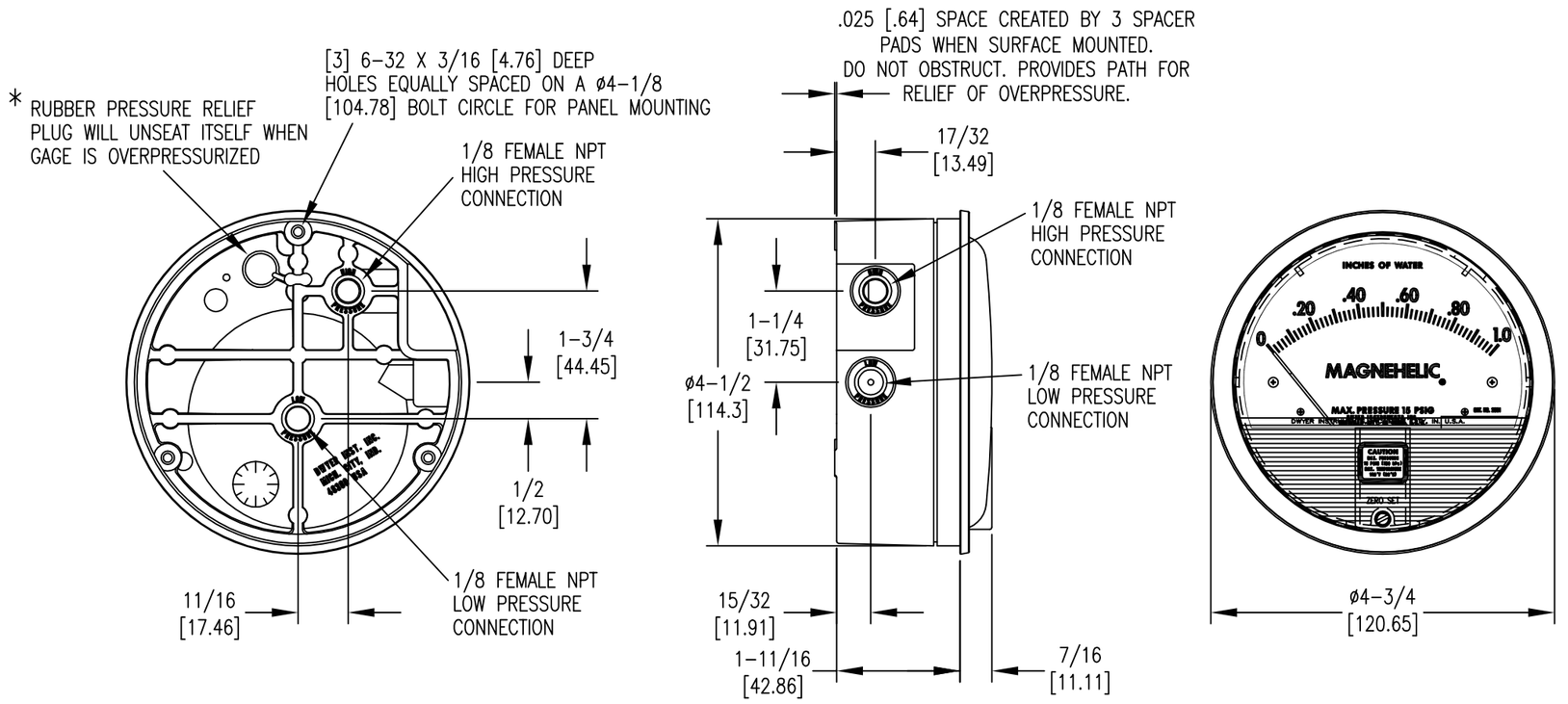
OPTIONS

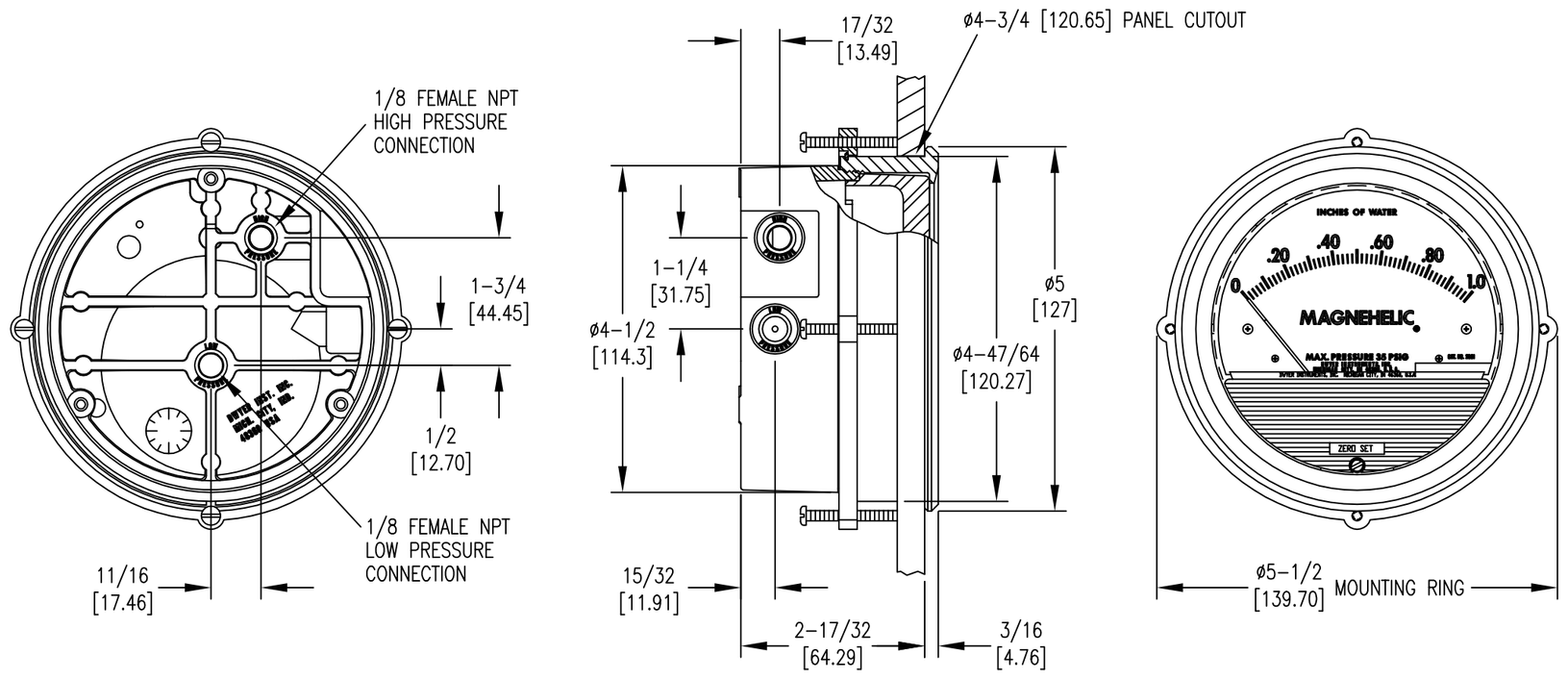
To order add suffix:	Description
-NIST	NIST traceable calibration certificate

Example: IS626-07-GH-P1-E1-S1-NIST

ACCESSORIES

Model	Description
A-295	Female four pin M-12 to cable gland connector
A-231	16´ (5 m) shielded cable with 4 pin female M-12 connection
MTL5541	Galvanic barrier
MTL7706	Intrinsically safe zener barrier





CD = CRITICAL DIMENSION

STANDARD TOLERANCES UNLESS NOTED:
ALL DECIMAL DIMENSIONS ± .005
ALL ANGLES ± 1°

SCALE 1:2

NO.	CHANGES	BY/DATE

DATE
DWN BY
CHKD
APPD

NAME: 2000 MAGNEHELIC ARTWORK (FOR REFERENCE ONLY)

ACAD2002

MATERIAL

FINISH

DWYER INSTRUMENTS, INC.
MICHIGAN CITY, INDIANA 46360 U.S.A.

FR. NO. 12-700060-05

NOTICE: This drawing and the principles and elements of design embodied therein are the exclusive property of DWYER INSTRUMENTS, INC. and are not to be communicated, disclosed, reproduced or used except as previously authorized in writing by such corporation and must not be submitted to outside parties for examination without the written consent of said corporation.

SRW PRODUCTS

Tel: 800-752-9326
Fax: 763-389-2725
SRWProducts.com

PO Box 70
32005 126th St
Princeton, MN 55371

SRW NW4

SRW Products Manufactures/Supplies a 100% Polypropylene Non-Woven produced by needle punching staple fibers in a random network to form a high strength dimensionally stable fabric. The polypropylene material is specially formulated to resist ultraviolet light deterioration, and is inert to commonly encountered soil chemicals. The fabric will not rot or mildew, is non-biodegradable, and is resistant to damage from insects and rodents. This Fabric is **MADE IN THE USA**.

SRW NW4 meets or exceeds the physical property values listed below.

Fabric Property	Test Method	Units	Minimum Average Roll Value
Weight (Typical)	ASTM D 5261	oz/sy	4
Grab Tensile	ASTM D 4632	lbs.	101 (450 N)
Grab Elongation	ASTM D 4632	lbs.	50
Trap-Tear Strength	ASTM D 4533	lbs.	45 (200 N)
Mullen Burst Strength	ASTM D 3786	psi	215
CBR Puncture	ASTM D 6241	lbs.	300 (1320 N)
Permittivity	ASTM D 4491	sec^{-1}	2
Water Flow	ASTM D 4491	gpm/ft^2	150 (6095 l/min/sm)
UV Resistance	ASTM D 4355	%	70
AOS	ASTM D 4751	US Sieve	#70 (.212 mm)

Values Provided represent expected values at time of manufacturer. This document provides the characteristic properties of the product described.

SETON
Signs, Labels & Solutions for a Safer Workplace

877.367.7732 seton.com
Fax 800.345.7819 Email submittals@seton.com
P.O. Box 458, Buffalo, NY 14240-0458

PRODUCT DATA SHEET

Opti-Code™ Pipe Markers

- Highly visible color-coded labels make it easy to differentiate between pipe systems
- The markers engineers most commonly specify
- Opticode™ Pipe Markers can be used with Arrows-on-a-Roll™ Tape or separate Directional Arrow Markers to indicate flow direction



3 Types of Pipe Marker Installation



1. Adhesive Marker with Directional Arrow
2. Adhesive Marker with Arrows-On-A-Roll™ Tape
3. Adhesive Marker with Pipe Banding Tape & Directional Arrow

Description: Seton Opti-Code™ Pipe Markers are made of self-adhesive, indoor/outdoor grade vinyl with ANSI specifications for background and letter colors, length of color field and letter height.

Use: Seton Opti-Code™ Pipe Markers are designed for use on pipes from 3/4" O.D. to over 10" O.D. and for use indoors and outdoors.

Compliance: Seton Opti-Code™ Pipe Markers meet ASME/ANSI A13.1-2015 standards when used with Seton Arrows-On-A-Roll™ to indicate flow direction. for background and letter colors, length of field and letter height.

Standard Legend Colors: Black or White

Standard Background Colors: Black, Blue, Brown, Gray, Green, Orange, Purple, Red, White and Yellow

Thickness (ASTM D 1593): Total 0.005 in. (0.125mm).

Gloss: 60 Gardner Units.

Standard Sizes/Dimensions:

Marker Size	Fits Pipe Outer Diameter	Length Color Field	Letter Height
8SM	3/4" - 1-3/8" (19mm - 35mm)	8" (203mm)	1/2" (13mm)
8LG	1-1/2" - 2-3/8" (38mm - 60mm)	8" (203mm)	3/4" (19mm)
12	2-1/4" - 7-7/8" (64mm - 98mm)	12" (305mm)	1-1/4" (32mm)
24	8" - 10" (203mm - 254mm)	24" (610mm)	2-1/2" (64mm)
32	over 10" (over 254mm)	32" (813mm)	3-1/2" (89mm)

Adhesive Properties:
Adhesion to steel (PSTC-1)
15 min. dwell (Avg)—75 oz/in. (82 N/100 mm)
Ultimate (72 hrs. dwell) (Avg)—116 oz/in. (127 N/100 mm)
Tack (ASTM-2979) (Avg)—800g (8 N)
Drop Shear (PSTC-7) (Avg)—4 Hrs

Date: ____/____/____ Job: _____

Contractor _____

SETON
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877.367.7732 seton.com
Fax 800.345.7819 Email submittals@seton.com
P.O. Box 458, Buffalo, NY 14240-0458

PRODUCT DATA SHEET

Opti-Code™ Pipe Markers (continued)

Abrasion Resistance: CS-17 Wheels, 1000 g. wts.

(Method 5306 of U.S. Federal Test Method Std. No. 191A): Legend withstands up to 700 cycles. Substrate withstands up to 8000 cycles.

Service Temperature: -40°F to 180°F (-40°C to 82°C).

Average Outdoor Durability: 5 years (Average expected outdoor life of product will depend on user definition of failure, climactic conditions, mounting techniques, and material color).

Chemical Resistance:

Reagent	7 day Immersion	Dip Test	Rub Test
30% Sulfuric Acid	NE	NE	NE
10% Sulfuric Acid	NE	NE	NE
30% HCL	F	NE	NE
10% HCL	NE	NE	NE
50% NaOH	F	NE	NE
10% NaOH	F	NE	NE
Gasoline	F	NE	F
Turpentine	F	NE	F
Glacial Acetic Acid	F	NE	F
5% Acetic Acid	NE	NE	NE
Cellosolve Acetate	F	F	F
Conc. Ammonia	NE	NE	NE
10% Ammonia	NE	NE	NE
Methyl Ethyl Ketone	F	F	F
Acetone	F	F	F
Methanol	F	NE	F
1,1,1, Trichloroethane	F	F	F
IPA (Isopropanol)	F	NE	F
ASTM #3 Oil	NE	NE	NE
SAE 20 Oil	NE	NE	NE
Mineral Spirits	F	NE	NE
Diesel Fuel	F	NE	F
Heptane	F	NE	F
Toluene	F	F	F
Alconox	F	NE	NE
Kerosene	NE	NE	NE
Water	NE	NE	NE

NE: No Effect **F:** Failed

7 Day Immersion: Immersed in reagent for 7 days.

Dip Test: Five 10 minute dips in reagent with 30 minute recovery.

Rub Test: Rubbed sample for one minute with swab soaked in reagent.

Shelf Life: 1 year when stored at 70°F (21°C) and 40% to 50% R.H.

Dimensions & Pressure Ratings

PVC Pipe

Schedule 40 Dimensions

Nom. Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nom. Wt./Ft.	Max. W.P. PSI*
1/8	0.405	0.249	0.068	0.051	810
1/4	0.540	0.344	0.088	0.086	780
3/8	0.675	0.473	0.091	0.115	620
1/2	0.840	0.602	0.109	0.170	600
3/4	1.050	0.804	0.113	0.226	480
1	1.315	1.029	0.133	0.333	450
1-1/4	1.660	1.360	0.140	0.450	370
1-1/2	1.900	1.590	0.145	0.537	330
2	2.375	2.047	0.154	0.720	280
2-1/2	2.875	2.445	0.203	1.136	300
3	3.500	3.042	0.216	1.488	260
3-1/2	4.000	3.521	0.226	1.789	240
4	4.500	3.998	0.237	2.118	220
5	5.563	5.016	0.258	2.874	190
6	6.625	6.031	0.280	3.733	180
8	8.625	7.942	0.322	5.619	160
10	10.750	9.976	0.365	7.966	140
12	12.750	11.889	0.406	10.534	130
14	14.000	13.073	0.437	12.462	130
16	16.000	14.940	0.500	16.286	130
18	18.000	16.809	0.562	20.587	130
20	20.000	18.743	0.593	24.183	120
24	24.000	22.544	0.687	33.652	120

Schedule 80 Dimensions

Nom. Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nom. Wt./Ft.	Max. W.P. PSI*
1/8	0.405	0.195	0.095	0.063	1,230
1/4	0.540	0.282	0.119	0.105	1,130
3/8	0.675	0.403	0.126	0.146	920
1/2	0.840	0.526	0.147	0.213	850
3/4	1.050	0.722	0.154	0.289	690
1	1.315	0.936	0.179	0.424	630
1-1/4	1.660	1.255	0.191	0.586	520
1-1/2	1.900	1.476	0.200	0.711	470
2	2.375	1.913	0.218	0.984	400
2-1/2	2.875	2.290	0.276	1.500	420
3	3.500	2.864	0.300	2.010	370
3-1/2	4.000	3.326	0.318	2.452	350
4	4.500	3.786	0.337	2.938	320
5	5.563	4.768	0.375	4.078	290
6	6.625	5.709	0.432	5.610	280
8	8.625	7.565	0.500	8.522	250
10	10.750	9.493	0.593	12.635	230
12	12.750	11.294	0.687	17.384	230
14	14.000	12.410	0.750	20.852	220
16	16.000	14.213	0.843	26.810	220
18	18.000	16.014	0.937	33.544	220
20	20.000	17.814	1.031	41.047	220
24	24.000	21.418	1.218	58.233	210

Schedule 120 Dimensions

Nom. Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nom. Wt./Ft.	Max. W.P. PSI*
1/2	0.840	0.480	0.170	0.236	1010
3/4	1.050	0.690	0.170	0.311	770
1	1.315	0.891	0.200	0.464	720
1-1/4	1.660	1.204	0.215	0.649	600
1-1/2	1.900	1.423	0.225	0.787	540
2	2.375	1.845	0.250	1.111	470
2-1/2	2.875	2.239	0.300	1.615	470
3	3.500	2.758	0.350	2.306	440
4	4.500	3.574	0.437	3.713	430
6	6.625	5.434	0.562	7.132	370
8	8.625	7.189	0.718	11.277	380

SDR 13.5 - Max W.P. 315 PSI*(all sizes)

Nom. Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nom. Wt./Ft.
1/2	0.840	0.696	0.062	0.110

SDR 21 - Max W.P. 200 PSI*(all sizes)

Nom. Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nom. Wt./Ft.
3/4	1.050	0.910	0.060	0.136
1	1.315	1.169	0.063	0.180
1-1/4	1.660	1.482	0.079	0.278
1-1/2	1.900	1.700	0.090	0.358
2	2.375	2.129	0.113	0.550
2-1/2	2.875	2.581	0.137	0.797
3	3.500	3.146	0.167	1.168
3-1/2	4.000	3.597	0.190	1.520
4	4.500	4.046	0.214	1.927
5	5.563	5.001	0.265	2.948
6	6.625	5.955	0.316	4.185
8	8.625	7.756	0.410	7.069

SDR 26 - Max W.P. 160 PSI*(all sizes)

Nom. Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nom. Wt./Ft.
1	1.315	1.175	0.060	0.173
1-1/4	1.660	1.512	0.064	0.233
1-1/2	1.900	1.734	0.073	0.300
2	2.375	2.173	0.091	0.456
2-1/2	2.875	2.635	0.110	0.657
3	3.500	3.210	0.135	0.966
3-1/2	4.000	3.672	0.154	1.250
4	4.500	4.134	0.173	1.569
5	5.563	5.108	0.214	2.411
6	6.625	6.084	0.255	3.414
8	8.625	7.921	0.332	5.784
10	10.750	9.874	0.413	8.971
12	12.750	11.711	0.490	12.620
14	14.000	12.860	0.538	15.205
16	16.000	14.696	0.615	19.877
18	18.000	16.533	0.692	25.156
20	20.000	18.370	0.769	31.057
24	24.000	22.043	0.923	44.744

SDR 41 - Max W.P. 100 PSI*(all sizes)

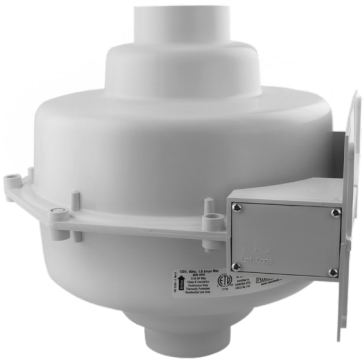
Nom. Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nom. Wt./Ft.
18	18.000	17.061	0.439	16.348
20	20.000	18.956	0.488	20.196
24	24.000	22.748	0.585	29.064

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RadonAway®

The world's leading radon fan manufacturer







RP, GP, XP Pro Series Installation Instructions

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

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

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

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

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

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

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

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

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

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

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

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

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

   f) Ducted fans must always be vented to outdoors.

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

1.0 SYSTEM DESIGN CONSIDERATIONS

1.1 INTRODUCTION

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

1.2 FAN SEALING

The RP, GP and XP Series Fans are factory sealed; no additional caulk or other materials are required to inhibit air leakage.

1.3 ENVIRONMENTALS

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

1.4 ACOUSTICS

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

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

1.5 GROUND WATER

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

1.6 SLAB COVERAGE

The RP, GP and XP Series Fans can provide coverage up to 2000+ sq. ft. per slab penetration. This will primarily depend on the sub-slab material in any particular installation. In general, the tighter the material, the smaller the area covered per penetration. Appropriate selection of the RP, GP and XP Series Fan best suited for the sub-slab material can improve the slab coverage. The RP, GP and XP Series have a wide range of models to choose from to cover a wide range of sub-slab materials. The RP140 and 145 are best suited for general purpose use. The RP 260 can be used where additional airflow is required, and the RP265 and RP 380 are best suited for large slab, high airflow applications. Additional suction points can be added as required. It is recommended that a small pit (5 to 10 gallons in size) be created below the slab at each suction hole.

1.7 CONDENSATION & DRAINAGE

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

For RP, GP and XP Series Fan piping, the following table provides the minimum recommended pipe diameter and pitch under several system conditions.

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



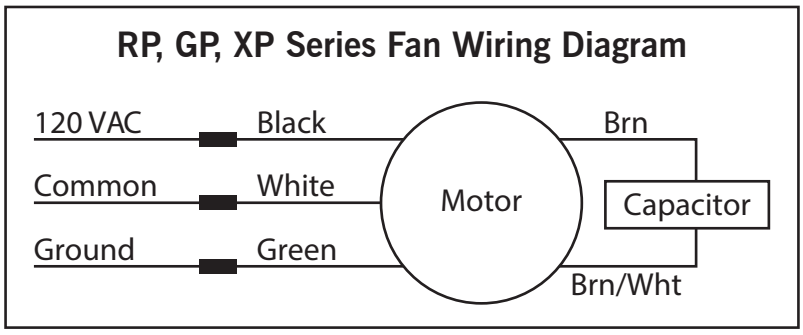
See p. 7 for detailed specifications.

1.8 SYSTEM MONITOR & LABEL

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

1.9 ELECTRICAL WIRING

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



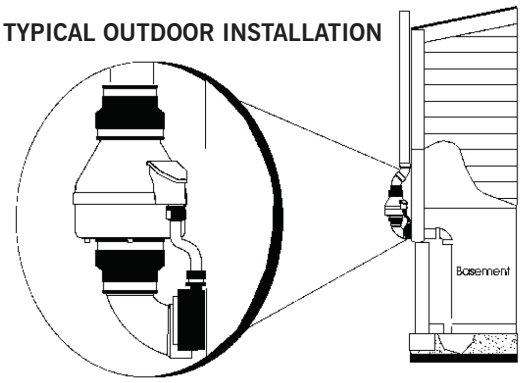
1.10 SPEED CONTROLS

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

2.0 INSTALLATION

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

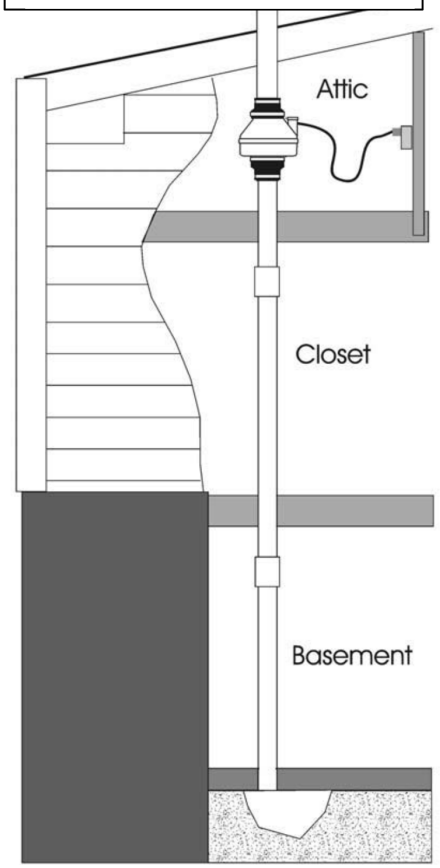
TYPICAL OUTDOOR INSTALLATION



2.1 MOUNTING

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

TYPICAL INDOOR INSTALLATION



2.2 MOUNTING BRACKET (optional)

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

2.3 SYSTEM PIPING

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

2.4 ELECTRICAL CONNECTION

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

2.5 VENT MUFFLER (optional)

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

2.6 OPERATION CHECKS & ANNUAL SYSTEM MAINTENANCE

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

_____ **Ensure** the RP, GP and XP Series Fan and all ducting are **secure and vibration-free**.

_____ **Verify system vacuum pressure** with manometer. **Insure** vacuum pressure is within normal operating range and **less than** the maximum recommended operating pressure.
(Based on sea-level operation, at higher altitudes reduce by about 4% per 1000 feet)
(Further reduce Maximum Operating Pressure by 10% for High Temperature environments.)
See Product Specifications. If this is exceeded, increase the number of suction points.

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

THE FOLLOWING CHARTS SHOW THE PERFORMANCE OF THE RP, GP and XP SERIES FANS

RP Series Product Specifications

Typical CFM Vs. Static Pressure "WC									
Model	**0"**	**.25"**	**.5"**	**.75"**	**1.0"**	**1.25"**	**1.5"**	**1.75"**	**2.0"**
RP140	135	103	70	14	-	-	-	-	
RP145	166	146	126	104	82	61	41	21	3
RP260	251	209	157	117	70	26	-	-	-
RP265	375	330	282	238	204	170	140	108	70
RP380	531	490	415	340	268	200	139	84	41

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
RP140	15 - 21 watts	0.7" WC
RP145	41 - 72 watts	1.7" WC
RP260	47-65 watts	1.3" WC
RP265	95 - 139 watts	2.3" WC
RP380	96 - 138 watts	2.0" WC

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

Model	Size	Weight	Inlet/Outlet	L.2
RP140	8.5"H x 9.7" Dia.	5.5 lbs	4.5"OD (4.0" PVC Sched 40 size compatible)	25
RP145	8.5"H x 9.7" Dia.	5.5 lbs	4,5" OD	15
RP260	8.6"H x 11.75" Dia.	5.5 lbs	6.0" OD	48
RP265	8.6"H x 11.75" Dia.	6.5 lbs	6.0" OD	30
RP380	10.53"H x 13.41" Dia.	11.5 lbs	8.0" OD	57

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

XP Series Product Specifications

Typical CFM Vs. Static Pressure "WC						
	0"	**.5"**	**1.0"**	**1.5"**	**1.75"**	**2.0"**
XP151	150	115	69	-	-	-
XP201	112	95	70	40	-	-

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
XP151	45 - 60 watts	1.3" WC
XP201	45 - 66 watts	1.7" WC

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

Model	Size	Weight	Inlet/Outlet
XP151	9.5"H x 8.5" Dia.	6 lbs	4.5"OD (4.0" PVC Sched 40 size compatible)
XP201	9.5"H x 8.5" Dia.	6 lbs	4.5" OD

GP Series Product Specifications

Typical CFM Vs. Static Pressure "WC							
	1.0"	**1.5"**	**2.0"**	**2.5"**	**3.0"**	**3.5"**	**4.0"**
GP201	54	42	11	-	-	-	-
GP301	64	54	41	4	-	-	-
GP401	-	61	52	44	22	-	-
GP501	-	-	66	58	50	27	4

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
GP201	31-65 watts	1.8" WC
GP301	56-100 watts	2.3" WC
GP401	62-128 watts	3.0" WC
GP501	68 - 146 watts	3.8" WC

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

Model	Size	Weight	Inlet/Outlet
GP201	13"H x 12.5" Dia.	12 lbs	3.5"OD (3.0" PVC Sched 40 size compatible)
GP301	13"H x 12.5" Dia.	12 lbs	3.5" OD
GP401	13"H x 12.5" Dia.	12 lbs	3.5" OD
GP501	13"H x 12.5" Dia.	12 lbs	3.5" OD

RP, XP and GP Series Additional Specifications

Model	Recommended Duct	PVC Pipe Mounting	Thermal Cutout	Insulation Class
RP140	3" or 4" Schedule 20/40 PVC	Mount on the duct pipe or with optional mounting bracket. For Ventilation: 4", 6" or 8" Rigid or Flexible Ducting.	130°C/266°F	Class B Insulation
RP145			130°C/266°F	Class F Insulation
RP260			150°C/302°F	
RP265			150°C/302°F	
RP380	6" Schedule 20/40 PVC Pipe		150°C/302°F	
XP151	3" or 4" Schedule 20/40 PVC	Fan may be mounted on the duct pipe or with integral flanges.	120°C/248°F	Class B Insulation
XP201				
GP201	3" or 4" Schedule 20/40 PVC	Fan may be mounted on the duct pipe or with integral flanges.	120°C/248°F	Class B Insulation
GP301				
GP401				
GP501				

Continuous Duty
3000 RPM
Thermally Protected
RP, GP Residential and Commercial
XP Residential Only
Rated for Indoor or Outdoor Use

LISTED
Electric Fan

Intertek
77728

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

IMPORTANT INSTRUCTIONS TO INSTALLER

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

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

Install the RP, GP and XP Series Fan in accordance with all EPA, ANSI/AARST standard practices, and state and local building codes and regulations.

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

Warranty

RadonAway® warrants that the RP, GP (excluding GP500) and XP Series Fan (the "Fan") will be free from defects in materials and workmanship for a period of 12 months from the date of purchase or 18 months from the date of manufacture, whichever is sooner (the "Warranty Term").

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

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

5-YEAR EXTENDED WARRANTY WITH PROFESSIONAL INSTALLATION.

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

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

LIMITATION OF WARRANTY

EXCEPT AS STATED ABOVE, THE RP, GP (excluding GP500) and XP SERIES FANS ARE PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULARPURPOSE.

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

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

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

Record the following information for your records:

Serial Number: _____ Purchase Date: _____

VaporPin®

Product Catalog 2018



ABOUT VAPOR PIN®

The Vapor Pin® a unique, patented, re-usable sampling device, has a variety of applications, including but not limited to: sub-slab soil-gas sampling, de-pressurization studies/ testing, stray gas evaluations, source area characterization, pilot testing and mitigation progress monitoring. The Vapor Pin® specifically, manufactured and marketed by Vapor Pin Enterprises, was designed to eliminate many of the problems associated with traditional sub-slab soil-gas sampling methods.

The patented design of the Vapor Pin® provides environmental professionals a means of collecting high-quality, low-cost soil-gas samples and pressure readings within minutes.

Plus, the Vapor Pin® is made in the USA.

*Protected under US Patent # 8,220,347 B2, US 9,291,531 B2 and other US and International Patents pending.



THE VAPOR PIN® ADVANTAGE

- Reduces damage to the slab
- Improves diagnostic testing
- Improves spatial resolution
- Connects easily to sampling equipment
- Is easily installed, sampled, and retrieved for reuse
- Eliminates the need for grout, increasing productivity
- Reduces sampling time, allowing collection of more samples for less cost, and improves the understanding of site conditions
- Unique patented design reduces the potential for leaks and improves sample quality

VAPOR PIN® KITS

Vapor Pin® Kits are the all-in-one solution to your gas sampling needs.

The Standard Kits come in 3 varieties* and Include:

- 10 VAPOR PINS®
- 20 VAPOR PIN® Sleeves
- 20 VAPOR PIN® Caps
- 10 Plastic Flush Mount Covers
- 1 Installation/Extraction Tool
- 1 Bottle Brush
- 1 Water Dam for leak testing
- Vapor Pin® SOPs
- Hard-sided carrying Case

STANDARD KITS



* Brass, Stainless Steel, or FLX-VP Stainless Steel

CONTRACTOR KITS



* Brass, Stainless Steel, FLX-VP, or FLX-VP with Quick Connect

The Contractor Kits come in 4 varieties* and Include:

- 10 VAPOR PINS®
- 20 VAPOR PIN® Sleeves
- 20 VAPOR PIN® Caps
- 10 Stainless Steel Secure Covers
- 1 Spanner Screwdriver
- 1 Stainless Steel Drilling Guide
- 1 Installation/Extraction Tool
- 1 Bottle Brush
- 1 Water Dam for leak testing
- Vapor Pin® SOPs
- Hard-sided carrying Case

Single Point Installation

Not all Projects call for multiple installation points, sometimes you only need one. In this case the essentials will get the job done.



At a minimum you will need:

- 1 VAPOR PIN®
- 1 installation/ Extraction tool
- 1 Bag of sleeves
- 1 Bag of white protective caps

Additionally, if you want a finished look, or if you are in an area with some foot traffic, you may want the optional plastic or stainless steel secure covers. The Stainless Steel Drilling Guide and Stainless Steel Secure Covers are recommended for flush mount installations in high traffic areas.





Individual Products

When you need an “a la carte” product we’ve got you covered. Order individual parts and pieces for your projects as you see fit. Placing an order is easy. The website works like Amazon, place items in your cart and checkout online at https://www.vaporpin.com/. If you have any questions, please contact us at 614-504-6915.



FLX-VPSS

The FLX-VPSS provides additional connectivity for the collection of soil-gas samples and subslab pressure readings. In addition to the barbed fitting that comes with the FLX-VPSS, the FLX-VPSS allows you to connect to sampling equipment though the use of Swagelok® fittings or Quick Connects. With the FLX-VPSS you can directly connect to TO-17 tubes connected to a Swagelok® fitting or to Bottle-VacsTM equipped with Quick Connects. Available in stainless steel only.



Stainless Steel Vapor Pin®

The barb at the top of the Vapor Pin® connects to ¼-inch OD sample tubing (typically Nylon or Teflon®) with softer tubing, preferably Tygon®. Because stainless steel is more durable than brass and more corrosion resistant, we recommend stainless steel for long-term installations and in corrosive environments.



Brass Vapor Pin®

Brass Vapor Pins® are less durable than stainless steel, but they can be reused repeatedly with proper care. We recommend brass Vapor Pins® for short-term installations, especially those installed in the stick-up configuration.



Mini Pin

The Mini Pin is ideal for use in buildings with thin slabs (as thin as 2 inches). Additionally, the Mini Pin is installed in the flush-mount position after drilling only a 5/8-inch hole. Mini Pins are supplied with Secure Covers, which act as a seal. While Mini Pins are designed for permanent installation and cannot be removed and reused, they are constructed of anodized aluminum, making them very economical.



FLX-VPBarb

The FLX-VPSS comes with a removable ¼-inch barb fitting, but the barb can be replaced, should it become lost or damaged. Available in stainless steel only.



MQT-SVPS Quick Connect

The optional Quick Connect attaches to the top of the FLX-VPPS, and connects directly to some sample containers, including Entech's glass Bottle-Vacs™. Quick Connect fittings provide the fastest way to connect to sample containers or field instruments, and they minimize the loss of soil gas to indoor air. Available in stainless steel only. Contact your analytical lab to make sure they provide compatible connections between the pin and the container.



Swagelok® and Ferrules

The optional Swagelok® fitting replaces the barb on top of the FLX-VPSS, should you desire to connect ¼-inch OD nylon or Teflon® tubing directly to the Vapor Pin®. The Swagelok® fitting also connects directly to most TO-17 sorbent tubes. Dedicated Swagelok® ferrules (not shown) are used to make connections, and are discarded whenever sample tubing is replaced. These are the same ferrules used for connecting ¼-inch OD sample tubing to most Summa-type canisters. Available in stainless steel only.



Vapor Pin® Filters

Vapor Pin® Filters screw into the bottom of Vapor Pins® to prevent particulates from entering the sample train. Due to the process used to manufacture them, Vapor Pin® Filters are available in brass only.



Vapor Pin® Barb Extension

With the Vapor Pin® Barb Extension screwed into to the bottom of the Vapor Pin®, sample tubing can be attached to extend deeper beneath the slab. The Barb Extension is the same diameter as the barb on top of the Vapor Pin®, and it accepts the same tubing. A Vapor Pin® Filter or Vapor Pin® Sieve can be attached to the bottom of the nylon tubing with Tygon® to prevent clogging the opening with soil.



Vapor Pin® 1.5" Extension

The Vapor Pin® 1.5" Extension is an alternative to the Barb Extension, and is screwed into the bottom of the Vapor Pin® to minimize contact between soil gas and the slab. Vapor Pin® Extensions can be connected end-to-end for collecting soil gas at various depths in increments of 1.5 inch. They can also be used with the Sealing Extension, described below.



Sealing Extension

Like the Vapor Pin® Barb Extension or the Vapor Pin® 1.5-inch Extension, the Sealing Extension is placed beneath the Vapor Pin®. The Sealing Extension is used to isolate the slab from the soil-gas environment to ensure that collected soil-gas samples are not affected by VOCs that may have saturated the slab. Depending on slab thickness, one or more Vapor Pin® 1.5" Extensions can be placed between the Vapor Pin® and the Sealing Extension to extend the assembly to the bottom of the slab. Available in stainless steel only.



Vapor Pin® Sieve

The Vapor Pin® Sieve can be attached to the bottom of a Vapor Pin®, a Barb Extension with tubing, or a Vapor Pin® 1.5" Extension to prevent soil from clogging the sample train.



Stainless Steel Drilling Guide

When installing Vapor Pins® in the flush-mount configuration, the Stainless Steel Drilling Guide is placed in the 1.5-inch hole prior to drilling the 5/8-inch hole, to ensure that the holes are co- centered, and perpendicular to the slab. The guide also functions as a depth gauge while drilling the 1.5-inch hole. When the flange on the Drilling Guide just touches the slab, the hole is at the proper depth.



Stainless Steel Secured Cover

The Stainless Steel Secured Cover screws onto the Vapor Pin® installed in the flush-mount configuration, to reduce trip hazards and to discourage tampering. The Secured Cover can be used with brass or stainless steel Vapor Pins®, and with the FLX-VPSS. The Secure Cover is available in stainless steel only.



Flush Mount Covers

The basic Flush Mount Cover is made of black plastic, and is a low-cost alternative to the Stainless Steel Secured Cover used in flush-mount installations.



Vapor Pin® Sleeves

The Vapor Pin® Sleeve is what distinguishes the Vapor Pin® from other sampling points. The Vapor Pin® Sleeve instantly forms a tight seal between the concrete slab and the Vapor Pin®, without the use of grout, cement, or adhesives. Like most plastic parts, including sample tubing, Vapor Pin® Sleeves are replaced each time the Vapor Pin® is installed.



Vapor Pin® Caps

Vapor Pin® Caps are placed on top of any type of Vapor Pins® equipped with barb fittings, and prevent soil gas from escaping between sample events. Caps should be replaced each time the Vapor Pin® is installed.



Spanner for Secured Cover

The spanner is used to secure and remove the Stainless Steel Secured Cover from Vapor Pins® installed in the flush-mount configuration.



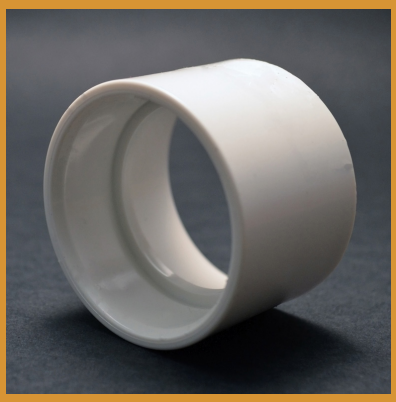
Installation/Extraction Tool

The Installation/Extraction Tool is placed on the barb of the Vapor Pin® or FLX-VPSS during installation to prevent damage to the barb while hammering it into the slab. At project completion, the Vapor Pin® is extracted by screwing the Installation/Extraction Tool onto the Vapor Pin® and twisting, in the way one extracts a wine cork.



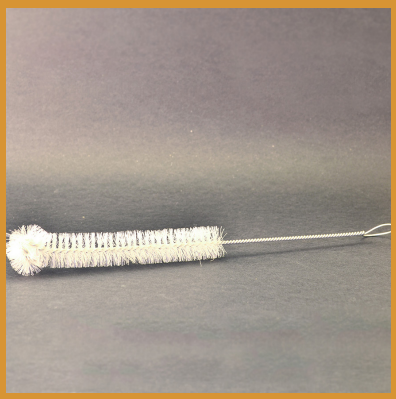
Elastrator Tool

The elastrator simplifies placing the Vapor Pin® Sleeve onto the Vapor Pin®. While wearing work gloves, screw the Vapor Pin® into a Stainless Steel Secured Cover, and place it upside down on a desk or work bench. Place the elastrator into the end of a sleeve, squeeze the elastrator handles, and with the other hand, push the sleeve onto the Vapor Pin®.



Water Dam

The Water Dam is used to leak test the seal between the Vapor Pin® and the concrete slab. The Water Dam is placed around the Vapor Pin® and in contact with the slab using a ring of clean modeling clay or Play-Doh®. Make your sample train connections, then pour distilled water into the Water Dam before purging, and if water isn't lost into the slab, the seal is tight.



Bottle Brush

The Bottle Brush is used to remove dust from the 5-8-inch hole prior to hammering in the Vapor Pin®.



O-Rings

The O-Rings form the seal between the FLX-VPSS and the interchangeable Barb Fitting, Swagelok® fitting, Quick Connect fitting or MiniPin cover. These fittings are sold with O-rings, but the rings can be replaced if desired.



Tygon® Tubing

Tygon® Tubing connects the Vapor Pin® ¼-inch barb to ¼-inch OD Nylon or Teflon® tubing. Tygon® is the best available tubing for making connections, but like all soft tubing, it is less chemically inert than Nylon or Teflon®, and it should not be used for longer tubing runs. Tygon® tubing should be replaced between samples.



Nylaflow® Tubing

Nylon tubing (¼-inch OD) has low chemical reactivity, and it should make up as much of the sample train as possible. Nylaflow® LM tubing is comparable to Teflon® at a lower cost. Nylaflow® tubing should be replaced between samples.



Hard Sided Case

The Vapor Pin® Contractor Kit is sold with a Hard Sided Case, but you can replace it should your case become lost or damaged.



Countersink Drill Bit

The Stainless Steel Secure Cover projects approximately 1/16" above grade and poses minimal trip hazard. The Countersink Drill Bit allows you to place the entire cover below grade, and drills both the 1.5-inch diameter hole, and a shallow 2-inch diameter hole. Besides making installations even neater, the Countersink Drill Bit makes it obvious when the 1.5-inch hole reaches total depth, without periodically having to stop and check.

Snap a shot of our QR code
and start shopping Now!

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